

DRAFT

**FOREST MANAGEMENT ACTIVITY ASSESSMENT
AND EVALUATION PLAN**

**for the
McKenzie River Watershed, Oregon**



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February 2005
Revision 2**

Introduction

The McKenzie River is the sole source of drinking water for more than 200,000 people in Eugene and surrounding communities. In October 2000, EWEB developed a drinking water source protection plan, which included a risk assessment of all potential threats to this valuable source of drinking water. The high-risk threat categories included stormwater outfalls, urban runoff, hazardous materials spills, agricultural activities and forest management activities (EWEB, 2000).

The forest management activities assessment in the McKenzie watershed implements a portion of EWEB's drinking water source protection program (EWEB, 2000; EWEB, 2001a). The overall concept of drinking water source protection is to have the ability to measure the balance between watershed health and human use over time and implement actions that maintain a healthy balance for production of exceptional water quality. This requires not only being aware of all the different human activities going on within the watershed, but also understanding the limits of what the river can handle and still maintain a healthy watershed with good water quality. EWEB's source protection program consists of the following eight subprograms:

- ? Comprehensive Monitoring;
- ? Disaster Preparedness and Response;
- ? Education and Research Assistance;
- ? Point Source Evaluation and Mitigation;
- ? Nonpoint Source Evaluation and Mitigation;
- ? Land Acquisition;
- ? Public Outreach and Information Sharing; and,
- ? Watershed Land Use Tracking and Management.

EWEB received Oregon Department of Environmental Quality Section 319 grant funds to implement the nonpoint sources of pollution evaluation and mitigation subprogram. Specifically, implementation of this subprogram includes taking inventory, mapping and assessing the risk associated with forest or silviculture activities, septic systems, agricultural activities, and building or construction activities in the McKenzie River watershed upstream of EWEB's intake at Hayden Bridge. Stormwater and urban runoff is not included in this effort because EWEB is already working with partner agencies to assess the potential impacts from this nonpoint source of pollution (NPS).

All work conducted under this grant will be accomplished using ArcGIS, a geographic information system (GIS) tool that allows for efficient data management and provides powerful data analysis and map production. The purpose of this report is to provide the various agencies, businesses, organizations, landowners, and other interested parties with basic information about the proposed project approach, objectives, scope, tasks, and outcomes as a starting point for discussing the best approach for this baseline assessment.

Potential Threats From Forest Management Activities

The McKenzie watershed is comprised of 68% forested land, with a mixture of private,

state, and federally owned lands. Forested watersheds, like the McKenzie, produce the best water quality than any other surface water source. However, forest management activities that may adversely impact downstream water quality include: the use of chemical applications for stand treatment; road building; and various timber harvest techniques (NRC, 2000; Chang, 2003).

Numerous studies have been conducted in the Willamette River Basin that looked at impacts of chemical spray activities on streams, rivers and drinking water supplies (USGS 2001, USGS 1998, USGS 1997, USGS 1996). These studies tended to focus on agricultural portions of the Willamette Basin, but did include some forested areas as well. Results indicate that pesticides and nutrients occurred at higher concentrations and more frequently in agricultural dominated drainages than in mostly forested drainages. Some widely used pesticides, such as atrazine, were found in over 90% of the 188 water samples collected in the Willamette basin (USGS, 1996; USGS, 1997). Atrazine was added on the U.S. EPA's restricted pesticides list in 1993.

Over a two-year period (2002 to 2004) approximately 3.5 million pounds of chemicals were aerially applied to almost 10% of the McKenzie Watershed as part of forest management activities (ODF, 2004). This activity was focused in the lower portions of the watershed closer to EWEB's drinking water intake (Figure 1). The majority of the aerial chemical applications, or 3.1 million pounds, involved fertilizer treatments using urea nitrogen with the remaining 400,000 pounds being pesticide applications. The greatest risk to drinking water from forest management activities is due to aerial application of pesticides because of drift, wash-off, and erosion processes (EPA, 2004).

Contaminants of particular concern for EWEB's drinking water are dissolved organic chemicals including pesticides. EWEB's water-filtration plant is designed to continually treat the raw water from the McKenzie River for bacteria, metals, nutrients, sediment and organic matter. However, EWEB can only treat for dissolved organic chemicals using activated carbon if these contaminants are known to exist. Currently, activated carbon treatment is only used during times of known problems, such as spills or during periods of taste/odor problems.

The Oregon Department of Forestry (ODF) conducted a study of potential impacts to surface water from aerial applications of pesticides (ODF, 2000). From 1997 to 1999, water samples were collected downstream of 26 different treatment sites within 72 hours after aerial pesticide applications occurred. Unfortunately, only three of the 26 sampling events coincided with precipitation events. Sample results indicated that only occasional low levels of pesticides were detected downstream of treatment sites within 72 hours of the application (ODF, 2000).

Other forest management activities associated with road building and timber harvesting may also adversely impact water quality due to increased runoff that carry higher sediment and nutrient loads (and possibly pesticides) (Chang, 2003; NRC, 2000). Recent events in the Santiam watershed (1996 floods) and McKenzie watershed (2002 Cougar Dam release) show how increased sediment in drinking watersheds can lead to extensive

problems with downstream water treatment plants (Hulse, et. al. 2002; PNW, 2003). For EWEB, increased sediment and nutrient loads in the raw water results in higher treatment costs and increased potential of producing disinfection by-products.

EWEB has conducted storm event and monthly baseline monitoring of the lower McKenzie River watershed (between Hayden and Hendricks bridges) since October 2001 (EWEB, 2001b) (Figure 1). Preliminary results of this effort show that:

- 1) Runoff from storm events are responsible for the majority of pollution that reaches the river;
- 2) Pesticide levels detected in storm runoff from Cedar Creek, Camp Creek, and Keizer Slough were below standards set for aquatic and human health;
- 3) Some nutrient and metals detected in storm runoff from Cedar Creek, Camp Creek and Keizer Slough exceeded aquatic and human health-based standards; and,
- 4) Low levels of nutrients and trace amounts of one pesticide were detected in the McKenzie River (EWEB, 2004).

Purpose, Objectives and Scope

The purpose of this assessment is to collect baseline information about forest management activities in the McKenzie watershed and, through GIS analysis and water quality monitoring, evaluate those areas that may impact the McKenzie River. The forest management activity assessment will focus on commercial forests. Federal forest management will be tracked and put into the GIS database, but actual monitoring and assessment work will be conducted in the next phase of NPS assessments. This baseline data will be used to evaluate trends over time to identify impacts before they become a drinking water problem. The McKenzie River has excellent drinking water quality. The goal of EWEB's drinking water source protection program is to maintain this level of quality for future generations of customers.

The idea is to focus on specific areas in the watershed where there are clusters of chemical spray activity and harvesting taking place and then monitor their effect on water quality. If potential problems exist, EWEB and partner organizations would work with interested landowners to voluntarily implement actions that would reduce risks to drinking water while maintaining timber harvest production.

The objectives of the forest activities assessment project are to:

- ? Bring watershed stakeholders, forest agencies, Oregon State University, and foresters/landowners together to share information and engage in meaningful discussions on current forest activities in the watershed and ways to assist foresters while maintaining the exceptional water quality of the McKenzie River;
- ? Develop a baseline inventory of forest management activities in the watershed and establish a procedure for periodic updates of this information;

- ? Evaluate forest activities to better understand potential threats and identify high priority areas for further study;
- ? Determine if high priority areas are currently impacting water quality in nearby streams and/or the McKenzie River;
- ? Work with interested landowners to implement actions that would reduce potential risks in high priority areas; and,
- ? Initiate and strengthen long-term relationships and cooperation among the forest community, EWEB, watershed stakeholders, academia, and others.

To achieve these objectives the following general tasks will be conducted:

1. Meet one-on-one with individual stakeholders, forest agencies and companies, OSU Department of Forestry, and others to discuss the forest management activities assessment project, gain a better understanding of current roles and responsibilities, and explore potential involvement and partnership opportunities with this project;
2. Collect watershed data on forest activities and import the information into a geographic information system (GIS);
3. Conduct GIS analyses of forest activities to identify specific areas susceptible to chemical runoff during storm events;
4. Meet and discuss the NPS assessment project with foresters and landowners in these high priority areas to gain a better understanding of forest practices and to solicit participation in this project;
5. Conduct water quality monitoring during storm events upstream and downstream of these high priority areas (water samples will be analyzed for pesticides, nutrients, metals and suspended sediment);
6. Share results with stakeholders, foresters and landowners through various meetings and mailings;
7. Conduct brainstorming sessions with interested stakeholders and foresters to create strategies that lower potential risks to water quality, while maintaining healthy tree stands and profit margin from harvesting;
8. Assist interested forest operations to implement voluntary actions; and,
9. Continue monitoring high priority areas to determine if voluntary actions are working.

Existing Forest Activity Data

Oregon Department of Forest requires written notification to the State Forester of activities such as timber harvest, chemical sprays, road building and management that occur on private and state owned land (OAR 629-605-0140, 0150, and ORS 527.670). These notifications for the McKenzie watershed are on file at the Eastern Lane Unit, Cascade District office in Springfield Oregon. EWEB has already entered the chemical spray notifications and harvest data from late 2001 to present in a GIS database (see figures 2 thru 5).

Existing Forest Management Practices and Laws

Oregon Forest Practice Rules and Statutes of 2000, including the Oregon Forest Practices Act, cover the legal frame work for all forest activities in the state of Oregon that are on private and state owned land. Federal owned land (i.e., US Forest Service and Bureau of Land Management land), which is administered under federal regulations, is outside the scope of this project.

All forest activities, on state and privately owned property, such as road building, road management (including road chemical spraying for access), chemical applications, and harvest practices, while having to comply with Oregon Law, also have to be in full compliance of the rules and regulations of the Department of Environmental Quality relating to air and water pollution control (OAR 629-605-0130, ORS 527.620). The Oregon Forest Practices Act (OFPA) of 1971 established forest protection regulations that built upon the states original Forest Conservation Act of 1941. Having changed over the decades since 1971 to comply with new federal regulations, the rules appear to be comprehensive. However, a number of recent legal rulings have set restrictions on use of certain pesticides thus indicating that the OFPA needs to comply with the federal Endangered Species Act (*The Oregonian*, 2003; *The Water Report*, 2004; *Oregon Insider*, 2004a). Proposed revised rules strengthen protection of riparian areas with the idea that active forest management is appropriate when it enhances riparian areas and promotes long-term protection for aquatic resources (*Oregon insider*, 2004b).

ODF has a monitoring program to evaluate the effectiveness of the OFPA with an emphasis on assessing the Chemical and other Product Rules (OAR 629-620-0700). Some of the goals of this monitoring program are to: coordinate monitoring and research efforts with other potential partner agencies and organizations to maximize state resources; investigate the cumulative effects of forest practices; and monitor temporal and spatial trends in forests and stream conditions (ODF, 2002).

Watershed Forest Management

EWEB has a lot to learn regarding forest management practices in the McKenzie Watershed and hopes that this project will provide an introduction to the complexities of commercial forest management. It is a well-known fact that watersheds predominately

covered with healthy forests have exceptional water quality (NRC, 2000; Chang, 2004; AWWA, 2004).

One approach to maintaining the quality of Eugene's drinking water source while maintaining timber harvests and corporate profits is through a watershed approach to stand management that incorporates the building of long-term relationships between watershed stakeholders, timber corporations, forestry agencies, and researchers (Peterson and Monserud, 2002; Cissel, Swanson, et. al., 1998). The McKenzie Watershed is fortunate to have a forest research center on the HJ Andrews Experimental Forest, an adaptive management area, a university (Oregon State University) dedicated to forest research, a strong and effective watershed council, and large timber landowners that are cooperative and innovative.

It is EWEB's hope that long-term cooperation and partnerships between landowners, watershed stakeholders, forest management agencies, and academia can be strengthened to not only minimize potential impacts from high risk forest management activities (i.e., aerial applications of pesticides), but to also promote forestry and forest products economic studies, improve local forest-based industry, provide technical and financial assistance to forest landowners interested in long-term management to ensure a continuous supply of high-quality timber to local manufacturing, and use research and lessons learned from adaptive management studies on public forests to provide a potential model for sound resource management that compliments private stewardship. If successful, these long-term relationships and the watershed approach could act as the foundation to address other important watershed issues such as effects of global warming on timber production, establishing effective fire assessment and response capabilities, protecting and enhancing threatened and endangered species habitat, and battling invasive weed problems.

Forest Assessment Project Approach

It should be noted that this specific project is the initial effort associated with a long-term program to develop mutually beneficial relationships with the forest community, forest agencies, universities, local businesses, and others. The forest management activities assessment project is funded with Oregon DEQ grant funds and will be completed within one year. The results, lessons learned and partnerships developed from this initial effort will be used to shape future directions and projects with the forestry community in the McKenzie Watershed. The following is an overview of the conceptual approach to implementing the forest management activities assessment project.

Phase 1: Meet, Listen, Learn, and Collect Information

- ? Contact and distribute this draft plan to the initial list of stakeholders and partners listed in Table 1 (add/remove stakeholders based on initial phone conversations).
- ? Meet with each stakeholder/partner to learn about their current involvement in the forest community, feedback on the draft plan, and discuss potential involvement in this project.

- ? Collect data and information on forest activities in the McKenzie watershed.

Phase 2: Share information and initial analysis

- ? Hold stakeholder/partner meeting(s) to share feedback received on draft plan, present the final plan, share information collected as part of the assessment, and discuss how information will be analyzed to identify high priority areas of potential pollution runoff.
- ? Conduct initial analysis and share results with forestry community to get feedback, new information, identify errors, etc.
- ? Revise GIS analysis based on feedback and share final analysis results that identifies high priority areas for further study with the forestry community.
- ? Meet and share results with specific landowners in high priority areas and learn about specific forest practices in these areas.

Phase 3: Monitor Storm Runoff in High Priority Areas

- ? Work with landowners and forest community to select monitoring sites and collect initial information on these sites.
- ? Conduct storm runoff monitoring upstream and downstream of high priority areas to collect water samples for pesticide, nutrients, metals, and suspended sediment analyses.
- ? Input storm runoff and analytical data into database.

Phase 4: Share Data and Brainstorm on Next Steps

- ? Share monitoring data results with landowners and forestry community.
- ? Conduct multiple meetings to brainstorm on approaches to implement on-site actions to reduce chemicals in runoff while providing assistance to landowners and foresters.
- ? Complete draft project report that discusses all aspects of the project and distribute to landowners and forestry community for comments and feedback.
- ? Finalize project report and distribute to forestry community and other interested parties.
- ? Develop new projects/approaches based on lessons learned and ideas from brainstorm sessions.

Project Timeline

Make Contacts & Distribute Plan	January to March 2005
Collect Data on Forest Activities	October 2004 to April 2005
Meeting to Share Data/Project Approach	April 2005
Hold One on One Stakeholder Meetings	April to May 2005

Revise GIS Analysis Based on Feedback	May 2005
Share GIS Analysis Results/Contact Landowners	May 2005
Meet with Landowners/Select Monitoring Sites	May to June 2005
Conduct Storm Monitoring	May to June 2005
Meet to Share Analytical Results	September 2005
Hold Brainstorm Sessions	September to October 2005
Draft & Final Project Reports	October to November 2005
Meet to Discuss New Approaches/Projects	November 2005

Summary of Potential Stakeholders and Partners

The following list of potential stakeholders and partners that may have an interest in participating in this project are summarized in Table 1. It is anticipated that this table will change after initial discussions with the various agencies, organizations, landowners, growers, and businesses listed in Table 1.

**TABLE 1
Summary of Forestry Community Stakeholders**

Organization Name	Contact	Potential Role
McKenzie Watershed Council	Kate Ferschweiler /Megan Finnessy	Water quality monitoring, TMDL Involvement and council contact
Oregon Department of Forest	Mark Slaten/ Lena Tucker	Forest Management Data and information sharing, Department contact
U.S. Geological Survey	Chauncey Anderson	Pesticide Monitoring, analysis and interpretation
Bureau of Land Management	Emily Rice	Forest Mngt. Data, Road Building Data, information sharing
Weyerhaeuser Company	Mike McDowell	Landowner, Forest Management Data and information sharing
Rosboro Timber Company	Steve Akehurst	Landowner, Forest Management Data and information sharing
Guistina Land & Timber Company	Pete Zikora	Landowner, Forest Management Data and information sharing
Oregon Department of Environmental Quality	Rachel Bun	NPS Program, grant administrator, information sharing
US Forest Service	Dave Krietzing/ Phil Raab	Forest Mngt. Data and Information Sharing

EWEB	Karl Morgenstern	Drinking Water
SUB	Nancy Moreno	Drinking Water
McKenzie River Trust	George Grier	Land Conservation
Oregon State University	Gordon Grant	USFS Pacific NW Research
University of Oregon	Cassandra Mosley	Ecosystems Workforce Program, Institute for a Sustainable Environment

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