USING ORAL HISTORIES TO DOCUMENT CHANGING FOREST COVER PATTERNS: SOAP CREEK VALLEY, OREGON, 1500-1999

Chapter I. Introduction

"The time has come," the walrus said,
"To talk of many things:
Of shoes—and ships—and sealing wax—
Of cabbages—and kings—
And why the sea is boiling hot—
And whether pigs have wings."
—Lewis Carroll

This thesis poses the question: Can changes in forest cover patterns be reliably documented by systematically questioning first hand observers and other knowledgeable individuals? The principal focus is to demonstrate the utility of oral histories to identify and document types and amounts of change that have occurred in a forested western Oregon environment over time.

OUTLINE AND DESCRIPTION OF THESIS

This section of the Introduction presents principal thesis objectives, provides definitions for primary terms that are used, outlines arrangement and content of thesis chapters, and describes the method by which oral histories, personal communications, and documentary sources of information will be differentiated and referenced in the text.

Objectives

The principal objective of this thesis is to use accepted oral history research methods to determine if measurable change to forest cover patterns has occurred over a representative portion of the Douglas-fir Region during the past

500 years. An additional objective, assuming that such change can be shown, is to identify and document activities, events and processes that caused change within the study area. The primary resource used to achieve these objectives is a series of oral histories assembled by Oregon State University (OSU) College of Forestry, OSU Horner Museum and OSU Research Forests between 1975 and 1999 (see Appendices A and B).

Definitions

Oral histories are tape recorded and transcribed interviews with individuals that document living memory. Oral history research methodology is perceived as either a distinct interdisciplinary science or as a qualitative research approach of particular value to anthropologists, historians, archivists, and/or feminist theorists (see Chapter II). The creation of new oral histories was the principal method used to obtain and interpret primary and secondary source data for this thesis.

The area of study is Soap Creek Valley ("The Valley"), a Benton County sub-basin of the Luckiamute River watershed and tributary to the Willamette River in northwest Oregon. Soap Creek Valley was first explored and documented in October, 1826, the beginning marker of "historical" time (see Chapters II and V and Appendix C) for present-day Benton County. The Valley was "settled" 20 years later, in 1846, by white and black American "pioneers" that had arrived primarily by wagon and horseback via the Oregon Trail. Thus, "prehistoric time" specifically denotes the 10,000 or more years of Soap Creek Valley human use and occupation that preceded documented exploration in 1826, and "presettlement time" is the same 10,000+ years added to the 20 years of "early historical" time that began in 1826 and ended with American settlement after 1845. (Names of pioneer Soap Creek Valley landowners, presettlement Kalapuyans displaced by the pioneers, and landowners for the years 1929 and 1990 are listed in Appendix D.)

Wild Soap Creek Valley plants and animals are referenced by "local" names, primarily because informants favored these terms over published lists of Latin and "common" names. "Local" refers to the names of plant and animal

species used commonly by Soap Creek Valley area residents and visitors, rather than the "common" names found in more general lists; e.g., chittum vs. cascara buckthorn, arrowwood vs. oceanspray, boomer vs. mountain beaver, and possum vs. opossum. (Local and scientific names for wild terrestrial vertebrates and wild vascular plants of Soap Creek Valley are listed in Appendix E.)

"Forestland" denotes areas that, in the absence of human intervention, tend to develop canopies of trees. This definition is sometimes called "potential vegetation" (see Chapter IV; Naveh & Lieberman 1993). Virtually all Soap Creek Valley area meets this definition. Native Soap Creek Valley trees, including Douglas-fir, redcedar, grand fir, bigleaf maple, Oregon ash, willow, alder and white oak, are sufficiently large to create a canopy over most existing buildings, roads, and creeks within a few decades; and would likely do so in the absence of human action (Anderson 1993). Pure and mixed stands of these species are capable of growing without human intervention on nearly every drained Soap Creek Valley surface except asphalt, concrete, and open rockface. This description of "potential forestland" varies from common definitions of forestland as (generally large) areas presently covered with trees; from "ecosystem," a bounded area with a "recognizable interdependent structure of organisms and their environment" based definitions of forestland as an "ecosystem dominated by trees" (Hunter, Jr. 1990); and from "ecological" based definitions that describe forestland as "the total assemblage of" trees, their substrate, associated other plants, local animals, microorganisms, soil, and atmospheric climate, including moisture and fire, "that influence the distribution and abundance of all the organisms in the forest" (Kimmins 1987). The principal difference in these definitions is that forestland, as the term is used in this thesis, includes areas that have been cleared of trees for agriculture, timber harvest, building construction, or other reasons. The temporary, or semi-permanent, absence of trees under these circumstances, while possibly limiting an area's consideration as "forest" for a time, does not limit its classification as "forestland." Old beaver ponds, berry patches, and meadows that have afforested during historical time are also included in the definition of "forestland," as are recent clearcuts, local housing developments, and Christmas tree farms.

"Forest cover patterns," for the purposes of this paper, are combinations, numbers, and/or vertical and horizontal shapes of dominant trees, shrubs, forbs,

grasses, native and domestic animals, human families, land uses, and physical structures used to describe above ground conditions of forestland at a point in time (Naveh & Lieberman 1993). This definition includes numerical patterns of plant and animal (including human) populations, vertical "structural" patterns of vegetation and human development, and temporal patterns of wildlife introductions and extirpations. This definition varies from more common depictions of forest cover patterns that depend on artificial delineation's of vegetation or animal "habitats," "types," "seral stages," "associations," "communities," "diagnostic species," or similar methods of classification to describe areas of plants and animals that occupy forestland (Kimmins 1987). This latter definition is often limited to mapping and measuring horizontal patterns within a bounded area and both definitions are used interchangeably throughout the thesis. Causes of change to these patterns are identified as "disturbances," "actions," "events," or "processes." (These terms, and others important to this thesis, including "climate," "catastrophic events," and "human activities," will be considered in greater detail in Chapters II, III, and IV).

Arrangement

This thesis is arranged in six chapters, with a list of references and nine appendices. Chapter I is this introduction, which states objectives, defines basic terms, provides an outline of the contents and structure of the thesis, lists principal sources of information, and gives a brief description of Soap Creek Valley. Chapter II describes methods used to gather thesis data, and how the data were organized and analyzed. Chapter III identifies and documents causes of change to Soap Creek Valley forest cover patterns during the past 500 years; Chapter IV is a theoretical construct of forest cover patterns; and Chapter V is a chronological accounting and documentation of specific patterns during that time. Chapter VI summarizes the findings of this thesis, including the utility of oral history research methods for this type and scale of research. Appendices are provided with this thesis and as supplementary documents in the form of monographs (see Appendix A).

Method of Oral History References

The variety of data sources used in this study required a clear and consistent style for citation and reference. In order to distinguish between oral history interviews, personal communications, and printed materials:

1) oral histories and other printed materials are listed alphabetically in the reference section, using a common format, 2) references to oral histories that appear in the body of the text are underlined and identified by interviewee, rather than by author(s), and 3) all personal communications are identified as such in the text and are not listed in the reference section. Table 1 identifies the 17 principal oral history monographs used in this study and lists the method by which each is cited in the body of this thesis. A second column in Table 1 provides a standard citation for locating sources in the reference section.

Table 1. Citation and reference list of oral history informants.

Citation	Reference	Monograph
Berg 1983	Lee and Jackson 1983	No. 1
Cook 1995	Zybach and Sherer 1995	#12
Davies 1997	Jackson and Lee 1997	#13
Dickey 1995	Zybach and Vanderburg 1995	#03
Dunn 1990	Jackson and Lee 1990	#02
Glender 1994	Zybach and Meranda 1994	#09
Grabe 1990	Zybach 1990	#01
Hanish 1994	Zybach and Sherer 1994	#06
Hindes 1996	Zybach 1996a	#14
Murphy 1995	Carlson, Finley, Zybach and Hays 1995	#11
Olson 1994	Zybach and Sondenaa 1994	#07
Rawie 1994	Zybach 1994a	#10
Rohner 1993	Zybach 1993b	#05
Rowley 1996	Jackson, Lee and Zybach 1996	#15
Sekermestrovich 1990	Thomas and Jackson 1990	#04
Starker 1984	Lee and Jackson 1984	No. 3
Vanderburg 1995	Zybach and Wisner 1995	#08

Citation — Method of data source and monograph identification used in thesis body.
Reference — Formal citation reference, used in thesis reference section.
Monograph — "#" Soap Creek Valley Oral History Series monograph number.
"No." Horner Museum Oral History monograph number.

NOTE: For example, (Hanish 1994) denotes James Hanish's oral history monograph within the body of the thesis, but is found in the Reference section as: (Zybach & Sherer 1994). A cited interview would be: (Hanish 1994: personal communication).

LOCATION AND DESCRIPTION OF SOAP CREEK VALLEY

This section of the Introduction provides preliminary information and context for better consideration of thesis results (see Chapters III and V). Maps and representative Geographic Information Systems (GIS) layers are provided as a basis for spatial displays and analyses of Soap Creek Valley forest cover patterns that are the principal findings of the thesis.

Boundaries and Landmarks

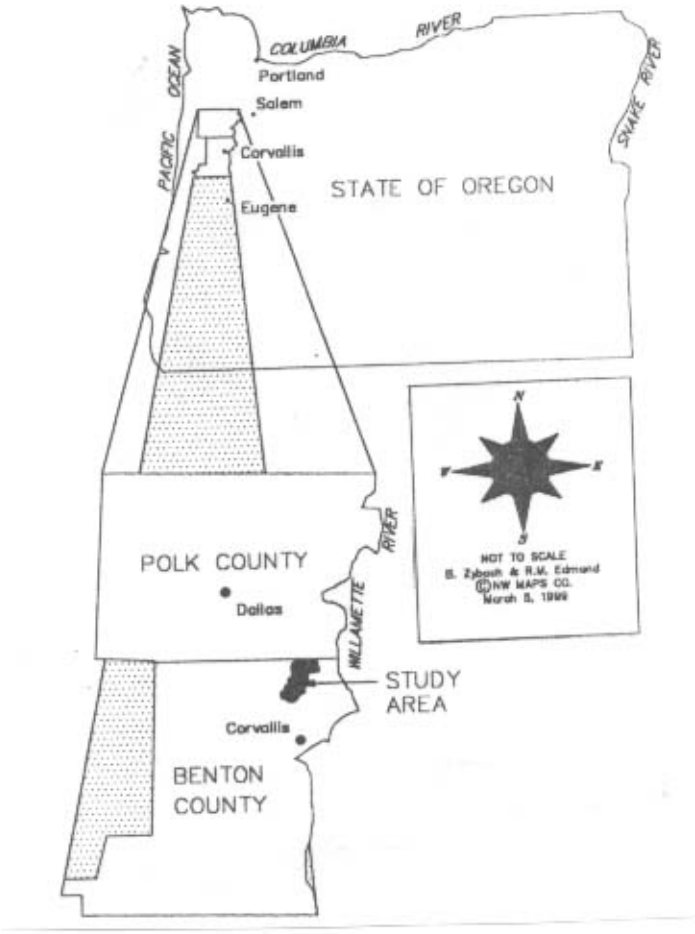
Soap Creek Valley drains an eastern slope of the Oregon Coast Range in northwest Oregon. The Valley is located in northwestern Benton County, along the southern border of Polk County (Map 1). It is approximately 15,000 acres in size and is inhabited by several hundred resident families and dozens of visitors, workers, students, and/or recreationists during most daylight hours. Western, southern, and southeastern boundaries of the study area have been made to conform with public land survey (PLS) lines established between 1845 and 1942 that most closely conform to actual drainage boundaries of Soap Creek. The northeastern boundary is Highway 99 E. and the northern boundary is Robison Road and the Polk County line (see Map 2). The names and locations of local landmarks are listed in Table 2 and correspond to icons and legal descriptions displayed in Map 2. Origins of landmark names vary from the mid-1800s (e.g., Coffin Butte and Forest Peak) to the late 1900s (e.g., McCulloch Peak and Poisonoak Hill). In instances where landmark names or locations change over time (e.g., Forest Peak and Bakers Mountain) or vary slightly from source to source (e.g., Smith Peak and Smith Hill or Writsmans Butte, Writsmans Peak, and Writsman Hill), efforts are made to identify or clarify these differences in the body of the text or in the captions to maps, figures, and tables.

Legal Descriptions and Land Ownership

The majority of Soap Creek Valley is contained in Township (Tsp.) 10 S. (South of the Willamette Meridian), Range (Rng.) 5 W. (West of the Willamette Meridian). Its eastern boundary is in Tsp. 10 S., Rng. 4 W. and its southern

headwaters are in Tsp. 11 S., Rng. 5 W. (see Map 2 and Table 2). County boundaries, Township, Range, Sectional (square mile), and land ownership subdivisions shown on Map 2 were established during early settlement time in Soap Creek Valley (Freeman 1852; Hyde 1852a; Hyde 1852b; Ives 1852; Elder 1853; Hathorn 1854a; Hathorn 1854b; Mercer 1882). Most Soap Creek Valley acreage is commercial-grade forestland, with significant portions dedicated to agriculture, solid waste landfill, lawns, and housing. The Valley contains both government and privately owned forest and farm lands, including significant portions of OSU College of Forestry and College of Agricultural Sciences properties. Most residents live on tax lots less than 10 acres in size (See Map 3 and Table D.4) and commute to work or school outside The Valley's boundaries (Grabe 1990).

Map 1. Location of Soap Creek Valley study area in Oregon, 1999.



Map 2. Named landmarks and original 1846-1882 land surveys. Table 2 provides additional names and legal descriptions of locations identified on this map. Circled numbers depict the names of pioneer landowners (see Table D.2) whose properties were surveyed prior to 1860. Landowner boundaries are the irregular shapes surveyed between 1846 and 1855 that contrast with square-shaped sectional subdivisions surveyed during the 1852-1882 time period.

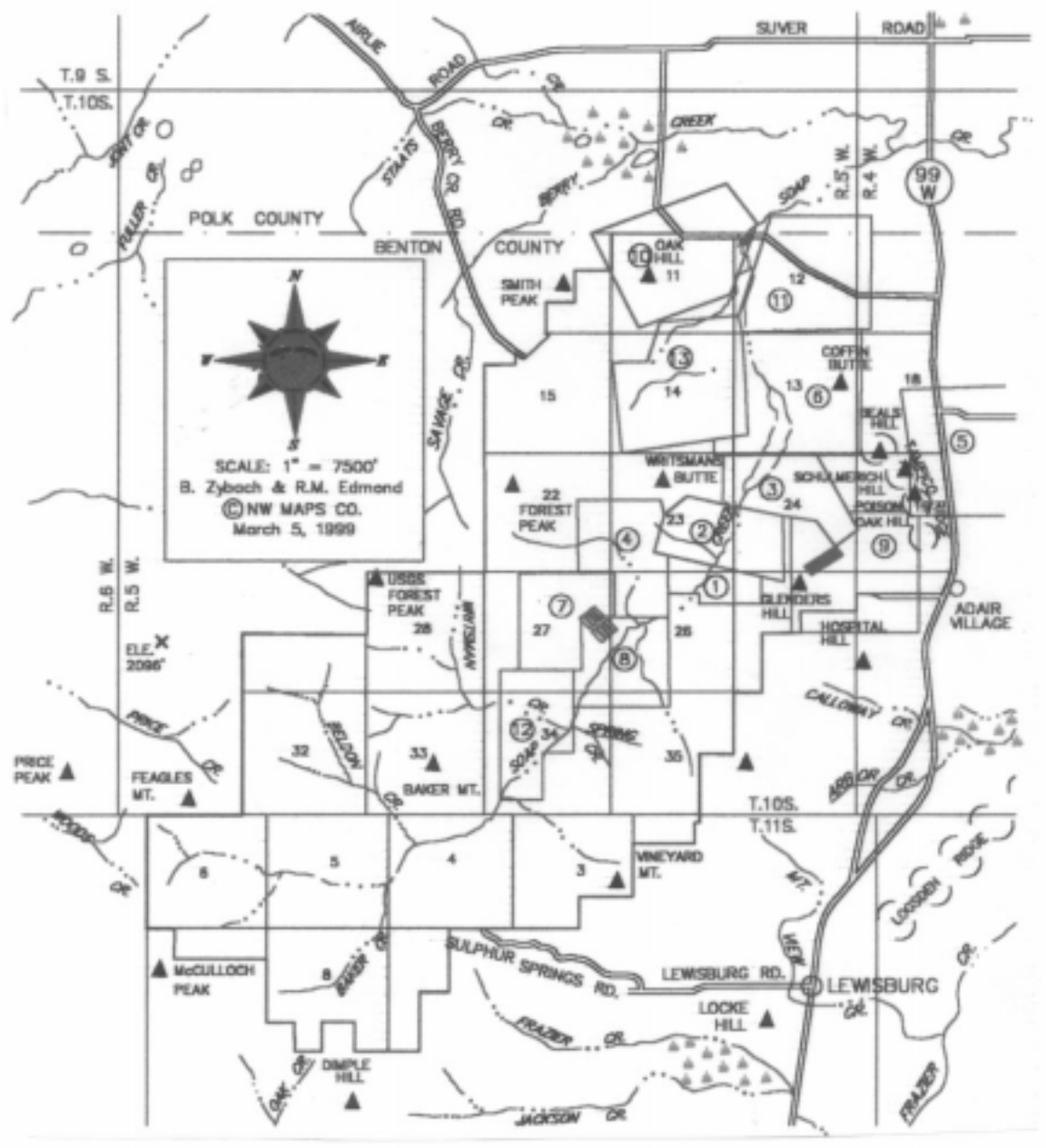
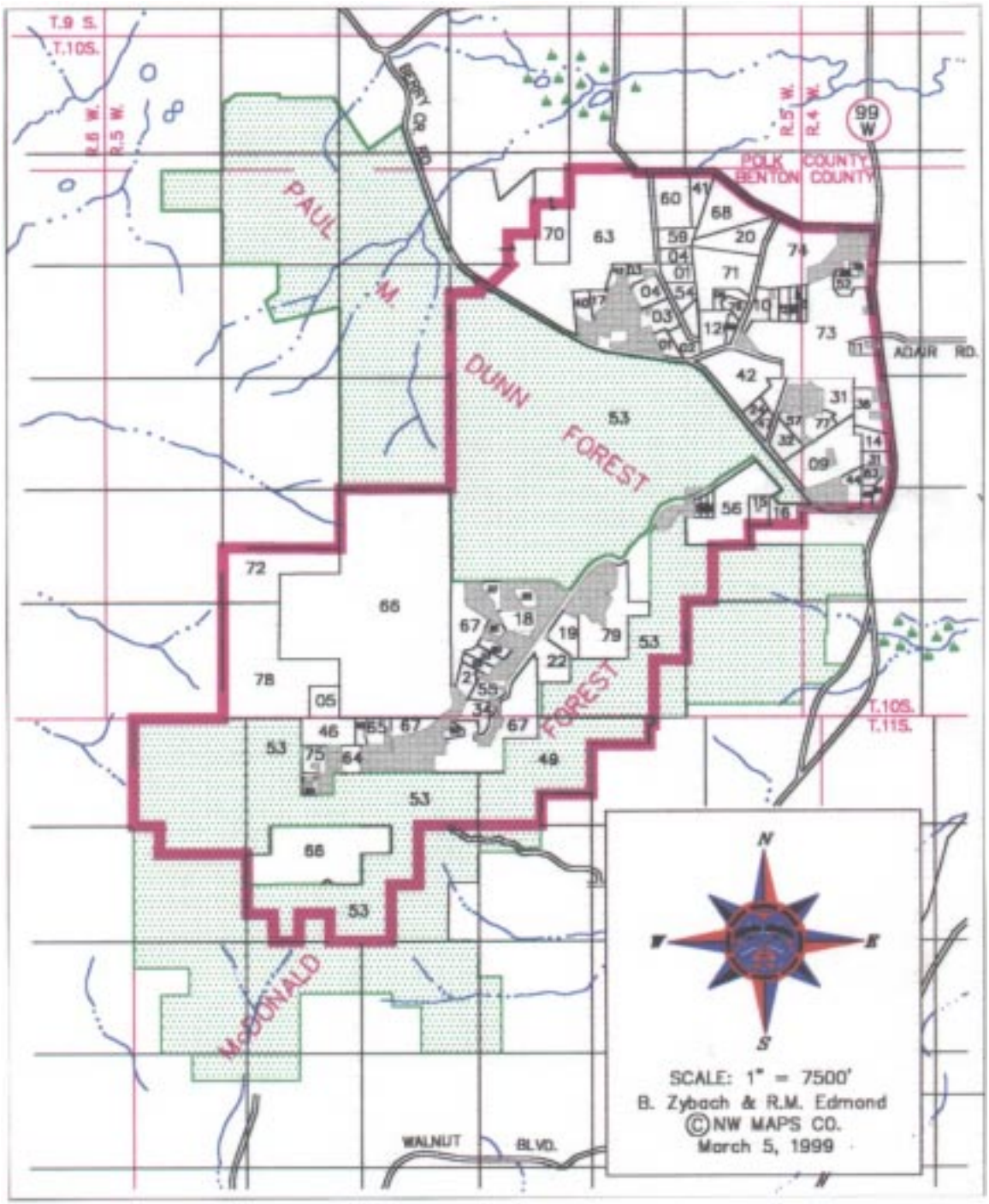


Table 2. Landmark names and locations, 1845-1999. See Map 2 for graphic display of legal descriptions and spatial distribution of named landmarks.

T - R - S	Landmark Name
Tsp. 10 S., Rng. 4 W.: NE Soap Creek Valley, west of Hwy. 99 W.	
10-4-7	Robison Road
10-4-18	Coffin Butte
10-4-19	Tampico Ridge
10-4-30	Hospital Hill
Tsp. 10 S., Rng. 5 W.: majority of Soap Creek Valley area	
10-5-10	Smith Peak
10-5-11	Oak Hill
10-5-12	County Line
10-5-13	Coffin Butte
10-5-14	Rifle Range
10-5-15	Tampico Road
10-5-22	Forest Peak
10-5-23	Writsman Hill
10-5-24	Tampico Road
10-5-25	Glenders Hill
10-5-26	Soap Creek Road
10-5-27	Research Ponds
10-5-28	Writsman Creek
10-5-29	Kings Valley Ridge
10-5-32	Beldon Creek
10-5-33	Bakers Mountain
10-5-34	Soap Creek Schoolhouse
10-5-35	Nettleton Road
Tsp. 11 S., Rng. 5 W.: Soap Creek Valley southern headwaters	
11-5-2	Radio Hill
11-5-3	Vineyard Mountain
11-5-4	Lewisburg Saddle
11-5-5	Sulphur Springs
11-5-6	Cedar Grove
11-5-7	McCulloch Peak
11-5-8	Bakers Creek
11-5-9	Patterson Road
T - R - S	PLS Township S., Range WWM, Section No.
Landmark	1999 names and descriptions. See Maps 2 and 3.

Map 3. Soap Creek Valley and OSU land ownership patterns, 1990. This map shows OSU Research Forests in relation to Soap Creek Valley. Including agricultural lands, OSU is the largest landowner in The Valley. Numbers on the map correspond to landowners listed in Table D.4. Soap Creek Valley boundaries are outlined in dark red and homesite subdivisions less than 10 acres in size are shown with a gray dot pattern. Note locations of modern homesite subdivisions in comparison with pioneer claims shown on Map 2.



Geology and Climate

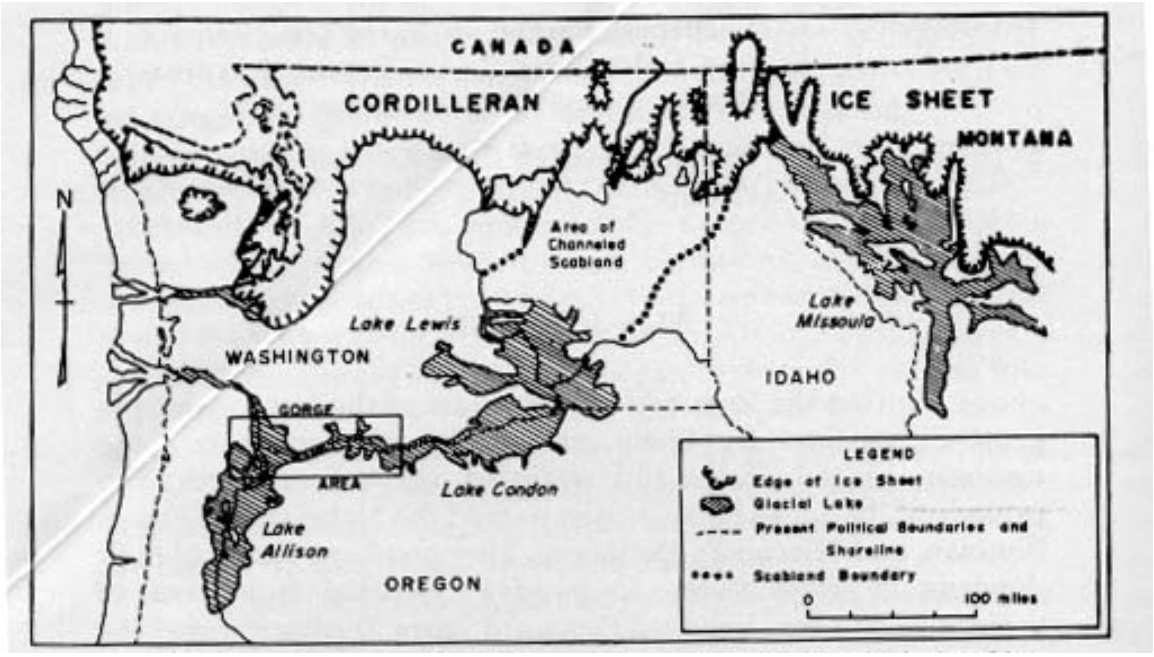
Coffin Butte is considered the easternmost boundary of the Oregon Coast Range within the Willamette River basin. This definition is the result of ancient Siletz pillow lavas that sharply profile the butte and western hills, ridges, and peaks of Soap Creek Valley above the Willamette's floodplain (Allison 1953). These basaltic hills and ridges are the easternmost result of undersea volcanic eruptions that occurred 40 to 55 million years ago (Orr, Orr, & Baldwin 1992). Subsequent volcanic eruptions have not been a direct factor in the development of Soap Creek Valley geomorphology or of forest cover patterns during historical times. For example, eruptions of Mt. Hood (Zybach 1996b) and Mt. St. Helens (Koenninger 1980) to the northeast of Soap Creek Valley during the past 250 years have had little apparent local effect. Some exceptions to this observation might be the secondary effects resulting from changed weather patterns caused by distant volcanic events (Bradley & Jones 1995), or the influences of volcanic ash on foliage or soil productivity (Franklin & Dyrness c.1988).

Kings Valley Ridge (Hanish 1994), to the immediate west of Soap Creek Valley and forming much of its western boundary, is a north-south ridgeline that rises nearly 2000 feet above Soap Creek and separates it from Kings Valley to the west. Continuing further west, across the Luckiamute River on Kings Valley floor, is another north-south ridge of Oregon Coast Range mountains. This second ridge is also higher than 2000 feet elevation and separates Kings Valley from the westerly drainages of the Yaquina and Siletz Rivers, which flow directly into the Pacific Ocean. The effect of the parallel ridgelines, both perpendicular to westerly Pacific Ocean winter storms that provide most moisture to Soap Creek Valley vegetation (Knezevich 1975), is to form a "double rainshadow" (Shumway 1981). Such effect is atypical for Oregon Coast Range valleys and helps explain why plants that prefer drier western Oregon climates, including oak, madrone and poisonoak, are common in Soap Creek Valley. And, conversely, why native Oregon Coast Range trees requiring substantial moisture, including western hemlock, redcedar, Sitka spruce, and black cottonwood, are absent or uncommon in The Valley.

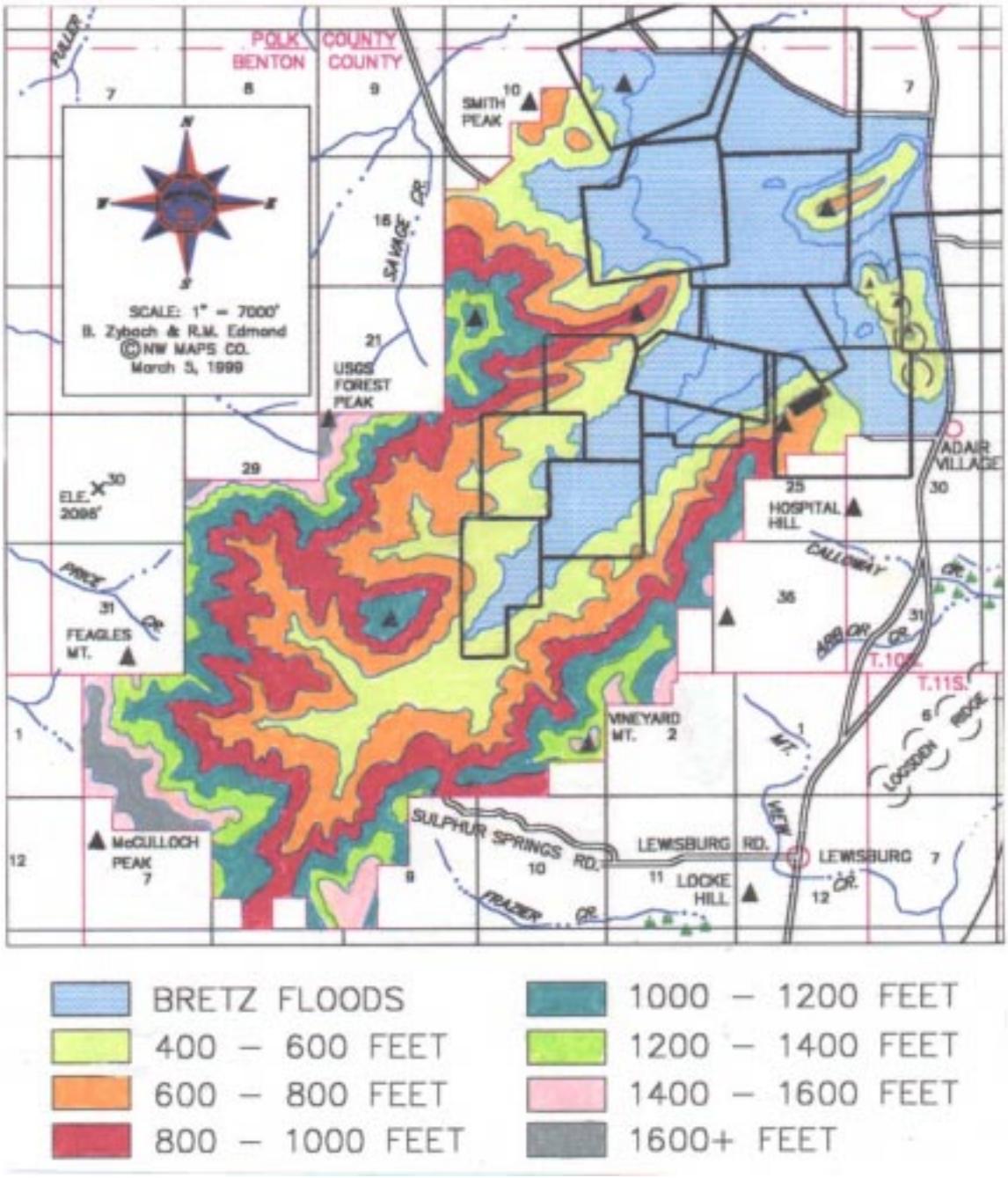
Topography and Aspects

Between 15,000 and 12,800 years ago, approximately 100 catastrophic floods coursed down the Columbia River and filled the Willamette Valley with ice, water, rocks, and soil (Allen 1984; Allen & Burns 1986; see Chapter III). Several, or all, of these events flooded the lower elevations of Soap Creek Valley and created expanses of flat and gently sloping "Willamette silts" (Allison 1953), which is common in much of the Willamette Valley. Map 4 shows the general area and extent of these floods. Map 5 shows the extent of flood soil and rock deposits in Soap Creek Valley relative to surrounding hills and ridges. Map 5 also shows the location of original pioneer land claims (see Map 2 and Table D.2) in relation to flood boundaries. The correlations between flood deposits, early settlement patterns, and current homeowner subdivisions (see Map 3 and Table D.4) form an important part of The Valley's history, as noted and shown in other sections of

Map 4. Extent of ice age floods in the Willamette Valley, 12,800 BP. This map (Allen & Burns 1986) shows the maximum Pacific Northwest extent of the Cordilleran ice sheet between 15,000 and 12,800 years ago. Floods resulting from the periodic draining of Lake Missoula resulted in the creation of several ephemeral lakes downstream, including Lake Allison, the name given to waters that filled the Willamette Valley (see Chapter III).



Map 5. Topography and ice age floods extent, 15,000 BP-1999. Elevations in Soap Creek Valley vary from more than 2000 feet to less than 350 feet above sea level. Area in blue shows land likely covered by "Bretz Flood" events (see Chapter III and Map 4) of 15,000 BP to 12,800 BP (Allen & Burns 1986). Largest floods likely made temporary islands of Coffin Butte and Tampico Ridge (see Map 2). A "bench" 400-600 foot elevation adjacent to the Bretz floodplain may be a partial effect of those events and bears significant prehistoric and early historical evidence of travel route and campsite use (Zybach, Sherer, & Sondenaa 1990). Dark lines indicate pioneer land claim boundaries of the 1840s and early 1850s (see Map 2).



this thesis. Likewise, the general correlation of OSU Research Forests' Paul M. Dunn Forest and McDonald Forest (see Maps 3 and 5) to The Valley's hills, peaks and ridges is also notable. In general, the floodplain has been dominated by residential development and agriculture during historical time, and steep or sloping lands have been used principally for livestock grazing and forestry (see Chapters III and V).

As shown on Map 5, Soap Creek Valley elevations vary from less than 350 feet near its northeastern entrance, to over 2000 feet at the summit of McCulloch Peak (see Map 2 and Table 2). Map 6 shows GIS-generated elevation layers of OSU properties in relation to the study area and Map 7 shows GIS aspect layers for the same properties. Most aspects are southerly or northerly, due to the east-west orientation of The Valley. As described by Anderson (1993), mapped OSU lands tend to resemble "a lopsided wing, the apex pointing east, a ridge line of hills and small peaks defining the V."

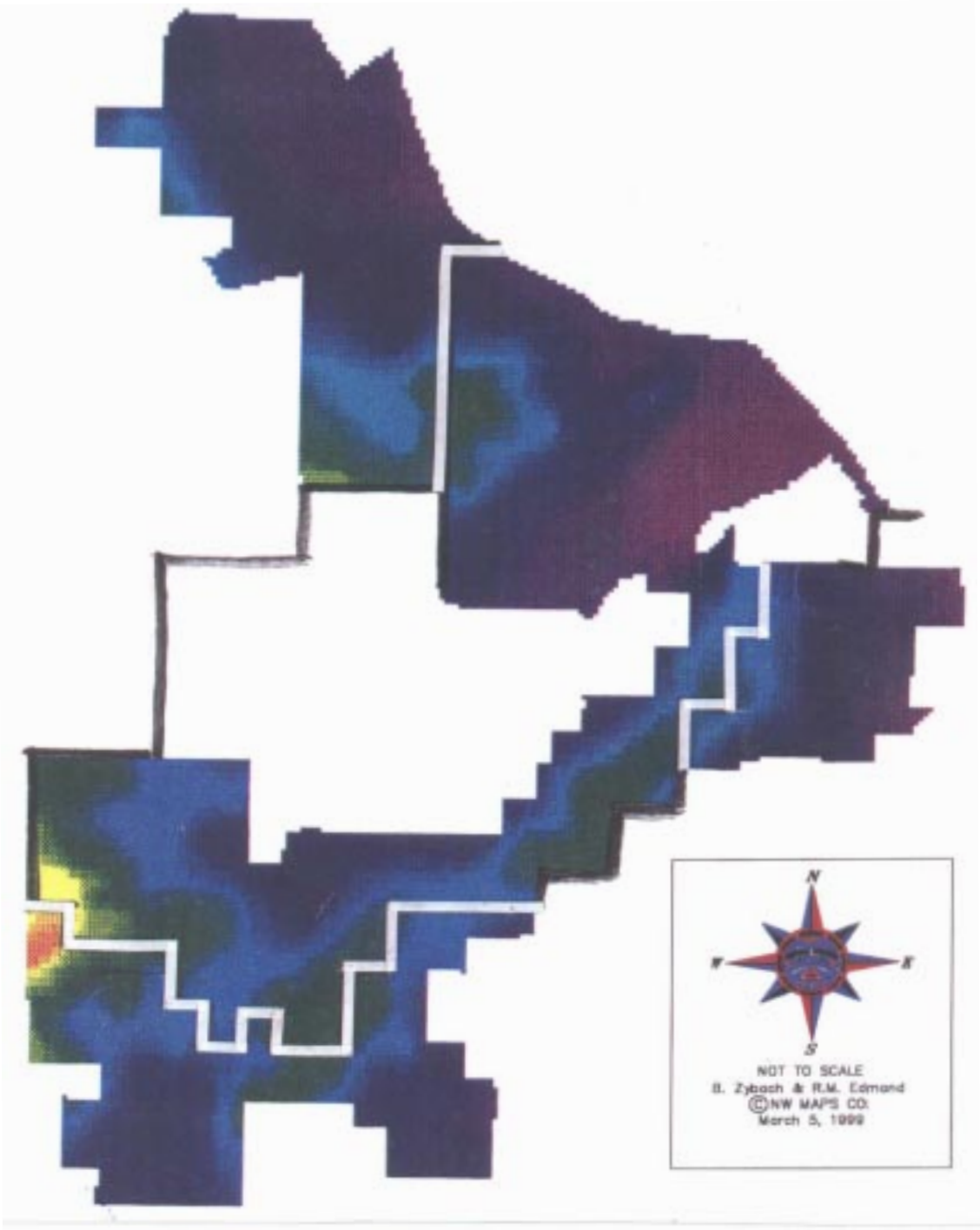
Destination of Surface Waters

Soap Creek enters the Luckiamute River from the south, several miles northeast of its Soap Creek Valley origin, near the Luckiamute's juncture with the Willamette River. The Willamette is the largest tributary to the Columbia River and enters it northwest of Portland, Oregon, about 90 river miles from its mouth on the Pacific Ocean (see Map 8).

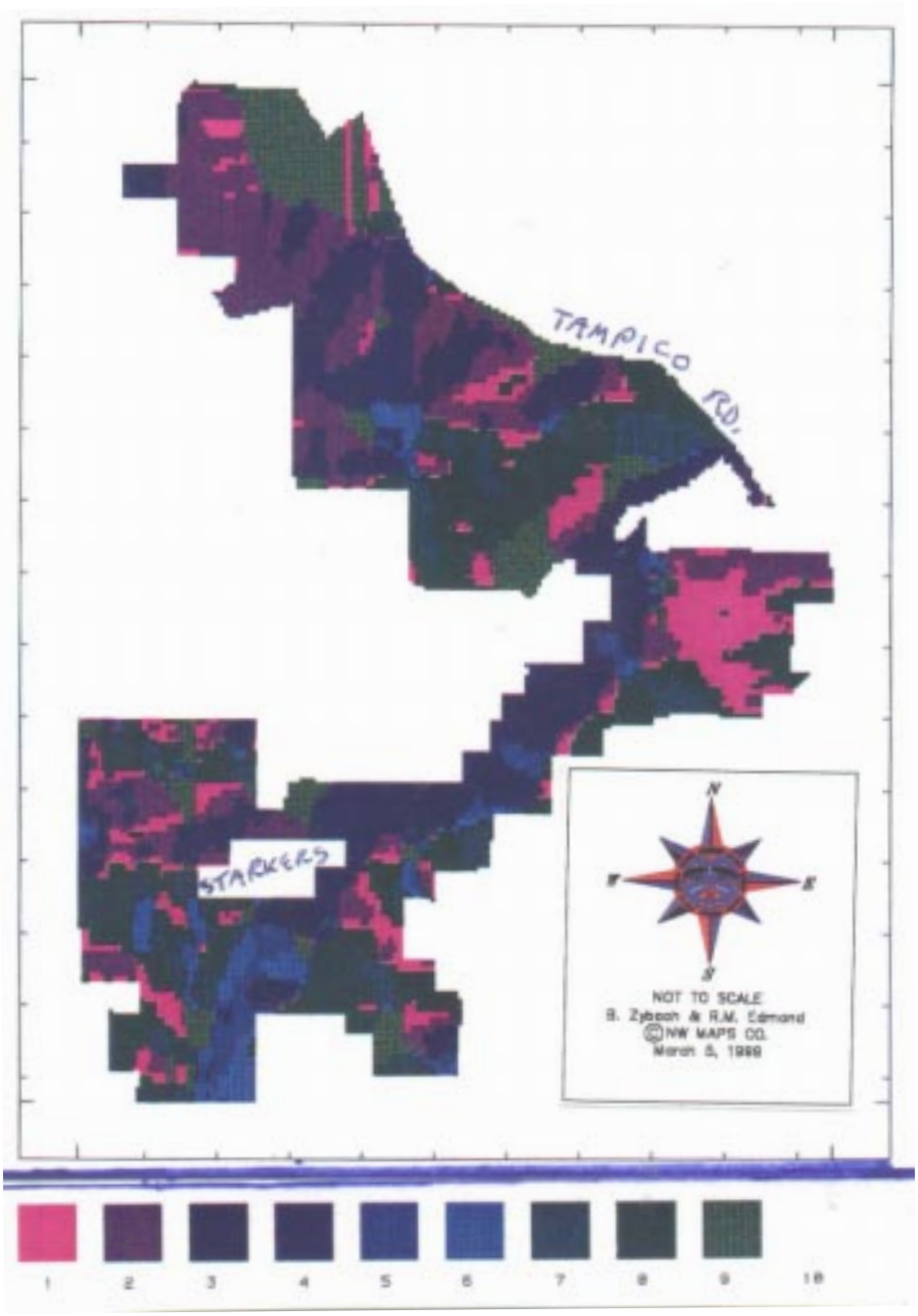
Threatened and Endangered Species

Soap Creek Valley is considered to be within the present range of a number of "threatened" or "endangered" species, as defined by the federal Endangered Species Act (ESA) of 1973 (Hogan 1998). Protected species include spotted owls (Gabrielson & Jewett 1940; FEMAT 1993; Rowley 1996), marbled murrelets (Nelson 1991; Gilligan, Smith, Rogers, & Contreras 1994), Fender's Blue Butterfly (Oregon Natural Heritage Data Base 1987; Zybach et al., 1990), Oregon chub (Altman, Henson, & Waite 1997; Mattson, Runyon, Fernald, Gallagher, Johnson, Snyder, Eden, & Zybach 1999), coho, steelhead, and chinook (Brinckman 1999);

Map 6. OSU Research Forests' GIS topographical layers. OSU Research Forests created a number of computerized GIS layers to provide opportunities for performing sophisticated analyses of forest cover patterns on OSU lands (Zybach et al., 1990; Johnson 1991: personal communication). This map is constructed from GIS-formatted elevational data. Compare these gradient measures of OSU Research Forests and College of Agricultural Sciences lands with Map 3 ownership patterns and Map 5 elevational polygons.



Map 7. OSU Research Forests' GIS aspect layers. The southwest to northeast orientation of Soap Creek Valley (Anderson 1993; Map 2), combined with significant silt deposits from Bretz Flood events (Maps 4 and 5) and current landownership/land use patterns (Map 3); creates a predominantly OSU-owned topography dominated by flats of agricultural lands and steep to sloping southern and eastern exposures of forestlands. The use of GIS to correlate elevation (Maps 5 and 6) and aspect to forest cover patterns (Chapters IV and V) provides a powerful and efficient tool for measuring and analyzing environmental change through time.
Map Legend. 1 = East; 2 = NE; 3 = North; 4 = NW; 5 = West; 6 = SW; 7 = South; 8 = SE; 9 = Flat; 10 = other property owners.)



although there is no indication that the latter three species have ever spawned or otherwise existed within its boundaries (Mattson et al., 1999). In late prehistorical and early historical time (1805-1845), Soap Creek Valley was within the range of several other plants and animals listed currently under the ESA, including timber wolves (Carey 1971), grizzly bears (Douglas 1905), western rattlesnakes (Storm 1941), and California condors (Gass 1904). Of additional resource management and political concern are groves of "old-growth" (more than 200-year old) Douglas-fir that exist in Soap Creek Valley (see Appendices F and G; OSU College of Forestry Forest Planning Team 1993). Local efforts to reserve these trees from logging activities have taken place in Soap Creek Valley, often unsuccessfully, for over twenty years (Rowley 1990: personal communication; Anderson 1993; Davies 1996).

Map 8. Destination of Soap Creek Valley surface waters to the ocean.