

Water Quality Restoration Plan

**Althouse Creek Watershed
HUC 1710031102**

Prepared by:
Medford District Bureau of Land Management, Grants Pass Resource Area

May 2008

Table of Contents

Element 1: Condition Assessment and Problem Description5
Element 2: Goals and Objectives.....8
Element 3: Proposed Management Measures9
Element 4: Timeline for Implementation..... 11
Element 5: Identification of Responsible Participants 11
Element 6: Reasonable Assurance of Implementation 11
Element 7: Monitoring and Evaluation 12
Element 8. Public Involvement..... 12
Element 9. Maintenance of Effort over Time 13
Element 10. Costs and Funding..... 14
Literature Cited 15

Water Quality Restoration Plan
 Rogue Basin
 Illinois River Sub-basin
 Althouse Creek

Bureau of Land Management Managed Lands

Althouse Creek at a Glance	
Hydrologic Unit Code	17/10/03/11/02
Watershed area/ownership	Total: 29,242 acres BLM Ownership: 4,711 acres USFS Ownership: 13,793 acres State, County, Private: 10,738 acres
303(d) listed parameters	Temperature
Beneficial Uses	Fish (salmonids) and aquatic life, irrigation, domestic water supply
Known Impacts(human)	Water diversions, bank erosion, riparian harvest, woody debris removal, mining
Natural factors	High amount of serpentine soils
Water Quality limited streams	<i>Althouse Creek</i> mouth to river mile 18

Statement of Purpose

Water quality standards are established to protect beneficial uses of the State's waters. Beneficial uses are assigned by basin in the Oregon Administrative Rules for water quality. Beneficial uses include:

domestic water supply	fishing
industrial water supply	boating
irrigation	water contact recreation
livestock watering	aesthetic quality
fish and aquatic life	hydropower
wildlife and hunting	

The Water Quality Restoration Plan for the Althouse Creek watershed was prepared to fulfill a requirement of Section 303(d) of the Clean Water Act. It is organized as per part 4(Water Quality Restoration Plan Template) of the sufficiency analysis (USFS, BLM 2003). This plan covers all the Bureau of Land Management lands within the Althouse Creek watershed (Figure 1), Hydrologic Unit Code 1710031102.

The DEQ 2004/2006 303(d) list is the current standard. This WQRP address all listings on the 303(d) list for the plan area. Within the plan area, only Althouse Creek has been placed on the State of Oregon's 303(d) list for failure to meet the water temperature criteria outlined below.

Temperature Standard:

The Oregon water quality temperature standard has been re-written. The standard that now applies to the Althouse Creek watershed was approved by EPA on March 2, 2004 and is found in OAR 340-041-0028 (4) (a-c) (ODEQ 2005). Excerpts of the 2004 standard read as follows:

(4) Biologically Based Numeric Criteria. Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:

(a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;

(b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to OAR 340-041-340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);

(c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);

Element 1: Condition Assessment and Problem Description

The Oregon Department of Environmental Quality (ODEQ) gathers and assesses water quality data for streams in Oregon and maintains a list of streams (the 303(d) list) that do not meet water quality standards. These streams are considered water quality limited, meaning that beneficial uses of the stream are adversely affected by water quality conditions. Althouse Creek has one stream segment listed on the 2004/2006 303(d) list. Table 1 displays the stream, miles and water quality parameter not meeting standards.

Table 1. Althouse Creek, 2004/2006, 303(d) listed stream

Stream Segment	Miles of Listed Stream	Miles on BLM	Parameter	Beneficial Use
Althouse Creek	18	1.2	Water Temperature	Salmon and trout rearing and migration

Althouse Creek is a 29,242 acre watershed which flows into East Fork of Illinois River. Althouse Creek is not a key watershed. Key watersheds are designated in the Northwest Forest Plan (USDA, USDI 1994a) as “crucial to at-risk fish species and stocks (Tier 1) and provide high quality water (Tier 2). Upper Sucker Creek watershed is a Tier 1 key watershed.

DEQ found 7-day average maximum stream temperatures above 18° C in Althouse Creek, leading to 303(d) listing. The listed stream segment is River Mile (RM) 0 to RM 18, measured at 2 sites on Althouse Creek. This is also reflected by water temperatures measured by BLM in Althouse Creek just below the confluence of Tartar Gulch. In four years of data only one year showed 7-day average maximum stream temperatures less than 18° C. This site is at approximately RM 8.4.

A reduction of both baseflow and riparian vegetation in the mid- and lower reaches of Althouse Creek are primarily responsible for increased water

temperatures. Reduced volumes of water are more susceptible to warming and reduced vegetative cover increases solar radiation input.

Baseflow

Consumptive use for agriculture and domestic supplies has reduced summer surface water flows in Althouse Creek. According to the Oregon Department of Water Resources, there are 116 points of diversion in Althouse Creek watershed. Currently, no water is available for future water rights claims in Althouse Creek. In other words, surface waters in the Althouse Creek Watershed have been fully appropriated. Exacerbating the effects of surface water diversions on baseflows are groundwater withdrawals for domestic and irrigation use. Often water withdrawn from wells is hydrologically connected to the surface water. In these instances, ground water is removed that would have flowed subsurface, discharging into streams.

Riparian Condition

Floodplains in the lower gradient valley bottoms of Althouse Creek and Democrat Gulch have been cleared for agricultural production, resulting in a narrow strip (30-75 feet) of hardwood dominated vegetation along the stream channel. In the moderate to high gradient reaches, rotational harvest on private lands and past BLM and Forest Service forest practices has reduced distribution of mature riparian forest stands.

Roads along sections of Althouse Creek, Democrat Gulch, as well as reaches of several unnamed tributaries, prevent future riparian vegetation development. In many riparian zones, fire suppression in combination with past harvest activities have led to high density, slow growing riparian stand conditions.

On BLM managed lands over the past 12 years management activities in the riparian zone focused on the protection of riparian functions of instream wood recruitment, stream shade and wildlife corridors. The recovery of past riparian harvest units with a management emphasis to maintain or improve riparian zones has led to an improving trend in riparian and aquatic conditions.

Nearly 40% of the riparian zones in the Althouse Creek watershed lack mature tree structure necessary to provide large instream wood. On private lands, in the lower gradient floodplain reaches of Althouse and Democrat Gulch, a reduction in riparian vegetation decreased stream shade, thereby increasing solar radiation input into surface waters. While harvest activities fragmented riparian habitats, average stream shade on BLM managed land in Althouse Creek was 86% in 2002(ODEQ 2002). For thermal protection of cold water beneficial uses, the Oregon Department of Environmental Quality considers full recovery of shade at 82% for Althouse Creek. All other applicable tributaries (tributary area is 5% or greater of the watershed area above its confluence with the receiving stream [ODEQ. 2002]) that partially occur on BLM land meet or exceed site potential shade.

Many riparian stands are overstocked due to past activities and fire suppression. These stands exhibit lower growth rates, reduced stand resiliency, and higher fire risk. The Grants Pass Resources Area actively investigates riparian conditions to identify riparian stands which would benefit from thinning or underburning. Benefits include increased growth rates, stand complexity, as well as reduced fire danger, leading to improved stream shade and wood recruitment.

Channel Condition

Aerial photographs following the 1964, 1974, and 1997 flood events display widespread bank erosion in the low to moderate gradients on Althouse Creek and Democrat Gulch. Miles of creek were scoured, fully exposing the channel. In addition, bedload was increased due to channel scour upstream. Currently, channel conditions are generally poor as indicated by high levels of bank erosion, high riffle to pool ratios, high extent of exposed bars in the lower valley. However, on BLM land for Althouse Creek trends from 1993 to 2003 indicate an increase percent of pools from 5.7 to 12.7% (ODFW.1993 and BLM 2003 Stream Surveys). Prevalent bank erosion in the downstream valley areas indicate that energy moving through the system has increased or the ability to dissipate the energy has decreased.

Peak flow increases have been linked to channel instability, as greater flow volume yields greater energy. Peak flow increases in Althouse watershed main streams (particularly Althouse Creek, Democrat Gulch, Tartar Gulch) are unlikely given the vegetative condition, and lack of scale and disturbance, in the transient snow zone. Some roads intercept of surface and groundwater and thus have increased flow routing to the stream network. But, given the low level of roaded area (1.9% of the lower watershed area), though there may be isolated effects to runoff and sedimentation at local sites, landscape scale flow changes resulting in increased peak flow magnitude are highly unlikely.

Rather, stream flow velocity increases are due to channel modifications. Stream kinetic energy increases exponentially with flow velocity. Stream velocity increases with depth and with gradient, and decreases in complexity. There is a lack of large wood in moderate gradient reaches. Ongoing stream degradation is occurring in the lower watershed along with decreased complexity. All three variable adjustments lead to increased streamflow velocities. Additive to the effects of increased energy is decreased resistance to bank scour by removal of riparian vegetation. Riparian zones in the mid and lower reaches of Althouse and Democrat Gulch were cleared prior to the 1964 flood event. The combination of increased stream velocity, riparian vegetation removal, and bedload increases have led to high levels of bank erosion.

Presently, channel banks are the primary energy dissipater, resulting in continued bank erosion. The continued altered channel processes are the

mechanism responsible for high levels of bank erosion and low habitat complexity.

While bank erosion is high through the lower gradient floodplain reaches, field surveys and aerial photographs show that the channel has changed locations at some sites and widened in the floodplain. Widened and generally shallower channels lead to higher stream temperatures.

Element 2: Goals and Objectives

For BLM, in the Althouse Creek Watershed, the primary goal within the riparian reserves is the maintenance and long-term restoration of riparian ecosystems as identified in the Northwest Forest Plan Aquatic Conservation Strategy (ACS) objectives. Specific project goals include:

- 1) Manage riparian areas within one to two tree-heights of all streams to benefit riparian health and aquatic habitat. Management includes preserving current conditions (protective) and silvicultural treatments to increase stand vigor and resiliency (proactive).
- 2) Manage BLM administered riparian lands to reach their shade potential.
- 3) Maintain/improve riparian reserve health on BLM managed lands to maximize large wood recruitment into the channel and riparian environments. The instream wood will benefit downstream channel stability and improve aquatic habitat conditions. Maintenance of late-seral conditions where they currently exist. In early, mid-seral, and mature stands that lack structural complexity, treatments would accelerate stand development into late-successional/mature structure (i.e. large trees, snags, down wood, species diversity and hardwood retention).
- 4) Return stand density and fuel loads to range of natural variability to reduce potential for stand replacement events.

To accomplish, the Northwest Forest Plan (NWFP)(USDA, USDI 1994) and the Medford District Resource Management Plan (RMP)(USDI 1995) provides management guidance to maintain or improve riparian health. The most relevant direction in the NWFP is included in the Aquatic Conservation Strategy (ACS) objectives; the ACS was developed to restore and maintain the ecological health of watersheds and to protect salmon and steelhead habitat on lands within the range of Pacific Ocean anadromy. The ACS contains specific water quality objectives that protect the beneficial uses identified in the state's water quality standards. Riparian reserves, key watersheds, watershed analysis, and watershed restoration components of the ACS are designed to operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. In addition to the ACS, the Standards and Guidelines for

Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl, April 1994, describe land allocations and specific standards and guidelines (S & Gs) for managing these land allocations. These S & Gs effectively serve as Best Management Practices (BMP's) to prevent or reduce water pollution further contributing to goals of Clean Water Act compliance.

Element 3: Proposed Management Measures

Management and protection of riparian zones will occur at two levels — programmatic and project. The Medford RMP contain BMPs that are important for preventing and controlling to the “maximum extent practicable” non-point source pollution and achieving Oregon water quality standards.

Programmatic: The Northwest Forest Plan standards and guidelines will be used to meet the goals of Althouse Creek Water Quality Restoration Plan including:

- Stream Temperature – Shade Component
Aquatic Conservation Strategy: B9 – B11, C30
Riparian Vegetation: B31
Riparian Reserves: B12 to B17
Watershed Restoration: B30
- Stream Temperature – Channel Form
Aquatic Conservation Strategy: B9 – B11, C30
Riparian Vegetation: B31
Riparian Reserves: B12 to B17,
Watershed Restoration: B30
Roads: B19, B31 to B33

The riparian reserve width for the fish-bearing streams in the Althouse Creek Watershed is 300 feet on each side of the stream. For non-fish bearing streams the riparian reserves is 150 feet on each side.

Project: The second level of management and protection occurs at the project planning level. The project planning area is usually at the fifth field watershed scale. A team of specialists including fish biologists, hydrologists, botanists and silviculturalists examine watershed analysis conclusions and conduct field surveys to determine the most appropriate actions necessary to improve and/or maintain riparian health and protection. These actions typically include developing silvicultural prescriptions to improve stand vigor, decommissioning roads, planting, and designing site specific BMPs.

The *Sufficiency Analysis for Stream Temperatures* (USDA, USDI 2003) provides specific guidance for silvicultural practices within riparian reserves. Shade curves were computed based on stream width, orientation, and topography factors and show the required minimum no-cut buffers necessary to maintain and

restore site-potential riparian shade. The shade curves and field surveys will ensure maintenance of riparian stands providing primary shade (those stands which provide shade between the hours of 10am and 2pm).

The Althouse-Sucker landscape project team, incorporated recommendations in the Althouse watershed analysis (USDI 2005) and guidelines included in the sufficiency analysis, identified 413 acres of commercial thinning with small group selections, 281 acres of structural retention (regeneration cut), 284 acres of density management/ understory reduction (understory management), 680 acres of young stand management with variable canopy thinning, 1244 acres of Jeffrey Pine or White Oak restoration, and 441 acres of fuel reduction treatment. All treatments in the riparian reserve outside the 50 foot no-treatment buffers are designed to meet the objectives of the Aquatic Conservation Strategy (ACS), Northwest Forest Plan.

0.47 miles of new road would be constructed to current BLM standards near the top of a ridge. 26.6 miles of existing road would be improved to current BLM standards. This would improve hydrologic function and provide long term sediment reduction. Also, there would be 1.9 miles of decommissioning, and one culvert would be replaced with open bottomed (natural stream bed) culvert (USDI 2008).

Additionally, aquatic habitat restoration intended to improve channel complexity, scour pools for rearing habitat, and slow water velocities would be implemented in a one mile reach of Althouse Creek. This is funded and currently in the planning phase. Also, small riparian understory trees would be girdled and felled into tributary streams as funding is available.

Specific design features, or BMPs, applied to the proposed treatments include:

- Vegetation providing primary shade would be retained; no management activities would occur within 50 feet of all perennial streams and intermittent streams.
- Silvicultural treatments in the riparian reserve can be described as thinning from below treatments, with the intention of leaving the larger/healthier trees in the overstory. Silvicultural treatments in riparian reserves would not reduce the canopy coverage below 50%-60% with the expectation that in ten years canopy cover would increase to 60%-70%. Vegetation responsible for providing shade to the active channel would be retained. The stocking level would provide adequate future recruitment of Large Woody Debris (LWD) to exceed the desired >25 key pieces per mile.
- Prescribed fuel treatments including, thinning, burning, and brushing would not occur within 50 ft for both intermittent and perennial channels. All trees greater than 8" DBH would be retained.

Element 4: Timeline for Implementation

The major provisions of this plan have already been implemented. The NWFP was implemented with the signing of the Record of Decision (ROD), April 13, 1994. Inherent in the implementation is the passive restoration of riparian areas that ensued as a result of the riparian reserve buffers/allocation. Implementation of active restoration activities beyond the inherent passive riparian restoration occurs with watershed analyses and site-specific projects.

Implementing specific activities designed to improve riparian conditions requires analysis under the National Environmental Policy Act (NEPA) and will occur following the landscape level planning. In 2007, the Grants Pass Resource Area developed the Althouse-Sucker landscape planning project. The plan identified road improvements, riparian silvicultural prescriptions outside the primary shade zone, and fuel reduction activities, leading to improved stand resiliency and productivity. The timing for active restoration implementation of these activities is dependent on funding levels and the NEPA process, see Element 10 below.

Stream temperature recovery is largely dependent on vegetation recovery. Actions implemented now will not begin to show returns in terms of reduced stream temperatures or improved aquatic habitat for a number of years. Due to the mixed ownership in the Althouse watershed, water temperature decreases will be dependent on non-BLM land management actions.

Shade recovery has been reached in the Althouse watershed on BLM lands. With passive restoration (riparian buffers) leading to improvement of past riparian harvest units combined with active riparian management to improve health, resiliency and growth rates, streamside shade is expected to increase, although in 2002 existing shade on streams on BLM land was 86%, the DEQ target was 82% (ODEQ. 2002. TMDL ASSESSMENT REPORT).

Element 5: Identification of Responsible Participants

The BLM signed a Memoranda of Agreement (MOA) with ODEQ (USDI,USDA, ODEQ. 2003) that provides a framework for effective cooperation on programs and projects to pursue the shared goal of attainment of state water quality standards. To that end, the MOA includes provisions for implementation that satisfy State and Federal point and non-point source pollution control requirements, develops a common understanding of water quality protection and restoration, and constitutes the basis for continuing formal designation of the BLM and USFS as Designated Management Agencies.

Element 6: Reasonable Assurance of Implementation

The ROD and associated Medford District Resource Management Plan were approved by the Oregon/Washington State Director on April 14, 1995. The ROD

approves the BLM's decisions for managing 870,000 acres in portions of Josephine, Jackson, Douglas, Curry, and Coos counties.

Implementation and monitoring of the ACS and use of the Sufficiency Analysis logic and tools provide reasonable assurance that watersheds under the direction of the NWFP will move towards attainment of water quality standards and beneficial use support. Implementation and adoption of the MOAs also provide assurances that water quality protection and restoration on lands administered by the FS and BLM will progress. Additionally, adherence to BMP's developed through the NEPA process and project design guidelines instituted for T&E species protection further provides reasonable assurance of progress toward water quality improvement. However, BLM acknowledges that periodic review of the Sufficiency Analysis and TMDLs is necessary to provide the assurance that goals and objectives are being met.

Element 7: Monitoring and Evaluation

Monitoring will be used to ensure that decisions and priorities conveyed by BLM plans are being implemented, to document progress toward attainment of state water quality standards, to identify whether resource management objectives are being attained, and to document effectiveness of management actions. If monitoring indicates that sufficient progress toward the goals contained in this plan are not being made, the goals and activities will be revisited and changes made as necessary to the action plan to assure attainment of water quality standards.

The primary objective of this WQRP is to increase stream shade, reduce sedimentation, and improve aquatic habitat. Due to the mixed ownership in the Althouse Creek watershed, attainment of the water temperature standard requires multi-ownership participation and commitment to improve riparian function.

Researchers at the Forest Service Pacific Northwest Experiment station are assessing the effectiveness of the management actions directed by the NWFP to improve water quality. This effort is monitoring the passive restoration measures implemented in this WQRP.

Grants Pass Resource Area (GPRA) will continue monitoring water temperatures in Althouse Creek. Likewise DEQ will continue to monitor stream temperatures near the mouth of Althouse Creek on an intermittent basis.

Element 8. Public Involvement

Many of the elements contained in this WQRP derived from existing land use planning documents such as the Medford RMP and the NWFP. These documents received broad based public comment during scoping prior to development of alternatives and during public appeal of both documents. Both documents also received numerous responses to the Draft Environmental Impact

Statement that were published for review, prior to development of the Final Environmental Impact Statements and Record of Decisions.

The Oregon Department of Environmental Quality has lead responsibility for creating (TMDLs) and (WQMP) to address water quality impaired streams in Oregon. This Water Quality Restoration Plan will be provided to DEQ for incorporation into an overall WQMP for the Illinois River Watershed. DEQ has a comprehensive public involvement strategy, which includes informational sessions, mailings, and public hearings.

Additionally, the NEPA process requires public involvement prior to land management actions, providing another opportunity for public involvement. During this process, BLM sends scoping letters and schedules meetings with the public. The public comment period ensures that public participation is incorporated into the decision making process.

Element 9. Maintenance of Effort over Time

The conditions leading to water quality limitations and 303(d) listing have accumulated over many decades. Management measures to address these factors will be carried out over an extended period of time. Furthermore, once restorative actions and protection practices achieve desired results, continued vigilance will be required to maintain water quality standards.

Northwest Forest Plan and Federal Land Management Plans

The NWFP and the Medford Resource Management Plan are ongoing federal land management plans. The NWFP became effective in 1994. The RMP was implemented in 1995 and covers a period of approximately 10 years or until the next RMP revision. Federal law requires RMP and Forest Plan implementation.

Water Quality Restoration Plan

The Medford District BLM, working in partnership with the DEQ, is responsible for ensuring the WQRP is implemented, reviewed, and amended as needed. This includes the following:

1. Review of the responsible agency's land treatments, verifying consistency with plans.
2. Promotion of ongoing communication, financial support, and partnerships for implementing priority projects.
3. Continue efforts to explore revised or additional management measures based on results of monitoring activities and other sources of information.
4. As additional information becomes available and techniques are improved, continue to improve and revise cost/benefit estimates.

Element 10. Costs and Funding

Active restoration can be quite costly, depending on the level of restoration. The following are estimated average costs of typical restoration activities (implementation only, does not include planning costs):

Riparian thinning	\$4,000 per acre
Culvert Replacement	\$50,000 -80,000

There are several sources of funding for restoration activities. This includes congressionally appropriated budget line items for restoration, and grants.

Budget Line Items for Restoration

In Fiscal Year 2007, the BLM Medford District received funding for Althouse Creek stream restoration under the BLM Clean Water and Watershed Restoration (CWWR) program. Funds were obligated to the Illinois Valley Soil Water Conservation District/ Watershed Council specifically for this project. However the project cannot be implemented until NEPA is completed for Althouse-Sucker landscape planning project. NEPA cannot be complete (through the Decision Record) until the USF&W releases the Biological Opinion (BO) for the Northern Spotted Owl. The BO will not be released any earlier than August, 2008.

Grants

Federal and state programs such as the Oregon DEQ 319 Non Point Source (NPS) Water Quality program and the Oregon Watershed Enhancement Board (OWEB) provide funds for watershed restoration activities. The BLM has been working with the local Illinois River Watershed Council to forge partnerships to complete restoration projects on a cooperative basis.

Every attempt will be made to secure funding for restoration activities but it must be recognized that the federal agencies have political and economic realities. Federal activities are subject to public and legal review prior to implementation; legal clearance is necessary prior to implementation. Historically, budget line items for restoration are a fraction of the total requirement. Grants may prove to be an increasingly important mechanism for funding restoration but funds are subject to availability, eligibility and approval of external parties.

Literature Cited

USDA, USDI. 1994a. Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl. Standards and Guidelines for Management of Habitat for Late-Successional and Old- Growth Forest Related Species Within the Range of the Northern Spotted Owl. Portland, Oregon.

USDA Forest Service, USDI Bureau of Land Management. 2004. Sufficiency Analysis for Stream Temperature.

USDI, Bureau of Land Management, Medford District. 1995. Record of Decision and Resource Management Plan.

USDI Bureau of Land Management, USDA Forest Service, ODEQ. 2003. Memorandum of Agreement to MEET STATE AND FEDERAL WATER QUALITY RULES AND REGULATIONS.

USDI, Bureau of Land Management, Medford District, Grants Pass Resource Area. 2005. Althouse Creek Watershed Analysis.

USDI, Bureau of Land Management, Medford District, Grants Pass Resource Area. 2008. Environmental Assessment for the Althouse-Sucker Landscape Management Project.

ODEQ. 2002. TMDL ASSESSMENT REPORT: Riparian Shade BLM Managed Lands, Illinois Valley Sub-Basin. Medford Office.

ODFW. 1993. Aquatic Inventory Project, Althouse Creek.