Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area Plan

Developed by the:

Upper Mainstem and South Fork John Day Local Advisory Committee

Oregon Department of Agriculture

With support from the:

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Acronyms and Terms Used in this Document

Ag Water Quality Program – Agricultural Water Quality Management Program
Area Plan – Agricultural Water Quality Management Area Plan
Area Rules – Agricultural Water Quality Management Area Rules
AUM – Animal Unit Months
BLM – Bureau of Land Management
CAFO – Confined Animal Feeding Operation
CNPCP – Coastal Nonpoint Pollution Control Program
CREP – Conservation Reserve Enhancement Program
CTWSR – Confederated Tribes of Warm Springs Reservation
CWA – Clean Water Act
CZARA – Coastal Zone Act Reauthorization Amendments
DEQ – Oregon Department of Environmental Quality
District – Grant Soil and Water Conservation District
DMA – Designated Management Area
EPA – Environmental Protection Agency
EQIP – Environmental Quality Incentive Program
FOTG - Field Office Technical Guide
FPA – Forest Practice Act
GPM – Gallons Per Minute
GWMA – Groundwater Management Area
HUC – Hydrologic Unit Code
LAC – Local Advisory Committee
LMA – Local Management Agency
Management Area – Agricultural Water Quality Management Area
MMDF – Million Board Feet
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
ODFW – Oregon Department of Fish and Wildlife
ORS – Oregon Revised Statute
OSU Extension – Oregon State University Extension
OWEB – Oregon Watershed Enhancement Board
PMP – Pesticides Management Plan
PSP – Pesticides Stewardship Partnership
Regulations – Agricultural Water Quality Management Area Regulations
RM – River Miles
RUSLE – Revised Universal Soil Loss Equation
SWCD – Soil and Water Conservation District
T – Soil Loss Tolerance Factor
TMDL – Total Maximum Daily Load
USDA – United States Department of Agriculture
U.S. EPA – United States Environmental Protection Agency
USFS – United States Forest Service
WRD – Water Resources Department
WQPMT – Water Quality Pesticides Management Team

Foreword

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

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

The Oregon Department of Agriculture (ODA) will exercise its enforcement authority for the prevention and control of water pollution from agricultural activities under Area Rules for the Upper Mainstem and South Fork Subbasins of the John Day River (Oregon Administrative Rules [OAR] 603-095-2000 through 603-095-2040) and statewide enforcement procedures provided in OAR 603-090-0060 through 603-090-0120.

The Area Rules, to implement the Area Plan, were formally adopted by the ODA in December 2002. The Area Plan was revised in 2011 to update the reference information, water quality standards and include Total Maximum Daily Load (TMDL) target information. The TMDL was developed by the Oregon Department of Environmental Quality (DEQ) and approved by the federal Environmental Protection Agency (EPA) in December 2010, to fulfill requirements of the Clean Water Act to develop pollution control targets and improvement plans for impaired waters within the plan area. In the Upper John Day Subbasin, TMDL targets have been established to address instream temperature, dissolved oxygen, bacteria and more locally, biological criteria. The TMDL focuses on temperature and bacteria reduction measures. Implementation of these target measures will subsequently address the water quality concerns for dissolved oxygen and biological diversity.

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

This Area Plan has an adaptive management strategy. Periodically, the ODA, Committee, and District will review this Plan and revise it to ensure that it is achieving the mission and goals. Monitoring will play a key role in this strategy. A good monitoring program will help determine agriculture's role as it relates to water quality concerns in the Upper Mainstem and South Fork Area.

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

OAR 603-095-2000
Purpose
(1) These rules have been developed to implement a water quality management area plan for the Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area pursuant to authorities vested in the department through ORS 568.900 – ORS 568.933 and ORS 561.190 – ORS 561.191. The area plan is known as the Upper Mainstem and South Fork John Day Agricultural Water Quality Management Area Plan.
(2) The purpose of these rules is to outline requirements for landowners in the Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area to prevent and control water pollution from agricultural activities and soil erosion. Compliance with Division 95 rules is expected to aid in the achievement of applicable water quality standards in the Upper Mainstem and South Fork John Day River Water Quality Management Area.

Required Elements of Area Plans

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

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

Plan Content

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

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

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

Chapter 4: Local Implementation, Monitoring, and Adaptive Management. ODA and the Local Advisory Committee (LAC) will work with partners to summarize land condition and water

quality status. Trends are summarized to assess progress toward the goals and objectives in Chapter 3.

Chapter 1: Agricultural Water Quality Management Program Purpose and Background

Chapter 1 of the Area Plan was developed by Oregon Department of Agriculture. The Local Advisory Committee and the Local Management Agency discussed and offered input but did not develop or participate in the development of Chapter 1. ODA developed Chapter 1 to have consistent and accurate information about the Agricultural Water Quality Management Program statewide.

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

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

The provisions of this Area Plan do not establish legal requirements or prohibitions (ORS 568.912(1)). Each Area Plan is accompanied by OAR regulations that describe local agricultural water quality regulatory requirements. ODA will exercise its regulatory authority for the prevention and control of water pollution from agricultural activities under the Ag Water Quality Program's general regulations (OARs 603-090-0000 to 603-090-0120) and under the regulations for this Management Area (OARs 603-095-2040). The Ag Water Quality Program's general OARs guide the Ag Water Quality Program, and the OARs for the Management Area are the regulations that landowners must follow.

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

- Large commercial farms and ranches.
- Small rural properties grazing a few animals or raising crops.
- Agricultural lands that lay idle or on which management has been deferred.
- Agricultural activities in urban areas.

- Agricultural activities on land subject to the Forest Practices Act (ORS 527.610).

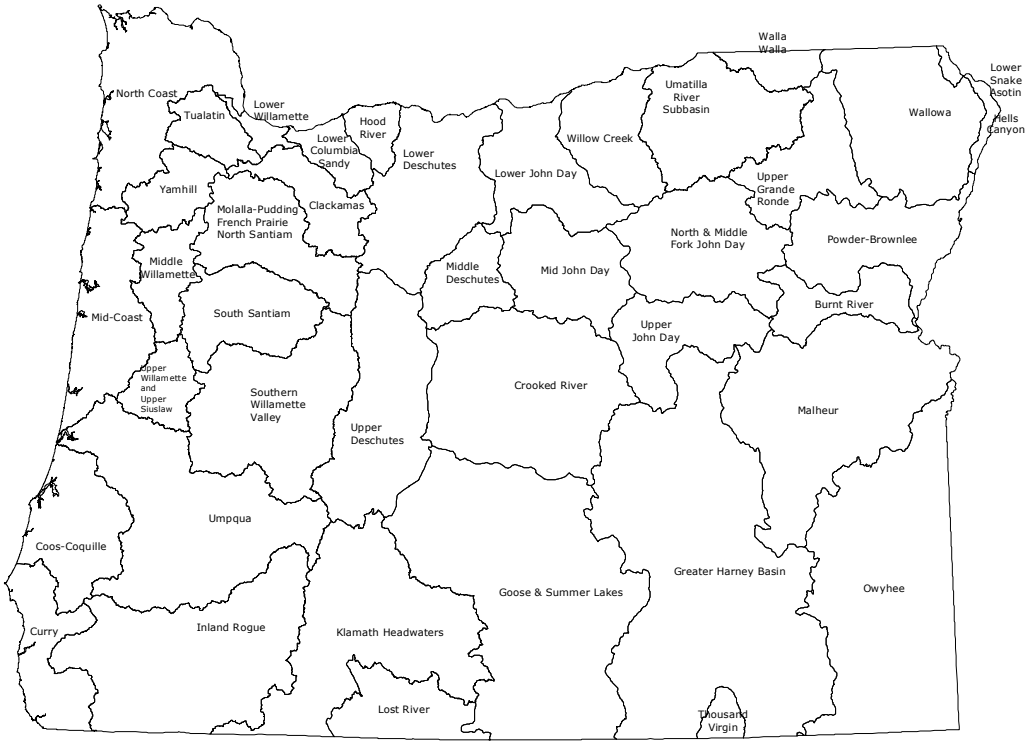
1.2 History of the Ag Water Quality Program

In 1993, the Oregon Legislature passed the Agricultural Water Quality Management Act, directing ODA to develop plans to prevent and control water pollution from agricultural activities and soil erosion, and to achieve water quality standards (ORS 568.900 through ORS 568.933). Senate Bill 502 was passed in 1995 to clarify that ODA regulates agriculture with respect to water quality (ORS 561.191). This Area Plan and its associated regulations were developed and subsequently revised pursuant to these statutes.

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

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

Figure 1: Map of 38 Agricultural Water Quality Management Areas



1.3 Roles and Responsibilities

1.3.1 Oregon Department of Agriculture (ODA)

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

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

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

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

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

Resolution of Complaints and Enforcement Action

The ODA may investigate complaints against landowners or operators who are alleged to be out of compliance with the Rules associated with this Area Plan. An investigation is triggered by one of three events;

(1) AgWQ Program receives a signed complaint from a citizen. The complaint must relate to a specific site, be filed with reference to the alleged rules being violated, and contain a thorough description of the violation. The complaint must be filed with the ODA in writing and be signed by the complainant. The ODA will determine if a water quality violation exists, and based on this determination, appropriate action will be taken to remedy the condition. If the landowner is in non-compliance, the ODA will consult with the landowner/operator and the District to develop solutions and timelines. Determination of a violation can only be made through an ODA site visit.
(2) The ODA's own observation from a public viewpoint, or
(3) Notificaiton by another agency of a water quality concern.

The authority and procedures for complaint investigation rests with the ODA under provisions of OAR 603-095-2060.

The ODA may use enforcement mechanisms where appropriate and necessary to gain compliance with the Prevention and Control Measures. Any enforcement action will be pursued only when reasonable attempts at voluntary solutions have failed. Landowners with chronic or egregious violations of Area Rules will be subject to enforcement action by the ODA under authority provided in OAR 603-90-060 through 603-90-120.

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 both authorized and strictly limited by law. The ODA will not enter onto private lands without first seeking 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.

ODA's Compliance Evaluation and Resolution Process

Letter of Compliance

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

Water Quality Advisory

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

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

Letter of Warning

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

A Letter of Warning includes a description of the conditions that violate the Area Rules, the statute or rule that is violated, consequences of future documented violations, and a schedule of recommended corrective actions. The letter may also refer the landowner to other sources of technical assistance, and summarize other issues discussed during the investigation. Although the landowner has the flexibility to choose the recommended actions or other practices best

suited to correct the problem on the operation, the inspector will follow up to see if the violation has been addressed.

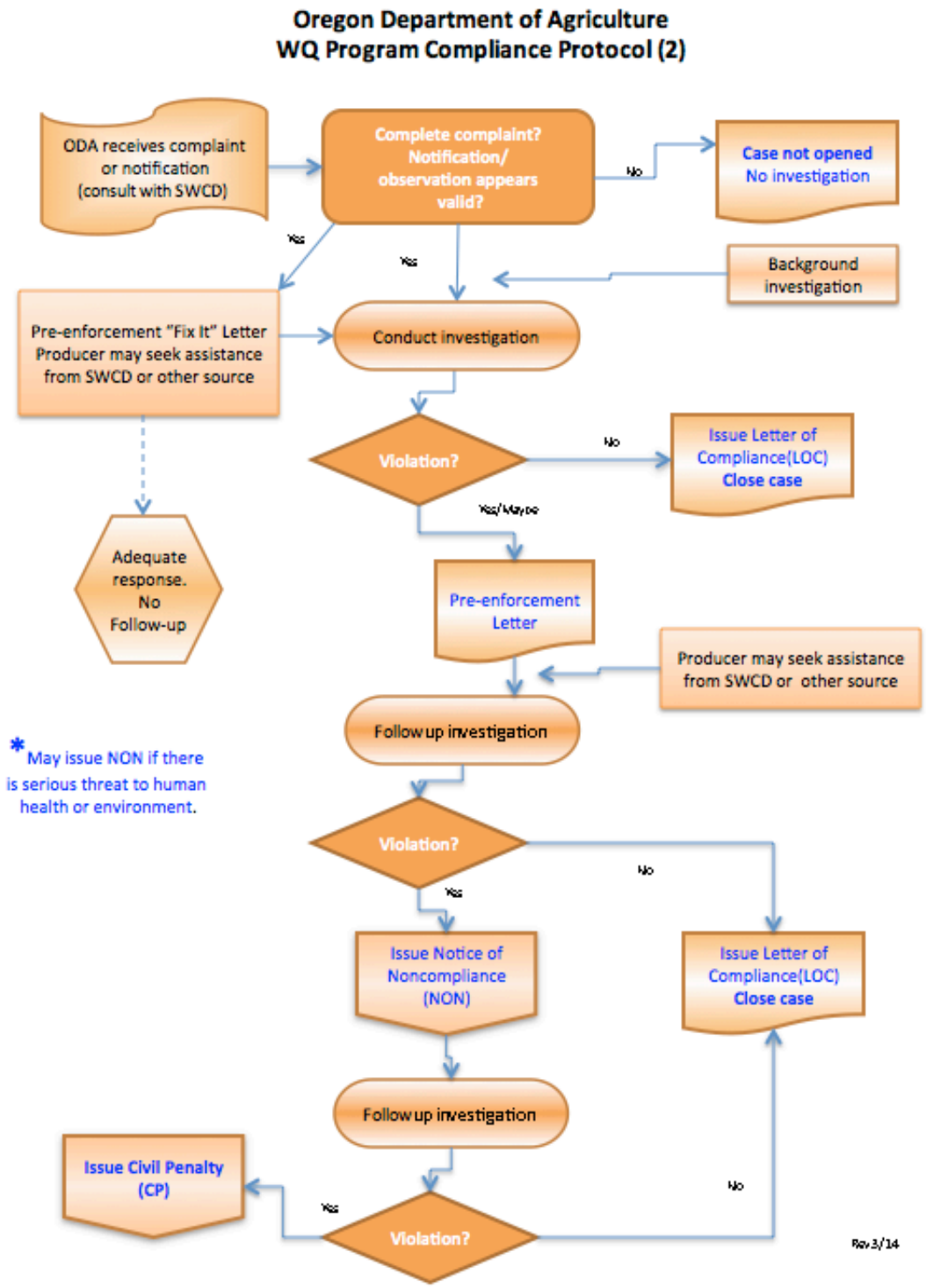
Notice of Noncompliance/Plan of Correction

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

Civil Penalty

A Civil Penalty (CP) is a fee that is assessed to a landowner whose agricultural activities caused either a willful and intentional violation of Area Rules, or who repeatedly failed to take steps to correct a violation. Oregon Department of Agriculture's Division 90 rules include a matrix for calculating the value of civil penalties for the Water Quality Program.

Compliance Flow Chart



1.3.2 Local Management Agency

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

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

1.3.3 Local Advisory Committee (LAC)

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

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

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

1.3.4 Agriculture's Role

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

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

Area regulations only address impacts that result from agricultural activities. A landowner is responsible for only those conditions caused by activities conducted on land managed by the landowner or occupier. Conditions resulting from unusual weather events or other circumstances

not within the reasonable control of the landowner or operator are considered when making compliance decisions. Agricultural landowners may be responsible for some of the above impacts under other legal authorities.

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

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

1.3.5 Public Participation

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

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

1.4 Agricultural Water Quality

1.4.1 Point and Nonpoint Sources of Water Pollution

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

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

1.4.2 Beneficial Uses and Parameters of Concern

Beneficial uses of clean water include: public and private domestic water supply, industrial water supply, irrigation, livestock watering, fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, hydropower, and commercial navigation and

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

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

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

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

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

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

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

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

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

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

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

ORS 468B.025 states that:

"(1) ...no person shall:

(a) Cause pollution of any waters of the state or place or cause to be placed any wastes in a location where such wastes are likely to escape or be carried into the waters of the state by any means.

(b) Discharge any wastes into the waters of the state if the discharge reduces the quality of such waters below the water quality standards established by rule for such waters by the Environmental Quality Commission.

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

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

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

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

Definitions (ORS 468B.005):

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

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

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

1.5 Other Water Quality Programs

1.5.1 Confined Animal Feeding Operation (CAFO)

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

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

1.5.2 Drinking Water Source Protection

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

1.5.3 Groundwater Management Areas

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

Oregon has designated three GWMAs because of elevated nitrate concentrations in groundwater. These include the Lower Umatilla Basin GWMA, the Northern Malheur County GWMA, and

the Southern Willamette Valley GWMA. Each GWMA has a voluntary action plan to reduce nitrate concentrations in groundwater. If after a scheduled evaluation point DEQ determines that the voluntary approach is not effective, then mandatory requirements may become necessary.

1.5.4 Pesticide Management and Stewardship

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

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

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

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

1.5.5 The Oregon Plan for Salmon and Watersheds

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

1.6 Partner Agencies and Organizations

1.6.1 Oregon Department of Environmental Quality (DEQ)

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

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

http://www.oregon.gov/ODA/programs/NaturalResources/Pages/AgWaterQuality.aspx

The MOA includes the following commitments:

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

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

1.6.2 Other Partners

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

1.7 Measuring Progress

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

1.7.1 Measurable Objectives

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

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

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

1.7.2 Land Condition and Water Quality

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

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

- Landowners can see land conditions and have direct control over them.
- It can be difficult to separate agriculture's influence on water quality from other land uses.
- It requires extensive monitoring of water quality at an intensive temporal scale to evaluate progress; it is expensive and may fail to demonstrate short-term improvements.

- Improved land conditions can be documented immediately, but there may be a significant lag time or a need for more extensive implementation before water quality improves.
- Agricultural improvements in water pollution are primarily through improvements in land and management conditions.

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

1.7.3 Focused Implementation in Small Geographic Areas

Focus Areas

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

Systematic implementation in Focus Areas can provide the following advantages:

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

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

The current Focus Area for this Management Area is described in Chapter 3 Section 3.2.2

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

Strategic Implementation Areas
Strategic Implementation Areas are small watersheds selected by ODA, in cooperation with partners, and after review of water quality and other available information. ODA leads the assessment of current conditions and the landowner outreach. Strategic Implementation Areas and Focus Areas are both tools to concentrate efforts in small geographic areas to achieve water quality standards. As with Focus Areas, SWCDs and partners work with landowners to improve conditions that may impact water quality. However, Strategic Implementation Areas also have a compliance evaluation and assurance process that allows ODA to proactively gain compliance with Ag water quality regulations.

1.8 Implementation, Monitoring, Evaluation, and Adaptive Management

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

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

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

1.8.3 Biennial Reviews and Adaptive Management
The Area Plan and associated regulations undergo biennial reviews by ODA and the LAC. As part of each biennial review, ODA, DEQ, SWCDs, and the LAC discuss and evaluate the progress on implementation of the Area Plan and associated regulations. This evaluation includes enforcement actions, landscape and water quality monitoring, and outreach efforts over the past biennium across the Management Area and for the Focus Area. In addition, progress

toward achieving agricultural load allocations may be documented (if a TMDL has been established). As a result of the biennial review, the LAC submits a report to the Board of Agriculture and the director of ODA. This report describes progress and impediments to implementation, and recommendations for modifications to the Area Plan or associated regulations necessary to achieve the purpose of the Area Plan. The results of this evaluation will be used to update the goal(s), measurable objectives, and strategies in Chapter 3.

Chapter 2: Local Background

2.1 Local Roles and Responsibilities

2.1.1 Local Advisory Committee (LAC)

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

Name	Location	Description
Joanne Keerins, Chair	Izee, OR	Rancher, Grant Soil and Water Conservation District Director, Original Member of Local Advisory Committee
Frazier Nichol, Vice-Chair	Upper Dog Creek	Retired Forest Worker, Small Rural Land Owner, Grant County Conservationists (since 1979), Original Member of Local Advisory Committee
T.G. Brown		
Roger O. Ediger		Rancher, Grant Soil and Water Conservation District Director, Original Member of Local Advisory Committee
Byron Rudishauser		
Dennis Reynolds		Retired County Judge, Small Rural Land Manager – Upper John Day River, Original Member of Local Advisory Committee
Ted Clausen		
Phil St. Clair	Izee, OR	Rancher, Grant Soil and Water Conservation District Director, Upper South Fork John Day River Watershed Council Vice Chair, Original Member of Local Advisory Committee

2.1.2 Local Management Agency

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

2.2 Area Plan and Regulations: Development and History

The Area Plan and regulations were approved by the director of ODA in December 2002.

Since approval, the LAC meets biennially to review the Area Plan and regulations. The review process included assessment of the progress of Area Plan implementation toward achievement of plan goals and objectives.

2.3 Geographical and Physical Setting

2.3.1 Location, Climate, Land Ownership, Land Cover and Land Use, Special Designated Use Area, and Resources

Upper Mainstem John Day Subbasin

Climate

The climate is semi-arid. Average annual precipitation is between ten and 14 inches in the river valley at Dayville (2,300 feet). Average annual precipitation at the pass near the headwaters of the John Day River (5,899 ft.) is 40-44 inches. Frost-free consecutive days at Dayville range from 80–172 days. Frost-free consecutive days at John Day (3,085 feet) range from 71–162 days. Frost-free days at Prairie City (3,710 feet.), range from 64–154 days.

Land Ownership

The federal government is the largest land manager in the subbasin. The Bureau of Land Management (BLM)administers mostly low-elevation grass/juniper rangeland, while the United States Forest Service (USFS) manages higher elevation conifer forests and juniper/grass rangeland. Private lands generally are concentrated at lower elevations along streams and at intermediate upland elevations (mostly rangeland).

The Department of State Lands, Department of Forestry and OR Oregon Department of Fish and Wildlife (ODFW) manage scattered parcels throughout the subbasin. One large block of ODFW's Phillip W. Schneider Wildlife Area is located above Dayville along the South Fork John Day River. The Strawberry Mountain Wilderness Area, (a special federal management area) is located south of John Day and Prairie City.

Land Cover and Land Use

Land cover in the Upper Mainstem subbasin is mostly range and forest. Most of the forested headwater areas are managed by federal agencies. Private rangeland dominates below the tree line. Upland soils, outside of the relatively flat alluvial valley floor, have a medium-to-high erosion potential and medium-to-high sediment yield.

About 38 percent of the subbasin is range and pastureland. Local ranchers rely on forestland for summer grazing. Nearly 260,000 acres of forestland are grazed. Forest covers about 56 percent of the subbasin.

Upper Mainstem Subbasin Landcover

Type	Acres
Range and pastureland	262,000
Forestland (grazed)	258,000
Forestland (not grazed)	131,400
Cropland	26,300
Other	14,000
	691,900

Source: Oregon Department of Agriculture Small Watershed Reconnaissance Study, 1984.

Irrigated cropland is confined largely to the valley, mostly on alluvial fans and floodplains of the mainstem and its tributaries. These croplands represent the greatest concentration of irrigated acreage in the entire John Day Basin.

Special Use Designated Area

Strawberry Mountain Wilderness Area

Resources

The economy of the Upper Mainstem is heavily resource-based. Forest products, ranching, and retail trade are the primary private-sector industries. Federal, state, and local governments also are major employers.

Agriculture

Ranching is the primary agricultural activity in the subbasin. Cropland, both irrigated and non – irrigated, makes up a small percentage of the subbasin land area.

The 25,000 acres of irrigated cropland make up about 95 percent of the cropped area. The primary crops are grass hay and alfalfa. NRCS crop production values for hay and alfalfa on arable valley soils are 5.0 to 6.5 tons per acre for alfalfa and 2.5 to 3.5 tons per acre for grass hay. An acre of irrigated pasture can produce 6 to 15 AUMs of forage. These values assume the use of common management practices and that the water requirements of the crops are satisfied throughout the irrigation season. Non-irrigated land yields significantly less production. Grass hay production is about 1.5 tons per acre.

Forest Resources

Forest Types: The forests of Grant County are almost exclusively softwoods, with small stringers of hardwoods in the river valleys. A belt of western juniper separates the forest from the grassland. Ponderosa pine predominates over the forested area and often occurs in pure stands at lower elevations (comprises 59 percent of timber species).

In 1958, total log production in Grant County was 240 million board feet (MMBF), Scribner Decimal C Rule. The previous ten years log output averaged 225 MMBF annually, ranging from 154 MMBF in 1949 to 285 MMBF in 1956. At that time, 90 percent of saw-timber volume was Federally provided (12,185 MMBF Scribner). Private ownership saw-timber was estimated at 1,352 MMBF Scribner. Privately owned forestlands in Grant County produced more than half the county's log production during the 1949-1958 period. Gross standing timber by volume on

the Malheur National Forest for 1959 was 11,641 MMBF. (*Forest Statistics for Grant County, Oregon* - Forest Survey Report 137, Nov. 1960). For 1994, the gross standing volume was 11,917 MMBF. By 2000, the annual volume of timber sold from the Malheur National Forest was reduced to 13.5 MMBF. (Malheur National Forest Information Derived from Historical Sources and Reports by William L. McArthur, USDA Forest Service Silvaculturalist).

Large wildfires have been common occurrences on the Malheur National Forest: In 1910, fire ravaged 28,769 acres; in 1919, fire claimed 30,828 acres. In 1990, fires occurred on 26,765 acres and in 1996, 46,765 acres burned. Lesser acreages were impacted every year since 1909, with some gaps in available data, most noticeable between 1961 and 1978. The Malheur National Forest as a whole has about eight percent more forested land now than in the 1930s. The increase is due to encroachment of ponderosa pine, juniper and other conifers in the meadows, riparian, and shrub lands on the Forest. (Malheur National Forest Information Derived from Historical Sources and Reports by William L. McArthur, USDA Forest Service Silvaculturalist).

Between 2001 and 2010, 211,842 acres was consumed by wildfire and 260 MMBF of commercial timber harvest was generated on the Malheur National Forest. The largest acreages were burned in 2007 totaling 142,267 acres. Peak timber production volume was in 2004 at 63 MMBF with the salvage sales from 2002 fires. The low volume was in 2002 at 2.6 MMBF. (Personnel communication from Roy Walker, Malheur National Forest, March 14, 2011).

Minerals and Energy

The Upper Mainstem subbasin has a rich and varied mining heritage. The subbasin has produced gold, precious metals, and industrial minerals. Besides large amounts of gold, 27,000 tons of valuable chromite ore were mined from the rock outcrops along the north slope of the Strawberry Range.

Approximately 716 acres were dredged in the area above John Day and below Mt. Vernon. Data on the number of acres in the Prairie City area has not been located.

Prairie Wood Products in Prairie City has constructed a biomass-fired co-generation facility on its mill site. This facility will use 70,000 bone dry tons per year of mill residue to generate 7.5 megawatts of energy per hour. The mill is expected to use about 120 gallons per minute (GPM) of water in the process of generating energy. In February 1986, Prairie Wood Products applied for the right to pump 300 (GPM) of ground water from two deep wells. The facility was shut down in 2014 and is currently not in operation.

The Upper Mainstem contains a number of low-temperature geothermal energy resources. They are Mt. Vernon Hot Springs (120°F), Limekiln Hot Springs (70°F), Blue Mountain Hot Springs (136°F), and Joaquin Miller Hot Springs (118°F).

Wildlife Resources

Big game species in the subbasin consist of Mule Deer, Rocky Mountain Elk, California Bighorn Sheep, Mountain Goat, Cougar, Black Bear and Pronghorn Antelope.

Historically, deer numbers in the subbasin peaked between 1955 and 1970 with easily five times as many deer as are present today. From the turn of the century through 1960, elk were virtually non-existent throughout the subbasin. Since 1960, there has been a steady increase in elk numbers. Management activities have reduced the elk herd in the subbasin approximately 30 percent since 1994 and are designed to keep elk numbers at approximately their current level. Population estimates for deer and elk are derived from wintering populations in the subbasin. Deer and elk wintering in the subbasin come from associated summer ranges in the Murderers Creek, Northside and Beulah wildlife management units. Populations in March of 1999 were estimated at approximately 9,800 deer and 1,500 elk. The population estimates for 2010 demonstrate that elk numbers have remained stable at 1,500 and deer numbers have receded to 9,000 (Personnel communication from Ryan Torland, ODFW, April 6, 2015). Deer and elk populations have remained relatively unchanged since 2011.

There is a resident antelope herd in the subbasin that summers in the John Day Valley above Picture Gorge. During severe winters, these antelope move west of Battle Creek toward the Antone Ranch. Population size is approximately 200 animals.

There is a resident population of approximately 90 California bighorn sheep in the subbasin. The herd range is from Riley Creek to Fields Creek. These bighorn were re-introduced into the area in 1988 and supplemented in 2014.

A small population of Mountain Goats has also established in the Strawberry Mountain Wilderness consisting of approximately 60 animals.

Populations of ducks, geese, turkeys, chukars, grouse and quail exist throughout the subbasin.

Beavers are present throughout the subbasin. They are present in most of the moderate to low gradient perennial streams with adequate habitat. ODFW has not attempted to estimate current numbers, however the population is lower than described in the journals of fur trappers in the early 1800s.

Fish Resources

An average of 1,750 adult spring Chinook salmon and 3,200 adult summer steelhead return each year to the Upper Mainstem John Day subbasin to spawn. The subbasin produces about 35 percent of the total John Day spring Chinook and about 16 percent of its summer steelhead population. The subbasin contains approximately 123 miles of existing spring Chinook spawning and rearing habitat and about 350 miles of summer steelhead habitat. As fish passage and habitat conditions in the Upper Mainstem John Day River continue to improve, the extent of spring Chinook spawning and rearing habitat has expanded further into tributaries. Spawning surveys show an increase in the spring Chinook population, but continued low returns for summer steelhead, which continue to be listed as threatened under the federal Endangered Species Act (ESA). (Personnel communication from Jeff Neal, ODFW. March 5, 2015)

Summer steelhead migrate to the headwater areas between March and May and may spawn as late as June. Steelhead fry emerge from spawning gravels after two to three months and remain in the subbasin for up to three years before migrating out of the basin.

Spring Chinook enter the drainage in spring (April through May) but do not reach spawning ground until late June. Adult Chinook rest in pools until spawning commences in late August or early September. Fry emerge from spawning gravels after an incubation period of up to five months, and rear for one year in the basin before migrating to the ocean as smolts. (Personnel communication from Jeff Neal, ODFW, March 5, 2015)

Recreation and Tourism

The Upper Mainstem subbasin contains most of the urban development and industry in the John Day drainage. This area offers a variety of recreational opportunities. The Strawberry Mountain Wilderness provides numerous recreational experiences, such as camping, hiking, fishing, horseback riding, and sightseeing. Malheur National Forest campgrounds are located in the subbasin. Steelhead and trout fishing account for approximately 4,200 angler-days per year along the river. Many other trout fishing opportunities are available in tributary streams and area lakes. Steelhead fishing is available from October through April with a peak during March. Trout fishing peaks in June and again in September as water temperatures become cooler. Hunting for deer, bear, and elk is the single largest recreational pursuit in the basin and peaks during the fall months.

Grazing

Historical information indicates that the relative numbers of domestic grazing animals varied considerably over the years subsequent to settlement in Grant County. Animal Unit Months (AUMs) have been used to provide a relevant comparison as species numbers have changed. Not verifiable to date were the large numbers of horses free to roam in the county in support of the Army Remount program. Many of these horses remained for years after the remount business declined and then ended around 1940. Accurate annual inventories of livestock have not been located and may not be available. The information below is provided from sources that were located to give the reader some sense of the historic livestock numbers.

Year	Sheep	Cattle	Horses/Mules	AUMs
1895 (1)	119,926	18,013	9,299	53,622
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2001(2)	400	54,000	2,500	57,205
2009(3)	600	37,000	-	37,120
2013(2)	300	56,500	2,500	-

(1) Grant County News 1895 as reported in the History of Baker, Grant, Malheur and Harney County.
(2) OSU Extension Reports
(3) Oregon Department of Agriculture, 2010 Agripedia

Water Resources

The South Fork, Beech Creek, Canyon Creek, Strawberry Creek, and Dixie Creek are major tributaries that contribute to the John Day River flow recorded by the Picture Gorge gauge. Annual average discharge at Picture Gorge is 346,000 acre-feet; 22.8 percent of the basin yield. The South Fork contributes about 100,000 acre-feet per year; 6.6 percent of the basin yield. (*Stream Restoration Program for the Upper Mainstem of the John Day River, March 1992)* Recent US Geological Survey data indicates the average discharge of the John Day River at 2,092 cubic feet (1,516,000 acre-feet) per year based on 94 years of record at the McDonald

Ferry station. The North Fork average discharge over 75 years is 1,305 cubic feet (945,500 acre-feet); 62.4 percent of the basin yield. (*USGS, Water-Data Report OR-00-1)*

Other gauged streams in the subbasin are Strawberry Creek, the John Day River near John Day, Canyon Creek (since 1980), John Day River at Blue Mt. Hot Springs near Prairie City, South Fork John Day River below Smokey Creek near Dayville, South John Day River above Dry Pine Creek near Izee, Murderer's Creek near Dayville, and Deer Creek near Izee**.** Beech Creek was previously gauged but only for a few years during the 1930s.

The distribution of subbasin discharge is uneven. Peak discharge generally occurs between March and early June, and lowest flows occur during the months of August and September.

The Upper Mainstem contains most of the basin's natural slack water resources -- Strawberry, Little Strawberry, Magone, Slide and Little Slide lakes, and Canyon Meadows Reservoir near the head of Canyon Creek.

Water Use and Control
Irrigation is the dominant water use in the Upper Mainstem subbasin. Although there are rights to divert over 900 cubic feet per second (cfs) of water for irrigation, it appears that the quantity actually used is less. According to the estimates of irrigated crop acreage, irrigation water requirements are about 100 cfs through the irrigation season. There are over 80 ditches diverting water from the mainstem John Day River; all are equipped with headgates as a regulation mechanism. (*John Day River Basin Report, State of Oregon Water Resources Department, November 1986)* All diversions on anadromous fish streams are screened to protect against fish entering the ditches (ODFW). Ditch companies operate four major ditches in the subbasin.

The Upper Mainstem subbasin is considered the drainage area (approx. 1,070 sq. mi.) above Picture Gorge, excluding the South Fork watershed. The 80 noted ditches directly divert out of the Mainstem John Day River and would be distributed from Picture Gorge to where the river enters the National Forest above Prairie City.

All information included in this paragraph is all directly paraphrased from the referenced document in parentheses.

In the upper portion of the subbasin, most water is delivered using historical flood irrigation practices. Flood irrigation is economical and effective for use on grass, meadow hay and pastures. Below Mt. Vernon, there has been more interest in sprinkler irrigation systems to apply water on higher value crops such as alfalfa.

Water Use Restrictions
Minimum Streamflows -- In 1985, the Water Resources Commission established six minimum streamflows to protect instream water uses in the Upper Mainstem subbasin. These minimum streamflows are regulated essentially the same as water rights – according to priority. The date for all six is November 3, 1983.

On the mainstem John Day River, three minimum streamflows cover the entire river reach from Rail Creek to Picture Gorge, a distance of about 70 miles. Three additional minimum

streamflows are located on Canyon Creek from the East Fork Canyon Creek to the mouth; Beech Creek from the East Fork Beech Creek to the mouth; and Cottonwood Creek at the mouth.

Hydroelectric Standards -- Administrative rules governing hydroelectric application generally prohibit development of hydroelectric projects on the Mainstem John Day River.

Storage -- A number of reservoir sites have been identified in the subbasin. Feasibility studies were performed on several of the sites by the Bureau of Reclamation and Corps of Engineers. Based on the criteria in use by the agencies at the time of the studies, none of the sites were found to be both environmentally and economically acceptable. Many of the proposed reservoirs would inundate anadromous fish spawning and rearing habitat and block migration. Projects may become available in drainages which would not adversely affect fish and which could meet the economic criteria of other possible public or private developers.

Based on irrigation water requirements and minimum flows, about 5,000 acre-feet are needed during the irrigation season to satisfy subbasin needs.

Demand by both out-of-stream and instream uses, however, pales in comparison to the total water supply that flows out of the basin annually. Water rights for irrigation cannot be satisfied in the late season. Instream water rights are frequently unsatisfied in August and September. (*Stream Restoration Program for the Upper Mainstem of the John Day River, March 1992)* For example, the irrigation water requirements of the Upper John Day subbasins account for only 11 percent of the total annual flow at Picture Gorge. Similarly, the minimum flow in the Picture Gorge reach amounts to 23 percent of the annual gauged flow. Annual average volumes, then, are well in excess of present and expected future needs.

Water quality is generally good. Water quality suffers during high-and-low-flow periods. The major water-quality conflict centers on fisheries impacts.

John Day Basin Reservation -- In October 1992, the District requested that the ODA reserve unappropriated water in the John Day Basin for future economic development as allowed by ORS 537.356. The ODA subsequently requested reservation of 60,000 acre-feet of live flow for irrigation and 124,465 acre-feet for storage: 85,000 acre-feet for irrigation; 1,000 acre-feet for livestock; 4,000 acre-feet for industrial uses; 8,000 acre feet for agriculture; 12,000 acre-feet for municipal uses; 1,000 acre-feet for domestic uses; and 13,465 acre-feet for fishery. A Department Columbia and Snake River Study, dated November 30, 1992, lists five storage sites totaling 17,975 acre-feet on the Upper Mainstem John Day and three sites on the South Fork totaling 6,100 acre-feet.

OAR Chapter 690, John Day Basin Plan, lists as an objective, "(A) Achieve better seasonal distribution of runoff to reduce high stream-flows and increase low stream-flows. (i) Provide for structural and non-structural storage." The Water Resources Commission John Day River Basin Plan Policies encourages "Development of storage reservoirs that are beneficial to anadromous fish and other uses."

Beginning in March of 1999, the Water Resources Department (WRD) held public scoping meetings in John Day to determine whether or not water users in the John Day basin wanted to

continue with rulemaking on the application for reservation. A second meeting in May 1999, was not well attended and it was decided that a hearing would be called as a special county court session. All counties, municipalities, and citizens would be invited to participate in the important decision. As of November 28, 2001, the issue remains unresolved.

South Fork John Day Subbasin

Climate

The climate is semi-arid with precipitation ranging from ten to 20 inches per year. Precipitation at Dayville averages about 12 inches per year. Peak precipitation occurs between November and January as snowfall, with a secondary peak of rain in May and June as a result of localized thunderstorms. The annual average temperature at Dayville is 50°F. The coldest average monthly temperature (34°F) occurs in January and the warmest (69°F) occurs in July. Subbasin elevation ranges between about 2,300 feet to 7,400 feet above sea level.

Land Ownership

The federal government manages most of the land in the subbasin. Private lands tend to be concentrated at lower elevations along streams and at intermediate upland elevations. The Phillip W. Schneider Wildlife Management Area comprises most of the state lands in the South Fork drainage.

Land Cover and Land Use

The two major land cover types are coniferous forest and rangeland. The few agricultural areas in the subbasin generally are located adjacent to streams on loamy soils. Forestland consists mostly of ponderosa and lodge pole pine with western larch and fir at higher elevations. Although some forestland is in private ownership, most is under Malheur and Ochoco National Forest management.

Photographs taken before and after the December 1964 flood indicate that the high waters scoured the South Fork River channel. Stream channel conditions are in an upward trend.

South Fork Subbasin Landcover

Type	Acres
Forestland (grazed)	216,300
Forestland (not grazed)	0
Cropland	5,200
Range/pasturelands	164,800
Other	3,300
	389,600

There is very little urban land in the subbasin. Dayville, the only city in the subbasin, has a population of 149 (according to 2010 census). Izee is a community encompassing an area 27 miles long with approximately 12 families located in the upper South Fork near the junction of the Post-Paulina Highway and the Dayville-Hines Road. Settlement throughout the remainder of the subbasin is sparse. Ranching is the primary economic activity.

The South Fork subbasin contains special wildlife, vegetation, and geologic values. The 26,000-acre Phillip W. Schneider Wildlife Management Area is owned and managed by ODFW. The Murderers Creek Wild Horse Herd Management Area (143,000 acres), composed partially of this ODFW land, adjacent USFS and BLM and private land, is administered jointly by the two federal agencies. The Murderers Creek Herd Management Area is located approximately 35 miles southwest of John Day, Oregon. It encompasses 34,954 acres of BLM land and 73,615 acres of National Forest Service land. Gathers are usually conducted every 3 years to maintain the herd at approximately 100 head. The horses share the range with mule deer, elk, antelope, bighorn sheep, bear, cougar, and many other native species.
(https://www.blm.gov/adoptahorse/herdareas.php)

Special Use Designated Area

Wild and Scenic River Reaches

The South Fork John Day River Oregon Wild and Scenic Waterway extends from approximately river mile (RM) 5 south of Dayville from the north boundary of the Phillip W. Schneider Wildlife Management Area upstream to County Road 63 RM 35 near the confluence of Pine Creek. This reach is classified as *Recreational* under the Oregon law. This State Scenic Waterway segment overlaps with the National Wild and Scenic River designation.

The Federal Wild and Scenic River designation extends from approximately Smokey Creek (RM 6) south of Dayville upstream to the Malheur National Forest Boundary (RM 52). The purpose of the designation is to preserve the outstanding natural, cultural and recreational features in a free flowing condition for the enjoyment of present and future generations.

Resources

Agriculture

Cropping is practiced on only a very small amount of the subbasin land area near Dayville and Izee. Irrigated agriculture, primarily pasture and hay production, comprises more than half the agricultural acreage, with the remainder devoted to non-irrigated hay, pasture and grain production. All irrigation water is derived from surface sources.

Forest Resources

Most of the forestlands in the subbasin are managed by the Malheur and Ochoco National Forests. According to the draft environmental statement for the South Fork Planning Unit (Malheur National Forest, 1976), there are nearly 170,000 acres of commercial forest within the Unit.

The Unit's forestlands also are used for range and have been since about 1900. The national forest currently permits annual cattle grazing at about 2,509 pairs (or 2,509 AUMs) between June 1 and October 15. (Personnel communication Joe Robson, MNF, Jan. 22, 2002). This is a substantial decline from the 9,700 AUMs made available for cattle grazing on the South Fork MNF lands as reported in the Oregon Water Resources *John Day Basin Report*, Nov. 1986.

Mining

Mining activity has not been a factor on the South Fork.

Wildlife
Big game species in the subbasin consist of Mule Deer, Rocky Mountain Elk, California Bighorn Sheep and Pronghorn Antelope, Black Bear, and Cougar.

Historically, deer numbers in the subbasin peaked between 1955 and 1970 with easily five times as many deer as are present today. From the 1900s through 1960, elk were virtually non-existent throughout the subbasin. Since 1960, there has been a steady increase in elk numbers, which peaked in the mid 1990's. Populations in March of 1999 were estimated at approximately 8,100 deer and 1,750 elk. The population estimates for 2010 demonstrate that elk numbers have risen to 2,000, while deer numbers have receeded to 4,000. Deer and elk populations have remained relatively stable since 2011 with maybe a slight increase in the deer population. (Personnel communication from Ryan Torland, ODFW, April 6, 2015).

There is a migratory antelope herd of approximately 160 head that summers in the Murderers Creek Basin.

There is a resident population of approximately 120 California bighorn sheep in the subbasin. The herd range is from the Smoky Creek drainage to the Murderers Creek drainage east of the South Fork and Black Canyon on the west side. These bighorn were re-introduced into the area in 1978 and supplemented in 2009.

Beavers are present throughout the subbasin. They are present in most of the moderate to low gradient perennial streams with adequate habitat. ODFW has not attempted to estimate current numbers.

Fish Resources
The South Fork Subbasin currently produces approximately 7 percent of the total John Day steelhead populations as well as a substantial resident trout fishery. Annually, between March 15 and June 30, as many as 1,400 adult steelhead spawners migrate into the South Fork drainage where approximately 95 miles of spawning and rearing habitat exist. Juveniles rear in the subbasin for two to three years before migrating out. Resident trout populations generate 3,000 to 5,000 recreation days annually with a sport catch of over 10,000 fish. The subbasin supports a small but growing spring Chinook population. Izee Falls prevents migration of anadromous fish. Steelhead runs are restricted to the river and tributary habitat below Izee Falls at River Mile (RM) 27.5. Major steelhead production tributaries in the drainage are Murderers, Tex, Deer, Wind and Black Canyon creeks. (Personnel communication from Jeff Neal, ODFW, March 5, 2015)

Recreation and Tourism
The South Fork Subbasin is an area that has seen relatively little recreational development. This area contains three national forest campgrounds and the Black Canyon Wilderness providing recreational opportunities such as hiking, camping, hunting, horseback riding, sightseeing and fishing. Deer and elk hunting account for the largest number of recreation user-days in the subbasin, with a peak in the fall. Trout fishing accounts for 2,500 angler-days on the South Fork of the river with an equal number on the tributary streams. Fishing peaks during June with another substantial surge during early fall.

Water Resources
Surface Water -- The headwaters of the South Fork John Day River are in the Ochoco and Aldrich Mountains. The stream gradient over the 60-mile course of the river is a relatively gentle 47 feet per mile. Significant tributaries below Izee Falls are Murderers Creek, Black Canyon Creek, and Deer Creek. Significant tributaries above Izee Falls include Sunflower, Flat, Pine, Lewis, Corral, and Indian Creek.
The South Fork near Dayville was gauged intermittently for ten years between 1910 and 1930, during 1951 to 1956, and from 1986 to the present. Average annual discharge at the mouth is an estimated 100,000 acre-feet. Streamflow gauging stations have also been installed on the Upper South Fork near Izee, Murderer's Creek and Deer Creek. These three stations were constructed in 1994 and recorded streamflows through 1996 as well as 1998 to the present.

Subbasin discharge is greatest during the winter months. Discharge generally peaks in late April, which coincides with maximum snowmelt runoff and is lowest in September. During the low-flow period of July through October, demands for irrigation use, fisheries maintenance, and water quality are greatest.

Ground Water -- The subbasin geology is comprised mostly of basalt and complex pre-tertiary rock. There are essentially no well data for the area and, as a result, estimates of ground water storage are not available. However, significant amounts of ground water probably are stored in the basalt. Topographic maps indicate springs are fairly common in the area.

Water Use and Control
Water Rights -- Presently, subbasin water rights total approximately 105 cfs for all uses. Out-of-stream water use is almost entirely for irrigation (95 percent by appropriated volume). Most of the remainder is for municipal use by Dayville.

Approximately 6,000 acre-feet of water is required for the crops grown in the subbasin. From May through September, the need is about 17 cfs.

There are 141 water rights with an allowable rate of 99.4 cfs to irrigate about 4,400 acres. In the northern portion of the subbasin, irrigation is applied primarily to pasture and hay fields. Roughly one-half is by sprinklers and one-half through flood irrigation. In the Izee area, flood irrigation is dominant. Most domestic water supplies are derived from shallow wells. The upper part of the South Fork drainage has the only domestic surface right in the subbasin. Domestic water use is not a major consumptive use.

The city of Dayville has the right to divert 5.05 cfs from Conner Creek, a tributary stream entering the South Fork about two miles above the mouth, and the South Fork John Day River. The city water system is supplied by a series of springs at the rate of 23 GPM (0.05 cfs). In 1985, the city of Dayville applied for an additional 0.3 cfs from the South Fork Subbasin in order to improve its water system. There are rights to store about 45 acre-feet of water in the subbasin. Most of these are small stock-watering impoundments. There are no industrial, mining or hydropower rights in the subbasin.

Ground water use in the subbasin is low and is primarily domestic. The geologic formations generally yield water slowly and large quantities are not commonly available, but supply appears

adequate for domestic use. One non-domestic well is located about three-quarters of a mile above the mouth.

Water Use Restrictions
Reservations -- Guyon Springs, tributary to Conner Creek which flows into the South Fork, was reserved by order of the State Engineer in 1932 for municipal use by the city of Dayville.
Minimum Perennial Streamflows --ODFW and Oregon's DEQ requested, and the Water Resources Commission adopted, a minimum stream flow with a November 3, 1983, priority on the South Fork from the confluence of Black Canyon Creek to the mouth. Municipal, storage, domestic, and livestock uses are exempt from the minimum flow.

Storage -- The subbasin has a large amount of unappropriated winter and spring streamflow which could be applied to beneficial use if it could be stored for release during the summer and fall. Studies conducted by the Bureau of Reclamation and the Corps of Engineers have identified many potential storage sites in the subbasin. None of the sites were found feasible based on the fishery criteria used by the agencies at the time of the studies.

Streamflows -- The seasonal distribution of stream discharge is a problem in the South Fork just as it is throughout the John Day Basin. Late-season low streamflows are common and affect water quality and fisheries resources. Peak runoff carries high amounts of sediment that have adverse effects on water quality and fish habitat. Extreme events, such as occurred in 1964, can alter stream structure.

2.3.2 Geographic and Programmatic Scope

The area included in this planning effort encompasses the Upper Mainstem and South Fork John Day River subbasins. This Plan will focus on the upper mainstem between Picture Gorge (River Mile 205) and its source in the Strawberry Mountains and the South Fork area from Dayville to the headwaters. The John Day River drains 8,100 square miles of land in east central Oregon and is the third largest drainage in the state.

OAR 603-095-2020
Geographic and Programmatic Scope
(1) The Upper Mainstem and South Fork John Day River Management Area includes the area that drains into the John Day River upstream of Picture Gorge. The physical boundaries of the Management Area are indicated on the map included as Attachment 1 of these rules.
(2) Operational boundaries for the land base under the purview of these rules include all lands within the Management Area in agricultural use, agricultural and rural lands that are lying idle or on which management has been deferred, and forested lands with agricultural activities, with the exception of public lands managed by federal agencies.
(3) Current productive agricultural use is not required for the provisions of these rules to apply.
(4) The provisions and requirements outlined in these rules may be adopted by reference by Designated Management Agencies with appropriate authority and responsibilities in the Upper Mainstem and South Fork John Day River Management Area.
(5) For lands in agricultural use within other Designated Management Agencies' or state agency jurisdictions, the department and the appropriate Local Management Agency shall work with these Designated Management Agencies to assure that provisions of these rules apply, and to assure that duplication of any services provided does not occur.

Past Human Activities within the Plan Area

Recent human activities (past 130 years) have contributed to degraded watershed conditions. Some problems can be traced to programs once promoted by state or federal agencies or extension staff committed to implementing the "best agricultural or watershed health science" then available. Current landowners and resource managers recognize this and are addressing these conditions through ongoing conservation practices.

Grazing

Historical information indicates that the relative numbers of domestic grazing animals varied considerably over the years subsequent to settlement in Grant County. Animal Unit Months (AUMs) have been used to provide a relevant comparison as species numbers have changed. Not verifiable to date were the large numbers of horses free to roam in the county in support of the Army Remount program. Many of these horses remained for years after the remount business declined and then ended around 1940. Accurate annual inventories of livestock have not been located and may not be available. The information below is provided from sources that were located to give the reader some sense of the historic livestock numbers.

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(1) Grant County News 1895 as reported in the *History of Baker, Grant, Malheur and Harney County*.
(2) *OSU Extension Reports*

Stream Channel Treatment

The years of 1943 through 1951 were a period of intensive stream channel treatment. Approximately 270,433 linear feet (51.22 miles) of stream channel were treated on 214 farms. (1) The county agent reported, "These changes should help materially for the channels were both deepened, widened, and straightened in order to enable them to handle the water." (2) He estimated 254,853 cubic yards of materials were moved to achieve the desired five-to-one slope on all banks treated. "This interest is probably due to effects of the Soil Conservation Service and Agricultural Conservation Association. Agriculture Adjustment Act payments have played an important part in educating farmers on methods of controlling erosion." (3) During the same reporting period, 90,361 linear feet of stream bank was treated with riprap on the 214 farms.

Drainage Projects

From 1943 through 1951, the annual reports list 3,159 acres drained on 134 farms. A total of 254,825 linear feet of ditch were either blasted or dug with a dragline. Of that, 25,875 linear feet of ditch was tiled. This work was accomplished to improve crop production. The agent reported that on four acreages "the production of hay has been doubled without any additional practices being established."(1)

(1) Oregon State College Extension Service Annual Report From December 1, 1950 to Nov. 30, 1951
(2) Oregon State College Extension Service Annual Report From December 1, 1947 to Nov. 30, 1948
(3) Oregon State College Extension Service Annual Report From December 1, 1947 to Nov. 30, 1948

This work was accomplished as a conservation priority and was considered the stream science of the time.

Wildland Fires
Large wildfires have been common occurrences on the Malheur National Forest: In 1910, fire ravaged 28,769 acres; in 1919 fire claimed 30,828 acres; in 1990 fires occurred on 26,765 acres and in 1996, 46,765 acres burned. Lesser acreages were impacted every year since 1909, with some gaps in available data, most noticeable between 1961 and 1978.

Juniper Expansion
Biological information indicates that western juniper has been in eastern Oregon for at least 4,000 to 7,000 years. Historically, juniper was found on "tough" sites, which are areas that had shallow soils with fractured bedrock or did not produce the fuels necessary to carry fire. Natural wildfires and fires set by Native Americans helped to maintain open landscapes. Seedlings, saplings, and trees under 40 years old are most susceptible to fire. The crowns of larger juniper trees often limit grass and other vegetative growth beneath them, reducing the fuel necessary to carry fire into the tree. The wet climate conditions from about the mid-1800s until 1916, introduction of livestock, and the reduced role of fire support the hypothesis that all these factors contributed to the post settlement expansion of juniper in the West.

If left alone, juniper will increase and become juniper woodland with very little understory. The lack of understory increases erosion, off-site deposition of sediments and loss of forage for both livestock and wildlife. Some studies have indicated a loss of bird species within a juniper woodland with species picking up at the edge (John Day/Umatilla Range Notes Volume 1, Issue 1, March 9, 2001, Ed Peterson, John Day Field Office, Natural Resource Conservation Service).

Mining
The subbasin has produced gold, precious metals and industrial minerals. Besides large amounts of gold, 27,000 tons of chromite ore were mined from the rock outcrops along the north slope of the Strawberry Range. Gold dredges were probably the major impact of mining in the basin. The dredges were large floating barges that employed either draglines or continuously connected buckets to dig ponds out in front of the barge and then discharge the processed spoils, less the gold, out the back. By swinging the barge from side to side, the dredge could maintain itself afloat and move along the floor of the valley. The dredges moved as far as 1,000 feet from the river channel on either side of the river and mined as much land as the owners would sell. It is estimated that the dredges moved over 10,400,000 cubic yards of soil and rock dredging nine feet deep over 716 acres in nine miles of the John Day River and two miles of Canyon Creek (from above John Day to just below Mount Vernon on the river and up to about the high school on Canyon Creek). It is estimated that approximately one-third of the area was dredged near Prairie City and on Dixie Creek. *Gold and Silver in Oregon* states that dredging occurred just below Prairie City from 1930-1936 and on Dixie Creek from 1938-1941. In 1916, a dredge was installed by the Empire Dredge Co. near John Day and operated almost continuously until it was dismantled and moved to Prairie City in 1929. A large dragline dredge owned by Ferris and Marchbank began work in the John Day River near John Day in 1935, and a connected bucket dredge was installed by Western Dredging Co. in 1937. Both operations ceased in 1942. Dredge tailing piles are still visible along the John Day River and tributaries, and many more acres have

been leveled and reclaimed for other uses. Evidence of early hydraulic mining can still be seen in the region know as the Humbolt Diggings. Significant miles of ditches were hand dug subsequent to the strikes of 1862 to provide water to support mining operations.

Naturally Occurring Thermal Sources
The Upper Mainstem contains a number of geothermal energy sources. Most significantly: Mount Vernon Hot Springs (120.2°F); Limekiln Hot Springs (69.8°F); Blue Mountain Hot Springs (136.4°F); Joaquin Miller Hot Spring (118.4°F) and Thompson Hot Springs (88°F) on Indian Creek.

Logging Practices
It was common practice until the 1980's, for federal timber sales to require removal of woody debris from stream channels in the sale proper. Many miles of logging roads along streams and additional miles of upland skid trails have influenced runoff patterns and created conditions for increased levels of soil erosion. The Oregon Forest Practices Act (FPA), enacted in 1971, now guides logging practices on private land.

Flood Damage
"The largest known floods were the winter rain floods that occurred in December 1964 and January 1965." (USACE, Dec. 1969). The peak stage at the McDonald Ferry gauging station on December 24th exceeded the historic 1894 peak. Flood damage was estimated to have caused $7,000,000 in losses to residences, utilities, industries, roads, bridges and emergency services. "Flood control works under emergency and continuing authorities have been performed along various reaches of the John Day River to restore the river to its natural channel and provide limited flood protection. After the 1964-65 floods, channel clearing and channel restoration was performed at 147 locations at a total cost of about $240,000." The Army Corps of Engineers emergency flood control work map indicates that most of the work was accomplished above Kimberly on the Mainstem John Day River. "Levee restoration work was performed in March 1971 at John Day and just upstream of Mt. Vernon." *John Day River Basin*, A Comprehensive Water Resources Investigation, U.S. Army Corps of Engineers, Walla Walla, WA, April 1972.

Upper Mainstem Subbasin

The Upper Mainstem subbasin is located almost entirely within Grant County. It drains an area of approximately 1,070 square miles above Picture Gorge. The mainstem John Day River flows west out of the Blue Mountains through a valley of irrigated stream bottoms and bench lands for over 75 miles before reaching Picture Gorge. Lower elevation agricultural land gives way to range and forest land at higher elevations. Most headwater areas are on lands managed by the Malheur and Ochoco National Forests in the Aldrich, Ochoco and Strawberry Mountains. The subbasin contains naturally occurring lakes, hot springs, and mineral springs. Elevations range from about 2,230 feet at Picture Gorge to above 9,000 feet in the Strawberry Range. The Upper Mainstem subbasin is diverse and contains mountains, rugged hills, plateaus cut by streams, alluvial basins and valleys. Coniferous forests and meadows are prevalent above an elevation of about 4,000 feet while the plant community below 4,000 feet is generally composed of grasses, sagebrush, and juniper trees.

The largest concentration of population in the John Day Basin is in the Upper Mainstem between Dayville and Prairie City. The inhabitants of Mt. Vernon, John Day, Canyon City, and Prairie City comprise about 52 percent of Grant County's population. The 2010 U.S. Census indicates that the current Grant County population of 7,445 individuals has receded by approximately 6 percent from its 2000 population of 7,935. The subbasin also is the location of much of the John Day Basin's industry.

The Upper Mainstem is within the ceded lands of the Confederated Tribes of the Warm Springs Reservation of Oregon (Warm Springs Tribes). By treaty, the Warm Springs Tribes gave up most of the rights to their traditional homeland granted to the United States, vast areas of the John Day Basin, but reserved to themselves certain rights to the use of the land and its resources. This area was, and is currently, used by the Warm Springs Tribes for various purposes such as ceremony, hunting, pasturing livestock, fishing, and gathering of plants and provided both subsistence and commercial resources. Resources of the area are still important to the economy of the Warm Springs Tribes furthering their interest in resource management in this subbasin. The Warm Springs Tribes has acquired title to several tracts of land that will be managed for fish and wildlife purposes, as well as being used for agriculture for traditional uses. Also, the Warm Springs Tribes and the ODFW have co-management responsibility and authority for the fish and wildlife program in the basin.

Local economic activity is strongly influenced by federal land management use decisions since most of Grant County's land base (60 percent) is publicly owned. The Forest Service administers about 90 percent of the 1.7 million acres of federal land within Grant County while the BLM administers the remainder. The National Forest includes 80 percent of the commercial forestland in the county, provides substantial forage resources for domestic livestock and wildlife, and affords plentiful recreational opportunities.

Ranching is the primary agricultural activity in the area and relies on forestland for grazing in the summer; a total of about 260,000 acres are grazed. Approximately 25,000 acres are irrigated containing grass and alfalfa for hay. Logging is critically important to the local economy. In 1991, approximately 209 MMBF were sold off the Malheur National Forest compared with approximately 13.5 MMBF sold in 2000. In 1996, approximately 46,765 acres burned on the Malheur National Forest. The subbasin produces about 18 percent of the spring Chinook and about 16 percent of the steelhead of the John Day River basin. A significant resident trout population is present in this subbasin.

South Fork Subbasin

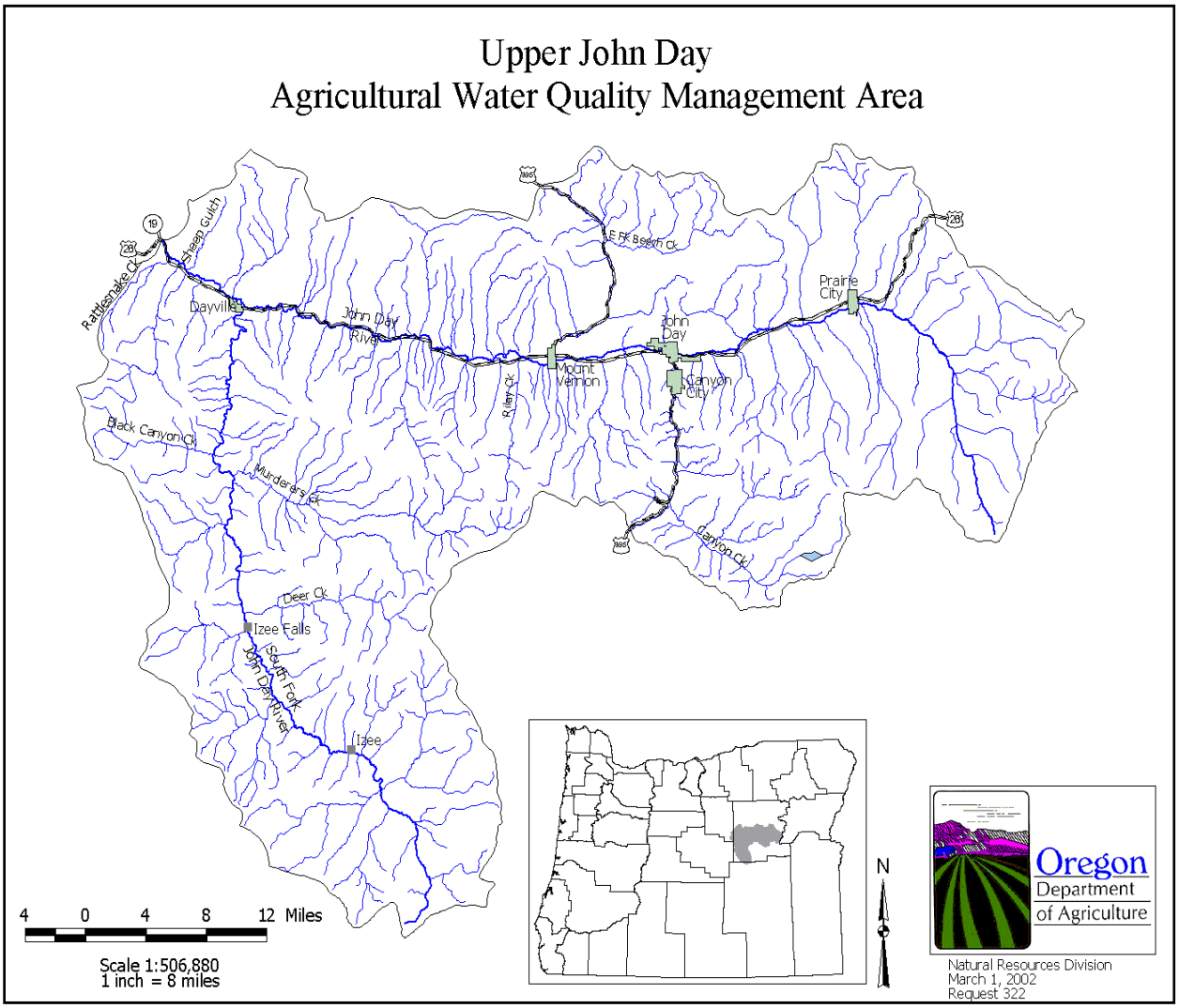
Flowing northward from the Ochoco and Aldrich mountains, the South Fork John Day River drains an area of approximately 607 square miles and enters the mainstem John Day River at Dayville. Subbasin elevation ranges between about 2,300 feet to 7,400 feet above sea level. The South Fork subbasin is located mostly in Grant County and is the driest and most sparsely populated area of the John Day subbasins.
Dayville is the only incorporated city in the subbasin. There are three major transportation routes in the subbasin: Highway 26 in the extreme northern part of the subbasin; a road that parallels the South Fork John Day River from Dayville to the headwaters and a federal aid

secondary highway that connects Prineville with Highway 395 and crosses the southern portion of the basin.

The subbasin is within the ceded lands of the Confederated Tribes of the Umatilla Indian Reservation and the ceded lands of the Warm Springs Tribes.

A little over one-half of the area is in forest with the remainder in range and pasture, of which 3,800 acres are irrigated. Nearly all of the forested areas are grazed and are federally managed by the Malheur National Forest (74,618 acres). About 20 percent of the South Fork subbasin is in private ownership and of this about 37,800 acres are used for grazing.

2.3.3 Map of the Management Area



2.4 Agricultural Water Quality in the Management Area

2.4.1 Local Issues of Concern

The federal Clean Water Act requires that each state designate beneficial uses, decide which parameters to measure to determine whether beneficial uses are being met, and to set criteria for those parameters. Sections 303(d) of the Clean Water Act directs each state, through the Oregon DEQ, to develop a list of water quality limited streams that violate water quality standards and do not support all of the beneficial uses. The Clean Water Act also directs states to develop TMDL for 303(d) listed streams. The TMDL results in allocations of pollutant loads to different sources such as agriculture, urban areas, and federal lands. Each jurisdictional authority then develops water quality management plans to achieve the load allocations. The John Day Basin TMDL, that includes this Management Area, was approved in 2010. This Area Plan serves as the implementation plan for agriculture's load allocation and may be revised to address the load allocations as they are implemented.

A TMDL assessment uses scientific data collection and analysis to determine the amount and source of each pollutant entering streams. A TMDL is the maximum amount of pollutant that can be present in a waterbody while meeting water quality standards. These maximum allowable pollutant loads are assigned to contributing sources, typically to land use authorities.

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

2.4.2 303(d) List of Impaired Water Bodies

Water quality limited streams from DEQ's 2012 303(d) list

The Local Advisory Committee understands that DEQ determined the 2012 303(d) list with limited resources and staff, and incomplete information. Therefore, the LAC questions the accuracy of the 303(d) listings.

DEQ is required to establish TMDLs for pollutants impairing water quality as listed on the 303(d) list. The 303(d) list contains several different categories of impaired water bodies. The categories that pertain (or may pertain in the future) to impaired water bodies in this Area Plan include: Attaining water quality criteria (Category 2), Insufficient data (Category 3), Water Quality Limited – TMDL needed (Category 5), Water Quality Limited – TMDL not needed (Category 4) and Water Quality Limited – TMDL Approved (Category 4A). When a water body is first placed on the 303(d) list as impaired, it is generally in Category 5 (TMDL needed). Once TMDLs are completed for a basin, the water bodies with TMDLs are removed from the Category 5 list and assigned to the Category 4A list (Water Quality Limited – TMDL Approved). In the future, when data show that water quality criteria have been met for these water bodies, the will be assigned to the Category 2 list (Attaining Water Quality Criteria).

In the Upper John Day Subbasin, most 303(d) listings are specific to elevated water temperatures, biological criteria, sedimentation, dissolved oxygen and bacteria (E. coli and fecal coliform). A complete list of water quality impaired water bodies in the Upper John Day

Subbasin as identified in Oregon's 2012 303(d) list is provided in Appendix A. The 2012 303(d) list was submitted to EPA on 11/05/2014. The 2012 303(d) list will be effective after EPA has taken final action.

2.4.3 Basin TMDLs and Agricultural Load Allocations

The John Day River Basin Total Maximum Daily Load and Water Quality Management Plan can be viewed on the DEQ Website at:
http://www.deq.state.or.us/WQ/TMDLs/docs/johndaybasin/TMDLandWQMPFINAL.pdf.

2.4.4 Beneficial Uses and Parameters of Concern

Beneficial Uses

According to OAR 340-41-602, water in the John Day Basin is to be managed to protect the recognized beneficial uses. Of the beneficial uses of water in the John Day River Basin, the most sensitive use is spawning and rearing of cold-water fisheries. According to current information, the following beneficial uses have been identified as adversely affected in the plan area:

- Resident fish and aquatic life
- Salmonid fish spawning and rearing
- Water contact recreation
- Domestic water sources

Parameters of Concern

The DEQ has identified several water quality concerns in the basin, including high temperature and bacteria levels, low oxygen concentrations and impaired biological conditions.
The following discussion of water quality parameters of concern addresses the standards established for the protection of beneficial uses listed in OAR 340-41-602.

Temperature

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

Where DEQ determines that the natural thermal potential of all or a portion of a water body exceeds the biologically-based temperature standards, the natural thermal potential temperatures supersede the existing biologically-based criteria, and are deemed to be the applicable temperature criteria for that water body (OAR 340-041-0028(8)).

DEQ computer simulation of heating along the Upper John Day River indicates that the biological-based criteria are not attainable in much of the subbasin. In such situations, the temperature standard specifies that the target of the TMDL is natural thermal potential temperatures. The TMDL defines natural thermal potential as the best estimate of vegetation,

channel shape, stream flow and other thermal controls that would occur without past and present human disturbance.

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

Bacteria

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

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

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

The standard states, "*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 biological criteria TMDL establishes that biological impairment is addressed through the temperature TMDL. While stressors other than temperature are identified as causes of biological impairment in the Basin, they are addressed directly or indirectly through the temperature TMDL implementation measures.

2.4.5 Sources of Impairment
Probable sources of pollution in the John Day Basin include: eroding agricultural, rural and forestlands, eroding streambanks, runoff and erosion from roads and urban areas, and runoff from livestock and other agricultural operations. Pollutants can be carried to the surface water or groundwater through the action of rainfall, snowmelt, irrigation, and urban runoff and seepage. A major source of water quality impairment is an increase in heat input due to vegetation removal and alterations in seasonal flows, channel shape, and floodplain functions.

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

2.5 Prevention and Control Measures

A landowner or operator's responsibility under the Area Plan is to implement measures that prevent or control the sources of water pollution associated with agricultural and rural lands and activities. Criteria developed in this Plan do not apply to conditions resulting from unusual weather events, or other exceptional circumstances. The LAC encourages ODA to consider random acts of god during rainfall events when waters of the state could potentially cause pollutants to enter creeks. Landowners should not be held accountable for these events.

All landowners or operators are encouraged to evaluate conditions on their lands that may be addressed by the following Prevention and Control Measures. Where current conditions are not consistent with the adopted Area Rules, efforts should begin immediately to ensure compliance with the relevant Prevention and Control Measure. The Area Rules will be reconsidered as part of the biennial review of this Plan. Prevention and control measures deemed to prevent degradation or cause improvement toward water quality standards will be retained while measures failing to protect water quality will be altered or deleted.

OAR 603-095-2040
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 603-095-2040(2)-(6) (Prevention and Control Measures).
(A) A landowner or operator shall be responsible for water quality caused only by conditions on land managed by the landowner or operator.
(B) Criteria 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.

2.5.1 Nutrients and Manure Management

Waste Management

Agricultural and rural land management activities shall be conducted in a manner which prevents or controls the placement, delivery, or sloughing of wastes into waters of the state. All applicable statutes and rules (ORS 468B.025) shall be followed concerning placement of wastes likely to escape or be carried into waters of the state. The same shall apply to discharge of wastes if the discharge reduces the quality of the waters of the state. Water discharge permits are required by law for point sources of pollution.

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

2.5.2 Riparian/Streamside Area Management

Streamside Management

A landowner or operators responsibility under this Area Plan is to implement measures that prevent and control water pollution from agricultural activities. Areas near water bodies are especially important to water quality and sensitive to management activities because of the natural ecological functions they perform such as water infiltration and storage, moderation of temperature and sediment capture. Streamside and riparian systems provide the connection between the water held in the uplands and the water that is released into the stream. The condition of this area influences the quality of the water in the stream.

(5) Streamside Management, no later than January 1, 2006, must allow the establishment, growth and active recruitment of vegetation, consistent with the vegetative growth capability of the site, for protection of water quality by filtering sediment, stabilizing streambanks, and providing shade.

Streamside area management addresses the water quality parameters of concern identified in the 303(d) list: temperature, dissolved oxygen, biological criteria and bacteria. Streamside vegetation influences water temperature through shade, stream width to depth ratio, groundwater recharge and discharge, and other hydrological factors. Streamside vegetation filters out sediment and manure, thereby improving fish and invertebrate habitat by reducing bacteria, increasing dissolved oxygen and increasing biological diversity. The streamside area is defined as the area near the stream where management practices can most directly influence the

conditions of the water. This area usually ranges from ten feet to 100 feet from the water, depending on the slope, soil type, stream size and morphology.

Water is the distinguishing characteristic of a streamside area but soil, vegetation, and landform are also important components. In a healthy streamside area, the four components are interdependent.

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

- Controlling erosion by dissipation of stream energy associated with high flows
- Building streambanks and floodplains by capturing suspended sediment and bedload
- Facilitating flood-water retention and ground-water recharge
- Developing root masses that stabilize streambanks
- Developing diverse channel characteristics providing pool depth, cover, and variations in water velocity necessary for fish production
- Supporting biodiversity
- Providing shading of the water and recruitment of large woody debris for aquatic habitat

Indicators of a healthy streamside area include:

- Maintenance or recruitment of desired riparian vegetation
- Streambank integrity protected through 25-year flood events

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

- Expansion of riparian area
- Reduction in actively eroding streambank length beyond that expected of a dynamic stream system
- Vegetation community composition changes reflecting an upward trend in streamside area condition. (Increases in grass-sedge-rush, shrubs, and litter with decreases in weedy forbs and bare ground)
- Improvement (decrease) of width to depth ratio of channel
- Increase in shade
- Stubble height of grasses and leader growth of shrubs and trees sufficient to maintain vigorous plant growth

Streamside management planning should target a properly functioning streamside area. When crop establishment or re-establishment occurs near streamside areas during the growing season, seedbed preparation should be timed to minimize exposure to erosive forces. An adequate vegetative buffer or equally effective erosion control practice should be provided during the winter months. Noxious weeds should be controlled to prevent the spread of the weeds or to eradicate the population when possible in accordance with the Grant County Weed District noxious weed program. Roads along streamside areas and stream crossings should be kept to a minimum and be installed and maintained to minimize sediment delivery to the stream and not impede fish passage. Streamside grazing should be managed to prevent degradation of water quality or negative impact to the stability of streambanks. Streamside grazing management should include an ongoing consideration of the degree of grazing use that will maintain or develop the desired vegetative cover.

Prevention of degraded streamside areas should always be a planning goal. Landowner(s) should implement management systems on those streamside areas to establish and/or maintain streamside vegetation, vegetative buffers, filter strips, sediment retention structure or equally effective water pollution control practices. If any activity degrades a vegetative buffer, the landowner should replant or restore the disturbed area to an adequate cover. Grazing management should allow for recovery of plants and leave adequate vegetation to ensure streambank stability, reduce sediment or other pollutants from entering the stream and provide streamside shading consistent with the vegetative capability of the site.

Healthy streamside areas are directly tied to management. This Area Plan does not prescribe specific practices to landowners for management of streamside 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 of the Area Plan.

Grant County government has recognized, as a part of the comprehensive land use planning process, the value of riparian management along rivers, streams and springs. The natural features provided by riparian areas have extensive economic, social, and environmental benefits to the county residents. It has developed a policy to conserve riparian areas while recognizing that certain activities may be in conflict with the overall goals of protecting streamside areas. The goals of this Area Plan are generally consistent with the natural resource elements of the Grant County Comprehensive Land Use Plan regarding water quality and riparian vegetation.

2.5.3 Soil Erosion Prevention and Control

Effective management practices for controlling soil erosion and sediment delivery

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

2.5.4 Optional Issues: Livestock Management, Upland Management, and Irrigation Management

Livestock Management
Landowners or operators shall manage their land in an attempt to prevent and control water pollution from livestock enterprises. Careful management of areas used for grazing, feeding and handling are critical to the success of livestock operations and have potential to affect water quality by the runoff of sediment and animal wastes. Livestock management must 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.

(3) Livestock Management: By January 1, 2006, livestock areas shall be managed to control direct discharge of pollutants.

A permit is required for certain livestock confinement areas, defined as annual feeding operations, or concentrated animal feeding operations, under rules currently being drafted, which are consistent with the federal rules.

Uplands Management
Landowners and operators shall manage their resources in an attempt to prevent and control water pollution from upland soil erosion and runoff of pollutants. This includes agricultural and rural lands that may not be in close proximity to water bodies but have the potential to contribute to water quality degradation through runoff of sediment or animal wastes. To implement proper management practices to 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, economic constraints. 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.

OAR 603-095-2040
(4) Uplands Management, by January 1, 2006, within the vegetative growth capability of the site, private land and access route management must foster significant vegetation, to protect water quality by providing infiltration, filtering of sediment and animal wastes, and stabilization of soil.

Uplands areas are the rangelands, forestlands and croplands, upslope from the streamside areas to the ridge tops. With a protective cover of crops, grass, shrubs or trees, consistent with site capability, these areas will capture, store, and safely release precipitation and runoff thereby reducing the potential of erosion of the soil or delivery of soil or pollutants to the receiving

stream or other body of water. Proper management of upland vegetation considers physical conditions and provides for livestock production, controls soil erosion, protects fish and wildlife habitat, and reduces transport of soil and nutrients to the stream. Vegetation on upland areas is dependent on physical characteristics including geology, landform, soils, water and other climate factors. Healthy uplands maintain productivity over time and are resilient to stress caused by variations in physical conditions including periodic disturbances.

Healthy upland areas provide several important ecological functions. They are:

- Capture, store and safely release precipitation in balance with climate and landform
- Provide plant health and diversity that supports habitat (cover and forage) for wildlife and livestock
- Filter sediment and thus reduce polluted runoff
- Provide root masses that utilize nutrients and stabilize soil against erosion

Indicators of healthy conditions may include:

- Ongoing recruitment of beneficial vegetation
- Adequate ground cover to limit runoff of nutrients and sediment
- Cropland condition sufficient to limit runoff of nutrients and sediment
- Roads and related structures designed, constructed and maintained to limit sediment delivery to streams
- Noxious weeds controlled or contained

Factors to evaluate upland area condition may include:

- Stubble height as a tool to measure plant utilization
- Species composition to measure plant health, diversity and recruitment
- Ground cover (plants, litter) to measure potential for erosion
- Presence of patterns of erosion caused by overland flows
- Domestic livestock and/or wildlife carrying capacity
- Soil loss prediction models (available at local NRCS Field Office)

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 practices to protect water quality can be obtained from sources listed in the Implementation Strategies section of this Area Plan.

Proper application of cropland management systems can control sheet and rill erosion and gully erosion. Average annual sheet and rill erosion rates can be estimated using the Revised Universal Soil Loss Equation (RUSLE) over a cropping rotation with supporting data from the NRCS Field Office Technical Guide (FOTG) and/or similar data from other credible sources.

Range and pasture management should include a grazing management system that maintains sufficient vegetative cover to prevent runoff of sediment and animal wastes. This should include a consideration of intensity, frequency, duration and season of grazing. Noxious weeds should be controlled according to current county and state weed laws.

Land access routes can be constructed and maintained to limit runoff of sediment into waters of the state. Roads used for activities subject to the Oregon FPA are regulated by FPA rules. Non-crop areas must be managed to control runoff of sediment and animal wastes into waters of the state.

Irrigation Management

Diversion of water from a waterbody to be applied on land for the purpose of growing crops and/or livestock 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 (duty) that can be applied to a particular parcel of land. Refer to WRD Rules, OAR Division 690 and ORS Chapters 536 through 543.

(6) Irrigation Management: By January 1, 2006, irrigation must be done in a manner that limits the amount of pollutants entering waters of the state.

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

Water released to a stream from impoundments for the purpose of augmenting streamflows or for diversion for irrigation should meet or exceed the water quality of the receiving stream.

Diversion and application of water for irrigation shall be done efficiently and in a manner that controls the introduction of pollutants into waters of the state. The diversion of water from a surface source must be done in a manner that protects the users right to a beneficial use of water but at the same time protects the other beneficial uses of the water. Irrigation scheduling should be appropriate to each site and consideration should be given to soil conditions, crop, climate and topography. Irrigation efficiency is generally enhanced by assuring that the quantity and timing of application is based on the needs of the crop, as determined by soil moisture levels, crop water use, budgets or other monitoring tools.

Diversion structures can be a source of pollution or a cause of instability to streambanks if not constructed and maintained properly. Temporary diversion structures, because of the fact that they usually must be reinstalled each year, can have a temporary effect on water quality as well as alteration of the stream channel. Diversions should not promote channel instability, cause continuing water pollution, increase instream turbidity, or impede fish passage.

Chapter 3: Goals, Objectives, and Strategies

Vision
Maintain and/or improve the water quality of the streams located in the Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area.

Mission
Maintain the economic viability of the agricultural industry and individual landowners, while pursuing water quality improvement through maintenance, restoration, education, and monitoring in the Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area.

3.1 Goal

1. Prevent and control water pollution from agricultural and rural land activities and soil erosion to achieve applicable water quality standards.
2. To respect private property rights.

3.2 Measurable Objectives

Measureable Objectives
Achieving the measurable objectives is based on adaptive management. As ODA, the LAC, and the LMA review the progress of the milestones, we will alter and insert new activities to help achieve the objectives. We will make progress, in part based on available resources. The measureable objectives are subject to change based on new information, rate of progress, and available resources. The Local Advisory Committee and the Local Management Agency take their responsibility seriously to make progress toward achieving the measurable objectives.

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

ODA, LMA, and the LAC will work on developing Measurable Objectives during the 2017 Biennial Review.

3.2.1 Milestones (Targets) and Timelines
The following milestones and timelines were developed in cooperation with ODA and the SWCD. Focus Area Action Plans are developed as a tool with milestones and timelines for implementation of the Area Plan within a defined geographic area.

ODA, LMA, and the LAC will work on developing milestones and timelines during the 2017 Biennial Review.

3.2.2 Focus Area
For the 2013-2015 biennium, the Grant SWCD is devoting 25% of their Scope of Work to working in a small geographic area (Focus Area). The Focus Area task involves developing an

Action Plan with anticipated quarterly tasks, conducting a pre-assessment of current conditions, conducting outreach and technical assistance, implementing projects, then conducting a post-assessment to document progress.

The Grant SWCD Board of Directors asked ODA to select the Grant SWCD Focus Area. ODA considered several factors when selecting the John Day Focus Area, including: preferred geographical scale (6th field HUC), capacity of the SWCD to complete the work, any previous work completed in the area, the need for agricultural water quality or streamside vegetation improvement, percent of agricultural use in the 6th field HUC, and water quality monitoring data.

Based on these factors, ODA has selected Strawberry Creek-John Day River HUC, just east of Prairie City, as the Focus Area for the Grant SWCD. The 6th field HUC number is HUC12-170702010601.

The Strawberry Creek Watershed emanates in the Strawberry Mountain Wilderness at 9,032 feet and drops to approximately 3,500 feet when it leaves the basin. It comprises approximately 20,850 acres and consists of Forestry (56.8%), Agricultural (39.7%), Urban (2.3%) and Rural Residential (0.9%) land uses. Private ownership makes up 54% of the watershed with the remainder consisting of the Malheur National Forest; 91% (8,742 acres) of the federal ownership is contained within the Wilderness Area. The Assessment Area comprises just over 400 acres and involves 23 landowners and 46 taxlots. Agricultural commodities include grass hay and alfalfa.

The Local Advisory Committee did not participate in the selection or development of the Focus Area.

Please see Appendix B for Focus Area Action Plan.

An Action Plan for the current biennium has been developed and approved by ODA outlining the key components of the process.

- Conduct a pre-assessment of current land conditions.
- Identify areas of concern.
- Conduct education and outreach to landowners.
- Offer technical assistance to landowners and financial assistance, if needed.
- Conduct a post-assessment after project implementation.
- Report progress to ODA and the LAC.

3.3 Strategies for Area Plan Implementation

The ODA and the District's primary strategies to reduce amounts of pollution from agricultural and rural lands lie in the reduction of pollutants in runoff and the reduction of erosion through a combination of educational programs, land treatment, implementation of sound management practices, installation of erosion control structures, and monitoring of implementation effectiveness. This includes the adoption and compliance with Prevention and Control Measures directly related to water quality.

To achieve clean water, an effective strategy must increase awareness of the problem and the range of potential solutions, motivate appropriate voluntary action, and provide for technical and financial assistance to plan and implement effective conservation practices.

Strategies

- Promote landowner stewardship by encouraging technically sound and economically feasible management practices that enhance water quality
- Increase public awareness and understanding of agriculture's contributions to improving water quality through educational outreach activities
- Promote funding for private landowners cost share for implementing water quality improvement projects through state and federal conservation agencies
- Support a monitoring program that provides scientifically credible data for:
    - Identifying current water quality conditions and assessing water quality trends
    - Assessing effects of implementing elements of the Area Plan
    - Assessing compliance with this Plan
- Seek solutions that protect and enhance economic viability of the agricultural industry and individual landowners
- Identify priorities for pollution source identification and determining areas for implementing restoration activities including reasonable timelines for management strategies targeting TMDL attainment

Water Quality Management Practices

Successful land management practices for pollution control are those management practices that are determined to be effective, practical means of preventing pollution from agricultural and rural land activities.

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

A detailed listing of a number of specific practices and management measures, which can be employed to control or reduce the risk of water pollution, resulting from agricultural activities are contained in the Field Office Technical Guide available for reference at the local NRCS office. This reference contains a list of practices, which may typically be used for effective prevention and control of soil erosion, sediment delivery to streams and water pollution from agricultural activities.

It is not the intent of this Area Plan to impose a financial hardship on any individual. If desired, managers can request technical and/or financial assistance to develop strategies for addressing potential water quality problems.

3.3.1 Education and Outreach

The ODA and District intend to encourage participation in this water quality improvement program by providing the following:

Educational Program

The objective of an educational program is to promote a high level of awareness and an understanding of water quality issues in a manner that reduces conflict and encourages cooperative efforts through education and technical assistance activities by:

- Incorporating implementation of the Area Plan as a priority element in the District's annual work plan and long-range plan with support from partner organizations
- Showcasing successful practices and systems and conduct annual tours 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 organizaitons as appropriate

3.3.2 Conservation Planning and Conservation Activities

Conservation Planning

The District, NRCS, and other natural resource agency staff are available to assist landowners in evaluating effective practices for enhancing water quality and/or incorporating these practices into voluntary ranch conservation plans. In most instances, 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.

The Upper Mainstem and South Fork John Day River have a strong, active conservation and funding team that includes private landowners, and personnel from: Federal, state and local agencies, Warm Springs Tribes, SWCDs, Watershed Councils and OSU Extension. Project cost share has included funds from private landowners, Bonneville Power Administration, Warm Springs Tribes, Bureau of Reclamation, OR Watershed Enhancement Board, ODFW, US Fish and Wildlife Service, USDA (Forest Service, Farm Services Agency and NRCS) and the Department's Natural Resources Division.

Restoration efforts in the plan area encompass a suite of educational programs, suggested land treatments, management activities and monitoring employed to control or reduce the risk of water pollution from agricultural and rural lands. Specific labors include:

- Elimination of fish passage barriers (e.g. irrigation diversion improvments, culvert replacements)
- Restoration of in-stream and riparian habitat conditions (e.g. riparian protection fencing, off-channel stock water developments, stream bank/channel stablization, large wood structure installations, channel restriction removal, restoration planting)
- Implementation of irrigation management and efficiency projects (e.g. pump station conversions, water conveyance improvements, irrigation return flow cooling projects)
- Enhancement of upland function (e.g. juniper and noxious weed control, restoration seeding, range/forest/cropland management and incentives, land use planning)

- Implementation of controls and management practices to prevent the introduction of waste into waters of the state (e.g. livestock facility improvements)
- Increasing public awareness and understanding of water quality issues in a manner to foster cooperative and volunatary program participation (e.g. program presentations, continuing education opportunities)
- Support of monitoring programs that provide scientifically credible information (e.g. project effectiveness, water quality condition/trend, plan compliance)

3.3.3 Funding

Sources of Financial & Technical Assistance

Technical and cost-sharing assistance for installation of certain management practices may be available through the US Department of Agriculture (USDA) conservation programs and other state and federal programs. Other agencies may also be available to provide technical or financial assistance to private landowners.

Information and 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 Cattlemen's Association/Oregon State University Extension (OSU Extension)
  - Ranch Water Quality Planning Workbook, OSU Extension
  - The Oregon Plan Toolbox, Oregon Watershed Enhancement Board (OWEB)
- Programs
  - Farm *A* Syst Program, OSU Extension
  - Home *A* Syst, OSU Extension
  - Stream *A* Syst, OSU Extension

3.3.4 Monitoring and Evaluation

Changes stimulated by the implementation of an Area Plan can be measured through monitoring of water quality change over time. Monitoring provides the data by which the direction, degree and rate of change can be determined and can assist in identifying treatment priorities. Monitoring is the tool by which water quality management practices are evaluated to make sure that they produce the desired outcomes, in terms of protecting water quality. For the purposes of this Area Plan, four main types of monitoring are accepted. These are:

1. Baseline condition monitoring
   Baseline condition monitoring provides a starting point for assessing water quality trends and for future evaluation of the effectiveness of water quality improvement efforts. Baseline condition monitoring typically includes identification and analysis of data previously and currently collected in the area according to accepted protocols.

2. Water quality trend monitoring
   Water quality trend monitoring can help to track how water quality (typically on a watershed or sub-watershed scale) is changing over time, including after implementation of an Area Plan. It is recommended that trend monitoring follow recommendations in the Oregon Plan Water Quality Monitoring Technical Guide.
3. Effectiveness monitoring
   Effectiveness monitoring will be used to evaluate the effectiveness of specific management practices in reducing losses or loadings of components such as sediment or nutrients. It can be used to evaluate the net effect of the implementation of an Area Plan, and watershed improvement activities on water quality trends. The NRCS can provide information about the effectiveness of various practices in protecting surface and groundwater quality.
4. Compliance monitoring
   Conducted as a part of a compliance investigation, this type of monitoring is specific to individual sites. Site-specific information and data are collected to characterize and quantify the physical setting and land management conditions that relate to a potential violation of a specific rule or standard. Photographic documentation of the suspected problem is typically also included in the assessment. Water samples may be taken for chemical or biological analysis.

The Oregon Plan for Salmon and Watersheds Water Quality Monitoring Technical Guide Book is available to provide technical assistance in developing monitoring programs. This monitoring guide describes local management agency accepted practices for most monitoring activities. Technical assistance can be obtained from the sources listed in the previous section. This guide book describes accepted procedures and protocols for most activities that would be used to conduct baseline condition and trend monitoring on a watershed scale, including development of quality assurance/quality control plans to assure quality of data and protocols for data collections.

Chapter 4: Implementation, Monitoring, and Adaptive Management

4.1 Implementation and Accomplishments

Location	Overall Score	Temperature	pH	Dissolved Oxygen (DO)	Biochemical Oxygen Demand, BOD	Total Solids	Nitrogen	Phosphorus	Bacteria
John Day R. u/s Dayville	82, Decreasing	92, Increasing	88, No Trend	82, No Trend	77, Decreasing	83, No Trend	97, Increasing	72, No Trend	84, Decreasing
S. Fk. John Day R. @ Dayville	87, No Trend	94, Increasing	82, No Trend	92, No Trend	79, Decreasing	80, No Trend	98, No Trend	86, No Trend	94, No Trend
Water Quality Trend Score is out of 100 http://www.deq.state.or.us/lab/wqm/wqimain.htm									

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

Please see Appendix C for the 2013-2015 Accomplishments Table.

4.2 Water Quality Monitoring—Status and Trends

Upper John Day AgWQ Management Area Water Quality Score and Trend
Oregon Water Quality Index Report – 10-Year Trend (2003-2013)

4.3 Progress Toward Measurable Objectives

The LAC, LMA, and ODA will work to develop MO, milestones, and timelines during the 2017 Biennial Review.

4.4 Monitoring of Streamside Vegetation Assessment

Management Area Monitoring of SVA will be included during the 2017 Biennial Review.

Eastside SVA Results:

SVA Map Category (Alphabetical)	"Office" Preliminary Pre-Assessment (2014)	"SitePre" Final Pre-Assessment (ongoing)	"SitePost" Post-Assessment or End of Biennium Report (2015)
Ag Infrastructure	.5		
Bare	.5		
Bare Ag	.8		
Grass	26		
Grass Ag	27.1		
Shrub	16.7		
Shrub Ag	.4		
Tree	22		
Tree Ag	.1		
Water	5.8		
TOTAL ACRES	**100**		

4.5 Biennial Reviews and Adaptive Management

The LAC met four times for the 2015 Biennial Review. The biennial review meetings consisted of updating language throughout the Area Plan, as well as discussing the New Chapter Format and Measurable Objectives.

There were no enforcement actions in the Management Area.

References to information used in the development of the Area Plan

Agricultural Commodity Sales - Grant County, Extension Economic Information Office, OSU, January 1999

Effective Cattle Management in Riparian Zones: A Field Survey and Literature Review, Montana BLM, 1997

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

John Day Irrigation Return Flow Study, 1985-86, Oregon Water Resources Department

John Day River Basin Report, Oregon Water Resources Dept., November 1986

John Day River Basin TMDL and WQMP, DEQ, December 2010

John Day River Management Plan and Environmental Impact Statement, BLM & OSPRD, October 1993

NRCS Field Office Technical Guide, NRCS

OARs, Chapter 340, Division 41, DEQ

OARs, Chapter 603, Divisions 90 and 95, ODA

Oregon Revised Statutes, 468B

Oregon Revised Statutes, 561.191

Oregon Revised Statutes, 568.900 through 568.933

Oregon Small Acreages Conservation Toolbox, NRCS /OACD, 1999

Oregon Water Quality Index Website, http://www.deq.state.or.us/lab/wqm/wqimain.htm

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

Ranch Water Quality Planning Workbook, OSU Extension,

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

Restoring Water Quality Throughout Oregon, DEQ, February 1998

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

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

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

Successful Strategies for Grazing Cattle in Riparian Zones, Montana BLM, 1998

The Ecological Provinces of Oregon, Oregon Agricultural Experiment Station, May 1998

The Oregon Plan Toolbox, Oregon Watershed Enhancement Board

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

WESt Program Workbook, Oregon Cattleman's Association, 1998

Appendices

A - Waterbodies in the Upper John Day Subbasin on the State of Oregon's 2012 303(d) List

B - Strawberry Creek – John Day River Focus Area Action Plan

C - 2013-2015 Accomplishments Table

D - Common Agricultural Water Quality Parameters of Concern

Appendix A: Waterbodies in the Upper John Day Subbasin on the State of Oregon's 2012 303(d) List

303(d) List – 2012 Category 4 (TMDL Approved)				
Subbasin	**Stream (Water Body)**	**Segment (River Mile)**	**Pollutant**	**Season**
Upper John Day	Badger Creek	0 to 9	Temperature [b]	Summer [a]
Upper John Day	Battle Creek	0 to 7.3	Temperature [b]	Summer [a]
Upper John Day	Bear Creek	0 to 10.1	Temperature [b]	Summer [a]
Upper John Day	Canyon Creek	0 to 27.5	Temperature [b]	Summer [a]
Upper John Day	Corral Creek	0 to 8.7	Biological Criteria	Year Round
Upper John Day	Cottonwood Creek	0 to 16.4	Temperature [b]	Summer [a]
Upper John Day	Dads Creek	0 to 8.6	Temperature [b]	Summer [a]
Upper John Day	Dans Creek	0 to 6	Temperature [b]	Summer [a]
Upper John Day	Deer Creek	0 to 11.9	Temperature [b]	Summer [a]
Upper John Day	Dog Creek	0 to 5.5	Temperature [b]	Summer [a]
Upper John Day	East Fork Canyon Creek	0 to 9.2	Temperature [c]	Year Round (Non-spawning)
Upper John Day	Ennis Creek	0 to 2.8	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Fields Creek	0 to 10.2	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Flat Creek	0 to 11.8	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Grasshopper Creek	0 to 5.3	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Grub Creek	0 to 13.5	Temperature [b]	Summer [a]
Upper John Day	Indian Creek	0 to 6.1	Temperature [b]	Summer [a]
Upper John Day	John Day River	182 to 243.7	Dissolved Oxygen	Year Round (Non-spawning)
Upper John Day	John Day River	182 to 265	E. Coli	Summer [a]
Upper John Day	John Day River	182 to 265	Fecal Coliform	Summer [a]
Upper John Day	John Day River	182 to 265	Flow Modification	Undefined
Upper John Day	John Day River	182 to 243.7	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Little Pine Creek	0 to 5.1	Temperature [b]	Summer [a]
Upper John Day	McClellan Creek	0 to 6.4	Temperature [b]	Summer [a]
Upper John Day	Mountain Creek	0 to 21.7	Temperature [b]	Summer [a]
Upper John Day	Murderers Creek	0 to 24.7	Temperature [b]	Summer [a]
Upper John Day	Murray Creek	0 to 1.8	Temperature [d]	Year Round (Non-spawning)
Upper John Day	North Fork Deer Creek	0 to 4.2	Temperature [b]	Summer [a]
Upper John Day	Pine Creek	0 to 3.8	Temperature [b]	Summer [a]
Upper John Day	Pine Creek	0 to 8	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Porcupine Creek	0 to 2.1	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Rail Creek	0 to 7.1	Temperature [c]	Summer [a]
Upper John Day	Rock Creek	0 to 24.8	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Slyfe Creek	0 to 6	Temperature [b]	Summer [a]
Upper John Day	South Fork John Day River	0 to 57.4	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Spring Creek	0 to 3	Temperature [d]	Year Round (Non-spawning)

303(d) List – 2012 Category 4 (TMDL Approved)				
Subbasin	**Stream (Water Body)**	**Segment (River Mile)**	**Pollutant**	**Season**
Upper John Day	Strawberry Creek	0 to 8.6	Temperature [e]	Year Round (Non-spawning)
Upper John Day	Sunflower Creek	0 to 8.7	Temperature [b]	Summer [a]
Upper John Day	Tex Creek	0 to 6.9	Temperature [d]	Year Round (Non-spawning)
Upper John Day	Tinker Creek	0 to 4.6	Temperature [b]	Summer [a]
Upper John Day	Utley Creek	0 to 5.5	Biological Criteria	Year Round

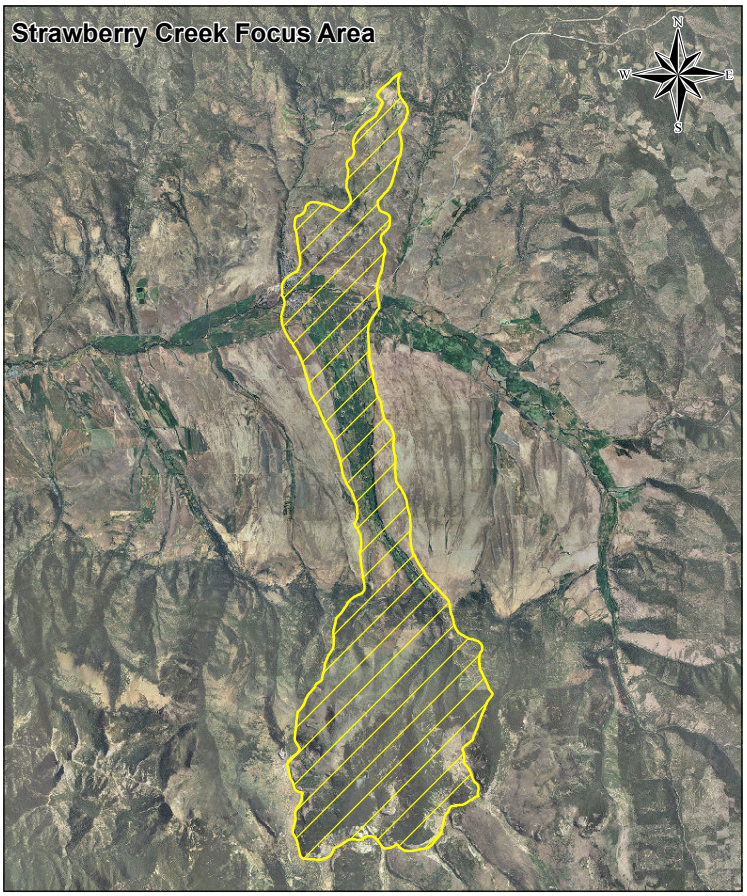
[a] Summer = June 01 through September 30
[b] Rearing: 17.8 degrees Celsius Salmonid fish rearing; Anadromous fish passage
[c] Bull trout spawning and juvenile rearing: 12.0 degrees Celsius 7-day-average maximum
[d] Salmon and trout rearing and migration: 18.0 degrees Celsius 7-day-average maximum
[e] Core cold water habitat: 16.0 degrees Celsius 7-day-average maximum

303(d) List – 2012 Category 5 (TMDL Needed)				
Subbasin	**Stream (Water Body)**	**Segment (River Mile)**	**Pollutant**	**Season**
Upper John Day	Canyon Creek	0 to 23.9	Biological Criteria	Year Round
Upper John Day	East Fork Beech	0 to 12.4	Biological Criteria	Year Round
Upper John Day	Jackass Creek	0 to 4.8	Sedimentation	Year Round
Upper John Day	John Day River	182 to 243.7	Dissolved Oxygen	January 1 - May 15
Upper John Day	John Day River	265 to 278.3	Dissolved Oxygen	September 1 - June 15
Upper John Day	Johnny Creek	0 to 6	Sedimentation	Year Round
Upper John Day	Murderers Creek	0 to 24.7	Sedimentation	Year Round
Upper John Day	North Fork Deer Creek	0 to 4.2	Biological Criteria	Year Round
Upper John Day	Pine Creek	0 to 8	Biological Criteria	Year Round
Upper John Day	Pine Creek	0 to 8	Sedimentation	Year Round
Upper John Day	South Fork John Day River	0 to 57.3	Biological Criteria	Year Round
Upper John Day	Trib to Strawberry Creek	0 to 1.6	Sedimentation	Year Round
Upper John Day	Wildcat Creek	0 to 2.5	Sedimentation	Year Round
Upper John Day	John Day River	0 to 278.3	Biological Criteria	Year Round

APPENDIX B: Strawberry Creek – John Day River Focus Area Action Plan

Strawberry Creek - John Day River: Action Plan

Upper John Day AgWQ Management Area
Grant SWCD – 2013-2015



1 in = 2 miles

0 1 2 4 6 8 Miles

Grant Soil and Water Conservation District
721 South Canyon Boulevard John Day, Oregon 97845
Phone: (541) 575-0135 Fax: (541) 575-0646
Serving the Citizens of Grant County for over 50 Years!

I. INTRODUCTION

A. Description of Watershed

The Strawberry Creek Watershed emanates in the Strawberry Mountain Wilderness at 9,032 feet and drops to approximately 3,500 feet when it leaves the basin. It comprises approximately 20,850 acres and consists of Forestry (56.8%), Agricultural (39.7%), Urban (2.3%) and Rural Residential (0.9%) land uses. Private ownership makes up 54% of the watershed with the remainder consisting of the Malheur National Forest; 91% (8,742 acres) of the federal ownership is contained within the Wilderness Area. The Assessment Area comprises just over 400 acres and involves 23 landowners and 46 taxlots. Agricultural commodities include grass hay and alfalfa.

B. Basis for Selection of Focus Area

The Grant SWCD Board of Directors asked the Oregon Department of Agriculture (ODA) to select the Grant SWCD Focus Area. ODA considered several factors when selecting the John Day Focus Area, including: preferred geographical scale (6th field HUC), capacity of the SWCD to complete the work, any previous work completed in the area, the need for agricultural water quality or streamside vegetation improvement, percent of agricultural use in the 6th field HUC, and water quality monitoring data.

Based on these factors, ODA has selected Strawberry Creek-John Day River HUC, just east of Prairie City, as the Focus Area for the Grant SWCD. The 6th field HUC number is HUC12-170702010601.

C. Water Quality Parameters of Concern

The John Day River Basin Total Maximum Daily Load (Nov. 2010) identifies water quality concerns applicable to the Strawberry Creek Watershed. Basin water quality issues of concern include high water temperatures, and bacteria levels, low oxygen concentrations, impaired aquatic life and excessive amounts of fine-grained streambed sediment. Specifically, the temperature and bacteria TMDLs apply to all streams throughout the Basin including the Strawberry Creek Watershed. Oregon's 303d List for temperature impaired streams includes Strawberry Creek. The Grant SWCD will work cooperatively with landowners to address all impairment issues by actively reducing near stream agricultural impacts to support establishment and growth of site capable riparian vegetation.

D. Description of Assessment Method(s)

Streamside vegetation condition will be assessed as a surrogate for stream temperature, using the ODA Streamside Vegetation Assessment Tool and associated User's Guide (Version 1).

Preliminary pre-assessment method - "Office":

- Digitize correct location of perennial and intermittent streams in National Hydrography Dataset, along with associated instream ponds
- Assess area that extends 35 feet outward from streambanks, plus area between streambanks
- Interpret aerial photos to map polygons, using Map Categories listed below
- Ground-truth "Office" pre-assessment from public vantage points and update polygons as needed
- Report total "Office" acres for each Map Category in Section IV (Results)

Final pre-assessment method - "SitePre":

- Update "Office" polygons based on actual conditions observed at technical assistance site visits
- Report total "SitePre" acres for each Map Category in Section IV (Results)

Post-assessment method – "SitePost":

- Update "SitePre" polygons based on projects implemented (for example, change Bare Ag polygon to Shrub, where trees and shrubs are planted)
- Report total "SitePost" acres for each Map Category in Section IV (Results)

SVA Map Categories: *(See User's Guide for detailed descriptions and examples)*

Ag Infrastructure	Grass	Shrub	Tree Ag
Bare	Grass Ag	Shrub Ag	Water
Bare Ag	Not Ag	Tree	

II. MEASURABLE OBJECTIVE(S)

Strawberry Creek – John Day River Focus Area Measurable Objectives

- By July 1, 2014, a Focus Area (Strawberry Creek Watershed), was identified within the Management Area, where Grant SWCD will focus outreach and technical assistance.
- By July 1, 2014, ODA completed the Streamside Vegetation Assessment in the area that identifies:
    - the current amount and percentage of ODA defined streamside vegetation assessment categories; and
    - streamside areas where there are opportunities to advance the restoration of vegetation to improve water quality functions and return sites to near estimated historic compositions.
- Outputs
    - By the 2015 biennial review, ODA and the SWCD will compile information about the number, and size of water quality improvement projects completed in the Focus Area since Area Plan and Rules adoption.
    - By the 2015 biennial review, the SWCD will have offered technical assistance to all landowners in the Focus Area regarding agricultural water quality regulations and opportunities to improve water quality functions through riparian vegetation enhancement projects.
    - By the 2015 biennial review, the LMA will report back to the LAC and ODA on the amount of lands where voluntary streamside vegetation enhancement projects have been accomplished in association with the Focus Area.
    - By July 1, 2015, ODA and/or the LMA will complete a post-assessment in the Focus Area and evaluate land condition changes over the two-year period.
- Outcomes
    - By the 2015 biennial review, the Focus Area will maintain Bare Ag areas at a level of less than 1% of the streamside vegetation assessment area.
    - By the 2015 biennial review, the Focus Area will show a 3% conversion of Bare Ag and Grass Ag categories to Tree and Shrub within the streamside vegetation assessment area.
    - By the 2015 biennial review, the Focus Area will show a 5% increase in assessed streamside areas where agricultural activities have been adjusted to aid in the reduction of near stream impacts, benefitting the natural growth and function of site capable streamside vegetation.

III. IMPLEMENTATION ACTIVITIES AND TIMELINE

The table can be refined and updated during the biennium based on progress and new information received.

The underlined agency(s) identifies the party responsible for completing the associated action plan task.

1. Introductory Outreach (Fall/Winter 2013)
    A. <u>ODA & GRANT SWCD</u> – Mutually develop and approve local outreach (e.g. press release, fact sheets, direct mailings) describing the Focus Area Assessment Program, clearly defining ODA's role in completing the selection of a Focus Area and the assessment of its streamside vegetation within the Upper Mainstem and South Fork Plan Area.

2. Focus Area selection and completion of Streamside Vegetation Assessment (Winter/Spring 2014)
    A. <u>ODA</u> – Completes Focus Area selection and streamside vegetation assessment.
    B. <u>ODA & GRANT SWCD</u> – Mutually develop and approve local outreach materials (e.g. press release, fact sheets, direct mailings) identifying the ODA selected Focus Area and describing

that ODA will be providing financial resources to the Grant SWCD to provide targeted assistance in the selected area.

3. Focused Outreach and Technical Assistance (Summer 2014 thru Summer 2015)
   A. ODA – Present streamside vegetation assessment information and results as necessary to support Grant SWCD outreach activities and events.
   B. GRANT SWCD – Complete area wide outreach to the selected property ownerships (e.g. direct mailing or contact). Initial outreach will notify landowners of existing regulations governing agricultural land use practices, solicit landowner interest in program, describe best management practices to address common limiting factors, and inform landowners of available assistance from the District.
   C. GRANT SWCD – Appropriate to the level of responsiveness, provides general informational opportunities or direct technical assistance. Example: Coordinate informational/educational events, complete individual site visits, provide specific grant application and project implementation supports.
   D. GRANT SWCD – Complete quarterly scope of work reporting requirements in support of receiving technical assistance/local management agency funds to implement focus area outreach activities and voluntary projects.

4. Focus Area Progress Assessment (Summer 2015)
   A. ODA – Re-evaluate focus area incorporating voluntary improvement activities sponsored by the District with local management agency financial resources.
   B. ODA & GRANT SWCD – Mutually develop and approve local outreach materials (e.g. press release, fact sheets, direct mailings) describing the results of the streamside vegetation assessment and accomplishments of the Focus Area Work.
   C. ODA & GRANT SWCD – Jointly assess effectiveness of Focus Area Program. Incorporate mutually approved findings into future action plans.

5. Implementation Activities and Timeline

Quarter #	Quarter Ending	Activity	Results	Notes
1	**September 2013**	Develop timeline for selecting Focus Area.	Completed and approved.	
2	**December 2013**	Develop outreach and education documents for Focus Area.	Outreach and education documents are in the process of being developed.	
3	**March 2014**	ODA selects Focus Area. ODA completes Streamside Vegetation Assessment. Develop and distribute outreach and education material regarding ODAs selection of Focus Area.	Presentation made at two Ag groups and article printed in newspaper on AWQM Plan & Focus Area.	District is waiting for ODA to select Focus Area and complete Streamside Vegetation Assessment.
4	**June 2014**	Provide general information or technical assistance to landowners interested in the program.	Annual Mtg held to provide information on AGWQM Plan and Focus Area. Conducted personal visits with landowners to provide technical assistance and information on compliance with Plan. Will conduct	

			specific outreach to landowners in Focus Area in coming months.	
5	**September 2014**	Implement projects. Apply for grants.	Outreach materials are being developed to provide information to landowners in the Focus Area.	
6	**December 2014**	Implement projects.	Outreach materials describing the Focus Area approach and its findings were distributed to 20 landowners.	District met on site with a landowner who requested additional information as a result of outreach materials that were sent.
7	**January 2015**	Implement projects.		
8	**March 2015**	Implement projects.		
9	**June 2015**	Re-evaluate Focus Area and ODA will complete Post-Assessment. ODA will provide quantitative results. Present results at Biennial Review.		

IV. RESULTS

A. Pre- and Post-Implementation Assessment Results

Raw Streamside Vegetation Assessment (SVA) Results (Acres):

SVA Map Category (Alphabetical)	"Office" Preliminary Pre-Assessment (2014)	"SitePre" Final Pre-Assessment (ongoing)	"SitePost" Post-Assessment or End of Biennium Report (2015)
Ag Infrastructure	2.54		
Bare	1.58		
Bare Ag	1.25		
Grass	93.33		
Grass Ag	198.65		
Not Ag	351.99		
Shrub	16.13		
Shrub Ag	0.00		
Tree	81.63		
Tree Ag	0.00		
Water	10.61		
TOTAL ACRES	**757.72**		

Notes:

- *Please report 0 (zero) for Map Categories not present in the Focus Area*
- *To convert the alphabetical list of Map Categories into percents (that exclude Not Ag), please contact the ODA Riparian Specialist for a simple excel template*
- *This Action Plan is for the 2013-2015 Scope of Work; a column for reporting in 2017 can be added if you extend the Focus Area to show progress and achieve water quality goals*

Measurable Objectives Reporting:

SVA Map Category (Alphabetical)	"SitePre" Final Pre-Assessment	"SitePost" Post-Assessment or End of Biennium Report	Percent Change
Bare Ag + Grass Ag *	*Insert acres from above*	*Insert acres from above*	*Calculate & insert **

* *Please adjust if needed, to reflect your measurable objective*

** *Calculate: Percent Change = ("SitePost" ÷ "Site Pre") - 1.0*

B. Two-Year Implementation Summary

Instructions: Please provide a summary of the implementation activities completed in the SOW report. Please report additional data not included in the SOW report as provided in the example below.

Example:
Number of landowners contacted by mail: 20
Number of landowners contacted by phone: 10
Number of landowners with projects installed: 8
Stream miles with exclusion fencing: 4 miles
Stream miles with riparian fencing for flash-grazing (minimum buffer width of 100 feet): 3 miles
Stream miles with plantings of native species: 1.6 miles
Acres of uplands reseeded: 148 acres
Off-stream water: 4 spring developments
Number of grants received: 4 grant proposals and an estimated cost of $389,000
Other notes: An additional two landowners did not wish to work with us and their 3 stream miles are still class III.

APPENDIX C: 2013-2015 Accomplishment Table

Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area Plan
2015 Biennial Review
January 29, 2015

Goals

1. Prevent and control water pollution from agricultural and rural land activities and soil erosion to achieve applicable water quality standards
2. To respect private property rights

Objectives

#1.Promote landowner stewardship by encouraging technically sound and economically feasible management practices that enhance water quality

Implementation Strategy #2. Water Quality Management Practices

Project Name	Type	Diversion Improved or Eliminated	Fence Miles	Acres Treated	Off Channel Water Sites	Ft. Pipeline Installed	Ft. Streambank Restored	Miles Habitat Opened	Harden Stream Crossing
Chandler Passage Improvement	Diversion Enhancement	1							
Long Meadow Diversion	Side Channel Diversion	1							
Austin Ditch Diversion	Engineered Rock Riffle Diversion	1							
Baucum Passage Improvement	Diversion Enhancement	1							
Enterprise Passage Improvement	Diversion Enhancement	1							
Oliver Ditch #48 Improvement	Diversion/Fish Screen Enhancement	1							
Meredith Diversion #5	Engineered Rock Riffle Diversion	1							
Stimac Pump Station	Pump Station	1							
Dovenberg Pump Station	Pump Station	1							
Dads Creek Siphon & Channel Reconnection	Improve Fish Passage/Water Quality	2						9.5	
ODFW Schneider WA JD River Instream Habitat	Streambank Stabilization			1.3			211		
Enright Return Flow Cooling	Return Flow Cooling			25					
Allen Return Flow Cooling	Return Flow Cooling			9					
St. Clair Rose Bud Fence Livestock Stream Crossing	Livestock Stream Crossing/Improve Water Quality								9
St. Clair Rose Bud Fence - Title II	Riparian Fence		2.3						
Malheur Forest Allotment Improvement Project	Riparian Fence		7.18						
Mt. Creek Jones	Riparian Fence		1.5						
Campbell Rock Creek	Riparian Fence		9.78						
Pryor Hay Creek	Riparian Fence		5.96						
Bark Cabin & Blue Creek Fence	Riparian Fence		2.58						
Herb Jones Fence	Riparian Fence		1.49						
Collins Mt. Creek Fence	Riparian Fence		1.09						
Langer Bear Creek Fence	Riparian Fence		8.5						
Emmel John Day River Fence	Riparian Fence		0.44						
O'Rorke Camp Creek Fence	Rebuild existing riparian fence		0.12						
Fox Creek Fence	Riparian Fence		1.89						
Mt. Creek Jones	Riparian Fence		2.07						
Lake Creek Let Down Fence	Riparian Fence		2.1						

Grant Soil Water Conservation District
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Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area Plan
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Project Name	Type	Diversion Improved or Eliminated	Fence Miles	Acres Treated	Off Channel Water Sites	Ft. Pipeline Installed	Ft. Streambank Restored	Miles Habitat Opened	Harden Stream Crossing
Lake Creek Stockwater - OWEB & Title II	Off-Channel Water Development				20				
Dollar Basin Stockwater - Title II	Off-Channel Water Development				3				
Huffstader Stockwater Development	Off-Channel Water Development				3				
Vidourek Irrigation Efficiency	Water Quantity & Quality/Irrigation Efficiency			13.5		800			
John Day River Watershed Function - Title II	Juniper Removal			1,338					
Grazing Lands Noxious Weed Management Continuation Project- Title II	Noxious Weed Control			745					
Noxious Weed Control - ODA Grants	Noxious Weed Control			83					
Noxious Weed Control - Private Contracts	Noxious Weed Control			475					
Noxious Weed Control - Bureau of Land Management	Noxious Weed Control			83					
Noxious Weed Control - County Roadsides	Noxious Weed Control			1200					
NRCS Fencing	Riparian/Cross Fence		11.4						
NRCS Brush Management	Juniper Removal			10773					
NRCS Off-Channel Water Development	Off-Channel Water Development				14				
NRCS Irrigation Efficiency	Irrigation Pipeline Improvements					22448			
NRCS Range Planting	Upland Restoration			129					
NRCS Prescribed Burning	Upland Restoration			1822					
NRCS Forest Stand Improvement/Slash Treatment	Forestland Improvement			479					
NRCS Riparian Forest Buffer	Tree & Shrub Planting			14					
NRCS Use Exclusion	Grazing Management			146					
Confederated Tribes Warm Springs of OR Juniper Removal Program	Juniper Removal			1725					
Totals		**11**	**58.4**	**19060.8**	**40**	**23248**	**211**	**9.5**	**9**

#2. Increase public awareness and understanding of agriculture's contributions to improving water quality through educational outreach activities

Implementation Strategy #1 Educational Program

Grant SWCD has hosted multiple tours showcasing projects that improve water quality. Tours have been held for Oregon Watershed Enhancement Board, US Fish and Wildlife Service, Bonneville Power Administration, Bureau of Reclamation as well as for District Directors and local landowners. The District has provided several Power Point Presentations that highlight the projects the District has implemented. Several newspaper articles have been published featuring restoration projects that have improved water quality. Presentations were made at two Agriculture groups and an article printed in the local newspaper on the Upper Mainstem and South Fork John Day River Agricultural Water Quality Management Area Plan. Grant SWCD's 2014 Annual Meeting focused on providing information on the AGWQM Plan and Focus Area. Information on OR Department of Agriculture's water quality management approach was mailed to the twenty landowners within the Strawberry Creek Focus Area. District staff meet on a regular basis with landowners in the office and on the ground to discuss problem areas and potential treatments. Small community word-of-mouth networks continue to bring landowners into the District office to seek solutions to their agricultural and water quality problems. Successful partnerships with other agencies involved in natural resources have enabled the District to be the "on the ground" implementor of restoration projects.

The District partners with Oregon Department of Fish & Wildlife, Oregon Water Resources, Bonneville Power Administration, Confederated Tribes of Warm Springs, US Fish and Wildlife Service, Bureau of Reclamation, US Forest Service Malheur Forest, Natural Resources Conservation Service, Oregon Watershed Enhancement Board, Bureau of Reclamation, Bureau of Land Management, North Fork Watershed Council, Grant County, and OR Department of Agriculture.

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#3. Promote funding for private landowners cost share for implementing water quality improvement projects through state and federal conservation agencies

Implementation Strategy #4 Sources of Financial & Technical Assistance

Funding was successfully sought and received for 100% of the projects the District implemented within the last two years. Funding sources have included Oregon Watershed Enhancement Board, Oregon Department of Fish and Wildlife, Bonneville Power Administration through Confederated Tribes of Warm Springs Reservation of Oregon, US Forest Service Malheur National Forest, Bureau of Reclamation, North Fork Watershed Council, Oregon Department of Agriculture, Bureau of Land Management, US Fish and Wildlife Service, Grant County, and private landowners.

#4. Support a monitoring program that provides scientifically credible data

Implementation Strategy #5 Monitoring & Evaluation

The Confederated Tribes of Warm Springs provides pre and post implementation monitoring on all diversion projects completed by Grant SWCD. Projects are monitored for temperature, flow, riparian recovery, channel stabilization, and macroinvertebrate populations. The District is partnering with Natural Resources Conservation Service to conduct monitoring on upland restoration projects implemented through OWEB Grant #209-5002.

#5. Seek solutions that protect and enhance economic viability of the agricultural industry and individual landowners

Implementation Strategy #3 Conservation Planning

Project Name	Type	Acres Treated	Guides
Lay-Flat Stanchion Operation and Maintenance Guide	Operation & Maintenace Guide		
Pump Station Operation and Maintenance Guide	Operation & Maintenace Guide		
Upper John Day Restoration Adaptive Management Report	Post-Project Assessment Report		
Picnic Creek Conservation Easement Management and Monitoring Plan	Easement Management Plan		

#6. Identify priorities for pollution source identification and determining areas for implementing restoration activities including reasonable timelines for management strategies targeting TMDL attainment.

Implementation Strategy #5 Monitoring and Evaluation

Grant SWCD completed a Focus Area Action Plan for 2013-15.Oregon Department of Agriculture selected the Strawberry Creek-John Day River HUC as the Grant SWCD Focus Area.

APPENDIX D: Common Agricultural Water Quality
Parameters of Concern

The following parameters are used by DEQ in establishing the 303(d) List and assessing and documenting waterbodies with TMDLs. Note: This is an abbreviated summary and does not contain all parameters or detailed descriptions of the parameters and associated standards. Specific information about these parameters and standards can be found at: http://www.deq.state.or.us/wq/assessment/assessment.htm or by calling (503) 229-6099.

Parameters

Template Language

Descriptions of Common Agricultural Parameters of Concern: This language can be used or added to existing language.

Bacteria: *Escherichia coli (E. coli)* is measured in streams to determine the risk of infection and disease to people. Bacteria sources include humans (recreation or failing septic systems), wildlife, and agriculture. On agricultural lands, *E. coli* generally comes from livestock waste, which is deposited directly into waterways or carried to waterways by livestock via runoff and soil erosion. Runoff and soil erosion from agricultural lands can also carry bacteria from other sources.

Biological Criteria: To assess a stream's ecological health, the community of benthic macro invertebrates is sampled and compared to a reference community (community of organisms expected to be present in a healthy stream). If there is a significant difference, the stream is listed as water quality limited. These organisms are important as the basis of the food chain and are very sensitive to changes in water quality. This designation does not always identify the specific limiting factor (e.g., sediment, nutrients, or temperature).

Dissolved Oxygen: Dissolved oxygen criteria depends on a waterbody's designation as fish spawning habitat. Streams designated as salmon rearing and migration are assumed to have resident trout spawning from January 1 – May 15, and those streams designated core cold water are assumed to have resident trout spawning January 1 – June 15. During non-spawning periods, the dissolved oxygen criteria depends on a stream's designation as providing for cold, cool or warm water aquatic life, each defined in OAR 340 Division 41.

Harmful Algal Blooms: Some species of algae, such as cyanobacteria or blue-green algae, can produce toxins or poisons that can cause serious illness or death in pets, livestock, wildlife, and humans. As a result, they are classified as Harmful Algae Blooms. Several beneficial uses are affected by Harmful Algae Blooms: aesthetics, livestock watering, fishing, water contact recreation, and drinking water supply. The Public Health Department of the Oregon Health Authority is the agency responsible for posting warnings and educating the public about Harmful Algae Blooms. Under this program, a variety of partners share information, coordinate efforts and communicate with the public. Once a waterbody is identified as having a harmful algal bloom, DEQ is responsible for investigating the causes, identifying sources of pollution and writing a pollution reduction plan.

Mercury: Mercury occurs naturally and is used in many products. It enters the environment through human activities and from volcanoes, and can be carried long distances by atmospheric air currents. Mercury passes through the food chain readily, and has significant public health and wildlife impacts from consumption of contaminated fish. Mercury in water comes from erosion of soil that carries

naturally occurring mercury (including erosion from agricultural lands and streambanks) and from deposition on land or water from local or global atmospheric sources. Mercury bio-accumulates in fish, and if ingested can cause health problems.

Nitrates: While nitrates occur naturally, the use of synthetic and natural fertilizers can increase nitrates in drinking water (ground and surface water). Applied nitrates that are not taken up by plants are readily carried by runoff to streams or infiltrate to ground water. High nitrate levels in drinking water cause a range of human health problems, particularly with infants, the elderly, and pregnant and nursing women.

Pesticides: Agricultural pesticides of concern include substances in current use and substances no longer in use but persist in the environment. Additional agricultural pesticides without established standards have also been detected. On agricultural lands, sediment from soil erosion can carry these pesticides to water. Current use agricultural pesticide applications, mixing-loading, and disposal activities may also contribute to pesticide detections in surface water. For more information, see at: http://www.deq.state.or.us/wq/standards/toxics.htm

Phosphorous/Algae/pH/Chlorophyll a: Excessive algal growth can contribute to high pH and low dissolved oxygen. Native fish need dissolved oxygen for successful spawning and moderate pH levels to support physiological processes. Excessive algal growth can also lead to reduced water clarity, aesthetic impairment, and restrictions on water contact recreation. Warm water temperatures, sunlight, high levels of phosphorus, and low flows encourage excessive algal growth. Agricultural activities can contribute to all of these conditions.

Sediment and Turbidity: Sediment includes fine silt and organic particles suspended in water, settled particles, and larger gravel and boulders that move at high flows. Turbidity is a measure of the lack of clarity of water. Sediment movement and deposition is a natural process, but high levels of sediment can degrade fish habitat by filling pools, creating a wider and shallower channel, and covering spawning gravels. Suspended sediment or turbidity in the water can physically damage fish and other aquatic life, modify behavior, and increase temperature by absorbing incoming solar radiation. Sediment comes from erosion of streambanks and streambeds, agricultural land, forestland, roads, and developed areas. Sediment particles can transport other pollutants, including bacteria, nutrients, pesticides, and toxic substances.

Temperature: Oregon's native cold-water aquatic communities, including salmonids, are sensitive to water temperature. Several temperature criteria have been established to protect various life stages and fish species. Many conditions contribute to elevated stream temperatures. On agricultural lands, inadequate streamside vegetation, irrigation water withdrawals, warm irrigation water return flows, farm ponds, and land management that leads to widened stream channels contribute to elevated stream temperatures. Elevated stream temperatures also contribute to excessive algal growth, which leads to low dissolved oxygen levels and high pH levels.