

FINAL REPORT
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Fertilizer Research & Education Program
Grant Contract #: 00-0071

Project Title:

On-Farm Monitoring and Management Practice Tracking for Central Coast Watershed Working Groups

Project Leader:

Kelly Huff, Program Coordinator
Coalition of Central Coast County Farm Bureaus
PO Box 1852, Capitola CA 95010
ph/fax: (831) 477-0272
khuff@surfnetusa.com

Statement of Objective:

Agriculture is listed as a source for contributing several forms of nonpoint source pollution to impaired waterbodies and groundwater aquifers on the Central Coast by the Regional Water Quality Control Boards (RWQCB). The RWQCBs have begun developing total maximum daily loads (TMDL) for sediment and nutrients in priority watersheds and will continue over the next several years. Growers are looking for practical methods of assessing their individual management practices relative to water quality and tracking their improvements over time, in response to the opportunity to comply voluntarily with TMDLs. Research projects performed by local water authorities, universities, and natural resources agencies have identified useful self-monitoring techniques, necessary equipment, and data collection methods that producers can utilize to respond proactively to concerns over NPS pollution. There was a need to organize the existing information on self-monitoring techniques, train Farm Bureau Coordinators who conduct individual field visits on those techniques, and purchase equipment that farmers and ranchers can use for self-assessments.

1. Gather existing information on tool kits, self-monitoring/tracking methods, and necessary equipment available to producers related to nitrates and sedimentation. Provide needs assessment from producers to research/technical assistance organizations.
2. Purchase self-monitoring equipment to be housed at County Farm Bureau Offices for use by watershed working group participants on pilot projects and during UCCE short courses. Train Farm Bureau county program coordinators on methods of tracking management measures and monitoring equipment (use & QA/QC)
3. Coordinate watershed working group on-farm field sessions to train participants in use of monitoring tools and tracking methods
4. Promote educational activities surrounding nutrient management developed by local technical assistance agencies and consultants

Executive Summary:

The Coalition of Central Coast County Farm Bureaus (CCCCFB) organized available information regarding agricultural management practices and self-monitoring tools related to water quality into a manual. The manual contains detailed descriptions of monitoring techniques, which contain more detail than necessary for use by individual farmers and ranchers. The manual is used by Farm Bureau Water Quality Program Coordinators who are training individual farmers and ranchers on the techniques during CCCCCFB industry-led watershed working group activities. USDA Natural Resources Conservation Service (NRCS) developed a summarized version of the manual contents for use by individual producers. CCCCCFB is utilizing existing industry networks to establish local watershed working groups. Watershed working group participants are trained in methods of self-monitoring and tracking of management practices during UCCE shortcourses and during individual site visits conducted by Farm Bureau Program Coordinators. Monitoring equipment is housed with Farm Bureau Program Coordinators and available for participants to perform self-assessments to guide management practices, with assistance from the Coordinators and technical assistance agency representatives. CCCCCFB coordinated with representatives from local Resource Conservation Districts (RCD), water authorities, USDA NRCS, and University of California Cooperative Extension (UCCE) for technical assistance to train Farm Bureau Program Coordinators on monitoring techniques and proper use of equipment.

Introduction:

Although agriculture is considered a significant contributor to nonpoint source water pollution, the mechanics and details of which practices are most effective as solutions is not well understood. The agricultural industry has committed to organizing agricultural watershed working groups to voluntarily address water quality protection. Tracking the progress of these groups requires three levels of monitoring; long term in-stream monitoring, research on the effectiveness of specific practices, and recording on-farm improvements and efforts. Farmers from the six County Farm Bureaus were anxious for tools to conduct the latter. Various techniques were being promoted by technical assistance agency representatives in the six county area. There was a need to gather all of the existing information and make it and the necessary equipment available to farmers on the Central Coast. The detailed information on monitoring and tracking techniques was organized into a manual for the purposes of training Farm Bureau water quality program coordinators and helping them to decide the most appropriate equipment to purchase for their respective counties. The manual and training has been utilized by technical assistance agency representatives as well. Terry Hall, USDA NRCS water quality expert for the six counties developed simplified how-to sheets on the same techniques for use by the farmers. The how-to sheets are now being distributed in the UCCE Farm Water Quality Planning Shortcourses and during site visits by Farm Bureau coordinators and technical assistance representatives.

Work Description:

Task 1: Development of Reference Packet and Feedback Loop

The purpose of this task was to compile existing information regarding monitoring and tracking sediment and nutrient movement off agricultural land and related management practices as well as to communicate missing information that producers feel is necessary to reduce non point source pollution.

Subtask 1.1: Develop Monitoring/Tracking section for watershed-working group How-To Manual that includes on-farm monitoring and tracking tools (use and availability) and methods related to nutrients and sediments by crop. It also lists contacts for on-site technical assistance.

Subtask 1.2: Review of "Monitoring/Tracking of Sediment & Nutrients" section and feedback on additional needs by industry.

Subtask 1.3: Set up feedback loop between Farm Bureau Water Quality Program and research / technical assistance agencies.

Task 2: Obtain Monitoring /Tracking equipment and record-keeping tools for FB offices

The purpose of this task was to assist watershed working group and FWQP short course participants in monitoring and tracking management practice effectiveness and improvements. The goal was to enable individual producers to monitor the effectiveness of water quality protection measures, adapt the measures to reduce non point source contributions to waterways, and track improvements to show progress.

Subtask 2.1: Purchase equipment for each County Farm Bureau Agricultural Water Quality Program.

Subtask 2.2: Coordinate training by technical experts on monitoring and tracking techniques and quality assurance/quality control for County Farm Bureau Program Coordinators.

Task 3: Trainings for watershed group and short course participants

The purpose of this task was to utilize the structure and participation in watershed working groups and FWQP short courses to train individual farmers and ranchers on methods and tools for tracking and monitoring effectiveness of management practices.

Subtask 3.1: Conduct at least twelve watershed working group field demonstrations or FWQP monitoring sessions.

Task 4: Promote educational activities surrounding nutrient management

The purpose of this task was to take advantage of the six county regional network of watershed groups for promotion of existing training workshops, avoiding duplication.

Subtask 4.1: The watershed working groups participants and individual farmers and ranchers were encouraged to participate in farm water quality assessments, the FWQP short course, and in workshops and trainings that address nonpoint source pollution control.

Subtask 4.2: Include announcements in local FB newsletter articles, announce at watershed working group meetings.

Results, Discussion and Conclusion:

Under **Subtask 1.1 and 1.2** the Coalition Program Coordinator organized the Monitoring & Tracking Manual with materials and review from technical assistance agency representatives from around the state. The original intent was to make the manual available to individual growers. Farmers from the Coalition Coordinating Committee reviewed the list of techniques and made suggestions for additions. Self assessment techniques for pesticides and other pollutants in addition to nutrients and sediment were requested. Technical assistance representatives reviewed the list of techniques as well as specific techniques where they had expertise. The level of detail included in the manual ended up as being more appropriate for the Farm Bureau coordinators and technical assistance agency representatives who will be working one on one with the growers. Terry Hall, USDA NRCS water quality specialist developed less detailed, more user-friendly instructions on the techniques for use in the shortcourses and by the individual growers.

The purpose of **Subtask 1.3** was to provide a feedback loop from agricultural producers to technical assistance folks, regarding which tools will be the most helpful in protecting water quality. Originally this was to be accomplished through a report developed by the project leader and distributed to technical assistance representatives. We modified this task to setting up a continuous feedback loop as opposed to a one-time report. With several new technical assistance staff hired specifically to assist efforts like the Coalition's and County Farm Bureau Agricultural Water Quality Program Coordinators (County Coordinators) being hired, there is ample opportunity for an effective feedback loop. The County Coordinators will be developing annual watershed working group reports for the Regional Board that outline existing water quality protection practices in the watershed, commitments for future practices, and considerations (obstacles, necessary information/tools) for improvements. Copies of these reports will be distributed to technical assistance representatives as part of the feedback loop. Each County Farm Bureau Agricultural Water Quality Coordinating Committee also has technical assistance representatives

as advisory members, which will serve as a mechanism for communicating the needs of the watershed working group participants. Additionally, the County Coordinators are meeting as a group with the technical assistance representatives on a quarterly basis.

The County Coordinators requested that we conduct the training on the monitoring and tracking techniques prior to them purchasing equipment to help them decide which equipment was most appropriate for their respective counties. The training under **Subtask 2.2** was held in Salinas on February 20, 2002 from 9:00am to 4:00pm and was attended by both Farm Bureau County Coordinators and Resource Conservation District watershed coordinators (see attached agenda and materials).

Subtask 2.1 was postponed until the County Coordinators were hired and trained. The equipment for each county was purchased by the end of March 2002 (see attached list of equipment). Equipment that was not able to be purchased at the county level and can be shared was purchased by the Coalition Program Coordinator and will be provided to each of the County Programs on an as needed basis. Record keeping equipment including topographic mapping programs, digital cameras, and GPS units were purchased by several of the counties to assist growers with components of their farm water quality plans and tracking implementation of practices at the watershed level.

In San Luis Obispo County water quality monitoring kits were purchased (using both FREP and matching funds from a county grant) for each of the Los Osos / Chorro Creek watershed working group participants and were distributed during the shortcourse with training. FREP funds were also used to purchase automatic stormwater samplers that will allow one watershed working group per winter to evaluate sediment and nutrient levels coming off of farms and ranches during storm events.

In Monterey County four equipment kits were developed using both FREP and matching funds from a Harden Foundation grant. The kits are available to each watershed working group participant once per month to conduct water quality testing / self monitoring on their property. Each grower is trained by Julie Hager, water quality monitoring coordinator for Monterey County Farm Bureau.

In Santa Cruz, Santa Clara / San Benito, and San Mateo Counties the funds were used to purchase sufficient equipment to test turbidity, total dissolved solids, pH, electroconductivity, temperature, nitrates, phosphates, ammonia, dissolved oxygen, and flow. The equipment is housed with County Coordinators and will be made available to agricultural producers and agricultural landowners on a library lending system. Instructions and demonstrations of the equipment will be provided by the respective County Coordinators and other technical assistance partners upon request.

Under **Task 3.1** more than twelve watershed working group and individual farm field demonstrations of self-monitoring techniques have been completed (see list of outreach activities) and twenty-four Farm Water Quality Planning shortcourses and individual site visits by County Coordinators will continue to be offered to watershed working group participants in the six county area over the next two years.

The promotion of existing training workshops under **Subtasks 4.1 & 4.2** was completed by the Coalition Coordinator broadcasting emails to Coalition Committee members, inserts into County Farm Bureau newsletters, posting events to Strauss Communications, media relations consultant for overall Sanctuary Ag Plan effort, and announcements at Coalition Committee quarterly meetings, watershed working group meetings, and during site visits. Events that were promoted included an annual Ag Expo in Watsonville by Winners Circle Consulting, Monterey County Water Resources Agency Nutrient Management Symposium, Santa Clara Valley Water District Ag Conference and Trade Show, Community Alliance with Family Farmers field days, etc.

The Monterey Resource Conservation District had a delay in funding for their mobile lab irrigation evaluations. When they are available, County Coordinators will encourage watershed working group members to participate. Participation in educational events and trainings was tracked in the pilot annual watershed report for Chualar Creek watershed working group and will be included in reports for all watershed working groups.

Conclusions:

Although this project's activities amount to a very small part of a larger effort to monitor the effectiveness of a voluntary approach to protecting water quality, it provided the tools to focus technical assistance around immediate needs of farmers and ranchers who have chosen to be proactive. One of the premises behind the Coalition Program is that each watershed and indeed each farm or ranch are unique. The various equipment purchases and distribution systems between the six county programs reflects a variety of needs dependent on the participating farmers and ranchers. The initial idea that we could put together a master list of equipment at the regional level that could be purchased at each of the six counties was not practical. As the equipment that was purchased through this grant is tried and tested, further revisions to the equipment needs at each county will occur. There is an impressive amount of technical assistance resources being devoted to refining self-monitoring techniques for Central Coast farmers, so this project provided a base to build on as opposed to a finished final product. Programs similar to the Coalition's around the state are requesting the information collected during this project and it will have to be adapted to their conditions.

Project Evaluation:

We found that much of the equipment use, even for low-tech monitoring, is time consuming and somewhat complicated. As a result we are budgeting for additional staff, either Farm Bureau or technical assistance agency, devoted to assisting individual farmers and ranchers in setting up their monitoring programs or conducting the monitoring themselves. The Farm Water Quality Planning shortcourses are effective means of outreach for monitoring techniques because the regulatory climate, science behind nonpoint source pollution from agriculture, appropriate practices, and specific local issues are all covered prior to the self-monitoring training. In addition the courses are being taught to already organized watershed working groups which allows the training to be focused on relevant water quality issues. The most effective outreach method was the individual training requested by a grower for his six foremen, so that the monitoring gets incorporated into other regularly scheduled on-farm activities.

Outreach Activities Summary:

Outreach for the following activities was conducted by Farm Bureau coordinators and the monitoring training was conducted by various experts and technical assistance agency representatives. The following activities are in addition to individual site visits, with each watershed working group participant, being conducted by Farm Bureau Coordinators.

January 17, 22, 24, 29, 31, 2001

"Farm Water Quality Planning Shortcourse", for Chualar Creek watershed working group participants, Salinas CA; 20 attendees representing 13 operations.

February 26, 28, and March 5, 7, 12, 2001

"Farm Water Quality Planning Shortcourse", for Los Osos / Chorro Creek watershed working group participants, San Luis Obispo CA; 13 attendees representing 11 operations.

March 29, April 5, 12, 19, 2001

"Ranch Water Quality Planning Shortcourse" for ranchers in Estrella River watershed prior to formation of the Estrella River Watershed Working Group, Estrella CA; 5 ranches represented.

April 10, 17, 24 & May 1, 2001

"Ranch Water Quality Planning Shortcourse" for ranchers San Benito County-wide, Hollister CA; 14 ranches represented.

April 30, 2001

Individual on-farm monitoring program training for 6 ranch foreman of large Salinas Valley vegetable producer, Chualar Creek watershed working group participant; Salinas CA

June 7, 14, 21, 28, 2001

"Farm Water Quality Planning Shortcourse", for Pescadero / Butano & Pilarcitos Creek watershed working group participants, Half Moon Bay CA; 31 attendees representing 24 operations.

August 30, 2001

"Irrigation & Water Monitoring Field Day" for Chualar Creek watershed working group participants, Salinas CA; 4 grower participants

January 15, 22, 29 & February 5, 2002

"Farm Water Quality Planning Shortcourse", for San Benito County-wide, Hollister CA; 16 grower participants