

## ROGUE RIVER DRAFT NAVIGABILITY REPORT

### Overview

This report has been prepared by the Department of State Lands (DSL) for public review and comment as part of the navigability study for the 89-mile segment of the Rogue River from Grave Creek at River Mile (RM) 68.5 to Lost Creek Dam at RM 157.5. The study segment runs through portions of Josephine and Jackson Counties. Additionally, it is either adjacent to, or within the city limits of Grants Pass, Rogue River, Gold Hill and Shady Cove.

This is the second report on this 89-mile segment of the Rogue River prepared pursuant to the requirements of Oregon Revised Statutes (ORS) 274.400 to 274.412 and Oregon Administrative Rules (OAR 141-121-0000 through 141-121-0040). It summarizes the evidence that DSL has collected and that was presented in the first draft report dated September 7, 2007 concerning the navigability of the study segment. In preparing this report, DSL considered information submitted to the agency during the public comment period that began on September 7, 2007 and ended on November 9, 2007 concerning the historical use and condition of the study segment.

The draft findings and conclusions presented in this report will be presented to the State Land Board ("Land Board" or "Board") on Wednesday, March 19, 2008, in Medford, Oregon. At that meeting the Land Board will invite testimony from all persons concerning:

- The accuracy and completeness of the information contained in the report, and
- Whether the evidence presented in the report concerning the historical use and condition of the Rogue River study segment meets the requirements of the federal test for navigability.

The public input presented to the Land Board during its March 19, 2008 meeting, as well that which DSL receives during the seven day public comment period that follows that meeting, will be used by DSL to prepare a Final Navigability Report.

Ultimately, the Land Board will make the final determination whether the Rogue River study segment is navigable and, thus, was one of the waterways that was conveyed by the federal government to the State of Oregon in 1859 when Oregon became a state. The Land Board's determination will be made pursuant to the requirements of Oregon Revised Statutes (ORS) 274.400 to

274.412 and Oregon Administrative Rules (OAR) 141-121-0000 through 141-121-0040, the same laws governing the conduct of this study. Federal law and court rulings establish the legal test for state ownership. This test is described in more detail later in this report.

If the Land Board determines that some or all of this 89-mile segment of the Rogue River is state-owned, it will declare the nature and extent of the state's ownership and provide notice of that declaration to all interested persons. That determination will be subject to judicial review under ORS 274.412.

## Organization of this Draft Navigability Report

For the convenience of the reader, this document is divided into the following five sections:

- **Section 1, “*The Elements of Navigability*”** describes navigability; what a navigability study is; and the federal test for navigability.
- **Section 2, “*Who Requested This Study and Why?*”** discusses who requested this navigability study and why the Land Board directed DSL to conduct it.
- **Section 3, “*Method, Evidence and Analysis*”** tells how this draft study was conducted; presents the evidence collected by DSL concerning the historical and current use and condition of the Rogue River study segment; and discusses the significance of the evidence.
- **Section 4, “*Proposed Draft Findings and Conclusions*”** presents DSL's draft findings and conclusions regarding whether the Rogue River study segment is navigable.
- **Section 5, “*References*”** provides references to the evidence cited in this report.

## Section 1: The Elements of Navigability

### • Background Information Concerning Navigability

Before presenting DSL's evidence concerning the historical use and condition of the 89-mile Rogue River study segment, an explanation of what “navigability” is and means, and how it is determined is important.

“Navigability” is a term commonly used to describe a broad group of issues that involve the public's use of waterways. It is used to describe this study – a “navigability study” – because the question has been raised concerning whether the state owns fee title to the waterway, in this case, the 89-mile Rogue River study segment. If the state does own the fee title to a waterway, the public is allowed to use it. However, certain private uses may require state approval.

The question of whether the state owns the fee title of a waterway is based on whether the waterway was “navigable-in-fact” in 1859 when Oregon became a state. The concept of navigability dates to English Common Law. Prior to the American Revolutionary War, the King of England owned all of the navigable waterways in England and within the original thirteen colonies. This ownership by the King included all of the land lying below the line of ordinary high water of the waterway, and was commonly referred to as the “beds and banks” of the waterway. The law provided that the natural and primary use of this land (which the King held in trust for the people in the colonies) was as a public highway for navigation and commerce.

After the American Revolution, the original thirteen states continued the principle of public ownership of the navigable waterways in their respective states subject only to the rights surrendered to the federal government through the United States Constitution. The rivers were vitally important as modes of transportation and for commerce. The original states continue to hold the title to this land in trust for the people.

The Equal Footing Doctrine is a critical element in a discussion of navigability. It requires that all new states own the navigable waterways within their borders. This doctrine was introduced as the federal government began to obtain land from which the future states would be formed. Under it, all new states entered the Union on an equal footing with the original thirteen states. The ownership of navigable waterways is considered a fundamental aspect of state sovereignty.

Therefore, although an area was still a territory, the federal government held the title to navigable waterways for the benefit of the people and in trust for the future states. When a new state entered the Union, the federal government conveyed navigable waterways to that state. To ensure that new states entered on an “equal footing” with the original states, courts construe federal patents to land issued in a territory prior to statehood as not conveying any interest in a navigable waterway unless there was an express statement of intent to do so. With few exceptions, the federal government reserved and then conveyed to each entering state title to the navigable waterways within that state at the time of statehood.

The Equal Footing Doctrine is implemented in part through each of the federal enabling acts, that is, the Admission Act that admitted a state into the Union. The act of Congress admitting Oregon into the Union in 1859 states in part:

*“Section 1. That Oregon be, and she is hereby, received into the Union on an equal footing with the other States in all respects whatever...”* and

*“Section 2 ...and said rivers and waters, and all the navigable waters of said state, shall be common highways and forever free, as well as to the*

*inhabitants of said state as to all other citizens of the United States, without any tax, duty, impost, or toll therefore.”*

Under the Equal Footing Doctrine the federal government conveyed title to all of the navigable waterways located within the state to the State of Oregon on the day of statehood in 1859. Thus, since 1859, the State of Oregon has generally been the owner of the beds and banks below ordinary high water of all navigable waterways in the state, and such waterways are common highways and forever free for use for trade and travel by the people.

#### • **What Is a Navigability Study and the Federal Test for Navigability?**

The purpose of a navigability study is to determine if a waterway was navigable at the time of statehood and, therefore, a waterway whose beds and banks the federal government granted to the state under the Equal Footing Doctrine.

The answer to the question of whether the 89-mile Rogue River study segment was conveyed to the State of Oregon at statehood depends on whether it was “navigable.” If the Rogue River study segment was not navigable in fact, then it was not conveyed to the State of Oregon at the time of statehood.

The test used to determine if a waterway such as the Rogue River study segment is navigable was established by the United States Supreme Court in 1871, and has been reaffirmed many times in state and federal courts. The test, often referred to as “the federal test for navigability,” is whether at the time of statehood (1859) the waterway:

- Was used or was susceptible to being used,
- In its ordinary and natural condition,
- As a highway of commerce over which trade and travel were, or could have been conducted,
- In the customary modes of trade and travel on water at statehood.

The federal courts have examined numerous waterways in the United States. Those cases outline some of the ways that a waterway may meet the criteria of the test. For instance, a waterway may be proven to have been navigable-in-fact by evidence of actual use at the time of a state’s admission to the Union, or by evidence that the waterway was susceptible to use at that time, or evidence of both actual use and susceptibility to use then.

The test does not require the use of any particular mode of trade or travel, nor does it depend on the use of any particular type of vessel as long as they were “customary” – in this case in 1859 at the time of Oregon’s statehood. Log drives may be one such mode of trade in a region. The use of canoes as a mode of travel by Indians is another. Log drives do not have to have been easy to conduct. Instead, they may have been done with considerable difficulty and

required the use of water released from splash dams. However, the waterway should be able to facilitate such a use on more than an occasional basis for that purpose. The use of the vessel on the waterway may be difficult and it need not be extensive.

Although they must be more than occasional, the courts have held that a use need not be long and continuous, and may be of a seasonal nature. Recreation and fishing are considered by the courts to be forms of commerce. A waterway will not fail the test simply because the region was not explored or settled before statehood.

A waterway will also not fail the test if there are no federal land survey riverside meander lines. The General Land Office left to the discretion of each contract surveyor whether or not to meander stream banks. When a surveyor subdividing a township clearly perceived a river or lake to be navigable, they meandered its banks. These lines were then used by the federal government in calculating the price that must be paid for the upland by the grantee of a federal land patent.

The federal courts have also addressed the types of factual information or evidence that is, or is not important for the test. Evidence of current use by drift boats, rafts, canoes, kayaks and other recreational watercraft may be persuasive where it is also demonstrated that vessels that were used at the time of statehood required similar depths of water, or that similar modes of travel were customary at that time. Where current uses are used to show that a waterway was susceptible of use at statehood, evidence of historical flow rates and channel conditions are used to show that the physical characteristics of the waterway have not changed appreciably since statehood.

## **Section 2: Who Requested This Study and Why?**

### **• Receipt and Consideration of Navigability Study Request**

To commence a navigability study process, the Land Board must find that there is either sufficient economic justification or a broad and substantial public interest to do so. By rule, the Land Board has established that a sufficient economic justification exists if it decides that a determination of navigability will result in revenue accruing to the Common School Fund from a use of the waterway or underlying land that is subject to authorization by DSL. The Land Board has also established that a broad and substantial public interest exists when a determination of navigability is required to:

- Help resolve conflicts between property owners, between users (including recreational users), or between users and affected property owners along a waterway segment;
- Facilitate management or protection of a waterway segment; and/or

- Facilitate and promote commerce.

In July 1997, Josephine County District Attorney Timothy R. Thompson submitted a written navigability study request to DSL for the Rogue River from Grave Creek to Lost Creek Dam. In his request, Mr. Thompson stated that the study was needed because:

*”Actual and potential conflicts between users and landowners are increasing in frequency and volatility. For example, property owners bordering the Rogue River are frequently faced with conflicts and disputes with members of the fishing or rafting public over access to land-based sites. As the pressure from development and commercial/recreational use of the river increases, these conflicts will increase. A primary source for the conflict is, in my judgment, related to the absence of a definitive interpretation of “navigability” on the middle and upper portions of the river. So long as the navigability of the river remains uncertain, the rights and responsibilities of the public and landowners remains uncertain.”* (Thompson, 1997)

Additional justification presented by Mr. Thompson included:

- *“Local courts in Josephine and Jackson Counties have had to address the issue [of the navigability of the Rogue River from Grave Creek to Lost Creek Dam] on an irregular basis.”*
- *“Law enforcement officers are continuously asked to enforce laws relating to claims and asserted rights which are unclear at best, throughout the entire middle and upper Rogue River.”*
- *“To the best of my knowledge, no definitive or binding decision has been rendered by either the appellate courts or any state agency charged with making such a determination. In the absence of such a study, the interests of landowners and a variety of other users remain in limbo and subject to inconsistent interpretations.”*
- *“The Rogue River between Lost Creek Dam and Grave Creek is subject to extensive commercial and non-commercial use.”* (Thompson, 1997)

After reviewing the navigability study request, DSL determined that it met the requirements stipulated in the administrative rules (OAR 141-121-0000 through 141-121-0040). In December 1997, DSL prepared a notice (available upon request) that it posted in local and statewide newspapers as well as mailed to landowners along the 89-mile segment of the Rogue River. This notice:

- Advised the public of receipt of the request, and
- Solicited public comment concerning the merits of the study and alternatives to conducting it.

At the February 10, 1998 Land Board meeting, an information item (available upon request) was presented by DSL summarizing the comments received in response to the notice. The Board did not take any action at that time concerning the study request. However, following this meeting, DSL forwarded a copy of the request to the Joint Legislative Interim Committee on Navigability for its review and recommendations. The Committee did not provide any comment on the navigability study request.

The Land Board took no further action on this navigability study request until December 2003. At that time, DSL reported that it planned to go before the Land Board in February 2004 with a recommendation concerning the study request. However, during the Board's discussion of this item, the question arose whether the then current District Attorney, Mr. Clay Johnson, believed that this study was still warranted. Pursuant to a request by the Board, DSL contacted him to seek his opinion on this issue. In response to DSL's inquiry, Mr. Johnson confirmed the continued need for the study stating:

*"I am in complete agreement with his [Mr. Timothy Thompson's] request for the study. The rights of the public, vis-à-vis the property owners along the Rogue River, is a significant issue in Southern Oregon and needs to be officially determined."*

Upon receiving this confirmation, DSL proceeded in early April 2004 to send a notice to approximately 2,000 landowners of record along the 89-mile stretch of the Rogue River for which the navigability study was requested advising them of the status of the study, and to let them know how they could obtain additional information concerning it and the topic of navigability in general. In response to this notice, DSL received additional input from the public which it presented to the Land Board at its June 8, 2004 meeting. At that meeting, the Land Board also discussed the merits of conducting this study and listened to comments made by District Attorney Johnson as well as several other persons. After some discussion, the Board decided that the decision of whether to direct DSL to conduct the study should not be made until the public was given more information concerning why such a long time had passed since receipt of the initial navigability study request from District Attorney Thompson in July 1997.

In August 2004, DSL again sent a letter to all owners of record along the study segment and other interested persons discussing the Board's action at its June meeting and addressing the question: *"Why the Rogue River now?"*

At the Land Board's October 2004 meeting, DSL presented a summary of the responses it received to its August letter and discussions it had with law enforcement concerning their recent experiences along the requested study segment. DSL also recommended at this meeting that the Land Board authorize DSL to undertake a navigability study of the Rogue River from

RM 68.5 to RM 157.5 based on the substantial public interest reflected in the study request, primarily in terms of resolving conflicts between property owners and users of the waterway segment, and in terms of facilitating management of the waterway segment. The Land Board also considered the relative importance of these issues as compared with other navigability study requests, the costs of conducting the study, and DSL's workload and funding. Based on DSL's recommendation, the Land Board directed DSL to undertake a navigability study of the Rogue River from RM 68.5 to 157.5. DSL then initiated this study pursuant to the Land Board's direction.

### **Prior Assertions of Title Navigability on the Rogue**

In 1975, the Oregon State Land Board, after considering evidence presented to it concerning the use and condition of the Rogue River, declared that the Rogue River from its mouth (RM 0.0) to Grave Creek (RM 68.5) was navigable for title purposes. In the minutes of this meeting, it was stated that:

*“Such a declaration would not declare the remainder of the river to be nonnavigable; a decision on that would be requested at another time.”*

It was also recorded that:

*“The Secretary of State moved that the Board officially take the position that the Rogue River is navigable from Grave Creek (about River Mile 69) to the mouth, and reserve the right to examine navigability of the River to at least Grants Pass. The motion was unanimously passed.”*  
(Minutes of Board Meetings, Land Department, 1975)

### **Section 3: Method, Evidence and Analysis**

#### **• Sources of Evidence Used in the Preparation of this Report**

DSL relied on a variety of sources to prepare the agency record and this report. Among the principal sources of information used were:

- The diaries and journals of early explorers;
- County Commissioner Journals;
- Historical society books, photographs and documents;
- Books describing the local and regional history of the Rogue River Basin;
- Newspaper articles and trade journals;
- Oral history interviews;
- Ethnographic studies;
- Geologic and engineering reports;
- The Oregon Water Resources Department's Water Availability Reporting System (WARS);

- United States Geological Survey (USGS) hydrologic data and geologic studies;
- A previous navigability study conducted in 1979 by James E. Farnell (Farnell, 1979);
- A research paper on the historical uses of the Rogue River written by Isaac B. Daniel (Daniel, 2006); and
- Reports and observations of current use by recreationists and law enforcement.

DSL also retained Stephen Dow Beckham, Ph.D., Professor of History, Lewis & Clark College, to critically review this draft as well as provide additional relevant historical information.

### • Geographic Markers

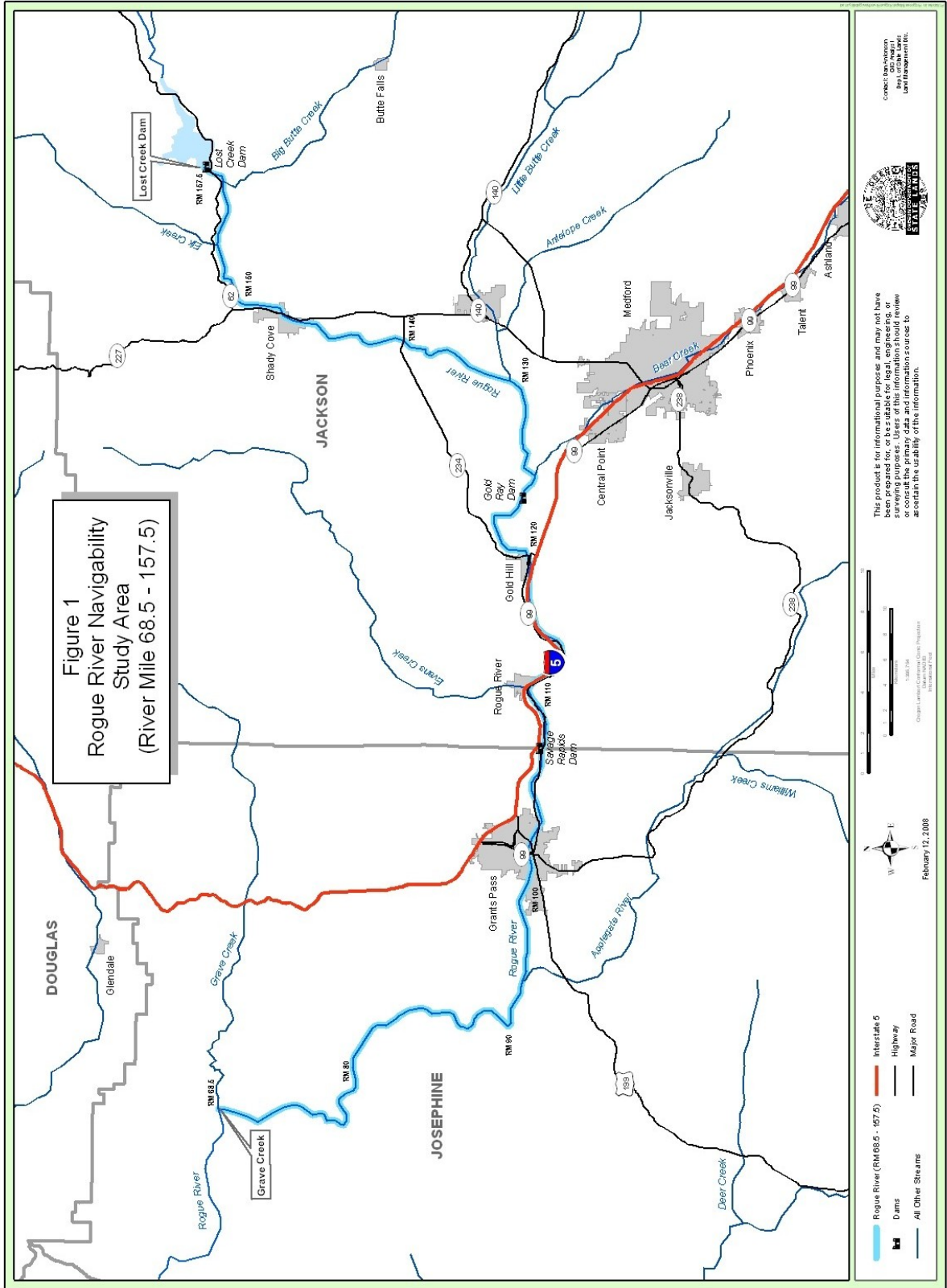
When discussing the history, physical characteristics and uses of the Rogue River study segment, it is useful to correlate specific physical features with approximate river mile points and vice versa. To provide regional perspective, physical features both within and outside of the 89-mile subject study area are listed on Table 1 and indicated on Figure 1 (a map showing the location of the Rogue River study segment).

<b>Mileage Location Points on the Rogue River</b>	
<b>Approximate River Mile (RM)</b>	<b>Adjacent Physical Features</b>
0.0	Gold Beach and confluence of the Rogue River with the Pacific Ocean
4.5	Head of tidal influence
11.0	Confluence of Lobster Creek and downstream limit of Lower Rogue River State Scenic Waterway and National Wild and Scenic Waterway
27.0	Agness and confluence of Illinois River
29.7	USGS Gauge #14372300
33.0	Illahee
45.0	Blossom Bar
47.5	Marial and Mule Creek
68.5	Confluence of Grave Creek and downstream limit of navigability study; WARS model flow point
72.0	Almeda mine
73.0	Rand
75.5	Galice
79.5	Hellgate Bridge
<b>Table 1 continued</b>	
82.5	Hog Creek and entrance to Hellgate Canyon

83.5	Confluence of Jumpoff Joe Creek
86.5	Robertson Bridge
95.0	Confluence of Applegate River; upstream limit of Lower Rogue River State Scenic Waterway and National Wild and Scenic Waterway; WARS model flow point
102.0	Grants Pass and USGS Gauge #14361500
104.0	Former site of Ament – Golden Drift Dam
107.5	Savage Rapids Dam
110.5	Confluence of Evans Creek
111.0	Rogue River
114.5	Interstate 5 bridge
117.0	Rock Point
119.5	Gold Hill
123.0	Sams Creek
125.5	Gold Ray Dam
126.0	USGS Gauge #14359000; WARS model flow point
126.5	Confluence of Bear Creek
131.0	Table Rock Road Bridge
131.5	Tou Velle State Park
132.5	Confluence of Little Butte Creek
138.5	Dodge Bridge
146.0	Shady Cove and confluence of Indian Creek
148.5	Trail and confluence of Trail Creek
152.0	Confluence of Elk Creek
154.0	USGS Gauge #14337600; WARS model flow point
155.5	McLeod and confluence of Big Butte Creek
157.5	William L. Jess (Lost Creek) Dam and upstream limit of navigability study
162.0	Peyton
164.0	Laurelhurst area
167.0	Confluence of South Fork of the Rogue River
169.0	USGS Gauge #14330000
171.0	Prospect and confluence of Mill Creek
173.0	Downstream limit of Upper Rogue River State Scenic Waterway and National Wild and Scenic Waterway
186.5	Confluence of Union Creek
215.0	Boundary Springs (source of the Rogue River); boundary of Crater Lake National Park; upstream limit of Upper Roger River State Scenic Waterway and National Wild and Scenic Waterway

Note: The shaded area in this table contains the physical features within the 89-mile Rogue River navigability study segment.

The 1980 Oregon Water Resources Department's Rogue Drainage Basin Map was used as the basis for locating the physical features listed above. Where a physical feature occurs between two mileage points, the RM given is rounded to the nearest one-half mile point.



### • Feature and Place Names

The Rogue River has been called numerous other names over time. Therefore, it is useful to know when reviewing historical maps and journals what names have been applied to the waterway in the past to distinguish it from other physical features.

- “**Trashit**” – the name given to the Rogue River by the Indians.
- “**La Riviere aux Coquins**” – the name given by early French-Canadian trappers referring to their perception of the Indians in the area as being mischievous or malicious.
- “**Gold River**” – the name established by the Territorial Legislature in 1854.
- “**Rogue**” – the name established by a subsequent act of the Territorial Legislature in 1855 (McArthur, 2003).

Additionally:

- References in the literature variously refer to the dam and site located at RM 125.5 as being called **Gold Ray, Ray Gold** or **Raygold**. The dam constructed at this site by Col. Frank Ray was, and continues to be named Gold Ray. However, the Southern Pacific Railroad named the station near the dam Ray Gold to avoid confusion with the town of Gold Hill (McArthur, 2003). The USGS refers to its gauge at this location as “Raygold.”
- In 1997, **Lost Creek Dam** was renamed the **William L. Jess Dam and Intake Structure** by Congress. Consequently, this dam may be called by either name in the literature depending on the date of the reference. However, in this study, this structure will be referred to by its better-known, former name: Lost Creek Dam.

### • Physical Characteristics of the Rogue River

From a descriptive standpoint, the Rogue River:

- Is 215 miles long;
- Drains an area of 5,169 square miles, which is approximately 5% of the total land area of Oregon;
- Is topographically bounded to the north by the Rogue-Umpqua Divide; to the east by the Cascade Mountains; to the south by the Siskiyou and Klamath Mountains, and to the West by the Klamath Mountains and the Pacific Ocean;
- Originates from Boundary Springs at an elevation of 5,250 feet on the western side of the Cascade Mountains near the north boundary of Crater Lake National Park, and ends upon its confluence with the Pacific Ocean;
- Is fed by eight principal waterways: the Illinois River, the Applegate River, Bear Creek, Little Butte Creek, Trail Creek, Elk Creek, Big Butte Creek and the South Fork of the Rogue River (into which flows the North Fork of the

Rogue River). Additionally, the Rogue River also receives the flow of more than 2,500 other streams, only about one-half of which are named (Oregon Water Resources Department, 1985);

- Is often divided into three major geographic segments based primarily on the configuration of the waterway and the topography through which it flows:

*Boundary Springs (RM 215) to Shady Cove (RM 146)*

The waterway in this segment (which is in what is often termed the “Upper Rogue River Basin”) varies markedly in width from a small creek near its source as much as 150 to 200 feet wide near Shady Cove. For most of the 69-mile distance, the waterway is confined to narrow steep-walled canyons within the Cascade Range.

Over the 69-mile segment from Boundary Springs to Shady Cove, the Rogue River falls nearly 4,000 feet from an elevation of 5,250 feet to 1,295 feet, giving the river an average gradient of approximately 57 feet per mile.

*Shady Cove (RM 146) to Robertson Bridge (RM 86.5)*

This segment of the Rogue River consists of three major physiographic settings. As the river flows south from Shady Cove, it is characterized over a distance of approximately 25 miles by numerous meanders along a generally flat valley floor. In the vicinity of Gold Hill, it becomes confined to the bottom of a relatively open, often narrow valley until it reaches Grants Pass. From there to the Robertson Bridge, the Rogue River again occupies a generally unconfined valley floor, and in places shows evidence of past meanders. Over this 59.5-mile segment, the river’s width typically ranges from 150 feet to 250 feet wide. However, in places it can exceed 300 feet in width.

Over this segment, the Rogue River drops from 1,295 feet to 847 feet above sea level which gives it an average gradient of approximately 7.5 feet per mile.

*Robertson Bridge (RM 86.5) to the Pacific Ocean (RM 0.0)*

Downstream from the Robertson Bridge, the Rogue River flows through increasingly steep, narrow canyons within the Klamath Mountain Range. The width of the river through this segment varies greatly. In the vicinity of the Robertson Bridge, the Rogue River is on the order of 250 feet wide. However, after entering Hellgate Canyon (RM 82.5), its width narrows considerably and in numerous places along its route to the Pacific Ocean is less than 100 feet across. From approximately Illahee (RM 33) until the river approaches the Pacific Ocean, the width of the Rogue River and the canyons through which it flows widen markedly.

Over this 86.5-mile segment, the Rogue River loses 847 feet of elevation, giving it an average gradient of approximately 10 feet per mile.

### • **Geologic Setting of the Rogue River**

The Rogue River flows through some of the most geologically complex and diverse terrains in Oregon. Consequently, the topography as well as the course and general configuration of this waterway change throughout its 215-mile length in response to the varying types of rocks and geologic structures over which it flows.

Two major geologic provinces are drained by the Rogue River: the Cascade Mountains and the Klamath Mountains. The southern Cascade Mountains consist primarily of andesite, dacite, rhyodacite and basalt flows deposited during two periods of repeated, geologically recent eruptions.

The first period of mountain building occurred from the Eocene to the mid-Miocene (approximately 42 million to 10 million years before present) as a result of an extended period of continuing volcanic eruptive activity (Orr et al., 1992; Orr and Orr, 1996). During this period, thick flows of basalt, diorite and andesite, as well as pyroclastic material from ancient volcanoes were deposited to create what is termed the "Western Cascades."

About 10 million years ago, a second period of volcanism (from the mid-Miocene to present) followed this initial mountain building and formed the "High Cascades." It was at this time that Mount Hood, Mount Thielsen, Mount Mazama, Mount McLoughlin and the other major Cascade volcanoes seen today in Oregon, Washington and California developed. Accompanying this volcanic activity were the folding, faulting and uplift of the older Western Cascades as well as the intrusion of these formations by granitic rocks.

During the Pleistocene (1.8 million to 10,000 years ago), glaciation scoured many of the major peaks in the Cascades. Approximately 7,000 years ago, Mount Mazama exploded and collapsed, sending clouds of ash and fiery fragments of rock that were deposited throughout the Pacific Northwest. Within the past several hundred years, volcanic activity has formed numerous cinder cones and basalt flows that are found throughout the Cascades.

The Klamath Mountains consist primarily of large segments of rock, termed "terrane," that originally formed in an open ocean or coastal environment and then collided with, and became welded to the North American continent through plate tectonics. As the result of their collision with the continental landmass and intrusion by granitic rocks, these accreted terranes have been intensively folded, faulted and metamorphosed.

Interestingly, the rocks forming the Klamath Mountains are not only among the most diverse in Oregon (consisting of ophiolites, quartzites, gabbros, greenschists, amphibolites, shales, sandstones and basalts) but may also be some of the oldest in the state (having originally formed in the Mesozoic Era (sometime between 248 to 65 million years before present).

Following the emplacement of the terranes forming the Klamath Mountains, the area was uplifted during the Miocene (23.8 to 5.3 million years before present) and subjected to extensive erosion. During the Pleistocene, glaciers eroded parts of the region significantly modifying the landscape and depositing large amounts of sediment throughout the area, particularly in valley bottoms.

• **What Was The Physical Character of the Rogue River Study Segment in the 1800s to Early 1900s?**

Because the federal test for navigability requires an examination of the actual use and the susceptibility to use of the Rogue River in its ordinary and natural condition at the time of statehood, it is important to know what the physical character of the study segment of this waterway was in 1859. Several sources of information exist that have been used for this purpose including the journals, diaries and reports of early explorers, oral histories, geologic reports, and cadastral survey maps and notes.

The following section presents observations of the Rogue River study segment made in these documents.

**Journals of Members of the United States Exploring Expedition (1841)**

In late September 1841, George Colvocoresses, a member of the United States Exploring Expedition (or more commonly and hereafter referred to as the Wilkes Expedition) described the Rogue River in the vicinity of Grants Pass as:

*“We passed, on the last of these days, Tootootuntnas [Rogue] River, another beautiful stream, upwards of one hundred yards in width, and abounding in salmon and other fish.”* (Colvocoresses, 1852)

William Brackenridge, also a member of the Wilkes Expedition, wrote of the Rogue River in the same area:

*“Left our encampment on Rogue River at 8 A.M. its breadth I estimated at 120 yards: 2 feet deep: banks generally low and bushy. The land on both side for a considerable distance back is poor and sandy rising into hills 6 to 800 feet high, thinly covered with Pine trees.”* (Brackenridge, 1931)

### **Journal of James Clyman (1844)**

In 1844, James Clyman, a frontiersman, explored western Oregon and northern California. While in Oregon, he spent time along the Rogue River upstream of Grants Pass. In his journal entry for June 21, 1844, Clyman described the Rogue River at that point as:

*"...about 100 yards wide running Rapid over a generally rocky Bottom the country we passed over was generally hard and dry the valley narrow and uneven."* (Clyman, 1984)

### **Journal of Captain Thomas Jefferson Cram (1859)**

Capt. T. J. Cram of the Topographical Engineers, U.S. Army Military Department of the Pacific, said of the Rogue River in his report of 1859 that:

*"With the exception of the Coquille and Umpqua, the rivers represented on Map No. 9 [which covered an area extending from Crescent City to Reedsport and inland to approximately Grants Pass] are not at all navigable except for canoes being generally of rapid current, rocky beds, and in many places running through deep canons."*

He also stated:

*"This river [the Rogue], coming from the west slope of the Cascade range, is of rapid current, and only navigable even for canoes in a few of its reaches. Its lower half is full of rapids and canons. It has no considerable valley until we get some 40 to 60 miles above its mouth; and then we come to a beautiful and fertile one, of only about 30 miles in extent, however; it is this that is called the Rogue River valley, in which is situated Fort Lane. Great difficulties are in the way of opening a road or passing from the mouth of the river up to this valley..."* (Cram, 1859).

### **Reports of G. L. Gillespie and Philip G. Eastwick (1879)**

In 1878, Philip Eastwick, Assistant Engineer, United States Army, was directed by the Major of Engineers, U.S. Army, to conduct "a hasty examination" of "the general character of the stream [Rogue River] and the agricultural and mining resources of the country traversed by it." In his report Eastwick described his trip down the Rogue from Evans Creek (RM 110.5) to its mouth. Upon arriving at Rock Point (RM 117) in mid-December, he had a boat constructed at Evans Creek which he used to explore the waterway to a point in the vicinity of Missouri Bar (RM 52) where, at that point:

*“...in lowering the boat over the rapids, it was carried away by the strong current, and wrecked on a rock in the river a short distance below...”*  
(Eastwick, 1879)

From there, Eastwick walked the rest of the way to the mouth of the Rogue.

In describing the river from Rock Point to Green’s Bend (now known as Finley Bend at RM 91), Eastwick wrote:

*“...I passed over 33 rapids, many of them, however, showing as such only at the low state of water prevailing at the time of the examination [December]. A remarkable feature of the river-bed is the entire absence of loose gravel or sand bars. This is no doubt due to the effect of the very strong current which prevails in the river at the time of the freshets, the volume of water and intensive of the current at such times...”* (Eastwick, 1879)

Eastwick described the segment of the Rogue from Green’s Bend to a point termed “Big Bend” (approximately six miles upstream from the confluence of the Illinois and Rogue Rivers near the present location of Illahee at RM 33.0) as:

*“...a rapidly-falling mountain stream. It is with very few exceptions narrow, rarely exceeding 150 feet in width, and frequently narrowing down to a width of from 25 to 50 feet; the waters in the narrows pouring with great velocity and rapid fall through the gorges. The fall of the river is, as may be expected, very great, though occasional long and slackwater levels are met with, more especially in the close canons, where, in some cases, the river being very deep, the current was scarcely perceptible.”*

He further stated that:

*“Entering this division of the river at Green’s Bend, the cement-gravel of the river bed rapidly disappears, occasional and extensive gravel-bars are met with, and these in turn disappear, the mountains closing in upon the river forming an almost continuous canon for the balance of the distance, the walls of the canon being very frequently of barren rocks rising in places perpendicularly to a height of several hundred feet...”*

### **Reports of Thomas W. Symons and Francis R. Shunk (1892)**

In 1892, 1<sup>st</sup> Lt. Francis R. Shunk of the U.S. Army Corps of Engineers conducted a preliminary examination of the Rogue River from Grants Pass to its mouth for the purposes of determining if that segment of the waterway was “*worthy of improvement by the General Government.*” In describing this segment of the waterway, Shunk referred to the description prepared by Eastwick in 1879 “*...to which I have little to add.*” (Shunk, 1892)

Shunk also contended in his report that:

*"I do not regard the Rogue River as worthy of improvement. Navigation as far as Grants Pass [from the Pacific Ocean] is, I think, out of the question."*

### **Cadastral Survey Maps and Notes (1854-1919)**

The maps and notes taken by surveyors conducting their cadastral, that is, land surveys of the Rogue River between 1854 and 1919 indicate that they believed the waterway was a navigable stream from approximately three miles upstream of Illahee (RM 36) to four miles upstream from Shady Cove (RM 150). They did this by meandering both banks of the Rogue River along this 114-mile segment of the waterway. Consequently, it appears that all but the upper 7.5 miles of the study segment was considered by the surveyors to be navigable.

In their field notes, the surveyors gave the following descriptions of the Rogue River study segment:

- In the vicinity of Galice (RM 75.5):  
*"The township is well watered by the Rogue River, which runs through the eastern and northern portions and by many branches and springs. Rogue River is very deep and treacherous, flowing through solid rock as it does in many places it forms many places of rare scenic beauty."* (Campbell et al., 1884 and 1917-1919: from survey notes taken during the period September, 26, 1917 through September 9, 1919)
- In the vicinity of Limpy Creek (RM 92):  
*"Rogue River runs through this township from the S.E. to the N.W. and enters a rocky canyon and high broken Mountains in Section No. 14. The most of the township lies west of the river and with the exception of a Small portion in the S.E. corner, lying on the river & Jump-off Jo Creek; is entirely unfit for settlement."* (Lake and Hyde, 1856: from survey notes taken March 31, 1856)
- In the vicinity of Rogue River (RM 111):  
*"The River through this township has a strong deep Current, & uniform width. The Banks are mostly steep & from 10 to 25 feet high. Open Timber along the River."* (Ives et al., 1855 and 1883: from survey notes taken July 30, 1855)
- In the vicinity of Table Rock (RM 130):  
*"The River through this Township has most the way a uniform width & a strong deep current, in many places rapid, water, Stoney bottom, is fordable in only one or two places at low water, the Banks are from 5 to 15 feet high & most of the way subject to overflow during freshets. The Banks are skirted with Timber."* (Ives and Hyde, 1854-1855a: from survey notes taken on December 25, 1854 and January 16, 1855)
- In the vicinity of Dodge Bridge (RM 139.5):  
*"The River Bank are from 5 to 10 feet high and are Subject to Overflows, the current in the river is gently rappid with Rock & Gravel bottom Water from 3 to*

*10 feet deep. The Mountain Streams dry up in the Valley in the Summer Months.*" (Ives and Hyde, 1854-1855b: from survey notes taken on December 25, 1854 and July 30, 1855)

- In the vicinity of Shady Cove (RM 146):  
*"Nearly all the small streams either dry up or sink, in the summer season."*  
 (Ives and Hyde, 1853-1854: from survey notes taken on December 25, 1854 and July 30, 1855)

### **Other Early Maps (1830s to 1900s)**

Numerous maps other than those prepared during the cadastral surveys exist depicting the Rogue River both prior to and since statehood. However, the accuracy of most of these maps and their usefulness to determining the historical configuration of the Rogue River varies greatly based on when the map was made and what stretch of the waterway it covered.

Most of the maps examined by DSL published prior to the 1840s only present a general approximation of the location of the Rogue River. It was not until the mid-1850s that mapmakers began to better understand the overall configuration of the entire waterway and its relationship to adjacent physical features.

Not surprisingly, the first section of the waterway to be depicted with a reasonable degree of accuracy is that which flows through one of the areas first settled – specifically along the 46-mile stretch from approximately Trail to Grants Pass (RM 148.5 to 102.0). With increasing exploration and settlement, more accurate maps showing the lower and upper reaches of the Rogue River began to be published in the early 1900s.

Despite these limitations, useful information can be obtained from early maps concerning the historical course of the Rogue River study segment and how it may have changed over the past.

Among the first maps indicating a waterway in approximately the same location as the Rogue River were two created in the 1830s. On one of these maps is a waterway called the "Claymouth R."; on the other a similar waterway is termed the "Clamet R." (Irving, 1837; Parker, 1838)

The first map known to specifically call the waterway "Rogue" was prepared in 1838 by Washington Hood of the U.S. Corps of Topographical Engineers (Hood et al., 1838). On this map, a waterway shown in the general location of the Rogue River is labeled the *"Rouge Calmet R. or Too-to-nez or Mc Leods R."* Interestingly, at the time this map was prepared, it was believed that the main stem of the Rogue/Calmet River flowed into eastern Oregon following a course similar to that of the Klamath River. It was also thought by some mapmakers that two tributaries called the Nasty River and the Shasty River joined together to flow into the Rogue/Calmet River.

Following the publication of Hood's map, a number of other maps were produced that also indicated these same features and orientation of the Rogue River (Greenhow, 1840; Wyld, 1843; Ringgold, 1844).

In 1841, Charles Wilkes led a scientific expedition funded by the United States Congress. During his expedition's visit to the Pacific Northwest, he prepared a map that for the first time shows in a very general way the current configuration of what was then labeled the "Rogues River." Also indicated on this map are for the first time two unnamed waterways that appear to be the Illinois and the Applegate Rivers (Wilkes, 1841).

In the early 1850s, the Rogue River was depicted on an increasing number of maps. However, the degree of accuracy concerning the configuration of the waterway as well as what it was called continued to vary greatly. In many instances, it appears that a number of the depictions of the waterway and the names given to it by mapmakers were premised on, or interpretations of previously published maps. Therefore, these maps did little to provide more accurate renditions of the course of the waterway.

It was not until 1856, with the publication of a map of Oregon and Washington west of the Cascade Mountains, that a considerably more accurate depiction of the entire course of the Rogue River and the location of many of its tributaries was published (Preston et al., 1856). Of particular significance regarding Preston's map is that a comparison of his depiction of the course of the Rogue River between the confluence of Jumpoff Joe Creek (RM 83.5) and the confluence of Big Butte Creek (RM 155.5) with maps in current use indicates that general the course of this segment of the waterway has not changed appreciably since shortly before statehood.

In 1858, the General Land Office prepared two maps of the Rogue River, one of which depicted the topography along much of the length of the river, and the other map which showed parts of the public land survey grid. However, neither of these maps provided more than a general representation of the course of the Rogue River study segment and are, for the most part, inaccurate with regard to the configuration of the other segments of the waterway.

These publications were followed in 1859 by a military map of the State of Oregon and Washington Territory compiled by the Bureau of Topographical Engineers. Although this map improved upon prior mapping efforts, it is too small of scale to be of more than limited use in determining if any significant changes have occurred since statehood in the course of the Rogue River as it flows through the study segment.

During its search for maps depicting the Rogue River, DSL found many others that were published during the 40-year period following the 1860s. However, not

until the 1900s (well after statehood) did the first maps that were not a part of the cadastral survey appear which accurately depicted the entire course of the Rogue River – particularly that segment from Grants Pass to the Pacific Ocean.

Among the maps prepared in the early 1900s of particular interest are those contained in a 1932 USGS report discussing thirteen future dam sites on the Rogue River study segment. These maps can be used to obtain a sense of what changes, if any, have occurred in topography of parts of the waterway since this study was prepared (Jones et al., 1932). Included in this report are:

- Maps showing topographical cross sections at each of the proposed dam sites; and
- Flow data for each of the thirteen possible, and four then-completed dams (Prospect, Raygold, Gold Hill and Savage Rapids) on the Rogue River study segment (which will be discussed later in this section).

### **• Changes to the Rogue River Since Statehood**

A comparison of the early cadastral maps of the Rogue River with the most recent topographic maps prepared by the United States Geological Survey indicates that with some exceptions, relatively little change has occurred since the mid-1850s and early 1900s in the general course of the waterway along much of the study segment. The most significant changes noted in this comparison consist primarily of meanders that have occurred on valley floors along the following stretches of the waterway:

- In the vicinity of the confluence of the Applegate River with the Rogue River;
- For several miles upstream of Gold Ray Dam;
- Around the confluence of Butte Creek; and
- For a three-mile stretch south of Shady Cove.

Along the remaining segments of the Rogue River within the study area, the waterway was, and continues to be generally confined within canyons and unable to meander.

Since 1859, three major activities have impacted the configuration and flow of the Rogue River both within, and beyond the study segment:

- The construction of numerous dams beginning in the late 1800s throughout the Rogue River Basin to obtain water for gold mining, log driving, municipal and domestic use, and for flood control, irrigation and power generation;
- The withdrawal of water directly from the Rogue River for irrigation, municipal and domestic uses; and
- The removal of boulders and other obstacles from the bed and banks of the Rogue River by Glen Wooldridge beginning in 1914 to improve the floatability of the waterway from Grants Pass to the Pacific Ocean.

Of these three activities, the one having the greatest impact on the flow and configuration of the Rogue River since statehood is the construction and operation of dams both on the Rogue River and its tributaries.

The first dam constructed on the Rogue River was built in the late 1880s or early 1890s in Grants Pass. The purpose of this dam was to provide water and power to the city. According to Glen Wooldridge, this dam was constructed using *“cribbed fir poles, filled with rocks”* which were *“barged down from the White Rocks area, east of town, using pike poles to move the barges up and down the river.”* (Arman and Wooldridge, 1982) No other information was found during this research concerning this dam, nor is it known when or how it was removed.

The second dam built across the Rogue River was constructed by C.W. Ament between 1901 and 1904 in the vicinity of what is now Tom Pearce Park (RM 104). The primary purpose of this 20-foot high, 650-foot long dam, variously called either the Ament or Golden Drift Dam, was to provide water for the Dry Diggings mine. Additionally, this dam was used to divert water to Grants Pass as well as to farmers in the area (Carlson, 1984). Because this structure was a major obstacle to fish passage, it was removed in 1921 (Oaks, 1998).

The third dam to be constructed on the Rogue River was the Savage Rapids Dam located just upstream of Grants Pass at RM 107.5. Completed in 1920, this 30 to 39 foot high, 456-foot long dam was originally built by private interests but is now owned by the Grants Pass Irrigation District. Its primary purpose has been to divert water from the Rogue River for irrigation purposes. The dam's reservoir (with a storage capacity of 1,500 acre feet of water) extends for approximately 2.5 miles behind the structure during irrigation season, and for one-half mile the remainder of the year. Because of the dam's impacts on fish passage, it will be removed following the completion of a new irrigation pumping station now under construction adjacent to the site of the dam. Complete removal of the Savage Rapids Dam is expected by 2010.

The Condor Water & Power Company constructed the Gold Ray Dam (RM 125.5) between 1902 and 1904 using logs *“...bolted into the riverbed, and strengthened by cement to provide extra strength.”* (Genaw, 1988; Davis, 2004) In 1921 this dam became an asset of the California-Oregon Power Company (now PacifiCorp). In 1941, the original log dam was replaced with the 37-foot high, 400-foot long concrete structure currently in place (Davis, 2004). The original purpose of this dam was to produce electricity for what were then the sawmill at Tolo and many mines in the area. However, the Gold Ray Dam is now only used to provide water for irrigation and is currently being considered for future removal. It has a storage capacity of 100 acre-feet of water.

The Gold Hill Diversion Dam was reportedly first built in the early 1900s on the Rogue River at RM 120 by Jesse Houck, owner of the Rogue River Milling Company (Davis, 2004). In 1914, the dam appears to have been reconstructed

to its present 8-foot height and 1,000-foot length and new generating equipment installed. This dam was originally constructed to generate power for local industries and the City of Gold Hill. However, it was later also used to divert water for use by the City of Gold Hill. The reservoir behind the dam is approximately 350 feet wide and one mile long, and contains 100 acre-feet of water. In 1973, the dam's generating plant was abandoned. Demolition of this dam is scheduled to begin in mid-2008 (Ashland Tidings, 1914 and 1915b; Medford Mail Tribune, 1999 and 2007).

The two largest dams currently affecting the flow of the Rogue River are the Lost Creek (William L. Jess) Dam at RM 157.5 on the Rogue River at the upper end of the study segment, and the Applegate Dam at RM 46 on the Applegate River (a major tributary of the Rogue River). The numerous major floods that have often occurred in the Rogue River Valley, particularly that of 1955, prompted the authorization of these two dams.

The Lost Creek Dam was constructed in the mid-1970s by the U.S. Army Corps of Engineers (USACE) primarily to provide water storage for flood control and irrigation. This 248-foot high, 1,078-foot long gravel embankment dam also has a powerhouse with two generating units having a combined nameplate capacity of 49 megawatts (MW). It is able to store 315,000 acre-feet of water.

The Applegate Dam, also constructed by the USACE, was completed in 1980. This 242-foot high, 1,994-foot long gravel embankment dam was designed primarily for flood control and irrigation purposes and has the ability to store 75,200 acre-feet of water. A powerhouse capable of generating 10 MW is being planned for construction at this dam.

A third major dam was started in 1986 on Elk Creek, a tributary of the Rogue River, to provide flood control and water storage. However, construction of this facility was stopped in 1988 with the structure at approximately one-third of its designed height. The decision to discontinue work on this dam was the result of litigation and additional studies that determined that minimal economic benefits would result from the project and that the dam would have, if completed, adverse impacts on salmon passage. Planning is now underway to remove a part of this dam to facilitate fish passage.

According to Graham (2004), 866 surface water rights are on file with the Oregon Water Resources Department (OWRD) to use water from just that part of the Rogue River Basin upstream of Grants Pass. The majority of these surface water rights (628) are for irrigation. An additional 103 surface water rights are for domestic uses. Graham did not report the actual amount of water taken from the Rogue River and its tributaries above Grants Pass as the result of these water rights nor is such data available from OWRD.

However, OWRD does maintain a database that includes the maximum diversion allowed by surface water rights above various points along the study segment (OWRD, 2007). For example, the total amount of water that may be diverted from the Rogue and its tributaries:

- Above Grants Pass (RM 102) varies from 4,969 cubic feet per second (cfs) in May to 4,909 cfs in November.
- Above Gold Ray (RM 125.5) from 3,522 cfs in May to 3,467 in December, January and February.
- Above Dodge Bridge (RM 138.5) is on the order of 1,727 cfs to 1,728 cfs throughout the year.
- Above McCloud (RM 155.5) is approximately 1,686 cfs throughout the year.<sup>1</sup>

In considering these amounts, it is important to note that they represent a maximum withdrawal and hypothetical impact on the flow of the waterway. The actual quantity of water withdrawn from the Rogue River and its impact on the flow of the waterway is, in fact, considerably less due to:

- The principle of prior appropriation – which means the first person to obtain a water right on a stream is the last to be shut off in times of low streamflow. Or, putting it another way, just because a person's water right allows them to withdraw a certain amount of water does not mean they can. The actual amount they can take depends on the flow available and the date of their application for a permit to use the water.
- The return of water withdrawn from the waterway to the waterway from irrigation and other consumptive uses.

As a consequence of the construction of dams on various streams in the Rogue River Basin, and the withdrawal of water for irrigation, domestic and municipal needs, the flow of the Rogue River today at various points along the study segment is not representative of that which existed at the time of statehood.

Nevertheless, it is possible to obtain perspective on the ordinary and natural condition of the waterway from current and historic flow data, particularly that collected prior to the construction of the major dams and diversion structures along the Rogue River and its tributaries.

### • **Hydrology of the Rogue River**

An element of the federal test for navigability is that the waterway must be considered in its ordinary and natural condition – in this case, as it existed at the

<sup>1</sup> Note: The information provided by OWRD concerning the total maximum amount of water that may be diverted from the Rogue and its tributaries was derived from interpretations of paper records by OWRD staff. Therefore, these data should only be considered indicative of the total maximum amount of water that may be diverted above each of the locations cited and not absolute quantities.

time of Oregon's statehood prior to the construction of dams and the taking of water for irrigation, municipal and domestic uses. Therefore, it is important to develop an understanding of the present and past hydrology of the waterway. Several sources of information can be used to make this determination. These are the data collected over time by the United States Geological Survey (USGS) from gauges placed at various locations on the waterway and the Oregon Water Resources Department's Water Availability Reporting System (WARS) model.

### **Early USGS Survey Gauge Data and Exceedence Projections**

As mentioned in a preceding section, the USGS conducted a study in 1932 to identify possible new hydropower sites throughout the Rogue River Basin (Jones et al., 1932). In the report resulting from this study, flow data are presented for the waterway at the sites of the dams on the Rogue River existing at that time (Prospect, Raygold, Gold Hill and Savage Rapids) as well as at thirteen proposed dam sites along the study segment. Because only eight dams had been constructed in the Rogue River Basin prior to 1932, the flow data provide insights into what the flow of waterway may have been at statehood. However, any consideration of these data must factor in withdrawals of water for municipal and domestic use that were occurring when the study was conducted.

Of particular interest is the flow data presented for Raygold for the period 1906 to 1927 (Table 2). This is because this is the only location along the study segment:

- For which flow has been measured on a continuous basis for the past 102 years;
- That continues to be monitored by a USGS gauge; and
- For which both the USGS and the Oregon Department of Water Resources have developed exceedence estimates.

This gauge is also significant because it is located approximately midway along the length of the study segment and, therefore, is very likely representative of the flow of the Rogue River over that 102-year period.

**Table 2****USGS Historical Flow Data For Raygold: 1906-1927**

(All flows indicated are in cubic feet per second)

Month	Average Flow	Exceedence Level	
		50%	90%
January	4,216		
February	5,062		
March	3,948		
April	4,198		
May	3,815		
June	2,911		
July	1,770		
August	1,302		
September	1,274		
October	1,359		
November	2,367		
December	2,923		
		2,150	1,110
Maximum Flow Recorded for 21-Year Period:		60,000	
Minimum Flow Recorded for 21-Year Period:		770	

Source: Jones et al., 1932

Although the data presented in Table 2 represent only 21 years of flow measurements, the following observations can be made:

- The USGS determined in 1932 that for the years 1906 to 1927, a 50% likelihood existed that the Rogue River would flow at a rate of 2,150 cfs, and a 90% likelihood that it would flow at a rate of 1,110 cfs.
- A large difference exists in the maximum high and minimum low flow recorded for the waterway at that location. It should be noted that in the report, the following statement was made:

*“The minimum recorded daily discharge at Raygold was 770 second-feet [cubic feet per second] in 1926. Prior to 1924, when it was 813 second-feet, the minimum recorded mean daily discharge was 937 second-feet.”* (Jones et al., 1932)

**Recent USGS Survey Gauge Data and Exceedence Projections**

Stream flows for the Rogue River are currently monitored by the USGS at four locations along the study segment. Although the data obtained from these gauges since the construction of dams and the withdrawal of water for irrigation, municipal and domestic use do not reflect what the flow of the river through the

study segment may have been at the time of statehood, useful observations may, nevertheless, be made from examining this information.

- The McLeod gauge (#14337600) is located at RM 154, 1.3 miles downstream from the confluence of Big Butte Creek. Data have been collected from this gauge on a continuous basis since October 1965. However, since February 1977, Lost Creek Dam has regulated the flow of the Rogue River at this and the following three other gauges on the study segment.
- The Dodge Bridge gauge (#14339000) is located on the Rogue River at RM 138.8, 50 feet upstream from where Dodge Bridge crosses this waterway. Data have been collected from this gauge on a continuous basis since October 1938.
- The Raygold (Central Point) gauge (#14359000) is located on the Rogue River at RM 125.8, 0.1 mile downstream from Gold Ray Dam. Data have been collected from this gauge on a continuous basis since August 1905.
- The Grants Pass gauge (#14361500) is located at RM 101.8, 0.6 mile upstream from where the State Highway 99 bridge crosses this waterway. Data have been collected from this gauge on a continuous basis since October 1938.

Only one gauge currently exists to measure the flow of the Rogue River over its course from Grants Pass through the Klamath Mountains. This gauge is located approximately 2.7 miles upstream of Agness and the confluence of the Illinois River with the Rogue River.

Table 3 presents a profile of the Rogue River's flow at each of the four gauge locations within the study segment.

**Table 3****Profile of the Rogue River Streamflow at Four Study Segment Gauges****McLeod** (USGS Gauge #14337600)

Minimum instantaneous flow: 468 cfs on February 18, 1977 (due to the completion of Lost Creek Dam)  
604 cfs on September 5, 1968

Maximum instantaneous flow: 30,000 cfs on March 3, 1972

Average annual flow: 2,166 cfs (1965 to 1987)

**Dodge Bridge** (USGS Gauge #14339000)

Minimum instantaneous flow: 567 cfs on February 18, 1977 (due to the completion of Lost Creek Dam)  
611 cfs on August 6, 14, and 29, 1940; and  
September 9, 1940

Maximum instantaneous flow: 87,600 cfs on December 22, 1964

Average annual flow: 2,615 cfs (1938 to 1987)

**Raygold** (USGS Gauge #14359000)

Minimum instantaneous flow: 418 cfs on September 19, 1968 (due to regulation)  
616 cfs on September 6, 1931

Maximum instantaneous flow: 131,000 cfs on December 23, 1964

Average annual flow: 2,988 cfs (1905 to 1987)

**Grants Pass** (USGS Gauge #14361500)

Minimum instantaneous flow: 195 cfs on January 30, 1961

Maximum instantaneous flow: 152,000 cfs on December 23, 1964

Average annual flow: 3,518 cfs (1938 to 1987)

Source: USGS, 1990a, 1990b, 1990c and 1990d

Table 4 provides data concerning the flow of the Rogue River within the study segment prior to, and following the completion of the Lost Creek Dam in 1977.

**Table 4****Average Monthly Flow of the Rogue River at USGS Gauges****Prior to Completion of the Lost Creek Dam in 1977**

(All flows indicated are in cubic feet per second)

	<b>McLeod</b>	<b>Dodge Bridge</b>	<b>Raygold</b>	<b>Grants Pass</b>
<b>River Mile</b>	RM 154	RM 138.5	RM 126	RM 102
<b>Period of Record</b>	10/1965- 12/1976	10/1938- 12/1976	9/1905- 12/1976	1/1939- 12/1976
<b>January</b>	3,430	4,021	4,605	6,627
<b>February</b>	2,720	3,922	4,713	6,032
<b>March</b>	3,301	3,676	4,286	5,432
<b>April</b>	2,861	3,476	4,206	4,527
<b>May</b>	3,270	3,484	3,907	4,019
<b>June</b>	2,555	2,602	2,839	2,797
<b>July</b>	1,577	1,557	1,607	1,463
<b>August</b>	1,255	1,254	1,266	1,160
<b>September</b>	1,162	1,177	1,251	1,169
<b>October</b>	1,232	1,353	1,408	1,624
<b>November</b>	1,792	2,184	2,328	2,805
<b>December</b>	2,228	3,420	3,643	5,297

**Prior to and Following Completion of the Lost Creek Dam in 1977**

	<b>McLeod</b>	<b>Dodge Bridge</b>	<b>Raygold</b>	<b>Grants Pass</b>
	10/1965- 9/2005	10/1938- 9/2005	9/1905- 9/2005	1/1939- 9/2005
<b>January</b>	2,445	3,511	4,341	5,758
<b>February</b>	1,953	3,285	4,310	5,276
<b>March</b>	2,330	3,165	3,988	4,777
<b>April</b>	2,415	3,108	3,960	4,229
<b>May</b>	2,844	3,229	3,757	3,862
<b>June</b>	2,467	2,579	2,792	2,767
<b>July</b>	1,947	1,802	1,765	1,727
<b>August</b>	1,854	1,631	1,518	1,548
<b>September</b>	1,516	1,403	1,400	1,428
<b>October</b>	1,227	1,318	1,401	1,555
<b>November</b>	1,645	2,009	2,301	2,692
<b>December</b>	2,222	3,255	3,740	5,064

Source: USGS, 2006a, 2006b, 2006c, 2006d

A comparison of the USGS flow data presented in Table 2 for Raygold (based on a 21-year record and prior to the construction of many of the dams in the Rogue River Basin) with that for the same location in Table 4 (based on a 71-year record prior to the construction of Lost Creek Dam) indicates relatively little difference in the flow data between the two reporting periods for most months.

Additionally, the data contained in Tables 2, 3 and 4 show that the flow of the Rogue River and its tributaries continues to vary considerably according to the time of year and in response to the amount and frequency of precipitation that falls as rain and snow throughout the basin. Because of the nature of the geology and vegetation of much of the Rogue River Basin, the flows of waterways within the Rogue River Basin respond quickly and often dramatically to rain-producing storms. The lowest flows typically occur from July through September when precipitation in the Rogue River Basin is the lightest and the snowpack in the Cascade and Klamath Mountains is limited. Conversely, the highest flows exist from December through May when precipitation as both rain and snow are the heaviest.

### **OWRD Water Availability Reporting System**

The Oregon Water Resources Department (OWRD) has developed a model (the Water Availability Reporting System or WARS) that can be used to determine what the average monthly flow of various rivers in the state would be if normal precipitation is assumed and no consumptive uses or flow regulation exist (Oregon Water Resources Department, 2006). These conditions are the same as those that existed at the time of Oregon's statehood in 1859. The model provides two exceedence levels, 50% and 80%.

The Rogue River is one of the rivers for which this determination can be made using data from the OWRD model. Table 5 gives the average annual monthly flows of the Rogue River at four locations along study segment for which OWRD model data are available. With one exception (Grave Creek), each of these data sites is located in the vicinity of an existing USGS gauge:

- Above the confluence of Grave Creek;
- Above the confluence of the Applegate River (in the vicinity of USGS Gauge #14361500);
- Above Curry Gulch (at the USGS gauge #14359000 at Raygold); and
- Above the confluence of Elk Creek (in the vicinity of USGS Gauge #14337600 near McLeod).

**Table 5**

**Likelihood of Flows At Various Points Along The Rogue River Study Segment Based on Oregon Water Resources Department Model**

	<b>Grave Creek</b> (RM 68.5)		<b>Applegate River</b> (RM 95)		<b>Curry Gulch</b> (RM 125.8)		<b>Elk Creek</b> (RM 152.0)	
	<b>50%</b>	<b>80%</b>	<b>50%</b>	<b>80%</b>	<b>50%</b>	<b>80%</b>	<b>50%</b>	<b>80%</b>
<b>January</b>	5,480	3,210	4,340	2,590	3,580	2,180	2,260	1,550
<b>February</b>	7,460	4,740	4,810	3,220	3,970	2,710	2,530	1,890
<b>March</b>	6,130	4,390	4,180	3,220	3,520	2,750	2,480	1,980
<b>April</b>	5,540	3,830	4,460	3,150	3,940	2,810	2,820	2,140
<b>May</b>	4,520	3,370	4,100	2,920	3,870	2,750	2,880	2,120
<b>June</b>	2,880	2,010	2,550	1,810	2,480	1,760	2,200	1,510
<b>July</b>	1,670	1,320	1,580	1,350	1,550	1,330	1,460	1,190
<b>August</b>	1,290	1,160	1,300	1,170	1,290	1,160	1,220	1,050
<b>September</b>	1,320	1,130	1,290	1,140	1,280	1,130	1,150	991
<b>October</b>	1,430	1,240	1,360	1,170	1,340	1,160	1,190	1,020
<b>November</b>	2,060	1,420	2,030	1,460	1,800	1,370	1,390	1,110
<b>December</b>	5,150	2,620	3,520	2,080	2,900	1,810	2,050	1,290
<b>Average</b>	3,744	2,537	2,960	2,107	2,627	1,910	1,969	1,487

Source: Oregon Water Resources Department, 2006

The data presented in this table indicate that if there were no withdrawals for irrigation, municipal or domestic use from, or controls exerted by dams on the flow of the Rogue River, an 80% likelihood exists that the lowest flow along the study segment would:

- Occur in September; and
- Be 991 cfs at Elk Creek and 1,130 cfs at Grave Creek.

Conversely, the highest flow along the study segment at an 80% exceedence level would:

- Occur in February and March along the lower part of the study segment, and April and May along the upper part of the study segment; and
- Range from 2,140 cfs at Elk Creek and 4,740 cfs at Grave Creek.

A comparison of the data developed using the OWRD WARS model for Curry Gulch (Raygold) at a 50% exceedence (presented in Table 5) with the 1932 USGS data at a 50% exceedence (presented in Table 2) is informative (Table 6).

**Table 6**

**Comparison of 1932 USGS and Oregon Water Resources Department  
Model Exceedence Projections**

(All flows indicated are in cubic feet per second)

Data Source	Exceedence Level		
	50%	80%	90%
USGS 1932	2,150		1,110
OWRD 2006	2,627	1,190	

Source: Jones et al., 1932; Oregon Water Resources Department, 2006

From Table 6, it is clear that a difference exists between expected flow rates developed by the USGS and the OWRD at a 50% exceedence: 2,150 cfs and 2,627 cfs. However, a comparison of each agency's estimates at the higher exceedence levels (80% and 90%, respectively) shows a much closer agreement in the expected flows: 1,110 cfs and 1,190 cfs.

What may be concluded from these data is that a good likelihood exists that the average annual flow of the Rogue River at statehood exceeded 1,100 cfs even at high exceedence levels of 80% and 90%, and 2,100 cfs at a 50% exceedence level.

### • **Historical Uses of the Rogue River**

An examination of historical and other records indicates that the 89-mile study segment of the Rogue River has been used in a number of different ways prior to and after Oregon's statehood.

#### **Use of the Rogue River Study Segment by Indians**

Numerous Indian villages are known to have existed along the middle and upper portions of the Rouge River (Swanton, 1953; Hodge, 1906; Macnaughtan, 1999, Loy et al., 2001). The inhabitants of these villages were members of the Takelma (meaning "those dwelling along the river") Tribe and known to use canoes for travel and fishing. According to Hodge (1906), these villages were relatively small in size.

Numerous references exist in the diaries of explorers, military journals and early settlers of the Rogue River Basin to the use of canoes by Indians on the Rogue and its tributaries. The first mention found in journals of a canoe being used on the Rogue River was by Peter Skeen Ogden. In his journal entry of March 3, 1827, while on the Rogue River in the vicinity of Evans Creek, Ogden reported:

*“Fair or foul tomorrow we must start otherwise we must start killing our Horses for food. One of my men by orders swam across the River and after a long search succeeded in finding a Canoe which he cross’d over leaving the full value of it in the same place...the owners will find and given them a favorable opinion of our good intentions.”* (LeLande, 1987)

In 1841, Titian Ramsay Peale, a United States naturalist and artist who accompanied the Wilkes Expedition of 1838-1842 mentioned the use of canoes by Indians in his journal. While camped near what is now Grants Pass, Peale wrote in his entry of September 25, 1841:

*“Reached and crossed “Rogues river” before night, pitching our tents on its South Bank. Some Indians approached in canoes, but were not suffered to enter the camp. The river was at camp about 90 yards Wide and three feet deep with gentle current, and an even gravelly bottom.”* (Poesch, 1961)

Another member of the Wilkes Expedition and U.S. Navy Officer, George Colvocoresses, also described in his journal the Takelma’s use of canoes in the vicinity of Grants Pass as follows:

*“Several Indians came about this camp and pretended to be friendly, but we placed no confidence in their professions, and sent them away before night came. They had canoes with which they navigated the neighboring streams, but they were very rude and dug out square at the extremes.”* (Colvocoresses, 1852)

In his journal entry of June 21, 1844, James Clyman stated that at a site upstream of Grant Pass:

*“...we hired two Indians and their canoes who soon forried [ferried] us over the river while we stood with our guns in our hands for our defence”* (Clyman, 1960).

In 1855, during a battle between the Rogue (Takelma) Indians and mounted volunteers in the vicinity of Hellgate, it was reported in a biography of one of the militia members that:

*“The main body of the Indians had crossed the river, but there were canoes filled with Indians, who were crossing when the Volunteers came upon them.”* (Sexton, 2006)

In 1906, Edward Sapir interviewed Francis Johnson (Gwisgwasan), a member of the Takelma Tribe and one of the last speakers of Takelma. Based on his conversations with Johnson, Sapir wrote that the members of the Takelma east of Table Rock *“toward the Cascades and in the neighborhood of the present*

*town of Jacksonville...* “are said...” “to have used log rafts instead of canoes” (Sapir, 1907). (In a later interview of Francis Johnson, John Harrington confirmed in his notes that the Takelma inhabiting that part of the Rogue River below Table Rock used canoes while those living upriver from that location used “...rafts of logs lashed together with hazel witches.” (Harrington, 1933))

Sapir further went on to state:

*“Fishing was done partly with lines made of a kind of grass, the fibers being rolled together by hand, while the hook was obtained by tying two pieces of bone with sinew – in which case mudcat and crawfish served as bait; partly, also, fish were caught in long nets and clubbed when hauled into the canoe...”* (Sapir, 1907)

Although there is evidence that the Takelma used rafts instead of canoes in the upper Rogue River, folk tales transcribed by anthropologists often mention the use of canoes by tribal members. In one such folk tale entitled “Beaver Ferries the Deer Across Rogue River,” Beaver is called upon to canoe many deer to the far bank of the Rogue River at a number of Takelma villages, all of which were near Table Rock (Sapir, 1909).

In his field notes prepared in 1933 while studying the Takelma Indians, John Peabody Harrington wrote:

*“Miss Savage says the Applegate River is sizeable & there may easily have been a ferry across it. The Crow brothers said they knew of no ferry ever having been there. Francis says the Indians used to ferry across Applegate River with Indian canoes.”* (Harrington, 1933)

In 1937, Philip Drucker reported that the canoes used by the Indians on the lower Rogue River were:

*“...built of red cedar. They presented all of the features of the craft of the Lower Klamath tribes, with their blunt raised ends, inturned gunwales, carved steersman’s seat, and the rest. The shape of the bottom might vary. A flat bottom (laterally) (ntEL) was steadier, less easily tipped; whereas a canoe with a rounded bottom (tummy’s) was swifter. If the bottom was given a slight longitudinal convexity (ti:yau’lka), it was more easily turned. If it was straight (ulgE’t), it had more speed. Canoes for river use were three and one-half fathoms long [21 feet].”* (Drucker, 1936)

Based on a cultural element distribution compiled by Barnett (1937), it is likely that the Takelma along the middle Rogue used canoes similar in configuration and size to that described by Drucker.

Between 1950 and 1966, Virginia Card conducted research on the Takelma Indians. In her manuscript, she stated:

*“Fishing was done in a number of ways. Lines are sometimes twisted from native grass with bone hooks attached and weighted with sinker stones. In some cases nets were woven and cast from canoes, or weighted at one side with sinker stones and cast from the shorts.”* (Card, 1967)

Although anecdotal evidence, it is interesting to note that three Takelma words refer to the use of watercraft: (‘e-y) for boat, (‘e-y lokta) for big boat, and (lumuhi) for paddle (Grey, 1987). This is indicative that they required such words because of their use of such watercraft.

### **Mining-Related Historical Uses of the Rogue River Study Segment**

The Rogue River study segment was used in several ways by miners:

- As a source of water to hydraulically mine gold-containing gravels on terraces adjacent to the waterway;
- To float at least one dredge to remove gold from the bed and banks of the waterway (Winchell, 1914); and
- As a means of transporting supplies and equipment to mines located near the waterway.

Numerous lode and placer deposits of gold have been discovered in the Rogue River Basin. The first discoveries were made in 1851 and consisted of rich placer deposits in the vicinity of Jacksonville. Following this event, exploration spread outward to other areas in the Rogue River Basin resulting in additional discoveries of in-stream placer deposits on the Rogue River and many of its tributaries (Brooks and Ramp, 1968). As the most accessible in-stream placer deposits were exhausted, additional discoveries were made and mined in the gravelly terraces adjacent to and above many of these waterways. During their search to find the source of the gold contained in these placer deposits, prospectors located numerous gold-bearing outcrops of rock, some of which contained enough gold to have been mined by underground operations.

Before the War Production Board issued an order in 1942 closing all United States gold mines, mining was conducted at many locations within the study segment area – particularly in the vicinity of Grave Creek, Galice, Hellgate Canyon, Grants Pass and Gold Hill. In addition, numerous gold mining dredges operated on, or in streams flowing into the Rogue River in the vicinity of Grants Pass.

The first dredge reported to be placed on the Rogue River was in 1898 near Tolo. However, this dredge reportedly operated only a short time (Winchell,

1914; Brooks and Ramp, 1968). Sometime prior to 1913, the Scandinavian-American Company also installed a dredge on the Rogue River about two miles downstream of the Almeda mine (RM 70), which reportedly was not successful (Winchell, 1914).

An undated photograph shows a dredge said to be on the Rogue River in the vicinity of Grants Pass. The caption on this photograph states that the dredge was called "Hickler and Barrey's Dredger" and was able to dig 30 feet below the water line and had a draft of three feet (Department of State Lands, 2006).

From 1903 to 1935, a dredge belonging to the Champlin Electric Gold Dredging Company operated on Footh Creek (which joins the Rogue River at RM 112.5 near Bolt). In 1941, the Murphy-Murray Dredging Company dredged the same creek for a three-month period. This dredge had the ability to dig 20 feet below the waterline (Brooks and Ramp, 1968; Potter, 1976).

Because most placer mining dredges, including those known to have operated on the Rogue River, require an impoundment of water on which to operate, these uses are of a historical interest only and are not necessarily evidence supporting the navigability of the waterway.

Following the establishment of mines and mining camps along the Rogue River study segment, supplies were first brought in by pack train, primarily from the rail station at West Fork (now called Glendale) in Douglas County. However, in 1907, Amaziah Aubery began transporting supplies to mines along the Rogue River -- which will be discussed in the following section of this study.

### **Other Historical Uses of the Rogue River Study Segment for Trade and Travel**

#### **Grants Pass (RM 102.0) to Gold Beach (RM 0.0): 1869 to 1900**

According to J.N. Macy, William Windsor was the first person to float down the Rogue River from Grants Pass:

*"I see some fellows have just come down from Grants Pass in a boat, and there is considerable being said about it. That thing was done years ago. He [William Windsor] came down in the fall of 1869, in a boat he built himself at Grants Pass. He afterward built the sawmill here and I was here when he came down and helped him build the mill, and used the boat in which he came down."* (Gold Beach Gazette, 1894a)

Twenty-five years later, a second trip was reported on the Rogue River. This journey is significant because it is believed to be the first in which a round trip was successfully made by boat from Gold Beach to Grants Pass and back. In

the article entitled “*Over the Riffles – Two Curry County Men go to Grants Pass by Boat*” it was stated:

*“H.B. Moore and A. Aubery, two citizens of Curry county, came up Rogue river in a boat for supplies for their ranch, a distance of eighty miles, arriving here Friday afternoon, consuming forty hours on the trip. They found very little difficulty in making the trip, though their boat was twenty-four feet long and they were obliged to “line up” over rapids and falls a distance of ten miles. This “lining up” consists in disembarking from the craft and towing it up the river as a horse tows a boat on a canal, and was accomplished without much fatigue or difficulty.” (Gold Beach Gazette, 1894b)*

This article went on further to state:

*“They took about 700 pounds of provisions on their down trip, and were well pleased with Grants Pass prices and quality of goods purchased. They claim that the stream could be made navigable for small boats at a very small expense, and that the government could by blasting and locks make Grants Pass accessible for steamers of good size, even when the water is low in the fall.”*

In the September 1, 1894 issue of the Oregon Observer, what is reported to be a third trip down the Rogue River was described.

*“For the third time in a quarter century Rogue river has been navigated between Grants Pass and Gold Beach. On Saturday last a boat reached here containing three men; their camp outfit, blankets and provisions, having made the trip in 20 days, with stoppages along for the purpose of prospecting. They were compelled to take their boat out of the water three times, to avoid falls, and had a number of dangerous rapids to pass, but made them all safely. The boat was built of sugar pine made by Frank L. Gillman of Eugene, who came as captain. He was accompanied from Grants Pass by W.A. Armfield, and down the river a ways they picked up a third man and brought him through.” (Oregon Observer, 1894)*

As noted in this article, this trip was specifically indicated to be the third that had occurred down the Rogue River. However, it is not known if this trip is the same, or a different one than that which is referred to in an article appearing in the Oregon Observer six months later (March 2, 1895):

*“It is claimed by persons who ought to know, that if some boulders were blasted out of the “Hell Gate” pass in Rogue river that small boats could easily be taken down without difficulty. The boatmen who came up from Gold Beach last summer and made a successful home trip with about one thousand pounds of supplies and provision, practically demonstrated this*

*to be a fact. They said that the worst and only bad place with in this pass, but they made it through in good shape.”* (Oregon Observer, 1895)

#### Evans Creek (RM 110.5) to Approximately Missouri Bar (RM 51.0): 1897

As already discussed in this report, in 1897, Philip Eastwick, an Assistant Engineer with the United States Army, and two other men, used a boat to explore the Rogue River from Evans Creek (RM 110.5) to “...*a point in the heart of the Coast Range of Mountains, 65 miles below Rock Point and 75 miles from the mouth of the river*” – at which point the boat was lost after trying to lower it over rapids and subsequently destroyed (Eastwick, 1879).

Based on these news items, it is clear that during the period 1869 to 1897, the Rogue River study segment was successfully used on several occasions by a boat for the transportation of people and/or freight. However, during the course of this study, no documentation was found to describe the type of boat used during the trips reported in 1869 and 1894.

As mentioned previously, prior to 1906, most of the mines along the Rogue River downstream of Grants Pass were supplied by pack trains originating from West Fork, a Southern Pacific railroad station located approximately 17 miles north of Galice. In 1906, 125 tons of freight was transported by these horse and mule trains. However, this means of transportation was unreliable, sporadic and expensive due not only to the unwillingness of the packers to work on a full time basis, but also their inability to operate in deep snow or inclement weather. Therefore, items brought to West Fork often remained at the railroad station for weeks or months (Rogue River Courier, 1906a).

To remedy this situation, the owners of mines along the Rogue River and businesses in Grants Pass began to determine what actions needed to be taken to make the waterway conducive to use ultimately from Grants Pass to its mouth. As mentioned in the March 1895 Oregon Observer article, among the physical features limiting the river’s use were “*the big rock at the entrance of Hells Gate...and the falls below Galice...*” (Rogue River Courier, 1906a) It was believed that if these and other obstructions could be blasted out of the way, river transport of material could occur as far as Mule Creek (RM 47.5).

#### Grants Pass (RM 102.0) to Russian Charlie Bar (RM 63.0): 1906

1906 marked the beginning of the regular use of the Rogue River study segment by boats for transportation of goods. In that year, Amaziah Aubery and Peter Fry took a boat (described as “*an ordinary Rogue River fishing boat*”) of supplies from Grants Pass to a mine at Russian Charley Bar (RM 63). On this trip, which was reported to have taken three days, Aubery and Fry carried:

*“...tools for a blacksmith shop, rubber boots, clothing, dry goods and camp supplies, all weighing about a ton. There was also 200 feet of lumber. At Galice, a raft of 1000 feet of timber was taken in tow.”* (Rogue River Courier, 1906b)

According to Aubery and Fry, they could have made the trip in one day if the river was at a higher stage and they did not have to tow the log raft.

Because this means of delivering supplies to Rogue River mining camps was found to be more reliable and less expensive than using horse and mule trains, Capt. J. W. McIntire, the owner of the mine, stated that he would use this mode of transport again to obtain the supplies he needed for his mining operation. Additionally, the success of this effort led Aubery and Fry to give up their careers as commercial fishermen and begin transporting supplies and machinery on a regular basis (Rogue River Courier, 1906b). According to Aubery, if some of the larger boulders blocking the river could be blasted away and the channel made clearer, *“...loaded boats could go at any stage of the water, except in very high floods, to all parts on the lower river”* from Grants Pass (Grants Pass Courier, 1906b). Additionally, Aubery stated that he was confident based on his experience as a commercial fishermen that in time *“...he could take a loaded boat to lower Rogue river in from one to three days, and that the boat could be polled back in not over four days.”* (Rogue River Courier, 1906b)

Based on Aubery’s comments, R. E. Gilbert, manager of the Rogue River Mining and Development Company, met with Grants Pass business owners in August 1906 to discuss *“...opening the Rogue river so as to be navigable for a distance of about 60 miles below Grants Pass for scows which would carry from five to six tons.”* Gilbert contended such improvements would enable Grants Pass to be the point from which supplies could be shipped downriver thereby eliminating the need for overland pack trains (Oregon Observer, 1906).

#### Grants Pass (RM 102.0) to Mule Creek (RM 47.5): 1910

In 1910, Amaziah Aubery took a trip down the Rogue River from Grants Pass to the Red River Mining Company at Mule Creek (RM 47.5) to bring supplies and machinery to the mine. On this trip, Aubery was reported to have taken two boats, each thirty feet long and seven feet wide, loaded with mining machinery (Rogue River Courier, 1910). However, other accounts indicate that the boats used to haul freight down the river on this and future trips by Aubery were *“...27 feet long, with an 8 foot deck beam, a 4.5 foot bottom and 37 inches depth of hold.”* (Arman and Wooldridge, 1982)

Because of the bridge crossing the Rogue River at the Almeda mine, Aubery had to unload all of the cargo he was hauling from the boat onto the bridge, lift the boat across the structure, then reload it (Arman and Wooldridge, 1982).

Grants Pass (RM 102.0) to Gold Beach (RM 0.0): 1913

In 1913, the Daily Courier reported that John Aubery and H.W. Elliott floated down the Rogue River to Gold Beach on a fishing dory they constructed. Once arriving at Gold Beach, the article stated that they planned to use the boat to fish for salmon for the local cannery. To help pay for the boat, Aubery and Elliott took 50 boxes of peaches with them which they intended to sell to residents of Gold Beach and Wedderburn (Daily Courier, 1913).

Grants Pass (RM 102.0) to Gold Beach (RM 0.0): 1914

In 1914, Amaziah Aubery took a boat reported to be 42 feet long and 14 feet wide from Grants Pass to Gold Beach. During this trip, Aubery transported two iron castings for a mine at Blossom Bar (RM 45), one of which weighed 4,800 pounds and the other 1,000 pounds. After making this delivery, Aubery took the boat the rest of the way down the river to Gold Beach where he used it to live in and do commercial fishing (Curry County Reporter, 1974).

Grants Pass (RM 102.0) to Gold Beach (RM 0.0): 1915

In 1915, Glen Wooldridge made the first of many trips floating down the Rogue River from Grants Pass to Gold Beach in a boat he described as:

*"It looked like Hell! White cedar, about eighteen feet. The ribs was two-by-fours, I remember that. The lumber for the body was 3/4 -inch cedar. I can remember how heavy that thing was. We didn't know any better."*  
(Atwood, 1978)

On one of his trips, Wooldridge recalled transporting "quite a lot of stuff" to the Anderson Ranch (RM 47.5) from Grants Pass. Among the items he said to have transported were: "...a big 450 pound bathtub. A big bathtub. And pipe and plate glass." (Wooldridge, 1974)

Grants Pass RM (102.0) to Winkle Bar (RM 53): 1915

In early 1915, it was reported that Amaziah Aubery was in the process of constructing a pair of boats in Grants Pass to transport ten tons of freight from that city to Winkle Bar (RM 53), the site of a mining camp. Each boat was 41 feet long and six feet wide (Ashland Tidings, 1915a). Because of low water, two trips were planned using one boat each time. During the first trip in May 1916, Aubery transported a 3.5 ton gold stamp mill that was delivered to a mining camp at Blossom Bar (RM 45).

### Grants Pass (102.0) to Blossom Bar (RM 45): 1916

In May 1916, an individual referred to as “Capt. Jack Aubery” and a crew of four other men floated from Grants Pass to the Blossom Bar mine (RM 45) in what was described as a “*gondola-shaped craft, 38 feet long and 9.5 feet wide.*” The purpose of this trip was to deliver a 3.5-ton stamp mill to that mining operation. After delivering the mining equipment, it was reported that Aubery continued down the Rogue River to Gold Beach – the entire trip taking six days (Ashland Tidings, 1916).

### **Historical Use of the Rogue River Study Segment by Ferries**

During the 1850s through 1920s, cable ferries were operated at various points along the Rogue River study segment. Table 7 gives the names and locations of a number of the ferries most frequently mentioned in historical documents. Although other ferries are also reported to have operated along the Rogue River study segment, they are not indicated on this table because of conflicting information concerning their names, crossing location and the years in which they were in service. Additionally, several were sold to new operators who subsequently moved them to different places along the waterway further complicating their identification.

**Table 7**

#### **Rogue River Study Segment Ferries**

<b>Ferry Name(s)</b>	<b>Approximate River Mile/ Nearest Geographic Feature</b>	<b>Period of Active Service</b>
Massie or Indian Mary	81.0 Indian Mary Park	1850s to 1910
Upper	90.0 Griffin Park	1850s to unknown
Lower, Vannoy or Long	95.0 Fort Vannoy/Applegate Creek	1853 to 1856
Middle or Perkins	102.0 Grants Pass	1851 to 1886
Evans or Jewett	110.5 Evans Creek/Rogue River	1851 to 1909
Evans, Bethel or Hunter	107.5 Savage Rapids Dam	1853 to unknown
Bybee, Hailey or Thompson	131.5 TouVelle State Park	1854 to 1886
Hannah	140.0 Reese Creek/Shady Cove	1869 to 1874
Kennedy, Nail or Dodge	146.0 Indian Creek/Shady Cove	1877 to 1921

Source: Sutton, 2002; Johnson et al., 1906; Grants Pass Courier, 1935; Hill, 1976; Lawrence, no date.

Typically, most of the ferries crossing the Rogue River study segment were relatively simple in construction. For example, the Evans ferry at RM 102.0 was described as:

*“...such as one would expect to find in a frontier area. It was made of three hewed logs, thirty inches in diameter. The ends were rounded up. These were covered both top and bottom with two inch planks. Overall the deck was 8 feet by 45 feet. The bottom and ends were calked with pitch. A cable fastened to an oak tree just west of the mouth of Evans Creek. The other end of the cable was fastened to rocks built up on a gravel bar. A double pulley and winch were used to pull the boat back and forth across the river.”*  
(Bournamann, no date)

Under the Oregon Provisional Government’s 1849 “Act Regulating Ferries” any person wanting to operate a ferry had to obtain a license from the county court having jurisdiction over the point of crossing. This law further also directed county courts to establish ferry use rates, taxes and the duties of licensees and penalties for non-compliance. Despite this regulation, the fees charged by the operators of these watercraft were in many instances high enough to cause potential users to swim across the river or attempt to build floating and other bridges – many of which quickly washed out during periods of high water.

### **Historical Use of the Rogue River Study Segment for Fishing**

Fishing for steelhead and Chinook and Coho salmon has been, and continues to be a major use of the Rogue River. Prior to, and following statehood, Indians as well as early explorers of, and settlers in the Rogue River Basin fished the Rogue River for sustenance.

Commercial fishing for salmon was first reported within the study segment in the 1890s primarily over a 19-mile section of the river extending from Grants Pass to Hog Creek (RM 83). The 13<sup>th</sup> census of the United States conducted in 1910 of Grants Pass listed nine men who gave as their occupation: “Fisherman, Drift Net” (United States Bureau of the Census, 1910). By the early 1930s, as many as 10 commercial “outfits” consisting of two to three persons ran drift boats down the Rogue River from Dead Man’s Island (RM 101.5) to Hog Creek Landing (RM 83) to catch Chinook salmon (Pyle, 1978).

Fishing typically commenced in the spring and extended through late fall. Fish were usually caught at night in gill nets laid out from drift boats. At the end of its drift, each boat was landed, placed on a trailer or wagon, and pulled by horse team or motor vehicle back to Grants Pass. There the catch was unloaded and purchased by markets which would then ship the fish to Portland (Pyle, 1978; Wooldridge, 1974; Arman and Wooldridge, 1982).

In 1906, a newspaper reported that:

*“Fishermen on Rogue river, taking lessons from cannerymen on the Columbia are doing a big business even if the season is closed. Last year they shipped from Grants Pass and Merlin over 200 tons of fish to*

*Portland. This year the shipments will amount to considerably more, as they are shipping more than a ton a day.” (Ashland Tidings, 1906)*

Although a wide variety of watercraft were used by the fisherman, most consisted of 12 to 22 foot long, shallow draft (6 to 8 inches loaded), essentially flat-bottom, double-ended, non-motorized dory-type wooden boats (Sutton, 2002). These watercraft, sometimes referred to as “Rogue River drivers,” are believed to have possibly originated from the bateaux used by fur traders or log drivers in the northeastern United States (Fletcher, 2006).

Because of both over-fishing and the construction of the Ament and Gold Ray Dams on the Rogue River, the amount of fish caught gradually declined. In an attempt to preserve salmon and trout runs, numerous laws were enacted beginning in 1903 to regulate the commercial fishing industry. However, the passage of these bills and the restrictions they imposed did not achieve the desired long-term increase in fish runs. Therefore, in 1935, the Oregon State Legislature enacted legislation closing the Rogue River to any commercial fishing – a closure which remains in effect today.

### **Historical Use of the Rogue River Study Segment for Log Driving**

Numerous references to log drives on the Rogue River are found in newspaper articles, journals and diaries, government records and photographs. The first evidence of log driving in the Rogue River study segment occurred in the early to mid-1880s. According to Francis Pearson, several French-Canadian loggers contracted with the Southern Pacific Railroad to provide ties. Because the Southern Pacific Railroad was constructed in the Rogue River Valley in the early 1880s, it is believed that the event Pearson recalls (as follows) occurred during that time.

*“There was one attempt, but I don’t know when that was. It was kinda legendary. Men were supposed to be sent here from Canada; lumberjacks who were accustomed to floating timbers down the river. They had cut ties for the Southern Pacific. It was unsuccessful because of the nature of the river. They were washed along side. They gave it up. I remember seeing the timbers scattered, that is the ties scattered along the bank of the river when I was a kid. There was a lot of them along.” (Pearson, 1978)*

In 1889, the Oregon State Legislature enacted a law that authorized county courts to grant any person the right:

*“...to secure for themselves, or itself the exclusive right to regulate, manage and control...the floating transportation and booming of logs, lumber, timber and wood upon any river or stream which is not navigable*

*for general commercial purposes...*" (Columbia River and Oregon Timberman, 1889)

Following enactment of the log driving franchise law, the Jackson County Commission offered a five-year lease for \$500 to the Tolo Townsite and Milling Company in 1889 for the purpose of floating logs and lumber down the Rogue River and its tributaries:

*"...including Big Butte Creek, from the head of said river to the point on said river where it has been meandered by the United States Government, being at or near the mouth of Big Butte Creek."* (Ashland Tidings, 1889; Jackson County Commissioner's Journal, 1889; Daniel, 2006)

This franchise allowed Tolo Townsite and Milling Company to regulate the use of the Rogue River from four miles above Shady Cove at RM 154 to its source at RM 215. No information was found to determine if, in fact, Tolo Townsite and Milling Company or any other group ever floated logs down this segment of the waterway under the provisions of this franchise.

In October 1902, Dr. C. R. Ray of the Condor Water and Power Company (later renamed the Rogue River Electric Company) petitioned the Jackson County Commissioners to grant his company a franchise to *"...float and boom logs on Rogue River above Gold Ray"* to a sawmill to be constructed at that location. The company established a fixed rate approved by the County Court to float logs for other persons of \$1.50 per 1,000 feet for floating logs and \$0.50 for booming" (Columbia River and Oregon Timberman, 1904a).

It is not known when logs began to be floated down the Rogue River under this franchise or whether it was the Condor Water and Power Company or a contractor to that company that did so. However, evidence exists to indicate that the sawmill at Tolo (just above Gold Ray Dam which was constructed between 1902 and 1904) was supplied by logs floated down the Rogue River. In November 1909, mention was made in a trade newspaper that:

*"Rogue River Electric Co., Medford, expects shortly to commence operation of their new sawmill near Medford. The plant is of modern type, will be electrically driven, and have a capacity of about 50,000 feet per day. Logs are to be brought to the mill from the main channel of the Rogue River through an artificial canal 25 feet wide, four feet deep and a quarter of a mile long."* (Columbia River and Oregon Timberman, 1909)

Additional evidence that the Rogue River was used not only to supply logs to the Tolo sawmill, but had been for many years, is found in two additional sources. In the May 30, 1910 edition of the Medford Mail Tribune concerning the death of George Connors, a log driver, it was stated that he drowned:

*“...while engaged in driving logs on the river with a crew of men for the Rogue River Electric Company for their Tolo saw mill.”*

The article further went on to say:

*“This is the first accident of its kind to occur, although the company has long engaged in floating logs to the sawmill at Gold Ray.”* (Medford Mail Tribune, 1910a)

The difficulty of driving logs down the Rogue River was apparent in oral interviews describing the cause of this accident. According to the persons questioned, the log drive in which the accident occurred involved floating approximately 500,000 board feet of logs cut in the vicinity of Peyton to the sawmill at Gold Ray Dam – a distance of approximately 36.5 miles (Trusty, 1978; Vaughn, 1978). Despite the use of 12 to 20 drivers, the logs became jammed together near McLeod (RM 155.5). In an attempt to dislodge the logs from each other, *“...one man [Connors] got trapped and he was drowned there in the river.”* (Vaughn, 1978) Upon being freed from each other, the logs continued down the Rogue River to a boom placed in the vicinity of the Tolo sawmill. At one time, this boom reportedly broke allowing some of the logs to float beyond the intended take-out point (Vaughn, 1978).

As a result of the death of the log driver and the difficulty encountered in floating the logs downstream, John Pankey, the contractor to Condor Water & Power Company charged with driving the logs downstream at the time of Connors' death, found it difficult to get *“...men to do the work of driving logs over the dangerous rapids in the river. Since Connors lost his life above the Tucker ranch loggers have been diffident about getting out on the logs.”* Consequently, Pankey gave up his contract with Condor Water & Power Company to continue driving logs (Medford Mail Tribune, 1910b).

Neither the death of Connors nor the difficulty of driving logs down the Rogue River, however, prevented further drives from occurring. Additional evidence of the continued use of the Rogue River for log driving is evident in a June 1911 newspaper article reporting on the death of yet another log driver on that waterway in the vicinity of Central Point. This article stated that:

*“Arthur McDonald, aged 20 years, was drowned in the Rogue River at Central Point Saturday morning. While with three men in a skiff, bringing logs down the river [when] his boat was caught in a jam and was overturned.”* (Ashland Tidings, June 1911)

The logs involved in this drive were reported to be for use in the construction of a new bridge across the Rogue River near Eagle Point (Medford Mail Tribune, June 1911).

The January 1911 issue of The Rogue Magazine confirmed the use by the Tolo sawmill of logs floated down the Rogue River stating:

*“This mill, the best equipped in Southern Oregon, is supplied with timber from the forests at the head waters of the Rogue river, the logs being driven down the stream during the summer months. The body of timber tapped by this mill is one of the largest virgin forests in existence today and many years will be required for this mill to cut away the timber.”* (The Rogue Magazine, 1911)

And, finally, in an interview of Elgar Abbott conducted in 1978, he recalled that *“...when he was 4 or 5 [1915 – 1916], his brother drove logs on the Rogue River from Peyton Bridge to Gold Ray; there were only two drives.”* (Abbott, 1978) Log drives were not confined to the stretch of the Rogue River extending from Peyton to Tolo. They were also reported to have occurred on other segments of the Rogue River as well as tributaries to that waterway. In 1902 an attempt was made to drive logs from Grants Pass to Gold Beach. However, this effort was reported to be unsuccessful (Sutton, 2002). Log drives were also reported to have occurred on the Applegate River and on Big Butte Creek (The Columbia River and Oregon Timberman, 1904b; Josephine County Commissioner’s Journal, 1903; Edmonson, 1989).

Interestingly, in a 1932 USGS study of potential water-power sites in the Rogue River Basin, a requirement indicated for any future dams constructed on the waterway was the ability of such structures to allow passage of logs:

*“A small motor boat runs from the mouth of the Rogue River...to the junction of the Illinois River at Agness, but if a highway were built the boat would be discontinued, so it is considered improbable that there will be any navigation above Copper Canyon except the driving of logs. Provision for passing logs should be made at all dams constructed on the river, and any permits or licenses should contain a provision permitting the United States to construct locks or other works for navigation at any of the dams if this is ever found desirable.”* (Jones et al., 1932)

This indicates that regardless of the degree of success log driving may have had on the Rogue River study segment, the river even in 1935 was still considered a potentially viable means for floating logs – even if only from one reservoir to another of future dams which might have been built.

### **Historical Use of the Rogue River for Recreational Uses**

Because of the Rogue River’s natural beauty, excellent opportunities for angling, and numerous rapids and whitewater segments, the entire waterway has become a popular destination for recreationists. The Rogue River has been used extensively for recreational boating and fishing since the early 1900s. The first

notable use of the Rogue River for recreational purposes occurred in 1917 when Glen Wooldridge began running guided fishing trips from Grants Pass to Gold Beach. Among the people Wooldridge guided down the waterway were Herbert Hoover, Zane Grey, Clark Gable and Ginger Rogers.

Prior to the mid-1940s, most of the recreational boats used on the Rogue River consisted of wooden dory-type watercraft. After floating down the Rogue River from Grants Pass to the mouth of the waterway, these boats were then loaded at Gold Beach on vehicles and transported back to Grants Pass – a trip that initially took at least two days due to the difficult nature of the roads at that time (Arman and Wooldridge, 1982). It wasn't until 1947 that a successful attempt was made to use a motorized boat to go down the Rogue River from Grants Pass and return to that city. In that year, Glen Wooldridge made the trip using a wooden boat in fourteen hours over a two-day period. The only portages required were at Rainie Falls (RM 67) and Grave Creek Falls (RM 68) (Arman and Wooldridge, 1982). Since this accomplishment, numerous motorboats now make this trip regularly.

With the invention and successful testing of the outboard jet drive in 1962 (which allowed boats to run forward in just a few inches of water), the Rogue River became increasingly more accessible and a popular recreation destination.

The most extensively used section of the Rogue River Study Segment extends from the confluence of the Applegate River through Hellgate Canyon to the confluence of Grave Creek (called the Hellgate Recreation Area). A 1981 study conducted by the United States Bureau of Land Management found that during that year over 100,000 people used this segment of the river in virtually every type of watercraft including jet boats, inflatable rafts and kayaks, drift boats, canoes and inner tubes.

Because of the presence of Gold Ray and Savage Rapids Dams (which require that recreationists portage around them), the stretch of the Rogue River from Grants Pass to Gold Ray Dam is less intensively used by recreationists than the Hellgate Recreation Area. Nevertheless, many kayakers, rafters and anglers in drift boats use this segment.

The uppermost section of the Rogue River study segment from Gold Ray Dam to Lost Creek Dam is considerably calmer than the lower two segments. However, it, too, is also extensively used by kayakers, rafters and anglers in drift boats.

At many places along the Rogue River study segment, companies offer a variety of recreational, whitewater and fishing trips as well as guide services. In addition, some of these firms offer various types of watercraft for rent to the public.

Table 8 indicates the drafts required by these watercraft. As is evident from this table, with the exception of jetboats, all of the watercraft currently used on the Rogue River require eight inches or less of draft, and many less than six inches of draft.

Type of Watercraft	Typical Draft (inches)	Comments
Whitewater kayaks	6	One person
Inflatable kayaks	3-4	One person
Drift boats	3-8	Depending on number of persons and amount of gear carried
Rafts and Paddle Boats	3-8	Depending on size of raft, number of persons and amount of gear carried
Jet boats (powered)	12	

In order for the various watercraft listed in Table 8 to use the Rogue River, the flow of the waterway must be sufficient to provide the necessary depths.

Table 9 gives the recommended and minimum flows reported by guides and recreationists for the segments of the river indicated.

Segment, Source and Type of Watercraft	Recommended Flow
<u>Lost Creek Dam to Grave Creek</u>	
(RM 157.5 to 68.5)	
Recommended for drift boats, kayaks and raft (1)	2,000
Minimum for drift boats, kayaks and raft (2)	900
<u>Lost Creek Dam to Gold Ray Dam</u>	
(RM 157.0 to 125.5)	
Recommended for drift boats (3)	1,500 and up
Recommended for rafts (4)	1,400 and up
Minimum for rafts (4)	1,000

**Table 9 continued**Gold Ray Dam to Gold Hill

(RM 125.5 to 120.0)

Recommended for kayaks (5)

1,000 to 4,000

Recommended for rafts (4)

1,800 and up

Minimum for rafts (4)

1,400

Nugget Falls to Gold Hill Boat Ramp

(RM 120 to 122)

Recommended for kayaks (6)

800 to 3,000

Grants Pass to Grave Creek

(RM 102.0 to 68.5)

Recommended for kayaks (7)

1,000 to 8,000

Hog Creek to Grave Creek

(RM 83.0 to 68.5)

Recommended for kayaks (8)

800 to 3,000

Grave Creek to Foster Bar

(RM 68.5 to 33.5)

Recommended for kayaks (9)

1,000 to 10,000

Recommended for kayaks (10)

1,200 to 6,000

## Sources:

- (1) Buck, 2006; Grieve, 2006
- (2) Buck, 2006; Grieve, 2006
- (3) fisheyesoup.com, 2006
- (4) Hague, 2006
- (5) dreamflows, 2006
- (6) wetdawg.com, 2006
- (7) Keller, 1998
- (8) cacreeks.com, 2006
- (9) Keller, 1998
- (10) Giordano et. al, 2004

From this table, it is clear that opinions vary among recreationists and guides regarding the minimum and recommended flows necessary to use various segments of the Rogue River study segment. However, based on the information provided by guides and river users, general agreement exists that drift boats, kayaks and rafts can use the entire study segment at a minimum flow on the order of 1,000 cfs -- albeit with some occasional difficulties encountered such as the scraping of the bottom of watercraft or the need to portage around some obstacles.

### Discussion of the Evidence

As stated in the beginning of this report, the federal test for navigability is used to determine if the title to the submerged and submersible land of a waterway was

conveyed to the State of Oregon at the time of statehood. The elements of this test are whether the study segment:

- At the time of Oregon’s statehood in 1859;
- Was used or was susceptible to being used;
- In its natural and ordinary condition;
- As a highway of commerce;
- Over which trade and travel were, or could have been conducted;
- In the customary modes of trade and travel on water.

Whether the 89-mile Rogue River study segment satisfies the federal test for title navigability depends on the evidence concerning the historical use and condition of the waterway, and evidence of what uses the waterway was capable of sustaining. Evidence of current uses is relevant if it shows what uses could have occurred at statehood.

According to federal court opinions construing and applying the test, use of a waterway does not need to be easy or without difficulty, extensive, or continuous over time.

In the following section, the evidence presented in this report will be discussed in light of each of these criteria.

### **How has the Rogue River study segment been used?**

Answering this question provides information relevant to the following criteria presented above:

- Whether the Rogue River study segment was used, or susceptible to being used as a “highway of commerce over which trade and travel were, or could have been conducted,” and
- What the “customary modes of trade and travel on the water” have been.

As discussed in this study, considerable evidence indicates that various segments of the Rogue River were used prior to, and since statehood (1859) in their natural and ordinary condition, as a highway of commerce over which trade and travel were or may have been conducted in the customary modes of trade and travel on water.

#### Indian Canoe and Raft Use

Based on information contained in the journals and diaries of early explorers, ethnologic research, oral histories provided by early settlers, and Indian legends, abundant evidence exists to substantiate the use of canoes on the Rogue River study segment by Indians for travel prior to, and following statehood.

Additionally, there is also evidence that Indians used log rafts for travel on the upper part of the Rogue River study segment.

### Cable Ferries

During the 1850s through the early 1900s, cable ferries were operated at various points along the Rogue River study segment. Although it is recognized that the use of the river by cable ferries is usually a lateral crossing, it can be concluded from their presence that at least at the crossing points, the river was of a sufficient flow and/or depth for enough of the year to make crossing the waterway by another means (for example, by horse, foot or swimming) difficult or impractical. Among the locations of these ferries were Indian Mary Park, the former location of Fort Vannoy, Grants Pass, and in the vicinity of Evans Creek, Savage Rapids Dam, TouVelle State Park and Shady Cove. Although several of these ferries operated for only a few years, many provided continuous service for considerably longer periods of time – some on the order of several decades.

### Use of the Study Segment for Transportation of People and Goods

Beginning in 1894 (and perhaps as early as 1869), numerous trips were made from Grants Pass to various downstream points along the Rogue River using a variety of shallow draft boats. The majority of the first trips were made to explore the lower Rogue River and to determine if it could be successfully floated to Gold Beach in its unimproved condition. At least four such efforts occurring in the 1890s are known to have been successful.

In 1906, the Rogue River began to be used to bring supplies to mining operations located along the waterway at Winkle and Blossom Bars. Initially, these trips were accomplished without improvements being made to the river's bed and banks. However, in 1914, Glen Wooldridge began to use dynamite to remove boulders and other obstacles in the waterway to facilitate the transport of these supplies. According to newspaper accounts, dory-type boats were used on these journeys and often carried loads from several hundred pounds to as much as five to six tons. Soon after commencing these trips, Wooldridge also began to take passengers down the river along with the freight.

### Commercial Fishing

Commercial fishing for salmon using dory-type boats was reported to have occurred on the Rogue River as early as 1889 in the vicinity of Gold Hill. However, it does not appear to be until the early 1900s that this industry became a major use of the waterway. From that time until the mid-1930s, commercial fishing was conducted from spring through late fall on the Rogue River from Grants Pass to Hog Creek at the entrance to Hellgate Canyon.

### Log Drives

Newspaper reports, photographs, and county commissioner journals show that log driving occurred on the Rogue River between Peyton and Tolo. Although it was reported that these drives were often difficult and occasionally accompanied by loss of life, it appears that they nevertheless occurred over at least a several year period, and possibly for as long as several decades. It was reported that log drives down the river served as the principal source of supply to the Tolo sawmill as well as other users.

### Recreational Use

Since the early 1900s, the Rogue River has been increasingly used by recreationists and anglers. In 1917, Glen Wooldridge started guided fishing trips on the waterway using wooden dory-type boats. At first, these trips were reported to be “occasional,” originating in Grants Pass and ending at Gold Beach. It wasn’t until after World War II that a significant and sustained increase occurred in the recreational use of the Rogue River. This use included not only the segment of the Rogue River from Grants Pass to Gold Beach, but also well upstream beyond the site of Lost Creek Dam.

In addition to the continued use of dory-type boats, recreationists and anglers now float along the entire study segment in a variety of other types of watercraft such as hard shell and inflatable kayaks, canoes and inflatable rafts. Jet boats also run between Grants Pass and Grave Creek, providing passengers with a whitewater experience.

### **What was the ordinary and natural condition of the Rogue River study segment at statehood?**

By answering this question, it is possible to determine which of the uses that have been made of the Rogue River study segment could have occurred at statehood. This information also provides additional insights into whether the waterway meets the criteria of being capable of, or susceptible to being used as a highway of commerce over which trade and travel were, or could have been conducted at the time of statehood.

From the evidence presented in this report, it is clear that:

- With the exception of a few areas, the general condition and character of the waterway has remained relatively unchanged over most of the study segment since statehood; and
- The flow of the Rogue River between Grave Creek and Lost Creek Dam was most likely greater at the time of statehood and prior to 1977 than it is today.

These conclusions are based on the following factors:

- Examination of cadastral maps made of the Rogue River study segment between 1854 to 1919 indicate that except for several segments of the waterway where meandering has occurred (in the vicinity of the confluence of the Applegate River; for several miles upstream of Gold Ray Dam; around the confluence of Butte Creek; and for a three-mile stretch south of Shady Cove), the waterway has flowed along much the same course as it does today.
- The apparent widths and location of much of the Rogue River throughout the study segment, as indicated on the cadastral maps and cross sections prepared by the USGS in 1932, correspond to those currently observed in the same locations. This is largely due to the steep topography and erosion-resistant nature of many of the formations through which much of the Rogue River flows. Consequently, the physical condition/general configuration of the Rogue River along most of the study segment does not appear to have changed appreciably over the past 150 years.
- The Rogue River from Grave Creek to Lost Creek Dam is believed to have carried more water at the time of statehood than it has for the past 100 years. This is not only because of the construction of numerous dams within the Rogue River Basin (many of which are used to control the amount of water flowing down the Rogue River), but also due to the significant withdrawals that occur from the river for irrigation and domestic and municipal use.

As indicated on Tables 5 and 6, a flow of more than 1,000 cfs is estimated by the USGS at both a 50% and 80% exceedence to have occurred at the time of statehood except at one point for one month: at an 80% exceedence at the confluence of Elk Creek in September. Furthermore, from Table 6, it is apparent that both the USGS and Oregon Water Resources Department's estimate of the projected flow of the Rogue River at statehood at Curry Gulch/Raygold was likely on the order of 1,100 cfs or more at an 80 to 90% exceedence.

#### **How do current watercraft compare to past modes of transportation?**

The susceptibility of the Rogue River study segment to use in 1859 as a highway of commerce over which trade and travel could have been conducted can be determined by comparing and linking the physical characteristics and flow requirements of watercraft currently in use on the Rogue River study segment with those that were in existence at the time of statehood. From Table 8, it is evident that nearly all of the watercraft currently using the Rogue River draw less than 8 inches when loaded with people and gear, and many 6 inches or less (for example, whitewater kayaks, canoes and some drift boats).

Table 9 presents the minimum flow requirements reported by recreationists and guides to use many of the watercraft currently run on the Rogue River. As indicated on this table, the minimum flows reported by recreationists to use segments of the Rogue River are from 800 to 900 cfs. However, at these flows the users of a kayak or drift boat would experience occasional scraping of the bottom of watercraft or need to portage around some obstacles. At a flow of

1,000 cfs or more, the river can be more easily used. Flows on the order of 1,400 cfs provide an even more enjoyable experience.

According to the model developed by the Oregon Water Resources Department (Table 5):

An 80% likelihood exists that at the time of statehood (1859):

- A flow of 1,400 cfs would have occurred from:
  - November through June as measured above the confluence of Grave Creek and above the confluence of the Applegate River;
  - December through June as measured at Curry Gulch; and
  - January through June as measured at Elk Creek.
- A flow of 1,000 cfs would have occurred:
  - During all months of the year except September as measured at Elk Creek.
- A flow of 900 cfs would have occurred:
  - Throughout the year.

A 50% likelihood exists that at the time of statehood (1859):

- A flow of 1,400 cfs would have occurred from:
  - October through July as measured at Grave Creek;
  - November through July as measured above the confluence of the Applegate River and at Curry Gulch; and
  - December through July as measured at Elk Creek.
- A flow of 1,000 cfs would have occurred:
  - Throughout the year.
- A flow of 900 cfs would have occurred:
  - Throughout the year.

Additionally, a comparison of the exceedence projections developed by the Oregon Water Resources Department with those of the USGS indicate that the flow of the Rogue River at statehood at Curry Gulch/Raygold most likely exceeded 1,100 cfs even at high exceedence levels of 80% and 90%, and from 2,150 to 2,627 cfs at a 50% exceedence level.

Research indicates that the types of canoes used by Indians in the Pacific Northwest were dugouts of various sizes and lengths, typically made from softwood trees such as cedar or ponderosa pine. Based on the journals and diaries of early explorers as well as oral histories, Indian use of the Rogue River study segment is known to have occurred along much, if not all of its length. The canoes they used have been variously described as being made of cedar and up to 21 feet long.

Depending on the size of the canoe used and the number of people carried in it, such canoes are believed to have been required a draft of only 6 to 8 inches deep. Given this water depth requirement, a dugout canoe would have essentially the same floatability characteristics as many of the watercraft currently using the Rogue River study segment such as canoes, kayaks and some drift boats.

Because it is likely that the Rogue River carried more water throughout the year at the time of statehood, it can be argued that this would make it more treacherous to use and, thus, not navigable. However, it can also be argued that the availability of this additional water would make the waterway more amenable to use during months of typically lower, pre-dam flows. And, it must also be kept in mind that in order to meet the requirements of the federal test for navigability, a waterway does not need to be capable of use as a mode of trade and commerce throughout the entire year.

**What does all this evidence mean regarding whether the Rogue River study segment meets the federal test for navigability?**

From the foregoing discussion, the following key conclusions can be made:

- A historical review of the Rogue River has found that many parts of the study segment from Lost Creek Dam to Grave Creek have been used in a variety of ways for trade and travel on the water since statehood. Among the uses of the study segment have been log driving, commercial fishing from drift-type boats, ferries, angling and recreational use.
- Some of the uses of the Rogue River study segment (for example, ferries and the use of canoes on the waterway by Indians) occurred prior to and at the time of statehood.
- With the exception of a few areas, the general physical orientation of the Rogue River study segment has not changed appreciably since statehood.
- Because of the construction of dams for flood control and irrigation, and withdrawals taking water from the waterway for irrigation, municipal and domestic uses, the flow of the Rogue River study segment was greater at statehood than it is today.
- Most of the recreational watercraft currently using the Rogue River study segment draw less than 8 inches and can travel on the waterway with some difficulty at a flow rate of 900 cfs.
- There is an 80% likelihood, based on the Oregon Water Resources Department 's Water Availability Reporting System model that a flow of 900 cfs would have occurred year round at the time of statehood on the Rogue River study segment.
- Indian dugout canoes of the type often used in the Pacific Northwest typically draw 6 to 8 inches.

From the evidence found during the course of this study, it is clear that Indians used canoes on many parts of the Rogue River study segment. What is not known with certainty is over how much of the study segment Indians traveled in canoes since reports of canoe use by Indians were location specific.

Nevertheless, it is reasonable to conclude that the entire Rogue River study segment was susceptible of being used by dugout-type canoes in the same way as current recreationists given the similarity in the operating characteristics between:

- The dugout-type canoes Indians were reported to use on the Rogue and on many other Pacific Northwest waterways, and
- Several of the watercraft currently in use today.

Furthermore, if the flow of the waterway was greater than 900 cfs through the year, there is a good likelihood that Indians did, in fact, use dugout-type canoes on the entire length of the Rogue River study segment at the time of statehood on a year around basis – not just in the vicinity of where such use has been reported in the journals and diaries of early explorers.

#### **Section 4: Proposed Draft Findings and Conclusions**

##### **Preliminary Findings**

The evidence presented in this report of the historical use and condition of the Rogue River from Grave Creek (RM 68.5) to Lost Creek Dam (RM 157.5) supports a determination that this 89-mile segment of the waterway meets the requirements of the federal test for navigability.

The Department of State Lands has come to this finding based on the following considerations:

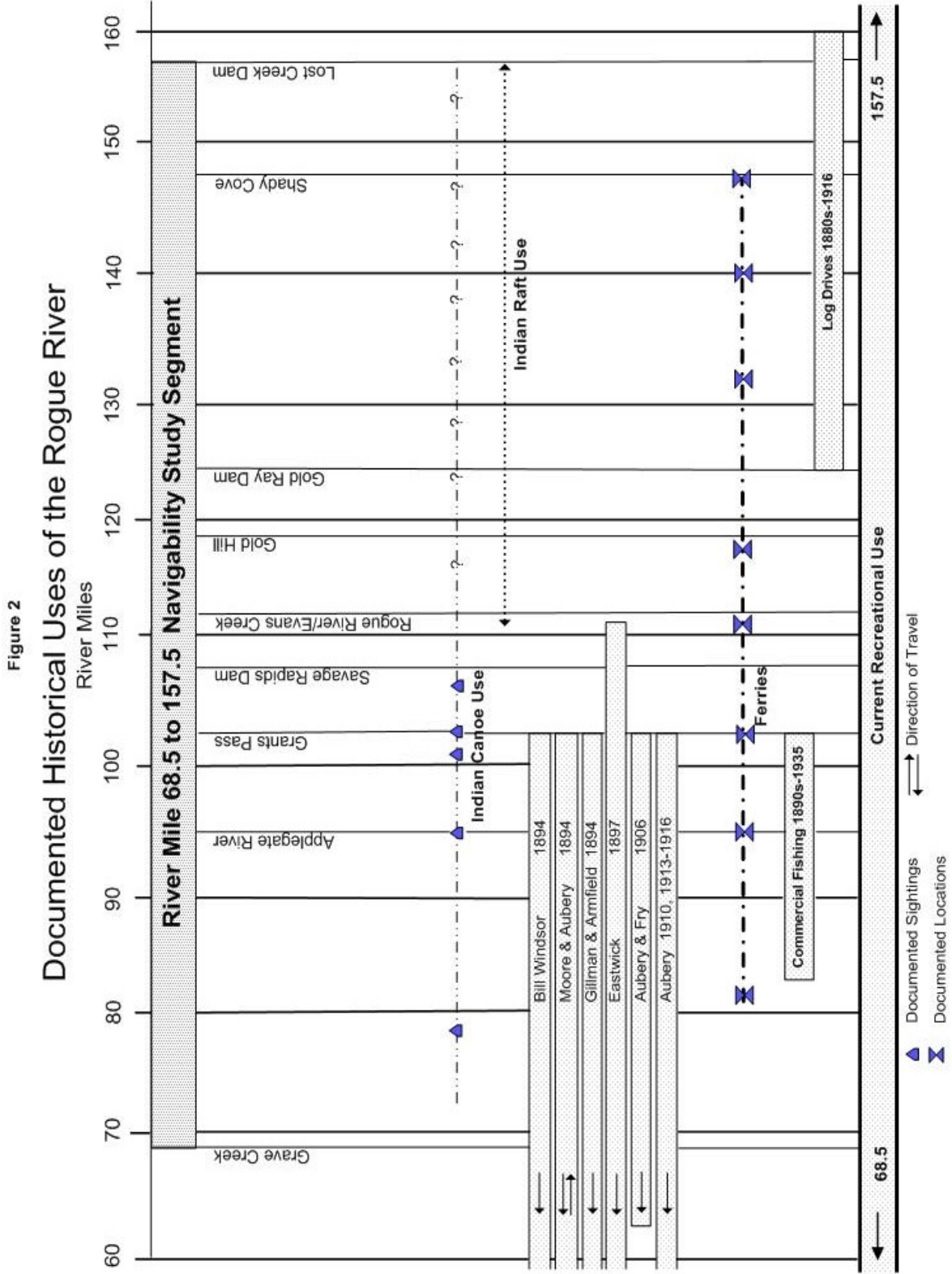
- The Rogue River study segment has been used in a variety of ways since statehood. Documented evidence exists that Indians traveled on stretches of the study segment in canoes. In addition, the study segment was also used by ferries, for log driving, by commercial fishermen, for the transportation of passengers and cargo and by various recreational watercraft.
- With the exception of a few areas, the general physical orientation of the Rogue River study segment has not changed appreciably since statehood. This conclusion is based on an examination of the maps prepared by the cadastral surveyors, and a review of post-statehood maps available to the Department.
- The flow of the Rogue River through the study segment was at the time of statehood greater than it is today. This is not only because of the dams that have been constructed throughout the Rogue River Basin, but also withdrawals that are taking water from the waterway for irrigation, municipal and domestic uses.

- Most of the recreational watercraft currently used on the Rogue River study segment draw less than 8 inches and can use the study segment with some difficulty at a minimum flow of 900 cfs. Based on a model developed by the Oregon Water Resources Department, an 80% likelihood exists that this rate of flow would have occurred throughout the year at the time of statehood (1859).
- Similarly, there is also an 80% likelihood that a flow of 1,000 cfs (which would provide a trip with fewer obstructions) would have occurred throughout the year in 1859.
- Indian dugout canoes of the type used on the Rogue River and in other parts of the Pacific Northwest typically draw 6 to 8 inches. Therefore, they are comparable to canoes, kayaks, drift boats and rafts in current use on the waterway.

Given that Indian use of canoes has been documented to have occurred prior to, or at the time of statehood at several points along the study segment, and that several of the recreational watercraft currently in use have characteristics similar to Indian canoes, it is reasonable to conclude that a dugout-type canoe could have been used on the entire Rogue River study segment at the time of statehood.

### **Preliminary Conclusions**

In light of the foregoing evidence presented in this study and the above listed conclusions, it is reasonable to conclude that the 89-mile segment of the Rogue River from Grave Creek to Lost Creek Dam, in its ordinary and natural condition, was used, was susceptible to use, or both, as a highway of commerce over which trade and travel were or could have been conducted in the customary modes of trade and travel on water at the time of statehood.



## Section 5: References

Abbott, Elgar, 1978, interview conducted by Oregon Department of State Lands, November 9, 1978.

Arman, Florence and Wooldridge, Glen, 1982, *The Rogue: A River to Run*, Grants Pass, Oregon, Wildwood Press, 276 p.

Ashland Tidings, 1889, news item beginning with the sentence: "In the manner of Tolo Townsite Milling Co....," August 16, 1889.

\_\_\_\_\_ 1906, news item beginning with sentence: "A Grants Pass correspondent of the Evening Telegram....," February 26, 1906.

\_\_\_\_\_ 1911, article entitled "Youth Drowned in Rogue," June 26, 1911.

\_\_\_\_\_ 1914, article entitled "Electric Plant At Gold Hill," December 28, 1914.

\_\_\_\_\_ 1915a, article entitled "Will Navigate Rogue River," February 1, 1915.

\_\_\_\_\_ 1915b, article entitled "Work on Gold Hill Dam Resumed," August 9, 1915.

\_\_\_\_\_ 1916, article entitled "Navigate Rogue to Gold Bar," June 1, 1916.

Atwood, Kay, 1978, *Illahe: The Story of Settlement in the Rogue River Canyon*, Corvallis, Oregon State University Press, 251 p.

Barnett, H. B., 1937, *Oregon Coast: Culture Element Distributions: VII*, Berkeley, California, University of California Anthropological Records, p. 155, 170-171 and map.

Bournamann, Chester L., no date, *A Brief History of the City of Rogue River, Oregon from the First Settler to 1912*, Jackson County Public Library, Medford, pp. 2-8.

Brackenridge, William D., 1931, O. B. Sperlin, editor, *Brackenridge Journal for the Oregon Country*, Seattle, University of Washington Press, p. 62-63.

Brooks, Howard C. and Ramp, Len, 1968, *Gold and Silver in Oregon*, Portland, Department of Geology and Mineral Industries, Bulletin 61, 337 p.

Buck, Jim, 2006, Project Manager, United States Army Corps of Engineers, Lost Creek Dam Project, personnel communication.

Cacreeks.com, 2006, *Hog River to Grave Creek: California Creeks – Scenic Rogue*: <http://cacreeks.com/rogue2.htm>

Carlson, Signe M., 1984, Irrigation: History of Ament Dam, 6 p.

Campbell, Qunitin; Daley, Thomas D.; Sorrels, Gerald A., Shafner, Ira F., Price, Norman D. and Huffer, John H., 1884, 1917-1919, Cadastral Map Township No. 34 South Range No. 8 West of the Willamette Meridian, Oregon, Portland, United States Bureau of Land Management Archives, 1 p. with notes.

Card, Virginia D., 1967, The Takelma Indians of Southwestern Oregon (Now Extinct), Typed from original manuscript by Mr. Leland Mentzer, found in Public Library of Medford and Jackson County, Medford, p. 15 and 26.

Clyman, James, 1984, Hasselstrom, Linda M., editor, Journal of a Mountain Man, Missoula, Mountain Press Publishing, p. 184-187.

\_\_\_\_\_1960, James Clyman: Frontiersman 1792-1881 (The adventure of a trapper and covered-wagon emigrant as told in his own reminiscences and diaries), Portland, Champoeg Press, p. 161.

Columbia and Oregon Timberman, 1889, article entitled: "Regulating Floating of Logs, An Act," February 2, 1889, p. 20.

\_\_\_\_\_1904a, news item with the sentence beginning: "The Condon Water & Power Company...", v. 6, no. 1, November, 1904, p. 45.

\_\_\_\_\_1904b, news item with the sentence beginning: "The recent freshets occasioned....," v. 5, no. 5, p. 25.

\_\_\_\_\_1909, news item with the sentence beginning: "Rogue River Electric Co., Medford, expects...", v. 11, no. 1, November, 1909.

Colvocoresses, George M., 1852, Four Years in a Government Exploring Expedition, New York, Cornish, Lamport and Co, p. 287-288.

Cram, Thomas J., 1859, Topographical Memoir of the Department of the Pacific, Washington, D.C., House of Representatives, 35<sup>th</sup> Congress, 2d Session, Ex. Document No. 114, p. 33-35 and map IX.

Curry County Reporter, 1974, caption below photo in article entitled "Miners Used Ingenious Methods," August 29, 1974, p. 6.

Daily Courier, 1913, news item beginning with sentence: "A. Aubery and H. W. Elliott left for Gold Beach where they will fish....," August 29, 1913.

Daniel, Isaac, 2006, Historical and Current Use of the Middle and Upper Rogue River, Oregon: A Title Navigability Study, Research paper submitted in partial fulfillment of the requirements for the degree of Master of Science, 74 p.

Davis, Linda, 2004, Appendix A - History of SBW (Seven Basins Watershed Council), Appendix to the Seven Basins Watershed Assessment, prepared for the Seven Basins Watershed Council by Environmental Management Services, Inc., Medford, Oregon, 101 p.

Department of State Lands, 2006, Undated copy of photographs taken of Hickler and Barrey's Dredger, Salem.

Dreamflows, 2006, Rogue River: Nugget-Powerhouse Run, Dreamflows, <http://www.dreamflows.com/Guide/Rogue/Nugget/index.html>

Drucker, Philip, 1936, The Tolowa and Their Southwest Oregon Kin, in American Archaeology and Ethnology, Berkeley, University of California Press, p. 219-299.

Eastwick, Philip G., 1879, Report of Mr. Philip G. Eastwick, Assistant Engineer, Examination of Rogue River, Oregon: G. L. Gillespie, Report of the Chief of Engineers, Washington, D.C., U.S. Government Printing Office, p. 1858-1863.

Edmonson, Bill and Zelda, 1989, Oral history interview, Rogue River National Forest, p. 58-60.

Farnell, James E., 1979, Rogue River Navigability Study, Oregon Division of State Lands, 85 p.

Fletcher, 2006, The River Drivers, <http://www.riverstouch.com/origins4.htm>

Fisheyesoup.com, 2006, Rogue River – Upper Fishing Reports, October 1, 2005, <http://www.fisheyesoup.com/reports.php?fmSearch=1&fmWater=Rogue River>

Genaw, Linda M., 1988, Gold Hill and Its Neighbors Along the River, Central Point, Oregon, p. 43-51.

Giordano and the Willamette Kayak and Canoe Club, 2004, Soggy Sneakers, Seattle, The Mountaineers Books, 384 p.

Gold Beach Gazette, 1894a, news item beginning with the sentence: "They talk of the navigation of Rogue River...", August 24, 1894.

\_\_\_\_\_ 1894b, article entitled "Over the Riffles: Two Curry County Men go to Grants Pass by Boat," August 3, 1894.

Graham, David L., 2004, Hydrology and Water Uses, Chapter 4, Seven Basins Watershed Assessment, prepared for the Seven Basins Watershed Council by Environmental Management Services, Inc., Medford, Oregon, p. 4-1 to 4-58.

Grants Pass Courier, 1835, article entitled: "Establish Ferries to Serve North-South Travel," April 3, 1935, Sixth Section, pp. 2-3.

Gray, Dennis J., 1987, *The Takelma and Their Athapascan Neighbors*, Eugene, University of Oregon Anthropological Papers, no. 37, p. 34.

Greenhow, Robert, 1840, *The North-West Coast of North America and Adjacent Territories Compiled from the Best Authorities Under the Direction of Robert Greenhow to Accompany His Memoir on the Northwest Coast*, Washington, Blair and River, Printers (held in University of Washington Libraries' Map Collection).

Grieve, Vernon, 2006, Greive's Guide Service, Inc., telephone interview conducted by the Oregon Department of State Lands.

Hague, Noah, 2006, telephone interview conducted by Oregon Department of State Lands.

Harrington, J. Peabody, 1933, Notes taken while studying the Takelma and interviewing Frances Johnson.

Hill, Edna M., 1976, *First Ferries on the Rogue River*, Josephine County Historical Highlights, Josephine County Historical Society, p. 2.7.

Hodge, Frederick W., 1906, *Takelma Indian Tribe History*, from internet website: <http://www.accessgenealogy.com/native/tribes/takelma/takelmaindianhist.htm>

Hood, Washington, Stansbury, M. H., Stone, William James and Abert, John J., 1838, *Map of the United States Territory of Oregon West of the Rocky Mountains*, Washington, D.C., Bureau of Topographical Engineers (held in University of Washington Libraries' Map Collection).

Irving, Washington, 1837, *Map of the Territory West of the Rocky Mountains*, Philadelphia, Carey, Lea and Blanchard, Publisher (held in Washington State University Manuscripts, Archives and Special Collections).

Ives, Butler and Hyde, George, 1854 and 1855a, *Cadastral Map of Township No. 36 South Range No. 2 West Willamette Meridian*, Oregon, Portland, United States Bureau of Land Management Archives, 1 p. with notes.

\_\_\_\_\_ 1854 and 1855b, *Cadastral Map of Township No. 35 South Range No. 1 West Willamette Meridian*, Oregon, Portland, United States Bureau of Land Management Archives, 1 p. with notes.

\_\_\_\_\_ 1853-1855, *Cadastral Map of Township No. 34 South Range No. 1 West Willamette Meridian*, Oregon, Portland, United States Bureau of Land Management Archives, 1 p. with notes.

Ives, Butler; Hyde, George and Howard, Charles J., 1855 and 1883, Cadastral Map of Township No. 36 South Range No 4 West Willamette Meridian. United States Bureau of Land Management Archives, 1 p. with notes.

Jackson County Commissioner's Journal, 1889, journal entry of August 7, 1889.

Johnson, Overton and Winter, Willam H., 1906, Migration of 1843, Oregon Historical Quarterly, v. 7, pp. 229.

Jones, Benjamin E.; Oakley, Warren and Stearns, Harold T., 1932, Water-Power Resources of the Rogue River Drainage Basin, Oregon, Water-Supply Paper 638-B, Washington, D.C., United States Government Printing Office, 1932, p. i-vi and 35-97.

Josephine County Commissioner's Journal, 1903, journal entry of April 2, 1903 with the sentence beginning: "In the matter of the application of the Applegate Boom and Lumber Company...." V. 4, p. 319.

Keller, Robb, 1998, Paddling Oregon, Guilford, Connecticut, The Globe Pequot Press, 471, p.

Lake, Wells and Hyde, George, 1856, Cadastral Map of Township No. 36 South Range 7 West of the Willamette Meridian, Oregon, Portland, United States Bureau of Land Management Archives, 1 p. with notes.

Lawrence, Mark E., Bridges and Ferries Across Rogue River in Early Jackson County Toll Roads, Tunnels, Ferries and Bridges, Southern Oregon Historical Society, p. 4-7.

LeLande, Jeff, 1987, First Over the Siskiyou: Peter Skene Ogden's 1826-1827 Journey Through the Oregon-California Borderlands, Portland, Oregon Historical Society Press, p. 77-87.

Loy, William G., Allan, Stuart, Buckley, Aileen R. and Meacham, James E., 2001, Atlas of Oregon, Eugene, Oregon, University of Oregon Press, 301 p.

McArthur, Lewis L., 2003, Oregon Geographic Names, Portland, Oregon, Oregon Historical Society Press, Seventh Edition, 1,074 p. and CD.

Macnaughtan, Don, 1999, Discovery and Bibliography of the Athapaskan Indians of Southwestern Oregon, Ethnographic Bibliographies no. 3, from internet website: <http://www.lanecc.edu/library/don/chetco.htm>

Medford Mail Tribune, 1910a, article entitled: "Lost Life in Rapids of Rogue," May 30, 1910, p. 1.

\_\_\_\_\_1910b, article entitled: "Logging Contractor Throws Up Job," June 13, 1910.

\_\_\_\_\_1911, article entitled "Loses Life in Whirlpool of Rogue River," June 25, 1911.

\_\_\_\_\_1999, article entitled "Diversion Canal Issue Swirls Around Money, Politics, Fish." November 7, 1999.

\_\_\_\_\_2007, article entitled "Gold Hill's Dam Set for Removal Next Year," July 14, 2007.

Oaks, Michael, 1998, Compilation of Newspaper Articles Concerning Ament, Josephine County Historical Society, 4 p.

Oregon Observer, 1894, news item beginning with the sentence: "For the third time in a quarter of a century Rogue river....," September 1, 1894.

\_\_\_\_\_1895, news item beginning with the sentence: "It is claimed by persons who ought to know....," March 2, 1895.

\_\_\_\_\_1906, news item beginning with the sentence: "R. E. Gilbert of Marial was in town Saturday....," August 8, 1906.

Oregon State Land Board, 1975, Rogue River agenda item in Minutes of Board Meetings, Land Department, May 20, 1975 meeting, v. 24, p. 546-547.

Oregon Water Resources Department, 1985, Rogue River Basin Study, 296 p.

\_\_\_\_\_2006, Water Availability Reporting System, internet website:  
[http://www.oregon.gov/OWRD/SW/index.shtml#Surface\\_Water\\_Availability](http://www.oregon.gov/OWRD/SW/index.shtml#Surface_Water_Availability)

\_\_\_\_\_2007, printout from OWRD database provided by Kimberly Grigsby and Kathy Boles, 2 p.

Orr, Elizabeth and Orr, William N., 1996, Geology of the Pacific Northwest, New York, The McGraw-Hill Companies, Inc., 409 p.

Orr, Elizabeth, William N. and Baldwin, Ewart M., 1992, Geology of Oregon, Dubuque, Iowa, Kendal/Hunt Publishing Company, 254 p.

Parker, Samuel, 1838, Map of Oregon Territory, Ithaca, New York, Samuel Parker Publisher (held in University of Washington Libraries' Map Collection).

Pearson, Francis, 1978, Oral interview, contained in Aural History, Rogue River National Forest, United States Forest Service, 5 p.

Poesch, Jessie, 1961, Titian Ramsay Peale: 1799-1855 and His Journals of the Wilkes Expedition, Chapter X: Oregon and California, Philadelphia, The American Philosophical Society, p. 190-192.

Potter, Miles F., 1976, Oregon's Golden Years, Caldwell, Idaho, The Caxton Printers, Ltd., 181 p.

Preston, J.A., Trutch, J.W. and Hyde, G.W., 1856, Preston's Sectional and County Map of Oregon and Washington: West of the Cascade Mountains, Chicago, A. H. Burley, Stationer (held in University of Washington Libraries' Map Collection).

Pyle, Presley, 1978, Oral interview conducted by James Farnell, Oregon Division of State Lands, 18 p.

Ringgold, George H., 1844, Map of the Western and Middle Portions of North America to Illustrate the History of Oregon and California, and the Other Countries on the North-West Coast by Robert Greenhow, Boston, C.C. Little & J. Brown, Publisher (held in University of Washington Libraries' Map Collection).

Rogue Magazine, 1911, Tolo and Its Possibilities, January issue, 2 p.

Rogue River Courier, 1906a, article entitled: "To Make Rogue River Navigable," August 10, 1906, p. 1.

\_\_\_\_\_ 1906b, article entitled "Rogue River to be Made Navigable," January 12, 1906.

\_\_\_\_\_ 1910, news item beginning with sentence: "Two boats 30 feet long and 7 feet wide....," April 1, 1910.

Sapir, Edward, 1907, Notes on the Takelma Indians of Southwestern Oregon, in American Anthropologist, v. 9, no. 2, pp. 251-252, 259-260.

\_\_\_\_\_ 1909, Takelma Texts, Philadelphia, University of Pennsylvania, Anthropological Publications of the University Museum, p. 113.

Sexton, Charles D., 2006, A Few Notes of the Life of David H. Sexton, A Pioneer of 1847, Josephine County Historical Society, found on internet at <http://www.jeffnet.org/~hugo/david.htm>

Shelby, Bo, 2002, John Day River, Oregon, Recreational Use and Flow Requirements for Watercraft, Expert Witness Report for Bo Shelby, Ph.D., prepared for the Oregon Department of Justice, February 4, 2002, 27 p.

Shunk, Francis R., 1892, Report of Lieut. Francis Rawn Shunk, Corps of Engineers, Portland, Report of Captain Symons, Preliminary Examination of the Rogue River, Oregon, From Grants Pass to the Mouth, Appendix V, p. 3433-3437.

Sutton, Jack, 2002, 110 Years With Josephine: The History of Josephine County, Grants Pass, Oregon, Josephine County Historical Society, 205 p. and 16 p. index.

Swanton, John R., 1953, Takelma, from internet website:  
<http://www.accessgenealogy.com/native/oregon/index.htm#Takelma>

Thompson, Timothy R., 1997, Letter of request for navigability study of the Rogue River, 2 p.

Trusty, Rufus, 1978, Oral interview conducted by James Farnell, Oregon Division of State Lands, regarding Trusty's participation in a log drive, May 11, 1979.

United States Bureau of the Census, 1910, Thirteenth Census of the United States, Josephine County, Records of the Bureau of the Census, National Archives, Washington, D.C., p. 12, 14, 15, 19, 21 and 23.

U.S. Geological Survey (USGS), 1990a, Statistical Summaries of Streamflow Data in Oregon, Open File Report 90-118, v. 1, Monthly and Annual Streamflow, and Flow-Duration Values, 14337600 Rogue River Near McLeod, Oregon, p. 365-366.

\_\_\_\_\_1990b, Statistical Summaries of Streamflow Data in Oregon, Open File Report 90-118, v. 1, Monthly and Annual Streamflow, and Flow-Duration Values, 14339000 Rogue River at Dodge Bridge, Near Eagle Point, Oregon, p. 370-371.

\_\_\_\_\_1990c, Statistical Summaries of Streamflow Data in Oregon, Open File Report 90-118, v. 1, Monthly and Annual Streamflow, and Flow-Duration Values, 14359000 Rogue River at Raygold, Near Central Point, Oregon, Oregon, p. 383-384.

\_\_\_\_\_1990d, Statistical Summaries of Streamflow Data in Oregon, Open File Report 90-118, v. 1, Monthly and Annual Streamflow, and Flow-Duration Values, 14361500 Rogue River at Grants Pass, p. 385-386.

\_\_\_\_\_2006a, Monthly Streamflow Statistics for the Nation: USGS 14337600 Rogue River near McLeod, Oregon, internet website:  
[http://nwis.waterdata.usgs.gov/nwis/monthly/?site\\_no=14337600@agency\\_cd=US](http://nwis.waterdata.usgs.gov/nwis/monthly/?site_no=14337600@agency_cd=US)

\_\_\_\_\_2006b, Monthly Streamflow Statistics for the Nation: USGS 14339000  
Rogue River at Dodge Bridge, Near Eagle Point, Oregon, internet website:  
[http://nwis.waterdata.usgs.gov/nwis/monthly/?site\\_no=14339000@agency\\_cd=US](http://nwis.waterdata.usgs.gov/nwis/monthly/?site_no=14339000@agency_cd=US)

\_\_\_\_\_2006c, Monthly Streamflow Statistics for the Nation: USGS 14359000  
Rogue River at Raygold Near Central Point, Oregon, internet website:  
[http://nwis.waterdata.usgs.gov/nwis/monthly/?site\\_no=14359000@agency\\_cd=US](http://nwis.waterdata.usgs.gov/nwis/monthly/?site_no=14359000@agency_cd=US)

\_\_\_\_\_2006a, Monthly Streamflow Statistics for the Nation: USGS 14361500  
Rogue River at Grants Pass, Oregon, internet website:  
[http://nwis.waterdata.usgs.gov/nwis/monthly/?site\\_no=14361500&agency\\_cd=USGS](http://nwis.waterdata.usgs.gov/nwis/monthly/?site_no=14361500&agency_cd=USGS)

Vaughn, 1978, Oral interview conducted by James Farnell concerning log drives on the Rogue River, November 1978.

Wetdawg, 2006, Available Information: Above Nugget Falls to Gold Hill Boat Ramp,  
[http://www.wetdawg.com/pages/white\\_dir\\_display.php?s=OR&f=5295&results](http://www.wetdawg.com/pages/white_dir_display.php?s=OR&f=5295&results)

Wilkes, Charles, 1841, Map of the Oregon Territory, Washington, D.C., U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey (held in University of Washington Libraries' Map Collection).

Winchell, A.N, 1914, The Mineral Resources of Oregon, Portland, The Oregon Bureau of Mines and Geology, v. 1, no. 5, 265 p.

Wooldridge, 1974, interview conducted by A. R. "Pat" Panisiddi of the Division of State Lands, 13 p.

Wyld, James, 1843, Map of the Oregon Districts and the Adjacent Country, London, James Wyld Publisher (held in University of Washington Libraries' Map Collection).