Bear Creek Subbasin Agricultural Water Quality Management Area Plan 2004-2005 Revisions

Developed by the

Bear Creek
Local Advisory Committee

and

OREGON DEPARTMENT OF AGRICULTURE
with assistance from
JACKSON SOIL AND WATER CONSERVATION DISTRICT

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ACRONYMS and ABBREVIATIONS

AgWQMAP	Agricultural Water Quality Management Area Plan
Area Plan	Bear Creek Subbasin Agricultural Water Quality Management Area Plan
Area Rules	Oregon Administrative Rules 603-095-0200 through 603-095-0260
BMPs	Best Management Practices
CAFO	Confined Animal Feeding Operation
DEQ	Department of Environmental Quality
LAC	Local Advisory Committee
LMA	Local Management Area
NRCS	Natural Resources Conservation Service
ODA	Oregon Department of Agriculture
POC	Plan of Correction
SWCD	Soil and Water Conservation District
TID	Talent Irrigation District
VWQFP	Voluntary Water Quality Farm Plan

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FOREWORD and APPLICABILITY

This Agricultural Water Quality Management Area Plan (AgWQMAP) provides guidance for addressing agricultural water quality issues in the Bear Creek Agricultural Water Quality Management Area (Management Area). The purpose of this Area Plan is to identify strategies to reduce water pollution from agricultural lands through a combination of educational programs, suggested land treatments, management activities, and monitoring. The provisions of this Area Plan do not, by themselves, establish legal requirements or prohibitions. The Oregon Department of Agriculture (ODA) will exercise its enforcement authority for the prevention and control of water pollution from agricultural activities under administrative rules for Bear Creek and Oregon Administrative Rules (OAR) 603-090-0120 through 603-090-0180.

The administrative rules for the Bear Creek subbasin set forth the requirements and/or prohibitions that will be used by ODA in exercising its enforcement authority for the prevention and control of water pollution from agricultural activities. In addition, OARs 603-090-060 through 603-090-0120 describe the enforcement actions that may be triggered upon the finding of a violation by ODA.

Furthermore, the 2001 Oregon legislature adopted Senate Bill 51 that clarifies the enforceability of AgWQMAP rules and not the plan language. This has always been the policy and direction of the ODA but it has been codified in response to public appeal.

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I. INTRODUCTION

In July 1989 the Oregon Environmental Quality Commission declared the beneficial uses of the waters of Bear Creek to be limited under the terms of the federal Water Pollution Control Act (33 USC §1313), and set interim total maximum daily loads and instream criteria for several pollutants, including total phosphorus. Senate Bill 1010 (Oregon Revised Statutes 568.900-568.933), initiated by the agriculture industry, passed by the 67th Oregon Legislature and signed by the Governor in July 1993, authorized the ODA to develop and carry out plans to prevent and control water pollution resulting from agricultural activities and soil erosion for water bodies listed under section 303(d) of the federal Clean Water Act, including Bear Creek. Oregon's Department of Environmental Quality (DEQ) updates their "water quality limited" or 303(d) list every two to four years.

In July 1995, Bruce Andrews, the director of ODA, appointed the Bear Creek Local Advisory Committee (LAC), and charged it to work with ODA to prepare a Bear Creek Subbasin AgWQMAP. The original plan document, the Bear Creek Subbasin AgWQMAP, was completed in 1997. That original plan addressed only phosphorus since that was the primary pollutant targeted on the 303(d) list. This second revision (dated 2004) is the result of LAC and Technical Committee meetings held in October and December of 2004 in an effort to address the revised listings from the 2002 303(d) list and upcoming Bear Creek TMDL.

II. MISSION and OBJECTIVES

The mission statement for the Bear Creek AgWQMAP adopted by the LAC is:

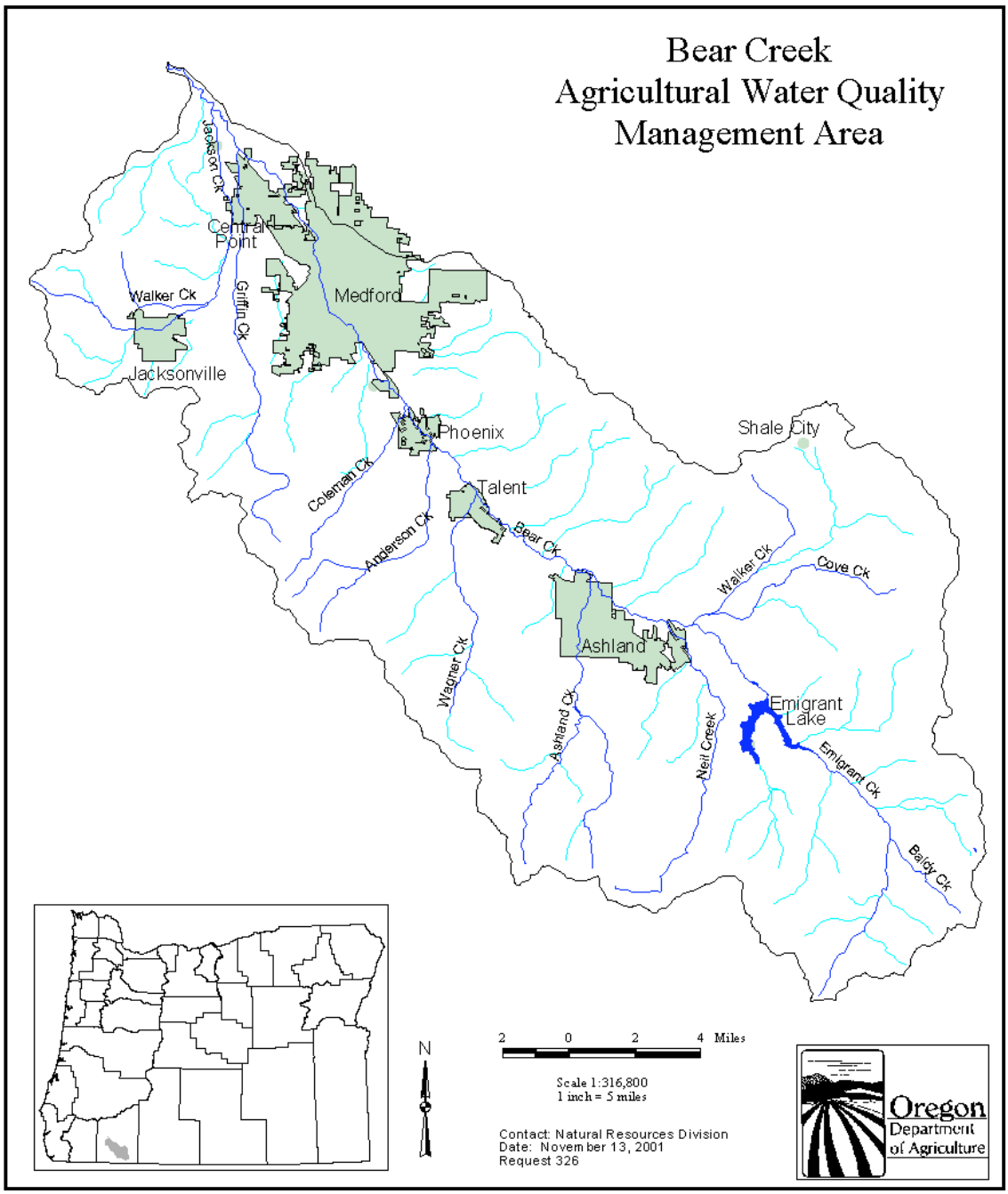
Seek to achieve the water quality standards current as of March 30, 2004, for the Bear Creek subbasin by preventing and controlling water pollution resulting from agricultural activities, given the background pollutant levels documented by monitoring data.

The objectives of the Bear Creek AgWQMAP are to:

- Create a high level of awareness of water quality issues and problems among farmers in the watershed;
- Promote practices that limit the movement of pollutants from agricultural lands into Bear Creek;
- Promote practices that stabilize stream-banks;
- Promote practices that reduce sedimentation of streams due to soil erosion;
- Seek to control water pollution as close to its source as possible; and
- Seek funding necessary to achieve the mission statement.

III. GEOGRAPHIC AREA and SCOPE

The Bear Creek subbasin is located near Medford, Oregon, and is entirely within Jackson County. The watershed area covered by this plan is concurrent with the geographic boundaries for which the DEQ has set total maximum daily loads. For clarification, the geographic area covered by the Bear Creek Plan does not include the Whetstone Creek or Upton Creek drainage areas north and east of Central Point and Bear Creek. Those areas are covered under the Inland Rogue Agricultural Water Quality Management Plan and Rules (OAR 603-095-1400 through 603-095-1440).



Agricultural or farm-related activities, both commercial and noncommercial, including livestock stables and pastures, both inside and outside municipal boundaries are addressed in this plan. This plan will be implemented for all agricultural lands under the jurisdiction of another designated management agency through Memoranda of Agreement between the ODA and the appropriate designated management agency.

The following conditions and activities that occur on rural lands in the Bear Creek watershed are addressed by other regulatory agencies, thus, will not be addressed by this plan:

- Activities subject to the Oregon Forest Practices Act;
- Nonagricultural activities inside and outside municipal boundaries, including road, bridge, and ditch maintenance & construction practices;
- Sewer and septic systems relating to human habitation;
- Design and site of housing and home sites in rural areas;
- Golf courses;
- Activities of quasi-governmental organizations;
- All other nonagricultural practices and activities.

The handling, storage, application, and disposal of animal waste from permitted CAFOs are regulated under their own state and federal regulations. Currently there is only one permitted operation in the entire Bear Creek basin. All other animal holding operations and other aspects of CAFOs (e.g. erosion control) come under this area plan and rules.

In 1993, the container nursery industry developed a proactive voluntary approach to water quality issues. This voluntary program is expected to go a long ways toward meeting required conditions identified in this plan and rules.

IV. BACKGROUND

Agricultural History

The Bear Creek Subbasin produces approximately $60 million worth of agricultural products annually, with crops (primarily pears) contributing most of this value. Total gross farm sales have shown a steady increase since 1985 due in part to better commodity prices and increased production.

Nurseryman J.H. Stewart planted the first commercial orchards in the Rogue Valley in 1885. In the years that followed there was a rapid expansion in acreage of pears, apples, cherries, peaches, and prunes. At one time there were four or five prune dryers in the valley. In the 1890s about 300 acres of cherry orchards were planted, mostly in the hills around Ashland. Apple orchard plantings enjoyed a boom in the early 1900s, surpassing pear acreage. The first orchards were put in on dry land, and were later flood irrigated. In 1996, over 80% of the orchards were sprinkle-irrigated. Today that percentage is probably higher.

The number of acres in commercial orchards has declined in recent years, from about 12,000 acres in the 1940s to fewer than 7,500 acres currently. Because of productivity increases, the number of boxes shipped has declined only to about 2.0 million boxes from approximately three million boxes shipped in the 1940s. The Rogue Valley has long set the standard of quality for Bosc and Comice pears. Following the introduction of the red "sports" varieties of winter pears in Medford in the 1950s and 1960s, the valley is now a major producer of these red pears. Today, over 10% of the Northwest's production of pears are grown in the Rogue Valley.

Irrigation in the Bear Creek Drainage

Bear Creek was originally named Stuart Creek, after Captain James Stuart, who died near it in 1851 while fighting Indians. It was later renamed Bear Creek in 1913 when a bear was, supposedly, killed near it. Crop production in the Bear Creek area is economically feasible only because of the

availability of water for irrigation. The growing season rainfall provides only a minor portion of crop water requirements. Most of the irrigation water used in Bear Creek comes from several reservoirs, from both within and outside of the watershed.

The first irrigation water supply for water districts within the watershed was obtained from Bear Creek and its tributaries. The Fish Lake Water Company was organized in 1897 to bring water into the valley from outside the watershed. Water rights were obtained on Little Butte Creek, and in 1906 irrigation water was brought across the agate Desert area to Delta Waters Road, west of Crater Lake Avenue, and across Bear Creek to the Berrydale (Railroad Park) area.

In 1910 the Fish Lake Water Company was bought by the Rogue River Valley Canal Co., and over the next 10 years the system was improved, bringing irrigation water to the Central Point area by 1920. In 1919 the newly formed Medford Irrigation District took over operation of the system and by 1930 the company had constructed the current Medford Irrigation system, constructed the storage dam at Fish Lake to its current height, and constructed the Cascade Canal connecting Four Mile Lake with Fish Lake. In 1929 the Rogue River Valley Irrigation District split from Medford Irrigation District when the group of farmers served by the Hopkins Canal system bought out the financial interests of the original Rogue River Valley Canal Company.

Talent Irrigation District (TID), the uppermost and largest of the three irrigation districts that currently serve the Bear Creek watershed, provides irrigation water for 3,300 clients on 16,400 acres, and manages the releases from Emigrant Reservoir for irrigation purposes. TID was formed in 1916, and constructed Emigrant Reservoir in 1924. The Rogue Basin Project helped enlarge Emigrant Lake with the addition of 30 feet to the height of the dam in the early 1960s.

In 1954, federal legislation authorizing the Talent Division of the Rogue River Basin Project was enacted, which provided for irrigation, flood control, hydroelectric power, and other beneficial purposes in the Bear Creek watershed. The US Bureau of Reclamation designed and helped finance major improvements for all three irrigation districts, including the construction of the Klamath Basin diversion and storage system, power generation facilities, and a new canal system that brought irrigation water to about 5,000 acres of previously dry lands in the TID.

Approximately 5,000 acres in the watershed receive “private” irrigation water rights from natural streamflow from Bear Creek and its tributaries, and these private rights total about 105 cubic feet per second. The three irrigation districts in the watershed also hold water rights to divert natural streamflow from Bear Creek which totals ~100 cubic feet per second for their clients, but these (less senior) rights typically expire by the end of June. In addition, the districts deliver water from storage to nearly 39,000 acres in the watershed. The Rogue River Valley Irrigation District, lowest in the Bear Creek system, serves ~9000 acres, the Medford Irrigation District serves nearly 12,300 acres, and the TID, the uppermost in the system, provides water to 16,400 acres.

Of the 144,000 acre-feet of stored water available for the Bear Creek watershed, approximately 33,000 acre-feet is imported annually from the Klamath River watershed. The vast majority of that volume is diverted during the winter flow season when it would be of no benefit to the late-season flow issues they are currently experiencing. Fourmile, Howard Prairie, and Hyatt lakes store this water, which is delivered during the irrigation season through a system of constructed canals and natural drainages. This water enters Bear Creek watershed at two locations:

- Water from Fish and Fourmile Lakes is delivered to Rogue River Valley and Medford Irrigation Districts’ canals at Bradshaw Drop via Little Butte Creek;
- Water from Howard Prairie and Hyatt Lakes is delivered via the Greensprings Diversion to Emigrant Creek and Reservoir for Talent Irrigation District. MID and RRVID can also receive BOR return flows from these sources.

Water is also diverted from streamflow in the Little Applegate Basin through the McDonald Ditch system to Wagner Creek.

Smaller Rural Landowners

Small acreage landowners (those with five acres or less) make up 80 percent of the irrigation district accounts in the Bear Creek watershed. Many of these small operations may have livestock and/or flood irrigation systems, and without careful management in place, water quality problems can be significant. This can be a particularly challenging group of landowners to reach in terms of education, technical assistance, and demonstration projects to promote water quality protection because:

- The number and diversity of these operations.
- The landowners often have other jobs and responsibilities.
- The time and attention they can devote to farming operations may be limited, and time constraints may reduce accomplishment of such needed practices as timely irrigation, rotating stock between paddocks, spreading manure, building fences, improving drainage problem areas, and other beneficial conservation practices.
- Inability to participate in farm organizations or activities that could be important sources of information and technical assistance.
- Many of the organizations or agencies that have technical or financial assistance may not be known or accessible by these landowners.

Given current population growth, there is every indication that this segment of the community will continue to grow and affect traditionally "rural" areas of the watershed. Clearly, there are significant benefits to those concerned with abatement of water pollution, as well as the community at large, to find new and effective ways of reaching this important segment of landowners with educational, financial, technical, and other forms of assistance. Irrigation district newsletters and billings is one venue that has not been fully explored.

Larger Agricultural Landowners

Large acreage agricultural landowners (more than five acres) make up 20 percent of the irrigation district accounts in the Bear Creek watershed. These operations are generally in orchards, pastures, specialty crops, or livestock production. The number of landowners is relatively small, estimated at approximately 1,300 operations. Many improvements in land and water management have been made over the years, some taken up solely by landowners, and others in partnership with federal, state, and local agencies. **Management is the key to water quality protection.** Without careful management in place, water quality problems can be significant. There are a number of avenues of communication and outreach on water quality issues available for larger agricultural landowners including:

- Participation in USDA programs;
- Direct involvement in irrigation district activities;
- Membership in farm and ranch organizations;
- Membership in marketing organizations; and
- Participation in Oregon State University Extension Service programs.

It is important to capitalize on these avenues of information dissemination, and utilize them to the fullest extent possible to promote land management activities for the improvement of water quality in the watershed.

V. ADMINISTRATIVE ROLES and RESPONSIBILITIES

Procedural Background

Oregon's Environmental Quality Commission has required each designated management agency in the Bear Creek Subbasin to develop strategies to reduce phosphorus inputs from its sources during the period from May 1 to October 31. Under the 1992 TMDL, DMAs in the Bear Creek Subbasin must develop and implement pollution control plans and programs. These plans and programs will provide reasonable assurance that the instream criteria for total phosphorous, ammonia, and biochemical oxygen demand will be met. The Bear Creek Subbasin's designated management agencies include the Oregon Department of Forestry, the ODA, the cities of Ashland, Central Point, Jacksonville, Medford, Phoenix, and Talent, the Bear Creek Valley Sanitary Authority, and Jackson County.

Oregon Administrative Rule 340-041-0385 requires pollution control management plans, and sets limits for instream total phosphorus concentrations. Jurisdictional plans were developed by the DMAs in 1992, and were to be fully implemented by December 31, 1994. The target instream total phosphorus concentration was not achieved by the end of 1994. However, the improvements in water quality in the watershed have been documented. The 2004 Oregon Water Quality index (a single, integrated number expressing the levels of eight water quality parameters) shows a positive and encouraging trend. While overall the period of record states that the Bear Creek water quality is still poor (56 OWQI units), it has the distinction of being the most improved river in the state, of those being analyzed. It improved +16.7 OWQI units in the last four years.

The Oregon DEQ has identified the City of Ashland's sewage treatment plant as a major source of phosphorus and other pollutants to Bear Creek, and has set an individual waste load allocation for it as an NPDES (national pollution discharge elimination system) permit. At its meeting on July 6, 1995, the Environmental Quality Commission required aggressive implementation of water pollution control efforts through the adoption of an *Implementation and Compliance Schedule and Order* for the City of Ashland and the DMAs in the watershed. That work has been completed resulting in a significant reduction in phosphorus inputs. In addition as of May 2003 the City of Ashland treatment plant has been upgraded and the resulting effluent has met the TMDL standard for phosphorus.

Agricultural Water Quality Area Plan Approval Process

Under Oregon law, ODA has lead responsibility for development and implementation of plans to control water pollution from agricultural and rural lands in the Bear Creek subbasin. In July 1995 the ODA appointed the LAC for Bear Creek to assist ODA with development of strategies to address potential sources of agricultural water pollution. The committee began meeting in November 1995 and provided the draft plan from which the ODA developed Oregon Administrative Rules to implement it.

The plan and rules were presented in public information meetings and a public hearing within the Bear Creek subbasin prior to formal adoption by the ODA. Testimony presented at public hearings and during the public comment period was reviewed by ODA staff and the LAC. The recommended final revisions were presented by ODA staff to the State Board of Agriculture and the director of the Department, for their review, prior to adoption in June of 1998.

The Bear Creek LAC conducted a second biennial review of plan implementation progress in open public meetings starting in October 2004. No changes to the plan and rules were recommended based on the 2002 303(d) list. Since there have been no proposed changes to the administrative

rules to implement the plan, as there was in the last review, revisions will only be done to update the plan language.

VI. AGRICULTURAL WATER QUALITY IMPROVEMENT ACTIVITIES

Water quality improvement efforts have been ongoing for many years, with both public and private sector funding utilized. Agricultural operators have installed and practiced water improvement measures by reducing irrigation water runoff, reducing animal waste runoff, preventing and controlling soil erosion, reducing chemical inputs into waterways, and providing improved livestock control. Listed below are some of the organizations and programs that have addressed water quality programs within the Bear Creek watershed during the past several years.

Jackson Soil & Water Conservation District

Formed in 1951, Jackson Soil and Water Conservation District (SWCD) is a political subdivision of state government. The district's major concern is conservation and wise use of renewable natural resources through education, project implementation, and planning. Jackson SWCD assists local landowners, state and federal agencies, the local Rogue Valley Council of Governments, Jackson County, and other districts and agencies. Jackson SWCD also plays a major role in the prioritization of local USDA Natural Resources Conservation Service (NRCS) efforts. The district, through various partnerships, has been instrumental in implementing:

Financial Programs
- Water Quality Grant Programs for Small Farms

Educational Workshops & Seminars
- Irrigation Management Training
- Horses and Mud Workshops
- Small Farm Workshops
- Pasture and Range Tours
- Bear Creek Compliance Tour
- Publication and Distribution of Newsletters and Conservation Materials

Oregon State University, Southern Oregon Research and Extension Center

The Southern Oregon Research and Extension Center works with a broad spectrum of agricultural producers and related industries in addressing water quality problems in the Bear Creek subbasin. They conduct tours, write newsletters, and conduct public information and education workshops. They organize groups to facilitate their informational programs. Groups they work closely with are the Small Woodland Owners Association, the Jackson Stockman's Association, the Winegrowers Association, the Fruit Growers Association, 4-H, Master Gardeners, and the Jackson SWCD. Their primary mission is to educate the public and to carry out research to develop new technologies. Because of severe cuts in budgets in the last biennium, there have been only a few agricultural water quality related projects and workshops. Accomplishments include the following.

- Water Quality Publications
- Certification Programs
- Herbicide & Pesticide Applicators Certification Program
- Master Watershed Steward Program

USDA Natural Resources Conservation Service

The NRCS works through the Jackson SWCD to provide on-site technical assistance, primarily to individuals and groups of land managers, for planning and implementation of conservation practices (Best Management Practices, or BMPs). Some of the water quality services and products provided include:

Technical Assistance Programs

- Natural Resource Conservation Planning for Individual Landowners
- Natural Resource Conservation Planning for Groups and Agencies
- Design and Engineering of BMP for Water Quality
- Basin and Watershed Studies and Planning

Certification/Recognition

- **Watershed Friendly Steward program** (through Southwest Oregon RC&D)

USDA Farm Services Agency

This federal agency provides cost-share funding to private agricultural producers for implementing water quality measures. Farm Services Agency is a sister agency to the NRCS, and acts cooperatively to provide both financial assistance to commercial agricultural producers. Many former agricultural conservation and water quality programs were eliminated with the 1997 Farm Bill and have been replaced by a new program. The Environmental Quality Incentives Program (EQIP) addresses conservation issues on a watershed basis. EQIP is to be carried out through the coordinated efforts of the Jackson SWCD, the Farm Services Agency, and the NRCS. Since 2001 over $14,000 in EQIP funds have been allocated in the Bear Creek subbasin. Locally, Farm Services Agency involvement includes:

- Environmental Quality Incentive Program (EQIP)
- Conservation Reserve Enhancement Program
- Forestry Incentives Program (through NRCS)
- Emergency Conservation Program
- Conservation Reserve Program
- Coming soon: Conservation Security Program

Oregon Department of Agriculture

The department is the lead state agency for development of agricultural water quality programs, provides financial, technical, and educational assistance for local water quality initiatives, and provides administrative oversight of Oregon's SWCDs. The department also has authority to regulate agricultural operations in the state for water quality purposes. Some of the water quality programs overseen by the ODA include:

- Implementation of AgWQMAPs (SB1010 plans)
- CAFO program
- Irrigation Water Management Program for Container Nursery Operations
- Administration of Groundwater Research and Development Grants
- Assistance with OWEB Small Grants Program

Oregon Watershed Enhancement Board

Through competitive grants and proactive project management, OWEB has funded several on-the-ground type projects that aid the agriculture industry. Over $460,000 has been spent on fish friendly diversion replacements or dam elimination. Other projects of interest to agriculture have totaled more than $143,000 in the last four years.

Bear Creek Irrigation Districts

Agricultural water management by the valley's three irrigation districts (Medford Irrigation District, TID, Rogue River Valley Irrigation District) continues to improve. These improvements include enhanced control of diverted water, converting from open ditches to pipes and lined canals, and delivery of gravity pressurized irrigation water. Growth in savings of irrigation water is predicted to be about 200 acre-feet annually for the next several years, representing three percent of current water diversion.

An example is the Rogue River Valley Irrigation District, which receives water from, Bear Creek, North and South Forks of Little Butte Creek's, including Fish Lake and Fourmile Reservoirs, They also manage the Agate Lake reservoir for irrigation in the northern portion of the Bear Creek subbasin, utilizes return flow waters from Medford Irrigation District and TID via Bear Creek, its tributaries and canal systems, and provides water to about 900 users on approximately 9000 acres. It has managed to improve 45 miles of its 95-mile system of conveyance ditches and canals through canal lining and pipe installation reducing the amount of ditch and canal cleaning and the amount of nutrients added from the adjacent land uses. Both of these are factors that can reduce the quality of water delivered back to Bear Creek. Currently, Rogue River Valley Irrigation District is installing from 3,000 to 3,500 feet of pipe or canal linings annually to their system; budget permitting. The district encourages all new and existing users to use sprinkler, drip, or mist systems, and requires measuring devices to determine the amount of water to divert. Fifty-one percent of the land Rogue River Valley Irrigation District serves has been converted from inefficient irrigation methods (e.g. flood) to sprinkler or pump (e.g. gated pipe) systems, with the landowners supporting the costs of these improvements.

Agricultural Water Use in the Watershed

Both flood and sprinkler irrigation methods are used by commercial farmers in the valley. Operation of the flood irrigation systems can result in soil erosion and excessive surface runoff "tail-water" which can transport nutrients, sediment, heated water, and pesticides off site.

There has been a large reduction in the number of acres in traditional row crop farms in the valley in recent years, and along with improvements in row crop farming methods, this change has reduced tail-water runoff in the watershed. Increased use of gated irrigation pipe for row crops has permitted more conserving applications of water and fertilizers, and a broader trend in the valley to convert to crops that demand less water, such as wine grapes. Use of drip and ultra low volume irrigation systems have also eliminated or reduced irrigation surface returns on many operations.

The most significant improvement in the past ten years, however, has been the conversion from flood to sprinkler irrigation. Sprinkler systems have been installed on about 15,000 acres of lands in the valley in the past 25 years, primarily on the commercial orchards, which are now about 80-90% sprinkler irrigated. The total number of acres flood irrigated in the valley is approximately 25,000 acres. Where farm operators have sufficient financial resources, it is expected that conversion to sprinkler irrigation will continue, with conversion of an additional 3,000 acres expected over the next 2-5 years. The NRCS, however, estimates that at least 50 percent of farm

acreage in the valley will continue to be flood irrigated for the foreseeable future, with most of this acreage in noncommercial tracts of five acres and less.

The WISE Project

The WISE Project is currently in the first phase of preparing the Feasibility Study and Environmental Impact Statement (FS/EIS). HDR Engineers has been hired to prepare the FS/EIS. As of this date the Project Need has been defined, and is summarized as follows:

"The WISE Project is being proposed to address the problems of unreliable irrigation water supplies and degraded water quantity and quality for native salmonids in the Bear Creek and Little Butte Creek watersheds by improving reliability and aquatic habitat in an economically and environmentally feasible manner."

In conjunction with the WISE Project Advisory Committee (PAC), HDR has also drafted project elements, which are those economical, social, technical, and environmental issues that must be addressed when preparing the FS/EIS.

Looking ahead, two key issues must be addressed in the upcoming months. The first is Congressional authorization for the Bureau of Reclamation (BOR) to be lead federal agency for the FS/EIS. The second is obtaining funding to complete the FS/EIS. The total cost for the FS/EIS is estimated at $2.8 million. A $900k Congressional earmark has funded the first phase of the FS/EIS, but there is still the need for an additional $1.9 million to fund the remainder of the FS/EIS.

In essence, the WISE project hopes to use level 4-treated effluent to augment irrigation requirements of the local irrigation districts. Using the effluent to irrigate crops will solve a number of problems as outlined above. The WISE Project web site is: http://www.wiseproject.org

VII. WATER QUALITY ISSUES

The 1990 Water Quality Status Impact Statement Report (305b report) produced by the Oregon DEQ indicates that Bear Creek does “not support” the identified beneficial uses of water for contact recreation (due to bacteria), and aquatic life, specifically salmonid species (due to low dissolved oxygen, high nutrients, pH, and algae growth).

Total maximum daily loads have been set for pollutants that violate standards, and represent the maximum amount of the pollutant allowed to enter the stream from all sources. Total maximum daily loads set for all sources in Bear Creek are for ammonia nitrogen, biochemical oxygen demand (BOD), and total phosphorus. The allowable instream concentration limits for both the low and high flow seasons for all sources are as follows:

Summer Season (May 1 - Oct 31)		**Winter Season (Nov 1 - Apr 30)**	
Ammonia Nitrogen	- 0.25 mg/1	Ammonia Nitrogen	- 1.00 mg/1
BOD	- 3.00 mg/1	BOD	- 3.00 mg/1
Total Phosphorus	- 0.08 mg/1	Total Phosphorus	- NA

The 2002, 303(d) list cited Bear Creek as violating state water quality standards for the following parameters:

- E.coli bacteria (200 colony forming units per liter geometric mean with 30 day period)
- Sediment (appreciable bottom sludge and sediments – Reeder Reservoir)
- Temperature (64 degree F, seven day moving average high)

Sources of Pollution in Bear Creek

In the past, the primary point source of pollution to Bear Creek was the City of Ashland's sewage treatment plant, which discharged nitrogen in the form of ammonia and nitrate, biochemical oxygen demand, chlorine, and phosphorus directly into the stream channel. The Ashland treatment plant is currently the only NPDES pollution source discharging directly into Bear Creek. However as a result of plant and process upgrades completed in the spring of 2003, the plant currently meets TMDL targets for ammonia, BOD, chlorine, and phosphorus. Daily monitoring reports (DMRs), required as a part of the NPDES permit, record the treatment plants daily compliance with this permit. The DEQ estimates that if all planned improvements are made to the Ashland facility and there is full implementation of the other water quality management plans in the basin there will be a significant reduction in the current total P load above the 0.08 mg/liter standard.

Recent Water Quality Findings in the Bear Creek Watershed

Ongoing studies along the Bear Creek mainstem and some tributary sites indicate that phosphate loads were very low in 1994, but have increased to historic values in 1995 and 1996 (Bill Meyers, Rogue Valley Council of Governments now with DEQ). Between 1995 and the middle of 1996, phosphate discharge from the Ashland sewage treatment plant has decreased by an average of 31%, but even these reduced levels are still too high to expect an improvement in Oregon Water Quality Index values. In 1995, sampling in the headwaters throughout the upper parts of the Bear Creek watershed indicated that the total maximum daily load instream criteria for total phosphorus of 0.08 mg/l was met at 75% of these sampling points, compared to 85% in 1992 and 95% in 1994 (Oregon Department of Forestry).

It is clear that little is definitively known about location, causes, and relative magnitude of the various non-point phosphorus sources located between the upper reaches of the watershed and the mouth of Bear Creek at Kirtland Road. Extrapolation from limited data sets to reach general, overall conclusion is of marginal value. It is prudent, however, to try to improve understanding of the system whenever possible. Recently, several limited studies have been done in attempts to better understand non-point source contributions (including agricultural) to Bear Creek water quality problems. Storm water sampling in six cities during October 1996 suggested that urban storm water runoff contributed little to phosphorus loading in Bear Creek (Bill Meyers, Rogue Valley Council of Governments now with DEQ).

In 1994 and 1995 studies of tailwater runoff from recently fertilized, newly-tilled and planted, furrow-irrigated vegetable row-crop fields showed increased concentrations of soluble phosphorus compared to input water, and also demonstrated how improved management practices might reduce the effects of such non-point sources (Richard Roseberg, Oregon State University, and Brian Lanning, USDA NRCS).

Single day longitudinal sampling of Jackson and Griffin Creeks in mid-summer 1996 indicated that on those days net phosphorus loading increased over the length of the study area. However, some reaches acted as net phosphorus sources, and some acted as net sinks (Gary Arnold, Oregon DEQ), although this effect may have been related primarily to changes in water flows. Future studies would be valuable if they can be designed to improve our limited understanding of causes and effects between management practices, land use, and water quality over larger geographic and/or time scales.

The Bear Creek LAC, as part of their implementation plan for 1999, wanted to measure, to the degree possible, the effects of agricultural activities on water quality in the Bear Creek Basin (during the 1999 irrigation season). The LAC asked Oregon State University to develop a water

quality-monitoring project that would do the best job possible in isolating, measuring, and describing agriculture's contribution to the factors of concern. Three objectives were established for this data-gathering exercise:

- Measure changes in total phosphorus (TP), fecal coliform (FC), total suspended solids (TSS), turbidity, temperature, and flow along four stream stretches that represented predominant agricultural land use.
- Analyze measured values to identify land uses and agricultural practices that either improve or degrade the water quality as it passes through those stream segments.
- Create a high quality data set that can be used by other scientists and agencies to model stream behavior in the Bear Creek Basin.

While sampling continued during the 2000 season in several tributaries to Bear Creek, some general conclusions were drawn related to the parameters of interest stated in objective #1. Conclusions for total phosphorus and total suspended solids were mixed. In longitudinal sampling in these four tributaries, agricultural land use tended to act both as sinks and sources for those parameters. Changes in load were, by and large, positive over the entire year (the creeks contributed to the P load) but not nearly to the degree that has been estimated from single, point-in-time samples.

There was, however, a strong general correlation to fecal coliform and temperature loads because of some agricultural land uses. The highest levels of fecal coliform counts and the greatest increase in those counts as compared to the next upstream site occurred where animal access to a stream was unrestricted. Stream segments where riparian vegetation had been cleared, thus exposing the stream and riparian area to direct solar radiation, displayed the greatest temperature increases whereas heavily shaded agricultural zones had smaller increases or even decreases in water temperature. Clearly, degraded riparian areas are not a unique condition to agricultural land use. It was the riparian condition rather than the agricultural land-use per se that was implicated in varying temperature readings.

There were also some positive correlations to agricultural land use that were, while not measured, at least implied (i.e. possible springs charged by subsurface irrigation returns that actually cooled stream flows). The types of conditions that act as nutrient and sediment sinks (such as vegetated buffers and drains) should be encouraged and we should recognize the net climatic cooling effect of subsurface irrigation return flows for the transpiring greenery (croplands) where dry rangelands would dominate if left un-irrigated.

There will be a summary of the second year of data by Dr. Roseburg in the 2006-2007 biennial review.

Nonagricultural Sources of Pollutants to Bear Creek

There are many potential sources contributing to non-point pollution including:

- Ineffective septic systems at rural homes, mobile homes and recreational vehicle parks (many built in the floodways of Bear Creek and its tributaries)
- Golf courses (fertilizer and irrigation runoff)
- Roads and ditches throughout the municipal and rural areas of the county (which produce oils, hydrocarbons, heavy metals, and trash)
- Municipal areas (which, because of roofs, sidewalks, and streets contribute oils, heavy metals, and organic and inorganic pollutants through the storm drains. There may also be conduits for illicit dumping of oil, antifreeze, and other pollutants)
- Forest roads and timber harvest operations (forest areas comprise 105,000 acres of the 230,000 acres total in the watershed)

- Sanitary authority and municipal sewer systems, which sometimes experience problems with underground leaks and uncertain connections. [See *Non-point Source Pollution Guidebook for Local Governments, Oregon DEQ, June 1994*]

The population residing in the Bear Creek watershed has grown dramatically in recent years to a current level of about 129,000 and is expected to increase to 175,000 by the end of 2010 (2000 census block data, Jackson County GIS). As a result, building construction has undergone a recent surge and may be an additional source of pollution due to soil erosion from land clearing, water and sewer installation, paving, and stream channelization activities. A great deal of this activity is occurring in rural and suburban areas of the watershed.

In addition, the waters in Bear Creek and its tributaries may pick up phosphorus from normal movement of surface and groundwater through the native soil and rocks, which can be sources of natural phosphorus. For example, *the Roxy basalt/andesite geologic formation*, which underlies about 25% of the watershed, and ranges from the Emigrant Creek subbasin to Lone Pine Creek to the north of Bear Creek, is comprised of material containing phosphorus in the range of 0.06 to 0.19%, expressed as P_2O_5. Similarly, most of the west side of the Bear Creek subbasin, from Emigrant Creek to Griffin Creek, is underlain by two formations containing significant amounts of phosphorus. These are the *Quartz Diorites* (metamorphic granitics containing 0.16 to 0.6% phosphorus expressed as P_2O_5), and the *May Creek schist* (metamorphics containing about 0.2% P as P_2O_5) formations [see *Oregon Department of Forestry 1995 Non-point Source Abatement Plan for Bear Creek*].

Some background levels of the listed parameters cannot be controlled. Bacteria can reside in streamside soils as well as be contributed from wildlife. Water temperature can be warmed or cooled by air temperatures and convection from surrounding soil. Sediment and bank erosion are part of the natural hydrologic and geologic system.

Unfortunately, determining the amount of a particular pollutant actually picked up by the water as it moves through the system under "natural" conditions without the many external effects of human influence is nearly impossible. For example, since Bear Creek tributary water from the upper watershed (where human activity is minimal) often contains total phosphorus at nearly the 0.08 mg/l target concentration limit, this is an indication that some amount of phosphorus is probably added to the water by natural processes.

Water quality impairment can sometimes be attributed to a single, definable act or land use activity. More often than not, however, the cumulative effects within the entire watershed puts the burden on all of the residents of the watershed to live on the land in a manner consistent with the ideals of conservation and stewardship. Cumulative effects need to be addressed by all the residents of the Bear Creek subbasin. The contributions of a single inhabitant to water pollution may not seem significant, but the cumulative effects of all the people in the watershed do have a significant impact.

Agricultural Contributions to Water Pollution

The 1988 Department of Environmental Quality publication, *Water Quality of Bear Creek Basin, Jackson County, Oregon*, indicates that of the non-point sources, ground water seepage and surface water return flows probably have the most significant effects on water quality in the Bear Creek watershed, and that phosphorus from agricultural sources is believed to enter the streams primarily from the runoff of surface irrigation water.

The following broad categories have been identified as factors of management that can affect whether pollution occurs:

- Excessive drainage and runoff
- Improperly managed livestock
- Poor vegetation management
- Wasteful irrigation surface return flows
- Improper storage of farm chemicals and fuels

VIII. MEASURES NECESSARY to ACHIEVE PLAN MISSION and OBJECTIVES

Statement of Commitment to Voluntary Approach

It is the intention of the LAC and the ODA to seek, facilitate, and rely on voluntary adoption of preventive land management measures as much as possible to accomplish the objectives of the Bear Creek Subbasin AgWQMAP. Persons found to be conducting agricultural or soil-disturbing activities that violate state water quality laws will first be directed to appropriate sources of technical and financial assistance for voluntary resolution of water quality problems. If reasonable attempts at cooperative resolution fail, persons who remain in violation, as determined by scientific means, will be subjected to enforcement procedures under the rules of the ODA.

Measures Proposed to Accomplish the Stated Objectives

Following are activities or measures proposed to be implemented to accomplish the plan's objectives.

The **first** objective of the water quality improvement plan is to create a high level of awareness of water quality issues and problems among agricultural landowners and operators in the watershed. The following methods were proposed to help accomplish this:

- Produce and promote a video program on agricultural water quality improvement practices that can be undertaken locally
- Utilize existing materials or, as needed, produce and distribute fact sheets on agricultural water quality improvement practices
- Produce and distribute news releases, or a regular newsletter on water quality
- Prepare and provide a training session on water quality issues for irrigation district personnel
- Prepare programs and presentations on water quality aimed at agricultural, equestrian, and natural resources oriented youth groups in the area
- Present an annual tour of water quality improvement pilot projects for agricultural landowners in the area
- Coordinate with, and assist the sponsors in developing a manure composting demonstration and educational facility at the Jackson County Exposition grounds, including the seeking of funding, and the design of educational materials

- Provide and install signs informing the public of the Jackson SWCD and the water quality improvement program
- Administer an educational and cost sharing program to encourage local agricultural landowners to develop voluntary water quality farm plans (VWQFP)
- Disseminate water quality information by developing and regularly updating a local electronic bulletin board or Web Site accessible via the Internet

As of January 2001, most of the above objectives had been accomplished, in part or completely, by the Jackson SWCD and/or its partner agencies. Through the ongoing efforts of the Education and Outreach position at the District, videos, newspaper inserts, mass media articles, and conservation related projects have been produced or implemented around the basin. Furthermore, during the spring and summer of 2001, all of the irrigation districts in the basin enthusiastically contributed to educational activities for their patrons concerning water conservation and irrigation efficiency.

The **second** objective of the water quality improvement plan is to promote conservation practices for use by those within agriculture to prevent the undesirable condition(s) that may contribute to water pollution in the Bear Creek subbasin. Jackson SWCD is developing an educational/technical assistance program that utilizes agricultural landowners as trainers who will have the responsibility of taking the conservation practice information to their neighbors and affiliations.

Monitoring and Evaluation of the Plan's Effectiveness

The progress and success of implementation efforts will be assessed through determination of changes in land management systems and the measurement of water quality improvement over time.

Two years after Area Plan and Rule adoption, the ODA, with the cooperation and assistance of the Jackson SWCD, the LAC, and the DEQ, will assess the progress of plan implementation toward achieving plan's goals and objectives. These assessments may include (secondary bullets are from 2004 revision):

- An accounting of the number of operations with approved Voluntary Water Quality Farm Plans, the number of requests for farm plans, and the acreage they cover.
    - Only one voluntary farm plan has been approved by the SWCD, over 60 grazing and irrigation improvement plans have been done through SWCD and NRCS affecting over 1000 acres
- Identification of additional agricultural sources of sediment, nutrients, and other contributors to 303(d) listed streams not addressed in the original plan.
    - The 2004 LAC knew of no additional sources of pollutants that had not already been addressed in the plan and rule language.
- An evaluation of the effectiveness of outreach and education programs designed to provide public awareness and understanding of water quality issues.
    - There is a general sense among the LAC that the small acreage segment of the agricultural community is still largely unaware of the existence, much less the implications, of the Bear Creek AgWQMP and rules. Suggestions include road signs and high profile project press from the SWCD.
- A review of projects, demonstrations, and tours used to showcase successful management practices and systems.
    - In 2001, Jackson SWCD hosted a bus tour of sites where complaints had been lodged and remediation had taken place. Also, the SWCD hosts yearly Range and Irrigation Field Days. Successful projects are highlighted and the operators talk about their benefits in conservation.

- An evaluation of the effectiveness of the sources for technical and financial assistance, which are available to the agricultural community.
    - OWEB and NRCS have each published summaries of their financial assistance to agricultural conservation efforts in the basin within the last three years. Irrigation districts in the basin also list their expenditures on the part of their patrons to conserve water, change application methods, and tighten their distribution network. Effectiveness per se has not been evaluated.
- Review of load allocations as found in Bear Creek TMDL and the effectiveness of this plan in meeting load allocations.
    - At each LAC meeting for the biennial review, the DEQ representative is posed the question of the status of TMDL development for the basin and if the AgWQMP rules are sufficient to meet the standards. So far, the response has been positive.

Menu of Conservation Practices

Optimal agricultural management for the Bear Creek subbasin consists of those management practices that are generally accepted as the most effective, economical, and practical for the area and that address water quality issues. These activities must maintain the economic viability of agriculture in the subbasin. Appropriate management for individual farms and ranches may vary with the specific cropping, soils, topographical, environmental, and economic conditions existing at a given site. Because of these variables, it is not possible to recommend uniform management practices for every farm or ranch in the Bear Creek subbasin. The NRCS's Field Office Technical Guide contains extensive lists of management practices to help an individual landowner meet his operational and conservation objectives.

Another important reference for conservation methods is found in the 1990 Coastal Zone Reauthorization Amendments, section 6217 (Appendix B). The entire Rogue basin falls under these guidelines. (Note that these are guidelines and not regulations) This Bear Creek AgWQM plan, along with other ODA water quality protection rules (e.g. pesticide applications, CAFO permitting), are the means by which the state of Oregon will implement CZRA agricultural land use recommendations.

What follows is a summary of some of the suggested practices that the ODA, SWCD, Oregon State University Extension Service, and the LAC will encourage landowners to consider, if they haven't already. Increased attention to these considerations may improve the water quality parameters of concern in the Bear Creek subbasin that are affected by agricultural activities.

The conservation practices listed in the following tables are intended to increase awareness, provide information, and educate the general public and the agricultural community about a variety of practices that may be used to protect water quality. **They are not intended to be mandates to land managers. Senate Bill 1010 was designed to maintain as much flexibility in farming and ranching as possible to achieve state water quality goals and objectives.**

Runoff and Drainage Management Conservation Practices

Practices	Potentially affected 303(d) listed parameter	Conservation Practices
Fertilizer Application	pH Chlorophyll a	• Test soil to know when application rate and timing matches agronomic need. • Follow instructions and label application procedures.
Tillage	Sediment	• Maintain vegetated filter strips. • Recover tail-water for re-circulation or infiltration. • Maximize vegetative cover.
Irrigation	Temperature Sediment Flow Modification	• Use responsible set duration and nozzle size based on agronomic need. • Use retention ponds to collect and re-use surface returns. • Measure soil moisture with appropriate instruments to understand soil moisture demand and availability. • Clean and maintain distribution and drainage ditches. • Install pipe where feasible.

Vegetation Management Conservation Practices

Practices	Potentially affected 303(d) listed parameter	Conservation Practices
Grazing the riparian area	Temperature Bacteria Flow Modification	• Fence where appropriate to control utilization. • Plant native and non-native species to enhance properly functioning conditions. • Manage grazing to restore proper functioning condition.
Grazing the uplands	Sediment Flow Modification	• Salt, water, and feed on hardened area. • Match stocking rate to forage production capacity of the pasture. • Account for slope and soil type for management. • Rotate pastures: use the 8" and 3"* rule to turn in and out.
Tillage on slopes and swales	Sediment	• Use settling basins consisting of depressions at the bottom of the field. • Construct curtain drains at the bottom of the field. • Put straw bales in un-constructed drainage ways. • Plant grass filter strips designed for slope and sediment yield potential.
Noxious and invasive weed control	Temperature Flow Modification	• Interrupt seeding cycle. • Control root reproducers. • Control weed populations systematically. • Plant competitive species.

***8" and 3" Rule - Turn animals into a pasture when forage averages 8 inches tall then take them out to allow re-growth when the forage has been utilized down to an average 3 inches of stubble height. Irrigated only.**

Livestock Management Conservation Practices

Practices	Potentially affected 303d listed parameter	Conservation Practices
Grazing in riparian pastures	Sediment Temperature Bacteria	• Use hardened crossings. • Use culvert crossings or bridge streams and ditches. • Install gates and rotate pasture use. • Use drainage appropriate to site: i.e. drain tile, curtain drains, etc. • Attract livestock to upland areas with off-stream shade, water, and salt. • Fence off riparian areas to facilitate proper management (permanent or temporary). • Water livestock off-channel. • Provide animals with shade away from the riparian area.
Grazing in upland areas	Temperature Bacteria Sediment	• Use electric fences for flexibility in rotation schedule. • Balance livestock numbers with re-growth potential. • Rotate animals off of pastures during and right after irrigation sets. • Construct buffer and filter strips.
Intensive feeding areas	Bacteria Nutrients	• Store in covered, dry area away from surface water. • Spread manure when runoff potential is minimal. • Balance livestock numbers with area available.
Livestock watering	Sediment Bacteria Flow Modification	• Use water gaps along fenced streams. • Provide off-stream watering. • Create visual barriers on far side of stream. • Harden stream crossings.

Irrigation Management Conservation Practices

Practices	Potentially affected 303d listed parameter	Conservation Practices
Irrigation applications	Temperature Flow Modification	• Improve scheduling, timing, and set changes. • Improve knowledge of crop needs, i.e. specific crop water requirements. • Improve distribution methods, i.e. up-grade from flood to sprinkler where feasible, or upgrade ditch and lateral system. • Schedule irrigation with soil moisture measurements using gypsum blocks or other simple moisture monitoring devices. • Improve diversion techniques and maintenance i.e. location of diversion. • Consider leasing unneeded water rights to WRD or OWT.
Irrigation runoff/tail-water	Temperature Nutrients Sediment	• Improve timing and integrate with livestock rotations to prevent compaction of pasture soils (OSU Extension recommends 4-5 days after irrigation before animals are allowed back on.) • Consider collection and redistribution of tail-water. • Facilitate percolation of tail-water on vegetated area with well-drained soils. • See scheduling requirements above.

Farm Storage Water Quality Protection Practices

Practice	Potentially affected 303(d) listed parameter	Conservation Practices
Machinery and chemical storage	No streams are currently listed for toxins or Volatile Organic Chemical's (VOC)	• Follow label rules for chemical and petroleum storage. • Avoid storing equipment in floodplains even temporarily. • Meet DEQ requirements for fuel storage and refueling. • Secure storage areas from leakage into water/drainage ways. • Keep a Hazardous Material control kit nearby. • Construct an appropriately sized containment barrier around storage areas. • Label and seal all containers. • Store money instead of chemicals. Buy chemicals as needed. • Use "Least Likely Third"* approach for all site decisions.
Silage and compost storage	Chlorophyll a	• Disperse runoff from drainages and gutters through appropriately sized filter strips or other equally effective pollution control mechanism.
Manure storage	Sediment pH Chlorophyll a Bacteria	• Store organic material in such a way as to prevent water from precipitation or surface flows from moving through the pile and into waters of the state. • Store silage and compost well away from water/drainage ways.

*Least Likely Third: Site strategy for potentially hazardous materials. When locating storage and staging areas on a property, select the third of the property that is least likely to allow contaminants from a spill or leak to run-off directly into waters of the State.

IX. MANAGEMENT and ENFORCEMENT of the WATER QUALITY IMPROVEMENT PROGRAM

Oregon statutes provide that agricultural water quality management area rules be enforceable, with enforcement authority (including civil penalty authority) available to the ODA to address rule violations. With that in mind, however, the LAC wants the agricultural community to know the intent of the committee members in identifying these particular conditions as "prohibited." Prior to each condition is an "intent" section which should clarify for the reader the thoughts and discussion of the committee.

A landowner, land occupier, or agricultural operator shall be responsible only for conditions caused by activities conducted on the land by the landowner, occupier, or operator. Rules associated with these unacceptable conditions do not apply to conditions resulting from unusual weather events or other exceptional circumstances that could not have been reasonably anticipated.

The following is a description of the conditions that are unacceptable in rules associated with this plan.

General Unacceptable Conditions:

Intent of LAC Using Oregon Revised Statutes (ORS) 468B

It is the intent of the Bear Creek LAC to limit agricultural contribution of listed water pollutants through educational and voluntary means. As stated above, however, it is necessary to have an enforceable "backstop." ORS 468B.010 to 468B.050 lay out a broad framework under which pollution is defined as both point and non-point sources which degrade water quality so as to be detrimental to beneficial uses. State water quality standards as defined in OAR division 41 (March 2004) (e.g. 64 degree temperature criterion, 200 colonies of E. coli bacterial standard) are based on those beneficial uses. The LAC feels that the continued use of this statute is sufficient to provide ODA with enforceable standard they need to protect the agricultural industry as well as waters of the state. It is also sufficient to deal with excessive contributions of sediment, bacteria, and nutrients.

ORS 468B has a weakness, however, in addressing riparian conditions that contribute to temperature standard violations. It is somewhat difficult to discern temperature contributions in short stream segments. Unequal responsibility would fall on the longer stream segment owners whereas numerous short segments may cumulatively contribute more to the temperature violation. The riparian condition on the next page is designed to level the playing field for both small and large landowners in the Bear Creek basin.

Current Oregon Water Quality Law

OAR 603-095-0240

(1) Effective upon adoption of these rules, all landowners or operators conducting activities on lands in agricultural use shall be in compliance with the following criteria. A land occupier shall be responsible for only those prohibited conditions caused by activities conducted on land managed by the landowner or occupier. Criteria do not apply to conditions resulting from unusual weather events or other exceptional circumstances that could not have been reasonably anticipated.

(2) No person conducting agricultural land management or land disturbing activities shall violate provisions of ORS 468B.025(1) or (2).

(3) Except as provided in ORS 468B.050, no person conducting agricultural land management or land disturbing activities shall:

(a) Cause pollution of any waters of the state or place or cause to be placed any wastes in a location where such wastes are likely to be carried into the waters of the state by any means.

(b) Discharge any wastes into any waters of the state if the discharge reduces the quality of such waters below the water quality standards established by rule for such waters by the Environmental Quality Commission.

(4) No person shall violate the conditions of any waste discharge permit issued pursuant to ORS 468B.050 or ORS 568.

Intent of Riparian Vegetation Condition

This committee does not intend to exclude riparian areas from sound/sustainable management. Farmers and ranchers must be able to provide livestock with access to adequate pasture and water when necessary. The intent is to allow controlled access to these resources while minimizing the impact on riparian vegetation, maintaining stable stream banks and protecting water quality. Properly functioning riparian areas have so many positive benefits for the agricultural landowner that it is imperative these areas be managed well. Riparian exclusion is one effective option but areas that have been previously managed may need continued management to prevent invasion and dominance of weedy or exotic plant species. Consult Oregon State University (OSU) Extension, the SWCD, and the ODA for ideas and assistance on rotational grazing, off-stream watering, and riparian pasture-management.

Productive agricultural management of riparian areas does not need to impede the development or maintenance of adequate riparian vegetation to control water pollution. Proper functioning riparian areas provide control of erosion, filtration of sediments and nutrients, moderation of solar heating, and infiltration of water into the soil profile. Evaluation of the adequacy of riparian vegetation development must always consider site-specific capabilities and anticipated levels of natural disturbance.

It is the intent of this LAC that landowners understand that nothing in this rule is to be perceived to hold them responsible for the functional condition of the stream as a whole; rather, they are only responsible for the impacts of their own management on a particular riparian area. Many factors influence proper functioning riparian condition but it is the responsibility of a particular landowner to be concerned with the affect she/he has on a particular riparian segment through his or her own agricultural management activities.

Unacceptable Riparian Condition

OAR 603-095-0240 (2)

(5) Agricultural management of riparian areas shall not impede the development or maintenance of adequate riparian vegetation to control water pollution.

(a) Effective four years after plan adoption, vegetation and streambank management in riparian areas shall not result in the following conditions:

(A) Sloughing of stream banks due to management practices which result in sediment entering a stream beyond what would be expected in that specific hydrologic regime; or

(B) Destabilization of stream banks beyond what would be expected in that specific hydrologic regime; or

(C) Damage to riparian vegetation that destroys its proper function and the vegetative recovery that is reasonably necessary to withstand a 25-year high flow event; or

(D) Absence of seasonally appropriate regeneration and recruitment, according to site capability.

(b) This condition is not intended to prohibit riparian grazing where it can be done while managing for proper functioning riparian condition.

(c) Exceptions:

(A) Written, limited duration exemptions to conditions described in OAR 603-095-0240(5)(a)(C) or (D) above will be considered for short-term activities included in a department (or its designee) approved plan intended to enhance the long-term function and quality of the riparian area.

(B) Constructed irrigation delivery and drainage ditches are exempt from conditions described in OAR 603-095-0240(5)(a)(C) or (D) above.

Voluntary Water Quality Farm Plans

Landowners are encouraged to develop and implement a Voluntary Water Quality Farm Plan (VWQFP), which may be approved by the ODA or its local management agency according to criteria and procedures specified in the Oregon Administrative Rules to implement this Bear Creek Subbasin AgWQMAP.

Generally, an approvable VWQFP will incorporate conservation practices and will be designed to achieve the management measures appropriate for the farm operation, as indicated in Section VIII above for:

- Facility Wastewater and Runoff from Confined Animal Facilities
- Nutrient Management
- Irrigation Water Management
- Grazing Management
- Erosion and Sediment Control

In all cases, an approvable VWQFP will outline specific measures necessary to prevent and control the existence of unacceptable conditions and the unacceptable activities indicated above.

A VWQFP may be written by landowners, private consultants, extension agents, or a technician available through the SWCD.

One example of a Voluntary Water Quality Farm Plan would be those entered into with the Jackson SWCD, once an agricultural landowner has requested financial or technical water quality assistance. After a field visit has confirmed the need, the landowner is asked to develop a "Cooperators Agreement" with the Jackson SWCD. A Voluntary Water Quality Farm Plan is developed with the landowner to consider the resource needs, social issues, landowner's objectives, and economic

limitations. Conservation practices are documented in the plan and the landowner agrees to implement it voluntarily. Plans may be revisited to determine success and, if necessary, are revised to accommodate changes that have occurred.

VWQFP may also be developed through cooperative efforts with other agencies and organizations to provide agricultural landowners and managers with the current technology to help solve their resource issues. These agencies include:

- USDA Natural Resource Conservation Service
- USDA Farm Services Agency
- Oregon State University, Southern Oregon Research and Extension Center
- Oregon Department of Fish and Wildlife
- Oregon Water Resources Department
- Oregon Department of Forestry

Resolution of Complaints

Complaints against operators or landowners alleged to be conducting land management activities resulting in unacceptable conditions or unacceptable activities will be investigated by the ODA in conjunction with its local management agency. In order to be considered as a formal complaint, the complaint must relate to a specific site, must be submitted in writing, and must be filed with the department.

Formal complaints will be investigated by the department. The department will determine if an unacceptable condition or unacceptable activity exists, and based on this determination, appropriate action will be taken to remedy the unacceptable condition or activity.

Informal or anonymous complaints will be investigated as appropriate and only as resources allow.

Enforcement Actions

The ODA may conduct an investigation as a result of its own observation, through notification by another agency, or upon the receipt of a valid formal written complaint alleging a landowner violation of the unacceptable conditions or unacceptable activities listed above.

If an approved VWQFP exists for a site which has been determined to have an unacceptable condition or unacceptable activity as defined in the basin rules and the plan is being implemented on schedule and in good faith, the operator and/or landowner will be given an opportunity to refine or modify the plan or to develop an updated implementation schedule to remedy the situation within a specified time frame. The revised plan and/or implementation schedule must be approved by the department or its local management agency.

If an approved VWQFP does not exist or is not being implemented according to the approved schedule for a site which has been determined to be out of compliance with the rules, the operator and/or landowner will be issued a **Notice of Noncompliance** and be directed by the ODA to remedy the unacceptable condition or the unacceptable activity under provisions in Oregon Administrative Rules 603-090-0060 through 603-090-0120. Authority for any enforcement action rests with the ODA.

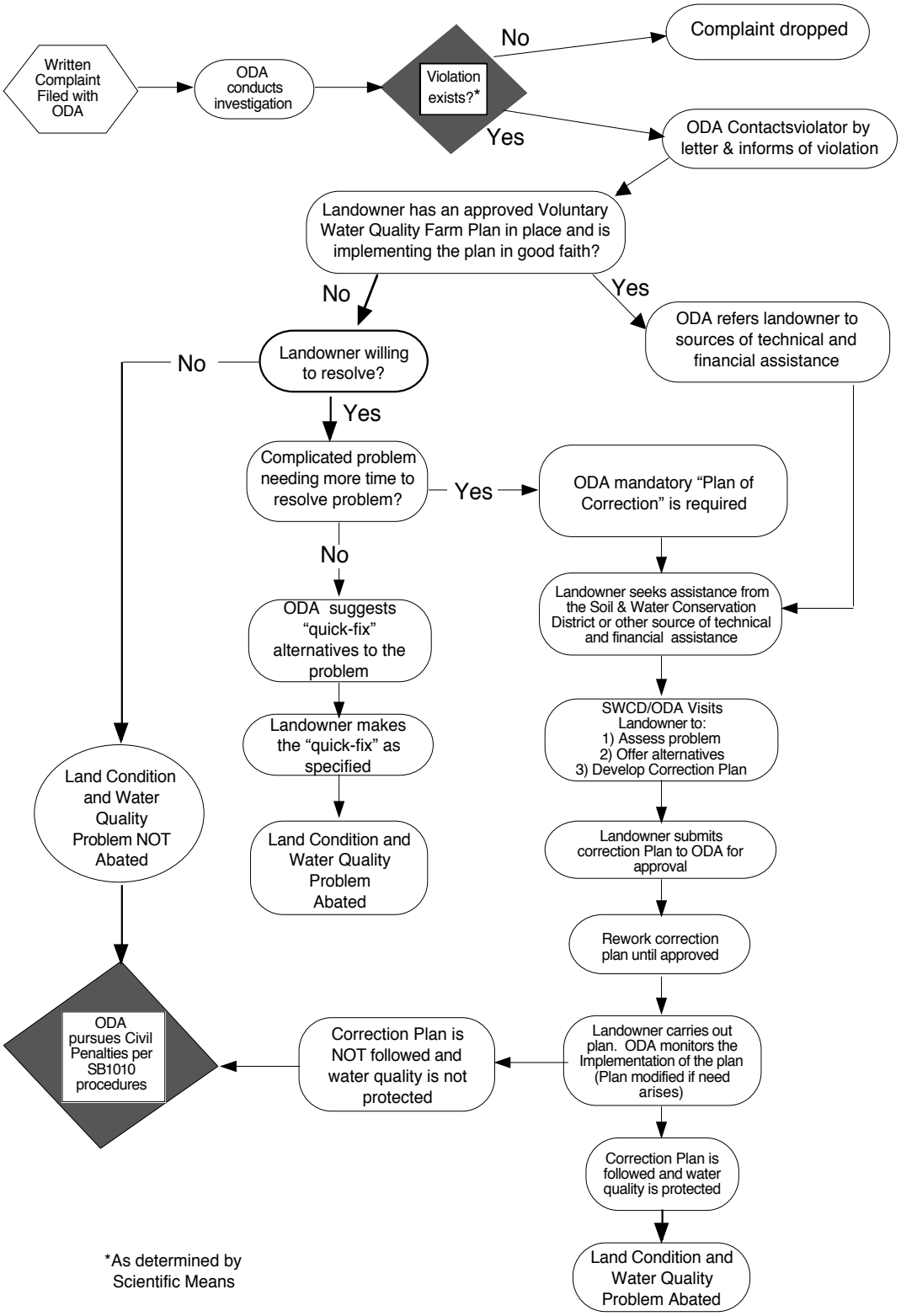
An ODA mandated **Plan of Correction** could come about under the enforcement procedures of the department after the agricultural landowner has been found by the department, as determined by scientific means, to be violating Oregon water quality standards or conditions or activities said to be unacceptable in the Bear Creek Subbasin AgWQMAP. Plans of Correction are in the form of compulsory corrective orders issued by the ODA to the landowner. Failure by the landowner to

comply with the Plan of Correction can result in the levying of financial penalties or fines or other remedies by the ODA.

The LAC strongly recommend that there be established in the Rogue Basin a landowner appeals board consisting of at least four members of the LAC and duly elected SWCD members. The purpose of this citizen board would be to act as a check on the interpretation of the plan rules between the compliance inspector and the intent of the LAC. While no authority would rest with this board, it could recommend a review of the evidence if an appeal was justified.

The following flowchart illustrates the procedures that will be followed by the ODA in dealing with the unacceptable conditions enforcement aspects of this plan.
[Note: For permitted CAFOs, separate enforcement procedures are available at the ODA.]

Procedures to be followed to resolve written complaints



X. PLAN IMPLEMENTATION

Responsibility for Plan Implementation

The ODA has the lead responsibility for implementing this Bear Creek AgWQMAP. The department has designated a local organization to serve as its local management agency for implementing portions of the Plan.

The Jackson SWCD has a long standing record of effectively identifying conservation concerns, developing action plans to address problems, and facilitating assistance to agricultural operators who voluntarily participate in conservation programs. Districts work cooperatively with the USDA NRCS, the USDA Farm Services Agency, and the Oregon State University Extension Service, which provide technical, financial, and educational assistance to individual agricultural operators for installing conservation and pollution control measures. The Jackson SWCD also plays an important role in developing additional partnerships between local agencies, volunteer organizations, and private landowners to address natural resource and conservation issues.

Implementation priorities will be established on a periodic basis through annual work plans developed jointly by the ODA and the Jackson SWCD. Any activities related to determination of violations of water quality standards or unacceptable conditions or any enforcement activities will be taken up directly by the ODA, as outlined in the applicable laws and rules, including Oregon Administrative Rules 603-090-0000 through 603-090-0120 and the rules adopted to implement this Bear Creek Subbasin AgWQMAP.

To administer, promote, and implement the Bear Creek Subbasin AgWQMAP, funds are needed for:

- Educational outreach activities;
- Demonstration projects to highlight affordable, typical solutions to water quality problems;
- Water quality and other progress monitoring activities;
- Landowner improvements.

Current Funding Availability

A source of funding for conducting early action elements and facilitating the development of this plan was a Clean Water Act Section 319 grant from the federal Environmental Protection Agency, tied to a matching grant from the ODA, totaling $77,500.

The Jackson SWCD hired a full time outreach coordinator for the 1998-1999 fiscal year. He was able to reach hundreds of landowners through meeting presentations, workshops, training sessions, brochure mailings, and newspaper inserts. Currently, the outreach coordinator has been instrumental in facilitating a high level of SB1010 awareness in both Jackson and Josephine counties.

The ODA has funded activities conducted by the local management agency (Jackson SWCD) to implement this plan. Details of a work-plan and local management agency funding have been outlined in a Memorandum of Agreement between both parties. Potential Funding Sources Table - *See Appendix A*

XI. EVALUATION of PROGRESS and PLAN MODIFICATIONS

How Monitoring Results Will Be Used to Modify Plan

Any significant reduction in the level of phosphorus in the main stem of Bear Creek is contingent upon a reduction of the discharges of Bear Creek's major point source, the Ashland Sewage Treatment Plant, since it overshadows the contributions of all the other sources combined. In addition, it is unlikely that phosphorus levels in the waters would respond quickly to changes in agricultural practices, based upon experience in other watersheds. Monitoring data from the mainstem of Bear Creek, therefore, cannot reasonably be used as a critical measure of the plan's success in the short term. Comprehensive sampling of agriculturally dominated tributaries would be more helpful.

As referenced earlier, monitoring was done in 1999 and 2000 so as to isolate potential agricultural contributions to water pollution. A final report on the 1999 data was submitted to the funding sources and the information is being evaluated and used by the JSWCD to target their educational efforts toward landowners. While seeking funding for continued monitoring, the LAC and LMA hope to use this preliminary data as a baseline to measure future effectiveness of educational efforts and management practice innovations. RVCOG continues monitoring at the mouths of Bear Creek tributaries and publishes a yearly summary. Summaries will be presented at the biennial reviews for LAC action on the plan.

Assessment of Plan Accomplishments

Approximately every two years a summary report will be prepared by the ODA or its local management agency for the Oregon Board of Agriculture. The report will address the success in accomplishing the ten specific action items listed under the plan's first (educational and public awareness) objective as enumerated in Section VIII of this plan. The report will also list the number and acreage of farms operating under Voluntary Water Quality Farm Plan (VWQFP) and what change has occurred in the numbers of these plans over the reporting period. This report will also present the efforts made to secure additional funding for the program, and the result of those efforts.

Approximately every two years, the ODA, with the cooperation and assistance of the Jackson SWCD, the LAC, and the DEQ, will assess the progress of plan implementation toward achieving plan's goals and objectives. A list of those assessments is found on page 22.

Organizations Contributing to the Development of the Bear Creek Subbasin AgWQMAP

- ODA
- Jackson SWCD
- Oregon State University Experiment Station
- TID
- Medford Irrigation District
- Rogue River Valley Irrigation District
- USDA NRCS
- Rogue Valley Council of Governments
- Oregon Dept of Environmental Quality

APPENDIX A – Available Technical and Financial Assistance

Since most agricultural landowners are unable to make a living directly from their land based enterprise, financial incentives will be essential to encourage basin-wide adoption of sound and sustainable management practices.

CREP - Conservation Reserve Enhancement Program (541-776-4267) made available $250 million dollars to pay landowners to set aside areas immediately adjacent to anadromous fish-bearing streams. It is intended to protect water quality and enhance spawning, rearing, and habitat quality.

OWEB - Oregon Watershed Enhancement Program (541-471-2886 ext. 229) provides funding for watershed enhancement projects under the general categories of education/public awareness, monitoring, management, and assessment/action planning.

EQIP - Environmental Quality Incentives Program (541-734-3143) pays landowners a majority cost-share for on-farm projects that protect natural resources and improve wildlife (including fish) habitat. EQIP information can also be obtained from the Farm Service Agency in Medford (541-776-4267).

EPA 319 - Environmental Protection Agency administers the 1972 Clean Water Act section 319 grants through ODEQ (541-776-6010) to help meet their water quality mandates. The projects EPA likes to fund are those with directly measurable benefits for water quality and endangered species. Check out EPA's Ag Info Center
http://es.epa.gov/oeca/ag/index.html

OWT - Oregon Water Trust (503-226-3480 in Portland) offers lease and buy-out options for abandoned or unused water rights. This market-based approach to increasing stream flow may also be used to fund irrigation system changes in watersheds identified as priorities for OWT.

OSU - Cooperative Extension (772-5165 in Jackson County) offers a wide variety of levels of technical assistance and planning help. OSU has been instrumental in the Oregon Cattlemen's extremely successful WESt Program. Since its inception, it has grown into several distinct natural resource related workshops that are offered to ranchers and farmers free of charge. The WESt Program workshops help ranchers and farmers understand their watersheds and stream function better through assessments and monitoring. OSU has also been providing Proper Functioning Condition (PFC) Workshops and assessments with landowners. PFC assessment should be a major component of a conservation plan.

Watershed Councils and the SWCD should be your primary resources for technical and financial assistance.

Bear Creek Watershed Council, Coordinator – Craig Harper, RVCOG, PO BOX 3275, CENTRAL POINT, OR 97502. Tel. (541) 664-6676 ext. 211 or 664-7927
email: charper@rvcog.org

Jackson SWCD, 573 Parsons Drive, Suite 102, MEDFORD, OR 97501.
Tel. (541) 734-3143

APPENDIX B – COASTAL ZONE MANAGEMENT ACT MEASURES

In 1990, the Federal Coastal Zone Reauthorization Amendments were enacted. This law mandated that all states and territories with approved coastal zone management programs develop and implement coastal non-point pollution control programs. Listed below are the Coastal Zone Management measures that were developed for use in Oregon for coastal basins such as the Rogue and its tributaries. These are recommendations only. Oregon is implementing its pollution control program for agriculture through the SB1010 plans along the west side of the state.

Sedimentation

- Apply the erosion component of a Resource Management System as defined in the Field Office Technical Guide of the U.S. Department of Agriculture, NRCS to minimize the delivery of sediment to surface waters.
- Design and install a combination of management and physical practices to settle the solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.

Nutrients

- Develop, implement, and periodically update a nutrient management plan to: (1) apply nutrients at rates necessary to achieve realistic crop yields, (2) improve the timing of nutrient application, and (3) use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is other than commercial fertilizer, determine the nutrient value and the rate of availability of the nutrients. Determine and credit the nitrogen contribution of any legume crop. Soil and plant tissue testing should be used routinely.

Pesticides

- Evaluate the pest problems, previous pest management practices, and cropping history.
- Evaluate the soil and physical characteristics of the site, including mixing, loading, and storage areas for potential of leaching or runoff of pesticides. If leaching or runoff is found, steps should be taken to prevent further contamination.
- Use integrated pest management (IPM) strategies that:
- Apply pesticides only when an economic benefit to the producer will be achieved (i.e. application based on economic thresholds).
- Apply pesticides efficiently and at times when runoff losses are unlikely.
- When pesticide applications are necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products being used.
- Periodically calibrate pesticide-spraying equipment.
- Use anti-backflow devices on hoses used for filling tank mixtures.

Riparian Areas

- Exclude livestock from riparian areas that are susceptible to over-grazing. Also exclude when there is no other practical way to protect the riparian area when grazing uplands.
- Provide stream crossings and hardened access areas for watering.
- Provide alternative drinking water locations.
- Locate salt and shade away from sensitive riparian locations.
- Include riparian areas in separate pastures with separate management objectives and strategies.
- Fence, or where appropriate, herd livestock out of areas for as long as necessary to allow vegetation and stream-banks to recover.
- Control the timing of grazing to: (1) keep livestock off stream-banks where they are most vulnerable to damage and (2) coincide with the physiological needs of target plant species.

Irrigation

- Operate the irrigation system so that the timing and amount of water match crop water needs. This will require, at a minimum:
- the accurate measure of soil water depletion and the volume of irrigation applied.
- uniform application of water.
- When chemigation is used, include anti-backflow devices for wells, minimize the harmful amounts of chemigated waters from the field, and control deep percolation.
- In cases where chemigation is performed with furrow irrigation systems, a tail-water management system may be needed.
- In some locations, irrigation return flows are subject to other water rights or are required to maintain stream flow(s). In these special cases, on-site use could be precluded and would not be considered part of the management measures for such locations.
- In some locations, leaching is necessary to control salt in the soil profile. Leaching for salt control should be limited to the leaching requirement for the root zone.
- Where leakage from delivery systems or return flows support wetlands or wildlife refuges, it may be preferable to modify the system to achieve a high level of efficiency and then divert the "saved water" to the wetland or wildlife refuge. This will improve the quality of water delivered to wetlands or wildlife refuges by preventing the introduction of pollutants from irrigated lands to such diverted water.
- In some locations, sprinkler irrigation is used for frost or freeze protection, or for crop cooling. In these special cases, applications should be limited to the amount necessary for crop protection, and applied water should remain on site.