Oregon
Department
of Agriculture

North & Middle Forks John Day River Agricultural Water Quality Management Area Plan

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Developed by the

Oregon Department of Agriculture

North & Middle Forks John Day River Local Advisory Committee

With support from the

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Acronyms and Terms Used in this Document

AF – acre-feet
Ag Water Quality Program – Agricultural Water Quality Management Program
Area Plan – Agricultural Water Quality Management Area Plan
Area Rules – Agricultural Water Quality Management Area Rules
BLM – Bureau of Land Management
CAFO – Confined Animal Feeding Operation
cfs – cubic feet per second
CWA – Clean Water Act
DEQ – Oregon Department of Environmental Quality
GWMA – Groundwater Management Area
HUC – Hydrologic Unit Code
LAC – Local Advisory Committee
LMA – Local Management Agency
Management Area – Agricultural Water Quality Management Area
MOA – Memorandum of Agreement
NPDES – National Pollution Discharge Elimination System
NRCS – Natural Resources Conservation Service
OACD – Oregon Association of Conservation Districts
OAR – Oregon Administrative Rules
ODA – Oregon Department of Agriculture
ODF – Oregon Department of Forestry
OHA – Oregon Health Authority
ORS – Oregon Revised Statute
OSU – Oregon State University
OSU Extension – Oregon State University Extension Service
OWEB – Oregon Watershed Enhancement Board
PMP – Pesticides Management Plan
PSP – Pesticides Stewardship Partnership
RCA – Required Corrective Action
SIA – Strategic Implementation Area
SWCD – Soil and Water Conservation District
TMDL – Total Maximum Daily Load
USDA – United States Department of Agriculture
US EPA – United States Environmental Protection Agency
WPCF – Water Pollution Control Facility
WQPMT – Water Quality Pesticides Management Team
WRD – Oregon Water Resources Department

Foreword

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

The Area Plan is neither regulatory nor enforceable (Oregon Revised Statute (ORS) 568.912(1)). It references associated Agricultural Water Quality Management Area Rules (Area Rules), which are Oregon Administrative Rules (OARs) 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, Area Rules, and available practices to address water quality issues.

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

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

Chapter 1: Agricultural Water Quality Management Program Purpose and Background

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

As part of Oregon's Agricultural Water Quality Management Program (Ag Water Quality Program), the Area Plan guides landowners and partners such as Soil and Water Conservation Districts (SWCDs) in addressing water quality issues due to agricultural activities. The Area Plan identifies strategies to prevent and control water pollution from agricultural activities and soil erosion (ORS 568.909(2)) on agricultural and rural lands 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 LAC, with support and input from the SWCD and the Oregon Department of Environmental Quality (DEQ). The public was invited to participate in the original development and approval of the Area Plans and is invited to participate in the biennial review process. The Area Plan is implemented using a combination of outreach, conservation and management activities, compliance with Area Rules developed to implement the Area Plan, monitoring, evaluation, and adaptive management.

The provisions of the Area Plan do not establish legal requirements or prohibitions (ORS 568.912(1)). Each Area Plan is accompanied by Area Rules that describe local agricultural water quality regulatory requirements. ODA will exercise its regulatory authority for the prevention and control of water pollution from agricultural activities under the Ag Water Quality Program's general regulations (OAR 603-090-0000 to 603-090-0120) and under the Area Rules for this Management Area (OAR 603-095-1000). The Ag Water Quality Program's general rules guide the Ag Water Quality Program, and the Area Rules for the Management Area are the regulations that landowners are required to follow. Landowners will be encouraged through outreach and education to implement conservation management activities.

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

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

Water quality on federal lands in Oregon is regulated by DEQ and on Tribal Trust lands by the respective tribe, with oversight by the United States Environmental Protection Agency (US EPA).

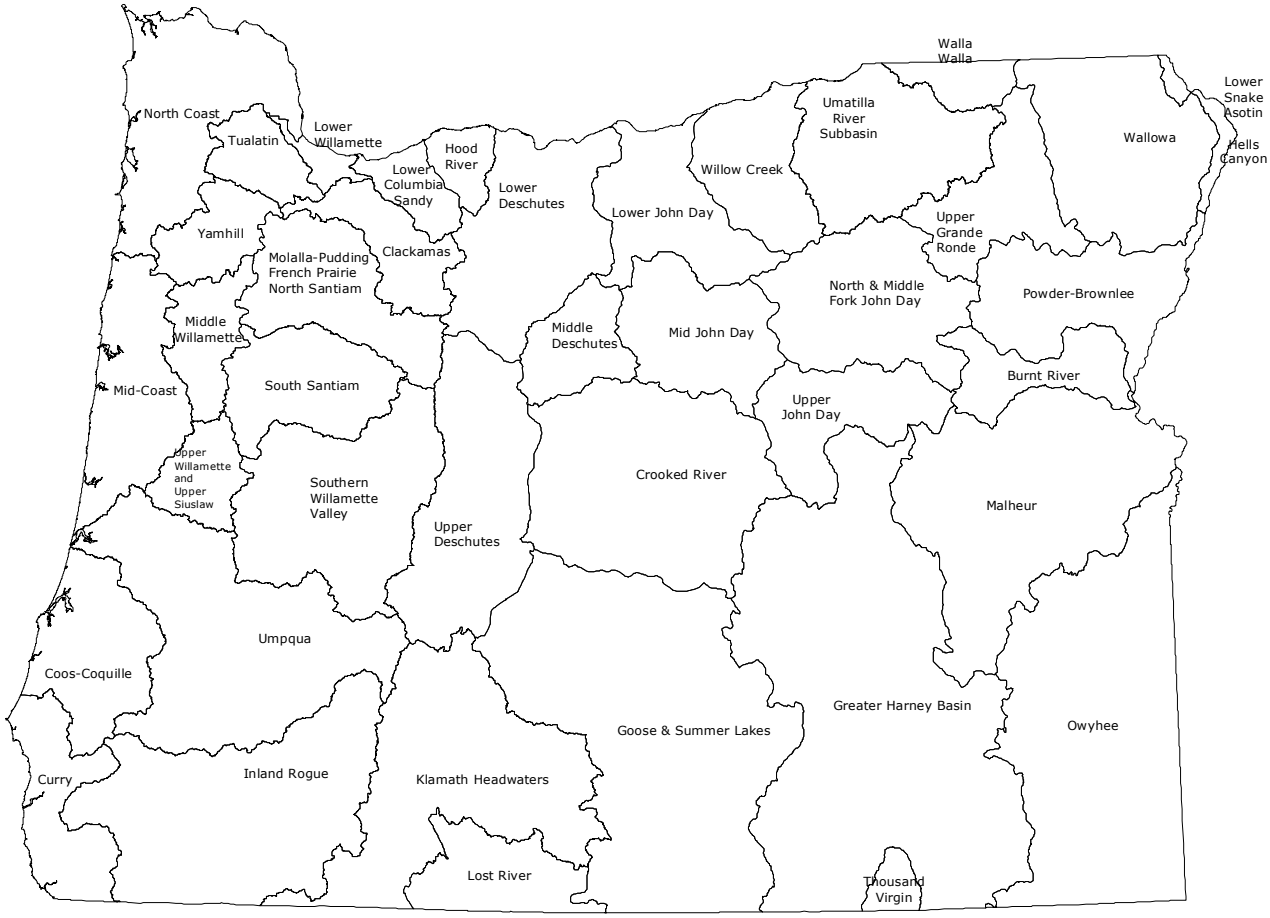
1.2 History of the Ag Water Quality Program

In 1993, the Oregon Legislature passed the Agricultural Water Quality Management Act directing ODA to develop plans to prevent and control water pollution from agricultural activities and soil erosion; to achieve water quality standards; and to adopt rules as necessary (ORS 568.900 through ORS 568.933). Senate Bill 502 was passed in 1995 to clarify that ODA is the lead agency for regulating agriculture with respect to water quality (ORS 561.191). The Area Plan and Area Rules were developed and subsequently revised pursuant to these statutes.

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

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

Figure 1: Map of 38 Agricultural Water Quality Management Areas



1.3 Roles and Responsibilities

1.3.1 Oregon Department of Agriculture

The Oregon Department of Agriculture is the agency responsible for implementing the Ag Water Quality Program (ORS 568.900 to 568.933, ORS 561.191, OAR 603-090, and OAR 603-095). The Ag Water Quality Program was established to develop and carry out a water quality management plan for the prevention and control of water pollution from agricultural activities and soil erosion. State and federal laws drive the establishment of an Ag Water Quality Management Plan, which include:

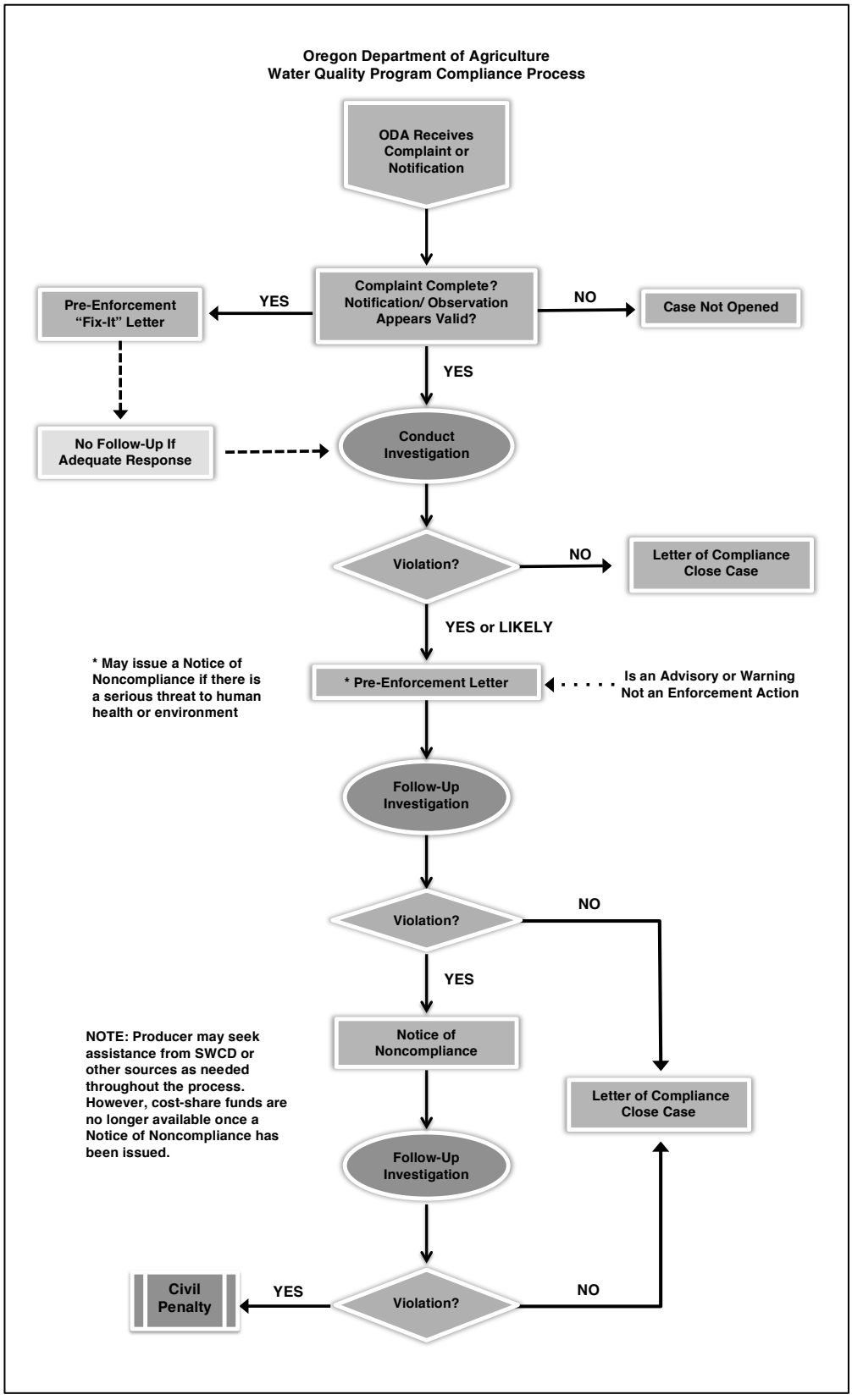
- State water quality standards,

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

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

The Area Rules are a set of standards that landowners must meet on all agricultural or rural lands. ("Landowner" includes any landowner, land occupier or operator per OAR 603-95-0010(24)). All landowners must comply with the Area Rules. The ODA will use enforcement where appropriate and necessary to gain compliance with Area Rules. Figure 2 outlines ODA's compliance process. ODA will pursue enforcement action 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 enforcement Order such as a Notice of Noncompliance. If a Notice of Noncompliance is issued, ODA will direct the landowner 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, ODA may assess civil penalties for continued violation of the rules. If and when other governmental policies, programs, or rules conflict with the Area Plan or Area Rules, ODA will consult with the appropriate agencies to resolve the conflict in a reasonable manner.

Figure 2: Compliance Flow Chart



1.3.2 Local Management Agency

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

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

1.3.3 Local Advisory Committee

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

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

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

1.3.4 Agricultural Landowners

The emphasis of the Area Plan is on voluntary action by landowners to control the factors affecting water quality in the Management Area. Each landowner in the Management Area is required to comply with the Area Rules. In addition, landowners need to select and implement a suite of measures to protect water quality. The actions of each landowner will collectively contribute toward achievement of the water quality standards.

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

Under the Area Plan and Area Rules, agricultural landowners 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.

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

1.3.5 Public Participation

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

The Oregon Department of Agriculture, LACs, and SWCDs conduct biennial reviews of the Area Plans and Area Rules. Partners, stakeholders and the general public are invited to participate in the process. Any future revisions to the Area Rules, will include a formal public comment period and a formal public hearing.

1.4 Agricultural Water Quality

The Clean Water Act directs states to designate beneficial uses related to water quality for every waterbody, decide on parameters to measure to determine whether beneficial uses are being met and set water quality standards based on the beneficial uses and parameters.

1.4.1 Point and Nonpoint Sources of Water Pollution

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

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

1.4.2 Beneficial Uses and Parameters of Concern

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

Many waterbodies throughout Oregon do not meet state water quality standards. Many of these waterbodies 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 (HABs), nitrates, pesticides, and mercury. These parameters vary by Management Area and are summarized in Chapter 2.

1.4.3 Impaired Waterbodies and Total Maximum Daily Loads (TMDLs)

Every two years, DEQ is required by the 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 must establish TMDLs for pollutants specific to the pollutants that led to the placement of a waterbody on the 303(d) list.

A TMDL includes an assessment of water quality data and current conditions and describes a plan to achieve conditions so that waterbodies will meet water quality standards. TMDLs specify the daily amount of pollution a waterbody can receive and still meet water quality standards. In the TMDL, point sources are allocated pollution limits as "waste load allocations" that are then incorporated in NPDES waste discharge permits, while a "load allocation" is attributed to nonpoint sources (agriculture, forestry, and urban). The agricultural sector is responsible for helping achieve the pollution limit by achieving 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, not just to an individual waterbody on the 303(d) list. Waterbodies will be listed as achieving water quality standards when data show the standards have been attained.

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 Area Rules must address agricultural or nonpoint source load allocations from relevant TMDLs.

The list of impaired waterbodies (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 Oregon Water Pollution Control Law – ORS 468B.025 and ORS 468B.050

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

To implement the intent of ORS 561.191, ODA incorporated ORS 468B.025 and 468B.050 into all of the Area Rules.

ORS 468B.025 states that:
(1) Except as provided in ORS 468B.050 or 468B.053, 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."

ORS 468B.050 identifies the conditions when a permit is required. A permit is required for CAFOs that meet minimum criteria for confinement periods and have large animal numbers or have wastewater facilities. The portions of ORS 468B.050 that apply to the Ag Water Quality Program state that:
"(1) Except as provided in ORS 468B.053 or 468B.215, without holding a permit from the Director of the Department of Environmental Quality or the State Department of Agriculture, which permit shall specify applicable effluent limitations, a person may not:
(a) Discharge any wastes into the waters of the state from any industrial or commercial establishment or activity or any disposal system."

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

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

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

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

1.4.5 Streamside Vegetation and Agricultural Water Quality

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

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

- Streamside vegetation improves water quality related to multiple pollutants, including: temperature (heat), sediment, bacteria, nutrients, toxics, and pesticides,
- Streamside vegetation provides fish and wildlife habitat,

- Landowners can improve streamside vegetation in ways that are compatible with their operation. Streamside conditions may be improved without the removal of the agricultural activity such as with managed grazing,
- Streamside vegetation condition is measurable and can be used to track progress in achieving desired site conditions.

Site-Capable Vegetation

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

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

Occasionally, mature site-capable vegetation such as tall trees may not be needed for narrow streams. 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.

In many cases, invasive, non-native plants, such as introduced varieties of blackberry and reed canarygrass, grow in streamside areas. This type of vegetation has established throughout much of Oregon due to historic and human influences and may provide some of the water quality functions of site-capable vegetation. ODA's statutory authority does not require the removal of invasive, non-native plants, however, ODA recognizes removal as a good conservation activity and encourages landowners to remove these plants. Voluntary programs through SWCDs and watershed councils provide technical assistance and financial incentives for weed control and restoration projects. In addition, the Oregon State Weed Board identifies invasive plants that can negatively impact watersheds. Public and private landowners are responsible for eliminating or intensively controlling noxious weeds as may be provided by state and local law enacted for that purpose. For further information, visit www.oregon.gov/ODA/programs/weeds.

1.5 Other Water Quality Programs

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

1.5.1 Confined Animal Feeding Operation Program

The 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 or process wastewater. Since the early 1980s, CAFOs in Oregon have been registered to a general Water Pollution Control Facility (WPCF) permit designed to protect water quality. A properly maintained CAFO must implement a site-specific suite of structural and management practices to protect 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 WPCF 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. In 2015, ODA and DEQ jointly issued a WPCF general CAFO Permit as an alternative for CAFOs that are not subject to the federal NPDES CAFO permit requirements. Currently, ODA can register CAFOs to either the WPCF or NPDES CAFO permit.

Either of the Oregon CAFO permits require the registrant to operate according to a site-specific, ODA-approved, Animal Waste Management Plan that is incorporated into the CAFO permit by reference. You can view the CAFO program site at
http://www.oregon.gov/ODA/programs/NaturalResources/Pages/CAFO.aspx

1.5.2 Groundwater Management Areas

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

Oregon has designated three GWMAs because of elevated nitrate concentrations in groundwater: Lower Umatilla Basin, Northern Malheur County, and Southern Willamette Valley. Each GWMA has a voluntary action plan to reduce nitrates in groundwater. After a scheduled evaluation period, if DEQ determines that voluntary efforts are not effective, 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 Area Rules throughout Oregon.

1.5.4 Pesticide Management and Stewardship

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

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

Through the PSP, state agencies and local partners work together to monitor pesticides in streams and to improve water quality (https://www.oregon.gov/deq/wq/programs/Pages/Pesticide.aspx). ODA,

DEQ, and Oregon State University Extension Service work with landowners, SWCDs, watershed councils, and other local partners to voluntarily reduce pesticide levels while improving water quality and crop management. Since 2000, the PSPs have made noteworthy progress in reducing pesticide concentrations and detections.

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

1.5.5 Drinking Water Source Protection

Oregon implements its drinking water protection program through a partnership between DEQ and OHA. The program provides individuals and communities with information on how to protect the quality of Oregon's drinking water. The DEQ and OHA encourage preventive management strategies to ensure that all public drinking water resources are kept safe from current and future contamination. For more information see: https://www.oregon.gov/deq/wq/programs/Pages/DWP.aspx.

1.6 Partner Agencies and Organizations

1.6.1 Oregon Department of Environmental Quality

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

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

The MOA includes the following commitments:

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

- Whether the rate of progress is adequate to achieve the goals of the Area Plans.

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

1.6.2 Other Partners

Oregon Department of Agriculture and SWCDs work in close partnership with local, state, and federal agencies and organizations, including: DEQ (as indicated above), the United States Department of Agriculture (USDA) NRCS and Farm Service Agency, watershed councils, Oregon State University Agricultural Experiment Stations and Extension Service, tribes, livestock and commodity organizations, conservation organizations, and local businesses. As resources allow, SWCDs and local partners provide technical, financial, and educational assistance to individual landowners for the design, installation, and maintenance of effective management strategies to prevent and control agricultural water pollution.

1.7 Measuring Progress

Agricultural landowners 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 towards improved water quality. ODA is working with SWCDs, LACs, and other partners to develop and implement strategies that will produce measurable outcomes. ODA also is working with partners to develop monitoring methods to document progress.

1.7.1 Measurable Objectives

Measurable objectives allow the Ag Water Quality Program to better evaluate progress towards improved water quality. 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. The Oregon Department of Agriculture, LAC, and LMA will establish measurable objectives and associated milestones for each Area Plan. Many of these measurable objectives relate to land conditions and primarily are implemented through focused work in small geographic areas (section 1.7.3), with a long-term goal of developing measurable objectives and monitoring methods at the Management Area scale.

At each biennial review, ODA and its partners 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 measurable objective(s) and will revise strategies to address obstacles and challenges.

The measurable objectives and associated milestones for the Area Plan are in Chapter 3 and progress toward achieving the measurable objectives and milestones is summarized in Chapter 4.

1.7.2 Land Conditions and Water Quality

Land conditions can serve as useful surrogates (indicators) for water quality parameters. For example, streamside vegetation generally is used as a surrogate for water temperature because shade blocks solar radiation from warming the stream. In addition, sediment can be used as a surrogate for pesticides and phosphorus because they often 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,
- There is generally a lag time between changes on the landscape and the resultant improvements in the water. Extensive monitoring of water quality is needed to evaluate progress, which is expensive and may fail to demonstrate improvements in the short term,
- Improved land conditions can be documented immediately, but there may be significant lag time before water quality improves or water quality impacts due to other sources,
- Reductions in water quality from agricultural activities are primarily through changes in land conditions and management activities.

Water quality monitoring data will 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 water quality concerns associated with agriculture. Through the Focus Area process, the SWCD delivers systematic, concentrated outreach and technical assistance in a 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. Assessing the Health of Streams in Agricultural Landscapes: The Impacts of Land Management Change on Water Quality. Special Publication No. 31. Ames, Iowa).

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. The scale of the Focus Area matches the SWCD's capacity to deliver concentrated outreach and technical assistance, and to complete (or initiate) projects. The current Focus Area for this Management Area is described in Chapter 3. 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 Area Rules, 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 Area Rules. Finally, ODA completes a post-assessment to document progress made in the watershed. Chapter 3 describes any SIAs in this Management Area.

1.8 Monitoring, Evaluation, and Adaptive Management

The Oregon Department of Agriculture, LAC, and LMA will assess the effectiveness of the Area Plan and Area Rules by evaluating the status and trends in agricultural land conditions and water quality (Chapter 4). This assessment will include an evaluation of progress toward measurable objectives. ODA will utilize other agencies' and organizations' local monitoring data when available. 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 Agricultural Water Quality Monitoring

As part of monitoring water quality status and trends, DEQ regularly collects water samples at over 130 sites on more than 50 rivers and streams across the state. Sites are present across the major land uses (forestry, agriculture, rural residential, and urban/suburban). Sites are visited every other month throughout the year and represent a snapshot of water quality conditions. Parameters consistently measured include alkalinity, biochemical oxygen demand (BOD), chlorophyll a, specific conductance, dissolved oxygen (DO), DO percent saturation, *E. coli*, ammonia, nitrate and nitrite, pH, total phosphorus, total solids, temperature, and turbidity.

Other partners may have water quality data that is described in Chapter 3 and presented in Chapter 4.

1.8.2 Statewide Aerial Photo Monitoring of Streamside Vegetation

Starting in 2003, ODA began evaluating streamside vegetation conditions using aerial photos. Stream segments representing 10 to 15 percent of the agricultural lands in each Management Area were randomly selected for long-term aerial photo monitoring. Stream segments are generally 3-5 miles long. ODA evaluates streamside vegetation at specific points within 30-, 60-, and 90-foot bands along both sides of stream segments from the aerial photos and assigns each segment a score based on streamside vegetation. The score can range from 70 (all trees) to 0 (all bare ground). The same stream segments are re-photographed and re-scored every five years to evaluate changes in streamside vegetation conditions over time. Because site-capable vegetation varies across the state, there is no single "correct" streamside vegetation index score. The purpose of this monitoring is to measure positive or negative change for an individual reach.

1.8.3 Biennial Reviews and Adaptive Management

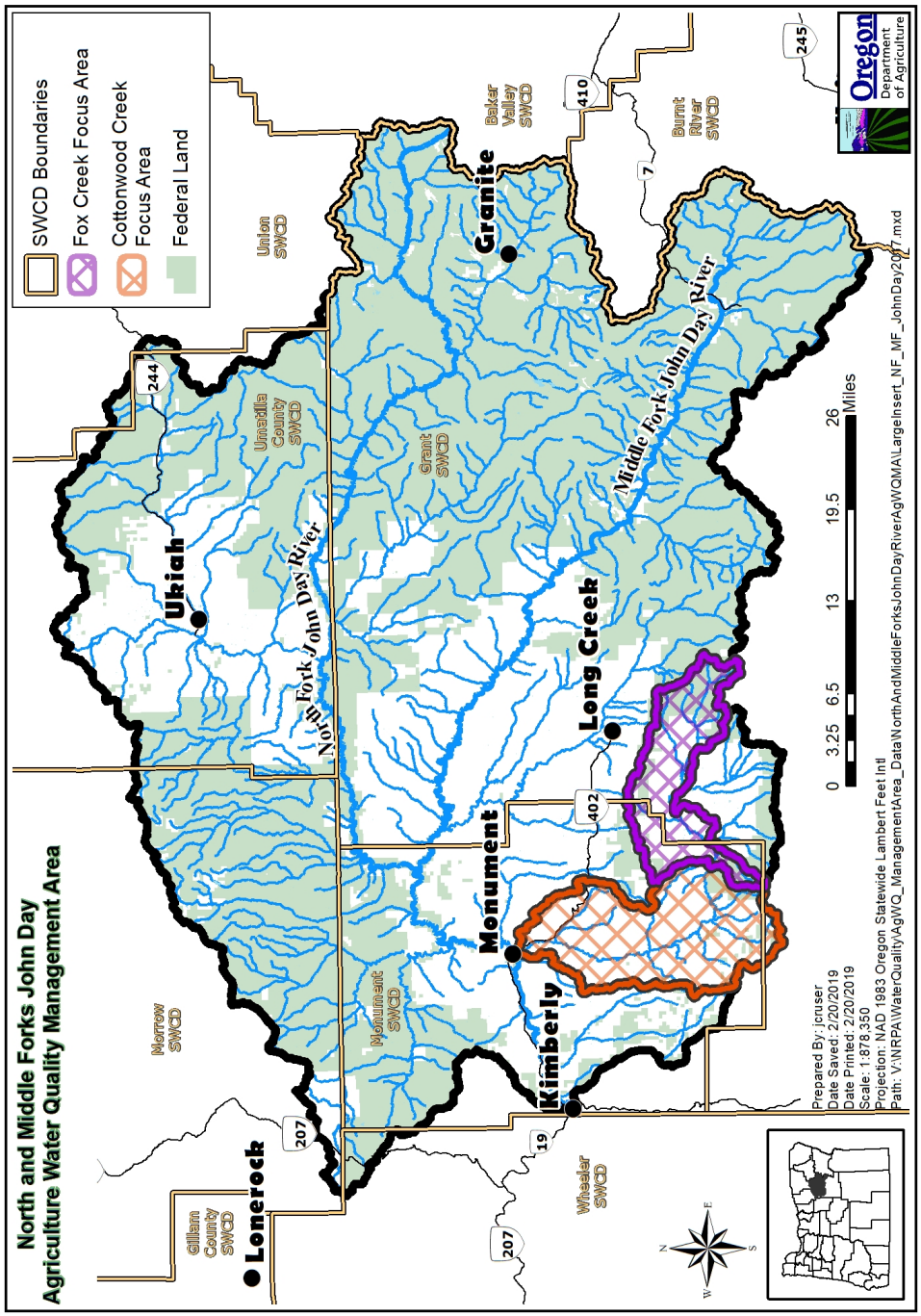
All Area Plans and Area Rules around the state undergo biennial reviews by ODA and the LAC. As part of each biennial review, ODA, DEQ, SWCDs, and the LAC discuss and evaluate the progress on implementation of the Area Plan and Area Rules. This evaluation includes discussion of enforcement actions, land condition and water quality monitoring, and outreach efforts over the past biennium. ODA and partners evaluate progress toward achieving measurable objectives, and revise implementation strategies as needed. The LAC submits a report to the Board of Agriculture and the director of ODA

describing progress and impediments to implementation, and recommendations for modifications to the Area Plan or Area Plans necessary to achieve the goal of the Area Plan. ODA and partners will use the results of this evaluation to update the measurable objectives and implementation strategies in Chapter 3.

Chapter 2: Local Background

The North and Middle Forks John Day River Agricultural Water Quality Management Area includes the area that drains into the North and Middle Forks of the John Day River upstream from the confluence with the mainstem John Day River near Kimberly. The physical boundaries of the Management Area are indicated on the map below.

Figure 3: NMF John Day River Ag WQ Management Area Map



2.1 Local Roles and Responsibilities

2.1.1 Local Advisory Committee

The Area Plan was developed with the assistance of the LAC. The LAC was formed in 2002 to assist with the development of the Area Plan and Area Rules and with subsequent biennial reviews.

Table 1: Current LAC members

Name	Location	Description
Sharon Livingston, Vice-Chair	Long Creek	Rancher, Landowner
Gary Adams	Lower Cottonwood Creek, Monument	Rancher, Landowner
Jim Bahrenburg	North Fork John Day River, Kimberly	Farmer, Landowner, Monument SWCD Director
Rick Henslee	Long Creek	Rancher, Landowner, North Fork John Day Watershed Council Board Member, Grant SWCD Director
La Velle Holmes	Middle Fork John Day River	Landowner
Jeff Thomas	North Fork John Day River, Kimberly	Orchard owner and operator
Joe Lemanski	John Day Basin	Fish Biologist with the Confederated Tribes of the Warm Springs Reservation of Oregon
John Zakrajsek	Northern and Upper North Fork John Day River	Habitat Biologist and North Fork John Day Watershed Council Board Member
Tammy Fields	North Fork John Day River, Kimberly	Rancher, Landowner, Monument SWCD Director

2.1.2 Local Management Agency

The implementation of this Area Plan is accomplished through an Intergovernmental Grant Agreement between ODA and Monument SWCD. This Intergovernmental Grant Agreement defines Monument SWCD as the lead Local Management Agency for implementation of the Area Plan. Monument SWCD was also involved in development of the Area Plan and associated Area Rules.

Grant and Umatilla County SWCDs will also assume responsibility for the implementation of the Area Plan and related projects within their districts boundaries that lie within the Management Area. Additionally, the North Fork John Day Watershed Council assists in implementation and review of the Area Plan and related projects in the Management Area. Implementation priorities will be established on a periodic basis through annual work plans developed jointly by the SWCDs and ODA with input from partner agencies.

2.2 Area Plan and Rules: Development and History

The director of ODA approved the Area Plan and Area Rules in March 2002. Since approval, the LAC has met biennially to review the Area Plan and Area Rules. The biennial review process includes an assessment of progress toward achieving the goals and objectives in the Area Plan.

2.3 Geographical and Physical Setting

The John Day River Basin is an 8,100 square mile drainage area, the fourth largest basin in the state. The flows originate in the Blue Mountains and flow generally westward and then northward for approximately 284 miles, discharging into the Columbia River east of Rufus, at river mile 218. The John Day River is one of the longest rivers without a dam in the United States. The climate is continental, characterized by low winter and high summer temperatures, low average annual precipitation and dry summers. Precipitation ranges from nine inches at the mouth to over 40 inches the upper reaches.

The Management Area consists of two Subbasins. The North Fork John Day River drains 1,800 square miles and flows westward for over 100 miles, entering the John Day River mainstem at Kimberly (river mile 184.2). This Subbasin includes parts of Grant, Umatilla, Morrow, Union, and Wheeler counties. The elevation ranges from 1,830 feet at the mouth to over 8,300 feet in the Blue Mountains. The climate varies from semi-arid near the mouth to relatively moist at higher elevations. Precipitation ranges from slightly more than 13 inches at Monument to over 40 inches annually (mostly snow) at the higher elevations of the Blue Mountains.

The Middle Fork John Day River, a tributary to the North Fork John Day River, drains 806 square miles and flows approximately 75 miles joining the North Fork at river mile 32.2 above Monument. This Subbasin is entirely in Grant County. The elevation ranges from 2,200 feet at the mouth to over 8,100 feet in the headwaters.

Most of the Management Area is in the John Day Ecological Province, which consists of "extensive areas of steeply and intricately dissected hills interspersed with isolated buttes and extensive plateaus and large and small valleys. The hills are mainly geologically eroded ancient lacustrine materials; plateaus and buttes are capped with igneous or tuffaceous rock. Soils are directly related to these different geologic formations; they are the parent materials in which the soils have formed." The upper North Fork is in the Blue Mountain Province "typified by groups of rugged mountains, steep canyons, and extensive plateaus divided by dendritic-pattern drainages. Basalt is the major bedrock underlying mountains and plateaus. Soils can be grouped according to natural vegetation." (*The Ecological Provinces of Oregon, 1998.)*

Water Yield

The North Fork John Day River contributes about 60 percent of the annual discharge of the John Day River Basin. The flow comes mostly from melting snowpack with late summer flows from groundwater. Average annual discharge at Monument, measured since 1925, is 904,200 acre-feet (AF). Peak discharge occurs between March and early June and the lowest flows generally occur during July, August, and September. The Middle Fork contributes about 25 percent of the North Fork flow with average annual measured flow at Ritter of 168,464 AF and an average annual estimated discharge at the mouth of about 268,000 AF.

Land Use

Forest covers 73 percent of the land area; range and pasture 24 percent; cropland two percent; and other uses one percent. Ninety-five percent of the land is used for grazing. In 1985, about 40 percent of the cropland was irrigated. Mining claims form small private enclaves, mostly within federally managed land.

Urban areas occupy only a small portion of the Management Area. Long Creek, Monument, Ukiah, and Granite are the incorporated cities with a total population of 690.

Special management areas include: the North Fork John Day River Wilderness (122,000 acres), the federal Wild and Scenic River System (27.8 miles - Wild River, 10.5 miles - Scenic River, 15.8 miles - Recreational River), State Scenic Waterways (53 miles - Accessible Natural River, 3 miles - Recreational

River, 11 miles - Natural River, 60 miles - Scenic River), US Forest Service (USFS) Greenhorn Mountains Scenic Area (29,285 acres) and Oregon Department of Fish and Wildlife Bridge Creek Wildlife Management Area (12,800 acres).

Significant mining has taken place in several areas of the John Day River Basin. Gold was discovered in the Canyon City area in 1862, which led to further exploration and settlement in the area. Large deposits were found in the Susanville and Greenhorn areas of the Management Area. Hydraulic mining was used to wash soil and gravel away to expose the gold ore.

Dredges were used in the streams to dig up the deposited gravel and sift out the gold. The Oregon Department of Geology and Mineral Industries estimates that at least 13 million cubic yards of material was handled on the North Fork-Granite Creek-Clear Creek system and 4.2 million cubic yards on the Middle Fork-Vincent Creek systems.

Land Ownership

Most of the land (65 percent) in the Management Area is owned by the public; managed by the USFS and US Department of Interior -Bureau of Land Management (BLM). The USFS lands are primarily in the eastern and northern headwaters areas and BLM lands are scattered throughout the western part of the Management Area and along the stream corridors. Private ownership occurs in the lower elevations, along streams and intermediate uplands. The state of Oregon owns scattered tracts throughout the Management Area totaling about 15,000 acres, which includes the Bridge Creek Management Area.

Agriculture

Agriculture is the primary private sector economic activity in the Management Area. The primary agricultural products are alfalfa, meadow hay, and beef cattle. Most hay produced is used to feed wintering cattle. Cattle production comprises over 70 percent of the agricultural income. Range forage provides over 50 percent of the year-round cattle feed with hay and pasture providing the remainder. Approximately half of the cattle operations use BLM or USFS range on a permit basis.

The North Fork Subbasin has about 24,000 acres of cropland, evenly split between irrigated and non-irrigated. Major crops are grain hay, meadow hay, and pasture. Other crops include, alfalfa, and orchards. The Middle Fork Subbasin has about 10,600 acres of cropland, one-third irrigated. Crops include alfalfa, meadow and grass hay, pasture, grain, and grain hay.

Grant County agricultural commodity sales for all crops and livestock for 2009 was $42,296,000. Since 1988, gross farm sales have ranged from about $16 to $45 million. Current statistics show that there are 35,000 cattle and 37,100 acres of hay in Grant County. (2017 Oregon Agripedia)

Early stockmen raised cattle and horses. In the 1880s, many cattle herds were sold and replaced with sheep. Grant County excelled in the production of wool. The 1893 assessment records show 17,631 cattle and 158,355 sheep. Sheep numbers began dropping off in the 1930s with an increase in cattle. Farming began in the 1860s with a gradual conversion of some stock ranches to farming in the valleys.

Water Use

The North Fork Subbasin has water rights administered by the Oregon Water Resource Department (WRD) for 536.0 cubic feet per second (cfs), mainly for irrigation (291.5 cfs) and mining (202.2 cfs). Annually, a total of 13,400 acres are irrigated (mostly by sprinklers) requiring 17,800 AF of water. Minimum stream flows were established in 1962 at Monument (55 cfs) and Dale (30 cfs). Some water may be diverted from the North Fork to the Umatilla Basin (25-28 cfs) and the North Fork Burnt River (22 cfs) for irrigation. There are 22 instream water rights.

The Middle Fork Subbasin has water rights for 146.7 cfs for irrigation (88.5 cfs) and mining (49.5 cfs). Mining rights are mostly junior, dated later than 1970. Irrigation is mostly flood near Long Creek and above Galena and totals 4,900 acres. Approximately 5,100 AF (44 cfs) is required from May to September. Minimum stream flows were established in 1962 for 10 cfs at Ritter for support of aquatic life. There are seven instream water rights.

Instream water rights are approved by WRD for fish protection, minimizing the effects of pollution, or maintaining recreational uses. Instream water rights have a priority date and are regulated in the same way as other water rights. An instream water right cannot affect a use with a senior priority date.

There are no major impoundments in the John Day River Basin. Over the years, many reservoir sites have been identified in both Subbasins for upstream storage of water. All of these sites are considered to have a potential adverse impact on anadromous fish runs. None of the sites were found to be justifiable economically, under the criteria used by federal agencies at that time.

Applications have been made to WRD for reservation of water in the Management Area for use in supplying irrigation uses or to meet adopted minimum perennial streamflow levels to be reserved for future appropriations. The decisions to approve the reservations are still pending.

Fishery Resources

The Management Area is an important producer of wild spring Chinook and summer steelhead for the John Day River Basin. Redd counts conducted for years 2000-18 showed the North Fork adult returns averaging 46 percent of the spring Chinook and 24 percent of total summer steelhead returns for the basin. The Middle Fork averages 21 percent of the adult spring Chinook 30 escapement and 28 percent of the summer steelhead returns for the basin. Bull trout, an Endangered Species Act (ESA) threatened species listed in 2002, is present in the upper reaches of both Subbasins as well as widespread populations of resident red band trout. Warm water species, including small mouth bass, exist in the lower mainstem reaches. Trends show a general decrease in spawning density for both spring Chinook and summer steelhead in the North and Middle Fork Subbasins in the last 18 years. Steelhead in particular have shown highly varied escapement estimates over the years. Middle Fork Subbasin estimates have generally show reasonable adult returns, even during low years, with the North Fork Subbasin seeing more dramatic declines in the last five years. John Day populations of steelhead were listed as a threatened species under the federal ESA in 1998.

The John Day Bull Trout Species Management Unit includes 20 populations distributed among headwater streams of the North Fork, Middle Fork, and Upper Mainstem John Day Rivers (ODFW, 2017). Of these, seven are located in the North Fork of the John Day River and nine are located in the Middle Fork of the John Day River. Bull trout populations within the North Fork and Middle Fork of the John Day River follow fluvial or resident life histories. Fluvial bull trout spawn and rear in headwater systems for one to four years before migrating downstream as sub-adults before returning to headwater areas to spawn. Resident populations do not show migratory behavior and therefore spawn and rear in smaller or headwater streams. Bull trout generally spawn in September, although this activity may occur as early as August or into October. Bull trout inhabit colder and more pristine habitats, typically requiring complex forms of cover, including large woody debris, undercut banks, boulders, and pools. They frequently inhabit side channels, stream margins, and pools with abundant cover.

Figure 4: John Day Basin Steelhead Escapement Estimates 2000-2018

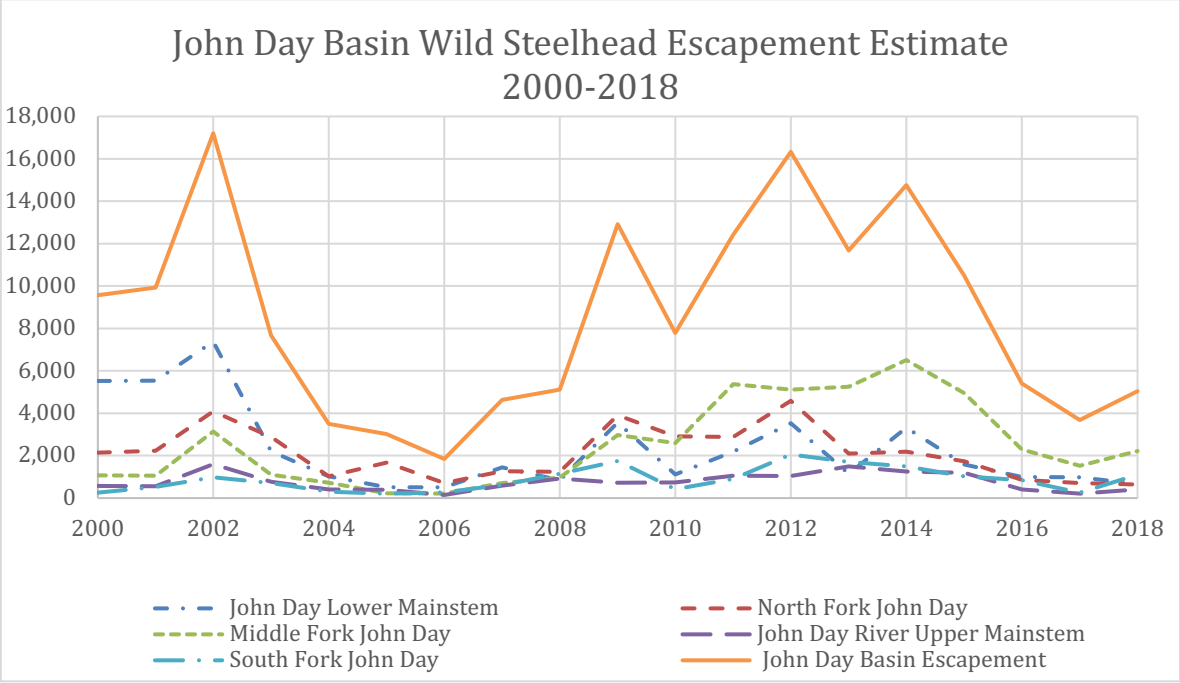
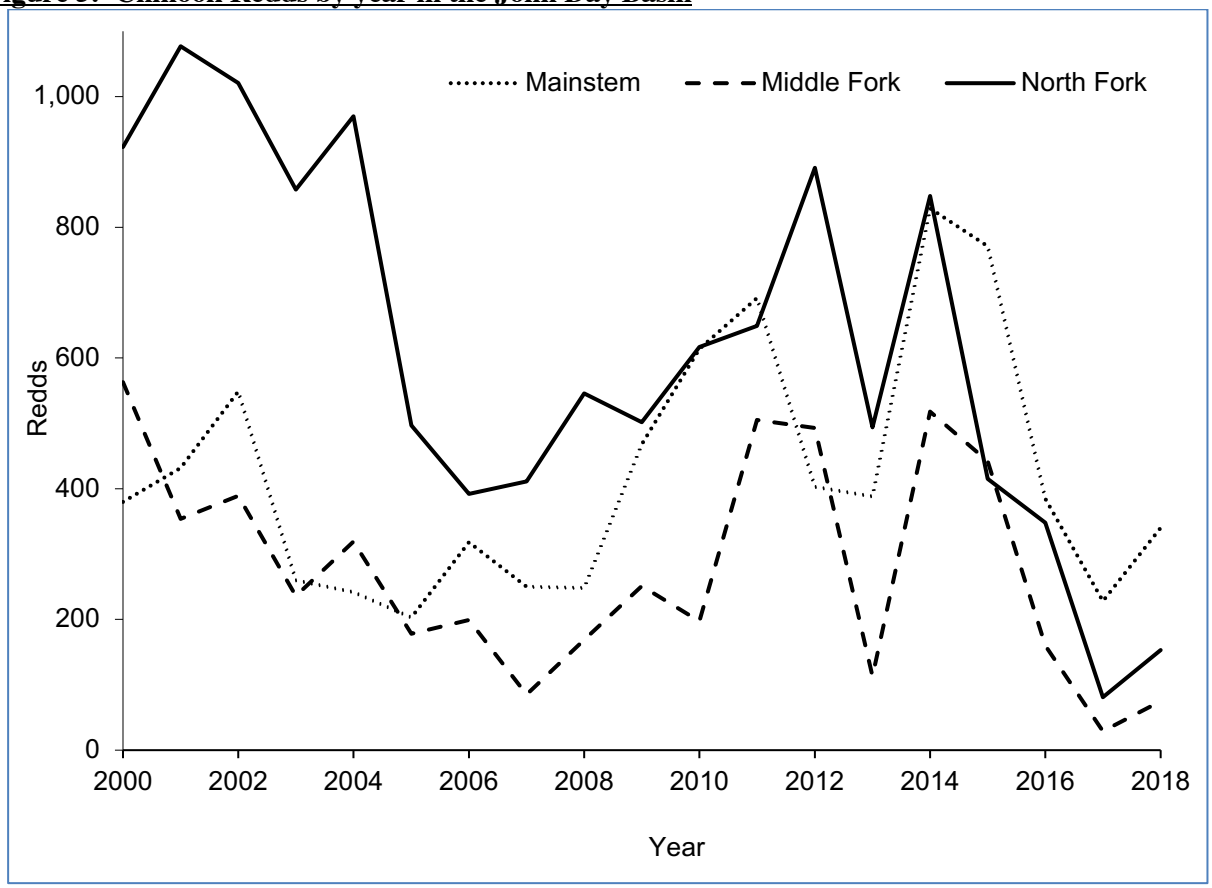


Figure 5: Chinook Redds by year in the John Day Basin



2.4 Agricultural Water Quality

2.4.1 Water Quality Issues

The North Fork Subbasin produces the best quality water; chemically, physically, and biologically; in the John Day River Basin (John Day River Basin Report, November 1986). Water distribution is a problem with high winter flows and low summer flows. Adverse weather conditions (e.g. high snow year spring melt) can have negative impacts on streambanks and riparian vegetation. High flows can carry sediment and can cause localized erosion and sedimentation while low flows along with lack of vegetation and other factors can result in high water temperatures. There are numerous sites with hot water (geothermal) springs, but total flows or the impact to stream temperatures are not fully understood.

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

Beneficial Uses

Water quality in the John Day River Basin must be managed to protect recognized beneficial uses. Beneficial uses of water in the John Day River 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. Beneficial uses that are adversely affected, according to current data, include: salmonid fish rearing and spawning, and resident fish and aquatic life.

The WRD (OAR 690-506-0010, John Day Basin Program) recognizes important economic, social, and environmental benefits to the public including: increases in crop production, enhancement of wild anadromous and resident fish production, provision of adequate water supplies for livestock and wildlife, enhancement of water-related tourism and recreation opportunities, maintenance of adequate water quality and quantity for projected domestic, industrial and municipal growth, and development of storage reservoirs that are beneficial to anadromous fish and other uses.

WQ Parameters and 303(d) list

In the Management Area, most 303(d) listings are specific to elevated water temperatures, biological criteria, sedimentation, dissolved oxygen, and pH. A complete list of water quality impaired water bodies in the Management Area, as identified in Oregon's 2012 303(d) list, is provided in Appendix A.

The DEQ has identified several water quality concerns in the John Day River Basin, including high temperature and bacteria levels, low oxygen concentrations, and impaired biological conditions. Temperature, sedimentation, and biological condition concerns were identified in the Management Area.

OAR 340-041-0007(1) states that "Notwithstanding the water quality standard contained below, the highest and best practicable treatment and/or control of wastes, activities, and flows shall in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic material, radioactivity, turbidity, color, odor, and other deleterious factors at the lowest possible levels."

Of the beneficial uses of water in the John Day River Basin, the most sensitive use for most waters and parameters of concern is spawning and rearing of cold-water fish. The following discussion of water quality parameters of concern in the Management Area addresses the CWA requirements for standards to be established for the most sensitive beneficial use.

Bacteria

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

The DEQ bacteria standard (OAR 340-41-0009(1)(a) states that organisms of the coliform group commonly associated with fecal sources shall not exceed a 90-day geometric mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five samples and no single sample shall exceed 406 *E. coli* organisms per 100 ml. The LAC suggests using the best scientific techniques available when sampling for *E. coli*.

As an alternative to estimating the load allocation directly, the bacteria TMDL establishes a surrogate measure expressed in a phased bacteria level reduction until the numeric standard above is achieved. An interim percent load reduction of 69 percent is suggested as an initial target for implementation, with a prioritization on the Upper Mainstem of the John Day River. If the numeric standard is not achieved after reaching this target, an 83 percent reduction would then be pursued.

Dissolved Oxygen

Low levels of dissolved oxygen can harm fish and other aquatic life. The availability of nutrients, warm temperatures, and light stimulate aquatic plant and algae growth that reduces the oxygen content of water when these plants die and decay. Domestic and wildlife feces and other organic wastes break down and remove oxygen from water.

The dissolved oxygen TMDL targets the DEQ standard (OAR 340-041-0016(3)) for water bodies identified as providing cool-water aquatic life habitats.

The standard states (in part), *"For waters identified by DEQ as providing cool-water aquatic life, the dissolved oxygen may not be less than 6.5 mg/l as an absolute minimum."*

The dissolved oxygen TMDL establishes that implementation of the temperature TMDL will sufficiently address the dissolved oxygen impairment identified in the Management Area.

Temperature

Increased water temperature is the most widespread concern in the basin. The causes of stream heating are excess solar radiation, decreased groundwater interaction, decreased hyporheic interaction, and instream flow reduction. These can result from natural disturbances and human-related stream modifications to stream channel, riparian, and floodplain areas such as vegetation disturbance, irrigation withdrawal, and channel straightening. The TMDL calls for increased stream shade and a more natural channel shape to reduce water temperatures. Water conservation and flow restoration are encouraged.

The streamside landscape provides shade that reduces solar heating of the water. The TMDL estimates the amount of natural, streamside vegetation needed to reduce solar heating to acceptable levels. Vegetation species and heights are determined by considering climate, soils, slope, elevation, historic vegetation, and protected areas.

Excessive water temperatures affect the survival of aquatic species. Cold-water fish, such as salmon and trout, are particularly sensitive to stream warming at all life stages. The purpose of the temperature criteria is to protect designated temperature-sensitive beneficial uses, including specific salmonid life cycle stages in waters of the state.

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

A one-time measurement above the standard is not a violation of the standard. When stream flow is exceptionally low or air temperature is exceptionally high, the temperature criterion is waived (an example is when the flow is less than the expected ten-year low flow or the air temperature is above the 90th percentile of a seven-day average). (*Questions and Answers About DEQ's Temperature Standards.)*

The TMDL load allocations are expressed as maximum heat loads. For ease of use, these are also expressed in terms of 'percent effective shade.' To further clarify, the vegetation target for temperature is simply natural shade-producing vegetation along all the streams in the John Day River Basin. Reduced channel widths and more natural flow levels are called for as well, while not quantified.

The TMDL targets can be found in the TMDL main document at https://www.oregon.gov/deq/FilterDocs/jdTMDLwqmp.pdf. The load allocations are defined and illustrated in the TMDL on pages 79-89 in Section 2.1.8.

Sedimentation

Sediment above natural levels affect drinking water for humans and impacts salmonid reproduction and rearing. The formation of appreciable deposits of sediment interferes with the quality of gravels in the streambed that are essential for successful spawning, incubation, and rearing of salmonids.

DEQ is in the process of developing quantitative methods and benchmarks to evaluate sedimentation impairment in Oregon streams. Because this work is not yet complete, DEQ postponed the sedimentation TMDL until these methods are in place.

This Area Plan addresses sedimentation through prevention and control measures that reduce runoff from upland areas, provide filtration in riparian areas, and reduce return flows from irrigated areas.

Biological Criteria

Biological criteria refer to the support of plants and animals that live at least part of their life cycle in water. Factors that affect biological criteria are stream disturbances, excessive heat inputs, and excessive sediment.

> *Waters of the state shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities (OAR 340-41-0011).*

The TMDL analysis demonstrates that temperature TMDL implementation will address both low oxygen levels and impaired biologic conditions.

2.4.2 Basin TMDLs and Agricultural Load Allocations

The John Day River Basin TMDL for temperature was developed by DEQ and approved by the US EPA in December 2010. The temperature TMDL focuses on the impacts of elevated temperatures to anadromous fish and other aquatic communities. It recommends practices such as increased riparian vegetation to provide stream shading to moderate the effects of solar heating. In the Management Area, TMDL targets for both effective shade and channel width have been established to address instream temperature. The John Day River Basin TMDL and Water Quality Management Plan can be viewed on the DEQ Website at: https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-Basin-John-Day.aspx. Agricultural load allocations are included in Section 2.4.1.

2.4.3 Sources of Impairment

Probable nonpoint sources of pollution in the Management Area include eroding agricultural and forest lands, eroding streambanks, runoff and erosion from roads and urban areas, and runoff from areas used by livestock and other agricultural operations. Pollutants from nonpoint sources are carried to the surface water or groundwater through the action of rainfall, snowmelt, irrigation and urban runoff, and seepage. Runoff from nonpoint sources can concentrate into identifiable sources entering waterways as point sources.

A major nonpoint source of water quality impairment is heat input that results in high water temperatures. Water temperature naturally fluctuates with air and soil temperatures on a daily and seasonal basis, however, temperature increases may be caused by both natural and man-caused events resulting from vegetation removal, low seasonal flows, changes in channel shape, and alteration to the floodplain (among others). Channelization or alteration of stream courses can alter gradient, width/depth ratio, and sinuosity, causing sediment and temperature increases.

While there may not be severe impacts on water quality from a single source or activity, the combined effects from all sources contribute, along with impacts from other land uses and activities, to the impairment of beneficial uses of the John Day River.

2.5 Voluntary and Regulatory Measures

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

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

OAR 603-095-1040
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 603-095-1040 (Prevention and Control Measure).
(A) A landowner or operator shall be responsible for water quality resulting from conditions caused by the management of the landowner or operator.
(B) Rules do not apply to conditions resulting from unusual weather events or other circumstances not within the reasonable control of the landowner or operator. Reasonable control of the landowner means that technically sound and economically feasible measures must be available to address conditions described in Prevention and Control Measures.
(b) Rule implementation schedule:
(A) OAR 603-095-1040(2) is effective upon adoption;
(B) OAR 603-095-1040 (3) through (6) are effective January 1, 2006;
(C) Effective upon adoption of these rules, all landowners or operators should immediately begin technically sound, economically feasible efforts where needed to achieve measurable progress towards compliance with these rules.
(c) These rules may be modified as a result of the biennial review of the progress of implementation of the North and Middle Forks John Day River Agricultural Water Quality Management Area Plan.

2.5.1 Nutrients and Manure Management

A landowner or operator's responsibility under this Area Plan is to prevent the introduction of waste materials into nearby bodies of water. There are existing, applicable statutes and rules that regulate water quality.

OAR 603-095-1040 (2) Waste Management: Effective on rule adoption, no person subject to these rules shall violate any provision of (ORS 468B.025 or 468B.050.

2.5.2 Riparian/Streamside Area Management

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

OAR 603-095-1040 (4) Riparian Area Management: Riparian area condition must allow the establishment, growth and active recruitment of riparian vegetation, consistent with the vegetative capability of the site, for protection of water quality.

OAR 690-4000-0019(14): "Riparian Area" means the zone of transition from an aquatic ecosystem to a terrestrial ecosystem, 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, bog, wet meadow, muskeg, or ephemeral, intermittent or perennial stream.

Water is the distinguishing characteristic of riparian areas, but soil, vegetation, and landform also exert strong influence on these systems. In a healthy riparian ecosystem, these four components interact to produce a wide variety of conditions. Healthy riparian areas provide several important ecological functions. These include:

- Dissipation of stream energy associated with high flows and thus influencing the transport of sediment,
- Capturing suspended sediment and bedload that builds streambanks and develops floodplain function,
- Retaining floodwater and recharging ground water,
- Stabilizing streambanks through plant root mass,
- Developing diverse channel characteristics providing pool depth, cover, and variations in water velocity necessary for fish production,
- Supporting biodiversity,
- Shade for moderation of solar heat input,
- 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 used to evaluate improvement of the riparian area condition could include:

- Expansion of riparian area as evidenced by development of riparian vegetation and plant vigor,

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

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

Riparian area health may be directly influenced by management. This Area Plan does not prescribe specific practices to landowners for management of riparian areas. Site specific recommendations for management to protect water quality, including buffer width, vegetation types, and grazing timing, can be obtained from sources listed in the Implementation Strategies section (3.2.4) of this Area Plan.

The LAC requests that the county governments include a description of strategies to improve and maintain riparian vegetation along rivers, streams, and springs in their comprehensive land use planning documents. The natural features provided by riparian areas have extensive economic, social, and environmental benefits to the county residents. Coordination of county and state programs addressing riparian condition may be provided by the local SWCDs.

2.5.3 Upland Management

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

> OAR 603-095-1040 (3) Uplands Management:
> (a) Cropland, rangeland and pasture condition must allow, within the capability of the site, vegetation sufficient to protect water quality.
> (b) Private roads and farmsteads must be in a condition that protects water quality by controlling soil erosion and suspended sediment concentrations in runoff.

Upland areas are the rangelands, forests, and croplands upslope from the riparian areas. These areas extend to the ridge tops of watersheds. With a protective cover of grass (herbs), shrubs, or trees, consistent with site capability, these areas will capture, store, and safely release precipitation thereby reducing the potential of excessive soil erosion or delivery of soil or pollutants to the receiving stream or other body of water. Proper management of upland vegetation considers physical and biological conditions of the management area, controls soil erosion, and minimizes transport of soil and nutrients to the stream. Upland management also simultaneously considers livestock production interests and protection of fish and wildlife habitat.

Vegetation and soils are distinguishing characteristics of upland areas. Adequate vegetative cover can prevent or reduce soil erosion, minimize pollutant transport, improve water infiltration and storage, and protect fish and wildlife habitat. Vegetation is dependent on physical characteristics including soil, geology, landform, water, and other climate factors. In a healthy upland environment, management will provide a balance of these characteristics.

Upland productivity varies depending on the characteristics listed above as well as biological and management factors. This productivity supports a wide variety of wildlife and forage for livestock. Healthy uplands maintain productivity over time and are resilient to stresses caused by variations in physical conditions such as climatic changes.

To implement proper management practices and ensure an area is healthy or functioning properly, the capability and potential of a site must be understood. Capability is the highest ecological status a site can attain given political, social, or economic constraints or limiting factors. Potential is the highest ecological status a site can attain given no political, social, or economic constraints and is often referred to as the "potential natural community." Examples of constraints would include local ordinances, location of roads or homes, and the costs of management changes.

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

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

Indicators of these conditions include:

- Recruitment of beneficial plant species,
- 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 control 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 NRCS.

Upland management addresses a water quality parameter of concern identified in the 303(d) list as sedimentation. This Area Plan does not prescribe specific practices to landowners for management of upland areas to reduce runoff of sediment and other wastes. Site specific recommendations for management to protect water quality, including grazing management systems, desirable vegetation types,

and road construction/maintenance, can be obtained from sources listed in the Implementation Strategies section (3.2.4) of this Area Plan.

2.5.4 Irrigated Lands Management

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

603-095-1040 (5) Irrigation Management: Irrigation must be done in a manner that limits the amount of pollutants in the runoff from the irrigated area.

Irrigated lands are lands either riparian, floodplain, or uplands upon which water is applied for the purpose of growing crops. Diversion of water from a waterbody to be applied on land for the purpose of growing crops is a recognized beneficial use of water. Irrigation water use is regulated by the WRD in the form of water rights, which specify the rate and amount of water that can be applied to a particular parcel of land. Refer to WRD Rules (OAR 690-300-0010(26)) for more details.

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

- Delivery of water efficiently 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,
- Scheduling of water application appropriate to the site including consideration of soil conditions, crop needs, climate, and topography,
- Increased sediment capture from irrigation runoff before it enters rivers and streams,
- Installation and management of diversion structures to control erosion and sediment delivery, and protect the stability of streambanks. If funding becomes available, temporary diversions, which must be reinstalled every year, should be replaced with suitable permanent diversions (i.e. pumping stations, infiltration galleries, dams),
- Diversions that are adequately screened and which provide for fish passage. Refer to ORS 498.268.

2.5.5 Livestock Management

A landowner or operator's responsibility under this Area Plan is to implement measures that prevent and control water pollution from livestock operations. Livestock production is the most common agricultural activity in the management area. Careful management of areas used for grazing, feeding, and handling is critical to the success of livestock operations and have potential to affect water quality.

OAR 603-095-1040 (6) Livestock Management: (a) Livestock confinement areas must have an adequate runoff control system or equally effective pollution control practice sufficient to control runoff of sediment and animal waste. (b) OAR 603-095-1040(6)(a) applies to all livestock confinement areas except those required to have a permit under ORS 468B.050.

Livestock management can be done in a manner that limits soil erosion and minimizes the delivery of sediment and animal wastes to nearby streams. A grazing management system should promote and

maintain adequate vegetative cover for protection of water quality by consideration of intensity, frequency, duration, and season of grazing.

Grazing near streams should be managed to prevent negative impacts to streambank stability, allow for recovery of plants, and leave adequate vegetative cover to ensure protection of riparian functions, including shade and habitat. Offstream watering systems, upland water developments, feed, salt, and mineral placement are examples of methods to be considered as ways to reduce impacts of livestock to streamside areas.

Factors used to evaluate effectiveness of management may include:

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

Chapter 3: Strategic Initiatives

Goal: Prevent and control water pollution from agricultural activities and soil erosion, and achieve applicable water quality standards.

Objective: Maximize agriculture's beneficial impact on water quality within the Management Area by identifying and controlling factors that contribute to pollution originating on agricultural and rural lands.

3.1 Measurable Objectives

To achieve the Area Plan goal, the following measurable objectives, strategies, milestones, and timelines were developed.

3.1.1 Management Area

Currently, we do not have adequate resources and expertise to develop and implement measurable objectives across the management area. The ODA, LMAs, and LAC continue to review opportunities to define and implement measurable objectives as resources allow. We currently rely on defining and measuring milestones in our Focus Areas.

3.1.2 Focus Area(s)

Cottonwood Creek Focus Area:
In the 2017-19 biennium, Monument SWCD decided to contiue work in Cottonwood Creek as a Focus Area, but developed a new assessment method and added a 3rd HUC to the Focus Area.

Cottonwood Creek is a significant tributary of the North Fork John Day River that provides critical spawning and rearing habitat for ESA listed (Threatened) Mid-Columbia River steelhead. Starting out as Fox Creek in its upper reaches, the entirety of the Cottonwood Creek watershed encompasses seven 6th field HUCs covering 149,061 acres. This 2017-2019 Focus Area includes the Upper Cottonwood Creek HUC (170702020905), the Middle Cottonwood Creek HUC (170702020906), and the Lower Cottonwood Creek HUC (170702020907) encompassing 79,405 acres with 25 perennial stream miles and 130 intermittent stream miles. The Upper Cottonwood Creek HUC has been added into the 2017-2019 Focus Area since a new assessment method more easily allowed for analysis over all three HUCs. Cottonwood Creek is vitally important both to aquatic species and agricultural producers who rely on its water to irrigate pastures and hay crops. The Monument SWCD's engagement with landowners has been relatively successful and many prior conservation practices have already been implemented within the Focus Area. Some of these actions include riparian fencing, juniper control, noxious weed control, fish passage improvements, irrigation efficiency improvements, and off-channel water developments for livestock. However, one resource concern that continues to be noticed is high sediment loads and turbidity, especially following rainfall events and during spring runoff. Because Cottonwood Creek is such an important steelhead producing stream, high sediment loading may be negatively impacting salmonid habitats.

One of the reason for the modified assessment method, is to provide more meaningful results of projects implemented. The Streamside Vegetation Assessment method utilized within this same Focus Area in 2015-2017 bienium did not yeild any change due a relatively high percentage of lands already in good condition classes (i.e., not likely impacted by agriculture) coupled with lack of landowner interest in riparian restoration projects. In the 2017-19 biennium, Monument SWCD developed the Water Quality

Land Condition Assessment (WQLC) method. The WQLC builds the final scoring of catchments (as defined per USGS National Hydrology Dataset) based upon analysis of several parameters from spatial data sets into Assessment Category scores, as shown below. Specific parameters include: 1) Revised Universal Soil Loss Equation (RUSLE), 2) percent north facing aspect, 3) juniper cover, 4) invasive annual grass cover, and 4) land use. The GIS analysis of these parameters creates a final assessment category score with the categorization of data within each parameter being grouped using the Jenks natural breaks optimization method to reduce bias. Initial Assessment Categories produced by the WQLC are then field verified to validate and update data within parameter layers (e.g. correcting juniper cover in an area that was cleared since the layer was created). Field surveys of Best Management Practices are also conducted and used to modify the land use scores and further refine the catchment Assessment Category score.

WQLC Assessment Categories:

- Class I – land conditions and agricultural use that are protective of water quality,
- Class II – land conditions that may impact water quality due to vegetation cover/composition or agricultural use concerns,
- Class III – land conditions likely to impact water quality due to vegetation cover/composition or agricultural land use concerns,
- Class IV – Not ag lands.

Current Milestone:

- By June 30, 2019, finalize the pre-assessment and develop a milestone and measurable objective.

Previous Milestone:

- By June 30, 2017: Decrease [Grass Ag + Bare Ag] to 2.2 acres. Current Grass Ag + Bare Ag is 16.8 acres.

Fox Creek Focus Area:
In July of 2018, Grant SWCD opened Fox Creek Focus Area, which encompases Lower Fox Creek HUC (170702020904) and Upper Fox Creek HUC (170802020901. This Focus Area has approximately: 44,000 acres, 35 miles of perennial streams, and 113 miles of intermittent streams. Approximately 56 percent of the Focus Area is in agricultural use, predomitanly meadow hay and grazing. Although the Focus Area is the boundaries of the HUCs, the assessment area is limited to the extent of existing LIDAR data along Fox Creek.

The assessment area comprises an 11.4 mile reach of Fox Creek, which was flown for LiDAR data and 4-band digital imagery between October 21 and 23, 2015 for US Bureau of Reclamation. A 35-foot buffer on either side of the streambanks will be assessed; the total size of the assessment area will comprise approximately 97 acres of riparian conditions. The assessment will estimate the volume of riparian vegetative cover structure ("biomass") within the subject area in cubic feet. This volume will be further classified as "herbaceous" (vegetation 0 to 3 feet in height), "shrub" (vegetation with heights between 3 and 20 feet) and "tree" (heights above 20 feet).

Milestone:

- By June 30, 2019, complete the BMP field survey, revise the pre-assessment if needed, and develop a milestone and measurable objective.

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 and Activities

The ODA and Monument SWCD primary strategies to reduce pollution from agricultural and rural lands are through a combination of educational programs, land treatment, implementation of sound management practices, installation of erosion control structures, and monitoring of implementation effectiveness.

To achieve clean water, 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 conservation practices. The following strategies will be employed at the local level by Monument, Grant, and Umatilla County SWCDs, the North Fork John Day Watershed Council, landowners, and other agencies and organizations for implementation of the Area Plan:

1. Work to improve the quality of water in the Management Area through planning and implementation of technically sound and economically feasible conservation practices that contribute to meeting plan goals.
2. Create a high level of awareness and an understanding of water quality issues, among the agricultural community and rural public, in a manner that minimizes conflict and encourages cooperative efforts through education and technical assistance activities.
3. Encourage active participation by the agricultural community and rural public in the process of solving our water quality problems.
4. Achieve plan goals and objectives by encouraging adequate funding and administration of the program to achieve 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.

3.2.1 Water Quality Management Practices

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

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

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

A detailed listing of a number of specific practices and management measures that can be used 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.

Landowners are expected to employ management practices, appropriate for their operation, that contribute overall to meeting the established load allocations for temperature and dissolved oxygen. Practices necessary for meeting those load allocations would address:

- Riparian or streamside area management - for effective shade, improved channel condition, and increased stream flow,
- Irrigation management - especially keeping nutrients and sediments from entering waterways, and irrigation efficiency,
- Manure management - for reduction of bacteria and nutrient runoff,
- Upland management - limit adverse effect on water quality and quantity.

3.2.2 Education and Outreach

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

- Incorporating implementation of the Area Plan as a priority element in Monument, Grant, and Umatilla County SWCDs' Annual Work Plan and Long Range Plan with support from partner organizations,
- Showcasing successful practices and systems, and conduct annual tours or seminars for landowners, and media,
- Recognizing successful projects and practices through appropriate media and newsletters,
- Promoting cooperative on-the-ground projects to solve critical problems identified by landowners and in cooperation with partner organizations,
- Conducting educational outreach to promote public awareness of water quality issues, coordinating the review of information and education materials with agencies or organizations as appropriate.

3.2.3 Conservation Planning and Activities

Effective water quality management depends on activities and structural measures that are the most effective, practical means of controlling and preventing pollution from agricultural activities. Appropriate management activities for individual farms may vary with the specific cropping, topographical, environmental, and economic conditions at a given site. Due to these variables, it is difficult to recommend any specific, uniform set of management activities in this document to improve agricultural water quality.

Management activities and land management changes are most effective when selected and installed as parts of a comprehensive resource management plan based on natural resource inventories and assessment of management activities.

A detailed list of specific measures that can be used to address agricultural pollution are contained in other documents such as the NRCS Field Office Technical Guide, available for reference at the local NRCS office. Landowners and operators have flexibility in choosing management approaches to address water quality issues on their lands.

Voluntary conservation plans describe the management systems and schedule of conservation activities that the landowner will use to conserve soil, water, and related plant and animal resources on all or part of a farm unit. Landowners, operators, consultants, or technicians available through a SWCD or the NRCS may develop voluntary conservation plans. A conservation plan can be used to outline specific measures necessary to address the "Prevention and Control Measures" outlined in this Area Plan.

Conservation activities should:

- Identify priorities for management activities, including reasonable timelines,
- Control pollution as close to the source as possible,
- Manage irrigation water use and conveyance efficiency to reduce the potential of nutrients and sediments from entering waterways,
- Continue good upland and riparian practices that are beneficial to water quality,
- Show reduction in potential sources of pollution through scientifically valid monitoring and periodic surveys of stream reaches and associated lands,
- Be flexible to adjust management based on feedback or monitoring and changing environmental and economic conditions,
- 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.

3.2.4 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, Monument, Grant, and Umatilla County SWCDs, the USDA-NRCS, North Fork John Day Watershed Council, and other natural resource agency staff are available to assist landowners in evaluating effective practices for reducing runoff and soil erosion on their farms, where it exists, and incorporating these practices into voluntary conservation plans and the implementation of effective managmenet practices. Personnel in these offices can also design and assist with implementation of practices, and assist in identifying sources of cost-sharing funds for the construction and/or use of some of these practices.

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

Farm planning assistance is available from these and other sources:

- Technical Assistance
  - NRCS -- planning, design, implementation,
  - SWCD -- planning, design, implementation, grant-writing,
  - Watershed councils -- planning, implementation, grant-writing.
- Workbooks and Publications
  - Voluntary Conservation On Your Land, NRCS/Oregon Association of Conservation Districts (OACD).
  - Oregon Small Acreages Conservation Toolbox, NRCS/OACD.
  - WESt Program Workbook, Oregon Cattleman's Assoc. (OCA)/OSU.
  - Ranch Water Quality Planning Workbook, OSU Extension.
  - The Oregon Plan Toolbox, OWEB.
- Programs
  - Farm*A *Syst Program, OSU Extension,
  - Stream*A *Syst Program, OSU Extension,

- Home*A *Syst Program, OSU Extension.

3.3 Monitoring and Evaluation

DEQ monitors one site in the Management Area as part of their ambient monitoring network (North Fork John Day River at Kimberly). This site has been monitored consistently every two months since 1979. This station captures predominantly agricultural land use, with some recreational use and some rural/suburban land use. Forested land is farther upstream.

The LAC maintains that grab samples for temperature are inappropriate for characterizing water quality for recreation and agricultural land use. DEQ encourages the LAC to work with ODA on more thorough water quality monitoring, especially continues temperature. ODA met with the LAC to develop an appropriate monitoring plan, but no action was taken. The LAC recommends that DEQ eliminate reliance on grab sample monitoring.

DEQ retrieved data for the Management Area from January 1, 2000 to December 1, 2018 from DEQ, US EPA and US Geological Survey databases. DEQ determined status for stations with data from 2016 through 2018 and trends for stations with at least eight years of data. Their report is summarized in Chapter 4 and can be found at https://www.oregon.gov/deq/wq/programs/Pages/wqstatustrends.aspx. The report will be updated for future biennial reviews.

For a description of monitoring and evaluation results, see Chapter 4.

Chapter 4: Implementation, Monitoring, and Adaptive Management

4.1 Progress Toward Measurable Objectives

4.1.1 Management Area

Currently, we do not have adequate resources and expertise to develop and implement measurable objectives across the management area. The ODA, LMAs, and LAC continue to review opportunities to define and implement measurable objectives as resources allow. We currently rely on defining and measuring milestones in our Focus Areas.

4.1.2 Focus Area

Table 2: Cottonwood Creek: Water Quality Land Condition Assessment Results in Acres

Class	2017: Pre-Assessment (prior to completeing BMP field survey)	2019: Finalized Pre-Assessment	Reason for Change
I	12,190 acres		
II	33,665 acres		
III	27,266 acres		
IV (Not Ag)	6,284 acres		
Total (I-IV)	**79,405 acres**		
Total Ag Area Assessed (= Total minus "Not Ag")	**73,121 acres**		

Table 3: Cottonwood Creek Streamside Vegetation Assessment (SVA) Results (Acres)

SVA Map Category	2013	June 30, 2017
Ag Infrastructure	0.4	0.4
Bare	6.3	6.2
Bare Ag	1.3	1.3
Grass	75.3	75.3
Grass Ag	15.5	15.4
Not Ag	0	0
Shrub	23.7	23.7
Shrub Ag	0	0
Tree	51.1	51.2
Tree Ag	0	0
Water	43.9	43.9
TOTAL ACRES	**217.5**	**217.5**

The Streamside Vegetation Assessment method utilized within Cottonwood Creek Focus Area in 2015 – 2017 did not yield any change due to lack of landowner interest in riparian restoration projects coupled with a relatively high percentage of lands in good condition classes (not likely impacted by agriculture). Much of Cottonwood Creek has been fenced through programs such as the Conservation Reserve Enhancement Program (CREP) and ODFW's habitat program. One of the reasons for the modified Assessment method is to provide more meaningful results of projects implemented.

Table 4: Fox Creek Focus Area

SBA Class Category	Pre-Assessment (evaluation of 2015 data) to be completed by June 30, 2019	2020: Interim-Assessment	Reason for Change
Total Biomass Volume			
Herbaceous Biomass Volume (0' to 3')			
Shrub Biomass Volume (3'-20')			
Tree Biomass Volume (>20')			

4.2 Activities and Accomplishments

Many conservation activities and implementation monitoring tracks have been implemented to benefit water quality. The SWCDs 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.

2017-2018 Activites and Accomplishments per Area Plan strategies.

Strategies:
1. Work to improve the quality of water in the Management Area through planning and implementation of technically sound and economically feasible conservation practices that contribute to meeting plan goals.

Monument SWCD:

- Nine off-channel livestock water developments installed,
- Continued monitoring and revegetation efforts on a 9.7-acre wetland adjacent to the North Fork John Day River,
- Continued work on a technical design project aimed at installing low maintenance sediment capture structures in non-jurisdictional drainages within the Cottonwood Creek watershed,
- Initiated a stream temperature and flow monitoring project on Cottonwood Creek to determine if a model can be built that estimates periods of lethal conditions for salmonids. Successful model development may lead to a future, voluntary irrigation curtailment program based on the model's success,
- Began work on a technical design process aimed at increasing fish passage and instream habitat functions at an irrigation point of diversion on Cottonwood Creek,
- Began work on an irrigation point of diversion transfer on the North Fork John Day River that will eliminate annual instream and riparian disturbance,
- Participate in the John Day Basin Partnership and their efforts to strategically plan, prioritize, and implement projects,
- 170 acres of riparian leafy spurge treated,
- 188 acres of additional weeds controlled.

NFJD WC:

- Three fish passage barrier culverts replaced including riparian plantings,
- 102 log structures placed in stream, treating a total of 3.75 miles of fish habitat,
- 20 floodplain log structures installed to mitigate wet meadow erosion and headcutting in high flow events,
- Removed 350 feet of berm, opening floodplain access to a stream,
- Created a total of 1.25 miles of additional side channel habitat,
- Connected 4 miles of in-stream fish habitat to passage, spawning and rearing by cutting a new channel,
- Planted 25 acres of willows and other native riparian plants,
- 40 acres of wet meadow protection from livestock impacts,
- Four wet meadows restored, eroded channels filled with organic material,
- Four springs developed for livestock off-source watering,
- 131 acres of ODA A&B listed weeds treated,
- 218 quaking aspen planted and 2.5 acres of aspen habitat fenced.

Grant SWCD:

- Approximately 33.1 miles of riparian exclusion fence,
- Installed 3 upland stockwater developments that included 29 water troughs, 15,111 ft. of buried water distribution pipe, development of 4 new springs and expand the use of 3 existing springs and 2 other functional well sources,
- Installed a bottomless arch culvert and restored floodplain connectivity along 1.2 miles of Big Creek,
- Performed noxious weed control on 465 acres and monitored noxious weed sites on 10,200 acres.

2. Create a high level of awareness and an understanding of water quality issues, among the agricultural community and rural public, in a manner that minimizes conflict and encourages cooperative efforts through education and technical assistance activities.

Monument SWCD:

- 2017 Annual Landowner Seminars attended by 40 individuals listening to presentations on land trusts and working land easements and updates on juniper herbicide trials,
- 2018 Annual Landowner Seminars attended by 57 individuals listening to presentations on soil health, herbicide resistance in noxious weeds, an overview of the John Day Basin Partnership, and updates on the North & Middle Forks John Day River Area Plan,
- Landowners assistance with herbicide and seeding efforts,
- Presentations at monthly meetings.

NFJD WC:

- Educated 12 rural youth in the importance of wet meadows for water conservation,
- Educated 4 rural youth regarding common invasive plants,
- Educated 4 rural youth on Watershed function and how litter and refuse impact systems downstream,
- Educated 12 youth on riparian ecosystem function (example: vegetation, animals, stream flow, and temperature.

Grant SWCD:

- Assessed riaprian vegetation biomass along Fox Creek with LIDAR Survey Data to gauge the effectiveness of agricultural water quality improvement outreach and project implementation.

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

Monument SWCD:

- Technical assistance provided to over 90 landowners and land managers from partner agencies and organizations as well as the SWCD,
- Secured grant funding for 9 landowner assistance projects,
- Invite public to attend and participate in monthly meetings.

NFJD WC:

- Employed 4 rural youth in wet meadow restoration work placing course woody debris jams in incised channels,
- Employed 8 rural youth for native plantings, riparian fence removal, and fish salvage for restoration.

Table 5: NRCS Accomplishments

NRCS Accomplishments in the Management Area		
Practice	**Units**	
Grazing Management		
Access Control	105.1	ac
Grazing management for improving quantity and quality of food for wildlife	438.6	ac
Incorporating wildlife refuge areas in contingency plans for prescribed grazing-cover/shelter	537.1	ac
Grazing management to improve wildlife habitat	4599.6	ac
Maintaining quantity and quality of forage for animal health and productivity	7479.2	ac
Managing Calving to Coincide with Forage Availability	5770.6	ac
Monitor key grazing areas to improve grazing management	7172.2	ac
Monitoring nutritional status of livestock using the NUTBAL PRO System	1057.6	ac
Rotation of supplement and feeding areas	7172.2	ac
Vegetative Practices		
Brush Management (Juniper Removal)	885.9	ac
Forest Stand Improvement	487.8	ac
Herbaceous weed control (inadequate structure and comp) for desired plant communities/habitats	182	ac
Herbaceous weed control (plant pest pressures) for desired plant communities/habitats	307.1	ac
Herbaceous Weed Treatment	40	ac
Range Planting	40	ac
Range planting for improving forage, browse, or cover for wildlife	88	ac
Use drift reducing nozzles, low pressures, lower boom height and adjuvants to reduce pesticide drift	10	ac
Woody Residue Treatment	656.7	ac
Structural		
Fence	7228	ft
High Tunnel System	1440	sq ft
Roof Runoff Structure	1	no
Stock Water		
Livestock Pipeline	8533	ft
Pumping Plant	3	no
Spring Development	10	no
Water Well	1	no
Watering Facility	23	no
Wildlife Habitat		
Upland Wildlife Habitat Management	105.1	ac
Snags, den trees, and coarse woody debris for wildlife habitat	116.6	ac
Summer roosting habitat for native forest-dwelling bat species	5	ac
Harvest hay in a manner that allows wildlife to flush and escape	169.7	ac

Additionally, the FSA and other entities have accomplished watershed restoration activities.

4.3 Monitoring—Status and Trends

DEQ

For this biennial review, DEQ reviewed data from 213 monitoring stations, of which 28 had sufficient data for this status and trends analysis (DEQ. *North and Middle Forks John Day AgWQ Management Area: DEQ's Water Quality Status and Trends Analysis for the Oregon Department of Agriculture's Biennial Review of Agricultural Area Rules and Plan*. 76pp. 2019).

The main water quality concerns identified in this report are highlighted in grey and discussed below. See the DEQ report for all maps and graphs (https://www.oregon.gov/deq/wq/programs/Pages/wqstatustrends.aspx).

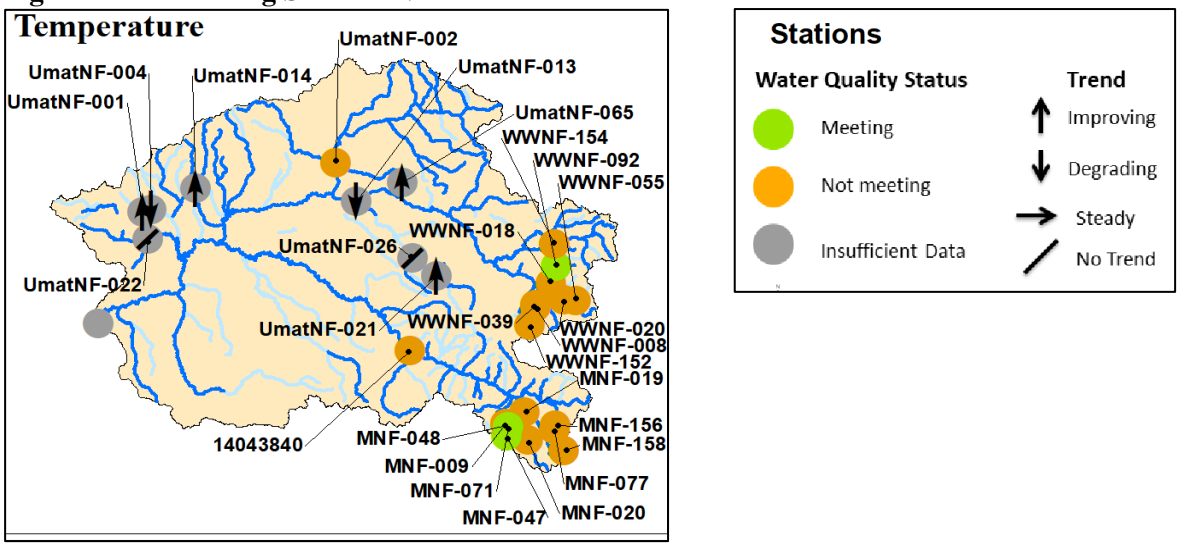
Table 6: DEQ's Water Quality Status and Trends Analysis

Site ID	Site Description	*E. coli* (mpn/100mL)	pH	Dissolved Oxygen (mg/L)	Temperature (deg C)	Total Suspended Solids[2] (mg/L)
		# exceeding standard/N[1]				median; N[1]
11017	**NF John Day River at Kimberly**	1/90 ↓	0/123 ↑	18/108	-	3; 95 ↓
varies	**27 sites on National Forests**	-	-	-	varies	-

[1] N = total # of observations
[2] DEQ has no benchmark for TSS in this Management Area
↑ Statistically significant improving trend
↓ Statistically significant degrading trend

Twenty-seven stations were on national forest lands. Continuous temperature data were collected at these stations with mixed results for status and trends. Three of sixteen stations always met the temperature standard in the last two years. Four of eight stations showed an improving trend.

Figure 6: Monitoring Stations NMF



John Day River at Kimberly: The degrading trends for *E. coli* and Total Suspended Solids were negligible. However, dissolved oxygen was of concern. The dissolved oxygen standard is complex, and DEQ has several criteria that apply to this Management Area, including cold water and aquatic life beneficial use that requires > 6.5 mg/L dissolved oxygen year-round, except for 11 mg/L when salmonids spawn (January 1 – May 15). All but two exceedances were of the 11 mg/L criterion. It is unfortunate that there is no continuous temperature monitor at this location, as cold water holds more oxygen and it would be helpful to compare the two graphs.

Data is still insufficient to characterize the effect of agriculture on water quality. ODA met with the LAC to develop a monitoring plan to determine how and where agricultural activities are affecting water quality, but no further steps were requested by the LAC.

4.4 Biennial Reviews and Adaptive Management

The LAC met on March 22 and April 11, 2017. There was one compliance action which closed with a letter of compliance.

Impediment's identified by the LAC:

- Not enough funds for monitoring,
- Additional outreach could benefit a wider public awareness of the AgWQ Program,
- New landowners that purchase property in this area aren't always familiar with ranching and/or the local ecosystems.

Recommendation from the LAC:

- Additional monitoring stations; include location upstream of Kimberly on the mainstem on the mouth of the North Fork,
- Create a 3-4 page summary of the NMF Area Plan.

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Appendix A: Waterbodies on the 303(d) List (2012)

Subbasin	Stream (Water Body)	Segment (River Mile)	Pollutant	Season	Details	Category
North Fork John Day	Baldy Creek	0 to 5	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Bear Wallow Creek	0 to 7.4	Temperature	Summer[1]	B	4A
North Fork John Day	Beaver Creek	0 to 6.1	Temperature	Summer[1]	B	4A
North Fork John Day	Big Creek	0 to 10.7	Temperature	Summer[1]	B	4A
North Fork John Day	Big Wall Creek	0 to 21.3	Temperature	Year Round (Non-spawning)	C	4A
North Fork John Day	Bowman Creek	0 to 6.9	Temperature	Summer[1]	B	4A
North Fork John Day	Bridge Creek	0 to 9	Temperature	Summer[1]	B	4A
North Fork John Day	Buck Creek	0 to 1.6	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Bull Run Creek	0 to 9.3	Temperature	Summer[1]	B	4A
North Fork John Day	Cable Creek	0 to 7.1	Temperature	Summer[1]	B	4A
North Fork John Day	Camas Creek	0 to 15.5	Temperature	Year Round (Non-spawning)	C	4A
North Fork John Day	Camas Creek	15.5 to 25	Temperature	September 1 - June 15	D	4A
North Fork John Day	Camas Creek	15.5 to 36.7	Temperature	Year Round (Non-spawning)	E	4A
North Fork John Day	Clear Creek	0 to 7.1	Temperature	Summer[1]	B	4A
North Fork John Day	Cottonwood Creek	0 to 22.5	Temperature	Year Round (Non-spawning)	C	4A
North Fork John Day	Crane Creek	0 to 5.9	Temperature	Summer[1]	F	4A
North Fork John Day	Crawfish Creek	0 to 5.3	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Desolation Creek	0 to 3.5	Temperature	January 1 - June 15	D	4A
North Fork John Day	Desolation Creek	0 to 3.8	Temperature	Year Round (Non-spawning)	E	4A
North Fork John Day	Ditch Creek	0 to 19.5	Temperature	Summer[1]	B	4A
North Fork John Day	East Fork Cottonwood Creek	0 to 6.5	Biological Criteria	Year Round	H	4A
North Fork John Day	Fivemile Creek	0 to 21.3	Temperature	Summer[1]	B	4A
North Fork John Day	Frazier Creek	0 to 6.2	Temperature	Summer[1]	B	4A
North Fork John Day	Granite Creek	0 to 16.3	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Hidaway Creek	0 to 16.2	Temperature	Summer[1]	B	4A
North Fork John Day	Indian Creek	0 to 5.4	Temperature	Year Round (Non-spawning)	C	4A
North Fork John Day	Junkens Creek	0 to 7	Temperature	Year Round (Non-spawning)	A	4A

Subbasin	Stream (Water Body)	Segment (River Mile)	Pollutant	Season	Details	Category
North Fork John Day	Lane Creek	0 to 7.1	Temperature	Summer[1]	B	4A
North Fork John Day	Mallory Creek	0 to 14.3	Temperature	Summer[1]	B	4A
North Fork John Day	Meadow Creek	0 to 10.4	Temperature	Year Round (Non-spawning)	E	4A
North Fork John Day	North Fork Cable Creek	0 to 7.5	Temperature	Year Round (Non-spawning)	E	4A
North Fork John Day	North Fork Desolation Creek	0 to 6.6	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	North Fork John Day River	0 to 56	Temperature	Year Round (Non-spawning)	C	4A
North Fork John Day	North Fork John Day River	56 to 59.6	Temperature	January 1 - June 15	D	4A
North Fork John Day	North Fork John Day River	56 to 86.3	Temperature	Year Round (Non-spawning)	E	4A
North Fork John Day	North Fork John Day River	59.6 to 86.3	Temperature	September 1 - June 15	D	4A
North Fork John Day	North Fork John Day River	86.3 to 111.2	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	North Trail Creek	0 to 5.1	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Onion Creek	0 to 4.5	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Owens Creek	0 to 14.8	Temperature	Summer[1]	B	4A
North Fork John Day	Potamus Creek	0 to 18.4	Temperature	Summer[1]	B	4A
North Fork John Day	Rancheria Creek	0 to 5.1	Temperature	Summer[1]	B	4A
North Fork John Day	Rudio Creek	0 to 16.8	Temperature	Year Round (Non-spawning)	C	4A
North Fork John Day	Skookum Creek	0 to 12.4	Temperature	Summer[1]	B	4A
North Fork John Day	South Fork Cable Creek	0 to 1.5	Temperature	January 1 - June 15	D	4A
North Fork John Day	South Fork Cable Creek	0 to 8.4	Temperature	Year Round (Non-spawning)	E	4A
North Fork John Day	South Trail Creek	0 to 6.6	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Sponge Creek	0 to 2.7	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Stalder Creek	0 to 4.1	Temperature	Summer[1]	B	4A
North Fork John Day	Swale Creek	0 to 11.1	Temperature	Summer[1]	B	4A
North Fork John Day	Trail Creek	0 to 1.9	Temperature	Year Round (Non-spawning)	A	4A
North Fork John Day	Wilson Creek	0 to 10.7	Temperature	Summer[1]	B	4A
North Fork John Day	Alder Creek	0 to 5.5	Biological Criteria	Year Round	H	5
North Fork John Day	Alder Creek	0 to 5.5	Sedimentation	Undefined	I	5
North Fork John Day	Baldy Creek	0 to 5	Sedimentation	Undefined	I	5
North Fork John Day	Big Wall Creek	0 to 17	Dissolved Oxygen	January 1 - May 15	J	5

Subbasin	Stream (Water Body)	Segment (River Mile)	Pollutant	Season	Details	Category
North Fork John Day	Big Wall Creek	0 to 21.3	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Big Wall Creek	0 to 21.3	pH	Fall-Winter-Spring	L	5
North Fork John Day	Big Wall Creek	0 to 21.3	Sedimentation	Undefined	I	5
North Fork John Day	Big Wall Creek	17 to 21.3	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Bowman Creek	0 to 6.9	Biological Criteria	Year Round	H	5
North Fork John Day	Bull Run Creek	0 to 9.3	Biological Criteria	Year Round	H	5
North Fork John Day	Bull Run Creek	0 to 9.3	Sedimentation	Undefined	I	5
North Fork John Day	Camas Creek	0 to 36.7	Biological Criteria	Year Round	H	5
North Fork John Day	Crane Creek	0 to 8.1	Biological Criteria	Year Round	H	5
North Fork John Day	Ditch Creek	0 to 19.5	Biological Criteria	Year Round	H	5
North Fork John Day	Ditch Creek	0 to 19.5	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Ditch Creek	10.1 to 19.5	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Fivemile Creek	0 to 21.3	Biological Criteria	Year Round	H	5
North Fork John Day	Fox Creek	0 to 19.7	Biological Criteria	Year Round	H	5
North Fork John Day	Granite Creek	0 to 16.3	Biological Criteria	Year Round	H	5
North Fork John Day	Granite Creek	11.2 to 16.2	Sedimentation	Undefined	I	5
North Fork John Day	Hog Creek	0 to 4.1	Sedimentation	Undefined	I	5
North Fork John Day	Mallory Creek	0 to 14.3	Biological Criteria	Year Round	H	5
North Fork John Day	Mallory Creek/Penland Lake	0 to 14.4	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Onion Creek	0 to 4.5	Biological Criteria	Year Round	H	5
North Fork John Day	Onion Creek	0 to 4.5	Sedimentation	Year Round	I	5
North Fork John Day	Oriental Creek	0 to 3.8	Biological Criteria	Year Round	H	5
North Fork John Day	Porter Creek	0 to 7.4	Sedimentation	Undefined	I	5
North Fork John Day	Potamus Creek	0 to 14.5	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Potamus Creek	0 to 18.4	Biological Criteria	Year Round	H	5
North Fork John Day	Potamus Creek	0 to 18.4	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Potamus Creek	0 to 18.4	pH	Fall-Winter-Spring	L	5
North Fork John Day	Potamus Creek	14.5 to 18.4	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Skookum Creek	0 to 11.2	Dissolved Oxygen	January 1 - May 15	J	5

Subbasin	Stream (Water Body)	Segment (River Mile)	Pollutant	Season	Details	Category
North Fork John Day	Skookum Creek	0 to 12.4	pH	Fall-Winter-Spring	L	5
North Fork John Day	Skookum Creek	4.3 to 12.4	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Swale Creek	0 to 11.1	Sedimentation	Undefined	I	5
North Fork John Day	Swale Creek	2.8 to 11.2	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Swale Creek	4.8 to 11.2	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Trib to Wilson Creek	0 to 0.9	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Trib to Wilson Creek	0 to 3.2	Dissolved Oxygen	Year Round (Non-spawning)	K	5
North Fork John Day	Trib to Wilson Creek	0.9 to 3.2	Dissolved Oxygen	January 1 - May 15	J	5
North Fork John Day	Wilson Creek	0 to 10.7	Sedimentation	Undefined	I	5

[1] Summer = June 01 through September 30

A. Bull trout spawning and juvenile rearing: 12.0 degrees Celsius 7-day-average maximum
B. Anadromous fish passage; Salmonid fish rearing; Rearing: 17.8 C
C. Salmon and trout rearing and migration: 18.0 degrees Celsius 7-day-average maximum
D. Salmon and steelhead spawning: 13.0 degrees Celsius 7-day-average maximum
E. Core cold water habitat: 16.0 degrees Celsius 7-day-average maximum
F. Bull Trout: 10.0 C
G. The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed.
H. Biocriteria: Waters of the state must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.
I. The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed.
J. Spawning: Not less than 11.0 mg/L or 95% of saturation
K. Cold water: Not less than 8.0 mg/l or 90% of saturation
L. pH 6.5 to 9.0

Category:
4A: Water quality limited, TMDL approved
5: Water quality limited, 303(d) list, TMDL needed

Appendix B: Complaints and Investigations

The ODA may investigate lands within the management area to determine those actions that may be required of landowners under the Area Rules and to determine whether the landowner is carrying out the required actions. Entry by ODA officials onto private property is authorized by law. The ODA will not enter onto private lands without first obtaining landowner consent.

OAR 603-095-2060
Complaints and Investigations
(1) When the Department receives notice of an alleged occurrence of agricultural pollution through a written complaint, its own observation, through notification by another agency, or by other means, the Department may conduct an investigation. The Department may, at its discretion, coordinate inspection activities with the appropriate Local Management Agency.
(2) Each notice of an alleged occurrence of agricultural pollution shall be evaluated in accordance with the criteria in ORS 568.900 to 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 to 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 603-095-2060(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 to 568.933 or any rules adopted thereunder.
(5) As used in section OAR 603-095-2060(4), "person does not include any local, state or federal agency."
(6) Notwithstanding OAR 603-095-2060(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 569.900 to 568.933 or any rules adopted therefore has occurred, the landowner may be subject to the enforcement procedures of the Department outlined in OAR 603-090-0060 through 603-090-0120.

Agency Actions

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

Pre-Enforcement Notification
A pre-enforcement notification means that either the inspector documented a violation at the site visit or conditions on the property are likely to violate the Area Rules in the near future. The pre-enforcement notification 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 an Order, such as a Notice of Noncompliance. The AgWQ Program does not consider a pre-enforcement notification an enforcement action.

A pre-enforcement notification includes a description of the conditions that violate or are likely to violate the Area Rules, the statute or OAR that is violated or likely to be, 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.

Notice of Noncompliance/Plan of Correction
A Notice of Noncompliance means the inspector found a violation of Area Rules during the investigation, and the violation was - (1) egregious or done to intentionally cause water pollution; (2) a second or continued violation after being issued a pre-enforcement notification; or (3) ODA has a compliance history with the landowner, indicating that the landowner is familiar with the water quality regulations.

A Notice of Noncompliance is an Order, a formal legal document that 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. A Plan of Correction accompanies a Notice of Noncompliance 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.

Civil Penalty
A Civil Penalty is an Order, a formal legal document that assesses a fee 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. OAR Division 90 includes a matrix for calculating the value of civil penalties for the AgWQ Program.