Description of Best Management Practices – September 2018

This list of management practices was compiled during the development of the TMDLs for sediment toxicity and pyrethroids in sediment in the lower Salinas River watershed. The list of management practices was compiled with the assistance of stakeholders in the watershed as part of the CEQA analysis, which is included in the TMDL CEQA Checklist and Analysis document (refer to page 25). The Central Coast Water Board is prohibited from specifying the manner of compliance with its regulations (Water Code § 13360), and accordingly, the actual compliance strategies and management practices will be selected by responsible parties. Although the Central Coast Water Board does not mandate the manner of compliance, foreseeable methods of compliance with the TMDL are outlined below.

Management Practice	Description	Reference
Deep Tillage and Ripping	Deep tillage is the practice of loosening the soil, without inverting and with a minimum of mixing of the surface soil, to shatter restrictive layers below the normal plow depth that inhibit water movement or root development. Deep tillage decreases runoff of pesticides by increasing infiltration. The practice can increase groundwater recharge and leaching of pesticides and nitrates.	NRCS Practice: Deep Tillage #324
Field Leveling	The leveling of fields and aligning of beds to slopes no greater than 1% and ideally to a slope of 0.2%. Field leveling increases infiltration and reduces runoff. The practice can involve extensive earth moving and use of precision earth moving equipment, which may be costly.	NRCS Practice: Irrigation Land Leveling #464
Irrigation Efficiency	High distribution uniformity, drip irrigation when feasible, and use of water management tools (soil moisture analysis, plant water requirements, and evapotranspiration rates). Efficient water use and distribution minimizes the movement of sediment and pesticides in runoff.	NRCS Practice: Irrigation Water Management #449 and Irrigation System Microirrigation #441
PAM (Anionic Polyacrylamide)	PAM is an irrigation water additive that keeps surface soil particles from detaching and flocculates soil particles in runoff. PAM increases infiltration and greatly reduces erosion. There are some environmental concerns with aquatic toxicity from cationic PAM formulations. However, there are no problems associated with using anionic PAM. PAM requires specialized equipment to apply. Although the initial irrigation treatment set up is costly, the ongoing application costs are relatively low. Drainage runoff treatment systems are less expensive.	NRCS Practice: Anionic Polyacrylamide (PAM) #450 UC Extension guide to using PAM

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Collect Water and Sediment in Head Ditches	Use drainage ditches at the end of agricultural fields to collect excess irrigation run-off and sediment.	NRCS Practice: Surface Drainage Ditch #607 and # 608
Cover Crops	Non-crop vegetation planted in fields to increases infiltration, reduces run-off and provides organic matter. Cover crops can be planted over entire fallow fields or planted in furrows between beds. Vegetation residues from cover crops must be tilled in prior to planting and may delay spring planting. Lower residue cover crops have been studied by UC Extension to address this issue and found to be very effective.	NRCS Practice: Cover Crop # 340 UC Extension cover crop study: Practices to Increase Groundwater Recharge in the Salinas Valley
Sediment Ponds and Basins	Sediment basins are earthen basins at the lower ends of fields or drainage channels to detain run-off and trap sediments. Sediment basins reduce runoff and sediment leaving properties. They can take up farmable land and cause pollutants such as nitrate to leach to groundwater.	NRCS Practice: Water and Sediment Control Basin #638
Vegetative Treatment Systems (VTS)	Drainage ditch treatment systems comprised of a sediment settling basin section of ditch for removing large grain sediment followed by a vegetative section for removing fine sediments. DPR funded a study by UC Davis of VTS in the watershed and the results indicate that the systems are very effective in reducing sediment loading and pyrethroid concentrations. The planting of vegetation near fields is a food safety concern for growers.	DPR Study: 09-C0079
Vegetative Buffer Strip	Conservation buffers are small strips of permanent vegetation between agricultural fields and off-site areas. Buffers intercept off-site flows trapping sediment and pesticides. Conservation buffers are an USEPA pyrethroid pesticide label requirement. Conservation buffers can remove land from agricultural production and vegetation can be a host for wildlife and a food safety concern.	USDA Publication: Conservation Buffers to Reduce Pesticide Losses
Vegetated Ditches	Vegetation in ditches between fields and manmade channels can adsorb pesticides and retains sediment. Studies have found that vegetative ditches can mitigate pyrethroid runoff from fields.	NRCS Practice: Channel Vegetation #322 USDA Drainage Ditch Research

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	Vegetation in channels reduces flow and can pose a risk for flooding. Ditches require maintenance to control vegetation and remove sediment. Vegetation can harbor wildlife, which is a food safety concern.	USDA Drainage Ditch Researcher Matt Moore
Constructed or Restored Wetlands	Constructed wetlands are effective in removing pyrethroid pesticides in run-off. A DPR study found that treatment wetlands on average reduced total pyrethroid sediment concentration by 64%. In addition to mitigating pyrethroids, studies also show that wetlands mitigate herbicides and nutrients. Construction of new wetlands could be expensive to build and maintain. Constructed wetlands could also take farmland out of production. Wetland vegetation can harbor wildlife, which is a food safety concerns.	DPR Monitoring Study: A Tale of Two Wetlands: Using Constructed Wetlands to Mitigate Pesticides in Urban Runoff
Woodchip Nitrate Bioreactor Treatment Systems	Bioreactor systems are large wood chip beds for treating run-off. They are primarily intended to remove nitrate from runoff but could also remove pesticides that adsorbed to wood chips.	DPR Monitoring Study 314: Pesticide mitigation through a woodchip bioreactor at Jim May Park, Santa Maria CA
Integrated Pest Management (IPM)	IPM is an ecosystem based management strategy used to address pest problems while minimizing risks to people and the environment.	NRCS Practice: Integrated Pest Management #595 UC IPM: Statewide Integrated Pest Management Program

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Discontinue Using Pesticide	To achieve the water quality goals, dischargers could discontinue using pesticides and use alternative materials. Dischargers could discontinue use voluntarily or to meet pesticide or water quality regulations.	USEPA diazinon regulations are an example. USEPA canceled all residential use of diazinon in 2004. USEPA had recently considered canceling uses of chlorpyrifos and diazinon but did not. USEPA: Diazinon cancelation factsheet Another example is the Water Board's Ag. Order that requires extensive monitoring for some diazinon and chlorpyrifos use.