Wallowa Agricultural Water Quality Management Area Plan

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Developed by the:

Wallowa Local Advisory Committee

Oregon Department of Agriculture

With support from the:

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Acronyms and Terms Used in this Document

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
District - Wallowa Soil Water Conservation District
DMA – Designated Management Agency
EPA - Environmental Protection Agency
EQIP - Environmental Quality Incentive Program
FA – Focus Area
GWMA – Groundwater Management Area
HABs – Harmful Algal Blooms
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
ODA – Oregon Department of Agriculture
ODF – Oregon Department of Forestry
OHA – Oregon Health Authority
ORS – Oregon Revised Statute
OWEB – Oregon Watershed Enhancement Board
PMP – Pesticides Management Plan
PSP – Pesticides Stewardship Partnership
RUSLE - Revised Universal Soil Loss Equation
SIA – Strategic Implementation Area
SWCD – Soil and Water Conservation District
TMDL – Total Maximum Daily Load
USDA – United States Department of Agriculture
US 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 water quality due to agricultural activities in the Agricultural Water Quality Management Area (Management Area). The purpose of the Area Plan is to identify strategies to prevent and control water pollution from agricultural lands through a combination of outreach programs, suggested land treatments, management activities, compliance, and monitoring.

The Area Plan is neither regulatory nor enforceable (Oregon Revised Statute (ORS) 568.912(1)). It references associated Agricultural Water Quality Management Area Rules (Area Rules), which are Oregon Administrative Rules (OARs) that are enforced by the Oregon Department of Agriculture (ODA).

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 (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 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 Ag Water Quality Program.

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

Chapter 3: Local Goals, Objectives, and Implementation Strategies. Presents goal(s), measurable objectives, and timelines, along with strategies to achieve these goal(s) and objectives.

Chapter 4: Local Implementation, Monitoring, and Adaptive Management. ODA and the Local Advisory Committee (LAC) will work with knowledgeable sources to summarize land condition and water quality status and trends 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), the Area Plan guides landowners and partners such as Soil and Water Conservation Districts (SWCDs) in addressing water quality issues due to agricultural activities. The purpose of the 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 this Management Area (OAR 603-090-0000(3)) and to achieve and maintain water quality standards (ORS 561.191(2)). The Area Plan has been developed and revised by ODA and the Agricultural Water Quality Management Area Local Advisory Committee (LAC), with support and input from the SWCD and the Oregon Department of Environmental Quality (DEQ). The public was invited to participate in the original development and approval of the Area Plans and is invited to participate in the biennial review process. The Area Plan is implemented using a combination of outreach, conservation and management activities, compliance with Area Rules developed to implement the Area Plan, monitoring, evaluation, and adaptive management.

The provisions of the Area Plan do not establish legal requirements or prohibitions (ORS 568.912(1)). Each Area Plan is accompanied by Area Rules 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 (OAR 603-090-0000 to 603-090-0120) and under the Area Rules for this Management Area (OAR 603-095-1800). The Ag Water Quality Program's general rules guide the Ag Water Quality Program, and the Area Rules for the Management Area are the regulations that landowners are required to follow. Landowners will be encouraged through outreach and education to implement conservation management activities.

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

- Farms and ranches.
- 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).

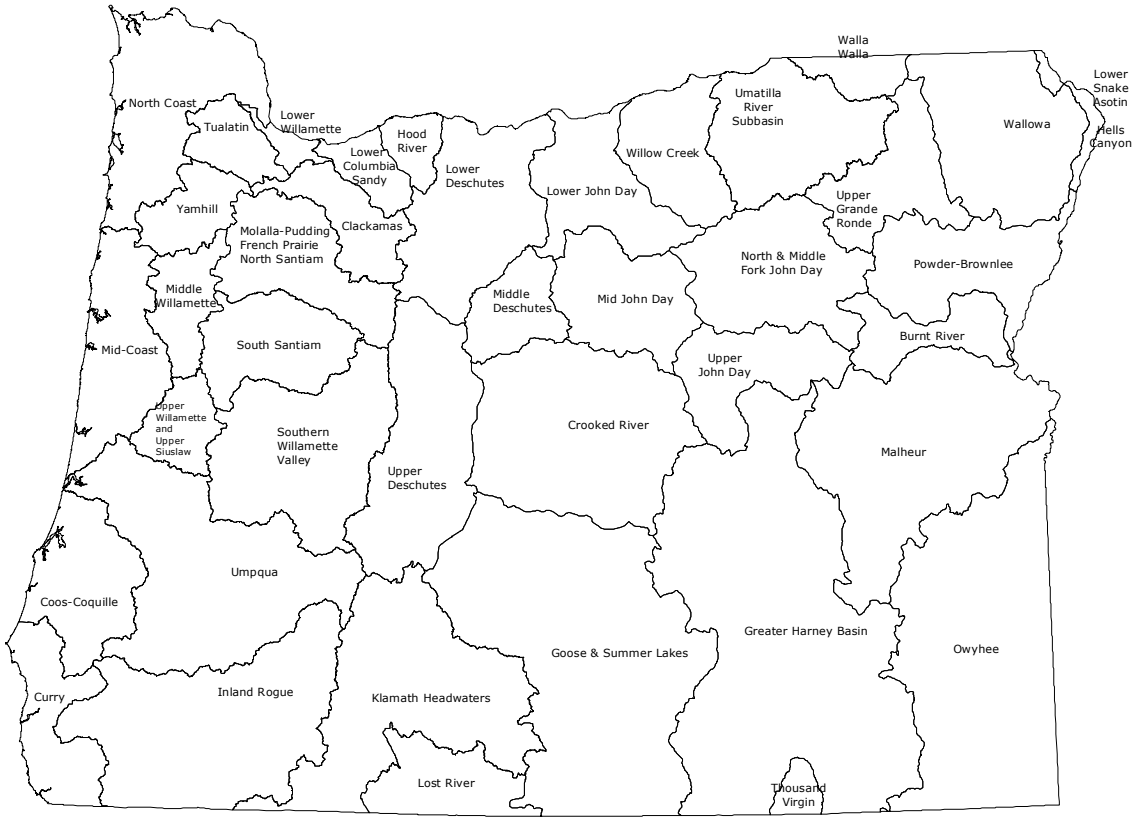
1.2 History of the Ag Water Quality Program

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, 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). The Area Plan and its associated Area Rules 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 Area Rules 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 Area Rules.
- Conducting biennial reviews of Area Plans and associated Area Rules.
- Monitoring, evaluation, and adaptive management.
- Developing partnerships with SWCDs, state and federal agencies, tribes, 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

The Oregon Department of Agriculture 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 was established to develop and carry out a water quality management plan for the prevention and control of water pollution from agricultural activities and soil erosion. State and federal laws that are drivers for establishing an Ag Water Quality Management Plan include:

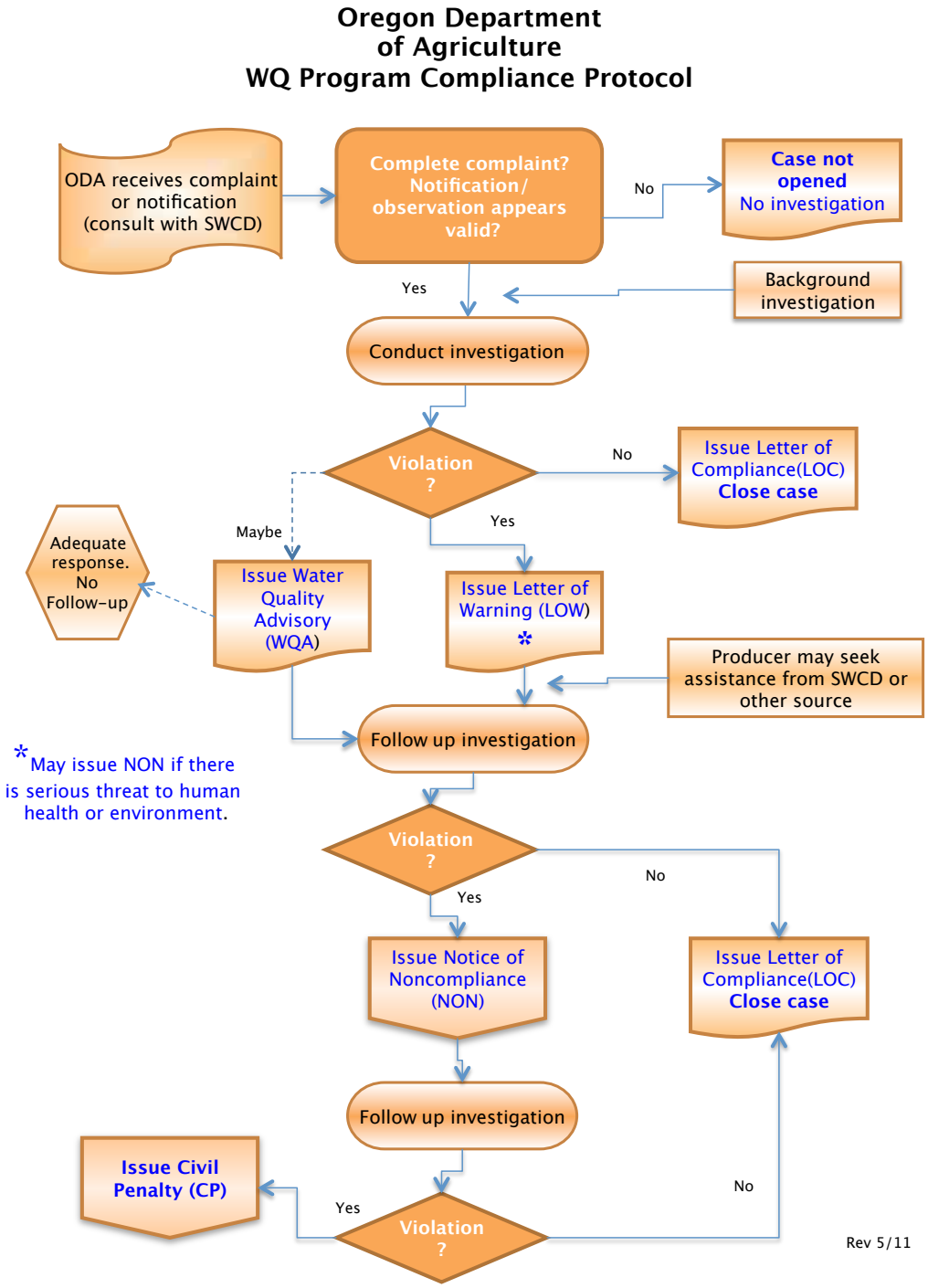
- State water quality standards.
- Load allocations for agricultural nonpoint source pollution assigned under Total Maximum Daily Loads (TMDLs) issued pursuant to the Clean Water Act (CWA), Section 303(d).
- Approved management measures for Coastal Zone Act Reauthorization Amendments (CZARA).
- Agricultural activities detailed in a Groundwater Management Area (GWMA) Action Plan (if a GWMA has been established and an Action Plan developed).

The Oregon Department of Agriculture has the legal authority to develop and implement Area Plans and associated Area Rules 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 bases Area Plans and Area Rules 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 Area Rules. ODA has responsibility for any actions related to enforcement or determination of noncompliance with Area Rules (OAR 603-090-0080 through OAR 603-090-0120). ORS 568.912(1) and ORS 568.912(2) give ODA the authority to adopt rules that require landowners to perform actions necessary to prevent and control pollution from agricultural activities and soil erosion.

The emphasis of the Area Plan is on voluntary action by landowners or operators to control the factors affecting water quality in the Management Area. The Area Rules are outlined as a set of minimum standards that landowners and operators must be met on all agricultural or rural lands.

ODA will use enforcement where appropriate and necessary to gain compliance with agricultural water quality rules. Figure 2 outlines ODA's compliance process. Any enforcement action will be pursued only when reasonable attempts at voluntary solutions have failed (OAR 603-090-0000(5)(e)). 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, ODA will direct the landowner or operator to remedy the condition through required corrective actions (RCAs) 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 RCAs, civil penalties may be assessed for continued violation of the rules. See the Compliance Flow Chart for a diagram of the compliance process. If and when other governmental policies, programs, or rules conflict with the Area Plan or associated Area Rules, ODA will consult with the appropriate agencies to resolve the conflict in a reasonable manner.

Figure 2: Compliance Flow Chart *– Refer to Attachment B for definitions*



1.3.2 Local Management Agency

A Local Management Agency (LMA) is an organization that ODA designated to assist with the implementation of an Area Plan (OAR 603-090-0010). The Oregon legislature's intent is for SWCDs to be LMAs, 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 to voluntarily address natural resource concerns. Currently, all LMAs 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

For each Management Area, the director of ODA appoints an LAC (OAR 603-090-0020) with as many as 12 members to assist with the development and subsequent biennial reviews of the local Area Plan and associated Area Rules. The LAC serves in an advisory role to the director of ODA and to the Board of Agriculture. LACs are composed primarily of agricultural 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 the Area Rules.
- Recommend strategies necessary to achieve the goals and objectives in the Area Plan.
- Participate in biennial reviews of the progress of implementation of the Area Plan and Area Rules.
- 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 Area Rules, which set minimum standards. However, the Area Rules alone may not be enough in every Management Area. Each landowner and operator in the Management Area is required to comply with the Area Rules. Landowners also are encouraged to engage in restoration activities to achieve the goals and objectives of the Area Plan. Each landowner and operator's actions will contribute toward achievement of the water quality standards.

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

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

- Conditions resulting from unusual weather events.
- 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.
- Other circumstances not within the reasonable control of the landowner or operator.

However, agricultural landowners or operators may be responsible for some of these impacts under other legal authorities.

1.3.5 Public Participation

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

The Oregon Department of Agriculture, LACs, and SWCDs conduct biennial reviews of the Area Plans and Area Rules. Partners, stakeholders, and the general public are invited to participate in the process. Any future revisions to the Area Rules will include a formal public comment period and a formal 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 CAFOs, and many are regulated under ODA's CAFO Program. Pesticide applications in, over, or within three feet of water also are regulated as point sources. Irrigation water discharges from agricultural fields may be at a defined discharge point but they do not currently require a permit.

Nonpoint water pollution originates from the general landscape and is difficult to trace to a single source. Nonpoint water pollution sources include 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 related to water quality are defined by DEQ in OARs for each basin. They may 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 usually are fish and aquatic life, water contact recreation, and public and private domestic water supply. These uses generally are the first to be impaired 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 can 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. Many of these water bodies have established water quality management plans that document needed pollutant 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, DEQ is required by the federal Clean Water Act (CWA) to assess water quality in Oregon. Clean Water Act 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. In accordance with the CWA, DEQ is required to establish TMDLs for pollutants specific to the pollutants that led to the placement of a waterbody on the on the 303(d) list.

A TMDL includes an assessment of water quality data and current conditions and describes a plan to achieve conditions so that water bodies will meet water quality standards. TMDLs specify the daily amount of pollution a water body can receive and still meet water quality standards. In the TMDL, point sources are allocated pollution limits as "waste load allocations" that are then incorporated in NPDES waste discharge permits, while a "load allocation" is attributed to nonpoint sources (agriculture, forestry, and urban). The agricultural sector is responsible for helping achieve the pollution limit by meeting the load allocation assigned to agriculture specifically, or to nonpoint sources in general, depending on how the TMDL was written.

Total Maximum Daily Loads generally apply to an entire basin or subbasin, and not just to an individual water body on the 303(d) list. When a water body is first placed on the 303(d) list as impaired, it is generally in Category 5 (Water Quality Limited – TMDL needed). Once TMDLs are completed for a basin, the water bodies with TMDLs are removed from the Category 5 list and assigned to the Category 4A list (Water Quality Limited – TMDL Approved). In the future, when data show that water quality criteria have been met for these water bodies, the will be assigned to the Category 2 list (Attaining Water Quality Criteria).

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

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

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

In 1995, the Oregon Legislature passed ORS 561.191. This statute states that any program or rules adopted by ODA "shall be designed to assure achievement and maintenance of water quality standards adopted by the Environmental Quality Commission."

To implement the intent of ORS 561.191, ODA incorporated ORS 468B into all of the Area Rules.

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 used in ORS 468B.025 and 468B.050:

"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 water pollution from agriculture activities and to prevent and control soil erosion. Streamside vegetation can provide three primary water quality functions: shade for cooler stream temperatures, streambank stability, and filtration of pollutants. Other water quality functions from streamside vegetation include: water storage for cooler and later season flows,

sediment trapping that can build 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 conditions may be improved without the removal of the agricultural activity, such as with managed grazing.
- Streamside vegetation condition is measureable and can be used to track progress in achieving desired site conditions.

Site-Capable Vegetation

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 that are outside the program's regulatory purview (e.g., channelization, roads, modified flows, previous 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, Natural Resources Conservation Service (NRCS) soil surveys and ecological site descriptions, and local or regional scientific research. ODA does not consider invasive, non-native plants such as introduced varieties of reed canary grass and blackberry to be site-capable vegetation.

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 the water quality functions equivalent to what site-capable vegetation would provide.

In some cases, for narrow streams, mature site-capable vegetation such as tall trees may not be needed. For example, shrubs and grass may provide shade, protect streambanks, and filter pollutants. However, on larger streams, mature site-capable vegetation is needed to provide the water quality functions.

1.5 Other Water Quality Programs

The following programs complement the Ag Water Quality Management Program and are described here to recognize their link to agricultural lands.

1.5.1 Confined Animal Feeding Operation Program

Oregon Department of Agriculture is the lead state agency for the CAFO Program. The CAFO Program was developed to ensure that operators do not contaminate ground or surface water with animal manure. Since the early 1980s, CAFOs in Oregon 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 surface water, the 2001 Oregon State Legislature directed ODA to convert the CAFO Program from a Water Pollution Control Facility permit program to a federal National Pollutant Discharge Elimination System (NPDES) program. Oregon Department of Agriculture and DEQ jointly issue the NPDES CAFO Permit, which complies with all CWA requirements for CAFOs. This permit 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.

1.5.2 Groundwater Management Areas

Groundwater Management Areas are designated by DEQ where groundwater has elevated contaminant concentrations resulting, at least in part, from nonpoint sources. After the GWMA is declared, a local groundwater management committee comprised of affected and interested parties is formed. The committee 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: the Lower Umatilla Basin GWMA, the Northern Malheur County GWMA, and the Southern Willamette Valley GWMA. Each GWMA has a voluntary action plan to reduce nitrate concentrations in groundwater. After a scheduled evaluation period, if DEQ determines that the voluntary approach is not effective, then mandatory requirements may become necessary.

1.5.3 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 salmonids because of their 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 Area Rules throughout Oregon.

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 (ODF), DEQ, and Oregon Health Authority (OHA). 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 in Oregon's streams can be addressed through multiple programs and partners, including the PSP program.

Through the PSP, 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). ODA, Department of Environmental Quality, 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. Since 2000, the PSPs have made noteworthy progress in reducing pesticide concentrations and detections.

Oregon Department of Agriculture led the development and implementation of a Pesticides Management Plan (PMP) for the state of Oregon (www.oregon.gov/ODA/programs/Pesticides/water/pages/AboutWaterPesticides.aspx). 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. By managing the pesticides that are approved for use by the United States Environmental Protection Agency (US EPA) and Oregon in agricultural and non-agricultural settings, the PMP sets forth a process for preventing and responding to pesticide detections in Oregon's ground and surface water resources.

1.5.5 Drinking Water Source Protection

Oregon implements its drinking water protection program through a partnership between DEQ and OHA. The program provides individuals and communities with information on how to protect the quality of Oregon's drinking water. Department of Environmental Quality and OHA encourage preventive management strategies to ensure that all public drinking water resources are kept safe from current and future contamination. For more information, see: www.deq.state.or.us/wq/dwp/dwp.htm.

1.6 Partner Agencies and Organizations

1.6.1 Oregon Department of Environmental Quality

The US EPA delegated authority to Oregon to implement the federal CWA in our state. DEQ is the lead state agency with overall authority to implement the CWA in Oregon. DEQ coordinates with other state agencies, including ODA and ODF, to meet the requirements of the CWA. The Department of Environmental Quality set water quality standards and develops TMDLs for impaired waterbodies, which ultimately are approved or disapproved by the EPA. In addition, DEQ develops and coordinates programs to address water quality including NPDES permits for point sources, the CWA Section 319 grant program, Source Water Protection, the CWA Section 401 Water Quality Certification, and GWMAs. DEQ also coordinates with ODA to help ensure successful implementation of Area Plans.

A Memorandum of Agreement (MOA) between DEQ and ODA recognizes that ODA is the state agency responsible for implementing the Ag Water Quality Program. ODA and DEQ updated the MOA in 2012.

The MOA includes the following commitments:

- ODA will develop and implement a monitoring strategy, as resources allow, in consultation with DEQ.
- ODA will evaluate the effectiveness of Area Plans and associated Area Rules in collaboration with DEQ.
    - ODA will determine the percentage of lands achieving compliance with Management Area Rules.
    - 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 to determine:
    - 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 Plans.
    - Whether the rate of progress is adequate to achieve the goals of the Area Plans.

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 Area Rules. The petition must allege, with reasonable specificity, that the Area Plan or Area Rules are not adequate to achieve applicable state and federal water quality standards (ORS 568.930(3)(a)).

1.6.2 Other Partners

Oregon Department of Agriculture 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) NRCS and Farm Service Agency, watershed councils, Oregon State University Agricultural Experiment Stations and Extension Service, tribes, 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 been implementing 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 progress. ODA is working with SWCDs, LACs, and other partners to develop and implement strategies that will produce measurable outcomes. ODA also is working with partners to develop monitoring methods to document progress.

1.7.1 Measurable Objectives

A measurable objective is a numeric long-term desired outcome to achieve by a specified date. Milestones are the interim steps needed to make progress toward the measurable objective and consist of numeric short-term targets to reach by specific dates. Together, the milestones define the timeline needed to achieve the measurable objective.

After ODA, the LAC, and the LMA establish measurable objectives and associated milestones, they will evaluate progress toward the milestones at each biennial review of the Area Plan. Using

adaptive management, the biennial review will evaluate progress toward the most recent milestone(s) and why they were or were not achieved. ODA, the LAC, and LMA will evaluate whether changes are needed to keep on track for achieving the longer-term measurable objective(s), and will revise strategies to address obstacles and challenges.

Measurable objectives allow the Ag Water Quality Program to better evaluate progress toward meeting water quality standards. Many of these measurable objectives relate to land conditions and primarily are implemented through focused work in small geographic areas (section 1.7.3), with a long-term goal of developing measurable objectives and monitoring methods at the Management Area scale. The measurable objectives and associated milestones for the Area Plan are in Chapter 3 and progress toward achieving the measurable objectives and milestones is summarized in Chapter 4.

1.7.2 Land Conditions and Water Quality

Land conditions can serve as useful surrogates (indicators) for water quality parameters. For example, streamside vegetation generally is 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.
- Extensive monitoring of water quality is needed to evaluate progress, which is expensive and may fail to demonstrate improvements in the short term.
- Improved land conditions can be documented immediately, but there may be significant lag time before water quality improves or water quality impacts may be due to other sources.
- Reductions in water quality from agricultural activities are primarily through changes in land conditions and management activities.

Water quality monitoring data may help ODA and partners to measure progress or identify problem areas in implementing Area Plans. However, as described above, water quality monitoring may be less likely to document 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

<u>Focus Areas</u>

A Focus Area is a small watershed with water quality or concerns associated with agriculture. Through the Focus Area process, the SWCD delivers systematic, concentrated outreach and technical assistance in small geographic area. A key component of this approach is measuring land conditions before and after implementation, to document the progress made with available resources. The Focus Area 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 provides 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 appropriate conservation practices and demonstrate their effectiveness.
- A higher density of projects allows neighbors to learn from neighbors.
- A higher density of projects leads to opportunities for increasing the connectivity of projects.
- Limited resources can be used more effectively and efficiently.
- Work in one Focus Area, followed by other Focus Areas, will eventually cover the entire Management Area.

Soil and Water Conservation Districts select 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 3.

Working within a Focus Area is not intended to prevent implementation within the remainder of the Management Area. The SWCD will also continue to provide outreach and technical assistance to the entire Management Area.

Strategic Implementation Areas

Strategic Implementation Areas (SIAs) are small watersheds selected by ODA, in cooperation with partners based on a statewide review of water quality data and other available information. ODA conducts an evaluation of likely compliance with agricultural water quality regulations, and contacts landowners with the results and next steps. Landowners have the option of working with the SWCD or other partners to voluntarily address water quality concerns. ODA follows up, as needed, to enforce agricultural water quality regulations. Finally, ODA completes a post-assessment to document progress made in the watershed. Chapter 3 describes any SIAs that are underway in this Management Area.

1.8 Monitoring, Evaluation, and Adaptive Management

ODA, the LAC and the LMA will assess the effectiveness of the Area Plan and associated Area Rules by evaluating the status and trends in agricultural land conditions and water quality data. This assessment will include an evaluation of progress toward measurable objectives on agricultural lands across the entire Management Area and within the Focus Area. ODA will utilize other agencies' and organizations' local monitoring data when available. The Area Plan summarizes the results and findings 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(s), measurable 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. Stream segments representing 10 to 15 percent of the agricultural lands in each Management Area were randomly selected for long-term aerial photo monitoring. Stream segments are generally 3-5

miles long. ODA evaluates streamside vegetation at specific points within 30-, 60-, and 90-foot bands along both sides of stream segments from the aerial photos and assigns each segment a score based on streamside vegetation. 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 single "correct" streamside vegetation index score. The purpose of this monitoring is to measure positive or negative change. The results for this Management Area are summarized in Chapter 4.

1.8.2 Agricultural Ambient Water Quality Monitoring

The Oregon Department of Agriculture evaluates water quality data from DEQ's long-term monitoring sites to determine trends in water quality at agricultural sites statewide. Results from monitoring sites in this Management Area, along with local water quality monitoring data, are described in Chapter 4.

1.8.3 Biennial Reviews and Adaptive Management

This and all Area Plans and associated Area Rules around the state 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 Area Rules. This evaluation includes discussion of enforcement actions, land condition and water quality monitoring, and outreach efforts over the past biennium. ODA and partners evaluate progress toward achieving measurable objectives, and revise implementation strategies as needed. The LAC submits a report to the Board of Agriculture and the Director of ODA describing progress and impediments to implementation, and recommendations for modifications to the Area Plan or associated Area Plans necessary to achieve the goal of the Area Plan. ODA and partners will use the results of this evaluation to update the measurable objectives and implementation strategies in Chapter 3.

Chapter 2: Local Background

2.1 Local Roles And Responsibilities

2.1.1 Designated Management Agency

The ODA is the DMA for water pollution control activities on agricultural and rural lands in the Wallowa Water Quality Management Area. The ODA is authorized to develop and carry out a water quality management plan for any agricultural or rural lands where state or federal law requires such a plan.

2.1.2 Local Management Agency

The Wallowa SWCD (District) is the Local Management Agency (LMA) designated by ODA for development and implementation of the Area Plan and projects in the Management Area. The implementation of the Area Plan is accomplished through an Intergovernmental Agreement between ODA and the Wallowa SWCD. Implementation priorities will be established on a periodic basis through annual work plans developed jointly by the District and ODA with input from partner agencies.

2.1.3 Local Advisory Committee

The Area Plan was developed with the assistance of a Local Advisory Committee (LAC). The LAC was formed in 1999 to assist with the development of the Area Plan and regulations and with subsequent biennial reviews. Current members are:

Name	Area	Operation	Affiliations
Don Stonebrink, Ch.	Wallowa	Farmer - Grain	OWGL
Rod Childers	Enterprise	Rancher - Cattle	OCA
Chris Cunningham	Enterprise	Farmer - Grain	NRAC
Bruce Dunn	Joseph	Timber	NRAC
Ed Jones	Enterprise	Ag Field Man	
Max Mallory	Wallowa	Rancher	
Kevin Melville	Joseph	Farmer	FB, SWCD
Bob Morse	Enterprise	Rancher	
Bob Stangle	Enterprise	Rancher - Hay, Grain, Buffalo	
Dan Warnock	Imnaha	Rancher - Cattle, Hay	SWCD

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

The ODA, LAC, and the District believe proper agricultural practices and widespread adoption of these practices will result in improved water quality. They also believe that ensuring the economic viability of agriculture and of the individual landowner is necessary to achieve this improvement in water quality and will lead to preserving and protecting beneficial uses.

2.2 Development of Local Area Plan and Area Rules

The Area Rules, to implement the Area Plan, were formally adopted by ODA in July 2001.

The Area Plan was revised in 2012 to update the reference information, water quality standards and include Lower Grande Ronde Total Maximum Daily Load (TMDL) target information. The TMDL was developed by the Oregon Department of Environmental Quality (DEQ) and approved by the federal Environmental Protection Agency (EPA) in September 2010, to fulfill requirements of the Clean Water Act to develop pollution control targets and improvement plans for impaired waters within the plan area. In the Lower Grande Ronde, TMDL targets have been established to address temperature and bacteria. The TMDL focuses on temperature and bacteria reduction measures. DEQ will develop TMDLs for dissolved oxygen, pH and sedimentation at a later date when more data becomes available.

This Area Plan has an adaptive management strategy. Periodically, ODA, the LAC, and the District will review this Plan and revise it to ensure that it is achieving the mission and goals. Biennial Reviews were held in 2005, 2007, 2009, 2012, 2014 and 2016. The 2012 Biennial Review was the first time that the Area Plan has been revised or updated. In 2014, the Area Plan was reformatted and measurable objectives were added.

2.3 Applicability

This Area Plan applies specifically to agricultural activities on all agricultural, rural, and forestlands within the Wallowa Agricultural Water Quality Management Area that are not owned by the federal government or are not Tribal Trust Lands. This Area Plan covers three subbasins - the Wallowa River, the Lower Grande Ronde and the Imnaha River subbasins. The Area Plan applies to agricultural lands in current use, those lying idle or on which management has been deferred, and lands (like private roads) not strictly in agricultural use but that support agricultural activities.

Activities governed by the Forest Practices Act are outside the jurisdiction of this Area Plan and the associated Rules. Pesticide use is governed by the Pesticide Control Act (Oregon Revised Statutes [ORS] 634) and is administered by ODA Pesticides Division.

2.4 Geographic Area and Physical Setting

2.4.1 Geographic Area

Wallowa County is in the northeast corner of Oregon and covers 3,153 square miles. In the southern part of the county, the Wallowa Mountains reach a height of 10,000 feet, and it is in these mountains that the Wallowa River originates. This headwater area contains perennial snow, steep slopes and many small lakes. The largest lake in the county, Wallowa Lake, is located at the foot of the Wallowa Mountains. This lake, which has a surface area of 1,600 acres, captures the flow from the West and East Forks of the Wallowa River. The main stem of the Wallowa River drains the lake in a northwesterly direction. Major tributaries such as the Lostine River, the Minam River, Bear Creek and Hurricane Creek all originate in the Wallowa Mountains, flow mostly north and west and enter the main stem at its south bank. The Wallowa River then flows into the Grande Ronde River at River Mile (RM) 82.

The Wallowa River subbasin is one of the three subbasins this AgWQM Area Plan covers. The other two are the Lower Grande Ronde River subbasin and the Imnaha River subbasin.

The Grande Ronde River flows along the northwestern fringe of the county, and its subbasin covers the northern third of the county.
The river enters the Snake River in Washington State. Joseph Creek and the Wenaha River are the main tributaries to the Grande Ronde River in this area.

The Imnaha River subbasin is in the eastern part of the county. This river originates in the Wallowa Mountains, runs nearly 80 miles until it empties directly into the Snake River. Big Sheep Creek is its largest tributary.

2.4.2. Climate

Average annual precipitation varies greatly, ranging from 8 to 60 inches, within the county. The Wallowa Valley, where much of the agricultural activity takes place, typically has 13 to 17 inches of precipitation per year. The length of the growing season varies with elevation. At Joseph, elevation 4,235 feet, it is 108 days, and in Wallowa, elevation 2,923, it is 130 days. Frosts can occur at any time.

Temperatures are generally high in the late spring and summer throughout the planning area. Daytime highs can reach the upper 90s. The Imnaha area tends to be much warmer than the Wallowa Valley. In August, average temperatures are 8 degrees higher in the Imnaha area than in Enterprise.

Floods can be frequent and devastating throughout the county. Particularly bad floods occur when a cold spell freezes the ground, a storm drops several inches of snow, and then a warm front moves in carrying rain. These rain-on-snow events can lead to large amounts of sediment being delivered to rivers, banks being heavily eroded and riparian vegetation being severely damaged. Normal yearly peak flows can cause large amounts of erosion as well.

Under the right conditions, ice jams can form in the rivers and creeks in Wallowa County. Often the ice first forms on the bottom of the stream channel and gradually forms large blocks of ice. As the ice moves down a channel, it can gouge banks, move streambed gravel and large rocks, ravage riparian vegetation, uproot entire trees and cause rivers to go outside their channel. The ice can dig swaths several hundred yards outside the normal streambank. Significant amounts of sediment are delivered into the river systems as a direct result of the ice and indirectly because of the unstable banks left by the ice event. This kind of damage to riparian areas can take years to be repaired. Casual observers may be mislead as to the cause of the damage if they are not aware of any recent ice flow events occurring in the area. These ice jams can occur several times within any ten-year period.

Violent hail and rainstorms can occur in the plan area. These storms, combined with steep topography and shallow soils, lead to significant landslides. Landslides often occur where soils overlay an impenetrable clay layer. When these soils become saturated, such as after a long wet period, they tend to slide easily. Thunderstorms on July 27, 2010, produced .75 inches of precipitation in less than 2 hours. This caused debris jams to fail in Doc Creek, a tributary to Bear Creek, and widening of the channel. A large sediment load was noticed in Bear Creek with the high water resulting in a loss of aquatic life including juvenile and adult salmon and steelhead/rainbow trout. Slumps have occurred near Hurricane and Lightning Creeks as well.

2.4.3 Land Use

Timber and agriculture are the dominant uses of the land in Wallowa County. Forests cover about 48 percent of the land base. Forestry activities take place on all these acres except in the three designated wilderness areas within the county. Readers should note that nearly all of the major waterways originate in wilderness areas. In many cases agriculture and timber uses occur on the same acre because livestock seasonally graze on many of the forested areas. The public owns approximately 66 percent of the land base in the county. The majority of the 34 percent in private ownership is used for agriculture.

According to 2010 data from the U.S. Census Bureau, 15 percent of the jobs in the county were in agricultural services and forestry related fields. Though employment is decreasing, natural resources particularly agriculture, still remains the basis for the economy in Wallowa County. Nationally, agriculture remains a vital part of the economy and civilization itself. Despite being less than two percent of the population, farmers and ranchers provide abundant food and fiber for a growing population.

Because of the hot and dry summers irrigation is a vital component of the agricultural industry. Crops such as hay could not be economically grown here without irrigation. Dryland farming, that is growing crops such as winter wheat without supplemental water, is limited to only certain parts of the county because of short growing seasons and the susceptibility to frosts.
A complex system of diversions and irrigation canals supply water to the fields. A large percentage of farmers and ranchers in the area use sprinklers to water a number of these fields. However, flood irrigation remains an economical method used to deliver water to crops.

Irrigation has many benefits besides improving crop yields. It can charge shallow groundwater aquifers, and this groundwater can return to streams cooler, cleaner, and later in the summer. Another benefit is that riparian vegetation communities have developed along irrigation ditches. This vegetation provides habitat for a variety of wildlife, and protects and enhances water quality. A third benefit is the improved crop yield associated with irrigation. This can reduce soil erosion because of the enhanced ground cover. A high level of vegetative ground cover also increases the infiltration of precipitation into the soil, which reduces runoff.

2.4.4 Environmental Benefits of Agricultural Production

Natural resources (e.g. soil, water, air, plants, and animals) are the backbone of agriculture. To be successful, farmers and ranchers must conserve these resources, and when they do, they provide an abundance of benefits to the general public.

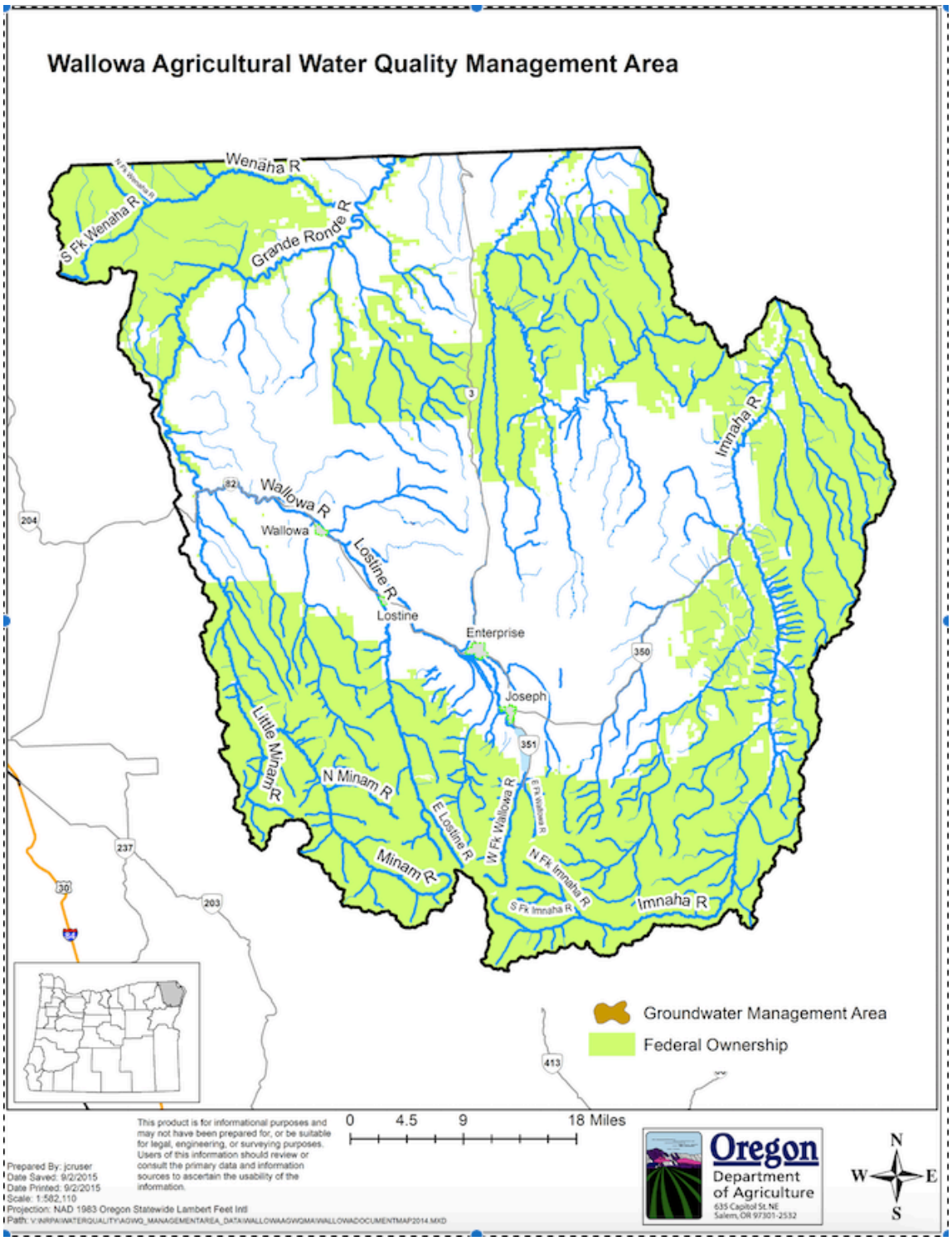
Some examples of agricultural environmental benefits include:

- Open space
- Recreation
- Wildlife habitat
- Atmospheric carbon dioxide removal
- Improved water quality

With good management, agriculture can improve soil quality through such practices as crop rotation and residue management. With improved soil conditions, water quality will improve as well because rain and snow will infiltrate the ground better, and the water will enter streams cleaner and cooler.

Proper range management through grazing has environmental benefits because it will lead to grasslands with diverse and healthy plant communities. Healthy vegetation is a key component to maintaining and improving water quality.

2.4.5 Map of Management Area



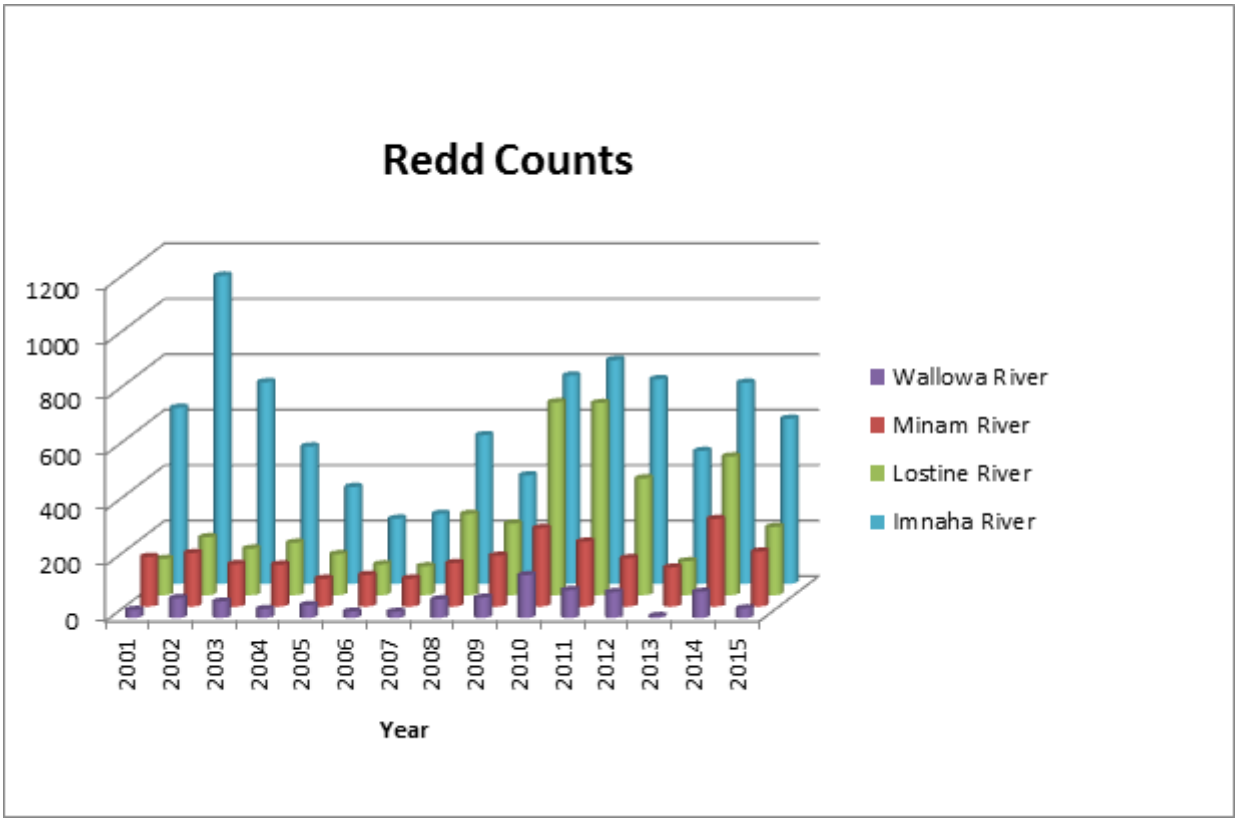
2.4.6 Relation to Fish Recovery Plans

The LAC and ODA want to support and assist existing conservation efforts such as the Wallowa County Salmon Habitat Recovery Plan and Multi-Species Strategy and existing Natural Resource Conservation Service (NRCS) farm plans. Farmers and ranchers in the area have been practicing good land stewardship in conjunction with these programs and on their own for many years.

The LAC and ODA want to emphasize to readers that solving water quality problems in Wallowa County will not by itself recover the federally listed bull trout, salmon and steelhead stocks. It will no doubt help a great deal, but many factors are responsible for the decline of these species. Some of these factors, such as ocean conditions and natural predation, are beyond the control of landowners in Wallowa County. Figure 1 documents the status of spring chinook redd counts over the from 2001 to 2011. Wilderness streams (e.g. the Wenaha River) show similar counts as streams that have been more heavily managed. This lends credence to the concept that out of basin issues (e.g. eight mainstem dams, a changed estuary, ocean harvest) are having a far more deleterious effect than in-basin issues (Don Bryson, personal communication).

Figure 1: Spring Chinook Redd Counts (2001-2011)

Note: The Lostine adult Chinook weir was not operational for much of the 2010 and 2011 migration seasons. This allowed large numbers of hatchery-origin Chinook to spawn in the wild, many of them in the index area. Index counts would have been less had the weir been operating.



2.5 Agriculture Water Quality Issues

2.5.1 Beneficial Uses

Beneficial uses in the AgWQM Area include drinking water, irrigation, livestock watering, aquatic life, boating and fishing, water contact recreation, and aesthetics. Uses related to federally listed species and other resident fish and aquatic life are the most sensitive. Chinook salmon, steelhead and bull trout have been listed as threatened under the Endangered Species Act.

2.5.2 303(d) List of Impaired Water Bodies

Upon completion of the TMDL, those stream segments in the Management Area that were declared water quality limited for temperature and bacteria were removed from the 303(d) Category 5 list (Water Quality Limited – TMDL needed) and assigned to the Category 4A list (Water Quality Limited – TMDL Approved). Category 5 water quality limited listings (303(d)) remain for other parameters including: biological criteria, copper, pH, dissolved oxygen, and sedimentation. DEQ no longer includes impairments for flow modification and habitat modification on its 303(d) list. The current 303(d) list can be viewed in Attachment A.

2.5.3 Basin TMDLs and Agricultural Load Allocations

The Lower Grande Ronde 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.

Stream pollution is closely tied to land use. In the Wallowa Basin, 48 percent of the land is forested and a majority 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.

2.5.4 Water Quality Parameters of Concern

Stream Temperatures

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. Humans have no, or at best, a modest ability to change these parameters. Human influence is limited to activities that affect:

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

Vegetation affects all these factors, and humans have, depending on the site, a 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 improve soil conditions and that will improve water infiltration. This helps to 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 (7.2 -12.8°C), 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, which 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 that 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.

Clearly, developing healthy, functioning riparian vegetation communities and stabilizing streambanks in Wallowa County will improve critical aquatic and riparian habitat. However, because of the natural factors listed above and the technical and biological challenges (e.g. site vegetation capability, and beaver, ungulate 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.

OAR 340-041-0028 provides numeric and narrative temperature criteria. Maps and tables provided in OAR 340-041-151 specify where and when the criteria apply. Biologically based numeric criteria applicable to the Lower Grande Ronde Subbasins, as measured using the seven-day average maximum stream temperature, include:

- 12.0° C (53.6° F) during times and at locations of bull trout spawning and juvenile rearing.
- 13.0°C (55.4° F) during times and at locations of salmon and steelhead spawning.
- 16.0°C (60.8° F) during times and at locations of core cold water habitat identification.
- 18.0°C (64.4° F) during times and at locations of salmon and trout rearing and migration.

Industries, agencies, cities and other groups including agriculture are required to write and implement a basin-wide management plan, such as this Agricultural Water Quality Management Area Plan, that describes how these groups will attempt to control stream temperatures if a stream in the basin exceeds the temperature criterion. In areas where a TMDL has been approved, agricultural water quality management area plans and rules must be sufficient to meet the TMDL load allocations.

The climate and topography of Wallowa County also have a profound influence on stream temperatures. Because eastern Oregon's climate is hot and dry, water temperatures are naturally high and flows are low late in the summer. One way of correcting low late season flows is to build multipurpose reservoirs or some other method of upstream storage.

An innovative storage method, which requires much more study than has been done to date, is underground injection of spring runoff water. This water would be stored as groundwater and then pumped out later in the season when needed to augment flows for fish, water quality and irrigation. As stated earlier, a higher volume of water requires more energy to heat. Increased flows could help decrease stream temperatures.

Another aspect that storage could help would be in controlling excessively high spring runoff. Many areas have high runoff frequently in the spring, and some areas experience extensive damage to streambanks. This damage contributes to sedimentation problems, and excessive streambank instability can destroy existing riparian vegetation and impede the establishment of new vegetation.

Another example of challenges to establishing riparian vegetation is the presence of noxious weeds. These weeds can harm water quality in many ways. Some examples are:

- Reduced ground cover resulting in increased erosion,
- Reduced infiltration of precipitation into the soil,
- Crowding out of vegetation appropriate to each site.

If noxious weeds are present in large enough numbers to be a serious problem along all segments of the Wallowa Management Area, water quality, fish, and wildlife habitat will suffer. Landowners and public land managers need to be vigilant in their weed control efforts.

Bacteria

Bacteria levels, particularly, Escherichia coli (*E. coli)* pose a threat to the health of water contact recreation users and domestic water supplies. Potential sources of bacteria include animal manure (livestock, wildlife & fowl) and septic systems.

The DEQ bacteria standard (OAR 340-41-0009(1)(a) states that organisms of the coliform group commonly associated with fecal sources shall not exceed a 30-day log mean of 126 E. coli organisms per 100 ml, based on a minimum of five samples and no single sample shall exceed 406 E. coli organisms per 100 ml.

For bacteria, load duration curves were used to determine the amount of load reduction that is needed to meet water quality criteria on the Wallowa River. For Spring Creek, Prairie Creek and other Wallowa River tributaries, *E. coli* limits are expressed as percent reductions needed to meet water quality criteria.

Nonpoint source load allocation surrogate measures for bacteria

	Wallowa River	Spring Creek	Prairie Creek	Other Wallowa River tributaries
Percent Reduction needed to meet 126 E. coli per 100 ml criterion	44%	63%	18%	44%
Percent Reduction needed to meet 406 E. coli per 100 ml criterion	32%	76%	49%	32%

Parameters Not Being Addressed by the Lower Grande Ronde TMDL

Biological Criteria – The biocriteria standard (OAR 340-041-0011) states: *Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities*.

Copper – The Toxic Substances Narrative (340-041-0033 (1)) states:. *Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare or aquatic life, wildlife or other designated beneficial uses.*

Dissolved Oxygen - Low levels of dissolved oxygen can harm fish and other aquatic life. The availability of nutrients, warm temperatures and light stimulate aquatic plant and algae growth that reduces the oxygen content of water. Animal manure (livestock, wildlife & fowl) and other organic wastes break down and also remove oxygen from water.

The dissolved oxygen standard (OAR 340-041-0016(3)) for water bodies identified as providing cool-water aquatic life habitats is as follows*: For waters identified by DEQ as providing cool-water aquatic life, the dissolved oxygen may not be less than 6.5 mg/l as an absolute minimum.*

There has not been enough data collected since then to adequately evaluate the sources of impairment to dissolved oxygen on these creeks. Once the necessary data has been collected for these creeks, a TMDL will be developed to address dissolved oxygen at a later date.

pH - There has not been enough data collected to adequately evaluate the causes of the pH violations, however, it is likely that nutrient reductions and stream temperature decreases will improve the pH condition. Once the necessary data has been collected, a TMDL will be developed to address pH at a later date.

Sedimentation - DEQ is reviewing the sedimentation criteria assessment methodology for determination of water quality impairment. Currently, sedimentation lacks quantitative listing criteria. TMDLs for the sedimentation listings will be developed at a future date once criteria are selected and a TMDL approach determined.

In the meantime, there is much restoration work that is already taking place in the subbasins which will reduce sources of sediment to streams, improve stream pH and dissolved oxygen through reductions in temperature and sources of nutrients. Much of this work is being done under the guidance of the Wallowa County Salmon Habitat Recovery Plan with Multi-Species Habitat Strategy (1999) and will also be addressed through implementation of the temperature TMDL included in this document. (Lower Grande Ronde Subbasins TMDL)

2.6 - Strategies for Area Plan Implementation

The LAC and ODA established the following water quality related strategies for agricultural land in the plan area to aid in accomplishing the program goals and objectives. Some specific guidance about the requirements of this Area Plan is as follows:

2.6.1 Prohibited Conditions

Voluntary efforts are the focus of ODA, the District (SWCD) and the LAC. However, situations may arise when a particular landowner refuses to correct the conditions on his or her property. In this case, ODA must have a regulatory backstop to ensure pollution control. At the same time, ODA does not want to mandate or prohibit any specific agricultural activity. To maintain this flexibility, this plan and its associated administrative rules describe Prohibited Conditions.

Readers should note that this AgWQM Area Plan is only a guidance document. By itself, it is not regulatory. However, it does refer to administrative rules that set requirements for landowners. To help distinguish between this Area Plan and its associated rules, all rule language is separated from the rest of the text by a border of solid lines.

The Prohibited Conditions relate to the water quality parameters that some of the rivers and streams in Wallowa County do not meet. The primary factors are as follows:

- Sediment
- Temperature
- Bacteria

Less widespread problems are as follows:

- Dissolved oxygen
- pH

Flow and habitat modification are not directly addressed in the Area Rules. The Oregon Water Resources Department regulates the use of water for irrigation. The ODA, the District and other local entities are actively encouraging landowners to conserve water through a variety of voluntary measures. Maintaining and improving riparian areas will help address habitat issues.

Area Rules are presented in this Area Plan and indicated by bold type within a border.

Prohibited Conditions – OAR 603-095-1840
(1) Limitations
A landowner shall be responsible for only those conditions caused by activities conducted on land managed by the landowner. Criteria do not apply to conditions resulting from unusual weather events or other exceptional circumstances, which could not have been reasonably anticipated.

2.6.2 Prevention and Control Measures

The strategies identified in this Area Plan for preventing and controlling pollution from agricultural and rural lands are consistent with goals for non-point source pollution reduction established in the Lower Grande Ronde TMDL. It is expected that adoption of management practices aligned with the following Prevention and Control Measures will, over time, result in achievement of TMDL goals and meeting water quality standards.

Sheet and Rill Erosion

- **Sheet and rill erosion will be within applicable soil loss tolerance factors set by USDA.**

Sheet and rill erosion on all cropland, not just land designated as Highly Erodible Land, will be reduced as set forth above. Reduction of soil erosion will be calculated by the Revised Universal Soil Loss Equation, with supporting data from the NRCS Field Office Technical Guide and similar data from other credible sources.

"T" means maximum average annual amount of soil loss from erosion, expressed in tons per acre per year that is allowable on a particular soil. This represents the tons of soil (related to the specific soil series), which can be lost through erosion annually without causing significant degradation of the soil or potential for crop production.

A ton of soil per acre per year may seem like a large amount of soil to lose, but the reality is that it is not. Note the following facts:

- 1 ton/acre/year = loss of about the thickness of a piece of paper across the entire field
- 5 tons/acre/year = loss of about the thickness of a dime across the entire field

The NRCS and other organizations have developed many combinations of tillage systems, conservation practices, and cropping rotations that will help reduce sheet and rill erosion to acceptable levels. Landowners can contact the local agencies if they need guidance in choosing a system that will work for them.

The focus of this discussion of "T" is on soil loss, but soil is being formed at a site-specific rate. In fact the definition of "T" is the rate of soil loss that will prevent long-term soil degradation and to economically and indefinitely sustain the potential level of productivity. Thus, if a field is eroding at a rate of "T" or less, the amount of soil loss will still permit a high level of crop production to be sustainable economically. In fact, certain cropping sequences or maintaining land in pasture will not only prevent erosion, but will help build soil.

(2) Excessive Sheet and Rill Erosion

(a) By January 1, 2006, soil erosion will be reduced to the "Soil Loss Tolerance Factor" or "T".

(b) For croplands, which the department determines cannot practically or economically achieve "T," soil erosion will be reduced to 5 tons per acre per year averaged over the length of the rotation.

(c) Reduction of soil erosion will be calculated by the Revised Universal Soil Loss Equation (RUSLE), with supporting data from the Natural Resource Conservation Service Field Office Technical Guide and similar data from other credible sources.

Excessive Gully Erosion

- **Gully formation will be addressed to the extent that it is economically and practically feasible.**

Gully erosion occurs frequently in Wallowa County, and in most cases, it is not a result of human activity. The majority of landowners in the area strive to prevent gully formation and work to rehabilitate them when they do occur. If landowners are having trouble preventing or rehabilitating gully erosion, they can seek technical assistance from the local county, state, and federal agencies.

(3) Excessive Gully Erosion

(a) By January 1, 2006, no person shall cause conditions on the land that contribute to gully erosion delivering sediment directly to the waters of the state. Gullies are defined as channels which at the largest dimension have a cross sectional area of at least one square foot and which occur at the same location for two or more consecutive years.

(b) No violation of this condition will be deemed to have occurred if the affected landowner has established and maintained a department or local Designated Management Agency approved effective management program. An effective management program shall provide assurance that reasonable steps have been taken to lessen and manage gully formation.

Streambank Erosion

- **Active streambank erosion will not exceed acceptable levels for the reaches' riparian capability.**
- **Stream channel modification caused by short-term erosion will be minimal.**

Capability in this instance is defined as the highest ecological status an area can attain given political, social, or economic constraints, (e.g. the presence of Highway 82) which are often referred to as limiting factors. Capability does not apply to uses such as grazing, farming, recreation and timber practices, which can be changed. While these uses can affect the condition of a riparian area, they do not prevent it from achieving capability. Capability only applies to constraints that the land manager cannot eliminate or change through a management action.

Streamside and Riparian Vegetation

- **Riparian vegetation will be able to respond and function within the site's capabilities.**

Vegetation, both in the uplands and in the riparian area, plays a critical role in water quality. Generally, healthy plant communities:

- Hold soil in place,
- Protect streambanks,
- Capture, store and safely release precipitation,
- Filter nutrients from both the groundwater and surface runoff,
- Provide shade to moderate water temperatures.

In addition to the water quality benefits, healthy terrestrial vegetation improves fish habitat. Riparian vegetation protects spawning, rearing and holding areas by trapping sediment that could smother eggs. Vegetation improves the recruitment of large woody debris. This debris helps to create pools for fish to rest in, provides hiding cover and habitat diversity. Vegetation provides organic debris to feed aquatic insects, which are an essential element in the diets of many fish.

Healthy riparian vegetation benefits farmers and ranchers too. Some benefits include increased forage production, less streambank erosion, increased late season flows, and stable stream channels. Techniques that improve riparian area management can lead to economic benefits as well. One example is Bear Creek on the Bureau of Land Management's Prineville District. Prior to 1976, the area was a single pasture permitted for 72 animal unit months. Riparian vegetation and stream channel conditions were poor. After the Bureau of Land Management and the permittee changed their management (season of use, grazing intensity and livestock distribution), animal unit months

are now almost 360 and the permittee is spending less money on his annual hay bill. Riparian vegetation has recovered, streambank erosion has decreased, and the quality and quantity of the flow has improved to the point that trout are again using the area (Leonard et al., 1997).

Riparian vegetation, consistent with site capability, is a cost effective means of reducing streambank erosion and heating from solar radiation. It is important to note that research and practical examples have shown that land managers can maintain riparian health and conduct agricultural activities as well.

In recent years, the state and federal governments have developed several cost-share programs to aid landowners in improving their management of riparian areas. These programs will help pay for fencing to establish riparian pastures, pay an annual rental fee for planting woody vegetation along streams, assist in developing off-stream watering sources that will help keep cattle out of the riparian area, and many other options. Some of the programs available include:

- Continuous Conservation Reserve Program (CRP)
- Conservation Reserve Enhancement Program (CREP)
- Oregon Watershed Enhancement Board (OWEB)
- Environmental Quality Incentives Program (EQIP)
- Bonneville Power Administration (BPA)
- Agricultural Watershed Enhancement Program (AWEP)
- Cooperative Conservation Incentive Program (CCPI)
- Conservation Stewardship Program (CStP)

(5) Streamside Conditions
By January 1, 2006, no person may contribute to conditions that preclude establishment and development of adequate riparian vegetation for streambank stability and shading, consistent with site capability.

Waste Management

- **Placement, delivery or sloughing of suspended solids to rivers and streams will be minimized.**
- **Location and condition of waste with respect to waters of the state will be managed according to existing state law.**

Suspended solids mean any material, manure, dirt particles or other organic matter that remains suspended in the water column.

Management of animal waste from confined areas is a local and national priority. The LAC discussed confined animal feeding areas several times, and while they did not recommend that ODA adopt new rules on this topic they encourage livestock operators to assess their feeding area management for any possible discharges of pollution to the waters of the state. Operators may contact local, county, state, and federal agencies for technical assistance and evaluation.

When assessing their management, operators should consider the following:

- Animal waste collection, storage, and disposal at agronomic rates,
- Excluding waters of the state from confinement areas,

- Control of surface runoff to and from the waste storage and confinement areas,
- Off-stream water development.

SWCD, NRCS, and ODA worked together to develop demonstration projects in Wallowa County to assess pollution levels from confinement areas and to test the effectiveness of various practices to control pollution from these areas.

See Section 1.4.4 Water Pollution Control Law, page 9, for applicable text of 468B.025 and definitions of terms.

(4) Pollution Control and Waste Management

Effective on rule adoption: No person subject to these rules shall violate any provisions of ORS 468.025 or ORS 468B.050. (*See Section 1.4.4 Water Pollution Control Law, page 8, for complete text of 468B rules and definitions*)

Irrigation Management

- **Irrigation surface water return flows will be managed to minimize contributions to water quality problems.**

With irrigation it is difficult to avoid some overland flow returning to creeks and rivers especially when fields are uneven. Landowners can avoid contributing to water quality problems by implementing a variety of management practices. Assistance is available by contacting local natural resource agencies.

(6) Irrigation Return Flow

(a) By January 1, 2006, no person may cause bacteria levels in irrigation tailwater to exceed state water quality standards. When the irrigation water at the point of initial application already exceeds the bacteria standard, then the bacteria level in the tailwater cannot be higher than the level in the irrigation water at the point of initial application.

(b) A landowner shall be responsible for only those conditions caused by activities conducted on land managed by the landowner. Criteria do not apply to conditions resulting from unusual weather events, natural background levels of bacteria or other exceptional circumstances, which could not have been reasonably anticipated.

Chapter 3: Goals, Objectives and Strategies

3.1 Purpose, Goals and Objectives

3.1.1 Purpose

Maintain the economic viability of the agricultural community while maintaining or enhancing sound production practices and water quality.

3.1.2 Goals

- To prevent and control water pollution from agricultural activities and soil erosion and to achieve applicable water quality standards.
- Minimize conditions on agricultural lands that might contribute to a reduction in water quality.

3.1.3 Measurable Objectives

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 lands meeting desired land conditions outlined in the Area Plan.

Focus Area Measurable Objective (Outcomes):

90% of the agricultural areas in the Prairie Creek Focus Area will have streamside vegetation likely to provide the water quality functions (shade, bank stability, and filtration of overland flow) of the area's site-capable vegetation.

- Current Conditions: **74%** (from pre assessment)
- Milestone 1: 10% improvement
- Milestone 2: 90%

3.1.4 Milestones (Targets) and Timelines

The following milestones and timelines were developed in cooperation with ODA, DEQ, the LAC, and the SWCDs. Focus Area Action Plans are developed as a tool with milestones and timelines for implementation of the Area Plan within a defined geographic area.

- **Streamside Conditions**

  Area Rule: …no person may contribute to conditions that preclude establishment and development of adequate riparian vegetation for streambank stability and shading, consistent with site capability.

  - Milestones and timeline:
    - By 2015, focus area stream reaches were assessed for streamside vegetation and water quality function.
    - Long-term targets based on the results from the initial assessment are as follows:
      - 2026 = 10% improvement

- **Runoff of agricultural wastes**:

  Area rule: Agricultural activities will not discharge any wastes or place waste where it is likely to run off into waters of the state.

- Milestones and timeline:
  - By 2015, the focus area was evaluated for likelihood of pollution from runoff or discharge of wastes.
  - Long-term targets based on the results of the initial assessment and previous erosion study are as follows:
    - 2016 = 10% improvement

3.2 Implementation Strategies

- **Secure adequate funding for administration and implementation to achieve this plan's mission, goals, and objectives.**
- **Identify priorities for pollution source identification and determining areas for implementing restoration activities including reasonable timelines for management strategies targeting TMDL attainment.**

3.2.1 Education

- **Use the media and other educational methods to increase awareness of agriculture's efforts to maintain and improve water quality.**
- **Educate not regulate.**

Education is the key to the success of this AgWQM Area Plan. The local county, state, and federal agencies will work together to provide farmers and ranchers in the plan area with information about the goals, objectives and requirements of this Area Plan. Where individual farmers need assistance to determine what can be done to meet the goals and objectives of the Area Plan, they may contact the county, state, and federal agencies.

3.2.2 Salmon Habitat Recovery Plan

- **Implement the Agricultural Water Quality Management Area Plan that works within the guidelines of the Wallowa County Salmon Habitat Recovery Plan and Multi-Species Strategy.**

The Salmon Habitat Recovery Plan is an important educational tool for water quality and fish habitat recovery. This document is an assessment of the conditions in the county and provides extensive guidance for landowners to correct problems and to prevent them from occurring.

3.2.3 Conservation and Fish Habitat Projects

Wallowa County farmers and ranchers have been conserving the soil, air and water for a long time. Their efforts have intensified with the implementation of the Wallowa County Salmon Habitat Recovery Plan and other programs. Funding for these projects has come from the Bonneville Power Administration, OWEB, and the Bureau of Reclamation. Interested readers can contact the Wallowa SWCD or the Grande Ronde Model Watershed for a map and complete list of projects completed since 1985. Examples of projects include:

- Developing off-stream water for livestock,
- In-stream structures for bank stability and fish habitat,
- Riparian area planting,
- Cross-fencing for better livestock management,

- Economic incentives for direct seeding,
- Irrigation efficiency projects.

In Wallowa County, all government cost-share conservation projects and land use planning decisions that affect natural resources must be reviewed by the county appointed Technical Committee. This committee was set up as part of the Salmon Habitat Recovery Plan.

3.2.4 Individual Farm and Ranch Planning

Many farmers in the county have individual farm plans through the NRCS because of their enrollment in federal farm programs. As of 1985, farm plans became a requirement if operators had Highly Erodible Land on their property, where enrolled in the federal government's farm program and they were annually cropping that ground. The portion of farms in the county that have these plans is about 55 percent.

More and more farms and ranches are developing similar plans as a result of getting government assistance for project work. Individual farm and ranch plans are also a good business tool, and a good method to document the positive effects land management has on water quality and fish habitat.

3.2.5 Effective Monitoring and Feedback

Readers should note that baseline water quality and project monitoring data is currently being collected by a coalition of all interested entities in Wallowa County. This coalition has agreed to use DEQ protocols for water quality monitoring. This coordination of monitoring in the county will minimize duplication of efforts, increase uniformity of data collection procedures and improve data sharing. Local agencies are developing a software program that will make sharing of temperature data easier. The coalition agreed that any data shared would be collected using the appropriate protocols. Over time, with more and better data Wallowa County will be able to assess the success of their conservation and habitat restoration efforts.

3.2.6 Adaptive Management

Adaptive management means making adjustments in management based on feedback from monitoring. This AgWQM Area Plan and its associated Area Rules will be assessed by ODA and the LAC every two years after adoption and adjustments will be made based on monitoring and other assessments.

3.3 Measuring Area Plan Progress And Success

Progress and implementation efforts will be assessed through determination of necessary changes in land management systems, measurement of water quality and/or landscape condition improvement over time, and evaluation of educational techniques and technical and financial tools.

3.3.1 Biennial Reviews

During the biennial review process, ODA, in cooperation with the SWCD, LAC, and DEQ will assess the progress of Area Plan implementation toward achievement of plan goals and objectives. These assessments will include:

Evaluation of implementation activities that have occurred to help achieve plan goals and objectives, including the following:

- Outreach and education activities conducted to promote awareness of water quality issues and encourage agricultural land conditions that protect water quality, and the level of participation in these activities.
- Voluntary conservation projects installed by agricultural landowners and managers in cooperation with the SWCD and other agencies and organizations.
- Number of complaint investigations, the result of each complaint investigation, and corrections of violations.
- Evaluation of the effectiveness of technical and financial assistance sources available to the agricultural community.

Data are reviewed every two years and summarized to the LACs and LMA during the biennial review process.

- An evaluation of available current water quality monitoring data and sources of pollution in the Management Area; and
- A review of load allocations as found in any completed TMDL for the Management Area and the anticipated effectiveness of this plan in meeting the load allocations as described in that TMDL.

ODA currently evaluates other agencies' and organizations' water quality data to answer the following questions.

- What water quality and land condition data from agricultural watersheds are available?
- What are trends in available water quality and land condition data in agricultural watersheds since Area Plan and Rule adoption, and since the last biennial review?

Based on all of these assessments, ODA, SWCDs, LACs, and the State Board of Agriculture will consider making appropriate modifications to Area Plans and Area Rules.

Chapter 4: Implementation, Monitoring and Adaptive Management

4.1 Implementation Update – 2014 to 2016

4.1.1 Projects

Projects 2014-2016	Size	Description	Funding Source
Weed Control – Leafy Spurge	200 ac.	Herbicide, bio control and grazing	OWEB, EQIP, APHIS, Landowner
Weed Control – Meadow Hawkweed	13,284 ac.	Herbicide	EQIP, Landowners
Pipelines *	Serves 1,652 ac. 33,364 ft. pipe	Open spur ditches to pipelines, VFDs	EQIP, OWEB, Landowners
Forest Thinning	530 ac.	Thin overstock stands	EQIP, OWEB, Landowners
Water Developments *		Frost free troughs, pipelines	OWEB, Landowners
Efficient Irrigation	2,360 ac.	Conversion to more efficient sprinklers, new nozzles	EQIP, Landowners
No-till planting	1,655 ac.	Planting using no-till	EQIP, Landowners
Riparian Fence	10,080 ft.	Fenced off creek on both sides	CREP, Landowners
Riparian plantings	25.9 ac.	Tree & shrub establishment	CREP, Landowners
Irrigation diversion	3	Head gate, culvert, pipe, automated head gate	EQIP, OWEB, BOR, SWCD, OWRD, Landowners
River meandering	600 ft.	Installing rearing channels and pools	BPA, OWEB
Range seeding	1,400 ac.	Seeding areas burnt in the Grizzly fire and seeded areas where medusa head was treated.	EQIP, OWEB, Landowners

*** Projects located in Prairie Creek Focus Area**

4.1.2 Education and Outreach

- Chief Joseph Summer Camp – 144 participants
- Poster Contest – "Local Heroes: Your Hard Working Pollinators"
- Monthly Radio Show – upcoming programs, events, informational tips
- Fourth Grade Foresters – tree give-away and lessons about trees
- Fair and Hells Canyon Mule days – partner with Wallowa County Vegetation Dept.
- Water Quality Tours
  - ODA, DEQ and OCA
  - Board of Agriculture
- Kokanee Festival – conservation practices
- Watershed Festival – (SWCD and NRCS) – importance of soils
- Sixth Grade Tour – (partner with local agencies) – natural resources

4.1.3 Funding

- Landowners - $506,000
- NRCS (EQIP, CSP) - $1,700,000
- OWEB (small grants) - $19,883
- OWEB (large grants) - $1,021,274
- BPA - $300,000
- County (Weeds) - $20,000

4.2 Water Quality Monitoring

4.2.1 Water Quality Data Assessment

This basin has six monitoring stations that fit our criteria, though only two of them have extensive data suitable for long-term trend monitoring. Monitoring stations of relevance are on the Minam River, the Wallowa River, and Spring Creek. The Spring Creek sites only have data from 1989 and 2000, and show elevated concentrations of fecal coliform, total phosphorus, TSS, and turbidity.

Water quality on the Wallowa River at Minam has had pH values up to 9.2. The median pH from 1985 to 2001 was 8.3, but there have many instances where pH was excessively high. Monitoring stations on the Wallowa downstream of Rock Creek, and at the hatchery intake, do not show excessively high pH, but these data sets are also limited in time. The Wallowa/Rock Creek did show slightly elevated concentrations of total P and TSS.

By contrast, data for the Minam River at Minam did not show any significant water quality problems. The median pH at this location was 7.8. The two monitoring stations at Minam are the ones with extensive data sets.

Additional monitoring sites are needed in the Wallowa to look at long-term trends. The two existing sites at Minam are probably sufficient for characterizing Minam and Wallowa quality. However, it would be good to have information on the Imnaha River, possibly with a monitoring site near the confluence with Cow Creek. It would also be good to have a monitoring station on the lower Grande Ronde River, downstream of Troy. This would provide information on water quality from drainages in the north side of the basin.

As of December 2011 there was one new monitoring station in LASAR representing agricultural areas. This was Prairie Creek upstream of the Joseph STP. Only two to three data points from 2008 were reported from this station, and no problems were apparent in the data. A closer look at agricultural use in the basin showed that the Minam River station did not have a significant agricultural influence. Water quality issues in the Wallowa site consisted of recent high E. coli counts (up to 816), recent high TP (to 0.26 mg/l), and a few high turbidity readings (to 83).

As of September 2015 the LASAR database no longer had updated information, and the only monitoring station accessible with current data was the Wallowa River @ Minam. Data from 2013 from this had a Water Quality Index score of 85, considered Good. However it also showed declining trends in water quality for pH, DO, NO3/NH3, and E. coli. It also was listed as having Poor quality BOD. The 2014 data had a decreased Water Quality Index score of 84, giving it a rating of Fair. There was no appreciable change in the quality of the individual analytes.

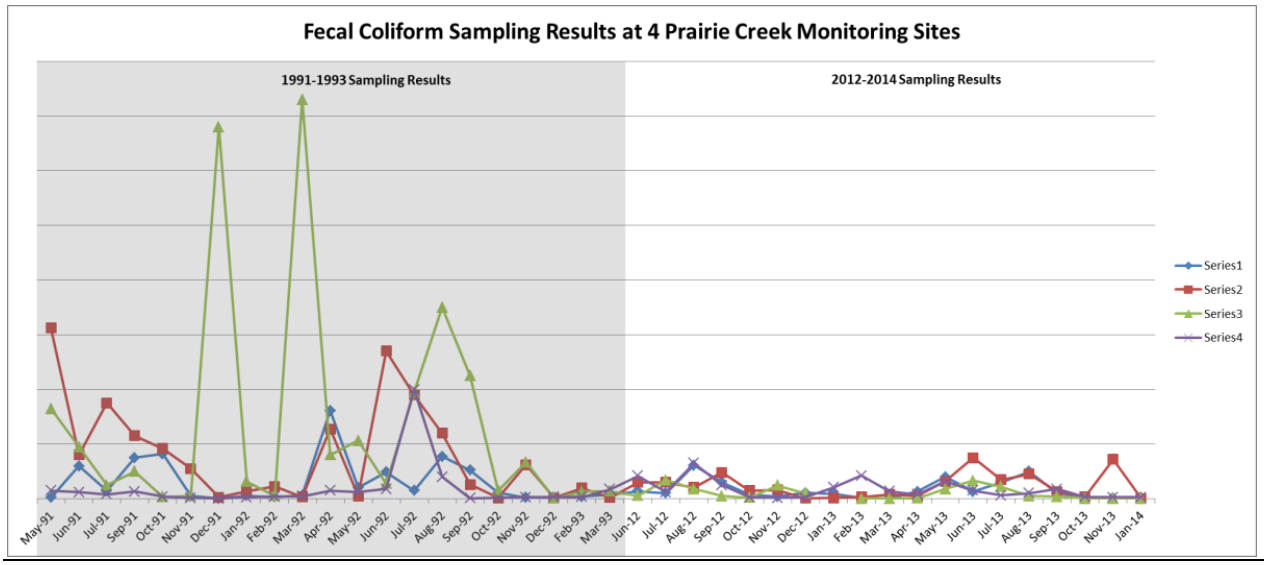
For the Wallowa River @ Minam site, data from 2006-2015 shows a OWQI score of 85, considered Good, with no discernable overall trend. Individual parameters show improving trends in water quality for pH and phosphorus, and a decreasing trend for bacteria. This site is identified as having excellent status for temperature, dissolved oxygen, and total solids; good status for pH; fair status for nitrogen; and poor status for BOD, phosphorus and bacteria.

For the Minam River @ Minam site, data from 2006-2015 shows a OWQI score of 95, considered Excellent, with an overall improving trend. Individual parameters show improving trends in water quality for pH, BOD and nitrogen, and no discernable trends for other parameters. This site is identified as having excellent status for temperature, pH, dissolved oxygen, total solids, nitrogen, phosphorus and bacteria; and fair status for BOD.

4.2.2 Prairie Creek Monitoring

The Prairie Creek Water Quality Monitoring Program began in 1991 with samples taken by the Wallowa SWCD and analyzed by the Bureau of Reclamation (BOR). The Natural Resource Conservation Services (NRCS), and the Water Resources Department were advisors and technical resources for the program. Monitoring was conducted between 1991 and 1993 to evaluate water quality parameters including bacteria, nutrients, turbidity, temperature, and more.

Twenty years later, after numerous conservation practices were implemented in the Prairie Creek watershed, the Wallowa SWCD wanted to see if there were improvements in the water quality and so with the financial assistance of ODA and OWEB began taking water samples again. In spring of 2012 the SWCD began monitoring 12 sites in the Prairie Creek Watershed. Six of the sites are repeat sites from the 1991-1993 monitoring and the other 6 are being used for additional baseline data for future monitoring. The 2012 monitoring program is looking at similar parameters such as bacteria, turbidity, temperature, and nutrients.



Comparing 1990's and 2010's Data

Source: ***Prairie Creek Water Quality Monitoring – Final Report, 2016***

The Prairie Creek Watershed had water quality monitoring samples taken at six sites during both the 1991-1993 and 2012-2015 studies. The repeat sampling capture changes in the Prairie Creek Watershed over the last 20 years. The parameters that were sampled during both studies included pH, turbidity, phosphorous, nitrogen, and fecal coliform.

Water Quality

pH: In the 1990's study 99% of samples were within the Oregon DEQ state standards, and in the 2010's study there was a slight improvement to 100% of samples within that range. The pH levels in Prairie Creek Watershed continue to not be of concern.

Turbidity: In recent years irrigation improvement projects have been installed in the Prairie Creek watershed. Since 2008, seven of these projects were installed by 25 landowners and eliminated over 16 miles of spur ditches in the watershed. Eliminating spur ditches reduces erosion, along with bacteria and nutrient inputs into Prairie Creek.

Turbidity levels over the last 20 years have improved in the Prairie Creek Watershed. In the earlier 1990's Prairie Creek Water Quality study the maximum reading was 134 NTU; in our current study comparing the same sites, the maximum reading was 63 NTU. The previous study stated that a reading of 25 NTU or greater was found to be harmful and even lethal to anadromous fish (Goebel, 1993). In the 1990's, 3% of samples were found to be at or above 25 NTU, and currently, at the same sites 1% of samples are at or above that level.

Nutrients

Phosphorous and nitrogen: The amounts of phosphorous and nitrogen in the Prairie Creek Watershed has decreased over the last 20 years. These decreases can be attributed to the local farmers implementing conservation practices on their operations.

Many Best Management Practices (BMPs) have been Implemented in the Prairie Creek Watershed over the last 20 years by landowners on their own and partnering with Wallowa SWCD, NRCS, and FSA. The practices that have factored into reducing the nitrogen and phosphorous inputs in Prairie Creek include:

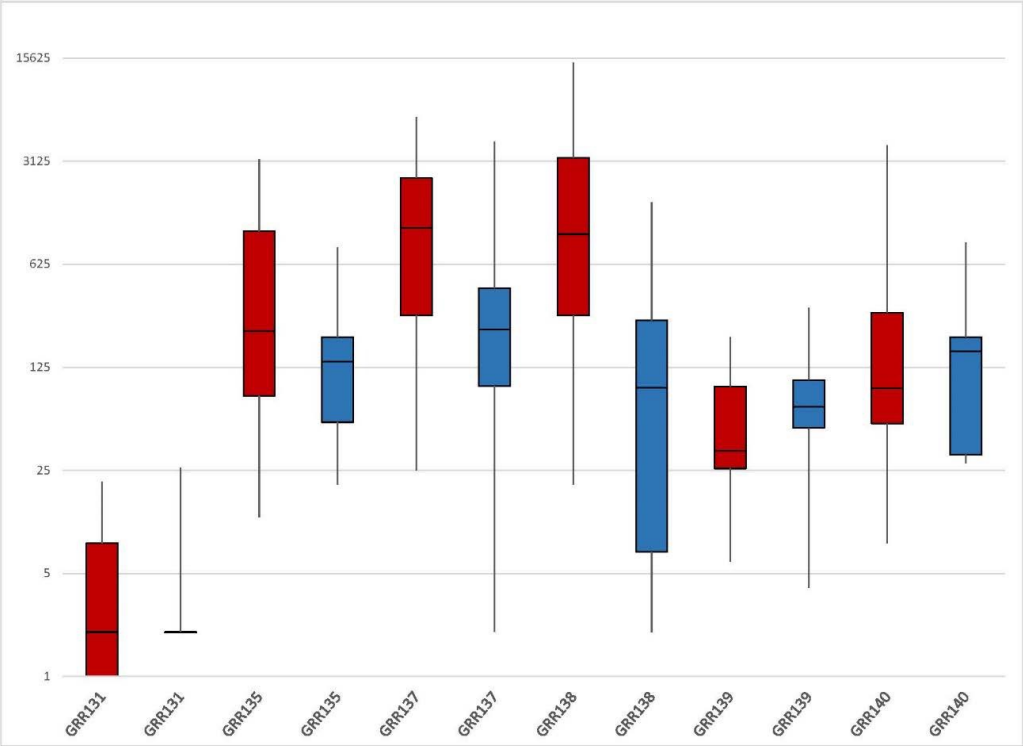
- Manage irrigation to reduce runoff including converting from flood to sprinkler and updating to more efficient systems,
- Increasing size and number of buffers along streams and major ditches,
- Reducing livestock feed lots along Prairie Creek and its tributaries,
- Install off stream watering for livestock,
- Planting cover crops,
- Applying nutrients at the proper time and using the proper amounts,
- Eliminating spur ditches that potentially carry runoff into Prairie Creek.

Bacteria

Fecal Coliform: Fecal coliform is a bacterium that lives in the intestines of warm-blooded animals. This is one of the most common microbiological contaminants of water. In the 1990's study fecal coliform was monitored, it was not until later, in 1996, that E. coli became the standard monitored by Oregon DEQ. In order to compare to past and future data we monitored fecal coliform and E. coli during the entire duration of this study. This will allow us to compare to past and future data no matter which standard is used.

As seen in Figure 12, five of the six sites showed decreases in levels of fecal coliform, and one tributary site had an increase in counts compared to the previous study. Overall, fecal coliform counts have decreased in the Prairie Creek Watershed and landowners continue to make operation changes to improve the health of the watershed.

Figure 12. Fecal



Coliform at six duplicate sites taken in Prairie Creek Watershed, during the 1991 study and 2012 study. The red boxes represent all measurements from 1991-1993, and the blue boxes represent all measurements from 2012-2015.

4.3 Land / Streamside Condition

4.3.1 Focus Area Assessment

As outlined in Section 1.7.3-Focused Implementation in Small Geographic Areas, the Wallowa SWCD selected the Prairie Creek watershed as a focus area for assessment and targeted assistance to landowners. An action plan has been developed with funding from ODA to complete a pre-assessment and outreach. The assessment will focus on streamside vegetation condition and sources of sediment and bacteria runoff.

Streamside Vegetation Pre-Assessment		
Map Category	**Acres**	**Percent**
Tree	20.43	8
Shrub	14.95	6
Grass	126.27	49
Bare	0.28	0
Water	24.99	10
Ag Infrastructure	1.78	1
Tree-Ag	0.00	0
Shrub-Ag	0.00	0
Grass-Ag	67.61	26
Bare-Ag	0.84	0
Total	**257.15**	**100**

Previously, the SWCD had evaluated erosion caused by excess irrigation water returning to Prairie Creek from the laterals. This assessment led to prioritization of numerous projects to pipe the laterals, therefore reducing return flows to Prairie Creek and irrigation induced erosion.

In 2015, NRCS and the SWCD evaluated eroded streambanks (cutbanks) in Prairie Creek and are developing strategy to assist landowners address those problem areas.

4.4 Riparian Aerial Photo Monitoring

Aerial photo monitoring was first completed in the Wallowa management area in August, 2004. Five streams within the management area were analyzed. Of these, four were heavily dominated by the grass/agriculture land cover category, and one (Lightning Creek) was dominated by tree cover. Grass/agriculture percentages for Crow, Parsnip, Pine, and Prairie Creeks ranged from 65-90%, while tree coverage on Lightning Creek ranged from 55 to 88%. Significant amounts of bare/agriculture ground were present on Parsnip, Pine, and Prairie Creeks. Parsnip and Crow Creeks had high percentages of infrastructure on one bank, due to roads. Lightning Creek had the highest riparian index score (62.98) while Prairie Creek had the lowest (30.45).

The reach of Lightning Creek observed appeared to be managed by a single ranch, and it is surrounded to the east and west by Federal land. The channel appeared to be stable with little signs of overgrazing or erosion.

Crow Creek showed some areas of overgrazing, and about 5-10% of the streambanks appeared unstable. Pine Creek was similar to Crow, with about 20% of the reach on the upstream end showing unstable, eroding streambanks.

Parsnip Creek had some eroding banks, and an area where the channel is poorly defined (e.g. no visible banks). There is also a large diversion to a canal at the lower end of the stream.

About 50% of Prairie Creek appeared to be ditched. Much of the sections that were not ditched appeared to be unstable and eroding.

Aerial photos of the selected segments were scheduled to be collected again in 2009, but this was not possible due to budget cuts.

4.5 Adaptive Management

At the 2014 Biennial Review, LAC members agreed to a reformatted version of the Area Plan, adopted two measurable objectives for evaluating the effectiveness of the program, and were introduced to an online tool for mapping streamside vegetation.

At the 2016 biennial Review, LAC members reviewed current monitoring data and agreed to update measurable objectives for the focus area.

Attachment A - 2012 DEQ 303(d) List of Impaired Water Bodies

Category 4A – TMDL Approved				
Lower Grande Ronde Subbasin				
Water Body	**Reach - RM**	**Pollutant**	**Season**	**Criteria**
Chesnimnus Ck	0 - 26.4	Temperature	Year Round	Salmon/Trout – rearing & migration
Courtney Ck	0 - 14.3	Temperature	Year Round	Salmon/Trout – rearing & migration
Crow Ck	0 - 20.2	Temperature	Year Round	Salmon/Trout – rearing & migration
Elk Ck	0 - 13.7	Temperature	Summer	Rearing
Grouse Ck	0 - 1.4	Temperature	Year Round	Core cold water habitat
Joseph Ck	8.1 - 48.2	Temperature	Year Round	Salmon/Trout – rearing & migration
Mud Ck	0 - 23	Temperature	Year Round	Salmon/Trout – rearing & migration
Peavine Ck	0 - 5.3	Temperature	Summer	Rearing
Salmon Ck	0 - 13.6	Temperature	Summer	Rearing
Sickfoot Ck	0 - 7.5	Temperature	Year Round	Salmon/Trout – rearing & migration
Wallupa Ck	0 - 10.1	Temperature	Year Round	Salmon/Trout – rearing & migration
Wenaha River	0 - 10.3	Temperature	Year Round	Core cold water habitat
	6.7 - 10.3	Temperature	Aug 15-June 15	Salmon/steelhead spawning
Wildcat Ck	0 - 16	Temperature	Year Round	Salmon/Trout – rearing & migration
Grande Ronde River	35.6 – 172.4	Temperature	Year Round	Salmon/Trout – rearing & migration
Wallowa Subbasin				
Bear Ck	0 – 7.5	Temperature	Year Round	Core cold water habitat
Bear Ck	2.8 - 9	Temperature	Aug 15-June 15	Salmon-steelhead spawning
Deer Ck	0 – 10.2	Temperature	Summer	Bull Trout
Fisher Ck	0 – 0.5	Temperature	Jan 1 – June 15	Salmon-steelhead spawning
Fisher Ck	0 – 5.1	Temperature	Year Round	Core cold water habitat
Howard Ck	0 – 9	Temperature	Jan 1 – June 15	Salmon-steelhead spawning
Howard Ck	0 – 11.2	Temperature	Year Round	Core cold water habitat
Little Bear Ck	0 – 8	Temperature	Summer	Bull Trout
Minam River	0 – 12.6	Temperature	Year Round	Core cold water habitat
Prairie Ck	0 – 12.5	E. Coli	Summer	Water contact recreation
Prairie Ck	0 – 12.5	Fecal coliform	Fall/winter/spring	Water contact recreation
Spring Ck	0 – 4.5	Fecal coliform	Fall/winter/spring	Water contact recreation
Wallowa River	0 – 50	E. Coli	Summer	Water contact recreation
Wallowa River	0 – 50	Fecal coliform	Summer	Water contact recreation
Wallowa River	0 – 53.7	Temperature	Year Round	Core cold water habitat
Imnaha Subbasin				
Big Sheep Ck	0 - 10	Temperature	Year Round	Salmon/Trout- rearing and migration
Crazyman Ck	0 - 6.8	Temperature	Year Round	Bull Trout
Dry Ck	0 – 4.2	Temperature	Year Round	Bull Trout
Freezeout Ck	0 – 8.5	Temperature	Year Round	Salmon/Trout- rearing and migration
Grouse Ck	0 – 17.3	Temperature	Jan 1 – June 15	Salmon and steelhead spawning

Grouse Ck	0 – 17.3	Temperature	Year Round	Core cold water habitat
Gumboot Ck	0 – 7.4	Temperature	Year Round	Bull Trout
Imnaha River	0 – 35.8	Temperature	Year Round	Salmon/Trout- rearing and migration
Imnaha River	35.7 – 42.7	Temperature	Aug 1 – June 15	Salmon and steelhead spawning
Imnaha River	35.8 – 42.7	Temperature	Year Round	Core cold water habitat
Imnaha River	42.7 – 72.2	Temperature	Year Round	Bull Trout
Lightning Ck	0 – 24.8	Temperature	Summer	Salmonid fish rearing; anadromous fish passage
Little Sheep Creek	0 - 26	Temperature	Year Round	Salmon/Trout- rearing and migration

Category 5 – TMDL needed				
Lower Grande Ronde Subbasin				
Water Body	**Reach – RM**	**Pollutant**	**Season**	**Criteria**
Beaver Ck	0 – 3.9	Biological Criteria	Year Round	Biocriteria
Chesnimnus Ck	0 – 26.4	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Elk Ck	0 – 13.7	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Grande Ronde River	36.3 – 80.7	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Grande Ronde River	65.9 – 104.9	Dissolved Oxygen	Jan 1 – May 15	Salmon/steelhead spawning
Wallowa Subbasin				
Bear Ck	0 – 7.5	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
E. Lostine River	0 – 6.3	Biological Criteria	Year Round	Biocriteria
Hurricane Ck	0 – 7.6	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Lostine River	0 – 9	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Minam River	0 – 49.4	Copper*	Year Round	Toxic substances
Minam River	0 – 10.2	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Prairie Ck	0 – 12.5	Dissolved oxygen	Spring/summer	Spawning
Prairie Ck	0 – 12.5	Sedimentation	Undefined	Resident fish/aquatic life;

				Salmonid rearing; salmonid spawning
Spring Ck	0 – 4.5	Dissolved oxygen	Spring/summer	Spawning
Wallowa River	0 – 35.7	Dissolved oxygen	Jan 1 – June 15	Spawning
Wallowa River	0 – 50	pH	Summer	pH 6.5 to 9.0
Wallowa River	0 – 50	Sedimentation	Undefined	Resident fish/aquatic life; Salmonid rearing; salmonid spawning
Imnaha Subbasin				
Imnaha River	0 – 72.2	Biological Criteria	Year Round	Aquatic Life
**** Added in 2012***				

Attachment B - Definitions

Gullies - (has the meaning given in OAR 603-095-0010(1))

means gullies or channels which at the largest dimension have a cross sectional area of at least one square foot and which occur at the same location for two or more consecutive years.

Site Capability

is the highest ecological status an area can attain given political, social, or economical constraints, which are often referred to as limiting factors. Capability does not apply to uses such as grazing, farming, recreation and timber practices, which can be changed. While these uses can affect the condition of a riparian area, they do not prevent it from achieving potential. Capability only applies to constraints that the land manager cannot eliminate or change through a management action.

"Soil Loss Tolerance Factor" or "T" - (OAR 603-095-0010(45))

means maximum average annual amount of soil loss from erosion, expressed in tons per acre per year, that is allowable on a particular soil. This represents the tons of soil (related to the specific soil series), which can be lost through erosion annually without causing significant degradation of the soil or potential for crop production.

Water Pollution - (ORS 468B.005(5))

means such alteration of the physical, chemical or biological properties of any water 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 of the habitat thereof.

"Water" or "the waters of the state" - (ORS 468B.005(10))

includes 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 effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

"Wastes" - (ORS 468B.005(9))

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.

Compliance Definitions

A **Letter of Compliance (LOC)** 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, that are likely to cause a water quality problem in the near future.

A **Water Quality Advisory (WQA)** 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.

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 (LOW)** 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** (POC) 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 (CP)** 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.