Background

A major goal of agricultural watershed working groups is to promote field scale water quality monitoring and management practice tracking. This FACT sheet provides information on important water quality elements to monitor, useful equipment, local water analysis laboratories, and other resources that may be helpful for starting a self-monitoring program.

The primary pollutants of concern affecting water quality that may be associated with agricultural production include nutrients, sediment, salts, and pesticides. Monitoring irrigation and tail water can provide water quality data for tracking the success of good management practices while also identifying problematic areas. Voluntary monitoring illustrates the responsibility and dedication of the agricultural community to the environment.

Recommended Water Quality Criteria

Total Phosphorus* (µg/L)	**21.88**
Total Nitrogen* (mg/L)	**.38**
Turbidity* (NTU)	**1.43**
pH**	**7.0 to 8.5**
Dissolved Oxygen** (mg/L)	**5.0**
Fecal Coliform** (MPN/100mL)	**400**

* EPA: Ecoregion III-Rivers & Streams (December 2000)

**SWRCB Basin Plan (September 1994)

For additional information on monitoring or for technical assistance, please contact:

Resource Conservation District of Monterey County / Salinas Natural Resource Conservation Service
744 La Guardia Street
Salinas, CA 93905
(831) 424-1036

Monterey County Farm Bureau
PO Box 1449
Salinas, CA 93902
(831) 455-2600

Irrigation and Tail Water Monitoring

Chualar Creek Pilot Project
FACT Sheet

A resource guide for agricultural producers in Monterey County

By the Monterey County Farm Bureau and the Resource Conservation District of Monterey County

Important Water Quality Parameters to Measure

- **Nitrogen & Phosphorus:** Although nitrogen is naturally present in aquatic ecosystems, high levels can lead to eutrophication (increased aquatic plant growth) and toxicity for aquatic organisms**.** Eutrophication can decrease oxygen levels, increase turbidity, alter temperature, and decrease biological diversity. Detecting the levels of nitrogen and phosphorus that may already exist in irrigation water and soil may help to reduce fertilizer usage. Nitrate, ammonia, and phospate levels can be easily determined using test strips or colorimetric tests kits.

- **Sediment:** High suspended sediment levels can clog waterways, alter flow patterns, and adversely affect aquatic organisms. Sediment levels can be easily measured using a turbidity meter, Imhoff sediment cones, or a secchi disc.

- **Pesticides:** Monitoring irrigation and tail water for pesticides can help to track the movement and degradation of these substances. Two pesticides of concern in the Salinas Valley are chlorpyrifos and diazinon. Detection of pesticides is a more difficult procedure and requires laboratory analysis.

- **Bacteria:** A primary indicator of fecal contamination in water sources is the presence of coliform bacteria. Test kits are available to determine presence/absence of fecal coliforms including e-coli. Laboratory analysis is suggested for determining numeric levels of coliform.

- **Salts:** Accumulation of salts in water and soil can be damaging to freshwater aquatic plants and agricultural crops. The amount of salts in soil and water can be determined using test strips and/or conductivity meters.

- **pH & Temperature:** pHis a measurement of hydrogen ion concentration ranging from 1(acidic) to 14 (basic). High pH and temperature levels alter the chemistry of the water and can be damaging to aquatic life. pH probes and/ or litmus paper can be used to determine values in soil and water.

- **Flow:** In order to determine the total amount of nutrients or other water quality constituents that are present in irrigation or tail water, you must first determine the flow. Several methods exists for measuring flow: 1) cross-sectional discharge with flow probe 2) volumetric flow per time using a bucket and a stopwatch 3) surface velocity using a floatable object (i.e. orange peel), a measuring stick, and a stopwatch.

Suggested Monitoring Locations

- Wells
- Upstream and downstream of property if land is adjacent to a stream or ditch
- Above and below management practice areas or test plots
- Any location where water exits property

Tail water discharge being measured using bucket method.

Local Water Analysis Laboratories

A&B Laboratories
(831) 664-9078

Creek Environmental Laboratory
(805) 545-0107

BC Laboratories
(661) 327-4911

Monterey Bay Analytical Services
(831) 659-7538

Bolsa Analytical
(831) 637-9776

Monterey County Laboratory
(831) 755-4516

CM Analytical, Inc.
(408) 848-3619

Soil Control Lab
(831) 724-3188

Test Kit & Equipment Suppliers

Hach Co.
www.hach.com
(800) 227-4224

Frey Scientific
www.freyscientific.com
(800) 225-frey

LaMotte
www.lamotte.com
(800) 344-3100

Ben Meadows Co.
www.benmeadows.com
(800) 241-6401

VWR
www.vwrsp.com
(800) 932-5000

Forestry Suppliers, Inc.
www.forestry-suppliers.com
(800) 647-5368

Earth Force
www.earthforce.org
(703) 519-6877

Micrology Laboratories
www.micrologylabs.com
(888) easy-gel

Equipment kits are also available for participants in the Monterey County Farm Bureau Agricultural Water Quality Program's watershed working groups. For additional information please contact the MCFBAWQP coordinator (831)455-2600.