

## 2 Introduction

### 2.1 Introduction

The Tillamook State Forest (Forest), covering roughly 364,000 acres, is located in the North Coast watershed basin in northwestern Oregon's coastal mountain range. The Forest, managed by the Oregon Department of Forestry (ODF), covers a vast swath of forested coastal highlands dissected by a complicated dendritic network of streams. The area is delineated into watersheds (5<sup>th</sup> Field Hydrologic Units or HUCs) including the Wilson River watershed (Map 1), the focus of this watershed analysis (hereafter, analysis). The Wilson River watershed spans approximately 123,000 acres, of which, roughly 80% (~98,000 acres) is managed by ODF's Forest Grove and Tillamook district offices (Map 2). The Wilson River watershed is managed for multiple uses (e.g. timber production and recreation) and is also home to a variety of fish and wildlife species, including chum, coho, spring and fall Chinook salmon, winter and summer steelhead, resident and searun cutthroat trout, deer, elk, and marbled murrelets.

### 2.2 Purpose

State laws (OAR 629-035-0020 and ORS 530.050) direct ODF to manage state lands to provide the greatest permanent social, economic and environmental value to Oregonians by managing for healthy, productive and sustainable forests. In 2001, the Northwest and Southwest State Forests adopted Forest Management Plans (FMP) to fulfill these directives. The FMPs included specific watershed assessment and analysis strategies that were compatible with, but expand upon, the existing Oregon Watershed Enhancement Board (OWEB) watershed analysis process.

The ODF watershed analysis process focuses on landscape function and process as they relate to aquatic and riparian habitat conditions on State Forest lands. The primary goal of the FMP is to manage for the "properly functioning condition" (PFC; as defined by ODF 2004) of State Forest aquatic ecosystems. The biological and ecological objective of the FMP strategies is to maintain or restore the key ecological functions of aquatic, riparian, and upland areas that directly influence the freshwater habitat of aquatic species within the context of the natural disturbance regimes that created habitat for these species. The primary objectives of the ODF watershed analysis are to identify where properly functioning habitat exists, is lacking, and what management changes can be implemented to meet the FMPs objective of maintaining or restoring PFC to aquatic systems. In addition to the OWEB watershed analysis process and requirements, the ODF process includes four explicit strategies that all watershed

analysis must address: limiting factors, alternative vegetation management, slope stability, and road analyses (ODF 2004).

In 2001, E&S Environmental Chemistry completed an OWEB watershed assessment of the Wilson River project area. The purpose of the 2001 assessment was to inventory and characterize conditions in the Wilson River watershed and provide recommendations that addressed key water quality, fisheries and fish habitat, and watershed hydrology critical questions identified by OWEB (E&S Environmental Chemistry 2001; see Section 2.3). The purpose of *this* watershed analysis is to provide an updated and supplemental inventory and characterization of watershed conditions in the Wilson River drainage basin. Additionally, this watershed analysis answers questions specifically designed to determine how ODF forest practices are affecting aquatic and riparian resources. This watershed analysis was conducted by the Duck Creek Associates team of professionals. This team was comprised of a variety of specialists who analyzed existing watershed information at varying spatial scales and generated new information as it pertained to historical and current natural resource conditions within the Wilson River watershed.

## 2.3 Approach

This watershed analysis follows the process outlined in the ODF's State Forest Program Watershed Analysis Manual (ODF 2004) which stipulates that the methodologies be compatible with those outlined in the Oregon Watershed Assessment Manual (WPN 1999). Consistent with the process outlined therein, this document contains three distinct components (assessment, analysis, and synthesis) and each topical chapter (e.g., Stream Channels, Hydrology, Riparian, etc.) incorporates each component.

The assessment component includes both historical and current conditions. The intent of the historical assessment is NOT to define conditions at some single point in the past to use as a target for the future. Instead, the purpose is to provide a description of major historical disturbance events that occurred within the Wilson River watershed and to characterize historical management trends. Forest environments are constantly changing. Therefore, the historical conditions described herein are presented in the context of the dynamic nature of forest environments, with recurring cycles of both disturbance and recovery. For it is only through an understanding the historical conditions across the watershed that managers are able to understand the context in which the current issues have arisen.

Unlike the historical conditions assessment, the current condition assessments contained herein are a simply snapshot of the conditions as they relate to a *range* of conditions the watershed has experienced, is experiencing, and will

experience. Because forest environments are continuously changing, however, the snapshot of current conditions should be considered in the context of the dynamic nature of the environment – an environment that includes recurring cycles of both disturbance and recovery. Additionally, the snapshot of current condition can be used as a measure against which future conditions can be compared to assess the relative effectiveness of differing land management scenarios.

While the current conditions are presented relative to certain “benchmarks” or “reference conditions,” it is important to note that many watershed processes cannot be characterized as either good or bad. Rather, these processes must be evaluated based on their likely influence on various resources (e.g., salmonid habitat or water quantity and quality). By updating and summarizing the existing conditions in the Wilson River watershed, the watershed can be better managed to better protect and conserve the natural resources consistent with the public values placed on them.

Similar to the previous OWEB watershed analysis (2001), this assessment is diagnostic in nature and does not prescribe specific actions for specific stream segments. Rather, it provides a decision-making framework for identifying areas of the watershed in need of protection and restoration. The assessment is conducted on a watershed level, recognizing that all parts of a watershed function as a whole and that alteration or loss of one watershed process or component can affect many other processes and components in the watershed.

Collectively, this watershed analysis evaluates dominant interactions between featured watershed processes, aquatic resources, and land use, particularly on ODF lands. The assessment component includes a narrative that describes the project area, land use patterns and various historic and current natural resource attributes. The analysis component, of primary importance to ODF, focuses on ODF administered lands within the Wilson River watershed and is intended to facilitate the management and attainment of properly functioning aquatic and riparian conditions. The synthesis section combines the results of the assessment and analysis and summarizes conclusions about the Wilson River watershed. The synthesis section also includes a determination of the overall watershed condition, a summary of the answers to OWEB and ODF questions, and provides management considerations as they relate to specific management goals and desired future conditions.

There are two general types of questions addressed in this watershed analysis: OWEB critical questions and ODF key supplemental questions. The OWEB questions are derived from the Oregon Watershed Assessment Manual (WPN 1999) while ODF questions are specific to ODF management needs and, therefore, primarily address State forest lands in the Wilson River watershed.

Critical OWEB questions were largely answered by the 2001 watershed analysis. Consequently, when addressing OWEB questions, this assessment largely references the existing OWEB assessment (E&S Environmental Chemistry 2001) but also includes additional analyses that update some of the answers from the existing assessment and answers to key supplemental ODF questions. Of particular interest to ODF is the identification of limiting factors to PFC, alternative vegetation management strategies, potential effects of landslides on streams, an information review from the road condition assessment to assist ODF in making timely road management decisions, and identification of locations where trails and dispersed camping sites are producing impacts to aquatic systems.

This watershed analysis is not intended to analyze all past and current information on all potential biological and ecological processes and natural resources in the Wilson River watershed. Rather, this analysis focuses on the issues identified in the FMP as they relate most directly to aquatic and riparian conservation and the current management strategies intended to address those issues. Consequently, upland processes are considered in the context of how they may be influencing aquatic and riparian conditions.