ATTACHMENT A – AVAILABLE MANAGEMENT PRACTICES

The following tables contain Management Practices (MPs) Responsible Parties may use to address potential water quality impacts caused by sediments, nutrients, and pesticides in agricultural discharges.

Table 1: Sediment Management Practices
Tailwater Ditch Checks or Check Dams: Tailwater Ditch Checks are temporary or permanent dams to hold back water that are placed at intervals in tailwater ditches, especially those with steeper slopes. They increase the cross-section of the stream, decrease water velocity, and reduce erosion, allowing suspended sediment to settle out. Tailwater Ditch Checks may be constructed of plastic, concrete, fiber, metal, or other suitable material. If plastic sheets are used, care must be taken to ensure plastic is not dislodged and carried downstream. To be effective, this MP should be used where water velocity will not wash out check dams, or slopes of the tailwater ditch at dams.
Field to Tailditch Transition: This practice controls flow from the field into the tailwater ditch through spillways or pipes, without eroding soil. Spillways may be constructed of plastic, concrete, metal, or other suitable material. If plastic sheets are used, care must be taken to ensure plastic is not dislodged and carried downstream. This practice may be useful on fields irrigated in border strips and furrows.
Furrow Dikes (C-Taps): Furrow dikes are small dikes constructed in furrows that manage water velocity. They may be constructed of earth with an attachment to tillage equipment, pre-manufactured "C-Taps," or other material, such as rolled fiber mat, plastic, etc. According to Jones & Stokes (Jones & Stokes Associates 1996), this MP should reduce sediment transport at relatively low cost.
Filter Strips: This practice eliminates borders on the last 20 to 200 feet of the field. The planted crop is maintained to the end of the field, and tailwater from upper lands is used to irrigate the crop at the ends of adjacent lower lands. The main slope on the field's lower end should be no greater than that on the balance of the field. A reduced slope may be better. With no tailwater ditch, very little erosion occurs as water slowly moves across a wide area of the field to the tailwater box. Sediment may settle as the crop baffles the water as it moves across the field.
Irrigation Water Management: This practice determines and controls irrigation rate, amount, and timing. Effective implementation minimizes erosion and subsequent sediment transport into receiving waters. Irrigation management methods include: surge irrigation, tailwater cutback, irrigation scheduling, and runoff reduction. Irrigation management may include an additional irrigator to better monitor and manage irrigation and potential erosion.
Irrigation Land Leveling: This practice involves maintaining or adjusting field slope to avoid excessive slopes or low spots at the tail end of the field. Maintaining a reduced main or cross slope facilitates uniform distribution of irrigation water, reducing salt build-up in soil, increased production, reduced tailwater, and decreased erosion. Jones & Stokes (Jones & Stokes Associates 1996) rate the sediment reduction efficiency of this MP at 10% to 50%, with a medium to high cost.
Sprinkler Irrigation: Sprinkler irrigation involves water distribution by means of sprinklers or spray nozzles. The objective is to irrigate efficiently and uniformly to

Table 1: Sediment Management Practices
maintain adequate soil moisture for optimum plant growth, without excessive water loss, erosion, or reduced water quality. According to Jones & Stokes (Jones & Stokes Associates 1996) this MP has a positive sediment transport reduction effect (sediment reduction efficiency of 25% to 35% if used during germination, and 90% to 95% for established crops), and a relatively high cost.
Drip Irrigation: Drip irrigation consists of a network of pipes and emitters that apply water to the soil surface or subsurface, in the form of spray or small stream.
Channel Vegetation/Grassed Waterway: This practice involves establishing and maintaining adequate plant cover on channel banks to stabilize banks and adjacent areas, and to establish maximum side slopes. This practice reduces erosion and sedimentation, and the potential for bank failure.
Dainage channels : For this practice irrigation drainage channels are constructed with flat slopes so water velocities are non-erosive, and water quality degradation due to suspended sediment prevented.

Table 2: Nutrient Management Practices
Nutrient and Irrigation Water Management Plan (NIWMP): This plan documents practices and strategies to address natural resource concerns due to excess nutrients. An NIWMP provides procedures used to select and apply crop nutrients (manure and commercial fertilizers) and water, to cropland and pastures. Processes to determine the amount of manure and commercial fertilizer needed for crops is included and a description of when and how nutrients and irrigation water (including reclaimed treated wastewater) are applied.
Tailwater Ditch Checks or Check Dams: Same as described in Table 1. The checks act as nutrient MPs by reducing and preventing erosion of soil containing nutrients.
Field to Tailditch Transition: Same as described in Table 1. The spillways act as nutrient MPs by reducing and preventing erosion of nutrient-laden soils from the tailwater ditch.
Furrow Dikes (also known as "C-Taps"): Same as described in Table 1. The C-Taps act as nutrient MPs by reducing and preventing erosion of nutrient-laden soils from the tailwater ditch.
Filter Strips: Same as described in Table 1. The filter strips act as nutrient MPs by reducing and preventing erosion of nutrient-laden soils from the tailwater ditch.
Irrigation Water Management: Same as described in Table 1. The objective is to apply irrigation water efficiently and uniformly to maintain adequate soil moisture for optimum plant growth, without causing excessive erosion of nutrient laden soils.
Irrigation Land Leveling: Same as described in Table 1. The objective is to apply irrigation water efficiently and uniformly to maintain adequate soil moisture for optimum plant growth, without causing excessive erosion of nutrient laden soils.
Sprinkler Irrigation: Same as described in Table 1. The objective is to apply irrigation water efficiently and uniformly to maintain adequate soil moisture for optimum plant growth, without causing excessive erosion of nutrient laden soils.

Table 2: Nutrient Management Practices
Drip Irrigation: Same as described in Table 1. The objective is to apply irrigation water efficiently and uniformly to maintain adequate soil moisture for optimum plant growth, without causing excessive erosion of nutrient laden soils.
Reduced Tillage: Same as described in Table 1. This practice eliminates one or more cultivation per crop, minimizing erosion of nutrient laden soils, and sedimentation that may occur in the furrow.
Channel Vegetation/Grassed Waterway: Same as described in Table 1. This practice reduces erosion of nutrient laden soils, and sedimentation.
Drainage channels: Same as described in Table 1. This practice reduces erosion of nutrient laden soils, and sedimentation in the irrigation drainage channels.

Table 3: Pesticide Management Practices
Pesticide Training and Certification: Obtain appropriate certification (through training), prior to pesticide use. Use a Qualified Pest Control Advisor to make recommendations.
Pesticide Recording Keeping: Requires maintaining a precise pest and pesticide record, and reading pesticide labels before purchase, use, or disposal; following label directions as required by law, and checking for groundwater advisories, or other water protection guidelines, so pesticide handling and application practices are known, and water quality impacts prevented.
Evaluate the Pesticide: Select pesticides less likely to leach to groundwater. Avoid pesticides that are highly water soluble, persistent, and do not adsorb to soil. The UC Extension Service and the Natural Resources Conservation Service are available to assist the public in selecting the appropriate pesticide.
Pesticide Selection: Select the least toxic and less persistent pesticide when feasible
Site-specific Pesticide: Avoid overuse of preventive pesticide treatments. Base pesticide application on site-specific pest scouting, and economic return indicators.
Integrated Pest Management: Integrated pest management (IPM) utilizes all means of pest control (chemical and nonchemical) in a compatible fashion to reduce crop loss. Pesticides are the last line of defense, and used only when pests cause sufficient damage to offset the expense of application.
Prevent backsiphoning and spills: Never allow a hose used to fill a spray tank to extend below the level of the water in the tank. Always haul water to the field to fill spray tanks, and mix and dilute pesticides. Contain pesticide spills as quickly as possible, and handle according to label directions. Use anti-siphon devices (inexpensive and effective) at water line.
Consider weather and irrigation plans: Never start pesticide applications if a weather event (rainfall for instance) is forecast that could cause drift or soil runoff at the application site. Application just before rainfall or irrigation may result in reduced efficacy if the pesticide is washed off the target crop, resulting in the need to reapply the pesticide.
Pesticide use: Use pesticides only when economic thresholds are reached, and purchase only what is needed

Table 3: Pesticide Management Practices
Leave buffer zones around sensitive areas: Read the pesticide label for guidance on required buffer zones around surface waters, buildings, wetlands, wildlife habitats, and other sensitive areas where applications are prohibited.
Reduce off-target drift: Never begin an application if wind or temperature facilitates pesticide drift to a non-target area. Use appropriate spray pressure and nozzle selection to minimize drift.
Application equipment: Maintain application equipment in good working order, and calibrate regularly.
Pesticide use and storage: Store pesticides on farm for a short time, and in a locked weather-tight enclosure downstream and a reasonable distance (greater than 100 ft) from wells or surface waters. Use appropriate protective equipment and clothing according to label instructions.
Dispose of pesticide and chemical wastes safely: Use pesticides and other agricultural chemicals only when necessary. Transport water to field in a nurse tank to mix and measure on site. Prepare only what is needed. Dispose of excess chemicals and containers according to label directions.