

UMPQUA BASIN AGRICULTURAL WATER QUALITY MANAGEMENT AREA PLAN

Developed by

**The Umpqua Basin Local Advisory Committee
and**

The Oregon Department of Agriculture

with assistance from

the Douglas and Umpqua Soil and Water Conservation Districts

June 17, 2010

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Acronyms

AgWQM	-	Agricultural Water Quality Management
DEQ	-	Department of Environmental Quality
EPA	-	U.S. Environmental Protection Agency
LAC	-	Local Advisory Committee
LASAR	-	Laboratory Analytical Storage and Retrieval
NRCS	-	Natural Resources Conservation Services
OAR	-	Oregon Administrative Rules
ODA	-	Oregon Department of Agriculture
ORS	-	Oregon Revised Statutes
OSU	-	Oregon State University
OWEB	-	Oregon Watershed Enhancement Board
SWCD	-	Soil and Water Conservation District
TMDL	-	Total Maximum Daily Load
USDA	-	United States Department of Agriculture

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Agricultural Water Quality Management Area Plan (Area Plan) Requirements

The following outlines the minimum requirements of an Area Plan as identified in Oregon Administrative Rule (OAR) 603-090-0030:

1. Description of the geographical area and physical setting of area.
2. List of water quality issues of concern. List of federal Clean Water Act Section 303(d) water quality parameters listed in the Umpqua basin (from the Oregon Department of Environmental Quality (DEQ)).
3. List of current designated beneficial uses that are adversely affected.
4. Statement ‘Goal of the Umpqua Basin AgWQM Area Plan is to prevent and control water pollution from agricultural activities and soil erosion and to achieve applicable water quality standards.’
5. Water Quality objectives of the area plan.
6. Description of the pollution prevention and control measures deemed necessary to achieve the goal.
7. A schedule for implementation of the necessary measures that is adequate to meet applicable dates established by law.
8. Guidelines for public participation.
9. Strategy for ensuring that the necessary measures are implemented.

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To: Agricultural Landowners of Douglas County

From: The Umpqua Basin Local Advisory Committee – 2001

Regarding: The Umpqua Basin Agricultural Water Quality Management Area Plan

The Umpqua Basin Local Advisory Committee (LAC) has been working hard for the last 2 1/2 years to represent the views of agricultural landowners during the development of an Agricultural Water Quality Management Area Plan for agriculture in the Umpqua Basin.

This project officially began in 1993 when the Oregon Legislature passed Senate Bill 1010, the Agricultural Water Quality Management Act, which mandated the development of agricultural water quality plans for each of the major watersheds in Oregon. The bill specified that a local committee would work with the Oregon Department of Agriculture (ODA) to develop a plan that would protect water quality while protecting the economic viability of agriculture in that region.

The Umpqua Local Advisory Committee (LAC) was appointed by the Director of the Department of Agriculture in 1997, made up of 12 agricultural producers and 2 members from conservation interests. Small and large operations are represented, and every region in the county is represented. Douglas County Farm Bureau and the Douglas County Livestock Association are both well represented and we have one representative from Umpqua Fishermen and one from the Steamboaters.

Recognizing the importance of this task, the Committee has invested a great deal of time and energy in developing a plan that would protect water quality while protecting landowners right to farm and graze livestock. After initial public review and comment in late 1999, the committee returned to work with two additional members and a great deal of public participation. The plan was essentially rewritten in order to address concerns presented during public comment and community participation.

The first task undertaken as we returned to work was to develop a Mission Statement and Statement of Goals and Intents. These statements are important groundwork for the entire plan, and should be read carefully by anyone who wants to understand the Umpqua Basin Agricultural Water Quality Management Area Plan for agriculture.

Sincerely,

Don Kruse, Chair LAC

George Sandberg, Chair of the Working Committee

Members of the Umpqua LAC: Vern Bare, Web Briggs, Ken Ferguson, JoAnn Gilliam, Janice Green, Bob Hall, Dave Harris, Don Kruse, James Mast, Kathy Panner, George Sandberg, Carol Whipple.

Alternates: Joe Brumbach, Jim Donnellan, Stan Hendy, and Jan Tetreault

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Mission Statement: Umpqua Basin Local Advisory Committee

To reduce agriculture's contribution to all forms of water pollution to the minimum level possible consistent with economically sound and sustainable farming and ranching.

Goals, Intent, and Responsibilities of Umpqua Basin Local Advisory Committee

It is goal of the Umpqua Basin LAC to develop a management plan for the Umpqua Basin, which will protect both the "right to farm and graze" and water quality.

It is the intent of the Umpqua Basin LAC that education be the primary driving force of the changes in agricultural practices necessary to improve water quality.

It is the intent of the Umpqua Basin LAC to help maintain the economic viability of farming and grazing in the Umpqua Basin.

It is the goal of the Umpqua Basin LAC that agricultural producers accept responsibility for agriculture's contribution to the failure to meet water quality standards, recognizing that all parts of the community must address their own contribution to the problem in order to reach our collective goal of improved water quality (sewage treatment facilities, aggregate companies, homeowners, and others).

It is the belief of the Umpqua Basin LAC that agriculture's share of the failure to meet water quality standards in the Umpqua Basin is quite small, relative to other contributions.

It is the goal of the Umpqua Basin LAC to develop a locally formulated AgWQM area plan that will protect farmers and ranchers from frivolous lawsuits and layers of unnecessary regulation.

It is the intent of the Umpqua Basin LAC that the plan be flexible enough to allow landowners and land managers to use their own ingenuity and creativity to address water quality concerns. It is not the intent of the Umpqua Basin LAC to specify any particular agricultural practices.

It is the intent of the Umpqua Basin LAC to recognize the importance of voluntary associations and partnerships of farmers and landowners that join together in efforts to improve water quality (Watershed Councils, Neighborhood Associations, etc.).

It is the belief of the Umpqua Basin LAC that changes made in agricultural practices to improve water quality will also improve the economic viability of Basin farms and ranches.

It is the belief of the Umpqua Basin LAC that the majority of agricultural landowners are not major contributors to water quality problems in the Basin, but that most of us could make improvements in our practices that could have a cumulative positive effect on the Umpqua River.

It is the responsibility of the Umpqua Basin LAC to assist in identifying those conditions resulting from agricultural activities, which could adversely impact water quality in the Umpqua Basin and identify them as "unacceptable conditions."

It is the intent of the Umpqua Basin LAC to provide ODA with a basis to work with those landowners that continue to maintain conditions that clearly qualify as “unacceptable conditions” as defined by the Umpqua Basin Agricultural Water Quality Management (AgWQM) Area Plan.

It is the intent of the Umpqua Basin LAC that fines and civil penalties be used only as a last resort, in situations where a landowner refuses to address a problem; and only in cases where an operation is clearly out of compliance, as demonstrated by appropriate testing. In those cases it is the intent of the Umpqua Basin LAC that fines be in relation to the scope of the violation and the size of the operation.

It is the intent of the Umpqua Basin LAC that constitutional rights be acknowledged, and that private property is entered only with owner permission or a valid search warrant.

It is the responsibility of the Umpqua Basin LAC to continue to be involved in the review of the Umpqua Basin AgWQM Area Plan to be certain that their intent is fulfilled.

Introduction

An AgWQM Area Plan, often referred to as an Area Plan, is a locally developed document that describes agricultural issues affecting water quality in that basin and defines how those situations will be addressed.

Correcting the problems that are causing water quality standards to be violated will be accomplished through several approaches. Educational efforts will be the primary method for providing long-term solutions and prevention of future problems. Technical and financial assistance will be provided to landowners through a number of agencies and organizations including the Douglas and Umpqua Soil and Water Conservation Districts (SWCD), Oregon State University (OSU) Extension Service, US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), etc. Monitoring will be ongoing to determine how well the industry is doing. If all other means fail, the ODA will follow the enforcement process defined in this plan to assure that unacceptable conditions are corrected. Situations where the land manager is unwilling to correct an identified problem are expected to be rare.

The Oregon Plan for Salmon and Watersheds is Oregon's guideline for implementing stream restoration activities throughout the state. The Umpqua Basin AgWQM Area Plan will meet the objectives of the Oregon Plan and the Clean Water Act.

What does an AgWQM Area Plan cover?

An area plan is developed to protect the "beneficial uses" of the waters of the state. The defined beneficial uses of water in the Umpqua Basin are identified in Table 1 (OAR 340-41-0320) (Table produced November 2003).

Table 1 - Umpqua Basin Beneficial Uses

Beneficial Uses	Umpqua River Estuary to Head of Tidewater and Adjacent Marine Waters	Umpqua River Main Stem from Head of Tidewater to Confluence of N. & S. Umpqua Rivers	North Umpqua River Main Stem	South Umpqua River Main Stem	All Other Tributaries to Umpqua, North & South Umpqua Rivers
Public Domestic Water Supply*		X	X	X	X
Private Domestic Water Supply*		X	X	X	X
Industrial Water Supply	X	X	X	X	X
Irrigation		X	X	X	X
Livestock Watering		X	X	X	X
Fish & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X
Fishing	X	X	X	X	X
Boating	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X
Hydro Power			X	X	X
Commercial Navigation & Transportation	X				

*With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards

The Oregon Environmental Quality Commission has adopted numeric and narrative water quality standards to protect these designated *beneficial uses*. In the Umpqua Basin monitoring has indicated that a number of water quality standards are regularly exceeded. When a water quality standard is exceeded for a specific type of pollution or parameter that water body is considered “impaired” and is required to be placed on the 303(d) list. For the Umpqua Basin, the 2004/2006 303(d) list identifies impairments for the following parameters:

- Bacteria
- Nutrients
- Temperature
- Sedimentation
- Toxics: iron, mercury, beryllium, arsenic, chlorine, ammonia, cadmium, copper, manganese, zinc
- Flow Modification
- Habitat Modification
- Total Dissolved Gases
- Chlorophyll a
- Dissolved Oxygen
- pH
- Aquatic Weeds and Algae

This plan will directly address sedimentation, nutrients, bacteria, and temperature, knowing that by improving in those areas on agricultural lands there will be improvement in other related parameters (flow modification, dissolved oxygen, pH, aquatic weeds and algae, total dissolved gas, biological criteria and chlorophyll a).

Total Maximum Daily Loads

The Oregon DEQ is required by federal law and court order to establish Total Maximum Daily Loads (TMDLs) for pollutants in designated water quality limited areas. The TMDL will establish maximum limits on the amounts of pollutants that can enter the Umpqua Basin Area. This process will produce a "loading capacity" which will be calculated and set to achieve water quality standards in each subbasin. Each subbasin will then be allowed a designated portion of the TMDL, representing the maximum amount of pollutant that may enter daily from the surrounding lands in the subbasin. This amount is the "load allocation."

Completed Total Maximum Daily Loads for the Umpqua Basin

The Oregon DEQ submitted in October 2006, TMDLs for impaired waters in the Umpqua Basin. The TMDLs identify load reductions of pollutants to achieve water quality standards for the beneficial uses of the water bodies. In April 2007, the U.S. Environmental Protection Agency (EPA) approved 181 TMDLs for these impaired waters. The number of water quality limited segments in the TMDL approval includes the following:

- 139 Temperature TMDLs for perennial streams within the Umpqua Basin.
- 14 pH TMDLs for perennial streams and lakes within the Umpqua Basin. The pH TMDL applies year round.
- 18 Bacteria TMDLs for perennial streams of the Umpqua Basin. The bacteria TMDL applies year round.
- 5 Dissolved Oxygen TMDLs for perennial streams within the Umpqua Basin.
- 3 Aquatic Weed TMDLs for perennial streams and lakes within the Umpqua Basin.
- 1 Chlorophyll a TMDL for the South Umpqua River.
- 1 Phosphorus TMDL for the South Umpqua River.

With the TMDL submittal, DEQ submitted the Umpqua Basin AgWQM Plan Area Plan as local agriculture's plan to achieve the load reductions called for in the TMDLs. It is the responsibility of ODA, through the Water Quality Program, to address the parameters listed in the TMDL document and implement a water quality management plan for agricultural and rural lands to achieve TMDL targets. This management plan does not establish numeric targets of water column parameters but instead facilitates the development of conditions on the land that, according to the best available research, will reduce loads identified in the TMDL. This Umpqua Basin AgWQM Area Plan is incorporated into the DEQ Umpqua Basin Water Quality Management Plan. .

What is the Process?

A LAC was appointed by the director of ODA to represent local agricultural interests during the development of an AgWQM Area Plan and Rules (Area Plan and Area Rules). The Umpqua Basin LAC studied the Agricultural Water Quality Management Act (ORS 568.900 – 568.933), corresponding associated legislation (ORS 561.190 – 561.191), ORS 468(b), and the federal Coastal Zone Management Act. The LAC worked to develop a plan for the Umpqua Basin that would place all regulation concerning agricultural water pollution in one plan, with ODA as the agency responsible for the enforcement of the Umpqua Basin Area Rules.

Briefly, the Agricultural Water Quality Management Act (sometimes referred as the piece of legislation that became, law, Agricultural Water Quality Act) provides the authority for ODA to develop local agricultural water quality area plans and rules. Additional and clarifying legislation in 1997 (Senate Bill 502) provides that all issues relating to agricultural water pollution will be handled by ODA. ORS 468.025 is an Oregon Statute that states no person shall cause pollution of the waters of the State of Oregon. At ODA's direction the LAC has incorporated ORS 468.025 into the Area Rules. In addition, in Oregon the ODA had the responsibility for developing a plan for the federal Coastal Zone Management Act and regulations relating to pesticide use. Placing the responsibility for all of the above with ODA is intended to avoid having agricultural producers be required to deal with multiple agencies, and to have a consistent policy of enforcement for all water quality regulation relating to agriculture.

This AgWQM Area Plan provides guidance for addressing agricultural water quality issues in the Umpqua watershed. 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 establish legal requirements or prohibitions. ODA will exercise its enforcement authority for the prevention and control of water pollution from agricultural activities under administrative rules for the Umpqua watershed, and OAR 603-090-0060 through 603-090-0120.

The Administrative Rules for the Umpqua watershed 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, Oregon Administrative Rules 603-090-0060 through 603-090-0120 describe the enforcement actions that may be triggered upon the finding of a violation by ODA.

¹ ORS 468B.025(1) states: ...no person 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 escape or be carried into the waters of the state by any means.
- (b) Discharge any wastes into the 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.

TEXT OUTLINED BY A BOX IS A PART OF THE ADMINISTRATIVE RULE.

These rules have been developed to implement a water quality management area plan for the Umpqua Basin AgWQM Area pursuant to authorities vested in the department through ORS 568.900-568.933 and ORS 561.190 - 561.191, due to a determination by the Environmental Quality Commission to establish Total Maximum Daily Loads (TMDL) and allocate a load to agricultural nonpoint sources. The area plan is known as the Umpqua Basin AgWQM Area Plan. After adoption of the TMDLs, these rules will be reviewed and modified as needed to provide reasonable assurance that the load allocations for agriculture will be met.

Nothing in the Umpqua Basin AgWQM Area Plan or Rules adopted by the department will allow the department to implement this plan or in a manner that is in violation of the U.S. Constitution, the Oregon Constitution or other applicable state laws.

Description of the Geographical Area and Physical Setting of Area

The Umpqua Basin includes the drainage area for the South Umpqua, the North Umpqua, the mainstem Umpqua and the Smith River (Map 1). The land base under this plan includes all agricultural and rural lands within the Umpqua Basin except for public lands managed by federal agencies (Bureau of Land Management, US Forest Service and US Fish and Wildlife Service), and activities subject to the Forest Practices Act.

Of the 2,876,000 acres in Douglas County, 16 percent is classified as agricultural lands, 74 percent as forest, and 10 percent as urban and other (Douglas County Planning Department). The majority of the agricultural lands is used for grazing and permanent hay fields. In 2006, the total estimated agricultural gross receipts for Douglas County were \$75.1 million for animal and crop sales². Agricultural production includes livestock, hay and silage, wine grapes, small grains, fruit crops, Christmas trees, and vegetables (truck crops).

The South Umpqua Subbasin and the mainstem subbasin lie between the Coast Range to the west and the Cascade Range to the east. Valleys associated with tributaries to these rivers are mostly narrow and widely scattered. The South Umpqua River is generally wide, shallow, and slow moving close to the mainstem, but can be in a steep gradient channel higher in the watershed. The South Umpqua has a very strong fall Chinook run that has adapted to spawning in mainstem reaches rather than in small tributaries as Coho. Most of the agricultural activities in the Umpqua basin take place in the central valley.

The entire eastern portion of the Umpqua basin is along the west slope of the Cascade Range. Beginning in the foothills east of the central valley, the terrain rises quickly, eventually reaching elevations over 9,000 feet. The North Umpqua River tends to be in an incised channel with a steep gradient. The water in the North Umpqua remains cooler than the South Umpqua and is an important source of cooler water to the main stem Umpqua where the North Umpqua and South Umpqua join. The North Umpqua with its geology and flow regime supports very strong steelhead runs. Agriculture is limited in the North Umpqua Basin as most of the land is in public ownership and is poorly suited for agriculture, although, there is some area below Little River linked to agriculture.

The Smith River Subbasin is on the west side of the Coast Range and is characterized by a 25-mile long estuary whose tributaries provide important Coho habitat. The headwaters of the Smith River tend to have high gradient, steeply incised channels that widen out into meandering, wide channels in the floodplains. Agriculture primarily occurs in the lower reaches of the subbasin along these floodplains.

² From *Oregon Agripedia*, Oregon Department of Agriculture, 2007.

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Water Quality Objectives for Area Plan

The Administrative Rules for this program require that the following statement be included in this plan. “The Goal of the Umpqua Basin AgWQM Area Plan is to prevent and control water pollution from agricultural activities and soil erosion and to achieve applicable water quality standards.”

In addition, a part of the 1990 federal Coastal Zone Amendments Reauthorization Act Section 6217(g), specifically addresses the impacts of nonpoint source pollution in coastal areas by requiring each state with an approved coastal zone management program to develop and submit to the U.S. Environmental Protection Agency and the National Oceanic and Atmospheric Administration, a Coastal Nonpoint Pollution Control Program. The purpose of the program "shall be to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters, working in close conjunction with other state and local authorities." As part of the Coastal Zone Program, the State of Oregon presented agricultural management measures to meet the requirements of the Coastal Zone Amendments Reauthorization Act Section 6217(g) and identified the agricultural Water Quality Program (referred to as the SB1010 program) as agriculture’s means to address the provisions of the state plan developed in response to the act. The measures identified under 6217(g) have been found to be effective to control and prevent agricultural water pollution and are listed in Appendix A. This plan represents the state’s program to address agricultural pollution as provided for in the federal Coastal Zone Amendments Reauthorization Act.

Pollution Prevention and Control

This section describes potential pollution sources and provides a plan to reduce and prevent water pollution. When combined with other provisions of this plan and pollution control efforts for other land uses, it will help achieve water quality standards. This section has been developed around the water quality parameters listed in the Umpqua Basin, which are directly affected by agricultural activity: sedimentation, nutrients, bacteria, and temperature. For each of these parameters, the committee identified:

- Information about the parameter to provide basic understanding of the reason for concern.
- A statement identifying the unacceptable condition, which will be reflected in the Umpqua Basin Area Rules.
- Steps that will be taken by ODA when investigating a complaint.
- Examples of situations, which could lead to an unacceptable condition. These examples are provided to alert landowners and managers to potential problems, rather than to prescribe particular treatments.

All landowners or operators conducting activities on lands in agricultural use shall be in compliance with the following criteria (refers to unacceptable conditions in boxes). A landowner is responsible for only those conditions caused by agricultural activities conducted by the landowner. A landowner is not responsible for unacceptable conditions resulting from the actions of another landowner. Conditions resulting from unusual weather events or other exceptional circumstances are not the responsibility of the landowner.

Thus, landowners are responsible only for an unacceptable condition caused by management activities on their lands. For example, stream bank erosion can and will occur and may be outside the landowner's control.

Following are the pollution prevention and control measures for the listed parameters of concern that agriculture may affect in the Umpqua Basin.

Sediment

Soil erosion is a natural process, but land management practices can accelerate the process or slow it down. For a farmer or rancher, soil loss means a loss of their land productivity. When soil moves into a stream and is deposited along the streambed, it is called sedimentation. Excess sediment in streams creates a number of problems, including negatively impacting drinking water quality, fish spawning grounds, and harbor management. It is in everyone's best interest to keep soil on agricultural land.

It is the responsibility of the Umpqua Basin LAC to identify those conditions, resulting from agricultural activities, which would seriously impact water quality in the Umpqua Basin and identify them as "unacceptable conditions."

Unacceptable Condition Addressing Sediment

Substantial amounts of sediment (i.e. in excess of water quality standards for sedimentation) moving from agricultural lands into waters of the state as a result of agricultural activities is identified as an unacceptable condition. Off stream ponds, which do not contribute to the downstream system under normal weather conditions, are exempt as they are often used to trap and contain sediment.

When a condition comes to the attention of ODA, which appears to be in violation of the sediment rule, every practical means shall be used to make a proper determination of the source of the sediment, the cause of the sediment movement, and the degree of the problem. Appropriate testing will be conducted to verify that sediment levels of waters entering waters of the state are in excess of water quality standards³. Turbidity testing may be the best available test for locating the sources of sediment.

Water quality monitoring can be done by landowners to assess their own situation. Help is available through OSU Extension Service, Oregon Cattlemen's Association, DEQ, and others to develop an appropriate monitoring program. ODA and the Umpqua Basin LAC encourage landowners to become involved in water quality monitoring.

Situations which could contribute to a violation of the sediment rule:

(This list is not intended to cover all possibilities, nor will these situations always result in violation of the "sediment rule." It is provided to help landowners assess the potential problems on their lands.)

³ OAR 340-041-0285(2) (2000 edition) states

(j) the formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed.

- Land disturbing farming activities such as plowing, discing, or rototilling so close to a waterway that the remaining near stream vegetation does not have the capacity to filter sediment adequately.
- Roads located in proximity to waterways that are not adequately surfaced or seeded.
- Intense and continual livestock use of the near stream area, leading to substantial reduction of ground cover and vegetation.
- Location of livestock feeding sites in the area near a stream.
- Stream crossings whether for livestock or vehicles and equipment which are “mudded out” (excessively muddy and unstable soil).
- Over irrigation of soils likely to erode, such as recently farmed land, leading to rill or gully erosion.
- Harvest of Christmas trees, tree seedlings, or root crops during the rainy season without adequate near stream vegetation or other precautions to filter sediment adequately.

MANY OF THE PRACTICES WHICH WOULD CONTRIBUTE SEDIMENT TO A WATERWAY ARE ALREADY COVERED BY REGULATIONS IN ORS 468B. HOWEVER, THEY ARE INCLUDED IN THIS PLAN SO THAT ENFORCEMENT ACTION IS HANDLED BY THE ODA UNDER THE SAME ENFORCEMENT PROCEDURES AS THE UMPQUA BASIN ADMINISTRATIVE RULES VIOLATIONS. THUS, LANDOWNERS ARE AFFORDED THE SAME OPPORTUNITY FOR TESTING AND APPEAL AS DESCRIBED IN THIS PLAN. Ditch maintenance and repair are presently subject to the Oregon's Removal-Fill Law (ORS 196.800-990) and associated administrative rules. This Umpqua Basin AgWQM Area Plan requires no additional conditions for those sites and activities subject to the Oregon Removal-Fill Law.

Nutrients

Nutrients, such as nitrogen, phosphorous, potassium, and sulfur are critical to plant growth. In fact the beautiful sub-clover pastures for which Douglas County is known are made possible by annual applications of phosphorous and sulfur. For many landowners, fertilizer is a significant budget item and managing those nutrients effectively is essential to productive and profitable farming and ranching in Douglas County. However, when nitrogen and phosphorous enter streams, they can have a very negative impact. Excess nitrogen and phosphorus contribute to increased aquatic weeds and algae growth, slowing water movement that leads to warmer water temperatures, and reduced dissolved oxygen levels available to fish. Keeping nutrients in the soil and out of waterways is a win-win situation.

It is the responsibility of the Umpqua Basin LAC to identify those situations resulting from agricultural activities that would seriously impact water quality in the Umpqua Basin and identify them as “unacceptable conditions.”

Unacceptable Condition Addressing Nutrients

Substantial amounts of phosphorous (i.e. in excess of water quality standards⁴) moving from agricultural lands into waters of the state as a result of agricultural activities is identified as an unacceptable condition.

⁴ When levels of P exceed 0.1 mg per liter, they are above acceptable water quality standards.

When a condition comes to the attention of ODA, which appears to be in violation of the nutrient rule, every practical means shall be used to make a proper determination of the source of the nutrient, the cause of the nutrient movement, and the degree of the problem. Appropriate testing will be conducted to verify that phosphorous levels of waters leaving agricultural land are in excess of water quality standards (see footnote 4 for a description of the phosphorous standard).

Landowners, to assess their own situations, can do water quality monitoring. Help is available through OSU Extension Service, Oregon Cattlemen's Association, Umpqua Basin Watershed Council, DEQ, and others. ODA and Umpqua Basin LAC encourage landowners to get involved in water quality monitoring.

Situations which could contribute to nutrient contamination of waterways:

(This list is not intended to cover all possibilities, nor will these situations always result in violation of the "nutrient rule." It is provided to help landowners assess the potential problems on their lands.)

- Placement of fertilizer in a waterway or so near to a waterway that runoff carries it into the waterway.
- Location of an animal feeding area, or other concentration of animals so near to a waterway that animal waste is carried into the waterway.
- Placement of barn maintenance waste so near to a waterway that runoff moves nutrients into the waterway.
- Irrigation practices which result in nutrient laden surface runoff returning to the waterway.
- Soil erosion that carries soils high in nitrogen or phosphorus into a waterway.
- Over-irrigation that moves nitrogen into the ground water, returning to waterways through sub surface runoff.

MANY OF THE PRACTICES WHICH WOULD CONTRIBUTE NUTRIENTS TO A WATERWAY ARE ALREADY COVERED BY REGULATIONS IN ORS 468B. HOWEVER, THEY ARE INCLUDED IN THIS PLAN SO THAT ENFORCEMENT ACTION IS HANDLED BY THE ODA UNDER THE SAME ENFORCEMENT PROCEDURES AS THE UMPQUA BASIN ADMINISTRATIVE RULES VIOLATIONS. THUS, LANDOWNERS ARE AFFORDED THE SAME OPPORTUNITY FOR TESTING AND APPEAL AS DESCRIBED IN THIS PLAN.

Bacteria

Bacteria, such as E. coli, can represent a serious hazard to human health. People are exposed to water-borne bacteria while swimming, fishing, water skiing, etc. However, many people are at risk for bacterial infection, particularly the very young and elderly and those who have weakened immune systems due to poor health or medical treatments. Agricultural activities could be one source of bacterial contamination of water. Streams and rivers can also be contaminated by wildlife, leaking septic systems, sewage spills, etc.

It is the responsibility of the Umpqua Basin LAC to identify those situations resulting from agricultural activities, which would seriously impact water quality in the Umpqua Basin and identify them as "unacceptable conditions."

Unacceptable Condition Addressing Bacteria

Substantial amounts of bacteria (i.e. in excess of water quality standards) moving from agricultural lands into waters of the state as a result of agricultural activities is identified as an unacceptable condition. Off stream ponds, which do not contribute to waters where public exposure is possible are exempt from this rule.

When a condition comes to the attention of Oregon Department of Agriculture, which appears to be in violation of the bacteria rule, every practical means shall be used to make a proper determination of the source of the bacteria, the cause of the bacterial movement, and the degree of the problem. Appropriate testing will be conducted to determine if bacteria levels in waters leaving agricultural land are in excess of water quality standards⁵.

Water quality monitoring can be done by landowners to assess their own situations. Help is available through OSU Extension Service, Oregon Cattlemen's Association, DEQ, and others to develop an appropriate monitoring program. ODA and the Umpqua Basin LAC encourage landowners to become involved in water quality monitoring.

Situations which could contribute to the bacterial contamination of waterways:

(This list is not intended to cover all possibilities, nor will these situations always result in violation of the "bacteria rule." It is provided to help landowners assess the potential problems on their lands.)

- Location of an animal feeding area, or other concentration of animals, so near to a waterway so that animal waste is carried into the waterway.
- Placement of barn maintenance waste so near to a waterway that runoff moves bacteria into the waterway.
- Irrigation practices which result in bacteria laden surface runoff returning to the waterway.
- Disposing of carcasses, or any other bacteria laden debris, near a waterway.

MANY OF THE PRACTICES WHICH WOULD CONTRIBUTE BACTERIAL CONTAMINATION TO A WATERWAY ARE ALREADY COVERED BY REGULATIONS IN ORS 468B. HOWEVER, THEY ARE INCLUDED IN THESE RULES SO THAT ENFORCEMENT ACTION IS HANDLED BY THE ODA UNDER THE SAME ENFORCEMENT PROCEDURES AS THE UMPQUA BASIN ADMINISTRATIVE RULES VIOLATIONS. THUS, LANDOWNERS ARE AFFORDED THE SAME OPPORTUNITY FOR TESTING AND APPEAL AS DESCRIBED IN THIS PLAN.

Temperature

⁵OAR 340-041-0285(e) (2000 edition) states organisms of the coliform group commonly associated with fecal sources shall not exceed (1) in freshwater and estuarine waters other than shellfish growing waters - a 30-day log mean of 126 E. coli organisms per 100 ml, based on a minimum of five samples and no single sample shall exceed 406 E. coli organisms per 100 ml., (2) in marine waters and estuarine shellfish growing waters - a fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

In this standard the number of organism refers to the number of colonies that develop on a petri dish from a sample of water.

Water temperature above water quality standards is the single largest category for 303(d) listing of streams in the Umpqua Basin and in Oregon. This is also the most controversial listing parameter, as warm temperatures are often viewed as a concern solely for fish. In reality, temperature has a dramatic impact on water quality because warm water temperatures along with available nutrients encourage weed and algae growth. The end result is slower water movement further increasing in water temperature, reduced oxygen in the water, and lower pH.

River temperatures in the Umpqua Basin often reach the 80's, so a goal of 64°F when salmonid fish rearing occurs, and 55°F when native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels occur, seems out of reach to many in agriculture. However, landowners may be able to reduce the rate of warming of water by encouraging vegetation, which will shade streams, and by using irrigation water as efficiently as possible.

Perennial Streams – those streams that flow above ground throughout the year, and are contributing to the downstream system during July, August, September or October, during the majority of years, are of concern as temperature is considered.

Unacceptable Condition Addressing Temperature

Agricultural management or soil-disturbing activities that preclude establishment and development of adequate riparian vegetation for streambank stability and streambank shading, consistent with site capability, along a perennial stream which has a site potential for such vegetation is considered an unacceptable condition. Minimal breaks in shade vegetation for essential management activities are considered appropriate.

Irrigation practices that contribute significant amounts of warmed surface water⁶ back into a stream are considered an unacceptable condition.

When a condition comes to the attention of ODA, that appears to be a violation of the temperature rule, every practical means shall be used to make a proper determination as to the agricultural activity's impact on stream temperature. Appropriate analysis will be conducted to verify that agricultural activity is resulting in a loss of shade producing vegetation, that the site has the potential for effective shading vegetation; or that warmed irrigation water is returning to the stream.

Monitoring of stream temperatures, riparian vegetation, and evaluation of irrigation systems can be done by landowners to assess their own situations. Help is available through OSU Extension Service, Oregon Cattlemen's Association, DEQ, and others. ODA and the Umpqua Basin LAC encourage landowners to become involved in water quality monitoring.

Situations that could contribute to increased stream temperatures include:

(This list is not intended to cover all possibilities, nor will these situations always result in violation of the "temperature rule," it is provided to help landowners assess potential problems on their lands.)

⁶ Irrigation systems that allow more than 3% of water pumped during any one irrigation setting to return as surface runoff to a stream.

- Removal of vegetation from the riparian area of a perennial stream that would have provided effective shading and/or bank stability.
- Grazing management that does not allow vegetation, which would provide effective shade and/or bank stability along a perennial stream to become established.
- Farming practices that do not allow vegetation to establish, that would provide effective shade and/or bank stability along a perennial stream.
- Allowing surface returns of surplus irrigation water.
- Use of irrigation water in excess of crop needs or soil water-holding capacity.

Waste Management

ORS 468B.025 is an existing statute which was developed to address water pollution from waste discharge. As stated earlier, ORS 561.190 – 561.191 (SB 502) was passed in 1995 to ensure that ODA is the lead state agency responsible for direct regulation of farming activities for the purpose of protecting water quality. To implement ORS 561.190 - .191, the department is incorporating ORS 468B.025 and 050 into all of the area plans in the state. ORS 468B.025 and 050 have been incorporated for the purposes of this plan by including the following language in the rules that are part of this plan.

Unacceptable Condition Addressing Waste Management

Effective upon adoption, no person subject to these rules shall violate any provision of ORS 468B.025 or ORS 468B.050.

ORS 468B.025(1) states:

...no person 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 escape or be carried into the waters of the state by any means.
- (b) Discharge any wastes into the 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.

ORS 468B.050 identifies the conditions when a permit is required. In agriculture under state rules these are referred to as Confined Animal Feeding Operations and are operations that confine animals for more than four months per year and have a wastewater treatment facility.

Definitions:

“Pollution” has the meaning given in ORS 468B.005(3) which states: “such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.”

“Wastes” has the meaning given in ORS 468B.005(7) which states: sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive or other substances which will or may cause pollution or tend to cause pollution of any waters of the state.

Other substances, which will or may cause pollution, include commercial fertilizers, soil amendments, composts, animal wastes, and vegetative materials.

Pesticide control is presently regulated by authorities granted to ODA under ORS 634 and through OAR 603.57. Water bodies in the Umpqua Basin have not been identified under 303(d) for pesticide contamination. Carefully following label instructions and implementing integrated pest management strategies can generally reduce pesticide use, increase yields, increase net returns, minimize surface and ground water exposure to pesticides, and decrease economic risk. Proper pesticide use begins with reading the label on the container and following the instructions. As required by ORS 634.372(2), users of pesticides must follow label recommendations for both restricted and non-restricted use pesticides.

Enforcement Procedures

ODA's primary mission is to support Oregon's agricultural industry. ODA will have the responsibility for enforcing area rules derived from the Umpqua Basin AgWQM Area Plan. It is the intent of the LAC that fines and civil penalties be used as a last resort in the effort to improve water quality in the Umpqua Basin. This is consistent with the direction provided in the Oregon Administrative Rules for the Agricultural Water Quality Management Program (603-090-0000 through 603-090-0120). This Area Plan includes an enforcement policy because it is a required element of an Plan, and to provide a mechanism when reasonable attempts at voluntary solutions have failed.

The primary focus of the Umpqua Basin Area Plan is education toward voluntary compliance with the plan. Even the enforcement procedure is designed to educate first and penalize only as a last resort.

In the event that a situation comes to the attention of ODA that may be a violation of the Umpqua Basin Agricultural Water Quality Administrative Rules, a prescribed procedure will be followed, EXCEPT FOR FLAGRANT⁷ POLLUTION OF WATERS OF THE STATE, FLAGRANT DESTRUCTION OF ADEQUATE RIPARIAN VEGETATION ALONG PERENNIAL STREAMS OR AFTER REPEATED REFUSALS TO ADDRESS WATER QUALITY VIOLATIONS, AT ANY POINT IN THE PROCESS, THE LANDOWNER MAY CHOOSE TO ADDRESS A PROBLEM AND NO CIVIL PENALTIES WILL BE LEVIED BY ODA.

1. Any person alleging a violation of the Umpqua Basin Agricultural water quality administrative rules may file a complaint with ODA. The ODA will evaluate or investigate a complaint filed by a person if the complaint is in writing, signed, and dated by the complainant, and indicates the location and description of the violation of the Umpqua Basin Agricultural Water Quality Administrative Rules.
2. If the problem appears to be a violation of the Umpqua Basin Agricultural Water Quality Administrative Rules, an Oregon Department of Agriculture representative will contact the landowner to schedule a meeting. NO ODA REPRESENTATIVE WILL ENTER PRIVATE PROPERTY AT ANY TIME WITHOUT THE OWNER'S PERMISSION OR A VALID SEARCH WARRANT.
3. The situation will be reviewed on-site by an ODA representative and the landowner. The on-site review will include an investigation by ODA that may include collecting appropriate samples for testing and consultation with experts as appropriate, at ODA's expense. If no problem exists, the landowner would receive a Letter of Compliance and the complaint would be dropped.
4. If ODA determines through the investigation that a violation of the Umpqua Basin Agricultural Water Quality Administrative Rules exists, ODA will advise the landowner of the violation and work with the landowner to solve the problem. Any recommendations

⁷ As defined in OAR 603-090-0060(2) - any violation where the respondent had actual knowledge of the law and knowingly committed the violation.

would include a timetable and an agreement to revisit the site as necessary to confirm that progress is being made to correct the violation within the time period given. This would complete the process if the landowner fixes the problem.

5. If the landowner does not agree that a problem exists, the landowner may choose to do additional testing or consultation at their own expense and request a review by ODA of the initial findings in light of any additional information collected.
6. If evaluation of the additional information by ODA determines that no problem exists or that the violation is not the result of an agricultural practice by the landowner, the landowner would receive a Letter of Compliance and the process is complete.
7. If there is a confirmed problem that a landowner refuses to address after ODA's on-site visit, and ODA's attempts to work with the landowner to develop a mutually agreeable solution, civil penalties can be levied. Civil penalties are issued by ODA director or the director's designee and will be based on the seriousness of the violation and the magnitude of the effect. OAR 603-090-0120(3) describes the civil penalty matrix for first violations which begins at \$50 and ranges to \$1200, and the civil penalty matrix for repeat violations which begins at \$100 and ranges to \$5000. ORS 568.933 states "each day of violation continuing after the period of time for correction set by ODA shall be considered a separate violation unless ODA finds that a different period of time is more appropriate to describe a specific violation event."
8. A landowner issued a civil penalty due to a violation of the Umpqua Basin Agricultural Water Quality Administrative Rules may request a hearing with the director of ODA. The hearing provides for the director to hear the landowners' disposition from which the director determines appropriate action, which can include a modification of the civil penalty or other form of intermediate sanction.
9. A landowner issued a civil penalty due to a violation of the Umpqua Basin AgWQM Area Administrative Rules may request a formal hearing by a hearings officer assigned from the Hearing Officer's Panel in accordance with applicable contested case procedures as described in ORS 183.413 to 183.550. Upon conclusion of the hearings process, a hearings officer will prepare a proposed order that includes recommended findings of fact, conclusions of law, and appropriate action by the agency. If the order is in favor of the landowner, the process is complete. If not, the landowner becomes subject to procedures for payment of the civil penalty.

THE PROCESS IS DESIGNED TO BE FAIR TO THE LANDOWNER AND TO ALLOW ENFORCEMENT OF THE UMPQUA BASIN AGRICULTURAL WATER QUALITY ADMINISTRATIVE RULES. AS INDICATED IN OAR 603-090-0020, THIS PROCESS INCLUDES A REVIEW EVERY TWO YEARS BY THE LAC TO PROVIDE CONTINUED ADVICE TO THE ODA ON MODIFICATION TO THE PLAN AND RULES THAT MAY BE NECESSARY.

Education

The goal of the Umpqua Basin education effort is to create a high level of awareness and an understanding of water quality issues among the agricultural community and the rural public, in a manner that encourages cooperative efforts through education and technical assistance. When agricultural land managers recognize that measures that protect water quality can also improve their profitability, progress toward improved water quality will be much more rapid.

Water quality projects will be used as educational demonstrations. Each water quality project should be reviewed with two concerns: 1) what will this do to improve water quality or fish habitat and, 2) how will this project improve the farm or ranch's productivity. For example, a new livestock watering system may reduce impact to the stream and streambank and provide clean water for livestock, or a new fence may protect a streambank and provide another pasture division, which improves grazing management.

Educational programs will address the relationship of practices on water quality and agricultural productivity. ODA funds many educational events through its Local Management Agency funds distributed to each local SWCD. Some examples are listed below.

Riparian Area Management

Riparian areas are important in influencing water quality. Managing riparian areas separately from upland areas can lead to increased productivity in terms of agriculture and water quality. Healthy riparian areas perform many functions:

- Stabilize streambanks and reduce erosion potential.
- Provide vegetation and shade to moderate stream temperature.
- Provide forage for grazing livestock.
- Provide wildlife habitat and connecting corridors for wildlife movement.
- Add large woody debris and fine organic matter to the stream channel.
- Slow overland runoff into streams and filter out nutrients and sediment before they reach the stream.

Good management of riparian areas in conjunction with farming and grazing is possible! Many ranchers in Douglas County have successfully protected stream banks and riparian vegetation while farming and grazing. Sensitive areas can be protected with managed, timely riparian grazing, proper stocking rates, off channel watering, buffer strips, and temporary or permanent fences where appropriate.

Livestock and Pasture Management

Well-managed pastures provide excellent ground cover and protect soil resources and water quality. Pastures have a relatively low requirement for applied fertilizer, which means that there is very little potential for fertilizer impact on waterways. Grazing as an agricultural practice can greatly reduce the need for broadcast pesticides. Productive pastures are high in organic matter, which improves water infiltration and water retention, reducing runoff. Pasture plants have a remarkable ability to recycle nutrients from manure and urine, and a well established, healthy pasture will utilize 90 percent of the

nitrogen, phosphorous, potassium, and sulfur within the square yard where it was deposited⁸. When pastures are managed so that nutrients are recycled, water quality is protected and dollars spent on fertilizer are reduced.

Irrigation Management

Landowners benefit from proper irrigation water use by maximizing water use efficiency and minimizing waste. Improved irrigation systems and irrigation management conserves water, protects water quality, and reduces pumping costs and loss of soil nutrients.

Estuarine Management

A sizable portion of agricultural ground in coastal Douglas County is protected from tidewaters with a system of dikes, ditches and tide gates. Farmers and ranchers in these areas must maintain these systems in order to maintain the productivity of these pastures and hay fields.

⁸ From Gerrish, J., 1997, Introduction to Management Intensive Grazing. In 1997 Missouri Grazing Manual, University of Missouri Extension Publication.

Education Plan

The Douglas and Umpqua Soil and Water Conservation Districts will lead agricultural water quality education projects within the Umpqua Basin. They will work hand in hand with US Department of Agriculture Natural Resource Conservation Service, the OSU Extension Service, and the Umpqua Basin Watershed Council to carry out an effective water quality education program.

To define, implement, and measure the success of the Umpqua Basin education effort, the following tasks can be pursued:

1. Conduct education programs to promote public awareness of water quality issues.
 - Hold workshops on water quality issues and the conservation practices that will help improve water quality.
 - Develop demonstration projects to highlight successful conservation practices and systems.
 - Organize tours of demonstration projects for agricultural managers and producers.
 - Produce and distribute brochures about water quality issues.
 - Prepare standard presentations for agricultural producer groups.
 - Develop detailed, one-page Umpqua Basin fact sheets for erosion control, nutrient and waste management, livestock and grazing management, and riparian and streambank management.
 - Conduct one-on-one and small group visits with landowners to discuss the Umpqua Basin Area Plan and adaptive management solutions.
2. Conduct a media program to inform Umpqua Basin agricultural operators, rural landowners, and the public of conservation issues and events.
 - Submit news articles and public service announcements to area newspapers, radio stations, and newsletters.
 - Invite media to conservation tours and workshops.
 - Include updates on the status of the Umpqua Basin Area Plan and water quality data in Umpqua Basin SWCD, OSU Extension Service and watershed council newsletters.
3. Involve the agricultural community in conservation education.
 - Create and maintain a list of experienced agricultural operators willing to share management solutions with other interested people by speaking, leading tours, and providing tour sites.
4. Build partnerships with commodity groups to promote conservation.
 - Co-sponsor workshops and tours among the Umpqua Basin SWCDs, watershed councils, and commodity groups.
 - Share education materials with commodity groups and their representatives.
 - Develop educational materials in conjunction with commodity groups and watershed councils.
 - Partner with other agricultural and natural resource agencies, watershed councils, and commodity groups to access and acquire the material and financial resources to implement the Umpqua Basin Area Plan and its educational component.

- Meet with other agencies and organizations, and develop a strategy to obtain funding from traditional and nontraditional sources.

Monitoring

Monitoring and evaluation of the Area Plan

Evaluation of the Area Plan's success involves several types of monitoring. These are:

- Baseline condition monitoring
- Implementation monitoring
- Trend monitoring
- Effectiveness monitoring

This section describes each type of monitoring and the activities associated with each type of monitoring.

Baseline Condition Monitoring – What are current conditions?

Baseline condition monitoring provides a starting point for assessing water quality trends and land conditions. To evaluate the effects of the Area Plan and Rules, implementation partners must collect a picture of conditions prior to implementation.

Water Quality Baseline Monitoring

To assess existing water quality conditions, Oregon Department of Agriculture water quality staff review water quality data from the Oregon Department of Environmental Quality's Laboratory Analytical Storage and Retrieval (LASAR) database. In many cases, monitoring sites included in this database are adequate to characterize and track conditions in agriculturally influenced watersheds. In other cases, ODA staff may recommend additional monitoring sites that would be useful for tracking agriculture's effects on water quality.

ODA looks at all data for trends, but focuses on the parameters of concern for the specific subbasin.

ODA applies the following criteria to water quality data used for trend monitoring:

- 1) Monitoring stations must have at least partial influence from agricultural lands.
- 2) Data must not be older than 1985.
- 3) Data must be a continuous record of at least two years (the frequency of monitoring was not considered).
- 4) Data set ideally should include at least the following constituents:
 - a) Total Suspended Solids
 - b) Nitrate
 - c) Ammonia
 - d) E. coli or fecal coliform
 - e) Total Phosphorus or orthophosphate
 - f) Dissolve Oxygen, or Chemical Oxygen Demand/Biochemical Oxygen Demand
 - g) pH

The above constituents are considered needed for tracking changes in water quality related to agricultural activities. Contact the Umpqua and Douglas SWCDs for the latest information regarding their water quality baseline monitoring.

Land Condition Baseline Monitoring

Currently, ODA is focusing land condition monitoring efforts on riparian areas because these areas have such an influence over water quality. Riparian land conditions are evaluated every five years for each Management Area by sampling about 5 percent of the riparian agricultural land. Each stream included in the evaluation receives a riparian condition score based on cover. Because site conditions vary across the state, there is no one correct riparian index score. Rather, the index is a means to evaluate change over time on individual reaches.

Eleven stream reaches were evaluated in 2006 and represented a wide range of characteristics and riparian index scores. These stream reaches will be re-evaluated in 2011 pending funding.

Trend Monitoring – Are Conditions Changing?

Trend monitoring evaluates long-term changes in landscape conditions and water quality. In general, trend monitoring activities are a continuation of baseline monitoring activities. Ideally, areas selected for baseline monitoring will also be used for trend monitoring.

Implementation monitoring – What is being accomplished?

Implementation monitoring tracks the conservation practices that have been implemented to benefit water quality. The local SWCD and NRCS track practices that have been implemented through quarterly reports to ODA and through an NRCS database. In addition, projects that have received funding from the Oregon Watershed Enhancement Board are tracked in OWEB's restoration database.

It is more difficult, if not impossible, to track beneficial practices that landowners have implemented on their own without funding or outside technical assistance. Needless to say, there are hundreds of thousands of private dollars being spent on private agricultural lands around the basin.

A complete list of accomplishments by the SWCDs and local watershed councils can be found in the most current biennial report available at the ODA web site or at the local SWCDs.

Effectiveness monitoring – Are efforts protecting and improving water quality?

Effectiveness monitoring occurs at two scales. At a management area scale, land condition data are compared against water quality data over time to determine if changes in land conditions are improving water quality. At a farm scale, ODA and local partners have initiated several projects to evaluate the effects of several management practices on water quality.

Monitoring of water quality in the Umpqua Basin is ongoing, intensive and extensive. Watershed assessment under the direction of the Partnership for Umpqua Rivers is underway in several subbasins including Deer Creek and Cow Creek at this time, with additional subbasins scheduled. In addition,

intensive temperature monitoring studies have been done on a number of streams in the basin, with follow-up studies continuing to provide comparison. OWEB and EPA 319 grants have funded bacterial studies and temperature studies particularly in the Smith River Watershed. The Umpqua SWCD has four years worth of data on agricultural streams in their region. This has been compiled into a report available from the Umpqua SWCD.

The Umpqua Basin Explorer allows users to explore water quality in the Umpqua Basin through an interactive mapping tool that includes detailed graphs of water-quality data. The Umpqua Basin Explorer can be found at <http://www.oregonexplorer.info/umpqua>.

OSU Extension has trained a number of volunteer water quality monitors and a lab has been established at Umpqua Community College to facilitate testing. Landowners may request that testing be done by these volunteers. Agricultural landowners are also working with consultants associated with the Oregon Cattlemen's Association to obtain data on their stream reaches.

DEQ is continuing their water quality testing to revise the 303(d) list and complete the basin TMDL as required by law, and their data is available.

All of the data from these monitoring efforts can be used to determine the areas of concern related to water quality, areas in good condition, and the effects of changes in management. Water quality monitoring can be done by landowners to assess their own situation. Help is available through OSU Extension, Oregon Cattlemen's Association, Umpqua Basin Watershed Council, DEQ, and others. For guidelines to perform monitoring, the OWEB has developed *Water Quality Monitoring: Technical Guide Book*, July 1999. This is the recommended guide for conducting water monitoring in Oregon. ODA and Umpqua Basin LAC encourage landowners to get involved in water quality monitoring.

APPENDIX A – 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 nonpoint pollution control programs. Listed below are the Coastal Zone Management measures that were developed for use in Oregon for coastal basins such as the Umpqua.

The following section contains the approved management measures for coastal nonpoint pollution in Oregon as developed for the Coastal Zone Reauthorization Amendments.

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, Natural Resources Conservation Service to minimize the delivery of sediment to surface waters.
- Design and install a combination of management and physical practices to settle the settle able 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 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 overgrazing and 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 streambanks to recover.
- Control the timing of grazing to: (1) keep livestock off streambanks 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: (a) the accurate measure of soil water depletion and the volume of irrigation applied, and (b) uniform application of water.
- When chemigation is used, include backflow preventers 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 tailwater 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.

APPENDIX B - TECHNICAL AND FINANCIAL RESOURCES FOR LANDOWNERS IN THE UMPQUA WATERSHED

Bureau of Land Management
777 N.W. Garden Valley Blvd.
Roseburg, OR 97470
541-440-4930

Oregon Department of Fish and Wildlife
4192 N. Umpqua Highway
Roseburg, OR 97470
541-440-3353

Douglas County Water Resources Advisory Board
1036 S.E. Douglas
Roseburg, OR 97470
541-440-4231

Oregon Department of Forestry
1758 N.E. Airport Road
Roseburg, OR 97470
541-440-3412

Douglas Soil and Water Conservation District
2741 West Harvard Ave.
Roseburg, OR 97470
541-957-5061

Oregon State University Extension Service
Douglas County Office
1134 S.E. Douglas Avenue
Roseburg OR 97470
541-672-4461

Douglas Timber Operators
3000 N.W. Stewart Parkway
Roseburg, OR 97470
541-672-0757

Southwest Resource Conservation and Development
Council
576 NE "E" Street
Grants Pass OR 97526
541-476-5906

Farm Services Agency (CREP Programs)
251 N.E. Garden Valley Blvd.
Roseburg, OR 97470
541-673-8316

Partnership for the Umpqua Rivers
1758 N.E. Airport Road
Roseburg, OR 97470
541-673-5756

Oregon Watershed Enhancement Board
221 Stewart Ave
Suite 201
Medford, Or. 97501
(541) 776-6010 ext.231

U.S. Department of Fish and Wildlife
2900 N.W. Stewart Parkway
Roseburg, OR 97470
541-957-3470

National Marine Fisheries Service
2900 N.W. Stewart Parkway
Roseburg, OR 97470
541-957-3383

U.S. Forest Service
2900 N.W. Stewart Parkway
Roseburg, OR 97470
541-957-3204

Natural Resources Conservation Service
2440 NW Troost St., Suite 202,
Roseburg, OR 97470
(541) 673-6071 Ext. 107

Umpqua Regional Council of Governments
1036 S.E. Douglas
Roseburg, OR 97470
541-440-4231

Oregon Department of Environmental Quality
165 East 7th Avenue, Suite 100
Eugene, OR 97401
(541) 687-7345

Umpqua Soil and Water Conservation District
2285 Longwood Dr.
Reedsport, OR 97467
541-662-1341

Oregon Department of Environmental Quality (Coastal
Zone Management)
1102 Lincoln, Suite 210
Eugene, OR 97401
541-686-7838

Map – Umpqua Agricultural Water Quality Management Area

