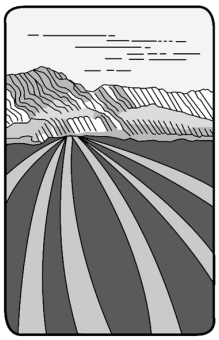

Oregon
Department
of Agriculture

Walla Walla Agricultural Water Quality Management Area Plan

February 2016

Developed by the:

Walla Walla Local Advisory Committee
Oregon Department of Agriculture

With support from the:
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Table of Contents

Acronyms and Terms Used in this Document

Ag Water Quality – Agricultural Water Quality
Area Plan – Agricultural Water Quality Management Area Plan
CAFO – Confined Animal Feeding Operation
CRP – Conservation Reserve Program
CREP – Conservation Reserve Enhancement Program
CTUIR – Confederated Tribes of the Umatilla Indian Reservation
CWA – Clean Water Act
CZARA – Coastal Zone Act Reauthorization Amendments
DEQ – Oregon Department of Environmental Quality
DMA – Designated Management Agency
DSL – Department of State Lands
EPA – United States Environmental Protection Agency
EQC – Environmental Quality Commission
EQIP – Environmental Quality Incentive Program
FSA – Farm Service Agency
HUC – Hydrologic Unit Code
IPM – Integrated Pest Management
LAC – Local Advisory Committee
LASAR – Laboratory Analytical Storage and Retrieval
LMA – Local Management Agency
Management Area – Agricultural Water Quality Management Area
MOA – Memorandum of Agreement
NON – Notice of Non-Compliance
NRCS – Natural Resources Conservation Service
OAR – Oregon Administrative Rules
ODA – Oregon Department of Agriculture
ODF – Oregon Department of Forestry
ORS – Oregon Revised Statute
OSU – Oregon State University
OWEB – Oregon Watershed Enhancement Board
OWQI – Oregon Water Quality Index
PCM – Prevention and Control Measure
PMP – Pesticides Management Plan
PSP – Pesticides Stewardship Partnership
Regulations – Agricultural Water Quality Program and Management Area Regulations
RUSLE – Revised Universal Soil Loss Equation
SWCD – Soil and Water Conservation District
T – Soil Loss Tolerance Factor
TMDL – Total Maximum Daily Load
USDA – United States Department of Agriculture
WQPMT – Water Quality Pesticides Management Team
WRP – Wetlands Reserve Program
WWBWC – Walla Walla Basin Watershed Council

Foreword

This Agricultural Water Quality Management Area Plan (Area Plan) provides guidance for addressing agricultural water quality issues in the Agricultural Water Quality Management Area (Management Area). The purpose of 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 Area Rules (regulations), 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 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. Summarizes 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 local agricultural 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, 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 OAR regulations that describe local agricultural water quality regulatory requirements. ODA will exercise its regulatory authority for the prevention and control of water pollution from agricultural activities under the Ag Water Quality Program's general regulations (OAR 603-090-0000 to 603-090-0120) and under the regulations for this Management Area (OAR 603-095-1700). The Ag Water Quality Program's general OARs guide the Ag Water Quality Program, and the OARs for the Management Area are the regulations that landowners are required to follow.

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:

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

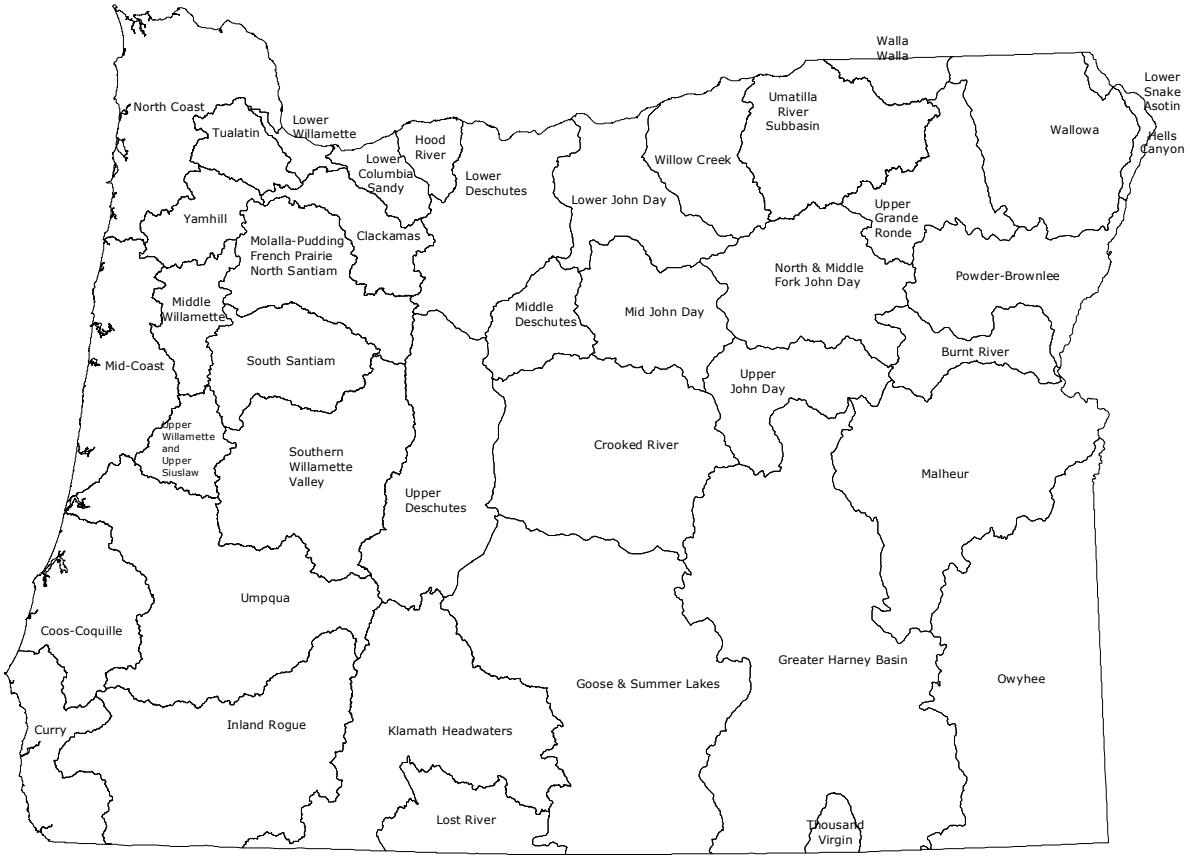
1.2 History of the Ag Water Quality Program

In 1993, the Oregon Legislature passed the Agricultural Water Quality Management Act (formerly known as "Senate Bill 1010") 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 regulations were developed and subsequently revised pursuant to these statutes.

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

- Providing education, outreach, and technical assistance to landowners.
- Implementing projects to improve agricultural water quality.
- Investigating complaints of potential violations of regulations.
- Conducting biennial reviews of Area Plans and associated regulations.
- 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 (ODA)

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 is intended to meet the needs and requirements related to agricultural water pollution including:

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

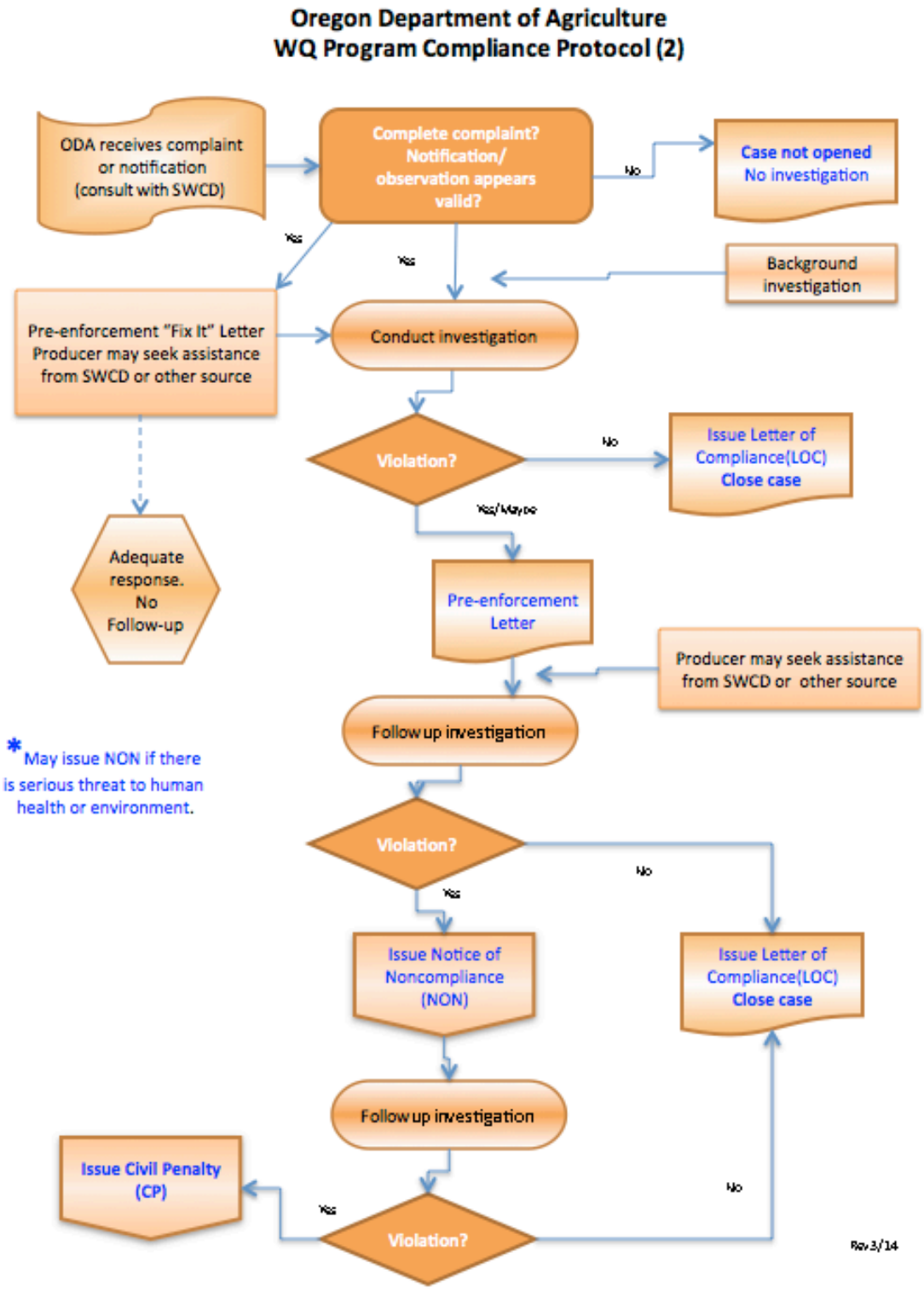
The Oregon Department of Agriculture has the legal authority to develop and implement Area Plans and associated regulations for the prevention and control of water pollution from agricultural activities and soil erosion, where such plans are required by state or federal law (ORS 568.909 and ORS 568.912). ODA bases Area Plans and regulations on scientific information (ORS 568.909). ODA works in partnership with SWCDs, LACs, DEQ, and other partners to implement, evaluate, and update the Area Plans and associated regulations. ODA has responsibility for any actions related to enforcement or determination of noncompliance with regulations (OAR 603-090-0080 through OAR 603-090-0120). ORS 568.912(1) and ORS 568.912(2) give ODA the authority to adopt regulations 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 effecting water quality in the Management Area. The regulations are outlined as a set of minimum standards that landowners and operators must be meet on all agricultural or rural lands.

ODA will use enforcement where appropriate and necessary to gain compliance with agricultural water quality regulations. 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 regulations. See the Compliance Flow Chart for a diagram of the compliance process. If and when other governmental policies, programs, or regulations conflict with the Area Plan or associated regulations, ODA will consult with the appropriate agency to resolve the conflict in a reasonable manner.

Compliance Flow Chart

Definitions of terms used in the compliance flow chart are included in Section 3.4.1.



1.3.2 Local Management Agency (LMA)

A Local Management Agency (LMA) is an organization that ODA designated to implement 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 (LAC)

For each Management Area, the director of ODA appoints an LAC (OAR 603-090-0020) with up to 12 members to assist with the development and subsequent biennial reviews of the local Area Plan and associated regulations. 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 regulations.
- 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 regulations.
- Submit written biennial reports to the Board of Agriculture and the ODA director.

1.3.4 Agriculture's Role

Each individual landowner or operator in the Management Area is required to comply with the regulations, which set minimum standards. However, the regulations alone are not enough. To achieve water quality standards, individual landowners also need to attain land conditions that achieve the goals and objectives of the voluntary Area Plan. Each landowner or operator is not individually responsible for achieving water quality standards, agricultural pollution limits, or the goals and objectives of the Area Plan. These are the responsibility of the agricultural community collectively. Achieving water quality standards will take the collective efforts of all people and land uses within the watershed, with agriculture playing its role.

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 may also choose to improve their land conditions without assistance.

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

- 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 associated regulations. 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 regulations, as needed, to address comments received. The director of ODA adopted the Area Plans and regulations in consultation with the Board of Agriculture.

The Oregon Department of Agriculture, LACs, and SWCDs conduct biennial reviews of the Area Plans and regulations. Partners, stakeholders, and the general public are invited to participate in the process. Any future revisions to the regulations will include a 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 are also regulated as point sources. Irrigation water discharges 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 sources include erosion and contaminated runoff from agricultural and forest lands, urban and suburban areas, roads, and natural sources. In addition, groundwater can be impacted from nonpoint sources including agricultural amendments (fertilizers and manure).

1.4.2 Beneficial Uses and Parameters of Concern

Beneficial uses 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 are usually fish and aquatic life, water contact recreation, and public and private domestic water supply. These uses are generally the first to be impaired because they are affected at lower levels of pollution. While there may not be severe impacts on water quality from a single source or sector, the combined effects from all sources contribute to the impairment of

beneficial uses in the Management Area. Beneficial uses that have the potential to be impacted in this Management Area are summarized in Chapter 2.

Many water bodies throughout Oregon do not meet state water quality standards. 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 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 on the 303(d) list.

A TMDL includes an assessment of water quality data and current conditions and describes a plan to restore polluted waterways to conditions that meet water quality standards. TMDLs specify the daily amount of pollution that a water body can receive and still meet water quality standards. In the TMDL, point sources are assigned pollution limits as "waste load allocations" that are implemented via waste discharge permits, while nonpoint sources (agriculture, forestry, and urban) are assigned pollution limits as "load allocations." 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) list), the TMDLs, and the agricultural load allocations for the TMDLs that apply to this Management Area are summarized in Chapter 2.

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

Following passage of the Agricultural Water Quality Management Act in 1993, the Oregon legislature passed Senate Bill 502 in 1995 to clarify that ODA is the state agency responsible for regulating farming activities to protect water quality. Codified as ORS 561.191, this statute states

that ODA "… shall develop and implement any program or rules that directly regulate farming practices, as defined in ORS 30.930, that are for the purpose of protecting water quality …" It further 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 Senate Bill 502, ODA incorporated ORS 468B into all of the Area Plans and associated regulations in the state.

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."

<u>Definitions used in ORS 468B.025 and 468B.050:</u>

"Wastes" means sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive or other substances, which will or may cause pollution or tend to cause pollution of any waters of the state. Additionally, OAR 603-095-0010(53) includes but is not limited to commercial fertilizers, soil amendments, composts, animal wastes, vegetative materials, or any other wastes.

"Pollution or water pollution" means such alteration of the physical, chemical, or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.

"Water" or "the waters of the state" include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters

which do not combine or affect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

1.4.5 Streamside Vegetation and Agricultural Water Quality

Across Oregon, the Ag Water Quality Program emphasizes streamside vegetation protection and enhancement to prevent and control agricultural water pollution. Streamside vegetation provides three primary water quality functions: shade for cooler stream temperatures, streambank stability, and filtration of pollutants. Other water quality functions include: water storage for cooler and later season flows, sediment trapping that builds streambanks and floodplains, narrowing and deepening of channels, and biological uptake of sediment, organic material, nutrients, and pesticides.

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

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

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 (e.g., channelization, roads, modified flows, past land management). Site-capable vegetation can be determined for a specific site based on: current streamside vegetation at the site, streamside vegetation at nearby reference sites with similar natural characteristics, 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

1.5.1 Confined Animal Feeding Operations

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. Once 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 regulations 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). Department of Environmental Quality, ODA, and Oregon State University Extension Service work with landowners, SWCDs, watershed councils, and other local partners to voluntarily reduce pesticide levels while improving water quality and crop management. 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/PEST/water_quality.shtml). The PMP, completed in 2011, strives to protect drinking water supplies and the environment from pesticide contamination, while recognizing the important role that pesticides have in maintaining a strong state economy, managing natural resources, and preventing human disease. By managing the pesticides that are currently approved for use by the United States Environmental Protection Agency (US EPA) and Oregon in both 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 community-based protection and 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. Agricultural activities are required to meet those water quality standards that contribute to safe drinking water.

1.6 Partner Agencies and Organizations

1.6.1 Oregon Department of Environmental Quality (DEQ)

The US EPA delegated authority to DEQ under the federal CWA for protection of water quality in Oregon. In turn, DEQ is the lead state agency with overall authority to regulate water quality in Oregon. DEQ coordinates with other state agencies, including ODA and ODF, to meet the requirements of the CWA. Department of Environmental Quality sets water quality standards and develops TMDLs for impaired waterbodies. 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.

The Department of Environmental Quality designated ODA as the DMA for water pollution control activities on agricultural and rural lands in Oregon to coordinate meeting agricultural TMDL load allocations.

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 regulations in collaboration with DEQ.
    - ODA will determine the percentage of lands achieving compliance with Management Area regulations.
    - ODA will determine whether the target percentages of lands meeting the desired land conditions, as outlined in the goals and objectives of the Area Plans, are being achieved.
- ODA and DEQ will review and evaluate existing information 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 regulations. The petition must allege, with reasonable specificity, that the Area Plan or associated regulations are not adequate to achieve applicable state and federal water quality standards (ORS 568.930(3)(a)).

1.6.2 Other Partners

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 for agricultural water quality. ODA is working also 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 are primarily 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 Condition and Water Quality

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

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

- Landowners can see land conditions and have direct control over them.
- It can be difficult to separate agriculture's influence on water quality from other land uses.
- 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 or a need for additional implementation before water quality improves.
- Agricultural improvements in water quality 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

Focus Areas

A Focus Area is a small watershed with significant water quality or land condition concerns that are 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 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 currently underway in this Management Area.

1.8 Implementation, Monitoring, Evaluation, and Adaptive Management

ODA, the LAC and the LMA will assess the effectiveness of the Area Plan and associated regulations 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 across the entire Management Area and within the Focus Area. ODA conducts land condition and water quality monitoring at the statewide level and will analyze this and other agencies' and organizations' local monitoring data. The 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 acquired specifically for this purpose. ODA focuses on land condition monitoring of streamside areas because these areas have such a broad influence over water quality. Stream segments representing 10 to 15 percent of the agricultural lands in each Management Area were randomly selected for 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 regulations 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 associated regulations. 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 regulations 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 Designated Management Agency (DMA) for water pollution control activities on agricultural and rural lands in the Walla Walla 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 Umatilla County Soil and Water Conservation District (SWCD) is the Local Management Agency (LMA) designated by ODA for development and implementation of the Area Plan and projects in the Management Area. The Walla Walla Basin Watershed Council (WWBWC) will assist the LMA in implementation and review of the Area Plan and related projects. 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

This document 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. Members are:

Name	Area	Operation	Affiliations
Dennis Rea	Spofford, NF WWR	Dryland & irrigated crops, livestock	OWGL
Bob Lewis, Chair	Stateline, ELWWR	Irrigated crops, environmental consultant	
Jerry Zahl	College Place, WA	Ag. Consultant – field man	
Vern Rodighiero	M-F	Orchard crops,	WWBWC, WWR Flood Control Dist., Horticulture Society
Brian Wolcott	M-F	Watershed Council Exec. Dir.	WWBWC
Herb March	Couse Creek	Dryland crops	
Lance Bullock	WW River	Orchard	

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.

2.2 Area Plan and Regulations: Development and History

The director of ODA approved this Area Plan and Area Rules in 2002.

Since approval, the LAC met in 2004, 2007, 2009, 2012, 2014 and 2016 to review and update the Area Plan and regulations. The review process included assessment of the progress of Area Plan implementation toward achievement of Plan goals and objectives.

The Area Plan was revised in 2007 to add TMDL information, updated in 2012 to add information about monitoring and Focus Areas, and reformatted in 2014.

2.3 Geographic and Programmatic Scope

The operational boundaries of this Area Plan include all private agricultural and rural land in Oregon that drains into the Walla Walla River and its tributaries. Federally managed land and those activities subject to the Oregon Forest Practices Act are exempted from this Area Plan but are subject to water quality management plans developed by the respective designated management agencies. This Area Plan applies to agricultural lands in current use and those lying idle or on which management has been deferred. This Area Plan also applies to rural lands not in agricultural use such as private roads and rural residential properties. The operational boundaries of the Plan area are defined in rule OAR 603- 095-1720.

Area Rules have been formally adopted to implement this Area Plan. Area Rules define the planning area, provide prevention and control measures to protect water quality, provide exceptions to the prevention and control measures and describe a complaint resolution process. Area Rules are presented in this Area Plan and indicated by bold type within a border.

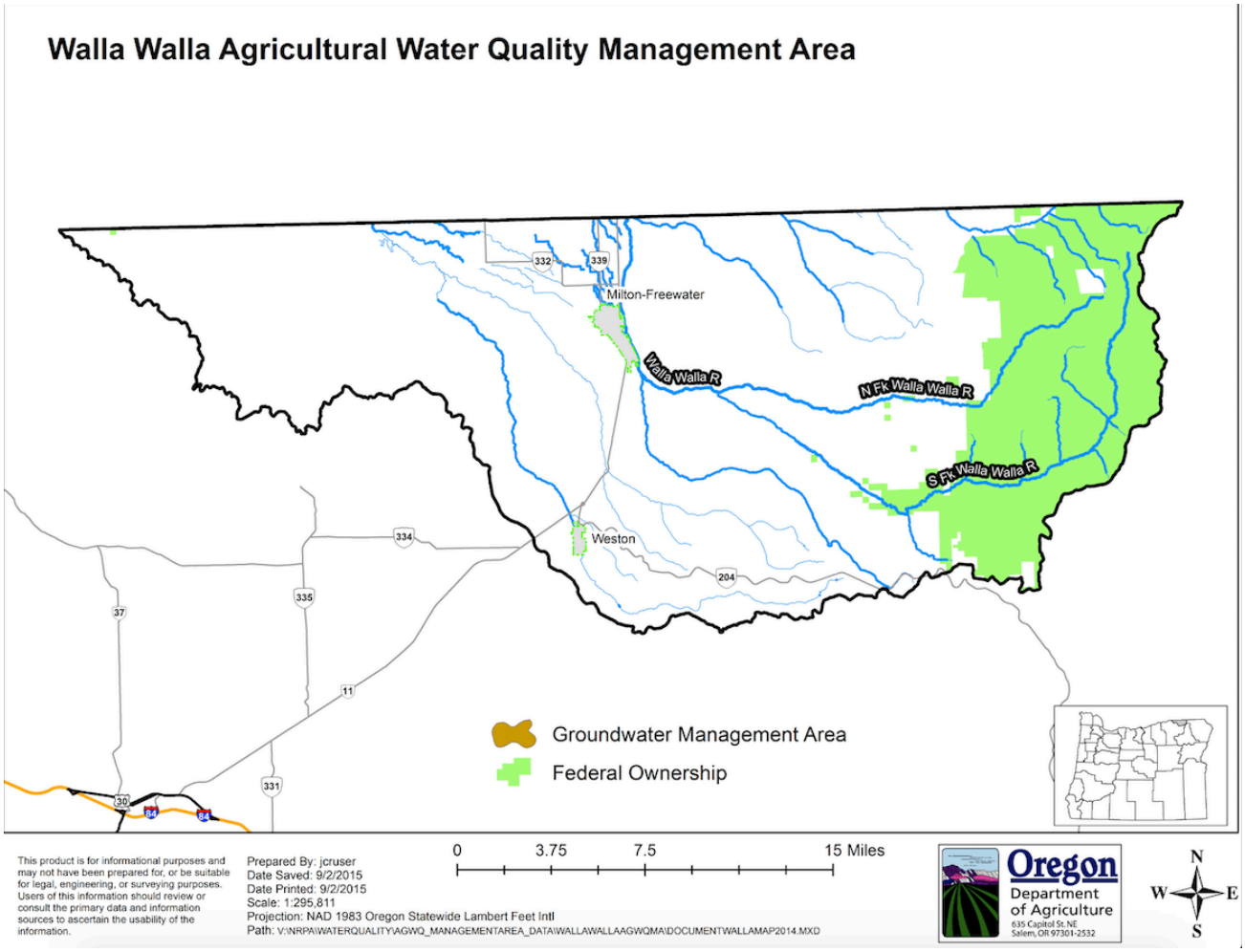
603-095-1700 Purpose
(1) These rules have been developed to implement a water quality management area plan for the subbasin pursuant to authorities vested in the department through ORS 568.900- 568.933, and ORS 561.191-561.191. The area plan is known as the Walla Walla AgWQM area plan.
(2) The purpose of these rules is to outline requirements for landowners in the Walla Walla AgWQM Area, for the prevention and control of water pollution from agricultural activities and soil erosion. Compliance with Division 95 rules is expected to aid in the achievement of applicable water quality standards in the Walla Walla AgWQM Area.

2.4 Geographic Area And Physical Setting

2.4.1 Location

The Walla Walla River Basin, located in southeast Washington and northeast Oregon, encompasses 1,758 square miles (1,125,120 acres). The portion of the basin in Oregon is 27 percent or 480 square miles. The Oregon Walla Walla River subbasin is bounded by the Oregon-Washington state-line (on the north), by the Blue Mountains (on the east and the south), and by Umatilla River Basin and the Columbia River (on the west). The Walla Walla River originates in the Blue Mountains and flows northwesterly, crossing into Washington State at river mile (RM) 40, and entering the Columbia River at Wallula, WA (RM 313). The Oregon portion of the subbasin has eight watersheds: mainstem Walla Walla River (including branches of the Little Walla Walla River), South Fork Walla Walla River, North Fork Walla Walla River, Pine Creek, Dry Creek, Birch Creek, Vansycle Canyon and Couse Creek. Two other watersheds, Cottonwood Creek and Mill Creek, lying partially in Oregon, are included in the Plan area. This Area Plan applies only to the Oregon portion of the basin.

2.4.2 Map of Management Area



2.4.3 Climate

The climate in the basin is continental where winters are cold, but generally not severe, and summer days are hot, but nights are fairly cool. Average daytime high temperatures generally decrease with increasing elevation. Lower elevation area temperatures average 50° to 55° Fahrenheit (F) with extreme temperatures of 115° and -21°F recorded in recent years. Precipitation ranges from less than ten inches in a narrow band along the Columbia River to more than 40 inches at high elevations in the Blue Mountains. Most precipitation occurs between October and May with snow in the upper elevations.

2.4.4 Geology

Elevations in the Walla Walla River basin are about 270 feet at the Columbia River, about 3,000 feet along the base of the Blue Mountains, and up to 6,000 feet at mountain crests. The elevation of Milton-Freewater is about 950 feet. Multiple lava flows exceeding 2,500 feet in thickness, known as the "Columbia River Basalt," underlie nearly the entire subbasin. The river basin is divided into two physiographic regions, the Deschutes-Umatilla Plateau and the Blue Mountains.

The Deschutes-Umatilla Plateau is a broad upland plain formed by flow upon flow of basalt,

which dip gently northward from the Blue Mountains to the Columbia River. The Blue Mountain region includes the extreme northern extension of the Blue Mountains of Oregon. It was formed by uplifting, folding, faulting, and erosion of a variety of volcanic, sedimentary and metamorphic rock and is characterized by flat-topped ridges, steep-walled canyons, and forested mountain slopes.

The Walla Walla syncline (a broad u-shaped fold) forms the center of the Walla Walla subbasin and forms a deposition basin between the upland areas. These numerous sedimentary deposits include both areas of clay and gravels deposited on top of the basalt. Younger sedimentary deposits overlie the clay and gravel units. (Umatilla Basin Report, 1988)

2.4.5 Hydrology

The Walla Walla River and its tributaries drain about 480 square miles in Oregon. Water availability in the Walla Walla River Basin is dependent on high-elevation snowpack in the Blue Mountains. Runoff occurs anytime during the precipitation period of October through May, with peaks occurring in April. Flows diminish rapidly after May, reaching their lowest levels in August and September. In late fall and winter, stream flows increase in response to storms migrating in from the Pacific Ocean.

2.4.6 Soils

An extensive deposit of silty clay known as the Palouse Formation covers much of the uplands. Recent alluvium, consisting of clay, silt, sand, and gravel deposited by present-day rivers and streams is common in river valleys and flood plains. (Umatilla Basin Report, 1988)

A deep deposit of loess (windblown silt and fine sand) covers much of the subbasin that is used for agricultural purposes. Loess is highly erodible, yielding sediment, particularly in the middle and lower reaches of the main stem Walla Walla River. (Watershed Assessment, Upper Walla Walla River Subbasin, 1997).

See Appendix 1 for more detailed description of general soil types. The *Soil Survey of Umatilla County Area, Oregon, 1988,* provides more information about the characteristics of specific soil types found in the area.

2.4.7 Vegetation

Currently, vegetation in the headwaters of the drainage is primarily evergreen forest, dominated in the higher elevations by Douglas fir and grand fir with an understory of shrubs, grasses, and forbs. In the lower elevation, there is a more open forest dominated by ponderosa pine.

Mid-elevation lands are characterized by stands of timber changing into brush and grass as the elevation declines. Past land management has eliminated much of the native sagebrush and bunchgrass; these have widely been replaced by noxious weeds and other undesirable grasses, shrubs, and broadleaf weeds. Large mid-lower elevation areas have been converted into dryland farming. This is a transition zone, where farmland is intermingled with range. Often, the north slopes will be farmed while the west and south slopes, with shallower soils, are used as range.

A riparian community dominated by cottonwood, alder, willow, and various shrubs occurs throughout the river basin. Cultivation, logging, domestic livestock grazing, residential and commercial development, and flood control activities have affected riparian vegetation

throughout much of the mid-lower elevation reaches of the subbasin.

2.4.8 Land Ownership and Land Use

According to the Umatilla Basin Report, 1988, the total acreage in the Oregon portion of the Walla Walla basin is 311,982 acres. Land in private ownership is 256,111 acres (81.7%), mostly in cropland or rangeland. The public owns 55,871 acres (17.8%); the US Forest Service manages 53,588 acres, the Bureau of Land Management manages 1,942 acres, and the state manages 41 acres. The US Forest Service has 136 acres of land in the Wenaha-Tucannon Wilderness Area that lie within the Walla Walla River basin.

Agriculture and related trades and industries are the economic base for the area. Production of a number of important food crops has led to the development of a large food-processing complex in the valley. Since farm-gate value is reported for Umatilla County as a whole ($250 million), it is difficult to determine an exact economic value for agriculture in the Walla Walla River basin alone. 1999 statistics, from the Oregon State University (OSU) Extension Information Office, indicate the value of tree fruit crops and alfalfa seed, which are grown almost exclusively in the Walla Walla basin, at $8.2 million.

There are about 133,000 acres of cropland in the Walla Walla River basin. Grains, predominantly wheat, account for about 50 percent of crops grown and are located primarily on the higher dryland areas. Green peas account for about 13 percent and are grown on the drylands where the rainfall is adequate, usually in rotation with wheat. Commercial vegetable and fruit production, concentrated north of Milton-Freewater account for about nine percent of the acreage; pasture, alfalfa and other hay account for about 15 percent; and the remainder is idle or fallow. Approximately 20,000 acres are irrigated with water that is withdrawn from wells and from surface sources.

Livestock production is important in the valley. Most of the estimated 4,800 cow-calf pairs are raised on irrigated pastures with summer grazing on the slopes of the Blue Mountains. There are some small feedlots and dairies in the subbasin.

Forested land in the subbasin is about 88,200 acres. National forests comprise about 54 percent, private holdings about 43 percent and state and local government less than 3 percent. Most forestland has been logged at least once.

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have treaty rights and interests in their traditional homeland, which includes the entire Walla Walla Basin, and those relating to natural resources and water quality, such as fishing and subsistence activities.

2.4.9 Water Yield and Flow

The hydrology of the Walla Walla drainage is complex due to its geology and extensive development. The Walla Walla River's flow in Oregon comes largely from two tributaries: the North and South Forks Walla Walla River. Both forks emerge from deep basaltic canyons and join to form the Walla Walla River mainstem about five miles southeast of Milton-Freewater.

Active gauges are maintained on the North and South Forks of the Walla Walla River. The South Fork is the larger of the two streams. Average annual yield of the South Fork is more than three times that of the North Fork. Together, they yield about 198,000 acre-feet per year.

The Walla Walla River has created an extensive alluvial fan from the gravels supplied by its forks and its channel. Once it flows out of the bedrock canyons of its headwaters, the Walla Walla dissipates a portion of its flow into the deposited gravels. Historically, the mainstem dispersed into multiple channels spreading across the valley floor. The multiple channels, including the Little Walla Walla River, are now used as natural irrigation ditches to carry water to the farms and orchards. (Umatilla Basin Report, 1988)

By June or early July on an average year and prior to 2001, the Walla Walla River was dry near the state line because of irrigation withdrawals, seasonally low flows, channel bed water losses and evaporative losses. Irrigation and groundwater return flows yield live flow in the Washington section of the Walla Walla River. During the irrigation season, ncreases noted in some wells that pump from the shallow gravel aquifer are attributed to groundwater recharge from irrigation ditches.

2.4.10 Water Use

The first irrigation was believed to have occurred in 1846. The earliest water rights of record date to the early 1860's. Some of these rights were established by court decree in the Walla Walla adjudication in 1933. In 1986, the Water Resources Commission withdrew the Walla Walla River and tributaries from further appropriation from the Little Walla Walla diversion to the state-line. Ground water development for irrigation dates back to the early 1900's.

A general provision of law, ORS 537.811, prohibits out-of-state diversions of water without consent of the Oregon Legislature. A 1936 U. S. Supreme Court decision allows Oregon users with senior water rights to divert the entire flow of the Walla Walla River before it enters Washington. Other judicial stipulations require water distribution on interstate tributaries as if the state line did not exist.

Approximately 70 percent of the surface irrigation water in the Oregon portion of the basin is delivered through two irrigation districts: the Walla Walla River Irrigation District (WWRID) and the Hudson Bay District Improvement Company (HBDIC)**.** The combined water rights for the two districts is approximately 280 cubic feet per second (cfs) with the combined diversion rate peaking at about 150 cfs during June and drops to approximately 60 cfs in September.

The WWRID was formed in 1995 by the consolidation of five existing irrigation companies. Almost 500 water rights, with priority dates in the late 1800's, make up the WWRID that allow for year around diversion. It delivers water to 3,600 acres with water rights from the Walla Walla River. It maintains four diversion sites and ten canals and ditches totaling 30.4 miles. The irrigation season is from mid-March to mid-October with irrigation water applied mostly by sprinklers. This application method is most efficient in the prevalent coarse soils. In general, water rights in the WWRID provide for a diversion of 16.8 gallons per minute per acre though modern application methods and current crops may require less water.

The HBDIC was formed in 1952 and took over existing irrigation facilities. It delivers water to approximately 6,900 acres with Walla Walla River surface rights. The water is diverted at the Little Walla Walla diversion and redistributed at the "frog" a centralized distribution facility. The HBDIC maintains five canals and ditches with a combined length of 35.6 miles.

The Little Walla Walla River is a former braided stream section of the Walla Walla River and is used as a primary component of the District's water delivery system. The Walla Walla River flow is regulated by head gates and fish screens even though a court order considers it to be a natural stream.

Above Milton-Freewater, water diverted by other basin users is done by individual or small group diversions that do not have organized irrigation districts. These diversions account for about 30 cfs. Current projects are being implemented by local citizens, irrigation districts, the Walla Walla Basin Watershed Council, the Water Resources Department (WRD), Bonneville Power Administration, and the CTUIR to improve the efficiency of these diversions including: improved head gates and flow measuring devices, fish screens, removal or modification of gravel push-up dams, conversion to pump systems, and conversion from flood to sprinkler systems.

2.4.11 Groundwater

Fractured basalt provides a major ground-water source throughout the river basin. The basalt aquifer is thought to contain ancient water with limited recharge occurring mainly in the Blue Mountains. A major alluvial or gravel aquifer underlies approximately 120,000 acres of the central river subbasin (the Milton-Freewater/Walla Walla area).

Gravels are the major water-conducting material overlying the basalts in the Walla Walla Subbasin. Recharge to the gravels occurs from precipitation, infiltration from riverbeds, canals, ditches, and irrigation loss. The water moves down gradient, which is usually down slope along porous and permeable zones in the gravels. Approximately 50,000 acre-feet of water moved through the gravels in an average year during the 1930's and 1940's (Umatilla Basin Report, 1988).

The gravel aquifer provides both domestic and irrigation water. Ground water levels vary from near land surface in the winter to as low as 50 feet below land surface in late summer. Annual fluctuations of 20 to 25 feet are common in some wells (Umatilla Basin Report, 1988). Because the gravel aquifer is shallow and the soils are highly permeable, it is susceptible to degradation from fertilizers, pesticides, septic systems, and urban runoff (Umatilla Basin Report, 1988). A groundwater quality study, conducted in April 1999 by the Oregon Department of Environmental Quality (DEQ) in the area north and west of Milton-Freewater, found no levels of contaminants at or above drinking water standards. However, occasional elevated levels of bacteria and nitrates do indicate a need for further study and awareness.

2.4.12 Fish Resources

The Walla Walla River Subbasin is home to several anadromous and resident fish species, of which steelhead and bull trout are listed as threatened under the federal Endangered Species Act. Channelization, low stream flow and high water temperature are factors limiting the production of fish in this Subbasin. Measures are being taken by local irrigators, tribes, and agencies to develop a Bi-State Habitat Conservation Plan for protection of these wild fish. The Walla Walla Basin Watershed Council, irrigation districts and producers are actively promoting irrigation efficiency projects to reduce the amount of water diverted from the Walla Walla River. Yearly agreements are being negotiated between the irrigation districts and the US Fish and Wildlife Service to protect irrigation district patrons from liability and to leave adequate water instream to protect and improve fish habitat.

Most major migration barriers have been removed or altered, but passage at push-up dams is still a potential problem. Completion of the new Nursery Bridge Dam fish ladder, in 2001, removed the last permanent structural barrier in the Walla Walla River. All ditches and diversions in the mainstem are screened and diversion structures are being improved to make them more efficient and fish friendly. WWBWC and CTUIR documents point out that several fish barriers still exist on the Little Walla Walla River system.

Resident and anadromous fish habitat and water temperatures are good in the headwaters of the North and South Forks. Fish habitat quality decreases and water temperature increases as the river flows down through the valley. Water quality remains fairly high, but because of levees to protect property, fish habitat quality (stream complexity and large organic debris) decreases. Mainstem habitat is limited between Milton-Freewater and the state-line because of low flows, U.S. Army Corps of Engineers flood control levees, and diversions.

Steelhead is present with adult and juvenile migration coinciding with the higher stream flows of November through June. A ten-year average of 621 adult steelhead returns annually to the upper Walla Walla River (Oregon Department of Fish and Wildlife communication, 2/2012). This suggests that the steelhead population is near the carrying capacity of 658 fish under current conditions. Most spawning occurs in March through May while smolt outmigration takes place during winter and spring.

Bull trout are found in the Upper Walla Walla River and Mill Creek. Adult bull trout move downstream from headwater tributaries after spawning in the fall, over-winter mostly in the mainstem, and return to the headwaters as waters warm in the spring. Based on spawning surveys, bull trout numbers are increasing with a population of 4,000 estimated in the entire Walla Walla River system.

Small numbers of Western Brook lampreys are present. Lampreys are anadromous and migrate as juveniles, returning to the headwaters to spawn. Resident fish include redband trout, mountain whitefish and margined and Paiute sculpin in the upper watershed and northern pikeminnows, chiselmouth, redside shiners, large-scale suckers and speckled dace in the lower basin. Spring Chinook were indigenous historically to the basin, but were extirpated by the 1920's. The CTUIR successfully reintroduced spring Chinook salmon to the basin in September 2000 and August 2001. Adult Chinook began returning to the Walla Walla River in 2004. Since re-introduction, the average Chinook return is 263 adults with 1,193 in 2010.

2.5 Agricultural Water Quality in the Management Area

2.5.1 Beneficial Uses

Water quality in the Walla Walla Management Area is managed to protect recognized beneficial uses. Beneficial uses of water in the Walla Walla basin are: public and private water supply, industrial water supply, irrigation, livestock watering, anadromous fish passage, salmonid fish rearing and spawning, resident fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation and aesthetic quality (OAR 340-041-682, table 12). Beneficial uses that are adversely affected, according to current data, include: salmonid fish rearing and spawning, anadromous fish passage, resident fish and aquatic life, irrigation, and fishing.

2.5.2 Local Water Quality Parameters of Concern

Four river segments in the Walla Walla Subbasin were declared "water quality limited," for temperature and one for flow modification under section 303(d) of the CWA when the DEQ updated the listing in 1998. TMDLs were approved for temperature in 2005 and flow modification was dropped as a pollutant requiring a TMDL. In addition, most assessments of the conditions of the Walla Walla Subbasin indicate that sediment is a water quality concern affecting beneficial uses. Management that addresses the conditions described in the Prevention and Control Measures section of this Area Plan will aid in preventing future water quality listings.

The most recent Water Quality Limited List – 303(d) is included as Appendix 4.

The following discussion of water quality parameters of concern in the watershed addresses the CWA requirements for standards to be established for protection of the most sensitive beneficial uses.

Temperature

Temperature is primarily a summer concern for rearing of anadromous fish species, resident trout and for bull trout. Water temperatures above 70°F can be immediately lethal to salmonids due to a breakdown in their respiration and circulation systems. Temperatures between the mid-60s to 70°F are stressful to salmonids, and fish survival is reduced as the salmonids are more susceptible to a variety of other agents. The sub-lethal effects associated with higher than optimum temperatures are disease, reduced metabolic energy for feeding, and reduced growth or reproductive behavior due to avoidance of areas with high temperatures. High water temperatures can also create barriers to migration and prevent normal movement of both juvenile and adult fish.

The Oregon temperature standard is defined in OAR 340-041-0028. The applicable biologically based temperature thresholds (numeric criteria) in the subbasin are:

- Salmon and trout rearing and migration (18.0°C (64.4°F)) applicable at all times when not superseded by a cooler criterion below.
- Core cold water habitat criterion (16°C (60.8°F)), applicable year round in waters draining to the mainstem while still in Oregon; except where cooler criteria apply simultaneously.
- Salmon and steelhead spawning criterion (13°C (55.4°F)), applicable above the state border to the upstream part of the city of Milton-Freewater from January 1 through June 15.
- Bull trout spawning and juvenile rearing criterion (12°C (53.6°F)), applicable above the state border during times of spawning and rearing.

Sediment

Sediment includes fine silt and organic particles suspended in the water column, settled particles, and larger gravel and boulders that move at high flows. Sediment movement and deposition is a natural occurrence but high levels of sediment can degrade fish habitat by filling pools, creating a wider and shallower channel and covering spawning gravels. Suspended sediment or turbidity in the water can cause physical damage to fish and other aquatic life, modify behavior and increase temperature by absorbing incoming sunlight. Sediment comes from erosion on range

and croplands, erosion from streambanks and streambeds, and runoff from roads and developed areas. Nutrients, pesticides, and toxic substances can also be attached to sediment particles.

Land managers are carrying out ongoing efforts to reduce soil erosion and sediment delivery to streams. However, current U.S. Department of Agriculture (USDA) farm programs do not require soil erosion reduction on the majority of Walla Walla area soils because they are not classified as "highly erodible" and are capable of maintaining productivity while losing up to five tons per acre per year. To maintain adequate water quality for beneficial uses, this Area Plan addresses soil erosion and sediment by extending USDA farm program soil erosion control requirements to all soil types.

Sediment deposition or siltation is a problem in the spring branch streams. Historically, these streams had productive fisheries. Now there is limited value for fisheries and aquatic life due to lack of spawning gravels, habitat, and aquatic weeds. Irrigation return flow, bank erosion, and livestock access for watering are some of the causes of this harmful siltation.

2.5.3 Sources of Impairment and Conditions Affecting Water Quality

The high stream temperatures and low summer stream flows are the main water quality problems in the Walla Walla River Subbasin. Stream temperatures can increase from various types of land management activities and natural disturbances that cause the removal of riparian vegetation or changes in channel morphology, from hydrological factors, such as groundwater recharge and discharge, and from other factors such as high sediment loads.

Protection of riparian and streamside areas for moderation of stream temperatures are addressed in Area Rules. Low summer stream flows often result from channel loss and water withdrawals for beneficial uses, primarily irrigation, along with normal seasonal reductions of stream flow. The Oregon WRD regulates water withdrawals.

2.5.4 Total Maximum Daily Loads *(excerpted from DEQ Fact Sheet-September 2005)*

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

In 2005, the EPA approved the Oregon portion of the Walla Walla Basin TMDL. The Walla Walla TMDL issued temperature targets and an improvement plan to address stream heating in the basin. DEQ developed the TMDL for temperature in partnership with the Walla Walla Basin Watershed Council and in collaboration with the various affected organizations and watershed managers. This effort advanced their understanding of the river.

The lower portions of the Walla Walla River and its tributaries are not cool enough in the summer to fully protect salmon and trout (salmonids) when they rear and spawn. The Walla Walla Basin salmonids that are most sensitive to this heating are: Chinook salmon, steelhead trout, and bull trout present in much of the Basin. During the summer and early fall, low stream flows and high solar input cause the water temperature to rise to levels that can be deadly to cold

water species. At temperatures above 65-70^{o} F, these fish are inefficient at hunting, hiding, and processing food. In addition, warmer water can also harm salmonids by increasing the incidence of disease, impairing their ability to spawn, reducing growth rates, and decreasing survival of eggs.

In the Walla Walla Basin, a substantial cause of stream heating results from the removal of trees and other shade-producing vegetation adjacent to the stream. This allows direct sunlight to heat the water. In addition, vegetation disturbance and stream straightening are common causes of bank erosion in the Basin, resulting in wider channels with more solar heating.

The TMDL addresses the problem in several ways:

- *Provides an estimate of near-natural temperatures along the length of the Walla Walla River*. This allows managers to see where the greatest room for improvement is.
- *Establishes numeric goals for on-the-ground conditions that would lead to more natural temperatures*. The TMDL identifies vegetation heights and stable channel widths that would provide for lessened, more natural heating. Potential increased stream flow is also estimated, along with the resultant temperature profile. However, it is important to recognize that DEQ does not regulate flow, nor is the TMDL intended to diminish existing water rights.
- *The TMDL is accompanied by a management plan designed to establish a cooling trend*.

A TMDL Water Quality Management Plan (WQMP) provides a framework with placeholders for various authorities: Oregon Departments of Agriculture and Forestry, the US Forest Service and US Bureau of Land Management. These designated management agencies (DMAs) will provide TMDL water quality management planning and implementation for the area each administers.

2.6 Prevention And Control Measures

A landowner or operator's responsibility under this Area Plan is to implement measures that prevent and control the sources of water pollution associated with agricultural activities and rural lands. The sections that follow describe more detailed information related to potential agricultural water quality concerns, provides definitions of commonly used terms, provides dates when landowner compliance should be achieved and provides some exemptions to the rules. Criteria will be applied with consideration of agronomic, horticultural, and economic impacts.

603-095-1740 Prevention and Control Measures
(1) Limitations:
(a) All landowners or operators conducting activities on agricultural lands are provided the following exemptions from the requirements of OAR 603-095-1740 (Prevention and Control Measures).
(A) A landowner or operator shall be responsible for only those conditions caused by activities conducted on land managed by the landowner or operator.
(B) A landowner or operator is not responsible for conditions resulting from unusual weather events or other uncontrollable circumstances.
(C) The Department will allow temporary exceptions when a specific integrated pest management plan is in place to deal with certain weed or pest problem.
(b) These rules may be modified as a result of the biennial review of the progress of implementation of the Walla Walla AgWQM area plan.

2.6.1 Waste Management

A landowner or operator's responsibility under this Area Plan is to prevent the introduction of waste materials into nearby bodies of water. These requirements are consistent with existing water quality regulations and are enforceable by designated management agencies. See Agricultural Water Quality/ Water Pollution Control Laws, Section 1.4.4, pg. 11, for the text and definitions used in that law.

603-095-1740
(2) Waste Management Effective on rule adoption, no person subject to these rules shall violate any provision of ORS 468B.025 or 468B.050.

The text of ORS 468B can be found in section 1.4.4 – Water Pollution Control Law.

2.6.2 Streamside and Riparian Area Management

Areas near water bodies are especially important to water quality and sensitive to management activities because of the natural ecological functions performed there such as water infiltration, waste filtration, erosion control, water storage, and moderation of temperature. Good riparian management provides habitat for fish and may yield more water in the channel in the summer. Summer water temperatures at sub-optimal levels for aquatic species survival are a concern in some reaches of the Walla Walla subbasin. Moderation of high summer water temperatures is an objective of this Area Plan. Water temperature can best be influenced by activities that encourage the development and protection of vegetation along streams to provide shade, narrowing and deepening of the channel, and water infiltration and storage within the streambanks. Increasing summer stream flows would also leads to reduced water temperatures. However, issues dealing directly with increasing stream flow are beyond the scope of this Area Plan.

The streamside area is defined as the area near the stream where management practices can most directly influence the conditions of the water. This area usually ranges from 10 feet to 100 feet from the water, depending on the slope, soil type, stream size, and morphology.

The riparian area, as defined in OAR 690-400-0010(14) is a zone of transition from an aquatic to a terrestrial system, dependent upon surface or subsurface water, that reveals through the zone's existing or potential soil-vegetation complex the influence of such surface or subsurface water. A riparian area may be located adjacent to a lake, reservoir, estuary, pothole, spring, bog, wet meadow, muskeg, slough, or ephemeral, intermittent or perennial stream.

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

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

- Floodwater retention and ground water recharge,
- Stabilization of streambanks through plant root mass,
- Development of diverse channel characteristics providing pool depth, cover, and variations in water velocity necessary for fish production,
- Support of biodiversity,

- Moderation of solar heat input by shade,
- Recruitment of large woody debris for aquatic habitat.

Indicators to determine improvement of this condition include:

- Recruitment of desirable riparian plant species,
- Maintenance of established beneficial vegetation,
- Maintenance or recruitment of woody vegetation -- both trees and shrubs,
- Streambank integrity capable of withstanding 25-year flood events.

Factors available to evaluate improvement of the streamside area condition could include:

- Expansion of riparian area as evidenced by development of riparian vegetation and plant vigor,
- Reduction in actively eroding streambank length beyond that expected of a dynamic stream system,
- Plant community composition changes reflecting increases in grass-sedge-rush, shrubs, and litter and decreases in bare ground,
- Plant community composition reflecting decreases in noxious plant species,
- Stream channel characteristics showing a narrowing and deepening of the channel,
- Shade patterns consistent with site capability,
- Stubble height of herbaceous (grass) species and leader (new) growth of shrubs and trees.

Characteristics of a healthy riparian area condition evaluation:

- Actively eroding streambank of no more than 20-25 percent of total streambank length,
- Shade levels of 50-70 percent at midday on 4th order or less streams,
- Stubble height measurements, dependent on species, of four to six inches of herbaceous species left prior to spring runoff,
- Growth and recruitment of shrubs and trees - no more than 50 percent utilization of annual growth of shrubs and trees.

The LAC has determined that the irrigation canals and ditches in the area served by the WWRID and the HBDIC should be exempt from the riparian vegetation requirement. These waterways are maintained for the delivery of irrigation water to cropland within the boundaries of the Districts. There is minimal flow of water from these irrigation canals and ditches back into perennial streams and the ditches are screened to prevent the introduction of fish. Therefore, since there are no known impacts to fish spawning and rearing streams within the canal system, moderation of water temperature is not required. Water that does infiltrate into the gravel aquifer and recharges groundwater or re-emerge as stream flow usually is cooler than the receiving stream water. Maintenance of riparian vegetation along ditches and canals within the intense fruit growing areas would create a hazard by providing host vegetation for fruit pests and would result in increased use of pesticides.

All other irrigation diversions in the Walla Walla River Basin must prevent overland return flows that may carry pollutants into the receiving streams.

603-095-1740
(3) Streamside and Riparian Area Management
(a) Except as provided in OAR 603-095-1740(3)(b), effective January 1, 2006, streamside area management must have allowed the establishment, growth and maintenance of riparian vegetation to promote habitat and protect water quality by filtering sediment, stabilizing streambanks, naturally storing water, and providing shade consistent with the vegetative capability of the site.
(b) OAR 603-095-1740(3)(a) does not apply to irrigation water conveyance systems, including, but not limited to, irrigation canals, ditches, laterals, and waterways, such as the Upper Little Walla Walla system, that in the normal course of operation have no return flow into perennial streams where cold-water fish species are present.

2.6.3 Uplands Management and Soil Erosion

A landowner or operator must implement measures that prevent and control water pollution from upland runoff and soil erosion. This includes agricultural and rural lands that may not be in close proximity to water bodies.

Soil erosion on uplands must be within acceptable limits. While soils lost through erosion may not necessarily enter waters of the state due to distance from the stream or to practices such as terraces and filter strips, the reduction in such erosion will reduce the likelihood that soils will enter area streams.

Upland areas are the rangelands, forests, and croplands upslope from the riparian areas. These areas extend to the ridge tops of watersheds. Vegetation and soils are distinguishing characteristics of upland areas. With a protective cover of crops, grass (herbs), shrubs or trees, consistent with site capability, these areas will capture, store, and safely release precipitation, thereby reducing the potential of excessive soil erosion or delivery of soil or pollutants to the receiving stream or other waters. Vegetation is dependent on physical characteristics including soil, geology, landform, water and other climate factors. Healthy uplands maintain productivity over time and are resilient to stresses caused by variations in physical and climatic conditions.

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

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

Indicators of these conditions include:

- Recruitment of beneficial plant species,
- Ground cover to limit runoff of nutrients and sediment,
- Cropland cover that is sufficient to limit movement of nutrients and sediment,
- Roads and related structures designed, constructed and maintained to limit sediment delivery to streams,
- Noxious weed and insect pest populations contained - see state weed laws and county

weed regulations to determine weed species that must be controlled.

Factors to evaluate upland area condition may include:

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

Cropland management systems must be designed to control sheet and rill erosion and gully erosion on all cropland, not just land designated as Highly Erodible Land (HEL). The Revised Universal Soil Loss Equation (RUSLE) can estimate average annual sheet and rill erosion rates over a cropping rotation, with supporting data from the NRCS Field Office Technical Guide and similar data from other credible sources.

Rangeland and pasture management must allow vegetation sufficient to protect water quality by providing water infiltration, filtering of sediment and animal wastes, and controlling soil erosion within the capability of the site.

Private roads on rural lands or roads used for agricultural activities should be constructed and maintained to limit runoff of sediment into waters of the state. Roads used for activities subject to the Oregon Forest Practice Act are regulated by Forest Practice Act rules. Homesteads, farmsteads and other non-crop areas should be managed to control runoff of sediment and animal wastes into waters of the state.

For more information on effective management practices for prevention and control of runoff from upland areas, see Appendix 2**.**

603-095-1740
(4) Soil Erosion and Sediment Control
(a) Effective on January 1, 2006, landowners must control upland soil erosion using practical and available methods.
(b) Landowners must control active channel erosion to protect against sediment delivery to streams.
(c) On croplands, a landowner may demonstrate compliance with this rule by:
(A) operating consistent with a SWCD-approved conservation plan that meets Resource Management Systems(RMS) quality criteria for soil and water resources; or
(B) operating in accordance with an SWCD-approved plan for Highly Erodible Lands (HEL) developed for the purpose of complying with the current US Department of Agriculture (USDA) farm program legislation; and farming non-HEL cropland in a manner that meets the requirements of an approved USDA HEL compliance plan for similar cropland soils in the county; or
(C) farming such that the predicted sheet and rill erosion rate does not exceed 5 tons/acre/year, as estimated by the Revised Universal Soil Loss Equation (RUSLE);
(D) constructing and maintaining terraces, sediment basins, or other structures sufficient to keep eroding soil out of streams.
(d) On rangelands, a landowner may demonstrate compliance with this rule by:
(A) operating consistent with a Soil and Water Conservation District (SWCD)-approved conservation plan that meets Resource Management Systems (RMS) quality criteria for soil and water resources, or
(B) maintaining sufficient live vegetation cover and plant litter to capture precipitation or slow the movement of water, increase infiltration, and reduce excessive movement of soil off the site; or
(C) minimizing visible signs of erosion, such as pedestal or rill formation and areas of sediment accumulation.

2.6.4 Irrigation Management

A landowner or operator must implement measures that prevent and control water pollution from irrigation activities. Diversion of water for irrigation and the return of water to the stream are activities that have potential for contributing to water quality problems by affecting channel stability and carrying pollutants to the stream through overland return flows.

Diversion of water from a water body to be applied on land for the purpose of growing crops is a recognized beneficial use of water. Irrigation water use is regulated by the Oregon WRD in the form of water rights, which specify the rate and amount of water that can be applied to a particular parcel of land. Refer to Oregon WRD laws and rules (OAR Division 690 and ORS Chapters 536 through 543) for more details.

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

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

- Efficient application of water to the land within legal water rights
- Minimal overland return flows
- Return flow routing that provides for settling, filtering and infiltration
- Minimal effect on stability of streambanks and minimal soil erosion
- Appropriate scheduling of water application to the site considering soil conditions, crop needs, climate and topography
- Diversion structures that are installed and managed in a way that controls erosion and sediment delivery and protect the stability of streambanks. If funding becomes available, temporary diversions, which must be reinstalled every year, should be replaced with suitable permanent diversions (i.e. pumping stations, infiltration galleries, ponds, dams).
- Diversions that are adequately screened and provide fish passage. (Refer to ORS 498.268)

OAR 603-095-1740(2) is applicable to any pollution caused by irrigation practices that allow wastes to enter waters of the state through overland return flows.

Refer to Appendix 2 for more information on effective management for protection of irrigation return flows.

2.6.5 Livestock Management

A landowner or operator must implement measures as needed to prevent and control water pollution from livestock enterprises. Careful management of areas used for grazing, feeding, and handling are critical to the success of livestock operations and have potential to affect water quality by the runoff of sediment and animal wastes containing bacteria, nutrients, and pathogens.

Grazing of livestock can be done in a manner that limits soil erosion and minimizes the delivery of sediment and animal wastes to nearby streams. A grazing management system will promote and maintain adequate vegetative cover, for protection of water quality, by consideration of intensity, frequency, duration, and season of grazing.

Managed grazing near streams will prevent negative impacts to streambank stability, allow for recovery of plants, and leave adequate vegetative cover to ensure protection of riparian functions including shade and habitat. Off-stream watering systems, upland water developments, feed, salt and mineral placement are effective ways to reduce impacts of livestock to streamside areas.

Livestock confinement areas need adequate measures to prevent and control runoff of sediment and animal waste. Certain confinement areas, as defined in ORS 468B.200 - 230, are required to have permits issued by ODA.

Factors used to evaluate effectiveness of management may include:

- Safe diversion or containment of runoff,
- Protection of clean water sources,
- Off-stream watering systems,
- Lot maintenance - smoothing, mounding, seeding,
- Structural measures -i.e. filter strips, catch basins, berms,
- Waste collection, storage and application methods.

OAR 603-095-1740(2) and (3) apply to runoff of animal waste and streamside or riparian vegetation conditions.

For more information on effective management practices for prevention and control of pollution from livestock operations, refer to Appendix 2.

Chapter 3: Goals, Objectives, And Strategies

3.1 Goals

The goal of this Area Plan is to prevent and control water pollution from agricultural activities and soil erosion and to achieve applicable water quality standards.

3.2 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.

To achieve the Area Plan goals, the following water quality related objectives are established and 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.

3.2.1 Prevent runoff of agricultural wastes:

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

- Milestone and timeline:
  - In 2014, the focus area was evaluated for likelihood of pollution from runoff or discharge of wastes.
  - Before the 2018 biennial review, the SWCD will contact and offer assistance to all of the landowners that where identified as having potential runoff conditions.

3.2.2 Provide adequate riparian vegetation:

Rule: Streamside area management must allow the establishment, growth and maintenance of riparian vegetation to promote habitat and protect water quality by filtering sediment, stabilizing streambanks, naturally storing water, and providing shade consistent with the vegetative capability of the site.

- Milestone and timeline:
  - In 2014, the focus area stream reaches were assessed for streamside vegetation and water quality function. *Assessment results are recorded in chapter 4.*
  - Before the 2018 Biennial Review, the SWCD will contact and offer assistance to all of the landowners that did not have adequate streamside vegetation to support natural functions.

3.2.3 Focus Areas

The current Focus Area for this Management Area is Big Springs Creek/East Little Walla Walla River. An Action Plan for the current biennium has been developed and approved by ODA outlining the key components of the process.

- Conduct a pre-assessment of current land conditions,
- Identify areas of concern,
- Conduct education and outreach to landowners,

- Offer technical assistance to landowners and financial assistance, if needed,
- Conduct a post-assessment after project implementation,
- Report progress to ODA and the LAC.

Results of the assessments and targeted assistance are reported to the LAC at the Biennial Review and are summarized in Chapter 4.

3.2 Strategies for Area Plan Implementation

To protect or improve water quality, an effective strategy must increase awareness of the problems and the range of potential solutions, motivate appropriate voluntary action, and provide for technical and financial assistance to plan and implement effective water pollution prevention and control measures. The SWCDs and other partners will cooperate to implement the following strategies at the local level with landowners.

3.2.1 Implementation Strategies

The following strategies will be employed at the local level by SWCD and the WWBWC in cooperation with landowners, and other agencies and organizations:

- Work to maintain and improve the quality of water in the Management Area through planning and implementation of technically sound and economically feasible management practices that contribute to meeting plan goals.
    - Control pollution that may be caused by agricultural activities, as close to the source as possible, by controlling soil erosion and sediment delivery to streams.
    - Demonstrate reduction in potential sources of pollution from agricultural and rural lands through scientifically valid monitoring and periodic surveys of stream reaches and associated lands, as funds are available.
    - Promote implementation of successful practices for: streambank stabilization; reduction in high summer water temperatures, where economically and biologically practical; restoration and enhancement of wetlands and riparian areas; and improved fish habitat.
    - Promote implementation of conservation practices to improve irrigation water use and conveyance efficiency to reduce the potential of polluted return flows.
    - Promote adaptive management, which encourages adjustments in management based on feedback, or monitoring and changing environmental and economic conditions.
    - Identify priorities for pollution source identification and determining areas for implementing restoration activities including reasonable timelines for management strategies targeting TMDL attainment.

- Create a high level of awareness and an understanding of water quality issues among the agricultural community and rural public in a manner that minimizes conflict and encourages cooperative efforts by providing education and technical assistance activities.
    - Incorporate implementation of the Area Plan as a priority element in the SWCD Annual Work Plan and Long-Range Plan and the WWBWC Action Plan, with support from partner organizations.
    - Showcase successful practices and systems and conduct annual tours for landowners and media.
    - Recognize successful projects and practices through appropriate media and

newsletters.
    - Promote cooperative on-the-ground projects to solve critical problems identified by landowners and operators and in cooperation with partner organizations.
    - Conduct educational programs to promote public awareness of water quality.
    - Evaluate current research and scientifically valid monitoring results and conduct such monitoring as may be necessary to better quantify current conditions and objectives contained in this Area Plan in preparation for biannual plan reviews.

- Encourage active participation by the agricultural community and rural public in the process of solving water quality problems.
    - Provide assistance to landowners in development of individual water quality plans and the implementation of best management practices adopted in those plans.
    - Review research and development needs with agriculture assistance agencies and consultants to promote the continued development, evaluation, and adoption of practices and technologies that enhance water quality in an efficient, effective, and economic manner.
    - Annually identify water quality funding needs with agencies providing cost-share and technical assistance to agricultural operations and promote incentive and cost-share programs to assist implementation of plans and related practices.

- Achieve plan goals and objectives by encouraging adequate funding and administration of the program to support systematic, long-range planning and focusing of coordinated efforts on full- scale, watershed-based approaches, identifying needs, developing projects, actively seeking funding, and ensuring successful implementation of funded projects.

The ODA and the SWCD's primary strategies to reduce amounts of pollution from agricultural and rural lands lie in the reduction of runoff and erosion through a combination of educational programs, riparian area enhancement, implementation of sound land use and irrigation management practices, and monitoring of implementation effectiveness. This will be accomplished by the adoption and compliance with Prevention and Control Measures directly related to water quality.

3.2.2 Education Programs

As resources allow, the SWCD, Watershed Council, and OSU Extension Service, in partnership with other agencies and local organizations, will develop educational programs to improve the awareness and understanding of water quality and quantity issues. They will strive to provide the most current information in a manner that avoids conflict and encourages cooperative efforts to solve problems.

The following is a list of action items that will be considered in developing educational programs:

- Showcase successful practices and systems and conduct annual tours for landowners and media,
- Recognize successful projects and practices through appropriate media and newsletters,
- Promote cooperative on-the-ground projects to solve critical problems identified by landowners/operators and in cooperation with partner organizations,

- Conduct educational programs to promote public awareness of water quality,
- Evaluate current research and scientifically valid monitoring results and conduct such monitoring as may be necessary to better quantify current conditions and objectives contained in this Area Plan in preparation for bi-annual plan reviews.

Implementation of this Area Plan is a priority element in the SWCD Annual Work Plan and Long- Range Plan and the WWBWC Action Plan. Both organizations hold regular monthly public meetings, publish newsletters, and sponsor special events that will often focus on water issues. In cooperation with OSU Extension and the irrigation districts, community meetings will continue to be encouraged, as needed, to provide a forum for current water issues.

3.2.3 Water Quality Management Practices

Effective water quality management practices for water pollution control are those management practices and structural measures that are determined to be the most effective, practical means of controlling and preventing pollution from agricultural activities.

Appropriate management practices for individual farms may vary with the specific cropping, topographical, environmental, and economic conditions existing at a given site. Due to these variables, it is difficult to recommend any uniform set of management practices to improve water quality relative to agricultural practices.

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

A detailed listing of a number of specific practices and management measures that can be employed to control or reduce the risk of agricultural pollution are contained in other documents such as the Field Office Technical Guide, available for reference at the local NRCS office. While not exhaustive or all-inclusive, Appendix 2 contains a list of practices that may typically be used in the Walla Walla River basin for effective prevention and control of soil erosion, sediment delivery to streams, and water pollution from agricultural activities.

3.2.4 Voluntary Water Quality Farm Plans

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

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

Voluntary water quality plans describe the management systems and schedule of conservation

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

3.2.5 Technical and Financial Assistance

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

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

Technical and financial assistance for installation of certain management practices may be available through current USDA conservation programs such as the Environmental Quality Incentives Program (EQIP), Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), Continuous CRP (CCRP), Environmental Protection Agency's (EPA) non-point source implementation grants, or state programs such as the Oregon Watershed Enhancement Board grant program, the Riparian Tax Incentive Program, and the Wildlife Habitat Conservation and Management Program. The WWBWC and several other federal and state agencies are also available to provide technical assistance and/or financial assistance to private landowners.

Farm planning assistance is available from these and other sources:

- Technical Assistance: NRCS, Umatilla County SWCD, WWBWC
- Workbooks and publications
- Voluntary Conservation On Your Land, NRCS/Oregon Association of Conservation Districts (OACD)
- Oregon Small Acreages Conservation Toolbox, NRCS/OACD
- WESt Program Workbook, Oregon Cattleman's Association/Extension Ranch Water Quality Planning Workbook, Extension
- The Oregon Plan Toolbox
- Programs
    - Farm*A*Syst Program, OSU Extension
    - Stream*A*Syst Program, OSU Extension
    - Home*A*Syst Program, OSU Extension

3.3 Monitoring and Evaluation

ODA conducts monitoring at a statewide level and analyzes other agencies' and organizations' (described in section 1.8) monitoring data to answer several monitoring questions related to agriculture and water quality:

- What are current water quality and landscape conditions in agricultural areas in Oregon? What are water quality trends?
- How well does the existing monitoring network assess agricultural water quality trends and streamside conditions in Oregon?
- What are riparian vegetation trends along agricultural lands in Oregon?
- How do riparian conditions compare with site capabilities?
- How do riparian vegetation conditions change in aerial photos of selected stream
- How do changes in riparian vegetation condition compare with trends in water quality in monitored watersheds?

Currently, the WWBWC, in cooperation with DEQ, the CTUIR, and other agencies are conducting a comprehensive monitoring program to gather water quality data to be used in implementation of the TMDL. This data will be available to establish baseline conditions for determining effectiveness of the Area Plan.

3.4 Resolution of Complaints and Enforcement Action

The ODA will investigate complaints against landowners and operators who are alleged to be out of compliance with the rules associated with this Area Plan. If the landowner is found to be out of compliance, ODA will consult with the landowner/operator and the SWCD. The Field Office Technical Guide will be the main tool to develop solutions and timelines. The authority and procedures for complaint investigation rests with the ODA under provisions of OAR 603-095-1760.

Landowners with chronic or egregious violations of area rules will be subject to enforcement action by ODA. Any enforcement action will be pursued only when reasonable attempts at voluntary solutions have failed. ODA will not enter onto private lands without first seeking landowner consent. Authority for any enforcement action rests with ODA under provisions in OAR 603-090- 0060 through 603-090-0120.

603-095-1760 Complaints and Investigations

(1) When the department receives notice of an alleged occurrence of agricultural pollution through a written complaint, its own observation, through notification by another agency, or by other means, the department may conduct an investigation. The department may, at its discretion, coordinate inspection activities with the appropriate LMA.
(2) Each notice of an alleged occurrence of agricultural pollution shall be evaluated in accordance with the criteria in ORS 568.900 through 568.933 or any rules adopted thereunder to determine whether an investigation is warranted.
(3) Any person allegedly being damaged or otherwise adversely affected by agricultural pollution or alleging any violation of ORS 568.900 through 568.933 or any rules adopted thereunder may file a complaint with the department.
(4) The department will evaluate or investigate a complaint filed by a person under section OAR 603-095-1760(3) if the complaint is in writing, signed and dated by the complainant and indicates the location and description of:
(a) The waters of the state allegedly being damaged or impacted; and
(b) The property allegedly being managed under conditions violating criteria described in ORS 568.900 through 568.933 or any rules adopted thereunder.
(5) As used in section OAR 603-095-1760(4), "person does not include any local, state or federal agency.
(6) Notwithstanding OAR 603-095-1760(4), the department may investigate at any time any complaint if the department determines that the violation alleged in the complaint may present an immediate threat to the public health or safety. (7) If the department determines that a violation of ORS 568.900 through 568.933 or any rules adopted thereunder has occurred, the landowner may be subject to the enforcement procedures of the department outlined in OAR 603-090-0060 through 603-090-0120.

Refer to 1.3.1 for Compliance Flow Chart

3.4.1 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.

Chapter 4: Implementation, Monitoring, and Adaptive Management

4.1 Implementation and Accomplishments

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

Planning and Projects • Prescribed grazing plans in uplands – 162.7 acres • Upland water developments – 2 • Irrigation efficiency/water management - 6 (477.2 acres) • Riparian habitat • Shallow aquifer recharge – 10 contracts • Upriver streambank erosion/habitat project • White Ditch piping • Fruitvale Water Users - weir boxes and measurement • Nursery Bridge - emergency fish passage
Outreach and Education • SWCD Conservationist of the Year – Couse Creek Ranches • WWBWC - Project tours, Summer Science Camp, STEP
Funding and Grants • USDA - EQIP contracts (6), CREP contracts (4) • OWEB – monitoring, Shallow Aquifer Recharge (SAR) • BPA – SAR, White pipeline, Fruitvale turnouts, monitoring, habitat • EPA – PSP, Smith Sill, Nursery Bridge
Monitoring and Evaluation • Pesticide Stewardship Program – see report below • WWBWC – Surface water monitoring program (7 mainstem gauges + 47 seasonal gauges), groundwater monitoring program (100+ wells)

4.2 Water Quality Monitoring – Status and Trends

As of 2015, the mainstem monitoring sites did not have any new data because LASAR stopped being used in December 2012. ODA added a new ambient monitoring site on Pine Creek at Hudson Bay Substation Road and this site has been monitored since early 2013. DEQ assigns rankings to the individual water quality analytes for ambient monitoring stations. The 2013 data for this site showed Poor BOD, TS and TP concentrations. Concentrations of nitrate plus ammonia and *E. coli* were ranked as Very Poor. The water quality index score for this site was 38, ranking it as Very Poor. In 2014, the water quality index score for this site was 46, slightly

improved from 2013 but still ranked Very Poor. The analytes with Poor and Very Poor rankings in 2013 retained these rankings in 2014.

2012 Report: No sites were found on the LASAR database that met our criteria in this basin. Monitoring stations listed throughout this Basin had very little data; each representing less than five sampling events. It would be useful to have two monitoring sites established on the mainstem, one upstream, and one downstream of Milton-Freewater.

As of October 2011, the East Prong monitoring site did not have current data. The West Prong site had a few high turbidity concentrations, up to 55 NTU, and a few low DO percent saturation readings, down to 37%. pH values were not of concern.

As of March 2009, two monitoring sites were added to the Walla Walla with limited application to characterize water quality in agricultural land. These sites are the East and West Prongs of the Little Walla Walla, both north of Stateline Road. Both of these sites had a limited amount of data for the period from 2005 to 2008. Most of the analytes reported were pesticides. The East site analytes relevant to this discussion consisted only of pH, nitrate, turbidity, and DO. All of these had concentrations with acceptable concentrations. The West site analytes were the same as the East site, though there were water quality concerns with pH and turbidity. The pH values had a very wide range for surface water, from around 6.5 to 9.4, and there were some turbidity values exceeding 20 in spring months (mostly March and May).

4.3 Progress Toward Focus Area Measurable Objectives

The current focus area is the East Little Walla Walla River/Big Spring Creek sub-watershed.

The focus area monitoring was conducted during the summer of 2014 by the WWBWC and the USWCD. Streamside vegetation assessment mapping has been completed using interpretation of publically available aerial photos.

Pre-Assessment Results			
Classes		**Streamside Vegetation**	
I. Vegetation supports functions	32%	Grass	7.55 acres
II. Vegetation does not completely support functions	29%	Grass Agriculture	17.54 acres
III. Lacking vegetation to support functions	29%	Shrubs	8.35 acres
IV. Not agriculture	10%	Shrubs Agriculture	5.82 acres
		Trees	5.03 acres
		Tree Agriculture	3.12 acres
		Bare	.03 acre
		Bare Agriculture	.87 acre
		Ag Infrastructure	4.59 acres
		Water	1.04 acre
		Not Agriculture	8.97 acres
		Total	62.91 acres

Completed projects in Focus Area: 1 OWEB small grant, 4 landowners setbacks

4.4 Aerial Photo Monitoring of Streamside Vegetation

Three streams were assessed in this basin in 2007 and reassessed in 2012. These were Birch, Couse, and Swartz creeks. The riparian index scores for Birch and Couse were nearly identical (50.40 and 50.05, respectively) while the score for Swartz was 30.85. Tree cover on Swartz was very low with no band having more than 10 percent trees. Swartz Creek did not have any bare land, though bare/agriculture percentages ranged from one to 14 percent. Couse and Birch had similar tree coverage with percentages ranging from 14 to 82 percent.

Qualitative descriptions of the streams are included below:

- Birch Creek: The 30-foot bands of this stream were mostly fenced off to restrict livestock access. Tree cover dominates the 30-foot bands. One section of the reach had corrals located in the 60 and 90-foot bands.
- Couse Creek: An active quarry was observed impinging on the 30-foot band, so we contacted Department of Geology and Mineral Industries mined land reclamation to alert them of this activity. The upper 105 feet of the reach has multiple active sand bars with little vegetative cover.
- Swartz Creek: The lower 100 feet of this reach was undergoing active riparian planting within 60 feet of the channel. The middle 2,500 feet of the reach also had active riparian planting, but not as densely as the lower section. The stretch in between these two areas was mostly channelized.

Stream	2007 Score	2012 Score	% Difference (if notable)
Birch Creek	50.40	50.46	
Couse Creek	50.05	48.69	- 3
Swartz Creek	30.85	31.44	+ 2

Only modest changes in land cover were measured for streams in this basin. The 3 percent decline in Couse Creek was due to the increase in both bare and bare agriculture cover, mostly in the left bands. The 2 percent increase in Swartz was due to more tree and shrub cover, though bare agriculture cover also increased.

4.5 Biennial Reviews and Adaptive Management

Topics for discussion during the biennial review included the following:

4.5.1 Land condition and water quality monitoring:

WWBWC monitoring Program

- Surface Water Monitoring – partnership with WDOE, OWRD, and USGS
  - Real Time Gauging Network
- Groundwater Monitoring
  - Aquifer Recharge

Pesticide Stewardship Program – Pesticide Monitoring summary of 2014 findings

- Decreases in Diuron (Karmex) concentrations is maintained in 2014 → deminimis levels
  - After 96% decrease between 2011 and 2012

- Chlorpyrifos (Lorsban) average and max concentrations lowest since monitoring began
  - 6 detections vs. 4 detections 2013
- Carbaryl (Sevin) and Malathion concentrations increased between 2013 and 2014
- Only 7 total pesticides detected in Basin
  - Least since analytical suite expanded 2009, despite adding new sites

4.5.2 Area Plan changes:

No major changes were made to the Plan. Chapter 4 was updated to report assessment and monitoring data from the past two years.

4.5.3 Area Plan implementation progress and effectiveness*:*

Many producers in the Walla Walla Management Area are enrolled in product certification programs. Operations are inspected and receive certification if they meet rigid standards for land and produce management, including meeting water quality standards. Among active certification programs are:

- Good Agricultural Practices (GAP) – 2,700 acres (70 percent of total orchard acres)
- Salmon Safe Program – Wheat/pea growers - acres not available
- VINEA – Winegrowers Sustainable Trust – acres not available

4.5.4 Regulations

There were four complaints filed along Stateline Road in late 2012. All were related to observed damage to riparian vegetation due to presence of livestock. The landowners received Pre-Enforcement Letters and were asked to contact ODA for assistance. Only one landowner contacted ODA and the SWCD for clarification of alleged violation of the regulations.

Investigations were conducted in the summer of 2013 with one landowner receiving a Letter of Compliance, one a Water Quality Advisory and two received Letters of Warning (LOW). Both landowners that received LOWS have completed fencing to exclude cattle from the stream.

Appendix A: Soils

Alluvial soils are on nearly level to gently sloping valley bottoms near the rivers and creeks, fanning northwest from Milton-Freewater. They vary from excessively to poorly drained. These soils are often irrigated and are adapted to a wide variety of crops. Several unconsolidated sedimentary layers have been deposited. A clay layer up to 500 feet thick was deposited on top of the basalts in the central portion of the subbasin. A thick (10-300 feet) composite alluvial fan was deposited directly on the basalts along the margins of the Walla Walla subbasin. Composed mainly of gravel, the fan material becomes finer toward the center of the basin where it inter-fingers with the clay unit. The gravel is composed mainly of well-rounded pebble, cobble, and boulder sized basaltic material. Compaction of the alluvial fan with a mixture of silt and sand make the gravels semi-consolidated. In places, calcareous cement also bonds the gravels.

Athena-Palouse-Waha association of soils occurs east of Milton-Freewater on the lower slopes of the Blue Mountains. Most of the Athena and Palouse and a part of Waha are cultivated in annual cropping rotation of winter wheat and green peas or other legumes. The remainder of these soils is in range with a dominant native vegetation of Idaho Fescue and bluebunch wheatgrass. These soils are well adapted to irrigation except in areas of unfavorable topography.

Ritzville-Starbuck association of soils is developed from loess and found mostly on the northwestern end of the subbasin. Most of the Starbuck and some Ritzville are used for range. Ritzville soils are well adapted for irrigation.

Sagemoor-Quincy-Taunton association of soils is formed on the medium-textured glacial sediments and also located in the northwestern corner of the subbasin. Winter range for sheep is the principal use of these soils with the vegetation being bluebunch wheatgrass, annual grasses, and sagebrush. A small portion of Sagemoor is producing wheat successfully. These soils are reasonably well adapted to irrigation.

Tolo-Klicker association occurs in the eastern subbasin, in the high country of the Blue Mountains with nearly level to gently sloping uplands, which break off to very steeply sloping canyon walls. Most of these soils support forest or mixed-forest-grass type vegetation, which is used for summer grazing of livestock. Minor areas of all the deep soils are cultivated and produce small grains, legumes, grass, and berries. The shallow, stony soils are used for range.

Waha-Snipe association is found on the lower slopes of the Blue Mountains from nearly level to very steep slopes. These soils are used mostly for relatively high-producing range. The major vegetation is Idaho fescue, bluebunch wheatgrass, and shrubs.

The **Walla Walla** series of soils has four phases, each developed from loess. Two are present in the subbasin - Walla Walla and Walla Walla high rainfall - and are used for wheat production in both a wheat-fallow rotation and a wheat-green pea rotation. Both would be very well adapted for irrigation.

Appendix B: Effective Water Quality Management Practices

These practices and many others may be considered in development of a management system that is appropriate for prevention and control of pollution caused by agricultural activities on an individual parcel of land. Management practices and land management changes are most effective when selected and installed as integral parts of a comprehensive resource management plan based on natural resource inventories and assessment of management practices. The result is a system using management practices and land management changes which are designed to be complementary, and when used in combination, are more technically sound than each practice separately.

For soil erosion and sediment control

- Conservation Tillage (Crop Residue Management) - reduced tillage, minimum tillage, direct seeding, modified conventional tillage, reservoir tillage, sub-soiling, or deep chiseling
- Cover Crops - perennial, annual
- Contour Farming Practices - Strip cropping, divided slopes, terraces (level and gradient), contour tillage
- Crop Rotations
- Early or Double Seeding in Critical Areas
- Vegetative Buffer Strips
- Filter strips, grassed waterways, field borders, contour buffer strips
- Irrigation Scheduling - soil moisture monitoring, application rate monitoring
- Prescribed Burning
- Weed Control
- Grazing Management Plans
- Range Plantings
- Livestock Distribution
- Road Design and Maintenance
- Sediment Retention Basins and Runoff Control Structures

For prevention and control of impacts to stream side areas:

- Critical area planting
- Vegetative Buffer Strips - Continuous CRP, CREP, riparian buffers, riparian forest buffers
- Livestock Management - fencing - exclusion, temporary, seasonal grazing
- Water Developments - off stream watering, water gaps, spring development
- Conservation Tillage Practices
- Weed Control
- Nutrient and Chemical Application Scheduling
- Road, Culvert, Bridge, and Crossing Maintenance
- Wildlife Management

For prevention and control of impacts from livestock

- Grazing Management or Scheduling - intensity, duration, frequency, season, pasture rotations, rest/deferral
- Vegetation Management - grass seeding, weed control, controlled burning

- Fencing - temporary, cross, exclosure
- Watering Facilities - spring development, water gaps, off-stream water, (may require water rights, refer to ORS 537.141)
- Salt and Mineral Distribution
- Waste Management Systems - clean water diversions; waste collection, storage, and utilization; facilities operation and maintenance

For prevention and control of impacts from irrigation

- Irrigation Scheduling - crop needs, soil type, climate, topography, infiltration rates
- Irrigation System Efficiency and Uniformity - flood, sprinkler, drip, pivot
- Diversion Maintenance - push-up dam management, screens
- Return Flow Management
- Backflow Devices
- Reservoir Tillage
- Cover Crops

For nutrient and farm chemical application

- Nutrient Budgeting - soil testing, tissue testing, plant needs o water testing
- Application Methods
- Application Timing
- Tail Water Management
- Hydraulic Connectivity
- Label Requirements
- Irrigation Scheduling
- Integrated Pest Management Practices

For channel and drain management

- Vegetation Management - burning, chemical, clipping
- Streambank Stabilization - structural, bio-engineered
- Critical area planting
- Channel Management
- Obstruction Removal
- Wetland Development
- Outfall Protection
- Offstream or Headwater Storage

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Appendix D: DRAFT 2012 303(d) Water Quality Limited List

Waterbodies	River Miles	Parameter	Criteria	Season
Category 4A – TMDL Approved				
Mill Creek	22.0 to 26	Temperature	Bull Trout 10.0 C	Summer
North Fork Walla Walla River	0 to 18.7	Temperature	Bull Trout 10.0 C	Summer
		Temperature	Bull Trout 12.0 C (non-spawning	Year Round
South Fork Walla Walla River	0 to 27.1	Temperature	Bull Trout 10.0 C	Summer
		Temperature	Bull Trout 12.0 C (non-spawning	Year Round
Walla Walla River	40.6 to 50.6	Temperature	Rearing 17.8C	Summer
Category 5 – TMDL Needed				
*Pine Creek **	*0 to 37.8*	*Iron*	*Table 20 - Toxic Substances*	*Year Round*
South Fork Walla Walla River	0 to 27.2	Dissolved Oxygen	Spawning	Sept 1 – June 15
Walla Walla River	40.6 to 46.1	Dissolved Oxygen	Spawning	Jan 1 – June 15
	46.1 to 50.6			Sept 1 – June 15
West Branch / West Crockett Branch	0 to 2.6	Chlorpyrifos Guthion	Table 20 - Toxic Substances	Year Round
West Branch / West Crockett Branch	4.6 to 11.5	Dissolved Oxygen	Spawning	Jan 1 – May 15
West Little Walla Walla River	4.6 to 11.5	Chlorpyrifos Guthion Parathion	Table 20 - Toxic Substances	Year Round
		Dissolved Oxygen	Spawning	Jan 1 – May 15

*Added in 2012