Lower John Day Agricultural Water Quality Management Area Plan

Developed by the:

Lower John Day Local Advisory Committee

Oregon Department of Agriculture

With support from the:
Gilliam and Sherman County Soil and Water Conservation Districts

Date: January 22, 2015

ODA and SWCD Contact Information:

Gilliam SWCD	**Sherman Co. SWCD**	**OR Dept of Agriculture**
PO Box 106	**PO Box 405**	**1 SW Nye Ave, B40**
Condon, OR 97823	**Moro, OR 97039**	**Pendleton, OR 97801**
(541) 384-2672	**(541) 565-3216**	**(541) 278-6721**

TABLE OF CONTENTS

Acronyms and Terms Used in this Document 3
Foreword 4
Required Elements of Area Plans 4
Plan Content 4
Chapter 1: Agricultural Water Quality Management Program Purpose and Background 6
1.1 Purpose of Agricultural Water Quality Management Program and Applicability of Area Plans 6
1.2 History of the Ag Water Quality Program 6
1.3 Roles and Responsibilities 7
1.4 Agricultural Water Quality 10
1.5 Other Water Quality Programs 14
1.6 Partner Agencies and Organizations 16
1.7 Measuring Progress 17
1.8 Implementation, Monitoring, Evaluation, and Adaptive Management 19
Chapter 2: Local Background 22
2.1 Local Roles and Responsibilities 22
2.2 Area Plan and Rules: Development and History 22
2.3 Geographical and Physical Setting 22
2.4 Agricultural Water Quality in the Management Area 27
2.5 Prevention and Control Measures 30
Chapter 3: Goals, Objectives, and Strategies 38
3.1 Purpose 38
3.2 Goal 38
3.3 Objectives 38
3.4 Strategies for Area Plan Implementation 41
3.5 Biennial Reviews 50
Chapter 4: Implementation, Monitoring, and Adaptive Management 52
4.1 Implementation and Accomplishments 52
4.2 Water Quality Monitoring—Status and Trends 53
4.3 Progress Toward Measurable Objectives 54
4.4 Aerial Photo Monitoring of Streamside Vegetation 55
4.5 Biennial Reviews and Adaptive Management 55
ATTACHMENT A - EFFECTIVE WATER QUALITY MANAGEMENT PRACTICES 58
ATTACHMENT B - REFERENCES USED IN THE DEVELOPMENT OF THE AREA PLAN 60

Acronyms and Terms Used in this Document

AgWQM - Ag Water Quality Program – Agricultural Water Quality Management Program
Area Plan – Agricultural Water Quality Management Area Plan
Area Rules – Agricultural Water Quality Management Area Rules
CAFO – Confined Animal Feeding Operation
CNPCP – Coastal Nonpoint Pollution Control Program
CREP – Conservation Reserve Enhancement Program
CRP – Conservation Reserve Program
CWA – Clean Water Act
CZARA – Coastal Zone Act Reauthorization Amendments
DEQ – Oregon Department of Environmental Quality
DMA – Designated Management Agency
EQIP – Environmental Quality Incentive Program
FOTG – Field Office Technical Guide
GWMA – Groundwater Management Area
HUC – Hydrologic Unit Code
LA – Load Allocations
LAC – Local Advisory Committee
LMA – Local Management Agency
Management Area – Agricultural Water Quality Management Area
MOA – Memorandum of Agreement
NPDES – National Pollution Discharge Elimination System
NRCS – Natural Resources Conservation Service
OAR – Oregon Administrative Rules
OACD – Oregon Association of Conservation Districts
OCA – Oregon Cattleman's Association
ODA – Oregon Department of Agriculture
ODFW – Oregon Department of Fish and Wildlife
ORS – Oregon Revised Statute
OSU – Oregon State University Extension Service
OWEB – Oregon Watershed Enhancement Board
PMP – Pesticides Management Plan
PSP – Pesticides Stewardship Partnership
Regulations – Agricultural Water Quality Management Area Regulations
RUSLE – Revised Universal Soil Loss Equation
SWCD – Soil and Water Conservation District
T – Soil Loss Tolerance Factor
TMDL – Total Maximum Daily Load
USDA – United States Department of Agriculture
U.S. EPA – United States Environmental Protection Agency
WQPMT – Water Quality Pesticides Management Team

Foreword

This Agricultural Water Quality Management Area Plan (Area Plan) provides guidance for addressing agricultural water quality issues in the Agricultural Water Quality Management Area (Management Area). The purpose of this Area Plan is to identify strategies to prevent and control water pollution from agricultural lands through a combination of educational programs, suggested land treatments, management activities, compliance, and monitoring.

The provisions of this Area Plan do not establish legal requirements or prohibitions, as described in Oregon Revised Statute (ORS) 568.912(1).

Required Elements of Area Plans

Area Plans must describe a program to achieve the water quality goals and standards necessary to protect designated beneficial uses related to water quality, as required by state and federal law (Oregon Administrative Rule (OAR) 603-090-0030(1)). At a minimum, an Area Plan must:

- Describe the geographical area and physical setting of the Management Area.
- List water quality issues of concern.
- List impaired beneficial uses.
- State that the goal of the Area Plan is to prevent and control water pollution from agricultural activities and soil erosion, and to achieve applicable water quality standards.
- Include water quality objectives.
- Describe pollution prevention and control measures deemed necessary by the Oregon Department of Agriculture (ODA) to achieve the goal.
- Include an implementation schedule for measures needed to meet applicable dates established by law.
- Include guidelines for public participation.
- Describe a strategy for ensuring that the necessary measures are implemented.

Plan Content

Chapter 1: Agricultural Water Quality Management Program Purpose and Background. The purpose is to have consistent and accurate information about the Agricultural Water Quality Management Program.

Chapter 2: Local Background. Provides the local geographic, water quality, and agricultural context for the Management Area. Describes the water quality issues, regulations (Area Rules), and available or beneficial practices to address water quality issues.

Chapter 3: Local Goals, Objectives, and Implementation Strategies. Chapter 3 presents goal(s), measurable objectives and timelines, and strategies to achieve the goal(s) and objectives.

Chapter 4: Local Implementation, Monitoring, and Adaptive Management. ODA and the Local Advisory Committee (LAC) will work with partners to summarize land condition and water quality status. Trends are summarized to assess progress toward the goals and objectives in Chapter 3.

Chapter 1: Agricultural Water Quality Management Program Purpose and Background

1.1 Purpose of Agricultural Water Quality Management Program and Applicability of Area Plans

As part of Oregon's Agricultural Water Quality Management Program (Ag Water Quality Program), this Area Plan guides landowners and partners such as Soil and Water Conservation Districts (SWCDs) in addressing local agricultural water quality issues. The purpose of this Area Plan is to identify strategies to prevent and control water pollution from agricultural activities and soil erosion (ORS 568.909(2)) on agricultural and rural lands for the area within the boundaries of the Management Area (OAR 603-090-0000(3)) and to achieve and maintain water quality standards (ORS 561.191(2)). This Area Plan has been developed and revised by ODA, the Local Advisory Committee (LAC), with support and input from the SWCD and the Oregon Department of Environmental Quality (DEQ). Throughout the development and revision processes, the public was invited to participate. This included public comment at meetings and public hearings during the Area Plan approval process. This Area Plan is implemented using a combination of outreach and education, conservation and management activities, compliance, monitoring, evaluation, and adaptive management.

The provisions of this Area Plan do not establish legal requirements or prohibitions (ORS 568.912(1)). Each Area Plan is accompanied by OAR regulations that describe local agricultural water quality regulatory requirements. ODA will exercise its regulatory authority for the prevention and control of water pollution from agricultural activities under the Ag Water Quality Program's general regulations (OARs 603-090-0000 to 603-090-0120) and under the regulations for this Management Area (OARs 603-095-2900 to 2960). The Ag Water Quality Program's general OARs guide the Ag Water Quality Program, and the OARs for the Management Area are the regulations that landowners must follow.

This Area Plan and its associated regulations apply to all agricultural activities on non-federal and non-Tribal Trust land within the Management Area, including:

- Large commercial farms and ranches.
- Small rural properties grazing a few animals or raising crops.
- Agricultural lands that lay idle or on which management has been deferred.
- Agricultural activities in urban areas.
- Agricultural activities on land subject to the Forest Practices Act (ORS 527.610).

1.2 History of the Ag Water Quality Program

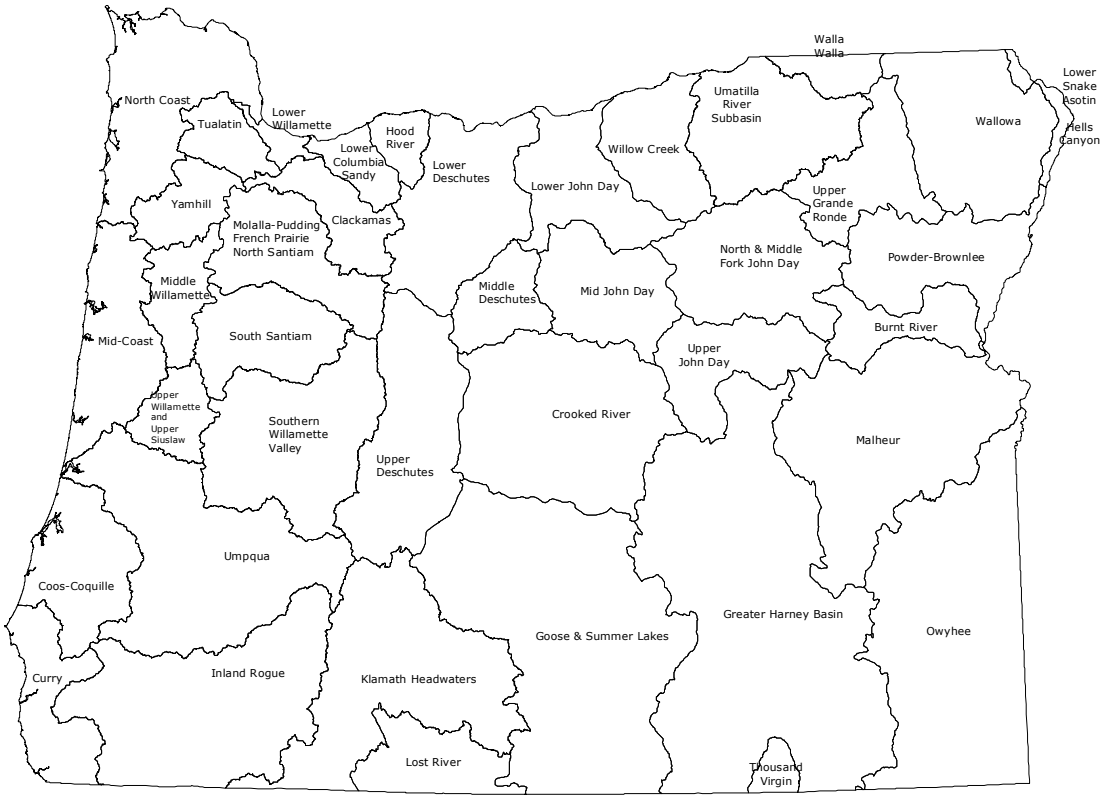
In 1993, the Oregon Legislature passed the Agricultural Water Quality Management Act, directing ODA to develop plans to prevent and control water pollution from agricultural activities and soil erosion, and to achieve water quality standards (ORS 568.900 through ORS 568.933). Senate Bill 502 was passed in 1995 to clarify that ODA regulates agriculture with

respect to water quality (ORS 561.191). This Area Plan and its associated regulations were developed and subsequently revised pursuant to these statutes.

Between 1997 and 2004, ODA worked with LACs and SWCDs to develop Area Plans and associated regulations in 38 watershed-based Management Areas across Oregon (Figure 1). Since 2004, ODA, LACs, SWCDs, and other partners have focused on implementation, including:

- Providing education, outreach, and technical assistance to landowners.
- Implementing projects to improve agricultural water quality.
- Investigating complaints of potential violations of regulations.
- Conducting biennial reviews of Area Plans and regulations.
- Monitoring, evaluation, and adaptive management.
- Developing partnerships with SWCDs, state, federal, and tribal agencies, watershed councils, and others.

Figure 1: Map of 38 Agricultural Water Quality Management Areas



1.3 Roles and Responsibilities

1.3.1 Oregon Department of Agriculture (ODA)

ODA is the agency responsible for implementing the Ag Water Quality Program (ORS 568.900 to 568.933, ORS 561.191, OAR 603-090, and OAR 603-095). The Ag Water Quality Program is intended to meet the needs and requirements related to agricultural water pollution, including:

State water quality standards.

Load allocations for agricultural nonpoint source pollution assigned under Total Maximum Daily Loads (TMDLs) issued pursuant to the Clean Water Act (CWA), Section 303(d).

Approved management measures for Coastal Zone Act Reauthorization Amendments (CZARA). Agricultural activities detailed in a Groundwater Management Area (GWMA) Action Plan (if a GWMA has been established and an Action Plan developed).

ODA has the legal authority to develop and implement Area Plans and associated regulations for the prevention and control of water pollution from agricultural activities and soil erosion, where such plans are required by state or federal law (ORS 568.909 and ORS 568.912). ODA will base Area Plans and regulations on scientific information (ORS 568.909). ODA works in partnership with SWCDs, LACs, DEQ, and other partners to implement, evaluate, and update the Area Plans and associated regulations. ODA has responsibility for any actions related to enforcement or determination of noncompliance with regulations (OAR 603-090-0080 through OAR 603-090-0120). ORS 568.912(1) and ORS 568.912(2) give authority to ODA to adopt regulations that require landowners to perform actions necessary to prevent and control pollution from agricultural activities and soil erosion.

The emphasis of this Area Plan is on voluntary action by landowners or operators to control the factors effecting water quality in the Management Area. The regulations are outlined as a set of minimum standards that must be met on all agricultural or rural lands. Landowners and operators who fail to address these regulations may be subject to enforcement procedures, which are outlined below.

Enforcement Action—ODA will use enforcement mechanisms where appropriate and necessary to gain compliance with water quality regulations. Any enforcement action will be pursued only when reasonable attempts at voluntary solutions have failed. If a violation is documented, ODA may issue a pre-enforcement notification or an Order such as a Notice of Noncompliance. If a Notice of Noncompliance is issued, the landowner or operator will be directed by ODA to remedy the condition through required corrective actions under the provisions of the enforcement procedures outlined in OAR 603-090-060 through OAR 603-090-120. If a landowner does not implement the required corrective actions, civil penalties may be assessed for continued violation of the regulations. See the Compliance Flow Chart pg. 50 for a diagram of the compliance process. If and when other governmental policies, programs, or regulations conflict with this Area Plan or associated regulations, ODA will consult with the agency and attempt to resolve the conflict in a reasonable manner.

1.3.2 Local Management Agency (LMA)

A Local Management Agency is an organization that ODA has designated to implement an Area Plan (OAR 603-090-0010). The legislative intent is for SWCDs to be Local Management Agencies to the fullest extent practical, consistent with the timely and effective implementation of Area Plans (ORS 568.906). SWCDs have a long history of effectively assisting landowners who voluntarily address natural resource concerns. Currently, all Local Management Agencies in Oregon are SWCDs.

The day-to-day implementation of the Area Plan is accomplished through an intergovernmental agreement between ODA and each SWCD. Each SWCD implements the Area Plan by providing outreach and technical assistance to landowners. SWCDs also work with ODA and the LAC to establish implementation priorities, evaluate progress toward meeting Area Plan goals and objectives, and revise the Area Plan and associated regulations as needed.

1.3.3 Local Advisory Committee (LAC)

For each Management Area, the director of ODA appoints an LAC (OAR 603-090-0020) with up to 12 members, to assist with the development and subsequent biennial reviews of the local Area Plan and regulations. The LAC serves in an advisory role to the director of ODA and to the Board of Agriculture. LACs are composed primarily of landowners in the Management Area and must reflect a balance of affected persons.

The LAC may meet as frequently as necessary to carry out their responsibilities, which include, but are not limited to:

- Participate in the development and ongoing revisions of the Area Plan.
- Participate in the development and revisions of regulations.
- Recommend strategies necessary to achieve goals and objectives in the Area Plan.
- Participate in biennial reviews of the progress of implementation of the Area Plan and regulations.
- Submit written biennial reports to the Board of Agriculture and the ODA director.

1.3.4 Agriculture's Role

Each individual landowner or operator in the Management Area is required to comply with the regulations, which set minimum standards. However, the regulations alone are not enough. To achieve water quality standards, individual landowners also need to attain land conditions that achieve the goals and objectives of the voluntary Area Plan. Each landowner or operator is not individually responsible for achieving water quality standards, agricultural pollution limits, or the goals and objectives of the Area Plan. These are the responsibility of the agricultural community collectively.

Technical and financial assistance is available to landowners who want to work with SWCDs (or with other local partners) to achieve land conditions that contribute to good water quality. Landowners may also choose to improve their land conditions without assistance.

Area regulations only address impacts that result from agricultural activities. A landowner is responsible for only those conditions caused by activities conducted on land managed by the landowner or occupier. Conditions resulting from unusual weather events or other circumstances not within the reasonable control of the landowner or operator are considered when making compliance decisions. Agricultural landowners may be responsible for some of the above impacts under other legal authorities.

Under the Area Plan and associated regulations, agricultural landowners and operators are not responsible for mitigating or addressing factors that do not result from agricultural activities, such as:

- Hot springs, glacial melt water, extreme or unforeseen weather events, and climate change.
- Septic systems and other sources of human waste.
- Public roadways, culverts, roadside ditches and shoulders.
- Dams, dam removal, hydroelectric plants, and non-agricultural impoundments.
- Housing and other development in agricultural areas.

1.3.5 Public Participation

The public was encouraged to participate when ODA, LACs, and SWCDs initially developed the Area Plans and associated regulations. ODA and the LAC in each Management Area, held public information meetings, a formal public comment period, and a formal public hearing. ODA and the LACs modified the Area Plans and regulations, as needed, to address comments received. The director of ODA adopted the Area Plans and regulations in consultation with the Board of Agriculture.

ODA, LACs, and SWCDs conduct biennial reviews of the Area Plans and regulations. Partners, stakeholders, and the general public are invited to participate in the process. Any future revisions to the regulations will include a public comment period and a public hearing.

1.4 Agricultural Water Quality

1.4.1 Point and Nonpoint Sources of Water Pollution

There are two types of water pollution. Point source water pollution emanates from clearly identifiable discharge points or pipes. Significant point sources are required to obtain permits that specify their pollutant limits. Agricultural operations regulated as point sources include permitted Confined Animal Feeding Operations (CAFOs) and pesticide applications in, over and within three feet of water. Many CAFOs are regulated under ODA's CAFO Program. Irrigation water discharges may be at a defined discharge point, but do not currently require a permit.

Nonpoint water pollution originates from the general landscape and is difficult to trace to a single source. Nonpoint sources include erosion and contaminated runoff from agricultural and forest lands, urban and suburban areas, roads, and natural sources. In addition, groundwater can be impacted from nonpoint sources including agricultural amendments (fertilizers and manure).

1.4.2 Beneficial Uses and Parameters of Concern

Beneficial uses of clean water include: public and private domestic water supply, industrial water supply, irrigation, livestock watering, fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, hydropower, and commercial navigation and transportation. The most sensitive beneficial uses are usually fish and aquatic life, water contact recreation, and public and private domestic water supply. These uses are generally the first to be impaired as a water body is polluted, because they are affected at lower levels of pollution. While there may not be severe impacts on water quality from a single source or sector, the combined effects from all sources contribute to the impairment of beneficial uses in the Management Area. Beneficial uses that have the potential to be impacted in this Management Area are summarized in Chapter 2.

Many water bodies throughout Oregon do not meet state water quality standards. These water bodies may or may not have established water quality management plans documenting needed reductions. The most common water quality concerns related to agricultural activities are temperature, bacteria, biological criteria, sediment and turbidity, phosphorous, algae, pH, dissolved oxygen, harmful algal blooms, nitrates, pesticides, and mercury. These parameters vary by Management Area and are summarized in Chapter 2.

1.4.3 Impaired Water Bodies and Total Maximum Daily Loads (TMDLs)

Every two years, the federal Clean Water Act (CWA) requires the DEQ, to assess water quality in Oregon. CWA Section 303(d) requires DEQ to identify a list of waters that do not meet water quality standards. The resulting list is commonly referred to as the 303(d) list. DEQ, in accordance with the CWA, is required to establish TMDLs for pollutants on the 303(d) list.

A TMDL includes an assessment of water quality data and current conditions and describes a plan to restore polluted waterways to conditions that meet water quality standards. TMDLs specify the daily amount of pollution that a water body can receive and still meet water quality standards. Through the TMDL, point sources are assigned pollution limits as "waste load allocations" in permits, while nonpoint sources (agriculture, forestry, and urban) are assigned pollution limits as "load allocations." TMDLs are legal orders issued by the DEQ, so parties assigned waste or load allocations are legally required to meet them. The agricultural sector is responsible for meeting the pollution limit (load allocation) assigned to agriculture specifically, or to nonpoint sources in general, as applicable.

TMDLs generally apply to an entire basin or subbasin, and not just to an individual water body on the 303(d) list. Once a TMDL is developed for a basin, the basin's impaired water bodies are removed from the 303(d) list, but they remain on the list of impaired water bodies. When data show that water quality standards have been achieved, water bodies will be identified on the list of water bodies that are attaining water quality standards.

As part of the TMDL process, DEQ identifies the Designated Management Agency or parties responsible for submitting TMDL implementation plans. TMDLs designate that the local Area Plan is the implementation plan for the agricultural component of the TMDLs that apply to this Management Area. Biennial reviews and revisions to the Area Plan and regulations must address agricultural or nonpoint source load allocations from TMDLs.

The list of impaired water bodies (303(d) list), the TMDLs, and the agricultural load allocations for the TMDLs that apply to this Management Area are summarized in Chapter 2.

1.4.4 Water Pollution Control Law – ORS 468B.025 and ORS 468B.050

Senate Bill 502 was passed in 1995, authorizing ODA as the state agency responsible for regulation of farming activities for the purpose of protecting water quality. A Department of Justice opinion dated July 10, 1996, states that "...ODA has the statutory responsibility for developing and implementing water quality programs and rules that directly regulate farming practices on exclusive farm use and agricultural lands." In addition, this opinion states, "The program or rule must be designed to achieve and maintain Environmental Quality Commission's water quality standards."

To implement Senate Bill 502, ODA incorporated ORS 468B into all of the Area Plans and associated regulations in the state. A Department of Justice opinion, dated September 12, 2000, clarifies that ORS 468B.025 applies to point and nonpoint source pollution.

ORS 468B.025 states that:

"(1) ...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.

(2) No person shall violate the conditions of any waste discharge permit issued under ORS 468B.050."

The aspects of ORS 468B.050 that apply to the Ag Water Quality Program, state that:

"(1) Except as provided in ORS 468B.053 or 468B.215, without holding a permit from the Director of the Department of Environmental Quality or the State Department of Agriculture, which permit shall specify applicable effluent limitations, a person may not:

(a) Discharge any wastes into the waters of the state from any industrial or commercial establishment or activity or any disposal system."

Definitions (ORS 468B.005)

"Wastes," means 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. Additionally, OAR 603-095-0010(53) includes but is not limited to commercial fertilizers, soil amendments, composts, animal wastes, vegetative materials, or any other wastes.

"Pollution or water pollution" means 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.

"Water" or "the waters of the state" include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or affect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

1.4.5 Streamside Vegetation and Agricultural Water Quality

Across Oregon, the Ag Water Quality Program emphasizes streamside vegetation protection and enhancement to prevent and control agricultural water pollution. Streamside vegetation provides

three primary water quality functions: shade for cooler stream temperatures, streambank stability, and filtration of pollutants. Other water quality functions include: water storage for cooler and later season flows, sediment trapping that builds streambanks and floodplains, narrowing and deepening of channels, and biological uptake of sediment, organic material, nutrients, and pesticides.

Additional reasons for the Ag Water Quality Program's emphasis on streamside vegetation include:

- Streamside vegetation improves water quality related to multiple pollutants, including: temperature (heat), sediment, bacteria, nutrients, toxics, and pesticides.
- Streamside vegetation provides fish and wildlife habitat.
- Landowners can improve streamside vegetation in ways that are compatible with their operation.
- Streamside vegetation condition can be monitored readily to track the status and trends of agriculture's progress in addressing water quality concerns.

The Ag Water Quality Program uses the concept of "site-capable vegetation" to describe the vegetation that agricultural streams can provide to protect water quality. Site-capable vegetation is the vegetation that can be expected to grow at a particular site, given natural site factors (e.g., elevation, soils, climate, hydrology, wildlife, fire, floods) and historical and current human influences (e.g., channelization, roads, invasive species, modified flows, past land management). Site-capable vegetation can be determined for a specific site based on: current streamside vegetation at the site, streamside vegetation at nearby reference sites with similar natural characteristics, NRCS soil surveys, and local or regional scientific research.

The goal for Oregon's agricultural landowners is to provide the water quality functions (e.g., shade, streambank stability, and filtration of pollutants) produced by site-capable vegetation along all streams flowing through agricultural lands. The agricultural water quality regulations for each Management Area require that agricultural activities provide water quality functions consistent with what the site would provide with site-capable vegetation.

In some cases, for narrow streams, mature site-capable vegetation may not be needed. For example, shrubs and grass may provide shade, protect streambanks, and filter pollutants. However, on larger streams, mature vegetation is important. Limited exceptions include:

- Junipers are mature site-capable vegetation in central and eastern Oregon, but they reduce bank stability and increase erosion
- Upland species (such as sagebrush) can be the dominant site-capable vegetation along streams with erosional down-cutting, but they do not improve water quality

The Ag Water Quality Program assesses streamside vegetation conditions across small watersheds, based on public domain aerial photos and ground-truthing from public vantage points. ODA and DEQ are working toward calibrating these streamside vegetation assessments with agricultural load allocations where TMDLs have been developed to quantify progress and establish milestones and timelines.

1.5 Other Water Quality Programs

1.5.1 Confined Animal Feeding Operation (CAFO)

ODA is the lead state agency for the CAFO Program. The CAFO Program was developed to ensure that operators and producers do not contaminate ground or surface water with animal manure. Since the early 1980s, CAFOs have been registered to a general Water Pollution Control Facility permit designed to protect water quality, while allowing the operators and producers to remain economically viable. A properly maintained CAFO does not pollute ground or surface water. To assure continued protection of ground and surfacewater, ODA was directed by the 2001 Oregon State Legislature to convert the CAFO Program from a Water Pollution Control Facility permit program to a federal National Pollutant Discharge Elimination System (NPDES) program. ODA and DEQ jointly issued a NPDES CAFO Permit in 2003 and 2009. The 2009 permit will expire in May 2014, and it is expected that a new permit will be issued at that time. The NPDES CAFO Permit is compliant with all Clean Water Act requirements for CAFOs; it does allow discharge in certain circumstances as long as the discharge does not violate Water Quality Standards.

Oregon NPDES CAFO Permits require the registrant to operate according to a site-specific, ODA approved, Animal Waste Management Plan that is incorporated into the NPDES CAFO Permit by reference. CAFO NPDES Permits protect both surface and ground water resources.

1.5.2 Drinking Water Source Protection

Oregon implements its drinking water protection program through a partnership between DEQ and the Oregon Health Authority. The program provides individuals and communities with information on how to protect the quality of Oregon's drinking water. DEQ and the Oregon Health Authority encourage community-based protection and preventive management strategies to ensure that all public drinking water resources are kept safe from future contamination. For more information see: www.deq.state.or.us/wq/dwp/dwp.htm. Agricultural activities are required to meet those water quality standards that ensure safe drinking water.

1.5.3 Groundwater Management Areas

Groundwater Management Areas (GWMAs) are designated by DEQ when groundwater in an area has elevated contaminant concentrations resulting, at least in part, from nonpoint sources. Once the GWMA is declared, a local groundwater management committee comprised of affected and interested parties is formed. The committee then works with and advises the state agencies that are required to develop an action plan that will reduce groundwater contamination in the area.

Oregon has designated three GWMAs because of elevated nitrate concentrations in groundwater. These include the Lower Umatilla Basin GWMA, the Northern Malheur County GWMA, and the Southern Willamtte Valley GWMA. Each GWMA has a voluntary action plan to reduce nitrate concentrations in groundwater. If after a scheduled evaluation point DEQ determines that the voluntary approach is not effective, then mandatory requirements may become necessary.

1.5.4 Pesticide Management and Stewardship

The ODA Pesticides Program holds the primary responsibility for registering pesticides and regulating their use in Oregon, under the Federal Insecticide Fungicide Rodenticide Act. ODA's Pesticide Program administers regulations relating to pesticide sales, use, and distribution, including pesticide operator and applicator licensing, as well as proper application of pesticides, pesticide labeling, and registration.

In 2007, the interagency Water Quality Pesticide Management Team (WQPMT) was formed to expand efforts to improve water quality in Oregon related to pesticide use. The WQPMT includes representation from ODA, Oregon Department of Forestry, DEQ, and the Oregon Health Authority. The WQPMT facilitates and coordinates activities such as monitoring, analysis and interpretation of data, effective response measures, and management solutions. The WQPMT relies on monitoring data from the Pesticides Stewardship Partnership (PSP) Program and other monitoring programs to assess the possible impact of pesticides on Oregon's water quality. Pesticide detections can be addressed through multiple programs and partners, including the PSP Program described above.

Through the PSP Program, state agencies and local partners work together to monitor pesticides in streams and to improve water quality (www.deq.state.or.us/wq/pesticide/pesticide.htm). DEQ, ODA, and Oregon State University Extension Service work with landowners, SWCDs, watershed councils, and other local partners to voluntarily reduce pesticide levels while improving water quality and crop management. There has been noteworthy progress since 2000 in reducing pesticide concentrations and detections.

ODA led the development and implementation of a Pesticides Management Plan (PMP) for the state of Oregon (www.oregon.gov/ODA/PEST/water_quality.shtml). The PMP, completed in 2011, strives to protect drinking water supplies and the environment from pesticide contamination, while recognizing the important role that pesticides have in maintaining a strong state economy, managing natural resources, and preventing human disease. The PMP sets forth a process for preventing and responding to pesticide detections in Oregon's ground and surface water resources by managing the pesticides that are currently approved for use by the U.S. EPA and Oregon in both agricultural and non-agricultural settings.

1.5.5 The Oregon Plan for Salmon and Watersheds

In 1997, Oregonians began implementing the Oregon Plan for Salmon and Watersheds referred to as the Oregon Plan (www.oregon-plan.org). The Oregon Plan seeks to restore native fish populations, improve watershed health, and support communities throughout Oregon. The Oregon Plan has a strong focus on salmon, because they have such great cultural, economic, and recreational importance to Oregonians, and because they are important indicators of watershed health. ODA's commitment to the Oregon Plan is to develop and implement Area Plans and associated regulations throughout Oregon.

1.6 Partner Agencies and Organizations

1.6.1 Oregon Department of Environmental Quality (DEQ)

The U.S. EPA has delegated authority to DEQ under the CWA authority for protection of water quality in Oregon. In turn, DEQ is the lead state agency with overall authority to regulate for water quality in Oregon. DEQ coordinates with other state agencies, including ODA and Oregon Department of Forestry, to meet the needs of the CWA. DEQ sets water quality standards and and develops TMDLs for impaired waterbodies. In addition, DEQ develops and coordinates programs to address water quality including National Pollution Discharge Elimination Permits (for point sources), 319 program, Source Water Protection, 401 Water Quality Certification, and GWMAs. DEQ also coordinates with ODA to help ensure successful implementation of Area Plans as part of its 319 program.

DEQ designated ODA as the Designated Management Agency for water pollution control activities on agricultural and rural lands in the state of Oregon to coordinate meeting agricultural TMDL load allocations. A Memorandum of Agreement (MOA) between DEQ and the ODA recognizes that ODA is the agency responsible for implementing the Ag Water Quality Program established under ORS 568.900 to ORS 568.933, ORS 561.191, and OAR Chapter 603, Divisions 90 and 95. The MOA between ODA and DEQ was updated in 2012 and describes how the agencies will work together to meet agricultural water quality requirements.

The MOA includes the following commitments:

- ODA will develop and implement a monitoring strategy, as resources allow, in consultation with DEQ.
- ODA will evaluate Area Plans and regulation effectiveness in collaboration with DEQ.
    - ODA will determine the percentage of lands achieving compliance with Management Area regulations.
    - ODA will determine whether the target percentages of lands meeting the desired land conditions, as outlined in the goals and objectives of the Area Plans, are being achieved.
- ODA and DEQ will review and evaluate existing information with the objective of determining:
    - Whether additional data are needed to conduct an adequate evaluation.
    - Whether existing strategies have been effective in achieving the goals and objectives of the Area Plan.
    - Whether the rate of progress is adequate to achieve the goals of the Area Plan.

The Environmental Quality Commission, which serves as DEQ's policy and rulemaking board, may petition ODA for a review of part or all of any Area Plan or its associated regulations. The petition must allege with reasonable specificity that the Area Plan or associated regulations are not adequate to achieve applicable state and federal water quality standards (ORS 568.930(3)(a)).

1.6.2 Other Partners

ODA and SWCDs work in close partnership with local, state, and federal agencies and organizations, including: DEQ (as indicated above), the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and Farm Service

Agency, watershed councils, Oregon State University Extension Service, livestock and commodity organizations, conservation organizations, and local businesses. As resources allow, SWCDs and local partners provide technical, financial, and educational assistance to individual landowners for the design, installation, and maintenance of effective management strategies to prevent and control agricultural water pollution.

1.7 Measuring Progress

Agricultural landowners and operators have implemented effective conservation projects and management activities throughout Oregon to improve water quality for many years. However, it has been challenging for ODA, SWCDs, and LACs to measure this progress. ODA is working with SWCDs, LACs, and our partners to develop and implement objectives and strategies that will produce measurable outcomes for agricultural water quality.

1.7.1 Measurable Objectives

Measurable objectives allow the Ag Water Quality Program to better evaluate progress toward meeting water quality standards and load allocations where TMDLs have been completed. Many of these measurable objectives relate to land condition and are mainly implemented through focused work in small geographic areas (*section 1.7.3*). The measurable objectives for this Area Plan are in Chapter 3, and progress toward achieving the objectives is summarized in Chapter 4.

At a minimum, the measurable objectives of the Ag Water Quality Program and this Area Plan are to:

- Increase the percentage of lands achieving compliance with the regulations.
- Increase the percentage of lands meeting desired land conditions outlined in the Area Plan.

1.7.2 Land Condition and Water Quality

Land conditions can serve as useful surrogates (indicators) for water quality parameters. For example, streamside vegetation is generally used as a surrogate for water temperature, because shade blocks solar radiation from warming the stream. In addition, sediment can be used as a surrogate for pesticides and nutrients, because many pesticides and nutrients adhere to sediment particles.

The Ag Water Quality Program focuses on land conditions, in addition to water quality data, for several reasons:

- Landowners can see land conditions and have direct control over them.
- It can be difficult to separate agriculture's influence on water quality from other land uses.
- It requires extensive monitoring of water quality at an intensive temporal scale to evaluate progress; it is expensive and may fail to demonstrate short-term improvements.
- Improved land conditions can be documented immediately, but there may be a significant lag time or a need for more extensive implementation before water quality improves.
- Agricultural improvements in water pollution are primarily through improvements in land and management conditions.

Water quality monitoring data may help ODA and partners to measure progress or identify problem areas in implementing the Area Plan; although, as described above, it may be less likely to evaluate the short-term effects of changing land conditions on water quality parameters such as temperature, bacteria, nutrients, sediment, and pesticides.

1.7.3 Focused Implementation in Small Geographic Areas

Focus Areas

A Focus Area is a small watershed with significant water quality or land condition concerns that are associated with agriculture. ODA's intent in selecting Focus Areas is to deliver systematic, concentrated outreach and technical assistance in small geographic areas ("Focus Areas") through the SWCDs. A key component of this approach is measuring conditions before and after implementation to document the progress made with available resources. The focused implementation approach is consistent with other agencies' and organizations' efforts to work proactively in small geographic areas, and is supported by a large body of scientific research (e.g., *Council for Agricultural Science and Technology, 2012*).

Systematic implementation in Focus Areas can provide the following advantages:

- Measuring progress is easier in a small watershed than across an entire Management Area.
- Water quality improvement may be faster since small watersheds generally respond more rapidly.
- A proactive approach can address the most significant water quality concerns.
- Partners can coordinate and align technical and financial resources.
- Partners can coordinate and identify the appropriate source specfic conservation practices and demonstrate the effectiveness of these conservation practices.
- A higher density of projects allows neighbors to learn from neighbors.
- A higher density of prioritized projects leads to greater connectivity of projects.
- Limited resources are used more effectively and efficiently.
- Work in one Focus Area, followed by other Focus Areas, will eventually cover the entire Management Area.

SWCDs choose a Focus Area in cooperation with ODA and other partners. In some cases, a Focus Area is selected because of efforts already underway or landowner relationships already established. The scale of the Focus Area matches the SWCD's capacity to deliver concentrated outreach and technical assistance, and to complete (or initiate) projects over a biennium. The current Focus Area for this Management Area is described in Chapter 4.

Working within a Focus Area is not intended to prevent implementation within the remainder of the Management Area. The remainder of the Management Area will continue to be addressed through general outreach and technical assistance.

Strategic Implementation Areas

Strategic Implementation Areas are small watersheds selected by ODA, in cooperation with partners, and after review of water quality and other available information. ODA leads the assessment of current conditions and the landowner outreach. Strategic Implementation Areas and Focus Areas are both tools to concentrate efforts in small geographic areas to achieve water

quality standards. As with Focus Areas, SWCDs and partners work with landowners to improve conditions that may impact water quality. However, Strategic Implementation Areas also have a compliance evaluation and assurance process that allows ODA to proactively gain compliance with Ag water quality regulations.

1.8 Implementation, Monitoring, Evaluation, and Adaptive Management

Evaluating the status and trends in agricultural land conditions will assess implementation of the Area Plan and associated regulations. Measurable objectives will be assessed across the entire Management Area and within the Focus Area. ODA conducts land condition and water quality monitoring at the statewide level and will analyze this and other agencies' and organizations' local monitoring data. The results and findings will be summarized in Chapter 4 for each biennial review. ODA, DEQ, SWCDs, and LACs will examine these results during the biennial review and will revise the goal, objectives, and strategies in Chapter 3, as needed.

1.8.1 Statewide Aerial Photo Monitoring of Streamside Vegetation

Starting in 2003, ODA began evaluating streamside vegetation conditions using aerial photos acquired specifically for this purpose. ODA focuses on land condition monitoring efforts on streamside areas because these areas have such a broad influence over water quality. Stream segments representing 10 to 15 percent of the agricultural lands in each Management Area were randomly selected for monitoring. ODA examines streamside vegetation at specific points in 90-foot bands along the stream from the aerial photos and assigns each sample stream segment a score based on ground cover. The score can range from 70 (all trees) to 0 (all bare ground). The same stream segments are re-photographed and re-scored every five years to evaluate changes in streamside vegetation conditions over time. Because site capable vegetation varies across the state, there is no one correct riparian index score. The main point is to measure positive or negative change. The results are summarized in Chapter 4 of the Area Plan.

1.8.2 Agricultural Ambient Water Quality Monitoring Assessment

ODA currently evaluates water quality data from monitoring sites in DEQ's water quality database that reflects agricultural influence on water quality. These data are also published in the DEQ water quality database and evaluated at the statewide level to determine trends in water quality at agricultural sites statewide. Results from monitoring sites in the Management Area, along with local water quality monitoring data, are described in Chapter 4.

1.8.3 Biennial Reviews and Adaptive Management

The Area Plan and associated regulations undergo biennial reviews by ODA and the LAC. As part of each biennial review, ODA, DEQ, SWCDs, and the LAC discuss and evaluate the progress on implementation of the Area Plan and associated regulations. This evaluation includes enforcement actions, landscape and water quality monitoring, and outreach efforts over the past biennium across the Management Area and for the Focus Area. In addition, progress toward achieving agricultural load allocations may be documented (if a TMDL has been established). As a result of the biennial review, the LAC submits a report to the Board of Agriculture and the director of ODA. This report describes progress and impediments to implementation, and recommendations for modifications to the Area Plan or associated

regulations necessary to achieve the purpose of the Area Plan. The results of this evaluation will be used to update the goal(s), measurable objectives, and strategies in Chapter 3.

Chapter 2: Local Background

2.1 Local Roles and Responsibilities

2.1.1 Local Advisory Committee (LAC)

This Area Plan was developed with the assistance of an LAC. The LAC was formed in 2002 to assist with the development of the Area Plan and regulations and with subsequent biennial reviews. Current members are:

Name	Location	Description
Walter Powell	Condon	OWC, Dryland crops
Tracy Fields	Moro	Dryland crops, cattle
Bob Martin, Chair	Moro	Dryland crops
Guy Weedman	Moro	Dryland crops, cattle
Marvin Thompson	Moro	WSC, Dryland crops
Brad Eakin	Grass Valley	SWCD, Dryland crops

2.1.2 Local Management Agency

The implementation of this Area Plan is accomplished through an Intergovernmental Agreement between ODA and the Gilliam and Sherman County SWCDs. This Intergovernmental Agreement defines the SWCDs as the Local Management Agencies for implementation of the Area Plan. The SWCDs were also involved in development of the Area Plan and associated regulations.

2.2 Area Plan and Rules: Development and History

The director of ODA approved the Area Plan and Area Rules in 2004.

Since approval, the LAC meets annually to review the Area Plan and regulations. The review process included assessment of the progress of Area Plan implementation toward achievement of plan goals and objectives. In 2006, the LAC agreed to modify the Prevention and Control Measures - Upland Management section of the Area Plan to add a statement clarifying the relationship between the Soil Erosion and Sediment Control Rule (OAR 603-095-2940(3)) and the Waste Management Rule (OAR 603-095-2940(2)). In 2013, the Area Plan was updated to include information about the John Day Basin TMDL and load allocations for agriculture. The 2015 biennial review included development of measurable objectives and reformatting the plan to a chapter format that makes all plans in the state formatted consistently.

2.3 Geographical and Physical Setting

2.3.1 Location, Description and Land Use

The Lower John Day Management Area is an interior plateau generally situated between the Blue Mountains to the east and the Cascades Mountain Range to the west in North Central Oregon.

The John Day River in northeastern Oregon is unique – it's the second longest undammed river (500 river miles) in the continental United States, behind the Yellowstone River. It contains designations of Federal Wild and Scenic and State Scenic River in some sections and hosts a diversity of fish and wildlife.

Located in the southern section of the Columbia Plateau Ecological Province, the John Day River Basin is an 8,100 square mile drainage area, the fourth largest basin in the state. The flows originate in the Strawberry Mountains (9,000 ft.) and flow generally westward and then northward for approximately 284 miles, discharging into the Columbia River east of Rufus (200 ft.), at River Mile (RM) 217.

Counties within this area include Gilliam, Morrow, Sherman, Wasco, and Wheeler. Major towns in the Management Area include Arlington, Condon, Grass Valley, and Moro. This area is not a highly populated area (0.9 – 2.2 people / square mile).

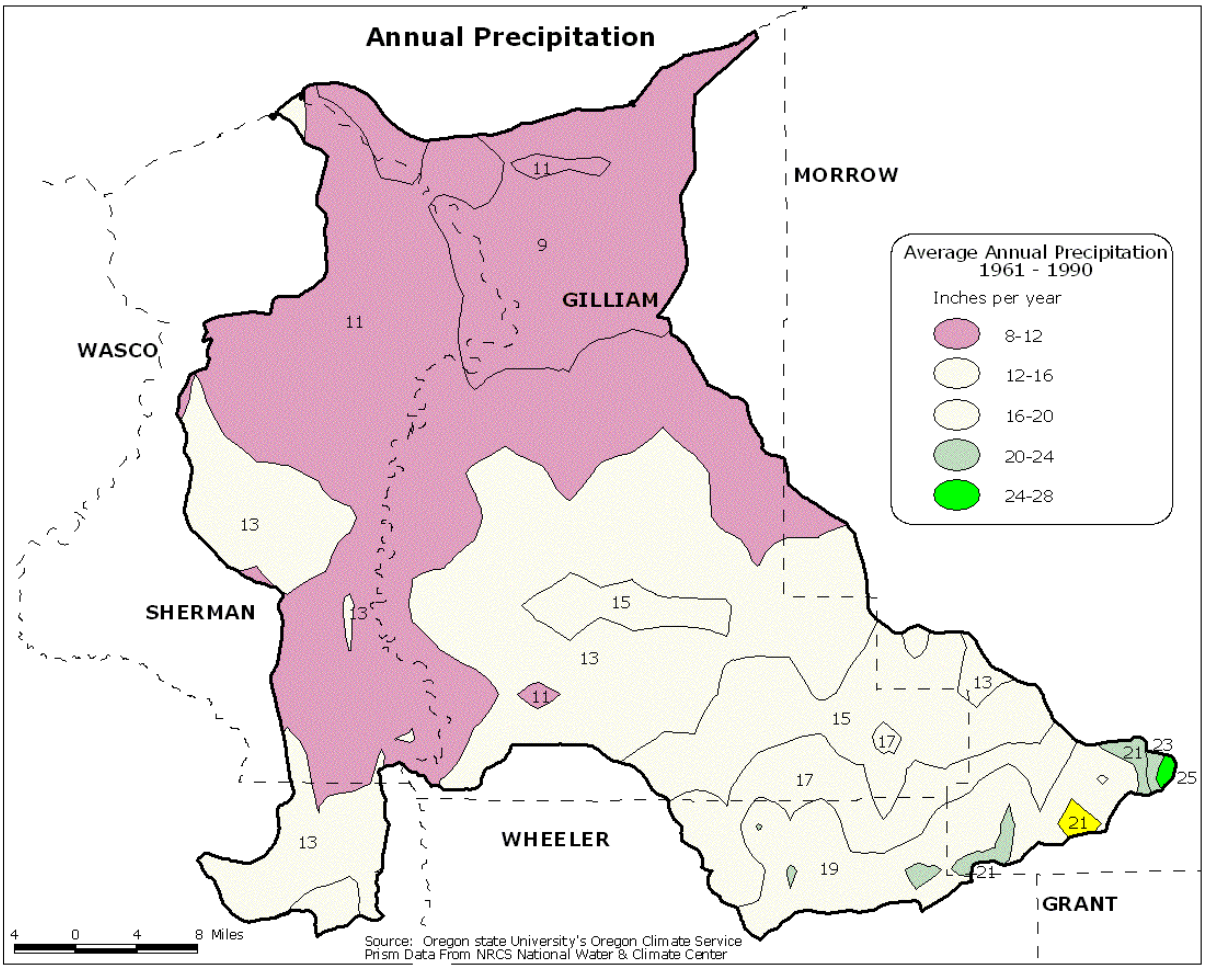
The Management Area contains 1,181,194 acres (1,845 square miles). Most of the land (1.07 million acres) in the Management Area (91 percent) is privately owned. Bureau of Land Management manages 88,566 acres (7.5 percent), mostly along the John Day River, while the U.S. Forest Service National Forest only occupies 13,551 acres (1.1 percent) in the southeastern corner of the Management Area.

Today the economy is heavily based on agriculture, tourism, and agriculture-related industries. The small population, isolation from major cities, and limited transportation facilities limit expansion of the economy. The timber industry (logging) is most important in the forested upper portions of the basin. Dryland production of grain crops is the major economic activity on the plateaus of the Management Area. Livestock agriculture is important throughout the basin, comprised mostly of cattle and sheep ranching and associated hay crops. Tourism and recreation are growing industries, constituting a significant sector of the subbasin's economy and are inextricably tied to the production of natural resources. Hunting, fishing, boating, camping, wildlife observation, photography, hiking, swimming, and scenic viewing are among the most common recreational activities. Federal Wild and Scenic River segments and State Scenic Waterway designation have undoubtedly contributed to the rise in tourism and recreation. These river segments contain outstandingly remarkable values and provide opportunities for white water rafting, warm-water bass fishing, and wildlife viewing.

2.3.1.1 Climate

The climate in the John Day Subbasin ranges from sub-humid in the upper basin to semi-arid in the lower basin. The area has a continental climate, characterized by low winter and high summer temperatures, low average annual precipitation and dry summers. The low annual rainfall on the majority of the landscape is characteristic of the Intermountain Region, which receives most precipitation (70-80 percent) between November and March. Less than 10 percent of the annual precipitation falls as rain during July and August, usually from sporadic, but violent thunderstorms. The other events that produce substantial and damaging runoff in this area are heavy precipitation or rapid snowmelt on frozen soils. These events occur relatively infrequently and cannot be predicted. Annual rainfall varies from about 8 inches in the northeast portion of the Management Area to about 28 inches in the extreme southeast, higher elevation, forested areas. Most of the agricultural areas receive between 10 and 14 inches of precipitation

per year. Mean annual temperatures vary inversely with elevation. Mean annual temperature ranges from 38° F in the upper subbasin to 58° F in the lower basin. Throughout the subbasin, actual temperatures vary from sub-zero during the winter months to over 100° F during the summer. Inflows of moist Pacific air moderate extreme winter temperatures. The average frost-free period is 50 days in the upper basin and 200 days in the lower basin.



2.3.1.2 Hydrology

The John Day and Columbia rivers are the largest watercourses within the area. Most water in the John Day Subbasin is derived from the upper watersheds, primarily in the form of melting snow. The John Day is a free-flowing system with highly variable discharge from peak to low flows. Discharge usually peaks from March through June and seasonal low flows typically occur from August to October. The John Day River tends to experience flood events in December and January when warm temperatures and high precipitation results in rain on snow events, which lead to extreme runoff. Average annual discharge of the John Day River into the Columbia River is approximately 1.5 million acre feet (or 2,103 cfs), with a range of 1 million to 2.25 million acre feet. Peak flow at the McDonald Ferry gauging station (RM21) is typically over 100 times greater than the lowest flows the same year. From year to year, peak flows can vary as much as 300 – 700 percent. Major tributaries of the Lower John Day in the Management Area include

Rock Creek, Grass Valley Canyon, Pine Hollow, Thirty-mile Creek, Dry Creek, Blalock Canyon and Juniper Creek.

2.3.1.3 Topography/Geology

Rock assemblages within the John Day Subbasin include masses of oceanic crust, marine sediments, volcanic materials, ancient river and lake deposits, and recent river and landslide deposits. Major geologic events included volcanic eruptions, uplifting, faulting, and erosion. Volcanic activity in the form of lava flows, mudflows, and ash fall formed and stratified three key formations in the subbasin over the course of approximately 37 to 54 million years – the Clarno Formation, the John Day Formation, and the Columbia River Basalt Group. The Columbia River Basalt Group, a less erodible formation, resulted from a series of flood basalt 12 to 19 million years ago. The Columbia River Basalt is the dominant rock at elevations below 4,000 feet. Igneous rocks are exposed in the higher reaches of the subbasin, while the lower basin exposures are primarily extrusive rocks, ash, and wind-blown loess. After volcanic activity ceased (10 million years ago), erosion and faulting continued to alter the landscape.

2.3.1.4 Vegetation

The present plant communities differ from the original flora found in the Lower John Day subbasin as a result of intensive grazing, fire suppression, and introduction of exotic plants. Native bunchgrasses have been largely replaced by western juniper, sagebrush, and exotic plants (e.g. cheatgrass). Land cover is predominantly rangeland and cropland. Agriculture is the primary private sector economic activity in the Lower John Day subbasin. The primary agricultural products in the Management Area are small grain and beef cattle production. The maximum allowable acreage (25% of total cropland) has been enrolled in the Conservation Reserve Program (CRP), removed from crop production and planted to perennial grasses. Classifiable plant communities (ecological sites) in the Lower John Day subbasin are categorized into four basic divisions, according to the topographic position which they occupy: riparian, terrace, upland, and forest- woodland. Grass, shrub, and juniper communities dominate the valleys; ponderosa pine, lodgepole pine, Douglas fir, and white fir communities dominate higher elevations. Soil diversity also contributes to the variety of vegetation types. Exotic plants (noxious weeds) and uncontrolled growth of some native species (e.g. juniper) is a growing problem within the region. The single greatest threat to native rangeland biodiversity and recovery of less than healthy watersheds is the rapidly expanding invasion of noxious weeds. Although many weeds occupy lands in the Lower John Day subbasin, those causing most concern are diffuse, spotted, and Russian knapweeds; Dalmation toadflax; yellow starthistle; Scotch thistle; purple loosestrife; rush skeletonweed; leafy spurge; poison hemlock; Russian thistle; Canada thistle and medusahead rye.

2.3.1.5 Fish and Wildlife Resources

Historically, the John Day River was one of the most significant anadromous fish producing rivers in the Columbia River basin. Today, the John Day continues to support some of the most diverse native and non-native fish assemblages and healthiest populations of anadromous fish in the basin.It is estimated that there are 27 species of fish, including 17 native species, found in the John Day Basin. The relative health of these populations has been largely attributed to the absence of any large dams, limited releases of hatchery fish and the presence of quality habitat in headwater areas. The John Day Basin supports wild runs of spring and fall chinook salmon,

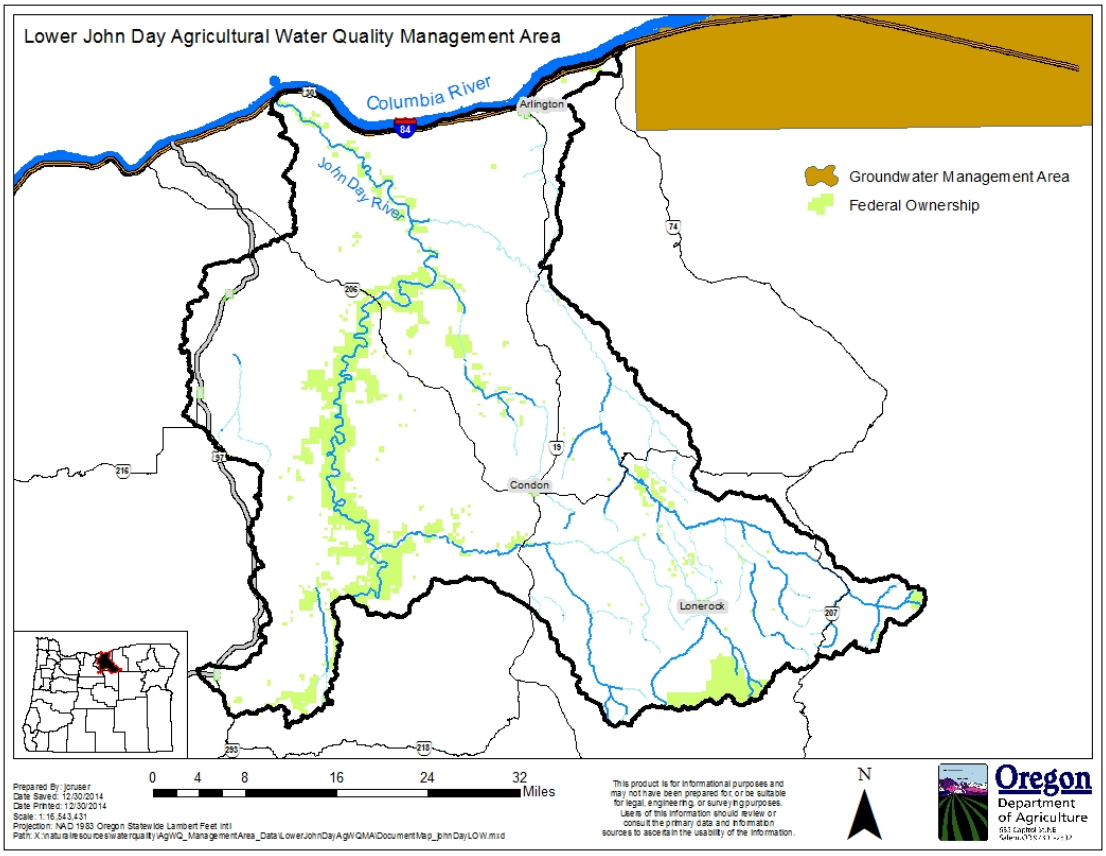
summer steelhead, and Pacific lamprey; resident populations of westslope cutthroat, interior redband, and bull trout also exist.
A variety of wildlife species, including large and small mammals, waterfowl, passerines, raptors, reptiles, and amphibians, are associated with the John Day Subbasin riverine, wetland, and upland habitats. Many wildlife species reside within the subbasin in association with Shrub-Steppe habitat.

Certain populations of wildlife species are being managed by federal and state wildlife managers throughout the subbasin, including big game, fur bearer, upland birds, and waterfowl species. Many raptors inhabit the subbasin as well.

2.3.2 Geographic and Programmatic Scope

This Area Plan applies to agricultural activities on all non-federal agricultural, rural, and forest lands in the Lower John Day Management Area. This Management Area consists of 1) all lands drained by the John Day River and its tributaries downstream but not inclusive of the Butte Creek drainage and 2) all streams flowing into the Columbia River between the Lower Deschutes drainage and the Willow Creek drainage (Attachment C). It applies to lands in current agricultural use and those lying idle or on which management has been deferred. It also applies to agricultural operations within incorporated city boundaries.

2.3.3 Map of the Management Area



2.4 Agricultural Water Quality in the Management Area

2.4.1 Local Water Quality Issues

The Clean Water Act (CWA) requires that each state designate beneficial uses for every stream and lake, decide which parameters to measure to determine whether beneficial uses are being met, and set water quality standards based on the beneficial uses and parameters. Section 303(d) of the CWA directs states to develop a list of water quality limited streams, which are streams that violate water quality standards and do not support their beneficial uses. The CWA also directs states to develop TMDLs for 303(d) listed streams.

Stream pollution is closely tied to land use. In the John Day Basin, 45 percent of the land is forested and more than 50 percent is in agricultural use. Other uses include urban, rural residential, parkland and industrial. The TMDL planning applies to all land uses that contribute pollution to the basin's streams and rivers.

ODA consulted with DEQ to determine whether this Area Plan was sufficient to meet load allocations and achieve water quality standards.

2.4.2 303(d) List of Impaired Water Bodies – 2012 DRAFT

Waterbodies with approved TMDLs – Category 4			
Waterbody	Segment - River Mile	Parameter	Season
Brown Creek	0 – 9.5	Temperature	Year Round
Grass Valley Canyon	0 – 39.8	Temperature	Summer
Hay Creek	0 – 24.8	Temperature	Year Round
John Day River	0.4 -182	Temperature	Year Round
Rock Creek	0 – 79.2	Temperature	Year Round
Stahl Canyon	0 - 5.7	Temperature	Summer
Thirty Mile Creek	0 – 39.4	Temperature	Year Round
Waterbodies needing a TMDL – Category 5			
Brown Creek	0 – 9.4	Biological Criteria	Year round
Brown Creek	0 – 9.4	Sedimentation	Year round
John Day River	0 – 154.6	Copper	Year round
John Day River	0 – 278.3	Biological Criteria	Year round
Rock Creek	0 – 79.2	Biological Criteria	Year round
Rock Creek	0 – 79.2	Sedimentation	Year round

2.4.3 Basin TMDLs and Agricultural Load Allocations

The TMDL results in allocations of pollutant loads to different sources such as agriculture, urban areas, and federal lands. Each jurisdictional authority then develops water quality management plans to achieve the load allocations. The John Day Basin TMDL, that includes this management area, was approved in 2010. This Area Plan serves as the implementation plan for agriculture's load allocation and may be revised to address the load allocations as they are implemented.

A TMDL assessment uses scientific data collection and analysis to determine the amount and

source of each pollutant entering streams. A TMDL is the maximum amount of pollutant that can be present in a waterbody while meeting water quality standards. These maximum allowable pollutant loads are assigned to contributing sources, typically to land use authorities. This plan addresses the agricultural sources.

TMDL implementation is carried out through two primary mechanisms: water quality permits for facilities and water quality management plans for nonpoint sources.

The TMDL document includes a water quality management plan with strategies and approaches for implementing the TMDLs. The plan designates organizations to prepare and carry out source-specific TMDL implementation plans. The organizations designated to prepare and carry out TMDL implementation plans include the U.S. Forest Service and Bureau of Land Management, Oregon Departments of Agriculture and Forestry, counties, cities and others. The timeline for submittal of these plans is generally 18 months following issuance of the TMDL.

2.4.4 Beneficial Uses

Beneficial uses in the Lower John Day Management Area include public and private water supply, irrigation, industrial, livestock watering, anadromous fish passage, salmonid fish rearing and spawning, resident fish and aquatic life, wildlife and hunting, boating, fishing, water contact recreation, and aesthetics (OAR 340-41-602, Table 10). Of the beneficial uses of water in the John Day River Basin, the most sensitive use for most waters and parameters of concern is spawning and rearing of cold-water fisheries.

2.4.5 Water Quality Parameters of Concern

The DEQ has identified several water quality concerns in the basin, including high temperature and bacteria levels, low oxygen concentrations and impaired biological conditions. The Lower John Day is listed for high summer water temperatures, copper and biocriteria. The following discussion of water quality parameters of concern in the watershed addresses the CWA requirements for standards to be established for the most sensitive beneficial use.

Stream Temperature

Water temperature is the most widespread concern in the basin. The causes of stream heating are excess solar radiation, decreased groundwater interaction and instream flow reduction. These can result from natural disturbances and human-related stream modifications such as vegetation disturbance, irrigation withdrawal and channel straightening. Excessive water temperatures affect the survival of aquatic species. The purpose of the temperature criteria is to protect designated temperature-sensitive beneficial uses, including specific salmonid life cycle stages in waters of the state.

Determining whether the stream temperature is above or below the temperature standard is based on the average of the maximum daily water temperatures for the stream's warmest, consecutive seven-day period during the year. Water temperature measurements must be taken with continuous recording temperature sensors, in well-mixed and representative locations of streams.

A one-time measurement above the standard is not a violation of the standard. When stream flow is exceptionally low or air temperature is exceptionally high, the temperature criterion are waived (an example is when the flow is less than the expected ten year low flow or the air

temperature is above the 90th percentile of a seven-day average). (*Questions and Answers About DEQ's Temperature Standards.)*

For nonpoint sources of stream heating (e.g. vegetation disturbance, stream channel alteration) attributed to agriculture and rural lands, the temperature TMDL establishes thermal goals for on-the- ground conditions that would lead to more natural stream temperature patterns. The TMDL recovery targets call for natural shade-producing vegetation along all streams in the plan area and the removal of stressors that are impeding that attainment of a natural vegetative and channel geometry conditions. In certain areas, shade producing riparian vegetation may not be appropriate due to local site conditions. Site-specific determinations will be made by the Department of Agriculture.

Water temperature is important because it affects most aspects of an aquatic environment, and many factors influence stream temperatures. Natural factors such as climate, air temperature, topography, and stream hydrology have a large influence. Human influence is limited to activities that affect:

- Volume of water flowing in the stream
- Width-to-depth ratio of the stream
- Groundwater recharge
- Shade

Vegetation affects all of these factors and humans have, depending on the site, some degree of direct influence on vegetation. Riparian vegetation can help narrow and deepen stream channels, which protects water from heating by exposing less stream surface area to the surrounding environment.
Healthy vegetation in both the uplands and in the riparian area will capture, store and safely release water later in the season. Releasing water later in the summer will reduce temperatures in two ways. The first way is that a higher volume of water requires more energy to heat it. Secondly, infusion of groundwater, usually between 45 and 55° F, can help hold down stream temperatures.

Shade, provided by tall vegetation, blocks solar radiation. Solar radiation is the single most important energy source for heating streams during daytime conditions. Thus, streamside vegetation, via the shade it produces, moderates summertime stream temperatures. Shade does not cool water; it merely reduces the rate at which water temperature increases. Another benefit from shade is that summer air temperatures under a dense canopy can be cooler, thus further reducing the rate of increase in stream temperature. In winter, the vegetation can act as an insulator helping maintain the steady temperatures that are important for fish.

Given the general trend that streams are cool at the headwaters and temperatures gradually increase as the water progresses to the mouth, attempts to reduce the rate of heating should focus on the small streams high in the watershed. Humans have much more influence on these types of streams than on larger rivers. It is important to note that the small streams human management can affect represent the majority of stream miles in this and other watersheds. This is not to say that reaches lower in the system should be ignored. The climate and topography also have a profound influence on stream temperatures. Because eastern Oregon's summer climate is hot and dry, water temperatures are naturally high and flows are low late in the summer.

Clearly, developing healthy, functioning riparian plant communities and stabilizing stream banks will improve critical aquatic and riparian habitat. However, because of the natural factors listed above and the technical and biological challenges (e.g. site capability, and beaver, deer and rodent damage) of developing riparian vegetation it is unlikely that portions of most stream segments will meet the temperature criteria. But the numerical criteria are only part of the temperature standard. The standard itself focuses on limiting human-caused warming of surface waters to the extent it is feasible.

Industries, agencies, cities and other groups including agriculture are required to write and implement a basin-wide management plan, such as this Area Plan, that describes how these sources will attempt to control stream temperatures if a stream in the basin exceeds the temperature criterion.

2.4.6 Sources of Impairment

Nonpoint source pollution is pollution emanating from landscape scale sources and cannot be traced to a single point. Probable nonpoint sources of pollution in the John Day River watershed include eroding agricultural and forest lands, eroding streambanks, runoff and erosion from roads and urban areas, and runoff from livestock and other agricultural operations. 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 that results in high water temperatures. Water temperature naturally fluctuates with air and soil temperatures on a daily and seasonal basis. Temperature increases may be caused by both natural and man-caused events resulting in vegetation removal, low seasonal flows, changes in channel shape and alteration to the floodplain. Channelization or alteration of stream courses can alter gradient, width/depth ratio and sinuosity, causing sediment and temperature increases.

While there may not be severe impacts on water quality from a single 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 John Day River.

2.5 Prevention and Control Measures

This Area Plan provides farmers, ranchers, and other agricultural land users in the Management Area a tool to achieve the following conditions on the land they occupy and manage:

- Soil erosion on uplands not exceeding acceptable rates.
- Elimination of placement, delivery, or sloughing of wastes into streams (currently a state law).
- Riparian vegetation for bank stability, filtration of overland flows and stream shading consistent with vegetative site capability.

Farmers, ranchers, and other agricultural land users are not expected to achieve all the above conditions immediately. Each condition has a timeline associated with it. However, landowners are expected to take current action in adapting their management techniques so they can control the conditions on their property.
The intent of this Area Plan is not to tell anyone how to farm, ranch, or otherwise utilize natural

resources. However, SWCD personnel along with the Natural Resources Conservation Service (NRCS) in local offices can provide technical assistance to help farmers, ranchers, and other agricultural land users implement recommendations in this Area Plan. For detailed information, please refer to the "Prevention and Control Measures" section. Each farmer, rancher, or other agricultural land user is expected to observe their property to ensure that undesirable conditions do not exist or that conditions are beginning to improve. If problems are encountered in meeting the goals of this Area Plan, land managers are encouraged to seek assistance, as they will be required to bring the land they own or operate on into compliance with these goals.

A landowner or operator's responsibility under this Area Plan is to implement measures that prevent and control the sources of water pollution associated with agricultural and rural lands and activities. A landowner or operator is not responsible for conditions caused by other landowners or for circumstances not within their reasonable control including unusual weather events. Reasonable control means that the landowner or operator is using technically sound and economically feasible measures to address conditions that can result in water pollution.

603-095-2940

Prevention and Control Measures

(1) Limitations: All landowners or operators conducting activities on agricultural lands are provided the following exemptions from the requirements of OAR 603-095-2940 (2), (3), and (4).

(a) A landowner or operator shall be responsible for water quality resulting from conditions caused by the management of the landowner or operator.

(b) These rules do not apply to conditions resulting from unusual weather events or other circumstances not within the reasonable control of the landowner or operator. Reasonable control of the landowner means that technically sound and economically feasible measures are used to address conditions described in Prevention and Control Measures

(c) The Department may allow temporary exceptions when a specific integrated pest management plan is in place to deal with certain weed or pest problems.

(d) The capability of a site is the highest ecological status a site can attain given political, social, or economic constraints.

The sections that follow describe more detailed information related to potential agricultural water quality concerns, provides definitions of commonly used terms, provides dates when rules are effective, and provides some exemptions to the rules.

To implement proper management practices and ensure an area is healthy or functioning properly, the capability and potential of a site must be understood. Site capability is the highest ecological status a site can attain considering political, social, or economic constraints. These constraints are often referred to as limiting factors. Site potential is the highest ecological status a site can attain given no political, social, or economic constraints and is often referred to as the "potential natural community."

2.5.1 Waste Management

A landowner or operator's responsibility under this Area Plan is to prevent the introduction of waste materials into nearby bodies of water. There are existing statutes and rules that regulate water quality that remain in effect and are enforced by other designated management agencies.

(2) Waste Management: Effective on rule adoption, no person subject to these rules shall violate any provisions of ORS 468B.025 or 468B.050.

Refer to Section 1.4.4, page 17, for text and definitions of applicable statutes.

2.5.2 Upland Management

A landowner or operator's responsibility under this Area Plan is to implement measures that seek to control water pollution from agricultural activities and soil erosion. This includes agricultural and rural lands that may not be in close proximity to waterbodies but have the potential to contribute to water quality degradation.

Upland areas are the rangelands, forests and croplands, upslope from the riparian areas. These areas extend to the ridge tops of watersheds. With a protective cover of crops and crop residue, grass (herbs), shrubs or trees, consistent with site capability, these areas will capture, store, and safely release precipitation thereby reducing the potential of excessive soil erosion or delivery of soil or pollutants to the receiving stream or other body of water. Vegetation is dependent on physical characteristics including soil, geology, landform, water and other climate factors. Proper management of upland vegetation considers physical and biological conditions, controls soil erosion, and minimizes transport of soil and nutrients to the stream. Upland management also considers crop and livestock production while, at the same time, should consider forest health and protection of fish and wildlife habitat. Healthy uplands maintain productivity over time and are resilient to stresses caused by variations in physical conditions such as climatic changes.

Healthy upland areas provide several important ecological functions. These include:

- Capture, storage and safe release of precipitation,
- Provide for plant health and diversity that support habitat (cover and forage) for wildlife and livestock,
- Filtration of sediment,
- Filtration of polluted runoff,
- Provide for plant growth that increases root mass that utilizes nutrients and stabilizes soil against erosion.

Indicators of these conditions include:

- Recruitment of beneficial plant species,
- Groundcover to limit runoff of nutrients and sediment,
- Cropland cover that is sufficient to limit movement of nutrients and sediment,
- Roads and related structures designed, constructed and maintained to limit sediment delivery to streams,
- Noxious weed and insect pest populations contained (see state weed laws and county weed regulations to determine weed species that must be controlled).

Factors to evaluate upland area condition may include:

- Vegetation utilization through stubble height measurements,
- Plant species composition to measure plant health and diversity,
- Groundcover (live plants, standing plant litter and ground litter) as a measure of potential erosion,
- Evidence of overland flow (pattern and quantity),
- Site productivity (domestic livestock and wildlife carrying capacity),
- Soil erosion potential through prediction models available through NRCS.

Location and management of roads and road/utility rights of way can have a significant impact on upland and riparian condition. Weed infestations and runoff causing erosion are common problems associated with roads. Farm roads are considered as part of the agricultural operation and must be managed to control erosion. 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 barrow ditches, sediment basins, proper culvert placement, sizing, and management, and weed control. Similarly, agricultural lands must be managed to reduce the impacts of runoff onto public rights of way.

This Area Plan does not prescribe specific practices to landowners for management of upland areas to reduce runoff of sediment and other wastes. Site specific recommendations for management to protect water quality, including grazing management systems, desirable vegetation types and road construction and maintenance, can be obtained from sources listed in the Implementation Strategies section of this Area Plan.

The Soil Erosion and Sediment Control Rule (OAR 603-095-2940(3)) that follows addresses the basic requirements of an Area Plan to prevent and control water pollution from soil erosion. At a watershed scale, it minimizes sediment at its source by controlling erosion on-site and recognizes an established system of conservation plans and farming practices that is likely to provide compliance with the Waste Management Rule (OAR 603-095-2940(2)). Most landowners or operators exercising control of soil erosion in compliance with the "soil erosion" rule would avoid discharging sufficient sediment into a stream to cause violation of the "waste management" rule. However, if monitoring demonstrates a water quality problem, then existing conservation plans may need to be modified to assure protection of beneficial uses.

In addition to complying with this rule, landowners should be aware that the waste rule requires them to prevent pollution from sediment delivery to streams. While an NRCS-approved farm plan may show compliance with the erosion rule, farming in accordance with the plan may still result in pollution in violation of rule #3 (OAR 603-095-2940(3)). If ODA determines during a compliance investigation that a landowner's farm plan is not adequate to comply with the waste rule, ODA will work with the SWCD, NRCS and the landowner to modify the plan to comply with the waste rule.

(3) Soil Erosion and Sediment Control: By January 1, 2008, landowners must control upland soil erosion using technically sound and economically feasible methods.

(a) On croplands, a landowner may demonstrate compliance with this rule by:

(A) operating consistent with a Soil and Water Conservation District (SWCD) approved conservation plan that meets Resource Management Systems (RMS) quality criteria for soil and water resources; or

(B) operating in accordance with an SWCD-approved plan for Highly Erodible Lands (HEL) developed for the purpose of complying with the current US Department of Agriculture (USDA) farm program legislation; and farming non-HEL cropland in a manner that meets the requirements of an approved USDA HEL compliance plan for similar cropland soils in the county; or

(C) farming such that the predicted sheet and rill erosion rate does not exceed 5 tons/ acre/year, as estimated by the Revised Universal Soil Loss Equation (RUSLE); or

(D) constructing and maintaining terraces, sediment basins, or other structures sufficient to keep eroding soil out of streams.

(b) On rangelands, a landowner may demonstrate compliance with this rule by:

(A) operating consistent with a Soil and Water Conservation District (SWCD)-approved conservation plan that meets Resource Management Systems (RMS) quality criteria for soil and water resources, or

(B) maintaining sufficient live vegetation cover and plant litter, consistent with site capability, to capture precipitation, slow the movement of water, increase infiltration, and reduce excessive movement of soil off the site; or

(C) minimizing visible signs of erosion, such as pedestal or rill formation and areas of sediment accumulation.

(c) Landowners must control active gully erosion to protect against sediment delivery to streams. 'Active Gully Erosion' means gullies or channels that at the largest dimension have a cross sectional area of at least one square foot and that occur at the same location for two or more consecutive years of cropping or grazing.

2.5.3 Riparian and Streamside Area Management

A landowner or operator's responsibility under this Area Plan is to implement measures that seek to control water pollution from agricultural activities. Areas near waterbodies are especially important to water quality and sensitive to management activities.

The riparian area, as defined in OAR 141-110-0020(28), is a zone of transition from an aquatic to a terrestrial system, dependent upon surface or subsurface water, that reveals through the zone's existing or potential soil-vegetation complex the influence of such surface or subsurface

water. A riparian area may be located adjacent to a lake, reservoir, estuary, pothole, spring, bog, wet meadow, muskeg, slough, or ephemeral, intermittent or perennial stream.
The streamside area is defined as the area near the stream 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, depending on the slope, soil type, stream size, and morphology.

Water is the distinguishing characteristic of riparian areas but soil, vegetation, and landform also exert strong influence on these systems. In a healthy riparian ecosystem, these four components interact to produce a wide variety of conditions.

Healthy riparian areas provide several important ecological functions. These include:

- Dissipation of stream energy associated with high flows and thus influencing the transport of sediment,
- Capturing suspended sediment and bedload that builds streambanks and develops floodplain function,
- Retaining floodwater and recharging ground water,
- Stabilizing streambanks through plant root mass,
- Developing diverse channel characteristics providing pool depth, cover, and variations in water velocity necessary for fish production,
- Supporting biodiversity,
- Shading for moderation of solar heat input,
- Recruitment of large woody debris for aquatic habitat.

Indicators to determine improvement of this condition include:

- Ongoing, natural recruitment of desirable riparian plant species,
- Management activities maintain at least 50% of each year's growth of woody vegetation - both trees and shrubs,
- Management activities minimize the degradation of established native vegetation,
- Maintenance of established beneficial vegetation,
- Maintenance or recruitment of woody vegetation—both trees and shrubs,
- Streambank integrity capable of withstanding 25-year flood events.

Factors used to evaluate improvement of the riparian area condition could include:

- Expansion of riparian area as evidenced by development of riparian vegetation and plant vigor,
- Reduction in actively eroding streambank length beyond that expected of a dynamic stream system,
- Community composition changes reflecting an upward trend in riparian condition. (Increases in grass-sedge-rush, shrubs, and litter and decreases in bare ground),
- Plant community composition reflecting an upward trend as indicated by decreases in noxious plant species,
- Stream channel characteristics show upward trend consistent with landscape position (i.e. a decrease of width-to-depth ratio of the channel),
- Shade patterns consistent with site capability,
- Stubble height of herbaceous species and leader growth of shrubs and trees.

Riparian area management addresses the water quality parameters of concern identified in the 303(d) list. Streamside vegetation influences water temperature through shade, stream width-to-depth ratio, groundwater recharge and discharge, and other hydrological factors. Sediment reductions improve fish and invertebrate habitat. Healthy riparian condition improves biological criteria and habitat by reducing stream disturbances, preventing excessive heat and contaminant inputs, and adding to stream habitat complexity.

Management may directly influence healthy riparian areas. This Area Plan does not prescribe specific practices to landowners for management of riparian areas. Site specific recommendations for management to protect water quality, including buffer width, vegetation types, and grazing timing, can be obtained from several sources listed in the Implementation Strategies section of this Area Plan.

(4) Streamside Management: By January 1, 2008, management must allow the establishment and improvement, over time, of riparian vegetation for streambank stability, filtering sediment and shading, consistent with site capability.

2.5.4 Livestock Management

A landowner or operator's responsibility under this Area Plan is to implement measures that seek to control water pollution from livestock operations. Livestock production is a common agricultural activity in the management area. Careful management of areas used for grazing, feeding and handling are critical to the success of livestock operations and have potential to affect water quality by the runoff of sediment and animal wastes. Livestock management can be done in a manner that limits soil erosion and minimizes the delivery of sediment and animal wastes to nearby streams. A grazing management system should promote and maintain adequate vegetative cover, for protection of water quality, by consideration of intensity, frequency, duration and season of grazing. Grazing near streams should be managed to prevent negative impacts to streambank stability, allow for recovery of plants, and leave adequate vegetative cover to ensure protection of riparian functions including shade and habitat. Offstream watering systems, upland water developments, feed, salt and mineral placement are examples of methods to be considered as ways to reduce impacts of livestock to streamside areas.

Factors used to evaluate effectiveness of management may include:

- Safe diversion of runoff,
- Protection of clean water sources,
- Off stream watering systems,
- Lot maintenance - smoothing, mounding, seeding,
- Structural measures – i.e. filter strips, catch basins, berms,
- Waste collection, storage and application methods,
- Plant community is neither dominated by invasive annual plant species nor by overgrowth of native woody species,
- Plant cover (plants plus plant litter) is adequate to protect site,
- Distribution and amount of bare ground does not exceed what is expected for site,
- Livestock utilization patterns do not exhibit excessive sustained use in key areas,

- Plant vigor levels and regeneration are sufficient to protect long term site integrity.

2.5.5 Irrigation Management

A landowner or operator's responsibility under this Area Plan is to implement measures that seek to control water pollution from irrigation. Diversion of water for irrigation or other uses and the return of excess water to the stream are activities that have potential for contributing to water quality problems.

Irrigated lands are lands either riparian, floodplain or uplands upon which water is applied for the purpose of growing crops. Diversion of water from a waterbody to be applied on land for the purpose of growing crops is a recognized beneficial use of water. Irrigation water use is regulated by the Oregon Water Resources Department (WRD) in the form of water rights, which specify the rate and amount of water that can be applied to a particular parcel of land. Refer to WRD Rules (OAR 690 – Division 250 and ORS 536 through 543) for more details.

Irrigation in this basin is done by either flooding or sprinkler application. Water usually is diverted from a surface source (stream or pond) but may also be from groundwater sources. Water withdrawals can have an affect on stream flows and thus, indirectly affect water quality. Irrigation management in this basin recognizes there may be some positive benefits occurring from flood irrigation application - including flow augmentation as water returns back to the stream, cooling and filtering of water through underground percolation, and the recharge of shallow wells and springs due to the connectivity of surface water to groundwater sources. Irrigation water may be used more than once as it returns to the stream and is available for instream uses or by other irrigators. Ultimately, streamflows will be enhanced by upland and riparian management practices promoting natural upstream storage and properly functioning floodplains that catch, store, and safely release precipitation for beneficial uses during summer months.

Characteristics of an irrigation system that has minimal effect on water quality include:

- Efficient delivery of water to the land within legal water rights,
- Minimal overland return flows,
- Return flow routing that provides for settling, filtering and infiltration,
- Minimal effect on stability of streambanks and minimal soil erosion,
- Appropriate scheduling of water application to the site including consideration of soil conditions, crop needs, climate and topography,
- Diversion structures that are installed and managed to control erosion and sediment delivery, and protect the stability of streambanks. If funding becomes available, temporary diversions, which must be reinstalled every year, should be replaced with suitable permanent diversions (i.e. pumping stations, infiltration galleries, dams),
- Diversions that are adequately screened and which provide for fish passage. Refer to ORS 498.268 for screen requirements,
- Sediment is captured from irrigation runoff before it enters rivers and streams.

Chapter 3: Goals, Objectives, and Strategies

3.1 Purpose

The purpose of this Area Plan is to establish a framework to minimize agriculture's impact on water quality within the Lower John Day Management Area. The Area Plan establishes procedures to identify and control factors that contribute to pollution originating on agricultural and rural lands. It also describes a program designed to achieve the goals of this Area Plan.

3.2 Goal

Prevent and control water pollution from agricultural activities and soil erosion, and to achieve applicable water quality standards

3.3 Objectives

Program objective: Promote the most economical preventative measures to reduce water pollution from agricultural activities

To achieve the Area Plan purpose and goal, the following **water quality** related objectives are established:

- **Control soil erosion on uplands to acceptable rates.**
  Intent: While all soil lost from fields through erosion may not necessarily enter streams, due to distance from stream or practices such as sediment basins, the reduction in such erosion will reduce the likelihood that soil will enter streams.

- **Control pollution caused by the introduction of or discharge of wastes into waters of the state.**
  Intent: This ensures that high nutrient concentrations, pathogens associated with high animal density areas, high sediment concentrations in run-off, or other potential pollutants are not readily transported to streams and groundwater. It is also consistent with existing state statutes.

- **Provide riparian vegetation for streambank stability and stream shading.**
  Intent: The purpose of this objective is to provide for streambank stability and stream shading, consistent with site capability, not to restore riparian areas to their pre-settlement conditions or to address wetland areas away from streams. Because most of these changes take time and may require planning and implementation of management changes, landowners should take current actions necessary to achieve the desired conditions.

3.3.1 Measurable Objectives

Measurable objectives allow the Ag Water Quality Program to better evaluate progress toward meeting water quality standards and TMDL load allocations. As stated in Section 1.7.1, at a minimum, the measurable objectives of the Ag Water Quality Program and this Area Plan are to:

- Increase the percentage of lands achieving compliance with the regulations.
- Increase the percentage of lands meeting desired land conditions outlined in the Area Plan.

3.3.2 Milestones and Timelines

To achieve the Area Plan goal and long-term objectives, the following milestones and timelines were developed in cooperation with ODA, DEQ, the LAC, and the SWCDs to guide the evaluation of the effectiveness of the strategies outlined in Section 3.4.

- **Control pollution caused by the introduction of or discharge of wastes into waters of the state.**
  - By 2017, livestock operations along streams will be evaluated for likelihood of pollution from bacteria and sediment. The method consists of: looking for likely sources (manure piles and heavy use areas) during riparian vegetation survey and follow up with landowner to do site visit follow up by technical assistance if needed.

These results will help the LAC develop long-term targets at the 2017 Biennial Review. Likely targets include:

- By June 30, 2027, the number of livestock operations likely to pollute surface water will be reduced by 10%.
- By June 30, 2037, fewer than 5% of livestock operations are likely to pollute surface water.

- **Control soil erosion on uplands to acceptable rates**
  - By 2017, uplands will be evaluated for erosion potential. The method consists of RUSLE2 evaluations based on average slopes for conventional and direct seed management practices. Soil loss will be estimated for 2017 and previous years.

These results will help the LAC develop long-term targets at the 2017 Biennial Review. Likely targets include:

- By June 30, 2027, estimated soil erosion rates on cropland will be reduced by 10% from 2017 levels.
- By June 30, 2037, estimated soil erosion rates on cropland will be less than 5 tons/acre.

- **Provide riparian vegetation for streambank stability and stream shading.**
  - By 2017, perennial stream reaches will be evaluated for vegetative water quality function (shading, bank stability, and filtration of potential pollutants in overland flows). The method consists of a combination of aerial photo evaluation and local knowledge to determine how similar the ground cover and canopy cover/shade are to what could be provided by site capable vegetation.

These results will help the LAC develop long-term targets at the 2017 Biennial Review. Likely targets include:

- By June 30, 2027, X% of perennial streams in agricultural areas will have streamside vegetation that likely provides the full suite of water quality functions the site is capable of (i.e., shade, bank stability, filtration of overland flow).
- By June 30, 2037, 90% of perennial streams in agricultural areas will have streamside vegetation that likely provides the full suite of water quality functions the site is capable of (i.e., shade, bank stability, filtration of overland flow).

3.3.3 Focus Area

Focus Areas are selected to deliver systematic, concentrated outreach and technical assistance in small geographic areas through the SWCDs (Section 1.7.2)

Focus Area Action Plans (FAAP) are developed as a tool with short-term (two year) milestones and timelines for implementation of the Area Plan within a defined geographic area. The FAAP provides guidance for assessment, targeted outreach and landowner assistance. The SWCD reports implementation activities to ODA on a quarterly and biennial basis. The LAC evaluates progress through the Biennial Review and makes recommendations for future actions.

Refer to the current FAAP, for the expected outcomes and outputs associated with the assessments and targeted landowner outreach.

Focus Area Outcomes:

- Measurable Objective: 90% of the agricultural areas in the Focus Area will have streamside vegetation that likely provides the water quality functions (shade, bank stability, and filtration of overland flow) of the area's site-capable vegetation,
- Current Conditions: x% (from pre-assessment),
- Milestone 1: 10% improvement,
- Milestone X: 90%.

Focus Area Outputs That Support the Measurable Objective

- The SWCD and LAC will identify the next Focus Area within the Management Area, where the local SWCD will focus outreach and technical assistance work for the next biennium.
- Within 6 months, ODA and/or the SWCD will complete a pre-assessment in the Focus Area that identifies the current streamside vegetation conditions, in total acres or stream / streambank miles of each vegetation classification.
- Within one year, the SWCD will have offered technical assistance to all landowners in the Focus Area with lands where agricultural activities do not appear to allow streamside vegetation to provide WQ functions.
- In two to four years, ODA and/or the SWCD will complete a post-assessment in the Focus Area that identifies the change in acres or stream / streambank miles of each vegetation classification over the two year period.

- ODA and the SWCD will compile information about the number, and size of water quality improvement projects completed in the Focus Area since Area Plan and Rules adoption, as resources allow.
- At the biennial review, the SWCD will report on the amount of lands where landowners accept voluntary assistance to establish streamside vegetation that provides WQ functions.

Specific dates for accomplishment of tasks will be listed in the FAAP.

3.4 Strategies for Area Plan Implementation

To achieve clean water, an effective strategy must increase awareness of the problem and the range of potential solutions, motivate appropriate voluntary action, and provide for technical and financial assistance to plan and implement effective conservation practices. The Sherman County and Gilliam SWCDs through annual workplans and Memorandum of Agreement with ODA will employ the following strategies, at the local level, in cooperation with landowners and other agencies and organizations.

The following strategies will apply for public participation in implementation and review of the Area Plan. ODA and the SWCDs intend to encourage participation in this water quality improvement program by:

- Providing **educational programs** to raise public awareness and understanding of water quality issues and solutions **(3.4.1)**.
- Providing **incentives** for the development and implementation of voluntary water quality plans **(3.4.2)**.
- Offering **technical assistance** for the development and implementation of effective agricultural management practices for pollution control **(3.4.3 & 3.4.4)**.
- Developing a **monitoring program** to identify current and potential water quality problems **(3.4.5)**.
- Following up on any water quality complaints and **provide assistance** in solving identified problems. Authority for any enforcement action rests with the ODA under provisions in OAR 603-090-0060 through 603-090-0120 **(3.4.6)**.

3.4.1 Education and Outreach

Strategy 1: 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.

As resources allow, the SWCDs, watershed councils, and OSU Extension Service (Extension), in partnership with other agencies and local organizations, will develop educational programs to improve the awareness and understanding of water quality and quantity issues. The objective of the educational programs is to promote the programs in a manner that reduces conflict and encourages cooperative efforts through education and technical assistance activities by:

- Incorporating implementation of the Area Plan as a priority element in the Sherman County and Gilliam County Soil and Water Conservation Districts' annual work plans and long- range plans with support from partner organizations.

- Showcase successful practices and systems and conduct annual tours for landowners and media.
- Inform landowners of the Area Plan and Rules and encourage landowners to make such changes as may be needed.
- Recognize successful projects and practices through appropriate media and newsletters.
- Promote cooperative on-the-ground projects to solve critical problems identified by landowners and in cooperation with partner organizations.
- Conduct educational outreach to promote public awareness of water quality issues.
- Coordinate the review of information and education materials with agencies or organizations as appropriate.
- Coordinate the review of information and education materials with agencies or organizations as appropriate.

3.4.2 Conservation Planning and Conservation Activities

Strategy 2: Encourage active participation by the agricultural community and rural public in the process of solving our water quality problems.

- Encourage development of individual conservation plans by assisting landowners with plans that address water quality and with the implementation of conservation practices adopted in those plans.
- Promote the continued development, evaluation, and adoption of practices and technologies that enhance water quality in an efficient, effective, economic manner, by reviewing research and development needs with agriculture assistance agencies and consultants.

Landowners and operators have flexibility in choosing management approaches and practices to address water quality issues on their lands. They may implement management systems on their own without a plan or may develop a plan that suits the needs of their operation. The local management agencies recommend that voluntary water quality plans be developed to assist the landowners and operators to assess the conditions on their lands, identify problems or potential problems on their land and to describe measures and resources needed to address those problems.

Voluntary water quality plans describe the management systems and schedule of conservation practices that the landowner will use to conserve soil, water, and related plant and animal resources on all or part of a farm or ranch unit. Voluntary water quality plans may be developed by landowners or operators, consultants, or technicians available through the SWCD or NRCS. An effective individual water quality plan will outline specific measures necessary to prevent or control water pollution and soil erosion from agricultural activities and to address the "Prevention and Control Measures" outlined in this AgWQM Area Plan.

Farm planning assistance is available from these and other sources:

- Technical Assistance
    - NRCS – planning, design, implementation
    - SWCD – planning, design, implementation, grant-writing
    - Watershed councils –planning, implementation, grant-writing
- Workbooks and Publications

    - Voluntary Conservation On Your Land, NRCS/Oregon Association of Conservation Districts (OACD)
    - Oregon Small Acreages Conservation Toolbox, NRCS/OACD
    - WESt Program Workbook, Oregon Cattleman's Assoc. (OCA)/OSU
    - Ranch Water Quality Planning Workbook, Oregon State University (OSU) Extension
    - The Oregon Plan Toolbox, Oregon Watershed Enhancement Board (OWEB)
- Programs
    - Farm*A*Syst Program, OSU Extension
    - Stream*A*Syst Program, OSU Extension
    - Home*A*Syst Program, OSU Extension

This Area Plan recognizes that planning for water quality is only part of a successful plan for overall management of agricultural and rural land and that other, broader objectives must also be considered in total farm or resource management planning. Sustaining agricultural production capacity for future generations is one of those broader objectives. Conserving water and soil resources will help achieve that.

The Gilliam and Sherman County SWCDs have a long history of providing assistance to farmers and ranchers in implementing practices for the protection and conservation of natural resources. The Gilliam SWCD was created on November 4, 1946, and the Sherman County SWCD was created on April 21, 1950, under ORS 568.210 – 800. The SWCD boundaries are consistent with the respective county boundaries.

The SWCD and the USDA Natural Resources Conservation Service (NRCS) have traditionally assisted landowners and operators with conservation planning and practice implementation utilizing many of the U.S. Department of Agriculture (USDA) conservation cost-share programs. When working with operators, the SWCD and NRCS staff follow a nine-step planning process, which helps the landowners identify their conservation objectives, and leads to development of a conservation plan that outlines various alternatives that may be used to address identified natural resource concerns. Staff works with the operators on their land to conduct resource inventories and surveys, and help lay out and oversee the installation of conservation measures on their land. The NRCS and SWCD develop specific conservation measures to control erosion, improve wildlife habitat, and reduce sedimentation.

The 1995 state legislature encouraged the formation of watershed councils within watershed boundaries in order to identify resource concerns and develop action plans. The county court recognizes the watershed councils and the SWCDs provide administrative services. Watershed councils have been formed in the Lower John Day Management Area. The councils are the East Gilliam County Watershed Council and the Sherman County Area Watershed Council that serves as an "umbrella" council for the Pine Hollow/Jackknife, Fulton and Gordon Canyons, Grass Valley Canyon, Mack's Canyon, and North Sherman County watersheds.

3.4.3 Technical & Financial Assistance

Strategy 3: Work to improve the quality of water in the Management Area through planning and implementation of technically sound and economically feasible conservation practices that

contribute to meeting Area Plan objectives.

- Limit soil erosion and pollution caused by agricultural activities, as close to the source as possible, by achieving soil erosion targets and sediment control.
- Show progress in reduction of pollution from agricultural and rural lands through periodic surveys of stream reaches and associated lands. Methods will be selected as targets become better understood and quantified.
- Implement successful practices for streambank stabilization, reduction in high summer water temperatures, and restoration and enhancement of wetlands and riparian areas, while avoiding adverse fish habitat modification.
- Implement conservation practices to improve irrigation water use and conveyance efficiency to reduce the impact of seasonal flow modifications on streams resulting from water withdrawals and to reduce the potential of polluted return flows.
- Identify priorities for pollution source identification and determining areas for implementing restoration activities including reasonable timelines for management strategies targeting TMDL attainment.

It is not the intent of this Area Plan to impose a financial hardship on any individual. It is the responsibility of the landowner or operator to request technical and/or financial assistance and to develop a reasonable timeframe for addressing potential water quality problems.

As resources allow, the Sherman County and Gilliam County SWCDs, NRCS, area watershed councils, and other natural resource agency staff are available to assist landowners in evaluating effective practices for reducing runoff and soil erosion on their farms, where it exists, and incorporating these practices into voluntary individual water quality plans. Personnel in these offices can also design and assist with implementation of practices, and assist in identifying sources of cost-sharing funds for the construction and/or use of some of these practices.

Strategy 4: Encourage adequate funding and administration of the program to achieve Area Plan goals and objectives.

- Promote incentive and cost-share programs to assist with implementation of Area Plans and related practices, by annually identifying water quality funding needs with agencies providing cost-share and technical assistance to agricultural operations.
- Implement systematic, long range planning, focusing on coordinated efforts on full-scale, watershed-based approaches.
- Identify needs, develop projects, actively seek funding, and ensure successful implementation of funded projects.

Technical and cost-sharing assistance for installation of certain management practices may be available through current USDA conservation programs such as Environmental Quality Incentive Program (EQIP), Conservation Reserve Enhancement Program (CREP), Conservation Reserve Program (CRP), EPA's non-point source implementation grants (Section 319), or state programs such as OWEB, the Riparian Tax Incentive Program, and the Wildlife Habitat Conservation and Management Program. Other agencies may also be available to provide technical assistance or financial assistance to private landowners.

3.4.4 Water Quality Management Practices

Effective agricultural management practices 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.

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 difficult to recommend any uniform set of management practices to improve water quality relative to agricultural practices.

Management practices 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 the management practices and land management changes which are designed to be complementary, and when used in combination are more technically sound than each practice separately.

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 Field Office Technical Guide (FOTG), available for reference at the local NRCS office. Refer to **Attachment A** for examples of effective management practices for controlling water pollution.

3.4.5 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. Monitoring activities are integral components of the Area Plan. For the purposes of this Area Plan, three main types of monitoring are appropriate. These are:

- Baseline condition monitoringBaseline condition monitoring provides a starting point for assessing water quality trends and for future evaluation of the effectiveness of water quality improvement efforts. Baseline condition monitoring typically includes identification and analysis of data previously and currently collected in the area according to accepted protocols.
- Water quality trend monitoringWater quality trend monitoring can help to track how water quality (typically on a watershed or sub-watershed scale) is changing over time, including after implementation of an AgWQM Area Plan.
- Effectiveness monitoring:
    - Evaluate the effectiveness of specific management practices in reducing losses or loadings of components such as sediment or nutrients. The NRCS has a good amount of information about the effectiveness of various practices in protecting surface water and groundwater quality.
    - Evaluate the net effect of the implementation of an AgWQM Area Plan and watershed improvement activities on water quality trends.

It is recommended that monitoring follow recommendations in the *Oregon Plan Water Quality Monitoring Technical Guide*. This guide book describes accepted procedures and protocols for most activities that would be used to conduct baseline condition and trend monitoring on a

watershed scale, including development of quality assurance/quality control plans to assure quality of data and protocols for data collection.
When effectively used, monitoring activities can provide valuable information on how much effect a plan is having, how extensively it is being implemented, and where more efforts are needed in a basin.

For a description of monitoring and evaluation activities, see Chapter 4 page 53.

3.4.6 Resolution of Complaints and Enforcement Action

In addition to these voluntary strategies, required measures (Area Rules) are included as an implementation strategy. ODA will use enforcement where appropriate and necessary to gain compliance with the Area Rules. Any enforcement action will be pursued only when reasonable attempts at a voluntary solution have failed.

ODA will investigate complaints against landowners or operators who are alleged to be out of compliance with the Rules associated with this Area Plan. If the landowner is in non-compliance, ODA will consult with the landowner/operator and the SWCD using FOTG to develop solutions and timelines. The authority and procedures for complaint investigation rests with the ODA under provisions of OAR 603-095-2960.

ODA will use enforcement mechanisms where appropriate and necessary to gain compliance with the prevention and control measures. Any enforcement action will be pursued only when reasonable attempts at voluntary solutions have failed. Landowners with chronic or egregious violations of Area Rules will be subject to enforcement action by ODA under authority provided in OAR 603-090-0060 through 603-090-0120.

Entry onto private property is authorized for the purpose of investigating lands within the Management Area to determine sources of pollution. ODA may investigate lands within the Management Area to determine those actions that may be required of landowners under the Area Rules and to determine whether the landowner is carrying out the required actions. ODA will not enter onto private lands without first seeking landowner consent.

603-095-2960 Complaints and Investigations

(1) When the department receives notice of an alleged occurrence of agricultural pollution through a written complaint, its own observation, through notification by another agency, or by other means, the department may conduct an investigation. The department may, at its discretion, coordinate inspection activities with the appropriate Local Management Agency.

(2) Each notice of an alleged occurrence of agricultural pollution shall be evaluated in accordance with the criteria in ORS 568.900 through 568.933 or any rules adopted thereunder to determine whether an investigation is warranted.

(3) Any person allegedly being damaged or otherwise adversely affected by agricultural pollution or alleging any violation of ORS 568.900 through 568.933 or any rules adopted thereunder may file a complaint with the department.

(4) The department will evaluate or investigate a complaint filed by a person under section OAR 603-095-2960(3) if the complaint is in writing, signed and dated by the complainant and indicates the location and description of:

(a) The waters of the state allegedly being damaged or impacted; and

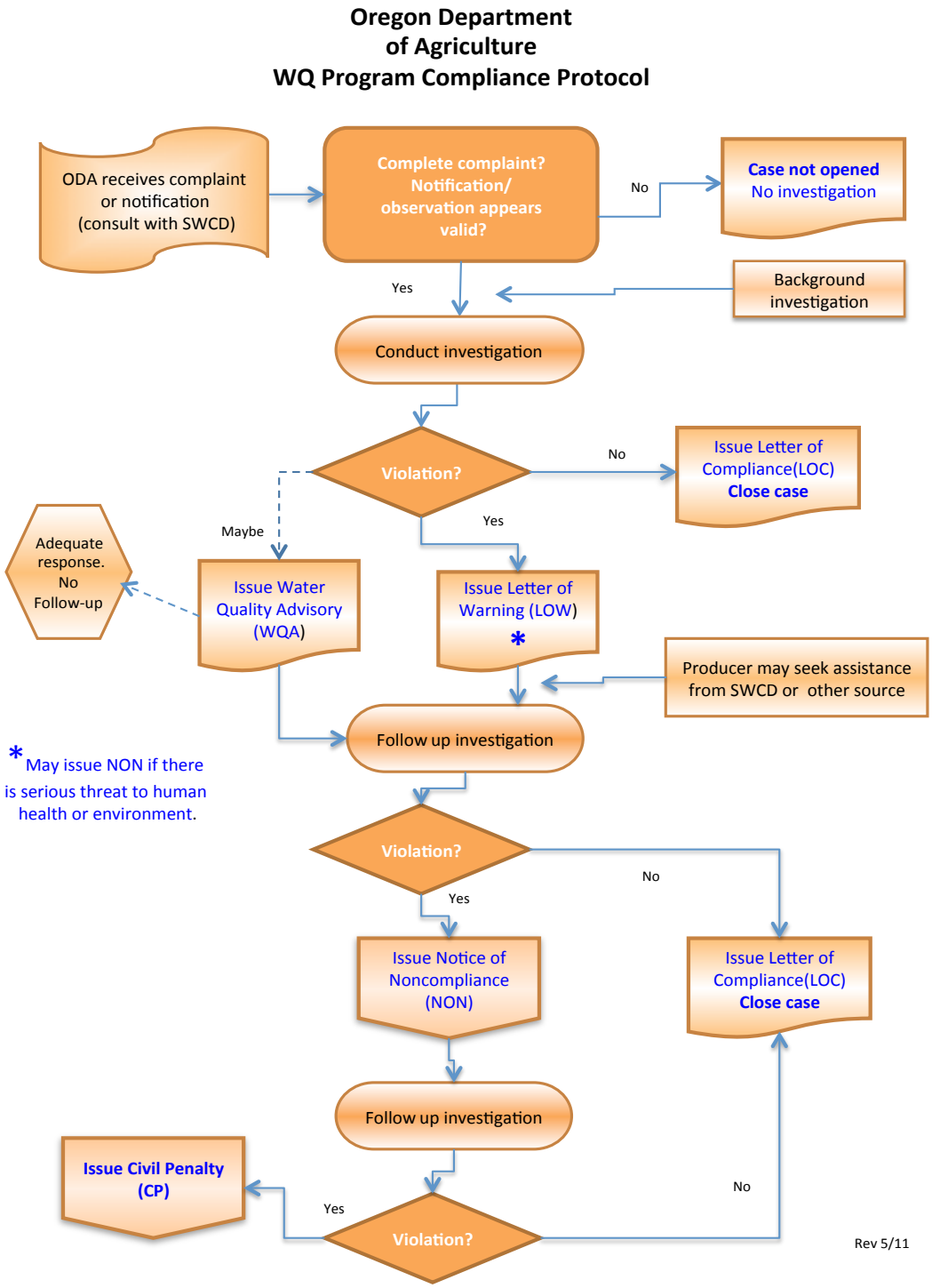
(b) The property allegedly being managed under conditions violating criteria described in ORS 568.900 through 568.933 or any rules adopted thereunder.

(5) As used in section OAR 603-095-2960(4), "person" does not include any local, state or federal agency.

(6) Notwithstanding OAR 603-095-2960(4), the department may investigate at any time any complaint if the department determines that the violation alleged in the complaint may present an immediate threat to the public health or safety.

(7) If the department determines that a violation of ORS 568.900 through 568.933 or any rules adopted thereunder has occurred, the landowner may be subject to the enforcement procedures of the department outlined in OAR 603-090-0060 through 603-090-0120.

Compliance Flow Chart



Definitions

A **Letter of Compliance** tells the owner/operator that at the time of the inspector's site visit, the property was in compliance with all Area Rules and there were no conditions observed during the investigation, such as manure piles near drainages or heavily grazed areas, that are likely to cause a water quality problem in the near future.

A **Water Quality Advisory** means the owner/operator is in compliance because there were no violations of Area Rules documented at the time of the inspector's visit, but the conditions on the property have the potential to violate the Area Rules in the future. Examples: a riparian area is in poor condition, and if management changes are not made, conditions will not improve; there is manure in a corral that could be transported to surface water in a rain event; there is build up of sediment in a sediment basin.

A Water Quality Advisory letter includes a description of the conditions that have the potential to violate the Area Rules, the statute or rule that may be violated, consequences of future documented violations, and a schedule of recommended corrective actions. The letter may also refer the landowner to other sources of technical assistance, and summarize other issues discussed during the investigation. The inspector will usually follow up to see if the changes effectively reduced the potential for a water quality problem.

A **Letter of Warning** means the inspector found a violation of Area Rules during the investigation, but the pollution-causing activity was not egregious and was not done intentionally to cause water pollution. The Letter of Warning is an unofficial compliance action (not defined in Administrative Rule) that gives the landowner or operator at least one opportunity to correct the problem before he/she receives a Notice of Noncompliance. A Letter of Warning is not considered an enforcement action by the State.

A Letter of Warning includes a description of the conditions that violate the Area Rules, the statute or rule that is violated, consequences of future documented violations, and a schedule of recommended corrective actions. The letter may also refer the landowner to other sources of technical assistance, and summarize other issues discussed during the investigation. Although the landowner has the flexibility to choose the recommended actions or other practices best suited to correct the problem on the operation, the inspector will follow up to see if the violation has been addressed.

A **Notice of Noncompliance (NON)** means the inspector found a violation of Area Rules during the investigation, and the violation was either (1) egregious or done to intentionally cause water pollution, or (2) a second violation after being issued a Letter of Warning. A Notice of Noncompliance includes a description of the conditions that violate the Area Rules, the statute or rule that is violated, consequences of current documented violations, and a schedule of required corrective actions. The letter may also refer the landowner to other sources of technical assistance, and summarize other issues discussed during the investigation. A Plan of Correction usually accompanies a NON if the corrective actions require more than 30 days and directs the landowner to take specific steps to correct the problem. An inspector will follow up to confirm the landowner completed the required corrective actions and effectively addressed the violation.

A **Civil Penalty** is a fee that is assessed to a landowner whose agricultural activities caused

either a willful and intentional violation of Area Rules, or who repeatedly failed to take steps to correct a violation. Oregon Department of Agriculture's Division 90 rules include a matrix for calculating the value of civil penalties for the Water Quality Program.

3.5 Biennial Reviews

This Area Plan and the associated Area Rules are subject to a two-year review process. Two years after adoption, ODA, in cooperation with SWCDs and the LAC will assess the progress of Area Plan implementation toward achievement of Area Plan goals and objectives. These assessments will include:

- An accounting of the numbers and acreage of operations with Voluntary Water Quality Plans and the calculated amount of soil erosion and pollution prevented.
- Identification of additional sources of sediment, heat inputs and other contributors to non-attainment of all applicable water quality standards.
- An evaluation of available current water quality monitoring data.
- An evaluation of outreach and education programs designed to provide public awareness and understanding of water quality issues.
- A review of projects, demonstrations, and tours used to showcase successful management practices and systems.
- An evaluation of the effectiveness of technical and financial assistance sources available to the agricultural community.
- Review of load allocations and effectiveness of this plan in meeting load allocations as described in the TMDL for the John Day Basin.

Based on these assessments, ODA, SWCD, LAC and the Board of Agriculture will consider making appropriate modifications to the Area Plan and Rules. Any future amendments to the administrative rules will be subject to public participation process as defined in Oregon law.

Chapter 4: Implementation, Monitoring, and Adaptive Management

4.1 Implementation and Accomplishments

Many conservation activities and implementation monitoring tracks have been implemented to benefit water quality. The SWCD and NRCS track activities that have been implemented through quarterly reports to ODA and through a NRCS database, respectively. Projects that have received funding from the OWEB are tracked in OWEB's restoration database. In addition, partner agencies can submit reports of projects and activities in the Management Area that improve water quality.

Outreach and Education:

Gilliam SWCD	Sherman County SWCD
• Quarterly newsletter • Student education - Stream demonstration table, collected/distributed willow cuttings, collected/distributed beneficial insects • Informational displays • Project tours –Thirtymile, Hay Creek, Lone Rock Creek and Rock Creek	• Quarterly newsletters • 1,500 landowner contacts • 4 "Conservation After Hours" sessions • K-5th grade – monthly presentations, 120 total participants, "All About Soil" trip to Cottonwood State Park

Planning and Projects:

Gilliam SWCD	Sherman County SWCD

• Acquired range drill to assist landowners with range seedings
• Alternative fuels testing with NRCS and PGE
• Promoting, planning, and implementing CREP/OWEB – 12 landowners, 29.4 miles of stream
• Completed watershed assessments of Thirtymile Creek, Hay Creek, Rock Creek, and Lonerock Creek
• OWEB small grants
  o 15 spring developments
  o 385 acres juniper treatment
  o 3 miles pasture management fencing
  o 3,000 acres prescribed burning
  o 4 upland water systems
  o 400 acres noxious weed control
  o 4 collections of beneficial insects
  o 365 acres pasture seeding
  o 2,000 acres fire restoration
• OWEB Large Grants and CTWS
  o 2 large culvert replacements
• 1 irrigation diversion modification
  o 1 push-up dam removal
	• 13 OWEB small grants
	  o 30,118 feet of terrace reshaping
	  o 2,165 feet of new terraces
	  o 24 water/sediment catch basins
	  o 2 spring developments
	  o 9 acres of juniper removal
	  o 40 acres pasture seeding
	  o 1 solar powered water development
	  o 3 acres brush management
	  o 433 acres direct seeding
	• OWEB Large grants
	  o Direct seeding – 18 landowners, 9,216 acres
	  o Pending grant – 2,368 feet new terrace, 9,422 feet reshaped terrace, 15 WASCBs
	• Weed Management Program – focus on riparian areas
	  o Weeds sprayed – Year 1 – 7 acres, Year 2 – 65 acres
	  o 8 monitoring sites

○ 1 channel reconnection • Gilliam Road Dept. - 2 large culverts replacements • NRCS – Juniper removal, spring developments, irrigation efficiency, crop residue management, EQIP, CSP	

Monitoring:

Gilliam SWCD	Sherman County SWCD
• Stream temperature monitoring throughout basin w/ CTWS • Spring flow monitoring of juniper removal sites • Native grass and plant stand monitoring near juniper removal sites • Two year project monitoring	• 2-year project monitoring

Funding and Grants*:*

Gilliam SWCD	Sherman County SWCD
• Applied for Regional Conservation Partnership Program grant • Applied for OWEB Focused Investment Partnership Program grant • Project planning funds from CTWS - $10,000 • OWEB Small grant program - $200,000 • OWEB Large grants - $305,984 • CTWS - $213,340 • BPA/ OWEB (CREP) - $454,912 • NRCS - $485,000	• Sherman SWCD Education Incentive Grants - $9,972 • OWEB Small Grants - $21,695 • OWEB Large Grants - $69.059 • NRCS programs – $2.7 M (EQIP, CSP)

4.2 Water Quality Monitoring—Status and Trends

DEQ **ambient water quality data** is available in LASAR for the John Day River at Highway 206 and Rock Creek near the mouth:

- As of March 2013, the Highway 206 site had one high turbidity value – 61 NTU – occurring in April 2012. There were two high pH readings, both of 8.9, and one high total phosphorus (TP) (0.19 mg/l). Ambient water quality data for this site from 2013 through early 2014 shows the only issues were with pH and temperature. pH readings met or exceeded 9 on two occasions, and were at or above 8.5 other times.
- A new monitoring station was added, Rock Creek @ mouth. This site had seven sampling events as of March 2013. Nearly all the samples from this site had elevated TP, but the highest concentration was only 0.12 mg/l. One high *E. coli* count (214) was also reported at this site in August of 2012. The 2014 review of the ambient water quality data for this site going back to early 2013 did not show significant problems with any analyses.

2013 **Oregon Water Quality Index** and 10-year trend for 2004-2013. Water quality variables included are dissolved oxygen (percent saturation and concentration), biochemical oxygen demand (BOD), pH, total solids, ammonia and nitrate nitrogen, total phosphorus, temperature and bacteria. OWQI scores range from 10 (worst case) to 100 (ideal water quality).

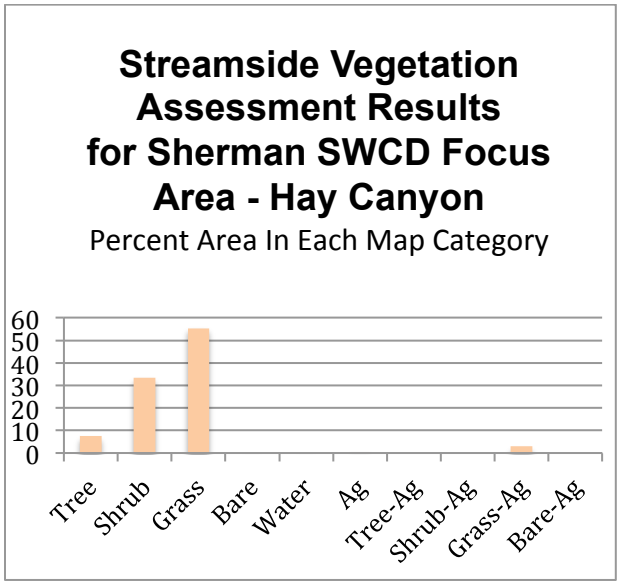
The John Day River at Highway 206 had a 2013 OWQI score of **78 (poor)** with no apparent trend. The Rock Creek site had a score of **83 (fair)** with not enough data to calculate a trend.

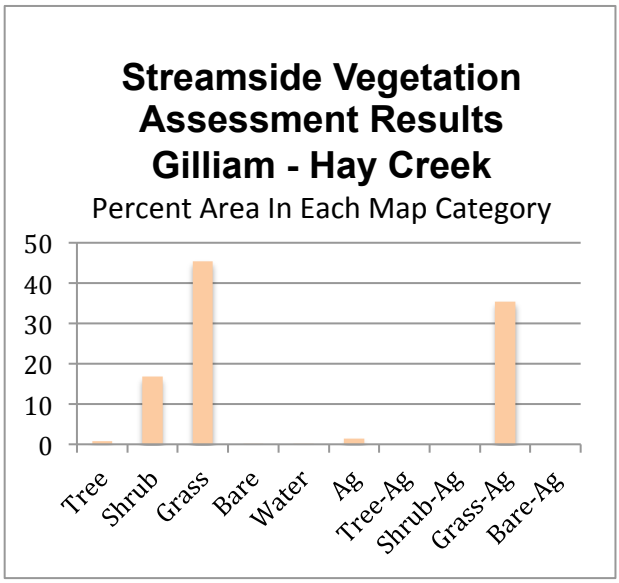
4.3 Progress Toward Measurable Objectives

Riparian condition classifications			
Class I	**Class II**	**Class III**	**Class IV**
Vegetation likely sufficient to moderate solar heating, stabilize streambanks, and filter out pollutants consistent with site capability.	Agricultural activities not impairing riparian growth, but vegetation likely insufficient to moderate solar heating, stabilize streambanks, or filter out pollutants consistent with site capability.	Agricultural activities likely not allowing vegetation to moderate solar heating, stabilize streambanks, or filter out pollutants consistent with site capability.	Non-agricultural activities, e.g. state highway, likely not allowing vegetation to moderate solar heating, stabilize streambanks, or filter out pollutants consistent with site capability.

Pre-Assessment

	Hay Canyon (Sherman County) – 7 miles				**Hay Creek (Gilliam County) -**			
	2013	**2015**	**Change**		**2011**	**2013**	**2015**	**Change**
Class I	48%				14%	16%		
Class II	34%				32%	34%		
Class III	18%				54%	50%		
Class IV	0				0	0		





4.4 Aerial Photo Monitoring of Streamside Vegetation

Five streams were assessed in this basin. Riparian index scores for these streams had a narrow range with the highest being 39 for Juniper Creek and the lowest at 30.40 for Rosebush Creek. Tree coverage was highest for Juniper with one band reaching 40%. Tree coverage was essentially zero on Rosebush Creek. Juniper also had the highest percent of bare land, due to rock outcrops. Bare land coverage on Juniper ranged from 5 to 19%, but there was no bare/agriculture. Bare/agriclture land was greatest on Lone Rock Creek with one band reaching 5%.

Streams in this basin had some interesting qualitative features:

- Juniper Creek had a stable channel throughout the area assessed. Most of stream is bounded on west side by lava flow. Part of the stream reach is in a slot canyon. One part of the stream makes a nearly right-angle turn, though there was no indication of any human influence on the channel configuration.
- Lone Rock Creek: Mostly stable, few areas of bank erosion.
- Rock Creek: Upper reach shows many unvegetated point and mid-stream bars, indicating an excessive sediment load. Uppermost section has recent riparian plantings. Lower reach partially channelized but stable.
- Rosebush: Mostly a channelized, narrow stream. It has multiple small impoundments. Mostly stable channel.
- Thirtymile Creek: Large numbers of cattle visible on upper reach, but channel is stable throughout. Appears that a large amount of sediment from rock avalanches and other upland erosion has affected the stream.

Stream	2007 Score	2012 Score	Notable Change
Juniper Creek	39.01	38.57	
Lone Rock Creek	38.94	39.05	
Rock Creek	33.41	34.01	
Rosebush Creek	30.40	30.39	
Thirtymile Creek	31.49	32.74	+4%

Thirtymile Creek was the only stream in this basin that had an appreciable change in RIS. The 4% increase was due to the cumulative impact of small increases in shrub and grass cover, with a reduction in grass agriculture.

4.5 Biennial Reviews and Adaptive Management

The 2015 Biennial Review was held on January 22, 2015, at the OSU Extension conference room in Moro. Five LAC members were present as well as representatives from the Gilliam and Sherman County SWCDs, NRCS, DEQ and ODA.

LAC members discussed the need for appointment of some new members to the LAC to fill vacancies of members that have dropped out. Participation by younger farmers is needed to provide diversity. The LAC members recommended that we continue to meet annually, which would help new members get up to speed on the program.

The SWCDs presented their implementation activities for the past two years and discussed the preliminary results of monitoring taking place in the streams in the Lone Rock area where extensive juniper control projects have taken place.

Both focus areas in the management area, Hay Creek and Hay Canyon, appear to have been successful and it was agreed that it was time to select new focus areas for the next biennium. Post assessment of the focus areas will be completed by June 2015 with results reported to ODA. ODA will work with the SWCDs to select focus areas for the 2015-2017 biennium.

The reformatted Area Plan was presented and discussed. Discussion was held regarding the proposed measurable objectives, timelines and milestones. It was recommended that the proposed plan revisions be sent out to LAC members for comment, with comments due in one month. The LAC met a second time to review comments and make minor adjustments to the plan.

Impediments to program implementation or issues facing agriculture in the management area include:

- Historical damage from ’64 floods prevents restoration in canyons,
- Landowner resistance to government assistance,
- LMA capacity to meet demands,
- Lack of participation of LAC members,
- Increasing number of absentee landowners shifting land from production to recreation,
- Increasing amount of public lands,
- Uncertainty about future legislation which would create burden on landowners.

ATTACHMENT A - EFFECTIVE WATER QUALITY MANAGEMENT PRACTICES

Effective management practices for controlling soil erosion and sediment delivery

- Conservation tillage (Crop residue management) - reduced tillage, minimum tillage, direct seeding, modified conventional tillage, reservoir tillage, sub-soiling, or deep chiseling
- Nutrient management – soil testing, fertilizer timing and placement
- Cover crops – perennial or annual
- Contour farming practices - strip cropping, divided slopes, terraces (level and gradient), contour tillage
- Crop rotations
- Early or double seeding in critical areas
- Vegetative buffer strips - filter strips, grassed waterways, field borders, contour buffer strips
- Irrigation scheduling - soil moisture monitoring and application rate monitoring
- Prescribed burning
- Weed control
- Road design and maintenance
- Sediment retention basins and runoff control structures

Effective management practices for prevention and control of impacts from livestock

- Grazing management or scheduling based on intensity, duration, frequency, and season of use; pasture rotation including resting and deferrals
- Vegetation management - grass seeding, weed control, controlled burning
- Fencing – including temporary, cross, and exclosures
- Watering facilities - spring development, water gaps, off-stream water
- Salt and mineral distribution
- Waste management systems - waste collection, storage, and utilization; facilities operation and maintenance
- Safe diversion of runoff
- Protection of clean water sources
- Lot maintenance - smoothing, mounding, seeding, filter strips, catch basins, berms

Effective management practices for prevention and control of impacts to streamside areas

- Critical area planting
- Vegetative buffer strips - Continuous CRP, CREP, riparian buffers, riparian forest buffers
- Livestock management - seasonal grazing, fencing - exclusion, temporary
- Water developments - off-stream watering, water gaps, spring developments
- Conservation tillage practices
- Weed control
- Nutrient and chemical application scheduling
- Road, culvert, bridge, and crossing maintenance
- Wildlife management

Effective management practices for prevention and control of impacts from irrigation

- Irrigation scheduling based on crop needs, soil type, climate, topography, infiltration rates
- Irrigation system efficiency and uniformity monitoring
- Diversion maintenance - push-up dam management, fish screens
- Return flow management
- Flow measuring devices
- Backflow devices
- Cover crops

ATTACHMENT B - REFERENCES USED IN THE DEVELOPMENT OF THE AREA PLAN

Field Office Technical Guide, NRCS

Influences of Human Activity on Stream Temperatures and Existence of Cold-Water Fish in Streams with Elevated Temperature: Report of a Workshop, Interagency Multidisciplinary Science Team, 11/8/2000.

John Day Basin Report, Oregon Water Resources Department, 1986

John Day River Basin Total Daily Maximum Load (TMDL) and Water Quality management Plan (WQMP), DEQ, Nov. 2010

John Day Subbasin Summary, prepared for the Northwest Power Planning Council, 2001

North/Middle Forks John Day River Agricultural Water Quality Management Area Plan, ODA, 2002

Oregon Final 1998 Water Quality Limited Streams - 303(d) List, DEQ, Nov. 1998

Oregon Administrative Rules, Chapter 340, Division 41, DEQ, March 1996

Oregon Administrative Rules, Chapter 603, Divisions 90 and 95, ODA

Oregon Revised Statutes, 468B

Oregon Revised Statutes, 561.191

Oregon Revised Statutes, 568.900 through 568.933

Oregon Small Acreages Conservation Toolbox, NRCS /OACD, 1999

Pollution Limits and Water Quality Plan for the John Day River Basin, DEQ. Nov. 2010

Questions and Answers About DEQ's Temperature Standards, DEQ, February 1998

Ranch Water Quality Planning Workbook, OSU Extension,

Relationship Between Agriculture Water Quality Management Area Plan Conditions and Water Quality Standards, ODA, Sept. 2000

Restoring Water Quality Throughout Oregon, DEQ, February 1998

Riparian Area Management; A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas, BLM/USFS/NRCS, 1998

Riparian Area Management; Process for Assessing Proper Functioning Condition, BLM, 1995

Riparian Area Responses to Changes in Management, BLM/OSU, 1999

The Ecological Provinces of Oregon, Oregon Agricultural Experiment Station, May 1998 The Oregon Plan Toolbox, OWEB

Water Quality Monitoring: Technical Guide Book, OWEB, July 1999

Wallowa Agricultural Water Quality Management Area Plan, ODA, 2002

WESt Program Workbook, Oregon Cattleman's Association, 1998