Agricultural Lands Stewardship

Photo caption. Rice field.

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Chapter 20. Agricultural Lands Stewardship

> "…'Agricultural lands stewardship' means farm and ranch landowners—the stewards of the state's agricultural lands—producing public environmental benefits in conjunction with the food and fiber they have historically provided while keeping land in private ownership."
>
> California Water Plan Update 2005, Agricultural Land RMS.

Agricultural lands stewardship broadly means the conservation of natural resources and protection of the environment. Land managers practice stewardship by conserving and improving land for food, fiber and biofuels production, watershed functions, soil, air, energy, plant and animal and other conservation purposes. Agricultural lands stewardship also protects open space and the traditional characteristics of rural communities. Moreover, it helps landowners maintain their farms and ranches rather than being forced to sell their land because of pressure from urban development.

Agricultural lands stewardship will continue to play a leading role in the implementation of California Water Plan Update 2009. Working landscapes will increasingly be relied on to attenuate peak precipitation runoff and conserve water, as well as to provide critical habitat at key locations and sequester carbon, while maintaining ongoing primary productivity of food and fiber. It is also anticipated that difficult decisions will be made to sacrifice some agricultural lands to ecological functions, in order to fulfill the goals of reliable water supplies and functional ecosystems.

Since the California Water Plan Update 2005, new assistance programs and laws and regulations affecting agriculture have been created or enacted, and old ones eliminated, reduced, or expanded. Among the policies and initiatives are:

Federal

- Federal Farm Bill reauthorization.

State

- AB 32 Greenhouse Gas Reduction Act Climate Action Team Ag Work Group (AgCAT).
- California bond measures that have been enacted since 2005, including those proposed in conjunction with 2009 water legislation.
- The California Department of Transportation-led Regional Blueprint (http://calblueprint.dot.ca.gov/)
- The Governor's Strategic Growth Plan/Strategic Growth Council. (http://www.sgc.ca.gov/)
- New agency programs since 2005 that support Agricultural Lands Stewardship, such as the Wildlife Conservation Board's Ecosystem Restoration on Agricultural

Box 20-1 Acronyms and Abbreviations

AB	California State Assembly bill
AgCAT	AB 32 Climate Action Team (Agriculture Work Group, Greenhouse Gas Reduction Act)
BDPAC	The Bay-Delta Public Advisory Committee
CALFED	A concatenation of California and federal. The term "CalFed Bay-Delta Program" means the programs, projects, complementary actions, and activities undertaken through coordinated planning, implementation, and assessment activities of the State agencies and federal agencies as set forth in the CalFed Bay-Delta Program Record of Decision, dated August 28, 2000. (Public Law 108–361)
CAWSI	California Agricultural Water Stewardship Initiative
DLRP	Division of Land Resource Protection
DOC	California Department of Conservation
DWR	California Department of Water Resources
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act
IFDM	Integrated on-farm drainage management
IRWMP	Integrated Regional Water Management Plan
NRCS	Natural Resource Conservation Service
Prop.	Ballot proposition
RCD	Resource Conservation Districts
SB	California State Senate bill
UCCE	University of California Cooperative Extension offices
USDA	US Department of Agriculture

Lands (ERAL) program. (http://www.wcb.ca.gov/Pages/eral_project.asp) Many new programs were made possible by enacted bond measures discussed above.

- The San Joaquin Valley Blueprint. (http://www.valleyblueprint.org/)

Non-governmental Organization

- Ag Innovations Network-sponsored Ag Futures Alliance, Food System Alliance initiatives, and California Roundtable on Agriculture and the Environment. (http://agfuturesalliance.org/, http://foodsystemalliance.org/, http://foodsystemalliance.org/crae/)
- The California Agricultural Water Stewardship Initiative.
- The California Rangeland Conservation Coalition. (http://www.carangeland.org/)
- Community Alliance with Family Farmers. (http://www.caff.org/)
- The California Dairy Quality Assurance Program. (http://www.cdqa.org/)
- Fish-Friendly Farming sponsored by the California Land Stewardship Institute. (http://www.fishfriendlyfarming.org/)
- Roots of Change. (http://www.rocfund.org/)
- The Sacramento River Conservation Area Forum. (http://www.sacramentoriver.org/SRCAF/index.php)

- Wild Farm Alliance. (http://www.wildfarmalliance.org/)
- Other agricultural production groups' environmental stewardship initiatives, such as the California Association of Winegrape Growers Sustainable Winegrowing Program; the California Rice Commission's Conservation Program. (http://www.cawg.org/, http://www.calrice.org/a6c_conservation.htm)

CALFED Bay-Delta Public Advisory Committee (BDPAC) Working Landscapes Approach

The working landscape is defined as an economically and ecologically vital and sustainable landscape where agricultural and other natural resource-based producers generate multiple public benefits while providing for their own and their communities' economic and social well-being

Agricultural Lands Stewardship in California

Agricultural lands in California comprise about 29 million acres.[1] About 12.5 million of these are cultivated, while the remaining 16.5 million acres are rangeland. Agricultural land includes both cultivated and non-cultivated lands used for production of plant and animal products. The specifics for rangeland stewardship are integrated throughout the body of this resource management strategy. Future Water Plan updates may present a strategy for agricultural lands stewardship that is separate from stewardship of rangeland. Stewardship of these lands requires constant balancing between market forces, natural constraints and ever-changing social expectations. In describing this dynamic, Giannini Foundation's Special Report 04-1, "Whither California Agriculture: Up, Down, or Out?" lists seven persistent elements that have shaped California Agriculture over the last 240 years (formatting added):

> *First*, California agriculture has always been "demand driven." It was never subsistence, family-farm agriculture like that which characterized much of early United States agriculture (Cochrane, 1993); rather, it was driven by entrepreneurs seeking riches by serving high-value and/or newly emerging markets. These markets were generally distant and often foreign: hides and tallow to the United Kingdom and Boston; wheat to Europe and beyond; fruits, nuts, and vegetables to the East Coast, Europe, and, more recently, Asia; and wine to the world.
>
> *Second*, California agriculture is resource-dependent (land and water). Its history includes aggressive development of new land and water resources along with cases of soil and groundwater exploitation—the nature and severity of which has changed over its history.
>
> *Third*, California agriculture has been shaped by the absence of water in the right place. It has always been in search of more water and has been an aggressive participant in water debates (wars?) with both internal and external competing interests.
>
> *Fourth*, California agriculture has always depended on a large supply of agricultural labor for cultivating and harvesting its abundant produce from both relatively large-scale operations and specialty-crop farms. The source of a stable supply of field labor has varied over time with immigrants from Asia and the Americas.

1 California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program. 2008. California farmland conversion report 2004-2006.

Fifth, California agriculture has grown rapidly and almost continuously, although it has been periodically buffeted by natural catastrophes (e.g., floods, droughts) and adverse economic shocks (e.g., the Great Depression, various recessions).

Sixth, California agriculture, at least since the Gold Rush, has required very high levels of management skills—both technical and economic. It has always been dominated by large-scale operations that have grown in complexity and sophistication.

Seventh, it has always been on the technological frontier in developing, modifying, or stealing new technologies, such as large-scale mechanical technology, irrigation equipment, horticulture/plant varieties, pest control, food processing, and wine making."

Institutions and policies have been developed in response to these challenges. Public investment in water infrastructure (reservoirs, canals, drains, levies, dykes) has been in the forefront of these.

California Land Conservation (Williamson) Act of 1965: Underscoring the economic importance of agricultural lands, California lawmakers enacted the California Land Conservation Act of 1965 (Williamson Act) in order to protect agricultural lands and open space from premature conversion to urban uses. The Williamson Act program, administered through the California Department of Conservation (DOC) Division of Land Resource Protection (DLRP), provides economic incentives to counties to promote land use planning decisions which conserve farmland to the greatest extent feasible. Roughly half of the farmland in California is covered by long-term contractual protections under the Williamson Act.

Article 13, Section 8 of the California Constitution restricts taxation of open space lands, including farmlands, to promote conservation, preservation, and continued existence of this necessary resource.

The Watershed Coordinator Grant Program, also administered by DLRP, supports projects implementing water conservation, working with private lands for watershed health, erosion and public education for water quality, best management practices, science and planning in watershed management, and working with landowners, building relationships, to build better, healthier watersheds. Permanent protection of farmland through agricultural easements is partially funded by matching fund grants administered by DLRP. Other institutions supporting agricultural land stewardship include Resource Conservation Districts (RCDs), University of California Cooperative Extension offices (UCCE), Natural Resource Conservation Service field offices (NRCS), county Agriculture Commissioners, and the California Department of Food and Agriculture.

The size and terrain of California allows for extensively and intensively diverse agriculture. This comes with costs, not the least of which are the large amounts of capital

and land needed for water capture, storage, transport, and disposal (i.e. Lower Klamath Lake; Salton Sea). Other resource management strategies requiring significant land resources may be compatible with or conflicting with ongoing agricultural uses. Among these are: Flood Management; Ecosystem Restoration; Watershed Management; Forest Resource Management, Economic Incentives; Water Transfers; Agricultural Water Use Efficiency; and Urban Land Use Management. This narrative will discuss overlap with some of these other strategies.

Kinds of Agricultural Lands Stewardship Practices and Strategies

There are many ways that agricultural lands can be profitably managed. Croplands can be managed to reduce or avoid streambank erosion or storm water runoff. Streambank stabilization may include a buffer strip of riparian vegetation which slows bank erosion and filters drainage water from the fields. Measures such as these can minimize or reduce the effects of agricultural practices on the environment and help meet governmental regulatory requirements while also reducing long-term maintenance problems for the landowner.

Agricultural lands stewardship is not a new concept. Under various names, it has been practiced and encouraged by the California Department of Conservation's programs and the US Department of Agriculture (USDA) through the Natural Resource Conservation Service and various nongovernmental entities for many years. The California Resource Conservation Districts (RCDs), and other entities, specialize in working with private landowners in watershed management and coordination strategies. Governmental land acquisition programs are not agricultural stewardship when they take farm lands out of production. These programs are limited, as they now can affect only a small portion of agricultural lands. Still, stewardship is increasingly considered by governmental and nongovernmental organizations for protecting natural resources while keeping the lands in productive private ownership.

A range of private and public programs and initiatives already exist that fit the stewardship model (see Box 20-2). Many public programs provide technical assistance on what crops to plant, and how to plant, cultivate and irrigate them. Others provide technical help on wildlife-friendly farming techniques for wildlife and aquatic ecosystems. Additional types of programs cover soil, water, and habitat conservation planning. These efforts can identify suitable areas for farming and habitat management. Urban planning programs can also be used to avoid agricultural land fragmentation and permanent loss of valuable agricultural land because of urban development (see the urban land use management strategy). And finally, there are programs that limit or cease commercial agricultural use to promote wetlands and other wildlife sensitive areas, while keeping lands in private ownership and stewardship.

Box 20-2 Initiatives that Exemplify Agricultural Lands Stewardship Strategy

- Proposition 50 Ecosystem Restoration Program's Proposed Working Landscapes Grants. These funds could be used as "matching funds" with the Farm Bill, thus leveraging State money with federal money.
- USDA Natural Resources Conservation Service.
- Conservation Security Program offers incentives and rewards to growers who implement resource conservation plans for parts or all of their lands.
- Conservation Technical Assistance Program provides technical assistance to design and implement stewardship practices.
- Wetland Reserve Program offers incentives to restore wetlands in order to replace marginal croplands to help restore the biological diversity of plant and animal species, particularly, migratory waterfowl.
- Grasslands Reserve Program provides rental payments and easements on working grasslands in exchange for protection against conversion to other land uses.
- Farm and Ranchland Protection Program is used to secure easements to prevent conversion from agricultural land to urban land use.
- Wildlife Habitat Incentives Program provides up to 75 percent cost-share to reimburse participants for installing practices beneficial to wildlife.
- Department of Water Resources Flood Protection Corridor Program. Grants for nonstructural flood management that enhance wildlife habitat or protect agricultural uses on private lands.
- Department of Fish and Game Private Lands Management Program. Pays ranchers and farmers to improve habitat for wildlife through fishing and hunting.
- Wildlife Conservation Board Rangeland, Grazing Land and Grassland Protection Act of 2002. Grants to prevent rangeland conversion to more intensive uses, and to improve grazing and wildlife.
- The Farmland Mapping and Monitoring Program (FMMP), managed by the DOC, produces maps and statistical data used to analyze impacts on California's agricultural resources. The maps are updated every two years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance.
- Ag Water Stewardship Resource Center. The Resource Center is an online clearing house of on-farm land and water management practices to improve water management on California farms and ranches.
- See California Water Stewards: Innovative On-farm Water Management Practices, a publication by the California Institute for Rural Studies. Ten case studies of leading growers in California.
- Pine Gulch Creek Project in Marin County by the Coastal Conservancy. On-farm ponds capture winter storm water for summer use.
- Marin Carbon Project. Use of keylines for on-farm water management and soil carbon sequestration.[1]
- Models of Agricultural Lands Stewardship in California by Hydrologic Region and Resource Issue. A region-by-region narrative of case studies that exemplify the application of agricultural lands stewardship to address resource management issues relevant to each region.

1 Keyline systems of water and soil conservation were developed in Australia during the 1950's by P.A. Yeomans as a response to increasing desertification and erosion of the landscape. Keyline agriculture is a permaculture farming technique offering holistic farm design. Keyline is a set of principles, techniques and systems, which coordinate into a development plan for rural and urban landscapes. The result is a strategic master plan to develop the natural or existing landscape through regeneration and enhancement. On Keyline properties the typical vistas are of lakes with water birds, roads along the contours and ridge lines, contour tree belts, healthy crops and green pasture growing in dark biologically fertile soil. Additional information on Keyline systems can be found at: http://www.californiagreensolutions.com/cgi-bin/gt/tpl.h,content=246, http://attra.ncat.org/intern_handbook/water_harvest.html, http://www.keyline.com.au/

The following examples describe a range of stewardship programs.

Butte County Resource Conservation District, Department of Conservation Watershed Coordinator Program	Oaks and Groundwater Outreach. RCD: (530) 534-0112; www.buttecountyrcd.org
Central Modoc Resource Conservation District, Department of Conservation Watershed Coordinator Program:	Working with Private Lands for Watershed Health. RCD: (530) 233-8872; www.cmrcd.org

Coastal San Luis Resource Conservation District, Department of Conservation Watershed Coordinator Program	Water Quality and Conservation. RCD: (805) 772-4391; www.coastalrcd.org
Colusa County Resource Conservation District Department of Conservation Watershed Coordinator Program	Local Partnerships are Critical to Program Success. RCD: (530) 458-2931; www.colusarcd.org
Contra Costa Power and Water District Department of Conservation Watershed Coordinator Grant Program	Water Quality and Best Management Practices. District: (925) 313-2313
El Dorado Irrigation District Department of Conservation Watershed Coordinator Grant Program	Science and Planning in the Watershed. District: (530) 642-4007
Glenn County Resource Conservation District Department of Conservation Watershed Coordinator Grant Program	Permit Coordination for Environmental Enhancements. RCD: (530) 934-4601 x4; www.glenncountyrcd.org
Napa County Resource Conservation District Department of Conservation Watershed Coordinator Grant Program	Enhancing a Watershed. RCD: (707) 252-4188
Stockton East Water District Department of Conservation Watershed Coordinator Program	Community Building for Watershed Health. District: (209) 948-0333
Tehama County Resource Conservation District Department of Conservation Watershed Coordinator Program	Building Relationships to Build a Better Watershed. RCD: (530) 527-3010 x120; www.tehamacountyRCD.org
Westside Resource Conservation District Department of Conservation Watershed Coordinator Program	Rainfall, Tamarisk, and Tree Propagation. RCD: (559) 647-9198

The CALFED Working Landscapes Subcommittee

The Bay-Delta Public Advisory Committee (BDPAC) established a Working Landscapes Subcommittee to advise it on the formulation of a working lands management approach for Bay-Delta Programs (see Box 20-3). The Working Landscape Subcommittee seeks to provide the committee with creative and practical strategies that (1) enhance the sustainability of California agriculture; and (2) provide for participation of local communities, landowners and managers; while (3) significantly fulfilling the CALFED Record of Decision to restore ecological health and improve water management for beneficial use of the Bay-Delta system while minimizing harm to agriculture.

The Farm Security and Rural Investment Act of 2002

The reauthorized federal 2002 Farm Bill provides several new and traditional agricultural conservation programs that exemplify an agricultural lands stewardship strategy. All programs are voluntary. Many programs may include technical assistance, financial incentives, or temporary and permanent set-aside payments for various purposes.

Box 20-3 Examples of Agricultural Lands Stewardship Practices

- **Wetland Restoration.** Wetland acreage improves water quality by filtering out pollution and sediments. It also helps flood management by slowing the flow of water. Healthy wetlands are indispensable for recharging underground aquifers and providing specific wildlife habitat.
- **Shallow-Water Wildlife Areas.** Shallow water areas provide habitat and water for wildlife. Temporary rice field habitat also provides resting and feeding grounds for waterfowl and shorebirds and related terrestrial species. Rice field flooding speeds the decomposition of rice straw, reduces air pollution, improves soil fertility and helps with the decomposition of agricultural chemicals.
- **Windbreaks.** Rows of trees or shrubs along field boundaries help control soil erosion, conserve soil moisture, improve crop protection, provide livestock shelter and wildlife habitat, reduce drainage water, and increase carbon sequestration (removal of carbon dioxide from the atmosphere).
- **Irrigation Tailwater Recovery.** Collection, storage and transportation facilities help capture and reuse irrigation runoff water to benefit water conservation and off-site water quality. [See Chapter 2 in Volume 2, Agricultural Water Use Efficiency]
- **Filter Strips, Grassed Waterways, and Contour Buffer Strips.** These are practices to reduce erosion and provide water quality protection, with some wildlife benefits depending on management.
- **Conservation Tillage.** Tillage of soils increases water infiltration and soil water conservation, reduces erosion and water runoff, sequesters carbon, and improves soil ecosystem and habitat quality.
- **Noxious Weed Control.** This practice establishes self-sustaining populations of "control organisms" to control or prevent weed infestations. Mowing, disking, plowing, and grazing are some of the practices that can be used for noxious weed control.
- **Riparian Buffers.** Areas of trees, shrubs, and grasses adjacent to streams or drains help filter runoff by trapping sediments, nutrients, and pesticides. Riparian buffers also provide wildlife habitat.
- **Grazing Management - Livestock Access.** This practice restricts or controls livestock access to surface waters to reduce sediment and nutrient nonpoint source pollution; Exclusion Fencing: Fencing can be installed to keep cattle out of creeks.
- **Streambank Protection.** Streambank protection is often needed when stream configuration is modified. Use of willow mattresses helps protect these reshaped streambank. The willows grow into a stable plant community that provides food, habitat, and overhanging shade which helps maintain cool stream water temperature for fish. Other fish friendly techniques, such as the use of logs and overhangs, are also incorporated into streambank protection to provide shade for fish. Some portions of the property may be left untouched to allow for natural flooding. Removing highly invasive plants, such as mugwort, non-native vinca, and other exotics, enables native plants to become established. Combining these measures along streambank avoids the need to use environmentally damaging riprap.
- **Cover Crops.** Other agronomic practices include planting cover crops to enhance soil water retention, reduce nutrient runoff and encourage beneficial insects and reducing or eliminating the need for pesticides.
- **Composting.** Using recycled compost and other sources for fertilizer and reusing wastewater for irrigation builds soil organic matter, water-holding capacity and reduces need for costly synthetic fertilizers.
- **Farm Ponds.** Farm ponds contribute to flood management and groundwater recharge as well as nesting and feeding habitat for various species of waterfowl and terrestrial animals. On-farm ponds can successfully offset the use of conveyed water by capturing winter storm water runoff for summertime irrigation. Farm ponds also can be used to help correct field drainage problems and capture wastewater. Agricultural pond management for water quality also may be a source of water for wildlife with appropriate water quality management.
- **Rice Straw Management using wetlands.** Wetlands can be created on rice land after incorporating straw into soil to speed decomposition, improve soil health, reduce disease, provide wildlife habitat and reduce field burning to improve air quality.
- **Increased Soil Organic Matter.** Increasing the organic matter content of soils is an important agronomic practice for improving soil structure, water infiltration, soil moisture retention, and reducing the need for applied water. Building organic matter, or soil carbon, is also an important climate change mitigation measure. Improved infiltration also helps to recharge groundwater and reduce erosion.
- **Fish-friendly Farming.** Installing fish screens on ditches prevents entrapment of fish. Water diversions can be designed to operate without creating obstacles to migrating fish.
- **Crop Fallowing.** Crop fallowing is an agronomic practice to benefit the soil or for other management purposes. Crop fallowing may be used in a rotation. Soil-building fallowing can also be used as a drought management tool at the water district level, especially where linked to drought

Box 20-3 (continued) Examples of Agricultural Lands Stewardship Practices

- **Drainage Management.** Integrated on-farm drainage management (IFDM) can be used to protect and enhance farmland, wildlife and water resources in drainage problem areas. The goal of IFDM is to eliminate the need for discharging salty subsurface drainage water from farms into waterways or evaporation ponds. The IFDM system manages irrigation water on salt-sensitive high value crops and reuses subsurface drainage and tailwater on increasingly salt-tolerant crops. Biological filters, drainage and tail water systems, crop management and salt harvesting in an evaporation system improve water use efficiency, provide for the use of concentrated drainage water, and reduce the need to dispose of agricultural drainage water. This approach to the management of agricultural lands affected by saline water and perched water tables has primarily been used on the west side of the San Joaquin Valley. It offers a temporary alternative to retirement of agricultural lands. More information can be found in the Salt Management resource management strategy of this Volume.

California Agricultural Water Stewardship Initiative (CAWSI)

Mission. CAWSI promotes approaches to agricultural water management that support the viability of agriculture, conserve water, and protect ecological integrity in California.

Services. Policy engagement, research, and education in support of agricultural water stewardship approaches that reduce water inputs, more efficiently use water on-farm, and provide a range of additional social, economic and environmental benefits.

Potential Benefits of Agricultural Lands Stewardship

1. **California Water Plan Update 2005 Agricultural Lands Stewardship Discussion.** Agricultural lands stewardship can be included as an integral component of regional integrated resource planning, including watershed planning and implementation. Agricultural lands stewardship can use stewardship practices to protect the health of environmentally sensitive lands, recharge groundwater, improve water quality, provide water for wetland protection and restoration, reduce costs to the State for flood management, and aid riparian reforestation and management projects. Lands can also be managed to improve water management, urban runoff control, water storage, conveyance and for groundwater recharge. These stewardship practices are attractive since they don't rely on construction of major facilities.

2. **Agricultural land stewardship can be part of a regional strategy of urban growth management.** Agricultural lands provide public benefits for floodplain management, scenic open space, wildlife habitat, and defined boundaries to urban growth. Stewardship provides the rural counterpart to urban efforts to encourage more water efficient development patterns. It also can minimize fragmentation of agricultural lands by development that can decrease productivity and harm the ecosystem.

3. **Climate Change.** Agricultural lands stewardship can lead to increased sequestration of carbon and nitrogen, common greenhouse gasses. On-farm management of green waste can retain carbon and nitrogen within the soil, benefitting both tilth and health. Efficient production of crops for fuel can reduce the rate of greenhouse gas emissions from fossil fuels. Production of crops for long term carbon sequestration is an emerging practice. Recent findings from the Marin Carbon Project relate soil organic matter enhancement on grazing lands to carbon sequestration. (See practices listed in Table 20-1 for this, and subsequent, points.)

4. **Provide Water Supply Benefits.** Agricultural lands stewardship includes wise management of water for on-farm application, for groundwater infiltration, and for downstream users.

5. **Improve Drought Preparedness.** Agricultural lands stewardship includes practices to promote local sufficiency and sustainability. Local sufficiency and sustainability are improved through wise management of surface water and groundwater. Well managed supplies of local groundwater can be a cost effective solution to drought preparedness. During times of drought, and at times when operating constraints prevent the delivery of allocated water supplies, landowners conserve available water by using local groundwater, reducing cultivated acreage (fallowing), shifting crops to lower water use crops, and by such practices as stumping a portion of trees in an orchard to maintain high quality for a reduced yield.

6. **Operational Flexibility and Efficiency.** Agricultural lands stewardship includes partnerships for water management to promote flexibility and efficiency in operations. Water banks, water loans, water transfers, conjunctive management, causeway farming, and other land management practices can contribute to operational flexibility and efficiency.

7. **Reduce Flood Impacts.** Managed lands are essential for flood management. By allowing floodwaters to spread, dissipating energy, sediments are retained as soil on the landscape. Stewardship of agricultural lands protects developed land while preserving productivity.

8. **Environmental Benefits.** Agricultural lands stewardship uses adaptive management to improve efficiency, reduce energy consumption while maintaining working landscapes, habitat, and open space. In addition to these direct environmental benefits of agricultural lands stewardship, farmlands proximate to urban populations can benefit the environment by providing local sources of food requiring less transportation and storage, thereby conserving energy and land, while reducing greenhouse gas emissions produced in transport and storage of fresh produce.

9. **Energy Benefits.** Agricultural lands stewardship practices and strategies can reduce the use of energy on working lands, as well as produce resources that

Table 20-1 Annotated list of agricultural lands stewardship best management practices

By resource issue(s) addressed and hydrologic regions of greatest applicability
Water Quality
For example:
• Vegetative Filter Strips
• Hedgerows (all regions)
• Tail Water Return Ponds (SR, SJR, TL, CC, SC)
Other Resource Issues to be addressed:
Water Use Efficiency/Drought Management/Reduction in Applied Water/Water Conservation:
• Increasing soil carbon (all regions)Selection of drought-tolerant varieties (all regions)
• Perennial grasses for grazing (all regions)
• Dry farming (coastal, northern regions)
• Keyline systems (primarily coastal regions and pastureland)
• Regulated deficit irrigation
• Farm irrigation ponds for winter storm water capture and summer use (all regions)
On-Farm/Ranch Ecosystem Restoration/Habitat Management
• Ponds (all regions)
Energy Conservation and Supply
• Ponds for winter storm water capture and summer use (all regions)
• Conservation tillage/no till (all regions)
Air Quality and Greenhouse Gases
• Increasing soil carbon (all regions)
Non-native Invasive Species
Soil Health
• Increasing soil carbon (all regions)
• No-till/conservation tillage (all regions) for soil surface protection and improvement of soil structure
Agricultural Land Conversion/loss
Flood Management
• Ponds for winter storm water capture and summer use (all regions)
Groundwater Management
• Contour infiltration trenches/swales (all regions)
• Increasing soil carbon (all regions)

can be used directly, or after processing, to create new energy. These practices include: conservation tillage to reduce farm implement energy use; photovoltaic installation to power farm equipment; switching to different equipment that uses less or less polluting energy; developing on-farm water sources, such as ponds, to reduce energy required for pumping water to farm and crops; improve soil moisture retention capacity by increasing soil carbon, reducing energy required for irrigation; composting, fermenting or burning of agricultural waste to generate kinetic energy

from latent energy for use on-farm/ranch or sale to the energy grid; growing of energy crops on existing cropped lands to produce renewable befouls, such as bodies and ethanol. Solar and hydroelectric energy production may be compatible with farming operations.

10. **Recreational Opportunities.** Working farms preserve open spaces which are both the backdrop and the source of recreational opportunities. Many open space areas open for public recreational activities are greatly enhanced by virtue of being surrounded by the open spaces of working farm lands. Waterfowl, game, and fisheries are all found in conjunction with well managed agricultural lands. Increasingly, connector trails between public lands pass through lands maintained in agricultural vitality.

11. **Reduce Groundwater Overdraft.** Agricultural lands are in the forefront of groundwater management. Opportunities to manage and store groundwater supplies continue to improve the long-term operational flexibility of total water supplies in wet and dry times.

12. **The Social Equity of Agricultural Lands Stewardship.** Proper application of agricultural lands stewardship can reduce off-farm impacts to residents of rural communities, through protection of soil, air, and water resources, as well as by providing meaningful jobs producing agricultural commodities.

13. **Food Security.** Provision of a safe, nutritious, affordable, domestic food supply.

Potential Economic Costs of Agricultural Lands Stewardship

Governmental and nongovernmental entities are seeking ways to secure funds for conservation practices that can be part of stewardship. In general, there is agreement by economists on three questions (1) what are the direct costs for supporting stewardship programs? (2) what are the common ways to measure the costs for the wide range of environmental values? and (3) what current level of investment is needed to sustain stewardship for the long term?

Developing stewardship costs is similar to estimating costs of managing lands to avoid environmental impacts such as air and water pollution, or to provide wildlife habitat or secure food and fiber production. Stewardship is a way of doing business and it should be a part of an economic model that shows a return on investment by placing a value on healthy communities and their quality of life. In addition, agricultural lands stewardship helps avoid costs associated with urban land use. It is difficult to quantify the costs that are prevented by agricultural land stewardship. Not only are there cost savings by avoiding expansion of infrastructure, but there are avoided costs for flood damage

reduction measures and urban runoff. These costs have not been quantified for broad reference and application.

Some legislative proposals are seeking to provide annual payments for conservation benefits that may be part of private lands management programs. Experience and recent trends suggest that many California agricultural lands owners may participate in some agricultural lands stewardship programs if the annual rents they receive are about $100 to $200 per acre. Based on a Department of Water Resources (DWR) preliminary estimate, agricultural lands stewardship practices in California could cost about $5.3 billion by year 2030.

Costs of implementing agricultural lands stewardship will be dealt with in at least three ways:

1. Actual costs of best management practices where those have been documented in recent studies or project, or by conservation or agricultural agencies, such as the USDA Natural Resources Conservation Service. Costs would be expressed in terms of dollars per acre or mile, for example, or for installation of a structure.

2. A range of costs based on past experience or range of levels of implementation of an agricultural lands stewardship practice or strategy. An example would be the cost of agricultural easement acquisition, which would vary from place to place in California, and would also vary based on the extent of property interests purchased by an easement agreement (e.g., just development rights, or development rights, plus flowage rights including restrictions on crops that can be planted under the easement agreement).

3. Cost estimates in reports and studies of solving a resource issue in a region or statewide. An example might be a State agency's estimate of the current cost of installing riparian buffers to protect water quality on high priority water bodies in a particular State Water Quality Control Board's region.

Sources of Agricultural Lands Stewardship Assistance

In narrative and table form, sources of three kinds of assistance available to State and regional water management program managers will be described. The focus will be to provide a resource for Integrated Regional Water Management Plan managers, for both active and prospective plans. Table 20-2 will be used to support a narrative description of sources of information and data, "boots on the ground" technical assistance, technical advice, and financial assistance (grants, loans, cost-share, and in-kind). The table will list public or private non-profit agencies that provide assistance, kinds of assistance, examples of applications, and contact information of providing organization.

Major Issues Facing Agricultural Lands Stewardship

There are major issues related to improving agricultural lands stewardship in California. There are issues about mixing economic endeavors with environmental goals and economic markets. Increased focus on this strategy is necessary to implement regional integrated resource planning and management, and demonstrate to the public the measurable benefits of stewardship.

1. **Resources Needed to Support Agricultural Lands Stewardship in California: A Gap Analysis.** The needs for agricultural lands stewardship in California, and the resources and policies available to support them, do not match. This section will review in very general terms where the gaps exist in terms of financial and technical assistance, data/information, research, and policies. The major providers of conservation support to private landowners—the US Department of Agriculture's Natural Resource Conservation Service, the State-authorized local resource conservation districts, and the California Association of Resource Conservation Districts—are among a handful of State, federal and local government and private non-profit conservation organizations that will be tapped for information on the gaps. This will be a qualitative discussion, supplemented with quantitative analyses where they exist.

2. **Duplication and Lack of Coordination of Resources to Support Agricultural Lands Stewardship.** This includes not only duplication and coordination issues among assistance programs, but also the lack of coordination between regulatory drivers of conservation and the programs available to help landowners respond.

3. **Landowner Confidentiality and Privacy Protection.** Many environmental regulatory programs understandably require information from working landowners about the effectiveness of grant funding made to help landowners comply with regulations. The issue has at least two facets. First, agencies have a responsibility to account for the expenditure of public funds to achieve resource protection and conservation. Second, there is an enforcement and scientific need for data on the effectiveness of agricultural lands stewardship practices that are funded. These data are needed to document compliance, but also to document value of agricultural lands stewardship practices to the conservation objectives of the regulatory agency. For example, the State Water Resources Control Board has required farm-specific information as part of the public record of its agricultural water quality grant programs. Besides the vulnerability that growers feel from other regulatory programs that might use the information, the requirement conflicts with USDA's conservation assistance programs and may prevent better leveraging of funds and coordination among agencies with similar goals of agricultural lands stewardship.

4. **Leadership.** Most states maintain a state council or similar leadership and coordinating body that provide guidance to federal, state, and local programs to achieve agricultural lands stewardship. Some have regulatory or oversight authority

Table 20-2 Examples of sources of informational, technical, and financial assistance for agricultural lands stewardship

Natural Resources Conservation Service
Financial Assistance
Environmental Quality Incentives Program (Cost-share) and other conservation programs
Informational Assistance
National Resource Inventory
CA Department of Water Resources
Financial Assistance
Floodplain Protection Corridor Program (grants)
Ducks Unlimited
Financial and Technical Assistance
Revolving Lands Strategy (grants and planning assistance)
AB 32 Implementation funds

over local conservation work that uses state and federal funding; others simply set state goals for conservation and serve as a venue for coordination and problem-solving for state programs as well as local conservation entities, especially resource conservation districts.

California once supported a Governor-appointed Resource Conservation Commission that served primarily in the former capacity. The commission failed to keep pace with the changing paradigms of conservation, including the definition of conservation, the move from structural solutions to bioengineering technologies. The commission, though still authorized in State statute, has ceased to operate due to a lack of funding and commissioner appointments. The California Association of Resource Conservation Districts, among others, has called for the re-creation of at least a State conservation advisory council. Based in part on the positive experience with the CALFED Bay-Delta Program Working Landscape Subcommittee, the Secretaries of Natural Resources and Food and Agriculture agencies explored the creation of a working lands stewardship council made up of stakeholders and agencies to identify and pursue coordinated initiatives in support of agricultural lands stewardship. At present, no such State leadership body exists, though the new California Watershed Council may help to fill this void. This section will build upon the proceeding narrative in addressing the leadership issue.

5. **Underserved Agricultural Lands Stewardship Stakeholders, Communities, and Regions.** For a variety of reasons, including language barriers, the remoteness and size of communities that affect their capacity to be heard, some landowners, communities, and regions may not receive the share of agricultural lands stewardship resources that is warranted by their agricultural lands stewardship resource problems. This section will draw upon existing documents to explore this issue.

6. **Regulatory Barriers to Agricultural Lands Stewardship.** Federal, State, and local regulations and permits may present crippling barriers to agricultural lands stewardship. The issue may simply be the time, complexity and cost of complying with regulations relative to the agricultural lands stewardship benefits to be achieved. The issue may be the costs and bad fit of regulations resulting from the application of regulations intended for urban land uses and settings to the rural conditions of the agricultural working landscapes. In at least a few circumstances, the application of one agricultural lands stewardship practice may place a landowner in jeopardy with another environmental protection standard. The application of a conservation practice that could result in the "take" of listed Endangered Species Act species is one example.

7. **Burden of Bureaucracy.** Landowners often do not pursue available conservation financial assistance because of the amount of paperwork and process that they must go through to get the funding. This issue is often a problem of striking balance between funding accessibility and the need to be accountable to the public for the effective and legal expenditure of funds. The liability that administrators face can lead to a cumbersome bureaucracy not commiserate with level of assistance being offered.

8. **Outreach and Demonstration.** Cutbacks in UC Cooperative Extension Service, Natural Resources Conservation Service Environmental Quality Incentives Program (EQIP) education and demonstration funding and authority, among other reductions in conservation programs has left the success stories, and how they were achieved, untold. Too few working landowners are aware of the technical and financial assistance that is available to them. There are too few opportunities for landowners to see what their neighbors are doing that saves natural resources and even saves them money. Farm tours, tailgate sessions, workshops, and meetings out on the working landscape are needed to spread information and inspiration. There are good examples that with funding and staff assistance could be replicated. Otherwise, insufficient outreach, education, demonstration, and storytelling opportunities are barriers to agricultural lands stewardship.

   Some examples include: Stories of stewardship published by the US Department of Agriculture's Natural Resources Conservation Service, California Farm Bureau Federation, wildlife conservation agencies and organizations like Farming for Wildlife, the California Cattlemen Association and the California Rice Commission, to name a few. Also, there are a growing number of agricultural lands stewardship-consistent workshops and training sessions being sponsored sporadically around the state, such as by the UC Small Farm Center; county-level farm marketing associations such as PlacerGROWN in Placer County, the EcoFarm Conference in Asilomar each winter, and others. It is hoped that review of this annotated outline will result in other examples that can be highlighted.

9. **Documenting Performance of Conservation.** The focus being on the need for information that makes it clear to funding organizations and landowners that agricultural lands stewardship practices are worth the investment; e.g., the practice will clean up the water enough to meeting regulatory standards or the personal stewardship goals of the landowner.

10. **Regulatory Assurances.** As previously noted, divulging personal or site-specific information to a granting agency can open a landowner to further regulatory liability. Similarly, there remains an issue that "no good deed goes unpunished" among some landowners, who fear that on-farm conservation, for example, can lead to the improved health in the population of a listed species, leaving the landowner at greater risk of Endangered Species Act sanctions. The issue is the need for more and easier-to-employ opportunities for regulatory assurances that good conservation deeds will not be punished, but rewarded.

11. **Food Safety.** Recent e-coli outbreaks from the consumption of leafy greens has supported the food processing industry's efforts to discourage their growers from planting or maintaining vegetation around their fields for fear that wildlife drawn to the vegetation will contaminate the fields. Unfortunately, the vegetation removed is often taxpayer-funded riparian habitat, riparian filter strips, or erosion control vegetation installed by the growers.

12. **Energy Crops and Climate Change.** The market and our national and state leaders are encouraging growers to plant energy crops, such as corn and soybeans. While these crops have increased the profitability of farming in many regions, the new cropping patterns can also lead to increased cultivation of new lands, higher use of fertilizers and volatile organic carbons for pest management, thereby increasing energy use and greenhouse gas emissions. Cropping and ranching practices that sequester carbon, on the other hand, are best suited to the production of cellulosic ethanol, whose technology is not yet developed for commercial scale use.

13. **Floodplain Protection and Farming.** The working landscape approach to agriculture often advocates the use of agricultural conservation easements to keep lands in private ownership and management, while permanently removing the development rights from the land and altering farming practices to those compatible with floodplain management. Among the common easement restrictions is the limitation on types of crops grown to crops that will not impede floodflows or lead to excessive crop loss claims. As such, flood easements often prohibit the planting of high value and flow-impeding permanent tree and vine crops. Farmers who may otherwise be interested in flood easements may be reticent to participate knowing that their "palette" of crops available to respond to market opportunities will be limited.

14. **Water Conservation and Water Rights.** The conservation of water on agricultural lands, depending on the nature of water contracts and rights, could result in the loss of water availability. For example, conservation of water could lead to a base of water use that may be used in the future for calculating cutbacks in water allocations. Conserving farmers could find themselves in a position that their water allocation during a drought is not sufficient to meet minimum crop needs.

15. **Water Transfers.** Increasingly, idling of agricultural land for the temporary or permanent transfer of water or water rights is a strategy to meet urban and environmental water needs in times of shortage, an increasingly normal condition with climate change and population growth. Idling of cropland can result in a degradation of soils from salt accumulation absent the leaching fraction component of irrigation, erosion, or invasive plant species. Strategies are needed that integrate water transfers with crop rotation/agronomic fallowing, soil-building schemes that also provide conjunctive wildlife habitat benefits.

16. **Agricultural Conservation Easements are Forever.** There is a growing awareness of the need for agricultural conservation easements to protect lands from the fragmentation of agricultural landscapes into parcels too large to mow and too small to farm. Yet, growers often loathe giving up their future "retirement account" of subdivision potential forever. Ways to enable growers to use easements as an aid to financial and estate planning are available, but too few growers are aware of them. One example is the use of clustering development to gain development value income while protecting the bulk of the land for agriculture in ways that do not impede surrounding agricultural uses or exacerbate the provision of urban services by cash-strapped counties.

17. **Farm Market and Economic Considerations.** The three legs of sustainability include economic, environmental, and social equity sustainability. A growing body of environmental, labor, food safety, land use and other regulations has increased the cost of doing business in California. Land costs have increased as demand for housing and open space uses compete for land. Trade liberalization and international competition from developing countries with lower labor costs and regulatory standards has driven up the prices California growers can command in the marketplace. These and other factors make grower choices to invest in agricultural lands stewardship practices difficult. Finding market value for the environmental services Californians demand from agriculture is one key to keeping California growers profitable and sustainable. These services include improved wildlife habitat, clean and more abundant water supplies, places to spread floodwaters, recreation, scenic open space, energy, carbon sequestration, groundwater recharge and clean air.

18. **Landowner Concerns.** Landowners are concerned that environmental programs that help growers improve habitat might attract more threatened and endangered species affecting landowners' use of land. Thus some landowners are reluctant to

be involved with government agencies, even though some of these agencies might help landowners to comply with real regulatory requirements.

Federal Endangered Species Act assurances can only be granted by the US Fish and Wildlife Service and the National Marine Fisheries Service. In order to determine what type of species must be covered and possible protective measures that may be required, surveys are necessary to determine what species are present. This only increases landowner concerns that they will be subject to increased restrictions if the presence of endangered species is verified on their property.

Some landowners question how they can adequately maintain their privacy and, at the same time, satisfy the public need for information of farm activities supported by public resources. In addition, there is landowner confusion regarding what type of assurances can be provided. One perspective is that the economic return from certain land stewardship programs may often be less than the return from other options for land use, especially when urban development is an option.

19. **Lack of Information.** There is a lack of scientific, economic, social and environmental studies and monitoring of agricultural lands stewardship programs to evaluate their merits for ecosystem restoration, water quality, and agricultural economics for large and small agricultural operations. There are conflicting reports about the compatibility of certain agricultural lands stewardship and ecosystem restoration programs. In order to justify public investment in stewardship, there must be accountability in terms of monitoring.

20. **Complex Regulations and Programs.** Institutional regulations and programs are complex and sometimes conflict. Agricultural landowners may be discouraged when developing a stewardship program for multiple purposes such as water and soil conservation, ecosystems restoration, floodplain and wetlands management, water quality and land use planning. The regulations may seem intrusive to the private landowner but essential for those responsible for environmental protection and restoration programs.

21. **Funding.** California has traditionally received proportionately less funding for the federal Farm Bill's conservation provisions relative to its agricultural standing, the value of the threatened resources and the population served. Although California farmers and ranchers provide more than 13 percent of the nation's food and fiber, they historically receive less than 3 percent of federal farm conservation funding. Commodity support programs influence stewardship management. California is dominated by specialty crops rather than traditional price-supported commodity programs. The funding inequities of the Farm Bill will become increasingly apparent in the future as production of California cotton, alfalfa, irrigated pasture, and possibly rice decreases and as specialty crops increases.

22. **Regional Cooperation.** Without regional cooperation, private landowners may be frustrated in reaching their management goals by adjacent operations or watershed activities that do not contribute to better management for environmental functions and values. These values include protecting and reestablishing riparian corridors or water quality within a watershed.

23. **State Policy Goals.** In general, land use is a local planning issue subject to local regulation. Statewide planning goals or restrictions may be seen as an intrusion on local governmental powers. If the conflict is between private property and public commitments, then many landowners prefer programs such as the Williamson Act because these are temporary land-use restrictions that landowners can ultimately "opt out" of if they later decide to sell land to development and the asking price justifies the cancellation penalty. As a result, many landowners are wary that they may lose future economic opportunities by committing to permanent restrictions. Likewise, the public may be unwilling to fund the necessary incentive (rental, technical assistance, etc.) programs essential to successful stewardship without a clear understanding of long-term benefits from such programs.

24. **Changing Demographics of Farmers, Farms.** As farm stewards age, and lacking a new generation of farmers to take the reins, there is a shift away from mid-sized farms toward large and small farms, the former held and managed by commercial interests with non-resident managers, the latter being a collection of smaller boutique farming operations. Mid-size, owner operated farms, meanwhile, are vanishing. At the same time, some farming families are diversifying, creating vertical integration of production, processing, packaging, marketing, with the new generation filling both the administrative and farming roles.

Recommendations to Promote and Facilitate Agricultural Lands Stewardship

I. Recommendations for State Action

A. Institutional and Leadership Recommendations

1. The Natural Resources and Food and Agriculture Secretaries, in consultation with the California Board of Agriculture, US Environmental Protection Agency, Department of Interior, US Department of Agriculture, Department of Commerce, and National Oceanic and Atmospheric Administration, should assess agricultural lands stewardship assistance, information and regulatory programs, their effectiveness and level of coordination. This assessment should be done by the end of 2010. The Performance measure is the completion of the assessment report that addresses the issues listed below.
    a. The assessment should address the need for better coordination between regulatory and assistance programs as well as between

assistance and information programs of both State and federal agencies. Recommendations should include mechanisms for improving coordination among State assistance programs; opportunities for leveraging State, federal, and local resources to address agricultural lands stewardship issues on a local and regional basis. Recommendations should also address ways for voluntary assistance programs to better help growers meet State resource regulatory mandates. The latter recommendations should include actions for better coordination between State and federal assistance and regulatory programs.

b. The assessment should address the need for a statewide agricultural lands stewardship leadership and coordination entity, such as a governor-appointed council or the reinvention of the former Resource Conservation Commission.

c. Measures to assure implementation of findings should be included in assessment mandate.

B. Regulatory and Process Recommendations

2. State funding and staff should be made available through collaboration with the US Department of Agriculture's Natural Resources Conservation Service, state Resource Conservation Districts and appropriate non-profit conservation organizations to develop one-stop shop local and regional-level permit coordination and assistance programs. California Environmental Protection Agency and the Natural Resources Agency should implement this recommendation through use of bond funds, redirection of staff and use of existing local capacity-building programs such as the Department of Conservation's Watershed Coordinator Program. This recommendation should be implemented immediately. Performance measures include reduced cost, time and liability for landowners to implement agricultural lands stewardship practices and strategies.
3. State Resource protection regulations should be amended to allow qualified third party verification that grant funding to assist landowners in complying with regulations is spent appropriately and effectively, and to collect monitoring data in a manner that protects landowner confidentiality and enables federal participation in conservation actions that assist with regulatory compliance and the development of data on the effectiveness of agricultural lands stewardship practices. Regulatory agencies, particularly the Air Resources Board, the Regional Water Quality Control Board and the Department of Fish and Game should assess regulations and need for amendments in the near term, and propose changes for mid-term achievement of this recommendation. Performance measures would include greater State and federal collaboration in assisting landowners in meeting regulatory requirements; sufficient data on the effectiveness of agricultural lands stewardship practices in meeting resource protection regulatory requirements;

and an increased level of participation among private landowners in State grant programs intended to assist regulatory compliance.

4. The Natural Resources Agency is facilitating the development of a CALFED Bay-Delta Habitat Conservation Plan and the California Department of Fish and Game's Natural Community Conservation Plan to provide regulatory assurances and incidental take permits for water agencies to pump water from the Delta while also implementing a conservation plan to protect Endangered Species Act- listed fish species. The Natural Resources Agency and Department of Food and Agriculture should offer similar leadership as needed to implement Integrated Regional Water Management Plans where agricultural lands stewardship is a key component of the regional plans. This is a mid-term recommendation pending adequate staff resources and bond funding availability. A performance measure would be increased implementation of agricultural lands stewardship practices that improve terrestrial and aquatic habitat and species diversity.
5. Integrate responses to the overlap of existing and forthcoming regulations on climate change, flood control, air and water quality, biodiversity protection, etc., to achieve greater adherence and efficiencies.

C. Financial and Technical Assistance Recommendations

6. A partnership between the Natural Resources Agency, the Department of Food and Agriculture, and the US Department of Agriculture's Natural Resources Conservation Service should be formalized to build on existing needs assessments to perform a gap analysis of agricultural lands stewardship needs and existing program resources to meet them. The analysis would become the basis for development of a strategy for the use of existing and new bond measure funding, existing General Fund conservation programs and federal conservation programs to fill the identified gaps. The analysis and strategic funding plan should be conducted under the leadership structures recommended in A(1), above. The analysis and strategy should be conducted pursuant to an executive directive or via a legislative proposal, or both immediately, with a product completed before the next water plan update. The performance measures would be increased funding for agricultural lands stewardship top priority resource issues; increased State and federal coordination of funding; and better information upon which to allocate available funding to meet the most important agricultural lands stewardship needs of California.
7. The Natural Resources Agency, the Department of Food and Agriculture and the California Environmental Protection Agency should establish a Farm Bill Interagency Agreement under which California establishes an ongoing presence in the debate over conservation provisions of reauthorized Farm Bills, and in the annual appropriations of funding for conservation to meet the needs of California as identified by the assessment and strategy of recommendation (6), above. This recommendation should be carried out after consultation with the Natural Resources Conservation Service and appropriate farm and

conservation interest groups and non-profits. The interagency agreement should be consummated immediately, building on the current collaboration over the reauthorization of the 2002 Farm Bill.

8. The Governor should establish a coordinated conservation easement acquisition program that is based on a preference for maintaining working lands in private ownership using conservation easements. Currently, there are a number of State and federal easement programs for wildlife, agricultural lands, grasslands, forestlands, floodplains and scenic and recreational open space. These programs need better coordination to assure that the highest priority resource lands are protected and that the lands protected are conserving multiple values at once. The funding gap analysis and strategic plan should include an identification of needs for resource land acquisition programs and seek State bond and federal farm, highway and wildlife easement funding to acquire the highest priority agricultural lands (among others) that also help to accomplish drought preparedness and flood management goals. This executive action should occur immediately, tied with the implementation of recommendation (6), above.
9. Funding for agricultural lands stewardship programs should be made available on a voluntary participation basis, but with allocation of funding based on priority conservation needs (recommendation (6) above) and regulatory compliance needs. Financial and technical assistance should be in the form of grants, cost-share, regulatory relief and tax incentives. Most financial and technical assistance should be contingent on a meaningful and feasible level of landowner contributions.
10. Relevant agencies should explore the feasibility of a coordinated statewide effort to develop on-farm irrigation ponds that provide offstream capture of winter storm water for summer use. Evaluate current pilot pond projects, obstacles to broader adoption, and benefits for economic viability, local water supply, watershed management, flood control, groundwater recharge, mitigation of climate change, wildlife habitat, etc.

D. Data and Research Recommendations

11. The US Department of Agriculture's Agricultural Resource Service, U.C. Cooperative Extension, and the US Department of Agriculture's Economics Research Service should conduct cost-benefit analyses for agricultural lands stewardship practices, in particular new and emerging strategies such as keylines and dry farming. California State government leaders should request that funding be directed or appropriated from the federal and State budgets to conduct such research. This is essential research if limited conservation assistance funding is to be spent effectively. Further, if a regulatory approach to working landscapes natural resource issues is to be collaborative, depending on conservation planning and the use of certified best management practices, regulators should be assured that practices employed to improve water and air quality or improve biodiversity are

documented as effective. Recently, the University of California at Davis and the US Department of Agriculture's Natural Resources Conservation Service have collaborated to document the costs and benefits of conservation tillage systems. This research should be implemented immediately. Performance measures should include increased confidence in agricultural lands stewardship practices as exemplified by greater State and federal funding to support their use by growers; and, increased use of certification programs to assist growers in complying with environmental regulations.

12. Agricultural, conservation and food safety organizations and agencies should continue to identify and support needed research on the causes of food contamination to determine the extent to which agricultural lands stewardship practices may play a role in causing or resolving the contamination. When research identifies food contamination risks from conservation practices, further research should be supported to adapt existing or develop alternative conservation practices that protect water and air quality, for example, while lowering the risk to food safety. Identification of research needs should be continued under the leadership of the University of California and industry and funding found immediately to support research and extension. Performance measure known risk of common conservation practices; reduction of risk from modified or alternative conservation practices (enumerating risks is progressive, adaptive management). Performance measure: known benefits of common conservation practices; increased, widespread adoption of conservation practices that contribute to food safety.
13. The US Department of Agriculture, California Department of Food and Agriculture, California Energy Commission, and Air Resource Board and others should support research of agricultural lands stewardship practices and strategies with respect to net greenhouse gas emissions and carbon sequestration, including the cultivation of alternative bio-fuel crops and use of agricultural residues. This research should be conducted immediately for application to agricultural lands stewardship practices by the next Water Plan update. Performance measures: the application of agricultural lands stewardship practices that reduce greenhouse gas emissions and increase carbon retention in the soil.

E. Climate Change

14. Recommendations of the Climate Action Team's agricultural work group should be incorporated into financial and technical assistance programs, particularly those of the US Farm Bill's conservation programs. Assistance programs should support only agricultural practices and crop systems that result in lower greenhouse gas emissions as determined by a life-cycle analysis of the carbon budget of a practice.

F. Floodplain Management and Agricultural Lands Stewardship.

15. The Legislature and Congress should appropriate bond and Farm Bill funding, respectively, to continue floodplain protection easement programs that allow conjunctive agricultural uses. Allow as much flexibility for crop selection under easement agreements as possible to avoid limiting grower response to market signals thereby limiting profitability of farming. At the same time, growers should assume the risk of growing high value, permanent crops on flood easement-restricted croplands. The latter recommendation may require immediate changes to statutory or regulatory rules affecting floodplain easement programs. Performance measure: increased participation by growers in floodplain corridor protection grant programs.

G. Water Conservation, Water Rights and Water Transfers

16. State and federal water providers should reward conservation by their customers through the use of conservation incentives in water delivery contracts, such as by increasing the water delivery priority to those growers practicing water conservation and agricultural lands stewardship measures.
17. The Department of Water Resources and US Bureau of Reclamation should establish a water transfer oversight entity that assures that water transfers do not result in a long-term negative impact on the state's food production capacity, or adversely impact rural community economics. The protection of soil health and enhancement of wildlife habitat should be considerations in approving water transfers. For example, temporary crop idling for water transfers should be designed to contribute to a crop rotation system that includes fallowing to build soil moisture and organic carbon content, and provide conjunctive wildlife habitat for such species as the Giant Garter snake. Transfers should reserve sufficient water on transferring lands in order to establish a cover crop. Performance measure: acres of land in rotational conservation fallow programs; amount of water not used (saved) for those acres during fallow periods.

H. Education, Demonstration and Outreach

18. The federal Farm Bill should be amended, and appropriations made, to support a return to farmer-to-farmer education, demonstration and outreach on successful conservation programs. The Environmental Quality Incentives Program once included funding for such work. This authority and needed funding should be returned to the Natural Resources Conservation Service as part of its conservation operations and technical assistance budgets. Every Farm Bill conservation program should include funding to not only document program effectiveness, but to share information about the programs and their supported practices with other growers through educational materials, field demonstrations and workshops. This recommendation should be implemented

immediately and in the near and long-term as US Department of Agriculture's budget appropriations are made each year, and as Farm Bill reauthorizations occur every five or so years. Performance measure: A greater awareness among working landowners of conservation programs, and greater demand for US Department of Agriculture's conservation program funding and technical assistance.

19. State grants that support agricultural lands stewardship should likewise include a requirement that each grantee document project success and share lessons learned and successes with other growers and granting agency managers. This recommendation should be implemented, as bond authorities allow, immediately. Performance measure: greater demand among stakeholders and agencies for funding of effective agricultural lands stewardship practices and strategies, and the requirement that such funding includes funding for demonstration and outreach.
20. The Department of Conservation's Farmland Conservancy Program's funding for planning grants should be expanded in support of recommendations 22 and 23 below. The Administration should work with the legislature to acquire bond measure appropriations that support the Conservation Farmland Conservancy Program, specifically for its planning grants. This recommendation should be implemented immediately and in the long-term as new bond measures are placed on the ballot. See performance measure for recommendation 22.
21. The Department of Food and Agriculture and the Department of Conservation should seek funding to support an interagency technical outreach team to facilitate the transfer of technology with respect to agricultural land protection via agricultural conservation easements. The team would work with county planners and agricultural commissioners by sharing information on innovative farmland protection programs and ordinances in other counties. The team would also educate landowners about the tax, estate planning, and other benefits of agricultural conservation easement. This recommendation could be implemented immediately through an interagency agreement and a minor reallocation of staff resources. Performance measures: transfer of successful agricultural land protection programs to other counties; a greater demand for agricultural conservation easements and the funding to purchase them.

II. Recommendations for Local Action

22. Integrated Regional Water Management Plan (IRWMP) applications for funding should embody agricultural lands stewardship components where the region addressed by the plan includes agricultural lands. This recommendation should be implemented immediately if it is not already. Performance measure: IRWMPs are comprehensive and integrated, including supportive agricultural lands stewardship measures and strategies where appropriate.
23. Counties should adopt agricultural general plan elements and designate supportive agricultural districts that enhance agricultural lands stewardship on high priority, productive agricultural lands. These districts should focus regulatory assistance through county agricultural ombudsmen. These districts

should also be the focus of local agricultural infrastructure investment, marketing assistance, and the development of agricultural lands stewardship practices and strategies in cooperation with local, State and federal agricultural conservation entities. Districts should also be the focus of land protection instruments, such as the Williamson Act and agricultural conservation easements. Other strategies to enhance agricultural resources locally should engage such resource organizations as resource conservation districts, the American Farmland Trust, and Ag Futures Alliances (via Ag Innovations Network), and be integrated with IRWMP and Habitat Conservation Plans where appropriate. This recommendation should be implemented over the long-term as each county general plan is updated. Performance Measure: Number of general plans that include comprehensive plans for the sustenance of local agricultural working landscapes.

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