

Applegate Subbasin Water Quality Management Plan (WQMP)

**Prepared by: Oregon Department of Environmental Quality
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**State of Oregon
Department of
Environmental
Quality**

Submissions by:

**Oregon Department of Forestry
Oregon Department of Agriculture
Oregon Department of Transportation
USDA Forest Service and USDI BLM
Applegate Watershed Council**

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APPLEGATE SUBBASIN WATER QUALITY MANAGEMENT PLAN

INTRODUCTION

This document describes strategies for implementing and achieving the Applegate Subbasin Total Maximum Daily Load (TMDL). The main body of this text has been compiled by the Oregon Department of Environmental Quality (DEQ) with assistance from the Designated Management Agencies (DMAs) in the Applegate and includes a description of activities, programs, legal authorities, and other measures for which DEQ and the other DMAs have regulatory authority. This WQMP provides the overall framework describing the management efforts which will be implemented to attain the Applegate Subbasin TMDL. Appended to this document are specific Implementation Plans which describe each management agencies' existing or planned efforts to implement their portion of the TMDLs. This relationship is presented schematically in Figure 1, below.

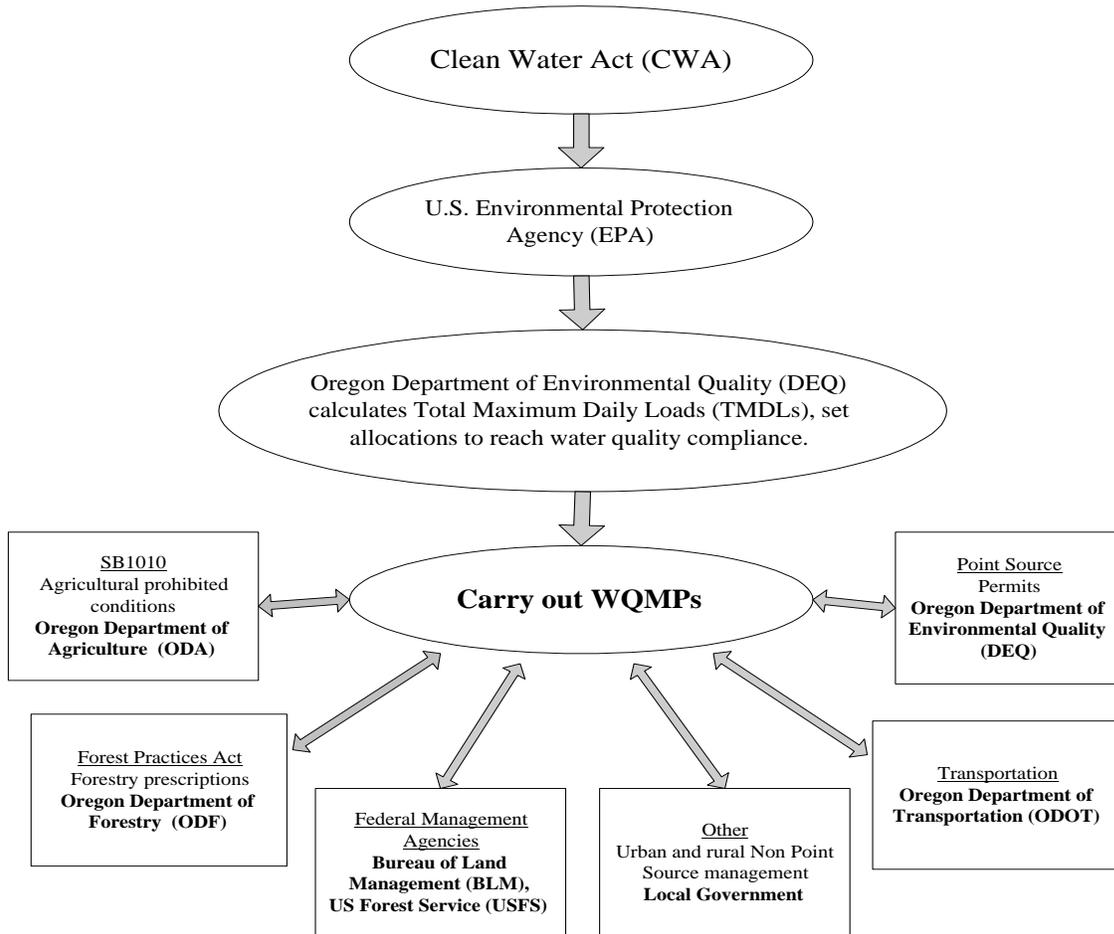
The focus of this WQMP is to demonstrate how TMDLs will be implemented in the Applegate Subbasin. It builds upon existing point and nonpoint source Implementation Plans to outline a management approach for all land uses in the subbasin. Its organization incorporates the 10 plan elements described in a Memorandum of Agreement (MOA) between DEQ and the US Environmental Protection Agency (EPA).

APPLEGATE DESIGNATED MANAGEMENT AGENCIES

Designated Management Agencies (DMAs) are recognized by the State of Oregon as being those entities with the legal authority to ensure that the targets set forth in the TMDL are met (Oregon Administrative Rule OAR 340-042-0030 (2)). What follows is a listing of the DMAs in Applegate Subbasin by land use and their responsibilities under the TMDL. Also included are contacts for more information.

***NOTE:** The term “zoning” may be used synonymously with “land use” in this document. However, in many cases it is the land use itself which determines which DMA has the authority and, therefore, which Implementation Plan is applicable.*

Figure 1. TMDL/WQMP/Implementation Plan Schematic



DMA: Josephine County and Jackson County

Land Use: Rural/Nonresource in the Applegate Subbasin

Urban/Nonresource land uses are covered in the Implementation Plans for Jackson and Josephine County to the extent of their authority. Contact Josephine County Planning (541) 474-5421 or Jackson County (541) 774-6007 for more information. These land uses include:

- All nonagricultural, nonforestry-related land uses including transportation uses (road, bridge, and ditch maintenance and construction practices)
- Sewer and septic systems as related to human habitation
- Designing and siting of housing/home, commercial, and industrial sites in urban and rural areas
- Golf Courses
- Other land uses as applicable to the TMDL

DMA: Oregon Department of Agriculture**Land Use: Agriculture**

Agricultural land uses are addressed in the *Inland Rogue Agricultural Water Quality Management Area Plan* as required by Senate Bill 1010. Contact Tim Stevenson, Oregon Department of Agriculture, (541) 471-7838 for more information. The land uses falling under this category include:

- Agricultural or farm-related activities, both commercial and noncommercial including livestock stable and pastures, both inside and outside of municipal boundaries
- Confined animal feeding operations (CAFO) and container nursery operations

DMA: Oregon Department of Forestry**Land Use: Forestry on Private Lands**

Private lands' forestry uses are addressed in the Forest Practices Act. Contact Dan Thorpe, Oregon Department of Forestry, (541) 664-3328 for more information. The forest management activities covered under the Forest Practices Act are included in the following general categories:

- Harvesting or Salvaging Trees
- Site Preparation and Reforestation
- Chemical Application
- Clearing Forest Land for Nonforest Uses
- Road Construction and Improvements
- Precommercial Thinning Slash Disposal

DMA: USDI-Bureau of Land Management, USDA-Forest Service**Land Use: Federal Lands – USFS and BLM**

Land uses on Federal Lands are addressed in the Northwest Forest Plan, associated Aquatic Conservation Strategy, and Water Quality Management Plan for the Applegate Subbasin. Contact Jon Brazier, USFS, (541) 858-2200 or Laurie Lindell, BLM, (541) 618-2200 for more information.

DMA: Oregon Department of Transportation**Land Use: Roads, Highways and Bridges**

State road issues are addressed in "Routine Road Maintenance, Water Quality and Habitat Guide Best Management Practices, July 1999." Contact ODOT District Manager, John Vial, (541) 774-6355 for more information.

DMA: Army Corps of Engineers (COE)**Land Use: Applegate Dam**

The US Army Corps of Engineers controls all operations related to Applegate Dam. Contact Jim Britton, Biologist Reservoir Regulation & Water Quality Section, Portland District, COE, (503) 808-4888.

DMA: NPDES Permitted Operations**Land Use: Variable Permitted Sources**

Point sources are addressed through the National Pollution Discharge Elimination System (NPDES). Permits are issued by Department of Environmental Quality (DEQ). Contact Jon Gasik, DEQ, (541) 776-6010 for more information.

ADAPTIVE MANAGEMENT

The goal of the Clean Water Act and associated Oregon Administrative Rules (OARs) is that water quality standards shall be met or that all feasible steps will be taken toward achieving the highest quality water attainable. This is a long-term goal in many watersheds, particularly where nonpoint sources are the main concern. To achieve this goal implementation must commence as soon as possible.

TMDLs are numerical loadings that are set to limit pollutant levels such that in-stream water quality standards are met. DEQ recognizes that TMDLs are values calculated from mathematical models and other analytical techniques designed to simulate and/or predict very complex physical, chemical and biological processes. Models and techniques are simplifications of these complex processes and, as such, are unlikely to produce an exact prediction of how streams and other waterbodies will respond to the application of various management measures. It is for this reason that the TMDL has been established with a margin of safety.

WQMPs are plans designed to reduce pollutant loads to meet TMDLs. DEQ recognizes that it may take some period of time - from several years to several decades - after full implementation before management practices identified in a WQMP become fully effective in reducing and controlling pollution. In addition, DEQ recognizes that technology for controlling nonpoint source pollution is, in many cases, in the development stages and will likely take one or more iterations to develop effective techniques. It is possible that after application of all reasonable best management practices, some TMDLs or their associated surrogates cannot be achieved as originally established. Figure 2 is a graphical representation of this adaptive management concept.

ADAPTIVE MANAGEMENT

(Involves all parties)

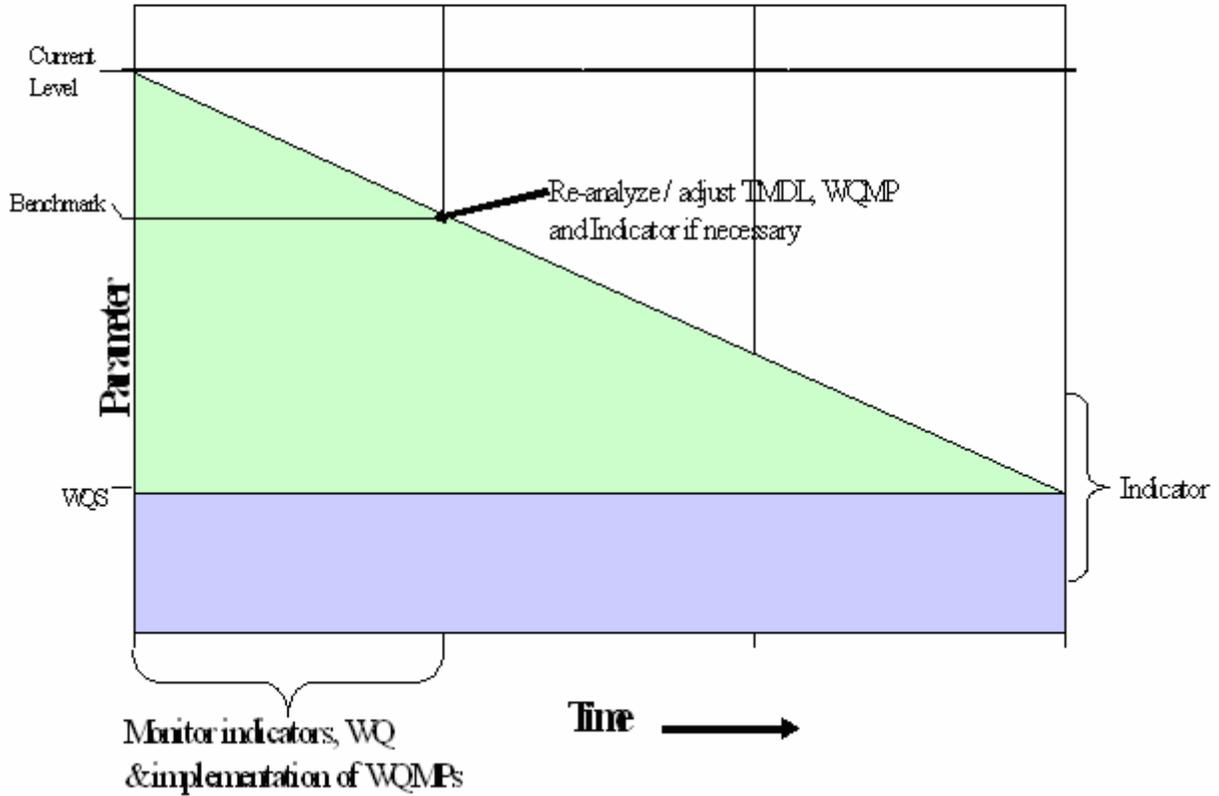


Figure 2. Adaptive Management

DEQ also recognizes that, despite the best and most sincere efforts, natural events beyond the control of humans may interfere with or delay attainment of the TMDL and/or its associated surrogates. Such events could be, but are not limited to, floods, fire, insect infestations, and drought.

In the Applegate Subbasin TMDLs, pollutant surrogates have been defined as alternative targets for meeting the TMDLs. The purpose of the surrogates is not to bar or eliminate human access or activity in the basin or its riparian areas. It is the expectation, however, that this WQMP and the associated DMA-specific Implementation Plans will address how human activities will be managed to achieve the surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to

physical, legal or other regulatory constraints. To the extent possible, the Implementation Plans should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise. For instance, at this time, the existing location of a road or highway may preclude attainment of system potential vegetation due to safety considerations. In the future, however, should the road be expanded or upgraded, consideration should be given to designs that support TMDL load allocations and pollutant surrogates such as system potential vegetation.

If a source is not given a load allocation, it does not necessarily mean that the source is prohibited from discharging any wastes. A source may be permitted to discharge by DEQ if the holder can adequately demonstrate that the discharge will not have a significant impact on water quality over that achieved by a zero allocation. For instance, a permit applicant may be able to demonstrate that a proposed thermal discharge would not have a measurable detrimental impact on projected stream temperatures when site temperature is achieved. Alternatively, in the case where a TMDL is set based upon attainment of a specific pollutant concentration, a source may be permitted to discharge at that concentration and still be considered as meeting a zero allocation.

If a nonpoint source that is covered by the TMDLs complies with its finalized Implementation Plan it will be considered in compliance with the TMDL. In employing an adaptive management approach to the TMDLs and the WQMP, DEQ has the following expectations and intentions:

- Subject to available resources, on a five-year basis, DEQ intends to review the progress of the TMDLs and the WQMP.
- In conducting this review, DEQ will evaluate the progress towards achieving the TMDLs (and water quality standards) and the success of implementing the WQMP.
- DEQ expects that each DMA will also monitor and document its progress in implementing the provisions of its Implementation Plan. This information will be provided to DEQ for its use in reviewing the TMDL.
- As implementation of the WQMP and the associated Implementation Plans proceeds, DEQ expects that DMAs will develop benchmarks for attainment of TMDL surrogates, which can then be used to measure progress.
- Where implementation of the Implementation Plans or effectiveness of management techniques is found to be inadequate, DEQ expects management agencies to revise the components of their Implementation Plan to address these deficiencies.
- If DEQ determines that all appropriate measures are being taken by the DMAs, and water quality standards will still not be met, DEQ may reopen the TMDL and revise as needed. DEQ would also consider reopening the TMDL, subject to available resources, should new information become available indicating that the TMDL or its associated surrogates should be modified.

The implementation of TMDLs and the associated plans is generally enforceable by DEQ, other state agencies and local government. However, it is envisioned that sufficient initiative exists to achieve water quality goals with minimal enforcement. Should the need for additional effort emerge, it is expected that the responsible agency will work with land managers to overcome impediments to progress through education, technical support or enforcement. Enforcement may be necessary in instances of insufficient action towards progress. This could occur first through direct intervention from land management agencies (e.g. ODF, ODA, counties and cities), and secondarily through DEQ. The latter may be based on departmental orders to implement management goals leading to water quality standards.

TMDL WATER QUALITY MANAGEMENT PLAN GUIDANCE

In February 2000, DEQ entered into a Memorandum of Agreement (MOA) with the U.S. Environmental Protection Agency (EPA) that describes the basic elements needed in a TMDL Water Quality Management Plan (WQMP). That MOA was endorsed by the Courts in a Consent Order signed by United States District Judge Michael R. Hogan in July 2000. These elements, as outlined below, will serve as the framework for this WQMP.

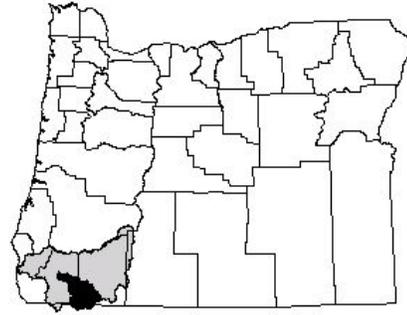
WQMP Elements

1. Condition assessment and problem description
2. Goals and objectives
3. Identification of responsible participants
4. Proposed management measures
5. Timeline for implementation
6. Reasonable assurance
7. Monitoring and evaluation
8. Public involvement
9. Costs and funding
10. Citation to legal authorities

CONDITION ASSESSMENT AND PROBLEM DESCRIPTION

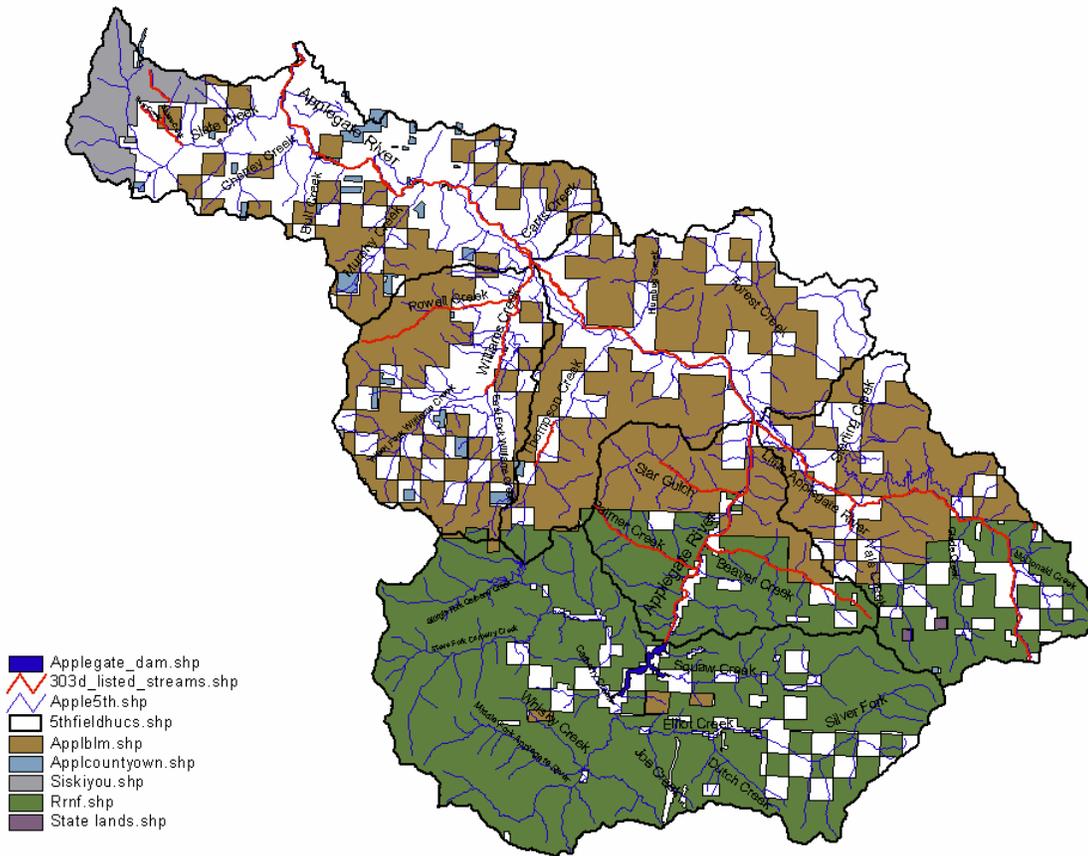
Geographic Region of Interest

The Applegate Subbasin is an important part of the diverse 3,300,000-acre (5,156 square miles) Rogue River Basin. Map 1 shows the location of the Applegate Subbasin within the Rogue Basin. The 493,000-acre (770-square-mile) Applegate Subbasin includes lands in Jackson County, Oregon (approximately 410 square miles), Josephine County, Oregon (approximately 270 square miles), and Siskiyou County, California (approximately 90 square miles). The subbasin is located on the northeastern flank of the Siskiyou Mountains in southwestern Oregon. This is one of the most biologically, botanically, and geologically diverse areas in the country. It is steep and rugged, ranging in elevation from 850 feet to 7,418 feet above sea level. Numerous small tributaries flow into the Applegate River which joins the Rogue River near the City of Grants Pass in Josephine County. Map 2 shows the rural communities, primary tributaries, and peaks in the Applegate Subbasin. There are no incorporated towns within the subbasin. Major communities include Wilderville, Wonder, Murphy, Williams, Applegate, Ruch and McKee Bridge. The subbasin contains approximately 700 miles of streams.



Map 1. Location of the Applegate Subbasin

Map 2. Applegate Subbasin Ownership



Geology

Most of the Applegate Subbasin today is characterized by highly dissected mountain slopes with long, steep, narrow canyons that have been carved into the rugged terrain by high gradient drainage. Steeper slopes in the upper and middle elevations are noted for their relatively high rates of mass wasting and erosion. In general, high erosion rates on the steep slopes cause soil profiles to be relatively thin and rocky. Major valleys have broad, gently sloping landscapes with river valley bottoms characterized by extensive accumulation of river deposits.

Ownership

There are no incorporated towns within the 770-square-mile Applegate Subbasin. Major communities include Wilderville, Wonder, Murphy, Provolt, Williams, Applegate, Ruch and McKee Bridge. The population in the subbasin has increased from 3025 in 1970, to 9000 in 1980, to 12250 in 1990.

Over 68 percent of the lands within the Applegate Subbasin are federally owned

Primary land owners within the subbasin include the US Forest Service, Bureau of Land Management, as well as privately owned residential, agricultural, and timber lands (Table 1).

Table 1. Ownership Within the Applegate Subbasin

Ownership ¹	Acres
USFS	197,698 (40%)
BLM	138,034 (28%)
Private	155,318 (32%)
Miscellaneous ²	1,442 (0.3%)
Tribal Lands	0(0%)
TOTALS	492,492 (100%)

¹ 90 square miles of the subbasin are within the State of California and are outside the jurisdiction of this TMDL.

²Miscellaneous includes state, county, and Army Corp of Engineers ownership.

Beneficial Uses

The Oregon Environmental Quality Commission (OEQC) has adopted numeric and narrative water quality standards to protect designated *beneficial uses*. In practice, water quality standards have been set at a level to protect the most sensitive beneficial uses. Seasonal standards may be applied for uses that do not occur year round. Cold-water aquatic life such as salmon and trout are the most sensitive *beneficial uses* occurring in the Applegate Subbasin. Oregon Administration Rules (OAR 340–041–0362) set the designated beneficial uses for Rogue Basin waters. The specific beneficial uses for the Applegate River Subbasin are presented in Table 2 below.

Table 2. Beneficial Uses in the Applegate Subbasin

<i>Beneficial Use</i>	<i>Occurring</i>	<i>Beneficial Use</i>	<i>Occurring</i>
Public Domestic Water Supply	✓	Anadromous Fish Passage	✓
Private Domestic Water Supply	✓	Salmonid Fish Spawning	✓
Industrial Water Supply	✓	Salmonid Fish Rearing	✓
Irrigation	✓	Resident Fish and Aquatic Life	✓
Livestock Watering	✓	Wildlife and Hunting	✓
Boating	✓	Fishing	✓
Aesthetic Quality	✓	Water Contact Recreation	✓
Commercial Navigation & Transportation		Hydro Power	✓

CURRENT CONDITIONS

Water Quality Impairments

Monitoring has shown that water quality in the Applegate Subbasin does not meet state water quality standards at all times of the year. This TMDL WQMP will address all parameters on the 1998 303(d) list and only temperature on the 2002 303(d) list. Additional listings on the 2002 list will be addressed when this TMDL is reviewed (see adaptive management). A total of twenty-three 303(d) listings are addressed in this TMDL: temperature (16 listings), Sedimentation (1 listing), Biocriteria (1 listing), Habitat (2 listings), Flow (3 listings). NOTE: Habitat and Flow are not considered pollutants by DEQ and are therefore addressed using narrative recommendations only. Table 3 below shows the stream reaches addressed in this TMDL together with the water quality criterion that is exceeded, and number of stream miles on the 303(d) list.

Table 3. 303(d) Listings Addressed in the Applegate Subbasin TMDL

303(d) List ¹	Stream Segment	Listed Parameter	Applicable Rule	Miles Affected
1998	Applegate River, mouth to Applegate Reservoir	Summer Temperature	OAR 340-041-0365(2)(b)(A)	50
1998	Applegate River, mouth to Applegate Reservoir	Flow Modification	OAR 340-041-0362 OAR 340-041-0365(2)(I)	50
1998	Beaver Creek, mouth to Headwaters	Biological Criteria	OAR 340-041-027 OAR 340-041-0362	8.7
1998	Beaver Creek, mouth to Headwaters	Habitat Modification	OAR 340-041-0362 OAR 340-041-0365(2)(I)	8.7
1998	Beaver Creek, mouth to Headwaters	Flow Modification	OAR 340-041-0362 OAR 340-041-0365(2)(I)	8.7
1998	Beaver Creek, mouth to Headwaters	Sediment	OAR 340-041-0362 OAR 340-041-0365(2)(j)	8.7
1998	Beaver Creek, RM 3.5 to headwaters	Summer Temperature	OAR 340-041-0365(2)(b)(A)	5.3
2002	Beaver Creek, RM 0 to 3.5	Summer Temperature	OAR 340-041-0365(2)(b)(A)	3.5
2002	Humbug Creek, RM 0 to 5	Summer Temperature	OAR 340-041-0365(2)(b)(A)	5.0
1998	Little Applegate River, mouth to headwaters	Summer Temperature	OAR 340-041-0365(2)(b)(A)	21.0
1998	Palmer Creek, mouth to headwaters	Flow Modification	OAR 340-041-0362 OAR 340-041-0365(2)(I)	5.7
1998	Palmer Creek, mouth to headwaters	Habitat Modification	OAR 340-041-0362 OAR 340-041-0365(2)(I)	5.7
1998	Palmer Creek, mouth to headwaters	Summer Temperature	OAR 340-041-0365(2)(b)(A)	6.0
1998	Powell Creek, mouth to headwaters	Summer Temperature	OAR 340-041-0365(2)(b)(A)	8.0
2002	Powell Creek, mouth to RM 2.0	Spawning Temperature Oct 1 – May 31	OAR 340-041-0365(2)(b)(A)	2.0
2002	Slate Creek, RM 0 to 5.3	Summer Temperature	OAR 340-041-0365(2)(b)(A)	5.3

303(d) List¹	Stream Segment	Listed Parameter	Applicable Rule	Miles Affected
1998	Applegate River, mouth to Applegate Reservoir	Summer Temperature	OAR 340-041-0365(2)(b)(A)	50
1998	Star Gulch, mouth to 1918 Gulch	Summer Temperature	OAR 340-041-0365(2)(b)(A)	4.0
1998	Thompson Creek, Mee Cove to Ninemile Creek	Summer Temperature	OAR 340-041-0365(2)(b)(A)	2.3
2002	Sterling Creek, mouth to RM 2.5	Summer Temperature	OAR 340-041-0365(2)(b)(A)	2.5
1998	Waters Creek, mouth to RM 2	Summer Temperature	OAR 340-041-0365(2)(b)(A)	2.0
1998	Waters Creek, West Fork, mouth to headwaters	Summer Temperature	OAR 340-041-0365(2)(b)(A)	1.9
1998	Williams Creek, mouth to East/West Fork confluence	Summer Temperature	OAR 340-041-0365(2)(b)(A)	7.0
1998	Yale Creek, mouth to Waters Gulch	Summer Temperature	OAR 340-041-0365(2)(b)(A)	1.3
Total Stream Miles listed for Summer Temperature Criteria (June 1 to Sept 30)				126.3
Total Stream Miles listed for Spawning Temperature Criteria Exceedances (October 1 to May 31)				2.0
Total Stream Miles Listed for Sedimentation		8.7		
Total Stream Miles Listed for Biological Criteria		8.7		
Total Stream Miles Listed for Habitat Modification		14.4		
Total Stream Miles Listed for Flow Modification		64.4		

¹This TMDL addresses all parameters listed on the 1998 303(d) list plus the temperature listings on the 2002 303(d) list. Additional parameters on the 2002 list will be addressed in 5 years when DEQ reviews this TMDL.

Existing Sources of Water Pollution

Temperature

Surface water temperatures in Applegate Subbasin are heavily influenced by human activities. These activities are diverse and may have either a detrimental or a beneficial impact on river temperature. Some of these activities have a readily observable and direct impact on water temperature, such as cool water releases from the reservoir, while other activities may have a less observable impact, such as the loss of riparian vegetation (shading), water withdrawal and the disconnection of floodplains to rivers.

Riparian vegetation, stream morphology, hydrology, climate, and geographic location influence stream temperature. While climate and geographic location are outside of human control, the condition of the riparian area, channel morphology and hydrology can be affected by land use activities. Specifically, elevated summertime stream temperatures attributed to anthropogenic sources may result from the following conditions within the Applegate Subbasin:

1. Riparian vegetation disturbance that reduces stream surface shading, riparian vegetation height, and riparian vegetation density (shade is commonly measured as percent effective shade),

2. Channel widening (increased width to depth ratios) due to factors such as loss of riparian vegetation that increases the stream surface area exposed to energy processes, namely solar radiation,
3. Flow and temperature management from Applegate Dam,
4. Reduced flow volumes (from irrigation, industrial, and municipal withdrawals) or increased high temperature discharges, and
5. Disconnected floodplains which prevent/reduce groundwater discharge into the river.

Sedimentation

Rates of sediment delivery (sedimentation) within the Applegate Subbasin are heavily influenced by both natural and human activities. Riparian vegetation, geology, stream morphology, hydrology, climate, and geographic location influence stream sedimentation and stream temperatures. While climate and geographic location are outside of our control, human activities that contribute to degraded water quality (temperature) and habitat conditions (sediment) in the Applegate Subbasin include agricultural activities, forestry practices, roads development and maintenance, and rural residential-related riparian disturbance. Specifically, sources of excessive sediment include:

1. Riparian Vegetation Disturbance

Many of the effects of land use on streams are mediated through changes in riparian vegetation (Meehan, 1991). Riparian vegetation provides shade and an insulating canopy, preventing adverse water temperatures during both summer and winter. It also acts as a filter to prevent addition of sediment, and its roots provide stream bank stability and cover for rearing salmonids. Riparian vegetation directly influences the food chain of a stream ecosystem by providing organic detritus and terrestrial insects, and by controlling aquatic productivity that depends on solar radiation. Road construction near streams often removes riparian vegetation directly.

2. Livestock Grazing

The most apparent effects of livestock grazing on habitat is the reduction of shade and cover and resultant increases in stream temperature (grazing on shrubs and herbaceous vegetation), water quality (livestock defecation and addition of sediment by streambank trampling), changes in stream morphology, and the addition of sediment through bank degradation and off-site soil erosion (livestock trails along a streambank cause channel widening and downcutting).

4. Road Density

Road density, use, design, and location can be important in affecting the extent and magnitude of road-related sediment impacts (Reiter et al 1995). Road impacts include cutbanks, fill slopes, ditch lines, and road surfaces themselves. As road surfaces increase, the potential for sedimentation in a watershed increases. Wider road prisms, and thus a greater area of road disturbances and potential erosion, are found on steeper slopes especially in areas where granitics

predominate.

5. Drainage-ways Crossed

The potential for sediment input to streams is greatest where roads cross drainages. The sediment derives from road surface, ditch line, cut slope, and fill slope erosion, which is routed directly into the stream. Where roads cross drainages, the potential for direct sediment input increases. Data is only available for system roads, no nonsystem road crossings are included.

Biological Criteria

Biological Criteria impairments in Beaver Creek are linked to macroinvertebrate population impairments. Sedimentation and high summer temperatures have been determined as the cause of the impairments in Beaver Creek and are, therefore, the focus of the TMDL. Sources listed above for Temperature and Sedimentation apply to the Biological Criteria exceedance as well.

GOALS AND OBJECTIVES

The overall goal of the TMDL Water Quality Management Plan (WQMP) is to achieve compliance with water quality standards for each of the 303(d) listed parameters and streams in the Applegate Subbasin. Specifically, the WQMP combines a description of all Designated Management Agencies' (DMA) plans that are in place or will be developed to address the load and wasteload allocations in the TMDL. The specific goal of this WQMP is to describe a strategy for reducing discharges from nonpoint sources to the level of the load allocations and for reducing discharges from point sources to the level of the waste load allocations described in the TMDL. This WQMP is preliminary in nature and is designed to be adaptive as more information and knowledge is gained regarding the pollutants, allocations, management measures, and other related areas. As part of the goals of this WQMP it is expected that all DMAs will undertake the following:

- Develop Best Management Practices (BMPs) to achieve Load Allocations and Waste Load allocations
- Give reasonable assurance that management measures will meet load allocations, through both quantitative and qualitative analysis of management measures
- Adhere to measurable milestones for progress
- Develop a timeline for implementation, with reference to costs and funding
- Develop a monitoring plan to determine if:
 - a. BMPs are being implemented
 - b. Individual BMPs are effective
 - c. Load and wasteload allocations are being met
 - d. Water quality standards are being met

IDENTIFICATION OF RESPONSIBLE PARTICIPANTS

The purpose of this element is to identify the DMAs responsible with the authority to meet the Applegate Subbasin TMDL and to list the major responsibilities of each. What follows is a simple list of those organizations and responsibilities. This is not intended to be an exhaustive list of every participant that bears some responsibility for improving water quality in the Applegate Subbasin. Because this is a community-wide effort, a complete listing would have to include every business, every industry, every farm, and ultimately every citizen living or working within the subbasin. We are all contributors to the existing quality of the waters in the Applegate Subbasin and we all must be participants in the efforts to improve water quality. Table 2, below, shows Applegate Subbasin 303(d)-listed stream segments along with the Designated Management Agencies responsible for that stream segment.

Oregon Department of Environmental Quality

- NPDES Permitting and Enforcement
- WPCF Permitting and Enforcement
- Technical Assistance
- Financial Assistance

Oregon Department of Agriculture

- Agricultural Water Quality Management Plan Development, Implementation & Enforcement
- CAFO Permitting and Enforcement
- Technical Assistance
- Revise Agricultural WQMAP
- Rules under Senate Bill (SB) 1010 to clearly address TMDL and Load Allocations as necessary
- Riparian area management

Oregon Department of Forestry

- Forest Practices Act (FPA) Implementation
- Conservation Reserved Enhancement Program
- Revise statewide FPA rules and/or adopt subbasin specific rules as necessary
- Riparian area management

Oregon Department of Transportation

- Routine Road Maintenance, Water Quality and Habitat Guide Best Management Practices
- Pollution Control Plan and Erosion Control Plan
- Design and Construction

Federal Land Management Agencies (Forest Service and BLM)

- Implementation of Northwest Forest Plan
- Following standards and guidance listed in PACFISH

US Army Corps of Engineers (COE)

- Applegate Dam and associated lands and structures

Jackson and Josephine Counties

- Construction, operation and maintenance of County roads and county storm sewer system
- Land use planning/permitting
- Maintenance, construction and operation of parks and other county-owned facilities and infrastructure
- Inspection and permitting of septic systems
- Riparian area management

Table 4. 303(d) Listings Covered in the Applegate Subbasin TMDL and DMAs

Waterbody Name and Segment	Listed Parameter	Designated Management Agency
Applegate River, mouth to Applegate Reservoir	Summer Temperature Flow Modification	ODOT, DEQ, ODA, USFS, BLM, JACO, JOCO
Beaver Creek, mouth to Headwaters	Biological Criteria Habitat Modification Flow Modification Sediment Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO
Humbug Creek, Mouth to Headwaters	Summer Temperature	ODOT, DEQ, ODA, BLM, JOCO
Little Applegate River, mouth to headwaters	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO
Palmer Creek, mouth to headwaters	Flow Modification Habitat Modification Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO
Powell Creek, mouth to headwaters	Summer Temperature Spawning Temperature	ODOT, DEQ, ODA, USFS, BLM, JOCO
Slate Creek, mouth to 5.3	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JOCO
Star Gulch, mouth to 1918 Gulch	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO
Sterling Creek, mouth to RM 2.5	Summer Temperature	ODOT, DEQ, ODA, BLM, JOCO, JACO
Thompson Creek, Mee Cove to Ninemile Creek	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO, JOCO
Waters Creek, mouth to RM 2	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JOCO
Waters Creek, West Fork, mouth to headwaters	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JOCO
Williams Creek, mouth to East/West Fork confluence	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO, JOCO
Yale Creek, mouth to Waters Gulch	Summer Temperature	ODOT, DEQ, ODA, USFS, BLM, JACO

PROPOSED MANAGEMENT MEASURES

The management measures employed to meet the load and wasteload allocations will differ depending on the source of the pollutant. Given below is a categorization of the sources and a description of the management measures being proposed for each source category.

Wastewater Treatment Plants

Not Applicable in the Applegate Subbasin

General and Minor Individual NPDES Permitted Sources

All general NPDES permits and minor individual NPDES permits will be reviewed and, if necessary, modified to ensure compliance with TMDL wasteload allocations. Specific management measures and plans will be developed with these permitted sources.

Nonpoint Source Categories

For discharges from sources other than the WWTPs and those permitted under general or minor NPDES permits, DEQ has assembled an initial listing of management categories. This listing, given in Table 5 below, is designed to be used by the designated management agencies (DMAs) as guidance for selecting management measures to be included in their Implementation Plans. Each DMA will be responsible for examining the categories in Table 5 to determine if the source and/or management measure is applicable within their jurisdiction. This listing is not comprehensive and other sources and management measures will most likely be added by the DMAs where appropriate. For each measure deemed applicable, a listing of the frequency and extent of application should also be provided. In addition, each of the DMAs is responsible for source assessment and identification, which may result in additional categories. Management measures are linked to the 303(d)-listed parameter.

Table 5. Management Categories Sorted by Pollutant Source and/or Management Measures

Management Measure/Source Category	Standard/Parameter Effected		
	Sedimentation	Temperature	Biological Criteria
Public Awareness/Education	X	X	X
New Development and Construction			
Planning Procedures	X	X	X
Permitting/Design	X	X	X
Education and Outreach	X	X	X
Construction Control Activities	X	X	X

Inspection/Enforcement	X	X	X
Storm Drain System Construction	X	X	X
Existing Development			
Storm Drain System Operations and Maintenance	X		X
Retrofit Existing	X		X
Septic Systems	X		X
Inspection/Enforcement	X		X
Illicit Connections and Illegal Dumping	X	X	X
Streets, Roads, Bridges			
Maintenance Activities	X		X
New Construction	X		X
Commercial and Industrial Facilities			
Parking Lot Runoff	X		X
Illegal Dumping	X		X
Illicit Discharges and Cross Connections	X	X	X
Source Control	X	X	X
Fertilizers			X
Residential			
Illegal Dumping	X		X
Illicit Discharges and Cross Connections	X	X	X
Riparian Area Management			
Rural/Urban Residential Riparian	X	X	X
Protection/Enhancement	X	X	X
Streambank Stabilization	X	X	X
Public/Governmental Facilities Including Parks			
Public Waterbodies Protection	X	X	X
Operations and Maintenance	X	X	X
Other Public Buildings and Facilities	X	X	X
Pet Wastes and Fertilizers	X	X	X
Forest Practices			
Implement Forest Protection Act (State)	X	X	X
Implement Resource Management Plans (Fed)	X	X	X
Riparian Protection/Enhancement	X	X	X
Replace/Restore Roads/Culverts	X	X	X
Agricultural Practices			
Implement SB 1010 AgWQMP	X	X	X
Livestock Management Training	X	X	X
Nutrient Management Plans	X	X	X
Riparian Protection/Enhancement	X	X	X
Wetland Protection/Enhancement	X	X	X
Reconnect Sloughs and Rivers	X	X	X
Replace Defective Tidegates/Culverts	X	X	X
Setback Levies & Dikes	X	X	X
CAFO Implementation	X	X	X
Planning and Assessment			
Source Assessment/Identification	X	X	X
Source Control Planning	X	X	X
Monitoring and Evaluation			
BMP Monitoring and Evaluation	X	X	X
Instream Monitoring	X	X	X
BMP Implementation Monitoring	X	X	X

TIMELINE FOR IMPLEMENTATION

The purpose of this element of the WQMP is to demonstrate a strategy for implementing and maintaining the plan and the resulting water quality improvements over the long term. Included in this section are timelines for the implementation of DEQ activities. Each DMA-specific Implementation Plan will also include timelines for the implementation of the milestones described earlier. Timelines should be as specific as possible and should include a schedule for BMP installation and/or evaluation, monitoring schedules, reporting dates and milestones for evaluating progress.

The DMA-specific Implementation Plans are designed to reduce pollutant loads from sources to meet TMDLs' associated loads and water quality standards. The Department recognizes that where implementation involves significant habitat restoration or reforestation, water quality standards may not be met for decades. In addition, the Department recognizes that technology for controlling nonpoint-source pollution is, in some cases, in the development stages and will likely take one or more iterations to develop effective techniques.

For the Applegate Subbasin TMDL, pollutant surrogates have been defined as alternative targets for meeting the TMDL for some parameters. The purpose of the surrogates is not to bar or eliminate human access or activity in the subbasin or its riparian areas. It is the expectation, however, that the Implementation Plans will address how human activities will be managed to achieve the surrogates. It is also recognized that full attainment of pollutant surrogates (system potential vegetation, for example) at all locations may not be feasible due to physical, legal or other regulatory constraints. To the extent possible, the Implementation Plans should identify potential constraints, but should also provide the ability to mitigate those constraints should the opportunity arise. For instance, at this time, the existing location of a road or highway may preclude attainment of system-potential vegetation due to safety considerations. In the future, however, should the road be expanded or upgraded, consideration should be given to designs that support TMDL load allocations and pollutant surrogates such as *system-potential* vegetation.

DEQ intends to regularly review the progress of the Implementation Plans. Individual Implementation Plans, this WQMP, and the TMDLs are part of an adaptive management process. Modifications to the WQMP and the Implementation Plans are expected to occur on an annual or more frequent basis. Review of the TMDLs are expected to occur approximately five years after the final approval of the TMDLs, or whenever deemed necessary by DEQ.

Figure 3, below, gives the timeline for activities related to the WQMP and associated DMA Implementation Plans.

Figure 3. Water Quality Management Plan Timeline

Activity	2004	2005	2006	2007	2008
DEQ Modification of MS4 Permits					
DEQ Modification of WWTP Permits	Not Applicable to the Applegate Subbasin				
DEQ Modification of General and Minor Permits					
DMA Development and Submittal of Implementation and Monitoring Plans					
DMA Implementation of Plans					
DEQ/DMA/Public Review of TMDL and WQMP (five years after approval)					
DMA Submittal of Annual Reports	September 30 of Each Year				

REASONABLE ASSURANCE

This section of the WQMP is intended to provide reasonable assurance that the WQMP (along with the associated DMA-specific Implementation Plans) will be implemented and that the TMDL and associated allocations will be met.

Programs are already in place or will be put in place to help assure that this WQMP will be implemented and the Applegate Subbasin TMDL will be met. Some of these are traditional regulatory programs such as specific requirements under NPDES discharge permits. Other programs address nonpoint sources under the auspices of state law (for forested and agricultural lands) or as voluntary efforts.

Point Sources

Reasonable assurance that point-source wasteload allocations will be met is addressed through the revision, issuance, or revision of NPDES and WPCF permits. Provisions to address the appropriate wasteload allocations (WLAs) will be incorporated into NPDES permits when permits are renewed by DEQ, typically within one year after the EPA approves the TMDL. It is likely each point source will be given a reasonable time to upgrade, if necessary, to meet its new permit limits. A schedule for meeting the requirements will be incorporated into the permit. Adherence to permit conditions is required by State and Federal Law, and DEQ has the responsibility to ensure compliance.

Nonpoint Sources

Land Use: All privately-owned lands in the Little Applegate Watershed

Plan Title: Integration of the Clean Water Act and Endangered Species Act Pilot Project on the Little Applegate.

Author: Pilot Integration Team (PIT)

Status: Currently under development

The Little Applegate River Watershed Management Plan (Plan) is the product of nonfederal landowners, state and federal agencies, and local, county and municipal representatives working together to develop a watershed management plan that provides a clean, seamless way to satisfy water quality and listed species concerns of both the Clean Water Act (CWA) and the Endangered Species Act (ESA). Equally as important, this Plan integrates the ESA and CWA requirements into a single effort that simplifies the regulatory process for the non-Federal landowners while producing a resource management approach that addresses the full range of ecological processes to restore and maintain a healthy watershed.

This project began in August 1997 when representatives from the Governor's Office and other State and Federal Agencies agreed to launch several pilot watershed conservation-planning efforts that would meet the requirements of the ESA and CWA. Within the Rogue Basin, the Applegate River Watershed was selected as one of the candidate watersheds because of the listings of water quality-limited water bodies under Section 303(d) of the CWA and the anadromous fish listings by the National Marine Fisheries Service under ESA. In early 1998, under the facilitation of the Rogue Valley Council of Governments (RVCOG), the Project Integration Team (PIT) was formed.

The PIT, which was tasked with writing the Plan, is represented by a broad spectrum of community interests, and local, state and federal agencies. In 1998 and 1999 the PIT began collecting existing environmental analyses and reports for the Little Applegate River Watershed. They completed additional studies and developed a watershed assessment and planning protocol based on habitat and water quality parameters. A "Matrix" was developed for each subwatershed in the Little Applegate Watershed. The matrix includes 1) a water quality and habitat characterization of each subwatershed; 2) an examination of water quality and habitat characteristics that provide measures of stream conditions; 3) a comparison of current conditions with CWA water quality standards and ESA future desired conditions for stream habitat; and 4) an identification of environmental and management factors contributing to the current conditions. Finally, the matrix includes common objectives for attaining water quality standards and reaching the desired future conditions. Thus, it is in the Matrix where the integration of the CWA and the ESA occurs. The Matrix is the "heart" of the Plan.

Under Section 303(d) of the CWA, waters not meeting state water quality standards are included on the State of Oregon's Section 303(d) list. To address the pollutant(s) in those listed waters, ODEQ developed a total maximum daily load (TMDL) which identifies how to allocate the pollutant loading to pollutant sources without violating the state water quality standards. ODEQ also develops a water quality management plan which defines the tools to be used for reducing the pollutant loading where necessary. For those pollutants identified in the TMDLs for the Little Applegate Watershed, ODEQ has determined that the tools in the matrix are more than adequate to meet the TMDL implementation requirements. These "tools" are the same tools to achieve proper functioning condition under ESA. Thus, by agreeing to use these implementation "tools", a land manager or property owner is able to address both ESA and CWA issues, and will be assured that no further implementation requirements will be asked of them.

The Little Applegate Watershed Management Plan also provides a clear process for land managers and property owners to participate in the watershed plan. Through a simple

application form and a site assessment, the land manager or property owner establishes an agreement with the Plan administrator that clearly defines the landscape management “tools” for his/her specific property for the “life” of the agreement. The life of the agreement is the period of time the conservation measures and new management, with its attendance CWA and ESA coverage, will be applied. All CWA and ESA coverage ends for each landowner with termination of the agreement.

So it is through the use of common but complete and comprehensive land management tools from the matrix in the Little Applegate Watershed Management Plan that we will be able to define common grounds from which to manage our lands, improve our waters, protect our fish and expeditiously address the regulatory process with a level of certainty that moves us forward for the next decade.

Land Use: All private commercial timber operations

Plan Title: Oregon Forest Practices Act

DMA: Oregon Department of Forestry (ODF)

Status: Completed (Sufficiency Analysis occurring according to schedule shown in Appendix A) See Appendix A for in-depth description of the FPA

FORESTRY

The Oregon Department of Forestry (ODF) is the designated management agency for regulation of water quality on non-federal forestlands. The Oregon Board of Forestry (BOF), in consultation with the Environmental Quality Commission (EQC), establish best management practices (BMPs) and other rules to ensure that, to the maximum extent practicable, non-point source pollution resulting from forest operations does not impair the attainment of water quality standards. The Board of Forestry has adopted water protection rules, including but not limited to OAR Chapter 629, Divisions 635-660, which describe BMPs for forest operations. These rules are implemented and enforced by ODF and monitored to assure their effectiveness.

By statute, forest operators conducting operations in accordance with the BMPs are considered to be in compliance with Oregon’s water quality standards. ODF provides on the ground field administration of the Forest Practices Act (FPA). For each administrative rule, guidance is provided to field administrators to insure proper, uniform and consistent application of the Statutes and Rules. The FPA requires penalties, both civil and criminal, for violation of Statutes and Rules. Additionally, whenever a violation occurs, the responsible party is obligated to repair the damage. For more information, refer to the Management Measures element of this Plan.

ODF and ODEQ are involved in several statewide efforts to analyze the existing FPA measures and to better define the relationship between the TMDL load allocations and the FPA measures designed to protect water quality. How water quality parameters are affected, as established through the TMDL process, as well as other monitoring data, will be an important part of the body of information used in determining the adequacy of the FPA.

As the DMA for water quality management on nonfederal forestlands, the ODF has recently completed working with the ODEQ through a memorandum of understanding (MOU) signed in

April of 1998. This MOU was designed to improve the coordination between the ODF and the ODEQ in evaluating and proposing possible changes to the forest practice rules as part of the Total Maximum Daily Load process. The purpose of the MOU was also to guide coordination between the ODF and ODEQ regarding water quality limited streams on the 303d list. An evaluation of rule adequacy has been conducted (also referred to as the “Sufficiency Analysis”) through the analysis of water quality parameters that can potentially be affected by forest practices. This statewide demonstration of forest practices rule effectiveness in the protection of water quality addressed the following specific parameters:

- 1) Temperature
- 2) Sediment
- 3) Turbidity
- 4) Aquatic habitat modification
- 5) Bio-criteria

The Sufficiency Analysis final report has been externally reviewed by peers and other interested parties. The report was designed, in part, to provide background information and assessments of BMP effectiveness in meeting water quality standards. The report demonstrates overall FPA adequacy at the statewide scale with due consideration to regional and local variation in effects. Achieving the goals and objectives of the FPA will ensure the achievement and maintenance of water quality goals. The report offers recommendations to highlight general areas where current practices could be improved in order to better meet the FPA goals and objectives and in turn provide added assurance of meeting water quality standards. The Board of Forestry will consider these recommendations, along with the FPAC recommendations, in their on-going review of the FPA in order to determine whether revisions and/or additional voluntary approaches are necessary consistent with ORS 527.710 and ORS 527.714.

ODF and DEQ statutes and rules include provisions for adaptive management that provide for revisions to FPA practices where necessary to meet water quality standards. These provisions are described in ORS 527.710, ORS 527.765, ORS 183.310, OAR 340-041-0026, OAR 629-635-110, and OAR 340-041-0120. For a more detailed description of current adaptive management efforts and the roles of the BOF and EQC in developing BMPs that will achieve water quality standards see Appendix A (detailed description of the non-federal forest lands portion of the Water Quality Management Plan).

Land Use: All agricultural operations

Plan Title: Inland Rogue Agricultural Water Quality Management Area Plan, May 2001

DMA: Oregon Department of Agriculture

**Status: Completed. Currently under review as part of a 2-year revision cycle.
(See Appendix B for a summary of the plan)**

It is the Oregon Department of Agriculture’s (ODA) statutory responsibility to develop agricultural water quality management (AWQM) plans and enforce rules that address water quality issues on agricultural lands. The AWQM Act directs ODA to work with local farmers and ranchers to develop water quality management area plans for specific watersheds that have been identified as violating water quality standards and having agriculture water pollution

contributions. The agriculture water quality management area plans are expected to identify problems in the watershed that need to be addressed and outline ways to correct those problems. These water quality management plans are developed at a local level, reviewed by the State Board of Agriculture, and then adopted into the Oregon Administrative Rules. It is the intent that these plans focus on education, technical assistance, and flexibility in addressing agriculture water quality issues. These plans and rules will be developed or modified to achieve water quality standards and will address the load allocations identified in the TMDL. In those cases when an operator refuses to take action, the law allows ODA to take enforcement action. DEQ will work with ODA to ensure that rules and plans meet load allocations.

Recognizing the adopted rules needs to be quantitatively evaluated in terms of load allocations in the TMDL and pursuant to the June 1998 Memorandum of Agreement between ODA and DEQ. The agencies will conduct a technical evaluation. The agencies will establish the relationship between the plan and its implementing rules and the load allocations in the TMDL to determine if the rules provide reasonable assurance that the TMDLs will be achieved. The AWQMA Local Advisory Committee (LAC) will be apprised and consulted during this evaluation. This adaptive management process provides for review of the AWQMA plan to determine if any changes are needed to the current AWQMA rules specific to the Applegate Subbasin. See Appendix B for Agricultural Water Quality Management Area Plan for the Inland Rogue.

Land Use: Roads, highways and bridges under the jurisdiction of ODOT

Plan Title: Routine Road Maintenance. Water Quality and Habitat Guide Best Management Practices, July 1999

DMA: Oregon Department of Transportation

Status: Completed (See Appendix C for summary of the plan. Entire plan can be viewed online on the ODOT website at:

<http://www.odot.state.or.us/eshtm/images/4dman.pdf>

The Oregon Department of Transportation (ODOT) has been issued an NPDES MS4 waste discharge permit. Included with ODOT's application for the permit was a surface water management plan which has been approved by DEQ and which addresses the requirements of a Total Maximum Daily Load (TMDL) allocation for pollutants associated with the ODOT system. Both ODOT and DEQ agree that the provisions of the permit and the surface water management plan will apply to ODOT's statewide system. This statewide approach for an ODOT TMDL watershed management plan addresses specific pollutants but not specific watersheds. Instead, this plan demonstrates how ODOT will incorporate water quality protection into project development, construction, and operations and maintenance of the state and federal transportation system that is managed by ODOT, thereby meeting the elements of the National Pollutant Discharge Elimination System (NPDES) program and the TMDL requirements. The MS4 permit and the plan:

- Streamlines the evaluation and approval process for the watershed management plans.
- Provides consistency to the ODOT highway management practices in all TMDL watersheds.

- Eliminates duplicative paperwork and staff time developing and participating in the numerous TMDL management plans.

Temperature and sediment are the primary concerns for pollutants associated with ODOT systems that impair the waters of the state. DEQ is still in the process of developing the TMDL water bodies and determining pollutant levels that limit their beneficial uses. As TMDL allocations are established by watershed rather than by pollutants, ODOT is aware that individual watersheds may have pollutants that may require additional consideration as part of the ODOT watershed management plan. When these circumstances arise, ODOT will work with DEQ to incorporate these concerns into the statewide plan.

Land Use: All land uses on Federal Lands

Plan Title: Applegate Subbasin Water Quality Restoration Plan

DMA: USFS and BLM

Status: Currently under development

Federal Forest Lands

All management activities on federal lands managed by the U.S. Forest Service (USFS) and the Bureau of Land Management must follow standards and guidelines (S&Gs) as listed in the respective Land Use and Management Plans, as amended for the specific land management units.

Northwest Forest Plan

In response to environmental concerns and litigation related to timber harvest and other operations on Federal Lands, the United States Forest Service (USFS) and the Bureau of Land Management (BLM) commissioned the Forest Ecosystem Management Assessment Team (FEMAT) to formulate and assess the consequences of management options. The assessment emphasizes producing management alternatives that comply with existing laws and maintaining the highest contribution of economic and social well being. The “backbone” of ecosystem management is recognized as constructing a network of late-successional forests and an interim and long-term scheme that protects aquatic and associated riparian habitats adequate to provide for *threatened species* and *at risk species*. Biological objectives of the Northwest Forest Plan include assuring adequate habitat on federal lands to aid the “recovery” of late-successional forest habitat-associated species listed as threatened under the Endangered Species Act and preventing species from being listed under the Endangered Species Act.

Land Use: All rural residential land uses within the Applegate Subbasin

Plan Title: No Implementation Plan at this time

DMA: Jackson and Josephine Counties

Status: Plan needs to be developed

Oregon cities and counties have authority to regulate land use activities through local comprehensive plans and related development regulations. This authority begins with a broad charge given to them by the Oregon constitution and the Oregon legislature to protect the public’s health, safety, and general welfare.

Every city and county is required to have a comprehensive plan and accompanying development ordinances to be in compliance with state land use planning goals. While the comprehensive plan must serve to implement the statewide planning goals mandated by state law, cities and counties have a wide degree of local control over how resource protection is addressed in their community.

The Oregon land use planning system provides a unique opportunity for local jurisdictions to address water quality protection and enhancement. Many of the goals have a direct connection to water quality, particularly Goals 5 and 6.

Responsible participants for implementing DMA-specific water quality Implementation Plans for urban and rural sources were identified in Chapter 5 of this Water Quality Implementation Plan. Upon approval of the Applegate Subbasin TMDLs, it is DEQ's expectation that identified responsible participants will develop, submit to DEQ, and implement individual water quality Implementation Plans that will achieve the load allocations established by the TMDLs. These activities will be accomplished by the responsible participants in accordance with the Schedule in Chapter 7 of this Water Quality Management Plan. The DMA-specific water quality Implementation Plans must address the following items:

1. Proposed management measures tied to attainment of the load allocations and/or established surrogates of the TMDLs, such as vegetative site potential, for example.
2. Timeline for implementation.
3. Timeline for attainment of load allocations.
4. Identification of responsible participants demonstrating who is responsible for implementing the various measures.
5. Reasonable assurance of implementation.
6. Monitoring and evaluation, including identification of participants responsible for implementation of monitoring, and a plan and schedule for revision of implementation plan.
7. Public involvement.
8. Maintenance effort over time.
9. Discussion of cost and funding.
10. Citation of legal authority under which the implementation will be conducted.

Should any responsible participant fail to comply with their obligations under this WQMP, the Department will take all necessary action to seek compliance. Such action will first include negotiation but could evolve to issuance of Department or Commission Orders and other enforcement mechanisms.

Voluntary Measures

Land Use: All privately-owned lands in the Little Applegate Watershed

Plan Title: Applegate Watershed Stewardship manual

Author: Applegate Watershed Council

Status: Completed (see Appendix D for complete plan)

There are many voluntary, nonregulatory, watershed improvement programs (Actions) that are in place and are addressing water quality concerns in the Applegate Subbasin. Both technical expertise and partial funding are provided through these programs. Examples of activities promoted and accomplished through these programs include: planting of conifers, hardwoods, shrubs, grasses and forbs along streams; relocating legacy roads that may be detrimental to water quality; replacing problem culverts with adequately-sized structures, and improvement/maintenance of legacy roads known to cause water quality problems. These activities have been and are being implemented to improve watersheds and enhance water quality. Many of these efforts are helping resolve water quality-related legacy issues.

Land Use: All privately-owned lands in the Applegate Subbasin

Plan Title: Oregon Plan for Salmon and Watersheds

Author: State of Oregon

Status: Completed

The Oregon Plan for Salmon and Watersheds represents a major effort, unique to Oregon, to improve watersheds and restore endangered fish species. The Oregon Plan is a major component of the demonstration of “reasonable assurance “that this TMDL WQMP will be implemented. The Plan consists of four essential elements:

1. Coordinated Agency Programs:

Many state and federal agencies administer laws, policies, and management programs that have an impact on salmon and water quality. These agencies are responsible for fishery harvest management, production of hatchery fish, water quality, water quantity, and a wide variety of habitat protection, alteration, and restoration activities. Previously, agencies conducted business independently. Water quality and salmon suffered because they were affected by the actions of all the agencies, but no single agency was responsible for comprehensive, life-cycle management. Under the Oregon Plan, all government agencies that impact salmon are accountable for coordinated programs in a manner that is consistent with conservation and restoration efforts.

2. Community-Based Action:

Government alone cannot conserve and restore salmon across the landscape. The Oregon Plan recognizes that actions to conserve and restore salmon must be worked out by communities and landowners with local knowledge of problems and ownership in solutions. Watershed councils, soil and water conservation districts, and other grassroots efforts are vehicles for getting the work done. Government programs will provide regulatory and technical support to these efforts, but local people will do the bulk of the work to conserve and restore watersheds. Education is a fundamental part of the community-based action. People must understand the needs of salmon in order to make informed decisions about how to make changes to their way of life that will accommodate clean water and the needs of fish.

3. Monitoring:

The monitoring program combines an annual appraisal of work accomplished and results

achieved. Work plans will be used to determine whether agencies meet their goals as promised. Biological and physical sampling will be conducted to determine whether water quality, salmon habitats and populations respond as expected to conservation and restoration efforts.

4. **Appropriate Corrective Measures:**

The Oregon Plan includes an explicit process for learning from experience, discussing alternative approaches, and making changes to current programs. The Plan emphasizes improving compliance with existing laws rather than arbitrarily establishing new protective laws. Compliance will be achieved through a combination of education and prioritized enforcement of laws that are expected to yield the greatest benefits for salmon.

Landowner Assistance Programs

A variety of grants and incentive programs are available to landowners in the Applegate Subbasin. These incentive programs are aimed at improving the health of the watershed, particularly on private lands. They include technical and financial assistance, provided through a mix of state and federal funding. Local natural resource agencies administer this assistance, including the Oregon Department of Forestry, the Oregon Department of Fish and Wildlife, DEQ, and the National Resources Conservation Service.

Field staff from the administrative agencies provide technical assistance and advice to individual landowners, watershed councils, local governments, and organizations interested in enhancing the subbasin. These services include on-site evaluations, technical project design, stewardship/conservation plans, and referrals for funding as appropriate. This assistance and funding is further assurance of implementation of the TMDL and WQMP.

Financial assistance is provided through a mix of cost-share, tax credit, and grant-funded incentive programs designed to improve on-the-ground watershed conditions. Some of these programs, due to source of funds, have specific qualifying factors and priorities. Cost share programs include the Forestry Incentive Program (FIP), Stewardship Incentive Program (SIP), Environmental Quality Incentives Program (EQIP), and the Wildlife Habitat Incentive Program (WHIP).

MONITORING AND EVALUATION

Monitoring and evaluation have two basic components: 1) monitoring the implementation of DMA-specific water quality Implementation Plans identified in this document and 2) monitoring the physical, chemical and biological parameters for water quality. Monitoring information will provide a check on progress being made toward achieving the TMDL allocations, meeting water quality standards, and will be used as part of the Adaptive Management process.

The objectives of this monitoring effort are to demonstrate long-term recovery, better understand natural variability, track implementation of projects and BMPs, and track effectiveness of TMDL

implementation. This monitoring and feedback mechanism is a major component of the “reasonable assurance of implementation” for the Applegate Subbasin TMDL WQMP.

This WQMP and the associated DMA-specific Implementation Plans will be tracked by accounting for the numbers, types, locations of projects, BMPs, educational activities, or other actions taken to improve or protect water quality. The mechanism for tracking DMA implementation efforts will be annual reports to be submitted to DEQ.

The information generated by each of the agencies/entities gathering data in the Applegate Subbasin will be pooled and used to determine whether management actions are having the desired effects or if changes in management actions and/or TMDLs are needed. This detailed evaluation will typically occur on a 5-year cycle. If progress is not occurring then the appropriate management agency will be contacted with a request for action.

PUBLIC INVOLVEMENT

To be successful at improving water quality, a TMDL WQMP must include a process to involve interested and affected stakeholders in both the development and the implementation of the plan. In addition to the DEQ public notice policy and public comment periods associated with TMDLs and permit applications, future Applegate Subbasin TMDL public involvement efforts will focus specifically on urban, agricultural and forestry activities. DMA-specific public involvement efforts will be detailed within the Implementation Plans included in the appendices.

COSTS AND FUNDING

The purpose of this element is to describe estimated costs and demonstrate there is sufficient funding available to begin implementation of the WQMP. Another purpose is to identify potential future funding sources for project implementation. There are many natural resource enhancement efforts and projects occurring in the subbasin which are relevant to the goals of the plan. These efforts, in addition to proposed future actions, are described in the Management Measurers element of this Plan.

Designated Management Agencies will be expected to provide a fiscal analysis of the resources needed to develop, execute and maintain the programs described in their Implementation Plans.

Potential Sources of Project Funding

Funding is essential to implementing projects associated with this WQMP. There are currently several sources of local, state, and federal funds. The following is a partial list of assistance programs available to aid in water quality protection in the Applegate Subbasin.

Program

Agency/Source

Oregon Plan for Salmon and Watersheds	OWEB
Environmental Quality Incentives Program	USDA-NRCS
Wetland Reserve Program	USDA-NRCS
Conservation Reserve Enhancement Program	USDA-NRCS
Stewardship Incentive Program	ODF
Access and Habitat Program	ODFW
Partners for Wildlife Program	USDI-FSA
Conservation Implementation Grants	ODA
Water Projects	WRD
Nonpoint-Source Water Quality Control (EPA 319)	DEQ-EPA
Riparian Protection/Enhancement	COE
Oregon Community Foundation	OCF

Grant funds are available for improvement projects on a competitive basis. Field agency personnel assist landowners in identifying, designing, and submitting eligible projects for these grant funds. For private landowners, the recipient and administrator of these grants is generally the local Soil and Water Conservation District. Grant fund sources include:

Oregon Watershed Enhancement Board (OWEB) which funds watershed-improvement projects with state money. This is an important piece in the implementation of Oregon's Salmon Plan. Current and past projects have included road relocation/closure/improvement projects, in-stream structure work, riparian fencing and revegetation, off-stream water developments, and other management practices.

Bonneville Power Administration funds are federal funds for fish habitat and water quality improvement projects. These have also included projects addressing road conditions, grazing management, in-stream structure, and other tools.

Individual grant sources for special projects have included Forest Health money available through the State and Private arm of the USDA Forest Service.

CITATION TO LEGAL AUTHORITIES

Clean Water Act Section 303(d)

Section 303(d) of the 1972 Federal Clean Water Act as amended requires states to develop a list of rivers, streams and lakes that cannot meet water quality standards without application of additional pollution controls beyond the existing requirements on industrial sources and sewage treatment plants. Waters that need this additional help are referred to as "water quality limited" (WQL). Water quality-limited waterbodies must be identified by the Environmental Protection Agency (EPA) or by a state agency which has been delegated this responsibility by EPA. In Oregon, this responsibility rests with the DEQ. The DEQ updates the list of water quality limited waters every two years. The list is referred to as the 303(d) list. Section 303 of the Clean Water Act further requires that Total Maximum Daily Loads (TMDLs) be developed for all waters on the 303(d) list. A TMDL defines the amount of pollution that can be present in the

waterbody without causing water quality standards to be violated. A WQMP is developed to describe a strategy for reducing water pollution to the level of the load allocations and waste load allocations prescribed in the TMDL, which is designed to restore the water quality and result in compliance with the water quality standards. In this way the designated beneficial uses of the water will be protected for all citizens.

The Oregon Department of Environmental Quality is authorized by law to prevent and abate water pollution within the State of Oregon pursuant to the following statute:

ORS 468B.020 Prevention of pollution

1. Pollution of any of the waters of the state is declared to be not a reasonable or natural use of such waters and to be contrary to the public policy of the State or Oregon, as set forth in ORS 468B.015.
2. In order to carry out the public policy set forth in ORS 468B.015, the Department shall take such action as is necessary for the prevention of new pollution and the abatement of existing pollution by:
 - a) Fostering and encouraging the cooperation of the people, industry, cities and counties, in order to prevent, control and reduce pollution of the waters of the state; and
 - b) Requiring the use of all available and reasonable methods necessary to achieve the purposes of ORS 468B.015 and to conform to the standards of water quality and purity established under ORS 468B.048.

NPDES and WPCF Permit Programs

The DEQ administers two different types of wastewater permits in implementing Oregon Revised Statute (ORS) 468B.050. These are: the National Pollution Discharge Elimination System (NPDES) permits for waste discharge; and Water Pollution Control Facilities (WPCF) permits for waste disposal. The NPDES permit is also a federal permit and is required under the Clean Water Act. The WPCF permit is a state program. As permits are renewed they will be revised to insure that all TMDL and 303(d)-related issues are addressed.

Oregon Forest Practices Act

The Oregon Department of Forestry (ODF) is the designated management agency for regulation of water quality on nonfederal forest lands. The Board of Forestry has adopted water protection rules, including but not limited to OAR Chapter 629, Divisions 635-660, which describes BMPs for forest operations. The Environmental Quality Commission (EQC), Board of Forestry, DEQ and ODF have agreed that these pollution control measures will be relied upon to result in achievement of state water quality standards.

ODF and DEQ statutes and rules also include provisions for adaptive management that provide for revisions to FPA practices where necessary to meet water quality standards. These provisions are described in ORS 527.710, ORS 527.765, ORS 183.310, OAR 340-041-0026, OAR 629-635-110, and OAR 340-041-0120.

Senate Bill 1010

The Oregon Department of Agriculture has primary responsibility for the control of pollution from agriculture sources. This is accomplished through the Agriculture Water Quality Management (AWQM) program authorities granted ODA under Senate Bill 1010 adopted by the Oregon State Legislature in 1993. The AWQM Act directs the ODA to work with local farmers and ranchers to develop water quality management plans for specific watersheds that have been identified as violating water quality standards and have agriculture water pollution contributions. The agriculture water quality management area plans are expected to identify problems in the watershed that need to be addressed and outline ways to correct the problems.

Local Ordinances

Within the Implementation Plans, Jackson and Josephine Counties are expected to describe their specific legal authorities to carry out the management measures they choose to meet the TMDL allocations. Legal authority to enforce the provisions of a City's NPDES permit would be a specific example of legal authority to carry out management measures.

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APPENDIX A – DEPARTMENT OF FORESTRY

Implementation Plan for
Non-Federal Forest Lands

Non-Federal Forest Lands

The purpose and goals of Oregon's Water Protection Rules (OAR 629-635-100) include protecting, maintaining, and improving the functions and values of streams, lakes, wetlands, and riparian management areas. Best management practices (BMPs) in the Oregon Forest Practices Act (FPA), including riparian zone protection measures and a host of other measures described below, are the mechanism for meeting State Water Quality Standards (WQS). There is a substantial body of scientific research and monitoring that supports an underlying assumption of the FPA, that maintaining riparian processes and functions is critical for water quality and fish and wildlife habitat. These riparian processes and functions include: Shade for stream temperature and for riparian species; large wood delivery to streams and riparian areas; leaf and other organic matter inputs; riparian microclimate regulation; sediment trapping; soil moisture and temperature maintenance; providing aquatic and riparian species dependent habitat; and nutrient and mineral cycling. The FPA provides a broad array of water quality benefits and contributes to meeting water quality standards for water quality parameters such as temperature, sediment, dissolved oxygen, nutrients, and aquatic habitat.

Currently, many streams within the Applegate Subbasin significantly exceed the WQS for temperature. The water quality impairment(s) in the Applegate Subbasin clearly do not result solely from current forestry activities. The proposed Applegate Subbasin total maximum daily load (TMDL) demonstrates that urban and agriculture areas contribute significantly to water quality impairment within the subbasin. It is also important to note that historic forest practices such as splash dam activities and the widespread removal of wood from streams may continue to influence current stream conditions and riparian functions. In addition, current forest practices occur on forestlands that simultaneously support non-forestry land uses that can affect water quality, such as grazing, recreation, and public access roads. With this noted, the TMDL demonstrates that increasing the level of riparian vegetation retained along forested reaches of these streams reduces solar loading, potentially preventing a substantial amount of stream heating. While providing high levels of shade to streams is an important aspect of meeting instream temperature standards it needs to be considered within the context of past management, stream morphology and flows, groundwater influences, site-productivity, insects, fire, and other disturbance mechanisms that vary in time and space across the landscape.

As described below, ODF and DEQ are involved in several statewide efforts to analyze the existing FPA measures and to better define the relationship between the TMDL load allocations and the FPA measures designed to protect water quality. The information in the TMDL, as well as other monitoring data, will be an important part of the body of information used in determining the adequacy of the FPA.

Forest practices on non-federal land in Oregon are regulated under the FPA and implemented through administrative rules that are administered by the Oregon Department of Forestry (ODF). The Oregon Board of Forestry (BOF), in consultation with the Environmental Quality Commission (EQC), establish BMPs and other rules to ensure that, to the extent practicable, NPS pollution resulting from forest operations does

not impair the attainment of water quality standards. With respect to the temperature standard, surface water temperature management plans are required according to OAR 340-041-0026 when temperature criteria are exceeded and the waterbody is designated as water-quality limited under Section 303(d) of the Clean Water Act. In the case of state and private forestlands, OAR 340-041-0120 identifies the FPA rules as the surface water management plan for forestry activities

ODF and DEQ statutes and rules also include provisions for adaptive management that provide for revisions to FPA practices where necessary to meet water quality standards. These provisions are described in ORS 527.710, ORS 527.765, ORS 183.310, OAR 340-041-0026, OAR 629-635-110, and OAR 340-041-0120. Current adaptive management efforts under several of the above statutes and rules are described in more detail following the discussion below on the roles of the BOF and EQC in developing BMPs that will achieve water quality standards.

ORS 527.765 Best management practices to maintain water quality.

- (1) The State Board of Forestry shall establish best management practices and other rules applying to forest practices as necessary to insure that to the maximum extent practicable nonpoint source discharges of pollutants resulting from forest operations on forestlands do not impair the achievement and maintenance of water quality standards established by the Environmental Quality Commission for the waters of the state. Such best management practices shall consist of forest practices rules adopted to prevent or reduce pollution of waters of the state. Factors to be considered by the board in establishing best management practices shall include, where applicable, but not be limited to:
 - (a) Beneficial uses of waters potentially impacted;
 - (b) The effects of past forest practices on beneficial uses of water;
 - (c) Appropriate practices employed by other forest managers;
 - (d) Technical, economic and institutional feasibility; and
 - (e) Natural variations in geomorphology and hydrology.

ORS 527.770 Good faith compliance with best management practices not violation of water quality standards; subsequent enforcement of standards.

A forest operator conducting, or in good faith proposing to conduct, operations in accordance with best management practices currently in effect shall not be considered in violation of any water quality standards. When the State Board of Forestry adopts new best management practices and other rules applying to forest operations, such rules shall apply to all current or proposed forest operations upon their effective dates.

There are currently extensive statutes and administrative rules that regulate forest management activities in the Grande Ronde basin that address the key water quality issues of stream temperatures, riparian aquatic functions, and sediment dynamics. The following is a list of specific administrative rules describing the purpose and goals of the FPA towards the achievement and maintenance of water quality standards established by the EQC.

OAR 629-635-100 - Water Protection Rules; Purpose and Goals

- (3) The purpose of the water protection rules is to protect, maintain and, where appropriate, improve the functions and values of streams, lakes, wetlands, and riparian management areas. These functions and values include water quality, hydrologic functions, the growing and harvesting of trees, and fish and wildlife resources.
- (4) The water protection rules include general vegetation retention prescriptions for streams, lakes and wetlands that apply where current vegetation conditions within the riparian management area have or are likely to develop characteristics of mature forest stands in a "timely manner." Landowners are encouraged to manage stands within riparian management areas in order to grow trees in excess of what must be retained so that the excess may be harvested.
 - (5) The water protection rules also include alternative vegetation retention prescriptions for streams to allow incentives for operators to actively manage vegetation where existing vegetation conditions are not likely to develop characteristics of mature conifer forest stands in a "timely manner."
- (6) OARs 629-640-400 and 629-645-020 allow an operator to propose site-specific prescriptions for sites where specific evaluation of vegetation within a riparian management area and/or the condition of the water of the state is used to identify the appropriate practices for achieving the vegetation and protection goals.
- (7) The overall goal of the water protection rules is to provide resource protection during operations adjacent to and within streams, lakes, wetlands and riparian management areas so that, while continuing to grow and harvest trees, the protection goals for fish, wildlife, and water quality are met.
- (a) The protection goal for water quality (as prescribed in ORS 527.765) is to ensure through the described forest practices that, to the maximum extent practicable, non-point source discharges of pollutants resulting from forest operations do not impair the achievement and maintenance of the water quality standards.
 - (b) The protection goal for fish is to establish and retain vegetation consistent with the vegetation retention objectives described in OAR 629-640-000 (streams), OAR 629-645-000 (significant wetlands), and OAR 629-650-000 (lakes) that will maintain water quality and provide aquatic habitat components and functions such as shade, large woody debris, and nutrients.

OAR 629-640-000 - Vegetation Retention Goals for Streams; Desired Future Conditions

- (1) The purpose of this rule is to describe how the vegetation retention measures for streams were determined, their purpose and how the measures are implemented. The vegetation retention requirements for streams described in OAR 629-640-100 through OAR 629-640-400 are designed to produce desired future conditions for the wide range of stand types, channel conditions, and disturbance regimes that exist throughout forestlands in Oregon.
- (2) The desired future condition for streamside areas along fish use streams is to grow and retain vegetation so that, over time, average conditions across the landscape become similar to those of mature streamside stands. Oregon has a tremendous

diversity of forest tree species growing along waters of the state and the age of mature streamside stands varies by species. Mature streamside stands are often dominated by conifer trees. For many conifer stands, mature stands occur between 80 and 200 years of stand age. Hardwood stands and some conifer stands may become mature at an earlier age. Mature stands provide ample shade over the channel, an abundance of large woody debris in the channel, channel-influencing root masses along the edge of the high water level, snags, and regular inputs of nutrients through litter fall.

- (3) The rule standards for desired future conditions for fish use streams were developed by estimating the conifer basal area for average unmanaged mature streamside stands (at age 120) for each geographic region. This was done by using normal conifer yield tables for the average upland stand in the geographic region, and then adjusting the basal area for the effects of riparian influences on stocking, growth and mortality or by using available streamside stand data for mature stands.
- (4) The desired future condition for streamside areas that do not have fish use is to have sufficient streamside vegetation to support the functions and processes that are important to downstream fish use waters and domestic water use and to supplement wildlife habitat across the landscape. Such functions and processes include: maintenance of cool water temperature and other water quality parameters; influences on sediment production and bank stability; additions of nutrients and large conifer organic debris; and provision of snags, cover, and trees for wildlife.
- (5) The rule standards for desired future conditions for streams that do not have fish use were developed in a manner similar to fish use streams. In calculating the rule standards, other factors used in developing the desired future condition for large streams without fish use and all medium and small streams included the effects of trees regenerated in the riparian management area during the next rotation and desired levels of instream large woody debris.
- (6) For streamside areas where the native tree community would be conifer dominated stands, mature streamside conditions are achieved by retaining a sufficient amount of conifers next to large and medium sized fish use streams at the time of harvest, so that halfway through the next rotation or period between harvest entries, the conifer basal area and density is similar to mature unmanaged conifer stands. In calculating the rule standards, a rotation age of 50 years was assumed for even-aged management and a period between entries of 25 years was assumed for uneven-aged management. The long-term maintenance of streamside conifer stands is likely to require incentives to landowners to manage streamside areas so that conifer reforestation occurs to replace older conifers over time.
- (7) Conifer basal area and density targets to produce mature stand conditions over time are outlined in the general vegetation retention prescriptions. In order to ensure compliance with state water quality standards, these rules include requirements to retain all trees within 20 feet and understory vegetation within 10 feet of the high water level of specified channels to provide shade.

- (8) For streamside areas where the native tree community would be hardwood dominated stands, mature streamside conditions are achieved by retaining sufficient hardwood trees. As early successional species, the long-term maintenance of hardwood streamside stands will in some cases require managed harvest using site specific vegetation retention prescriptions so that reforestation occurs to replace older trees. In order to ensure compliance with state water quality standards, these rules include requirements in the general vegetation retention prescription to retain all trees within 20 feet and understory vegetation within 10 feet of the high water level of specified channels to provide shade.
- (9) In many cases the desired future condition for streams can be achieved by applying the general vegetation retention prescriptions, as described in OAR 629-640-100 and OAR 629-640-200. In other cases, the existing streamside vegetation may be incapable of developing into the future desired conditions in a "timely manner." In this case, the operator can apply an alternative vegetation retention prescription described in OAR 629-640-300 or develop a site specific vegetation retention prescription described in OAR 629-640-400. For the purposes of the water protection rules, "in a timely manner" means that the trees within the riparian management area will meet or exceed the applicable basal area target or vegetation retention goal during the period of the next harvest entry that would be normal for the site. This will be 50 years for many sites.
- (10) Where the native tree community would be conifer dominant stands, but due to historical events the stand has become dominated by hardwoods, in particular, red alder, disturbance is allowed to produce conditions suitable for the re-establishment of conifer. In this and other situations where the existing streamside vegetation is incapable of developing characteristics of a mature streamside stand in a "timely manner," the desired action is to manipulate the streamside area and woody debris levels at the time of harvest (through an alternative vegetation retention prescription or site specific vegetation retention prescription) to attain such characteristics more quickly.

The Water Protection Rules are an important component of the rules that are designed to achieve and maintain water quality standards. The rules identify seven geographic regions and distinguishes between streams, lakes, and wetlands. The rules further distinguish each stream by size and type. Stream size is distinguished as small, medium, or large, based on average annual flow. Stream type is distinguished as fish use, domestic use, or neither.

Generally, no tree harvesting is allowed within 20 feet of all fish bearing, all domestic-use, and all other medium and large streams unless stand restoration is needed. In addition, all snags and downed wood must be retained in every riparian management area. Provisions governing vegetation retention are designed to encourage conifer restoration on riparian forestland that is not currently in the desired conifer condition. Future supplies of conifer on these sites are deemed desirable to support stream functions

and to provide fish and wildlife habitat. The rules provide incentives for landowners to place large wood in streams to immediately enhance fish habitat. Other alternatives are provided to address site-specific conditions and large-scale catastrophic events.

The goal for managing riparian forests along fish-use streams is to grow and retain vegetation so that, over time, average conditions across the riparian landscape become similar to those of mature unmanaged riparian stands. This goal is based on the following considerations:

(1) Mature riparian stands can supply large, persistent woody debris necessary to maintain adequate fish habitat. A shortage of large wood currently exists in streams on non-federal forestlands due to historic practices and a wide distribution of young, second growth forests. For most streams, mature riparian stands are able to provide more of the functions and inputs of large wood than are provided by young second-growth trees.

(2) Historically, riparian forests were periodically disturbed by wildfire, windstorms, floods, and disease. These forests were also impacted by wildlife such as beaver, deer, and elk. These disturbances maintained a forest landscape comprised of riparian stands of all ages ranging from early successional to old growth. At any given time, however, it is likely that a significant proportion of the riparian areas supported forests of mature age classes. This distribution of mature riparian forests supported a supply of large, persistent woody debris that was important in maintaining quality fish habitat.

The overall goals of the riparian vegetation retention rules along Type N and Type D streams are the following:

- Grow and retain vegetation sufficient to support the functions and processes that are important to downstream waters that have fish;
- Maintain the quality of domestic water; and
- Supplement wildlife habitat across the landscape.

These streams have reduced riparian management area (RMA) widths and reduced basal area retention requirements as compared to similar sized Type F streams (Table 1). In the design of the rules this was judged appropriate based on a few assumptions. First, it was assumed that the amount of large wood entering Type N and D channels over time was not as important for maintaining fish populations within a given stream reach. And second, it was assumed that the future stand could provide some level of “functional” wood over time in terms of nutrient inputs and sediment storage. The validity of these assumptions needs to be evaluated over time through monitoring.

Table 1. Riparian Management Area widths for streams of various sizes and beneficial uses (OAR 629-635-310).

	Type F	Type D	Type N
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<i>LARGE</i>	100 feet	70 feet	70 feet
<i>MEDIUM</i>	70 feet	50 feet	50 feet
<i>SMALL</i>	50 feet	20 feet	Apply specified water quality protection measures, and see OAR 629-640-200

For all streams that require an RMA, basal area targets are established that are used for any type of management within the RMA. These targets were determined based on the data that was available at the time, with the expectation that these targets could be achieved on the ground. There is also a minimum tree number requirement of 40 trees per 1000 feet along large streams (11-inch minimum diameter at breast height), and 30 trees per 1000 feet along medium streams (8-inch minimum diameter at breast height). The specific levels of large wood inputs that the rules are designed to achieve are based on the stream size and type. The biological and physical characteristics specific to a given stream are taken into account in determining the quantity and quality of large wood that is functional for that stream. Given the potential large wood that is functional for a given stream, a combination of basal area targets, minimum tree retention, buffer widths, and future regenerated stands and ingrowth are used to achieve the appropriate large wood inputs and effective shade for a given stream.

The expectation is that these vegetation retention standards will be sufficient towards maintaining stream temperatures that are within the range of natural variability. In the design of the Water Protection Rules shade data was gathered for 40 small non-fish-bearing streams to determine the shade recovery rates after harvesting. One to two years after harvest, 55 percent of these streams were at or above pre-harvest shade levels due to understory vegetation regrowth. Most of these streams had a bankfull width averaging less than six feet, and most shade was provided by shrubs and grasses within 10 feet of the bank. Since 1991 there has also been a 120-acre limit on a single clearcut size, which is likely to result in a scattering of harvested area across a watershed over time. In the development of the rules it was assumed that this combined with the relative rapid shade recovery along smaller non-fish-bearing streams would be adequate in protecting stream temperatures and reduce possible cumulative effects. For fish bearing streams it is assumed that a 20-foot no-harvest buffer, combined with the tree retention requirements for the rest of the RMA, will be adequate to maintain shade levels necessary to achieve stream temperature standards. The monitoring program is currently collecting data to test these assumptions, evaluate the effectiveness of the rules, and evaluate whether or not water quality standards for temperature are being achieved.

In terms of sediment issues specific to forest roads, there are BMPs within the FPA specifically designed to regulate road design, construction and maintenance. The bulk of the BMPs are directed at minimizing sediment delivery to channels. The primary goals of the road rules are to: (1) protect the water quality of streams, lakes, and wetlands; (2) protect fish and wildlife habitat; and (3) protect forest productivity.

The Board of Forestry revised several BMPs related to road design when the new Water Protection Rules were adopted in the fall of 1994. Significant changes made to the road construction rules include the following:

- The requirement for operators not to locate roads in riparian management areas, flood plains, or wetlands unless all alternative locations would result in greater resource damage.
- The requirement for operators to design stream crossings to both minimize fill size and minimize excavation of slopes near the channel. A mandatory written plan is required for stream crossing fills over 15 feet deep.
- The requirement to design stream crossing structures for the 50-year flow with no ponding, rather than the 25-year storm with no specification of allowable ponding.
- The requirement that stream crossing structures be passable by juvenile fish as well as adult fish.
- The requirement that fish must be able to access side channels.
- The requirement that stream structures constructed under these rules must be maintained for fish passage.

In determining the location of a new road, operators are required to avoid steep slopes, slides and areas next to channels or in wetlands to the extent possible. Existing roads should be used when possible, and stream crossings should be used only when essential. The design of the road grade must vary to fit the local terrain and the road width must be minimized. The operator must also follow specific guidelines for stream-crossing structures (listed above). Cross-drainage structures must be designed to divert water away from channels so that runoff intercepted by the road is dispersed onto the hillslope before reaching a channel. The specific method used is up to the operator, but the end result should be the dispersal of water running off of the road and the filtering of fine sediment before the water reaches waters of the state.

Construction and maintenance activities should be done during low water periods and when soils are relatively dry. Excavated materials must be placed where there is minimal risk of those materials entering waters of the state, and erodible surfaces must be stabilized. Landings must be built away from streams, wetlands and steep slopes.

Road maintenance is required on all active and inactive roads. Regardless of when a road was constructed, if the road has been used as part of an active operation after 1972, it is subject to all maintenance requirements within the current rules. Culverts must be kept open, and surface road drainage and adequate filtering of fine sediment must be maintained. If the road surface becomes unstable or if there is a significant risk of sediment running off of the road surface and entering the stream, road activity must be halted and the erodible area must be stabilized. Abandoned roads constructed prior to 1972 and not used for forest management since that time are not subject to Forest Practices regulatory authority.

All roads in use since 1972 must either be maintained or vacated by the operator. Vacated roads must be effectively barricaded and self-maintaining, in terms of diverting

water away from streams and off of the former road surface, where erosion will remain unlikely. Methods for vacating roads include pulling stream-crossing fills, pulling steep side cast fills, and cross ditching. It is up to the landowner to choose between vacating a road and maintaining a road. If a road is not vacated, the operator is required to maintain the road under the current rules whether it is active or inactive, however they are not required to bring the design up to current standards outside of the normal maintenance and repair schedule.

The ODF has a monitoring program that is currently coordinating separate projects to monitor the effectiveness of the forest practice rules with regard to landslides, riparian function, stream temperature, chemical applications, sediment from roads, BMP compliance, and shade. The results from some of these projects have been released in the form of final reports and other projects will have final reports available in the spring of 2000, 2001 and beyond.

Voluntary measures are currently being implemented across the state under the Oregon Plan for Salmon and Watersheds (OPSW) to address water quality protection. These measures are designed to supplement the conifer stocking within riparian areas, increase large wood inputs to streams, and provide for additional shade. This is accomplished during harvest operations by (1) placing appropriate sized large wood within streams that meet parameters of gradient, width and existing wood in the channel; and (2) relocating in-unit leave trees in priority areas¹ to maximize their benefit to salmonids while recognizing operational constraints, other wildlife needs, and specific landowner concerns.

The measures include the following:

ODF 8S: Riparian Conifer Restoration

Forest practice rules have been developed to allow and provide incentives for the restoration of conifer forests along hardwood-dominated RMAs where conifers historically were present. This process enables sites capable of growing conifers to contribute conifer LWD in a timelier manner. This process will be modified to require an additional review process before the implementation of conifer restoration within core areas.

ODF 19S: Additional Conifer Retention along Fish-Bearing Streams in Core Areas

This measure retains more conifers in RMAs by limiting harvest activities to 25 percent of the conifer basal area above the standard target. This measure is only applied to RMAs containing a conifer basal area that is greater than the standard target.

ODF 20S: Limited RMA for Small Type N Streams in Core Areas

This measure provides limited 20 foot RMAs along all perennial or intermittent small Type N streams for the purpose of retaining snags and downed wood.

¹ The Executive Order replaced the concept of "core areas" with "priority areas". See (1)(f) of the Executive Order (p.5).

ODF 21S: Active Placement of large wood during Forest Operations

This measure provides a more aggressive and comprehensive program for placing large wood in streams currently deficient of large wood. Placement of large wood is accomplished following existing ODF/ODFW placement guidelines and determining the need for large wood placement is based upon a site-specific stream survey.

ODF 22S: 25 Percent In-unit Leave Tree Placement and Additional Voluntary Retention

This measure has one non-voluntary component and two voluntary components:

- 1) The State Forester, under statutory authority, will direct operators to place 25 percent of in-unit leave trees in or adjacent to riparian management areas on Type F and D streams.
- 2) The operator voluntarily locates the additional 75 percent in-unit leave trees along Type N, D or F streams, and
- 3) The State Forester requests the conifer component be increased to 75 percent from 50 percent.

ODF 61S: Analysis of "Rack" Concept for Debris Flows

OFIC members will conduct surveys to determine the feasibility and value of retaining trees along small type N streams with a high probability of debris flow in a "rack" just above the confluence with a Type F stream. The rack would extend from the RMA along the Type F stream up the Type N stream some distance for the purpose of retaining trees that have a high likelihood of delivery to the Type F stream.

ODF 62S: Voluntary No-Harvest Riparian Management Areas

Establishes a system to report and track, on a site-specific basis, when landowners voluntarily take the opportunity to retain no-harvest RMAs.

The voluntary management measures are implemented within priority areas. Several of the measures utilize in-unit leave trees and are applied in a "menu" approach to the extent in-unit leave trees are available to maximize their value to the restoration of salmonid habitat. The choice of menu measures is at the discretion of the landowner, but one or more of the measures is selected.

The measures can be described as either active restoration measures, or passive restoration measures that provide long-term large wood recruitment. Voluntary measures ODF 8S and 21S are active restoration activities. ODF 8 restores hardwood-dominated riparian areas back to a conifer-dominated condition, where appropriate, using a site-specific plan. Site-specific plans require additional consultation with the ODFW to minimize potential damage to the resource. They often result in conditions that are more protective of the resources than would occur without the site-specific plan. ODF 21S addresses large wood placement if stream surveys determine there is a need. Measures ODF 19S, 20S, 22S, and 62S provide future large wood recruitment through additional riparian protection. This additional protection is accomplished by retaining in-unit leave

trees, snags, and downed wood within and along RMAs, and by changing the ratio of in-unit leave trees to 75 percent conifer.

The following application priority has been developed for OPSW voluntary measures for harvest units containing more than one stream type. The list establishes the general priority for placement of in-unit leave trees.

- 1) Small and medium Type F streams.
- 2) Non-fish bearing streams (Type D or Type N), especially small low-order headwater stream channels, that may affect downstream water temperatures and the supply of large wood in priority area streams.
- 3) Streams identified as having a water temperature problem in the DEQ 303(d) list of water quality limited waterbodies, or as evidenced by other available water temperature data; especially reaches where the additional trees would increase the level of aquatic shade.
- 4) Potentially unstable slopes where slope failure could deliver large wood.
- 5) Large Type F streams, especially where low gradient, wide floodplains exist with multiple, braided meandering channels.
- 6) Significant wetlands and stream-associated wetlands, especially estuaries and beaver pond complexes, associated with a salmon core area stream.

The Oregon Plan also has voluntary measures addressing sediment issues related to forest roads. Many forest roads built prior to the development of the FPA or prior to the current BMPs continue to pose increased risk to fish habitat. Industrial forest landowners and state forest lands are currently implementing the Road Hazard Identification and Risk Reduction Project, measures ODF 1S and ODF 2S, to identify risks to salmon from roads and address those risks. The purposes of this project are:

1. Implement a systematic process to identify road-related risks to salmon and steelhead recovery.
2. Establish priorities for problem solution.
3. Implement actions to reduce road related risks.

The Road Hazard Identification and Risk Reduction Project is a major element of the Oregon Plan. The two major field elements of this project are (1) the surveying of roads using the Forest Road Hazard Inventory Protocol, and (2) the repairing of problem sites identified through the protocol. Road repairs conducted as a result of this project include improving fish passage, reducing washout potential, reducing landslide potential, and reducing the delivery of surface erosion to streams.

Roads assessed by this project include all roads on Oregon Forest Industry Council member forestland, plus some other industrial and non-industrial forestland, regardless of when they were constructed. Industrial forest landowners have estimated spending approximately \$13 million a year, or \$130 million over the next 10 years, on this project for the coastal ESUs alone. However, the effort is not limited to nor bound by this

funding estimate. Funding for the implementation for this measure within the other ESUs will be reflective of road problems found.

Under ODF 2S, the State Forest Lands program has spent over \$2.5 million during the last biennium (1997-1999) for the restoration of roads, replacement of culverts and other stream crossing structures damaged by the 1996 storm. State Forest Lands are also proposing to spend an additional \$2.5 million dollars in each of the next two biennia to improve roads, including stream crossing structures. This effort will upgrade approximately 130 miles of road in each biennium.

In addition to ODF 1S & 2S, there are additional measures under the Oregon Plan that address road management concerns:

ODF 16S - Evaluation of the Adequacy of Fish Passage Criteria: Establish that the criteria and guidelines used for the design of stream crossing structures pass fish as intended under the goal.

ODF 34S - Improve Fish Passage BMPs on Stream Crossing Structures: Ensure that all new stream crossing structures on forestland installed or replaced after the fall of 1994 will pass both adult and juvenile fish upstream and down stream.

Adaptive Management Process

By statute, forest operators conducting operations in accordance with the BMPs are considered to be in compliance with Oregon's water quality standards. The 1994 Water Protection Rules were adopted with the approval of the Environmental Quality Commission as not violating water quality standards. However, there are several provisions within the FPA and rules that require adaptive management.

In January of 1999 the Governor of Oregon signed Executive Order no. EO 99-01 that directed the Oregon Board of Forestry, with the assistance of an advisory committee, to determine to what extent changes to forest practices are needed to meet state water quality standards and protect and restore salmonids. The committee was directed to consider both regulatory and non-regulatory approaches to water quality protection. To carry out this charge, an ad hoc advisory committee developed four separate issue papers on the following topics:

- Fish passage restoration and water classification
- Forest roads
- Riparian functions
- Landslides

The committee represented diverse interests, including environmental, industrial, non-industrial, county, and public advocates. In addition to ODF technical staff, the Oregon Department of Environmental Quality (DEQ) and Oregon Department of Fish and Wildlife (ODFW) technical staff participated in the process. The committee made its recommendations to the Board of Forestry in September 2000. The Board is now considering the recommendations in order to determine whether revisions to the FPA and

additional voluntary approaches are necessary consistent with ORS 527.710 and ORS 527.714.

As the DMA for water quality management on nonfederal forestlands, the ODF has recently completed working with the ODEQ through a memorandum of understanding (MOU) signed in April of 1998. This MOU was designed to improve the coordination between the ODF and the ODEQ in evaluating and proposing possible changes to the forest practice rules as part of the Total Maximum Daily Load process. The purpose of the MOU was also to guide coordination between the ODF and ODEQ regarding water quality limited streams on the 303d list. An evaluation of rule adequacy has been conducted (also referred to as the "Sufficiency Analysis") through the analysis of water quality parameters that can potentially be affected by forest practices. This statewide demonstration of forest practices rule effectiveness in the protection of water quality addressed the following specific parameters:

- 6) Temperature
- 7) Sediment
- 8) Turbidity
- 9) Aquatic habitat modification
- 10) Bio-criteria

The Sufficiency Analysis final report has been externally reviewed by peers and other interested parties. The report was designed, in part, to provide background information and assessments of BMP effectiveness in meeting water quality standards. The report demonstrates overall FPA adequacy at the statewide scale with due consideration to regional and local variation in effects. Achieving the goals and objectives of the FPA will ensure the achievement and maintenance of water quality goals. The report offers recommendations to highlight general areas where current practices could be improved in order to better meet the FPA goals and objectives and in turn provide added assurance of meeting water quality standards. The Board of Forestry will consider these recommendations, along with the FPAC recommendations, in their on-going review of the FPA in order to determine whether revisions and/or additional voluntary approaches are necessary consistent with ORS 527.710 and ORS 527.714.

There may be circumstances unique to a watershed or information generated outside of the statewide sufficiency process that need to be considered to adequately evaluate the effectiveness of the BMPs in meeting water quality standards. Information from the TMDL, ad hoc committee process, ODF Water Protection Rule effectiveness monitoring program, and other relevant sources may address circumstances or issues not addressed by the statewide sufficiency process. This information will also be considered in making the FPA sufficiency determination.

The above adaptive management process may result in findings that indicate changes are needed to the current forest practice rules to protect water quality. Any rule making that occurs must comply with the standards articulated under ORS 527.714(5). This statute requires, among other things, that regulatory and non-regulatory alternatives have been considered and that the benefits provided by a new rule are in proportion to the degree that existing forest practices contribute to the overall resource concern..

APPENDIX B – DEPARTMENT OF AGRICULTURE

**Inland Rogue Agricultural Water Quality
Management Area Plan**

The following introduction was written by Tim Stevenson, Oregon Department of Agriculture July 2003. For more information or a complete copy of the 2001 Inland Rogue Agricultural Water Quality Area Plan contact Tim at (541) 471-7838.

Introduction for the 2001 Inland Rogue Agricultural Water Quality Area Plan

Senate Bill 1010 requires that the Oregon Department of Agriculture (ODA) develop and implement an Area Plan and Rules wherever such a Plan is required by state or federal law.

The Inland Rogue Agricultural Water Quality Management Area consists of non-Federal and non-Tribal Trust lands in the Jackson and Josephine counties, which includes all major tributaries to the Rogue River in southwest Oregon excluding the Bear Creek.

An Area Plan and Rules were required for the Inland Rogue Area because 303(d) list was developed the Department of Environmental Quality (DEQ) for temperature, sediment, nutrients and bacteria in 1996. Private agriculture is required to provide reasonable assurance that it will meet its TMDL load allocations for listed parameters. Additionally, Coho salmon are listed as an "Endangered Species" in southern Oregon and northern California in what is known as the Klamath-Siskiyou ESU by the National Marine Fisheries Service (now called NOAA Fisheries).

In 2000, the LAC, working with ODA and the Jackson Co. Soil and Water Conservation District (SWCD) completed the Area Plan and Rules. The rules were adopted in June 2001 under the guidance of Rose Marie Davis and Tim Stevenson. ODA then worked with the Jackson Co. SWCD, the Natural Resources Conservation Service (NRCS), OSU Cooperative Extension, private landowners, and other partners to implement the Area Plan and Rules.

In 2003, as required by OAR 603-090-0020, the LAC will meet to conduct the first periodic review and update of their Area Plan and Rules. Management Area landowners, representing agricultural commodities (orchards, cattle, vineyards, row crops, and horses) serve on the LAC. Other interests include small woodland owners, irrigation districts, and environmental representatives. The LAC will review the progress and effectiveness of the Plan and Rules in preventing and controlling water pollution from agricultural activities in the Management Area. Based on this evaluation, the LAC will discuss several revisions to the Area Rules, with corresponding updates and changes to the Area Plan.

III. Background

When developing the Area Plan and Rules, the LAC identified several objectives that, if achieved, would significantly improve water quality in the Management Area. The LAC then developed rules that had to be met on all agricultural and rural lands. Each rule was intended to prevent pollution as close to the source as possible, and to meet agriculture's expected load allocations in the TMDL.

The mission statement for the Inland Rogue AgWQMAP adopted by the LAC is:

TO DESCRIBE REASONABLE METHODS AND PRACTICES ALL PEOPLE ENGAGED IN AGRICULTURAL ACTIVITIES MAY USE TO MAINTAIN AND IMPROVE WATER QUALITY WHILE PRESERVING AND ENHANCING ECONOMIC VIABILITY IN THE ROGUE BASIN

The objective of the Inland Rogue AgWQMAP is to:

Attain water quality standards that serve the beneficial uses designated for the Rogue Basin.

They are listed alphabetically.

- aesthetic quality
- anadromous fisheries passage, rearing, and spawning
- cold water resident aquatic life
- commercial navigation and transportation
- contact recreation, fishing, boating
- drinking water, both public and private
- irrigation
- livestock watering
- threatened and endangered species
- wildlife and hunting

Intent of the Rogue Basin Agricultural Water Quality Advisory Committee

The committee's plan is intended to:

- be based on scientifically defensible data
- protect water quality in agricultural settings
- protect the economic viability of the agriculture industry in the Rogue Basin
- help set priorities so that resources are distributed where they will be of the most benefit to help the industry meet its long-term water quality objectives
- address each subbasin as a unique entity
- develop desirable agricultural condition requirements that are not prescriptive and provide for a wide variety of agricultural practices to alleviate potential problems.
- develop condition descriptions that allow for the unique character of specific sites

Summary of the high points of the 2001 Inland Rogue AgWQMAP includes:

- Identification of the diverse agricultural history of the basin
- Identification of the complex land uses in the basin
- Acknowledgement of background and residential contributions to pollution in the basin
- Acknowledgement of the potential contributions of pollution from private agricultural lands
- Commitment to use existing water quality protection law to reduce agricultural contributions
- Development of reasonable and measurable conditions to avoid on agricultural lands
- Identification of ODA and Jackson County SWCD roles and responsibilities

APPENDIX C – ODOT WATER QUALITY MANAGEMENT

ENTIRE PLAN CAN BE VIEWED ONLINE ON THE ODOT WEBSITE AT:
[HTTP://WWW.ODOT.STATE.OR.US/ESHTM/IMAGES/4DMAN.PDF](http://www.odot.state.or.us/eshtm/images/4dman.pdf)

The Oregon Department of Transportation (ODOT) plan addresses the requirements of a Total Maximum Daily Load (TMDL) allocation for pollutants associated with the ODOT system. This statewide approach for an ODOT TMDL watershed management plan would address specific pollutants, but not specific watersheds. Instead, this plan would demonstrate how ODOT incorporates water quality into project development, construction, and operations and maintenance of the state and federal transportation system, thereby meeting the elements of the National Pollutant Discharge Elimination System (NPDES) program, and the TMDL requirements.

ODOT has partnered with DEQ in the development of several watershed management plans. By presenting a single, statewide, management plan, ODOT:

- Streamlines the evaluation and approval process for the watershed management plans
- Provides consistency to the ODOT highway management practices in all TMDL watersheds.
- Eliminates duplicative paperwork and staff time developing and participating in the numerous TMDL management plans.

Temperature and sediment are the primary concerns for pollutants associated with ODOT systems that impair the waters of the state. DEQ is still in the process of developing the TMDL water bodies and determining pollutant levels that limit their beneficial uses. As TMDL allocations are established by watershed, rather than by pollutants, ODOT is aware that individual watersheds may have pollutants that may require additional consideration as part of the ODOT watershed management plan. When these circumstances arise, ODOT will work with DEQ to incorporate these concerns into the statewide plan.

ODOT Limitations

The primary mission of ODOT is to provide a safe and effective transportation system, while balancing the requirements of environmental laws. ODOT is a dedicated funding agency, restricted by the Oregon Constitution in its legal authority and use of resources in managing and operating the state and federal highway system. ODOT can only expend gas tax resources within the right of way for the operation, maintenance and construction of the highway system.

ODOT and DEQ recognize that the ODOT system has the potential to negatively impact the beneficial uses of the waters of the state, primarily through surface water runoff. However, removal of vegetative cover to provide for safety, and undermining of the road associated with bank failure may impact temperature and sediment allocations.

As defined in the TMDL program, ODOT is a Designated Management Agency (DMA) because highways have the potential to pollute waterways and negatively impact watershed health. With this definition of a DMA, ODOT is required to participate in developing and implementing watershed management plans that will reduce the daily

pollutant loads generated from ODOT highways to acceptable TMDL levels.

ODOT is not a land use or natural resource management agency. ODOT has no legal authority or jurisdiction over lands, waterways, or natural resources that are located outside of its right of way. ODOT's contribution to the TMDL management plan can only be directed at the development, design, construction, operations and maintenance of the ODOT system.

Related Clean Water Regulations

There are various water quality laws and regulations that overlap with the TMDL program. In a TMDL Memorandum of Agreement with the Environmental Protection Agency (EPA) (July 2000), DEQ states that; "DEQ will implement point source TMDLs through the issuance or re-issuance of National Pollutant Discharge Elimination System (NPDES) permits". The DEQ NPDES municipal permit program was established in 1994 and requires owners and operators of public stormwater systems to reduce or eliminate stormwater pollutants to the maximum extent practicable.

On June 9, 2000, ODOT received an NPDES permit from DEQ that covers all new and existing discharges of stormwater from the Municipal Separated Storm Sewer associated with the ODOT owned and maintained facilities and properties located within the highway right of way and maintenance facilities for all basins in Oregon. This permit required the development of a statewide ODOT stormwater management plan.

Other environmental regulations that overlap with the intent of the TMDL program include the federal and state Endangered Species Act, Corps of Engineers Wetland 404 permit regulations, state cut and fill removal laws, erosion control regulations, ground water protection rules, etc. Many federal, state, and local agencies join DEQ in administering and enforcing these various environmental regulations related to water quality.

ODOT Programs

ODOT established a Clean Water program in 1994 that works to develop tools and processes that will minimize the potential negative impacts of activities associated with ODOT facilities on Oregon's water resources. The ODOT Clean Water program is based on developing and implementing Best Management Practices (BMPs) for construction and maintenance activities. ODOT has developed, or is developing the following documents, best management practices, or reviews, that reduce sediment and temperature impacts:

- **ODOT Routine Road Maintenance Water Quality and Habitat Guide, Best Management Practices, July 1999 (ESA 4(d) Rule)**

ODOT has worked with National Marine Fisheries Service (NMFS) and Oregon Department of Fish and Wildlife (ODFW) to develop Best Management Practices (BMPs) that minimize negative environmental impacts of routine road maintenance activities on fish habitat and water quality. The National Marine Fisheries Service has determined that routine road maintenance, performed under

the above mentioned guide, does not constitute a 'take' of anadromous species listed under the federal Endangered Species Act, and therefore additional federal oversight is not required. This determination has been finalized as part of the Federal Register, Volume 65, Number 132, dated Monday, July 10, 2000, pages 42471-42472. In addition, the Oregon Department of Fish and Wildlife has determined that the guide, and BMPs are adequate to protect habitat during routine maintenance activities.

- **NPDES Municipal Separated Storm Sewer System (MS4) Permit**

ODOT worked with DEQ to develop a statewide NPDES MS4 permit and stormwater management program that reduces pollutant loads in the ODOT stormwater system. The permit was issued to ODOT on June 9, 2000.

- **NPDES 1200CA Permit**

ODOT has developed an extensive erosion control program that is implemented on all ODOT construction projects. The program addresses erosion and works to keep sediment loads in surface waters to a minimum. ODOT currently holds 5 regional permits that cover highway construction.

- **Erosion and Sediment Control Manual**

ODOT Geotechnical/Hydraulic staff have developed erosion and sediment control manuals and training for construction and maintenance personnel. Included in the manual are designs for different types of erosion control measures.

- **National Environmental Policy Act (NEPA) Reviews**

ODOT is an agent of the Federal Highway Administration, consequently, ODOT must meet NEPA requirements during project development. Included in the project development process are reviews to avoid, minimize and mitigate project impacts to natural resources, including wetlands and waters of the state.

- **Integrated Vegetation Management (IVM) District Plans**

ODOT works with the Oregon Department of Agriculture and other agencies to develop activities that comply with regulations that pertain to the management of roadside vegetation. Vegetation management BMPs can directly effect watershed health. Each ODOT district develops an integrated vegetation management plan.

- **Forestry Program**

ODOT manages trees located within its right of way in compliance with the Oregon Forest Practices Act and other federal, state, and local regulations. Temperature, erosion, and land stability are watershed issues associated with this program. ODOT is currently working with ODFW on a prototype for managing hazardous trees along riparian corridors.

- **Cut/Fill Slope Failure Programmatic Biologic Assessment**

ODOT has been in formal consultation with the National Marine Fisheries

Service, the US Fish and Wildlife Service and the Oregon Department of Fish and Wildlife Service in the development of a programmatic biological assessment for how ODOT will repair cut/fill slope failures in riparian corridors. The draft document outlines best management practices to be used in stabilizing failed stream banks, and bio-engineered design solutions for the failed banks.

- **Disposal Site Research Documentation and Programmatic Biological Assessment**

ODOT has been working with DEQ in researching alternatives and impacts associated with the disposal of materials generated from the construction, operation and maintenance of the ODOT system. ODOT has begun the process of entering into formal consultation with NMFS, USFWS, and ODFW on disposing of clean fill material.

ODOT TMDL Pollutants

ODOT and DEQ have identified temperature and sediment as the primary TMDL pollutants of concern associated with highways. While DEQ may identify other TMDL pollutants within the watershed, many historical pollutants, or pollutants not associated with ODOT activities, are outside the control or responsibility of ODOT. In some circumstances, such as historical pollutants within the right of way, it is expected that ODOT will control these pollutants through the best management practices associated with sediment control. ODOT is expecting that by controlling sediment load these TMDL pollutants will be controlled. Research has indicated that controlling sediment also controls heavy metals, oils and grease, and other pollutants.

Oregon's limited summer rainfall makes it highly unlikely that ODOT stormwater discharges elevate watershed temperatures. Management of roadside vegetation adjacent to waterways can directly effect water temperature. ODOT has begun to incorporate temperature concerns into its vegetation management programs and project development process.

Other TMDL concerns, such as dissolved oxygen, or chlorophyll A, can be associated with increased temperature. These TMDLs are not associated with the operation and maintenance of the transportation system, and are outside the authority of ODOT. Specific TMDL concerns that are directly related to the transportation system will be incorporated into the ODOT management plan.

ODOT NPDES characterization monitoring indicates ODOT pollutant levels associated with surface water runoff are below currently developed TMDL standards. This indication is based on ODOT 1993-95 characterization monitoring and current TMDLs.

Requirements of a TMDL Implementation Plan

Designated Management Agencies appointed by DEQ are required to develop a watershed management plan once the TMDL for the watershed is defined. EPA and DEQ have listed the following requirements as essential elements of a watershed TMDL

Implementation plan:

- 1) Proposed management measures tied to attainment of the TMDL. This will include a list of sources by category or sub-category of activity;
- 2) Timeline for implementation, including a schedule for revising permits, and a schedule for completion of measurable milestones (including appropriate incremental, measurable water quality targets and milestones for implementing control actions);
- 3) Timeline for attainment of water quality standards, including an explanation of how implementation is expected to result in the attainment of water quality standards;
- 4) Identification of responsible participants demonstrating who is responsible for implementing the various measures;
- 5) Reasonable assurance of implementation;
- 6) Monitoring and evaluation, including identification of parties responsible for monitoring, and a plan and schedule for revision of the TMDL and/or implementation plan;
- 7) Public involvement;
- 8) Maintenance of effort over time;
- 9) Discussion of cost and funding;
- 10) Citation to legal authorities under which the implementation will be conducted.

1) Proposed Management Measures tied to attainment of TMDLs.

ODOT has two business lines: project development and construction, and maintenance. There are management measures, processes, requirements and reviews included with each business line that are tied to the TMDL programs. These include:

- The ODOT MS4 NPDES permit and permit application- addresses sediment and temperature TMDL, includes project development and construction, and maintenance.
- The ODOT NPDES 1200 CA Permit- addresses sediment TMDL for construction.
- The ODOT Erosion and Sediment Control Manual-addresses sediment TMDL for construction and maintenance.
- The ODOT Routine Road Maintenance Water Quality and Habitat Guide, Best Management Practices, July 1999- addresses sediment and temperature TMDL.
- National Environmental Policy Act: addresses sediment and temperature TMDL, and habitat issues.
- Endangered Species Act requirements for project development: addresses sediment and temperature TMDL, and habitat issues.

2) Timeline for Implementation

ODOT already implements many water quality management measures as directed by state and federal law. Implementation timelines for currently developing measures are described in ODOT's MS4 NPDES permit. The ODOT MS4 permit was recently issued and is valid until May 31, 2005. ODOT's regional construction permits (1200 CA) are scheduled for renewal in December 2000.

3) Timeline for Attainment of Water Quality Standards

The complete attainment of load allocations applicable to ODOT corridors may not be feasible, certainly in the short term, and likely in the long term due to safety concerns and other important factors. However, ODOT expects to implement every practicable and reasonable effort to achieve the load allocations when considering new or modifications to existing corridors, and changes in operation and maintenance activities.

4) Identification of Responsible Participants

Implementing the ODOT best management measures is the responsibility of every ODOT employee. ODOT Managers are held accountable for ensuring employees and actions meet agency policy, and state and federal law, including the Clean Water Act.

5) Reasonable Assurance of Implementation

ODOT is required by its state NPDES MS4 permit to implement a stormwater management plan. In addition, as a federally funded agency, ODOT is required to comply with the Endangered Species act and the Clean Water Act as part of project development. Recent agreements with NMFS require ODOT to implement best management practices for routine road maintenance.

6) Monitoring and Evaluation (see MS4 Permit Application)

ODOT's monitoring and evaluation program is tied to performing research projects that address best management practices and effectiveness of the practices.

7) Public Involvement

DEQ held public hearings on the ODOT MS4 Stormwater Management Plan throughout Oregon. In addition, NMFS held a series of public hearings on the ESA 4(d) rule, which included the ODOT Routine Road Maintenance Best Management Practices. ODOT project development under goes a public involvement process that includes review by regulating agencies, and public hearings and meetings.

8) Maintenance of Effort Over Time

The elements of the ODOT water quality and habitat programs are bound in state and federal law, and state and agency directives. Consequently, the ODOT programs are standard operating practice.

9) Discussion of Cost and Funding

ODOT revenue comes primarily from dedicated funds collected as state and federal gasoline taxes. The Oregon Constitution dedicates taxes associated with motor vehicle fuel, and the ownership, operation and use of motor vehicles for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways. Consequently, ODOT is unable to expend resources outside its rights of way, or on activities not directly related to ODOT highways. ODOT construction projects are funded through a variety of Federal Highway Administration funding programs, including the Transportation Equity Act (TEA-21), state gas tax dollars, local and matching funds and bond.

ODOT budgets are identified the preceding year for the following biennium. Each

ODOT section or district budgets as necessary to fulfill the requirements of its identified programs. ODOT determines the budget for its MS4 permit as program needs develop and as agency funds allow. ODOT Office of Maintenance, through the Clean Water/Salmon Recovery Program allocates funds to maintenance forces for betterment projects that improve water quality and salmon habitat.

The Oregon Transportation Commission and the Oregon State Legislature approve the ODOT budget.

10) Citation to Legal Authorities - See MS4 Permit Application
ODOT has legal authority only over ODOT right of way.

Conclusion

ODOT programs are adaptive and are expected to change as new information becomes available. ODOT will continue to work with the DEQ, NMFS, USFWS, and ODFW in best management practices, research opportunities, training, etc. The ODOT program meets the requirements of the TMDL Implementation Plans, and will be attached as appropriate to individual watershed plans.

APPENDIX D: LITTLE APPLGATE OWNERS MANUAL

Contact Tim Franklin at the Applegate River Watershed Council at 541-899-9982 for more information on this plan, or to obtain a copy.

The Little Applegate Owner's Manual

A Landowner's Guide to Good Stewardship
**IN THE LITTLE APPLEGATE RIVER
WATERSHED**

