

## **APPENDIX A-10:**

# **UMATILLA RIVER SUBBASIN AGRICULTURAL WATER QUALITY MANAGEMENT AREA PLAN**

Prepared by Oregon Department of Agriculture and the Umatilla County Soil and Water Conservation District through Oregon Senate Bill 1010. Issued September 15, 1999.

**Umatilla River Subbasin  
Agricultural Water Quality  
Management Area Plan  
Guidance Document**

Developed by

**The Umatilla River Subbasin Local Agricultural Water  
Quality Advisory Committee**

with assistance from

**The Oregon Department of Agriculture  
and  
The Umatilla County  
Soil and Water Conservation District**

**September 15, 1999**

**Local Advisory Committee Members**

**Kathy Ferge  
Jim Harris  
Bob Lazinka**

**Robin Fletcher  
Karl Jensen  
Clinton Reeder**

**Pat Davis  
Don Key  
Phil Walchli, Chair**

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**APPENDIX 1 - UMATILLA RIVER SUBBASIN MAP 20**

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# **Agricultural Water Quality Management Area Plan Umatilla River Subbasin**

## **Geographic Area and Physical Setting**

The Umatilla River subbasin is a 2545 square mile area encompassing most of Umatilla County and portions of Morrow County in Northeast Oregon. The Umatilla river originates in the Blue Mountains and flows generally westward, across the Columbia Plateau, approximately 100 miles, discharging into the Columbia River at the townsite of Umatilla. The basin has a continental climate with a winter precipitation pattern. Precipitation varies from 8-10 inches along the Columbia River, to as high as 45 inches in the higher elevations of the Blue Mountains. Peak flows normally occur in the spring with high elevation snowmelt and diminish throughout the summer to their low points in August or September. Below Pendleton, summer flows are augmented with releases from McKay Reservoir for irrigation and fisheries. Elevations range from 270 feet at the Columbia River, to above 6,000 feet at the highest peaks of the Blue Mountains. A thick sequence of lava flows, known as the Columbia River Basalt, underlies nearly all of the basin. Regional uplifting formed the Blue Mountains along the south and east borders of the basin. The basalt bedrock is covered with younger sedimentary deposits from glacial and river origins. Alluvium is common in the valleys and floodplains. A layer of loess, windblown silt and fine sand, of various depths, covers the land surface of much of the basin.

## **Land Use**

Agricultural land, both dryland and irrigated, comprise about 42% of the basin area. Rangeland and range-forest transition areas account for another 42%, and the remaining portion of the basin is approximately 13% forest and 3% urban and developed areas. Historically, early settlers arrived (1843-1880) to mountains covered with forests and native grasses covering the plateau lands. These early settlers pursued an agrarian lifestyle, primarily raising livestock and with limited crop production. Heavy livestock grazing during the last half of the 1800's and early part of this century, along with expanding cultivation, modified much of this native vegetation. Less desirable, drought-tolerant species moved in converting thousands of acres of perennial grasses to sagebrush, rabbitbrush, and antelope bitterbrush. Intensive tillage began during the 1880's to 1910's, causing large amounts of native grassland to be converted to dry cropland. Mechanization and government policy (WWII horse slaughter) reduced the number of horses and the need for large areas of pasture and hay production by the late 1940's or early 1950's. Irrigation water rights date to the 1860's for flood irrigating in creek valleys. Several Bureau of Reclamation projects, beginning shortly after the turn of the century, developed arid areas in the lower basin. Since the advent of modern irrigation systems, thousands of acres of land in the lower basin have been developed for crop production.

Nearly 85% of the Basin, mostly agricultural and rangeland, is in private ownership. The federal government owns about 9% and the Umatilla Indian Reservation includes about 6% of the basin. The present population of Umatilla county is approximately 68,000 with about 60% in urban areas. Growth is expected to add 10,000 people in the next 10 years in the lower basin.

Records from 1900 indicate there were 223,000 sheep, 19,500 cattle, and 20,000 horses in the Umatilla Basin. The 1996 Oregon State University Extension Service statistics indicate there are 46,000 sheep, 32,000 cattle, and 3,800 horses in the basin. The acreage used to grow grain has increased from 126,800 in 1890 to 340,750 in 1996. A total of 480,000 acres is now used for crop production.

Economically, the Umatilla Basin is regarded as one of the state's major agricultural centers. Umatilla County ranks second in the state in agricultural commodity sales at \$275 million. Wheat and other grains are the major commodities followed by cattle and potatoes. Hay and vegetables are also large contributors with vineyards, canola, and other alternative crops emerging as new commodities. Currently 10% -15% of the cropland has been retired from crop production, enrolled in Conservation Reserve Program and seeded to grass, shrubs and trees. The timber industry has declined dramatically in recent years primarily due to harvest reductions on national forest lands. Food processing, mainly located in the lower basin, has continued to expand.

The first inhabitants of the basin were the Native Americans. The tribes' homeland once encompassed 6.4 million acres in NE Oregon and SE Washington. As a result of the 1855 Treaty with the United States Government and subsequent federal legislation, the present day reservation of the Confederated Tribes of the Umatilla (CTUIR) consists of 172,000 acres, which lies entirely within the Umatilla River subbasin. The ownership of reservation land is: 20,200 acres of Tribal ownership, 68,350 acres in individual allotments, and 83,589 acres owned by non-natives. The CTUIR reserved their sovereign authority and reserved rights to harvest fish, wildlife, and other natural resources in their traditional homeland.

## **Water Use**

The average discharge of the Umatilla River at Yoakum (River Mile 37) is about 495,000 acre-feet (AF) per year. The gauged yield at Umatilla (RM 2) is about 336,000 AF per year. The difference is due to withdrawals for irrigation and other purposes. The Umatilla River was adjudicated in 1916. The court decree defined rights for irrigation, municipal, domestic, stock, power, and industrial water use. The irrigation season was defined as March 1 to November 1. Above Pendleton (RM 55), surface water rights for all purposes total about 17.6 cubic feet per second (cfs). The entire Umatilla River drainage has surface water rights totaling 1954.8 cfs (out-of-stream uses = 1813.5 cfs).

Two major reservoirs store water in the Umatilla River Subbasin: McKay has a design capacity of 73,800 AF and Cold Springs is 50,000 AF. Both reservoirs are primarily for irrigation but provide wildlife, recreational, and flood control benefits as well. Many other sites have been studied for storage, but none has been developed due to economic reasons.

Six major irrigation diversions, within the Federal Umatilla Reclamation project, are located in the lower 32 miles of the mainstem Umatilla River. Large quantities of water are diverted and at times dewater entire reaches of the mainstem during summer and fall months. Return flows to the river are an important factor in availability of water in the lower reaches. A cooperative program between

the Bureau of Reclamation, irrigators and the CTUIR provides releases from McKay Reservoir for critical fish passage.

The Umatilla River subbasin supports a variety of anadromous and resident fish, both cold and warm water species. The historical abundance of the basin's anadromous fish resources, including fall and spring chinook, coho and steelhead, has been greatly diminished. The bull trout and summer steelhead are listed as a threatened species under the federal Endangered Species Act (ESA). Recovery efforts have resulted in the restoration of chinook and coho salmon runs in the basin.

The Umatilla River subbasin is home to four indigenous species of fish that qualify as Sensitive, Threatened or Endangered under either the federal ESA or Oregon's Sensitive Species Rule (Oregon Administrative Rules (OARs) 635, Division 100).

<b>Species</b>	<b>ESA Status</b>	<b>Sensitive Species Status</b>
Bull trout	Threatened	Critical
Summer steelhead	Threatened	Vulnerable
Redband trout		Vulnerable
Margined sculpin		Vulnerable

The Umatilla Basin Project, which began construction in the late 1980's, is designed to deliver water from the Columbia River to the Umatilla basin irrigation systems, permitting Umatilla River water, which was formerly diverted or stored for irrigation use, to remain in the Umatilla River to improve flows for salmon and steelhead production. In addition, the project improved fish passage facilities and provided protective screens to the major irrigation diversions.

Extensive development of the basalt groundwater resource, largely for irrigation, began in the mid 1960's. Estimates of annual groundwater use and annual groundwater recharge to the basalts, indicates that the available groundwater supply was being significantly overdrawn. The Oregon Water Resources Department (WRD) documented declines in many wells as well as interference between wells. Critical Groundwater Areas have been established in the Ordinance, Butter Creek, and Stage Gulch areas. These orders control the amount of water pumped from wells in those areas and limits the development of new wells.

In 1990, the Oregon Department of Environmental Quality (DEQ), declared the Lower Umatilla Basin a Groundwater Management Area, because of nitrate-nitrogen concentrations that exceeded federal safe drinking water standards in many area groundwater samples. An Action Plan for this area was completed in 1997 to reduce the groundwater contamination. The Oregon Department of Agriculture (the Department), the DEQ and the Groundwater Management Area Committee have agreed to promote a voluntary approach for addressing the groundwater contamination in the area that will complement the implementation of water quality permits.

## **Mission, Goals, Objectives and Scope**

### **Mission**

Seek to achieve water quality standards appropriate to the Umatilla River Subbasin through development and implementation of an Agricultural Water Quality Management Area Plan (AWQMAP).

## **Goals and Objectives**

1. Improve the quality of water in the Umatilla River subbasin through planning and implementation of scientifically based conservation practices.
  - A. Promote upland and stream-side management practices to limit soil erosion and pollution caused by agricultural activities as close to the source as possible, through compliance with the Soil Erosion and Sediment Control prevention and control measures.
  - B. Demonstrate reduction in nitrate, ammonia, phosphorus, bacteria, and thermal contributions from agricultural and rural lands through periodic surveys of stream reaches and associated lands.
  - C. Promote streambank stabilization and the restoration and enhancement of wetlands and riparian habitat through implementation of appropriate Management Practices.
2. Create a high level of awareness and an understanding of water quality issues among the agricultural community and rural public in a manner that minimizes conflict and encourages cooperative efforts through education and technical assistance activities.
  - A. Promote implementation of the AWQMAP as a priority element in the Umatilla County Soil and Water Conservation District's Annual Work Plan with support from partner organizations.
  - B. Promote demonstration projects to showcase successful practices and systems and conduct annual tours for landowners and media.
  - C. Promote recognition of successful projects and practices through appropriate media and newsletters.
  - D. Promote cooperative on-the-ground projects to solve critical problems identified by landowners/operators and in cooperation with partner organizations.
  - E. Conduct educational programs to promote public awareness of water quality issues and their solutions.
3. Proactively invite the agricultural community and rural public to become involved in the process.
  - A. Encourage voluntary individual and cooperative farm planning by providing planning and implementation assistance.

- B. Promote the continued development, adoption and evaluation of practices and technologies which enhance water quality in an efficient and effective manner, by reviewing research and development needs with agriculture assistance agencies and consultants.
  - C. Promote incentive and cost-share programs to assist implementation of plans and related practices by annually identifying water quality funding needs with agencies providing cost-share assistance to agricultural operations.
4. Ensure adequate funding and administration of the program to achieve mission goals and objectives by establishing target watersheds, identifying needs, developing projects, actively seeking funding, and ensuring successful implementation of funded project.

### **Geographic and Programmatic Scope**

The operational boundaries of this plan include all agricultural and rural lands that contribute to the Umatilla River and its tributaries, except federally managed land and activities subject to the Oregon Forest Practices Act (FPA). This plan applies to agricultural lands in current use and those lying idle or on which management has been deferred. This plan applies to rural lands not in agricultural use, but which affect agricultural lands such as roadways and rural residences.

This document recognizes that planning for water quality is only part of a successful approval for overall management of agricultural and rural land, and that other personal and public objectives must also be considered in total farm or resource management planning.

### **Water Quality Issues**

Approximately 40 river/stream segments in the Umatilla Basin have been declared water quality limited by the DEQ under Section 303 (d) of the Clean Water Act. Water quality standards violations occur for temperature, pH, bacteria, nutrients (ammonia and nitrate), turbidity, aquatic weeds/algae, sedimentation, flow modification, and habitat modification. Of these, temperature, flow, ammonia, algae, and bacteria are primarily summer concerns. Additionally, there are concerns with dissolved oxygen. Water quality monitoring is being conducted by an interagency team consisting of: DEQ, the Department, WRD, Oregon Department of Fish and Wildlife, the Umatilla Basin Watershed Council (UBWC), the Umatilla County Soil and Water Conservation District (USWCD), USDA-Natural Resources Conservation Service (NRCS), USDA-Forest Service, CTUIR, City of Pendleton, USDA-Agricultural Research Service, and others. Some agencies are conducting independent monitoring or surveys within the basin.

Data collected over the past few years indicates that temperature, sediment, pH and nutrients are interrelated, and together lead to conditions that impair beneficial use of the water. Temperature is the most common listing and one of the easiest to quantify as well as the most difficult to affect. Further monitoring and data evaluation will be done to support effective solutions and track progress, and will be the basis for future refinement of this plan.

Sources of water pollution can be generalized into two types: point source pollution and nonpoint source pollution. Point source pollution emanates from clearly identifiable discharge points such as wastewater treatment plants and piped effluent from industrial operations. Permits are required for point source discharges. These permits, administered by the DEQ, require that certain effluent standards be met. Nonpoint source pollution is pollution emanating from landscape scale sources and cannot be traced to a single point.

Nonpoint sources of pollution in the Umatilla River watershed include: eroding agricultural and forest lands, eroding streambanks, runoff and erosion from roads and urban areas, runoff from livestock and other agricultural operations, and septic systems. Re-routing of runoff via road building, construction, and land surfacing such as parking areas can lead to excessive erosion or pollutant transport. Pollutants from nonpoint sources are carried to the surface water or groundwater through the action of rainfall, snowmelt, irrigation and urban runoff, and seepage. A major nonpoint source of water quality impairment is heat input, which has increased due to vegetation removal, seasonal flow reduction, changes in channel shape and alteration to the floodplain. Channelization alters gradient, width/depth ratio and sinuosity, causing sediment and temperature increases.

There exists within the basin an extensive network of public roads. Outside of urban areas, there are approximately 1900 miles of county and state managed roadways that equates to nearly 10,000 acres of impermeable surfaces. These roadways also may form blockages or constrictions to streams and waterways that influence erosion and/or sediment delivery and influence functionality of streams. Roads can serve as a conduit to channel runoff from the road onto adjacent land before entering the waterway.

Nutrients can occur naturally in streams and rivers, but elevated concentrations are often the result of pollution due to human activities. Phosphorus and nitrates have been nationally identified as the most important nutrients to prevent from reaching surface water bodies. Excess nutrients can promote the growth of algae, which can reduce beneficial uses of the stream. Biological processes (such as algal production) in surface waters are controlled by the availability of temperature, light, and nutrients. Abundant algae causes wide fluctuations in pH and dissolved oxygen, impacting aquatic life. Nuisance algae and plant growth impair aesthetics and can cause odor problems. While there may not be severe impacts on water quality from a single nonpoint source or activity, the combined effects from all sources contribute, along with impacts from other land uses and activities, to the impairment of beneficial uses of the Umatilla River water. Beneficial uses that are adversely affected include: public and private domestic water supplies, salmonid fish rearing and spawning, resident fish and aquatic life, water contact recreation, and aesthetic quality.

## **Strategies for Achieving Plan Mission, Goals, and Objectives**

The Department's and the USWCD primary strategies to reduce amounts of pollution from agricultural and rural lands lie in the reduction of pollutants in runoff and the reduction of erosion through a combination of educational programs, land treatment, implementation of sound management practices, and installation of erosion control structures. These strategies will be carried out at the local level by the The Department's local management agency, the USWCD, in cooperation with landowners, other agencies, volunteer organizations, and others.

In addition to the voluntary strategies, regulatory measures are included as a strategy in this plan. To gain compliance with prevention and control measures the Department will use enforcement where appropriate and necessary. Any enforcement action will be pursued only when reasonable attempts at voluntary solution have failed.

Landowners have flexibility in choosing management approaches and practices to address water quality issues on their lands. Landowners may choose to develop management systems to address problems on their own, or they may choose to develop an approvable Voluntary Water Quality Farm Plan (VWQFP), which affords them a limited safe harbor protection against immediate enforcement action if water quality standards violations are found to occur on lands under their management. Approval of VWQFP will be by the Local Management Agency. Adoption of individual farm plans will be at a rate consistent with the availability of technical and financial assistance. See Voluntary Water Quality Farm Plans, page 12, for criteria.

## **Prevention and Control Measures**

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 conditions caused by activities conducted on land managed by the landowner or occupier. These criteria do not apply to conditions resulting from unusual weather events, or other exceptional circumstances. Criteria will be applied with consideration of agronomic and economic impacts. Implementation of the rules will begin upon adoption and shall be fully implemented by January 1, 2010.

### **Soil Erosion and Sediment Control**

Management systems shall be implemented that reduce soil erosion on cropland by 75% from a baseline condition or to  $T_{0.75}$ . This level of soil erosion reduction applies to all cropland in the basin, not just land designated as Highly Erodible Land. Reduction of soil erosion will be calculated by the Revised Universal Soil Loss Equation (RUSLE), with supporting data from the NRCS Field Office Technical Guide (FOTG) and/or similar data from other credible sources such as site specific research generated by licensed consulting engineers. Soil loss reductions will be based on a referenced condition of no surface residue and an average yield for determining the cover management factor. Compliance with this standard will be 50% reduction of soil erosion or  $T_{0.5}$  by 2005 and a 75% reduction or  $T_{0.75}$  by 2010. Ephemeral or gully erosion shall be reduced by the same degree as sheet and rill erosion. Acceptable management systems allow the use of management practices, or combinations of practices, that produce an equivalent reduction of soil erosion.

Management of grazing land shall be conducted in a manner that limits soil erosion and minimizes delivery of sediment and animal wastes to the waters of the state. Grazing management shall maintain vegetative cover to meet water quality criteria by manipulating the intensity, frequency, duration, and season of grazing. The upland grazing management system shall include an ongoing consideration of the degree of grazing use that will maintain or develop vegetative cover to meet water quality criteria.

Private roads that traverse rural lands or roads used for agricultural activities shall be constructed and maintained such that road surfaces, fill, and associated structures are designed and maintained to limit contributing sediment to waters of the state. Stream crossings, with or without culverts or bridges, shall be kept to a minimum, and shall be installed and maintained to minimize sediment delivery to the stream and not impede fish passage. All roads on agricultural lands not subject to the FPA are subject to this regulation. Homesteads and other non-crop areas shall be laid out and managed in a manner which controls soil erosion and prevents delivery of sediments to the stream.

Public roads and rights of way should be managed to reduce the impact of runoff onto agriculture lands and into waterways. This includes practices, similar to agricultural practices, such as: grass seeding of rights of way, rock placement in borrow ditches, sediment basins, proper culvert placement, sizing, and management, and weed control. Similarly, agricultural lands shall be managed to reduce the impacts of runoff onto public rights of way.

While the RUSLE equation shall be used as a means of assessing likely reductions in in-field soil erosion, because it has not been validated as a siltation prediction tool, it should not be used as a standard means of predicting siltation problems in adjoining waterways. It is presumed that if a landowner adopts practices that prevent and control soil erosion, that a significant reduction in stream sedimentation from agricultural activities will result. A landowner may develop and adopt alternative means of reducing stream sedimentation, but the burden of demonstrating effectiveness of the alternative system rests on the landowner.

### **Stream-side Area Management**

Definition: Stream-side area is generally defined as the area near the stream, riparian area, wetland, or other waterbody, depending on slope, soil type, stream size and morphology, where management practices can most directly influence the conditions of the water. This area usually ranges from 10 feet to 100 feet from the water.

Any agricultural land management or soil disturbing activities within stream-side and adjacent agricultural lands shall be conducted in a manner which prevents or controls the placement, delivery, or sloughing of wastes (i.e., nutrients, soil, sediment, manure, thermal loading) into waters of the state. No land management activity shall occur that unreasonably contributes to streambank instability.

Stream-side management shall include establishment and/or maintenance of riparian vegetation, vegetative buffers, filter strips, sediment retention structures or equally effective water pollution control practices, placed so as to be most beneficial to waters of the state. This vegetation may provide enhanced water storage and shade to reduce thermal loading of the streams, nutrient cycling and enhance fish and wildlife habitat. If any activity degrades a vegetative buffer, the landowner shall replant or restore the disturbed area to an adequate cover as soon as practical, and shall take additional measures as needed to prevent water pollution. When establishment or reestablishment of crops occurs in the stream-side management area during the growing season (March through October), conservation management systems shall be employed, and seedbed preparation shall be timed so as to minimize exposure to erosive forces. An adequate vegetative buffer or equally effective erosion control practice shall be provided during the winter months (November through

March). Noxious weeds shall be controlled to prevent weed contamination to downstream and other nearby areas. State weed law and county weed regulations will be used to determine weed species that must be controlled.

### **Livestock Management**

Livestock facilities, pastures, rangeland, and confinement areas shall be managed to minimize sediment, nutrient, and bacterial contributions to waters of the state. Adequate vegetative buffers or filter strips shall be installed and maintained, and vegetative cover shall be maintained or restored after use as needed to control runoff and weed infestations. Where appropriate, waste management systems shall be installed to collect, store and, utilize animal wastes.

Livestock facilities (i.e. barnyards, feedlots, drylots, and other non-pasture areas) shall not be located within the stream-side management area, unless an adequate runoff control system, a waste management system, or an equally effective pollution control practice, is installed and maintained.

Watering facilities shall be installed that limit livestock need for access to streams and irrigation ditches where feasible. Water developments and salting away from water sources are typically used as tools to disperse livestock away from sensitive areas.

Grazing within the stream-side management area shall be done in a manner which does not degrade water quality or negatively impact the stability of streambanks. Grazing management systems shall be applied that allow for recovery of plants and leave adequate vegetative cover to ensure streambank stability and prevent sediments from entering the stream. The grazing management system shall include an ongoing consideration of the degree of grazing use that will maintain or develop the desired vegetative cover.

Establishment and spread of noxious weeds shall be prevented by appropriate weed control practices and grazing management.

### **Irrigation Management**

Irrigation systems shall be designed and operated to minimize runoff of potential contaminants. Irrigation scheduling shall be appropriate to each site and consideration shall be given to soil conditions, crop, climate and topography.

Subject to legal water rights, water withdrawals (dependent on surface water characteristics and method of diversion) shall be made in a manner to minimize the adverse impacts on stream flows. The efficacy of irrigation water application is generally enhanced by assuring the quantity and timing of application based on the needs of the crop, as determined by soil moisture levels, crop water use budgets or other monitoring tools.

Irrigation management in this basin must recognize the positive benefits which may occur from flood irrigation. These include flow augmentation for late season, and the connectivity (especially in the lower basin) of surface water to shallow wells and springs. Where applicable, overland return flows shall be minimized and monitored to determine if contamination exists, and to identify the

management practices needed to reasonably control the delivery of pollution, including temperature increases, to waters of the state.

The construction and operation of temporary irrigation diversions (push up dams) shall: 1) only occur during the irrigation season; 2) not promote channel instability; 3) not cause continuing water pollution; 4) not increase instream turbidity during operation; and 5) not impede fish passage. Outside of the irrigation season, temporary irrigation diversions shall be removed, to restore full channel carrying capacity.

## **Nutrient and Farm Chemical Management**

Crop nutrient applications must be done at a time and in a manner that does not adversely impact the waters of the state. Fertilizers shall be applied in accordance with nutrient budgets developed for each crop by the use of current yield estimates, water analysis, soil tests, tissue tests and/or other appropriate tests and information. Sources of information are found in the NRCS Field Office Technical Guide and Oregon State University - Extension Service informational fact sheets for most commercial crops.

Surface applied nutrients shall not be applied to frozen soil, on snow, or when significant rainfall (more than 1 inch) is predicted as imminent (greater than a 67 percent probability within 24 hours of application) by the National Weather Service. Extra care shall be used when utilizing surface (rill or flood) irrigation to minimize nutrient contamination of tail water. In no case shall chemigated or fertigated irrigation waters be applied in a manner such that a direct hydraulic connection occurs with waters of the state.

Application and storage of manure, sludge, commercial fertilizer, and other added nutrient inputs to agricultural lands within the stream-side management area shall be done in a manner which prevents the introduction of nutrients directly into the waters of the state. Safe storage of all concentrated potential contaminants shall be encouraged, including consideration of all those major factors which might make any site potentially threatening to surface and/or groundwater. Management practices for spill prevention and control shall be implemented.

Concentrated Potential Contaminants (CPCs) are substances managed on a property that may or may not be toxic or dangerous, but need special consideration when storage locations are chosen. Typical farm and ranch CPCs include, but are not limited to: manure; compost; fuel, lubricants and other motor vehicle chemicals; insecticides, herbicides, and other farm chemicals; fertilizer; used truck and tractor batteries; solvents; garbage; and cleaning products. Fertilizers, pesticides, and other chemicals that have been applied to the land are not considered concentrated after application.

Pesticides shall be used in accordance with label requirements. Pesticide handling and application practices shall be adopted that limit off-target pesticide transport and maximize the amount of applied pesticide material retained on the property.

## **Channel and Drain Management**

Whenever major construction, or re-construction or maintenance occurs in ditches and water channels, they shall be designed and/or maintained with a capacity to handle above normal flows with a minimum likelihood of bank erosion and negative erosion impacts on nearby land areas.

Water conveyance discharge shall not visibly erode stream banks or channels. Water storage, transfer and recirculation facilities shall be constructed and maintained such that the infiltration of agricultural chemicals and nutrients to groundwater is reasonably controlled.

Instream activities other than routine maintenance of diversion or other agricultural structures are regulated and permitted by the Division of State Lands.

### **Waste Management**

All applicable statutes and rules shall be followed concerning pollution by placement of wastes where it is likely to escape or be carried into waters of the state and discharge of wastes if the discharge reduces the quality of the waters of the state. Waste discharge permits shall be obtained if required by law.

## **Voluntary Water Quality Farm Plans**

Landowners are encouraged to develop and implement VWQFPs. These plans may be developed by landowners or operators, consultants, or technicians available through the SWCD, NRCS or ES. Plans will outline specific measures to be implemented to limit soil erosion and pollution of the waters of the state from activities on lands in agricultural use. The VWQFP is a comprehensive management plan which addresses site-specific problems through the selection of individual Management Systems or Management Practices to be implemented for the protection of natural resources. These plans will be subject to approval by the USWCD according to criteria set forth in this Basin Plan.

The VWQFP will employ a descriptive management system, which addresses and provides management practices for each area of concern. These plans may contain any or all of the following elements, depending on the site and the condition for which preventive or corrective measures are being implemented.

### **General components**

- ò Maps and/or aerial photographs, soil surveys, and other natural resource inventory information indicating soils, topography, fields, farm site plan, waterbodies and drainages which may be necessary to assess or inventory the potential for water pollution.
  
- ò A list of fields, crops grown (including typical rotation), and other land uses, with the area in acres for each field or land use.

- ò Any agreements entered into by the landowner or operator involving any agency providing technical or financial assistance in the completion of the management practices included in the VWQFP.

### **Specific components**

- ò Soil Erosion and Sediment Control measures to prevent soil erosion from exceeding acceptable levels and minimize the delivery of sediments to streams: a list of proposed management systems or practices for each field or land use, the general time of application, the general or more typical crop rotation, and the general time of application in proposed alternative management systems. In addition, the person(s) developing the Farm Plan is (are) encouraged to provide estimates of the rate of soil loss before and after application of the general sequence, or sequences of practices for different soil types and general field or range condition on his farm or ranch.
- ò Streamside Area Management: a list of activities conducted in the stream-side management area and management practices used to prevent streambank instability, minimize the delivery of sediments, thermal loading, and nutrients to the stream, and to prevent degradation of water quality.
- ò Livestock Management measures to prevent soil erosion and delivery of sediment and animal waste to the stream: a list of grazing management systems or practices used to disperse livestock away from sensitive areas and maintaining adequate vegetative cover, the livestock facilities and water sources used, and practices used to prevent and control wastes from entering the waters of the state.
- ò Irrigation Management measures to better utilize irrigation withdrawals, to prevent return flow contamination, and to prevent streambank instability at diversion structures, a list of irrigation water sources (including water rights), amount of water used, how and when it is applied, and how the diversions and drains are managed.
- ò Nutrient and Farm Chemical Management measures used to prevent potential pollution by application and storage of fertilizers and farm chemicals, a description of fertility strategy, and a description of weeds or diseases being controlled.
- ò Channel and Drain Management measures to describe drainage needs during storm events, and a list of practices used to maintain drainage ditches and manage drainage discharges into waters of the state.
- ò Waste management measures to prevent and control the placement, delivery, or sloughing of wastes into waters of the state.

### **Best Management Practices**

Agricultural Best Management Practices (BMPs) for pollution control are those management practices and structural measures that are determined to be the most effective, practical means of controlling and preventing pollution from agricultural activities. BMPs are actions taken by individual agricultural operations for the achievement of production and water quality goals.

Appropriate management practices for individual farms may vary with the specific cropping, topographical, environmental, and economic conditions existing at a given site. Due to these variables, it is not possible to recommend any uniform set of BMPs to improve water quality relative to agricultural practices.

A detailed listing of a number of specific practices and management measures which can be employed to control or reduce the risk of agricultural pollution are contained in other documents such as the FOTG available for reference at the local the NRCS office. While not exhaustive or all-inclusive, the following is a list of practices which may typically be used in the Umatilla River Subbasin for effective prevention and control of water pollution from agricultural activities.

### **For soil erosion and sediment control**

- ò Conservation Tillage (Crop Residue Management)
  - Reduced tillage, Minimum tillage, Direct seeding, Modified conventional tillage, Reservoir tillage, Subsoiling or Deep chiseling
- ò Cover Crops
  - Perennial, Annual
- ò Contour Farming Practices
  - Strip cropping, Divided slopes, Terraces (level and gradient), Contour tillage
- ò Crop Rotations
- ò Early or double seeding in critical areas
- ò Vegetative Buffer Strips
  - Filter strips, Grassed waterways, Field borders, Contour buffer strips
- ò Irrigation scheduling
- ò Prescribed Burning
- ò Weed Control
- ò Grazing Management Plans
- ò Range Plantings
- ò Livestock Distribution

### **For prevention and control of impacts to stream side areas:**

- ò Critical Area Planting
- ò Vegetative buffer strips
  - Continuous CRP, CREP, Riparian buffers, Riparian forest buffers
- ò Livestock Management
  - Fencing - exclusion, temporary
  - Seasonal grazing
- ò Water developments
  - Off stream watering, water gaps, spring development
- ò Conservation tillage practices

- ò Weed control
- ò Nutrient and Chemical application scheduling
- ò Road, culvert, bridge, and crossings maintenance
- ò Wildlife management

### **For prevention and control of impacts from livestock**

- ò Grazing management or scheduling
  - Intensity, duration, frequency, season
  - Pasture rotations, rest/deferral
- ò Vegetation management
  - Grass seeding, weed control, controlled burning
- ò Fencing
  - Temporary, cross, enclosure
- ò Watering facilities
  - Spring development, off-stream water, water gaps
- ò Salt and mineral distribution
- ò Waste management systems
  - Clean water diversions; waste collection, storage, and utilization; facilities operation and maintenance

### **For prevention and control of impacts from irrigation**

- ò Irrigation scheduling
  - Crop needs, soil type, climate, topography, infiltration rates
- ò Irrigation system efficiency
  - Flood, sprinkler, drip, pivot
- ò Diversion maintenance
  - Push-up dam management, screens
- ò Return flow management
- ò Backflow devices
- ò Reservoir tillage
- ò Cover crops

### **For nutrient and farm chemical application**

- ò Nutrient budgeting
  - Soil testing, tissue testing, plant needs
  - Water testing
- ò Application methods
- ò Application timing
- ò Tail water management
- ò Hydraulic connectivity
- ò Label requirements
- ò Irrigation scheduling
- ò Integrated Pest Management

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## **For channel and drain management**

- ò Vegetation management
  - Burning, Chemical, Clipping
- ò Streambank Stabilization
  - Structural, Bioengineered
- ò Critical Area planting
- ò Channel management
- ò Obstruction removal
  - ò Wetland development
- ò Outfall protection
  - ò Offstream or headwater storage

BMPs and land management changes are most effective when selected and installed as integral parts of a comprehensive resource management plan based on natural resource inventories and assessment of management practices. The result is a system using BMPs and land management changes which are designed to be complementary, and when used in combination, are more technically sound than each practice separately.

## **Implementation Strategies**

The Department and the USWCD intend to encourage participation in this water quality improvement program by:

- ò Providing educational programs to raise public awareness and understanding of water quality
- ò Providing incentives for the development and implementation of VWQFPs.
- ò Offering technical assistance for the development and implementation of VWQFPs.
- ò Taking inventory and surveying the watershed for potential water quality problems.
- ò Pursuing water quality complaints.
- ò Verifying the existence of water quality violations based on complaints and/or inventory and survey information.
- ò Taking appropriate enforcement actions as outlined in OAR 603-090-0060 through 603-090-0120, when the Department has determined that necessary measures to improve or prevent degradation of water quality are not being met.

## **Resolution of Complaints**

Complaints against operators or landowners alleged to be out of compliance with this plan will be investigated by the Department in conjunction with the soil and water conservation district. In order to be considered as a formal complaint, the complaint must relate to a specific site, must be submitted in writing, must be signed by the complainant, and must be filed with the department and/or the soil and water conservation district, and made available to the parties alleged to be in violation.

Formal complaints will be investigated by either the Department or the appropriate soil and water conservation district. The Department will determine if a water quality violation exists. Based on this determination, appropriate action will be taken to remedy the condition as outlined above.

## **Enforcement Action**

If an approved VWQFP exists for a site which has been determined to have a violation, and the plan is being implemented on schedule, 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 condition within a specified time frame. The revised plan and/or implementation schedule must be approved by the soil and water conservation district.

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 have a water quality standards violation, the operator and/or landowner may be issued a Notice of Noncompliance, and be directed by the Department to remedy the condition under provisions in OAR 603-090-0060 through 603-090-0120. Authority for any enforcement action rests with the Department.

## **Administrative Roles and Responsibilities**

### **Total Maximum Daily Loads**

The DEQ is required by federal law and court order, to establish formal "Total Maximum Daily Loads" (TMDLs) for pollutants in waters designated as "water quality limited." In response to this court order, DEQ, the UBWC, and the CTUIR, formed a core partnership to lead the development of a TMDL for the Umatilla River subbasin. Numerous local, state, and federal natural resource agencies in the Umatilla Basin provide technical and financial assistance in the data collection and evaluation of data to be used in the TMDL. A citizens "TMDL Stakeholder Committee" has been selected to provide balanced and diversified local input into the TMDL development process. The TMDL will set maximum limits on the amount of pollutants allowed to enter in the Umatilla River subbasin's waters. This "loading capacity" is calculated to achieve water quality standards.

Each jurisdiction in the Umatilla River subbasin will be allotted a portion of the TMDLs, representing the maximum amount of pollutant which may be discharged daily from the lands managed by the respective jurisdiction to the Umatilla River's waters. This amount is the jurisdiction's "Load Allocation." The DEQ has requested the appropriate Designated Management Agencies in the subbasin to develop pollution control plans and programs designed to achieve the

load allocations. OARs 340-041-0026, 340-041-0120, and 340-041-0642 require these management plans and sets the water quality standards.

### **Designated Management Agency**

The 1993 Oregon Legislature, in passing Senate Bill 1010, provided for the Department to be the lead state agency working with agriculture to address nonpoint source water pollution. Under the law, the Department is authorized to develop and carry out a water quality management plan for any agricultural or rural lands where a water quality management plan is required by state or federal law.

The Department is the "Designated Management Agency" for nonpoint source pollution control activities on agricultural and rural lands in the Umatilla River subbasin. In turn, through Memorandum of Agreement, the Department has designated the USWCD as its Local Management Agency (LMA) for development and implementation of the water quality management area plan and projects in the Umatilla River subbasin. Implementation priorities will be established on a periodic basis through annual work plans developed jointly by the USWCD and the Department.

The director of the Department, in consultation with the Board of Agriculture, appointed a Umatilla River Subbasin Local Agricultural Water Quality Advisory Committee (the Committee) representing local agricultural producers, local landowners, the Indian tribes, local agencies, and the USWCD, for the purpose of assisting with the development of this plan and the associated draft OARs to implement core elements of the plan. The Draft plan and rules resulting from the Committee's and the Department's efforts will be presented to the State Board of Agriculture for their review and consultation in the Fall of 1998.

The draft plan and the associated proposed OARs, will be presented in public information meetings and public hearings within the agricultural and rural portions of the Umatilla River subbasin. Testimony presented at public hearings, and during the public comment period, will be reviewed by the Department and the Committee, and recommended modifications will be presented to the Board of Agriculture and the director of the Department for their review. The final OARs resulting from this review, will be adopted through the Administrative Rules process by the director of the Department.

The LMA and Committee will participate in biennial review of plan implementation progress. Any future amendments to the administrative rules, will be subject to the public participation process outlined in Oregon law.

### **Technical and Financial Assistance**

As resources allow, in the Umatilla River subbasin, the USWCD and NRCS staff are available to assist landowners in evaluating effective practices for reducing runoff and soil erosion on their farms and incorporating these practices into VWQFPs. Personnel in these offices can also design and assist with implementation of practices and assist in identifying any sources of cost-sharing funds for the construction and/or use of some of these practices.

Technical and cost-sharing assistance for installation of certain management practices may be available through current USDA conservation programs such as Environmental Quality Incentives Program (EQUIP) and Continuous Conservation Reserve Program, EPA's nonpoint source implementation grants, or state programs such as the Governor's Watershed Enhancement Board and Conservation Reserves Enhancement Program (CREP).

## **Monitoring and Evaluation**

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.

By the end of 1999 and 2001, the Department, with the cooperation and assistance of the USWCD, the Committee, and the DEQ, will assess the progress of plan implementation toward achievement of plan goals and objectives. These assessments will include:

1. An accounting of the numbers and acreage of operations with approved VWQFPs and the calculated amount of soil erosion and pollution prevented.
2. Identification of additional sources of sediment, nutrients, and other contributors to non-attainment of all applicable water quality standards.
3. An evaluation of available current water quality monitoring data.
4. An evaluation of outreach and education programs designed to provide public awareness and un-
5. A review of projects, demonstrations, and tours used to showcase successful management practices and systems.
6. An evaluation of the effectiveness of the technical and financial assistance sources available to the agricultural community.
7. Review of load allocations as found in Umatilla Basin TMDL and effectiveness of this plan

Based on these assessments, the Department, the USWCD, the Committee and the State Board of Agriculture will consider making appropriate modifications to the plan and/or the associated OAR.

## References

WRD, Umatilla River Basin Report, 1988

WRD, Umatilla River Return Flow Analysis During 1985 and 1986, 1991

WRD, Critical Groundwater Area, 1976, 1986

DEQ, Lower Umatilla Basin Groundwater Management Area Action Plan, 1997

BOR, Umatilla Basin Project, 1986

USDA-NRCS, Field Office Technical Guide, 1998

OSU/CES, Selected Crop information Fact Sheets

OSU/ Economic Information Office, 1997

DEQ, 303(d) report, 1998