

UNTAPPED

HOW FARM BILL
CONSERVATION
PROGRAMS
CAN DO MORE
TO CLEAN UP
CALIFORNIA'S
WATER

**ENVIRONMENTAL
WORKING GROUP**

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How Farm Bill Conservation Programs Can Do More to Clean Up California's Water

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EXECUTIVE SUMMARY

MANY CALIFORNIA FARMERS PRODUCE FOOD IN WAYS THAT PROTECT PUBLIC HEALTH AND THE ENVIRONMENT, BUT TOO MANY OTHERS USE PRACTICES THAT TAKE A SERIOUS TOLL ON THE STATE'S WATER RESOURCES. A SLEW OF AGRICULTURAL POLLUTANTS, INCLUDING FERTILIZERS, PESTICIDES, PATHOGENS AND SEDIMENT, ARE SERIOUSLY DAMAGING CALIFORNIA'S SURFACE AND GROUND WATER, POISONING FISH AND THREATENING DRINKING WATER FOR MANY COMMUNITIES.

Amid the growing urgency to address these problems, policy makers and regulators are putting increasing pressure on farmers to curb agriculture-related pollution. Citing costs and lack of resources, many farmers have been slow to respond, but this may soon change as stricter State Water Board regulations for managing nitrogen and farm runoff go into full force in the Central Valley and Central Coast Water Districts.

Federal farm bill conservation programs administered by USDA's Natural Resources Conservation Service (NRCS) provide tens of millions of dollars a year in financial and technical support to help California farmers and ranchers reduce

water pollution, build healthier soil, protect air quality, enhance wildlife habitat and improve water conservation. EWG analyzed the two programs that constitute the state's most significant resource for combatting nutrient and pesticide pollution – the Environmental Quality Incentives Program (EQIP) and the Agricultural Water Enhancement Program (AWEP) – focusing on how much funding is being devoted these critical problems and whether it is being spent most effectively.

EWG's analysis found that overall, California farmers too often fail to use these programs to support land management practices that NRCS considers highly effective for addressing nutrient and pesticide pollution. Instead, the lion's share of EQIP and AWEP funding for practices that combat nutrient pollution goes to pay for structural installations such as irrigation, cement infrastructure and animal fences. In fact, half of this funding goes to purchase and install irrigation equipment, and 24 percent finances infrastructure to manage and treat the millions of tons of waste generated by dairies and cattle feedlots.

More efficient and well-designed irrigation systems can help reduce nutrient pollution of surface and ground water, but far less costly knowledge-based and vegetative practices – such as nutrient management, conservation tillage, cover cropping and filter strips – are more effective, as documented in a key NRCS technical document. Yet just 11 percent of the funding for practices that reduce nutrient contamination goes towards these kinds of

practices, which generate other valuable ecological benefits as well. These include conserving water, enhancing soil and plant health, reducing greenhouse gas emissions, promoting biodiversity and adapting to climate change.

EWG's analysis also show that the efforts of both federal programs to reduce pesticide pollution rely most heavily on the installation of micro-irrigation systems. Nearly 80 percent of funds spent on NRCS-endorsed practices for "reducing harmful levels of pesticides in surface water" go to irrigation systems, which alone will not guarantee significant reduction in pesticide use or pollution. Micro-irrigation can help reduce pesticide runoff and leaching, but these toxic chemicals still escape into the air, soil and water during spraying sessions and after heavy rains and windstorms. Other management and vegetative practices are crucial for reducing pesticide use and preventing water contamination, but only 20 percent of the resources spent on practices with greater potential to cut pesticide pollution go to support vegetative and management practices such as cover cropping, residue and tillage management, field borders and filter strips.

The emphasis on building expensive structures or buying high-priced equipment comes at the expense of investing in less costly, highly effective land management practices that could help more farmers, cover more acres and achieve greater environmental benefit per dollar invested. Stretching scarce conservation dollars to address multiple resource concerns simultaneously and reach more farmers is especially critical given the difficult fiscal environment, which results in turning away 60 percent of applicants every year due to lack of funds.

Targeting more resources to encourage farmers to implement less costly and more effective management and vegetative practices – either alone or in combination with more efficient irrigation – would accelerate progress on stemming the nutrient and pesticide pollution threatening California's ground and surface water.

SMALL STEPS FORWARD, FURTHER TO GO

Seeking to steer funding to projects that deliver the greatest environmental benefit, in 2012 NRCS changed its systems for evaluating applications for cost-share assistance. This came on the heels of changes in 2011 aimed at better targeting financial assistance through smaller, more competitive funding pools around shared resource concerns in fewer regions. However, EWG's initial analysis found little indication that these positive changes will alter the relative funding imbalance between expensive irrigation systems versus support for complementary integrated crop management practices. Our data also found that few resources were geared toward the Central Coast region, which has some of the most acute pesticide and nutrient toxicity levels in California.

Because EQIP and AWEP are voluntary programs, NRCS cannot force farmers to choose particular practices. According to NRCS staff, many farmers do not request funding for these highly effective vegetative and knowledge-intensive management practices despite the staff's efforts to promote them. This clearly speaks to the need for more technical assistance and regulatory mandates to induce adoption of higher-impact practices. In the meantime, there are ways that NRCS could create conditions that would yield a better balance in funding among structural, management and vegetative practices.

RECOMMENDATIONS TO THE NRCS CALIFORNIA OFFICE

NRCS should give farmers greater incentives to adopt high-impact management practices that would go a long way toward improving water quality and the long-term environmental performance of California agriculture. These recommendations will move NRCS and farmers in that direction:

1. REVISE RANKING SYSTEMS FOR FUNDING APPLICATIONS

- Provide much higher points for contracts that include a comprehensive suite of management and vegetative practices to reduce nutrient and pesticide pollution or complete implementation of such systems.
- Give priority to applications for irrigation and Animal Feeding Operation (AFO) infrastructure submitted by producers who implement a comprehensive system, including management and vegetative practices, to cut nutrient and pesticide pollution.
- Do not give points for irrigation systems as a means to address water quality issues unless a suite of highly effective management or vegetative practices are already in place or are included in the application.
- Award higher points and create clear preferences for vegetative practices and management practices that score a 4 or 5 for their potential to address nutrient and pesticide issues in the matrix used by NRCS to rate the effectiveness of conservation practices.
- Encourage local and regional work groups to do grower outreach in the most impaired watersheds and to award high points for projects in highly impaired watershed districts.

2. MODIFY CONSERVATION PRACTICE COST-SHARE RATES AND PAYMENTS

- Establish higher cost-share rates (75 percent) for vegetative and advanced management practices that score a 4 or 5 in the CPPE as a means to address nutrient and pesticide issues
- Eliminate all cost-share payment caps on crop management and vegetative practices.
- Cap cost-share payments for specific irrigation and AFO infrastructure practices to free resources for lower cost, high-impact practices.

3. INCREASE FOCUS ON LOW-COST, HIGH-IMPACT PRACTICES IN HIGHLY IMPAIRED REGIONS

- Create a more targeted initiative in the Central Coast region to overcome barriers and deliver conservation resources to farmers who qualify for cost-share assistance.

4. INCREASE OUTREACH, TRAINING AND PROMOTION

- Provide additional training, support and direction to field staff to ensure that they actively promote integrated, complementary and advanced management and vegetative practices along with irrigation and livestock management solutions for water quality issues.
- Intensify partnerships with state agencies, cooperative extension and non-profit organizations to accelerate training in integrated crop and livestock production practices and promote cost-effective best management practices.

5. ENSURE THAT IRRIGATION INVESTMENTS LEAD TO SIGNIFICANT WATER SAVINGS AND MINIMIZE DEPLETION OF GROUNDWATER RESOURCES.

- Conduct an extensive assessment of the true water savings and impacts of NRCS-supported irrigation infrastructure investments.
- Consider measures to require farmers who receive cost-share assistance for irrigation infrastructure to provide assurances that they are using surface water when available.

ROLE OF FEDERAL POLICY

NRCS's emphasis on directing scarce conservation funds toward expensive structural projects is a national problem. Nearly 70 percent of all EQIP funds between 1997 and 2010 were spent on structures, and one in four EQIP dollars were used to purchase irrigation equipment.¹ While many changes can be made at the state level, NRCS can adjust policy at the national level, without new legislation from Congress, to increase the resources and effectiveness of conservation programs for addressing nutrient and pesticide pollution nationally and in California. These include:

- a. Establishing cost-share payment caps for irrigation hardware and waste infrastructure;
- b. Providing higher cost-share payments for high-impact, integrated crop management practices;
- c. Strengthen standards to promote more advanced integrated management practices
- d. Increasing promotion and funding for conservation planning that encourages a more system-based, integrated, agro-ecological approach to farming; and
- e. Increasing funding for priority watershed-based initiatives

In addition, Congress should enact key policy reforms to enable EQIP to reach more farmers and improve its effectiveness. Specifically, lawmakers should:

- a. Restore the former policy of prohibiting the largest confined animal feeding operations from receiving EQIP dollars to build animal waste management structures and facilities.
- b. Authorize mandatory funding for the conservation loan program established in the 2008 farm bill to provide no- or low-cost loans for building structures and purchasing equipment; use the loan program rather than direct cost-sharing to help farmers make these capital investments.

UNTAPPED

How Farm Bill Conservation Programs Can Do More to Clean Up California's Water

INTRODUCTION

Many California farmers produce food in ways that protect public health and the environment, but too many others use practices that take a serious toll on the state's water resources. A slew of agricultural pollutants, including fertilizers, pesticides, pathogens and sediment, are seriously damaging California's surface and ground water, poisoning fish and threatening drinking water for many communities.

Amid the growing urgency to address these problems, policy makers and regulators are putting increasing pressure on farmers to curb agriculture-related pollution. Citing costs and lack of resources, many farmers have been slow to respond, but this may soon change as stricter State Water Board regulations for managing nitrogen and farm runoff go into full force in the Central Valley and Central Coast Water Districts.

Farm bill conservation programs administered by USDA's Natural Resources Conservation Service (NRCS), provide tens of millions of dollars a year in cost-sharing and technical assistance to help California farmers and ranchers reduce water pollution, build healthier soil, protect air quality, enhance wildlife habitat and improve water conservation. As the most significant funding source for addressing nutrient and pesticide pollution, it is critical to understand how NRCS is addressing these issues and whether conservation funds are being spent for maximum benefit.

To answer these questions, this report analyzes the implementation of two important federal programs that provide technical and cost-share assistance to help farmers and ranchers implement practices that improve water quality: the Environmental Quality Incentives Program (EQIP) and the Agricultural Water Enhancement Program (AWEP). EWG analyzed conservation spending data for both programs to see how much funding goes for practices that specifically address nutrient contamination in ground and surface

water; assessed the various practices supported by the programs; and reviewed EQIP's key water quality initiatives and scoring criteria to better understand how funding decisions are made.

EWG's analysis found that EQIP and AWEP are primarily addressing water quality issues through installation of more efficient irrigation systems and animal waste infrastructure, with much less support for a more comprehensive, integrated approach to land and crop management that would generate far greater environmental benefits.

We hope that this report will lead NRCS and interested stakeholders to take a closer look at how these programs are responding to California's pressing water quality issues – and implement changes that will reach more farmers and result in greater benefit, not just for water quality but also for numerous other environmental problems. Given the pressure on federal conservation funding, it is critical that the available dollars be used in the most effective ways possible.

A. MAJOR SOURCES OF CALIFORNIA WATER POLLUTION

Nutrient and pesticide contamination of California's waterways is widespread in agricultural regions, with serious consequences for public health and the environment.

Nitrate contamination of ground water is a serious public health problem. In California, 85 percent of residents depend on groundwater for at least some of their drinking water.² Water that is too high in nitrates is a particularly serious problem for infants and pregnant women. In 2010, the state's Department of Public Health found that 1,077 of 13,153 active and standby public drinking water sources had nitrate concentrations above the agency's permissible Maximum Contaminant Load (MCL) of 45 mg/L.³ Most nitrate contamination is directly associated with the application of animal waste and fertilizer on agricultural land, and in California the problem is particularly acute in the Central Valley, where fertilizers and animal manure have been making their way into ground water for decades. A UC Davis Study



Many California waterways have unsafe levels of nutrients and pesticides.

commissioned by the State Water Resources Control Board (SWRCB) found that 250,000 people in the Tulare Lake basin and Salinas Valley were at risk of drinking nitrate-contaminated water.⁴ It is an issue in other parts of the state as well, including in the Inland Empire, the Delta and in shallow ground water aquifers in Los Angeles County.⁵

Nutrients, including nitrates and phosphorus from agriculture, are also seriously damaging surface waters. A 2010 EPA assessment of 16 percent of California's rivers and streams found that nutrient levels in more than 5,000 miles of rivers and streams failed to meet minimum federal safety standards for swimming, aquatic life and drinking water. The excessive nutrients fuel the growth of harmful algal blooms, which deprive fish and other aquatic life of the oxygen they need to survive. Blooms of algae also create fish-killing toxins and develop into smelly and unsightly green scum that decreases recreational value and clogs water pipes. Drinking, swallowing or swimming in water affected by algal blooms poses serious health risks, including rashes, stomach or liver diseases, respiratory problems and neurological effects.

Widely used agricultural pesticides are also degrading thousands of miles of California creeks, rivers, and other water bodies, threatening aquatic life and drinking water quality. The 2010 EPA water quality assessment found that pesticide levels exceeded water

quality standards in more than 4,000 miles of rivers and streams. Of particular concern are two highly toxic organophosphates, chlorpyrifos and diazinon, which are still in use. Each was found at unsafe levels in more than 1,500 miles of rivers and streams, with the highest number reported in Monterey County. Other frequently used pesticides pose serious threats to [aquatic invertebrates and fish](#), including endangered salmon populations. Those found at high levels in California waters in the EPA assessment included toxaphene, dieldrin, pyrethroids, endosulfan and chlordane. Pesticides are far less of a problem in ground water. US Geological Service studies found high levels in only 1 percent of the aquifers used for public water supplies.⁶

B. CALIFORNIA CONSERVATION FUNDING UNDER THE 2008 FARM BILL

Conservation funding authorized by the federal 2008 farm bill is the greatest potential source of financial and technical assistance to help California farmers and ranchers reduce fertilizer and pesticide pollution. From 2009 to 2012, US Department of Agriculture's Natural Resources Conservation Service (NRCS) obligated \$789 million to support agricultural conservation programs in the state. Roughly \$504 million was allocated to farmers and livestock producers in cost-share and technical assistance for a wide range of practices that build healthier soil, generate cleaner air and water, enhance wildlife habitat and improve water and energy conservation. These funds help farmers reduce their environmental impact, increase productivity and enhance their resiliency to extreme weather challenges such as drought, floods, high and low temperatures. The remaining conservation funds went to farmland preservation and land retirement programs, such as the Wetland Reserve Program and Conservation Reserve Program. The Wetland Reserve Program, California's second largest conservation program, makes a significant contribution to enhancing the state's water quality by providing long-term protection for wetland resources. Federal funding for conservation, however, is not nearly enough to

address the widespread demand. In 2011, nearly 60 percent of the eligible applications for EQIP funding in California were denied due to lack of funding.⁷

TABLE 1
FARM BILL CONSERVATION FUNDING
OBLIGATIONS IN CALIFORNIA, 2009-2012

Conservation Programs	Combined FA +TA
Environmental Quality Incentives Program (EQIP)	\$370
Wetlands Reserve Program (WRP)	\$121
Agricultural Water Enhancement Program (AWEP)	\$81
Conservation Technical Assistance	\$79
Conservation Stewardship Program (CSP)	\$24*
Emergency Watershed Protection Program (EWP)A	\$22
Conservation Security Program (CSP)	\$19*
Conservation Reserve Program	\$18
Farm and Ranch Lands Protection Program (FRPP)	\$18
Soil Survey (SOIL)	\$15
Wildlife Habitat Incentive Program (WHIP)	\$10
Other	\$13
Total	\$798

*These data, provided by NRCS, refer to the actual amount paid in 2009-12. The National Sustainable Agriculture Coalition estimates that the amount obligated during this time was roughly \$100 million.

C. FEDERAL CONSERVATION PROGRAM SPENDING TO REDUCE NUTRIENT AND PESTICIDE POLLUTION

EQIP is the most important program in the state, accounting for nearly 50 percent of California's farm bill conservation funding. From 2009 to 2012,

it provided \$309 million in cost-share funding and an additional \$70 million in technical assistance. Improved water quality is one of its many resource concerns, which include water quantity/conservation, air quality, plant health and domestic animal needs (feed/forage/stress). AWEP is a smaller, more narrowly defined program that has two goals: conservation of surface and ground water and improved water quality.

The Conservation Stewardship Program (formerly the Conservation Security Program) also helps farmers improve water quality, but NRCS was unable to provide detailed information regarding how its dollars are spent. Because of this disturbing lack of data, EWG could not include the program in this analysis.

Part of EQIP's focus is to help producers comply with (or prevent the need for) environmental regulations through voluntary conservation. In the coming years, there will be increased demand for EQIP funding as more California farmers seek assistance in complying with new water quality regulations in the Central Valley and Central Coast. Farmers who seek funding in order to comply with local regulations automatically receive bonus points in the application process. Due to a national mandate that at least 60 percent of EQIP funds be spent on livestock concerns, 40-to-45 percent of EQIP's funding in California goes to the livestock sector.⁸

1. METHODOLOGY

NRCS developed a tool, the Conservation Practice Physical Effects (CPPE) matrix, to rate the effectiveness of conservation practices in addressing particular resource concerns. Staff use the matrix for guidance when assisting farmers in developing conservation plans and selecting the best mix of practices to address the particular issues on their farms.⁹ The magnitude of the anticipated effect of a given practice is scored by a point system. Practices that receive a "3" are expected to have a moderate impact; a "4" indicates a moderate to significant impact; and "5"s have a significant impact.¹⁰

EWG used the these point rankings to assess how

well EQIP and AWEF funding was being used to help producers reduce nutrient and pesticide pollution between 2009 and 2012. We focused our analysis on funding for practices ranked 3, 4 or 5 for effectiveness in reducing nutrient and pesticide contamination of ground and surface waters. We also analyzed the share of EQIP and AWEF funding supporting three basic types of practices: structural, vegetative and crop management. In addition, we analyzed data from both programs to determine the total number of practices that were applied/installed under contracts written between 2009 and 2012. Finally, EWG reviewed EQIP's water quality initiatives and ranking criteria to better understand how it scores applications. We interviewed and discussed our initial findings with NRCS staff in California.

2. REDUCING NUTRIENT POLLUTION

From 2009 to 2012, NRCS devoted \$151 million – 40 percent of all EQIP's and AWEF's funding total of \$380 million – to help farmers implement practices expected to have a moderate to significant impact on nutrient pollution of surface or ground water. Table 2 provides more detailed information about this investment, including the specific practices funded, the extent of the practices in acres, feet or number of practices; the number actually applied through 2012; and the CPPE ranking of each.

The table shows that fully 83 percent (\$126 million) of the water quality funding was invested in practices with a CPPE ranking of 3. Only 10 percent (\$15 million) went to practices with the top ranking of 5. Practices with a 4 ranking received 7 percent (\$10 million).

These data also reveal that 82 percent of the funding for projects considered moderately to significantly effective went to pay for expensive structures or equipment. For example, \$75 million was spent on irrigation equipment and \$37 million on infrastructure to manage manure from Animal Feeding Operations (AFOs).¹¹ Of the 15 funded practices with a CPPE ranking of 3, the six projects that involved building structures or buying equipment accounted for \$108 million, or 71 percent of all water quality funding from EQIP and AWEF between 2009 and 2012.

Funding for micro- or drip-irrigation systems that deliver water more efficiently straight to the plant root accounted for 49 percent of all EQIP and AWEF funding for practices with a moderate to significant impact on reducing nutrient water pollution. EWG's data show that many farmers are using EQIP as a funding source for irrigation systems without taking advantage of the many highly effective complementary integrated crop management practices. Currently, only \$16 million – 11 percent – of water quality funding is going to such practices.

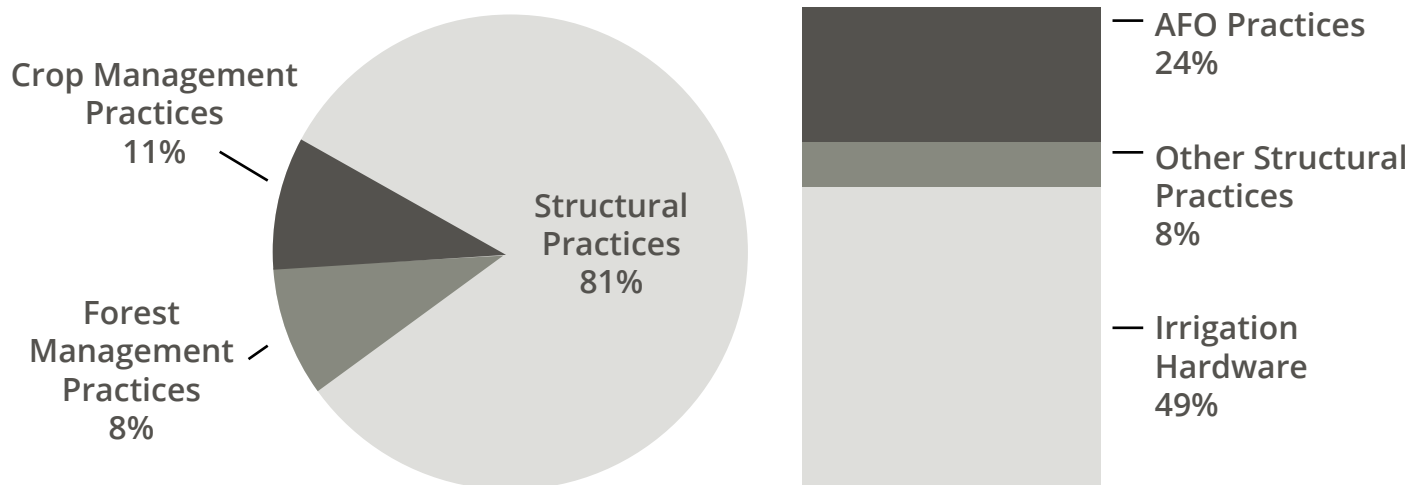
From 2009 to 2012, EQIP and AWEF obligated \$73 million for micro-irrigation systems on 100,412 acres while allocating just \$2 million in funding for nutrient management on less than half as many acres (53,360 acres). One valuable land management practice, cover cropping, which scores a 4 in the CPPE, was only implemented on 33,000 acres. Mulch till, which scores a 3 in the CPEE, was the most widely used land management practice, at more than 149,000 acres.



Cover crops such as yellow mustard in this vineyard build soil fertility and suppress weeds naturally.

These practices are not only highly effective in reducing nutrient pollution but also can help farmers manage fertilizer, weeds, pests, and irrigation water in ways that generate other valuable ecological benefits such as conserving water, enhancing soil and plant health, reducing greenhouse gas emissions, promoting biodiversity and adapting to climate change. For example, cover crops such as winter rye, clover or vetch that are planted between periods of regular crop production help prevent soil erosion,

STRUCTURAL PRACTICES DOMINATE CONSERVATION SPENDING* TO REDUCE NUTRIENTS IN CALIFORNIA'S WATER



* California EQIP and AWEP spending, 2009-12

build up nutrients in the soil and control weeds and pests. Benefits include enhanced soil fertility, reduced nutrient leaching, forage crop production and increased water infiltration and retention, as well as reduction of chemical fertilizer and pesticide use and increased carbon sequestration. Other vegetative management practices deliver similar benefits.

While more efficient and well designed irrigation systems may reduce surface and ground water pollution, the benefit would be far more certain if more emphasis was placed on high-impact crop management and vegetative practices with CPPE rankings of 4 or 5. Only a small percentage of funding, acreage and contracts go to support these practices.

Not only is very little money and land mass going to land management, but also far fewer contracts go towards these practices. A review of contracts signed from 2009 to 2012 shows that 1,311 micro-irrigation systems were installed, compared to 508 that applied irrigation water management; 440 that installed cover crops; 390 that applied nutrient management; and 195 that implemented mulch till.¹² Although it is one of the most important management practices, nutrient management receives a small slice, just 1 percent, of overall EQIP and AWEP funding (See

Appendix 4 for a list of the top funding allocations for cropland vegetative and management practices.)

Similarly, relatively few EQIP or AWEP dollars were used to encourage farmers to implement highly effective vegetative practices that play a critical role in absorbing and removing pollutants from runoff and waste water. The two programs allocated only \$10,000 to support 29 acres of filter strips, a highly beneficial practice that entails planting vegetation along the edges of crop fields. Just 11 contracts were completed for filter strips over the four years. Similarly, just nine farms used cost-share assistance to implement field borders. Riparian cover and buffer practices were slightly more popular, receiving \$120,000 and \$219,000 respectively. Conservation cover planting was by far the most popular, receiving \$1.8 million to cover 5,700 acres.

In general, the limited use of high-impact and low-cost management and vegetative practices and the over-emphasis on lower impact and much more expensive structures and equipment raise serious questions about how effective these investments will be in addressing the full spectrum of nutrient contamination. If farmers simply install more efficient water systems and do not change the way

TABLE 2

EQIP AND AWEF FUNDING FOR NUTRIENT POLLUTION REDUCTION PRACTICES

Practice	Funding Obligations 2009-2012	Quantity	Number of Practices Applied * 2009-12	CPPE Rank
Riparian Forest Buffer (acres)	\$218,824	217	29	5
Riparian Herbaceous Cover (acres)	\$119,531	151	14	5
Agrichemical Handling Facilities (#)	\$72,250	3	1	5
Windbreak/Shelterbelt Renovations (feet)	\$1,109	6,952	2	5
Filter Strip (acres)	\$10,057	29	13	5 **
Fence (feet)	\$12,475,783	4,213,895	731	5
Nutrient Management (acres)	\$2,074,321	53,360	390	5
Sediment Basin (acres)	\$170,825	1,634	13	5
Cover Crop (acres)	\$3,164,157	33,621	440	4
Irrigation Water Management (acres)	\$2,524,281	130,998	508	4
Irrigation System, Tailwater Recovery (acres)	\$2,082,071	2,870	83	4
Conservation Cover (acres)	\$1,769,509	5,742	159	4**
Waste Storage Facility (#)	\$561,398	12	4	4
Residue/Tillage Management No-Till/Strip Till/Direct Seed (acres)	\$95,862	2,790	10	4
Anionic Polyacrylamide (PAM) (acres)	\$22,706	984	5	4
Access Control (acres)	\$17,049	1,109	16	4
Well Decommissioning (#)	\$12,247	1	1	4
Constructed Wetland (acres)	\$10,709	3	1	4
Irrigation System, Micro-irrigation (acres)	\$72,767,620	100,412	1,311	3
Heavy Use Area Protection (acres)	\$23,962,219	6,214	242	3
Forest Stand Improvement (acres)	\$11,510,944	17,216	720	3
Waste Transfer (#)	\$8,076,826	114,136	234	3
Residue and Tillage Management, Mulch Till (acres)	\$4,102,820	140,587	195	3
Solid/Liquid Waste Separation Facilities (#)	\$2,062,922	64	18	3
Pond Sealing or Lining, Flexible Membrane (feet)	\$1,105,899	109,005	8	3
Waste Treatment (#)	\$874,041	14	5	3
Prescribed Grazing (acres)	\$146,352	154,530	71	3
Pond Sealing Lining, Compacted Clay Treatment (square feet)	\$51,156	86,010	4	3
Wetland Restoration (acres)	\$36,042	72	6	3
Field Border (feet)	\$27,223	36,995	10	3
Grassed Waterway (acres)	\$16,702	42	7	3
Wetland Enhancement (acres)	\$307	4	2	3
Comprehensive Nutrient Management Plans* (#)	\$1,345,814	329	221	
Total	\$151,489,575			

* Includes only contracts signed and completed 2009-2012. Columns 1 and 2 include contracts signed, not necessarily completed.

** Physical effects sheet ranks practice 3 for groundwater

* California EQIP and AWEF spending, 2009-12

they manage their nutrients and pests, there is no guarantee that the more than \$80 million dollars¹³ of irrigation equipment purchased with federal conservation funds will result in significantly better water quality. Moreover, greater application of these high-impact practices on non-irrigated cropland could also make an important contribution to reducing nutrient pollution, particularly of surface water. There is no doubt that EQIP dollars would yield a much greater benefit if there were a greater balance between investments in expensive structures and equipment and support for high-impact and lower-cost management and vegetative practices.

3. REDUCING PESTICIDE POLLUTION

Few EQIP and AWEF resources are directed toward high-impact practices for reducing pesticides in surface water. From 2009 to 2012, the two programs spent 25 percent of their cost-share assistance – \$93 million out of a total of \$380 million – to support practices that got a 3-, 4- or 5-point CPPE score for “reducing harmful levels of pesticides in surface water” (Table 3). Of the \$93 million, 89 percent was invested in practices with a score of 3. Only 5 percent

(\$4.7 million) went to practices with the top score of 5. Practices with a 4 score got 6 percent (\$5.3 million).

As with nutrient pollution, spending on irrigation equipment dominated the investment in cutting pesticide pollution. Fully 78 percent of the spending on pesticide pollution was used to help install of micro-irrigation systems – which accounted for 49 percent of the investment in cutting nutrient pollution.¹⁴

While more efficient and well-designed irrigation systems may reduce pesticide runoff and leaching, the benefit would be far more certain if more emphasis were placed on high-impact crop management and vegetative practices with CPPE rankings of 4 or 5. Currently, only \$10 million – 11 percent – of water quality funding is going to these practices.¹⁵

Since pesticides can escape into the air, soil and water, especially in heavy rains or winds, additional vegetative and land-based management practices that minimize soil erosion, such as cover cropping, minimum till practices, riparian buffers, filter strips, are needed. These are all part of advanced integrated pest management systems (IPM) that aim to reduce

DOES MICRO-IRRIGATION INCREASE WATER USE?

With nearly 30 percent of NRCS funding in California going to support micro-irrigation infrastructure, it is important – though beyond the scope of this paper – to ask whether installation of new micro- or drip irrigation systems is in fact decreasing water use on California farms, since that is its primary purpose. It is also important to better understand the impact of this technology on groundwater depletion. A recent University of California, Davis study of [water use in the High Plains Aquifer](#) of western Kansas focused on whether subsidized conversions to more efficient sprinkler systems had the intended effect of slowing groundwater depletion. The researchers examined data from more than 20,000 farms and concluded that the taxpayer subsidies **were actually making the situation worse**, because farmers who used more efficient equipment often decided to switch to crops that required more water, irrigated more acres, or both. Overall, the result was that farmers pumped more water out of the ground, not less. While there is no evidence that this is currently happening in California, several experts interviewed for this paper expressed concern about the increase in groundwater pumping as farmers switch from surface water irrigation to micro-irrigation, which is more dependent on groundwater. This points to the need for an extensive assessment of the true water savings and impacts of these irrigation infrastructure investments. NRCS should also consider measures to require farmers who receive cost-share assistance for irrigation infrastructure to provide assurances that they are using surface water when available.

TABLE 3
EQIP AND AWEF FUNDING FOR PESTICIDE POLLUTION REDUCTION PRACTICES

Effective Practices for Pesticide Pollution	Funding Obligations 2009-2012	Quantity	Practices Applied 2009-12	CPPE Rank
Integrated Pest Management (acres)	\$3,676,287	75,425	558	5
Residue Management, Seasonal (acres)	\$1,023,546	34,393	54	5
Residue and Tillage Management No-Till/Strip Till/Direct Seed (acres)	\$93,118	2,698	10	5
Agrichemical Handling Facilities (#)	\$72,250	3	1	5
Tree/Shrub Establishment (acres)	\$926,657	36,407	98	4
Riparian Forest Buffer (acres)	\$218,824	5,624	29	4
Anionic Polyacrylamide (PAM) Application (acres)	\$22,706	984	5	4
Irrigation System, Micro-irrigation (acres)	\$72,767,620	100,412	1311	3
Residue and Tillage Management, Mulch Till (acres)	\$4,105,564	140,679	195	3
Structure for Water Control (#)	\$3,585,226	10,262	706	3
Cover Crop (acres)	\$3,164,157	33,621	440	3
Irrigation Water Management	\$2,524,281	130,998	508	3
Conservation Cover (acres)	\$1,769,509	5,742	159	3
Field Border (feet)	\$27,223	36,995	10	3
Grassed Waterway (acres)	\$16,702	42	7	3
Constructed Wetland (acres)	\$10,709	3	1	3
Filter Strip (acres)	\$10,057	29	13	3
Silvopasture Establishment	\$561	180	0	3
Terrace (feet)	\$375	100	0	3
Total	\$94,015,372			

the use, impact and risk of pesticides. An approach that incorporates these kinds of practices will do the most to reduce pesticide pollution of surface water. Although NRCS's IPM technical note for conservation planners encourages the use of many of these and other vegetative and management practices to lessen the impact of pesticides on water¹⁶, only 21 percent of the resources spent to reduce pesticide pollution are going to support these practices. Just 4 percent goes to support integrated pest management, one of three practices rated as having a significant impact on reducing pesticide pollution of surface water.

Integrated pest management receives an even smaller slice – 1 percent – of overall EQIP funding.. This is a sharp decline from earlier in the decade, when nearly 2 percent of EQIP cost-share assistance went to IPM.¹⁷ No AWEP funding supported integrated pest management. Only 75,425 acres were covered by this practice in EQIP contracts signed from 2009 to 12. Although the current NRCS IPM standard fails to expressly encourage reduction of pesticide use, farmers can apply this practice in a way that minimizes the their use. More promotion of this approach is needed.

4. LIMITED INVESTMENT IN HEAVILY POLLUTED CENTRAL COAST REGION

The Central Coast Water Quality Board district encompasses Santa Cruz, San Benito, Monterey, San Luis Obispo, Santa Barbara and parts of Santa Clara, Ventura, San Mateo and Kern counties. EWG's analysis excluded Kern County, since it constitutes a very small portion of the region.

Together these counties account for 17.3 percent of California's agricultural output. This economic benefit comes at a heavy environmental price. More than 175 water bodies are severely impaired by nutrients and several studies have identified the Central Coast waters as the most toxic in the state. One study by the Surface Water Ambient Monitoring Program found that 22 percent of Central Coast sites were highly toxic, compared to just 2.3 percent of the Central Valley sites studied.¹⁸ According to the EPA, 27 of the region's waterways are impaired by a highly toxic organophosphate pesticide, chlorpyrifos.¹⁹

Despite these threats, a small percentage of EQIP and AWEP funds have been deployed to clean up the region's water pollution. Just \$3.7 million – 1 percent of the programs' financial resources in the state – supported high-impact management practices for reducing pesticide pollution in the Central Coast region from 2009 to 2012 (Appendix 1). Most of that was for irrigation systems. During that period, EQIP and AWEP spent 10 times more on irrigation systems (\$2.5 million) than on integrated pest management practices (\$200,000). Similarly just \$5.7 million – 1.5 percent – went to practices to combat nutrient pollution in surface and ground water. Most of those funds also went to irrigation (\$2.5 million) and fence construction (\$1.8 million), which may or may not reduce nutrient pollution. The Central Coast region received just 3.8 percent of all the funding for effective management practices to address surface water nutrient pollution (Appendix 2).

According to NRCS, the low participation rates in the Central Coast are due in part to the intensive land use and short-term rental arrangements in the area, which make longer-term contracts difficult. In addition, many properties are owned by large corporations whose profits exceed the minimum adjusted gross income standards for EQIP eligibility. Another factor is the pressure from corporate buyers who demand misguided food safety standards that preclude producers from establishing riparian buffers and other vegetative practices that are



Yellow mustard and rye cover crops growing in the Central Coast.

known to improve water quality. These companies are concerned that vegetated buffers will provide safe haven for wildlife that, they argue, pose health safety risks. Recently approved regulatory measures requiring landowners to take more responsibility for stemming pollution will induce better management practices, but NRCS should create a more targeted initiative in the region to address water quality issues and intensify its outreach to eligible growers, especially disadvantaged farmers who can make good use federal conservation programs.

5. TOO MANY FARMERS TURNED AWAY

So much spending on costly irrigation and AFO structures and equipment leaves fewer resources for the thousands of farmers who are turned away every year when they seek assistance from California's conservation programs.

Contracts that include structures and equipment are costly. The average cost per contract for Heavy Use Protection, the most popular AFO practice, was \$56,000, and the average cost for micro-irrigation was about \$36,000. Waste Transfer, another common practice associated with AFOs, averaged \$17,000 per contract. Waste Storage Facility contracts averaged about \$37,000. In contrast, the cost per contract for high-impact crop and vegetation management practices was far lower: \$9,200 for mulch till, \$4,900 for cover cropping and \$1,563 for nutrient management.

The emphasis on building expensive structures or buying high-priced equipment comes at the expense of putting more resources towards less costly, highly effective land management practices. Shifting funding to these practices could help more farmers, cover more acres and achieve greater environmental benefit per dollar invested, particularly considering the multiple benefits these practices provide.

Moreover, using scarce conservation dollars to subsidize large Animal Feeding Operations is justifiably controversial. Many question the use of subsidies to increase the profitability of this unhealthy, unnatural and unsustainable form of livestock production, which concentrates too many

animals and too much manure in small spaces, uses unhealthy amounts of antibiotics and causes serious harm to water and air resources, public health and animal welfare. Until 2002, the largest confined animal feeding operations were ineligible for EQIP funding to build animal waste management structures and facilities, a provision that Congress should restore in the next farm bill.

From 2009 to 2012, EQIP and AWEP provided more than \$48 million to build structures to manage and treat the millions of tons of waste generated every year by California's dairies and cattle feedlots.²⁰ During this same period, the two programs spent \$131 million on irrigation hardware and \$2.5 million on irrigation management.²¹ This amounted to nearly 30 percent of EQIP's overall funding and 65 percent of AWEP's.

Many animal feeding operations use EQIP funding to help them comply with strict state nutrient management regulations aimed at reducing contamination in ground and surface water. Reducing subsidies to this sector would level the playing field and increase the competitiveness and viability of more sustainable livestock operations that do not receive much federal support. It would also free up resources to support a transition to the type of livestock operations that can meet California's growing market demand for grass-fed and antibiotic-free meat and dairy products.

Spending less on expensive structures and equipment for AFOs and irrigation would also free up funding to support larger numbers of farmers and do more to clean up California's ailing waterways. Low-cost subsidized conservation loans could provide an appropriate alternative for farmers and livestock operators who need help to comply with regulations, improve waste management systems or install costly structural practices to address other conservation concerns. The 2008 farm bill established a conservation loan program to provide "up front" resources to help pay the costs of expensive conservation practices, but funding was authorized only once, in 2010. Use of this loan program for high-cost infrastructure would make more resources available to invest in high-impact, low-cost

management and vegetative practices. Furthermore, this loan-based approach would ensure that livestock operators and farmers are paying for the true costs of their pollution.

D. OPPORTUNITIES TO ACCELERATE PROGRESS

EWG's analysis of spending by federal conservation programs suggests that there are important opportunities to improve their effectiveness. Focusing resources where they are most needed, investing more in high-impact, low-cost practices and downplaying investment in high-cost structures and equipment would go a long way to accelerate the cleanup of California's waterways.

Our analysis, however, also suggests that reliance on voluntary programs alone is inadequate to meet the water quality challenge. Increased technical support and regulatory measures will be needed to spur landowners and producers make the changes needed to cut nutrient and pesticide pollution.

1. MORE EFFECTIVE VOLUNTARY PROGRAMS

EWG briefly assessed the processes NRCS follows to target resources, rank applications for funding, and set criteria for evaluating whether an application will effectively address water quality concerns.

Important steps are being taken to focus resources where they are most needed. However, NRCS's ranking systems and criteria continue to favor subsidies for irrigation and AFO infrastructure and will do little to overcome farmers' strong preference for using the program to finance infrastructure rather than effective, but perhaps less profitable (at least in the short run), land management and vegetative practices.

2. FOCUSING RESOURCES

NRCS took steps recently to modify its ranking systems and target resources more efficiently on California's high-priority resource concerns, including water quality. In 2011, the agency restructured EQIP's

funding pools into 11 geographic regions based on shared priorities, replacing the highly inefficient system of distributing funds to each of California's 58 counties. This new system requires producers to compete on how well their applications address the top concerns in their region. At the direction of the national office, additional funding pools have been established based on whether applications for funding address the following land uses: cropland, rangeland, forest land, pasture land, animal feeding operations and water conservation. Water quality concerns figure prominently in the ranking system for at least several of these pools.

In addition, NRCS has established national, state and local initiatives to concentrate funds on regional concerns, including sage grouse protection, energy conservation, salmon recovery, air quality, tribal initiatives and water quality. In 2012, the agency launched seven initiatives focused on improving water quality in California, including three as part of a national EQIP initiative that directs states to reserve a minimum of 5 percent of their general funding allocation to target water quality concerns. In consultation with the State Water Board and EPA, NRCS selected three watersheds for funding based on these three criteria: having waterways deemed to be "impaired" by agricultural contamination under the Clean Water Act (303d impairments); existing partnership and monitoring efforts; and likely landowner interest in participation.

Thus far, a total of \$2.6 million has been obligated under this initiative for 26 landowner contracts in Calleguas Creek and the Garcia and Salt Rivers. These projects still emphasize subsidies for structural projects, including irrigation reservoirs, underground outlets, grade stabilization, access roads, stream crossings, roof runoff and water control. In the case of Calleguas Creek in Ventura County, nutrient management and irrigation water management were also funded.²²

In 2012, an additional four water quality initiatives were funded with roughly \$5 million under the national Bay Delta Initiative, which focused on implementing water quality and conservation practices on irrigated cropland operations and

animal feeding operations. These were selected because of pesticide or nutrient pollution that exceeded regulatory limits or significant pollution risks to surface and groundwater because of shallow groundwater subbasins.

3. RANKING SYSTEM

In 2012, NRCS adopted a new ranking system that evaluates applications based on national, state and local resource priorities and the expected environmental benefits of proposed practices. State priorities, developed in consultation with the volunteer State Technical Committee, have typically been given a 50 percent weight, with local and national priorities each having a 25 percent weight. For the Delta watershed projects, as well as for the other more general funding pools noted above, NRCS staff review the applications in light of these priorities.

EWG's review of a select number of NRCS' ranking systems and scoring criteria for the Bay Delta watershed projects, as well as the more general San Joaquin Valley Cropland Funding pool, found that water quality was a key concern. Nevertheless, the initial analysis found no clear indication of any change in the relative funding imbalance between expensive irrigation systems and support for complementary, high-impact vegetative and knowledge-based management practices.

For example, contracts approved under NRCS's relatively new ranking system for the EQIP-funded lower Snake River water quality initiative in the Delta Bay region focused exclusively on funding two practices – micro-irrigation systems and irrigation water management. This occurred even though three locations exceeded limits for organophosphate pesticides and establishing vegetative filtering practices was explicitly cited as one of the goals.²³

In the case of San Joaquin, there was a high priority on water quality, but applications could score well with either vegetative or structural practices. While the scoring criteria gives high points to applications that address water quality, there is no clear preference between structural or vegetative

practices. Furthermore, the ranking criteria set a fairly low cap on the total amount of funding available per contract for management practices such as nutrient or integrated pest management.

In response to local stakeholder requests for a greater role in decision making, NRCS will be giving much greater weight (50 percent) in the coming year (2013-14) to projects that address resource concerns and practices identified at the local level.²⁴ This could in theory lead to more investment in higher-impact practices, particularly if the local regions specify practices that they know will be highly effective in addressing the major concerns in that region. (In general, rating criteria developed by local committees have been more specific about the kinds of practices that are awarded high points than the national and state criteria.) Local regions could ensure an even greater benefit by giving high points to projects in particularly polluted watershed areas (essentially following the model of national initiatives in California that target key water bodies with high rates of nutrient or pesticide pollution). If high enough points are awarded at the local level, one would expect to see more funding going to groups of farmers in particular watersheds. This approach would likely have a much greater impact on addressing water pollution in the region than funding farmers and ranchers in disparate geographic areas.

Local/regional committees would be more likely to adopt this approach with encouragement from NRCS and increased technical support and outreach by local non-profits and resource conservation districts. Since significant farmer outreach would be needed to ensure high level of participation, it will be important for NRCS to cultivate more partnerships to move this approach forward.

NRCS currently provides a 50 percent cost-share rate for infrastructure, knowledge-based and vegetative management practices. Disadvantaged and beginning farmers are eligible for a higher cost share rate. Increasing the cost-share rate to 75 percent for management practices for all farmers would create stronger incentives to request support for land management practices.

4. UP-FRONT PLANNING AND TECHNICAL ASSISTANCE

Beyond outreach, better up-front planning is needed to help farmers identify the entire suite of practices that can address water quality and other conservation concerns. In theory, NRCS staff are supposed to follow a nine-step plan to help farmers and ranchers consider a more holistic approach to conservation planning. In practice, according to experts interviewed for this report, some offices are apt to skip the nine-step process and instead respond to farmers' requests (e.g. irrigation systems) rather than take the time to identify and promote alternative practices that farmers might not seek. Another explanation, said one NRCS staff interviewed for this report, is that local offices want to see high implementation/contract completion rates. When a number of practices are incorporated in a single contract, farmers are less likely to complete implementation of all of them.

While adherence to NRCS guidance on developing conservation plans likely varies from office to office, the lack of demand for integrated crop management practices underscores a broader concern over the public sector's dearth of technical assistance for farmers. The University of California Cooperative Extension service has just 200 on-farm advisors and 119 specialists for roughly 80,000 farmers, a 40 percent drop from the early 1990's.²⁵ In some cases, farmers don't ask for support for other practices because they simply don't know how they would benefit their operations or affect key concerns. Most farmers report that they get their information from pesticide and fertilizer company crop advisors, who are less likely to encourage advanced integrated crop management practices to address water quality concerns, soil health and other conservation issues. A recent [survey of California growers by the American Farmland Trust](#) identified the lack of access to adequate information or technical assistance as one of the top three barriers to adoption of beneficial management practices (BMP).

E. RECOMMENDATIONS TO THE NRCS CALIFORNIA OFFICE

In order to reduce pesticides and nutrients in

ground and surface water and generate other benefits, NRCS should take steps to encourage adoption of high-impact management practices that would improve water quality and the long-term environmental performance of California agriculture. The following recommendations will move NRCS and farmers in that direction:

1. REVISE RANKING SYSTEM FOR FUNDING APPLICATIONS

- Provide much higher points for contracts that include a comprehensive suite of management and vegetative practices to reduce nutrient and pesticide pollution or complete implementation of such systems.
- Give priority to applications for irrigation and Animal Feeding Operation infrastructure submitted by producers who implement a comprehensive system, including management and vegetative practices, to cut nutrient and pesticide pollution.
- Do not give points for irrigation systems as a means to address water quality issues unless a suite of highly effective management or vegetative practices are already in place or are included in the application.
- Award higher points and create clear preferences for vegetative practices and management practices that score a 4 or 5 for their potential to address nutrient and pesticide issues in the matrix used by NRCS to rate the effectiveness of conservation practices.
- Encourage local and regional work groups to do grower outreach in the most impaired watersheds and to award high points for projects in highly impaired watershed districts.

2. MODIFY CONSERVATION PRACTICE COST-SHARE RATES AND PAYMENTS

- Establish higher cost-share rates (75 percent)

for vegetative and advanced management practices that score a 4 or 5 in the CPPE as a means to address nutrient and pesticide issues

- Eliminate all cost-share payment caps on crop management and vegetative practices.
- Cap cost-share payments for specific irrigation and AFO infrastructure practices to free resources for lower cost, high-impact practices.

3. INCREASE FOCUS ON LOW-COST, HIGH-IMPACT PRACTICES IN IMPAIRED REGIONS

- Create a more targeted initiative in the Central Coast region to overcome barriers and deliver conservation resources to farmers who qualify for cost-share assistance.

4. INCREASE OUTREACH, TRAINING AND PROMOTION

- Provide additional training, support and direction to field staff to ensure that they actively promote integrated, complementary and advanced management and vegetative practices along with irrigation and livestock management solutions for water quality issues.
- Intensify partnerships with state agencies, cooperative extension and non-profit organizations to accelerate training in integrated crop and livestock production practices and promote cost-effective best management practices.

5. ENSURE THAT IRRIGATION INVESTMENTS LEAD TO WATER SAVINGS AND MINIMIZE DEPLETION OF GROUNDWATER RESOURCES.

- Conduct an extensive assessment of the true water savings and impacts of NRCS-supported irrigation infrastructure investments.
- Consider measures to require farmers who receive cost-share assistance for irrigation infrastructure to provide assurances that they are using surface water when available.

F. ROLE OF FEDERAL POLICY

NRCS's emphasis on directing scarce conservation funds toward expensive structural projects is a national problem. Nearly 70 percent of all EQIP funds between 1997 and 2010 were spent on structures, and one in four EQIP dollars were used to purchase irrigation equipment.²⁶ While many changes can be made at the state level, NRCS can adjust policy at the national level, without new legislation from Congress, to increase the resources and effectiveness of conservation programs for addressing nutrient and pesticide pollution nationally and in California. These include:

- a. Establishing cost-share payment caps for irrigation hardware and waste infrastructure;
- b. Providing higher cost-share payments for high-impact, integrated crop management practices;
- c. Strengthen standards to promote more advanced integrated management practices
- d. Increasing promotion and funding for conservation planning that encourages a more system based, integrated, agro-ecological approach to farming; and
- e. Increase funding for priority watershed-based initiatives

In addition, Congress should enact key policy reforms to enable EQIP to reach more farmers and improve its effectiveness. Specifically, lawmakers should:

- a. Restore the former policy of prohibiting the largest confined animal feeding operations from receiving EQIP dollars to build animal waste management structures and facilities.
- b. Authorize mandatory funding for the conservation loan program established in the 2008 farm bill to provide no- or low-cost loans for building structures and purchasing equipment; use the loan program rather than direct cost-sharing to help farmers make these capital investments.

G. VOLUNTARY PROGRAMS ARE NECESSARY BUT NOT SUFFICIENT

As EWG's data show, and as NRCS staff attest, many farmers are simply interested in using EQIP and AWEF funding for irrigation systems or other expensive animal infrastructure without taking full advantage of the many other cost-share management practices that are vital for reducing water contamination.

While implementing EWG's recommendations should lead to greater adoption of low-cost, high-impact management practices, most farmers and ranchers will not voluntarily choose to install them without stronger financial incentives or regulatory mandates.

In a recent report by American Farmland Trust, farmers identified several financial inducements that would increase their adoption of beneficial management practices (BMP), including tax incentives, risk management insurance, ecosystem service credits and buyer contract preferences.²⁷ The study also identified the top three barriers to adopting these practices as cost, risk of diminished yield and lack of adequate information or technical assistance. NRCS does seek to address at least two of these barriers by defraying the costs of beneficial management practices and providing needed technical assistance, but apparently not enough.

Financial inducements are important, but it appears that the new State Water Board regulations mandating a more comprehensive conservation practices to address surface and ground water quality on irrigated lands will have the greatest effect on shifting agricultural production in a more sustainable direction. NRCS staff have indicated that they will be stepping up their technical and financial support for farmers faced with regulation by helping them develop more comprehensive and integrated Conservation Activity Plans to improve water quality and address other resource concerns. Anticipating more demand for support as a result of the new regulations, NRCS recently published a beautiful guide that highlights the numerous water quality-related practices available through NRCS.²⁸

California's regulatory push is very welcome. Given the increased demand these regulations will

generate for NRCS programs, however, it is even more important that EQIP and AWEF target their resources so as to reach more growers and ensure investment in high-impact measures. Asking taxpayers to mostly subsidize expensive and relatively less effective irrigation facilities or expensive animal waste infrastructure will become more difficult to justify in light of scarce resources and growing unmet demand.

NRCS is making a solid effort to address water quality in California, but clearly more can and must be done. As farmers step up demand for conservation resources in order to address the new regulations, it will be important for NRCS to make sure that applications from farmers who go above and beyond the regulatory requirements are at the top of the pile.

ENDNOTES

1. EWG analysis of NRCS data, available upon request
2. Jay Lund and Thomas Harter, [California's groundwater problems and prospects](#), January 30, 2013, California Water Blog
3. Ibid
4. Thomas Harter and Jay Lund, et al, Addressing Nitrate in California's Drinking water with a Focus on Tulare Lake Basin and Salinas Valley Basin, Report to the State Water Resources Control Board Report to the Legislature, Center for Watershed Sciences, University of California at Davis, January 2012 available at <http://groundwaternitrate.ucdavis.edu/files/138956.pdf>
5. State Water Resources Control Board, Division of Water Quality, GMA Program, Groundwater Information Sheet, August 2012, available at http://www.waterboards.ca.gov/water_issues/programs/gama/docs/coc_nitrate.pdf
6. Groundwater in Madera County and other parts of San Joaquin Valley are exceptions. According to a 2013 study, high concentrations of highly toxic fumigants were found in 10 percent of the groundwater in Madera county. Since this fumigant is no longer used, NRCS programs can do little to address this particular issue. The study also noted that in most California waterways, just 1 percent of aquifers that supply drinking water are contaminated with pesticides: <http://www.wqpmag.com/fumigants-found-high-concentrations-madera-county-groundwater>.
7. EWG analysis of NRCS data
8. NRCS staff interview
9. Physical Effects information and Spread Sheet available in Section V of California's Field Office Technical Guide available at : <http://efotg.sc.egov.usda.gov/treemenuFS.aspx>
10. More information on the tool is available at: ftp://ftpfc.sc.egov.usda.gov/NY/eFOTG/section_5/cppe/ny5cppe_intro.pdf
11. The following practices are included: Pond Sealing Lining, Compacted Clay Treatment; Waste Treatment Solid/Liquid Waste Separation Facility Heavy Use Area Protection (ac) Waste Storage Facility.
12. EWG analysis of EQIP/AWEP contract data, provided by NRCS
13. EWG analysis of EQIP/AWEP funding for all irrigation hardware
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19. http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reports/tox_rpt.pdf
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21. EWG analysis of NRCS data, available upon request.
22. Power point provided by NRCS describing the 3 watershed initiatives
23. EQIP Bay Delta Initiative for the Lower Snake River Fiscal Year 2012 available at: ftp://ftp-fc.sc.egov.usda.gov/CA/programs/EQIP/2012/2012_BDI_Lower_Snake_River_PD.pdf
24. Information provided by NRCS staff in State Technical Committee, September 19th, 2013
25. California Climate and Agriculture Network. March 2011. Ready... or Not? An Assessment of California Agriculture Readiness for Climate Change. Available at: <http://calclimateag.org/our-work/ready-or-not/>
26. EWG analysis of NRCS data, available upon request
27. Steve Shaffer and Edward Thompson, Jr. Encouraging California Specialty Crop Growers to Adopt Environmentally Beneficial Management Practices for Efficient Irrigation and Nutrient Management, Lessons from A Producer Survey and Focus Groups, America Farmland Trust, April 2013
28. USDA Natural Resources Conservation Service, Your Farm and Agricultural Water Quality, forthcoming

APPENDIX 1

EQIP AND AWEF FUNDING FOR PESTICIDE POLLUTION REDUCTION IN THE CENTRAL COAST, 2009-2012

Practice Name	San Benito	San Mateo	Santa Clara	Santa Cruz	Ventura	San Luis Obispo	Santa Barbara	Monterey	All Central Coast
Irrigation System, Micro-irrigation (acres)	\$325,690	\$29,048	\$217,192	\$92,281	\$278,931	\$714,605	\$74,653	\$798,987	\$2,531,387
Cover Crop (acres)	\$43,783	\$5,467	\$48,656	\$10,429	\$8,680	\$20,904	\$2,767	\$200,642	\$341,328
Structure for Water Control (#)	\$6,460	\$42,699	\$39,534	\$61,056		\$66,277	\$36,951	\$63,589	\$316,565
Irrigation Water Management	\$10,425	\$19,515	\$36,821	\$16,500	\$53,891	\$68,133	\$13,965	\$50,683	\$269,932
Integrated Pest Management (acres)	\$45,838		\$37,921	\$11,657	\$21,961	\$16,425	\$4,777	\$66,109	\$204,688
Residue and Tillage Management, Mulch Till (acres)						\$24,112			\$24,112
Tree/Shrub Establishment (acres)		\$307		\$2,098	\$240	\$3,118	\$702	\$5,114	\$11,579
Residue and Tillage Management No-Till/Strip Till/Direct Seed (acres)	\$2,744					\$76			\$2,820
Grassed Waterway (acres)				\$338		\$1,276	\$656		\$2,270
Filter Strip (acres)						\$1,721			\$1,721
Constructed Wetland				\$1,632					\$1,632
Residue Management, Seasonal (acres)								\$986	\$986
Riparian Forest Buffer (acres)					\$481	\$172			\$653
Conservation Cover (acres)				\$645					\$645
Terrace (feet)						\$375			\$375
Anionic Polyacrylamide (PAM) Application (acres)						\$225			\$225
Total	\$434,939	\$97,035	\$380,125	\$196,636	\$364,184	\$917,419	\$134,471	\$1,186,109	\$3,710,918

APPENDIX 2

EQIP AND AWEF FUNDING FOR NUTRIENT POLLUTION REDUCTION IN THE CENTRAL COAST, 2009-2012

Practice Name	San Benito	San Mateo	Santa Clara	Santa Cruz	Ventura	San Luis Obispo	Santa Barbara	Monterey	All Central Coast
Irrigation System Micro-irrigation	\$325,690	\$29,048	\$217,192	\$92,281	\$278,932	\$714,606	\$74,653	\$798,987	\$2,531,388
Fence	\$364,947	\$51,994	\$241,115	\$19,589	\$183,545	\$369,523	\$14,934	\$592,206	\$1,837,853
Waste Transfer								\$18,636	\$18,636
Irrigation Water Management	\$10,425	\$5,640	\$36,821	\$16,500	\$53,891	\$68,133	\$13,965	\$50,683	\$256,057
Cover Crop	\$43,783	\$5,467	\$49,553	\$10,429	\$8,680	\$32,966	\$2,767	\$200,642	\$354,286
Pond Sealing or Lining, Flexible Membrane					\$41,175		\$66,150		\$107,325
Nutrient Management	\$26,569		\$55,870	\$4,354	\$44,046	\$16,168	\$19,175	\$24,633	\$190,816
Conservation Cover	\$1,336		\$57,511	\$307	\$41,011		\$156	\$106,531	\$206,852
Residue/Tillage Management, Mulch Till									\$0
Sediment Basin				\$17,345	\$7,371			\$53,239	\$77,955
Comprehensive Nutrient Management Plan								\$6,000	\$6,000
Waste Treatment									\$50,005
Heavy Use Area Protection	\$4,837		\$1,256				\$1,254	\$35,911	\$43,258
Irrigation System, tailwater recovery				\$7,650				\$5,115	\$12,765
Solid/Liquid Waste Separation Facility									\$0
Forest Stand Improvement		\$11,214						\$13,306	\$24,520
Agrichemical Handling Facility					\$21,250				\$21,250
Tree/Shrub Establishment	\$1,048	\$307		\$2,098	\$240		\$702	\$6,114	\$10,509
Prescribed Grazing				\$1,139			\$2,614		\$3,753
Residue/ Tillage Management No-Till/ Strip Till/Direct Seed	\$2,744					\$76			\$2,820
Filter Strip						\$1,721			\$1,721
Constructed Wetland				\$1,632					\$1,632
Grassed Waterway				\$338			\$655		\$993
Riparian Herbaceous Cover						\$780			\$780
Wetland Restoration									\$0
Riparian Forest Buffer					\$481	\$172			\$653
Access Control						\$90			\$90
TOTAL	\$781,379	\$103,670	\$659,319	\$173,662	\$680,622	\$1,204,235	\$197,025	\$1,912,001	\$5,761,918

APPENDIX 3

CALIFORNIA EQIP FUNDING: TOP 15 PRACTICES, 2009-2012

Top Practices	Obligated Funding 2009-12	Coverage	% Total Calif. EQIP
Irrigation System, Micro-irrigation (acres)	\$45,536,339	62,195	15%
Combustion System Improvement (#)	\$44,172,724	1,064	14%
Engine Replacement (#)	\$43,161,994	2,938	14%
Fence (feet)	\$15,410,790	3,887,380	5%
Heavy Use Area Protection (acres)	\$15,347,372	5,216	5%
Forest Stand Improvement (acres)	\$11,528,159	17,216	4%
Pipeline (feet)	\$7,794,296	2,043,809	3%
Irrigation System, Sprinkler (acres)	\$7,032,237	11,162	2%
Shallow Water Development and Management (acres)	\$6,871,690	206,302	2%
Brush Management (acres)	\$6,750,886	59,153	2%
Irrigation Pipeline (feet)	\$6,740,631	507,842	2%
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic (feet)	\$5,276,357	400,940	2%
Dust Control on Unpaved Roads and Surfaces (square feet)	\$5,149,234	4,400,551	2%
Manure Transfer (#)	\$5,013,839	81,764	2%
Pumping Plant (#)	\$4,542,496	9,502	1%
Total	\$230,329,046		74%

APPENDIX 4

CALIFORNIA EQIP FUNDING: TOP 20 CROPLAND MANAGEMENT AND VEGETATIVE PRACTICES, 2009-2012

Top Cropland Management and Vegetative Practices	Obligated Funding 2009-12	Coverage	% Total Calif. EQIP
Residue Management (Mulch Till)	\$4,102,820	140,597	1.3%
Pest Management (acres)	\$3,343,225	66,375	1.1%
Cover Crop (acres)	\$2,870,601	30,670	0.9%
Mulching (acres)	\$2,025,726	6,204	0.7%
Nutrient Management (acres)	\$1,758,010	49,979	0.6%
Irrigation Water Management (acres)	\$1,540,462	77,447	0.5%
Conservation Cover (acres)	\$1,457,755	4,461	0.5%
Precision Pest Control Application (acres)	\$1,104,810	34,593	0.4%
Comprehensive Nutrient Management Plan (#)	\$1,346,143	329	0.4%
Residue Management	\$1,059,953	36,407	0.3%
Hedgerow Planting (feet)	\$1,243,358	395,191	0.4%
Conservation Crop Rotation	\$815,657	4,146	0.3%
Windbreak/Shelterbelt Establishment (feet)	\$507,661	188,470	0.2%
Deep Tillage (acres)	\$304,666	4,681	0.10%
Critical Area Planting (acres)	\$249,763	875	0.08%
Riparian Forest Buffer (acres)	\$218,824	2,217	0.07%
Riparian Herbaceous Cover	\$117,881	151	0.04%
Residue and Tillage Management, No-Till/Strip Till/Direct Seed (acres)	\$95,816	2,698	0.03%
Channel Bank Vegetation (acres)	\$49,790	30	0.02%
Salinity and Sodic Soil Management (acres)	\$25,678	187	0.01%
Total	\$24,238,599		7.83%