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# CONTEXT STATEMENT FOR RAILROAD LOGGING IN OREGON

Ward Tonsfeldt
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## CHAPTER I

## NINETEENTH CENTURY BACKGROUND

### Yeoman Forestry

During the nineteenth century, Europeans and Americans immigrating into the Oregon country brought with them a material culture that required large quantities of wood. For the settlers, arriving after the trappers and traders, the need was especially acute. In the farming traditions of both Europe and America, cutting trees to make buildings, fences, and wooden items for the homestead was viewed as a necessary part of husbandry.[1] Building up a farm in western Oregon or a ranch east of the Cascades required logs, timbers, boards, poles, rails, shakes, and other products that the forest was expected to provide.

One family participating in the white settlement of Oregon was the Robbins family-- Abner and Kate Robbins, with their daughter Eunice and their son Tommy. The letters that the Robbinses wrote to their relatives in Cohasset, Massachusetts, give us an interesting glimpse into the homesteading processes.

In 1869, the Robbins family came to Oregon's Crooked River Valley to raise cattle for the new mining camps that were opening in eastern Oregon and in Idaho. The first settlers had entered the grasslands of the Crooked River during the mid-1860s. Kate Robbins wrote to her relatives in Massachusetts that their community on Ochoco Creek had been first settled two years ago, that there were seventy families in the valley, and "no death in the valley yet."[2]

The family's settlement cabin was made from pine logs, as we might expect, and the family used juniper and pine for fuel. "We have any amount of wood nearby," Kate wrote, and "there has been two sawmills put up and by spring we will have plenty of lumber

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[1]See W.G. Youngquist and H.O. Fleischer, Wood in American Life: 1776-2076 (Madison, Wisconsin: Forest Products Research Society, 1977), 17-59, and Brooke Hindle, Material Culture and the Wooden Age (Tarryton, New York: Sleepy Hollow, 1980).

[2]Kate Robbins to Sarah Pratt, 6 December 1870, Robbins Letters, Oregon Collection, University of Oregon library.

and at a reasonable price."[3] A year later at least one of the mills was cutting lumber in the valley, probably a water-powered sash mill operated by Ike Schwartz.[4]

In April of 1871, the family put a frame addition on their one-room cabin, "...said addition being nothing more nor less than a kitchen." Kate and Eunice were pleased with the enlarged accommodations, which Eunice found as "high-toned as W.B. Johnson with his cupola."

Through the 1870s the family remained on Ochoco Creek while Abner ranged the country, leaving the ranch in the early spring to buy cattle for delivery to ~~the~~ Idaho and eastern Oregon ~~mines.~~

In the winter of 1878, we find Abner "...camped out in the woods making rails. He is going to fence a large pasture which will take 5000 rails."[5] If we assume that Abner was building the Montana style rail fences that were popular at this time, he would have gotten around 10,000 linear feet of fence from his 5000 rails. This would enclose 160 acres of pasture, which was the conventional quarter section of land claimed by homesteaders or "entrymen." To get his 5000 rails, Abner would have had to cut 2500 small lodgepole pine trees, if he was able to average two 12' rails per tree.

Kate and Abner Robbins' experiences were shared by families throughout the territory. West of the Cascades and in the Oregon Trail corridor, families like the Robbinses had settled in the 1840s and 1850s. In the more remote country east of the Cascades, the 1860s, 1870s and 1880s saw the entry of Euro-American settlers and the rise of the yeoman economy.

## Local Mills

Besides Abner's axe, the local saw mill provided a second source of forest products for the Robbins family. On Ochoco Creek, as we have seen, the first mill appeared four years after initial settlement. In more remote parts of the state, the small local mills continued to operate well past the 1900s. Specialized production of lumber or any other commodity in the

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[3]Kate Robbins to Sarah Pratt, 27 December 1870, Robbins Letters.

[4]Philip Brogan, East of the Cascades (Portland: Binfords and Mort, 1953), 217.

[5]Eunice Robbins to Sarah Pratt, 18 January 1878, Robbins Letters.

settlement communities required a predictable market, capital for equipment, craftsmen and laborers, and an economy that could provide cash or barter goods to exchange for the product. The local lumber mills provided services to the community at the same level as local grist mills. What was produced by the mills was consumed locally, and plans for reaching beyond neighborhood markets were not part of the owners' strategies.

Local mills were modest operations driven by water power or small steam engines. The equipment typically consisted of a single sash or muley saw, and little else. The most distant market they could reach were those available to their teams and freight wagons--usually within a radius of twenty to fifty miles. Poor roads or long winters could limit this market even more.

Louis E. Polley comments that the first mill in Lane County's Mohawk Valley "was never too big a success as they had a very small market locally and lumber had to be hauled to Eugene or Harrisburg by wagon [to reach a larger market]."[6]

While business was slow at times, the local mills had little competition. Despite this, few of them seem to have prospered. Their staple products, rough boards and large timbers, could be duplicated on any homestead equipped with a pit saw, a broad axe, and a froe. As a consequence, in difficult times settlers could revert to manual production and make their own lumber, beams, or shakes.

As the communities grew and the mills slowly improved, however, they began to acquire more sophisticated equipment including edgers, planers, and molders. With these machines, they could produce siding, molding, and sash for buildings. Stephen Dow Beckham points out that the local mills in Douglas County benefitted from the homesteaders' lust "to possess a house of milled lumber" that would notify their neighbors that they "had attained financial stability" and were "moving rapidly toward comfortable living."[7]

In those parts of western Oregon with good access to navigable water, small mills devoted to local production flourished for a rather brief period in the middle decades of the nineteenth century. In Coos County, for example, lumber was shipped in from other areas as early as 1850. By 1854, an industrial-scale mill was established in Port Orford. It had a

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[6]A History of the Mohawk Valley and Early Lumbering (Marcola, Ore.: Polley Publishing, 1984), 15.

[7]Land of the Umpqua (Roseburg, Ore.: Douglas County, 1986), 216.

daily capacity of 5000 board feet.[8] Such a mill could easily supply the local demand for lumber while still shipping most of its production to markets in California.[9]

In landlocked parts of western Oregon, the community mills were a more important feature of the rural economy. In Lane County's Siuslaw valley, for example, John Addison set up the first mill with a circular saw in 1884, long after such machinery was common in other parts of the state. The mill cut for the local market and sold rough lumber in Eugene when the condition of the roads permitted. Uncertain markets, poor roads, and the bottomless Lane County mud limited the mill's operation to "three or four months" in most years.[10]

East of the Cascades where there was no possibility of water-borne commerce, the small mills served local markets until well into the 1900s, or whenever the railroad reached near enough to bring in better products. The small mills operating in south-central Oregon's old Lake County--now divided into Lake and Klamath counties--serve as examples of this pattern of production throughout the state.

Old Lake County's early mills displayed the general characteristics of pre-industrial technology. Some of the machinery was built of wood, the mills were often water-powered, and the energy required for logging was supplied by human or animal power. Even the larger steam powered mills were built to "human scale," with one or two men tending the saw and carriage, which may have been the only machines the mill had. Most of the mills ran on an intermittent basis. Some cut lumber when there was a specific order, while others cut for seasonal sales. The largest of the mills was the Moore mill in Linkville, and its total ~~annual~~ cut was less than 400,000 board feet each year.

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[8]Lumber and timber are traditionally measured in board feet, usually in even thousands. A board foot is 1 lineal foot of a board 1" by 12". A thousand feet of lumber can be visualized as a pile of lumber 10' long, 4' wide and 2' high. A thousand feet was also the traditional load for a farm wagon.

[9]Emil R. Peterson and Alfred Powers, A Century of Coos and Curry (Portland: Binfords and Mort, 1952), 425ff.

[10]Patricia A. Edwards, Nancy Seales O'Hearn, and Marna L. Hing, Sawdust and Cider: A History of Lorane, Oregon, and the Suislaw Valley (Bend, Ore.: Maverick Publications, 1988), 103-111.

**Table 1.**

**Early Mills in Old Klamath County**

| Mill | Dates | Location | Reference |
|---|---|---|---|
| Klamath Basin | | | |
| Naylor-Hockenyoss | 1868-86 | Spencer Ck | (Shaver 1905) |
| Spencer Family | *Same mill* | *as above* | (The Timberman 1928) |
| Gordon | 1874-88 | Keno | (The Timberman 1928) |
| Pratt | *Same mill* | *as above* | (Shaver 1905) |
| Dussenberry | *Same mill* | *as above* | (Lamm 1944) |
| Witherow | *Same mill* | *as above* | |
| Moore | 1877-1900 | Lost River | (The Timberman 1928) |
| Shook | c. 1877 | Bonanza | (Klamath Echoes 1974) |
| Gordon | 1877-83 | Lost River | (Lamm 1944) |
| Cooper Brothers | 1880-88 | Lost River | (Lamm 1944) |
| Van Riper | 1880-85 | Lost River | (The Timberman 1928) |
| Colahan | 1885-89 | Bly Mountain | (Good 1945) |
| Carr | 1888-1900 | Malin | (Lamm 1944) |
| Cooper-Dusenberry | 1888-1900 | Keno | (Lamm 1944) |
| Fitch | 1894-1900 | Hildebrand | (Lamm 1944) |
| Conally | 1985-97 | Keno | (Lamm 1944) |
| Snowgoose | 1897-1900 | Keno | (Lamm 1944) |
| Goose Lake Basin | | | |
| Joseph Ck. Mill | 1872 | Joseph Ck. | (Bach 1981) |
| Hyronymous and Russell | 1874 | Lassen Ck. | (Bach 1981) |
| E.A. Joseph | 1875-78 | Mill Flat | (Bach 1981) |
| O.L. Stanley | 1878 | Camp Ck. | (Bach 1981) |
| "Flintlock" Smith | 1877 | Thomas Ck. | (Bach 1981) |
| J.M. Russell | 1877 | Cottonwood Ck. | (Bach 1981) |
| Snelling Bros. | 1884-85 | Cox Ck. | (Bach 1981) |
| | 1885-88 | McShane Ck. | |
| Colahan | 1885-89 | Bly Mountain | (Lamm 1944) |
| Hawkins and Snelling | 1888-89 | Crooked Ck. | (Bach 1981) |
| T.J. Metzker | 1888 | 7 Up Ranch | (Bach 1981) |
| James Snyder | 1893 | Camp Ck. | (Bach 1981) |
| Hawkins and Rinehart | 1894 | Crooked Ck. | (Shaver 1905) |

Sources: W.E. Lamm, Lumbering in Klamath (Klamath Falls, Ore: 1945); "Pioneer Lumbering in Klamath," The Timberman, July 1928, 42-49; F.A. Shaver, A.P. Rose, R.F. Steele, and A.E. Adams, An Illustrated History of Central Oregon (Spokane: Western Historical, 1905); Rachael Applegate Good, History of Klamath County (Klamath Falls, 1941); Melva Bach, History of the Fremont National Forest (Lakeview: Fremont National Forest, 1989); Klamath Echoes, 1974.

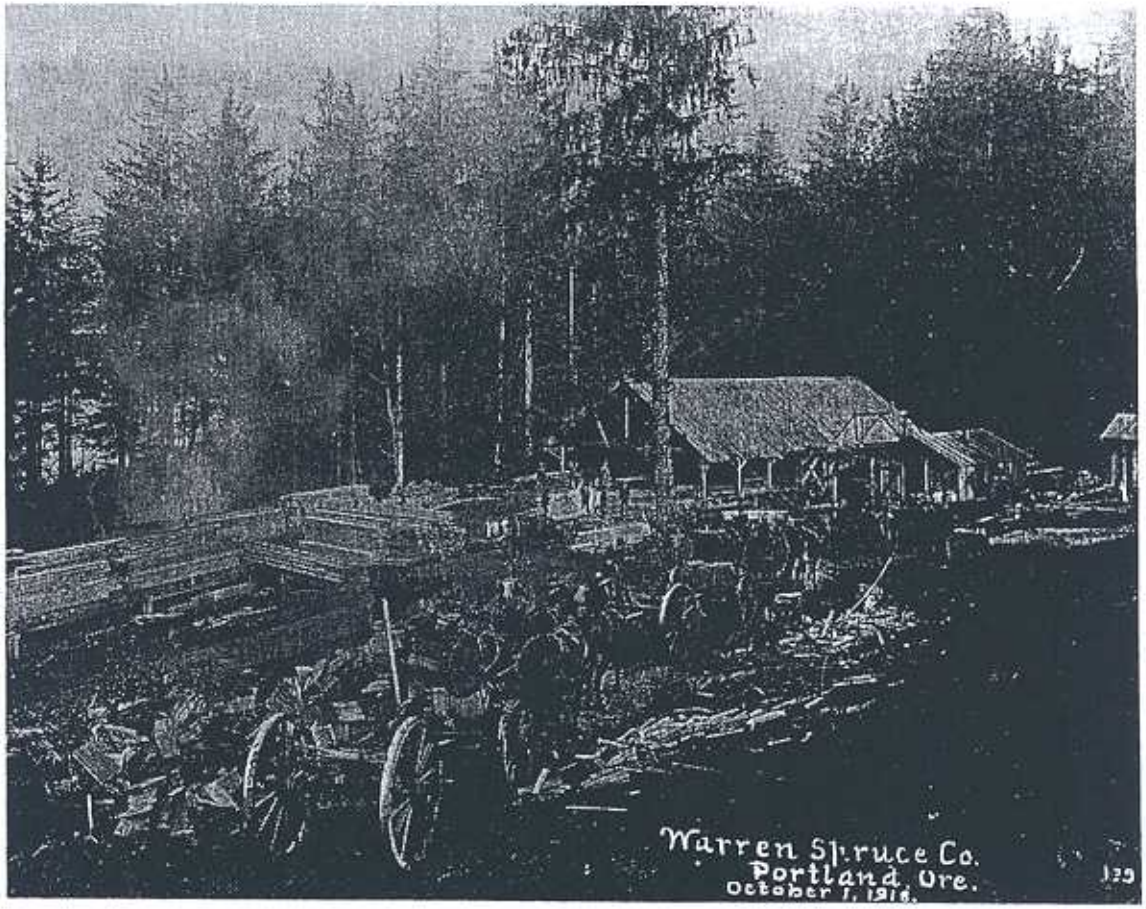


*Figure 1*
*Small mills like this one, photographed in 1918, cut lumber for local markets.*

The owners of the smallest local mills took a casual attitude toward their business. Lamm quotes Frank Nichols of Bonanza, who operated a mill in the early 1880s:

> `It didn't cost much to make lumber in those days, since I cut free Government timber, then hired a man and a team to haul in the logs. I ran the mill myself, so I didn't have any payroll to meet, and the only supply bill was for axle grease to grease the sash.'[11]

The mill that Nichols describes was a sash mill, run by a water wheel which was either an overshot or undershot wheel. Although the overshot wheels were more powerful than the undershot wheels, neither configuration had enough torque to run a circular saw. Hence the water wheel mills used a sash, which was a wooden frame that held a vertical saw blade moving in an up-and-down pattern. The sash was driven by a crank off the mill wheel. This arrangement allowed the sash to cut on the down stroke, with gravity and the mill's effort propelling the saw through the log. The result was not spectacular, but it was dependable.

One of Lamm's oral informants describes a sash mill as an "up and down mill":

> . . . up today and down tomorrow. Grandpap Gordon used to start the saw in the log then go away, sometimes to catch a fish, then after a while he would go back to see what effect the saw had upon the log. [12]

Louis Polley relays a similar story about the slow pace of activity in an early Lane County mill, where the sawyer had ample time to "go out and kill a deer" while the saw ran through the log.[13]

While the small sash mills in old Lake County were experiencing the ups and downs of the lumber business, the largest and most successful of the early mills seems to have pursued a rather placid course. This was the William S. Moore mill, built in 1877 on Link River near Linkville. The Moore mill used water power, but it had a water turbine instead of a wheel. As a result, it had enough power for a circular saw and other machinery. Since we have more information about this mill than

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[11]Lamm, 5.

[12]Lamm, 5.

[13]Polley, 15.

any of the others, it is worth examining.[14]

William Moore was originally from Illinois, immigrating to Oregon City in 1849 and working as a millwright around the Willamette Valley until 1873, when he came to Klamath Agency, on the Klamath Reservation. At the Agency, Moore built a small mill for the government. Then, in 1877, he built his own mill on Link River below Upper Klamath Lake.

By all accounts, the Moore mill was unusually well planned. The mill enjoyed "ample water power and an unlimited supply of timber" and was located close to the largest market in south central Oregon. Water was diverted from Link River into a large (6' x 6') flume that powered the turbine. The flume was also used to bring logs from Upper Klamath Lake to the mill floor. Lumber could be sold "right from the pile and loaded into the wagons of the customers, as was the general custom in those days." The mill's initial capacity was 7000 board feet/day, increasing over the years to 15,000 board feet. The factor limiting production was not the mill's capacity, however, but the amount of lumber the local market could absorb.

Machinery in the mill consisted of the turbine-powered head rig that mounted a 54" lower saw and a 36" top saw. There was a planer, which was an unusual feature in early Klamath mills. According to The Timberman, Moore resisted buying a saw with inserted teeth when they first came into use on the grounds that they were unsafe. When he was finally persuaded to install one, the guides were inadvertently set up too tight and the saw overheated. As a result, the rim expanded and "within fifteen minutes, teeth were flying in every direction."

The Moore mill received its logs from a logging camp on the Upper Lake at Squaw Point. The logs were skidded by bull team down to the lake and then assembled into a raft which was sailed down the lake to the mouth of Link River. The logging crew averaged 7000 board feet each day and cut 300 to 400 thousand board feet of logs each season. Later, horses replaced the oxen. In 1881, the steamer General Howard towed log rafts to the mill, but the practice proved unsuccessful because of the vessel's deep draft.

In 1887, William Moore sold his mill to his sons Charles S. and Rufus. The brothers ran the mill for twenty years, then closed it and built a larger steam powered-mill on Lake Ewauna several miles away. After the turn of the century, the Moore brothers were among the most prosperous members of the community.

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[14]For references on the Moore mill, see Shaver et al., 816; Lamm, 10; The Timberman, July 1928, 42; and Good, 416.

Rachael Applegate Good lists retailing, banking, and utilities among their business interests. Charles Moore's obituary in the Klamath Falls Evening Herald (20 July 1915) traces his career in state politics, which included four years' service as state treasurer. Conspicuous among the assets in his estate was 20,000 acres of timberland.

The Moore mill was more successful and longer-lived than most of Oregon's small local mills. Nevertheless, it is representative of this pattern of production and similar examples could be found in nearly any community in Oregon. Significantly, when the railroads reached Linkville (by then Klamath Falls) and Lakeview after 1900, the Moore mill was not able to survive in the new business environment. With the railroad came competition from outside. Lumber that had been planed, kiln-dried, and graded could be shipped in to compete with the local product. Local producers like the Moore brothers had to meet the competition or withdraw from the market.

The Dalles Lumbering Company, located near The Dalles, Oregon, offers another example of a competently-run local mill. It was perhaps better capitalized than the Moore mill, but was still unable to enter the national lumber market. The Dalles firm had timber located near The Dalles on the south fork of Mill Creek. In 1884 they built a mill on the creek and 12-mile flume to carry their rough lumber to The Dalles for finishing and local sale. The Northern Pacific Railroad and the Union Pacific came through the Columbia Gorge in the 1880s, offering the Dalles Lumbering Company access to expanded markets, which they were unwilling or unable to enter. In 1902, the company quietly gave up the ghost, selling the flume, millsite, and their precious water rights to the city.[15]

Men like the Moore brothers or the proprietors of The Dalles Lumbering Company were more closely aligned with the craft and trades tradition than industrial-scale lumber production. When railroads reached isolated areas like old Lake County, the local mills had the opportunity to expand their production and sell lumber on the national market.

Yet, few did. Entering the national lumber market required industrial-scale production and resources of capital, technical sophistication, and marketing skills beyond the reach of back country merchants.

The mill that replaced the Moore mill as the dominant

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[15]Jon Horn, "History of the Dalles Lumbering Company," Women in Natural Resources, March 1990, 28-33. See also Jon Horn, "Bingham's Camp: Historical Archaeology of an 1890s Eastern Oregon Logging Camp" (M.A. thesis, University of Idaho, 1987).

producer in Klamath Falls was the Pelican Bay Lumber Company. Financed by the Mortenson family in Chicago and headed by Harold Mortenson from San Francisco, the new mill contracted for thousands of acres of government timber, employed hundreds of workers, owned its own steamboats and railroad, and sold its products throughout the nation. Its competitors were large pine mills in Michigan, the Southern states, and California.

Oregon and the American Lumber Industry

In his colorful account of the American lumber industry, Oregon writer Stewart Holbrook commemorated the "pure logger strain" of American worker who "came into being on the grim wooded shores of Maine three hundred years ago,...rose to fullest stature in the Lake States of the nineteenth century, and is now [in 1938] passing out of existence on the West Coast and in the Pacific Northwest."[16]

The progress of the national lumber industry through the nineteenth century was certainly colorful, but it also brought the worst excesses of laissez faire capitalism. After the century's end, in 1909, lumber production reached a crescendo of 44 billion board feet, a figure that was not exceeded until the late 1980s.[17] A few years later, Congress asked the Bureau of Corporations to investigate the lumber industry and to report on its current state. The resulting publication in 1913 and 1914 of the Bureau's report--simply titled The Lumber Industry--provided the details of a century of financial opportunism.

Herbert Knox Smith, Commissioner of Corporations, wrote in his Letter of Submittal that investigation confirmed ". . .the concentration of. . .our standing timber in a. . .few enormous holdings;" "vast speculative purchase of timberland;" and "an enormous increase in the value of this diminishing natural resource." Lumbermen had plundered the public domain for decades, he argued, by accumulating public lands into private holdings and monopolizing the supply of timber. Smith blamed public lands policies for allowing this travesty, and urged that

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[16]Holy Old Mackinaw (New York: Macmillan, 1938), ix. See also Thomas Cox, Robert Maxwell, Philip Thomas, and Joseph Malone, This Well Wooded Land (Lincoln: University of Nebraska Press, 1985).

[17]Statistical Abstracts of the United States (Washington, D.C.: GPO), 1920-47.

they be revised.[18]

Although the worst abuses in public land policy had been checked before the report was published, The Lumber Industry remains a fascinating document for its wealth of detail as well as its surprisingly modern sentiments. Beneath virtually every section of the two-volume report lurks the implicit question: "Given the richness of American forest resources, how did we get into this predicament?" The answer is a little complicated.

Producing lumber is deeply rooted in Euro-American culture, but the nineteenth century saw some fundamental changes in this ancient process. Lumber manufacture requires four elements: a supply of trees to cut, a means to manufacture the product, a means to transport the product, and a ready market. In Colonial times, the trees were widely available, but uncertainties about the other elements inhibited production. Then, in the first half of the nineteenth century, the invention of high pressure steam engines made lumber easier to manufacture. As this technology was applied to railroads and steamships, lumber became easier to transport. The spread of Euro-American settlement provided a market for lumber, as did the new manufacturing technologies that developed during the century. Lumber was used for building, of course, but it was also used for containers, wagons, ships, and numerous domestic and commercial products.

Nineteenth century America provided new levels of demand for lumber, then, and also provided the means to manufacture and transport it with greater ease than in previous times. The fourth element--the availability of timber to cut--grew prodigiously as the industry moved west from its origins in the New England and Middle Atlantic states into the Great Lakes area. Vast tracts of white pine in Michigan, Wisconsin, and Minnesota passed from the public domain into the hands of speculators and lumber companies through such expedients as military warrants, road and railroad land grants, swamp land grants, and land grants to colleges.[19]

In 1862, for example, Cornell University in New York was granted nearly 1,000,000 acres of public domain. One half of the grant was taken in prime Wisconsin timber lands, which were then sold to lumber companies. The average sale price of all the

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[18]U. S. Department of Commerce, Bureau of Corporations, The Lumber Industry (Washington, DC: USGPO, 1914) vol. I, xvii.

[19]See Malcolm J. Rohrbough, The Land Office Business: The Settlement and Administration of Public Lands 1789-1837 (New York: Oxford, 1968) for early nineteenth century practices and Benjamin H. Hibbard, A History of Public Land Policies (New York: Macmillan, 1924) for later nineteenth century practices.

Cornell lands was seventy cents an acre.[20]

Holbrook and others have popularized the view that the New England states--especially Maine--began the American lumber industry. In fact, the industry began in no single place, and other states including New York and Pennsylvania were greater producers than Maine. It seems probable, however, that the New England entrepreneurs were among the first to see the connection between making lumber and shipping it by sea to distant markets. Maine lumbermen like Isaac Stephenson and Asa Mead Simpson and Maine firms like Pope and Talbot made significant contributions to the emerging industry.

Wherever its origins lay, the American lumber industry grew to a "floodtide" in the Great Lakes States that set the precedent for the later developments in the South and in the Pacific Northwest.[21]

Cutting the white pine logs in the winter, driving them down streams in the spring, and manufacturing lumber for the rest of the year, the Lake States prospered more than other early lumber centers. From their strategic location at the head of the Mississippi, Lake States mills could ship their products by river, canal, or rail to virtually every part of the country.

> The sawmills [in the Lake States] cut feebly during the Civil War, but in the expansionist years that followed, the production of pine lumber in the Lake states doubled and redoubled; from a mere two and three-quarters billion board feet in 1869 it leaped to five billion feet in 1879 and then to almost seven billion board feet in 1889. Between 1869 and 1899, the three Lake states were the primary source of lumber supply in the nation.[22]

As the Great Lakes region moved to dominate the industry, certain major producers began to dominate the region. By controlling the supply of logs and by building ever larger mills, the leading lumber firms reduced the cost of production and

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[20]Hibbard, 337. For detailed discussions of timber land acquisition in the Lake States, see Agnes M. Larson, History of the White Pine Industry in Minnesota (Minneapolis: University of Minnesota, 1949), 265-349 and Robert F. Fries, Empire in Pine (Madison: Wisconsin State Historical Society, 1951), 161-204.

[21]Thomas Cox et al., Well Wooded Land (Lincoln: University of Nebraska, 1985), 154-169.

[22]William G. Rector, Log Transportation in the Lake States Lumber Industry 1840-1918 (Glendale, California: Arthur H. Clark, 1953), 59.

## LUMBER PRODUCTION FOR THE U.S. AND SELECTED STATES 1870-1947

| | 1870 | 1880 | 1890 | 1900 | 1909 | 1919 | 1929 | 1939 | 1947 |
|---|---|---|---|---|---|---|---|---|---|
| Total US | 12,755,543 | 18,091,356 | 23,495,853 | 34,780,513 | 44,509,761 | 34,552,000 | 36,886,000 | 25,148,000 | 35,404,000 |
| Oregon | 75,139 | 177,171 | 444,565 | 734,181 | 1,898,995 | 2,577,000 | 4,784,000 | 4,765,000 | 7,102,000 |
| Washinton | 128,743 | 160,176 | 1,061,560 | 1,428,205 | 3,862,916 | 4,961,000 | 7,302,000 | 4,244,000 | 3,705,000 |
| California | 318,817 | 304,795 | 515,823 | 734,232 | 1,143,509 | 1,259,000 | 2,063,000 | 1,685,000 | 3,409,000 |
| Michigan | 2,251,613 | 4,172,572 | 4,245,717 | 3,012,057 | 1,889,724 | 876,000 | 571,000 | 333,000 | 580,000 |
| Minnesota | 242,390 | 563,974 | 1,079,403 | 2,341,619 | 1,561,508 | 700,000 | 357,000 | 111,000 | 244,000 |
| Mississippi | 160,580 | 168,747 | 452,797 | 1,202,334 | 2,572,669 | 2,390,000 | 2,669,000 | 1,201,000 | 1,397,000 |
| Louisiana | 76,459 | 133,472 | 303,591 | 1,113,423 | 3,551,918 | 3,164,000 | 2,232,000 | 1,036,000 | 1,269,000 |
| Maine | 639,167 | 566,656 | 564,243 | 765,515 | 1,111,565 | 596,000 | 258,000 | 215,000 | 459,000 |
| Pennsylvania | 1,629,631 | 1,773,844 | 2,113,267 | 2,321,284 | 1,462,771 | 630,000 | 55,000 | 51,000 | 154,000 |

Source: Statistical Abstract of the United States

All figures in Thousands of Board Feet

gained a competitive edge. Frederick Weyerhaeuser and his associates, for example, organized the distribution of logs from Wisconsin's Chippewa River watershed by operating a log boom at Beef Slough, the point where the Chippewa entered the Mississippi. Mills located down the Mississippi from the Chippewa joined Weyerhaeuser's group and were thereby assured of reliable delivery of the logs that their crews cut on the Chippewa and its tributaries. Since the Chippewa Basin held perhaps twenty percent of the total supply of white pine timber, controlling its production was a key to success in the white pine lumber business. Logs handled at Beef Slough totaled 10 million board feet in 1870; by 1880 the total reached 254 million board feet, and in 1892, 632 million board feet.[23] After 1892, the production declined rapidly, to fall below 10 million feet by 1905.

After the 1890s, production was declining not only on the Chippewa, but throughout other Lake States pine forests. Lumbermen from the Lake States and the Northeast began to look to the southern pine forests in Arkansas, Alabama, Texas, and especially Mississippi and Louisiana. Many northern lumbermen, including Frederick Weyerhaeuser, were reluctant to invest in the South, however, because of prevailing social and economic conditions. Also, the southern yellow pine was not as marketable as northern white pine. Nevertheless, the resource was there. Mississippi alone held nearly 6,000,000 acres of vacant pine land.[24] After the homestead laws were revised in 1876, public timber land in Mississippi was available to speculators and lumber companies for at auction with a minimum bid of $1.25/acre. Again, the process of acquiring timber land, building up production capacity, and creating distribution networks paid off handsomely for the most far-sighted lumbermen.

The tendency toward centralizing production that had begun in the Lake States continued in the South. The Long-Bell Lumber Company became "king of the yellow pine" in the South and one of the nation's leading producers after the turn of the century.[25] Many Lake States lumber companies built mills in the South, including Edward Hines, Brooks-Scanlon, Blodgett, the Gilchrist

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[23]Ralph W. Hidy, Frank Ernest Hill, and Allan Nevins, Timber and Men (New York: Macmillan, 1963), 585.

[24]Nollie Hickman, Mississippi Harvest (University, Miss.: University of Mississippi Press, 1962), 68-100. See also, Archer Mayor, Southern Timberman (Athens: University of Georgia Press, 1988) for a discussion of land acquisition in Texas, Louisiana, and Arkansas.

[25]Lenore Bradley, Robert Alexander Long (Durham: Forest History Society, 1989), 43ff.

family, the Shevlin partners, and F.C. Denkmann, Frederick Weyerhaeuser's associate. These operations were not modest. The Great Southern Lumber Company mill in Bogalusa, Louisiana, for example, was the nation's largest mill, with a capacity of over 1,000,000 board feet of lumber each day.

In 1889, the Lake States produced 34.5% of the U.S. cut while the South produced 15%. Twenty years later, in the banner year of 1909, the South was producing 33%, while the Lake States cut had declined to slightly over 12%. Southern production remained over 30% of the total cut for the next thirty years, falling to 22% in 1949.[26]

While southern production was rising in the 1890s and 1900s, production in the western states of California, Oregon, and Washington was rising as well. As Thomas Cox points out, however, it was rising slowly.[27] No western state was among the top three lumber producers in 1890. The redwood, fir, and ponderosa pine resources of the west were no secret to the Lake States and northeastern lumber companies, but there were several major problems with western timber. The most notable problem was that for all practical purposes the west coast was an island, cut off from U.S. markets and accessible only by sea.

Even after transcontinental railroads connected the west coast to the rest of the country in the 1880s, lumber companies were justifiably nervous about railroad rates and policies. Railroad rates could be ruinous for commodities like lumber. The Weyerhaeuser Timber Company, for example, did not build a mill to cut the timber it had acquired in Klamath County until 1928. George S. Long, Weyerhaeuser's west coast manager, was willing to pay taxes on the land and suffer the depredations of fires, ~~and~~ insects, ~~and trespass~~ for thirty years rather than become dependant on the Southern Pacific, which was Klamath County's only rail link to the outside world. When the Great Northern Railroad reached Klamath County in 1927, Weyerhaeuser set about building its first mill in Oregon.[28]

Through the 1880s, while the Northern Pacific, the Union Pacific, and the Southern Pacific controlled freight rates, the Northwestern mills could not compete for eastern markets. Lumber companies in the Lakes States, the Northeast, and South had the advantage of lower freight rates, as well as proximity, business

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[26]Statistical Abstracts

[27]Thomas Cox et al., Well-Wooded Land, 167ff; see also Thomas Cox, Mills and Markets (Seattle: University of Washington Press, 1974), 189ff.

[28]Hidy, Hill, and Nevins, 404.

connections, lower production costs, and familiar products.

In the 1890s, however, the tables turned. James J. Hill's Great Northern connected Puget Sound with Minneapolis. Hill cut rates in 1893, opening up the potential for lumber shipments east. The economic climate was not favorable in the early 1890s, however, so Hill's lower rates had little immediate effect on west coast production.[29] When the demand for lumber revived late in the decade, the west coast mills were finally poised to serve the national market.

During the 1890s lumbermen from the Lake States fairly besieged the West Coast. Weyerhaeuser's celebrated purchase of the Northern Pacific Railroad grant lands in 1900 probably represents the high water mark of this movement. Other significant Lake States firms moving west included T.B. Walker's Red River Lumber Company, Edward Hines, Merrill and Ring, the Griggs brothers, and a host of others. Great Lakes firms important in Oregon include William Yawkey, C.A. Smith, the Wheeler associates, the Blodgett Company, Robert Dollar, J. Neils, McCormack-Hauptmann, Shevlin associates, Brooks-Scanlon, the Gilchrist Company and others.

## Oregon's Cargo Mills

When the transcontinental railroads and the Great Lakes lumbermen burst upon the west coast in the 1880s and 1890s they found an indigenous variety of industrial-scale lumber industry already well established. This was the cargo trade, which had been cutting lumber for export to Hawaii and other Pacific ports before the settlement of Oregon was really begun. In 1828, the Hudson's Bay Company mill near Vancouver shipped a cargo of lumber to Hawaii on the schooner Cadboro.[30] Other shipments followed, and the lumber trade became an important part of the Hudson's Bay Company business. The mill on the Columbia was followed by a mill built in 1842 by the Island Milling Company at the falls on the Willamette, then a second mill at that point built by McLoughlin in 1842.

Cox offers the cargo manifest of the bark Cowlitz as an example of the trade in 1845. The vessel cleared the Columbia River with "752 barrels of flour, 52,000 feet of lumber, 200

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[29]Robert E. Ficken, The Forested Land (Seattle: University of Washington, 1979), 62. See also Thomas Cox, Mills and Markets, 199ff.

[30]Thomas Cox, Mills and Markets, 9-10.

barrels of salt salmon, 53,000 shingles, and 45 spars."[31]

The 1840s saw continuing development of Oregon's nascent lumber business. The Island Milling Company sold in 1846 to Portland merchant George Abernethy, who re-sold it in 1849 to build a mill at Oak Point in the lower Columbia. In 1843, Henry Hunt and Talmage Wood built a mill on the Columbia thirty miles above Astoria. The mill was water-powered using an overshot wheel which powered "two run of saws." Cox estimates the mill's capacity at 3000 feet/day, which would be consistent with a sash mill of the period, but the description of the saw, or saws, is perplexing.[32] Among the vessels trading with the Astoria Mill was the Chemanus, commanded by John Couch. Couch's 640 acre claim at the head on navigation on the Willamette became the site of Portland.

The California gold rush had a profound effect on Oregon's cargo trade. Prices for lumber rose to astonishing levels, reportedly exceeding $500 per thousand board feet.[33] Mill owners who had lumber cut and ships available profited, but the excitement caused a mass exodus from Oregon that left most mills without labor enough to cash in on the bonanza. In 1849 and 1850 new lumber enterprises appeared on the Columbia and the Willamette, including the Abrams and Reed mill in Portland, which was the first steam-powered mill in the territory. Cox estimates that there were 37 mills in the Oregon Territory by 1850 with a combined production of over 20,000,000 feet of lumber.[34]

As the California market stabilized in the 1850s and then began to decline, mill owners and ship owners looked to other possibilities. Shipping lumber to Hawaii had been profitable since the Hudson's Bay Company days, and that trade revived. Nathanial Crosby is credited with initiating the China trade in the 1850s. Ships carried lumber from Portland and other Columbia River ports to Hong Kong and returned with Chinese immigrants or Chinese goods. Portland entrepreneur John C. Ainsworth and others continued this trade though the 1880s.[35]

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[31]Thomas Cox, Mills and Markets, 12.

[32]Thomas Cox, Mills and Markets, 27. The account books of the Astoria Mill, as it was called, are available in the Oregon Historical Society collection.

[33]Ficken, 22.

[34]Thomas Cox, Mills and Markets, 55.

[35]For the China trade, see Thomas Cox, Mills and Markets, 138-160; and Edwin T. Coman and Helen M. Gibbs, Time, Tide, and Timber (Palo Alto: Stanford University Press, 1949), 180ff.

(Photo) [illegible]
Cargo Mill

While the largest of the cargo mills were located on the Columbia and on Puget Sound, smaller harbors on the Northwest coast came in for their share of attention. Coos Bay, the mouth of the Umpqua, and Florence had early mills, as did Willapa Bay and Greys Harbor in Washington. The first mills established on Coos Bay were the Luse mill at Empire, and the Simpson mill at North Bend, both in 1855.[36] These were both cargo mills, although they probably supplied the local market as well. At the mouth of the Umpqua, on Winchester Bay, piling had been shipped to California as early as 1850. Local mills proliferated in the Umpqua Valley in the 1850s and 1860s, then in 1864 the larger Gardiner Mill Company mill was built at Gardiner for the cargo trade.[37] Further up the coast at Florence lay the ramshackle empire of William Kyle, who operated The Florence Lumber Company, a schooner, and a bar tug through the 1890s.

Journals and ledgers of the Gardiner Mill Company provide some insights into the cargo trade in the 1860s. The four partners--Gardiner Chisolm, George Bower, Dave Morely, and John Kruse--purchased the machinery for the mill in June of 1864 after they had bought the land and erected some hand-hewn framing. The engine and boiler cost $4300.00, cast iron wheels for the carriage were $36.00, and there were additional expenses for shafting, fire brick, and metallurgical coal for the forge. The saws are especially interesting. There were two circular saws, one 60" and the other 50"; both had inserted teeth. This suggests that the headrig ran with a top saw and bottom saw, a sophisticated configuration that would have allowed for cutting logs above 4' in diameter.[38]

Subsequent entries in the journal show the purchase of replacement teeth for the saw blades, belting, babbitt metal for the bearings, hardware, and tools. The saws were periodically straightened when they had warped from overheating. There is no reference in the journals through 1870 to parts or supplies for additional machinery. This suggests that the mill had no planer, which would have required replacement blades, and no cut-off saw. Edging was presumably done on the head rig. There were, of course, no kilns or other facilities for drying lumber at the Gardiner mill or its competitors. William Kyle's mill, which was criticized for producing unusually crude lumber, piled its product on the dock and loaded it--green and sopping wet--into

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[36]Peterson and Powers, 426.

[37]Barbara Vatter, A Forest History of Douglas County, Oregon, To 1900 (New York: Garland, 1985), 217ff; Beckham, Land, 216-220.

[38]5 June 1864, Gardiner Mill Company Papers, Oregon Collection, University of Oregon library, Eugene.

waiting vessels.[39]

The Gardiner mill's capacity is not recorded, but Cox estimates the cut for the September-December period in 1864 at 240,000 board feet. This would suggest a daily cut of not less than 5000 board feet. Oxen skidded logs to the Umpqua river, so they could be driven down to the mill. The company purchased five pair of oxen for $455, and five yokes for them for an additional $25. Although the company owned logging equipment, journal entries suggest that logs were purchased from contractors for $3.00/thousand board feet for fir and $5.00 for cedar.[40] Later, we find payments for "running" logs at $0.30/thousand. This suggests a contract payment for driving logs down the river, perhaps those cut by the company.

Lumber sold in 1864 for $12/thousand board feet in small lots and for $8 to $10 in larger lots. One sale in September of 1864 grossed $1995.39 for 115,757 board feet, for an average price of $17.23/thousand. Although the mill was established to sell lumber in the cargo trade, we find numerous small orders, some for as little as 130 feet of "cedar boards."

It is interesting to compare the Gardiner Mill with Klamath County's Moore Mill. The Moore Mill was built in 1877, twelve years later than the Gardiner Mill, and was water powered, but the two mills' equipment was comparable. They both had double saw headrigs and little other machinery on the mill floor. The two mills' capacity was also similar, with an initial cut of 5000-7000 board feet per day and a later cut of perhaps 15,000 to 20,000. The Gardiner Mill, however, cut nearly 3,000,000 board feet of lumber in 1866, its second full year of operation. Even during the boom years of Klamath County's development in the 1870s, the Moore mill was unlikely to have cut more than 500,000 board feet.

For a second comparison, we might consider the mills on the Great Lakes. In 1870 the larger mills in Saginaw, Michigan, were supplementing the capacity of their circular headrigs with gang saws, which were multiple-bladed sash saws. Using the gang saws to cut squared logs (or cants) into boards, the Saginaw mills were able to reach an annual cut of more than 25,000,000 board feet.[41]

In 1868, the original partners sold the Gardiner Mill to the

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[39]Thomas Cox, Mills and Markets, 177ff.

[40]Mill journal, 20 July 1864, Gardiner Mill Company Papers.

[41]Jeremy W. Kilar, Michigan's Lumbertowns (Detroit, Wayne State University Press, 1990), 53.

Charles Hanson Company in San Francisco. This firm operated the mill for three years and then sold in 1871 to Asa Mead Simpson. Simpson was a gifted entrepreneur whose empire of mills, retail lumber yards, ship yards, and ships stretched along the coast from Puget Sound to California. He expanded the capacity of the Gardiner Mill, and provided reliable shipping which made it profitable. Lumber from the Umpqua was sold in California under Simpson's regime. From his headquarters in San Francisco, Simpson presided over the coastwise cargo trade until it declined in the 1890s.[42]

Although Simpson was committed to the coastal trade to California, the cargo trade as a whole is best interpreted as an international trade of the "Pacific Rim" long before that term became popular. As such, it was far more speculative than the larger but duller lumber trade on the continental U.S. It was also well suited to the circumstances of the Pacific Northwest before the railroads entered the scene.

> Prior to the completion of the transcontinental railroads...the economic well-being of Western Washington [and the Northwest] was more closely linked to that of Honolulu, Callao, Sydney, and Melbourne--more closely related to Hawaiian sugar and Latin American and Australian minerals--than to developments in the domestic economy east of the Cascades. Northwest lumbermen were among the leading traders in the international emporium that was the Pacific ocean.[43]

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[42]For Simpson lore and data, see Thomas Cox, "Lumber and Ships: The Business Empire of Asa Mead Simpson," Journal of Forest History 14 (July 1970): 17-26; Stephen Dow Beckham, "Asa Mead Simpson: Lumberman and Shipbuilder," Oregon Historical Quarterly 68 (1967): 259-273. See also Stephen Dow Beckham The Simpsons of Shore Acres (Coos Bay, Oregon: Arago Books, 1971).

[43]Ficken, 36.

## CHAPTER II

## BEGINNINGS OF RAILROAD LOGGING IN OREGON

### The Boom of the 1880s

The 1880s brought the transcontinental railroads to Oregon, and with them came a period of rapid growth. Three separate lines connected the state with the rest of the U.S. The Northern Pacific was completed in 1883, the Union Pacific in 1884, and the Southern Pacific in 1887. Most historians see the decade as a critical one for Oregon: a period of economic and social maturation from the colonial economy of earlier times to a full partnership that "inextricably bound the Northwest into the national economy."[1]

During the 1880s, U.S. lumber production increased 28% from 18 to 23 billion board feet. Production in the three western states increased at a much faster pace, with Washington's production rising 662%, Oregon's rising 250%, and California's rising 170%. Michigan and the Lake States remained the dominant producers in the U.S., with 34% of the total production by the end of the decade.[2]

As we have noted earlier, the Northwest lumber industry probably did not feel the fullest benefit of the railroad connection to eastern and mid-western markets until after James J. Hill's rate adjustment in 1893. During the 1880s, however, railroad construction increased the demand for ties and timbers, stimulating the lumber business throughout the region. Additional stimulus came from the population growth that followed the advent of the transcontinentals, and the movement of Great Lakes lumber capital into the region. And, there was some rail shipment of lumber east when rates permitted.[3]

In addition to the growth that the 1880s brought to the Northwest, the decade also brought some important changes. In the lumber industry, these changes took the shape of several new technologies that truly revolutionized the age-old business of

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[1]Gordon Dodds, The American Northwest (Arlington Heights, Ill.: Forum, 1986), 137. Similar views can be found in Dorothy O. Johansen and Charles M. Gates, Empire on the Columbia (New York: Harper, 1957).

[2]Statistical Abstracts, 43rd. ed., 1921, 181.

[3]Thomas Cox, Mills and Markets, 204-209.

producing lumber. The first area of the industry to feel the change was logging.

American Logging Technology in the 1880s

The earliest logging operations in Oregon and elsewhere relied on water for log transportation. Trees near the water were dropped into it, and then floated to the mill or loaded on the ship. In addition to providing easy transport, the water washed off dirt that could dull saws, saturated the log to prevent its drying out and checking, kept off insects, and facilitated sorting logs for size, species, and quality. Water was so intimately bound up with the milling process that until recent times all mills had log ponds, even if they had to be filled from wells in some instances.

As the trees nearest the shore were cut, the loggers moved back to streams that could float the logs to deeper water. The Lake States and New England were perfectly suited for this type of logging. When the streams froze in the winter, the loggers rolled logs onto the ice or the stream bank, where they could wash downstream in the spring. Later, as the trees near the streams were cut, the loggers relied on sleds and animal power to move the logs to driveable streams. As the best streams were logged off, the less satisfactory streams could be improved by blasting out rocks or by building splash dams to impound water that could be released to drive the logs.

As the Lake States loggers moved into the South and the West Coast, however, they learned that stream driving--which must have seemed like the natural order of things to them--did not always work. In the South, the streams were sluggish or dry for most of the year. In the West, there were some driveable streams, but the large size of the timber and the lack of a winter freeze-up in western Oregon and Washington made driving difficult. In the California redwood country, driving was possible, but the huge logs and the mild climate did little to encourage the loggers. In the semi-arid pine country, of course, log driving was not a possibility.

Some of the noteworthy western driving streams included Idaho's Clearwater, the forks of the Willamette, the Rogue and Umpqua systems, the Klamath River in California, the Noyo on the redwood coast. There were other suitable streams as well. In 1939, the Shevlin-Hixon Company of Bend drove 3,000,000 board feet of pine down the Deschutes River in what was touted by the media as "Oregon's last great log drive." [4] Most log driving in

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[4] West Coast Lumberman, June 1939, 40.

the west had ended decades before as better methods of moving logs became available.

Western loggers' first improvement on stream driving was the use of skid roads and ox teams. Moving logs by animal power was hardly innovative, but the skid road was an innovation of the 1860s and 1870s. West coast timber was too large to move conveniently by the old expedient of hitching a team to the log and dragging (or "twiching") it along the ground. The skid road was a runway of peeled logs laid perpendicular to the saw log's path. Some skid roads were over a mile long. The oxen--ironically called "bulls"--pulled the logs across the skids to a rollway where they could be rolled into the water for storage or transport to the mill. Rain and mud, or grease, diminished the friction, and the oxen supplied the muscle.[5]

Without the skid road, the log would mire in the soft ground. In other areas, logs could be trundled with one end supported by a set of wheels. But west coast terrain and soil conditions, along with the size of the timber, made this method unworkable. If animals were to be used, some sort of skids were necessary to support the logs. The Gardiner Mill Company's purchase of ox teams and yokes in 1864 shows us that animal power was supplementing water transportation very early in west coast logging.

Then, in 1881, John Dolbeer abruptly took the oxen out of the picture. Dolbeer was logging in the redwood forest near Eureka, California, when he perfected and patented his design for a large but portable steam-powered winch. The winch, called the donkey engine, could skid the logs along the skidroad with a cable. Although high pressure steam technology had been available since the first decades of the nineteenth century, steam engines were more often stationary than mobile--unless they were powering a locomotive or boat. Dolbeer's donkey engine had broad implications for moving logs, and western loggers were quick to see the possibilities inherent in portable steam technology.

While west coast loggers were perfecting their skid roads, loggers in other areas continued to experiment with wheeled implements for log transportation.[6] These included bummers, a

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[5]Thomas Cox attributes the "skid road system" to west coast loggers well before the 1880s (Mills and Markets, 228). Detailed discussions of contemporary logging practices in the South and the Lake States by Nollie Hickman (p. 103-106) and William G. Rector (p. 74-77) show no evidence of skid roads in these areas.

[6]James A. Young and Jerry D. Budy, Endless Tracks in the Woods (Sarasota, Florida: Crestline, 1989), 61-80.

simple axle which supported one end of a log during skidding, and log wagons, which carried the logs on four or eight sturdy wheels. In Michigan, loggers were using the high-wheels, a set of wheels large enough to straddle logs and trundle them through the woods.[7] Wheels freed the loggers from their dependence on water transportation, but they required solid ground or well-built roads. In the Lake States bogs, or on the steep, muddy hillsides of the Coast country, log wagons would not be practical. The advantages of wheeled transport were so seductive, however, that loggers in all areas kept experimenting with wheeled devices.

One obvious strategy for extending the advantages of wheeled transport into difficult terrain was to use a track. Log-carrying trams running on wooden rails or on poles saw use in all the major logging regions by the 1870s. In Arcata, California, the Union Wharf and Plank Walk Company was an early example of a logging tram in 1855. The next step was to put a locomotive on the tram road, in effect, re-inventing the railroad. This occurred between the late 1850s and the 1880s, again varying from region to region.

There has been a certain amount of scholarly scuffling about the dates and locations of first logging railroads, as we might expect with so significant an innovation. If we agree that a logging railroad is one that hauls logs from the woods with steam power, we can probably find a workable consensus in most cases. While the dates vary from one region to another, and some early uses were no doubt unrecorded, it seems clear that loggers around the nation began experimenting with logging railroads in the 1870s and that the railroads became practical in the early 1880s.

The date of the first logging railroads is not nearly as important as the date the logging railroads began to have an impact on the lumber industry in each region. In the Lake States, declining white pine stumpage and a few mild winters gave railroads a boost in the early 1880s. By 1885, there were 71 logging railroads in Michigan alone.[8] The southern states and Pennsylvania were also early railroad logging centers.

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[7]For a discussion of wheeled log transport technology, see Young and Budy, 61-80; for the Michigan wheels, see Theodore J. Karamanski, Deep Woods Frontier (Detroit: Wayne State University Press, 1989).

[8]Koch, 29.

**Table 3.**

**Early Logging Railroads**

| State | Year | Company |
|---|---|---|
| Michigan | 1857 | Blendon Lumber Company |
| New York | 1860 | Fox, Weston, and Benson |
| Illinois | 1862 | Bell Mill, Ullin |
| Pennsylvania | 1864 | Wright and Pier |
| Virginia | 1869 | unconfirmed |
| Georgia | 1870 | George Garbuth |
| New Hampshire | 1870 | Brown's Lumber Company |
| California | 1871 | Arcata and Mad River |
| Mississippi | 1873 | J.J. White |
| Oregon | 1876 | Isthmus Transit Railroad |
| North Carolina | 1877 | Greenleaf, Johnson and Son |
| Washington | 1881 | "between Tenino and Olympia" |

Sources: Carl Jay Bajema, "First Logging Railroads in the Great Lakes Region," Forest and Conservation History 35 (April 1991): 76-83; for Oregon, see John T. Labbe, "The Isthmus Transit Railroad," Narrow Gauge and Short Line Gazette, September/October 1988, 17-21; for Washington, see Ficken, Forested Land, 71, and Thomas Cox, Mills and Markets, 208; for Mississippi, see Nollie Hickman, Mississippi Harvest (University, Moss.: University of Mississippi Press, 1962), 63; see also Michael Koch, Steam and Thunder in the Timber (Denver: World, 1979), 19-83, for a general discussion.

*Figure 5*
*Nineteenth Century loggers tried all kinds of devices, including this "horsepower" winch*

In 1881, the year John Dolbeer patented his donkey engine, a Michigan logger named Ephraim Shay patented the geared logging locomotive. The geared locomotive produced its maximum tractive effort at significantly lower speeds than a rod locomotive, so it could climb grades steeper than the traditional 4% and pull harder at low speeds. Because the geared locomotives did not "pound the rails" as the direct-drive rod locomotives did, they could run on light rail, and maintain their footing on sketchy roadbeds.[9]

Within a few years of Dolbeer's and Shay's inventions, people begin putting the two together. Dolbeer's donkey engines were mounted on wooden sleds. They could pull themselves through the woods, but a self-propelled track-mounted donkey engine would be much more mobile. Dolbeer patented the gypsy locomotive in 1883. This was a small logging locomotive with a spool and drum winch arrangement on the front. Later in the same year, Horace Butters of Ludington, Michigan, patented the "Butters Patent Skidding and Loading Machine" which was the ancestor of the huge rail-mounted skidders that were used after the turn of the century.[10] In later years, the Clyde Company of Duluth provided the fullest line of rail mounted logging machines, offering several varieties of skidders, loaders, hoists, and cranes that ran on logging railroads.

Saw Technology

Saw technology in the woods and the mills changed during the 1880s as well. One important change was the adoption of crosscut saws for felling trees. Prior to the 1880s, trees had been felled with axes. During the 1880s, loggers in the Lake States, the South, and on the West Coast began to use the crosscut to make the face cut and the back cut for felling. In Michigan and Minnesota, the crosscut was associated with higher productivity than the axe. Also, loggers using saws were less highly skilled, and therefore paid lower wages.[11] In Mississippi, the advent of crosscut felling in the 1880s changed the loggers' financial life from the wage to the contract or "gyppo" system of compensation.[12] In the Aroostook Valley of northern Maine, loggers were too tradition-bound to accept crosscut felling until

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[9]Koch, 41ff; Kramer Adams, Logging Railroads of the West, (Seattle: Superior, 1962), 74ff.

[10]Koch, 70.

[11]Karamanski, Deep Woods 67; Larson, 176.

[12]Hickman, 103.

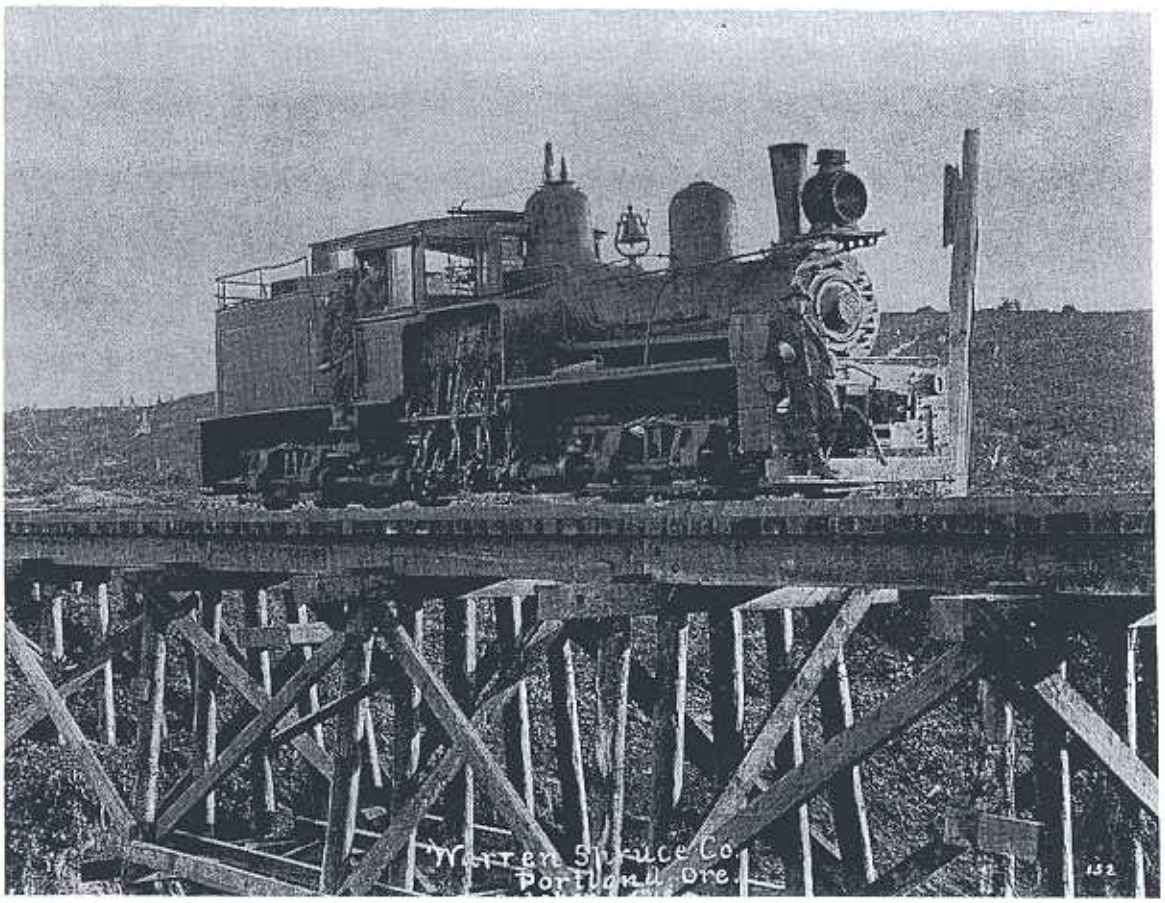


*Figure 6*
*Shay locomotives became the standard of the industry by the 1920s.*

1900.[13]

Cox attributes the development of crosscut felling in the West to redwood loggers in the 1880s. It seems unlikely, however, that it was invented in any one place in light of its simultaneous use in so many places.[14] What is most perplexing about the slow adoption of the crosscut saw for felling is that the saws were available in the woods after 1840, but were used only for bucking fallen trees into logs. The Gardiner Mill Company purchased two crosscut saws in May of 1864 along with axe helves, but we must conclude that the saws were for bucking logs and not for felling trees.

Louis E. Polling offers an account of early logging in Lane County's Mohawk Valley in which the loggers used glowing coals to burn an undercut in trees they wanted to fell. They then bored holes on the opposite side of the tree, inserted more live coals, and waited "four to seven days" for the tree to be sufficiently weakened to fall down. This risky practice seems to have been widespread in the fir country. Again, crosscut saws reached the Mohawk Valley "around 1880" and proved superior to the previous method.[15]

In the mills, the head rigs--the great saws that cut the logs into boards or cants--were changed from sash saws to circular saws with the development of steam power in the 1850-60 period. Then inserted teeth came into use. Although the circular saw was a significant improvement over the sash saw, it still had problems. Since the saw could cut with only one half its diameter, cutting a four foot width would have required a saw with a diameter in excess of eight feet. The use of two saws alleviated the diameter problem. The top saw cut from the top of the log and the bottom saw cut from the bottom. Keeping the two saws in the same plane while running in counter-rotation at different speeds was a great challenge to the millwrights, however. If something went wrong and the saws got out of adjustment, the head rig stopped and the entire mill lost production.

The solution to the saw problem lay in changing from circular saws to band saws. The band saw could cut logs of any diameter that could be accommodated on the carriage. Moreover, it ran cool, had a narrow kerf, and was less likely to bind. Band saws were invented early in the nineteenth century, but were

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[13]Richard W. Judd, Aroostook: A Century of Logging in Northern Maine (Oronto: University of Maine Press, 1989), 116.

[14]Thomas Cox, Mills and Markets, 227-8.

[15]Polley, 17.

not used in mills in the U.S. until the 1880s. In the Lake States and the South, band mills proved reliable and, with their narrow curf, less wasteful than the circular saws. In the West, the first band saw was set up by the redoubtable John Dolbeer, at his Dolbeer and Carson mill in 1885.

In summary, then, the 1880s saw some technological changes in the lumber industry that would have far-reaching implications. In 1910, W.W. Reed, who was one of the first professional logging engineers, addressed his fellows in the Pacific Logging Congress:

> No doubt there are but few business enterprises or occupations in the West that have undergone the radical changes in conditions or methods as those that have accompanied the development of the logging industry to its present proportions. We first see the hand logger working along the shores of a lake or stream with his bars, jacks, and probably a single team, rolling his logs into the water, and driving, rafting, or towing these to their destination. As the timber gets farther back, we next see the same man increasing his equipment--adding more teams, extending his skid-roads further back into the woods. Later we find the introduction of steam engines, wire rope and possibly, here and there, a short stretch of railroad--logging out one short gulch then moving all equipment on to another. From here we can easily trace from one step to another: the increase in size of engines, extensions of railroads and changed methods of working till we come to present day operations.[16]

These changes would have been most apparent to loggers and lumbermen, but the general public was aware that something was happening. Writing at the end of the century, the anonymous author of an Oregon booster pamphlet noticed that changes were occurring in the woods:

> In keeping with the general improvements of modern times, and especially of the last few years, the methods employed in logging have undergone radical changes. The handspike, logging chain, bob sleigh, oxen, and skidway have been superseded by donkey engines, cables and cars. By means of these portable engines and cables, one or two acres can be "yarded" (collected within a small area) in a comparatively short time, after which the cables and donkey engines are conveyed on sleighs or [railroad] trucks, especially constructed for that purpose, elsewhere to repeat that operation. The "bull donkey" with its endless cable

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[16]W.W. Reed, "Working Plans Necessary for Successful Logging Operations," The Timberman (January 1910): 50-51.

attachment removes the logs from the yard to the railroad, which in turn conveys the--by steam--to the mill.

What a revelation to the uninitiated lumberman of twenty years ago.[17]

## Early Logging Railroads in Oregon

By 1900, there were perhaps 25 logging railroads operating in Oregon. At least fifteen of these were built by mills with access to ocean commerce. Mills in Astoria and on the Lower Columbia had built eight logging railroads to serve their needs.[18] These were the Astoria and South Coast Railroad (1889), the Brix Lumber Company railroad (1899), Henry Colvin's railroad at Marshland (1899), Crown Columbia (1890s), Hammond Lumber Company (1895), C.C. Masten at Svensen (1898), John Yeon at Rainer (1890s), and the Walluski River railroad (1886).

The next greatest concentration was on Coos Bay, with the Blue Ridge Railroad on Daniels Creek (1898), the Isthmus Transit Railroad (1876), and the Southern Oregon Company at Empire (1884). Bandon had two early railroads: The Dollar Lumber Company railroad (1899), and the Lampa Creek railroad (1899). Coquille had the Aasen Brothers railroad (1898), and Garibaldi had the Whitney Company railroad (1892).

The remaining logging railroads were built by mills with no direct access to the deep-water shipping. These were the new "railroad mills." They were industrial-scale producers that cut lumber for shipment to distant markets by rail. In many respects, the appearance of these new mills was the most radical change that the 1880s brought to Oregon's lumber industry.

Each of the new railroad mills was located on transcontinental railroad or the branch line of a transcontinental. In the Columbia Gorge, along the Oregon

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[17]Oregon and the Orient: A Work Designed to Show the Great Natural and Industrial Advantages of Oregon and its Unequaled Position Relative to Trade with the Orient (Portland: Alfred A. Bowen, 1901), 70.

[18]Adams, appendix; for the Astoria railroads see Emma G. Miller, Clatsop County, Oregon: Its History, Legends, and Industry (Portland: Binfords and Mort, 1958); see also Thomas Cox, "Lower Columbia Lumber Industry 1880-93," Oregon Historical Quarterly 67 (1966); and Nathan Douthit, Coos Bay Region 1890-1949: Life on a Coastal Frontier (Coos Bay, Ore.: Riverwest, 1981), 97ff.

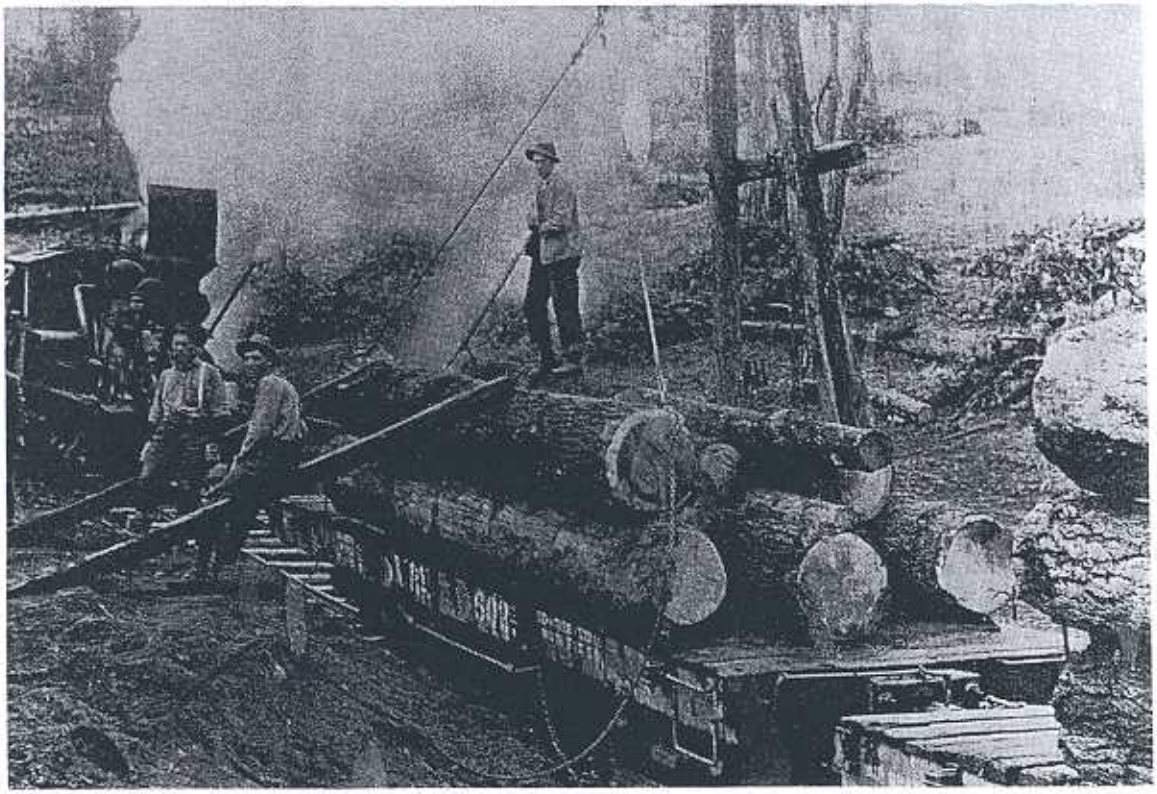

*Figure 7*
*Early logging scene on the Sumpter Valley Railroad. Note A-frame loading and winch on the locomotive.*

Railway and Navigation/Union Pacific route, was the Bridal Veil Lumber Company railroad (1891) at Palmer, and the Carter Logging Company railroad at Cascade Locks (1887).[19]

In Baker, also on the Union Pacific, the Sumpter Valley Railroad (1890) was logging for the Oregon Lumber Company mill at Baker, and Stoddard Lumber Company (1898) was logging with their own line off the Sumpter Valley main line.[20] In Medford, on the Southern Pacific, the Rogue River Valley Railroad was logging in 1891. In Dallas, in Polk County, the Willamette Valley Lumber Company railroad (1896) and the Dallas and Ellendale Railway (1891) were bring in logs.

The strangest of the early logging railroads in Oregon was the Pokegama Sugar Pine Lumber Company (1897) railroad in southern Klamath County. This miniature railroad brought logs from the company's holdings in Klamath County to the head of a log chute which sent them down to the Klamath River. The logs were then driven down the Klamath to the company's mill, located on the Southern Pacific in Klamathon, California.[21]

## The Cargo Mills and Railroad Logging

For the cargo mills, logging by rail was a logical development of their logging technology. Many of them had started logging by stream driving or by bull teams and skid roads, and some had moved on to trams or pole roads. As these methods waned in practicality, steam-powered railroads would have seemed to be the next step. The cargo mills had foreign and domestic markets to absorb increased production and capital to invest in new technology.

Although the cargo mills were generally more receptive to new technology than the small mills that cut for local markets, there were some exceptions. Asa M. Simpson, for example, was famous throughout the industry for his conservatism and resistance to change. He resisted modernizing his mills, refused

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[19]Adams' chronology except where noted. For Bridal Veil, see William F. Carr, A History of the Bridal Veil Lumbering Company (Portland: Mt. Hood National Forest, 1991).

[20]See Malory H. Ferrell, Rails, Sagebrush, and Pine (San Marino, Cal: Golden West, 1967); and Leonard J. Arrington, David Eccles: Pioneer Western Industrialist (Logan: Utah State University Press, 1975).

[21]Devere Helfrich, "Pokegama," Klamath Echoes 2 (1964): 1-81.

to install band saws, and did not enter the rail trade to any great extent. The firm declined through the 1890s and the 1900s, and finally collapsed during the 1920s.[22]

In many areas, the cargo mills built logging railroads before common-carrier rail service was available. Astoria and the lower Columbia had no rail service to Portland until A.B. Hammond's Columbia River and Astoria Railroad was finished in 1898.[23] Similarly, despite several attempts by enterprising railroad builders, Coos Bay had no rail service to the Southern Pacific until the line down the coast from Florence was completed in 1916.[24]

In these locations, logging railroad equipment including rails, cars, and locomotives had to be brought in by ship and in some cases, like the Pokegama operation, by freight team. The modest equipment of the Isthmus Transit Railroad, for example, consisted of wooden rails and a locomotive that the owners had fashioned on the site from "an old [steam] engine from the mine ...mounted on a handcar."[25]

Photographs taken during the nineteenth century show some early railroad logging technology to be extremely primitive. Loggers loaded the cars by rolling logs off embankments onto them. Others used cross haul loading, which dragged the logs up onto the cars on a pair of inclined poles. On the Bridal Veil Lumber Company railroad (and others, no doubt) the loggers dispensed with cars altogether. The logs were rolled between the rails, chained together end to end, and then chained to the locomotive. The logs bumped across the ties much as they had on the skidroads, or slid over greased planks. This method was crude but direct, and had the added advantage of slowing the locomotive as it descended some of the steepest grades.[26]

Used, abused, and superannuated equipment from the common carrier railroads found its way to the early logging railroads. Urban streetcars called "steam dummies" were popular with

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[22]Thomas Cox, "Lumber and Ships," 24-26.

[23]For Hammond's railroad adventures in Oregon, see Dale L. Johnson, "Andrew B. Hammond: Education of a Capitalist on the Montana Frontier," (Ph.D. diss., University of Montana, 1976), 180-200. See also E.G. Miller, 159.

[24]Petersen and Powers, 487ff.

[25]Railroad Gazette, 15 June 1883, in Labbe, "Isthmus," 18; see also Peterson and Powers, 485-486.

[26]Adams, 15; William F. Carr, Bridal Veil, 5.

loggers, as were narrow gauge machines sold at bargain prices by the major lines. In addition to recycled equipment, early railroad loggers also experimented with innovative machines of their own design. Two of the best remembered were the Fouts Grip Wheel and the Walking Dudley, both designed to climb the steep grades that the coastal loggers kept building. Kramer Adams remarks that for the first two decades, railroad loggers "struggled with underpowered industrial locomotives, high wheeled castoffs from main line passenger service or home-made monstrosities."[27]

The early railroads were not always designed by civil engineers. As a result, curves, gradients, and roadbed characteristics reflected the builder's best judgement. Railroads are supposed to maintain their grades by earthwork--the often elaborate process of cutting a roadbed though high points and filling the low points with the dirt or rock removed from the cut. The resulting pattern of cuts and fills ensures that the grade is even and reasonable (>5%) and that the roadbed will endure for several years. The early railroad loggers did not always have the patience or the finances for this kind of construction. As a result, their railroads were built with little earthwork, often in creek beds, and occasionally with the ties or even rails simply spiked to cull logs leveled up by eye.

## The Railroad Mills

As we have seen, Oregon's early logging railroads were operated by cargo mills and the new railroad mills. These mills followed the transcontinental railroads into the state in the 1880s, changing the mix of cargo mills and local mills that had prevailed since the 1850s. Although the cargo trade with California began to decline in the 1890s and after the turn of the century, the most immediate victims of the new railroad mills were the small mills that cut for local consumption. The Dalles Lumbering Company mill and the Moore Brothers mill in Klamath Falls were much larger and more successful than most of the small mills, yet they were unable to survive in the new environment.

The failure of the Moore Brothers mill is especially instructive, since the brothers were trying to adapt to the new times when their luck ran out. The original Moore mill was a water-powered mill on the Link River near the outlet of Upper Klamath Lake.

The Moores had always cut timber on the shore of the lake and rafted it to the Link River, then flumed it down to their mill.

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[27]Adams, 16.

In 1908, they closed the old mill and built a modern mill with a respectable capacity of 50,000 board feet/day on Lake Ewauna, downstream from the original site. To ensure an adequate log supply, they secured the first National Forest timber sale in the area. This was the Wampler Creek sale on the west shore of Klamath Lake. The logging crew cut logs on Wampler Creek, rafted them to the head of Link River, and then drove them down Link River to the new mill. Unfortunately, however, the pine logs were damaged beyond use by the passage down the falls on Link River. The Wampler Creek sale was therefore unusable for the Moores, and they were forced to buy logs on the open market.[28]

What the Moore Brothers needed to get logs from the Wampler Creek to their new mill was a logging railroad. This did not enter their plans, however. For some reason, the brothers did not seem to consider railroads as part of their business. Klamath Falls was connected to the Southern Pacific in May of 1909, one year after the new Moore mill was completed. When the railroad reached Klamath Falls, the Moore Brothers could not build a railroad spur to ship lumber from the mill because they had built their new mill on the west side of Lake Ewauna while the railroad was on the east side.

Having chosen their mill site more carefully, the Ackley Brothers Lumber Company--the Moore Brothers' old rival--were able to build a shipping spur to the railroad. In 1912 the Ackley Brothers went one step further and built a logging railroad to get their logs out to the Klamath River at Keno. By then it was too late for the Moore Brothers, however, since they had sold their new mill in haste in 1910, less than two years after it opened.

Unlike the Moore Brothers' new mill, the railroad mills were designed with railroads in mind. David Eccles got his start in the lumber business in Utah, far from navigable water. He began the Oregon Lumber Company in Baker City in 1889 and built the mill on the Union Pacific so that he could ship lumber to his yards in Utah, or to new markets across the continent.[29] While the Union Pacific railroad was taking the finished lumber out, another railroad was bringing the logs in.

This was the narrow-gauge Sumpter Valley Railroad, which Eccles built to reach his timber west of Baker City. Although the Sumpter Valley line was narrow-gauge and used second-hand

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[28]Lamm, 13.

[29]For Eccles' retail businesses, see Arrington, 212-215. The Odgen retail yard was operated as the Eccles Lumber Company with the Stoddard family and Thomas Dee, and continued in operation until 1923.

equipment, it enjoyed common carrier status. This enabled Eccles to condemn private land for his right-of-way, and when the Sumpter Valley grew, to enter the passenger and freight business. His railroad also hauled logs to other mills. As the timber closest to Baker City was cut, The Oregon Lumber Company built additional mills west of Baker City at Whitney, Austin, and at Bates. Logs were cut into rough lumber at these mills, and then shipped on the Sumpter Valley line to Baker for finishing. This was an early example of milling in transit, a practice that integrates logging, milling, and railroad technology to take the fullest advantage of each.

Eccles' remarkable success as an entrepreneur was no doubt due to a variety of factors. It is certain, however, that his intuitive grasp of railroad operations and possibilities was one factor that helped him succeed in the lumber business in Oregon at the turn of the century.

We might also consider A.B. Hammond, a lumberman who came to Oregon in the early 1890s from Missoula, Montana. Like Eccles, he learned the lumber trade in a landlocked area, and looked to railroads as the veins and arteries of his business.

Hammond's career compares neatly to Asa Mead Simpson's. As Simpson was oriented to ships and shipping, so Hammond was oriented to railroads. Both saw that the lumber business depended on transportation, but Hammond saw in the 1890s what Simpson resisted seeing--that the dominant mode of transportation in Oregon was changing from ships to rail.

Hammond's first ventures in Oregon were to buy three distressed railroad lines: the Astoria and South Coast Railroad, the Astoria and Columbia River Railroad, and the Oregon Pacific Railroad. Later named the Oregon Central and Eastern Railroad, the old OPR followed a strategic east-west course across the state from Mill City to Newport. Hammond and his associates paid $100,000 for the line in 1894 at a Sheriff's auction. After selling off locomotives, steamships, and tugboats that the railroad had operated, Hammond sold the railroad itself to the Southern Pacific in 1907 for $750,000.[30]

After the railroads, Hammond began buying sawmills. Like Simpson, he operated mills along the length of the West Coast, often in places that would have appealed to Simpson. In 1928, Hammond had major mills at Port Hammond, B.C.; Mill City, Oregon; Samoa, California; and planning mills at San Pedro and at Watsonville,

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[30]Lloyd Palmer, Steam Towards the Sunset (Newport, Oregon: Lincoln County Historical Society, 1982), 1-28; see also E.G. Miller, 158; D. Johnson, 182.

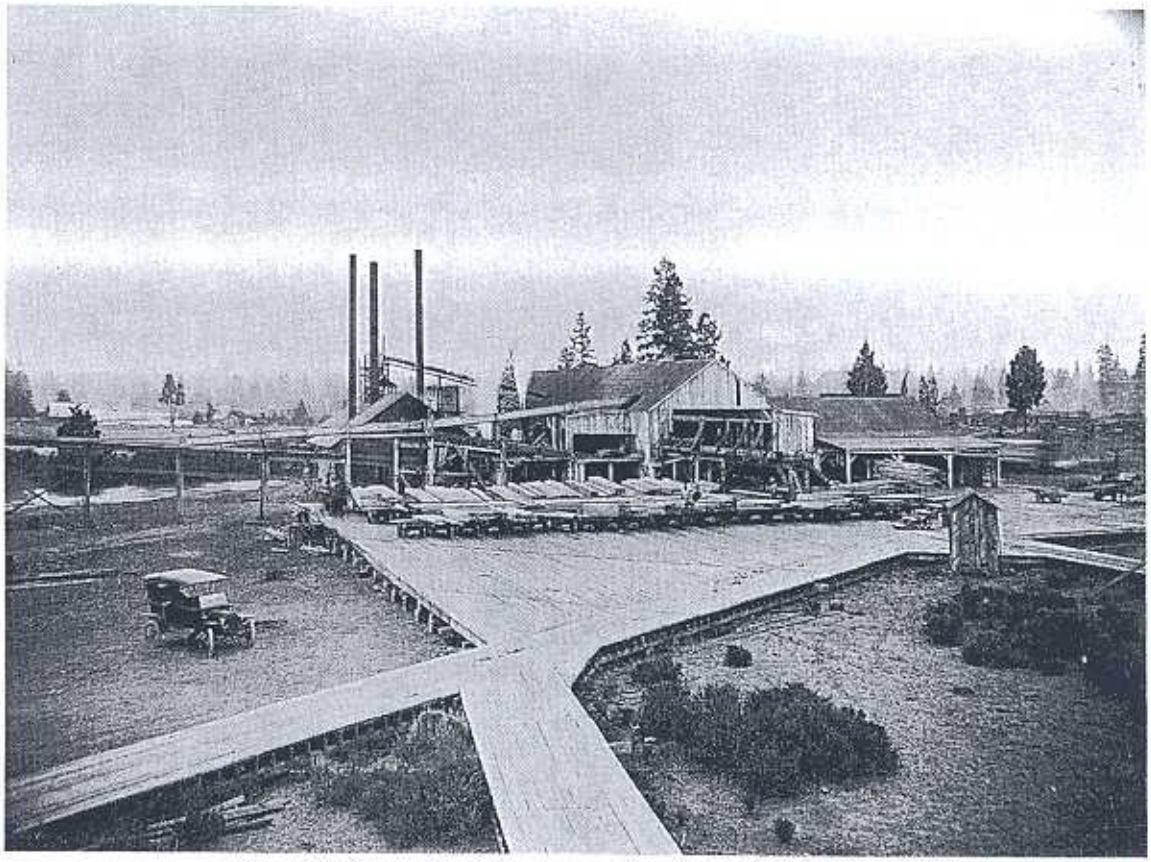

*Figure 8*
*The Bend Company Mill (1911-1915) was an early railroad mill. It shipped its first carload of pine lumber to a Hastings, Nebraska, millwork plant.*

In January of 1906, George M. Cornwall, the editor of The Timberman, remarked that there were 38 logging railroads operating on the Columbia River and its tributaries, and that there would be at least 45 by the end of 1906.

By the first decade of the twentieth century, the consensus among West Coast lumbermen was that logging railroads were a necessity for any serious industrial producer. Writing in The Timberman in 1910, J.J. Donovan, partner in what was to become the Bloedel Donovan Lumber Company, epitomized the prevailing attitude.

> The day of the bull and horse team is long past. The full development of cableways and electric haulage is yet to come, but the steam railroad, long in use but still improving, is the main factor in moving logs from the stump to the mill, and it seems likely to remain so for many years. We may hope for something more effective, less expensive and dangerous, but for hauls of over two miles there is no other method of transportation available in successful use for handling the class of timber growing on the Pacific Coast.[31]

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[31]J.J. Donovan, "Important Function of Steam Railroads in Modern Logging Operations," The Timberman, Aug. 1910, 54. For Donovan's career, see Donald McKay, Empire of Wood: The MacMillan Bloedel Story (Seattle: University of Washington, 1982), 64ff.

**Table 4.**

**Oregon Logging Railroads, January 1906**

| Name | Location | Miles |
|---|---|---|
| Mt. Hood RR | Hood River | 21 |
| Bridal Veil Lumber Co. | Bridal Veil | 2 |
| Columbia & Nehalem Val. | Columbia City | 6.5 |
| Goble, Nehalem & Pacific | Goble | 9 |
| Portland Lumber Co. | Ranier | 9 |
| Chapman Timber Co. | Scappoose | 7 |
| Rockey Lumber Co. | Ranier | 2 |
| Joe Erickson | Quincey | 2 |
| Clatskanie & Nehalem | Clatskanie | 5 |
| Oregon Lumber Co. | Inglis | 2 |
| E.H. Cline | Marshland | 1.5 |
| Oregon Timber & Lumber Co. | Clifton | 4.5 |
| Kelly Logging | Knappa | 4 |
| C.C. Masten | Svensen | 6 |
| Bremmer Logging | Astoria | 4 |
| Western P.& P. | Oregon City | 3.5 |
| Seaside Spruce | Seaside | 2 |
| Henry Colvin | Marshland | 2.5 |
| Stoddard Bros. | Baker City | 5 |
| Oregon Lumber Co. | Baker City | 63 |
| Grande Ronde Lumber Co. | Perry | 7 |
| Salem, Falls City & Wn. | Dallas | 13 |
| Curtiss Lumber Co. | Mill City | 8 |
| C.K. Spaulding | Newberg | 2 |
| Aasen Bros. | Lampa | 2 |
| Sturdivant & Crane | Riverton | 2 |
| Cody Lumber Co. | Coquille | 5 |
| A. Johnson | Coquille | 2.5 |
| Blue Ridge R. & N. | North Bend | 7 |
| Gardiner Mill Co. | Gardiner | 5 |

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The Timberman, Jan. 1986, 17.

## CHAPTER III

## SIX CASE STUDIES

### Case Study I: The Oregon Lumber Company and the Sumpter Valley Railroad, Baker City, Oregon, 1889-1905

In 1889, David Eccles and his associates from Utah incorporated the Oregon Lumber Company to cut timber they had acquired in the Powder River drainage west of Baker City. The Oregon Railway and Navigation company line had connected to the Union Pacific in 1884, bringing transcontinental rail services to Eastern Oregon. As early as 1887, pine lumber manufactured by small mills in Telocaset, North Powder, and other Eastern Oregon points began to enter the national market.[1]

David Eccles, financier of the Oregon Lumber Company and the Sumpter Valley Railroad, was one of the great capitalists of the American West. His humble origins in the Glasgow slums, his religious affiliation with the Latter Day Saints, and his entrepreneurial zeal have made him a favorite figure for historians and biographers.[2]

Eccles was associated foremost with the construction industry and secondarily with lumber, railroads, sugar beet processing, and banking. The Utah Construction Company (now Utah International) was Eccles' largest and most durable venture. A close second was the Oregon Lumber Company, which was an amalgam of mills Eccles purchased or built in Oregon during the 1880s and 1890s. The Oregon Lumber Company operated mills or camps at the following locations in Oregon and Washington: Baker, Hood River, Inglis, Meacham, North Powder, Pleasant Valley, Dee, Chenowith, Viento, Haynes Spur, and on the Little White Salmon River. The mills at Dee, Chenowith, and Baker each reached the capacity of 100,000 board feet/day, which was respectable in the 1890s.

Eccles' interest in lumber in Baker County began when he

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[1]An Illustrated History of Baker, Grant, Malheur, and Harney Counties (Spokane: Western History Publishing, 1902).

[2]See Arrington; Merrill Beal, Intermountain Railroads (Caldwell:Caxton, 1962); Marriner Eccles, Beckoning Frontier (New York: Knopf, 1951); Arthur Horne, Latter-Day Saints in the Great Northwest (Seattle: University of Washington Press, 1968); Clem Pope, Switchback to the Timber (Hood River, Ore.: Old Forester Publishing, 1992).

established two small mills to cut ties for the Oregon Short Line railroad. The purchase of a tract of Sumpter Valley timber in 1889 led him to form the Oregon Lumber Company, and to build the large mill in Baker in 1891. To bring logs to the mill, the Oregon Lumber Company built the Sumpter Valley Railroad. For the next fifty years, the operations of the Oregon Lumber Company and the Sumpter Valley Railroad were inextricably connected.

In July of 1890, the road was completed nearly as far as McEwen, which was to be the first terminus, twenty-five miles up the Powder River west of Baker City. The first car of logs reached Baker on August 1, 1890, and the remaining mileage to McEwen was completed in the summer of 1891.

The line did not reach beyond McEwen, however, until 1895. The nationwide depression of the 1890s slowed the lumber business. The Oregon Lumber Company mill remained open, but Eccles himself had to advise the employees of cash-flow problems and promise to pay them when he could.[3] A drought in 1895 hampered placer mining operation in eastern Oregon and in Idaho, and the market for agricultural products from local farms and ranches was unfavorable. These economic reverses prolonged the railroad's McEwen period.

Although log transportation dominated the Sumpter Valley Railroad's traffic, as early as 1893 the railroad began to exhibit signs of an economic life beyond logging. McEwen became a thriving community boasting "two stores, two blacksmith shops, a saloon, odd Fellow's Hall and a Methodist Church."[4] The railroad began offering scheduled passenger service to McEwen in 1893, and the first timetable appeared on May 31.

The 1893 Oregon Public Utility Commission inspector remarked that the trestle timbers on the line were already in poor condition. Financial records for the first half of 1893, filed in the Report of Railroad Commissioner for that year, show an operating deficit of $4,856.80.[5]

The earnings statement for that year shows general freight revenues of $8,888.09 and passenger revenues of $2,406.40. On April 14, McEwen and Daly, merchants in McEwen, complained to the commission that the freight rates of 17.5 cents per hundred were exorbitant. They had, however, shipped 32 cars of grain and machinery to McEwen. This traffic in freight and passengers

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[3]Arrington, 167.

[4]Ferrell, 16.

[5]Report of the Railroad Commissioner, Oregon Public Utilities Commission Annual Report, 1893, on file at Oregon Public Commission, Salem, Ore.

confirms the railroad's role in local commerce.

Sumpter, 1896-1910

Gold strikes early in the 1890s increased general freight and passenger traffic on the Sumpter Valley Railroad and added to its revenues. This must have pleased Eccles and his cohorts, but it is almost certain that no one in eastern Oregon--the Eccles group, the citizens, or the miners themselves--anticipated the magnitude of the mining activity which was to develop there during the next ten years.

In 1897, Sumpter had a population of perhaps 300; by 1903, it had grown to nearly 4,000 and "Golden Sumpter" was gaining notoriety throughout the West. In addition to the predictable trappings of a boom town--hotels, saloons, and an opera house--Sumpter also had a smelter, three newspapers, and a hospital. There were eighty-one businesses in town. In 1902, according to one contemporary account, "though . . . the vices that go wherever prosperity reigns are well represented, the forces which make for morality, culture, and the highest enlightenment are also here." [6]

The mines responsible for Sumpter's prosperity were all deep quartz mines which produced fabulous sums for their owners but required substantial capital to operate. The largest were the Columbia, the Eureka and Excelsior, the Golconda, the North Pole, the Tabor Faction, the Bunker Hill, and the Ibex. Each of these mines figures into the folklore of the area. The Baring family of London, for example, is reported to have purchased the North Pole for $10,000 in 1895 and to have extracted over $1,000,000 from it the following year.[7]

Commercial activity on the scale that Sumpter offered in 1896 was welcome indeed to the Sumpter Valley Railroad. Traffic soon grew to four trains each day between Baker and Sumpter. During the first years of production, gold ore and concentrates were shipped by rail to the smelters at Tacoma and Everett. Public Utilities Commission records for 1909, well after the best years for the district, show the Sumpter Valley railroad shipping 1,559 tons of ore in that year.

In addition to the ore shipments, the railroad enjoyed the passenger traffic associated with the mines. In 1909, passenger

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[6]Illustrated History, 220.

[7]See Miles Potter, Oregon's Golden Years (Caldwell: Caxton, 1976) and Waldemar Lindgren, Gold Belt of the Blue Mountains (Washington, D.C.: GPO, 1901).

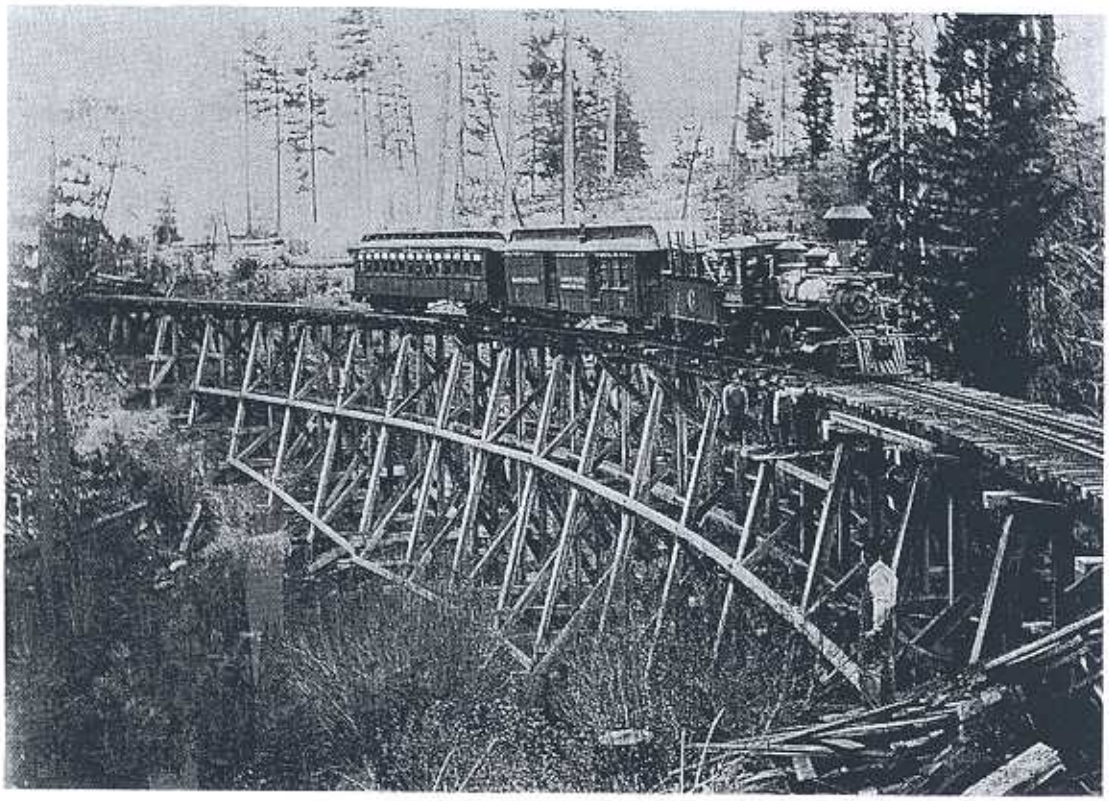

*Figure 9*
*Sumpter Valley RR train with passenger and mail car.*

traffic generated $39,788 or 29.6% of the road's revenue.[8] The 70.4% of the traffic that came from general freight was mostly logs and lumber. Manufactured and agricultural goods constituted less than 5% of the freight traffic. As the mining boom slowed, ore and passenger traffic dwindled. Even before Sumpter burned in 1917, the Sumpter Valley Railroad was back to operating as a dull but dependable logging railroad.

Whitney, Tipton, and Austin, 1901-1905

Building the railroad west into the Blue Mountains from the Sumpter wye (or S-wye) required more elaborate and expensive construction than the route up the Powder River. The first obstacle was the pass at Larch Summit, which rose to 5,094 feet. This section required deep cuts and sharp turns to maintain an even grade to Larch, where sidings and a wye were built. The Alder Springs trestle, perhaps the most photogenic spot on the line, was built west of Larch.

Fourteen miles beyond Sumpter, the road reached the townsite of Whitney in the fall of 1901. Here was an ideal mill site, and a junction point for logging railroads operated by lumber companies cutting the surrounding timber. Whitney developed as a mill town with a population of loggers and millworkers, a weekly newspaper, stores, hotels, and, "of course, the inevitable saloons."[9]

To the west of Whitney along the railroad's chosen route lay a second pass, this one reaching an elevation of 5,097 feet, three feet higher than Larch Summit. The road to Tipton, as the next station was named, was begun in April, 1903, but not completed until the summer of 1904. Although the route was a short 7.65 miles, grades and rock work, as well as winter, delayed completion. According to the account in the Sumpter Miner, "Railroad Day," which was celebrated on August 3, was sufficiently festive.

Descending from Tipton, the railroad pushed west to Austin, completing that section in the fall of 1905. On this part of the line Joseph West, chief civil engineer for the railroad, designed a spectacular horseshoe bend that took the line down to the White Pine Mill junction.

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[8]Oregon Public Utilities Commission Annual Report, 1909.

[9]Frederick Shaw, Oil Lamps and Iron Ponies (San Francisco: Bay Books, 1949), 74.

Logs and Lumber

While the Sumpter Valley Railroad was being built into the forest of the Blue Mountains in the years after the turn of the century, events that would have a profound effect on the company's fortunes were unfolding across the continent in Washington, D.C. In 1891, Congress had passed the Forest Reserve Act, allowing forested areas of the West to be withdrawn from public entry (or settlement) and managed as forest reserves. On July 28, 1902, the Blue Mountain Forest Reserve was formed by withdrawing 3,053,178 acres from the Blue Mountains.

According to Allen Hodgson, who was Deputy Forest Supervisor in 1913, people living in the affected areas divided themselves into three groups: the cattlemen welcomed the Forest Reserve, since it would mean better grazing management and protection from itinerant sheepherders; the miners objected to the Reserve, since they feared that their timber supply would be interrupted; and the lumber companies were simply appalled at the entire idea.

The Federal Forest Inspector, H. D. Langille, was equally appalled by the practices of the lumber companies. Hodgson quotes from Langille's 1906 report:

> The Oregon Lumber Company (which has recently absorbed the Grande Ronde Company) has its headquarters and mills at Baker City, and logs are brought to them over the Sumpter Valley Railroad which was first built to Sumpter but has now been extended to Whitney to reach the timber belt of that section. All along the line of this road the destruction of the timber is almost complete.
>
> During the past twenty years this Company has been actively engaged in acquiring title to timber lands, not only in this part of the state, but elsewhere. It is common knowledge that their employees have been supplied with funds with which to purchase lands under the Timber and Stone Act, and it is a matter of record that these claims have been transferred to the Company on the same day or the day following receipt of patent. In this way large areas of timber land which are now included within the temporary withdrawal of the reserve are held by this Company. If these lands are retained in the reserve the timber will be stripped off and the lands relinquished for scrip.[10]

For the lumber companies, the practical result of the Reserve (and the National Forest system that followed it) was that public timber was no longer so easily available. As Langille's report

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[10]Hodgson Manuscript, page 13, Ochoco National Forest, Prineville, Ore.

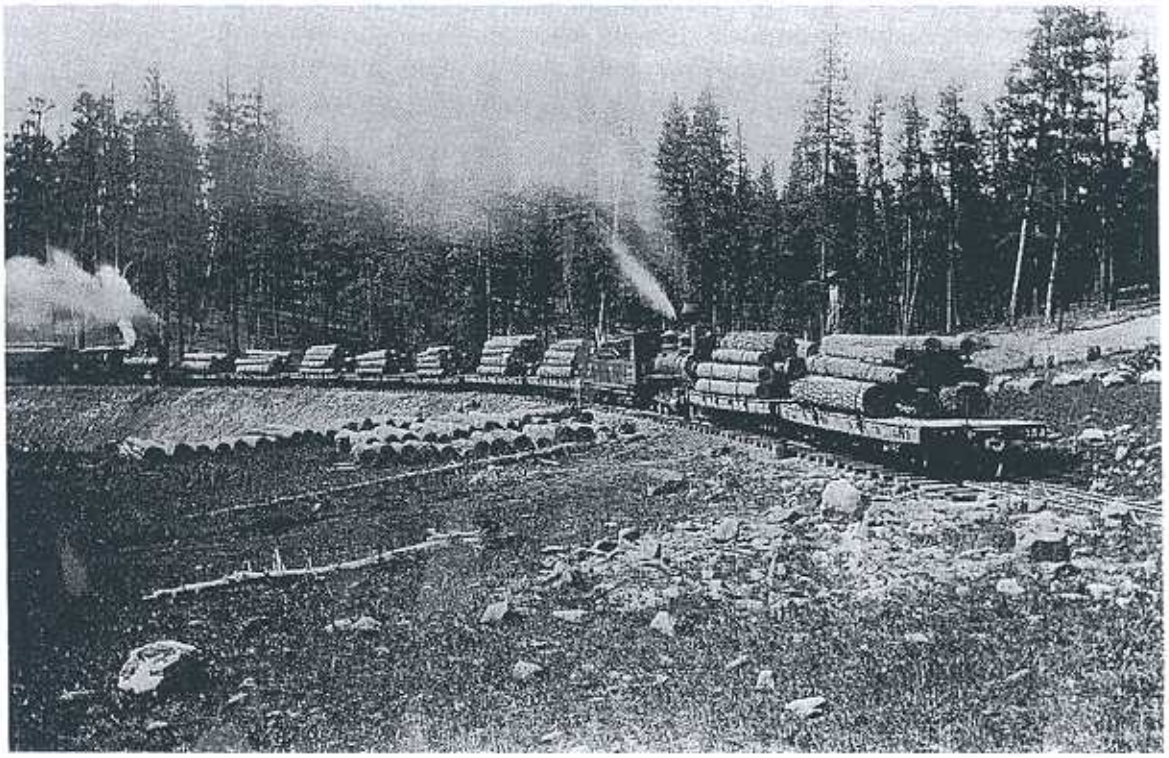

*Figure 10*
*Logging in the Sumpter Valley. Note logs at landing.*

suggests, the lumber companies had been acquiring public land by extralegal means. These included bogus claims for mining, fraudulent claims on 160-acre Timber and Stone Act tracts, illegal purchases of state school sections, and other expedients.

In 1908 Stephen A. D. Puter, "king of the Oregon land fraud ring," wrote a book "from the dank recesses of a prison cell" exposing his own and others' illegal activities. His account of the "Blue Mountain Forest Reserve Conspiracy" indicates a complex scheme that began to unravel with the 1905 indictment of six conspirators and continued until the statute of limitations on the offenses ran out. In October of 1911, David Eccles and the Oregon Lumber Company were indicted for their past offenses.[11] The case dragged on after Eccles' death in 1912 and was eventually settled in 1922.

The extensions of the Sumpter Valley Railroad into the higher altitude timber of the Blue Mountains "opened up" the forest to the Oregon Lumber Company and other firms, but after 1902 getting the legal right to cut Blue Mountain timber was no longer as simple as it had been. Lumber companies were obliged to purchase stumpage from Forest Service sales, or to purchase stumpage from other firms, or to secure rights from firms that had acquired them before the formation of the Reserve. Each of these methods was expensive, and as the demand exceeded the supply--at least in the near term--the price went up.

## Operating the System

The industrialization in the Blue Mountains, then, followed a pattern set by the progress of the railroad. The main line of Sumpter Valley road furnished an artery through the mountains, getting people and supplies into the forest, and then getting logs and lumber down to Baker for finishing and shipment throughout the nation.

While the Sumpter Valley Railroad provided a main line, the lumber companies built their own branch lines off the main line into the timber. The lumber companies cut the timber and yarded it to their own branch line, and then loaded it onto cars and sent them to the mill via the Sumpter Valley main line. In some cases, the logging railroads ran to small transit mills in the forest, but the transit mills required the services of the Sumpter Valley to ship their lumber to Baker City and the outside world.

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[11] Sumpter Miner, 4 Oct. 1911.

The locomotives favored by the lumber companies were generally gear-driven designs manufactured by Lima (Shay type), Climax, or Heisler. According to Ferrell, the Oregon Lumber Company owned at various times six Lima Shays, three Heislers, and one Climax. The Stoddard Lumber Company owned one Shay, three Climaxes, and four Heislers. The Baker White Pine Company had three Climaxes. The Nibley Lumber Company had one Heisler, and the W. C. Eccles Lumber Company had two Heislers and a Climax.[12] These geared locomotives were popular with logging operators because they could climb steep grades and develop their tractive effort at low speeds.

Unlike the lumber companies, the Sumpter Valley Railroad concentrated its locomotive fleet on conventional rod-driven locomotives which were more appropriate for main line operations. During the entire history of the railroad, narrow gauge lines throughout the U. S. were either re-gauging to standard gauge or abandoning their operations. As a result, the Sumpter Valley fell heir to used narrow gauge equipment that was available for bargain prices.

Ferrell's painstaking analysis of the Sumpter Valley Railroad's locomotives accounts for 32 engines owned by the line during its 56 years of operation.[13] Two of the locomotives were logging Shays, purchased by the Oregon Lumber Company but originally "lettered" Sumpter Valley. The roster also included two switch engines and a White motor truck refitted for passenger service. The balance of the engines were built by the Brooks or Baldwin firms between 1878 and 1900 and acquired by the railroad from their original owners. The exceptions were four Baldwins acquired new in 1915 and 1916, and two new Schenectady locomotives purchased in 1920. The most famous locomotives owned by the railroad were two large articulated Baldwin 2-6-6-2 engines usually referred to as Mallets, although they had simple rather than compound engines. These came to the firm late--in 1940--after a decade's service with the Uintah Railroad in Colorado.

While the firms followed conventional practice in their railroad operations, their practice in logging was somewhat unusual. Generally, as we have seen, industrial-scale logging in the western forests benefitted immensely from John Dolbeer's invention of the portable logging winch or donkey engine in 1881. By the first decade of the twentieth century, logging technology was approaching standardization. Timber operators west of the Cascades favored highlead yarding, which used large sled-mounted donkey engines to move the logs by aerial cables to landings where they were loaded onto rail cars. East of the Cascades, where the pine timber was less dense and the terrain gentler, the loggers

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[12]Ferrell, 99.

[13]Ferrell, 104-107.

favored huge rail-mounted machines which skidded the logs on the ground to the landings. A more common method in pine country "railroad shows" from 1905 to 1925 used horse-drawn high wheels to move the logs to the track.[14]

The most famous of the rail-mounted machines and by far the most popular was the McGiffort machine, a mechanical monster that could pull empty cars to the logging site, load them with logs while moving them underneath itself, and pull the loaded cars back to the main line. The Clyde Company, which manufactured the "McGiffort Self-Propelling Log Loader," claimed that the machine could cut logging costs by 66% and double output.[15] Even allowing for a certain amount of commercial hyperbole, the claim is probably not far from the truth. McGifferts came into use before the turn of the century, and the last one was retired by the Weyerhaeuser company in 1964. Other loading methods were limited to the slow and dangerous crosshaul method or cumbersome A-frame loaders which were dragged down the line of empty log cars.

Despite the advantages of standardized logging technology, the Baker County lumber companies continued to use old methods and machinery, including some remarkable contraptions which they made themselves. The Timberman directory of lumber companies for 1924 lists the equipment of the Stoddard Lumber Company, the Baker White Pine Lumber Company, and the W. H. Eccles Lumber Company, and shows none of them using rail-mounted skidders or loaders. Photographs taken as late as 1922 show cars being loaded by steam donkeys and A-frame "slide" loaders.[16]

Whether motivated by economy, the difficulty of converting the equipment from standard gauge to narrow gauge, or considerations of the light 40 lb. rail used on the spurs, the firms clung to their old-fashioned yarding and loading equipment until the end.

However they accomplished their production, the lumber companies were relatively prosperous. The only one with serious financial problems seems to have been the Baker White Pine Company, which was bankrupted in 1929. Oregon Lumber Company records for the World War I years--generally a time of prosperity in the Pacific Coast Lumber industry--reveal that the Baker operations

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[14]Swift Berry, Lumbering in the Sugar and Yellow Pine Region of California (Washington, D.C.: GPO, 1917), 13-64; Thornton Munger, Western Yellow Pine in Oregon (Washington, D.C.: GPO, 1917), 32-35; S.B. Show, Timber Growing and Logging Practices in the California Pine Region (Washington, D.C.: GPO, 1929).

[15]Clyde Iron Works Catalog (Duluth: Clyde Company, n.d.).

[16]Ferrell, 58.

produced a profit of $265,399, while Oregon Lumber Company operations at Dee made $95,555 and the Oregon Lumber Company mill at Inglis made $120,700. The following year saw Baker profits falling to $138,056, while Dee's rose to $103,753 and Inglis's fell to $47,266. In 1919, Baker made $127,636, Dee made $96,846, and Inglis lost $2,001. In 1920, Baker produced a solid profit of $376,271, Dee finished with $88,804, and Inglis managed $2,510.[17] Since the mills at Dee and Baker were about the same size (100,000 bf/day), the comparison is revealing.

At the beginning of their business in Oregon the Eccles, Stoddard, and Nibley interests were all closely aligned. All were Utah firms, and all were associated in Latter Day Saints colonization efforts. Ellen Stoddard was David Eccles' second wife--he had two in a polygamous arrangement--and C.W. Nibley was Eccles' close associate for many years. Eccles quarreled with Nibley and they divided their business interests for several years, but they soon resumed amicable relations.[18]

After Eccles' death in 1912, the relations between the various firms deteriorated to some extent. Oregon Public Service Commission reports for the period 1917-1920 show continuous litigation between the Sumpter Valley Railroad, the W. H. Eccles Lumber Company (operated by Stoddards), and the Baker White Pine Company. In 1917 the railroad asked for a 15% increase in rates, which the lumber companies fought, and in 1919 and 1920 the Stoddard Lumber Company and the Baker White Pine Company brought rate concerns before the Commission. This suggests that the separation of the railroad and the lumber firms was practically complete after 1915. Ownerships continued to overlap, of course, but the businesses did non defer to each other's interests as much as they did during Eccles' lifetime.

As the century advanced, the railroad's business continued to concentrate on lumber while showing some diversification. In 1914, passenger traffic produced revenues of $58,779 and freight produced $251,870--a ratio of about 1:4 which was nearly the same as the ratio in 1893.[19] Freight traffic during that year included the following:

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[17]Profit and Loss Statement, Oregon Lumber Company file, Church of Latter Day Saints Archives, Salt Lake City, Utah.

[18]Arrington, 79.

[19]Oregon Public Utilities Commission Annual Report, 1914.

**Table 5.**

**Sumpter Valley Railroad Freight in 1914**

| Freight | | Weight |
|---|---|---|
| Agricultural products | (including hay) | 2,980 tons |
| Livestock and wool | | 2,507 tons |
| Mineral products | | 2,704 tons |
| Lumber and logs | | 176,171 tons |

Source: Oregon Public Utilities Commission Annual Report, 1914.

At its fullest extent, the railroad reached slightly over 80 miles from Baker City to Prairie City. At the peak of its operation in 1910, the area that the railroad served had a population of perhaps 7,000 people; now (in 1992) it has less than 1000 residents. Writing in 1902, the author of the Illustrated History of Baker County deplored the Sumpter Valley Railroad as a "road that was primarily designed and has ever been operated as an adjunct to ...lumbering enterprises." He missed the basic point that "lumbering" was the only enterprise in the area capable of sustaining a railroad, or--indeed--a permanent population. Mining was soon exhausted, and ranching engaged fewer people each year. As the mills closed down, the towns of Whitney, Austin, and Bates closed down with them.

## Spacial Organization of the Railroad System

The spacial organization of the Sumpter Valley Railroad and its tributary logging systems followed a pattern dictated by the location of pine timber and the location of viable railroad routes through the rugged Blue Mountain country.

The first leg of the main line was from Baker City to McEwen. This route followed the Powder River south through the Bowen Valley and then west up the Powder River gorge to the Sumpter Valley. Since the majority of the Oregon Lumber Company timber holdings lay in this area, the choice was logical. From junction points in the Sumpter Valley--McEwen, Herschal, Mason, Curry, Lockhart, and California Gulch--logging systems radiated out into timber owned by the Stoddard Lumber Company, the Baker White Pine Company, and the Oregon Lumber Company. Railroad development of the Sumpter Valley and adjacent areas was relatively easy, and lucrative for the railroad and the timber companies.

When the main line reached the head of the Powder River Valley

near Sumpter, however, the company faced a hard decision. The route east into the mountains required a difficult crossing of the ridge separating the Powder River valley from the valley of the North Fork of Burnt River. The ridge itself would provide little opportunity for logging systems to branch off the main line, but once the ridge was crossed the Burnt River drainage would provide good railroad access to National Forest timber in that area. This second leg of the system proved to be a good investment, and Whitney in the Burnt River valley developed into a major junction point for logging routes north and south.

The next leg presented a similar set of circumstances. Crossing the ridge to the drainage of the Middle Fork of the John Day River would be expensive, but the reward was a strategic location in that richly-timbered valley. Austin and Bates, the stations on the Middle Fork, became major junction points for logging systems, as well as mill sites. From Bates, the Oregon Lumber Company built the grandest of the tributary logging railroads on the entire Sumpter Valley complex.

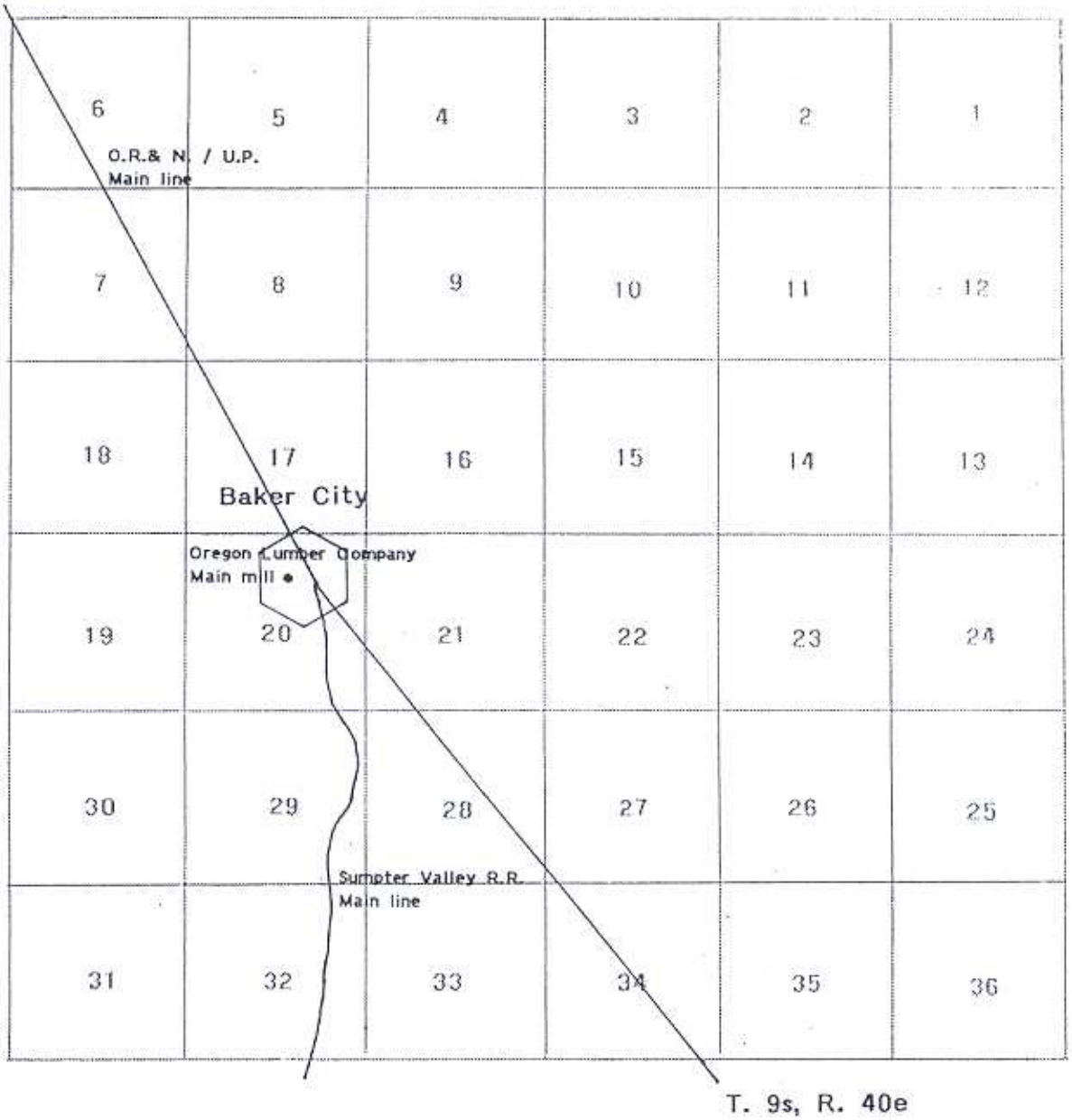
The decision to built over the last pass--Dixie Summit--and into the valley of the John Day was prompted by the valley's commercial cargo potential rather than its timber. This final leg was never able to generate sufficient revenue to justify its expenses, and the railroad abandoned the route in 1933.

With the exception of the Bates to Prairie City segment, then, the spacial pattern of the Sumpter Valley Railroad followed the logic of timber supply. Each of the three valleys that the railroad reached provided good routes for logging systems into the Blue Mountain pine stands.

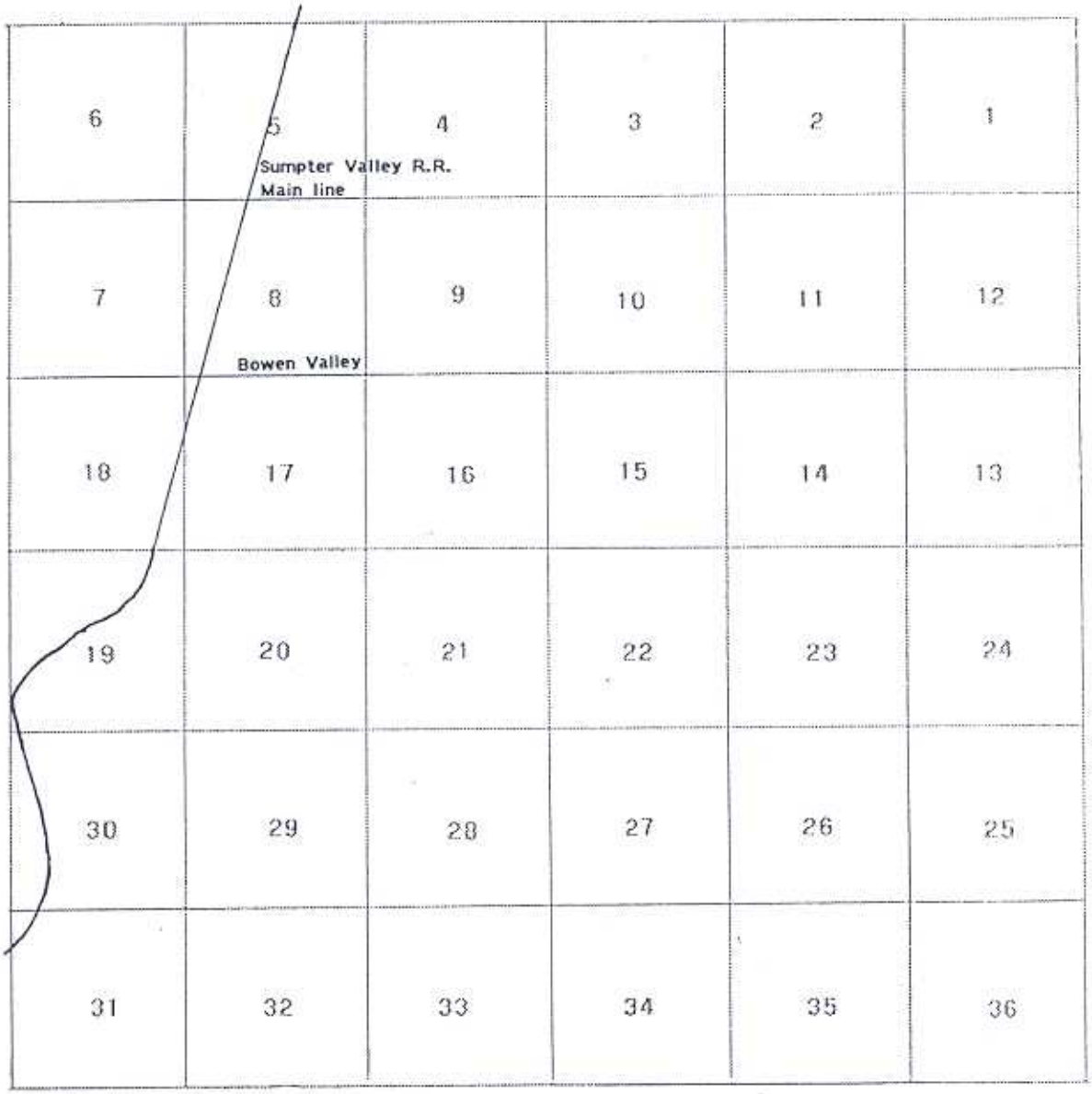
## Current Status of the Sumpter Valley Railroad System

In 1975, the Oregon State Historic Preservation Office funded a reconnaissance of the Sumpter Valley Railroad main line, station sites, and major tributary systems. The reconnaissance determined that portions of the main line, the Dean Creek system, and the Middle Fork system were eligible for nomination to the National Register of Historic Places. In addition to the railroad grades, station sites at Laurel, Whitney, Tipton, and Dixie, and mill sites at White Pine and Whitney were included in the linear district nomination. Also included in the district was the new depot built by the Sumpter Valley Railway Restoration, Inc. for their excursions on a portion of the main line track they have restored to service.

Sumpter Valley Railroad



Sumpter Valley Railroad

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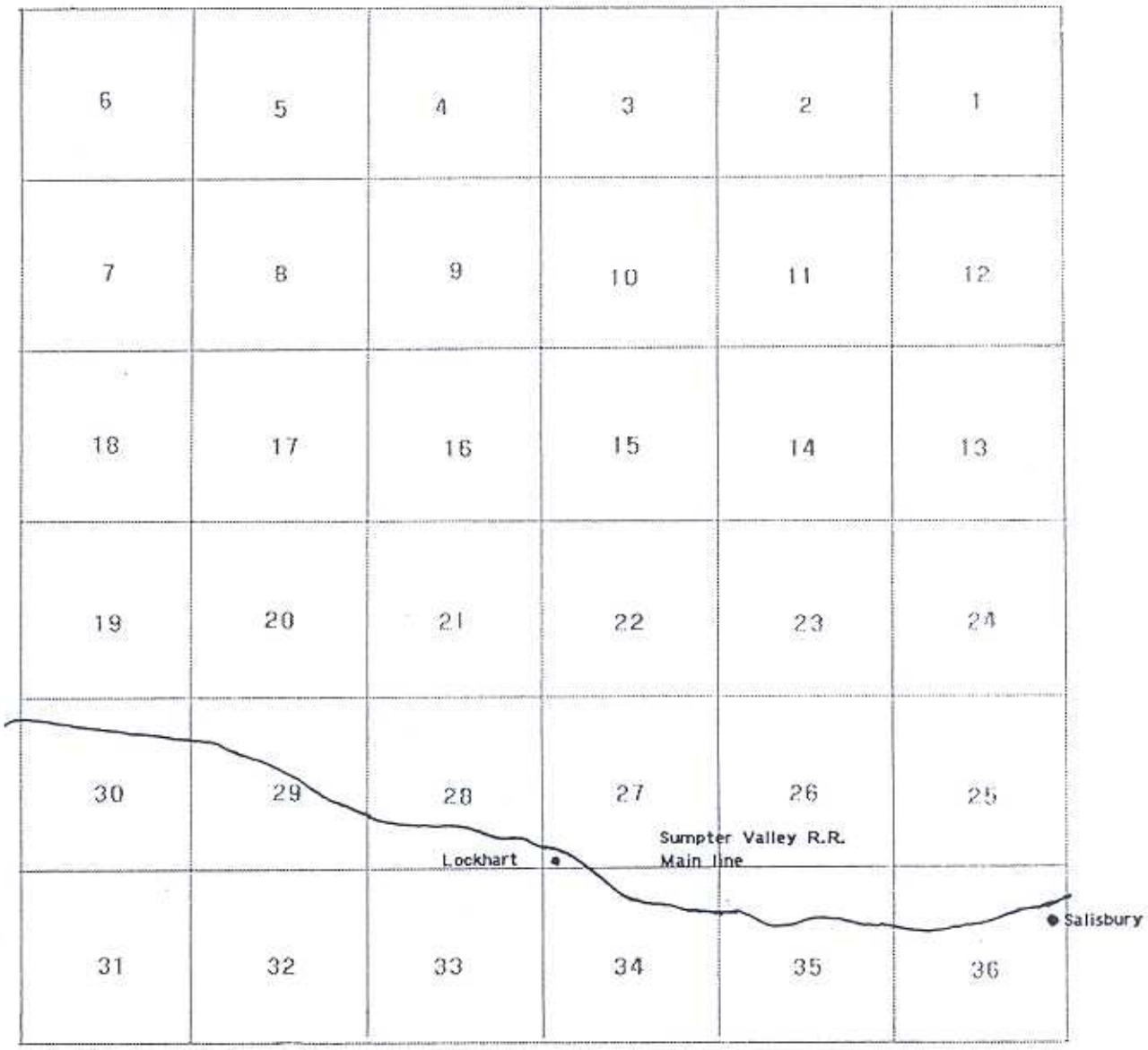
Sumpter Valley Railroad

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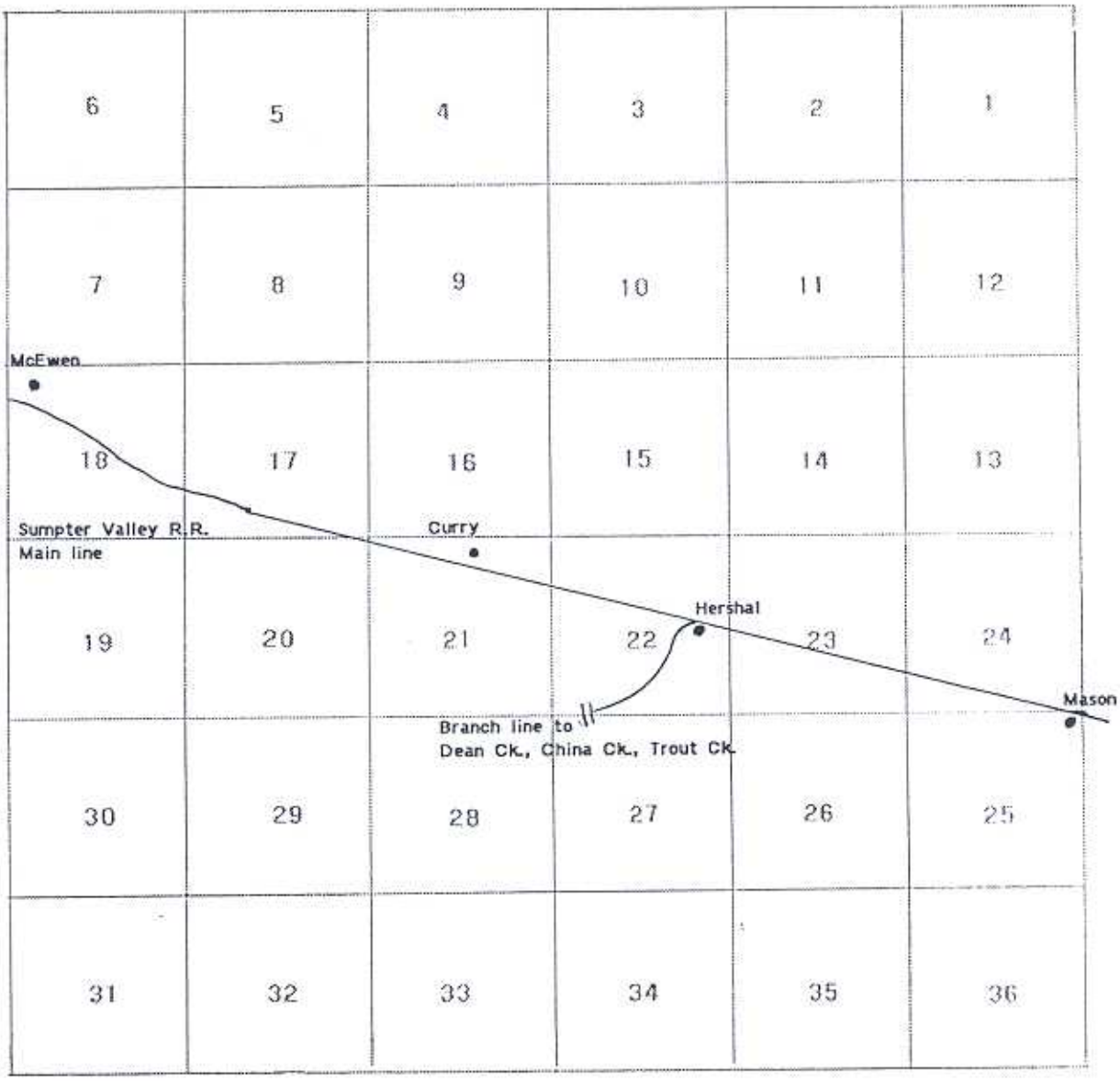
## Sumpter Valley Railroad

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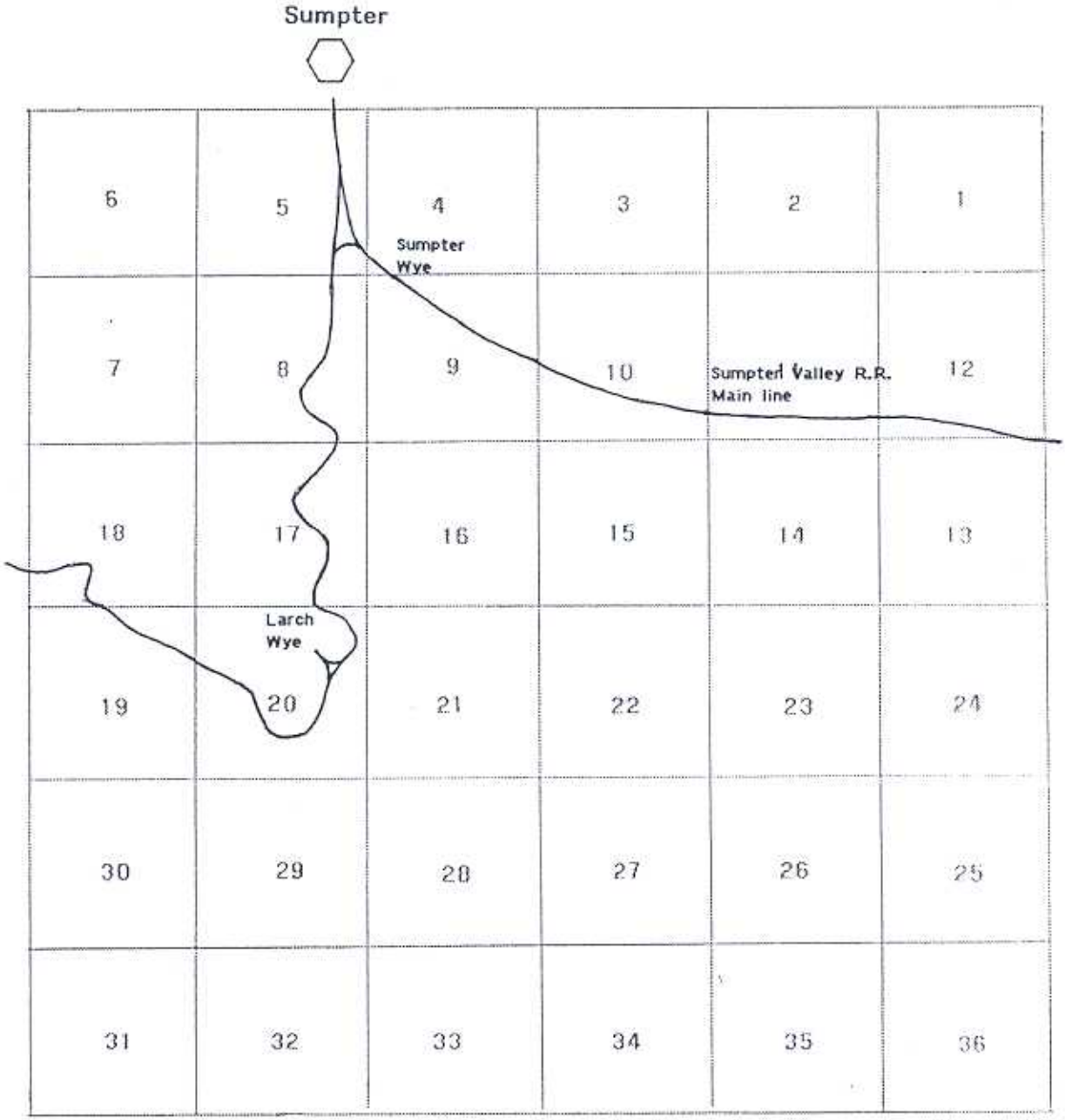


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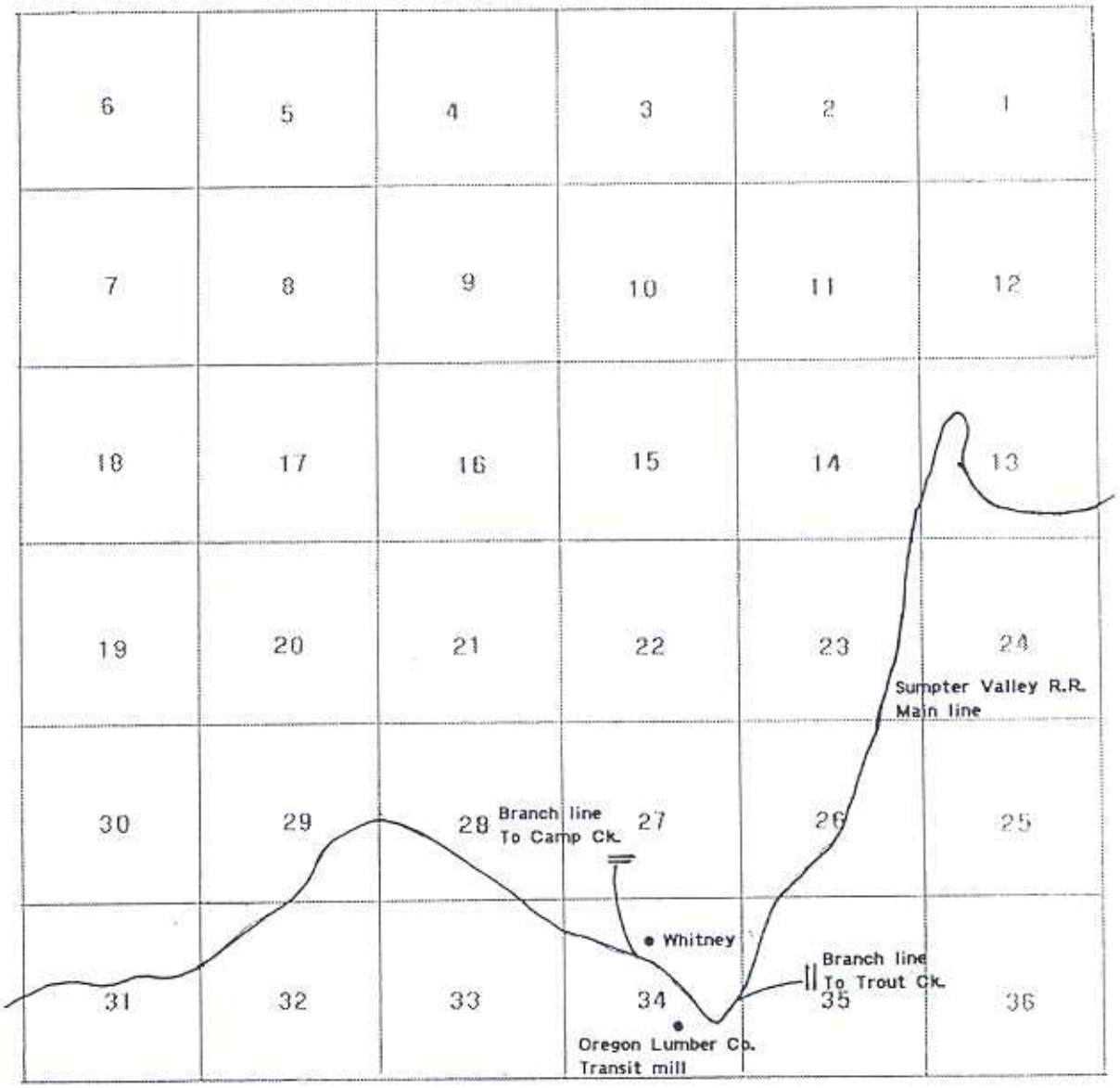


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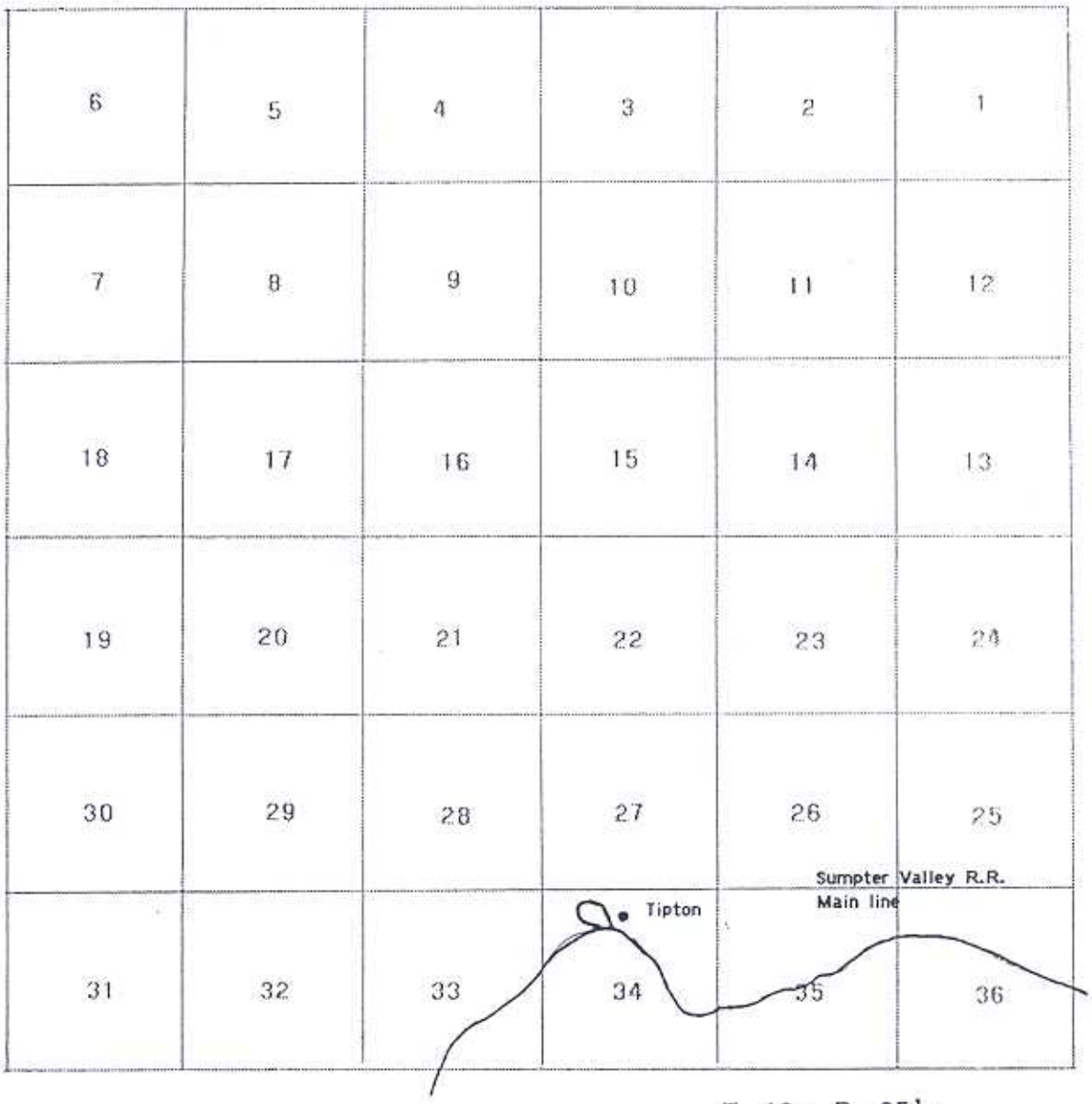


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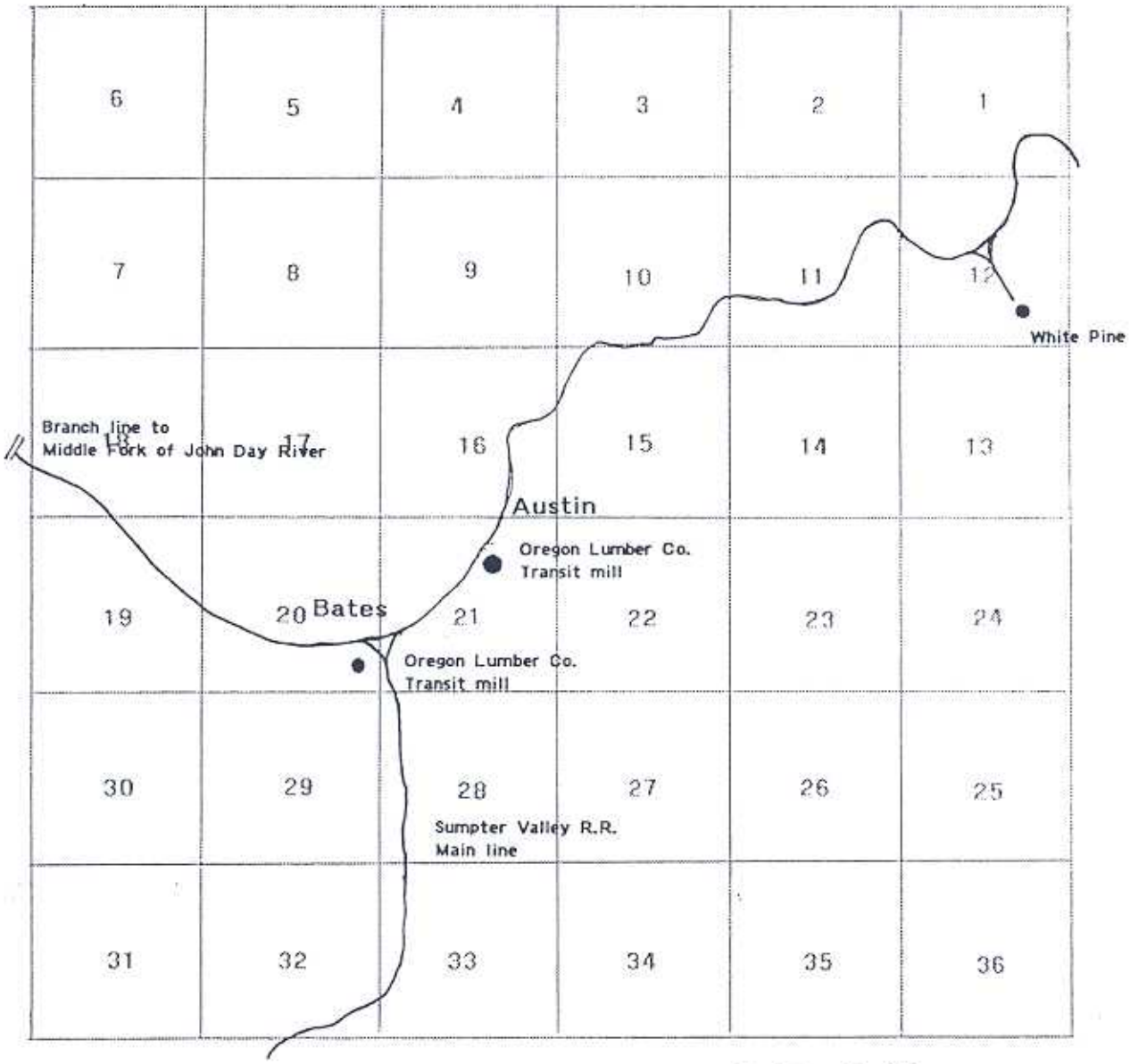


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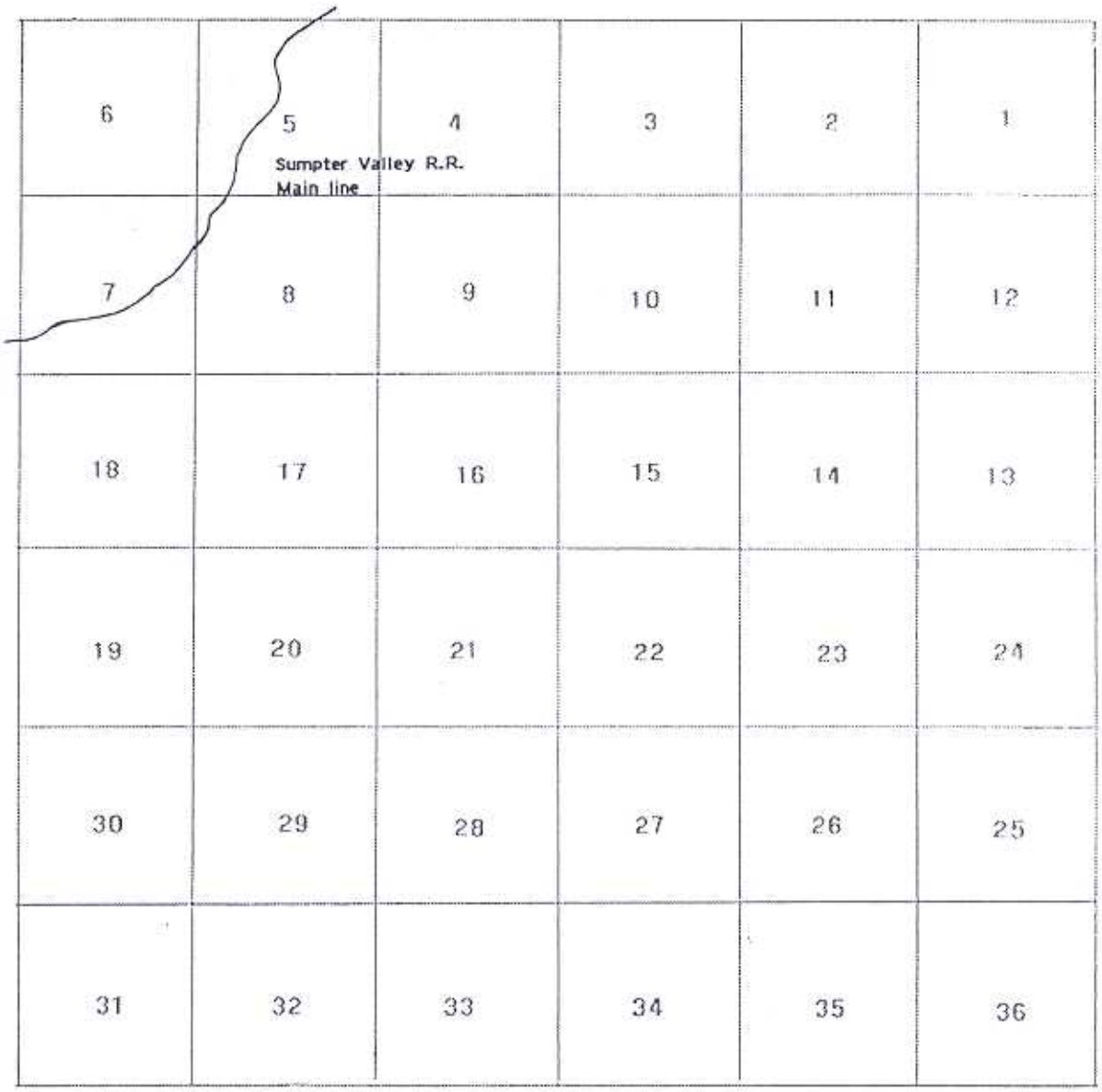


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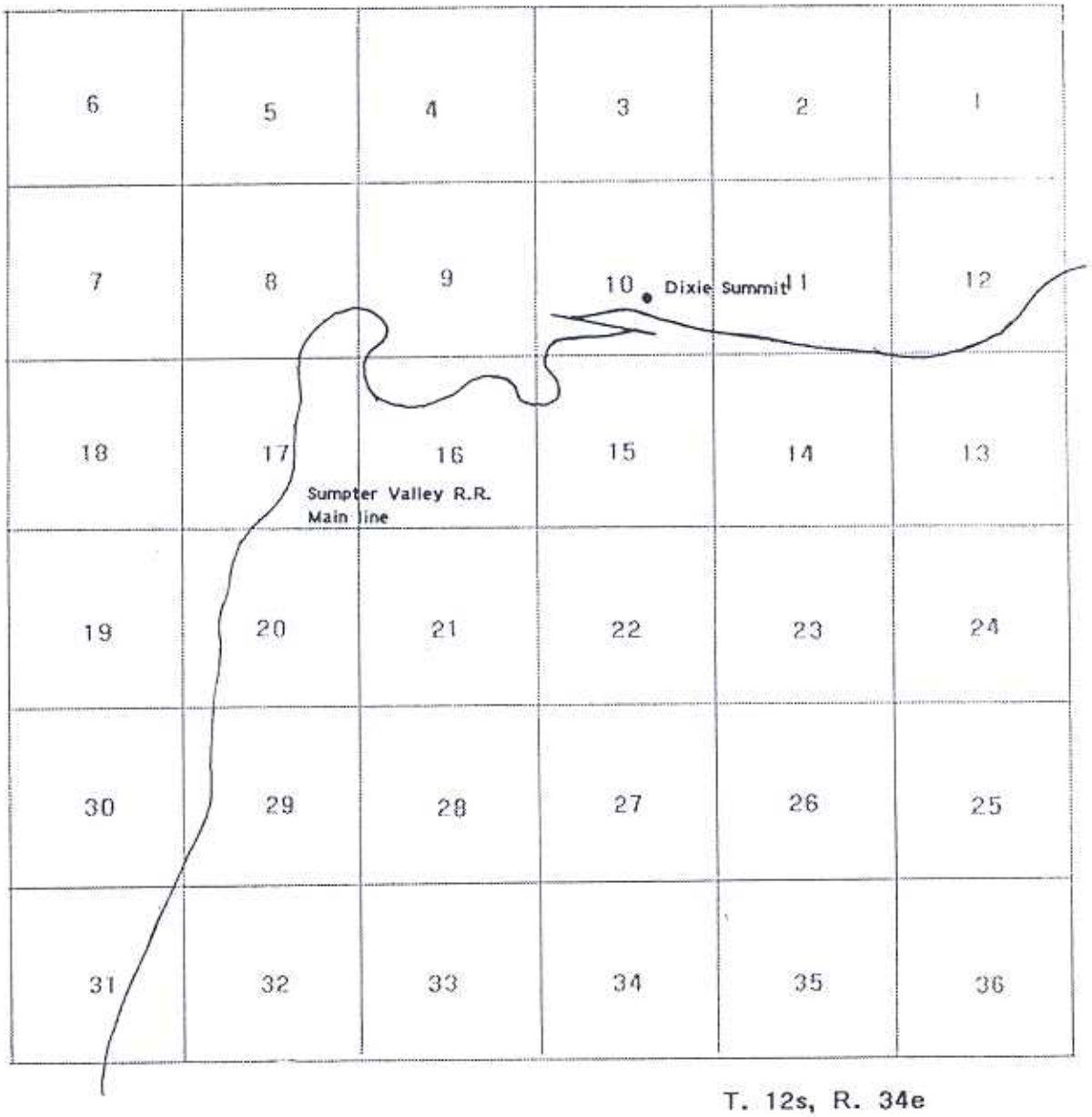


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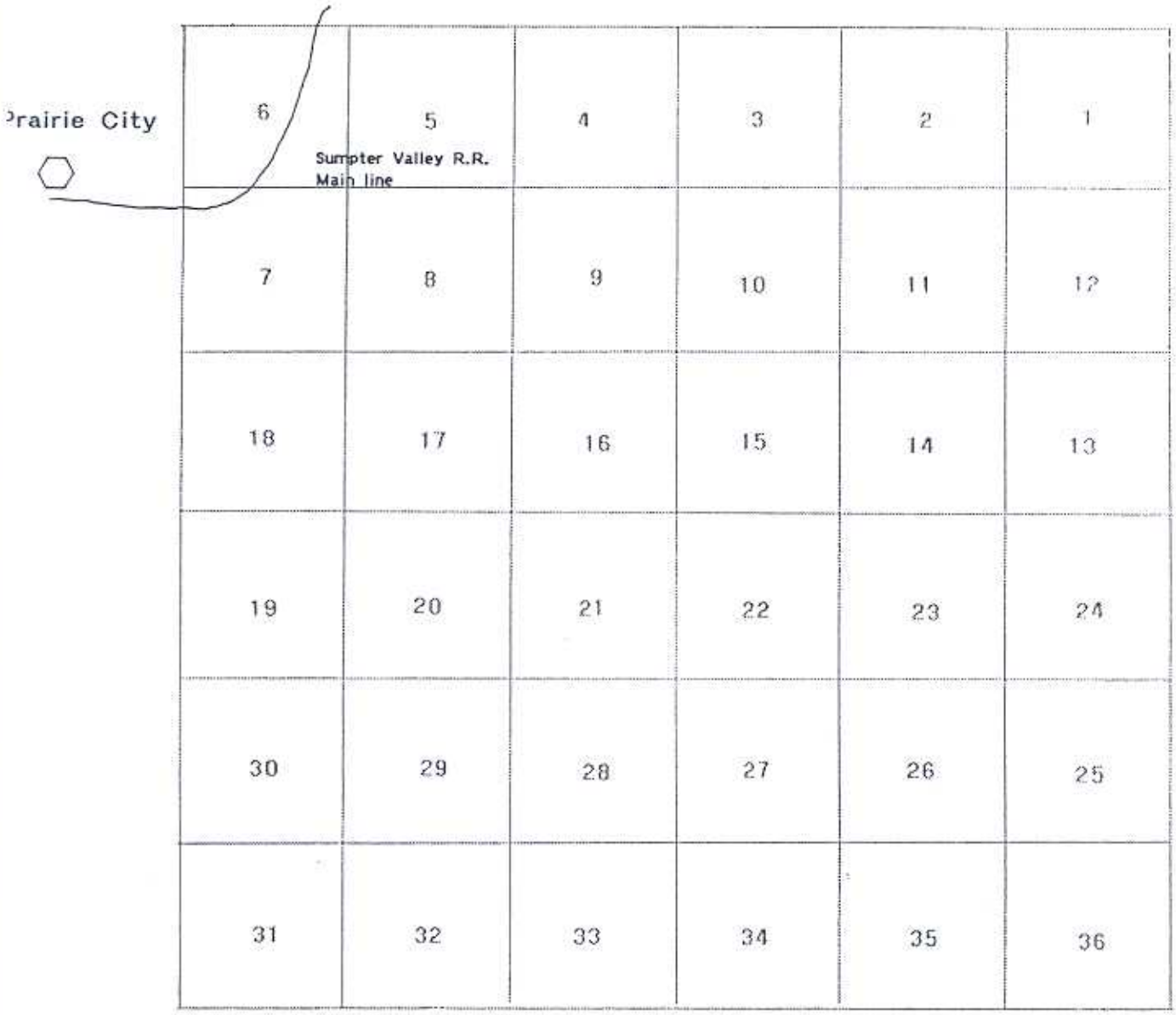


T. 13s, R. 33e

Case Study II: The Booth-Kelly Lumber Company, Lane County, Oregon, 1900-1915

During its fifty years of operation from 1896 to 1946, the Booth-Kelly Lumber Company dominated fir production in the southern end of the Willamette Valley. Booth-Kelly was also the first firm in the Willamette Valley to enter the interstate lumber trade.

The company incorporated in 1896, as the Northwest was beginning to recover from the depression of the early 1890s. The associates at the nucleus of the firm were Robert A. Booth, who was a banker and lumberman in Grants Pass, and George and Tom Kelly, both of Springfield.

Booth's business activities in Grants Pass began with his organizing the First National Bank of Southern Oregon in 1889. Among his associates in this venture were Portland financiers Henry Failing and H. W. Corbett, who controlled the First National Bank of Portland. Booth's bank had a correspondent relationship with the Portland bank, and Booth and the Portland bankers apparently had a good personal working relationship as well. This may have provided Booth with some financial resources that he could apply to the lumber business.[20]

Booth's mill in Grants Pass, the Sugar Pine Door and Lumber Company, became what is usually called a "secondary" manufacturer, buying lumber from nearby mills and producing finished goods. In 1895, Booth was making "boxes, sash and door molding and the like, almost altogether from pine lumber."[21]

According to A.C. Dixon, who managed Booth-Kelly for much of its life, the Kelly brothers convinced Booth to relocate in Lane County for better timber. They must also have convinced him to move from secondary manufacturing to primary manufacturing, for the first venture of the new corporation was to lease a sawmill in Saginaw, in southern Lane County.

The associates had a successful year at Saginaw, and began negotiations with the Southern Pacific Railroad to supply the railroad with ties and bridge timbers. These negotiations produced a three-part agreement that was to have wide implications for the

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[20]O.K. Burrell, Gold in the Woodpile (Eugene, University of Oregon Press, 1967), 175-202.

[21]Dixon Papers, Presentation to the Willamett Chapter, Society of American Foresters, March 14, 1960. Held in the Oregon Collection, Univerity of Oregon library, Eugene, Ore.

lumber industry in the Willamette Valley:

A) Southern Pacific would sell Booth-Kelly 70,000 acres of timber land from the Oregon and California Railroad grant which they controlled. These were the Mill Creek tract in the Mohawk Valley, a tract on the McKenzie, a tract on Fall Creek (tributary to the Willamette), and a tract near Cottage Grove.

B) Southern Pacific would set freight rates for Booth-Kelly lumber shipments to the California Bay Area at the same price as shipments from Portland by sea.

C) Booth-Kelly would manufacture lumber from the timber the railroad had sold it, shipping on the Southern Pacific not less than 2500 cars of lumber during the first year. It would also supply the Southern Pacific with 1,000,000 ties for $5.50/thousand feet or 17.6 cents/tie.

Although Dixon does not mention it, the deal also included a provision for Southern Pacific to build a branch railroad for Booth-Kelly's lumber shipments. The railroad extended from Springfield to Booth-Kelly's mill site in the Mohawk Valley in 1900.[22]

From its inception, then, Booth-Kelly was clearly a "railroad mill." The initial agreement between R.A. Booth and C.P. Huntington--president of the Southern Pacific--gave the lumber firm the tie contract that it needed to begin business. The Southern Pacific also provided the rail connection that Booth-Kelly needed to market its lumber.

As the company grew in the early years of the century, the need for more capital led them to sell stock, first to investors from California, then in a later offering, "control of the company was sold to...Michigan men..., afterwards it was controlled by eastern lumbermen. The local people operated it, but the control was elsewhere."[23] The Michigan men that Dixon refers to were John Blodgett and J.K. Danaher, both of whom owned extensive lands in the Lake States, the South, and the Northwest. Blodgett owned timber in Lincoln, Benton, and Linn counties that could have been cut in Booth-Kelly mills.

The Bureau of Corporations' investigations in 1913 concluded that the Booth-Kelly was "owned by individuals closely affiliated with the Weyerhaeusers" and that the "Hammond interests are closely

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[22]For an account of the Booth-Kelly/Southern Pacific agreement that varies slightly from Dixon's, see Herbert Cox, Random Length (Eugene, 1949), 29-31.

[23]Dixon Papers, 7.

connected with the Booth-Kelly Lumber Co. interests."[24] Unfortunately, the report is not more specific, so it is difficult to know if Blodgett and Danaher are meant here.[25]

Booth-Kelly Timber Lands

The land that was to provide Booth-Kelly with its timber base was part of the famous and deeply vexed Oregon and California Railroad grant lands. As the successor firm to the Oregon and California Railroad, the Southern Pacific had possession of the 4,200,000 acre land grant that was authorized by Congress in 1866. The original terms of the grant were that land was to be sold to "actual settlers" (not lumber companies) for not more than $2.50/acre and in lots of not more than 160 acres. Since "actual settlers" could obtain better land from other sources, sales were slow. The railroad therefore ignored the grant provisions, and we find Booth-Kelly as the largest single buyer of Oregon and California (or O.& C.) lands at a price of $40.00/acre.[26]

The O.& C. lands that Booth-Kelly bought lay in odd-numbered sections in a checkerboard pattern, as they do throughout much of western Oregon. Booth-Kelly needed to buy the intervening even-numbered sections to give them adequate continuity of lands for efficient logging. And, the even-numbered sections were available. For the most part they had been acquired by speculators through several legal (and semi-legal) expedients including Timber and Stone Act claims, various homestead claims, script and lieu land claims, and state school section sales. Dixon himself referred to the even-numbered sections as land bought from "Tom, Dick, and Harry . . . Some of it you will remember, the land fraud trials [sic]. People came out, school teachers very often, others from the East, a good many from Minneapolis."[27]

The company bought the even-numbered sections in small units, with the largest purchase totalling 15,000 acres. Eventually, they had acquired 70,000 acres in this fashion. Around the turn of the

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[24]U.S. Bureau of Corporations, The Lumber Industry, vol. II, 58-59.

[25]Corporate File, Booth Kelly Lumber Company, State of Oregon Department of Corporations, Salem, Ore.

[26]See Elmo Richardson, BLM's Billion Dollar Checkerboard (Santa Cruz: Forest History Soceity, 1980), 14-15; Jerry A. O'Callaghan, Disposition of the Public Domain in Oregon (Washington, D.C.: GPO, 1960), 37ff.

[27]Dixon Papers, 14.

century, then, Booth-Kelly had 140,000 acres of Lane County timber. Since the holdings included both odd-numbered O.& C. sections and other even-numbered sections, it was what loggers called "blocked up" and ready to log.

During these years Booth-Kelly made an additional purchase through its subsidiaries, the California and Oregon Land Company, and the Oregon Land and Livestock Company. This purchase was another land grant, the Oregon Central Military Wagon Road grant. This grant had been authorized by Congress in 1863 and assigned by the Oregon legislature to the road builders in 1864.[28] The road builders had sold it in 1876 to the Pacific Land Company, from whom Booth-Kelly bought it.

The wagon road grant included valuable timber land in western Oregon and central Oregon, and a great deal of sub-marginal land in eastern Oregon. Dixon refers to the land as a "million acres," of which 875,196 acres was eventually patented.[29] The purchase price was $500,000, or $.50/acre. Dixon acknowledges that this was a bargain, but as he points out, "the reason we got the property for $500,000 was that there was a lawsuit with the government as part of the trade."[30]

By 1905 Booth-Kelly found itself in possession of around 1,150,000 acres of land stretching from Lane County to the Idaho border. All of the land had recently been part of the public domain, and some of it had left the public domain under curious circumstances.

During the next ten years, nearly every acre was to be contested in court, and the company would find itself occupying a prominent place in the Bureau of Corporation's 1913 report on the lumber industry.[31] The report identified The C.A. Smith Company, Booth-Kelly, and A.B. Hammond Company as the three largest timber owners in western Oregon, and noted that Smith and Booth-Kelly were the beneficiaries of fraudulent practices. The authors of the report had a certain fondness for conspiracy theories which, as we have seen, led them to connect Booth-Kelly, Weyerhaeuser, and Hammond in an unholy (and unlikely) alliance to control western Oregon timber.

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[28]O'Callaghan, 50-51.

[29]Dixon Papers, 15; O'Callaghan, 52.

[30]Dixon Papers, 15.

[31]U.S. Bureau of Corporations, The Lumber Industry, vol. II, 58ff.

Booth-Kelly's land package began to unravel before it was completely assembled. In 1901 Edward H. Harriman, who controlled the Union Pacific, gained control of the Southern Pacific, bringing two of Oregon's three interstate railroads under his direction. Harriman then withdrew the O. & C. lands from sale, in violation of the grant agreement, because he recognized that the timber would be worth more in the future. This incurred a great amount of public wrath, especially among lumber operators who wanted to buy cheap "railroad timber."

> The Attorney General filed the authorized suit against the Oregon and California September 24, 1908, and with it were filed suits against purchasers of more than 1000 acres. Thus began the legal action which would end before the Supreme Court in 1915, complete with seventeen bulky volumes of evidence, the greatest amount presented to the Court to that time.[32]

As a result of conflicts over the O.& C. land that Booth-Kelly had purchased from the Southern Pacific, the military wagon road grant lands, and other sources, A.C. Dixon spent several extended periods in Washington, D.C., involved in courts and politics instead of his usual duties of logging and making lumber. Despite negative press from the Bureau of Corporations and other media, the courts upheld Booth-Kelly's position.

Booth-Kelly's purchase of 70,000 of O.& C. land was made in good faith, Dixon and his attorneys maintained, and the firm was "as innocent as a newborn babe because we had gotten legal advice, went back to the patent, and bought land that we thought we were entitled to buy."[33] The court ordered the lands forfeited by Booth-Kelly and the other large purchasers, but allowed them to buy the lands back at their proper price of $2.50/acre. This established clear title to the O.& C. lands that the Southern Pacific had sold.

The Ferris-Chamberlin Act in 1916 put the remaining unsold O.& C. lands into a trust that made the timber saleable but not the land. This policy has continued through the administration of these lands by the Bureau of Land Management.

Booth-Kelly's second bargain, the 70,000 acres of even-numbered sections acquired from "Tom, Dick, and Harry" were not seriously contested by the government, as was generally the case with homesteads and Timber and Stone Act claims. Although Stephen A.D. Puter had exposed the abusive nature of this practice in his Looters of the Public Domain in 1907, and the courts had wrested 6000 acres of fraudulent land claims away from C. A. Smith, the

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[32]O'Callaghan, 43.

[33]Dixon Papers, 13.

practice was so widespread that anything more than token prosecution would have been extremely difficult.

The government contested the third land deal, the Oregon Central Military Wagon Road grant, because the road and the grant lands extended across the Klamath Indian Reservation east of the Cascades. Here, the Pacific Land Company and Booth-Kelly argued that since the grant was made in 1864 before the Reservation was created in 1865, the grant properly included 110,000 acres through the heart of the Reservation. Neither the Klamath Tribe nor the Bureau of Indian Affairs was willing to accept this, and litigation dragged on into the 1930s. The intermediate solution was to consolidate the 110,000 acres into a 87,000 acre block that was withdrawn from the Reservation and deeded to the grant holders. This was the Yamsay Tract, which Booth-Kelly sold to the Long-Bell Lumber Company in 1924.

At the very least, as historian Jerry O'Callaghan comments, "the Booth-Kelly holdings illustrate the diverse methods of acquiring timber land" available to enterprising operators during the first decades of this century.[34] Lumber companies' peccadilloes in the land business were common in Oregon, of course, as they had been in the Lake States and the South. The only source of large contiguous blocks of timber land was the public domain. The lumber companies argued that they needed to get public land if they were to make lumber, which was important for all kinds of things, as well as keeping people employed and "opening up the country."

Clear title to the timber land was not always important to the lumber companies, however, since they wanted the timber rather than the land. Once they had cut the timber, many lumber companies traded the land back into the public domain through the Forest Service's tripartite exchange program or simply "let it go for taxes" and revert to the county. Until the middle decades of the century, little value was placed on cut-over timber land.[35]

What makes the case of Booth-Kelly interesting is the national attention the firm received, their persistence in arguing their case, and the Court's willingness to uphold their claims.

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[34]O'Callaghan, 81.

[35]For a discussion of cut-over lands, conservation, and reforestation, see Robert E. Ficken, Lumber and Politics (Seattle: University of Washington, 1979), 62-65; For a case study, see James Fisher, Starker Forests (Corvallis: Starker Forests, 1991), 42-48.

The Booth-Kelly Mills

If the first part of Booth-Kelly's agreement with the Southern Pacific had broad implications for the lumber industry, the second part had equally broad implications. This was the agreement to set Willamette valley rail rates to California at a level equal to ocean rates.

> The inauguration of such rail competition was followed by rapid lumber industry development throughout the Willamette Valley, reaching north to Portland. Included in the early Willamette Valley mill group were Corvallis Lumber Company, Corvallis; Willamette Valley Lumber Company, Dallas; Chas. K. Spaulding Log Company, Salem and Newberg; Falls City Lumber Company, Falls City; Sheridan Mills Company, Sheridan; Silverton Lumber Company, Silverton; and Hammond Lumber Company, Mill City.[36]

Like Booth-Kelly, these mills were landlocked in the Willamette Valley and wholly dependent on rail transportation to move their lumber.

While Booth-Kelly was clearly a railroad-oriented firm, they located their mills to accommodate stream driving, which was their first logging pattern. The O.& C. lands lay in four blocks of timber:

1) Mill Creek and the Santiam Basin (Mohawk River)
2) McKenzie Valley (McKenzie River)
3) Fall Creek (Willamette River)
4) Cottage Grove area

The first three blocks lent themselves to stream driving. Accordingly, Booth-Kelly ran mills first at Coburg (1898), on the McKenzie near the Willamette; and then at Wendling (1900), on Mill Creek near the Mohawk; and finally at Springfield (1900-01) on the Willamette. The company's first mill, at Saginaw in southern Lane County continued to run, and another mill operated at Cottage Grove "for awhile," but these two mills got their logs by methods other than stream driving.[37]

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[36]Herbert Cox, 31-32.

[37]Chronology of mills from Dixon Papers and from Herbert Cox, 31.

According to Dixon, the pattern for driving logs to the Booth-Kelly mills was as follows:

| Mill | Tract | Route |
|---|---|---|
| Coburg | Mill Ck. | Mill Ck. to Mohawk to McKenzie |
| Coburg | McKenzie | McKenzie to mill |
| Springfield | Fall Creek | Fall Ck. to Willamette |
| Wendling | Mill Creek | Mill Ck. to mill |

Stream driving had been used on the Mohawk, the McKenzie, and branches of the Willamette since 1885, supplying mills along the Willamette as far away as Salem and Newburg. The first drives occurred in the spring with the annual high water. Later, after the turn of the century, larger mills in the Valley needed a steady supply of logs year-round. To supply logs when the stream flows were lower, the loggers built splash dams, blasted rocks that impeded the drives, and finally resorted to starting logs downstream whenever it rained.[38] In addition to the problem of supplying enough logs to the mills, river drives were threatened by irate farmers whose crops were flooded out by splash dam releases, and by the construction of hydropower dams like the Leaburg dam on the McKenzie. In 1906, Booth-Kelly began building a logging railroad to serve its mill at Wendling.

Despite the erratic nature of its log supply, the first decade of the new century was a productive time for Booth-Kelly. In 1903, the company cut 143,250,000 feet of lumber, the largest cut in Oregon. In 1905, its cut was down to 80,000,000 feet, which placed it among the largest mills. Polley estimates that Booth-Kelly had 900 men employed in the woods by 1904. Even if we allow for the fact that the firm was logging essentially by hand, this figure seems large. After that year, the government apparently closed the contested O.& C. lands for two seasons pending outcome of the litigation.[39] In 1910, The Timberman declared Booth-Kelly the largest individual lumber concern on the Pacific Coast. During this period, Booth-Kelly advertisements in the trade journals advised the public that the company had "saw mills, planing mills, and dry kilns" at Saginaw, Coburg, Wendling, and Springfield.

In 1910 the town of Wendling burned, but not the mill. The town was immediately rebuilt. In the same year, the mill in Springfield burned. In 1915, the company built a new Springfield

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[38]Glen Mason, "River Driving in Lane County," Lane County Historian 18 (1973): 23-39.

[39]Polley, 78.

mill which had a daily capacity of 150,000 board feet. The mill was all electric. This permitted saws, rolls, chains, and other machinery to be independently driven. At an Oregon Power Company generating plant near the mill, sawdust and waste were burned to generate steam for the dry-kiln and for the turbines to run the generators.

Spacial Arrangement of the Railroad Logging System

Booth-Kelly's logging activities began in 1898 and continued through the 1940s. Logging began on Mill Creek with stream driving and team logging. During the early period, three splash dams were built on Mill Creek to provide water for driving. The first was built in 1901, the second in 1902, and the third in 1905 or 1906.

In 1906, Booth-Kelly began the logging railroad up Mill Creek. Log deliveries to Mill Creek and to the railroad were augmented by a series of log chutes. These devices were common to logging operations in many parts of Oregon. Polley notes that Booth-Kelly chutes were built of two logs or three logs laid end-to-end to form a trough.[40] Loggers rolled logs into the uphill end of the chute, and gravity carried the logs down the chute to the creek or a railroad spur. In some instances, the chutes were steep enough to propel the logs at a dazzling speed down the hill.

The logging railroad system in the Mill Creek drainage pursued a classic dendritic pattern into the hills.[41] The main lines followed the Mill Creek and the major ridges north and south of the creek. Spurs and sub-spurs accessed timber 5.5 miles south of Mill Creek and 3.5 miles north of Mill Creek. To the north, the system covered Oshkosh Mountain and entered the drainage of the Mohawk River. The system covered an area of approximately 75 square miles. Grade features included switchbacks, inclines, S curves, and trestles.

Booth-Kelly's camps were small and numerous through the system's 40 years of operation. Numbers assigned to camps range from 1 to 40, with some camps named rather than numbered, and some numbers duplicated. In 1916, Booth-Kelly brought a YMCA car into the camps. The company bought the car, and provided a person to staff it, but the recreation equipment in the car was purchased from money raised by the loggers.[42] The camps on the Wendling

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[40]Polley, 129-131.

[41]Data from Polley.

[42]The Timberman, May 1916, 34.

*Figure 11*
*Booth Kelly's rail-mounted donkey was an unusual piece of equipment.*

system were apparently operated as family camps after the 1920s.[43] This permitted the loggers to bring their wives and children with them into the woods. Families were housed in frame cabins that could be transported by rail.

Railroad equipment on the Mill Creek system included Shay and Heisler geared locomotives and two articulated Mallet locomotives built by Baldwin. The company had a rail-mounted duplex donkey engine which was used with spar trees for high lead yarding and for loading log cars. Other rail-mounted equipment consisted of a steam shovel and two locomotive cranes.

One interesting footnote to the Booth-Kelly railroad system was an iron bridge that the company purchased in 1900 to cross the McKenzie River at Springfield. The bridge had been built in Utah in 1882, and was no doubt available at a bargain price. The bridge has remained in service since 1900, and is now regarded as the oldest surviving bridge in Oregon.[44]

## Current Status of the Booth-Kelly Railroad System

At the present time, the Booth-Kelly system has not been formally surveyed to record data about the grades and features. Louis Polley has prepared maps of the system to accompany his book about the Mohawk Valley. Since no historic maps have been located in public archives, Polley's map is proabaly the best source currently available.

The former Booth-Kelly lands are privately owned, and are managed as an industrial forest, but there is no reason to assume that elements of the system such as grades, dams, camp sites, log chutes do not survive, at least in a form suitable for archaeological data recovery.

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[43]Polley, 123.

[44]Dwight Smith, James Norman, and Peiter Dykman, Historic Highway Bridges of Oregon (Salem: State Dept. of Transportation, 1986) 29.

Case Study III: The Pelican Bay Lumber Company, Klamath County, Oregon, 1916-1936

After the Southern Pacific reached Klamath Falls in 1909, several local mills began cutting lumber for shipment by rail to distant points. These included the Moore Brothers and Ackley Brothers mills in Klamath Falls, the Long Lake Lumber Company, the Utter and Burns Lumber Company, and the Meadow Lake Lumber Company. None of these was successful in the new market. The Moore Brothers, the oldest firm in Klamath Falls, sold their mill in 1910 and left the lumber business.

Then, in the same year, the first of the new Klamath Falls lumber companies incorporated. This was the Pelican Bay Lumber Company, a firm whose practices were to set the standards for the industry in the Klamath country.

The Pelican Bay Lumber Company began as an association of Harold D. Mortenson and G. D. Hauptman, both of whom were in the lumber business in San Francisco in 1910. Hauptman was with the Hauptman Lumber Company of San Francisco, and Mortenson was the son of Jacob Mortenson, president of Portland's Peninsula Lumber Company and reportedly "interested" in twelve lumber companies in the midwest.[45]

In 1909, the Crater National Forest had prepared a timber sale on Klamath Lake's Pelican Bay for the Innes-Clark Lumber Company, which had taken over a previous sale that the Moore Brothers had been unable to log. Innes-Clark colapsed before bidding the sale, however, and M. L. Erickson, the Forest Supervisor, decided "it would be a mighty good plan to advertise the area under a general notice advertisement."[46]

In the following spring, Harold Mortenson visited the sale and announced his interest in bidding it. The sale was then designated the "September 5, 1910" sale and advertised in the Portland and Klamath Falls newspapers. Mortenson and Hauptman submitted a bid of $3.15/thousand board feet for yellow (ponderosa) and sugar pine, and $1.50/thousand for other species. As no other bids materialized, the sale went to the San Francisco associates.

The associates' successful bid on the Pelican Bay sale was the occasion for forming the Pelican Bay Lumber Company. Mortenson and

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[45]Klamath Falls Express, 13 April 1911.

[46]Erickson to District, 25 April 1911, Sale File for 5 Sept. 1910, Crater National Forest, on file at Winema National Forest, Klamath Falls, Ore.

Hauptman prepared their corporate agreement in September of 1910 and filed it in April of 1911.[47] The sale also provided a name for the new firm. In a letter to Erickson on November 7, 1910, M.A. Leach, who was one of the original associates, wrote that they "would probably not incorporate [the] company until after we make sure of getting the timber. No use going to unnecessary expense." When they did incorporate, Leach was no longer among the officers.[48] The new company opened an office in Klamath Falls in May of 1911, and began logging on July 1 of the same year.

In the spring of 1911, Pelican Bay Lumber Company began dredging on the canal or "cut" leading to their mill site, and the mill itself was ready by the following spring. The mill and logging operations reflected the high standards of the new firm:

> The new plant of the Pelican Bay Lumber Company, Klamath Falls, Oregon, began operations March 29. The main building is 44x162 feet, three stories high. The equipment consists of a 9-foot McDonohough band [saw], a 72-inch Murray edger, 12 saw overhead trimmer, five-saw slasher, lath mill, equipment for manufacturing 16 inch wood, and a hog. The log deck is equipped with a kicker and deck stops; carriage is equipped with steam set works and a 12-inch shotgun feed.[49]

As a final touch, the company bought the steamer Klamath, ostensibly to tow their log rafts, but perhaps as a company yacht as well.

The Pelican Bay Lumber Company was, then, a tidy arrangement. Mortenson and Hauptman had the support of family firms in a venture that was well-conceived from the outset. They also had the participation of stockholders G.X. Wendling, S.O. Johnson, and W.P. Johnson--men whose interests in pine belt business included (among others) the Weed Lumber Company, the California and Northwestern Railway, the White Pelican Hotel, the Klamath Development Company, and the Big Basin Lumber Company. These entrepreneurs were all loosely associated with the Southern Pacific Railway at the turn of the century.

Mortenson rose to a position of prominence in the industry and the community. His long-time competitor, W.E. Lamm, remarked in

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[47]Corporate File, Pelican Bay Lumber Company, State of Oregon Department of Corporations, Salem, Ore.

[48]Klamath Falls Express, 13 April 1911.

[49]The Timberman, April 1912, 31.

his history of the Klamath County lumber industry that Pelican Bay Lumber Company had purchased more government timber than any other firm in the U.S. This assertion would be difficult to document, but it points to Mortenson's policy of buying public timber contracts at a time when most other operators were buying as much private land as they could afford, and often more.

## The 1914 Bear Creek Sale

In 1914, the Pelican Bay Lumber Company entered into negotiations with the Crater National Forest to purchase additional timber near their sale at Pelican Bay. They had built a railroad to serve the unit and they were eager to acquire more timber.[50] The result of their inquiry was the offering by the Crater and Paulina National Forests of a sale comprising nearly 400 million feet of timber in two tracts, one near the original Pelican Bay sale and the other in the northern part of the district in the narrow strip of land between Crater Lake National Park and the Klamath Reservation. This sale, officially called the November 4, 1914 sale, figured into the company's operations until the late 1930s.

The first problem that the company encountered was getting rail access to the new sale. The Forest Service sale prospectus emphasized the likelihood of Southern Pacific extending its mainline north from Kirk, where construction had ended in 1910. In October of 1914, however, the Southern Pacific replied to Mortenson's inquiry by saying that "there is no possibility of our extending the line north of Kirk in the near future."[51]

As a result, Pelican Bay Lumber Company would be forced to build its own access railroad, seventeen miles of expensive main line into the forest beyond the end of the Southern Pacific at Kirk. To help recover its expenses, Pelican Bay proposed that the Crater National Forest sell additional stumpage near Bear Creek, which was the drainage to be logged on the northern half of the November 4, 1914, sale.[52] The Forest Service declined, but Mortenson was able to persuade the Bureau of Indian Affairs to sell

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[50]File for 4 Nov. 1914 Sale, Crater National Forest.

[51]Hinshaw to District Forester, 28 Oct. 1914, File for 4 Nov. 1914 Sale, Crater National Forest.

[52]Mortenson to Forest Service, 15 Oct. 1916, File for 4 Nov. 1914 Sale, Crater National Forest.

a unit of Klamath Reservation timber.[53] This sale, the North Mt. Scott Sale, was adjacent to the Bear Creek portion of the November 4, 1914, sale.

The new sale would bring Pelican Bay's block of available timber in the South Mt. Scott/Bear Creek area up to 400 million board feet. This was a substantial amount of timber, enough to justify the cost of the railroad from Kirk.

Mortenson applied for a right-of-way for the new line across the Reservation. Permission was forthcoming from the Reservation, but the commissioner insisted on a contract provision that required Pelican Bay to guarantee use of the line to other loggers, should the occasion arise. Mortenson was upset: "It certainly seems a hardship for us to put up our money and capital to build a railroad so that other people can make money out of the proposition."[54]

The cost of the seventeen mile railroad was $248,600 including grading, ties, steel, and additional rolling stock. The operating cost was $1.12/thousand board feet of logs, including labor, fuel, and maintenance. When depreciation and capital costs are included in the calculations, the total cost rises to $1.98/thousand board feet.[55]

## Railroad Logging

Once the loggers had their transportation lined up, the real business began. At the 1912 Pacific Logging Congress, F. F. Spencer, who was logging superintendent of the McCloud River Lumber Company, presented a paper reprinted in The Timberman as "Modern Sugar and Yellow Pine Logging Operations in California."[56] The paper is very useful because it records details of ponderosa logging practices as they were developing at the outset of this period. Although Spencer's operations dwarfed Pelican Bay's, the issues and practices were essentially the same.

The McCloud logging operation was divided into three camps that logged with big wheels and two camps that logged with cable

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[53]Timber Sale File 815, Decimal File 371, Klamath Indian Reservation Forestry Files, Federal Record Center, Seattle, Wash.

[54]Mortenson to Forest Service, 11 May 1918, File for 4 Nov. 1914 Sale, Crater National Forest.

[55]Report, 13 Dec. 1919, File for 4 Nov. 1914 Sale, Crater National Forest.

[56]The Timberman, Aug. 1912, 70-71.

skidders. The big wheels were more advantageous on thin stands and the skidders were better on thick stands. The wheels were better on level ground, but the skidders could reach places too steep for the wheels.

Both kinds produced equal amounts of timber, but the support systems varied. In the wheel logging sides, the haul distances were kept at .25 miles or 440 yards, while on the skidder sides the haul distance ran between 500 and 600 yards. The wheel sides yarded their logs directly to the main line, which was served by rod locomotives requiring <4% grades and <16 degree curves, with a "very good roadbed." The skidder sides, on the other hand, were served by two Shays, "taking the loads from the yarders and delivering them to such points on the spurs or the main line that the rod engines can safely reach."[57] Spurs on the skidder sides were built with 6% grades and 25 degree curves.

In practice, then, the skidder sides had cheaper railroads than the wheel sides, but they required additional locomotives and additional handling. The decision about technologies had to be made on a cost/benefit basis:

> The location of the spurs is determined by the chief engineer working in conjunction with the logging superintendent and the timber cruiser. Each of these naturally views the spur from a different angle, but with the same end in view--that of getting it located to the best possible advantage for bringing the timber out with the least cost per thousand feet of logs per mile of track.[58]

Pelican Bay Lumber Company's 1910 and 1914 sales involved both wheel and skidder logging methods. The 1914 contract included a specific provision that permitted "logging in the woods by means of animals and steam or electric ground skidding" only.[59]

Other methods, which could have included stream driving, traction engine logging, or high lead logging, were prohibited except by written consent of the Forester. Both wheels and skidders saw simultaneous service on the 1910 sale, but their rates were not as comparable as they were at McCloud. "The big wheel crew will load about 100,000 feet per day while the steam donkey crew will only load about 30,000 and these two crews will always be

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[57]Spencer, 70-71.

[58]Spencer, 70.

[59]Contract, File for 4 Nov. 1914 Sale, Crater National Forest.

about one-half mile apart."[60]

This suggests that the two methods were used on similar ground and that the wheels had the advantage. Later correspondence on the same sale also suggests that the company made better use of the wheels:

> A large percent of the logs have been logged by the big wheel method up to the present time...but the logging system here will be changed sooner or later from horse to machine logging. The areas suitable for the big wheels are now very nearly cut over on the old sale, and there is no great amount of level country on the new sale of November 4/14 that can be logged profitably by this method, so under these circumstances it will be necessary for the company to adopt some other system of logging.
>
> There are now two donkeys at work and no doubt there will be more machines bought in a short time. The company has not yet decided what kind of machines they will use but it will be a Clyde 4-line skidder or some other overhead skyline machine.[61]

As it turned out, a machine that saw continual service on the sale was an Ohio locomotive crane that the company used for yarding. This machine was a self-propelled steam powered crane that was typically used for construction work or maintaining the grades. Since it did not fit the contract definition of logging methods, the company asked for special permission to use it.

By the 1916 season, Pelican Bay had three camps near Odessa on the 1910 and 1914 sales with a total of 250-300 men in the woods. The following pattern developed:

> The big wheels are all working on sect. 19 & 20 along the south boundary of the 1910 sale. About 2 months work there then the 1910 sale will all be cut. Donkey #2 are [sic] working on both sides of Woods Creek along the west boundary of the 1914 sale. Donkey #1 are working around camp 3 on sec. 4-9 partly on private lands bought from Weyerhaeuser.
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> The Ohio steam skidder jumps from one place to another picking up the logs 300 feet away from the spurs. With all these machines and wheels, the output per day from the three camps

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[60]Scaler to District Forester, 14 June 1913, File for 5 Sept. 1910 Sale, Crater National Forest.

[61]Memorandum for S., 19 Oct. 1915, File for 10 Sept. 1910 Sale, Crater National Forest.

Frank Courtade was using trucks and sleighs.[65]

In June of 1918 Pelican Bay was reportedly buying a Lidgerwood skidding machine, but they may have reconsidered, since it does not appear in subsequent accounts.

The next season was even more confused. Sprague River Lumber Company was logging with wheels but transporting lumber by motor truck. Puckett Logging Company was logging with Winther and GMC motor trucks and a steam traction engine pulling 5-ton trailers. Kesterson Lumber Company was logging with four GMC motor trucks pulling 6-ton trailers.[66]

While Klamath loggers were casting about logging methods, the larger pine operations in Bend and in Weed, California, were tending more towards steam. Historians Larry Shoup and Suzanne Baker conclude that the Weed Lumber Company had to use steam skidders to maintain production levels after the cost of their new mill had depleted company coffers.[67] In Bend, the Clyde four-line skidders and the Lidgerwood steel tower yarders were standard equipment for both the Shevlin-Hixon Company and Brooks-Scanlon. The productive capacity of these machines was truly enormous; one four-line skidder reportedly yarded 51,691,309 board feet of logs for Shevlin-Hixon in 1917.[68]

In the fir country, the high lead systems grew in power and complexity, reaching out in some instances to yard over a million board feet per setting.[69] The application of this technology to pine logging was still open to question within the industry, however. In July 1919, The Timberman ran features on internal combustion tractors for pine logging and a "portable high lead system" for pine logging. In spite of the tendency toward larger and larger steam skidders, The Timberman piece concluded that "mobility in yarding and loading is pre-essential in keeping costs down."

The logging technology that was to win out in the Klamath forests was a combination of the high wheels and a tracklaying tractor. Although this method did not appear until the early 1920s, the ground had in effect been prepared for it during the

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[65]The Timberman, Jan. 1918, 40-41.

[66]The Timberman, June 1919, 52-53.

[67]Larry Shoup and Suzanne Baker, Speed, Power, Production, and Profit (Yreka, Cal.: Klamath National Forest, 1981), 91ff.

[68]The Timberman, Sep. 1918, 87.

[69]The Timberman, Nov. 1915, 43.

1910-1920 period. The dominant characteristic of Klamath lumber production was decentralization, which more than anything else prevented the Klamath loggers from adopting steam skidder technology on the same scale that the larger firms did. Without huge tracts of private timber and huge reserves of capital, the Klamath mills needed to stay as mobile as they could. The multi-purpose tractors eventually proved that they could yard logs, build railroad grade, and go where horses could not.

In 1924, Pelican Bay had three sales near Bear Creek: the Crater National Forest sale, the Klamath Reservation sale, and a unit of private timber. After operating five donkeys on the September 5, 1910 sale, Pelican Bay bought tractors and motor trucks for the Bear Creek operations. In 1924, the Crater National Forest Bear Creek unit was logged without Clyde skidders or donkeys:

> All logging this season was done with high wheels, two jammers [McGiffert loaders] and the Ohio skidder [crane]. One jammer loaded out with horse wheels from April 15 to October 11, jammer number two and two caterpillars and high wheels loaded out from August 27 to September 20, and the Ohio skidder yarded and loaded from August 27 to October 11. From October 13 to October 19, jammer number two and the Ohio skidder decked logs along the railroad. Later, the Ohio skidder was used to pick up wood logs for camp use and to pick up logs which were spilled from the cars along the main line to Kirk.[70]

Pelican Bay's switch to high wheels with horses or tractors came as the firm was moving its logging operation to the Bear Creek sales. They apparently intended to use the steam machinery at first: "At the close of the 1920 season, the purchaser decided that it would be most practicable to move their logging and railroad equipment to the operations on the Indian Reservation near Kirk, thus concentrating their equipment . . . for the Bear Creek operation."[71] Costs had been running high on the Four Mile Creek unit, and at least a portion of those costs were due to the equipment:

> Undoubtedly the operations on Four Mile Creek were costly, since a large amount of equipment was kept tied up during the last three years for a relatively small output. The introduction of the Clyde Skidder, I believe, proved to be a costly experiment. Aside from the fact that the company had some poor luck with this machine, I am of the opinion that its

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[70]Report on Progress, 1924, File for 4 Nov. 1914 Sale, Crater National Forest.

[71]Damage Report, 1922, File for 4 Nov. 1914 Sale, Crater National Forest.

usefulness in this particular type of logging is very limited.[72]

Comparing logging costs is difficult, but the Forest Service's calculation of Pelican Bay's cost at $15.08/thousand for 1921 suggests that the firm's cost was above the national average figure of $12.00.

As the 1920s rolled on, logging throughout the Klamath Basin, and the entire pine belt of northern California and central Oregon became standardized around high wheels. As a measure of the degree of standardization, crews along the pine belt began competing for daily loading records. Eventually, camps in the Klamath district, the Bend district, and northern California all participated in the contest, which continued for years.

Algoma Lumber Company started the rivalry in 1924, by declaring its feat of loading 31 cars and 310 thousand feet in eight hours to be an industry record. It then bettered its time to load 40 cars with 429 thousand feet in eight hours. In December, Brooks-Scanlon of Bend loaded 45 cars in eight hours to claim the record. By 1929, Pelican Bay had nudged the daily count up to 61 cars, nearly twice Algoma's initial effort. The equipment used to set the record was "five Best 60 tractors and one Monarch 75 tractor which operated six slip tongue high wheels."[73]

We might ask at this point how logging practices in the Klamath district--which had been so diverse for the past fifteen years--had become so standard. We have seen that the move away from skidders was prompted by economy. Young and Budy cite a cost study that sets the cost of donkey yarding at $5.70/mbf and tractor yarding at $2.51/mbf.[74] In an analysis of mechanized pine logging costs in 1921, the Forest Service calculated the cost of high lead skidding pine at $2.04/mbf, ground skidding at $1.78/mbf.[75] In comparison, the cost for bunching and hauling by team on Pelican Bay Lumber Company's wheel operation in 1922 was $.87/mbf.[76]

In addition to the cost factor, an ecological factor came into

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[72]Damage Report, 1922, File for 4 Nov. 1914 Sale, Crater National Forest.

[73]The Timberman, July 1928, 78; Dec. 1924, 133; Klamath News, 24 July 1924, 27 April 1929.

[74]Young and Budy, 11-6.

[75]The Timberman, Jan. 1922, 39.

[76]Readjustment Report, 1926, File for 4 Nov. 1914 Sale, Crater National Forest.

play as the Forest Service opposed skidders because they damaged small trees:

> The reason for the oversight [i.e. allowing tractors on the Bear Creek Unit] was probably due to the fact that in our desire to get the Company to discontinue the use of donkeys and skidders, we advocated the use of tractors on account of their being less destructive than the donkeys, and it was taken for granted there would be no objection to this method of logging.[77]

A third factor was the level of productivity, which generally increased with tractors. J. R. Shaw proprieter of the Shaw-Bertram Lumber Company, found that "by using four Holt 5-ton tractors we displaced 52 head of horses. We are averaging 160,000 feet per day with 75 men. Formerly it took 100 to perform the same work."[78] W. E. Lamm, of the Lamm Lumber Company, liked the productivity and the manufacturers' trade-in policy: "We use the tractors for two seasons, then turn them in to the manufacturers, who give us a very liberal allowance on the price of a new tractor." In Lamm's history of "Logging in Klamath," he remarks that the tractors "traveling faster and carrying larger load, delivered about twice as many logs per set of wheels as horses." [79]

Pelican Bay continued to cut timber in the Bear Creek area through the 1920s. Toward the end of the decade, in 1928, they built an elaborate railroad logging network in eastern Klamath County on Quartz Mountain. Then, in 1936, they moved from Quartz Mountian back onto the Klamath Reservation to cut the enormous Skyan sale unit. During World War II, the company cut a smaller Reservation unit near Klamath Marsh and some private stumpage in northern Klamath County. Finally, in 1943, the Pelican Bay Lumber Company ceased operations.

## Pelican Bay Lumber Company's Corporate Culture

Unlike its larger competitors in Bend or in Weed, Pelican Bay conducted its logging operations on a season basis from all-male (or "stag") camps. The winter shutdown of the Klamath Falls lumber companies is slightly mysterious. Klamath mills may have shut down their logging operations because of the weather, or because the lake was frozen and could not be used to transport logs, or

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[77]Rankin to District, 2 July 1925, File for 4 Nov. 1914 Sale, Crater National Forest.

[78]The Timberman, June 1924, 79.

[79]Lamm, 27.

because they were dependent on the California box market, which followed the agricultural season.

Whatever the reason, the effect of this practice was to disrupt the lives of the workers. Each fall, the loggers were laid off, and each spring they were hired from a common "labor pool." Oral sources relate that most workers left the area during the winter months, seeking work in the coastal logging camps, or in California. Obviously the most competent of these men would have been encouraged to stay with their winter jobs, so that those who returned to Klamath Falls may have been less experienced or less competent than others. A Forest Service sale administrator made the following remark about the loggers in Pelican Bay's Four-Mile camps:

> . . . the Klamath Falls region has always had a class of labor which is somewhat below the efficiency shown by labor in the yellow pine region of eastern and central Oregon. This may be explained in that Klamath Falls is quite accessible to San Francisco, from which the greater portion of the common labor is secured. I have always noticed that there is a larger turnover of labor in this locality and a rather inefficient type of floating element.[80]

While Pelican Bay may not have displayed the paternalism shown by some firms like Bend's Shevlin-Hixon, Mortenson apparently regarded some of the old "stag" loggers very highly. In a letter to the Crater National Forest supervisor in 1931, he remarks that he had found work for his crew of "old and faithful employees" although he could not sell the lumber that they were producing.

Photographs of the Pelican Bay logging camps, perhaps including those on the Bear Creek system, show the camps as untidy arrays of tents and buildings. Oral sources describe the tents as "cabin tents" with wooden floors and walls. Berry notes that the standard housing arrangment in the California pine camps was the portable cabin, 10'x 18' or 9'x 22', which housed four men.[81] These cabins were built on skids so that they could be moved on railroad cars. Larger structures on the camp sites included stables, cookhouses, and shops. These were not portable.

Boarding arrangements consisted of meals and cabin space. The cots were steel, and Berry reported that "bedding is not furnished and mattresses but seldom, though each man is usually permitted to

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[80]Readjustment Report, 20 Oct. 1922, File for 4 Nov. 1914 Sale, Crater National Forest.

[81]S. Berry, Lumbering in the Sugar and Yelow Pine Region of California (Washington DC: US GPO, 1917).

take enough hay for a bed."[82] Loggers' wages ranged from $2.50 to $4.50 each day; the cost of boarding averaged $20.00 per month.

A key factor in Pelican Bay's logging camps was J.C."Cruel Jimmy" Johnson, the logging superintendent or "bull of the woods." Johnson has entered Klamath County folklore to a certain extent, so that many of the stories about his exploits (and his epithet) remain apocryphal. Photographs show him to have been a rather ordinary-looking man of modest stature. He was, however, a successful organizer and a prominent personality. The following story illustrates his attitude about the Pelican Bay loggers:

> The old loggers had a pride in their work. It's like old Bert Gillis coming up to Cruel Jimmy and saying: "Why don't we get to work?" And he [Johnson] would say: "OK, go get an axe and get to work." One of the sissorbills [company managers] says: " . . . why do you hire these drunken loggers here? A fellow like that goes and gets drunk and then he comes back [to the camp]. Why do you hire him?" And Cruel Jimmy told him something: "You know, Bert Gillis drunk is a better logger than three of you fellows [sober]."[83]

During W.W. I, the large logging camps of the Bend and Weed mills changed to the "family camp" format. Pelican Bay camps apparently remained stag through the 1920s, when the firm was logging on the Bear Creek system. Finally, in 1929, when Pelican Bay moved its camp to Bly, families were included. The reasons for the change to family camps are complex. Shoup and Baker offer a political explanation: the Weed Lumber Company apparently felt that family camps would encourage a more stable element of loggers who would be less likely to organize.

This strategy may have worked for the Weed Lumber Company, but it did not appeal to the lumber companies in the Oregon and Washington coastal areas, which had truly radical loggers and maintained their stag camps until W.W.II. An alternate explanation--offered by an oral source in Bend--is that the original pine loggers came from the Lake States as young single men. As they aged and married, Shevlin-Hixon built family camps to keep them working.

For the camps on the Four-Mile system, the point is moot; the "floating element" among the loggers did not have families to bring to camp, even if accommodations had been provided for them.

Despite their lack of family life, the Pelican Bay loggers

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[82]Berry, 9.

[83]T.R. Radcliffe Paper, 41-42, Oregon Historical Society, Portland, Ore.

were not given to labor militancy. During World War I, the U.S. Army stationed 30,000 soldiers in Northwest mills and camps that were suspected of harboring dangerous radicals. The government then followed up by establishing 4-L (Loyal Legion of Loggers and Lumbermen) groups in the affected communities. The Bend and Klamath mills were not included in the government's program, although pine mills in central Washington and eastern Oregon were.

The only strike to occur in Klamath mills or camps during the 1920s was the Big Lake Box Company strike of 1922. The box factory workers affiliated with the International Union of Timber and Sawmill Workers during that time, but neither the strike nor the union spread from the mills to the camps. This suggests that while Klamath County's stag loggers may have been a "floating element" sometimes given to drink, they were in fact less disposed to activism than the more domesticated millworkers who lived with their families in town.

## Spacial Organization of the Railroad System

The complex of National Forest and Klamath Reservation timber that Pelican Bay logged in the rugged country north of Mt. Scott required extensive spur development in addition to the 17-mile main line. The main line from Kirk is well documented in several historic maps. The line left Kirk and crossed the Williamson River on a timber trestle that is now reduced to broken piling. The Algoma Lumber Company shared this portion of the Pelican Bay railroad. On the west bank of the river, Algoma's main line switched off to reach the Middle Mt. Scott Sale on the Klamath Reservation. The Pelican Bay main line then continued northwest in a straight line through the Antelope Desert.

Spurs tapping the North Mt. Scott Sale on the Reservation left the main line at several points from Sand Creek to the northern boundary of the Reservation. This portion of the system was not designed in the familiar dendritic or branching pattern. One- or two-level spurs come off the main line to run into the timber to the west, forming the pinnate or feather-like pattern of grade development. At least two camps were located in this part of the system.

Farther north, in the Bear Creek drainage, Pelican Bay built a major junction point in Section 14, T. 29 s., R. 6 1/2 e. This is near the geographical center of the sale.

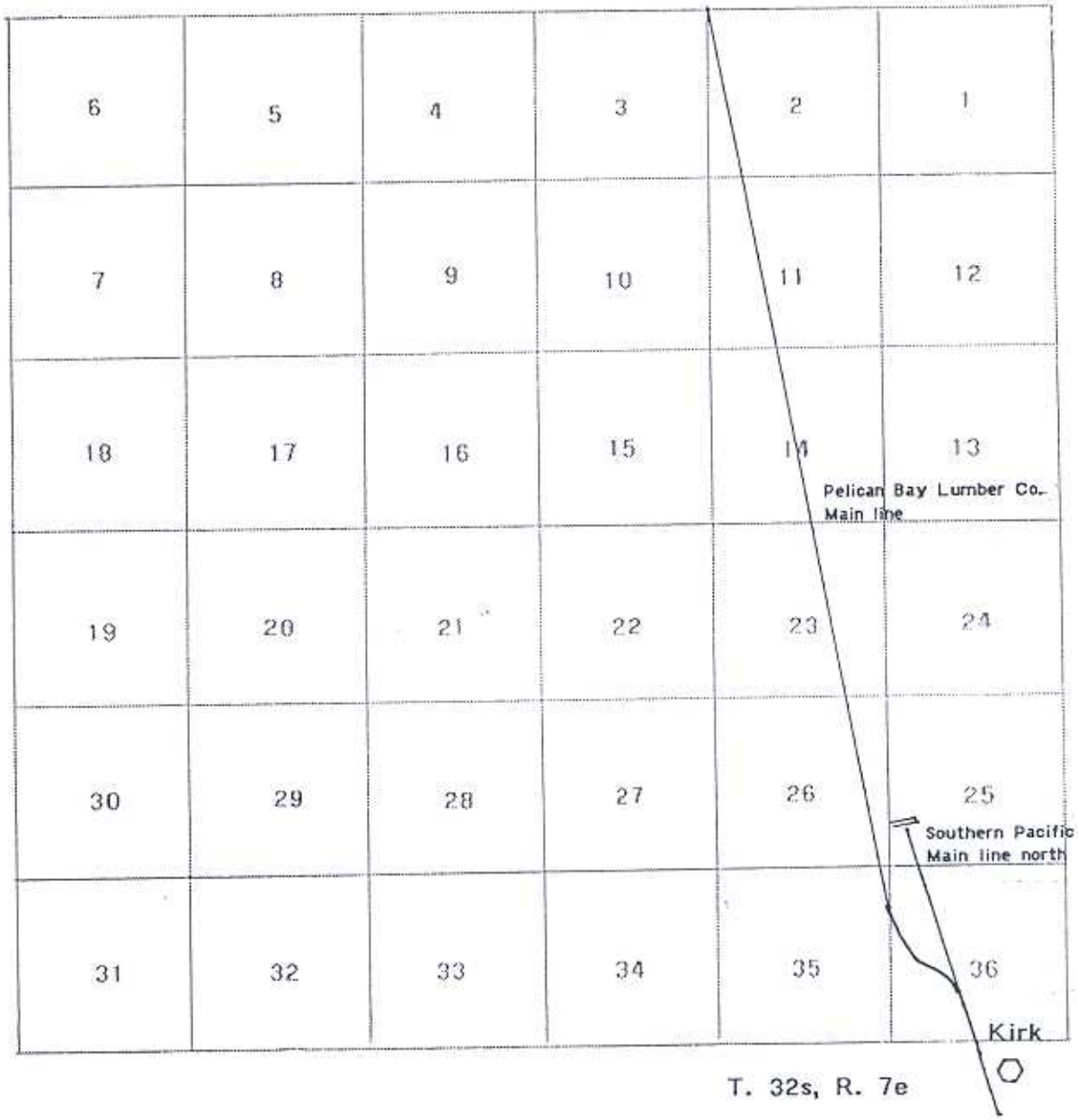
## Current Status

The Pelican Bay system is scheduled for survey during the summer of 1994. At the end of the survey, the Winema National

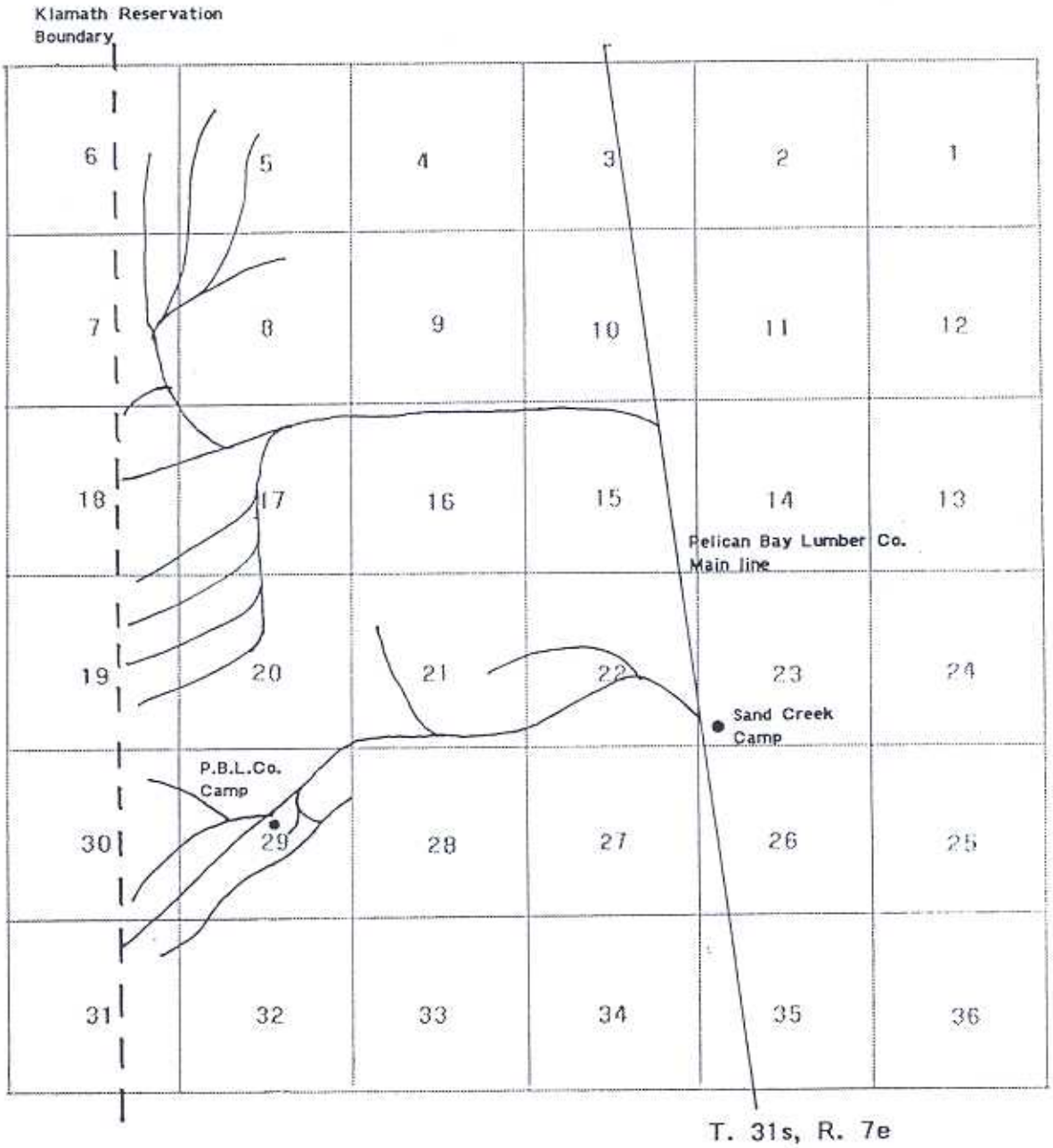
Forest will consider the integrity of the system and its suitability for National Register nomination, or other preservation measures.

The Bear Creek/North Mt. Scott sale complex provided logs from 1914 until 1938. As such, it is one of the longest-lived logging operations in Oregon, and almost certainly the longest on public land. We are fortunate to have the sale files; these documents are not available for other Forest Service sales in this period, and the quality of the files is noteworthy.

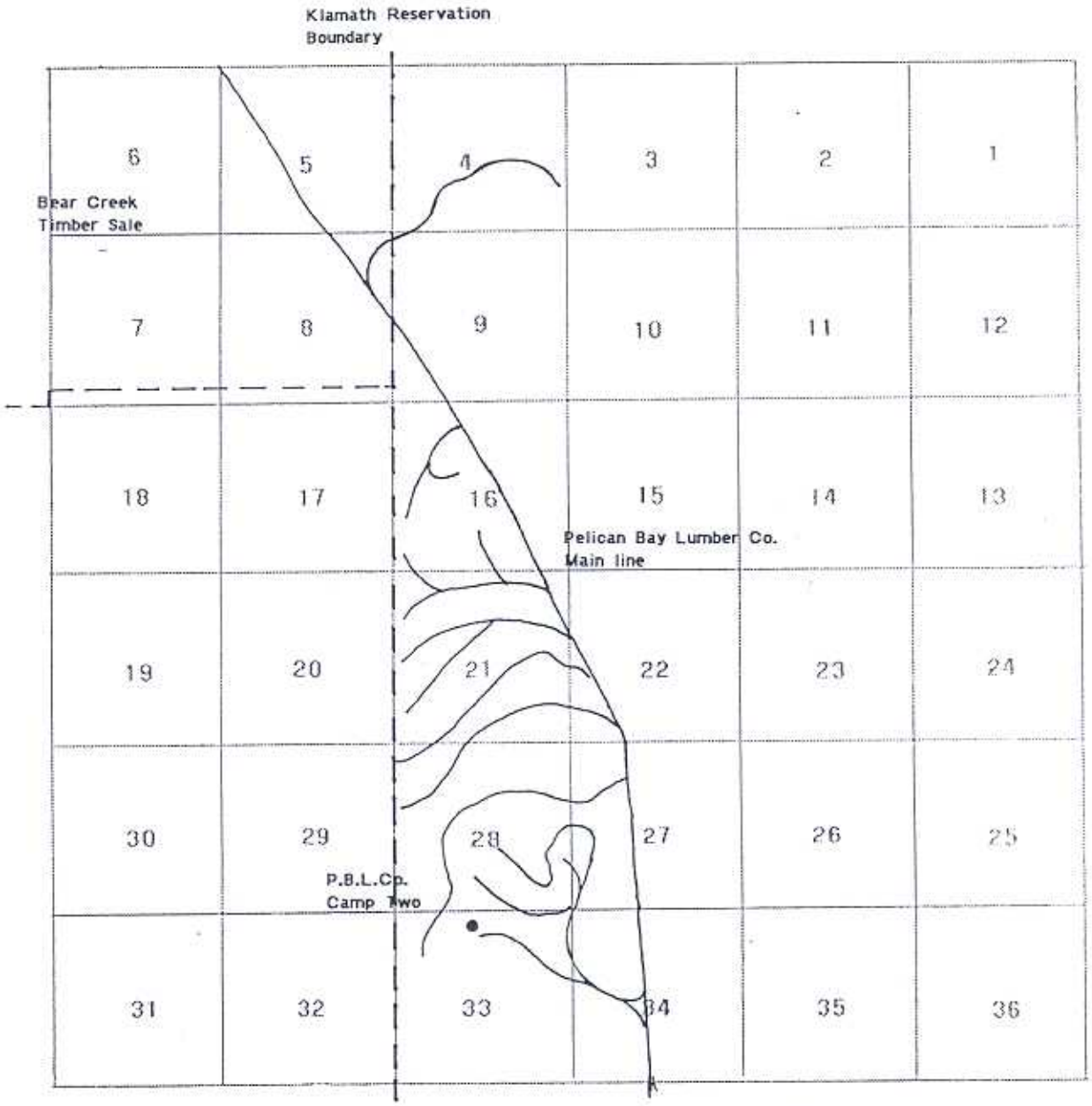
Pelican Bay Lumber Company



Pelican Bay Lumber Company

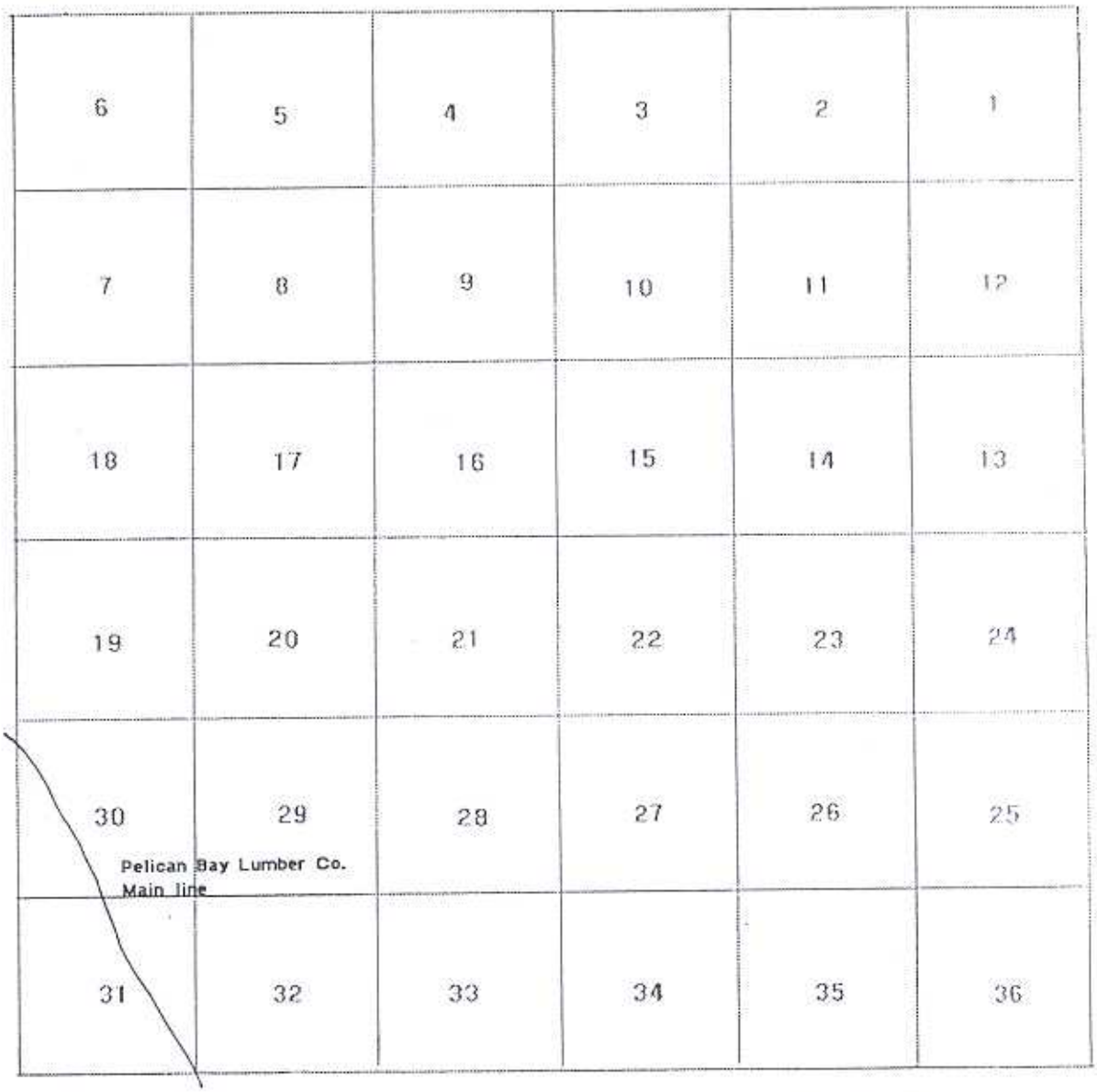


## Pelican Bay Lumber Company




T. 30s, R. 7e

Pelican Bay Lumber Company

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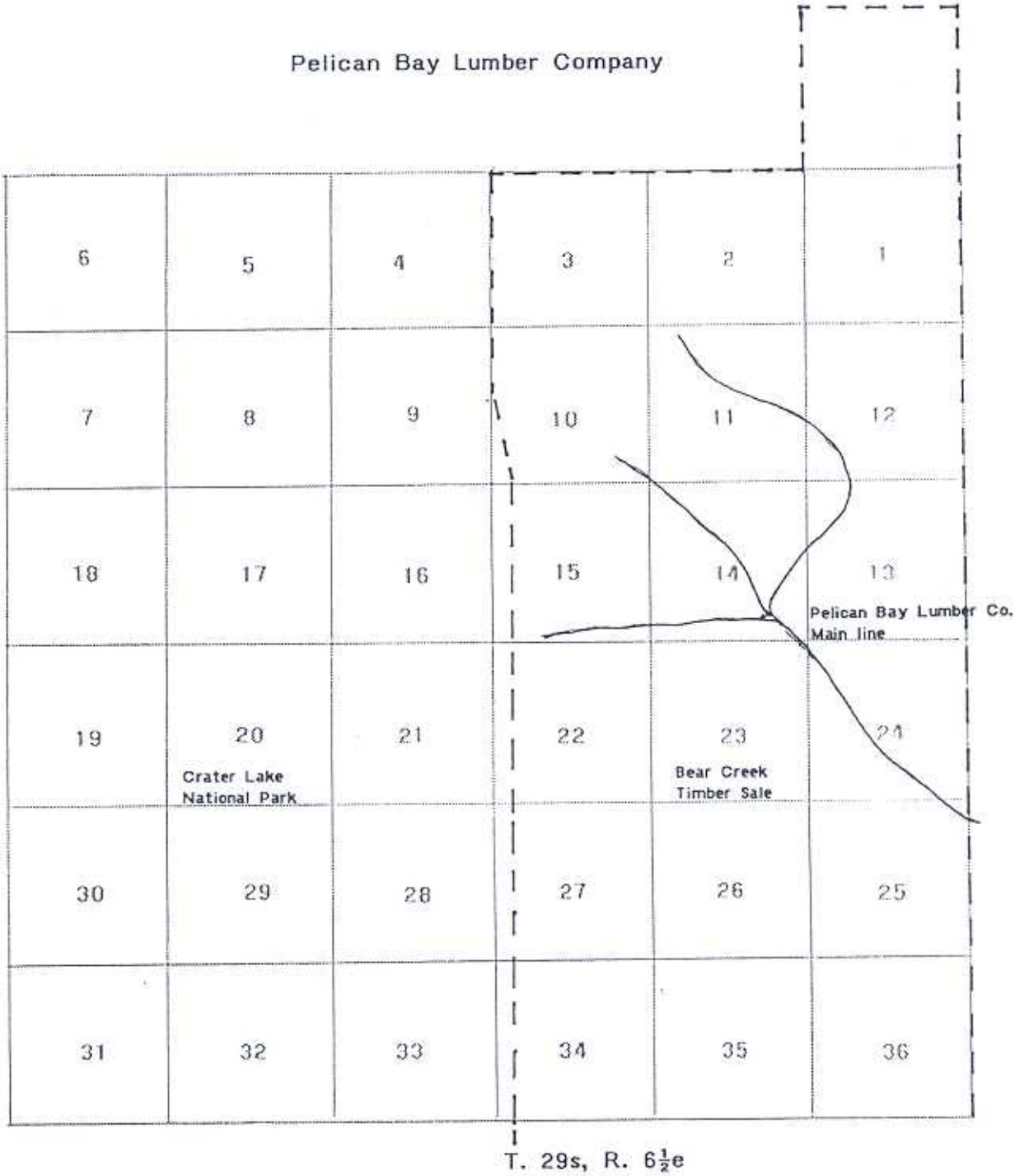

## Case Study IV: The U.S. Army Spruce Production Division, Lincoln County, Oregon, 1917-1918

### World War I and the Lumber Business

During the spring of 1917, the United States moved closer to entering the war that had engulfed Europe since 1914. European and American aircraft manufacturers were using clear spruce lumber for airframes, and this formerly obscure lumber became an important strategic product.

Spruce was available in several areas of the country. Sitka spruce, however, was available only in the coastal areas of Oregon, Washington, British Columbia, and Alaska. Since the trees were large and old, they yielded a high percentage of clear lumber. During the winter of 1916-1917, the European aircraft makers had discovered that Sitka spruce was the very best material for airframe construction. Sitka spruce prices rose, stocks went down, and by mid-winter, one mill manager reported that "there is an unlimited demand for aeroplane spruce stock, at exceedingly high prices."[84]

The problem was that the mills were not oriented to spruce production. What little Sitka spruce was cut was used for box shook or for piano sounding boards. The first product was too common to be lucrative, and the second too specialized. Before the war, U.S. spruce production was concentrated in the Appalachian states. The West Coast and the Lake States produced only 24% of the nation's spruce.[85] In addition to being unprofitable, Sitka spruce was inconvenient to log. Ralph W. Burnside, president of the Willapa Lumber Company, summarized the situation spruce producers faced:

> Spruce is really a by-product of our other woods, and can as a rule only be produced only as it comes in with cedar, fir, or hemlock. There are some small tracts of timber along the coast where spruce predominates. The greater proportion of the spruce on these lowland tracts is of inferior quality, so that only a very small percentage of upper grades is produced from it. Growing in with this spruce is a very inferior quality of cedar and hemlock which must be logged at the same time as the spruce. By the time the logger or mill man disposes of the low grade cedar and hemlock...and 50 percent of the spruce for box lumber, he begins to realize that he

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[84] The Timberman, Jan. 1917, 35.

[85] U.S. Bureau of Corporations, Lumber Industry, vol. II, 682.

needs a very fancy price for the shop lumber and aeroplane stock which remains.[86]

By the summer of 1917, the government had established a War Emergency Spruce Council made up of spruce producers. This body was charged with the task of procuring 100,000,000 board feet of clear spruce lumber during the next four months. The lumbermen in turn formed the Pacific Aircraft Spruce Production Board to try to meet the demands of the War Emergency Spruce Council.[87]

West Coast Radicalism

The early World War I years were also years of labor activism and radicalism throughout the western states. The radical Industrial Workers of the World (I.W.W.) enjoyed a solid following among the "homeless, womanless, voteless migratory workers in the West," particularly in the agricultural, mining, and maritime trades.[88]

On March 5 and 6, 1917, the I.W.W. organized the Lumber Workers Industrial Union in Spokane. The organizing convention included a demand for better wages, improved camp conditions, and a 8-hour working day. The convention also set a strike date for July unless their demands were met. The shingle weavers unions convened in May and made similar demands, with a July 16 strike date, and the A.F.of L. International Union of Timber Workers joined them.

The stage was set for a major confrontation between the lumbermen and the workers, and on July 16, the strike began. By August 1, no more than 15% of the mills were running.[89] The result was a rare combination of forces: the workers saw their best chance for improved working conditions at hand, the lumbermen saw their opportunity for war profits slipping away. Political and military authorities watched the production of lumber needed for ships, aircraft, and cantonments plummet.

Neither the workers nor the lumbermen were prepared to compromise; they had been at each others' throats too long. Each side turned the strike into a political showcase. The industry

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[86]The Timberman, Jan. 1917, 36.

[87]The Timberman, Aug. 1917, 31.

[88]Merrill, Lumber and Labor (New York: King's Crown, 1945), 106.

[89]Jensen, 126.

spokesmen indulged in a shameless display of red-baiting:

> At close range it appears that the powerful, unseen, foreign hand, which has directed this campaign of industrial unrest, is bent solely on the destruction of the social fabric. When the entire facts are known this country will be shaken to its very depths.[90]

The I.W.W., for its part, opposed capitalists' wars and took the opportunity to raise the workers' consciousness about political as well as industrial matters:

> I love my flag, I do, I do,
> Which floats upon the breeze,
> I also love my arms and legs,
> And neck, and nose, and knees.
> One little shell might spoil them all
> Or give them such a twist,
> They would be of no use to me;
> I guess I won't enlist.[91]

When the summer was over, the season's production of aircraft spruce stood at 300,000 board feet instead of 100,000,000.

Ostensibly as a result of the lumber industry's inability to meet spruce production goals, the Army formed the Spruce Production Division on October 17, 1917. Col. Brice P. Disque was placed in command. Disque opened headquarters in Portland and pursued an initial policy of counseling the industry, much on the model of other wartime cooperations between industrial groups and the government.

After a brief period, the complexion of the relationship changed:

> It was soon found that the industry could not expand to meet the Government's requirements and that the Government must take steps to supplement the output of the industry.

This led to the next step:

> It was found early in October [1917] that mills were not equipped to cut to grain and that much valuable spruce was being spoiled. A cut-up plant to operate at Vancouver Barracks, under the charge of the Division, was decided upon.

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[90]The Timberman, July 1917, 1.

[91]R.L. Tyler, Rebels of the Woods (Eugene: University of Oregon Press, 1967), 117.

And to the next step:

> Enlisted men of the draft were asked to volunteer for duty in logging camps and 34 squadrons were organized by January 16, for this purpose.[92]

By the end of 1917, then, the Army had entered the lumber industry not simply as a regulating force in chaotic time, but as a factor in the industry, assigning labor, building mills, and eventually buying timber land. Folk humor records that Disque "came to see and stayed to saw."

The Spruce Production Division's role in neutralizing labor radicalism was established even before the Division was formed. General Pershing, commander of the Allied Expeditionary Fores, summoned Disque to Washington, D.C., in May of 1917 to discuss the proposed assignment.

Pershing, who was generally anti-labor, had become concerned about the West Coast lumber situation. Since the American military would be supplied in part by wooden ships, and since wooden airplanes were held as the best hope for breaking the stalemate in the trenches of France, Pershing's concern was not unreasonable. If the industry was unable to produce lumber the war effort would suffer; worse, if the radicals were successful, the "infection" might spread to other parts of the country.[93]

Disque attacked the "labor problem" on three fronts. First, he put soldiers into the camps and mills to undermine the threat of a strike. Then he established the 8-hour day and improved health and safety conditions so that the radicals would lose their strongest arguments for reform. Finally, he created the Loyal Legion of Loggers and Lumbermen as a surrogate union which included both management and labor.

## The Army Makes Lumber

The Spruce Production Division's attack on the "production problem" concentrated on two unconventional techniques. The first of these was riving or splitting the spruce logs rather than trying to take them out of the woods in one piece. The second strategy was operating a huge milling-in-transit system. This arrangement

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[92]Historical Report, 1918, page 2, Disque Papers, Oregon Collection, University of Oregon library, Eugene, Ore.

[93]Harold Hyman, Soldiers and Spruce (Los Angeles: Institute of Industrial Relations, 1963), 35ff.

had the private mills cutting cants that were shipped by rail to a government mill at Vancouver, Washington, for re-manufacture into airplane lumber. Within the next few months, Disque was to reconsider both these strategies.

By April of 1918, the idea of riving spruce timber, which Colonel Disque had hailed as a success in February, was being phased out, and the centralized milling scheme which he had developed in November of 1917 was showing signs of weakness.

Records from Disque's day-books and general orders suggest that the Colonel completed the plans for his two most ambitious (and most conventional) projects during this month. These were the Siems-Carey project on the Olympic Peninsula in Washington and the South Lincoln County project in Oregon. Each project included securing large tracts of timber, building new railroads to log them, and building large new integrated mills to manufacture the product. This strategy was, of course, the conventional wisdom of the western industry, which the Lake States lumbermen had gambled their fortunes on two decades earlier.

The new projects grew to the point where they required a new operating aegis for the Spruce Production Division, since both the Lincoln County proposal and the Olympic Peninsula proposal went beyond the original charter. The Army connection was to be maintained for the personnel, but the new industrial activities were modeled on the Emergency Fleet Corporation, which was building ships on both coasts. Accordingly, the Spruce Producion Corporation was created by the Army Appropriation Act of July 8, 1918. The act authorized the S.P.D. to form "one or more corporations for the purchase, production, manufacture, and sale of aircraft, aircraft equipment, or materials therefore, and to build, own, and operate railroads in connection therewith."[94] The act capitalized the projects with funds of up to 100 million dollars and transferred S.P.D. equipment to the new corporation.

As early as January of 1918, the Spruce Production Division had identified Lincoln County's Blodgett Tract as an outstanding source of spruce. Lincoln County newspapers carried an announcement of a proposed railroad to the Blodgett Tract on February 8.[95] Disque's General Orders for that week, however, described the proposed line as a spur "south from Alsea Bay" that would "open up a tract of 250 million board feet of spruce." In Disque's day-book, the proposed road was named the "Alsea Spruce"

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[94]H.A. Van Dorn, Government Owned Corporations (New York, Knopf, 1926), 249.

[95]Lincoln County Leader, 8 Feb. 1918.

line.[96] On February 15 the first Spruce Production Division soldiers arrived in Toledo.[97]

The Army's new railroad, eventually named Railroad XII or the Alsea Southern, was discussed again in Disque's General Orders for the week of April 6-13. The next week found Disque sanguine that the new line could be finished by October 1, 1918, and that the Tract would furnish 300 million board feet of spruce.[98] Construction on the new line started during the next week from a camp at South Beach.

On April 16, Disque asked A.S. Benson of the Benson Timber Company to go to the "Alsea Bay district" to reconnoiter the timber available there.[99] This presumably referred to the Blodgett Tract, and perhaps some other south Lincoln County holdings that C.A. Smith had not sold to Blodgett. Disque called a major meeting to consider the Lincoln County situation, inviting three representatives of the Southern Pacific Railway and Mr. Van Orsdel of the Portland Lumber Company:

> [Disque] took up the question of the best method of sawing logs from Toledo. To haul to Portland they said that a three day round trip would have to be figured on and that this would mean the withdrawal of about 300 cars [i.e. boxcars] from service. It was agreed that it would require 4 or 5 times the cars to haul logs that would be needed to haul lumber. . . Mr. Benson suggested that barges might be used on Yaquina Bay to supplement the railroad, but the discussion indicated that there might be considerable trouble with the bar. . . Mr. Van Orsdel thought they [i.e. the S.P.D.] should build a mill to saw at least part of the output, and one which could be enlarged if needed.[100]

After lunch, the meeting re-convened with Disque, Reed (of the Simpson Logging Company), Benson (of the Benson Timber Company), Yeon (of the Yeon-Pelton Lumber Company), and Ladd (of the Ladd and Tildon Bank) in attendance.

> Mr. Ladd brought up the question of whether it would not be best to avoid building a mill at Toledo, and rather attempt to

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[96]Day-book, 7 Feb. 1918, Disque Papers.

[97]Lincoln County Leader, 15 Feb. 1918.

[98]General Orders, 13-20 April 1918, Disque Papers.

[99]Day-book, 16 April 1918, Disque Papers.

[100]Day-book, 29 May 1918, Disque Papers.

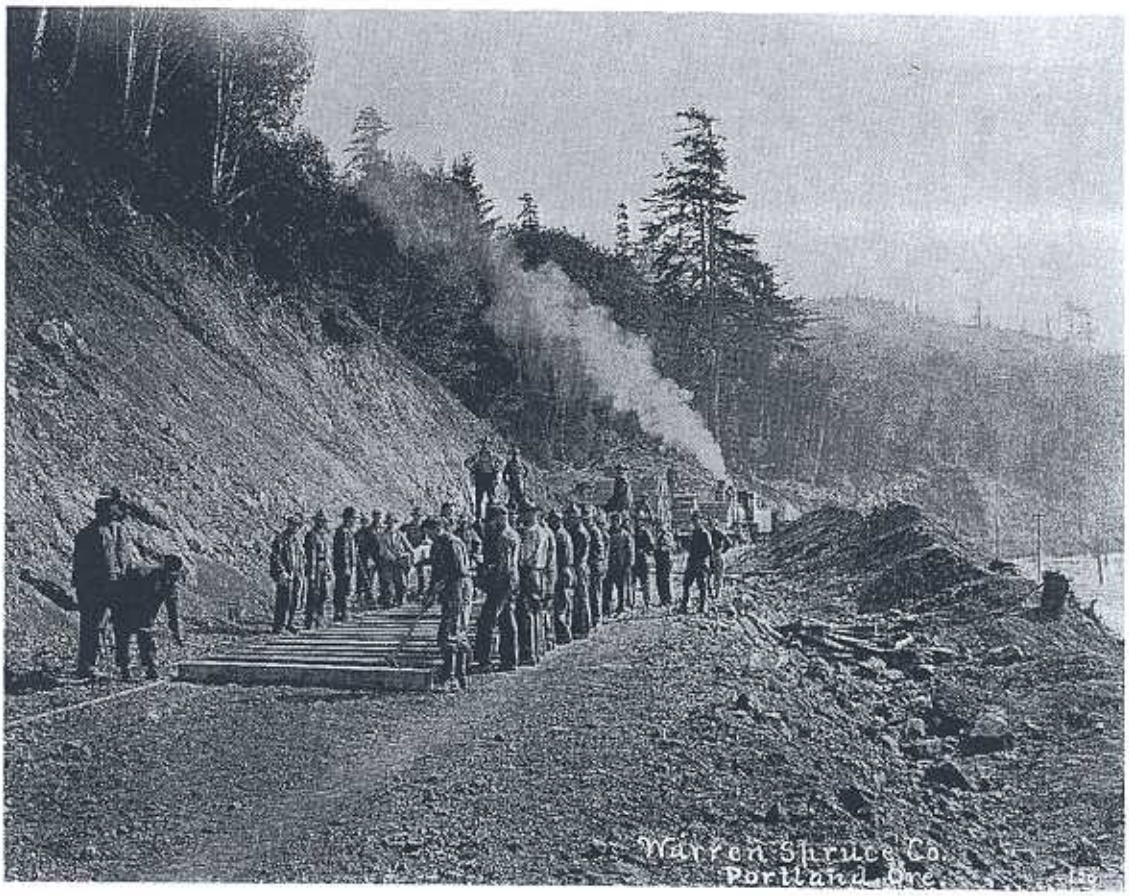


*Figure 12*
*Building the Spruce Production Division Railroad XII.*

> make use of the mills here [in Portland] where the side cut could be more easily marketed. Colonel Disque was of the opinion that the means of hauling logs could not be relied upon and that it would be safer to mill at Toledo.
> . . . It was moved by Mr. Reed, seconded by Mr. Benson, and passed unanimously that a mill to cost approximately $750,000 be constructed at or near Toledo.[101]

As the plans were finalized, then, the Toledo mill would consist of a primary mill to cut logs and a remanufacturing or cut-up plant to make airplane stock. The three spruce railroads were to produce 900,000 feet of timber each day, with 250,000 coming from the Blodgett Tract. The capacity of the sawmill would be 300,000 board feet/day at the outset, and 800,000 board feet/day by January 1919. The remanufacturing plant would be "similar to the one at Vancouver" which had grown to a capacity of 500,000 board feet.[102] The prime contractor, the Warren Spruce Company, was building 2 miles of track on the Alsea Southern each day. Employed on the project were 4200 soldiers and civilians working out of 33 construction camps. The railroads cost over $30,000/mile for labor and material, including 15,000,000 board feet of timber for trestles, camps, and ties.

The only detail that Disque had overlooked in his grand scheme was--ironically--the Blodgett Tract itself. When the railroad construction was under way (or perhaps because it was under way) Blodgett decided that he was no longer certain about selling the timber. In July, Disque was still haggling with Blodgett in a way that he seems to have found undignified:

> Mr. Potter [of Warren Spruce Co.] outlined <u>his proposition</u> which was <u>to furnish rail</u> from 19 miles of main line and 6 miles of spur . . . , <u>to sell all of his equipment</u>, then to negotiate with Blodgett for his timber, the <u>Gov't to operate the road and turn it back to them after the war</u>. . . . Mr. Potter said that whether they made anything out of the deal was entirely dependent on the deal they made with Blodgett, and that while he had an option on it [the tract] he was not sure that it would hold, but felt that Blodgett . . . only wanted to get as good a deal as others in the same circumstances.[103]

By the end of July, Disque threatened to "take the matter to the U.S. Courts unless we heard from Mr. Blodgett very soon," and opined that it might be "easiest and quickest" to place the tract

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[101]Day-book, 29 May 1918, Disque Papers.

[102]<u>The Timberman</u>, Oct. 1918, 37.

[103]Day-book, 11 July 1918, Disque Papers.

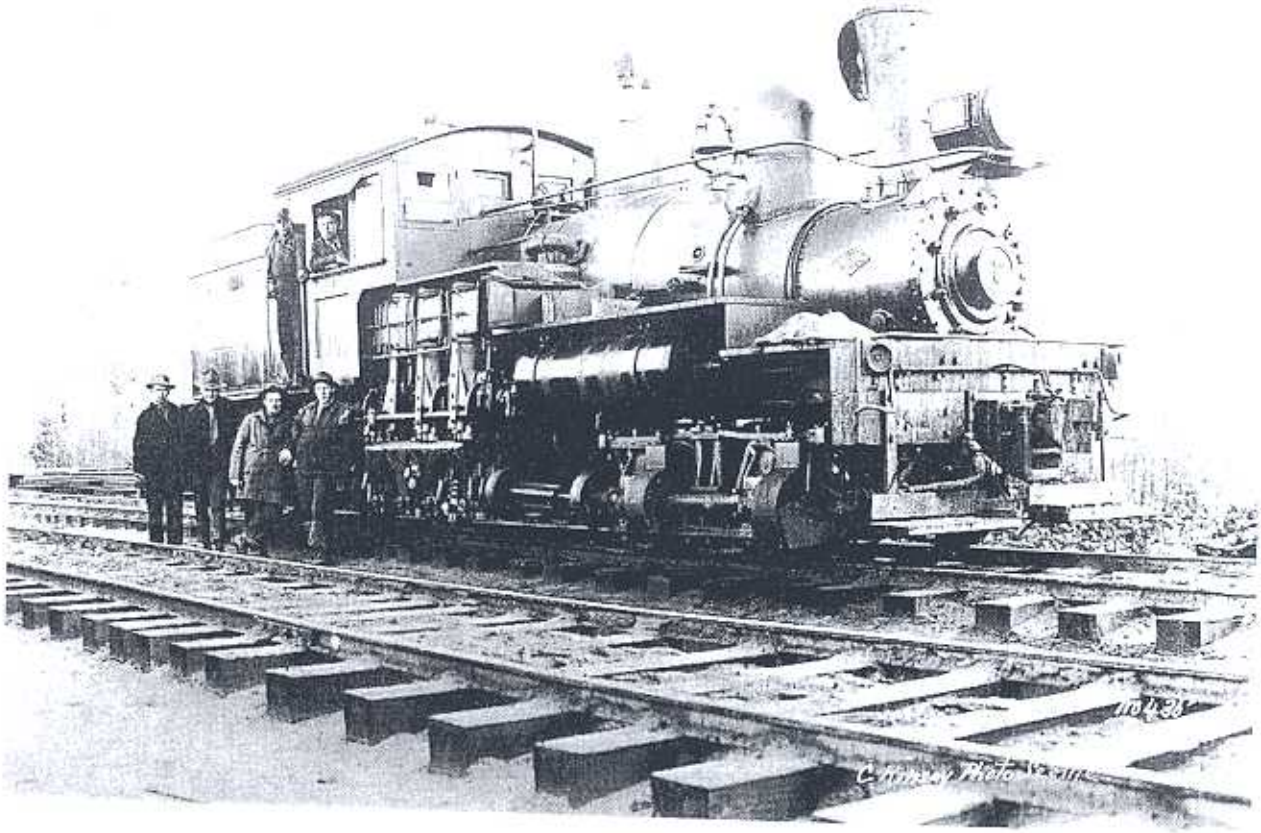

*Figure 13*
*Spruce Production Division equipment was the best available in 1917. After the war, it was sold to lumber companies throughout the West.*

under a "friendly commandeer." On July 20, Disque wired Blodgett, notifying him of his determination to commandeer:

> We must have permission to start operating in your timber commonly known as the Wright Blodgett Tract south of Alsea Bay (stop) Will you agree to this entry with the understanding that if we cannot agree on a price that the same will be legally commandeered (signed) Disque.[104]

Unfortunately, neither the Disque Papers nor the Blodgett Papers record the outcome of the negotiations. The Spruce Production Corporation's banker recorded a payment of $635,000.00 to the Blodgett Company in December of 1918.[105] If this sum represented the total payment for the tract, and the tract was considered as 12,700 acres "more or less," the final price was exactly $50.00/acre. The Spruce Production Division cruise of the tract showed 786,102,000 board feet of timber, not all of which was spruce.[106] With an average stand density of 62,000 board feet/acre, the mixed timber on the tract would have sold for $.80/thousand, which would have been reasonable.

Building Railroad XII

Construction began on April 26, 1918, and continued until the railroad reached Camp One on November 8.[107] By mid-July, the road was progressing well and the trestle across Alsea Bay was partially completed.[108] Perhaps the most interesting aspect of the construction was the difficulty in supplying timbers to the construction crews for bridge building. Since the bridge crews worked well in advance of the track crews, and there were no adequate roads along the coast, the timbers had to be floated through the surf to reach the crews.

> Piling and large bridge timber was put in rafts and towed outside the bar. When off its destination it was turned loose and washed ashore by the waves. Here horses were attached to it and it was snaked through the sand to a point where it was

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[104]Disque to Blodgett, 20 July 1918, Blodgett Papers, University of Michigan library, Ann Arbor.

[105]Bleakley to Disque, 16 Dec. 1918, Disque Papers.

[106]Spruce Production Corporation Inventory, 1919, page 56, Disque Papers.

[107]Palmer, 37ff.

[108]Lincoln County Leader, 12 July 1918.

to be placed.[109]

For soldiers working on the railroad, life was busy but probably better than it was in the trenches in France. The Warren Spruce Company was working on a "cost plus" contract which gave them seven cents profit on each dollar spent. This scheme did not encourage thrifty management. Civilians and enlisted men worked 10 hours each day on the railroad. The 8-hour day was appropriate for loggers, apparently, but not for others. The wages ranged from $3.55/day for common labor to $10.00/day for the most highly skilled.[110]

> When the armistice was signed on November 11, 1918, the activities in Lincoln County came to an abrupt halt. The Alsea Southern had reached Camp One only three days before, and the Blodgett Tract had produced only 1 million board feet of spruce, which had been bucked into logs, but was still lying on the forest floor. The mill complex at Toledo was unfinished, with the sawmill 70% complete and the remanufacturing plant ready for machinery. Despite the Army's intentions to finish the mills, they were abandoned in a state of partial completion. By January 24, 1919, all soldiers were out of Lincoln County.[111]

## The Pacific Spruce Corporation

At the time of the Armistice, the Spruce Production Corporation had spent $24,000,000 of its authorized capital of $100,000,000. "To make a salvage of every possible cent was the task to which the leaders of the organization turned."[112] The single largest asset was the Blodgett Tract:

> Foremost among the real property is the big Blodgett tract in the Alsea basin, tapped by Division Railroad Number XII, and comprising 13,440 acres of land, covered with spruce, hemlock, fir and cedar. Cruises made show a total of 786,101,000 feet of timber on the land; of which 32.5% is spruce, 25.5% is hemlock, 49% is fir, and 2% is Port Orford cedar.[113]

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[109] The Timberman, Oct. 1918, 37.

[110] The Timberman, Oct. 1918, 37.

[111] Lincoln County Leader, 24 Jan. 1919.

[112] [E.H. McCollister and R.S. Gill, History of the Spruce Production Division (Portland: Kilham Stationary, 1919), 97.

[113] [McCollister and Gill], 97.

Spacial Organization of the System

In March of 1922, the Manary Logging Company began rehabilitating the Alsea Southern line from South Beach to Waldport. Camp Two, twelve miles south of South Beach, opened with one side logging during the summer of 1922. In September of 1922 Camp One was open and spur 1 on the Blodgett Tract was built. By October spur 1 was delivering logs from two sides. The first side on spur 1 cut 12 million board feet, and the second side cut 4 million board feet.

The first side was moved 2000' further on spur 1 in January of 1923, and it cut 5 million feet there by June of 1923, when it was moved to a third set. In February 1923, side 2 was moved onto spur 4, which had been graded and tracked in the interim. During the summer of 1923, spur 4 and spur 4B were extended four miles into the timber. As second side (side 3) opened on spur 4, contributing to the combined cut of 13 million board feet on spur 4 for 1923. Spur 4 was expected to produce an additional 20 million board feet.[114]

Spur 3, which followed Big Creek, was built during the fall of 1925, between September and Christmas. The roadbed construction was contracted to Jack Tommas and Ron Hadley at $1.00/ lineal foot of spur grade. According to an oral source, Spur 5, on Vingie (or Divinity) and Starr Creeks, was next, with work beginning after January 1926, and ending in May of that year.

Spur construction continued on or more-or-less steady basis during the logging operations on the Tract. The Manary company was content to follow the Spruce Production Division surveys for the most part, since they took the logical routes up the major drainages. The most significant deviations from the original surveys occurred on spurs 2 and 5. Spur 2 was surveyed as a major spur into the Big Creek drainage, but Manary built it as a short spur. Spur 5 was surveyed as a fourth spur off the main line, but it was built as a south tending spur off spur 4, leaving at the Vingie Creek crossing.

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[114]Bolling Arthur Johnson and Archie Whisnant, Pacific Spruce Corporation and its Subsidiaries (Chicago: Lumber World Review, 1924), 36-38.

**Table 6.**

**Spur Construction on the Blodgett Tract**

| | | |
|---|---|---|
| Spur 1 | Graded by S.P.C. in 1918 | In use after Sept. 1922 |
| Spur 2 | Graded by S.P.C. in 1918 | Not built as surveyed |
| Spur 3 | Small portion graded 1918 | Built in fall 1925 |
| Spur 4 | A and B graded by S.P.C. | In use after March 1923 |
| Spur 5 | Surveyed by S.P.C. in 1918 | Not built as surveyed; Built in spring 1926 |

Source: Map As-23, Lincoln County Engineering; Lloyd Palmer, Steam Towards the Sunset (Newport, Ore.: LIncoln County Historical Society, 1982); Bolling Arthur ohnson and Archie Whisnant, Pacific Spruce Corporation and its Subsidiaries (Chicago: Lumber World Review, 1924. Photocopy reprint, Newport, Ore.: LIncoln County Historical Society).

The Blodgett Tract's rugged terrain dictated that the spurs would be built with extensive trestling. One extension of Spur 4, for example, was built with 600' of trestle in 1200' of track.[115] The Manary company built a pile driver for use in trestle construction, and employed a 10" x 11" donkey engine for logging out spur track right-of-ways.

The roadbed itself was built with an Eire 3/4 yard steam shovel, as well as what one oral source described as "powder, pick, and shovel." The spurs often had grades in excess of 7%, which would have been close to the limits of safe descent even for the sure-footed Shay locomotives. The most extreme piece of engineering on the system was the incline on Spur 5, which used a donkey engine to lower cars down a 30% grade.

Spur 5 was the last spur built on the Blodgett Tract. Logging continued at a brisk pace during 1926 and a part of 1927, with production reaching peaks of 400 to 500 thousand board feet/day. In the winter of 1927, Camp One closed and the Manary Logging Company was dissolved.[116] The camp operated on a sporadic basis during the rest of the decade, and even more sporadically during the 1930s. When the Toledo mill was running, the bulk of Pacific Spruce Corporation's timber came from the Siletz area.

[115]Johnson and Whisnant, 37.

[116]Lincoln County Leader, 12 July 1928.

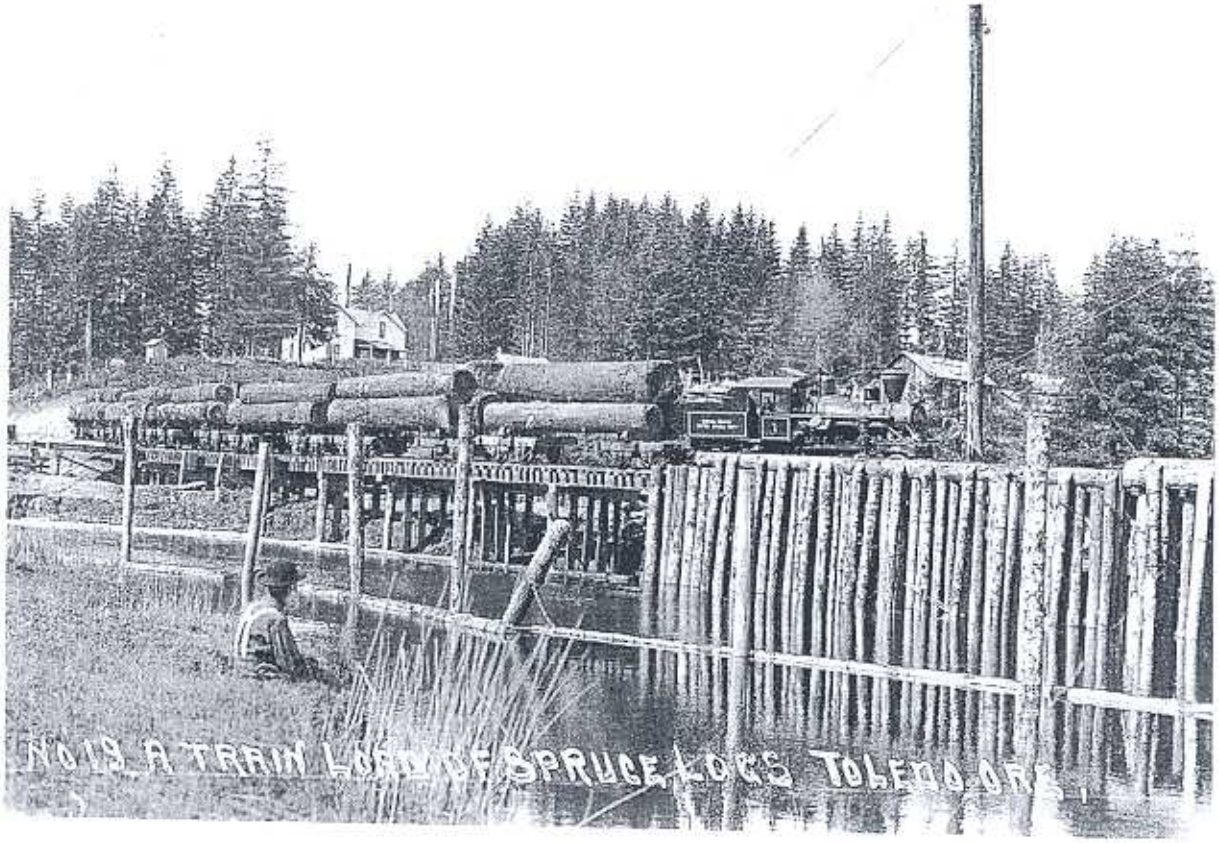


*Figure 14*
*Spruce Production Division logging train.*

In 1930, Pacific Spruce was insolvent and forced into receivership. Four years later, the receivers sold the Alsea Southern and the Pacific Spruce Northern railroads in July of 1934. The price was $500,000. In November, the remaining assets of the Pacific Spruce Corporation were sold to the C.D. Johnson Lumber Company for $700,000.[117]

## Current Status of the System

In 1987 the Siuslaw National Forest conducted a survey of the Spruce Production Corporation logging railroads on the old Blodgett Tract. The survey included a reconnaissance of the route of the Alsea Southern railroad from Toledo to Waldport. Although little remained of the Alsea Southern, the earthwork and some of the features on the logging spurs remain extant. Camp One is still in use, and several of the original houses remain. The mill at Toledo is still in service, but little of the original structure remains.

One segment of Spur 5 on the Blodgett Tract was found to retain an unusual degree of integrity. The grades had the ties in place, significant numbers of ferrous artifacts remained on the ground, and several features including the incline were discernible. This complex of spur grade, incline, and associated features was nominated to the National Register of Historic Places.

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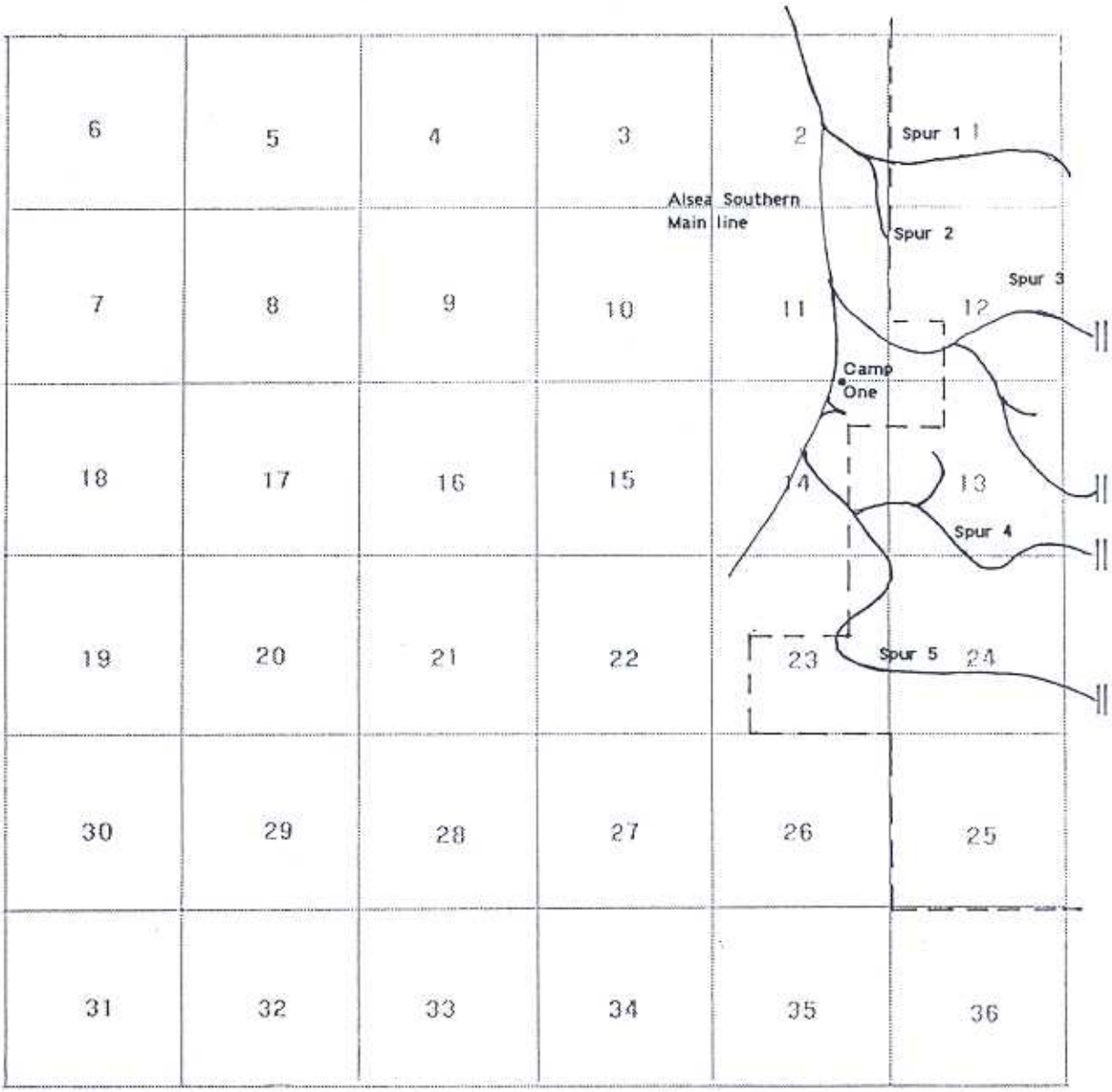
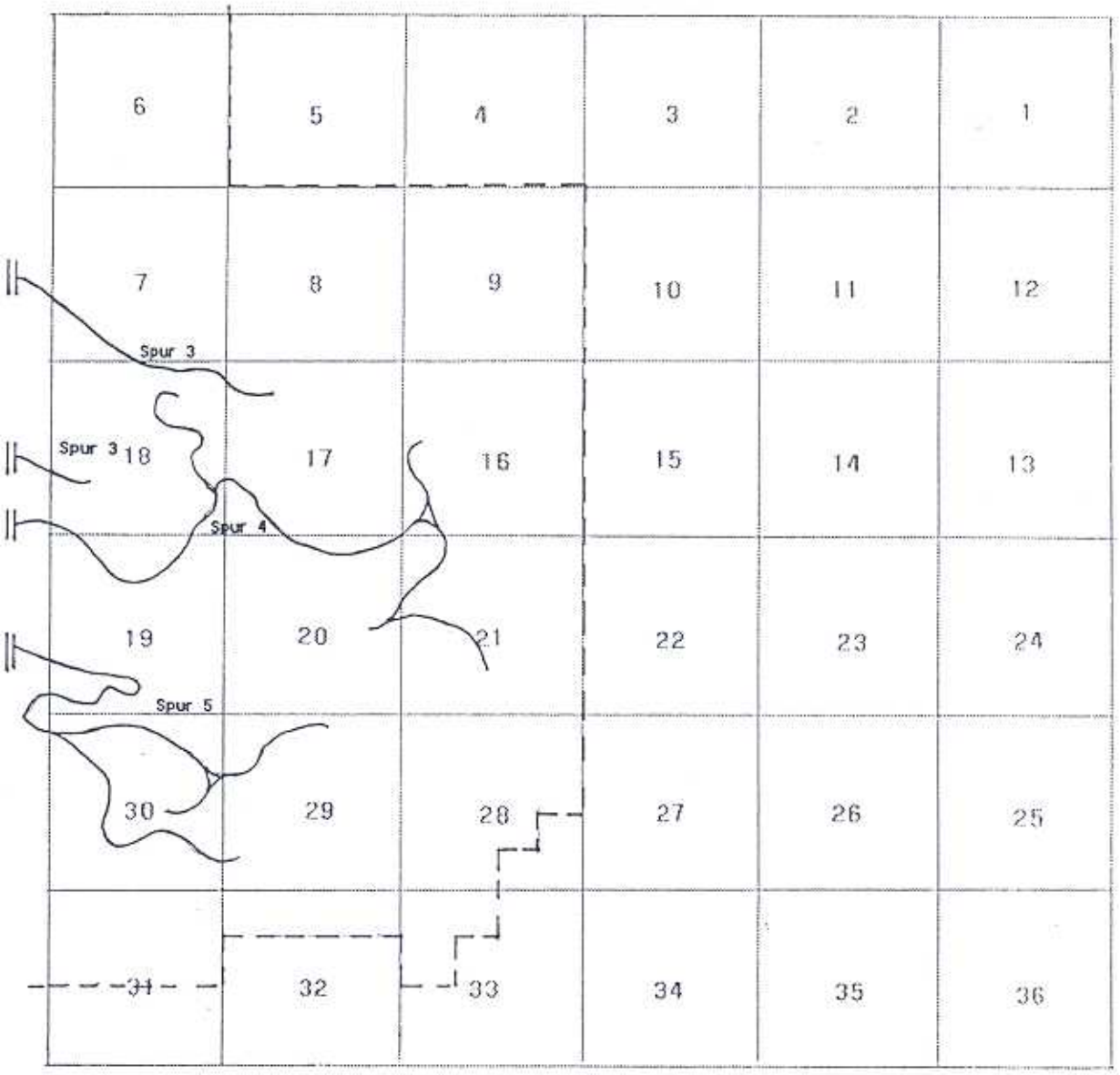
[117]Palmer, 165; Lincoln County Leader, 4 July and 28 Nov. 1934.

Blodgett Tract Railroads




T. 14s, R. 12w

Blodgett Tract Railroads




T. 14s, R. 11w

Case Study V: Consolidated Timber Company, Washington County, Oregon, 1934-1946

In August of 1933, a major forest fire burned over 300,000 acres of timber in the Coast Range of northwestern Oregon. The 1933 fire was not the first forest fire in the area, and it was not the last, but it was the major fire and the one that has entered regional history and folklore as the great "Tillamook Burn."

According to most accounts, the 1933 fire began on August fourteenth on Gales Creek.[118] Bert Lyda, a contract logger on Crossett-Western Lumber Company lands is given the dubious distinction of starting the fire by "dragging one log across another" while yarding logs to his landing. The next few days saw the fire spread slowly through slash and previous burns and into the old growth forest. Fire fighters from lumber companies, the Civilian Conservation Corps, and the Forest Service mobilized until 1200 men were on the fire by August nineteenth. By the twenty-third the fire had burned 40,000 acres and was nearing containment. Then, in the night of the twenty-fourth, the fire suddenly "blew up," igniting the hot dry forest covering the hills to the west of Gales Creek.

Within a day, the fire had covered over 250,000 acres of prime timber. Ashes fell on the streets of Portland, and a column of smoke rose to 40,000' above the conflagration. The smoke cloud was reportedly visible 500 miles at sea. Eventually the fire crews prevailed, but only after more than 300,000 acres had been burned.

The burned area had been one of Oregon's most productive forests. Sixteen percent of the burn had been second growth, 5% had been cut-over land, and 1.5% had been previously burned; over 76% was uncut old-growth fir. Estimates of the damage made at the time set the total timber lost at between 10 and 12 billion board feet. The value of the timber was estimated at $375,000,000, with a secondary value to Oregon's economy in the $600,000,000 range.[119]

The fire's size and destructiveness were blamed on various factors. The heat and low humidity obviously contributed to the

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[118]See Stewart Holbrook, Burning and Empire (New York: MacMillan, 1957); Larry Kemp, Epitaph for the Giants (Portland: Touchstone, 1967); Ellis Lucia, Tillamook Burn Country (Caldwell: Caxton, 1983).

[119]Sinclair A. Wilson, "Staggering Loss in Oregon's Big Fire Estimated," The Four L Lumber News, 15 Sep. 1933; The Portland Oregonian, 1 April 1934, sect. 5, p. 1, col. 1-7.

destruction, as did the location in the rugged and roadless Coast Range. "A vast wilderness of 300 year old monarchs," one journalist wrote, "unfrequented by man, lacking roads or trails."[120]

Professional foresters and the press called for salvage of the burned timber, but several factors complicated plans for a salvage program. First, in 1933 there was little demand for any kind of logs, burned or unburned. Second, the National Recovery Administration set the allowable cut during the Depression years, and the fire was not part of their plans. Cutting the fire timber would mean flooding the fragile Depression market with timber or reducing other loggers' precious NRA quotas. Third, although there had been other salvage logging efforts, no one was too confident about the quality of the fire-killed timber or about its useful life on the stump. Finally, "the Burn," as it was called after 1933, was a patchwork quilt of ownerships. Lumber companies that owned the burned timber included the giants of the industry, Washington and Michigan firms that were much more comfortable competing than cooperating.

In the Northwest, the industry had one previous experience in salvaging timber after a major burn. This was the Yacolt fire in southwestern Washington, which occurred in 1902. The Yacolt fire burned 230,000 acres, killing about 10 billion feet of timber.[121] Although this fire was not as large as the Tillamook Burn, it was comparable.

The Weyerhaeuser associates owned timber burned in the Yacolt fire, and they set about salvaging it in 1903. Weyerhaeuser formed the Twin Falls Logging Company and the Clarke County Timber Company to log the burn. Logs left the hills by rail and went to a dump and booming ground on the Columbia River near Vancouver. There the blackened logs were assembled into rafts for towing to mills on the Columbia and Willamette river systems "from Oregon City to Astoria."[122] Weyerhaeuser did not mill any of the Yacolt logs into lumber, but sold them all to other manufacturers. The Yacolt salvage operation continued from 1903 until 1924.

> The Yacolt timber was big and black. It had been a prime stand of fine quality fir, cedar, and hemlock. Some of the trees were seven feet in diameter. The logging for the first ten years was to be mostly in stands that had felt the full force of the fire. Needles and branches had fallen away and

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[120]Wilson, 13.

[121]Alden H. Jones, From Jamestown to Coffin Rock: A History of Weyerhaeuser Operations in Western Washington, (Tacoma: Weyerhaeuser, 1974), 4-18.

[122]Jones, 8; Hidy, Hill, and Nevins, 229-231.

some of the trees had fallen to the ground. It was a graveyard of trees and it didn't look like any forest the loggers had ever seen.[123]

Eventually, the Yacolt loggers extracted 1.5 billion feet of logs from the burn and adjacent areas. The large scale and relative success of this salvage operation was surely known to the owners of the Tillamook lands. An additional connection between the two operations was provided by Peter Connacher, who managed Clarke County Timber Company from 1903 until 1916, and was later involved in the Connacher Logging Company, which conducted salvage logging on the Tillamook Burn.

One major difference between the Yacolt fire and the Tillamook fire was that forest science had matured in the intervening years. The Pacific Northwest Forest Experiment Station in Portland took the lead in providing information about quality of the burned timber and its rate of deterioration.[124] The scientific consensus was that fire-killed fir deteriorated as a result of insect and fungus attacks. The sapwood was stained and unmerchantable after the first year, but the heartwood remained sound for decades. The trees under 24" diameter breast height (DBH) needed immediate attention, but larger trees could be logged after several years without added damage. The butt logs were the soundest, with top logs less sound. Most importantly, experimental evidence had found that fire-killed timber was as strong and durable as green timber when made into lumber.

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[123]Jones, 9.

[124]Richard McArdle, "The Tillamook Fire," Pacific Northwest Experiment Station Bulletin, 9 Oct. 1933; J.A. Beal, J.W. Kimmey, and E.F. Rapraeger, "Deterioration of Fire-Killed Douglas Fir," The Timberman, December 1935, 11-17; R.L. Furniss, "Bark Beetles Active Following Tillamook Fire," The Timberman, January 1936, 21-22; R.L. Furniss, "Salvage on the Tillamook Burn as Affected by Insect Activity," The Timberman, December 1937, 11ff.

**Table 7.**

**Ownership of Tillamook Burn Lands in 1933**

| Owner | Location | Acreage (Approx.) |
|---|---|---|
| Hammond LC | T. 3n, R. 9w | 3,000 |
| | T. 2n, R. 8w | 6,000 |
| | T. 1n, R. 8w | 7,500 |
| | T. 1s, R. 7w | 20,000 |
| | T. 1s, R. 6w | 11,500 |
| | T. 2s, R. 7w | 11,500 |
| Blodgett LC | T. 2n, R. 6w | 11,500 |
| | T. 1n, R. 8w | 5,750 |
| | T. 1n, R. 7w | 5,750 |
| | T. 1n, R. 6w | 11,500 |
| | T. 1n, R. 5w | 5,750 |
| Tillamook Yellow Fir Co. | T. 2n, R. 8w | 11,500 |
| | T. 2n, R. 7w | 3,200 |
| Oregon Pacific Timber & Lumber | T. 2n, R. 8w | 7,500 |
| | T. 2n, R. 7w | 17,250 |
| Flora Logging | T. 2s, R. 8w | 11,500 |
| | T. 2s, R. 7w | 11,000 |
| | T. 2s, R. 6w | 17,250 |
| Stimson Lumber | T. 1n, R. 6w | 3,840 |
| | T. 1n, R. 5w | 2,560 |
| | T. 1s, R. 5w | 4,000 |
| Wilson River LC (Weyerhaeuser) | T. 1n, R. 8w | 4,480 |
| | T. 1n, R. 7w | 10,560 |
| | T. 1n, R. 6w | 2,400 |
| | T. 1s, R. 8w | 3,520 |
| | T. 1s, R. 7w | 4,480 |
| Chehalem Timber | T. 1n, R. 5w | 1.280 |
| | T. 1s, R. 6w | 3,680 |
| W.E. Boeing | scattered | 3,520 |

Source: Portland Oregonian, 1 April 1934.

In addition to the owners listed above, other affected lands included numerous small holdings, public domain lands, and adjacent timber companies whose lands had not been in the Burn.

Before the Burn, the timber lands that lay between Forest Grove and Tillamook Bay were very attractive to lumbermen. The area had fine old-growth fir, hemlock, and cedar stands, with fir predominating. Tillamook Bay, on the west, provided good water transportation and milling sites. Portland, with its harbor, mills, and excellent transcontinental rail service lay to the west. To the north, the Pacific Railway & Navigation railroad, the Astoria and Columbia River Railroad, and the Columbia River itself provided transportation for logs or lumber.

## Consolidated Timber Company

The first major response to the challenge of salvage logging on the Burn came from Michigan. In August of 1934, a year after the fire, the Blodgett Timber Company, the Crossett-Western Timber Company, and Henry F. Chaney incorporated the Consolidated Timber Company to log their lands.[125] Consolidated established a camp and small mill at Glenwood on Gales Creek. Glenwood was the site of a former Crossett-Western camp and the terminus of a Southern Pacific branch line. From Glenwood, Consolidated would build a new logging railroad up Gales Creek and over the divide into the Wilson River drainage.

Consolidated was formed as a logging and log transportation company. The burned lands of the Blodgett Company had no truck or rail transportation. If the timber was to be salvaged, it needed to be done expeditiously. A specialized operation like Consolidated could get the timber out of the area and on the way to mills in Portland, the Columbia River ports, or elsewhere more efficiently than decentralized operations could. Consolidated owned no timber of its own and milled only small logs that were not valuable enough to ship. Consolidated operated logging "sides" of its own, but also hauled logs cut by other contract loggers.

The result was a very productive operation. Daily averages for Consolidated ran from 1,000,000 to 1,400,000 board feet.[126] This is an enormous amount of timber to bring out of the woods in a single day. No other logging operation in Oregon rivaled it; comparable production was to be found only in the Washington operations of Weyerhaeuser or Long Bell. If the stand in the Burn

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[125] Forest Grove News-Times, 9 Aug. 1934, 1ff.

[126] The Timberman, April 1940, 35-36.

averaged 50,000 feet/acre, Consolidated and the contract crews would be logging 25-30 acres of the rugged Tillamook country each working day.

The general manager of Consolidated was Lloyd Crosby. Crosby had previously worked as logging superintendent or "woods boss" for the giant Weyerhaeuser mill in Klamath Falls. Crosby designed the Weyerhaeuser west side logging railroad system, which was one of the most extensive and most productive in Oregon. At its peak of production, Weyerhaeuser's west side railroad brought 800,000 feet of logs out of the woods each day. Designing and supervising the Weyerhaeuser system would have prepared Crosby for some of the technical problems he faced at Consolidated, but the complexities of salvage logging and the rugged Coast Range country would have added challenge.

Crosby's plan for the Consolidated operation combined traditional railroad logging with truck-to-train logging technology. The company sides used steam-powered donkey engines for high lead or ground lead yarding to a rail landing. At the landing, the logs were loaded onto railcars with hayrack booms.[127] The contract loggers, however, tended to favor track-laying tractors with arches to skid logs either to railroad landings or to truck landings. At the truck landings, logs were loaded onto trucks with gasoline-powered loaders and then hauled to massive re-loads where the trucks were unloaded and the logs loaded onto railcars.[128]

Motor trucks could carry 6,000 to 12,000 feet of logs in the Burn operations, and railcars could carry 20,000. A day's production would require 70 railcars or 140 truckloads of logs. Consolidated had seven locomotives and 425 railcars in use on the Burn. The company built over 100 miles of grade and a similar amount of truck roads. Total cost of the railroad equipment (as of 1942) was $1,250,000; the railroad grades cost $1,500,000 to build and the truck roads cost $800,000.[129]

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[127]Consolidated's "steam sides" employing conventional technology are well documented in Darius Kinsey's photographs archived at the Kinsey Collection, University of Washington Libraries.

[128]This part of the operation is documented in The Timberman, Sep. 1937, 15-17; Nov. 1937, 43-46; Sep. 1938, 42-43; April 1940, 35-36; and in Lucia, Tillamook Burn, 86-117.

[129]"Arsenal Out of Ashes," The Portland Oregonian, 4 Oct. 1942.

Other Loggers in the Burn

As Crosby brought Consolidated up to speed in 1935, several other logging companies joined the salvage effort. The Burn was accessible from several points. To the north at Wauna, on the Columbia River, the Crossett-Western mill received logs by rail from the Astoria and Columbia River Railroad and the Kerry logging railroad. The Oregon American Lumber Company at Vernonia logged the upper Nehalem drainage by rail.

At Forest Grove, west of the Burn, the Carnation Lumber Company mill logged by truck. South of Forest Grove, the Stimson Lumber Company opened a new mill and logging railroad in September of 1933. The southern edge of the Burn was owned by the Flora Timber Company, which was itself owned by the Inman-Poulsen Lumber Company. Flora logged from a railroad that followed the North Fork of the Yamhill River. Inman-Poulsen was one of Oregon's largest mills, cutting 170 million board feet during 1930, and maintaining a cut of nearly 100 million feet each year of the Depression.

To the west of the Burn was Tillamook Bay and the Hammond mill at Garibaldi. Hammond Lumber Company lands lay on the northwestern edge of the Burn and near its center. The A.F. Coats Lumber Company mill was also located on Tillamook Bay. Coats truck logging crews were very active during the salvage period.

Most timber owners on the Burn seem to have employed contract or "gyppo" logging crews in addition to company crews. The level of production the owners were able to sustain varied with the circumstances of each "logging chance," but a reasonable average from the data available would be 100,000 feet/day. Not all loggers were employed at all times, of course, but the independent operators probably accounted for 1,000,000 feet/day of salvage logging by themselves during the late 1930s and early 1940s. Some of the independent crews were rather shabby "haywire outfits," but the Gilmore Logging Company was an exception:

> This operation is a rather old-fashioned outfit . . . It includes the old Minnesota River veteran Charles Peterson, 65 years old, who, with a broken hip, does most of his bucking sitting down, and accomplishes as much as any other bucker. The comforts of the bunkhouse are enjoyed by the crew at off duty periods. Some are musicians with violin and guitar, some are bookworms delving into the late magazines, others play checkers.[130]

The following independent logging companies participated in the salvage operations.

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[130]The Timberman, April 1940, 36.

**Table 8.**

**Logging Companies in the Tillamook Burn Salvage**

Anlicker Brothers Logging
Cahill Logging Company
Connacher Logging Company
Converse and Hitchman Logging
Clarence Dietrich Logging Company
C. & C. Dye Logging
Gilmore Logging
Hall Logging
Harold Hanson Logging
Cecil Hughes Logging Company
Interstate Logging Company
Meehan Logging
Menefee Logging Company
John Nyland Logging
Dewey Powers Logging
R.A. Roppel Logging
R.F. Ryne and Son Logging
H.J. Smith Logging
Stone Logging
Sture Logging Company

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Source: The Timberman, April 1940, 36.

Through the 1930s

As the lumber industry increased production in the late 1930s, the salvage operation increased its tempo to meet the demand for logs and lumber. In 1937, Columbia River mills in both Washington and Oregon reached levels of production that were higher than their pre-Depression levels.[131] The industry may not have been as profitable as it had been, but at least the mills were running and people were buying lumber.

The National Recovery Administration (NRA) had modified production limits for the salvage effort, setting the quota for 1934 at 300,000,000 for the Burn.[132] This solved one problem, but the loggers were hampered by weak markets through 1936. Logging camps and mills shut down for a variety of reasons during those years including wet weather, dry weather, and shortage of "dock space" to pile unsold lumber at the mills.

While the lumber companies were dealing with a weak market, loggers and mill workers were dealing with poor wages and working conditions. In the summer of 1934, mill workers struck the Stimson and Carnation mills, idling loggers for the duration of the strike. A year later, in May of 1935, an industry-wide strike closed the mills throughout Oregon for the summer of 1935. Small communities like Forest Grove were affected by the strike, as the mill and camp payrolls contributed most of the available cash in the local economy.[133] In the fall of 1940, when the World War II market was reviving the industry, Stimson mill workers went out on strike again.

Logs cut on the Burn were delivered to the timber owners' mills or sold on the open market. In 1937, when the salvage effort was well begun, the Portland mills cut 422 million board feet of lumber and the Columbia River mills on both sides of the river cut over 1 billion board feet. If the Burn salvage was producing 2 million feet of logs/day, the year's cut would have been around 400 million feet.

The Portland and Columbia River mills could have absorbed this amount of logs from the Burn, but it would have constituted 30% of their total log supply.[134] Since many of the mills had their own

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[131]The Timberman, Feb. 1941, 26.

[132]The Portland Oregonian, 1 April 1934, sect. 1, 1:1-7.

[133]Forest Grove News-Times, 9 May 1935, 16 May 1935, 23 May 1935, 6 June 1935, 1 Aug. 1935.

[134]The Timberman, Feb. 1941, 26.

*Figure 15*
*Truck-to-train logging on the*
*Consolidated Timber Company operations.*

logs and did not buy on the open market, the salvage produced a surplus of logs in the areas surrounding the Burn. This was particularly apparent to loggers on the west side of the Burn.

> The Tillamook region is not as favorably situated as Clatsop with respect to primary log markets. In the latter case, logs from the Wolf Creek highway, the Oregon coast highway and Nehalem Valley points can be delivered directly to the Columbia River by truck. Logs coming into Tillamook, on the other hand, find no local market and must be either railed to Willamette Valley or Portland mills.[135]

The salvaged logs that "found no local market" in Tillamook were soon being shipped out by barge to Grays Harbor, Willapa Bay, or even Puget Sound. All of these areas had mills that could use the salvage logs, provided the price was low enough to absorb the transportation costs. The highest grade and most valuable logs were the plywood peelers. These were purchased in Garibaldi by the West Coast Plywood Company and barged to their mill in Aberdeen, Washington.[136]

## Consolidated Timber Company in World War Two

The advent of World War Two expanded the market for timber, and Consolidated responded by increasing its production. On September 23, 1943, Consolidated was presented with the Army-Navy E award for its contribution to the war effort. Timber from the Burn had been important in several defense operations. Logs over 100' were cut and milled into keels for wooden naval vessels, especially minesweepers and sub chasers. Lumber from salvaged timber was used to build the shipyards in Portland and Vancouver, Washington. Noble fir on the Burn was salvaged for aircraft material, presumably as plywood.[137]

On December 31, 1946, Consolidated suspended its operations and passed the baton to its successor firm, Portland Lumber Mills. In an address to the Pacific Logging Congress the following year, Lloyd Crosby estimated that 4 billion board feet of timber had been salvaged by Consolidated and the other operators. Logs salvaged in 1933 and 1934 had little defect from the fire, but the percentage of damage increased with time until snags cut in 1946 were only half usable. Trees under 30" DBH were no longer cut, since the insect and fungus damage was too high. Crosby predicted that the

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[135] "Logging in Tillamook," The Timberman, Nov. 1937, 43.

[136] "Logging in Tillamook," 44.

[137] "Arsenal Out of Ashes," 5.

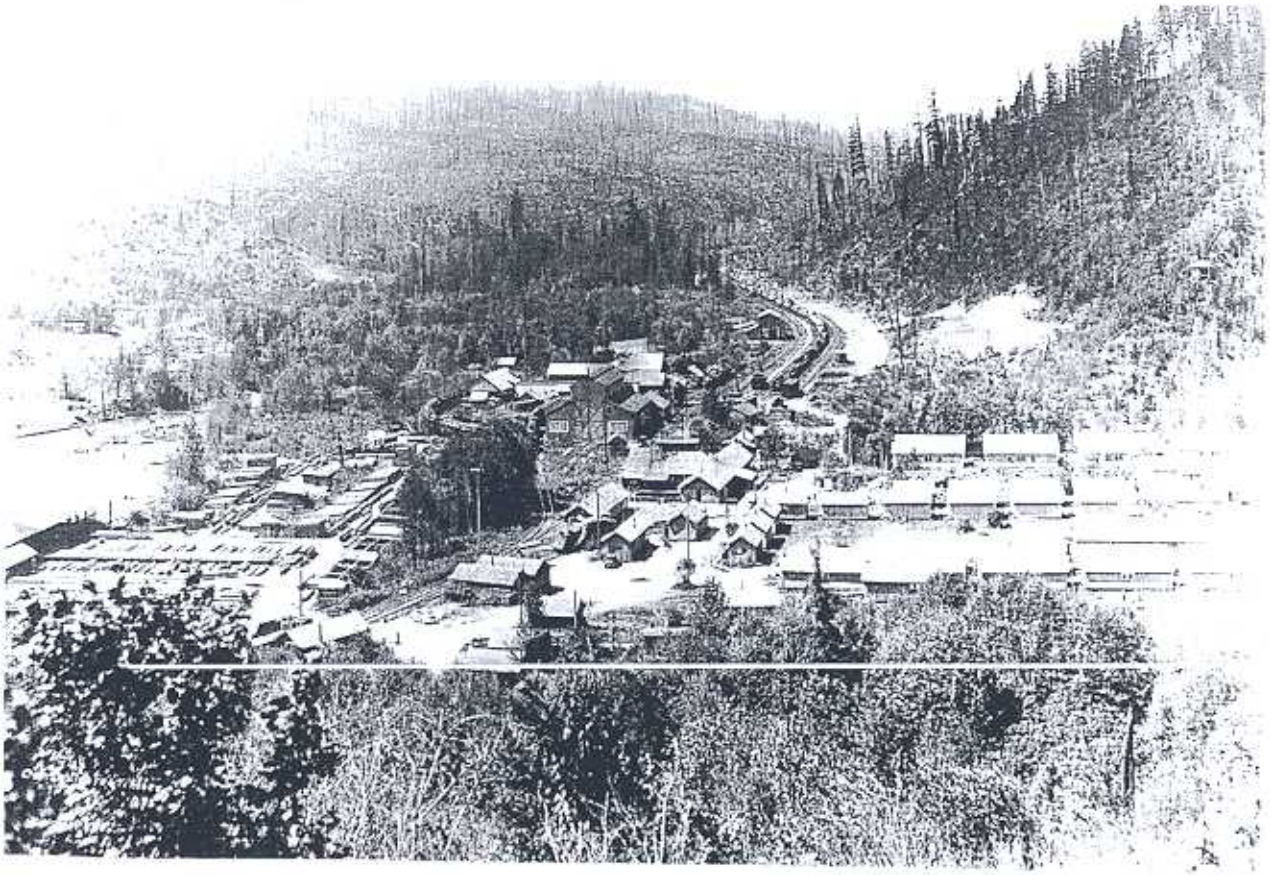

*Figure 16*
*Consolidated Timber Company mill at Glenwood.*

Burn would support salvage logging for several years more.[138]

Spacial Arrangement of the System

The railroad logging system that Lloyd Crosby designed for Consolidated Timber employed the "hub-and-spokes" pattern of organization. This pattern brings the main line into the forest to a central point (the hub) from which grades (the spokes) radiate out into the surrounding timber. The advantage of this pattern is that it provides access to a maximum amount of timber with a minimum amount of grade construction. The disadvantage is that it requires very precise engineering. If the central point is not well chosen, grades may not be able to reach into all parts of the timber. In that event, valuable timber might be left standing, or the cost of building additional grade might negate the economic advantages of the design.

There were two added complications on the Consolidated system. The system needed to accommodate truck-to-train logging, and the system was located in some very rugged terrain on the Wilson River/Gales Creek divide.

In Crosby's design, Glenwood was developed as a camp, mill site, and switchyard for the system. Here the Consolidated railroad joined the Southern Pacific branch line for connections to Portland, the Columbia River, or other points. The Consolidated main line then went west up Gales Creek canyon to a major serpentine or S curve that brought the line up onto a ridge above what is now the Wilson River road. A minor spur left the mainline to the east at this point. The mainline then continued west to the Owl junction.

At Owl, the Owl Branch line left the mainline and ran west. The Owl junction had sidings, a loading spur, and perhaps a re-load as well. The main line then continued another mile to the central hub of the system. This point is simply labeled "the Wye" on Consolidated Timber Company's 1938 map. The Connacher Logging Company camp was located nearby. Later maps show the site as Roger's Camp (Sect. 31, T.2n, R.5w).

At the Wye, Crosby designed a large switchyard with five sidings, a wye, and switches for five branch lines. The branches were the West Branch, the East Branch, the South Branch, and two additional branches or spur lines, both tending north. The Connacher Logging Company operated the West Branch. At the Willow junction, Connacher built spurs south and west into the Wilson River drainage. The system that Crosby designed was simple and

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[138]The Portland Oregonian, 11 Feb. 1947.

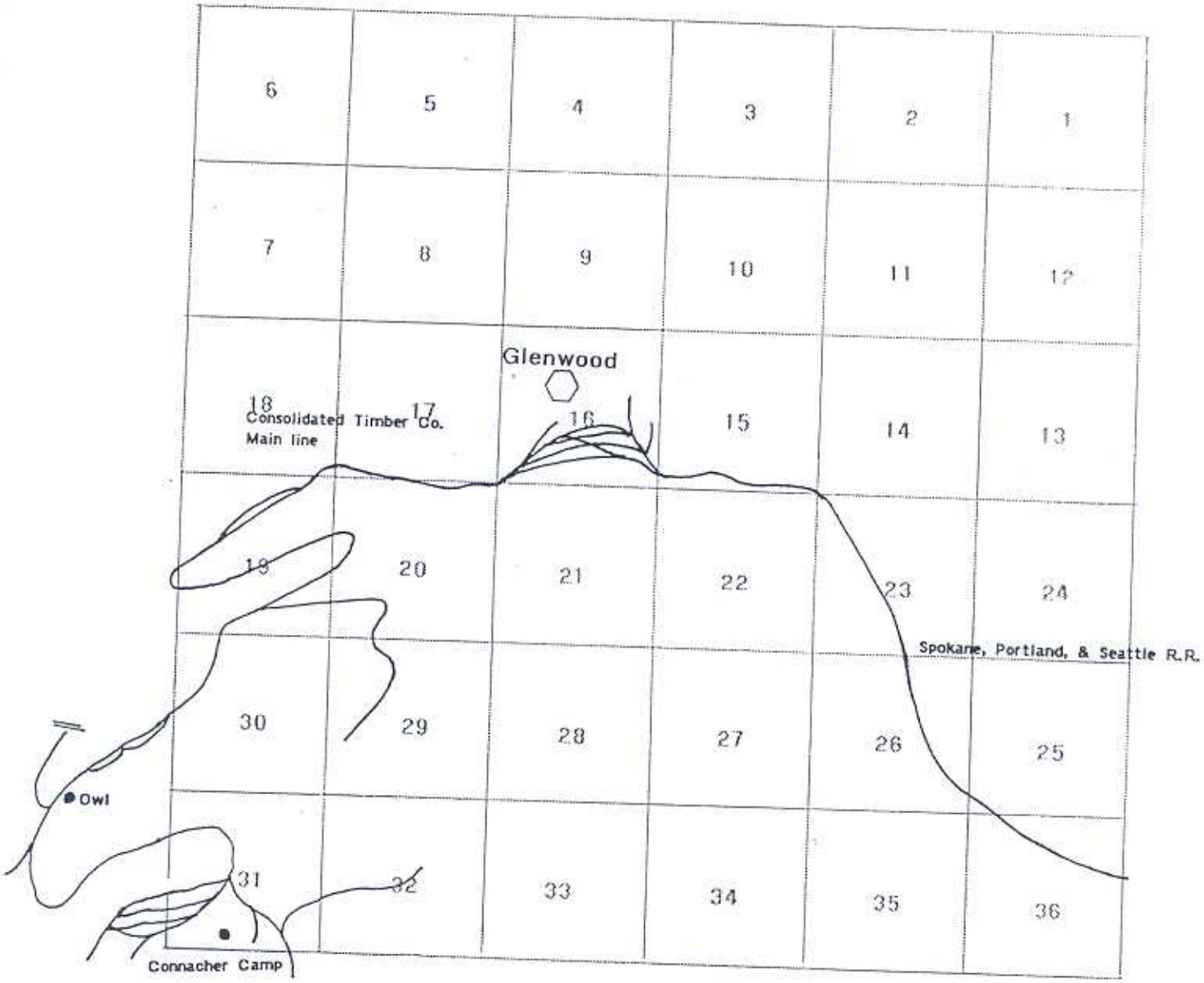
*Figure 17*
*Glenwood switchyards*

well-suited to handling the volume of logs that Consolidated brought out of the Burn.

Current Status

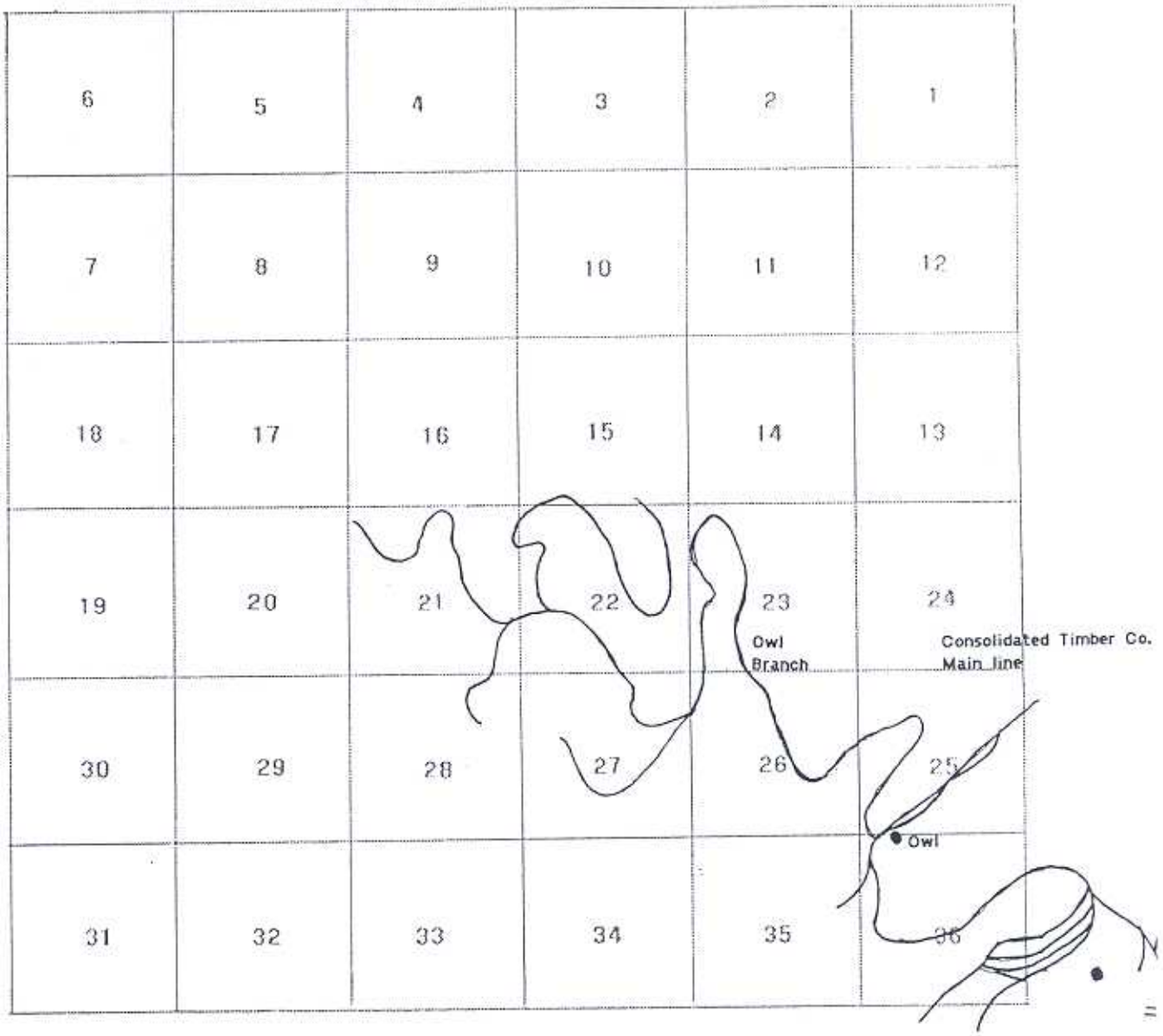
Because of its historic associations with the Tillamook Burn and World War II, the Consolidated system is of more interest than many other logging railroads would be. As the work of Lloyd Crosby, the system is also associated with a master of logging railroad design and engineering. Although we have some documentary information about the system, a survey on the ground would provide much additional information. This system should have one of the highest priorities for future survey work.

Consolidated Timber Company



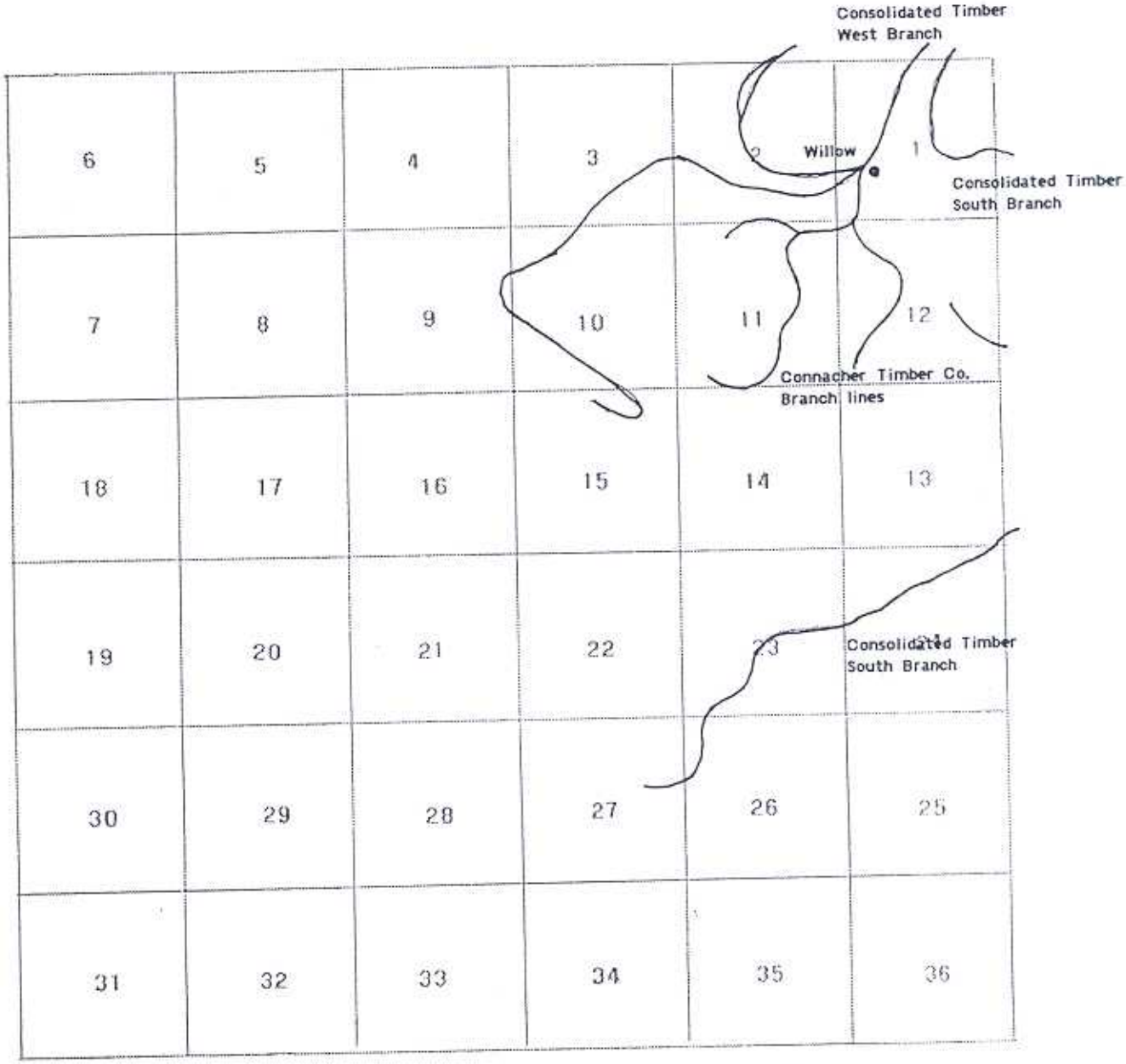

T. 2n, R. 6w

Consolidated Timber Company



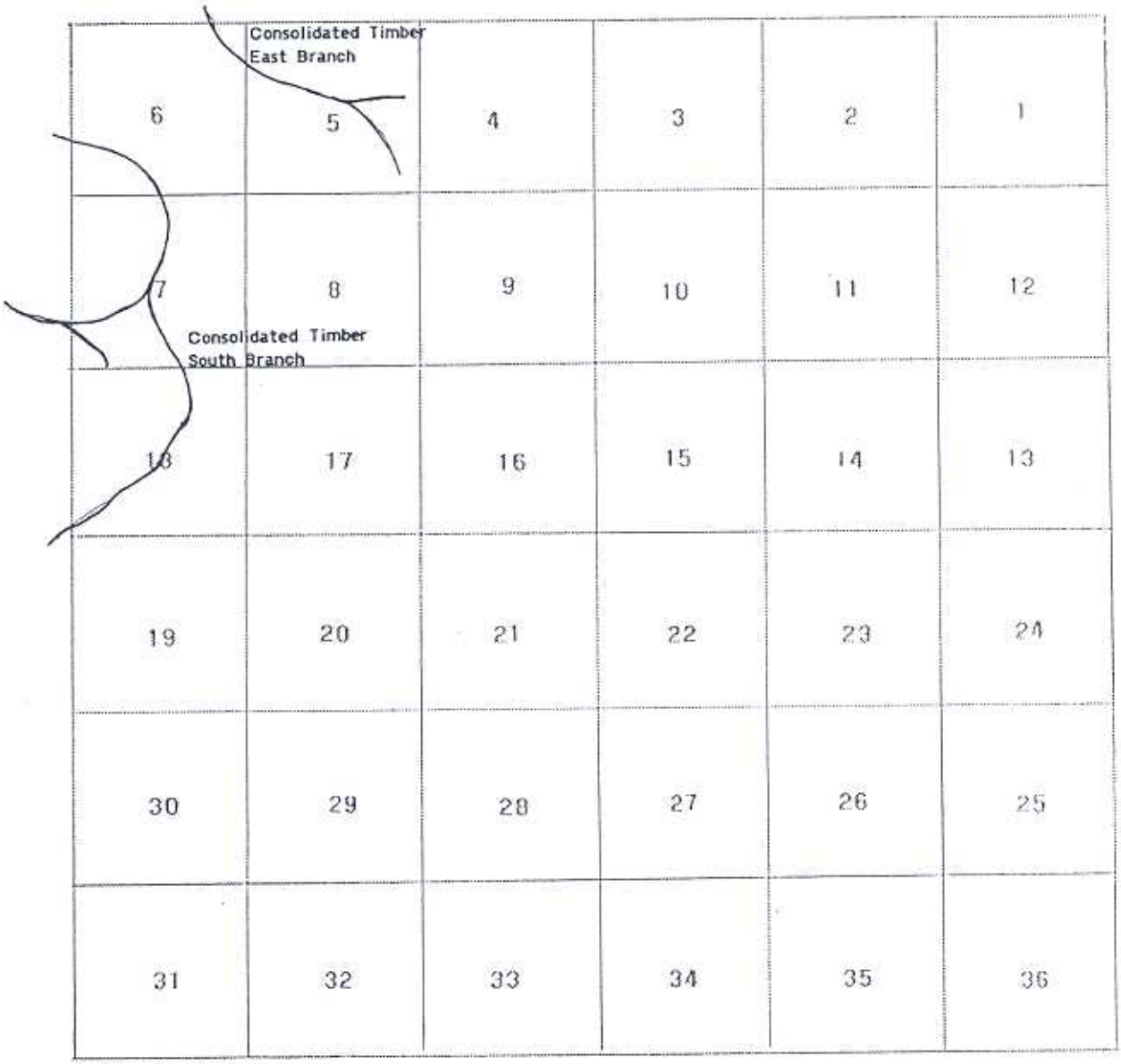

T. 2n, R. 5w

Consolidated Timber Company




T. 1n, R. 5w

Consolidated Timber Company




T. 1n, R. 6w

## Case Study VI: The Shevlin-Hixon Lumber Company, Deschutes County, Oregon, 1942-1947

### Shevlin Timber Base: 1890-1910

Like many other large pine manufacturing firms, Shevlin-Hixon was formed by Lake States lumbermen who moved into western pine regions during the 1890s. The Bureau of Corporations' 1914 report on the lumber industry identified the Shevlin interests as one of the firms associated with Hill and the Northern Pacific Railroad group.[139] In 1914, Shevlin's holdings were concentrated in Oregon (113,000 acres), Montana (113,000 acres), and Minnesota (176,000 acres). Like other Lake States firms, the Shevlin group often acquired their timber lands by some questionable methods.

Stephen A.D. Puter--the "king of the Oregon land fraud ring"--provides an account of the 1902 Deschutes County land rush:

> People came rushing into the Bend country by scores in search of timber claims. From 100 to 150 came on one train quite frequently. Some of them hailed from Minnesota, some from Wisconsin or Michigan, while the Dakotas and other Midwestern states were well represented in the new immigration.... All their expenses had been borne by the various [lumber companies] and as several syndicates were in the field simultaneously seeking to secure control of these lands, the rivalry between them became so intense at times that timber claimants, or "dummies" as they were more popularly known, commanded a premium, and the rush continued without interruption far into the winter.[140]

By 1916, Thomas Shevlin and his associates owned 250,000 acres of central Oregon timber.[141]

### Building the Shevlin-Hixon Mill

The new mill was conceived on a grand scale from the outset. The mill was to have a nine-foot double band head rig with a daily capacity of 300,000 board feet/shift. Seventy-five percent of the

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[140]S.D. Puter, Looters of the Public Domain (Portland: Portland Printing House, 1908; Reprint New York: Arno, 1972), 84.

[141]Bend Bulleting, 22 Mar. 1915, 12 May 1915, 14 June 1916.

lumber would be remanufactured into finished goods in the mill complex. Included in the plant would be a battery of twenty dry kilns, remanufacturing equipment, and lath and box factories. Logging operations would include a broad-gauge railroad with Baldwin locomotives, Clyde four-line skidders, and a Lidgerwood machine.[142]

The Timberman's account of the new mill included more data about the equipment and the projected operations. The main power was to be furnished by a 750 horsepower Corliss reciprocating steam engine. In addition three turbine/generators would provide electricity for the motors in the remanufacturing plants. The sash and door plant would have a daily capacity of 1000 doors and 2000 door frames. The sash and door plant and the box factory would help the new company meet its goal of remanufacturing 75% of its cut.[143]

Pine mills like Shevlin were eager to manufacture finished goods rather than simply making lumber. Adding value to the product improved the revenues of the lumber company as well as helping the economics of the local community by adding more jobs for a given amount of timber. The Kinzua mill in Wheeler County was possibly the most extreme example of this strategy. This mill incorporated a furniture factory into its plant. Shevlin-Hixon continued to make sash, doors, and molding during most of its operating years, but curtailed remanufacturing during the Depression.

The builders were Dion and Horskotte, of Minneapolis. They had built several mills for the Weyerhaeuser Company and for the Shevlin interests. Shevlin's employment included 75 men in the box factory, 130 in the sash factory, 120 in the mill, and 200 in the woods, for a total of c.525.[144]

In 1919, when the World War I market was still strong, Shevlin-Hixon cut 110 million board feet.[145] This was a prodigious amount of lumber; only one other west coast pine mill--Red River Lumber Company at Westwood, California--exceeded that cut, but it was still short of the Shevlin-Hixon mill's potential.

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[142]Bend Bulletin, 22 Mar. 1915.

[143]The Timberman, May 1915.

[144]Bend Bulletin, 22 Mar. 1916.

[145]The Timberman, Dec. 1919.

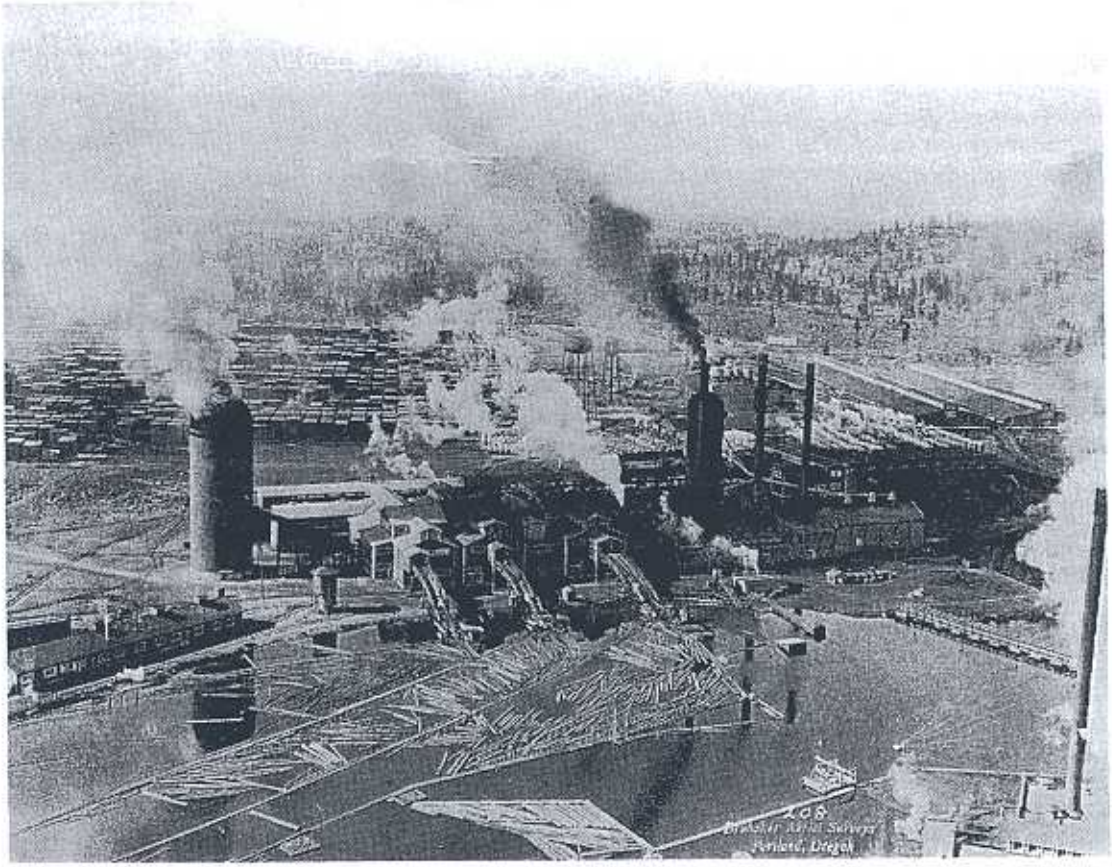

*Figure 18*
*Shevlin-Hixon mill in Bend.*

Shevlin-Hixon's production through the 1920s remained strong. The mill usually ran two shifts with a daily production in the 300-500 thousand board foot range.[146] In 1932, when ponderosa pine production reached its lowest point in the Depression, only two western pine mills were out-producing Shevlin-Hixon's 350,000 feet/day.[147]

Logging Operations 1915-1940

Railroad logging technology was a key to Shevlin's productivity. The railroad logging equipment that the company purchased in 1915 included Clyde four-line skidders, McGiffert loaders, and a Lidgerwood steel tower yarder.[148]

These machines represented rather radical technology. Rail mounted skidding machines were larger than locomotives and could move logs along the ground or through the air at a startling pace, more than 1000'/minute in some cases.[149] The Clyde Company four line skidder was described in the Clyde Company's catalog as "the Clyde Self-Propelling Steam Skidding Machine." It was able to move itself along the track, and then to skid logs from 1000 feet away at a speed of 500 feet/minute. In 1918, a Clyde Company advertisement featured Shevlin's four line skidder, which had yarded 51,691,309 board feet during the 1917 season.[150]

In the 1920s, the cable skidders were supplimented by horses and high wheels, and in the 1930s, the skidders were replaced by tractor-drawn high wheels and arches.

In addition to their mechanical efficiency, the Shevlin-Hixon logging operations were also distinguished by the large, semi-permanent camps that the company built for its loggers and their families. In the western pine industry, a common practice among the larger firms was to provide camps for family members instead of camps restricted to bachelor or "stag" loggers. The practice varied from firm to firm and was less common in fir logging, but

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[146]Abbey's Register of the Western Lumber Industry (Portland: Modern Printing, 1928).

[147]Western Pine Association Papers, 1935, Oregon Historical Society library, Portland, Ore.

[148]Bend Bulletin, 15 Dec. 1915.

[149]Berry.

[150]The Timberman, Sep. 1918, 43.

was a feature of the Bend and some of the Klamath Falls companies' operations. The Shevlin camps have been singled out for their size and "homeyness" in the region's folklore.

Summit Camp

The move in April of 1942 from La Pine to Summit Stage Station--later the "stage" was dropped from the name--was an important one. Shevlin had been at La Pine for 10 years. The new camp was on the Fremont Highway near the end of the logging railroad. According to newspaper accounts, the move went smoothly enough, requiring only four days from start to finish. Six hundred people were in residence in Shevlin at the time of the move, and the inventory of buildings included over 400 separate structures.[151]

> Only four days were required in the shift, beginning Thursday and by Monday evening house wives were busy straightening up their houses and studying what could be done with the new "yard" into which the crane had lowered their homes.[152]

The town was situated so that the cabins had a pleasant vista of the surrounding forest. The houses were faced away from the streets, a feature that increased privacy and diminished dust.

> Oddly enough, the houses do not front toward the street, but face the opposite direction with the front of one house facing the front of the house bordering one street over. This arrangement has the advantage of a minimum of dust and noise to the residents of the houses. Shade trees were left standing between the rows of houses.[153]

Water came from a well drilled 750' into the lava rock. The pumps were powered by the camp's electric system, which had three diesel-electric generating sets. In 1943, the generating plant caught fire and left the town without electricity for an extended period.[154]

Logging techniques on the new system were to combine truck and railroad logging. In 1941, Shevlin had introduced the first trucks

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[151]Bend Bulletin, 29 Apr. 1942.

[152]Bend Bulletin, 29 Apr. 1942.

[153]West Coast Lumberman, Dec. 1942, 21.

[154]Bend Bulletin, 25 May 1943.

onto its operations.[155] This was late for south central Oregon pine logging, but Shevlin was an old firm and had perhaps grown resistant to change.

The Summit system had three logging "sides" using nine Caterpillar RD2 tractors with arches to skid logs to three shovel-loaders. The loaders were a Lima, a Bucyrus-Eire, and a Link-Belt, representing the three largest manufacturers of excavating equipment.[156] The trucks included seventeen vehicles that Shevlin owned and three contractors' trucks.

The trucks hauled on private roads, which permitted them to use eleven foot bunks and to load as much as 9,000 board feet. The truck hauls ranged from 7 to 12 miles from the loaders to the reload. At this point, the logs were removed from the trucks and loaded onto railroad cars for the journey back to Bend. This re-loading operation was conducted by McGiffert machines, which had been serving the firm since its inception in 1916. The system was not simple, but it was enormously productive. West Coast Lumberman reported the average volume of logs loaded out at 600,000 feet/day.[157]

In the five years that Shevlin remained at Summit, it logged a significant amount of land. Company holdings in the area were purchased by Shevlin-Hixon and by the Fremont Land Company during the 1920s and earlier. Klamath County deed books record eleven timber tracts purchased by Shevlin-Hixon in 1924 alone. Projections on Shevlin-Hixon cutting maps indicate the firm's holdings along the Summit line were extensive.

Logged-over lands that Shevlin-Hixon exchanged back to the Fremont National Forest totalled 1280 acres in 1942 and c.1500 acres in 1943.[158] In 1943, Shevlin-Hixon purchased 29 million board feet of ponderosa stumpage from the Fremont to supplement its private holdings.[159] Although most of the logged-over land was exchanged, diminishing the firm's land base, Shevlin-Hixon and its successor firm retained c.16000 acres in the area once served by the Summit line. If the loggers' productivity averaged 500 mbf/day, and the forest's stand density averaged 15 mbf/acre, Shevlin-Hixon would have cut its way through 33 acres of forest each day. During the five years it spent at Summit, then, it would

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[155]West Coast Lumberman, Aug. 1941.

[156]West Coast Lumberman, Dec. 1942, 21.

[157]Dec. 1942, 21.

[158]Bach, 481-482.

[159]Bach, 482.

have consumed c.50,000 acres of stumpage.

Shevlin-Hixon Goes to War

Built only four months after the attack on Pearl Harbor, the Summit system was inextricably linked to World War II production. Shevlin-Hixon and other lumber companies had several distinct problems meeting the war production goals. The first of these was labor. As conscription reduced the labor pool, the number and quality of available laborers diminished.

Throughout the industry, logging was viewed as a semi-skilled occupation, practiced by a migratory force of laborers who worked in other seasonal jobs as well as logging. The national depression had reinforced this pattern, but the practices of individual firms varied. Shevlin-Hixon was known for its paternalism and its orientation to "family men" in the woods and in the mill. These workers were skilled, experienced, and company-oriented. They provided the nucleus of Shevlin crews, and when they left they were impossible to replace.

In May of 1942, the government began regulating the sale of lumber, freezing all sales not related to the war effort.[160] Forty-eight men enlisted at the Shevlin Camp and 38 enlisted at La Pine on May 12; 115 men enlisted three days later. Enlistments from the logging camps of Shevlin and other Bend firms continued to grow during the rest of the spring.[161] By June the effect of the loggers' enlistment was being felt throughout the northwest lumber industry. War production authorities asked the mill and woods crews to forego their annual vacations and work an extra two weeks to supplement production, which had been declining all spring. The crews were perhaps willing, but the lumber companies had not budgeted for the extra labor costs.[162] On June 29, Shevlin-Hixon's 1100 mill workers took their vacation, closing the mill for the first time since 1939.

By midsummer, western lumber production was 8% lower than its pre-war level.[163] Lumber workers were asked not to enlist, but to remain at work unless drafted. Workers were leaving the lumber industry for reasons other than enlistment, however. Jobs in the shipyards and aircraft plants in Portland and Seattle paid higher

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[160]Bend Bulletin, 8 May 1942.

[161]Bend Bulletin, 25 May 1942.

[162]Bend Bulletin, 22 June 1942, 23 June 1942.

[163]Bend Bulletin, 15 July 1942.

wages than lumber jobs, so canny workers were relocating to the urban areas. The "war production authorities" were appalled by the "job shifters," the Bulletin reported, and had prepared a plan to change the selective-service classification of anyone caught changing jobs.[164]

During the fall of 1942, the lack of experienced fallers in the Summit Camp took its toll on the log production rate. The mill slowed lumber production through the months of October and November and finally closed entirely during the latter half of November so that the woods crew could build up an inventory of logs in the pond.[165] Although the mill resumed production in December, the November closure pointed to a problem associated with war production. The timber Shevlin was cutting was proprietary timber which was being consumed at an alarming rate. The mill's superintendent was quoted as saying that "the company would be better off cutting 400 thousand board feet of lumber a day than 600 thousand and [could] still save lumber."[166]

In the spring of 1943, the Selective Service Commission granted occupational deferments to loggers and the War Manpower Commission asked loggers working in the shipyards to return to the woods.[167] Over 300 experienced loggers quit the Kaiser shipyards in Portland to return to their old jobs.[168] In October, the War Manpower Commission was asking 2000 loggers who were currently in the army to return to the woods.[169] The WMC was also reportedly considering importing 19,000 "foreign workers" for the lumber industry in the western states. Despite the War Manpower Commission's best efforts and the industry's best efforts, production could not keep pace with wartime consumption. The U.S. lumber industry produced 34.6 billion board feet in 1943, but the war production board reported that an additional 4 billion board feet were purchased from foreign sources.[170]

By the summer of 1944, Shevlin-Hixon's contribution to the war effort was running smoothly enough. Minor problems such as a shortage of work gloves continued to plague the loggers, but the

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[164]Bend Bulletin, 12 Sep. 1942.

[165]Bend Bulletin, 17 Nov. 1942.

[166]Bend Bulletin, 15 Dec. 1942.

[167]Bend Bulletin, 19-20 Apr. 1943.

[168]Bend Bulletin, 29 Apr. 1943.

[169]Bend Bulletin, 14 Oct. 1943.

[170]Bend Bulletin, 8 Mar. 1944.

greatest problems were over. As the end of the war neared, wage and hour concerns prompted strikes throughout the west coast industry. Members of Shevlin-Hixon's CIO local remained on their jobs, however, except for a brief walkout prompted by disagreement over the number of men operating the dry chain.[171]

In April of 1945, the National War Labor Board endorsed a return to a 40-hour week and a 2-week annual vacation. The Bend mills went back to 40 hours at the end of the year. In September of 1945 the AFL lumber unions struck the west coast mills, closing operations in Prineville, Redmond, and Gilchrist, but not Bend. A jurisdictional conflict among the Shevlin-Hixon workers threatened to close the plant in the spring of 1946, but it was averted by an agreement at the eleventh hour.[172] The nation-wide rail strike in May of 1946 slowed production in central Oregon by strangling the transportation system. In the spring of 1947, the Brooks-Scanlon mill crew struck for higher wages, but their neighbors at Shevlin did not join them.

Finally, on April 30, 1947, the Bulletin announced that the town of Shevlin would move during May from its location at Summit Stage Station to a new location near Chemult. The Chemult railroad was already in place and the townsite was prepared with streets graded and utilities installed. Over 450 portable buildings would be skidded to a loading point, loaded onto flatcars, and taken to the new townsite. The moving operation was expected to require several days.[173]

## Spacial Organization of the System

Because it was the first system that George Conklin, Shevlin-Hixon's civil engineer, designed for truck-to-train logging, the Summit system served as a transition from conventional logging railroad design to a new design that would use trucks. The 21.8 miles of main line had only seven spurs with an aggregate of 16 miles of track. The system produced about 750 million board feet of logs with a very short railroad base.

Each of the spurs served large reload sites, where trucks delivered logs to the railroad. There were, in addition, several reloads on the main line, and a very large reload at the end of the main line, near Pot Hole Springs.

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[171] Bend Bulletin, 3-8 May 1945.

[172] Bend Bulletin, 25 Mar. 1946.

[173] Bend Bulletin, 30 April 1947.

In a truck-to-train logging system, the spurs and sub-spurs that we might expect to find are replaced by truck roads. What spurs there are join the main line much as the branch lines on earlier systems do. On some early truck-to-train systems, the truck roads are built like railroad grades, with railroad standards of curve and gradient. This was generally not the case with the Summit system. The truck road that leaves the reload site at Pot Hole Springs was an exception, however. Now Fremont National forest road 2015, this road is still noteworthy for its elaborate cut and fill construction and is conspicuous among the dusty pumice roads in the area.

The accompanying map is based on field survey and on a map of the system prepared by George Conklin, the civil engineer for Shevlin-Hixon. The first five spurs (4,5,6,7, and 8) are shown on Conklin's map with the numbers assigned. Spurs 1, 2, and 3 are not shown on the map, and could not be identified on the ground.

Spurs 4 through 8 look much like branch lines on a dendritic system, and were probably used to reach conventional landings as well as reloads. From the standpoint of truck logging, these spurs were not particularly useful, and certainly not worth their cost. The mile or two that the saved the trucks was not significant in therm of operating expense or time.

The next set of spurs (A though D) are different. Spur A extends for nearly three miles, while spurs B, C, and D are very short. These spurs served reload sites, but not conventional tractor landings.

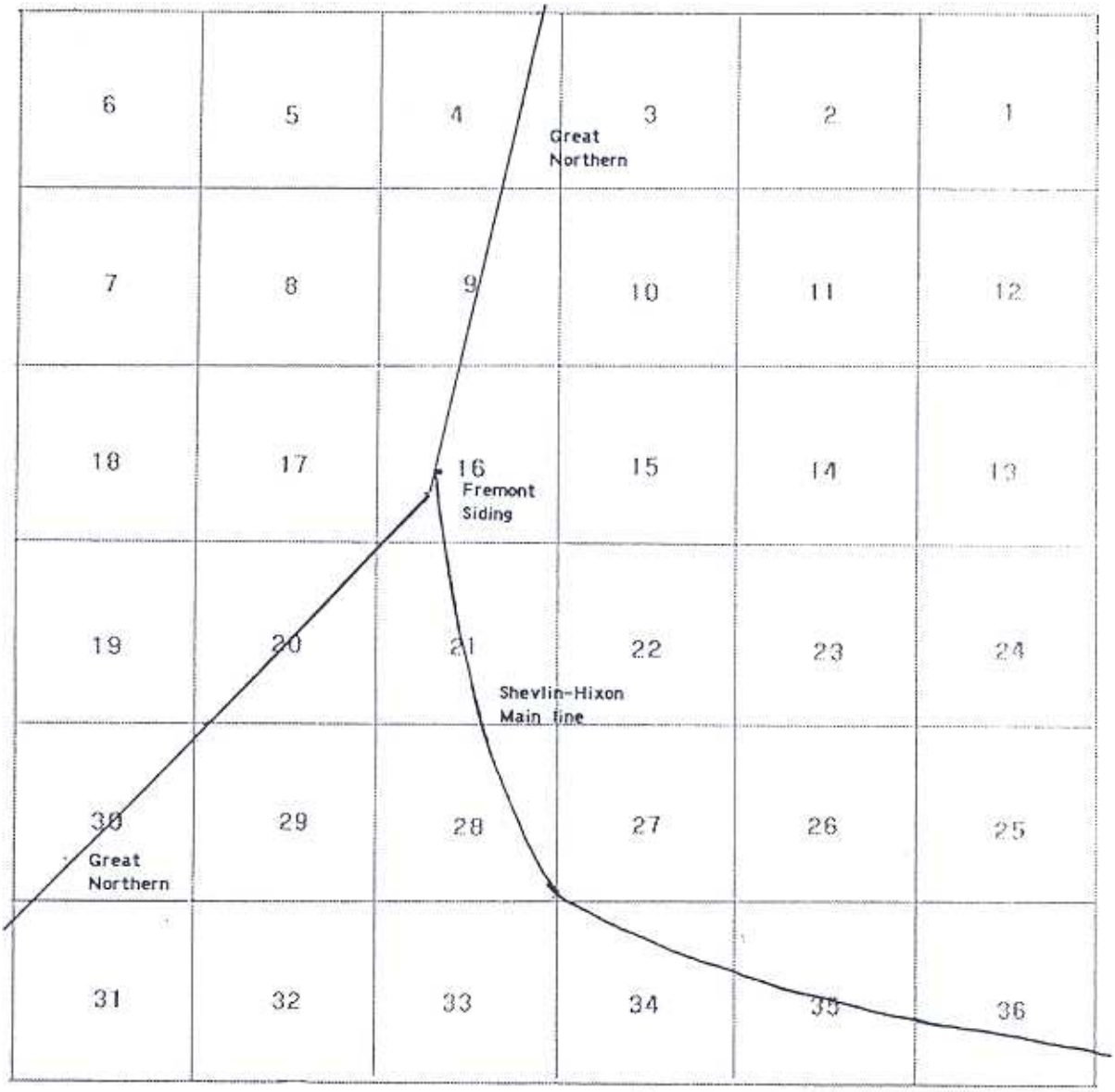
When Conlkin designed his next system for Shevlin, he left out the medium length spurs. The Chemult system (1947-50) has a long mainline with major reloads and some spurs in the 2-5 mile class. There are also some short service spurs at the reloads, but none of the medium length spurs.

## Current Status of the System

The Fremont National Forest sponsored a survey of the Summit system during 1987. Routes of the main line and branches were easily discerned, as were the camp and numerous reload sites. In the classification system used by the Forest Service (and other agencies) grades with ties in place are "A" class, those with no ties but no modification are "B" class, those with some motor vehicle use but little modification are "C" class, and those fully modified by grading or re-surfacing are "D" class.

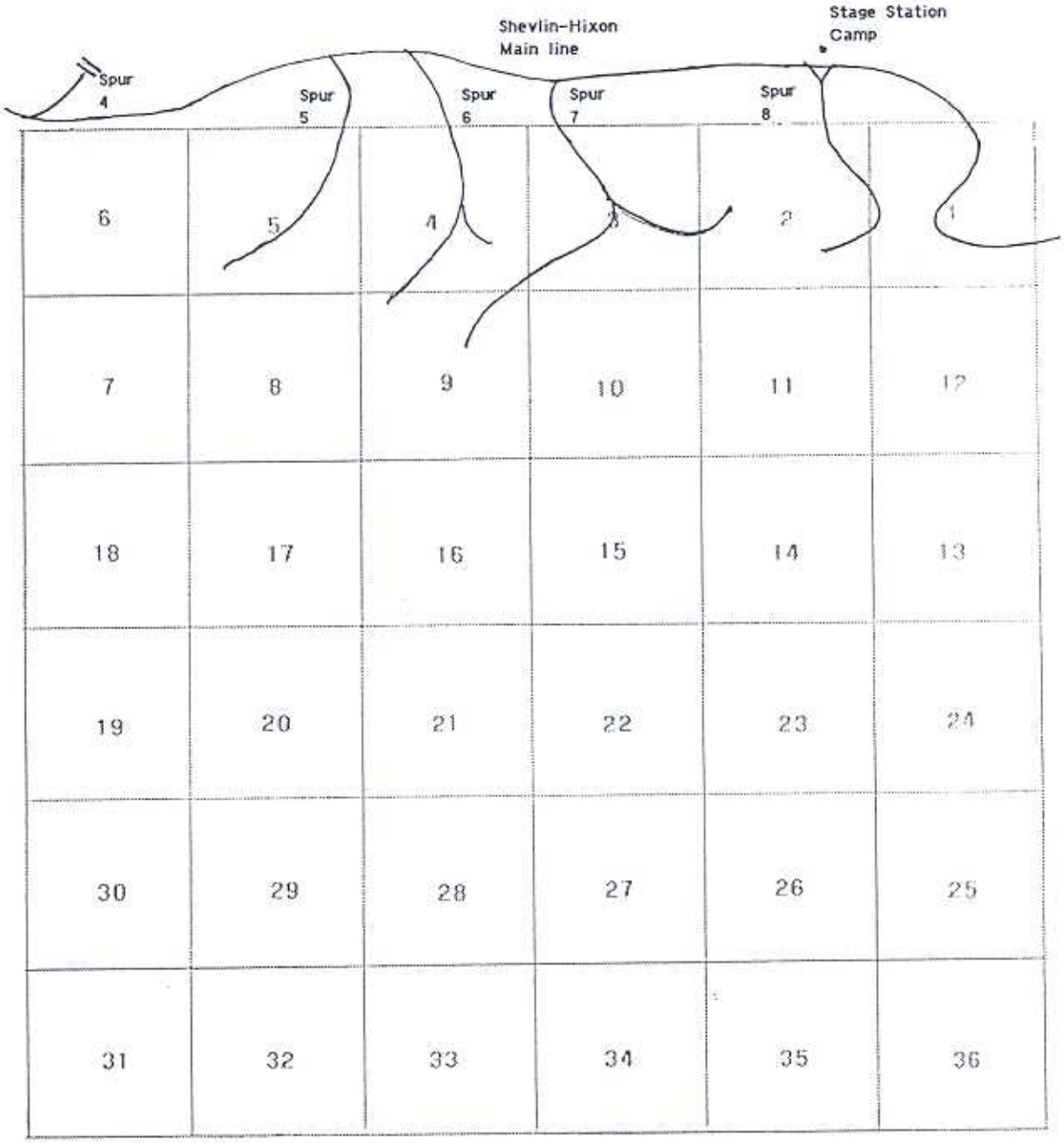
Although the Shevlin-Hixon Summit system has some grades that remain in "A" class, the overall integrity of the system was judged low enough to make it inappropriate for National Register nomination.

Shevlin-Hixon Summit System



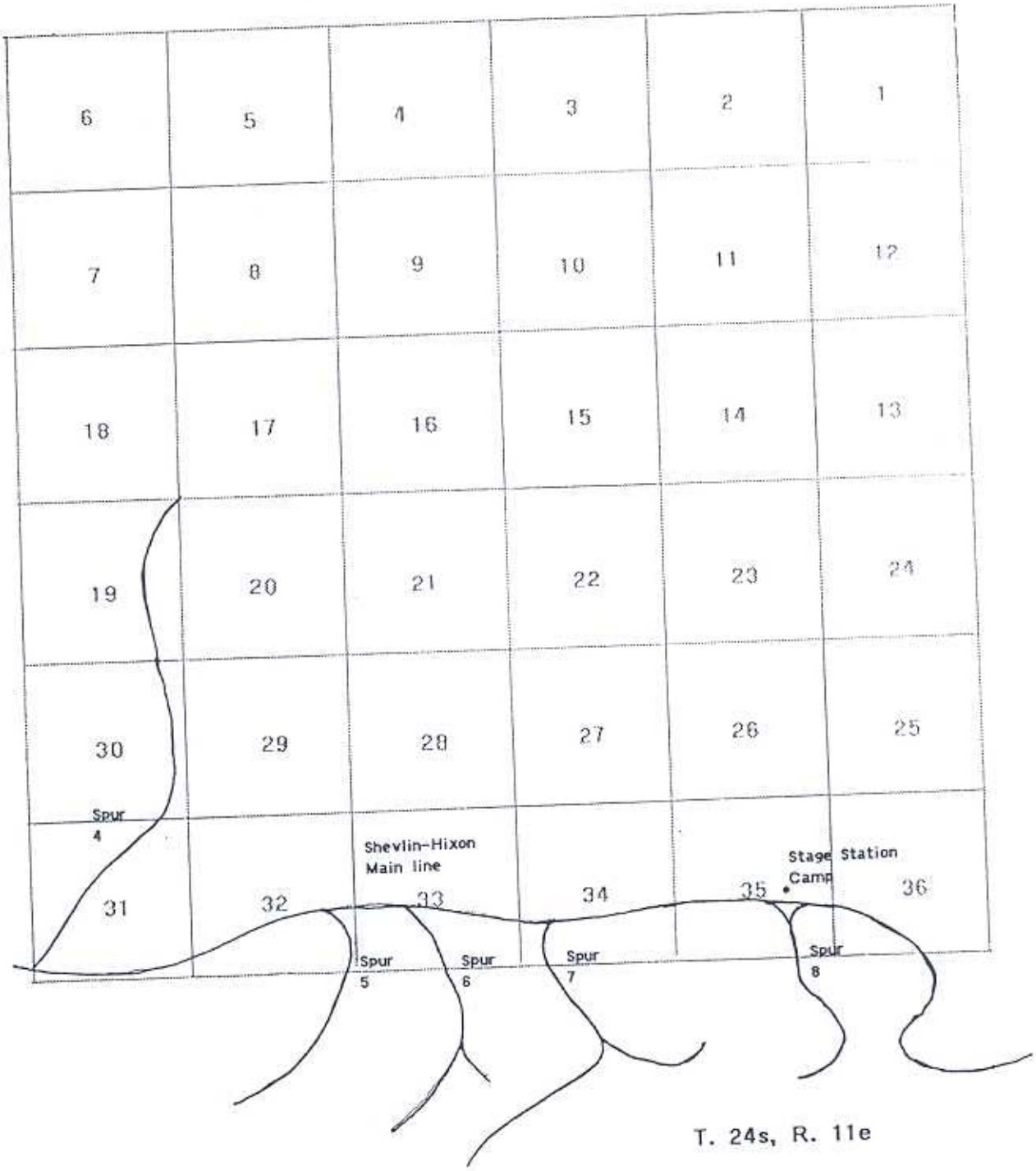

T. 24s, R. 10e

## Shevlin-Hixon Summit System




T. 24s, R. 11e

Shevlin-Hixon Summit System



## CHAPTER IV

## IDENTIFYING THE REMAINS OF THE RAILROAD LOGGING ERA IN OREGON'S FORESTS

In Oregon as in other forest states, the frantic activity of industrial-scale logging left a vast complex of cultural materials in its wake. As the industry revived after the Depression and World War II, people entering the forests found "abandoned logging camps, derelict drive dams, empty saw mills, and forgotten railroad rights-of-way gradually enveloped by second-growth forests."[1]

Because the culture of logging and lumbering was so ubiquitous and so recent in Oregon, it did not attract as much popular attention as it did in other parts of the country. In the New England and Great Lakes regions "lumberjack lore" flourished after the industry declined in those areas. In Oregon, however, loggers were still found on every street corner and most families had at least some members who worked in the woods or the mills. Whatever is familiar is not colorful. Ironically, during the 1930s and 1940s, Oregon writers Stewart Holbrook and James Stevens were reaching national audiences with Maine logging stories and Paul Bunyon tales set in the Lake States.

In 1971, Executive Order 11593 required all federal land management agencies to preserve significant historic (as well as prehistoric) resources on their lands. This policy resulted in the first coherent inventories of historic logging resources. The USDA Forest Service Regions 6 (Oregon and Washington) and 5 (California) responded with increasingly sophisticated inventory and evaluation of historic logging sites and systems. The Bureau of Land Management carried out surveys and assessments that included historic logging sites on the Oregon and California Railroad lands. Other federal and state agencies followed suit.

The study of railroad logging falls somewhere between several academic disciplines. These are historic/industrial archaeology, business or industrial history, and material culture study. Since the early 1970s, cultural resource managers from diverse academic backgrounds have been investigating railroad logging in the West, and have developed some common practices in

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[1]Theodore J. Karamanski, "Logging History and the National Forests," Public Historian 7 (1985): 27-40.

identifying, evaluating, and interpreting the material resources.

## The "Whole Systems" Approach

The most important of these common practices is to recognize that the term "railroad logging" designates a spacial system of sites and features tied together by railroad track. James Rock, who carried out early investigations of railroad logging in northern California, noted in 1980 that "When one examines railroad logging it is useful to consider it as a dynamic system made up of a series of subsystems."[2] Subsequent investigators have followed Rock's lead and approached railroad logging as a system or set of systems. In Rock's analysis, major elements include the railroad grades, the sites, and the landscape associated with logging. Specific elements include the mill where lumber was manufactured, railroads from the mill to a common carrier, railroads that brought logs to the mill, camps where the loggers and their families lived, the logging spurs, and such sites or features as reloads, sidings, spar trees, donkey settings, trestles, wyes, water tanks, and others.

The advantage of the "whole system" approach is that it places each element of the system into context. Without an analysis of the whole system, it is impossible to interpret any individual element with any degree of certainty.

> [When] only a portion of a logging system [is] located within a project area . . . we are faced with the difficult proposition of assessing the importance of an isolated camp or a stretch of track without knowing its role in the system as a whole. Even where we have identified the entire logging system, the lack of a comparative base makes evaluation difficult.[3]

In areas where systems built by different companies are crowded close together--the Tillamook State Forest or the former Klamath Reservation are good examples--it is impossible to distinguish elements of one system from another without a complete survey of each system.

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[2]James T. Rock, "What's Out There: Railroad Logging's Material Culture Remains" (Paper presented at Society for California Archaeology meeting, 1980). On file at Klamath National Forest, Yreka, CA.

[3]Sonia Tamez et al., "A Thematic Railroad Logging Research Design," Contract Abstract and CRM Archaeology 1982: 35-41.

Geographical Boundaries

Once we have decided to approach the resource as an interconnected system of sites and grades, the next step is to identify the geographical boundaries of the system. Here historic documents can provide the necessary information. For railroad logging that was conducted on public land, timber sale records may be available. The Forest Service did not ordinarily retain timber sale records, but records from the Indian Service sales are available, as are BLM sale records and Spruce Production Division records. Records of National Forest sales may have been kept by the buyer, and would be available in corporate archives or other historic documents collections. Major National Forest sales were advertised in industry publications, and sales were reported in newspapers. These notices often include geographical details including legal descriptions of the sale area.

Old maps from National Forests often record the route of logging railroads. These typically show only the main line of the railroad system and perhaps a camp or two. Although the maps are not complete, the information can be useful in determining the geography of the sale. Indian Service Forestry files include more detailed maps and engineering diagrams for the logging railroads, camps, and sale areas.

Historic records of logging on private lands are available through ownership records in county assessors' offices. Land ownership in Oregon and Washington is also shown on commercial forest maps. Those prepared during the 1920s and 1930s by the Metsker Company are the most convenient. Finally, private firms including timber companies frequently maintain their own land records which may be of considerable value. Historian Theodore Karamanski found these records to be the best in his research in northern Michigan:

> The [Cleveland Cliffs Iron Company's] land department maintained a corps of timber inspectors known as cruisers or land lookers, and retained the cruisers' early field notes. Each timber cruise contained a written description of the township under study and a sketch map of the natural and cultural features found in each section. These reports proved very accurate sources of logging camp locations, early mine shafts, and homesteaders' cabins.[4]

In some cases information is available from several sources. The Spruce Production Division's Logging Railroad XII reached the Blodgett Tract, which as we have seen, had a complex ownership

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[4]Karamanski, "Logging," 33.

history and figured into several controversies. Records including maps of the tract are available in the Department of State Lands plat books in Salem, the Lincoln county assessor's office in Newport, in the corporate archives of the Blodgett Company at the University of Michigan archives in Ann Arbor, maps prepared by the Metsker Company, the archives of the Spruce Production Division, the Civilian Conservation Corps, and the Suislaw National Forest.

Wherever timber sale or land ownership records can be found, they are available as primary historic documents rather than published sources. Books written on local or regional history do not provide information at this level of detail.

## Determining the Design of the System

Once historical information is available, we can begin to determine the system's design. Although each railroad logging system has a unique shape, there are four basic design types:

A--Timber to Waterbody Railroads of this type were built from the timber to a body of water suitable for transporting the logs to the mill site. This may be the ocean, a river, a driveable stream, a lake, bay, inlet, or other waterbody. This was historically the first type of logging railroad, deriving from log chutes and skid roads, and common in the Lake States, northern California, and Puget Sound. In Oregon, these systems are found on the Columbia River, on coastal bays, and on the Klamath Lakes. SPD Railroad XII, which ran to a log dump on Yaquina Bay, is an example of this kind of system.

B--Timber to Mill Site The second type of logging railroad ran from the timber to a mill site. This type was a later development characteristic of West Coast and Southern railroad mills. Railroads serving mills could be very short lines for the mill's proprietary use, or they could be common carrier lines that served other customers. Examples include Booth-Kelly's railroad to the Wendling mill, and the Oregon Lumber Company's Sumpter Valley Railroad.

C--Timber to Common Carrier The third type ran from the timber to a common carrier rail line which took the timber to the mill. This was generally a later development in Oregon's railroad logging systems, and was characteristic of sophisticated applications of the railroad logging concept. This type allowed the lumber companies to purchase timber lands or sales that were a significant distance away from their mills. The Pelican Bay Lumber Company Bear Creek system, which ran from the Southern Pacific line at Kirk

*Figure 19*
*Lamm Lumber Company's railroad up the Williamson River was a type C system, built from the Southern Pacific into the timber of the Yamsay Tract.*

into the sale area, is an example of this design type.

D--Truck Reload to Waterbody, Mill, or Common Carrier This final type of system prevailed for a brief period during the late 1930s and the 1940s. The logging was done by motor trucks, which hauled logs as far as 10 miles to a reload site where the logs were unloaded from the trucks, decked and sorted, and then reloaded onto rail cars for the trip to the mill. The logic was that trucks were more convenient than railroads in the timber, but that the railroad was less expensive for the long haul to the mill. Historic examples include the Consolidated Timber Company system and the Shevlin-Hixon Summit system. Although this design was short-lived west of the Cascades, it was very successful in the pine country where hauling distances often exceeded 100 miles. Two of the last logging railroads in Oregon were of this type; Hines Lumber Company's system near Burns remained in use through the early 1970s, and Weyerhaeuser's Sykan system remained in use until 1990.

Any of these systems can be complicated by the addition of mills within the system. This is technically known as milling-in-transit and it was practical only on the largest railroad systems. Milling-in-transit means that railroads deliver logs to small mills located "downstream" from the main mill. At the small mill, the logs are cut into square timbers called cants or rough lumber. This product is then loaded onto rail cars and taken to the main mill where it is resawn into smaller dimension lumber, planed, kiln-dried, and possibly remanufactured into finished products like doors, windows, siding, or molding.

The advantage of this system is that the logs are cut into lumber nearer their point of origin, and the shipping costs are less than carrying logs the full distance to the main mill. At its peak of production, the Oregon Lumber Company operated transit mills at Bates and Whitney on the Sumpter Valley system.

In addition to these four basic design patterns, railroad logging systems also display different organizational patterns. By far the commonest pattern is the dendritic or branching pattern. In this pattern, the main line runs into branches, branches divide into spurs, and spurs divide into sub-spurs.

Archaeologists Dorothy Fleming and Jeffrey McAlister have proposed that logging railroads displaying this pattern can be understood as systems based upon a model of spacial organization called the Dendritic Central Place Systems model. Stated simply, this model organizes linear systems--like railroads, highways, stock driveways, or canals--into levels branching away from a common point of origin. We can expect to see continuities of features and artifacts on each level of branching, but discontinuities or differentiation between levels. All portions

of a railroad's main line would have common engineering characteristics, then, but these characteristics would differ from those of the branch lines, spur lines, or sub-spurs.[5] On the Sumpter Valley Railroad, for example, the following characteristics can be associated with different levels in the pattern.

**Table 9.**

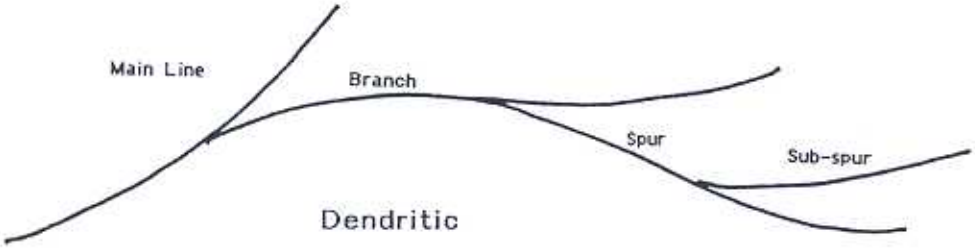
**Sumpter Valley Railroad Grade Differentiations**

| **Main Line** To station Points | **Branch Line** To spurs | **Spur/Subspur** To timber |
|---|---|---|
| 80.1 miles | >2 miles | < 2 miles |
| Raised roadbed, 6' at crown, 20' at base | Raised roadbed, 6' at crown, 20' at base | Road bed not raised |
| Cuts, fills >6' | Cuts, fills >6' | All <6' |
| Grade <4% | Grade <4% | Grade <6% |
| Rock roadbed | Rock roadbed | Soil roadbed, logs in fill |
| Rail 75 lb. | Rail 40-20 lb. | Rail 20 lb. |
| Ties ballasted | Some ballast | No ballast |
| Tie plates | No tie plates | No tie plates |
| Ties treated | Ties not treated | Some hewn or roundwood ties, no treatment |
| Wyes, sidings | Wyes, sidings | No wyes, sidings |
| Water tanks | Water tanks | No tanks |
| Vertical bent trestles | Vertical & horizontal | Horizontal |

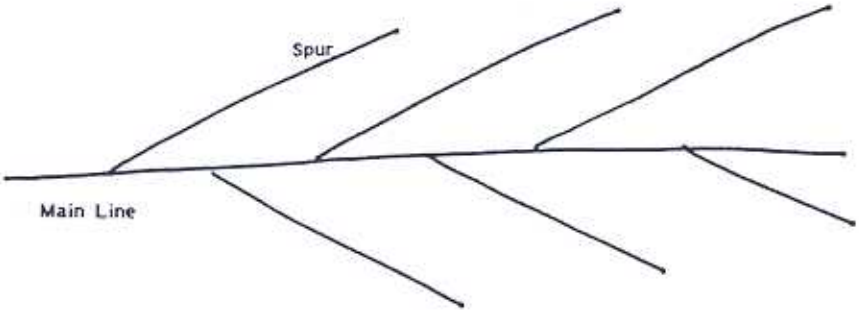
Source: Ward Tonsfeldt, "Sumpter Valley Railroad National Register Linear District Nomination" (Salem, OR: SHPO, 1985).

[5]Dorothy Fleming and Jeffrey McAllister, "Testing the Dendritic Central Place Model with Historic Railroad Logging Data" (Paper presented at Society for Historical Archaeology, Sacramento, 1986).

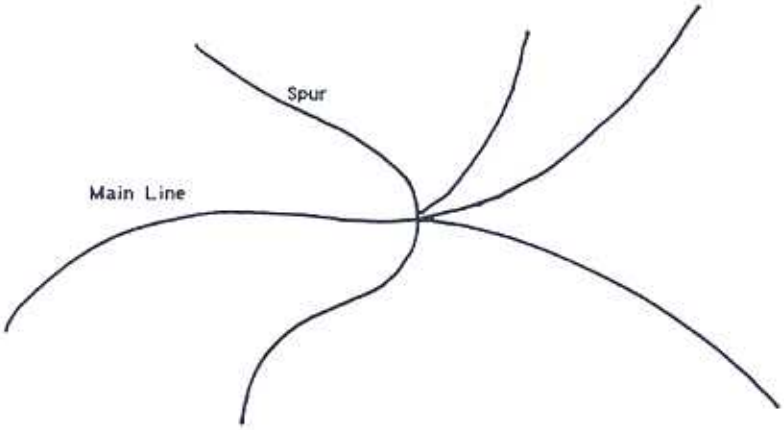
Logging Spur Types




Dendritic




Pinnate




Hub and Spoke

The characteristics of the Sumpter Valley system are not necessarily common to other systems, of course. The Sumpter Valley system was narrow-gauge, construction began in the 1880s, and many of the practices on the Sumpter Valley were not followed by the industry in general. But the system does show some typical internal consistencies which vary with the dendritic level.

On early systems, where logging technology required that spurs be spaced close together to minimize yarding distance, the dendritic pattern was probably the only practical choice. As logging technology improved, however, high lead yarding, tractor yarding, and more powerful skidders meant that the logs could be dragged further and the railroad grades could be spaced further apart.

Alternatives to the dendritic pattern appeared in the late 1920s and 1930s. One alternative has a central stem and a series of parallel grades off the stem. This two-level pattern resembles a feather. Another alternative to the dendritic pattern is organized around central junction points with spurs radiating out from the junction. This pattern resembles a hub and spokes. Both the feather (or pinnate) pattern and hub and spokes pattern have the advantage of reaching the timber with fewer miles of grade than the dendritic pattern. The hub and spokes pattern is especially effective, but requires careful engineering and a complicated switching system at the central junction points.

An example of the pinnate pattern can be found in the Oregon Lumber Company's railroad system on the Middle Fork of the John Day River. Hub and spokes organization can be found on the Crater Lakes Lumber Company railroad system on Bly Mountain in Klamath County.

Whatever the design of the system is, each grade varies in quality and characteristics along its length. Grades have two ends: the end closer to the center of the system is the proximal end, and the end closer to the edge of the system is the distal end. Since construction always began at the proximal end of a grade, the quality of the earthwork is higher than at the distal end. Grades should usually be surveyed from proximal end to distal end so that the surveyor can see the junctions more clearly and begin with well-developed earthwork.

## Estimating the Extent of the System

Once we have a sense of the geographical boundaries of the system and its design, we can begin to estimate its extent. The basic rule is that early logging technology required more miles

of grade and that later technology required fewer miles of grade. A system built in the 1880s might have spurs and subspurs no farther apart than 300 or 400 yards. Systems built for truck-to-train logging during the 1940s might have a main line with reloads but no branches or spurs.

Knowledge of the logging technology is essential here. In pine logging, for example, a forester writing in 1917 recommended spurs spaced 440 yards to accommodate horse logging technology. The horses and high wheels could move logs 400 yards from the stump to a landing on the railroad spur.[6] Greater distances were not economical. In the same year, a forest engineer operating in fir country calculated the optimum skidding distance with high-lead machinery as 800 yards, with 1000 yards possible on "long corners."[7] Twenty years later Weyerhaeuser logging engineer Lloyd Crosby was able to space spurs over 1000 yards apart because tractors and arches were skidding pine logs much farther and faster than horses could.[8]

To estimate the total miles of railroad that a system required we need to know the amount of timber that the system produced. On timber sales from public lands, this figure is available from sale documents. On private lands, or where no documents remain, we can calculate the total production by knowing how long the sale was logged, and what the mill's production rate was during the period of the sale. This figure is less precise than sale records, but it can be adequate for estimating railroad miles.

During the first four decades of this century, industry publications listed each major mill's annual production. If we know that a mill was cutting 100 million board feet each year, and that the timber was supplied from a sale that lasted two years, we know that the sale produced around 200 million board feet of logs. This figure may need to be adjusted for production overruns if the timber was especially large and the mill unusually efficient.

We also need to estimate the sale's production/acre. This figure may be available from historic sources or from oral informants. If the original stumps remain on the ground and can be measured, a local volume table can be assembled to estimate the original yield.

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[6]Berry.

[7]W.H. Dunn, "The Location of Logging Railroads;" The Timberman, Nov. 1917, 50.

[8]Lloyd Crosby, "Selective Logging and Railroad Location," The Timberman, Nov. 1928, 70.

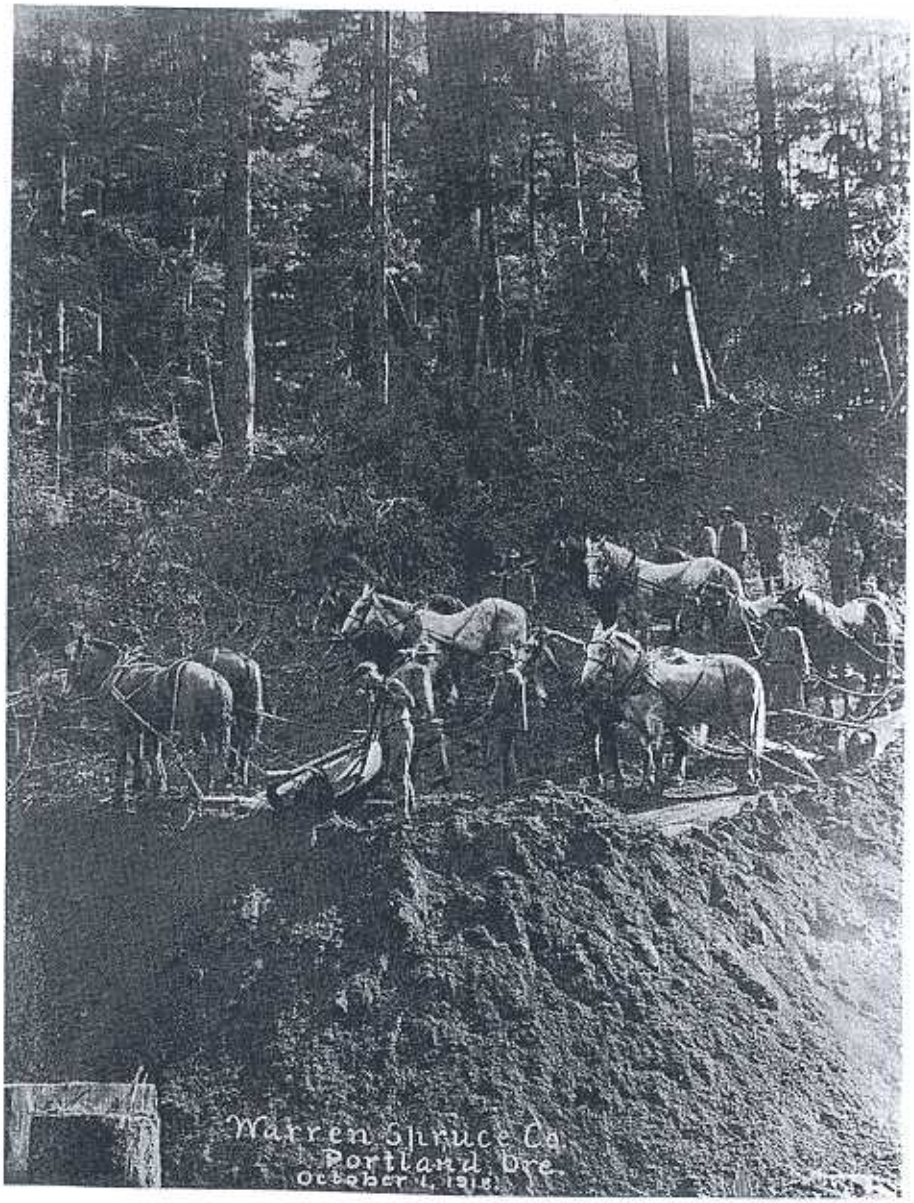


*Figure 21*
*Horses with Fresno scrapers made thousands of miles of railroad grade.*

2. Trestling and Bridges

Trestling for logging railroads is available as vertical trestling or as horizontal trestling. The vertical trestles are assembled from a series of vertical logs which may be driven into the ground as piling or set upright as bents, which resemble the letter "A". Vertical trestling keeps the logs in compression, preserving their strength and retarding the intrusion of moisture.

Horizontal trestling, or "cribbing," sets the logs on the ground for their full length. The additional contact with the soil, plus the fact that the logs are stressed by deflection, makes the horizontal trestling shorter-lived than the vertical. However, vertical trestling was more expensive to build.[10] Most logging railroads employed vertical trestling on the permanent portions and horizontal trestling on the temporary portions.

Trestles are a feature associated with railroad logging in the public imagination. For the civil engineers of the railroad era, however, trestles were not a virtue. They were easier to build than fills, but they did not last, and they were vulnerable to fire.

> "Avoid bridges when possible. They are expensive and a bad fire risk, especially on side hills where the fire is sure to hug the ground and burn over all the surface. Make curves sharper within reason and spend twice as much on a fill as a bridge will cost, as the latter will probably be burned about every second year."[11]

3. Wyes

Wyes are important features of all railroad systems because they were used to turn the locomotives around. A wye consists of a triangle of track, like the letter "Y" with an additional bar closing the top. In practice, locomotives were advanced along the first leg of the wye, then switched and backed along the second leg, then switched and advanced over the third leg to return to their original position. Some wyes are located at junctions, but many are not. Junctions by themselves are not wyes.

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[10]Nelson C. Brown, Logging: The Principles and Methods of Harvesting Timber in the United States and Canada (New York: Wiley, 1934) and A.E. Wackerman, Harvesting Timber Crops (New York: McGraw-Hill, 1949).

[11]Irving C. Clark, "Logging Railroad Construction," The Timberman, Aug. 1925, 51.

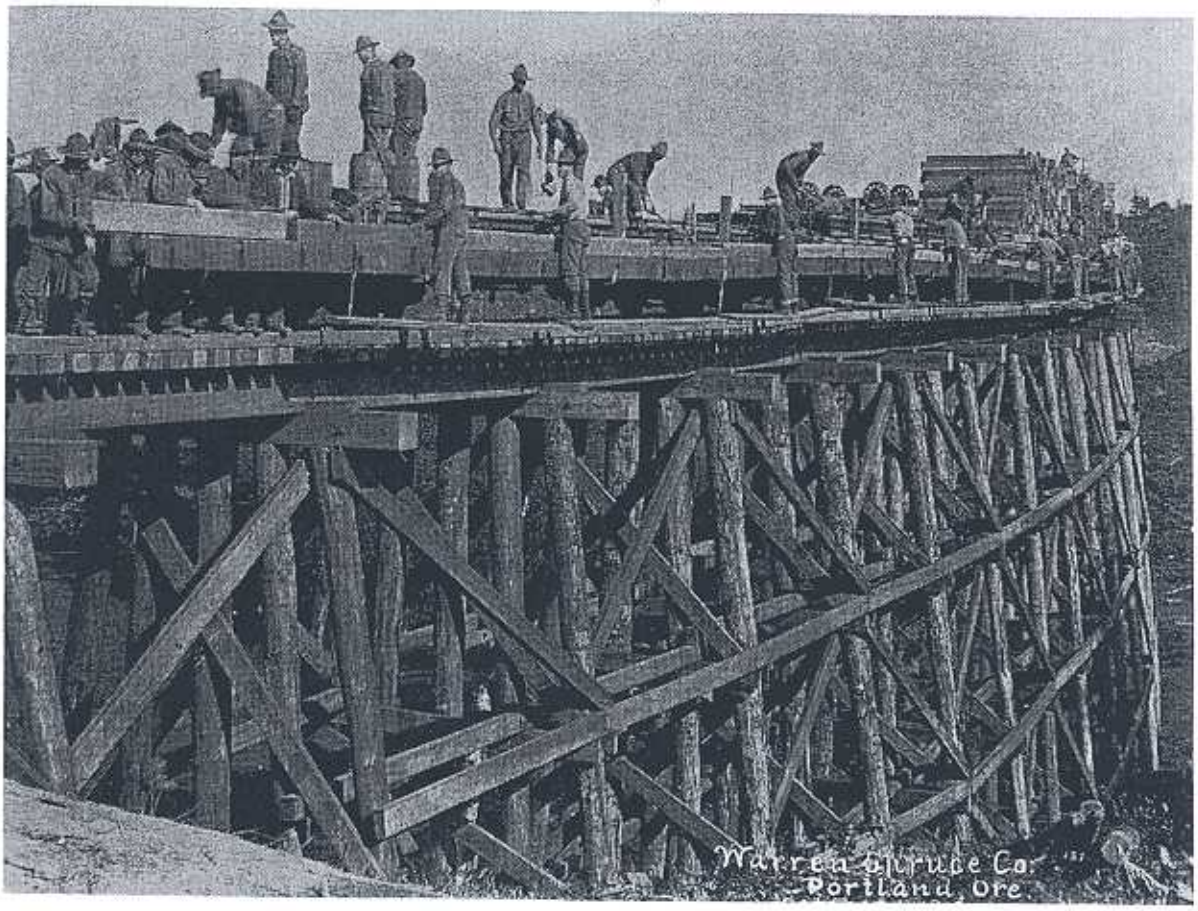



*Figure 22*
*Building a vertical bent trestle.*

*Figure 23*
*Remains of a vertical bent trestle.*

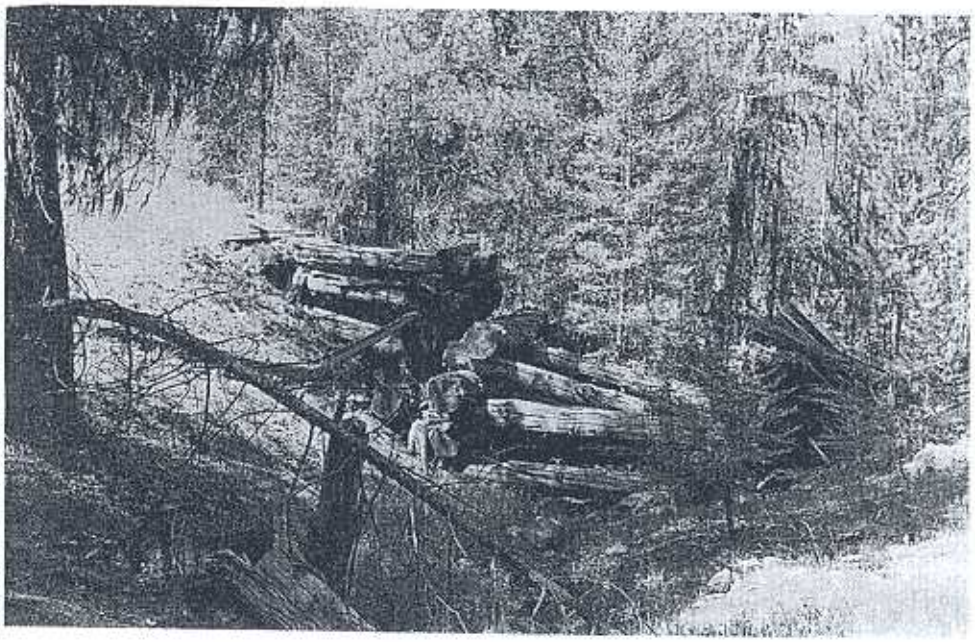


*Figure 24*
*Remains of a horizontal bent trestle.*

4. Sidings

Sidings, which are tracks laid parallel to the main track, are integral parts of logging railroad systems. Sidings permit cars to be loaded, or to pass other cars on the line. Typical siding locations include junction points, camps, landings, and junctions between logging railroads and common carrier railroads. Some sidings run at a tangent from the branch line, instead of the conventional parallel course. This is probably simply a concession to unfavorable terrain, but we can refer to these as "spur/sidings" to note the distinction.

5. Water Tanks and Other Water Sources

These are points where the locomotives' water supply could be replenished. Since American locomotives were not fitted with condensers, they consumed water as they made steam. A 75-ton Shay locomotive could consume as much as 2500 gallons of water during a day's work. Keeping an adequate supply of water in the tender and the locomotive's boiler was a constant concern to locomotive crews. In many instances, tanks were located at the top of long grades, where the locomotives' water supplies would be low after the uphill pull.

Tanks could store water from springs or creeks, or they could be filled by hauling water from another source. In some instances, water sources were developed by damming springs to form ponds from which water could be pumped (or siphoned) into the tenders.

6. Landings

Landings are sites where logs were gathered together and loaded onto the rail cars. Teams, skidders, chutes, tractors, or trucks brought the logs to the landings, and the loaders set them onto the cars. Crews ate lunch at the landings, and performed routine maintenance on their equipment. Although not all landing sites are still discernible, the extant landings display some predictable elements. These include the following:

a) Cull or reject logs left by the loading crews. These are cut to 16', 20', or 24' lengths. The degree of deterioration on the logs is equal to the degree of deterioration on the nearby ties.

b) Cable from the tractor winches or the loader. When cables began to "strand" or break individual wires, they had to be rejected.

c) Refuse associated with day-use activities. These are usually small cans of the sanitary type, sardine cans, and vent-hole milk cans.

*Figure 25*
*Grade in "A" class showing siding junction.*

*Figure 26*
*Water tank, Sumpter Valley system.*

*Figure 27*
*Fir country log landing, with high lead yarding and hayrack boom loading.*

*Figure 28*
*Pine country landing, showing 16' logs and horse yarding.*

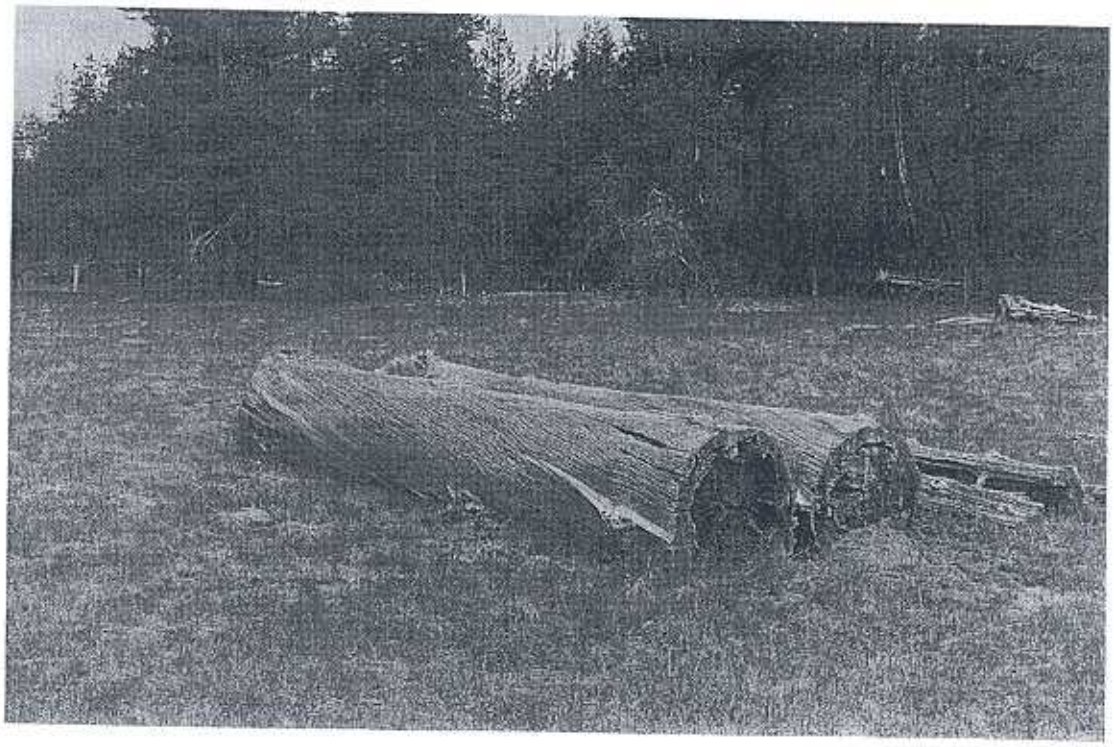


*Figure 29*
*Remains of a landing with cull logs.*

d) Industrial containers for lubricants. Steel drums and 5-gallon kerosene cans are found on the larger sites.

e) Machine parts. These are associated with larger landings where maintenance was performed. Railroad brake shoes and gaskets are common, as are tractor parts.

7. Culverts and Cattle Guards

These features marked points where the grade crossed drainage or fences. Culverts were of two types--steel and wooden. The steel culverts were similar to the corrugated pipes that are currently in use. Sections of the pipe were riveted together, however, rather than welded. Diameters varied from 8" to 18". Wooden culverts were assembled in place from logs. Bed logs placed parallel to the stream were covered by additional logs or planks and the roadbed was built over the structure.

Cattle guards were built at fence crossings. A pit was dug across the railroad and a wooden bridge built over it. The resulting structure allowed the rolling stock to cross the fence but kept the livestock within.

8. Fueling Sites

Locomotives on most of the logging railroads burned oil, especially during the boom years of the 1920s. This fuel was inexpensive and less likely to set forest fires than wood or coal. Its requires some special considerations for handling, however. The oil was transported by tank car to a site where it could be pumped into the tenders. The fueling site typically has an elevated siding for the tank car and a reveiver or tank between the siding and the main line. When the oil spilled onto the ground, the residue remains as a tarry substance resembling asphalt pavement. On many sites, the crews used roundwood ties unter the tank cars. The reason for this practice has eluded explanation.

One railroad that used coal was the East Oregon Lumber Company line from Enterprise. Coal was available for the locomotives at the camp, where it was stored in a bunker that could deposit it in the tender by gravity. A spur reached the top of the coal bunker for loading it.

*Figure 30*
*Cattle guard.*

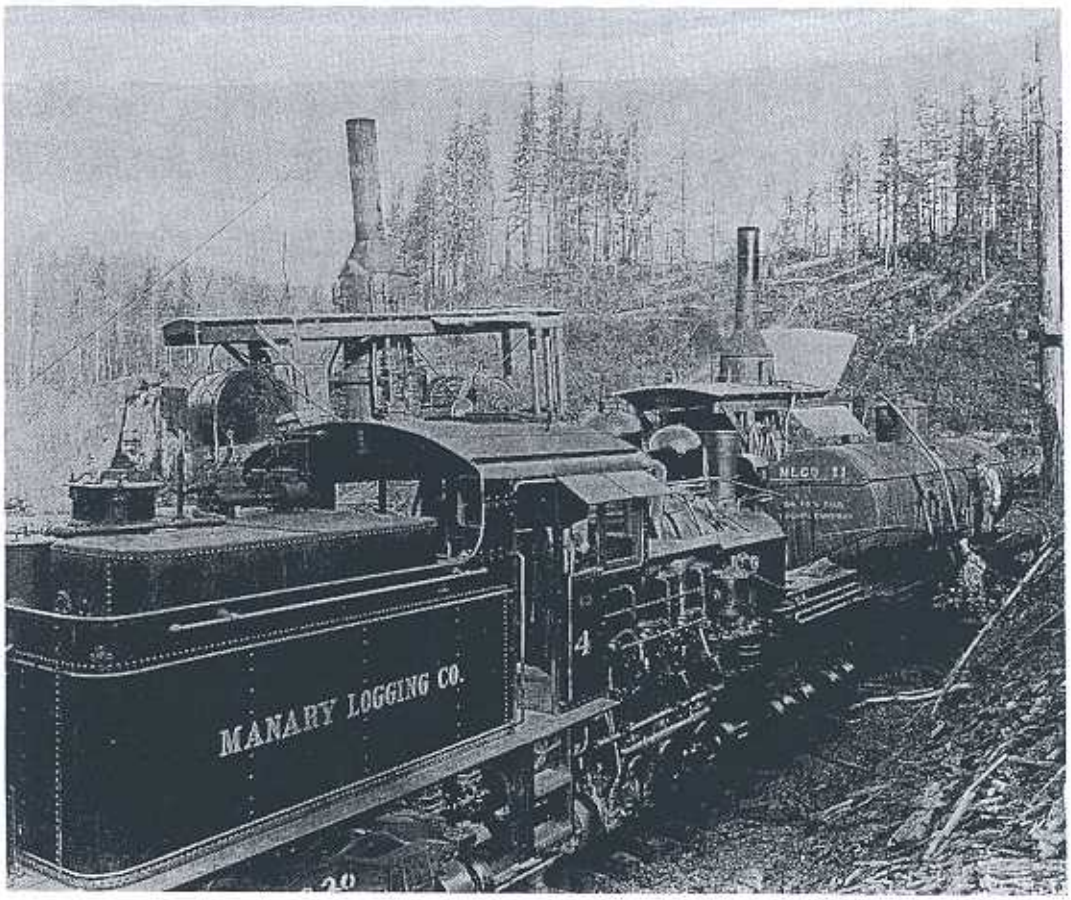



*Figure 31*
*Fueling site. Note hoses on oil car and pumps on the locomotive's oil tank.*

## Artifacts

Artifacts specific to logging railroads are manufactured items common to the industry as a whole.

1. Ties

Ties on most systems were standard broad-gauge ties 8' long, 8" high, and 6" or 8" wide. Most were not treated with creosote and were not ballasted. Multiple spike punctures suggest that some ties were re-used. Defective ties were removed and replaced. Narrow gauge systems used shorter ties, usually 6' long. Some systems used hewn or roundwood ties, especially as replacement ties or on temporary spurs.

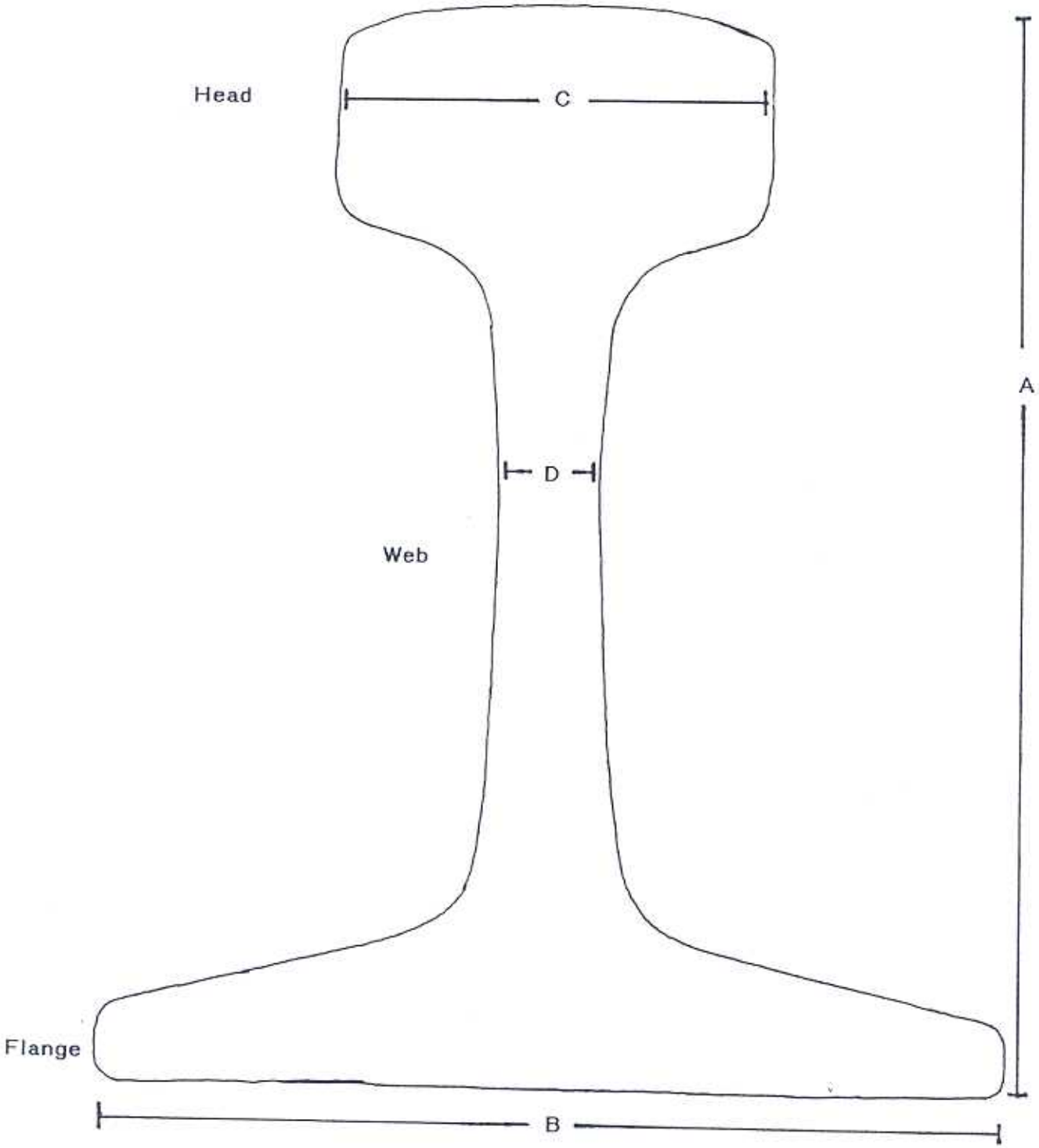
2. Rail

Rails are almost never found in place on old systems, but short pieces of broken rail or stock piles of full-length rails are occasionally found. Rail is classified by its weight/yard. Fifty pound rail was a common size on logging railroads, although rail as heavy as 75 pound or a light as 20 pound was used. The chart on the following page shows the dimensions for 40 to 100 pound rail.

Lumber companies acquired their rail from common carrier railroads and re-used it as long as they were actively logging. Rail usually carries the date of its manufacture in embossed numbers on the web.

Rail has been widely re-used for a variety of purposes since the historic period. One common use of rail is to make cattle guard grids. Rails are cut to 10' for this purpose, and laid across roads at fence line crossings. Cattle guard rails may have come from a nearby logging railroad, but they were often purchased by ranchers from scrap dealers and may not have come from a logging railroad in the vicinity.

RAIL PROFILE



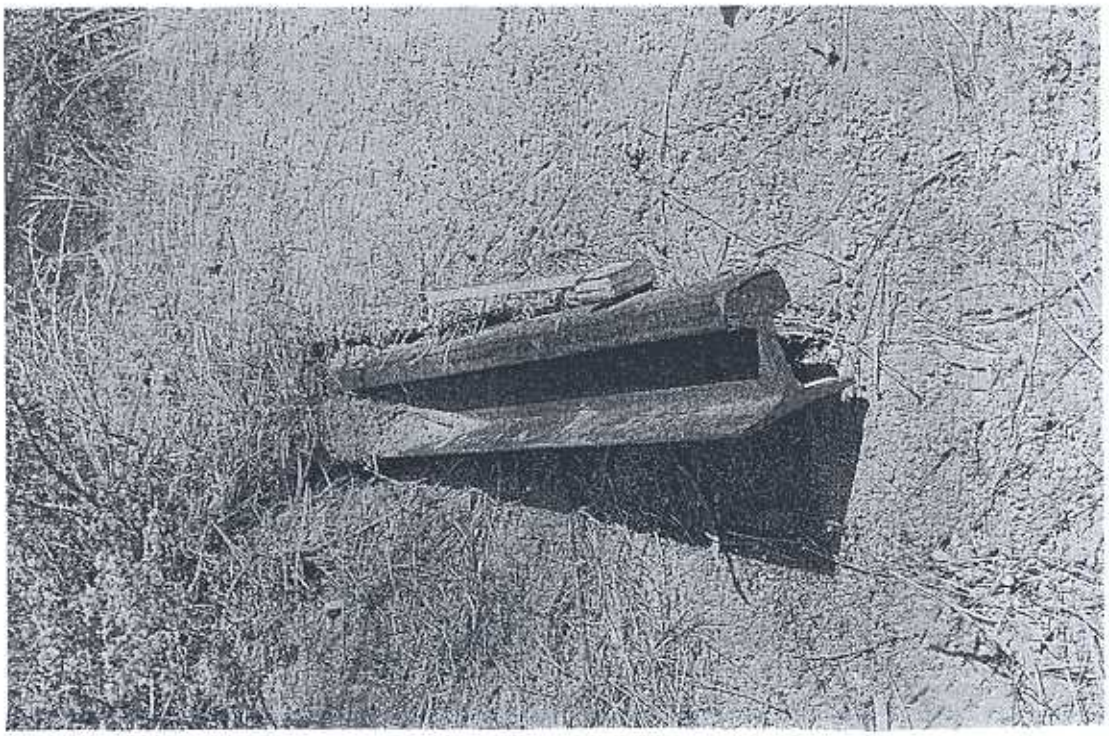


*Figure 33*
*Rail.*

**Table 10.**

**Standard Rail Sections**

| Pounds/Yard | A | B | C | D |
|---|---|---|---|---|
| 100 | 5 3/4 | 5 3/4 | 2 3/4 | 9/16 |
| 90 | 5 3/8 | 5 3/8 | 2 5/8 | 9/16 |
| 80 | 5 | 5 | 2 1/2 | 35/64 |
| 75 | 4 13/16 | 4 13/16 | 2 15/32 | 17/32 |
| 70 | 4 5/8 | 4 5/8 | 2 7/16 | 33/64 |
| 65 | 4 7/16 | 4 7/16 | 2 13/32 | 1/2 |
| 60 | 4 1/4 | 4 1/4 | 2 3/8 | 31/64 |
| 55 | 4 1/16 | 4 1/16 | 2 1/4 | 15/32 |
| 50 | 3 7/8 | 3 7/8 | 2 1/8 | 7/16 |
| 45 | 3 11/16 | 3 11/16 | 2 | 27/64 |
| 40 | 3 1/2 | 3 1/2 | 1 7/8 | 25/64 |

A.S.C.E. standards, dimensions in inches

Source: Walter Mason Camp, Notes on Track (Chicago, 1904).

3. Spikes

Spikes used to secure the rails to the ties are a common artifact on any railroad system. Spikes found on the three systems built in 1929 in eastern Klamath County yielded the following measurements:

Crater Lake LC Railroad
5/8" square x 6"
1/2" square x 5 1/2"

Pelican Bay LC Railroad (Robinson Springs)
5/8" square x 6 1/4"
5/8" square x 6 7/8"

Ewauna Box Co. Railroad (Quartz Mountain)
9/16" square x 6"
9/16" square x 5 3/4"

Generally smaller spikes are used on lighter rail on sidings or spurs.

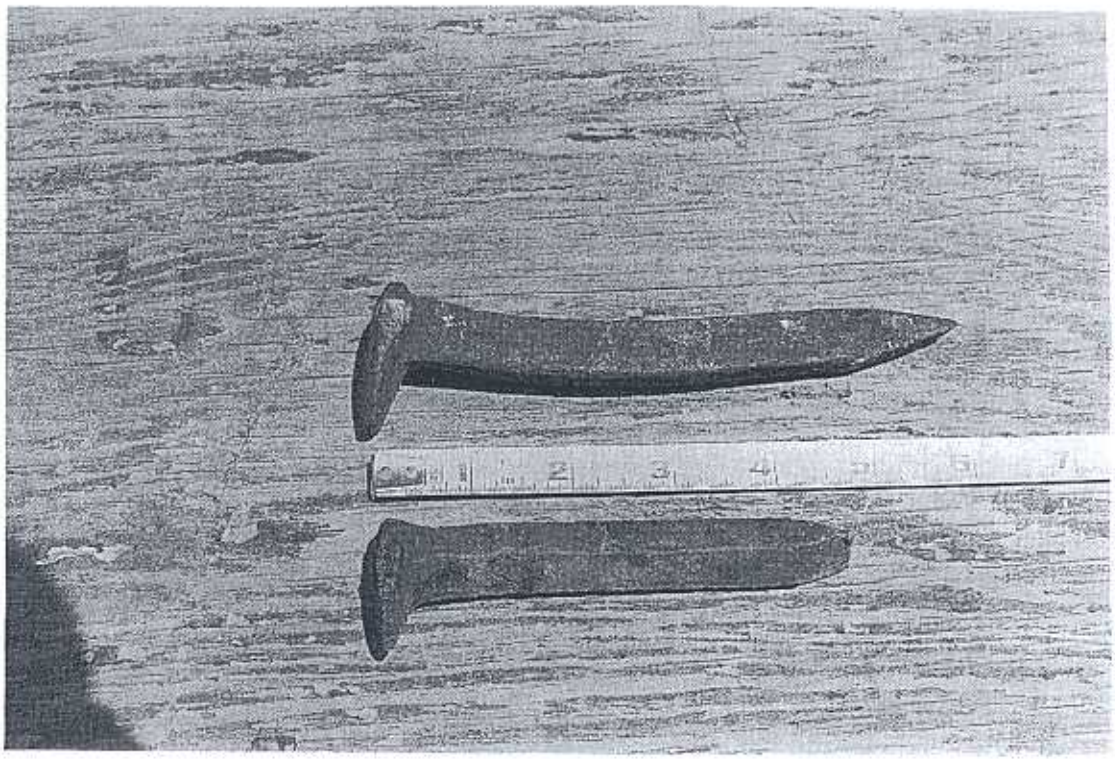


*Figure 34*
*Spikes vary in size but not in configuration.*

4. Bolts

Splice-plate bolts were used to hold the rail joints together. Most of these bolts have a characteristic oval lug on the shank which keeps the bolt from turning when the nut is threaded on.[12] Splice plate bolts found on most systems are 3/4" in diameter, 4" long, with 10 threads/inch. Many broken bolts were discarded by track crews. Nuts were both hexagonal and square.

5. Splice Plates

These items are also called angle bars or fish plates. They serve to connect rails together end-to-end. Since they are often broken in use, portions of them are frequently found along the roadbed where they have been discarded by maintenance crews. Splice plates found on the three systems were standard Sampson angle bar pattern.[13] Length of the complete angle bars varies from 24" to 36".

6. Rail Braces

Rail braces are triangular steel forgings or castings spiked to ties to give rails extra support on curves. According to Camp they are used when rails "show signs of trouble from spreading"--that is, when the outer rail on a curve is pushed away from the inner rail enough to threaten derailment.

7. Tie Plates

Tie plates are steel forgings spiked to the ties beneath the rails. Their purpose is to give the rails better support and to prevent them from wearing into the ties. Tie plates were used on main lines where the trains ran at greater speed than on the spurs.

Road or Grade?

In the field, one of the greatest challenges is determining whether a linear resource is a railroad grade or simply a road. A high percentage of railroad grades are presently re-used as motor vehicle roads, and original engineering features are often obscured. If the system under investigation was a truck-to-train system, truck roads built during the historic period may be nearly identical in earthwork and construction characteristics to railroad grades.

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[12]Camp, 120.

[13]Camp, 115.

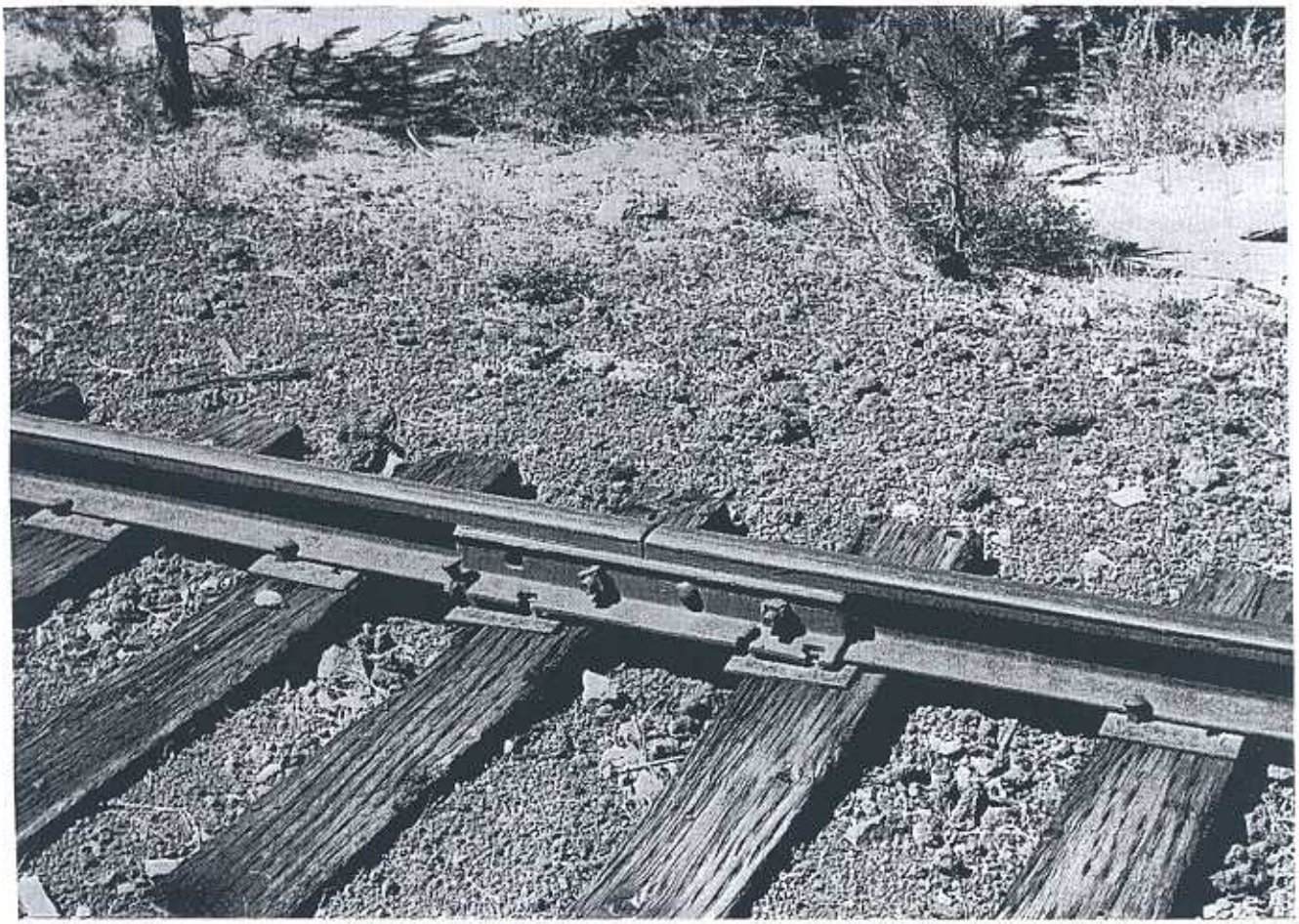

*Figure 35*
*Rail, showing ties, rail, tie plates, spikes, splice plates (Sampson angle pattern), splice plate bolts.*

Historian Dana Supernowicz prepared the following matrix to identify grades on his survey of a railroad logging system in California:

1. Presence of railroad logging features such as donkey settings, chutes, or ties [or ferrous artifacts] in situ or off side.

2. Contour--smooth curves and slope transitions, no abrupt bends or steep slope changes, roadbed flat and uniform width rather than varying tilt and width.

3. Linkage with known system layout--in the absence of other features, some segments [should be] rejected when no feasible linkage with known connecting points can be found.

4. System logic--the need for a grade to access good timber stands (indicated by old high stumps) connected to known parts of the system, not redundant, and avoiding expensive or unreasonably difficult construction.

5. Verification in documentary sources

6. Presence or absence of alternative explanations, [examples include ditches, historic roads, etc.][14]

The essential element in determining whether a certain feature is a grade is the observer's understanding of the system as a whole. Real grades almost always have features or artifacts on them, but if the disputed feature fits into the logic of the system, it may be a grade even when no railroad logging features or artifacts remain. For this reason, grades cannot be assessed in isolation; only when their connections to the rest of the system are clear can we interpret them intelligently.

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[14]Dana Supernowicz, "A History and Determination of Eligibility of the California Door Company and the Diamond-Caldor Railway in the El Dorado National Forest, California" (Placerville, CA: El Dorado National Forest, 1990).

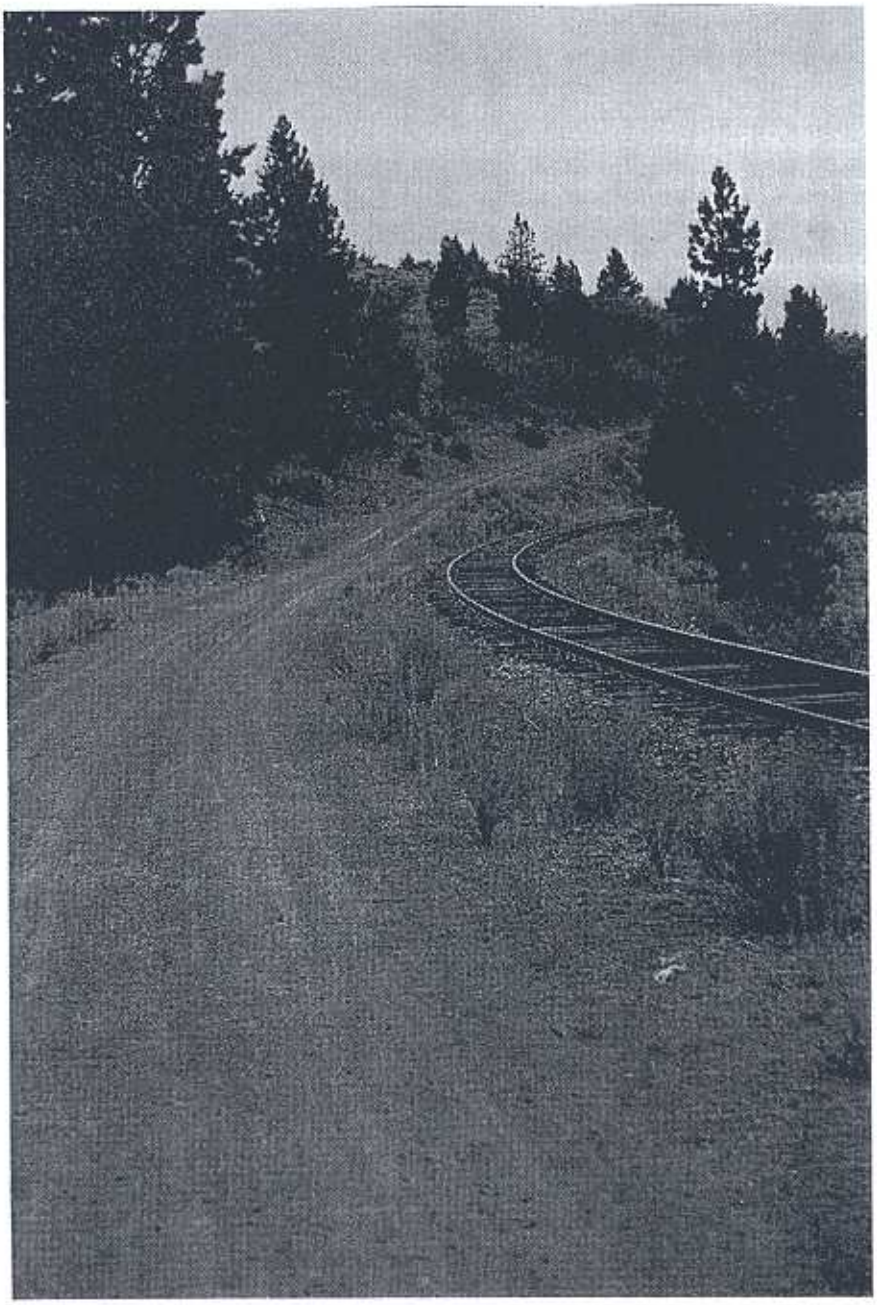

*Figure 36*
*Road and railroad in the same terrain.*
*Note curves and gradients.*

Site Types

1. Camps

The term "camp" is applied most usefully to railroad logging sites that housed loggers and their families. Logging camps in general have long been a focus of historical, archaeological, and popular interest.[15] When the industry moved into the Northwest from the Lake States, most loggers were single men, and the camps were unsanitary, unsavory, and thoroughly squalid. "You were overcome with the odor of drying sox" one logger recalled "and you crawled in bed with the bedbugs."[16] Some of the first camps had log cabins. Many consisted of portable buildings that could be moved by rail, but some, called "rag camps," were tents with wooden walls and floors. As we have seen in the discussions of individual railroad systems, camp practices varied with the cultures of firms and regions.

The World War I years and the Spruce Production Division forced lumber companies to improve camp conditions. Showers, bedding, and decent accommodations generally prevailed in the larger west side camps after 1920. At about the same time, the pine camps east of the Cascades began to move to the "family camp" system. This permitted loggers to bring their families into camp. The lumber companies provided cabins, schools, recreation facilities, and other elements of normal life.

Some companies clearly took a paternalistic view towards their workers, providing camp accommodations that went well beyond the necessities. Booth-Kelly had a YMCA recreation car in camp, featuring pool tables, a library, and writing desks.[17] Shevlin Hixon camps were famous for their size (500-600 people) and their tavern car, where the company pumped beer for thirsty loggers. The Long-Bell Lumber Company camp at Ryderwood, Washington, was perhaps the most elegant in the industry. In

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[15]See, for example, Randall E. Rohe, "The Evolution of Great Lakes Logging Camp, 1830-1930," Journal of Forest History 30 (January 1986): 17-27; Richard A. Rajala, "Bill and the Boss: Labor Protest, Technological Change, and the Transformation of the West Coast Logging Camp, 1890-1930," Journal of Forest History 33 (October 1989): 168-179; Horn, "Bingham's Camp;" Daniel R. Elliott, "Historical Archaeology at the Tate Creek Logging Camp" (Weed, CA: Shasta-Trinity National Forest, 1990); William A. Sawyer, "A History and Evaluation of the Mono Mills Railroad Logging District," (Bishop, CA: Inyo National Forest, 1988).

[16]Rajala, 168.

[17]The Timberman, May 1916, 34.

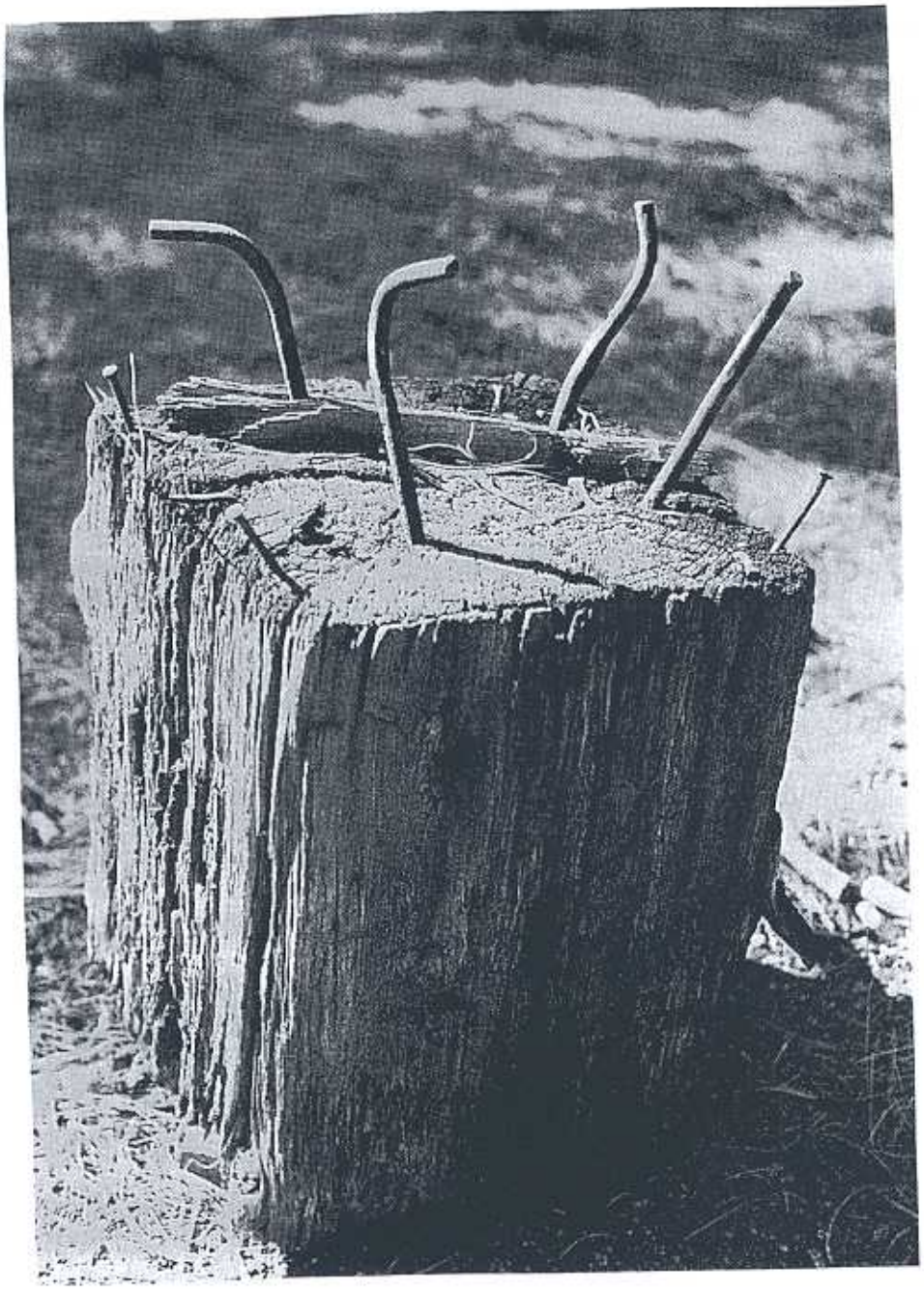

*Figure 37*
*Camp artifacts. This block was used to hold the blacksmith's anvil.*

*Figure 38*
*Camp artifacts. Car parts and bodies litter logging camp dumps.*

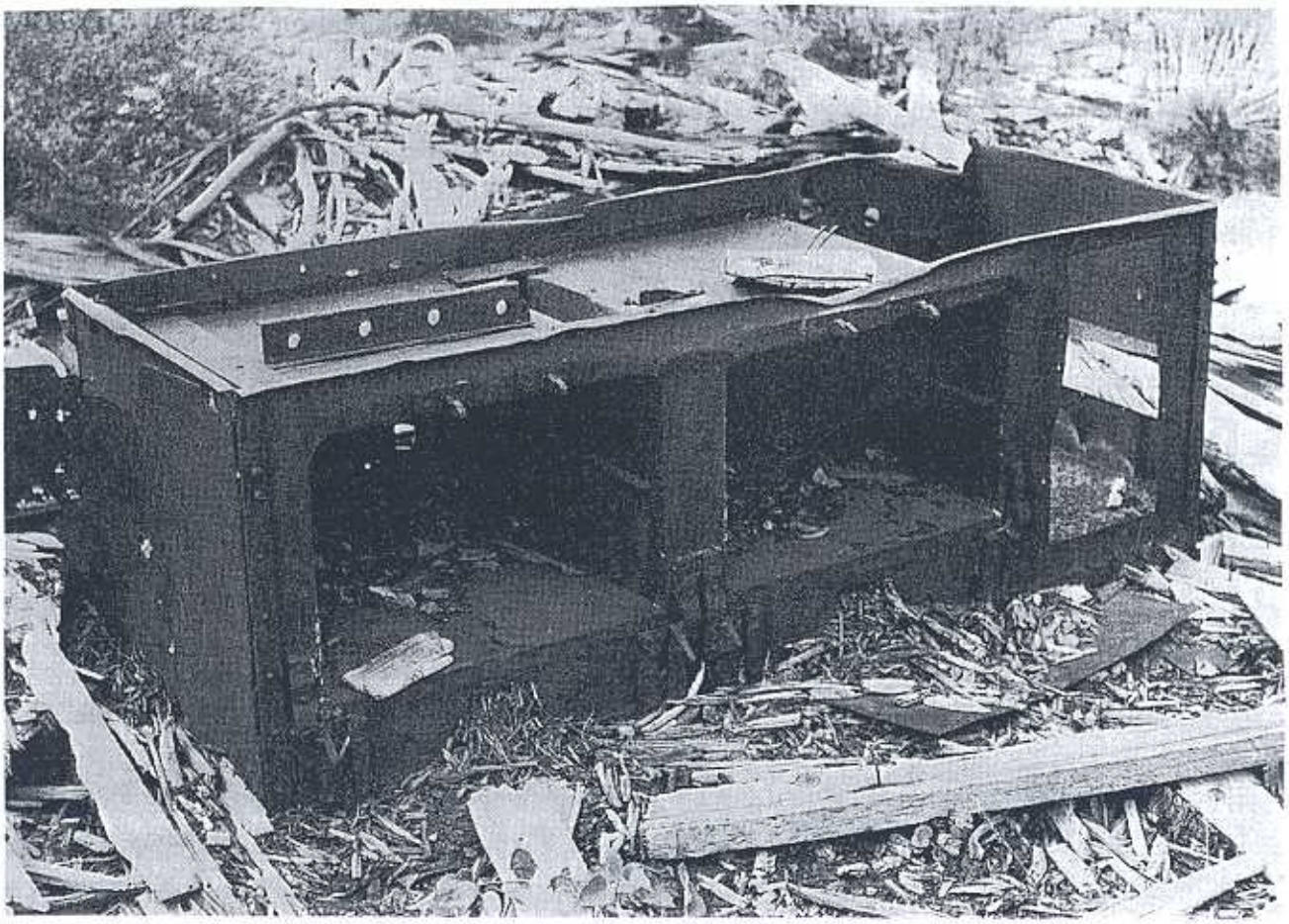

*Figure 39*
*Camp artifacts. The cookstove was often left in the dump when the camp was abandoned.*

1924 it featured bungalow housing, electric power, sewers, wide streets--amenities not found in many towns.

Professional investigations of logging camps have followed the methods of historic archaeology, including excavation and recording artifacts.

2. Log Landings

This term refers to areas where logs are gathered together to be loaded onto the railroad. Small landings which cover no more than a few hundred square feet should be treated as features; large landings may cover several acres and should be treated as sites. The elements of landings vary with the logging technology.

On high-lead systems west of the Cascades, the landing was the location of the donkey engine and spar tree. The high lead brought logs into the site, where they were piled or "decked" and then loaded onto rail cars by the donkey engine operating a loading boom on the spar tree.

Landing sites on systems employing rail-mounted skidders usually retain marks of skid trails which converge at the landing. Different styles of rail-mounted skidders produced different patterns of skid trails. Several of these patterns were recorded by aerial photography during the 1920s.[18] When the patterns remain on the ground, we can identify the technology that produced them.

Landings used in team or tractor logging are usually the simplest. Here little remains but a few cull logs and perhaps some cable or tin cans.

The last kind of landing used in railroad logging was the truck landing or reload site. At these sites, trucks brought logs from as far as 10 miles away to the railroad track. At present, there is no body of literature documenting reload sites. Since most of them date from the World War II period, they are just reaching the 50-year mark that makes them officially historic. In addition, they are difficult to recognize, especially if they have been altered, or if the observer is not familiar with the arcane details of railroad logging.

Although the reloads were relatively simple in concept, they are complex and difficult to interpret on the ground. Some of them were used for several years, processing up to 600 thousand board feet of logs each day. According to one oral source, some of the sites were in use 24 hours a day during the World War II

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[18]Show.

*Figure 40*
*Hoisting engine sled at reload site.*

*Figure 41*
*Bark pile at reload site.*

years, as the loggers struggled to meet government production quotas. Trucks dumped logs during daylight hours and the loading crews labored into the night piling the logs onto the waiting rail cars.

Photos from the 1930s and 1940s show that loggers in pine country used gasoline powered hoisting engines with A-frames to unload the trucks onto an inclined grid which rolled the logs down to the railroad siding. Rail-mounted McGiffort machines then loaded the logs onto rail cars. Transferring the Ponderosa logs knocked off bark, which had to be pushed into piles by tractors with blades.

At the reload, incoming log trucks were unloaded by passing a cable from the A-frame under the load. The "cheeseblock" wedges that held the load on the truck were removed, the cable tightened, and the logs spilled off the truck onto the grid or rollway.

Motive power for unloading the logs came from a winch or "hoisting engine" at the base of the A-frame. The winches were gasoline powered and mounted on heavy log skids. The hoisting engines resemble the donkey engines, except that they are considerably smaller than the massive high lead skidders.

The activity at the reloads leaves a perplexing mix of railroad grades and truck roads, with collapsed wooden structures, cull logs, and steel artifacts littering the sites. Features common to reload sites on pine logging systems include the following:

A. Railroad siding or loop
B. Elevated truck road
C. Unloading point with hoisting engine sled
D. Grid of logs and rail
E. Brow log at end of grid
F. A-frame remains
G. Bark pile
H. Industrial debris including cable, binder chains, steel drums, truck parts and service debris
I. Day-use refuse including condensed milk cans, bottles, and tobacco cans

3. Mill Sites

There are two kinds of mills on logging railroad systems--terminal mills and transit mills. The terminal mills were located at the beginning of type 2 systems and were closely associated with type 1 and type 3 systems. These mills were the destination of the logs from the system and were served by labor from a mill town or community. The mills were located on common carrier railroads or on navigable water.

While nearly every railroad system had some kind of terminal mill it supplied with logs, transit mills were much less common. These small mills produced rough lumber for finishing at the terminal mill. The term for this use of an intermediate mill was milling-in-transit. The logic was that shipping lumber or large timbers was easier and more efficient than shipping logs. Examples of milling-in-transit schemes were Oregon Lumber Company transit mills at Bates and at Whitney. The Baker White Pine Company mill at White Pine, the Hines Lumber Company mill at Seneca, and the Weyerhaeuser mill at Bly.

A variant of the railroad milling-in-transit pattern used a flume to deliver the rough lumber to the finishing mill. This pattern was used by lumber manufacturers in the Columbia Gorge, including the Dalles Lumber Company and the Bridal Veil Lumber Company. In Bridal Veil's operation, a logging railroad delivered logs to the upper mill, where they were cut into rough lumber that was then sent down a V flume to a lower mill for planing and shipping on the Union Pacific Railroad.

Transit mill features typically include a log pond, mill structures with concrete footings for the head rig, a mill camp, and railroad sidings.

## CHAPTER V

## PRESERVING RAILROAD-ERA LOGGING RESOURCES

### Current Preservation Efforts

The first chapters of this report have presented logging during the railroad era as an activity intimately connected with other larger issues in Oregon's history. While some of the details of this connection, and perhaps its scope, are not generally well-known, no one who has much contact with Oregon would doubt the importance of logging and the lumber industry in the state's development. For most Americans, "Oregon" means "lumber."

Despite this obvious connection, forest and timber history have not figured as prominently as we might expect into historic preservation efforts in Oregon. While many of the state's splendid public buildings and private homes are listed on the National Register of Historic Places, there are at present no mill towns, a few mill buildings, no logging camps, and portions of only two logging railroads. Listing on the National Register is not the only evidence that a resource will be preserved, of course, but it is a good indicator of public interest. As historian Joan Kelley comments in her discussion of mill town architecture: "For too long, the built environment from Oregon's industrial past has remained outside the preservation mainstream."[1]

There is evidence that this situation is changing. Vernacular buildings including mills and mill towns are drawing more attention from the public and the academic community. Historic archaeology is flourishing, especially under the sponsorship of the Forest Service and other federal agencies. House Bill 62, currently before the Legislature, would invite State agencies, including the Oregon Department of Forestry, to survey their lands for historic (and prehistoric) resources.

Perhaps most significantly, we have come to realize that our forests are in jeopardy and that the industrial culture that they support is also in peril. Forest history provides information about the trees, the people, and the communities in our forested

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[1]Joan M. Kelley, "The History of the Lumber Industry in Oregon's Douglas For Region: An Examination of Historic Architecture in Five Mill Towns" MA Thesis, University of Oregon, 1992, p.122.

land. For this reason, what was once a rather arcane area of study is coming into public view and verges on being newsworthy.

While there is some increased interest in Oregon's forest history, there are still major obstacles to preserving its material resources. Preserving historic houses and other buildings is expensive and difficult, but these structures have obvious potential for adaptive re-use. However, old railroad grades, abandoned logging camps, sagging trestles, and similar remains of historic logging offer little potential utility, even for the most enterprising preservationist.

Despite this challenge, there are some bright spots. The Sumpter Valley railroad complex was the first logging railroad in Oregon to be seriously considered for National Register nomination. The State Historic Preservation Office sponsored a survey and nomination project, with the active cooperation of the Wallowa-Whitman National Forest, and the Malheur National Forest. The final list of landowners for the main line and major sites included the two national forests, the Bureau of Reclamation, the Bureau of Land Management, the Hines Lumber Company, and dozens of private owners.

The nomination was completed and approved, and the result was the formation of the Sumpter Valley Railroad Historic District. This provides some assurance that the remaining portions of the railroad and associated sites will be managed as historic resources. Part of the system has been restored to service for excursion trains, and another portion has ties and rail in place as an interpretive site. The system has great potential for interpretive trails, and the railroad now figures into larger plans for historic interpretation in the Blue Mountains.

Elsewhere in Oregon, the Mount Hood Railroad, built through the Hood River Valley by the Oregon Lumber Company, is still in service as an excursion line, and is in the final phase of the nomination process. A portion of the Weyerhaeuser West Block logging railroad in Klamath County has recently been opened as a recreational trail through the cooperative efforts of the Weyerhaeuser Timber Company and Klamath County.

## The Threat to the Resources

Historic logging railroad systems are threatened by several factors. First, development of roads, pipelines, power-transmission lines, dams, and buildings eradicates hundreds of miles of railroad grades each year. Many of these grades have been modified to roads, and may not be recognized as grade. Even if they are no longer significant portions of a historic railroad

**TABLE 11.**

**SYSTEMS SURVEYED OR PARTIALLY SURVEYED**

| System | County | Sponsor |
|---|---|---|
| Algoma, Middle Mt. Scott | Klamath | Winema NF |
| Baker White Pine, Dean's Ck. | Baker | SHPO |
| Big Lakes Box Co. | Klamath | Winema NF |
| Bridal Veil | Multnomah | Mt. Hood NF |
| Brooks-Scanlon, Sisters (part) | Deschutes | Deschutes NF |
| Chiloquin LC | Klamath | Winema NF |
| Crater Lake LC | Klamath | Fremont, Winema |
| East Oregon LC (part) | Wallowa | Wallowa-Whitman |
| Ewauna Box Co., Quartz Mntn. | Lake | Fremont NF |
| Ewauna Box Co., Cliff Boundary | Klamath | Winema NF |
| Ewauna Box Co., Long Prairie | Klamath | Winema NF |
| Ewauna Box Co., South Calimus | Klamath | Winema NF |
| Forest LC | Klamath | Winema NF |
| Hines LC | Grant | Malheur LC |
| Lamm LC | Klamath | Winema NF |
| Lamm LC, South Mt. Scott | Klamath | Winema NF |
| Mary's Peak | Benton | Siuslaw |
| Mt. Emily (part) | Union | Wallowa-Whitman |
| Mt. Hood RR | Hood River | Mt.Hood RR |
| Oregon LC, Middle Fork (part) | Grant | Malheur NF |
| Owen-Oregon (part) | Jackson | Rogue River NF |
| Pelican Bay LC | Klamath | Winema NF |
| Pelican Bay, Sykan | Klamath | Winema NF |
| Pelican Bay, Bly | Lake | Fremont NF |
| Shaw-Bertram LC, Squaw Flat | Klamath | Winema NF |
| Shaw-Bertram LC, Soloman Butte | Klamath | Winema NF |
| Shevlin-Hixon, Summit | Lake | Fremont NF |
| Shevlin-Hixon, Chemult | Klamath | Winema NF |
| Spruce Production Division XII | Lincoln | Suislaw NF |
| Sumpter Valley Railroad | Baker, Grant | SHPO |

As Table 11 shows, Forest Service cultural resource managers have made a good start at identifying systems and beginning survey programs. The systems on the east side of the Cascades have gotten more attention than those on the west side for a variety of reasons. First, east side systems are generally large and conspicuous in the forest. They are well known, often associated with place names, and many were in use until recent times. They are also better preserved than west side systems. Systems on the west side of the Cascades are significant, however, and need to be surveyed.

TABLE 12.

FIRST PRIORITY FOR SURVEY

| System | County | Ownership |
|---|---|---|
| Booth-Kelly | Lane | Private, BLM |
| Brooks-Scanlon | Deschutes | Deschutes NF |
| Consolidated TC | Tillamook | State Forest |
| Kerry Line | Clatsop | State Forest |
| O.C. & E. | Klamath | Private |
| Smith-Powers | Coos | Private, BLM, Siskiyou NF |
| Shevlin-Hixon | Deschutes | Deschutes NF |
| Weyerhaeuser Sykan | Lake | Private, Fremont NF |

The systems in the "First Priority" group are all historically important, and have verified extant grade. The Brooks-Scanlon, Shevlin-Hixon, and Smith-Powers systems are known to cultural resource managers on federal lands and are in little immediate danger. However, complete surveys of these extensive systems would provide valuable information about the industry in general as well as a context for interpreting resources within the systems.

The Oregon, California, and Eastern (O.C. & E.) and the Weyerhaeuser Sykan are currently being abandoned and having their steel removed. These logging railroads were the last to operate in Oregon, and have a rich history extending back to 1916, when Robert Strahorn began building the O. C. & E. Considered together, they comprise the most extensive system in Oregon, and perhaps in the nation.

The need for surveys is urgent here so thay we can record resources before they deteriorate. Since these are among the last logging railroads in the west, the information they provide will be useful in interpreting other systems. Both of these lines also offer very high recreation potential.

The Consolidated Timber Company system and the Kerry Line are located on the Tillamook and Clatsop State Forests. Managers in these areas are looking toward increased logging and increased recreational pressures. As we have seen, the Consolidated system is very important historically and represents the work of Lloyd Crosby, a master designer of logging railroads. Preliminary reconnaissance indicates that grades on the Consolidated system are still interpretable although they have been affected by road building and forest management.

**TABLE 13.**

**SECOND PRIORITY FOR SURVEY**

| System | County | Ownership |
|---|---|---|
| Anderson-Middleton | Lane | Private, BLM |
| Benson Lumber C. | Columbia | Private |
| Blue Ridge | Coos | BLM |
| Bowman-Hicks | Union | Private, Wallowa-Whitman NF |
| California & Oregon | Curry | Private, Siskiyou NF |
| Clark and Wilson | Columbia | Private |
| Coats Drive & Boom | Tillamook | Private |
| Crosset-Western | Clatsop, Til. | Private, State Forest |
| Crown Willamette | Clatsop | Private |
| Deer Island | Columbia | Private |
| R. Dollar | Douglas | BLM, private |
| Flora Lumber | Yamhill | Private, BLM, State |
| Fischer Lumber | Lane | Private, BLM |
| Grande Ronde | Union | Wallowa Whitman NF |
| Hammond Lumber | Marion | State, BLM, private |
| Hammond Lumber | Tillamook | State, private |
| Inman-Poulsen | Columbia | Private |
| Kinzua Pine Mills | Wheeler | Private, Umatilla NF |
| Leona Mills | Douglas | Private, BLM |
| Markham & Callow | Clatsop | Private, State |
| McKenna Lumber | Coos | Private |
| Mt. Emily | Union | Wallowa-Whitman NF, Umatilla |
| Oregon-American | Columbia | Private |
| Oregon Lumber | Hood River | Private, Mt. Hood NF |
| Owen-Oregon | Jackson | Umpqua |
| Polk Operating Co. | Yamhill | Private |
| Silver Falls TC | Marion | Private, State, BLM |
| Silverton LC | Marion | Private |
| Tidewater TC | Clatsop | Private |
| Valley and Siletz | Polk | Private, BLM |
| Western LC | Lane | Willamette NF |
| Weyerhaeuser TC | Klamath | Private |
| C.H. Wheeler | Clatsop | Private |
| Willamette Valley | Polk | Private, BLM |

Ownership of the systems needing survey includes public agencies and private owners. While public agencies are generally positive about managing historic resources, private landowners may not be as enthusiastic as we might wish. County planning departments can help here by identifying historic logging railroads on private land and encouraging their preservation. Goal 5 of the Land Conservation law faciltiates this process. In

many cases, railroads run on public and private lands. This is especially true of the railroads on the BLM "checkerboard." County agencies could be especially helpful here, perhaps by brokering agreements between public and private owners to encourage survey and preservation.

Forest history, embodied in logging railroads and other resources, is a rich part of Oregon's cultural heritage. The industrial system that came into the Northwest forests in the nineteenth and early twentieth centuries created a new pattern of social organization throughout Oregon and other states. More than any other single factor, the lumber industry influenced Oregon's patterns of land tenure, settlement, and socio-economic development.

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## APPENDIX I

### OREGON'S LOGGING RAILROADS BY DECADE[1]

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| **1880s** | | | |
| Astoria & South Coast RR | Astoria | 16 | 1888-1892 |
| Cascade M. RR | Cascade Lks. | 2 | 1887,1891 |
| Dunham Logging C | Isthmus Sl. | | 1876 |
| Scranton Logging C | Isthmus Sl. | | 1883 |
| Southern Oregon Company | Empire | 8 | 1884-1919 |
| Waluskie RR | Astoria | 2 | 1886-1890 |
| **1890s** | | | |
| Aasen Bros | Coquille | 7 | 1898-1926 |
| Astoria & Columbia River RR | Astoria | 100 | 1896-1907 |
| Astoria & Portland RR | Astoria | 16 | 1892-1893 |
| Blue Ridge RR | Daniels Ck. | 10 | 1898-1916 |
| Bridal Veil LC | Palmer | 16 | 1898-1941 |
| Brix LC | Astoria | 8 | 1899,1913 |
| Henry Colvin | Marshland | | 1899,1904 |
| Coos Bay, Roseburg & Eastern | Marshfield | 31 | 1891-1915 |
| Crown Columbia Paper | Astoria | | 1890-1914 |
| Dallas & Ellendale RR | Dallas | 5 | 1891 |
| Dollar LC | Bandon | 10 | 1899-1916 |
| Hammond LC | Astoria | 18 | 1895-1927 |
| Hillsboro Logging C | Buxton | | 1899 |
| Lampa Creek RR | Bandon | 5 | 1899-1916 |
| C. C. Masten | Svensen | 8 | 1898-1906 |
| Pokegama Sugar Pine LC | Pokegama | | 1897-1902 |
| Rogue River Valley RR | Medford | | 1891-1916 |
| Seashore RR | Astoria | 17 | 1893-1896 |
| Southern Oregon Company | Empire | | 1890s |
| Stoddard LC | Baker | 65 | 1898-1943 |
| Sumpter Valley RR | Baker | 89 | 1891-1956 |
| Syverson Brothers | Beaver | | 1891- |
| Willamette Valley LC | Dallas | 35 | 1896-1948 |
| John Yeon | Ranier | | 1890s |

[1]This list is based on Kramer Adams, Logging Railroads of the West (Seattle: Superior, 1961) p.145ff. Adams' data has been updated and adjusted for more recent information.

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Troland Logging C | Glenwood | 3 | 1942-1946 |
| Western Logging C | Valsetz | 3 | 1944-present |
| Weyerhaeuser Company | Springfield | 31 | 1947-present |
| E. B. Whipple | Drain | 6 | 1944-1947 |

1950s

| | | | |
|---|---|---|---|
| Ball LC | Glide | 2 | 1950-1951 |
| Delbert Burnham | Rainier | 1 | 1952-1956 |
| Georgia-Pacific Corporation | Coos Bay | 70 | 1956-present |
| Lamford LC | Mt. Vernon | 41 | 1951-1953 |
| Longview,Portland & North.Ry | Grand Ronde | 9 | 1955-present |
| Longview,Portland & North.Ry | Reedsport | 3 | 1952-present |
| Parker & Sons | Kernville | 2 | 1951 |
| Rosenberg Logging C | Tillamook | 25 | 1950-1953 |
| Stouder Logging C | Alsea | 5 | 1951-1956 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| 1900s | | | |
| Ackley Brothers LC | Keno | | 1905-1917 |
| Algoma LC | Klamath Falls | 30 | 1903-1943 |
| Beaver Hill Timber C | Marshfield | 3 | 1909- |
| Beaver Logging C | Quincy | 5 | 1909-1910 |
| Benson Logging | Clatskanie | 16 | 1903-1936 |
| Blue Mountain RR | Meacham | 6 | 1907,1912 |
| Blue Ridge RR | North Bend | 10 | 1900-1912 |
| Booth-Kelly LC | Springfield | 35 | 1906-1945 |
| Bowman-Hicks LC | La Grande | 65 | 1905-1936 |
| Bremner LC | Astoria | 4 | 1903-1915 |
| Brown LC | Cottage Grove | | 1906- |
| Campbell & Swigert | West Fork | 3 | 1907-1913 |
| Case LC | Ranier | 2 | 1908 |
| Central RR of Oregon | Union | 19 | 1906-1927 |
| Clark & Wilson LC | Linnton | 98 | 1905-1943 |
| Clatskanie & Nehalem RR | | 8 | 1904-1908 |
| John Clinton | Riverton | | 1900- |
| Columbia & Nehalem Logging C | | | 1906 |
| Columbia & Nehalem V. RR | Columbia City | 17 | 1902-1906 |
| Columbia City & Nehalem RR | Tillamook Co. | | 1903-1904 |
| Coos Bay Logging C | Coos Bay | | 1900-1907 |
| Coos Bay LC | Coos Bay | 75 | 1908-1956 |
| Coos Bay Timber C | Marshfield | | 1909 |
| Corvallis & Alsea River Ry | Corvallis | 7 | 1908-1911 |
| Cottage Grove & Southern RR | Cottage Grove | 38 | 1902-1904 |
| Davenport Brothers | Haynes | | 1900-1905 |
| Dean LC | Marshfield | 2 | 1905,1907 |
| East Side M & L Company | Sellwood | 2 | 1903-1910 |
| England & Cyphers | Gaylord | | 1906 |
| Joe Erickson & Son | Quincy | 2 | 1906-1909 |
| Everding & Farrell | Portland | | 1905- |
| Fir & Spruce LC | Toledo | 3 | 1909-1912 |
| Furbush LC | Glendale | 3 | 1908 |
| Gardiner Mill Company | Gardiner | 5 | 1906-1917 |
| Glendale LC | Fernvale | 8 | 1908-1932 |
| Goble Milling Company | Goble | 1 | 1908,1910 |
| Goble, Nehalem & Pacific RR | Goble | 18 | 1901-1923 |
| Great Western LC | Black Rock | 3 | 1909-1913 |
| Hoevet Logging C | Adair | | 1906 |
| Jennings & McRae Logging C | Coos Bay | 3 | 1906-1914 |
| Johnson LC | Coquille | 2 | 1902-1914 |
| W.W. Johnson LC | Westport | 3 | 1908,1910 |
| D.L. Kelly LC | Warrenton | 4 | 1904-1910 |
| Larsen Timber Company | Marshfield | 2 | 1908-1909 |
| Lawson Creek Logging C | Cushman | | 1906 |
| E.F. Libke | Astoria | 3 | 1908-1910 |
| Masten Logging & RR Company | St Helens | 8 | 1907-1910 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| McDougal-Nickey Logging C | Westport | 2 | 1907-1909 |
| Meacham LC | Meacham | 4 | 1906-1910 |
| Mill City Manufacturing C | Mill City | 65 | 1905-1947 |
| Moore M & T Company | Bandon | 11 | 1905-1934 |
| Mount Hood RR Company | Hood River | 22 | 1906-present |
| Northwest Logging & LC | Barton | 3 | 1906-1910 |
| O.K. Cable RR | Marshland | 2 | 1907,1910 |
| M.T. O'Connell | Rainier | 1 | 1906-1907 |
| Oregon Eastern RR Company | Oakridge | 34 | 1909-1912 |
| Oregon LC | Dee | 30 | 1900-1943 |
| Oregon Timber & LC | Clifton | 15 | 1903-1928 |
| Oregon & Southeastern RR C | Cottage Grove | | 1904-1914 |
| Oregon & Wisconsin LC | Toledo | 2 | 1908 |
| Oregon-Idaho LC | Glendale | 5 | 1908-1913 |
| Pacific Eastern RR | Medford | 31 | 1909-1919 |
| Pacific Ry & Navigation C | Hillsboro | 77 | 1906-1915 |
| Geo Palmer LC | La Grande | 38 | 1907-1922 |
| Palmer & Libby Logging C | Albert | 2 | 1907,1910 |
| Peninsula LC | St. Johns | 27 | 1900-1915 |
| Portland LC | Rainier | 13 | 1901-1923 |
| Portland & Southwestern RR | Linnton | 20 | 1905-1943 |
| Quincy Logging C | Clatskanie | 1 | 1908 |
| Read & Pelton | Goble | | 1905-1907 |
| Geo Rockey | Rainier | 2 | 1905-1910 |
| R.H. Rosa | Bandon | 3 | 1904-1910 |
| W.J. Ross | Blind Slough | 1 | 1900- |
| Rue & Clyde | Goble | | 1905-1909 |
| St. Helens Timber Company | St. Helens | 12 | 1909-1915 |
| Salem, Falls City & Wn RR | Salem | 28 | 1906-1915 |
| Salem & Pacific Coast RR | Dallas | 14 | 1903-1906 |
| Seaside L & Manufacturing C | Seaside | 3 | 1907-1911 |
| Seaside Spruce LC | Seaside | 2 | 1905-1907 |
| Seeley & Anderson Logging C | Coquille | 4 | 1907-1914 |
| Silverton LC | Silverton | 12 | 1906-1931 |
| Skelley LC | Drain | 2 | 1905-1909 |
| C. A. Smith LC | Coos Bay | 28 | 1908-1915 |
| Smith-Powers Logging C | Coos Bay | 90 | 1908-1926 |
| Sorenson Logging C | Svensen | 6 | 1901-1916 |
| Chas K. Spaulding Logging C | Newberg | 20 | 1906-1938 |
| Spaulding-Jennings Logging C | Westport | | 1901- |
| Star Logging & LC | Rainier | | 1900 |
| Storey-Keeler LC | Cascade Lakes | | 1901-1902 |
| Stout LC | North Bend | 25 | 1900-1926 |
| Sturdevant & Crane | Coquille | 3 | 1907-1923 |
| Tichenor LC | Clatskanie | | 1906- |
| West Oregon LC | Clatskanie | 5 | 1909-1913 |
| C.H. Wheeler | Cochran | 30 | 1909-1935 |
| Willamette Pulp & Paper | Seaside | 4 | 1903-1913 |
| Wilson-Case LC | Rainier | 1 | 1905-1908 |
| Wisconsin Logging & Timber C | Coos Bay | 15 | 1906-1912 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| 1910s | | | |
| Albany LC | Albany | 2 | 1916- |
| Anderson & Middleton LC | Cottage Grove | 32 | 1911-1928 |
| Astoria Southern RR Company | Astoria | 27 | 1910-1943 |
| Bear Creek Logging C | Kerry | 6 | 1916-1922 |
| Berst & Cox Logging Co | Timber | 1 | 1916-1918 |
| Bohemia LC | Culp Ck | 4 | 1910-1947 |
| Bramhall LC | Haley Sta | 3 | 1910- |
| Brooks-Scanlon LC | Bend | 100 | 1915-1956 |
| Butte Falls LC | Butte Falls | | 1913-1918 |
| California & Oregon Coast RR | Grants Pass | 15 | 1913-1954 |
| California & Oregon LC | Brookings | 36 | 1914-1925 |
| Cameron-Hogg LC | Bull Run | 4 | 1918-1927 |
| Carlton & Coast RR | Carlton | 30 | 1911-1939 |
| Carlton & Washington RR | Carlton | 16 | 1911-1913 |
| Geo H. Chaney Logging C | Coquille | 7 | 1910-1933 |
| Chester-Fisher Logging C | Olney | 5 | 1915-1932 |
| Chiloquin LC | Chiloquin | 18 | 1919-1947 |
| Clark's Sawmill | Oregon City | | 1910 |
| Coast Range LC | Mabel | 15 | 1910-1926 |
| Coats Driving & Boom Company | Tillamook | 15 | 1915-1943 |
| James Cole | Summit | 5 | 1918-1921 |
| Colwell & Fowler Logging C | Astoria | 2 | 1910 |
| Coos Bay Logging C | North Bend | 17 | 1913-1942 |
| Corvallis L & M Co. | Corvallis | 4 | 1915-1920 |
| Crown Willamette Paper C | Seaside | 30 | 1914-1928 |
| Dallas L & Logging C | Dallas | 3 | 1912 |
| Delta Shingle C | Florence | 4 | 1918-1926 |
| Dollar LC | Prosper | | 1913-1915 |
| Drug & Blachly | Blachly | | 1910 |
| Dwyer LC | Boring | 7 | 1915-1923 |
| East Side Logging C | Timber | 2 | 1918-1923 |
| W. H. Eccles LC | Austin | 15 | 1911-1926 |
| Elliot & Ellwood Logging C | Olney | 3 | 1916-1919 |
| Elwood Logging C | Kerry | 2 | 1919-1928 |
| Elwood & Snow | Birkenfeld | 1 | 1916-1919 |
| Falls City L & Logging C | Falls City | | 1916-1919 |
| Fir & Pine LC | Glendale | 4 | 1919-1920 |
| Fir LC | Cottage Grove | | 1910- |
| Fir Tree LC | Scappoose | 12 | 1910-1911 |
| Fischer-Boutin LC | Glentina | 1 | 1915-1919 |
| Fischer-Leitzel Logging C | Olney | 3 | 1919-1923 |
| Fischer LC | Marcola | 12 | 1911-1939 |
| Fisher & Bally | Marcola | | 1916 |
| Fishhawk Logging C | Kerry | 2 | 1915-1919 |
| Flora Logging C | Carlton | 41 | 1910-1940 |
| Gales Creek & Wilson River RR | Glenwood | 16 | 1917-1943 |
| J. K. Gamble Logging C | Birkenfeld | 3 | 1916-1919 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Gardiner LC | Gardiner | 4 | 1917-1927 |
| Gold Hill L & RR Company | Gold Hill | 6 | 1910-1919 |
| Hammond-Tillamook LC | Astoria | 5 | 1913- |
| Haskell-Carpenter Company | Cherry Grove | 6 | 1915-1928 |
| Henry Hoeck & Company | Marshfield | | 1910,1915 |
| Hoover LC | Hoover | 2 | -1916 |
| Jacobson-Reid LC | Rainier | 1 | 1917-1919 |
| K. C. LC | Wheeler | | 1917 |
| K-P Timber Company | Kerry | 6 | 1915-1925 |
| K-P Timber Company | Clatskanie | 32 | 1915-1925 |
| Kiernan-Flora Logging C | Kerry | 7 | 1919-1923 |
| Kings Valley LC | Airlie | 1 | 1917-1919 |
| Robert C. Kinney Logging C | Astoria | 3 | 1919-1926 |
| Klamath Logging & Timber C | Odessa | 4 | 1917-1919 |
| Koster Products Company | Astoria | 11 | 1919-1939 |
| Koster Products Company | Olney | 6 | 1918-1919 |
| LaDee Logging C | Kerry | 5 | 1918-1934 |
| Lamb Timber Company | Deer Island | | 1916- |
| Lamm LC | Modoc Point | 50 | 1915-1944 |
| Larkin-Green Logging C | Blind Slough | 15 | 1910-1926 |
| Leona Mills LC | Leona | 8 | 1913-1924 |
| Lewis & Clark Narrow Gauge RR | Clatsop County | 3 | 1917-1918 |
| Lewis & Clark River RR C | Clatsop | 18 | 1918-1922 |
| Lincoln-Toledo LC | Toledo | 25 | 1918- |
| Longview, Portl. & Nrthrn RR | Willamina | | 1919-1920 |
| Masters-Ewold LC | La Grande | 13 | 1910-1914 |
| McCall Logging C | Timber | 3 | 1918-1923 |
| Chas R McCormick LC | St. Helens | 8 | 1910-1917 |
| McGregor & Malone Inc | Youngs River | 7 | 1915-1918 |
| J. B. Miller | Toledo | | 1915-1916 |
| Milton Creek Logging C | Yankton | 17 | 1917-1926 |
| Modoc L. Company | Chiloquin | 23 | 1918-1926 |
| Mohawk LC | Mohawk | 4 | 1918-1924 |
| Monroe Timber Company | Pt. Terrace | | 1917-1918 |
| Montgomery Brothers | Wendling | | 1916 |
| East Oregon LC | Enterprise | 42 | 1915-1928 |
| Multnomah Lumber & Box | Reliance | 2 | 1919-1920 |
| Murphy Timber Company | Kerry | 5 | 1916-1923 |
| Murphy Timber Company | Deer Island | 30 | 1916-1928 |
| Nibley-Mimnaugh LC | Wallowa | 18 | 1910-1923 |
| Nicolle Brothers | Odessa | 2 | 1916 |
| Nine LC | Klamath Falls | 8 | 1917-1926 |
| W. C. Noon LC | Philomath | 5 | 1910,1912 |
| North Bend LC | North Bend | 1 | 1910-1915 |
| North Pacific Fir & LC | Banks | 2 | 1913 |
| Noyes-Holland Logging C | Kerry | 8 | 1917-1925 |
| Olson Brothers | Coquille | 3 | 1910 |
| Olson Brothers Logging C | Seaside | 3 | 1915-1919 |
| Oregon, California & Eastern | Klamath Falls | 82 | 1919-present |
| Oregon LC | Cascade | 2 | 1918- |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Oregon Pacific & Eastern RR | Cottage Grove | 28 | 1914-present |
| Oregon-Jamestown LC | Glenbrook | 7 | 1919-1924 |
| Owens Brothers LC | Cushman | 4 | 1917-1930 |
| Palmer Logging C | Astoria | 7 | 1912-1919 |
| Palmer-Rupp Logging C | Mist | 1 | 1917-1918 |
| Pelican Bay LC | Klamath Falls | 44 | 1911-1934 |
| F. R. Pendleton | Toledo | | 1916- |
| Pine Tree LC | Bend | 1 | 1917-1919 |
| Pitchless LC | St. Johns | | 1910 |
| Pokegama RR & LC | Keno | | 1910- |
| Port Orford Cedar Co | Port Orford | | 1910-1913 |
| L. B. Porter | Svensen | 6 | 1916- |
| Portland & Oregon City RR | Viola | 24 | 1915,1920 |
| Presley & Hackett | Gold Hill | 1 | 1918-1919 |
| Prosper M Company | Prosper | 3 | 1913-1924 |
| Randolph LC | Bandon | 7 | 1911-1913 |
| Rhine Allen LC | Center | | 1912- |
| Roach Timber Company | Sutherlin | 12 | 1916-1920 |
| Rogers LC | Prineville | | 1919- |
| Rogue River Valley RR | Medford | 6 | 1919-1930 |
| Santiam Ry Company | Silverton | | 1916-1920 |
| Seaside Door & LC | Seaside | | 1912-1913 |
| Sheridan LC | Sheridan | | 1912-1914 |
| Sheridan Timber Company | Sheridan | 1 | 1914-1918 |
| Shevlin-Hixon | Bend | 128 | 1915-1950 |
| Silver Falls Timber Company | Silverton | 68 | 1912-1938 |
| Sitka Spruce Company | Coquille | | 1918-1920 |
| H. E. Spenser | Elgin | | 1912 |
| Standard Box & LC | Scofield | 8 | 1913-1928 |
| E. C. Steiger | Gold Hill | 2 | 1912 |
| Stoddard LC | Baker | 60 | 1914-1943 |
| Stoddard LC | Baker | 32 | 1912-1929 |
| Stout LC | North Bend | 7 | 1916-1923 |
| Summit LC | Clatskanie | 1 | 1910,1912 |
| Summit LC | Cochran | | 1915 |
| Tide Creek LC | Deer Island | 2 | 1918-1919 |
| Toledo LC | Toledo | | 1915 |
| Toledo & Siletz RR Company | Toledo | 10 | 1911-1919 |
| E. Turney & Sons | Seaside | 2 | 1917-1920 |
| Valsetz LC | Valsetz | 24 | 1919-1951 |
| Warren & Scott | Seaside | | 1918 |
| Warren Spruce Company | Toledo | 13 | 1918-1920 |
| Wauna LC | Wauna | 3 | 1911-1943 |
| Wauna LC | Knappa | 30 | 1912-1923 |
| Wells-Laber LC | Rainier | 2 | 1912 |
| Wentworth Logging C | Beaver Hill | | 1918-1919 |
| West Shore LC | Rainier | 1 | 1910,1912 |
| Western Cedar Company | Rainier | 1 | 1910 |
| Western L & Export Company | Cottage Grove | 8 | 1919-1923 |
| Western L & Export Company | Cottage Grove | 6 | 1915-1919 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Westport LC | Westport | 5 | 1910,1912 |
| Westport LC | Kerry | 4 | 1917-1920 |
| C. H. Wheeler | Westimber | 6 | 1913-1926 |
| Wheeler LC | Wheeler | | 1911-1919 |
| Willamette Pacific RR C | Florence | | 1911 |
| Willamette Valley | Dallas | 45 | 1915-1945 |
| Willamette Valley | Dallas | 7 | 1913-1915 |
| Yaquina Northern RR | Yaquina | 16 | 1918-1929 |

1920s

| | | | |
|---|---|---|---|
| Aagard LC | Glenwood | 2 | 1920-1923 |
| J. L. Aeson | Coquille | 3 | 1923-1926 |
| Allen & Murphy LC | Grant County | | 1920-1921 |
| Astoria Timber & LC | Holbrook | | |
| B-W Timber Company | Jewell | 15 | 1927-1929 |
| R. G. Baldereee Loggging C | Salem | 5 | 1920 |
| Balderee & Ritner Logging C | Yaquina | 3 | 1929-1930 |
| Bay Park LC | North Bend | | 1920-1946 |
| Roy A. Beebe | Leona | 5 | 1927-1933 |
| A. W. Bell LC | Wemme | 2 | 1929-1943 |
| Big Lakes Box Company | K. Falls | 22 | 1926-1944 |
| Blue Lake Logging C | Cochran | 18 | 1927-1938 |
| Bonlokke & Nelson | Yamhill | 5 | 1927-1933 |
| Braymill White Pine Company | Braymill | 8 | 1927-1933 |
| Bridal Veil LC | Palmer | 4 | 1924- |
| Brix Logging C | Holbrook | 16 | 1926-1940 |
| Brownlee-Olds LC | Medford | 45 | 1922-1924 |
| Butte Creek LC Scotts | Mills | 2 | 1928-1933 |
| Cameron LC | Kings Valley | 8 | 1924-1928 |
| Christensen Logging C | Kerry | 4 | 1924-1926 |
| Clackamas Eastern RR Company | Clackamas | 19 | 1929-1940 |
| Clackamas Eastern RR Company | Clackamas | 14 | -1929 |
| Clackamas Fir LC | Beaver Creek | 2 | 1929-1939 |
| Cochran & Southern RR C | Cochran | 2 | 1924-1923 |
| Condon, Kinzua & Southern RR | Kinzua | 27 | 1927-present |
| Connacher Logging C | Vernonia | 14 | 1924-1941 |
| Coos Cedar Company | Coquille | 2 | 1923-1935 |
| Crooked Creek LC | Lakeview | 1 | 1926-1927 |
| Crown Timber Company | Mapleton | 2 | 1926- |
| Crown Zellerback Corporation | Seaside | 30 | 1928-1937 |
| Culver LC | Lakeside | 7 | 1929-1930 |
| Dixon & Howitt | Cherryville | 1 | 1925-1933 |
| East Side Logging C | Keasey | 22 | 1923-1933 |
| Eastern & Western LC | Molalla | 30 | 1927-1935 |
| Elrod & Wills | Reedsport | | 1929- |
| Elwood LC | Buxton | 5 | 1928-1941 |
| Ewauna Box Company | K. Falls | 40 | 1924-1948 |
| Fall Creek M Company | Scappoose | 3 | 1929-1931 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Forcia & Larsen | Noti | 2 | 1923-1934 |
| Forest LC | Pine Ridge | 75 | 1926-1940 |
| Foster Mills Inc | Willamina | 9 | 1925-1943 |
| Fountain-Campbell LC | Sprague River | | 1929- |
| Gales Creek Logging C | Glenwood | 5 | 1923-1933 |
| Gardiner LC | La Grande | | 1926- |
| Pacific Spruce | Toledo | 61 | 1921-1959 |
| Giustina Brothers LC | Eugene | 8 | 1929-1941 |
| Grande Ronde LC | Willamina | 1 | 1927-1928 |
| Green Mountain Logging C | Kerry | 2 | 1922-1927 |
| J. P. Guerrier LC | Buckner | 1 | 1925-1926 |
| Hammond-Tillamook LC | Garibaldi | 20 | 1927-1936 |
| Edward Hines LC | Hines | 74 | 1928-1981 |
| Horton L & Timber Company | Horton | 17 | 1927-1931 |
| Max H. Houser | Warrenton | 5 | 1920- |
| Hutchinson Logging C | Newport | 18 | 1928-1936 |
| Wilbur Hyland | Noti | | 1916 |
| Inman-Poulson LC | Keasey | 8 | 1923-1930 |
| International Paper Company | Vernonia | 35 | 1922-1957 |
| Al V. Johnson LC | Grand Ronde | 1 | 1928-1929 |
| Johnson LC | Reedsport | 3 | 1921-1928 |
| Keith Sawmill | Harrisburg | 1 | 1928-1929 |
| Kinzua Pine Mills Company | Kinzua | 14 | 1927-1951 |
| Kirby LC | Willamina | 2 | 1928 |
| Knappton Logging C | Holbrook | 3 | 1920- |
| Kramer LC | Grand Ronde | 1 | 1929-1931 |
| LaDee Logging C | Estacada | 26 | 1923-1932 |
| LaDee Logging C | Kerry | 5 | 1922-1926 |
| LaDee Logging C | Astoria | 30 | 1920-1929 |
| E. G. Larkins | Beaver Creek | 3 | 1928-1929 |
| Lawson Cypress LC | Coos Bay | 5 | 1926-1930 |
| Leland LC | Grants Pass | 1 | 1921-1924 |
| Lewis-Malone Logging C | Astoria | 1 | 1920-1926 |
| Lewis-Peters LC | Dexter | 2 | 1929-1933 |
| Lincoln County Logging C | Taft | 5 | 1928-1941 |
| Longview,Portlnd & North. RR | Grand Ronde | 10 | 1920-1955 |
| Lorane Timber & Milling C | Gillespie C. | | 1927- |
| Lorane Valley LC | Cottage Grove | 49 | 1924-1951 |
| Lorenz LC | Sprague River | 12 | 1929-1931 |
| Lulay Brothers LC | Scio | 12 | 1929-1935 |
| Lystul-Lawson Logging C | Glendale | 9 | 1922-1933 |
| M.L. & B Company | Newport | | 1924 |
| Markham & Callow Inc. | Nehalem | 15 | 1929-1938 |
| McKenna LC | North Bend | 3 | 1929-1933 |
| Medford Logging RR | Medford | 31 | 1924-1930 |
| Menefee LC | Wendling | | 1924-1926 |
| Midway LC | Grand Ronde | 2 | 1929-1940 |
| C. M. Miller LC | Marcola | 2 | 1925-1931 |
| W. J. Miller | Bellfountain | 1 | 1928-1933 |
| Fred Minard & Company | Lakeside | 1 | 1920-1925 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Mountain Fir & Timber C | Lowell | 2 | 1928-1931 |
| Mowry Logging C | Glenwood | 4 | 1928-1929 |
| Multnomah L & B Company | Newport | 12 | 1923-1928 |
| Multnomah L & B Company | Douty | 3 | 1920-1926 |
| New Grand Ronde LC | Willamina | 3 | 1926-1943 |
| Oregon Export LC | Marshfield | 2 | 1921-1923 |
| Oregon White Cedar Company | Charleston | 8 | 1929-1931 |
| Pacific Pine LC | Baker | 7 | 1929-1931 |
| Penn LC | McGlynn | 4 | 1925-1938 |
| Peterson & LaDuke Brothers | Goldson | | 1928,1929 |
| Polk Operating Company | Grand Ronde | 21 | 1924-1943 |
| Port Orford Cedar Products C | Port Orford | 12 | 1929-1943 |
| Sandy LC | Sandy | 1 | 1923-1931 |
| Schroeder & Aason | Coquille | 2 | 1920-1923 |
| Shanghai LC | Devitt | 4 | 1928-1931 |
| Shannon & Walters | Elmira | | 1921 |
| Shaw-Bertram LC | Klamath Falls | 29 | 1920-1936 |
| E. J. Sherman L & Logging C | Banks | 19 | 1928-1936 |
| Snellstrom Brothers LC | Vaughn | 4 | 1927-1945 |
| Southeast Portland LC | Boring | 45 | 1923-1938 |
| Spaulding-Miami LC | Grand Ronde | 21 | 1921-1924 |
| Stevens-Farris LC | Walton | 2 | 1920-1925 |
| Sunset Logging C | Timber | 18 | 1923-1949 |
| Tideport Logging C | Jewell | 22 | 1928-1933 |
| Tidewater Timber Company | Olney | 35 | 1926-1943 |
| Tillamook Spruce Company | Tillamook | 1 | 1924-1926 |
| Umpqua Mills & Timber C | Reedsport | 6 | 1924-1934 |
| United Railways | Linnton | 50 | 1921-1947 |
| Veness & Shives | Timber | 3 | 1920-1923 |
| Wallowa Pine LC | Wallowa | | 1922- |
| Weise Brothers | Cottage Grove | 2 | 1923-1926 |
| Western LC | Westfir | 16 | 1923-1936 |
| Western White Cedar Company | Marshfield | 4 | 1923-1929 |
| Westport LC | Westport | 7 | 1920-1926 |
| Weyerhaeuser Company | Klamath Falls | 120 | 1928-1968 |
| White Pine LC | Klamath Falls | 2 | 1920-1931 |
| Frances Wiest & Company | Cochran | 3 | 1920-1923 |
| Willamette River LC | Oregon City | 2 | 1920-1922 |
| Williamson River Logging C | Chiloquin | 38 | 1923-1925 |
| Winchester Bay LC | Reedsport | 8 | 1920-1936 |
| Winchester Bay LC | Reedsport | 3 | 1922-1929 |
| W. A. Woodward LC | Cottage Grove | 14 | 1925-1942 |

## 1930s

| | | | |
|---|---|---|---|
| Addison LC | Lorane | 3 | 1931-1941 |
| C. C. Arney | Scappoose | 3 | 1934-1936 |
| Best L & Manufacturing C | Philomath | 1 | 1931 |
| Bradley-Woodard LC | Bradwood | 11 | 1931-1940 |

| NAME | LOCATION | MILEAGE | DATES |
|---|---|---|---|
| Briggs LC | Umpqua | 18 | 1936-1938 |
| Butler Logging C | Elsie | | 1937-1938 |
| E. S. Collins | Molalla | 3 | 1937-1938 |
| Crater Lake Box & LC | Sprague River | 29 | 1931-1942 |
| Robert Dollar Company | Glendale | 32 | 1931- |
| Robert Dollar Company | Holley | 3 | 1935-1942 |
| Dwyer Logging C | Cochran | 1 | 1930-1941 |
| A. E. Gault | Coos Bay | 1 | 1931 |
| Hadsall Creek Logging C | Mapleton | 3 | 1931-1933 |
| Hills Creek LC | Jasper | 1 | 1931-1942 |
| Edward Hines LC | Westfir | 20 | 1937-1956 |
| Interstate Logging C | Glenwood | | 1938-1940 |
| Kesterson L Corporation | Klamath Falls | 25 | 1930-1941 |
| Klamath Northern RR | Gilchrist | 11 | 1938-present |
| Laurel LC | Hillsboro | 1 | 1931 |
| Manary-Davis Logging C | Glenwood | 4 | 1931-1933 |
| Medford Corporation | Medford | 65 | 1930-1961 |
| Moser Brothers LC | Hoskins | 4 | 1934-1940 |
| Pacific Pine LC | Baker | 7 | 1931- |
| Pine Logging C | Klamath Falls | 1 | 1931-1933 |
| Red Fir LC | Harrisburg | 5 | 1931-1938 |
| Schelky Logging C | Molalla | 3 | 1931-1939 |
| Standard Logging C | Cochran | 22 | 1938-1944 |
| Stimson LC | Forest Grove | 18 | 1932-1952 |
| Stoddard LC | Pondosa | 35 | 1930-1943 |
| Trask-Willamette Company | Carlton | 15 | 1935-1941 |
| West Coast Logging C | Birkenfeld | 1 | 1938-1940 |
| Weyerhaeuser Sykan | Beatty | 126 | 1939-1992 |
| West Coast Logging C | Cochran | 2 | 1930-1933 |
| Willamina Logging C | Willamina | 2 | 1931 |
| Wolf Creek Logging C | Timber | 10 | 1930- |
| Wright-Blodgett Company | Jewell | 25 | 1935-1938 |
| Yunker & Wiecks | Jewell | 7 | 1936-1946 |

1940s

| | | | |
|---|---|---|---|
| Beck & Hess | Camas Valley | 18 | 1944-1947 |
| Brewold Pine Company | O'Brien | | 1947-1951 |
| Brooks-Scanlon Sisters | Bend | 70 | 1946-1960 |
| Hobson Brothers | Murphy | 7 | 1940-1945 |
| Ralph Johnson Sawmill | Vaughn | 8 | 1947 |
| Klamath Timber Company | Klamath Falls | | 1942 |
| Knappa Logging C | Knappa | 7 | 1942 |
| Mardock LC | Florence | 1 | 1947 |
| Moore LC Incorporated | Wallowa | 12 | 1940-1941 |
| A. N. Pittock | Aumsville | 3 | 1947 |
| Orrin R. Reese | Gresham | 3 | 1942 |
| Scott & Blinn Logging C | Gaston | 10 | 1944-1947 |
| Seitzinger LC | Idanha | 7 | 1942-1947 |