VCAILG Water Quality Management Plan

Survey of Management Practices

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COVER SHEET

Please provide the following information:

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Name: _____

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Operation Information:

Name of operation: _____

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100 Agricultural Management Practices to Protect Water Quality

The following checklist provides a basis for assessing management practices that can be used for reducing runoff and the amount of sediment, fertilizers, pesticides, salts, and metals found in agricultural runoff.

This self-assessment is part of the Water Quality Management Plan (WQMP) submitted by the Ventura County Agricultural Irrigated Lands Group (VCAILG). Developing the WQMP was necessary because monitoring of agricultural runoff in Ventura County has shown concentrations of pollutants exceeding water quality benchmarks.

As part of the plan, growers are given the opportunity to evaluate their current management practices and document what management measures they use to improve water quality in the surrounding water bodies.

Please fill out this survey as completely as possible. You should mark statements as "Yes" when you follow this practice. If you implemented the practice since January 2008 when the Water Quality Management Plan implementation began you should also check the "Since 2008" box. Check "No' if you do not follow the practice. If you are planning to implement the management practice in the next two years, then check "Planning" as well as the "No" box. Those practices that are not applicable to your operation should be checked as "N/A." Practices checked "No" may indicate an area where implementing appropriate practices could reduce the potential for runoff and groundwater contamination.

OPERATION INFORMATION

How many acres are being evaluated in this assessment?	_____ Irrigated acres
What crops are being evaluated in this assessment?	**SPECIFY CROP OR VARIETY:** Strawberries _____ acres Other berries _____ acres Vegetables _____ acres Citrus _____ acres Avocado _____ acres Nursery _____ acres Cutflower _____ acres Other _____ _____ acres
How many acres of each type of operation are used at this site?	Field grown without cover _____ acres Shade house / hoop house _____ acres Greenhouse _____ acres Other _____ _____ acres
What type of surface treatments are used in the production area? (Choose more than one if applicable. Percentages do not need to add to 100%.)	_____ % Raised beds _____ % Plastic _____ % Gravel _____ % Weed cloth _____ % Mulch _____ % Cover crop _____ % Bare soil Other _____

What types of irrigation systems are used? (Estimate percentage by time or acreage, with the percentage totaling 100%.)	_____ % Overhead sprinkler _____ % Drip or other microirrigation _____ % Handwater _____ % Furrow / flood Other _____
Where does your operation drain to, considering either irrigation or storm runoff? (Check all that apply)	☐ Drainage ditch ☐ Creek or river ☐ Constructed pond, basin, or reservoir ☐ Natural pond, wetland or other natural area ☐ Municipal stormwater or sewer system Other _____

Management Practices		Practice Tracking					Pollutants Being Targeted/Controlled				
							Fertilization, Irrigation, & Runoff Control		Sediment Transport & Runoff Control [1]		
	Sediment and Erosion Management	**Yes, Prior to Jan. 2008**	**Yes, New since Jan. 2008**	**Planned for future**	**No, Not currently used**	**N/A**	***Nitrogen***	***Salts***	***OC Pesticides***	***OP Pesticides***	***Metals***
1	Consult with local agencies (NRCS, RCD, UCCE, or county planning) to develop a soil conservation plan.								x	x	x
2	Know your soil series and its erosion hazard rating.								x	x	x
3	Consider erosion hazard rating and prevailing winds when choosing row orientation.								x	x	x
4	Long runs of production area are broken up by access roads or buffer strips.								x	x	x
5	Riparian areas or other areas of natural vegetation were retained or expanded during site development.						x	x	x	x	x
6	Avoid bare fields using cover crops, leaving plant debris, or planting subsequent crops.						x	x	x	x	x
7	Minimize compaction by using drive rows, reducing tractor passes, reducing cultivation, and avoiding driving on or tilling wet ground.								x	x	x
8	Apply mulch, compost, or green waste to improve soil characteristics, especially for sandy or clayey soils.						x	x	x	x	x
9	Windbreaks or shelterbelts are used in areas prone to wind erosion.								x	x	x
10	In sloped production areas, management practices to minimize erosion such as contour farming, contoured buffer strips, or terracing are used.						x	x	x	x	x
11	Berms, culverts, or flow channels are in place to divert water away from roads.						x	x	x	x	x

	Sediment and Erosion Management continued	**Yes, Prior to Jan. 2008**	**Yes, New since Jan. 2008**	**Planned for future**	**No, Not currently used**	**N/A**	***Nitrogen***	***Salts***	***OC Pesticides***	***OP Pesticides***	***Metals***
12	Road erosion is minimized by grading, using gravel or mulch on roads, or constructing water bars or drainways.								x	x	x
13	Erosion management practices such as terracing, water diversions, and critical area plantings are used for non-production areas that are sloped or hilly.						x	x	x	x	x
14	Ditch banks are protected from erosion with vegetation, rock protection, or geotextiles.						x	x	x	x	x
15	Non-cropped areas with bare soil are protected from erosion with vegetation, mulch, gravel, or by diverting water.						x	x	x	x	x
16	Irrigation runoff is captured or kept on the property.						x	x	x	x	x
17	Stormwater runoff is captured or kept on the property.						x	x	x	x	x
18	Sediment traps are used at the end of the field to retain sediments in runoff.						x	x	x	x	x
19	Devices are in place to treat runoff before it leaves the property, such as grassed waterways, vegetated filter strips, and tailwater recycling systems.						x	x	x	x	x
	Irrigation Management										
20	At least annually test the irrigation system for distribution uniformity by monitoring water delivery or pressure differences within a block.						x	x	x	x	x
21	Utilize the services of the Irrigation Mobile Lab or a professional irrigation consultant for evaluating irrigation system performance.						x	x	x	x	x
22	Implement appropriate improvements based on your own irrigation system test or the recommendations of the Irrigation Mobile Lab or other appropriate irrigation professionals.						x	x	x	x	x

	Irrigation Management continued	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
23	When drip irrigation is used, the distribution uniformity is 90% or better.						x	x	x	x	x
24	Irrigation main and lateral lines are regularly inspected for breaks, leaks, or clogs.						x	x	x	x	x
25	Filters are inspected and cleaned regularly.						x	x	x	x	x
26	Lines are flushed or cleaned chemically to prevent clogging.						x	x	x	x	x
27	Pressure regulators or pressure compensating emitters are used.						x	x	x	x	x
28	Sprinkler heads and drip emitters of the same gallonage are used within each block and replaced with the same heads or emitters when necessary.						x	x	x	x	x
29	Consistent riser heights are used.						x	x	x	x	x
30	Water is diverted from non-crop areas by adjusting sprinkler head arcs or using sprinkler guards.						x	x	x	x	x
31	When irrigating for frost protection, the proper timing and amount of irrigation is used.						x	x	x	x	x
32	Alternative equipment such as tunnels, air circulation, heaters, or smudge pots are used for frost protection.						x	x	x	x	x
33	The grower knows the infiltration rate of the soil, the available water holding capacity of the soil, and the crop rooting depth.						x	x	x	x	x
34	Soil moisture is measured with equipment such as gypsum block soil moisture sensors (such as Watermarks), tensiometers, soil probe, or neutron probe.						x	x	x	x	x

	Irrigation Management continued	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
35	Evapotranspiration (ET) values are used to determine irrigation requirements. Values are obtained from CIMIS, onsite atmometers, or other appropriate devices.						x	x	x	x	x
36	If irrigation must be based on a set schedule due to water availability, the amount of irrigation is varied according to the weather and plant growth stage.						x	x	x	x	x
37	Flow meters are used to measure actual water use and is coupled with known crop use values or other measurements to conserve water as appropriate.						x	x	x	x	x
38	Irrigation is halted if significant runoff occurs.						x	x	x	x	x
39	Harvested or unplanted areas are not irrigated.						x	x	x	x	x
40	Irrigation water quality is tested for parameters of interest including: pH, electrical conductivity (EC), sodium (Na), chloride (Cl), bicarbonate (HCO3), and boron (B).						x	x			
41	Well head is protected from surface contamination (located high in the landscape so that surface water drains away from well head; located away from potential contaminants; the space between the casing and sides of hole is grouted; casing regularly inspected for leaks; vermin-proof well cap with screened vent).						x	x	x	x	x
42	Irrigation duties are performed only by personnel who understand and practice appropriate irrigation scheduling, application, and crop management practices related to runoff management.						x	x	x	x	x

	Pest Management	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
43	Proper scouting methods are used to determine the population densities of insect pests, snails, slugs, and weeds and the incidence of diseases. Methods include use of yellow sticky traps, use of pheromone traps, plant inspection, beating, or net sweeping or other appropriate scouting tools and methods .									x	x
44	Use weather data or degree days to determine when to control pests.									x	x
45	Use UC IPM guidelines as a resource (www.ipm.ucdavis.edu).									x	
46	Diagnostic lab services or other professional assistance is used to identify unknown pathogens, pests, or growth problems before implementing a control measure.									x	x
47	All transplants, plugs, or plant material is inspected for pests before planting or introduction in the growing area.									x	x
48	Natural enemy populations are considered when choosing pesticides, application rates, and timing.									x	x
49	Beneficial insects or mites are released in the field.									x	x
50	Personnel are aware of the causal agents of diseases in the field and their methods of spread.									x	x
51	Personnel are familiar with methods and timing of disease control in the growing region.									x	x
52	Disease resistance or disease tolerant crop varieties are used.									x	x
53	Classes of pesticides are rotated to avoid resistance.									x	
54	The grower or pesticide applicator considers selectivity and effectiveness against the target organism before choosing a pesticide.									x	

	Pest Management continued	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
55	Personnel are familiar with the UC online databases for comparing the risks of different pesticides moving with water and sediment and affecting non-target organisms (WaterTox or Pesticide Wise).									x	
56	Spray timing is based on economic thresholds of pest incidence.									x	x
57	Hot spots are identified and sprayed rather than treating an entire field.									x	x
58	Sprayers are routinely calibrated to ensure accurate application rates.									x	x
59	Worn nozzles and screens are replaced to ensure the best coverage of pesticide applications.									x	x
60	Treatment rate, water volume, and driving speed are optimized to attain the coverage needed for specific pests.									x	x
61	Pesticides are applied only according to the label and environmental hazards are followed.									x	x
62	Pesticides are applied at the lowest effective labeled rate.									x	x
63	Pesticide use records are submitted monthly to the county Agricultural Commissioner.									x	x
64	Pesticides are stored where they are protected from rain and contained on an impermeable pad with curb to contain spills or leaks.									x	x
65	Pesticide mixing and loading is done on an impermeable surface and more than 100 feet down slope from any wells.									x	x
66	Pesticide disposal methods are environmentally safe and in accordance to label instructions.									x	x
67	Reduced risk pesticides are used.									x	

	Pest Management continued	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
68	Choose selective pesticides for the target pest species and avoid using broad-spectrum pesticides.									x	
69	Avoid applying pesticides when wind could move them off-target as drift.									x	x
70	Avoid applying pesticides when rain or scheduled irrigation will move the pesticides as runoff and ground percolation.									x	x
71	Copper sulfate is not applied prior to extensive irrigation or expected rainfall.							x			x
72	Copper containing pesticides are replaced with alternatives.										x
	Nutrient Management										
73	Most recent nutrient recommendations for your particular crops and growing practices are used.						x	x			
74	Chemical properties of the soil, including pH and electrical conductivity (EC), are routinely measured.						x	x			
75	Soil fertility is routinely monitored through measurements of nitrogen, phosphorus, potassium, and micronutrients.						x	x			
76	Fertilization rates are adjusted based on the results of soil fertility measurements.						x	x			
77	Crop plants are visually assessed for signs of nutrient deficiency or toxicity.						x	x			
78	Leaf or petiole analyses are used as a guide for fertilizer application.						x	x			
79	Fertilizer applications are split into multiple smaller applications rather than applying all that is required for a crop in one large application.						x	x			
80	Fertilizer levels in fertigation water are tested to ensure that injectors are correctly calibrated.						x	x			

	Nutrient Management continued	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
81	Fertilizer applications are timed to maximize plant uptake, taking into consideration the life stage of the crop, potential rain events, and irrigation timing.						x	x			
82	Slow-release fertilizers are used.						x	x			
83	Fertilizer applications are adjusted to account for other nutrient sources, such as: irrigation water, cover crops, and residuals from previous fertilizations.						x	x			
84	Fertilizers are stored where they are protected from rain and on an impermeable pad with a curb to contain spills.						x	x			
85	Mixing and loading of fertilizers occurs in a covered area on an impermeable surface and more than 100 feet down slope from any wells.						x	x			
	Salinity Management and Leaching										
86	Leaching is performed only when necessary, as determined by measuring soil solution electrical conductivity (EC).						x	x			
87	Leaching is done only when fertilizer injectors are turned off.						x	x			
88	Fertilizers and amendments with a low salt index are used.							x			
89	Saline or high selenium wells are decommissioned and other sources of water are used.							x			
	Property Management										
90	Landowner, grower, or other personnel regularly attend UC Cooperative Extension, Commodity Board, or other industry educational meetings concerning management practices that protect water resources.						x	x	x	x	x

	Property Management continued	Yes, Prior to Jan. 2008	Yes, New since Jan. 2008	Planned for future	No, Not currently used	N/A	*Nitrogen*	*Salts*	*OC Pesticides*	*OP Pesticides*	*Metals*
91	Landowner, grower, or other responsible personnel subscribe to and read farming, trade, and industry journals containing articles about water quality, fertilizer, pest and erosion management.						x	x	x	x	x
92	Employees receive training on the following: wearing protective clothing, understanding fertilizer/pesticide signage, MSDS and label information, personal hygiene and sanitation, trash disposal and recycling, use storage and disposal of fertilizers and pesticides, pest and disease scouting, spill cleanup, and irrigation.						x	x	x	x	x
93	Training is provided in the employees' native language.						x	x	x	x	x
94	Fuel tanks are checked and maintained to prevent leaks.										x
95	Spill cleanup materials are readily accessible and maintained for all potential types and sizes of spills.						x	x		x	x
96	All vehicles, trucks, and tractors are regularly maintained to detect and prevent fluid leaks.										x
97	Vehicles, machinery, and tanks no longer in use are drained of fluids, and those fluids properly disposed.										x
98	The property is kept clean and free of debris.										
99	The property has an adequate number of waste containers that are regularly collected to prevent overflow and are kept covered to prevent scattering of trash.										
100	Restrooms or portable toilets are available where needed and regularly maintained.										

[1] Previous samplings have shown pesticides and metals to have caused toxicity. Therefore, BMPs that address these classes of constituents will also mitigate toxicity exceedances.