

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

Historic name U.S. Army Spruce Production Division Railroad #1

Other names/site number Clallam County Railroad; Port Angeles and Western Railroad

2. Location

street & number Vicinity of Port Angeles to Lake Pleasant ☐ not for publication

city or ☐ vicinity

town

State Washington code WA county Clallam code 009 zip code

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this ☒ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. I recommend that this property be considered significant ☐ nationally ☐ statewide ☐ locally. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title

Date

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. (☐ See continuation sheet for additional comments.)

Signature of certifying official/Title

Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby, certify that this property is:

Signature of the Keeper

Date of Action

☐ entered in the National Register.

☐ See continuation sheet

☐ determined eligible for the National Register.

☐ See continuation sheet

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other (explain:)

5. Classification**Ownership of Property**
(Check as many boxes as apply)

☒ private
☐ public-local
☐ public-State
☒ public-Federal
☐

Category of Property
(Check only one box)

☐ building(s)
☒ district
☐ site
☐ structure
☐ object

Number of Resources within Property
(Do not incl. previously listed resources in the count.)
Contributing Non-Contributing

	buildings
1 site	sites
15 grade segments	structures
	objects
16	Total

Name of related multiple property listing:
(Enter "N/A" if property is not part of a multiple property listing.)

n/a

Number of contributing resources previously listed in the National Register

none

6. Functions or Use**Historic Functions**

(Enter categories from instructions)

Railroad

Current Functions

(Enter categories from instructions)

Hiking/bicycle trail

7. Description**Architectural Classification**

(Enter categories from instructions)

Materials

(Enter categories from instructions)

foundation

walls

roof

other

Narrative Description

(Describe the historic and current condition of the property.)

SEE CONTINUATION SHEET

Statement of Significance**Applicable National Register Criteria**

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- ☒ **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ☐ **B** Property is associated with the lives of persons significant in our past.
- ☐ **C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ☐ **D** Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- ☐ **A** owned by a religious institution or used for religious purposes.
- ☐ **B** removed from its original location.
- ☐ **C** a birthplace or grave.
- ☐ **D** a cemetery.
- ☐ **E** a reconstructed building, object, or structure.
- ☐ **F** a commemorative property.
- ☐ **G** less than 50 years old or achieving significance within the past 50 years.

Areas of Significance

(Enter categories from instructions)

Military

Industry

Period of Significance

1918-1922

Significant Dates

1918-1919

Significant Person

(Complete if Criterion B is marked above)

Cultural Affiliation**Architect/Builder**

Seims, Carey-H.S. Kerbaugh

Narrative Statement of Significance

(Explain the significance of the property.) **SEE CONTINUATION SHEET**

9. Major Bibliographical References**Bibliography**

(Cite the books, articles, and other sources used in preparing this form.) **SEE CONTINUATION SHEET**

Previous documentation on file (NPS):

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ # _____
- ☐ recorded by Historic American Engineering
- ☐ Record# _____

Primary location of additional data:

- ☐ State Historic Preservation Office
- ☐ Other State agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other

Name of repository:

10. Geographical DataAcreage of Property 265.1**UTM References**(Place additional UTM References on a continuation sheet.) **SEE CONTINUATION SHEETS, SECTION 7, FOR UTM's**

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Verbal Boundary Description(Describe the boundaries of the property.) **SEE CONTINUATION SHEETS.****Boundary Justification**(Explain why the boundaries were selected.) **SEE CONTINUATION SHEETS.****11. Form Prepared By**

name/title Ward Tonsfeldt
organization Ward Tonsfeldt Consulting date August 5, 2005
street & number PO Box 1285 telephone 541-408-1564
city or town Bend state OR zip code 97701

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets**Maps**A **USGS map** (7.5 or 15 minute series) indicating the property's location.A **Sketch map** for historic districts and properties having large acreage or numerous resources.**Photographs**Representative **black and white photographs** of the property.**Additional items**

(Check with the SHPO or FPO for any additional items.)

Property Owner (Complete this item at the request of the SHPO or FPO.)

name various
street & number _____ telephone _____
city or town _____ state _____ zip code _____

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Description of the Resource

The Siems, Carey-H.S. Kerbaugh Company, as general contractor, built Spruce Production Division Railroad No. I during the summer of 1918 for the U.S. Army. The Spruce Production Division built and operated thirteen railroads and four saw mills in Oregon and Washington during 1918. Railroad No. I was their most ambitious project. The railroad was proposed by the Spruce Production Division (SPD) as a main-line railroad that would reach 36 miles west from Port Angeles to tap extensive stands of Sitka spruce timber in the interior of the Olympic Peninsula. The spruce was necessary for aircraft, which were in turn necessary for the war in Europe. Sitka spruce was found only in the coastal forests of Oregon, Washington, British Columbia, and Alaska.

The portion of Spruce Railroad No. I proposed for eligibility is the largest and most complex material vestige of Spruce Production Division remaining.

The SPD was to operate the railroad for the duration of World War I. The estimated 2 billion board feet of Sitka spruce would last eight years at an annual production level of 250,000,000 board feet. Logs would come from public and private forests. A 35-mile "loop" of logging railroad would bring cars loaded with logs to Lake Pleasant. There, some of the cars would be unloaded at a small SPD mill, and their logs would be cut into large timbers or "cants." Railroad No. I would then bring the cants and selected whole logs to the mill that the SPD was building at Port Angeles. Port Angeles is a deep-water harbor on the Straits of Juan de Fuca. There the finished aircraft-grade spruce lumber would be loaded onto ships for delivery to Allied aircraft manufacturers in Britain, France, and Italy. Some spruce would also go by rail to American aircraft plants in the Midwest.

The railroad was nearly complete by the fall of 1918, but the Armistice on November 11 ended construction that was in progress at the mill in Port Angeles and in a smaller mill at Lake Pleasant. Although Railroad No. I was not used for its intended purpose, it served as a common-carrier line after the war. The Lyon, Hill Company of Portland, Oregon, purchased the railroad from the government and put it to use as an Interstate Commerce Commission common-carrier line serving the interior of the Olympic Peninsula. It remained in use as the Port Angeles and Western Railroad until its abandonment in 1954.

SPD Railroad No. I is noteworthy because of its historic association with the Spruce Production Division and World War I, and because of its potential for industrial archaeology. The rugged terrain of the Olympic Peninsula had discouraged railroad construction before the war. Railroad No. I had to cross two passes through the mountains, skirt the steep northern shore of Lake Crescent, and cross the Sol Duc River twice. It was expensive to build and maintain, and was dependent on timber for all of its traffic.

The enormous volume of standing timber that the railroad tapped, however, was sufficient to justify its cost. B.B. Kelliher, Chief Engineer for Seims, Carey-H.S. Kerbaugh, designed the railroad to carry 400 loaded

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cars each day in trains of 40 cars (Sawyer 1918). Adverse grades—those that the loaded trains had to climb—were limited to 1.25%. Curvature was limited to 14 degrees/100'. Getting the railroad through the mountains while meeting these standards was difficult indeed. The railroad was further distinguished by tunnels, Howe truss bridges, cuts and fills exceeding 20', and a drainage system that could cope with the torrential streams running down to Lake Crescent. The result was a straighter and flatter railroad than anyone could have predicted. Trains could negotiate the 36 miles at good speeds with a minimum of derailments.

Elements of Spruce Production Division Railroad No. I

The engineering features listed in this section comprise the fabric of the railroad. Collectively, these features constitute a historic resource that represents a significant event in U.S. history. Although some integrity has been lost, enough remains to convey a sense of the railroad's scope and scale, and its place in 20th century American history.

Grades

The roadbed or grade is the foundation for the track and the most enduring part of the railroad. As civil engineer Walter Mason Camp noted in his classic 1904 engineering textbook *Notes on Track*, the civil engineer's first job is to provide adequate gradient, curvature, and drainage for the roadbed. Gradient on main-line railroads needed to be <2% according to Camp, and curvature needed to be <16 degrees/100'. Drainage provisions were to consist of ditches along the grade and culverts across it (Camp 1904). The best material for the grade was what Camp described as "stony fill." Roadbeds built of soil were too soft for main-line locomotives.

According to the SPD inventory, gradient on Railroad No. I reached 2% only at Muller Summit, on the divide between Lake Crescent and the Sol Duc Valley. This was a "favorable" grade that the empty westbound trains had to climb. The loaded eastbound trains climbed a 1.25% grade on the west side of the pass. Maximum curvature on the line was 14 degrees/100'. The grade itself was elevated above the surface of the ground to allow water to run off, and to maintain the level gradient. Grades of a main-line railroad like SPD Railroad No. I average 4' above ambient terrain, although the elevation is higher in rough terrain like the Lyre Canyon, and lower in the flat, well-drained Sol Duc Valley. Width of the grade averaged 12'.

The usual method of railroad construction removed material from high spots (cuts) and deposited it in low spots (fills). If there was not enough fill available from the cuts, the builders excavated material from sites adjacent to the grade. These were known as "borrow pits," and the excavations were called "borrow pits." Taken together, the cuts, fills, and borrows are known as "earthwork."

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When the grade was built on a side-hill, the lower side required support of timber and stone retaining walls or revetments. Walls with vertical timbers and exterior stone facing support the grade on the north side of Lake Crescent on segments 8 and 9. These are a prominent feature of the railroad, especially when viewed from the Lake. Some of these are deteriorating and should be stabilized.

2. Culverts

Culverts provide drainage across the grade. On most railroads, ditches on the uphill side of the grade drained into pipes or wooden boxes that ran under the grade so that the water could find its way down hill. On Railroad No. I, the combination of torrential Olympic Peninsula rains and the mountains on the north side of Lake Crescent produced a volume of run-off that could easily wash out the grade. The engineers called for huge wooden culverts as large as 5' x 5' to accommodate the water. In the Sol Duc Valley, however, flat terrain and well-drained glacial til meant that more modest 16" steel culverts were adequate.

Junctions and Crossings

Railroads intersect at junctions and crossings. A junction divides a railroad into two. Usually these occur where a branch or subsidiary line comes off a main line. Disque Junction, west of Port Angeles, was the point of origin for Railroad No. I where it left the Chicago, Milwaukee, and St. Paul main line. Junction points are important day-use sites, since railroad crews left the trains to operate switches and to wait for other trains. Junctions on SPD Railroad No. I (as it was built) include the Calawa spur junction, and Bockman's Spur junction. There was also a spur to a gravel pit near milepost 13. Other spurs were added later.

A crossing occurs when one railroad crosses another. This is relatively rare in main-line construction, and is often designed as an elevated crossing with one railroad going over the other. As more logging railroads were built in the Sol Duc Valley during the 1920s and 1930s, two of them crossed Railroad No. I. Neither of these crossings remains, but evidence on the ground suggests that they were level crossings.

4. Trestles and Bridges

Timber trestles are signature features that the public associates with logging railroads. Bridges and trestles spanned water and other obstacles including canyons, highways, and low-lying ground. Railroad No. I had four major trestles and bridges, none of which remains.

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SPD Railroad No. I Major Trestles and Bridges

Trestle/Bridge	Mile Post	Span	Construction	Status
Lyre River	5	171'	A-bent trestle	Burned or removed
Olympic Highway	16	396'	A-bent trestle	Removed
Sol Duc Crossing	19	150' bridge, 234' total	Timber Howe truss A-bent trestle	Removed
Sol Duc Crossing	33	150' bridge, 1065' total	Timber Howe truss A-bent trestle	Removed

In addition, there were three smaller trestles across watercourses on the route. "Trestle" usually refers to elevated tracks supported by an evenly-spaced series of bents or upright members, while "bridges" are spans supported only at the ends. In practice, the terms are not used consistently, and railroad engineers combined bridges like the Howe truss spans across the Sol Duc with approach trestles. The trestles and bridges on SPD Railroad No. I are lost, but artifacts associated with the structures remain on the site of the Lyre crossing and the last Sol Duc crossing and add to our understanding of the technology.

5. Tunnels

Logging railroads generally did not use tunnels because they were expensive to build and maintain. The two tunnels on SPD Railroad No. I would have been almost impossible to avoid, however. The railroad's location left the engineers few options, and the Army budget was adequate to the job. The timbering inside the tunnels has collapsed, but the tunnels themselves remain open.

6. Stations

Stations on SPD Railroad No. I were stopping points for freight or railroad service. They did not have depots. They marked geographical points on the line, and they were useful in scheduling trains. The following stations appear on the plans for Railroad No. I:

Disque	MP	0
Crescent	MP	5.5
Ovington	MP	11
Sol Duc	MP	17
Flight	MP	21.5
Aero	MP	26.5
Bockman	MP	31
Lake Pleasant	MP	35.5

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During the Port Angeles and Western operations, Sol Duc station was moved to MP 18, and Manganese Station was designated to serve the manganese mine near MP 15.5.

7. Sidings

Sidings are tracks laid parallel to the main line. They are used to hold idle cars and other rolling stock while they are being loaded or waiting to be made up into a train. Sidings are also essential for trains to pass one another. According to SPD Captain Mott Sawyer (1918) the sidings were located at 5-mile intervals to accommodate the eight 40-car trains that traveled the railroad each day. The following sidings were part of the original design:

SPD Railroad No. I Sidings

Siding	Station	MP	Length
Disque	Disque	0-1	2 sidings, 3351', 3656'
Crescent	Crescent	5.5	3000'
Ovington	Ovington	11	3332'
Sol Duc	Sol Duc	17	3000'
Lake Pleasant	Lake Pleasant	35.5	2500'

Sidings were important day-use work sites for crews. During the construction period, Siems, Carey-H.S. Kerbaugh workers lived in rail cars which were parked on sidings. The sidings required a wider roadbed, so evidence of them remains in the form of 16-20' roadbeds.

8. Wyes

Wyes are triangular configurations of track that permitted a locomotive to reverse direction. The locomotive advanced over the first leg of the wye, then backed over the second leg, and then advanced over the third leg pointing the opposite direction. There were two of these necessary facilities on Railroad No. I. One was at the second Sol Duc station (MP 18) and the other was at the Bockman's Spur junction. The wye at Sol Duc required earthwork which remains in place.

9. Water Tanks

Locomotives required water, which was stored in elevated tanks so that it could feed into the tenders by gravity. Evidence remains of a water tank at Sol Duc. There were other water tanks on the line as well, though they were not confirmed in the survey. Captain Mott Sawyer notes that water tanks were located at 12-mile intervals. Evidence on the ground does not confirm this.

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10. Communication Lines

Most railroads, including Railroad No. I, had telephone or telegraph wires along the track to enable the railroad staff to communicate from station to station. Some of these lines also provided communication among towns along the line. Railroad No. I had a telephone system using galvanized iron wire on conventional poles and cross arms. The railroad required 87 miles of wire and 1,170 poles, according to the SPC sale inventory. Fallen poles and wires from the original communication system can be found on several segments.

Survey Methodology

The methodology of this survey began with the assumption that the Spruce Production Division Railroad No. I is a series of sites and features tied together by the railroad grade. Dr. James Rock, who carried out early archaeological investigations of logging railroads in northern California, is generally credited with this way of thinking about these cultural resources. "When one examines railroad technology it is useful to consider it as a dynamic system made up of a series of subsystems" (Rock 1980).

In Rock's analysis, major elements of the system include the railroad grades, the related features, and the landscape. This approach views each of these elements in the context of the larger "whole system." In other words, we interpret a feature like a historic bridge, for example, within the context of the whole railroad. Without an analysis of the whole system, it is impossible to interpret an individual element with any degree of certainty.

[When] only a portion of a ...[railroad] 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 system, the lack of a comparative base makes evaluation difficult (Rock 1980).

The Department of the Interior applies this "whole systems" thinking to railroads, canals, historic roads, and other linear resources. To determine whether any part of one of these resources is significant, the investigator must first survey the system as a whole. In practical terms, this translates into an end-to-end survey of the whole resource before judgments can be made about specific parts.

The project crew surveyed Spruce Production Division (SPD) Railroad No. I during November of 2004. The pedestrian survey proceeded from the beginning (or proximal end) of the railroad at Disque Station to the distal end at a point near Lake Pleasant. The survey team also attempted to record the SPD mill site in Port Angeles, the SPD hotel building in Port Angeles, and the SPD mill site at Lake Pleasant. Characteristics of the latter two could not be determined with adequate certainty since the structures have been razed.

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The railroad was designed as a 36-mile structure. Our survey recorded 40 miles, which reflects the uncertainty about the actual ending point. It probably ended in segment 29, at the location of the community of Tyee Prairie, near the company town of Siemscarey. Integrity on this segment is very poor, however, and the railroad's location here is conjectural. After the U.S. government sold the railroad, subsequent owners extended it to link with other logging railroads on the Olympic Peninsula and to serve the community of Forks, further to the west. For survey purposes, we covered as much of the railroad as met our evaluation system and as appeared on the SPD construction map. The end of the survey, at the point where the grade crosses Highway 101 in the SE ¼ of section 4, T. 30 N, R. 13 W., appears on the construction map as the furthest extension of the original railroad plan. There is grade to this point, although it is farther west than the historic end of the SPD railroad as recorded in the original plans.

The survey crew recorded the railroad with 35mm black and white film. Ending and beginning points of segments are located by landmarks (where possible) and by UTM's. Because of the difficulty of obtaining good positional data by field GPS systems, we verified and supplemented field data from mapping software. Photo points are not recorded by UTM's.

Determining Integrity

When a railroad is "abandoned," or ceases to be used, the owners remove the steel elements, including the rails, switches, spikes, fish plates, and other pieces of track hardware. The ties may or may not be removed, depending on their condition. Steel bridges can be recycled or scrapped. The earthwork, including the design elements of curves, tangents, and gradients, remains. The elevated grade or roadbed remains, with its characteristic cuts, fills, ditches, and borrows. Other railroad features, including trestles, bridges, tunnels, culverts, communications lines, junctions, sidings, wyes, cattle guards, water tanks, sidings, and spurs may also remain on the ground. Artifacts of the railroad include steel and cast iron track hardware, ties and rails, hack saw blades, lost tools, and associated equipment. Habitation and day-use artifacts offer evidence of the workers' lives. These items include cans for food and tobacco, old boots, ceramic and glass remains, and the jumble of ordinary items that humans leave in places where they live and work.

The first criterion of integrity, then, is the extent to which the features and artifacts remain for us to interpret. A segment in very good condition has ties remaining on the ground, and clear evidence of features still visible. Surface artifacts are also visible, indicating that the segment has not been disturbed. At the other end of the condition scale, a very poor segment has only traces of the grade and features left. The grade has typically been re-used as a road, and no surface artifacts remain. Most segments fall somewhere between these two extremes.

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EVALUATION SCALE

Condition Class	Modifications	Gradient and curvature	Railroad Features	Artifacts
A	Rail removed, ties in place	Curves and gradients intact and measurable	All features intact	Railroad artifacts on surface
B	Ties removed. Grade retains original dimensions	Curves and gradients may be blurred by overgrowth or damage	Features can be deduced, but may not be apparent	Railroad artifacts on surface
C	Grade modified for motor vehicles, crushed rock or gravel on surface, widened, joins with forest roads	Basic design visible, but curves and gradients no longer meet railroad specs	Some major features remain. Original earthwork lost, however.	Some surface artifacts can be found
D	Grade modified by widening, re-alignment, new surface	Basic design lost, route only remains	None apparent	None apparent
E	Intermittent evidence of grade	Route conjectural	None apparent	None apparent

Condition Class A Grades and engineering features remain in their original condition with steel artifacts including rails, spikes, tie plates, splice plates and other track hardware removed. This is the condition the grades were left in when the owners abandoned the railroad. In this condition class, many artifacts associated with the industrial activities remain on site, and features remain clear and distinct.

Condition Class B Grades and engineering features remain in original condition, but the ties have been removed. This condition usually indicates that the grade has been re-used to some extent. The grade may be used as primitive road, a trail, or a fence line. Artifacts appear in much lower frequency on B grades than on A grades, and what features remain are less distinct.

Condition Class C Grades in this category retain their engineering elements, but have been re-used as motor vehicle roads. The grades have been maintained as roads by grading, draining, and building water bars, but the original railroad earthwork including cuts, fills, and drainage features remain in place. The road has not been widened or surfaced. Artifacts are limited to deteriorated ties piled along the road, and occasional ferrous artifacts, especially spikes and track hardware. Industrial features and civil engineering features have become distinct and generally would escape notice by the untutored eye.

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Condition Class D

In this category, the grade has been altered by widening and surfacing as a road, or by adaptive re-use as a canal, high line corridor, or pipeline. What remains of the railroad is really only the civil engineer's choice of route. The fact that these routes remain practical choices for other purposes testifies to the original engineers' abilities. Artifacts and features are generally not visible on D class grades, but could be discovered by excavation.

Dividing the Grade into Segments

For purposes of survey and documentation, it is useful to divide the grade into segments. A segment is a portion of the grade with uniform integrity. A segment ends when the integrity changes for 50 meters. Very short interruptions in the integrity level are permissible within a segment.

Eligibility for National Register Nomination

We have considered grades in condition classes A and B appropriate for nomination to the National Register. These retain enough earthwork and features to be easily interpreted as historic railroad grade. Because much of Railroad No. 1 lies on National Park and National Forest land, its integrity is quite good. Nearly half (48%) of the original grade remains in class B.

Summary of Findings

Segment Number	Condition	Length	Ownership
1	D	0.28	Other
2	E	1.14	Other
3	C	0.89	Other
4	C	3.32	Other
5 District begins	B	0.4	ONP
6	C	0.36	ONP
7	E	0.55	ONP
8	B	4.38	ONP
9	B	4.48	ONP
10	B	2.61	ONP, Other
11	C	0.32	Other
12	B	2.46	ONF, Other
13	C	0.188	ONF, Other
14	B	0.183	ONF
15	C	3.4	ONF
16	B	0.71	ONF
17	D	0.71	Other
	B	1.18	ONF
District ends	B	1.6	Other
20	C	1.55	Other, ONF

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Segment Number	Condition	Length	Ownership
21	B	0.8	Other
22	C	1.8	Other
23	C	1.37	Other
24	C	0.53	Other
25	C	0.55	Other
26	B	0.62	Other
27	E	0.97	Other
28	C	1.3	Other
29	E	0.75	Other
30	C	0.8	Other

Total miles as surveyed 40.2
Total in "A" -0-
Total in "B" 19.42
Total in "C" 16.37
Total in "D" 01.00
Total in "E" 03.41

Additional Resources on the Route

The following sites have potential for further investigation and for NRHP designation.

Manganese Station SW ¼ section 24, T. 30 N., R. 10 W.

This was a station point associated with an historic manganese mine. There was a siding for ore cars, structures, and an ore tipple for loading cars. The site and the mine were identified in a previous study of mining resources on national parks of the Pacific Northwest. This site is currently protected as part of the Olympic National Park.

Sol Duc Station NW ¼ section 28, T. 30 N., R. 10 W.

This site was apparently the second Sol Duc station, developed by the Port Angeles and Western RR and the Crescent Logging Company. The site consists of a junction with a logging spur or branch line, a wye, structure remains, and a water source for locomotives. As currently interpreted, this site will be contained within the 100' railroad right-of-way.

Spruce Production Railroad # 1
Name of Property

Clallam Co., Washington
County and State

NPS Form 10-900-a

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

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Flight Station SW ¼ section 26, T. 30 N., R. 11 W.

Flight Station is located in segment 16. The site consists of a long siding, a water source for locomotives, and possibly a construction camp. An interesting element of the site is a gravel quarry with railroad access. Evidence on site suggests that Flight was a major station point during the construction period (Chesmore 1995). Surface artifacts suggest that the site has good potential for archaeological investigation. Estimated extent of the site is >3 acres.

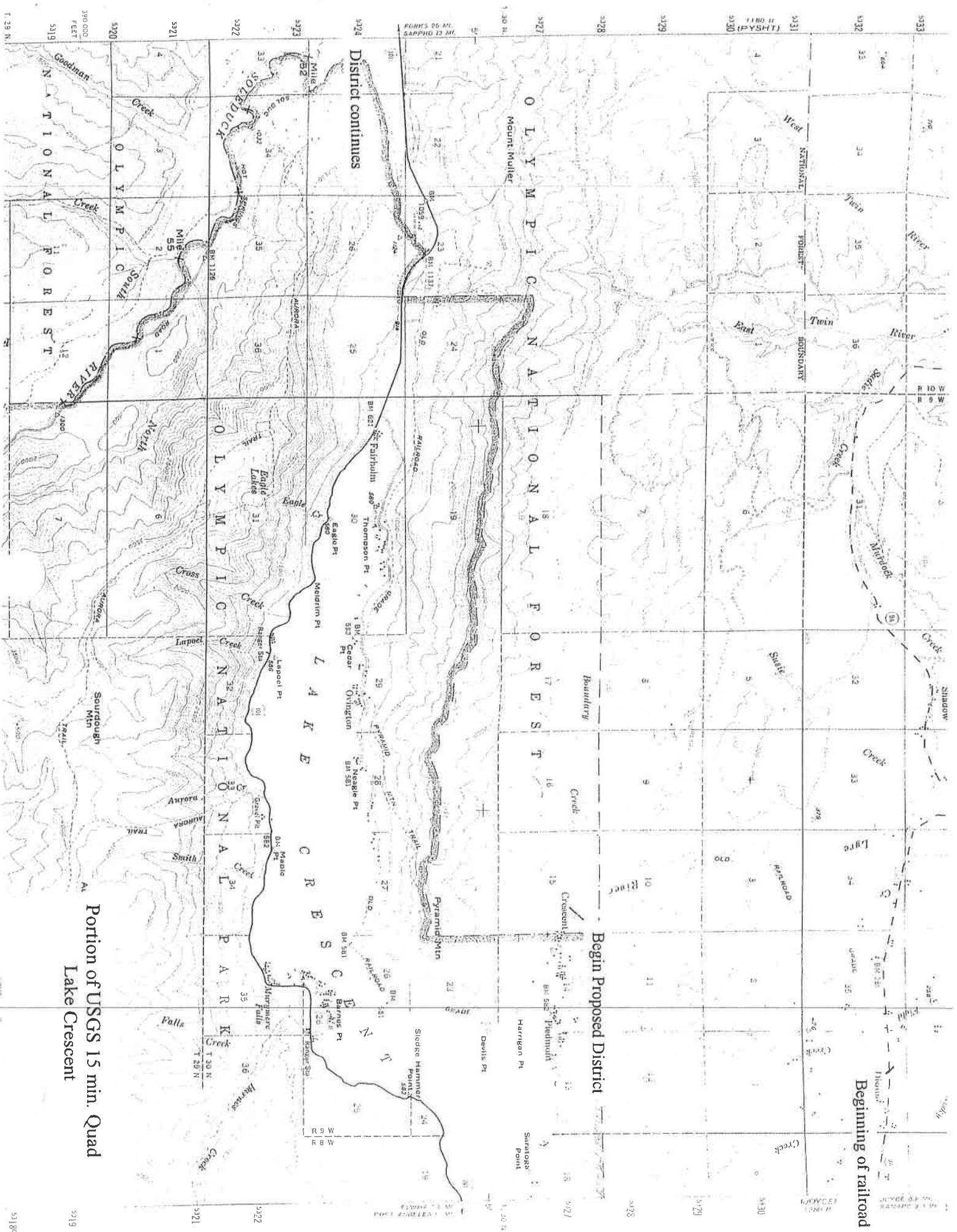
This site is proposed for inclusion within the district as an extension of the railroad right-of-way

Previous Investigations

Richard Chesmore surveyed cultural resources of the rail environment of the Olympic National Park in 1993, and the portion of the SPD railroad that crosses the Olympic National Forest in 1995. Findings from these studies include recommendations that the SPD Railroad No. 1 be considered for nomination to the National Register.

A Note on Mapping

The following maps are digitized versions of standard USGS 7.5' quadrangles. The historic Spruce Production Division Railroad #1 is mapped on the quads, and indicated with a purple dotted line. The first set of maps shows the total extent of the historic railroad, with all segments included. The second set of maps shows the portion of the railroad proposed for determination of eligibility. This portion consists of segments 5 through 19.



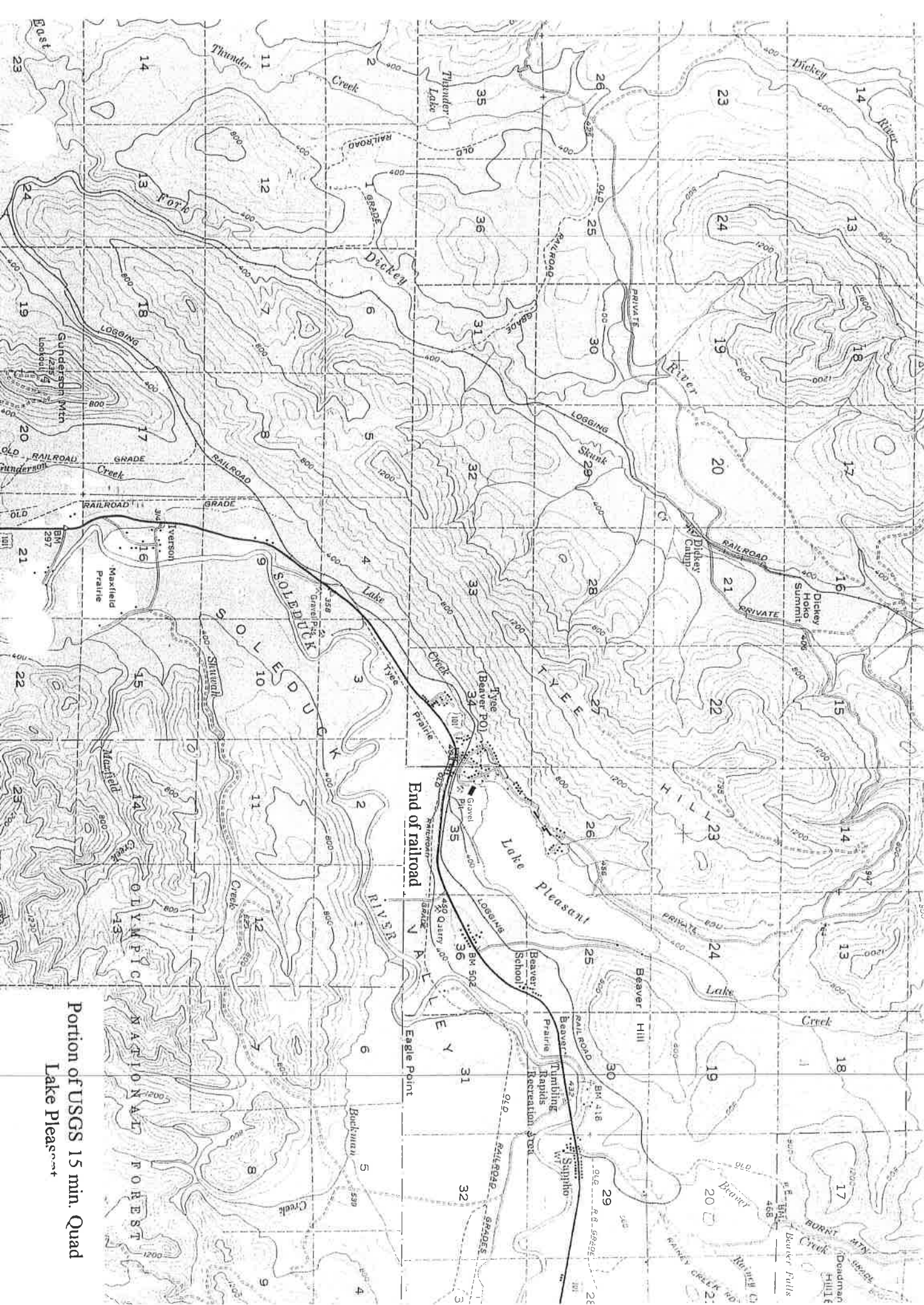
Beginning of railroad

Begin Proposed District

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Portion of USGS 15 min. Quad
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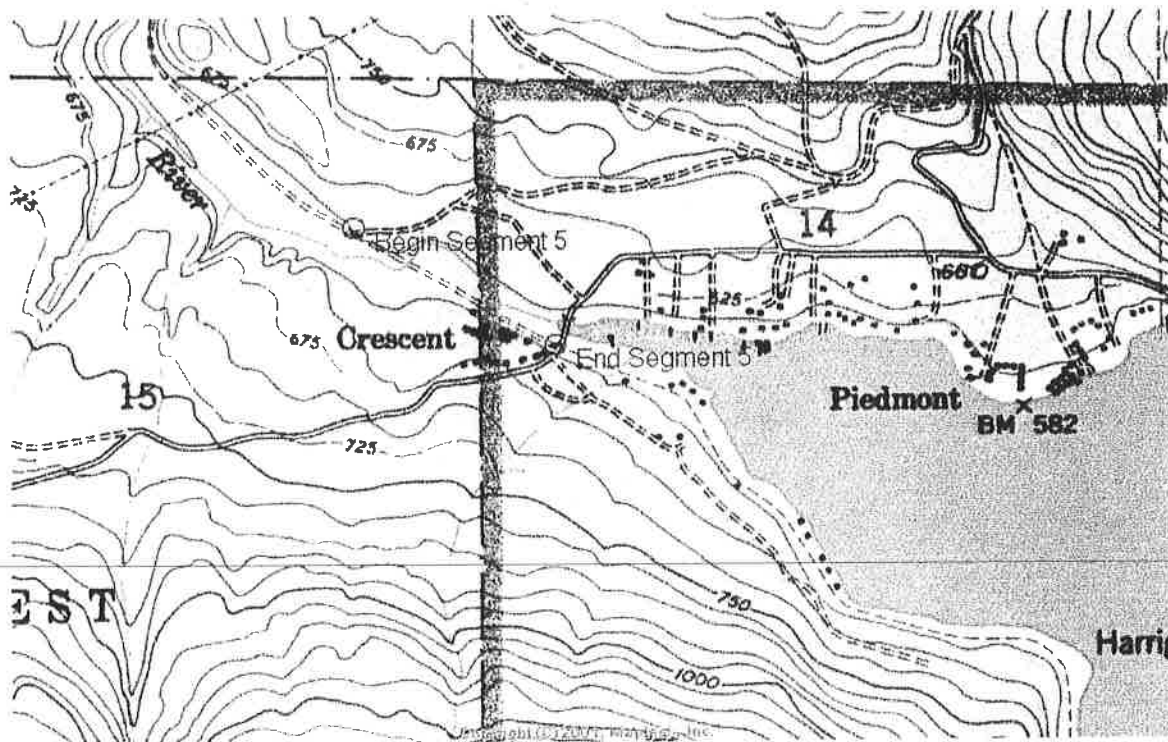


Portion of USGS 15 min. Quad
Lake Pleasant

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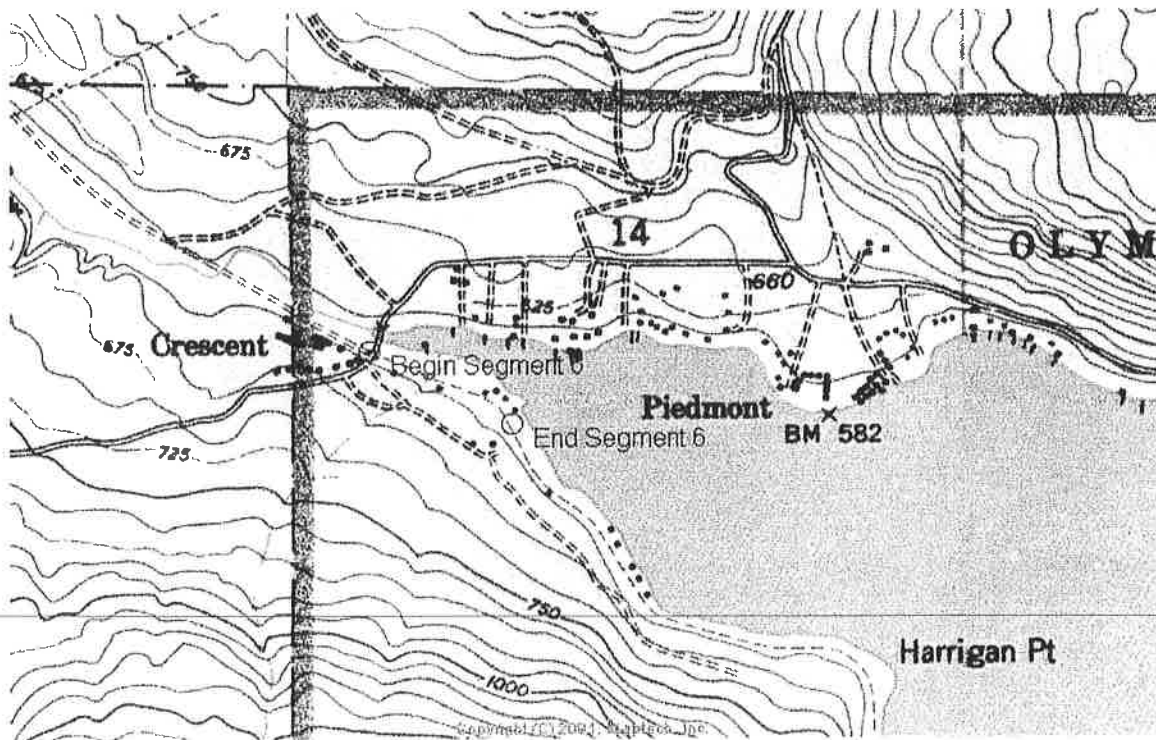
Segment Number	5	Field Number	W-16-2	Quad	Lake Crescent
Begin Segment		Easting	1004 39 699	Northing	53 27 178
Grade leaves FR Lyre River crossing NE ¼ Section 15, T. 30 N., R. 9 W.					
End Segment		Easting	1004 40 122	Northing	53 26 848
Forest road (FR) 3099 crosses grade, NW ¼ section 14, T. 30 N., R. 9 W.					
Length	0.4 miles				
Survey Notes	Historic data and USGS maps indicate that the station of Crescent was located on this segment. Field evidence is inconclusive, however. Contributing segment				
Features and Artifacts	Remains of Lyre River trestle include earthwork for bents and several frame members.				
Condition	B	Ties removed, original surface, engineering elements of gradient and curvature preserved			



Map from Lake Crescent, WA, USGS 7.5' Quad, T. 30 N, R. 9 W.

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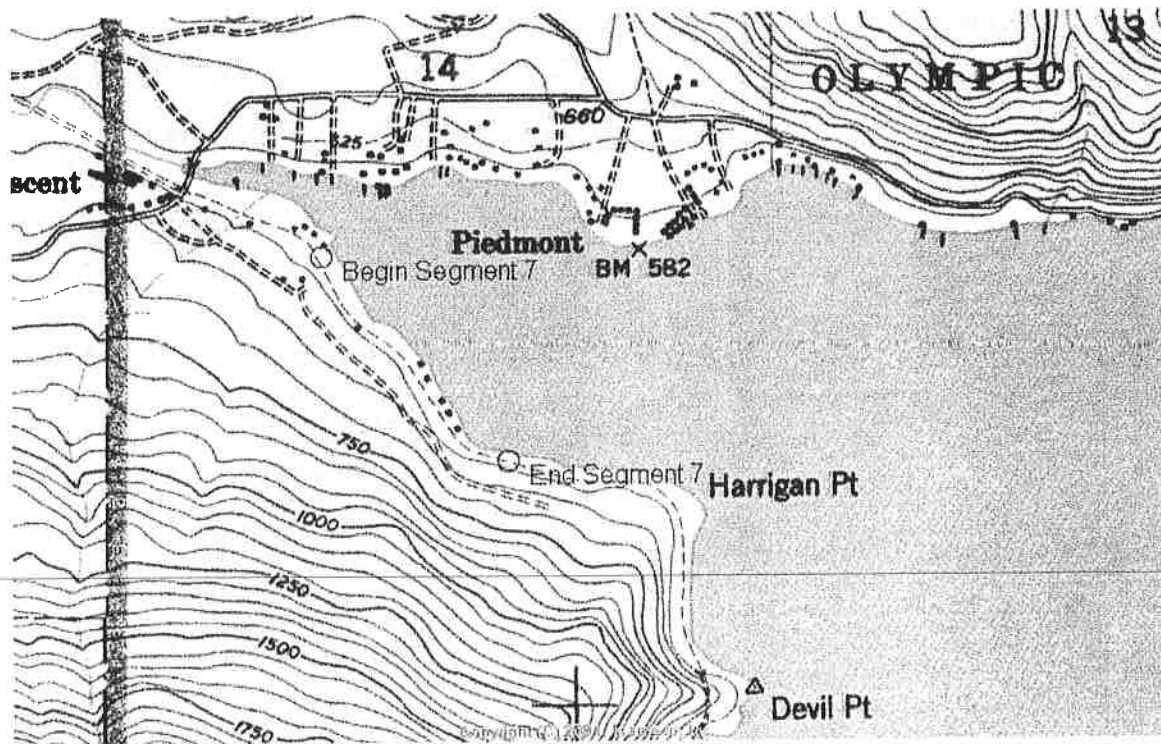
Segment Number	6	Field Number	W-16-1	Quad	Lake Crescent
Begin Segment		Easting	1004 40 122	Northing	53 26 848
Forest road (FR) 3099 crosses grade, NW ¼ section 14, T. 30 N., R.9 W.					
End Segment		Easting	1004 40 460	Northing	53 26 703
"C" portion of grade ends south (distal) of first group of cabins					
Length	0.36 miles				
Survey Notes	Grade in discernible through cabin tract. The Crescent siding was apparently located here, to judge from the width (20') of the grade. A logging spur leaves the railroad to the north, but the junction is not clear. Non-contributing segment.				
Features and Artifacts	No surface artifacts				
Condition	C Modified surface, engineering elements preserved, few surface artifacts				



Map from Lake Crescent, WA, USGS 7.5' Quad, T. 30 N., R.9 W.

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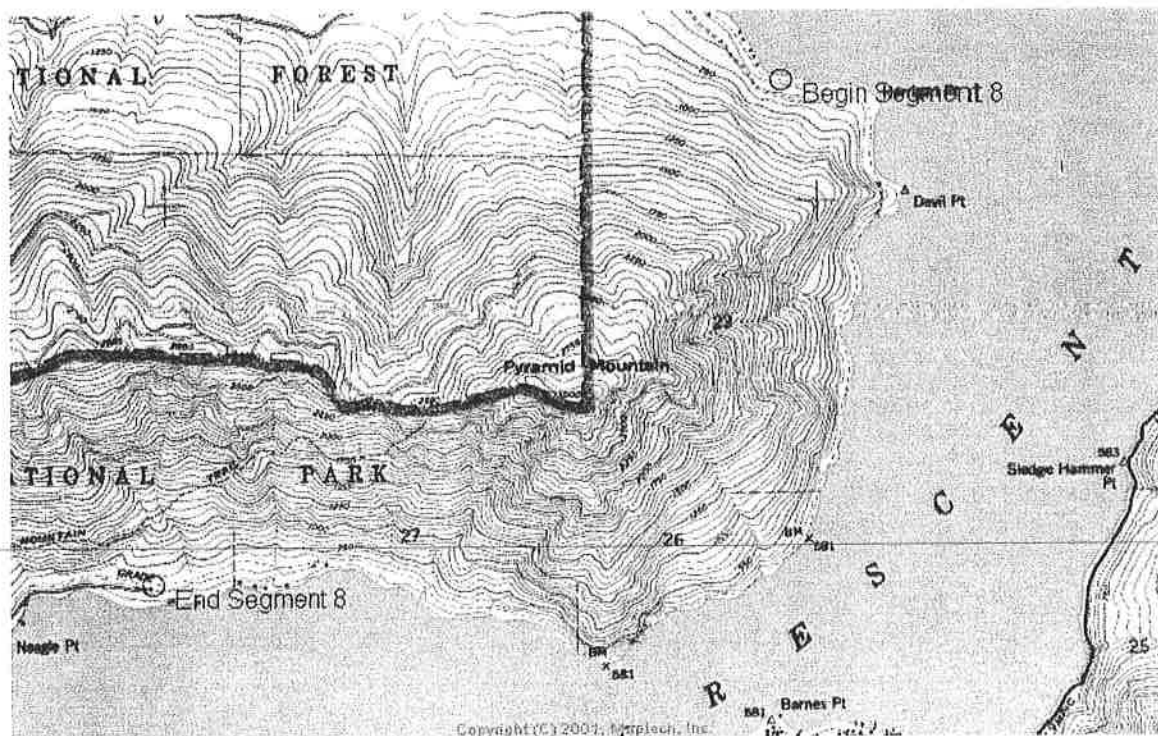
Segment Number	7	Field Number	D-16-2	Quad	Lake Crescent
Begin Segment		Easting	1004 40 460	Northing	53 26 703
"C" portion of grade (segment 6) ends south (distal) of first group of cabins, NW 1/2 section 14, T. 30 N., R. 9 W.. Grade is indistinct from that point					
End Segment		Easting	1004 40 897	Northing	53 26 209
Grade resumes (segment 8) south of (distal to) the second group of cabins SE 1/4 section 14, T. 30 N., R. 9 W.					
Length	0.55 miles				
Survey Notes	Grade is intermittent through cabin tract. The Crescent Logging Co. spur left the grade in this segment or in segment 6, but the junction site has been lost. Non-contributing segment				
Features and Artifacts	No surface artifacts				
Condition	E Intermittent evidence of railroad				



Map from Lake Crescent WA, USGS 7.5 ' Quad, T. 30 N., R. 9 W

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Segment Number	8	Field Number	D-16-2	Quad	Lake Crescent
Begin Segment		Easting	1004 40 879	Northing	53 26 209
Grade resumes to begin segment 8 south of (distal to) the second group of cabins, SW ¼ section 14, T. 30 S., R. 9 W.					
End Segment		Easting	1004 37 829	Northing	53 23 883
Point of convenience at end of North Lake Road, NE ¼ section 28, T. 30 S, R. 9 W.					
Length	4.38 miles				
Survey Notes	This is the most important segment of the grade, with a scenic location on the north shore of Lake Crescent.				
Features and Artifacts	Features include rock revetments below the grade, tunnel 1, and tunnel 2. Artifacts include rail and track hardware. Contributing segment				
Condition	B Ties removed, original surface, engineering elements of gradient and curvature preserved				

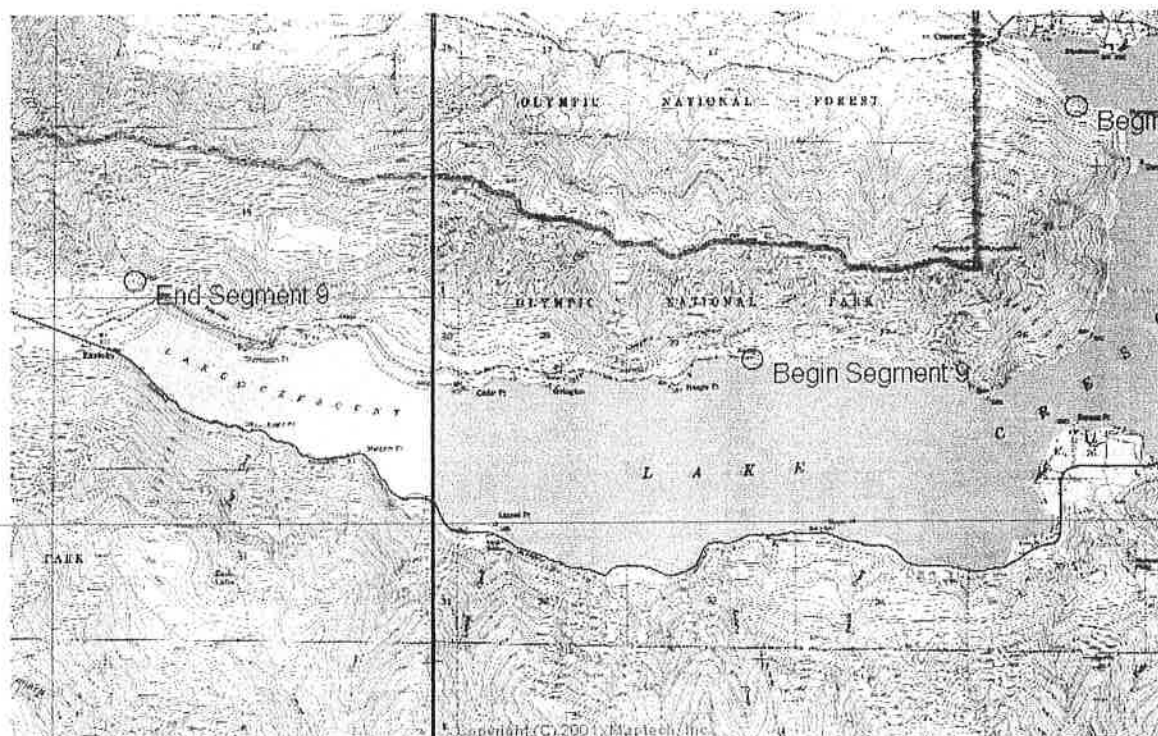


Map from Lake Crescent WA, USGS 7.5' Quad, T. 30 S., R. 9 W.

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Segment Number	9	Field Number	W-16-1	Quad	Lake Crescent, Mt. Muller
Begin Segment		Easting	1004 37 829	Northing	53 23 883
Point of convenience at end of North Lake Road, NE ¼ section 28, T. 30 N., R. 9 W.					
End Segment		Easting	1004 32 066	Northing	53 24 675
Point of convenience at unnamed stream, SW ¼ section 19, T.30 N., R.9 W.					
Length	4.48 miles				
Survey Notes	This segment of the grade is accessible by the north Lake Crescent road, which is at a lower elevation than the grade. There is some damage from vehicle access. Collapsed culverts and slides have blocked the grade at some points. Contributing segment.				
Features and Artifacts	Earthwork is well preserved. Artifacts include telegraph poles with hardware and track hardware. Features include Ovington siding.				
Condition	B Ties removed, original surface, engineering elements of gradient and curvature preserved				

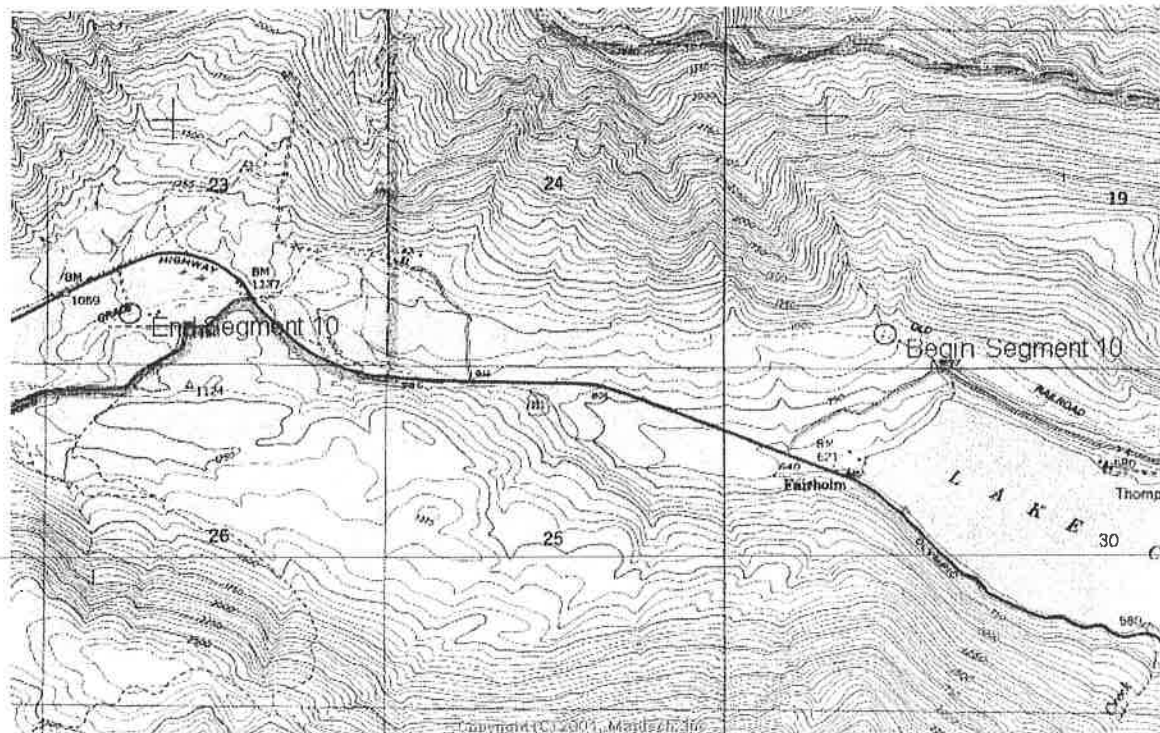


Map from Lake Crescent WA and Mt. Muller WA USGS 7.5' quads. T. 30 N.. R. 9 W.

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Segment Number	10	Field Number	L-16-1 L-18-1	Quad	Lake Crescent
Begin Segment		Easting	1004 32 066	Northing	53 24 675
Point of convenience at unnamed stream, SW ¼ section 19, T.30 N., R.9 W.					
End Segment		Easting	1004 28 407	Northing	53 24 383
Logging access road crosses grade, SW ¼ section 23, T. 30 N, R. 10 W.					
Length	2.61 miles				
Survey Notes	This segment of the grade completes over 10 miles of "B" class grade on the north side of Lake Crescent. There is some damage from vehicle access, and collapsed culverts and slides have blocked the grade at some points. On the whole, however, it is excellent. Contributing segment				
Features and Artifacts	Earthwork is well preserved, including the deep (16') cut and fill at the summit. Artifacts include ties and track hardware.				
Condition	B Ties removed, original surface, engineering elements of gradient and curvature preserved				

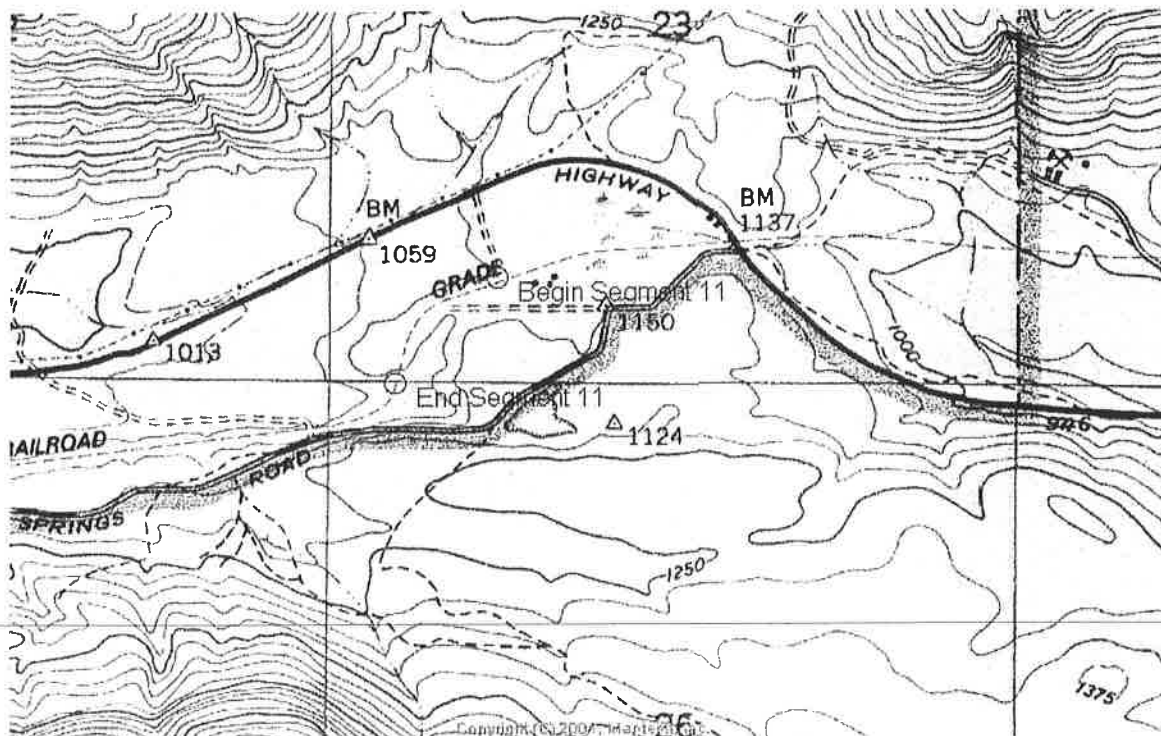


Map from Mt. Muller WA USGS 7.5' Quad, T. 30 N, R. 10 W.

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Segment Number	11	Field Number	L-16-2	Quad	Lake Crescent
Begin Segment		Easting	1004 28 415	Northing	53 24 383
Logging access road crosses grade, SW ¼ section 23, T. 30 N, R. 10 W.					
End Segment		Easting	1004 28 179	Northing	53 24 599
Olympic NP boundary, section line 23/26 crosses grade, NW ¼ section 26, T. 30 N., R. 10 W.					
Length	0.32 miles				
Survey Notes	Short segment of grade used as logging road. Non-contributing segment.				
Features and Artifacts	Features include the original Sol Duc siding and a quarry that may have been used during the construction period. Although this segment is in class "C," ties and track hardware are preserved adjacent to the grade.				
Condition	C Modified surface, engineering elements preserved, few surface artifacts				

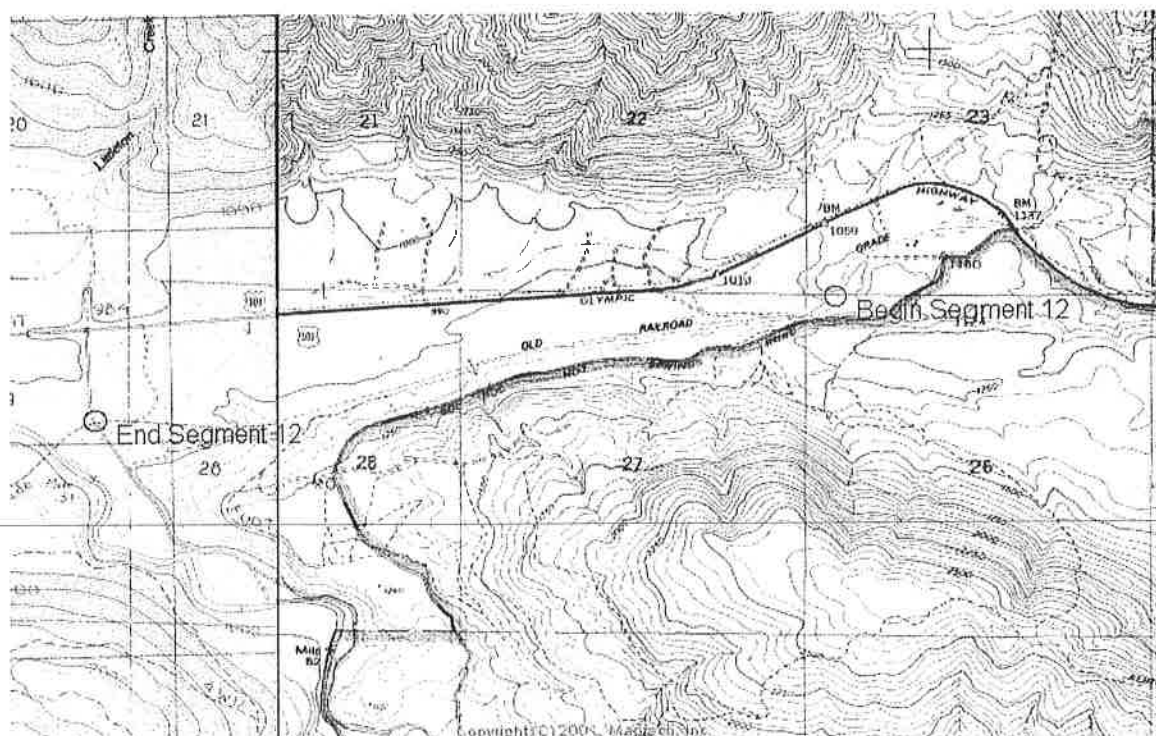


Map from Mt. Muller WA USGS 7.5' Quad, T. 30 N., R. 10 W.

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Segment Number	12	Field Number	L-18-3 W-17-1	Quad	Lake Crescent Snider Peak
Begin Segment		Easting	1004 28 179	Northing	53 24 599
Olympic NP boundary, section line 23/26 crosses grade, NW ¼ section 26, T. 30 N., R. 10 W.					
End Segment		Easting	1004 24 640	Northing	53 24 106
Forest Road (FR) 2918 crosses grade in NE ¼ section 29, T. 30 N., R. 10 W.					
Length	2.46				
Survey Notes	This segment continues nominable grade west toward the Sol Duc crossing. Contributing segment.				
Features and Artifacts	Features include the second Sol Duc station with sidings, water, and a wye. A logging railroad left to the south at this point. The station site has numerous surface artifacts including collapsed structure, sheet metal, fire brick, ferrous items, fasteners, cable, stove, recent domestic refuse, containers, and ceramic and glass debris. Railroad artifacts include ties and tie fragments with track hardware.				
Condition	B Ties removed, original surface, engineering elements of gradient and curvature preserved				



Map from Mt. Muller and Snider Peak Quads, T. 30 N., R. 10 W.

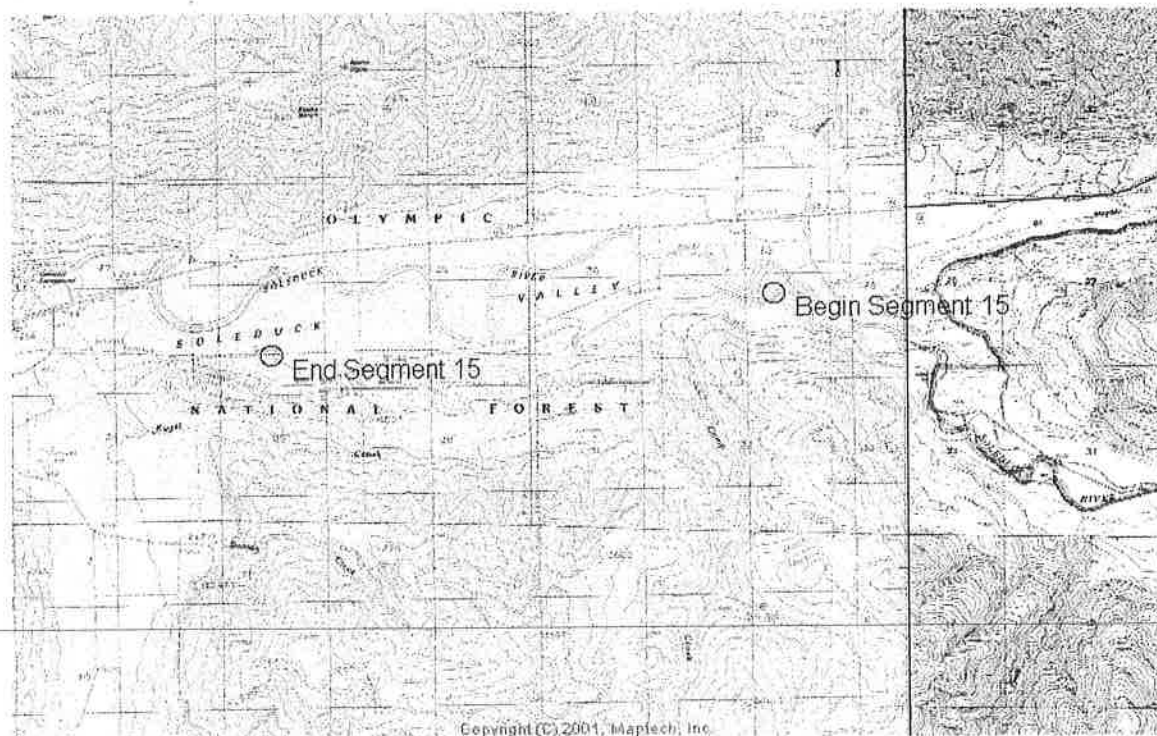
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Map from Snider Peak WA USGS 7.5' Quad, T. 30 N., R. 10 W.

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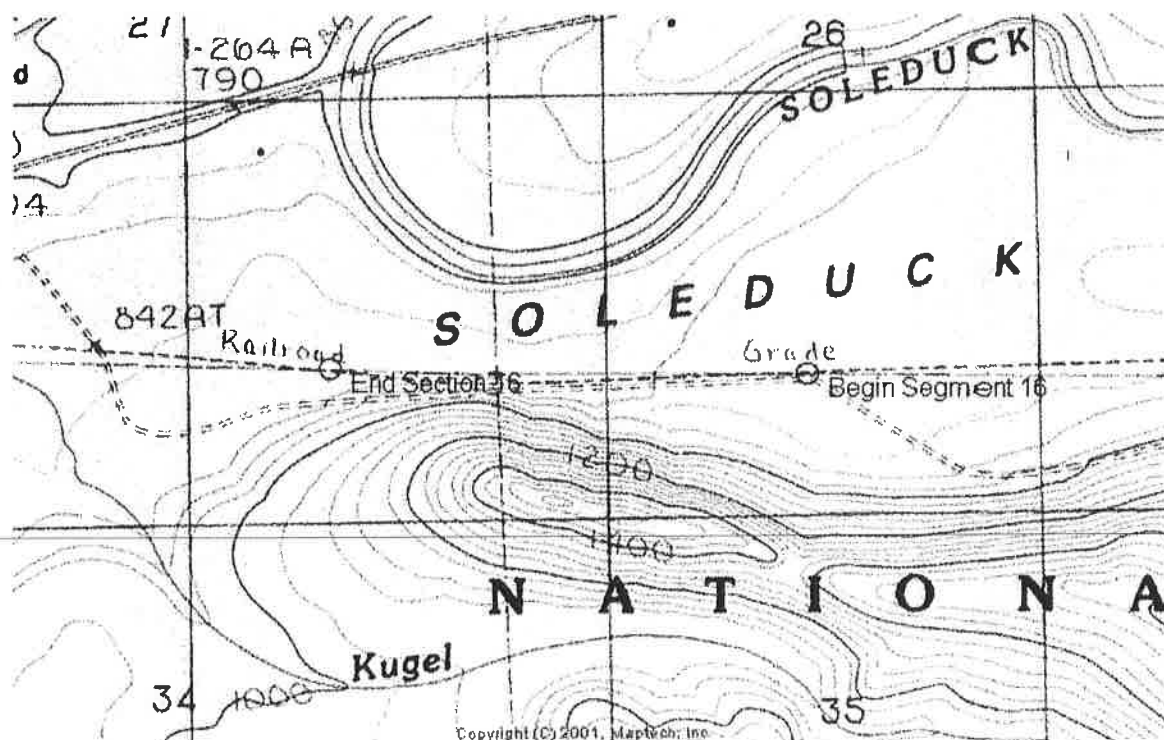
Segment Number	15	Field Number	W-17-4	Quad	Snider Peak
Begin Segment		Easting	1004 24 270	Northing	53 23 820
Eastern end of forest road 070, NE ¼ section 29, T. 30 N., R 10 W.					
End Segment		Easting	1004 19 492	Northing	53 23 302
Forest road 070 branches northwest off FR 2929 and overlies the grade in the NW ¼ section 35, T. 30 N., R. 11 W.					
Length	3.4 miles				
Survey Notes	This segment is under FR 070. The terrain is the flat glaciated Sol Duc valley, requiring little earthwork. Non-contributing segment				
Features and Artifacts	No surface artifacts observed.				
Condition		C	Modified surface, engineering elements preserved, few surface artifacts		



Map from Snider Peak WA USGS 7.5' Quad , T. 30 N., R 10 W.

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Segment Number	16	Field Number	W-17-5	Quad	Snider Peak
Begin Segment		Easting	1004 19 492	Northing	53 23 302
Forest road 070 joins FR 2929 revealing the grade in the NW ¼ section 35, T. 30 N., R. 11 W.					
End Segment		Easting	1004 18 361	Northing	53 23 356
Grade crosses section line 27/34, enters private land in the NE ¼ section 34, T. 30 N., R. 11 W.					
Length	0.71 miles				
Survey Notes	This important segment is approximately 30 m. north of FR 2929 and parallel to the road. Contributing segment.				
Features and Artifacts	The Flight station and siding, and a major gravel quarry are located on this segment. Earthwork for the gravel quarry is well-preserved, including the pits, railroad grades into the pits, and sidings for the excavation equipment. Surface artifacts include fire brick and sheet metal, cable, ferrous debris, and the boom of a large steam-powered excavator.				
Condition		B	Ties removed, original surface, engineering elements of gradient and curvature preserved		



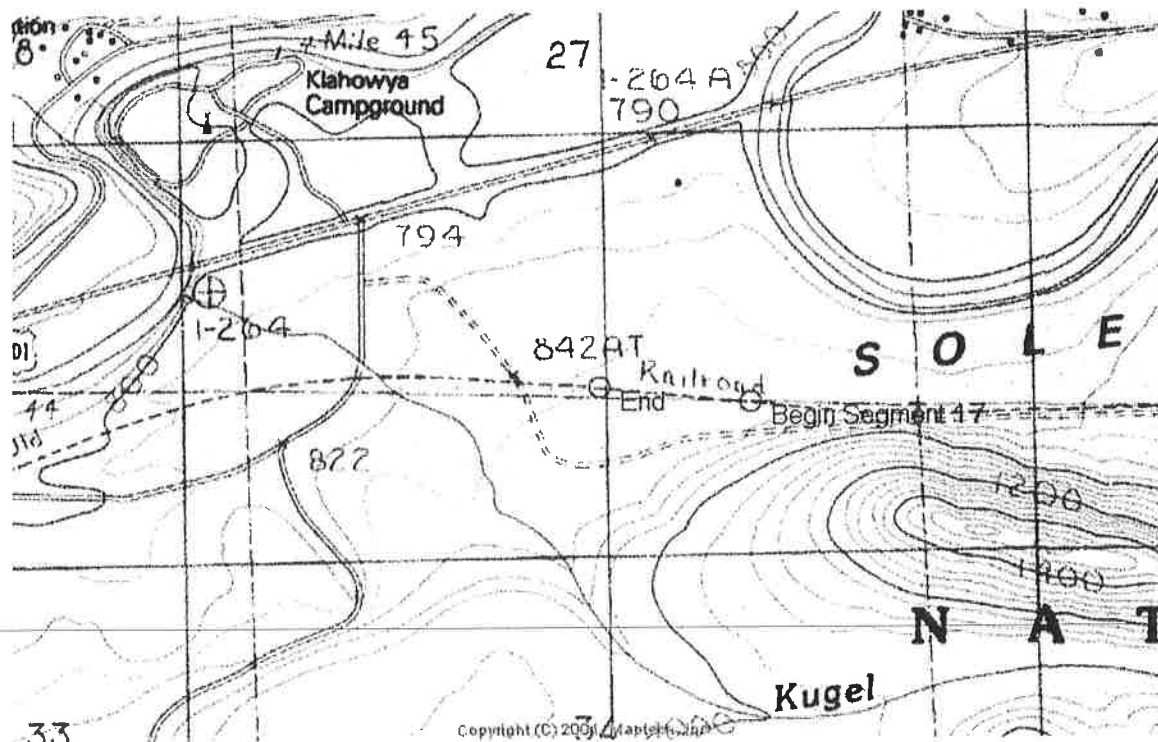
Map from Snider Peak WA USGS 7.5' Quad, T. 30 N., R. 11 W.

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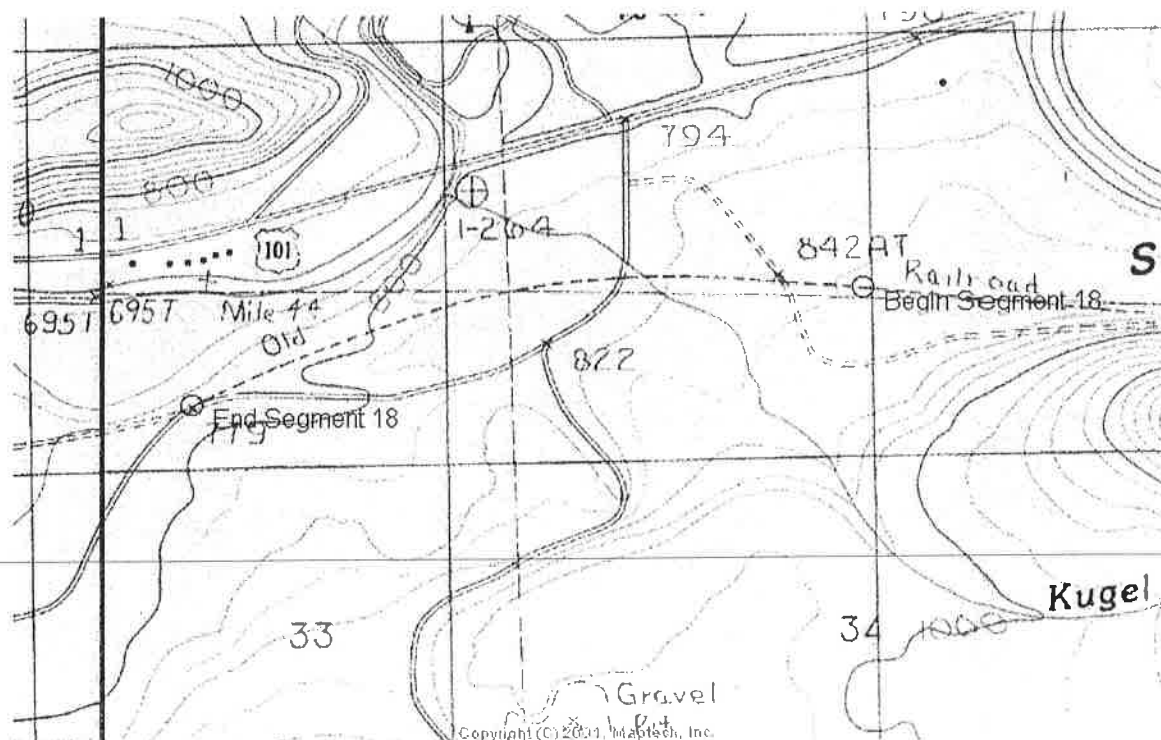
Segment Number	17	Field Number	W-17-6	Quad	Snider Peak
Begin Segment		Easting	1004 18 361	Northing	53 23 356
Grade crosses section line 27/34, enters private land in the NE ¼ section 34, T. 30 N., R. 11 W.					
End Segment		Easting	1004 17 984	Northing	53 23 382
Grade crosses land boundary, SE ¼ section 27, T. 30 N., R. 11 W.					
Length	0.71 miles				
Survey Notes	This segment is on land actively logged. Non-contributing segment.				
Features and Artifacts	Extensive road-building has removed evidence of the original earthwork. No surface artifacts observed.				
Condition	D Modified surface, engineering elements altered, features lost				



Map from Snider Peak, WA USGS 7.5' Quad T. 30 N., R. 11 W.

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Segment Number	18	Field Number	W-17-7 W-18-2	Quad	Snider Peak
Begin Segment		Easting	1004 17 984	Northing	53 23 382
Grade crosses land boundary, SE ¼ section 27, T. 30 N., R. 11 W.					
End Segment		Easting	1004 16 402	Northing	53 23 124
Grade runs into FR 100, NW ¼, section 33, T. 30 N., R. 11 W.					
Length	1.18 miles				
Survey Notes					
This segment crosses two forest roads and Kugel Ck, but retains good integrity. Some artifacts near the distal end suggest habitation. Contributing segment.					
Features and Artifacts					
Kugel Ck. crossing retains earthwork.					
Condition		B	Ties removed, original surface, engineering elements of gradient and curvature preserved		

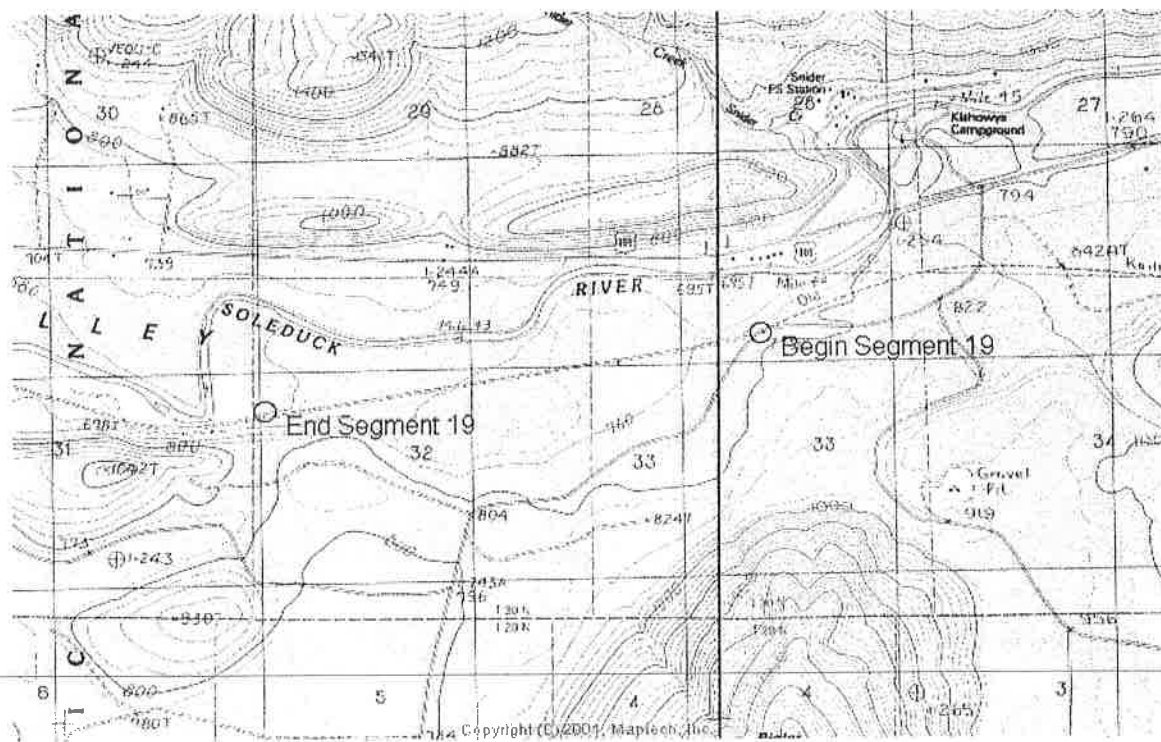


Map from Snider Peak WA USGS 7.5' Quad, T. 30 N., R. 11 W.

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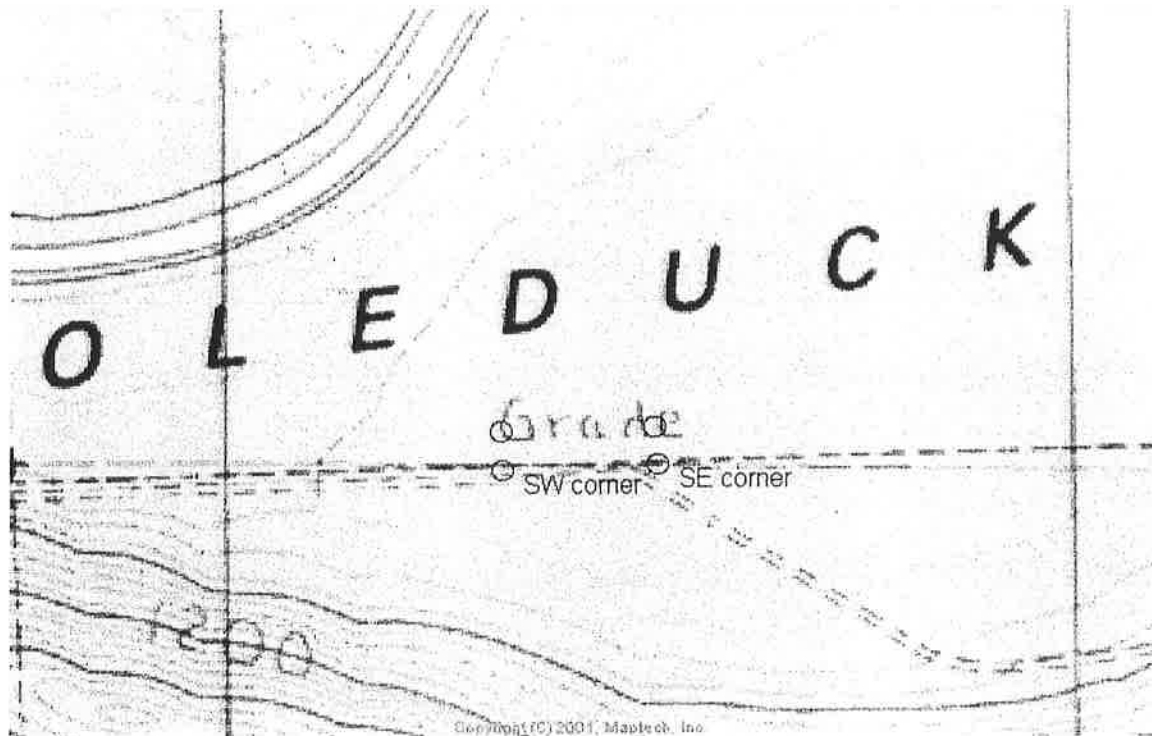
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Segment Number	19	Field Number	D-18-1	Quad	Snider Peak Deadman's Hill
Begin Segment		Easting	1004 16 402	Northing	53 23 124
Grade runs into FR 100, NW ¼, section 33, T. 30 N., R. 11 W.					
End Segment		Easting	1004 14 029	Northing	53 22 804
Segment ends at property line (?) and the 32/31 section line, NW ¼ section 32, T. 30 N., R. 11 W.					
Length	1.6 miles				
Survey Notes	This segment remains in good condition through very dense second-growth fir. Contributing segment.				
Features and Artifacts	Earthwork is minimal in flat glaciated terrain				
Condition					
	x	B	Ties removed, original surface, engineering elements of gradient and curvature preserved		



Map from Snider Peak and Deadman's Hill WA USGS 7.5' Quads, T. 30 N., R. 11 W.

LOCATION MAP FOR THE SITE OF FLIGHT STATION AND GRAVEL PIT



Map from USGS Snider Peak Quad. SW $\frac{1}{4}$ section 26, T. 30 N., R. 11 W. Site extends 100' north from the center of the grade. Distance from SW corner of site to NW corner of site is 600'.

SE corner of site is 100419509 E and 5323376 N. SE corner of site is located on section line, 763 meters east of section corner.

Spruce Production Railroad # 1
Name of Property

Clallam Co., Washington
County and State

NPS Form 10-900-a

OMB Approval No. 1024-0018

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THE SPRUCE PRODUCTION DIVISION

"War emergencies cannot be solved by debating societies or boards and in this work we have ample proof that the best results come when the right man is given responsibility, authority, and a free rein."
Col. Brice P. Disque, Feb. 7, 1918

SIGNIFICANCE

The U.S. Army Spruce Production Division Railroad No. I is significant under Criterion A for its historic association with the U.S. Army Spruce Production Division (SPD). This organization provided aircraft spruce for Allied forces during World War I. The Spruce Production Division built 13 railroads and four saw mills in Oregon and Washington. Railroad No. I was the most ambitious undertaking of the SPD and was its signature facility. The railroad system included a 36-mile main line, two tributary logging spur lines, and two saw mills. The railroad grades and other features of Spruce Railroad No. I constitute the most extensive remaining material vestige of the Spruce Production Division.

The period of significance (1918-1922) begins with the construction of the railroad and ends when the government sold it to private investors. At the end of the war in 1919, the railroad was nearly complete, but not in use. It languished as a surplus property until its sale in 1922.

In addition to its military role in World War I, the Spruce Production Division also made an important contribution to the industrial history of the Pacific Northwest. Because of the complicated labor situation in the lumber industry on the eve of the war, the SPD assigned troops to work in logging camps and lumber mills. The SPD established rules for wages, hours, working conditions, health, and safety that applied to civilian workers as well as soldiers. An adjunct of the SPD was the Loyal Legion of Loggers and Lumbermen, an association of workers and employers created to promote cooperation in the lumber industry. The Loyal Legion (or 4Ls) fostered agreements on wages, hours, working conditions, and employment of women that influenced the lumber industry and other industries in the region.

United States Department of the Interior
National Park Service**National Register of Historic Places
Continuation Sheet**Section number 8 Page 2**THE U.S. LUMBER INDUSTRY AND WORLD WAR I**

- 1909 Total US lumber production sets record of 44.5 billion board feet. This total production is not exceeded until the early 1990s. Per capita consumption of lumber by Americans has never exceeded this level.
- 1914 U.S. Bureau of Corporations publishes *The Lumber Industry*, a three-volume report which documents unscrupulous business practices among the major lumber firms
- 1914 War begins in Europe. Lumber is identified as a strategic material by both Axis and Allies.
- 1915 Government of Holland sends embassy to Oregon to investigate quality of lumber and grading standards. American lumber manufacturers are cutting as much as they can and shipping product to all European countries, including the Axis nations.
- 1916 England embargoes US lumber shipments to Axis countries.

BACKGROUND IN THE PACIFIC NORTHWEST

The second decade of the 20th century (1910-1920) was a turbulent time for Oregon, Washington, and Northern California. With the completion of the transcontinental railroads in the 1880s and the Panama Canal in 1914, this remote corner of the U.S. was moving toward full participation in American life. The Pacific Northwest's great resource was timber. After the depression of the early 1890s, the U.S. embarked on a long period of prosperity and building. The steadily increasing U.S. demand for lumber peaked in 1909 with 44.9 billion board feet produced, a record that was to stand through most of the century. The U.S. has never consumed more lumber on a per capita basis. Although the South and the Lake States were still producing 58% of the nation's lumber, the Pacific Northwest had the most impressive stands of timber remaining in the U.S.

Acquiring timber and manufacturing lumber was big business in the Northwest. The *Portland Oregonian* ran a special section on the lumber business each week. The Portland lumber trade journal, *The Timberman*, provided detailed and thoughtful reporting of the Western lumber scene each month. Over the next few years, it would wrest readership away from the older Chicago-based *American Lumberman* and the New Orleans-based *Southern Lumberman*.

The federal government moved to protect public timber supplies in the Northwest by forming 19 Forest Reserves in Oregon and Washington during the years around the turn of the 20th century. In 1905, the Forest Transfer Act created the National Forest system to manage the extensive Forest Reserves.

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In the meantime, the large lumber companies of the Lake States were selling their holdings and re-locating to Oregon, Washington, and Northern California. Among these were the Red River Lumber Company, Weyerhaeuser Timber Company, the Shevlin associates, Michigan-California, the Mortenson associates, and others. There were also dozens of home-grown lumber firms in the Northwest like Booth-Kelly, Merrill and Ring, Bloedel-Donovan, Yeon and Pelton, Dant and Russell, as well as transplants from New England (Pope and Talbot), and from the Rocky Mountain states (Oregon Lumber, Hammond).

The U.S. Bureau of Corporations undertook a multi-year study of the business practices of the largest lumber firms and published the results in 1914 as *The Lumber Industry*. This three-volume report made national headlines by demonstrating that the lumbermen were often unscrupulous in their dealings with the public domain, the railroads, and each other.

Then, in 1914, the First World War began in Europe. Isolationist sentiments kept the U.S. out of the war during the early years. Lumber was a strategic material for the combatants, and as the war interrupted European production, both the Allies and the Axis looked to the U.S. The U.S. lumbermen recognized the business potential that the war in Europe offered, but the market did not meet their expectations at first (Hidy, Hill, and Nevins 1964). After 1915, U.S. lumber firms began selling lumber to European industries supplying the Axis, and in response, the British embargoed softwood shipments from the U.S. in response (*American Lumberman* Feb. 17, 1917: 25).

AIRCRAFT SPRUCE

During the winter of 1916-1917, aircraft builders in Europe and the U.S. determined that Sitka spruce was the best material for aircraft construction. Spruce in general was preferred to other woods, but the obscure Sitka spruce of Oregon, Washington, British Columbia and Southwestern Alaska had the highest tensile strength and lowest weight of any material tested. It also had the anecdotal reputation of not shattering when hit by a machine-gun bullet. West Coast spruce prices rose, inventories declined, and by midwinter, one mill manager reported that "there is an unlimited demand for Sitka spruce at exceedingly high prices" (*The Timberman*, Jan. 1917:35).

Since the customers would be the European Allies—Britain, France, and Italy—the British would not embargo shipments. The problem was that the west coast mills were not prepared to produce aircraft grade spruce. To be used in an airplane, the lumber needed to be absolutely defect-free. What little Sitka spruce was cut on the west coast was used for low-quality applications like box shooks or piano sounding boards.

Before the war, U.S. spruce production concentrated in the Appalachian states (72.5%), with the west coast (16.5%) and the Lake States (7.5%) a distant second and third (Bureau of Corporations 1914, vol. II:682). West Coast Sitka spruce was inconvenient to log. Ralph W. Burnside, president of the Willapa Lumber Company, summarized the situation spruce producers faced:

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Spruce is really a by-product of our other woods, and can as a rule only be produced 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 needs a very fancy price for the shop lumber and aeroplane stock which remains... (*The Timberman*, Jan. 1917:36)

Given time, market economics could have sorted out the Sitka spruce situation. The war made for urgency, however, and the U.S. was moving closer to participation in 1917. These factors increased pressure on the industry to produce Sitka spruce. Lumber producers were not sufficiently organized to respond to the pressure, however. The industry was fragmented and characterized by what U.S.F.S. Assistant Forester William B. Greeley called "competition in manufacture [that] is not only keen but often destructive." Especially in the west, Greeley noted, "excessive mill capacity, poor financing, and low average efficiency in manufacture and marketing add to its weakness" (Greeley 1917: 4).

THE U.S. ENTERS THE WAR

PACIFIC NORTHWEST LUMBER INDUSTRY, SPRING AND SUMMER, 1917

- The Industrial Workers of the World (IWW) organizes lumber workers through the Lumber Workers' Industrial Union in **March**.
- The new union sets a strike date for July 1 unless demands were met for an 8-hour day. The Shingle Weavers Union (mill workers) and the American Federation of Labor International Timber Workers (loggers) set strike date for July 16.
- US enters the war in **April**. Aircraft is identified as the critical element in breaking the "stalemate in the trenches."
- Army sends Major Sligh to investigate lumber manufacturing in the Pacific Northwest in **May**. General Pershing orders Colonel Brice P. Disque to Washington DC to a briefing on the lumber situation.
- Major Sligh reports to Gen. Pershing in **June**, establishing the goal of 10,000,000 board feet of Spruce per month or 100, 000,000 for the war effort. These production goals are adopted by the Pacific Aircraft Spruce Production Board, and the War Emergency Spruce Council, both of whom represent the industry and the Government.
- Loggers and mill workers strike in **mid-July**.
- By **August**, only 15% of the lumber mills in Oregon or Washington are operating. Total spruce production by the end of the summer ends at 200,000 board feet/month, well short of the goal of 10,000,000 board feet/month.

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The early years of the 20th century were also years of labor activism and radicalism throughout the West. The radical (and often visionary) Industrial Workers of the World (IWW) enjoyed a solid following among the "homeless, womanless, voteless migratory workers in the West," particularly in the agricultural, mining, and maritime trades (Jensen 1945: 106). With the burgeoning growth of the lumber industry, IWW organizers looked to loggers and mill workers. The IWW organized the loggers in the Lake States and then moved into the logging camps and mill towns of the Western states during the first decade of the century (Jensen 1945: 118-20; Tyler 1967; Dubovsky 1969: 128).

Other West Coast labor groups active at the time included the shingle weavers unions in the Puget Sound mills and the several American Federation of Labor loggers' and mill workers' locals. As the west coast lumber industry prepared for the war, the labor groups saw that they had a golden opportunity to make industry meet their terms, or jeopardize wartime profits.

On March 5 and 6, 1917, the IWW organized the Lumber Workers Industrial Union in Spokane. The organizing convention included a demand for better wages, improved camp conditions, and an 8-hour working day. The convention also set a strike date for July unless union demands were met. The shingle weavers 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 (Jensen 1945: 125).

The stage was set for a major confrontation between the west coast lumbermen and the workers, and on July 16, the strike began. By August 1, no more than 15% of the mills were running (Jensen 1945: 126). 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, while political and military authorities watched the production of lumber 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 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. (*The Timberman* July 1917: 1)

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

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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 wouldn't be of use to me;
I guess I won't enlist.
(Tyler 1967:117)

When the summer of 1917 was over, the season's production of aircraft spruce stood at 300,000 board feet instead of 100,000,000 (Evans and Williams 1984: 5). The lumbermen and the workers each held the other side responsible for the debacle, but, as historian Harold Hyman points out, "neither lumberman nor worker, AFL or IWW, had clean hands" in the matter (Hyman 1963: 52).

THE SPRUCE PRODUCTION DIVISION

THE ARMY'S RESPONSE, FALL, 1917

-Pershing sends Disque to Portland in **October** to investigate the spruce situation. Disque returns to Washington DC at the end of October with three-point plan for spruce: 1) put soldiers in the mills and camps, 2) build re-manufacturing plant at Vancouver Barracks, 3) organize Loyal Legion of Loggers and Lumbermen (4-L) as an anti-union.

-Pershing approves Disque's plan late in **October**.

-Pershing creates the Spruce Production Division on **November 15**. First 105 officers assemble at Vancouver Barracks on **November 20**.

-First 5,000 troops report to SPD headquarters in Vancouver Barracks on **December 4**, 1917. The 4-L organizes in December with SPD members.

-Construction of the Vancouver re-manufacturing plant begins on **December 14**.

As a result of the west coast lumber industry's inability to meet spruce production goals, the Army formed the Spruce Production Division on October 17, 1917. General Pershing, Commander of the Allied Expeditionary Forces, placed Col. Brice P. Disque in command. Disque opened headquarters in Portland and pursued an initial policy of counseling the industry, much on the model of other wartime co-operations between industrial groups and the government. Disque adopted the following goals:

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- (a) To impress upon industry the urgency of speed in production
- (b) To instruct in careful manufacture
- (c) To stabilize prices
- (d) To encourage new development
- (e) To determine the value and possibility of riving spruce
(Disque Papers, Historical Report, 1918: 2)

Disque soon concluded that the lumber industry was not prepared to meet the Army's requirements for sufficient quality or quantity of aircraft spruce. Disque planned to build a Government spruce mill at Vancouver Barracks, and to staff civilian mills and logging camps with soldiers. Enlisted men were asked to volunteer for duty in logging camps and 34 squadrons were organized by January 16, 1918, for this purpose. (Disque Papers, Historical Report 1918).

The men who joined the spruce squadrons were a mixed group. Some were men who had been involved in logging or in lumber manufacturing. Most of the lumber workers and managers from Oregon and Washington, however, joined the 10th or 20th Engineers, which made up the Forestry Division of the American Service of Supply. This organization built and operated mills and logging camps in France (Greeley 1952: 88ff). Some members of the SPD were "limited service men" who had medical problems that kept them out of combat (*Spruce*, Nov., 1918:3). Hospital records from the Vancouver Barracks hospital show that many SPD men were admitted for what must have been pre-existing health problems, including tuberculosis, heart problems, rheumatism, and varicose veins (Yaquina District Weekly Reports, August 27, 1918). The personnel roster of the 17th Spruce Production Squadron lists men from all 48 states plus two Canadian provinces.

When he was assigned to the Spruce Production Division, Col. Brice P. Disque was arguably the only man in the Army who was capable of meeting the SPD's major objectives. These were to produce aircraft-quality spruce and to solve the west coast lumber industry's labor problems. Early in his career, Disque had distinguished himself in the Philippines by building an Army maintenance group into a thriving contracting business. Later, as a civilian, he ran the training programs and industrial services of the Michigan State Penitentiary so well that the prison actually made a \$371,000 profit for the state (Hyman 1963: 30-33).

By the end of 1917, then, the Army had entered the west coast lumber industry not simply as a regulating force in a chaotic time, but as a factor in the industry, providing labor, building mills, and eventually buying timber land. Folk humor records that Disque "came to see and stayed to saw." The result was one of the most unusual and controversial actions of the military during the war.

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THE SPRUCE PRODUCTION DIVISION AND LABOR RADICALS

Disque moved against the radicals 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 IWW 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.

When we compare this strategy to other early 20th century attempts by federal or state authorities to solve "labor problems," Disque looks like a genius. Not only was he successful, but he managed the situation in a humane and thoughtful way. Historian Robert E. Ficken attributes Disque's success to the influence of Carleton Parker, economics professor at the University of Washington; Henry Suzzallo, President of the University, and James Scherer, national defense council.

These three men, especially Parker, preached that only by eradicating abusive working conditions could the I.W.W. be immobilized and the lumber output be maximized. Advised by Parker, Disque determined that Army personnel should be provided to make up the industry's labor shortage, and that means should be found to improve the lot of the workers. Thus were born two unique organizations: the army's Spruce Production Division, and the Loyal Legion of Loggers and Lumbermen.... (Ficken 1979:36)

Although Disque may well have "believed that all labor unions were infected with the radical virus," the perceptions he recorded in his notebooks suggest a more complex sense of the situation (Hyman 1963:35; Disque Papers). Visits to logging camps and mills convinced the Colonel that the IWW propaganda had not exaggerated the miserable living and working conditions that the loggers had to endure. Loggers lived in crowded camps without bathing facilities and with no provision for clean bedding or laundry. The food in some camps was inedible. "Disque was filled with sick dismay that American workers in the twentieth century had to live as the loggers did" (Hyman 1963: 110).

Negotiations between the industry, labor groups, and the Army were complex. The lumbermen were anxious to get soldiers into their mills and camps, but they were suspicious of Disque and chary of anything that could be seen as compromising their autonomy (Evans and Williams 1984: 10). The unions were naturally opposed to any government intervention in the industry. Disque had, in his exasperation, adopted what Hyman calls a "plague on both your houses" attitude towards the lumbermen and the labor leaders.

Nevertheless, he continued to meet with both sides during the winter and gradually won a certain amount of respect. Disque's day-books reveal frequent meetings with IWW leaders during December of 1917 and January of 1918. Among the IWW contacts that he names were Pat Rooney, Joe Willis, and a third man

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named Ellis. The compromise that Disque worked out is detailed in the SPD policy statement "Employment of Soldiers in Private Camps and Mills" (Disque Papers). Most historians agree that this policy was Disque's best contribution to labor peace (Evans and Williams 1984: 10; Tyler 1967: 116ff; Dubovsky 1969: 413).

The employment policy made soldiers available to the lumbermen on the basis that "for every soldier furnished, 100 feet of aircraft stock will be turned out each working day" (Disque Papers, "Employment," n.d.: 68). This meant that any logger or mill owner could get soldiers into his operations to fill in labor shortages, break strikes, prevent sabotage, or impede the IWW habit of "striking on the job." The trade-off was that the lumbermen had to provide accommodations for the troops, and these needed to meet the "sanitary regulations of the War Department." "It is the present plan that troops should board with the logging company ... if this cannot be done without crowding, a separate mess hall should be built for the troops."

All troops were to receive "the same pay as civilian labor," but that pay was to be \$3.50 per 8-hour day for loggers and less for common laborers. The pay standard for soldiers and civilians was above the former rate for loggers. Pay was to be drawn every two weeks, and no charges were to be deducted for medical service. The document goes on to list specifications for "recreation rooms," "bathing facilities," "latrines," "sleeping facilities," and "dry rooms." These very issues--especially the 8-hour day, showers, and bedding--had been the crux of the IWW's campaign for the last 10 years.

These concessions were a bitter pill for the lumbermen, but the prospect of a second summer like the summer of 1917 was too depressing to contemplate. The SPD divided the coast into six divisions--Puget Sound, Grays Harbor and Willapa Bay, Vancouver, Clatsop, Coos Bay, and Yaquina Bay--extending its influence into virtually all the northwest coast logging areas. The strength of the Division grew to 27,685 men and 1,142 officers by May of 1918. By the end of the war, the SPD officers and men numbered more than 30,000.

The Spruce Production Division extended its influence beyond spruce through the Loyal Legion of Loggers and Lumbermen, an industry-wide organization headed by Col. Disque. Attributed to Disque and University of Washington economist Carleton Parker, the concept of the Loyal Legion was a daring one which met with some success during the war. As early as December of 1917, *The Timberman* reported that "the red, white, and blue button of the Legion is being proudly worn in every [lumber producing] district." By the end of the war, 4L membership had grown to 130,000 (*The Timberman* Dec. 1918: 29).

Like the SPD soldier-logger concept, the Loyal Legion promised industrial peace if both workers and lumbermen would make concessions. An early version of the 4L code asked employers and employees to endorse the following goals:

- To maintain the 8-hour day
- To ensure a "just and equitable wage"
- To standardize conditions in camps and mills

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- To create a community spirit
 - To encourage cooperative hospitals
 - To provide health and accident insurance and pensions
 - To institute employment service
 - To further recreation and education
 - To establish a common ground among labor and owners
 - To promote better relationships within the industry
 - To provide the means for amicable adjustment of issues
 - To provide information within the industry
 - To promote settlement of logged-over land
 - To develop loyalty to the United States
- (4L Papers)

A few of these goals appear somewhat dated, but the basic concerns about working conditions, wages, hospitalization, accident insurance, health care, pensions, employment service, and education are compelling and were certainly forward-looking for 1918.

The Loyal Legion had the most impact on the coast and in the Inland Empire--the great pine-producing region of Washington, Oregon, and Idaho that had been associated with radicalism since the days of the Western Federation of Miners. The combined efforts of the SPD soldiers and the Loyal Legion members had a stabilizing effect on the lumber industry throughout the region. As Disque anticipated, establishing the 8-hour day deprived the radical groups of their most popular issue. Although the 8-hour day concession had been tried before--most notably by Washington's Governor Lister in August of 1917--Disque made it stick, at least until the end of the war (*The Timberman*, August 1917: 31).

PRODUCING AIRCRAFT SPRUCE

GETTING OUT THE SPRUCE, WINTER, 1918

-Spruce soldiers number 25,000 and are organized into 34 Squadrons and assigned to logging camps and lumber mills in Oregon and Washington. The "agreement" between the SPD and the industry is that for each soldier assigned, 100 board feet of spruce must be cut each day. Soldiers are to be fed, housed, and cared for to Army standards, and can work only 8 hours/day. All facilities for housing, cooking, sanitation, transport, and recreation must pass weekly inspections. Medical administration from Vancouver Barracks inspects camps and maintains soldiers' health.

-The SPD commits to building additional mills at Port Angeles, Washington, and Toledo, Oregon to supplement the main mill at Vancouver Barracks.

-SPD commits to building and operating 13 logging railroads in Oregon and Washington. The first, SPD RR #II, is complete in May.

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As we have seen, Disque proposed to augment spruce production by bringing the SPD directly into the business of cutting timber and making lumber. This proposal--like his proposal on the labor issue--was bold and decisive. It also met with success in that it did increase spruce production to an acceptable level. On the negative side, however, Disque's industrial schemes were criticized after the war for their excesses. Disque's mentors in the industry included some knowledgeable lumbermen and loggers, particularly from the spruce-producing areas of western Washington. Such industry notables as Mark Reed of the Simpson Logging Company, J.J. Donovan of Bloedel Donovan, Timothy Jerome of Merrill and Ring, and G.S. Long of Weyerhaeuser comprised an informal council of advisors (Ficken 1979: 36-8).

The Spruce Production Division's manufacturing plans 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 that had the private mills cutting cants that were shipped by rail to a government mill at Vancouver for re-manufacture into airplane lumber. Before the end of the war in November 1918, Disque was to reconsider both these strategies.

The practice of riving or splitting the logs lengthwise into several pieces before removing them from the forest came in response to the size of the spruce trees and the rugged terrain of the coast country. While a full-sized spruce log would strain the largest donkey engines and require a railroad to move it to the mill, the riven logs could be transported by motor truck over plank roads (Evans and Williams 1984: 12). Since the SPD proposed to open up new timber stands that did not have railroad spurs, the riving strategy had a great appeal. Waiting for railroad construction and the delivery of large donkey engines would have delayed production for months.

In August of 1917, Nels Est of Aberdeen, Washington, argued that riving spruce cants produced superior material because splitting, unlike sawing, did not cross the grain lines (*The Timberman*, August 1917: 42). By September, there was a Rived Airplane Spruce Stock Association in Aberdeen, Washington. The rived cants produced in Aberdeen were pictured in the September issue of *The Timberman*, showing large cants of perhaps 24" on each side, hewn square, and cut to lengths of 20 feet.

When the SPD began issuing logging contracts for rived spruce, the loggers complained that they were not getting a fair scale (Disque Papers, General Orders, Feb. 9, 1918). Loggers continued to object to riving until Disque responded to their concerns by hiring George Breece in April of 1918. Breece was experienced in hardwood manufacturing and showed Disque some sophisticated sawing techniques that could preserve the spruce's grain. The SPD officially abandoned the practice of riving in April, 1918 (Disque Papers, General Orders, April 20-27, 1918).

The SPD approach to milling aircraft lumber was a centralized system which had private mills supplying large pieces of spruce lumber to the Government remanufacturing or "cut-up" mill in Vancouver. The Vancouver plant was part of the SPD's original plan and was built by soldiers in 45 working days during the winter of 1917-18 (*The Timberman*, Feb. 1918: 35). When it opened in February of 1918, the plant had a

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daily capacity of 600,000 board feet, on a 24-hour operating basis. Housed in a new building 348' x 300', the plant included six sets of circular saws mounted in tandem, with edgers, resaws, and trim saws supporting them. Associated with the plant was a battery of kilns capable of drying half the plant's projected output (*The Timberman*, Jan. 1918: 45).

The advantage of the centralized remanufacturing plant was that the spruce could be sawn to the exacting tolerances that the aircraft manufacturers demanded without training hundreds of sawyers in private-sector mills. The disadvantage was the milling-in-transit plan. The spruce logs had to be cut into cants or flitches at small mills, loaded into boxcars, shipped to Vancouver, unloaded, resawn into finished dimensions, loaded again, and shipped to the end user. This required extra handling and excess capacity on the railroad system.

In 1917, the railroads evidently had that capacity. By 1918, however, there was a nationwide shortage of boxcars. Although the SPD had priority rights, the division felt the car shortage as early as February of 1918 (Disque Papers, General Orders, Feb. 23-March 2, 1918). By the spring of 1918, the car shortage was general throughout the northwest and was a frequent subject in Disque's day-book. The SPD maintained its productions quota of 11 million board feet each month, but the centralized remanufacturing plant made it more vulnerable to the shortage of rail cars than a decentralized system would have been (*The Timberman*, Jan. 1918: 4)

BUILDING RAILROAD No. I IN CLALLAM COUNTY

THE SPD REACHES MATURITY, 1918

-In **January**, SPD timber cruisers identify the privately-owned spruce stands in the central Olympic Peninsula as the best available.

- In **April**, the SPD produces 13,000,000 board feet of aircraft spruce, 70% of which is shipped to aircraft plants in Europe. This is not enough to satisfy the Allies. President Wilson creates the Division of Aircraft Production in the War Department, and appoints John D. Ryan as chief with authority over the SPD.

-In **May**, SPD contracts with New York construction firm Siems, Carey-H.S. Kerbaugh to log 250 million feet of spruce and to build railroads to reach it. Civil engineer B.B. Kelliher arrives at Port Angeles.

-In **July 12**, the SPD's contractor, Siems, Carey-H.S. Kerbaugh, begins work on Spruce Railroad No. I, also known as the Clallam County Railroad. It will be a 36 mile mainline route through the Olympic range from Port Angeles to Lake Pleasant. Work on two associated mills begins, and the SPD buys the Olympic Hotel in Port Angeles.

-In **August**, the SPD produces 28,000,000 board feet. In the same month, the Spruce Production Corporation (SPC) is chartered in Washington (state) to handle the business affairs of the SPD.

-On **November 11**, Allies and Axis sign the Armistice, on **November 30**, track on RR#I is complete to Lake Pleasant

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The winter and spring of 1918 brought additional pressures from the Allies for more aircraft. President Wilson responded by creating a Division of Military Aeronautics and a Division of Aircraft Production within the War Department. The Division of Aircraft Production was to coordinate all aspects of aircraft manufacturing, including spruce production. Wilson placed a civilian, John D. Ryan, in charge. Ryan was President of the Anaconda Copper Company in Montana, and also a member of the boards of the Chicago, Milwaukee, and St. Paul railroad and the Montana Power Company. Ryan had authority over Disque and the SPD (McCollister and Gill 1919).

When he decided to end the practice of riving spruce logs in the woods in April of 1918, Disque committed the SPD to conventional logging technology. This meant that the organization needed large donkey engines to move the logs through the woods, and new railroads to bring the logs to the mills. Both of these technologies were considerably more expensive than the riving and trucking strategy. Since the best Sitka spruce was located in places that existing railroads did not serve, the SPD built 13 railroads in Oregon and Washington to reach the spruce. Most of the railroads were short logging lines, but two were more bitious. These were railroads in Clallam County, Washington and Lincoln County, Oregon.

The Clallam County railroad (SDP RR#I) was to reach extensive spruce stands in the center of the Olympic Peninsula. SPD timber cruisers estimated the volume of Sitka spruce there at 2 billion board feet (*Timberman*, Jan. 1918:45). This would be eight years' supply. They had combed the Pacific coast for spruce from Nome, Alaska, to northern California and concluded that this stand and the Blodgett Tract in Lincoln County, Oregon, were the best available. The Olympic Peninsula spruce forest was on private lands owned by several timber companies, including Bloedel-Donovan. The Milwaukee Land Company, a subsidiary of the Chicago, Milwaukee, and St. Paul railroad, owned 19,000 acres.

To reach the Olympic spruce, a railroad would need to cross the Olympic range from the Straits of Juan de Fuca, or proceed from the south up the coast from Grays Harbor. The southern route would connect to the Northern Pacific railroad system, which extended north from Hoquiam on Grays Harbor to Moclips. The western route could connect with the Chicago, Milwaukee, and St. Paul system. This railroad operated a line from Port Townsend west along the Straits through Port Angeles to a point near the Pysht River, simply called "Deep Creek" (*Timberman*, Jan. 1918:45). Another route to the spruce would run south from Clallam Bay up the Hoko River. This route would not connect with a transcontinental railroad. Logs would be put in the water at Clallam Bay and towed by tug to a mill.

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No route to the spruce timber would be easy to build. Since the peninsula was sparsely populated, there would be little revenue for the railroad beyond logs. Since the supply of logs in Washington exceeded the demand, at least during peace time, there was little incentive to build an expensive railroad to the interior of the Olympic Peninsula.

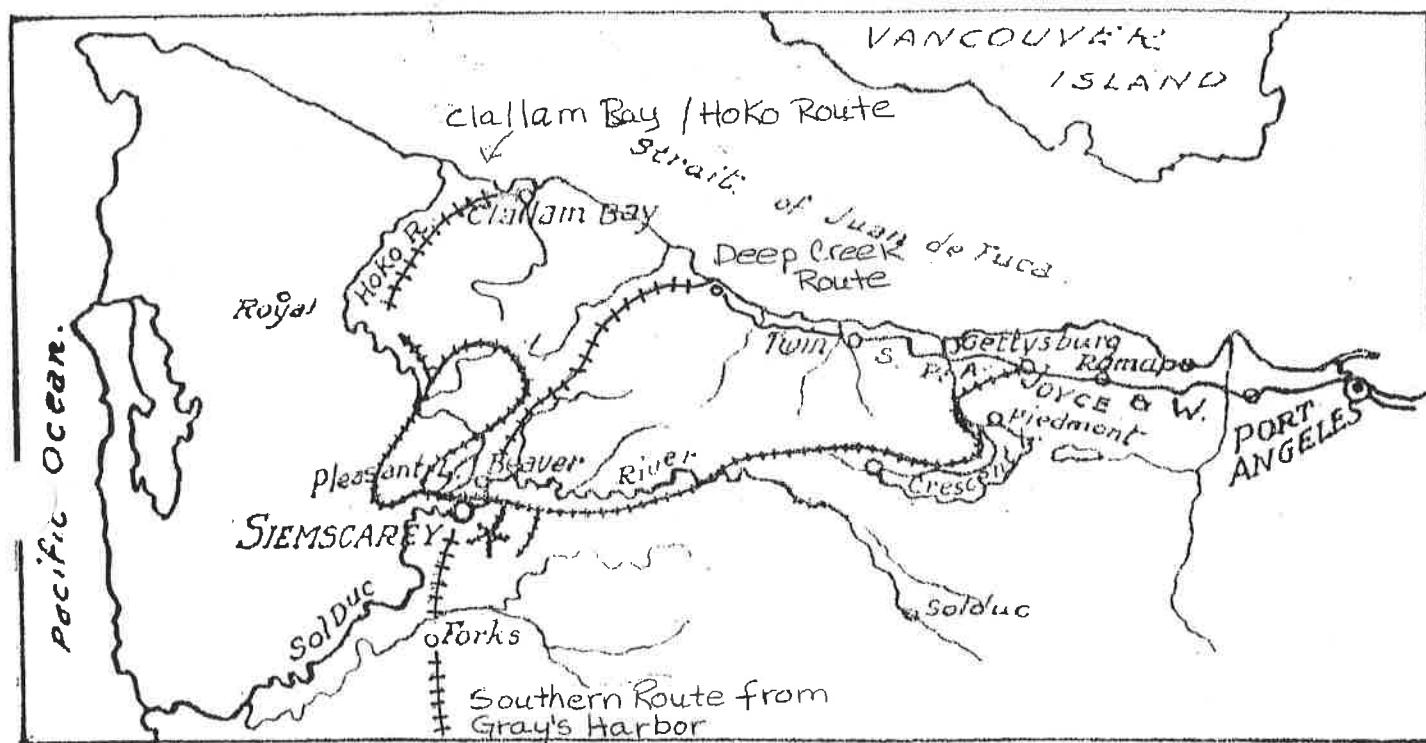
Although the SPD was considering the Olympic Peninsula project as early as January, 1918, it appeared rather abruptly in May as a fully-developed plan with choices of railroad, contractor, and timber sources in place. The Chicago, Milwaukee, and St. Paul (Milwaukee railroad) would be the favored railroad, and a New York construction firm, Seims, Carey-H.S. Kerbaugh (Seims, Carey) would be the contractor. The contract called for Siems, Carey to deliver 250 million board feet of spruce flitches in 18 months. To do this, they would first need to build a main line railroad to Lake Pleasant, then build over 100 miles of logging spurs, two new saw mills with a combined capacity of 2 million feet/day, coordinate with six private timber companies who owned the spruce, build and operate 20 logging camps, and supervise a working force of 6,000 men (McCollister and Gill 1919:38; *Spruce* November 1918). The contract gave them about six months to get this massive infrastructure in place. The 250 million feet of spruce would be cut and made into aircraft lumber in the remaining 12 months.

The contract with Siems, Carey called for a \$25,000,000 payment for the spruce and a "cost plus" arrangement for building the railroads, mills, and other infrastructure. "Cost plus" contracting means that the contractor submits the actual costs of materials and labor and then gets an agreed-upon markup as its profit, in this case, 7% (Minority Report, Select Committee on Expenditures of the War Department 1920:44).

This method does not provide an incentive for the contractor to keep costs low. The more the contractor spends, the more the profit will be. John D. Ryan excused himself from signing the contracts since he served on the Chicago, Milwaukee, and St. Paul Board of Directors and had numerous financial ties with the railroad.

The chief civil engineer on the project was B.B. Kelliher, an experienced railroad location and construction engineer from Canada. Siems, Carey's construction superintendent would be Mott Sawyer, who was commissioned Major for the project. In civilian life, Sawyer was a construction engineer with the Milwaukee railroad (*Spruce*, November 1918; Testimony Aug. 29, 1919, Select Committee on Expenditures of the War Department 1919: 1243).

Kelliher and his staff reached Port Angeles in May of 1918, and their first job was to locate the route from the Milwaukee main line to Lake Pleasant. There were two possibilities. The Milwaukee had surveyed a route through the mountains from Deep Creek to Forks, Washington. This would pass Lake Pleasant, and would be adequate for the SPD's needs. A second route would run from the Milwaukee main line to Lake Crescent, then over Muller Summit to the Sol Duc River and then to Lake Pleasant.

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Continuation SheetSection number 8 Page 15Railroad Routes to Reach Lake Pleasant, 1918 Base Map from *The Timberman*, November 1918

Map of Clallam County, Washington, showing railroad being built by Seims, Carey-H. S. Kerbaugh Corporation and relation to Port Angeles, Clallam Bay and other Olympic Peninsula points.

Both routes had their merits and their defects. The Milwaukee railroad had surveyed the Deep Creek route. They incorporated it into their expansion plans, but the Department of Transportation denied their application for the duration of the war. Naturally, the Milwaukee staff had a strong interest in the Deep Creek route. Kelliher apparently favored the Lake Crescent route, although preliminary surveys by his staff had favored the Deep Creek route (*Spruce*, November 1918:16). Testimony submitted by James A Frear and Walter W. Magee to the House Committee on Expenditures of the War Department (August 29, 1919) provides evidence that Col. Disque and Newton Baker, Secretary of War, formally approved the Deep Creek route on April 24, 1918.

Nevertheless, the contract with Seims, Carey signed on May 18, did not specify the route.

The contract provided that the road [i.e., railroad] should be constructed in whatever form might prove necessary or desirable. An engineer to be employed in the work was empowered to both interpret and revise plans and specifications, and all such conditions were subject of the engineer's approval, binding both the Government and Seims, Carey-H.S.

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Kerbaugh Corporation without any right of appeal from his decision (Fryer and Magee to Newton D. Baker, Testimony Aug. 29, 1919, Select Committee on Expenditures of the War Department 1919: 1247)

The best explanation for this latitude was that Seims, Carey was responsible for delivering the 250 million feet of spruce in 18 months, and no one wanted to compromise their choice. This commitment would require them to cut and ship an average of 1.5 million board feet each day. This is a prodigious volume of timber, equaled by very few other operations. Only the Weyerhaeuser mill in Longview, Washington, and the Red River Lumber Company mill in Westwood, California, would ever sustain this volume of timber production.

Since Seims, Carey were responsible for delivering the material, it made sense to let them choose the route that they thought would be best. Disque remarked that his advisory committee of lumbermen told him "...to leave the matter alone, ...that they [Seims, Carey] were capable of doing the thing they had contracted to accomplish, and [that] it would be a mistake ...to interfere with Seims-Carey-Kerbaugh operations."

At the hearings in 1919, Disque provided a letter written on April 4, 1918, from logging engineer L.A. Nelson of the Forest Service that neatly sums up the situation:

A further investigation of the Milwaukee [i.e. Deep Creek] and the Lake Crescent routes is necessary to determine which is best. This must be considered not only on the standpoint of gradient, but on the character of the country and soil, the latter in regard to the possibility of slides holding up shipments. The amount of timber available to each road [i.e., railroad] is another factor that should be given weight in the decision. The Milwaukee is probably committed to building the line projected [i.e. Deep Creek] but if the other route is best, some arrangement must be made for them to build by way of Lake Crescent. (Nelson to Disque, April 4, 1918 in Testimony, Select Committee on Expenditures of the War Department 1919:1572).

With the confusion reaching this level, Disque appointed a civil engineer named Roberts from the Union Pacific as a disinterested party and asked him to investigate. Roberts and his group reported to Disque, J.J. Donovan, and others on June 8 in Seattle. Roberts' report endorsed the Lake Crescent route, and Disque officially reversed his earlier decision in favor of the Deep Creek route (Minority Report, Select Committee on Expenditures of the War Department 1920:50).

Construction began in July on several parts of the railroad simultaneously. Seims, Carey engaged 12 sub-contractors for grading and excavation. The segment up the Lyre canyon was the most difficult. The two tunnels on the north shore of Lake Crescent and the bridges across the Sol Duc River were also time-consuming. The route on the north shore of Lake Crescent required stone revetments on the Lake. Olympic National Forest Supervisor Rudo Fromme argued that the route on the north side Lake Crescent should be high enough to avoid the summer residences. Disque vetoed Fromme's request (Fromme Narrative n.d.: 84). One blast sent 22 rocks through the roof of a "millionaire's summer house." Disque relented and relocated the railroad further up-slope (*The Timberman*, November 1918:33).

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Supplying materials for the construction crews required trucks to navigate extremely poor roads through the mountains. One truck with a detached trailer apparently managed 86' long beams for the Howe truss bridges. For the work on the north shore of Lake Crescent, goods had to be shipped by water. Other supply routes required horses, mules, wheelbarrows, or backpacking through the rain forest. The SPD took over a lodge on the lake and two lake ferries. Workers were housed in rail cars and tent camps along the route. Telephone communication was essential for coordinating activities, and the telephone system was in place early in the summer. Other challenges included water supply for men and machinery, fuel for the steam-powered equipment, and sanitation measures adequate to the army of 4,000 workers (*Spruce*, November 1918).

At the peak of building in the flat Sol Duc valley, the steel gang was able to lay 1.5 miles of track each day. On the other hand, work on the two tunnels required three shifts of workers each day for most of the summer. Excavation was done by the liberal use of explosives, and track-mounted steam shovels to "muck out" after blasting.

While the twelve sub-contractors of Seims, Carey worked on the railroad, loggers began felling spruce trees near Lake Pleasant. A company town, Seimscarey, appeared on the east end of Lake Pleasant. The logging system proposed would have a 22-mile loop of railroad from Lake Pleasant into the mountains to the north and east. The loop would send "innumerable" temporary logging spurs into the surrounding hills. Additional spur systems were built off the main line at Calawa junction and at Bockman's junction. This system would tap the spruce forest of the Hoko River valley and adjacent lands. Logs would be loaded onto trains for the run to a mill under construction at Lake Pleasant. There the logs would be cut into cants (or flitches) and then shipped down the main line to the mill at Port Angeles. The volume of traffic required for Seims, Carey to meet its contract obligations was estimated at 400 cars each day (*The Timberman*, November 1918:34).

While soldier/workers were building the railroad, and soldier/loggers were felling the spruce trees, other soldiers were building the two new saw mills. The mill at Seimscarey on Lake Pleasant was modest, but the mill at Port Angeles was a major installation. By the fall of 1918, work on both mills was progressing well. The isolation of Lake Pleasant meant that a portable saw mill had to be erected to cut lumber to build the permanent mill. Capacity of the mill at Seimscarey was to be 75,000 board feet each day. The equipment was to include 10-foot and 9-foot double-band saws on the head rigs, with some limited capacity for re-sawing (*The Timberman*, November 1918:34).

The mill at Port Angeles would be built on land donated by the city to the Spruce Production Corporation. It would have a capacity of 750,000 board feet in a 20-hour working day. This mill would also have two double-band head rigs plus re-saws and re-manufacturing equipment including gang saws for the over-grade spruce. Much of the equipment was purchased from a defunct mill in New Westminster, B.C. (*The Timberman*, November 1918:34). Unlike the SPD mill in Vancouver, Washington, the proposed Port Angeles

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mill would be less specialized and would be oriented to cutting whole logs as well as cants. Neither of the mills was finished by the time of the Armistice, and were never used for their intended purpose.

When the Armistice was signed on November 11, work came to a halt. The mills would not be finished, but the railroad was needed to remove the spruce that had been logged in the woods near Lake Pleasant. By the end of the month, the steel reached Seimscarey, and the railroad was officially complete.

AFTERMATH

SPD Railroad No. I after the Armistice

General Order 34, **November 23, 1918**, dismantles the SPD, suspends all contracts, schedules sales of equipment, lumber, and logs. Auctions dispose of equipment, January through June, **1919**.

-Hearings on alleged misconduct of SPD officers begin **August, 1919**. Congressmen James Frear (Wisc.), Clarence Lea (Calif.) and Walter Magee (N.Y.) preside. Disque and Ryan exonerated.

- Solicitation published for offers on Clallam County property and Lincoln County property, **September 2, 1919**.

-January 29, **1921**, storm blows down trees and renders salvage of logs impossible.

-June, **1922**, Lyon, Hill and Company buys the railroad and the mill property from the Government.

-Port Angeles and Western Railroad incorporated in February, **1925**, by Lyon, Hill.

-PA&W and Lyon, Hill sell all assets to Sol Duc Investment Co., **1929**.

-Railroad operations are slowed by Depression, 1929-1936, and formation of Olympic NP 1938

-PA&W suspends operation in October, **1951**.

-All rails and ties removed by **1956**.

After the excitement of construction, the rest of the railroad's life was a slow anticlimax. Neither the railroad nor either of the two mills served the war effort. Subsequent events in the history of Spruce Railroad

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No. I included the Congressional investigation of fraud and waste in its construction, its sale in 1922, and its decline over the next thirty years.

Many activities of the SPD were unusual, to say the least, but it was the construction of the Clallam County system that brought the most public censure. Col. Disque, who was promoted to General by the end of the war, enjoyed positive press until the spring of 1918. Then he and his newly-appointed supervisor John Ryan came under criticism for the Clallam County project. The sticking points with the project included four basic policy questions:

- Why did the Government choose Seims, Carey-H.S. Kerbaugh as contractor?
- Why did the Government offer a cost-plus contract?
- Why was the Lake Crescent route chosen?
- Why did the project include two unnecessary saw mills?

Congressmen James Frear (Wisc.), Clarence Lea (Calif.), and Walter Magee (N.Y.) presided over the hearings of the Select Committee on Expenditures of the War Department during the fall of 1919. The Committee's agenda was that Ryan was acting for the benefit of the Chicago, Milwaukee, and St. Paul railroad. Ryan's connections with the line included a seat on their Board, and lucrative contracts to supply the railroad with electricity in Montana. The Committee argued that Ryan had chosen the route through Lake Crescent so that the Milwaukee could buy the spruce railroad after the war at a bargain price. It would thus secure the most expensive part of a direct line from Port Angeles to the Grays Harbor area.

We [i.e. Reps. Frear and Magee] would rather see this railroad [SPD RR #1] and the mills scrapped than to have the Government sell them to the Chicago, Milwaukee & St. Paul for an insignificant percentage of their cost. The facts here presented speak for themselves and further investigation may disclose conditions upon which a recovery can be had against John D. Ryan and others who are responsible for this wasteful expenditure of public funds. (Frear and Magee to Newton D. Baker, Testimony Aug. 29, 1919, Select Committee on Expenditures of the War Department: 1248-1249)

The Committee also implied that Ryan was somehow connected with or partial to Seims, Carey-H.S. Kerbaugh, although this remains moot.

Ryan and other SPD officials, including Disque, answered that they made the best decisions that they could under the pressure of the war and the need for spruce. This generally satisfied the public (*The Timberman*, Sept. 1919:40). Disque also argued that he needed to give Seims, Carey a free hand if he was to hold them to their agreement to deliver 250,000,000 board feet of spruce in the short time allotted by the contract. Disque himself was probably not in a position to gain from his wartime decisions, but Ryan definitely was in such a position.

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At the end of the war, the SPD had about \$24,000,000 worth of equipment, lumber, and logs for sale. The Army appointed a Sales Board, which had all the logging equipment brought to Vancouver for the huge sale. This was to be the largest government sale since the disposition of the Panama Canal equipment. The Sales Board opened the bids in February of 1919. Only \$200,000 worth of goods moved out. The rest remained Government property, to be disposed of on a piecemeal basis that stretched out for several years (McCollister and Gill 1919:103).

The largest items in the inventory were the two flagship SPD holdings in Clallam County, Washington and Lincoln County, Oregon. Each consisted of main line railroads, logging spurs, and unfinished mills. The Lincoln County property also included valuable timber land. Neither attracted adequate bids.

It is interesting to speculate about the lumbermen's motives in declining to bid on the SPD properties. The best documented example is that of Bloedel-Donovan, who owned timber near Lake Pleasant and who could have used SPD Railroad No. 1 to advantage.

[J.J.] Bloedel and attorney McCord went to Washington and offered Secretary of War Weeks \$600,000 for the "Spruce Railroad" but the offer was refused. Bloedel told Weeks that he could build 25 miles of railroad into his timber from Clallam Bay for \$800,000 and haul logs over much less mileage than on the "Spruce Railroad." Weeks evidently thought Bloedel was bluffing, but...he admitted that he'd underestimated Bloedel's intentions. (Clark 1949:121)

In the early 1920s, the West Coast lumber industry experienced one of its periodic slumps and mill properties flooded the market. Then, in January of 1921, a huge cyclonic storm hit the Olympic Peninsula and brought down literally millions of trees. This damaged timber holdings in the central Peninsula and made the spruce logs that the SPD had left on the ground worthless. "The wind-thrown spruce and hemlock decayed before it could be reached. The fir was salvaged,... averaging 80% of the log content" (Clark 1949:117).

The two SPD properties eventually sold, and the buyers in both cases were groups assembled by San Francisco investor Fentress Hill. Hill, John K. Lyon, and F.S. Scritsmier created a firm, Lyon, Hill and Company, to buy the Clallam County properties in 1922. Hill and Scritsmier had also formed the Pacific Spruce Corporation with some other investors to buy the Lincoln County properties in 1920.

Hill's associates in the Pacific Spruce Corporation were R.J. Dunham of Chicago, F.S. Scritsmier of Portland, and Wendell Kuhn of Portland. Pacific Spruce and Lyon, Hill were both based in Portland. Hill had been manager of Lyon, Gary and Company, which was a financial firm in Chicago. Officers in Lyon, Gary included Calvin Fentress and Lucius Baker, who were involved in Baker, Fentress and Company of Chicago. Baker, Fentress was one of the largest financial firms lending money to the lumber business. Fentress Hill's name suggests that he was related to the Fentress family.

As far as we know, Lyon, Hill did not intend to manufacture lumber on the Olympic Peninsula. Clark (1949) dismisses Lyon and Hill as "speculators from the East," but with his Pacific Spruce Corporation

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experience, Hill at least was as heavily involved in spruce production as anyone on the West Coast. In January of 1918, Hill had attempted to buy the heavy spruce forest on the Blodgett Tract in Lincoln County, Oregon, from John Blodgett. He said in a letter to Blodgett on January 2 that he was interested in the tract so that he could "open it up" and make the spruce available to the war effort (Blodgett Papers, Hill to Blodgett, Jan. 2, 1918). Blodgett refused to sell to Hill, and the SPD eventually commandeered the tract for its spruce.

Hill led his associates into the spruce business in the early 1920s and then led them out of it. In 1924, the Hill group sold most of the Pacific Spruce Corporation to Southern lumberman C.D. Johnson (Tonsfeldt 1988: 82; Palmer 1982:162). Lyon, Hill incorporated the Port Angeles and Western Railway Company in 1925 as a subsidiary firm. In 1929, they sold the railroad and their other Clallam County holdings to the Sol Duc Investment Company.

As the Port Angeles and Western Railroad (PA&W), the Clallam County line ran log trains through the 1920s, eventually extending the track toward Forks. The Depression years were not kind to the railroad and PA&W found itself with serious maintenance problems on the track and the rolling stock. World War II brought an increase in traffic which lasted through 1948 (Russell 1971:90). In 1951 a fire near Forks interrupted the logging operations that sustained the railroad. In October of 1951 the railroad suspended operations. The ICC granted abandonment in 1954 (Keller 1954:10).

One of the last bright spots in the railroad's checkered history was the career of Harry LeGear. LeGear was a locomotive engineer working for the Milwaukee railroad in 1918 when construction started on Railroad No. I. He joined the Port Angeles and Western in 1925 and became Superintendent in 1928. Then he was promoted to Assistant Manager in 1932. He retired in 1940, but returned to work as General Manager in 1942. He became President of the Port Angeles and Western during the last years of its operation. After he closed the line that he had tended for so many years, LeGear told reporters that he would retire to his home overlooking Puget Sound and "think about railroading."

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Continuation Sheet**Section number 9 Page 1**BIBLIOGRAPHY AND REFERENCES CITED****Acknowledgement**

I am eager to acknowledge here the help I have received in gathering materials for this project. The following people have extended access to information that would otherwise have been unavailable.

Rod Crossley
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Paul Gleeson
Joan Robinson

Primary Documents

Bryce P. Disque Collection, University of Oregon Special Collections, Eugene, OR
Contains correspondence, photos, military documents, and journal (day book) donated by Disque

Bryce P. Disque Collection, University of Washington, Seattle
Contains six boxes of document and correspondence related to SPD activities in Washington.

Loyal Legion of Loggers and Lumbermen Papers, University of Oregon Special Collections, Eugene, OR. Corporate records, 1919-1936.

Michigan-California Lumber Company Papers, Bentley Historical Library, University of Michigan, Ann Arbor. Includes the Blodgett Company files relating to the SPD.

National Archives (NARA) Seattle

Record Group 18 is the major archive of SPD materials. Well-indexed. Military documents, correspondence, personnel documents, health data, contract administration, etc. related to SPD in the Northwest.

National Archives (NARA) College Park

Record Group 18 contains general military documents. Photos and documents are at College Park, including transcripts from the SPD hearings.

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Olympic National Park Archives

Holdings include original blueprint for RR#1 construction (in digital format), two collections of photos, and clipping file in addition to administrative documents. Memoirs of Rudo Fromme are available in this collection.

Washington State Historical Society, Olympia

Ashahel Curtis Collection has a photo-documentation of the construction of SPD RR#1

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American Lumberman

Spruce Production Railroad # 1

Name of Property

NPS Form 10-900-a

United States Department of the Interior
National Park Service

Clallam Co., Washington
County and State

OMB Approval No. 1024-0018

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Loyal Legion of Loggers and Lumbermen Monthly Bulletin
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Spruce [House organ of the Seims, Carey -H.S. Kerbaugh Company]

Seattle Times

The Timberman

Spruce Production Railroad # 1
Name of Property

Clallam Co., Washington
County and State

NPS Form 10-900-a

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

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Section 10

Verbal Boundary Description

The portion of the Spruce Production Railroad No. 1 eligible for nomination consists of linear district comprised of 23.52 of the original 36 miles. Detailed locational data for each segment is presented in Section 7. In general, the eligible portion begins near the crossing of the Lyre River and ends at the western boundary of section 32, T. 30 N., R. 11 W.

Boundary Justification

The project team conducted an end-to-end survey of the historic railroad to determine which portions retained integrity. The part of the railroad proposed for eligibility consists of those segment retaining the original materials, surface, and engineering characteristics of the railroad as it was built in 1918. There are some intervening segments which do not meet this level of integrity. They have been classes as non-contributing resources. The non-contributing segments constitute 5.52 miles or 23% of the 23.52 miles proposed for the linear district.

Photos from Proposed Linear District, Spruce Production Railroad No. 1



Photo W4-13 Trestle timber with drift pin, segment 5



Photo D1-1 Proximal end of segment 6, looking toward distal end, condition "C"



Photo D1-15 View through tunnel 2, segment 8

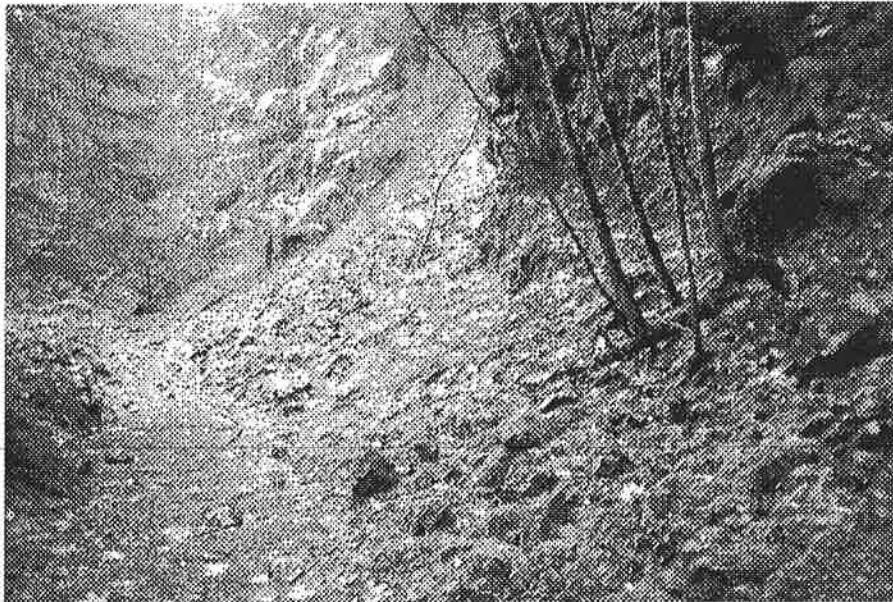


Photo W1-8 Grade in "B" showing slides, segment 9



Photo W1-5 Segment 9 grade in "B"



Photo W1-3 Culvert on segment 9



Photo W1-11 Segment 9 grade in "B"



L1-6 Collapsed structure at Manganese, segment 10



L1-5 Segment 10 grade in "B"



L2-3 Ties with spikes, segment 10



W2-10 Distal end of segment 11, condition class C



L2-8 Tie plate with spikes on segment 11



L2-5 Ties *in situ*, segment 11



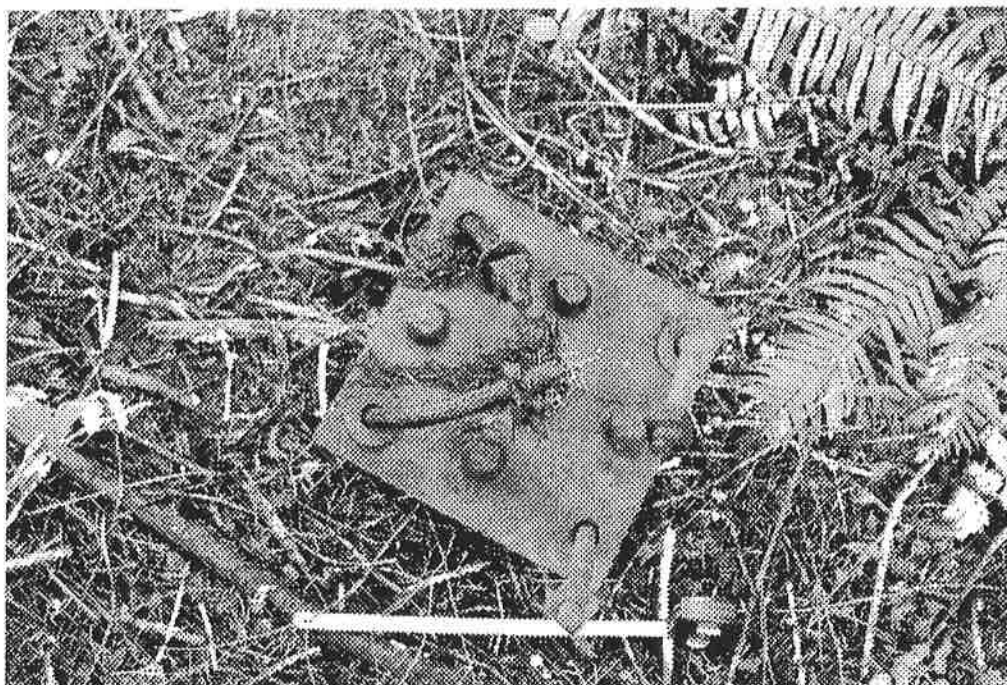
L2-22 Logging spur leaves main line, segment 12. Note long tangent on main line and the steeper gradient on the spur. View toward distal end.



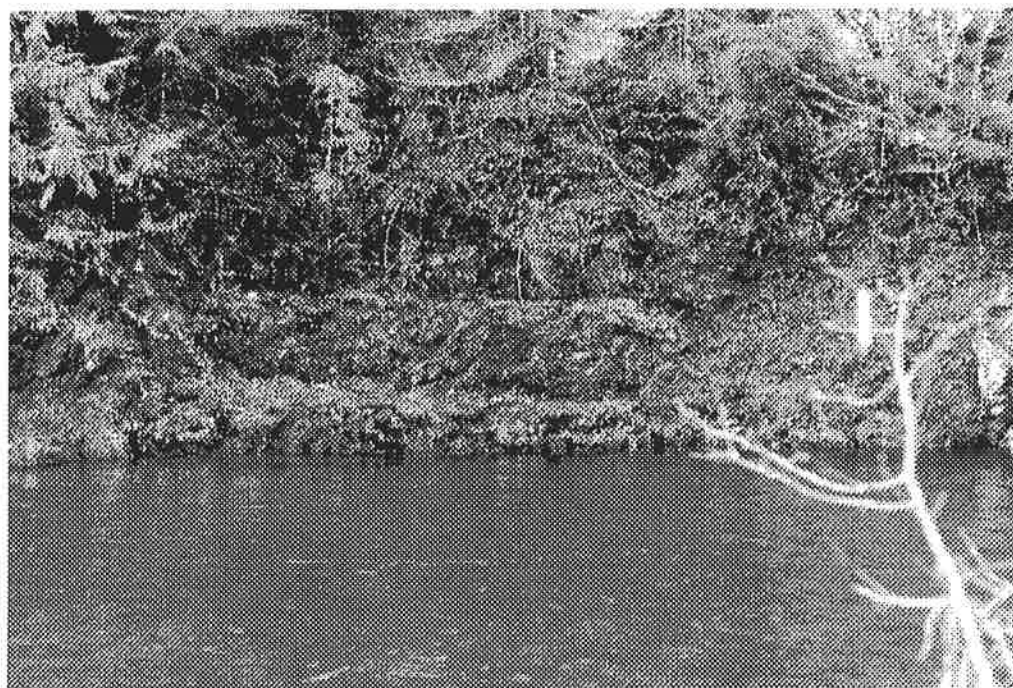
L2-18 Ties in pile beside grade, segment 12



W4-2 Steel fabrication, possible hinge, Sol Duc station site, segment 12



W4-4 Anchor plate with bolts, Sol Duc station site, segment 12



W2-7 Trestle site, Sol Duc crossing. Note excavations for bridge abutments. Segment 13



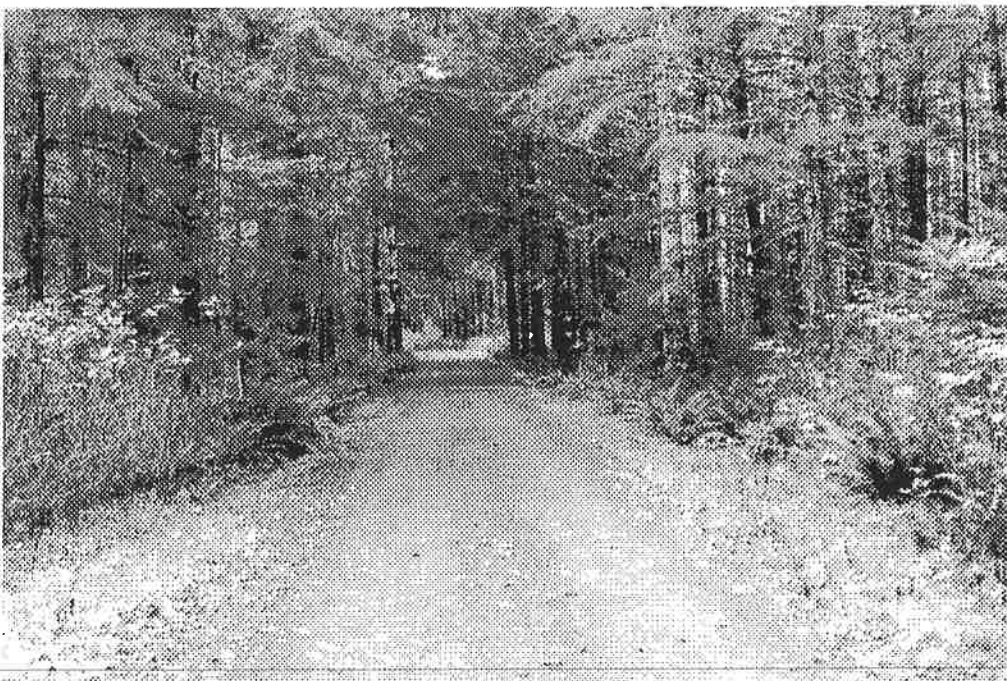
W2-5 Drift pin in timber, showing spalling. Sol Duc bridge site, segment 13



W2-9 Fish plate bolt and nut, bolt sheared at head. Segment 13



W2-13 Steel rod with castings from Howe truss. Segment 14



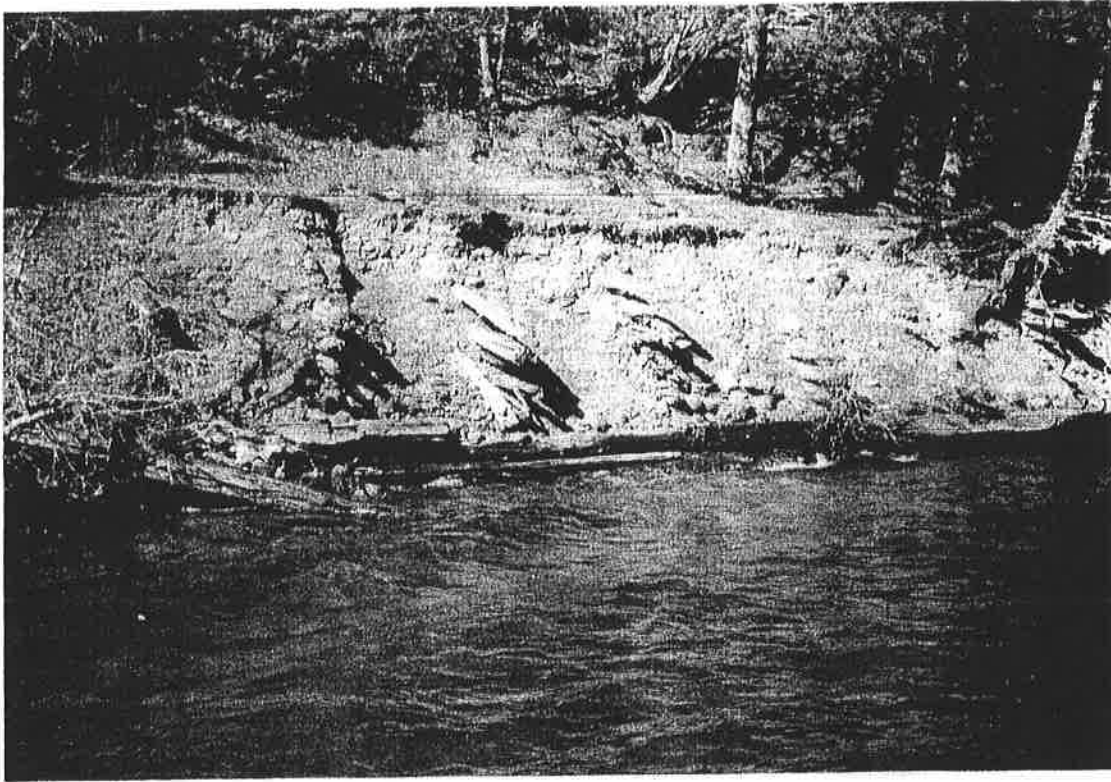
W2-16 Segment 14 grade in "C" View towards distal end.



W2-19 Embossed fire brick, Flight site, segment 16



W3-10 Segment 29 grade in "B"

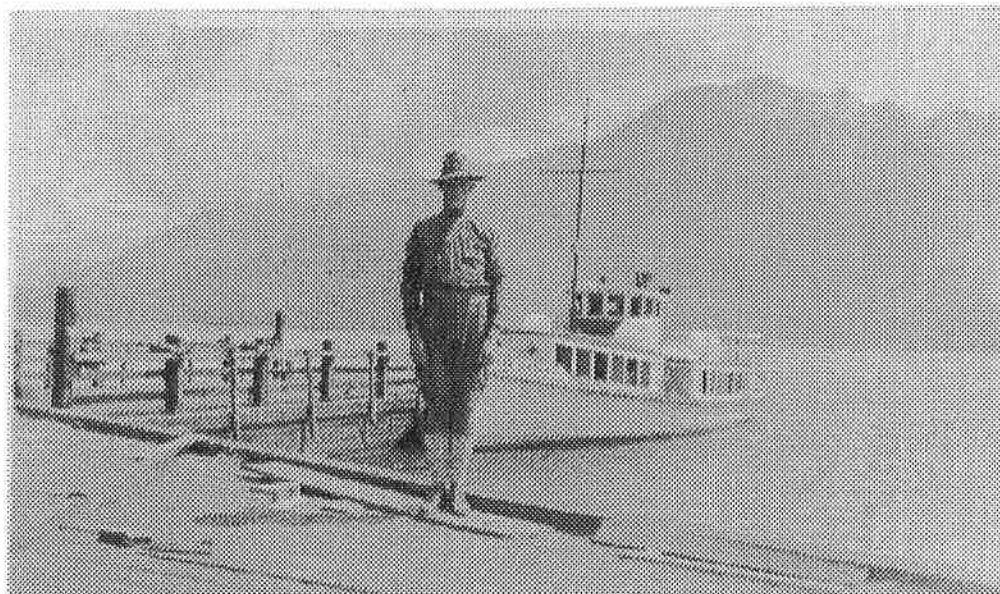


NPS1 Eroded revetment with facing stone collapsed, segment 9

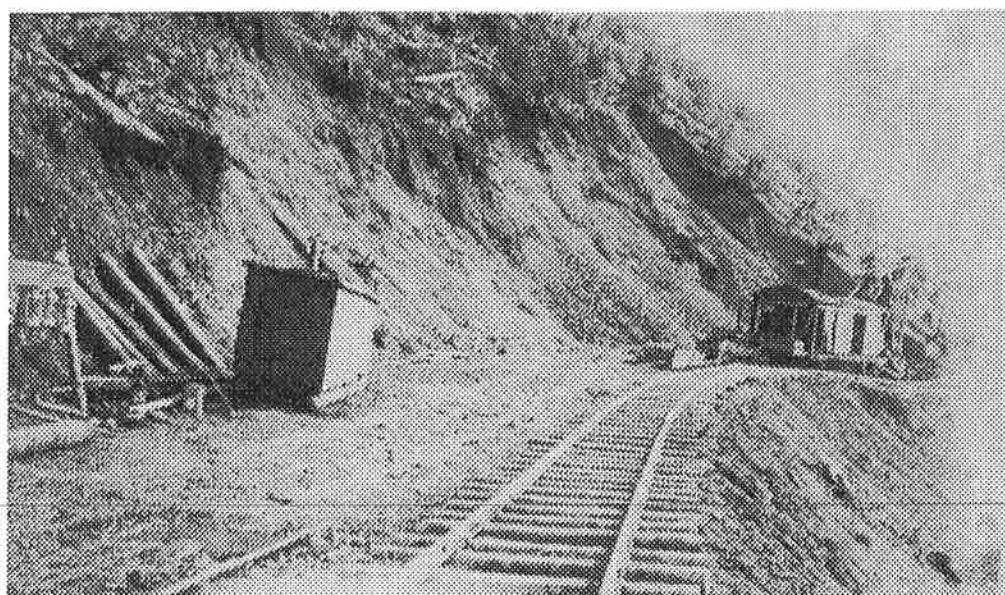


NPS2 Revetment with facing stone, segment 9

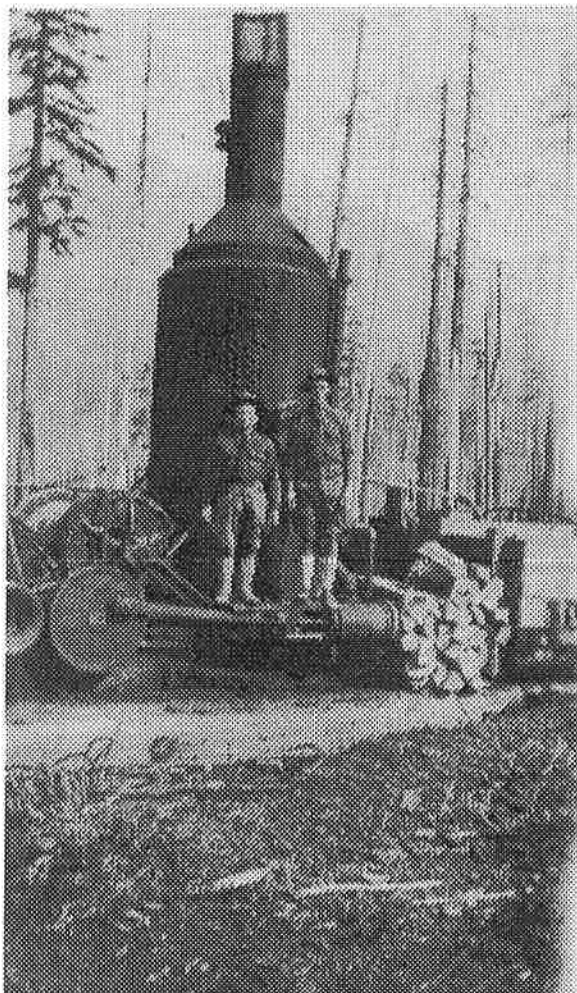
Historic Photos from Olympic National Park Collection



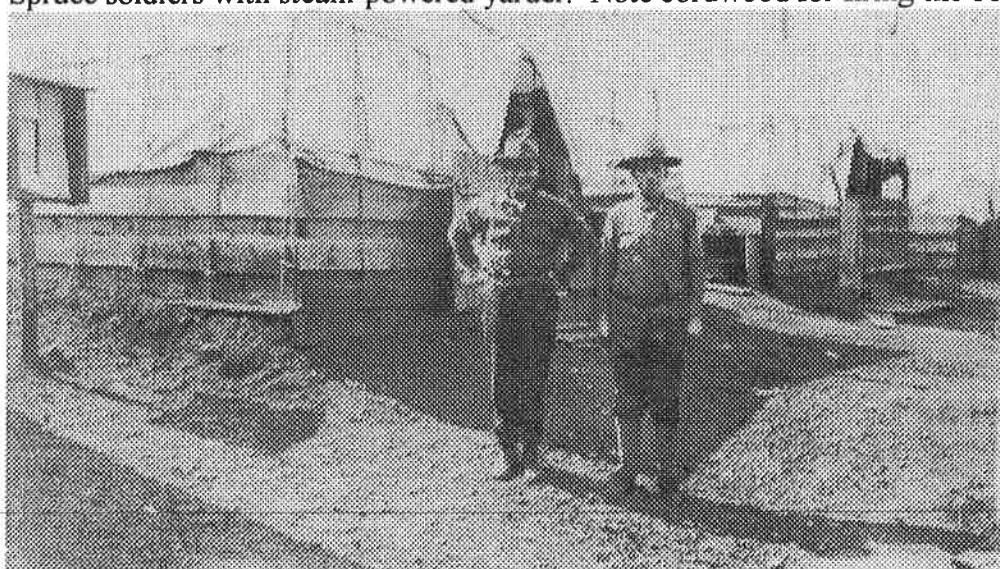
Spruce soldier with ferry on Lake Crescent.



View of construction with steam excavator widening grade



Spruce soldiers with steam-powered yarder. Note cordwood for firing the boiler.



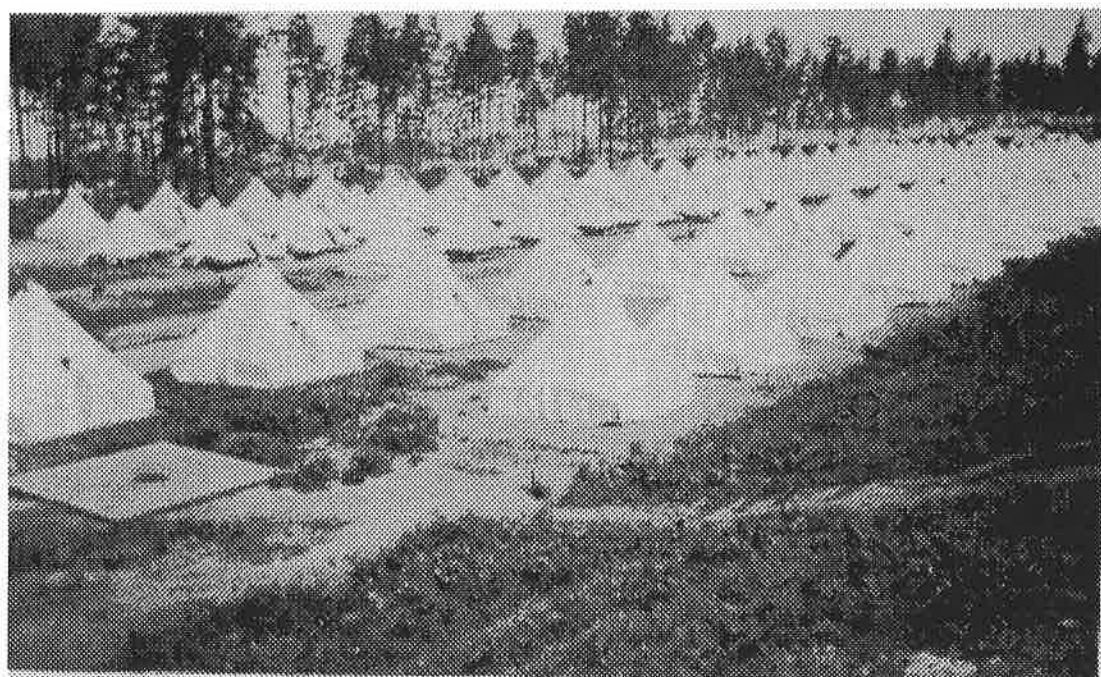
Spruce soldiers stand by frame tents with wooden walls and floors.



Spruce soldier with young Sitka spruce



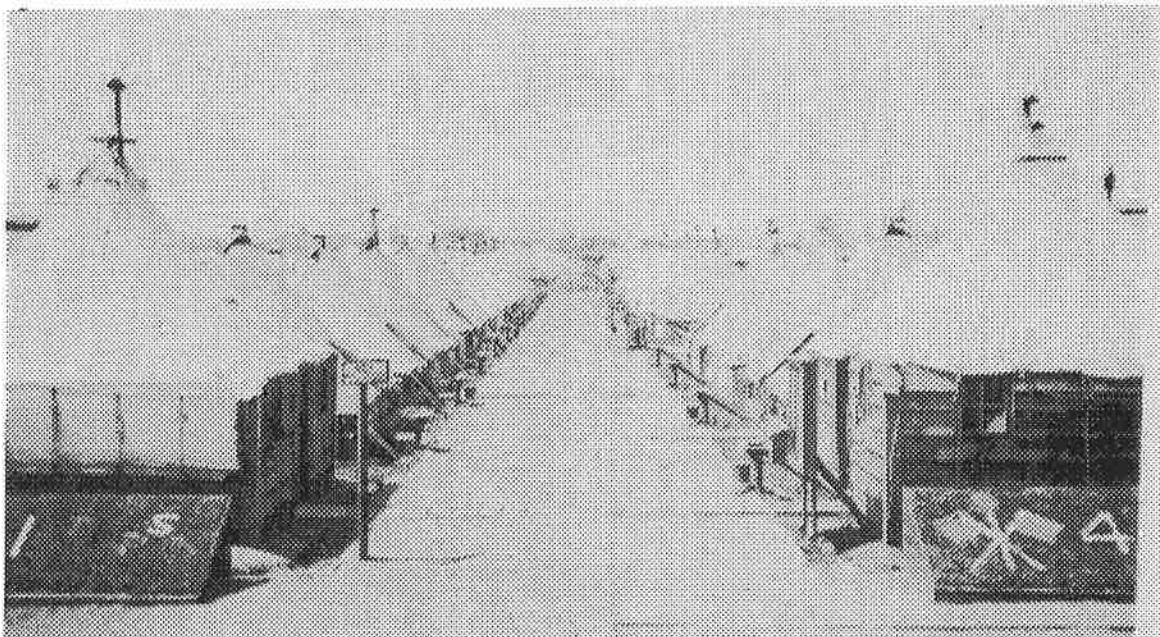
SDP camp with squad tents



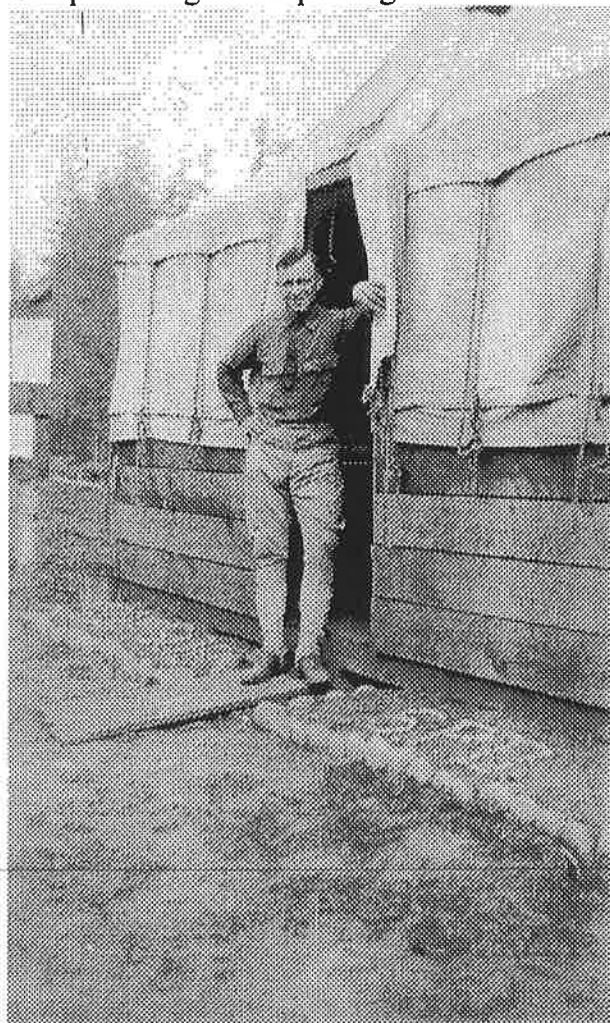
Squad tents arranged in a "tent city."



SPD truck used to haul men and equipment to construction work.



Camp with Signal Corps insignia for the SPD

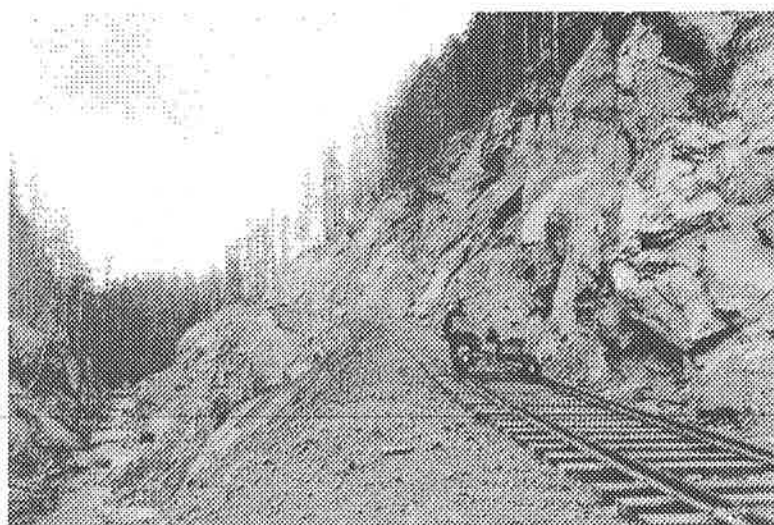


Spruce soldier with "SPD" and squadron number (not visible)

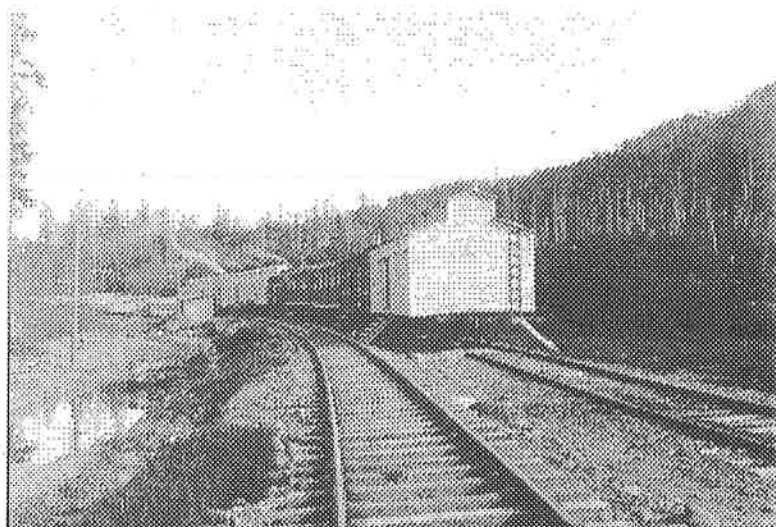
**Historic Photos of Spruce Production Division Railroad No. 1 Construction from the
Ashahel Curtis Collection, Washington State Historical Society**



Disque Junction, where SPD RR #1 leaves the Chicago, Milwaukee, and St. Paul main line. View west on Milwaukee. #38051



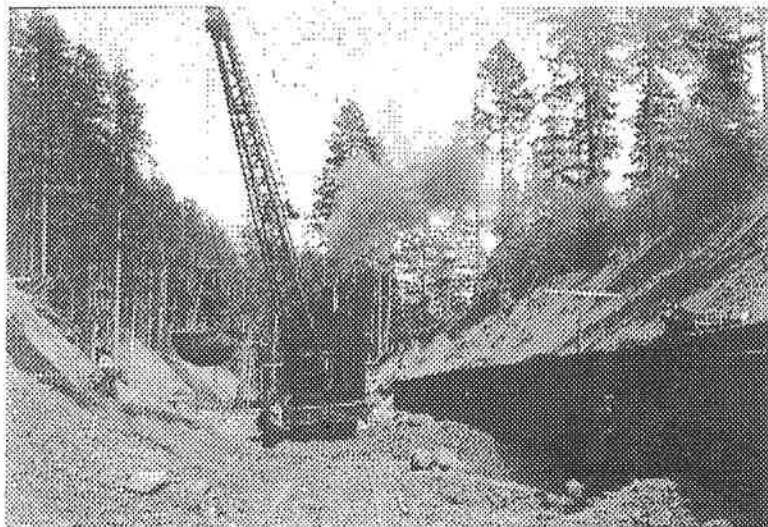
Grade in Lyre Canyon with speeder. #38054



Seims, Carey-H.S. Kerbaugh camp cars #38056



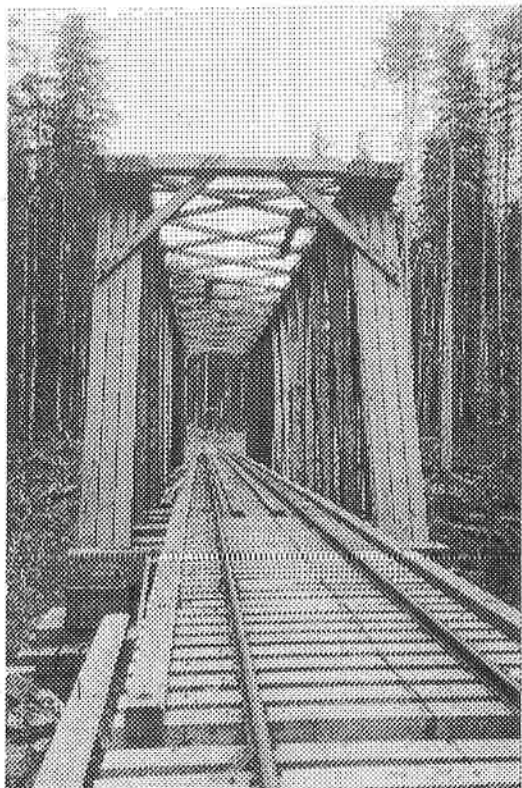
View of grade with telephone lines in place #38055



Excavating gravel for ballast #38066



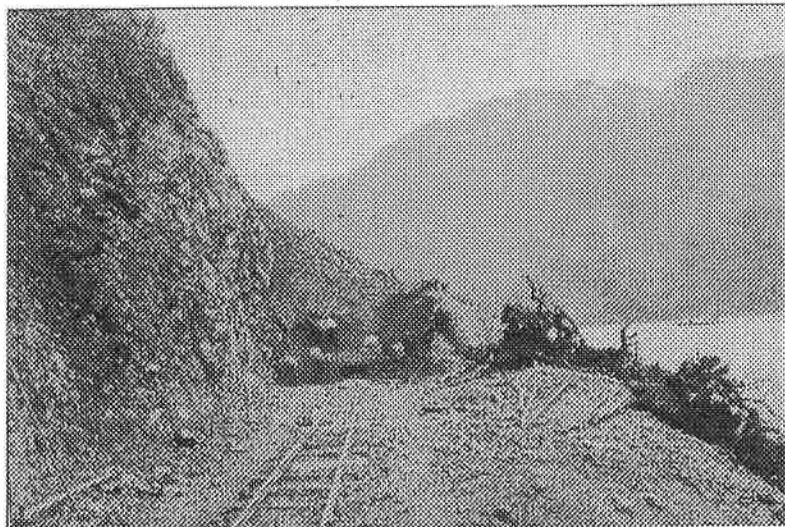
Elevated crossing of Highway 101 at Muller Summit #38068



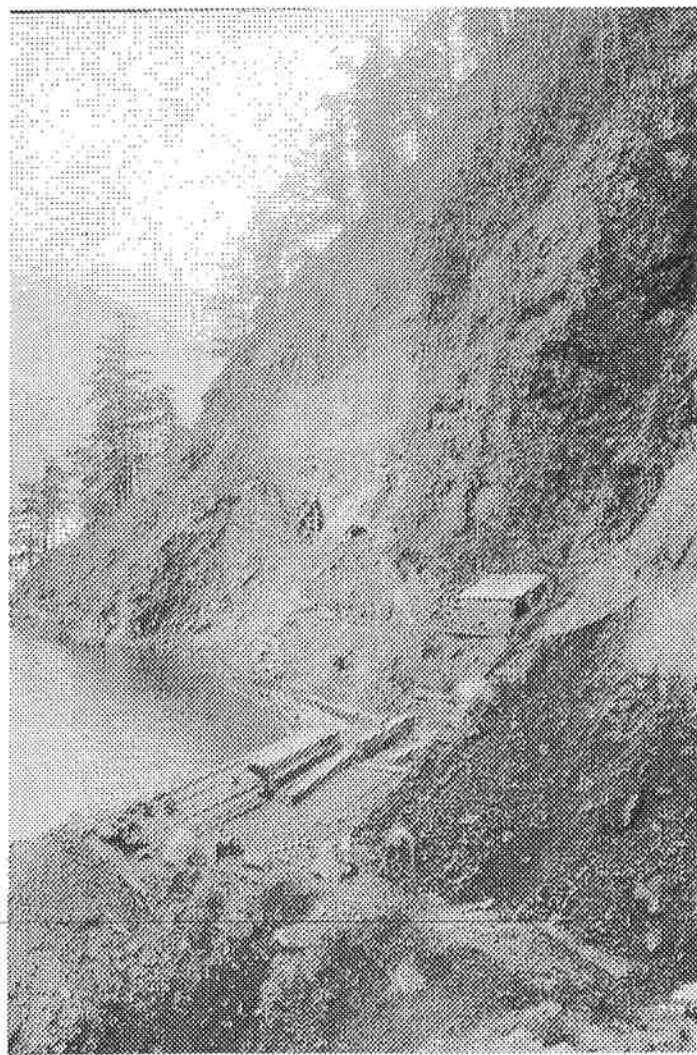
View of first Sol Duc bridge #38070



View of first Sol Duc bridge #38072



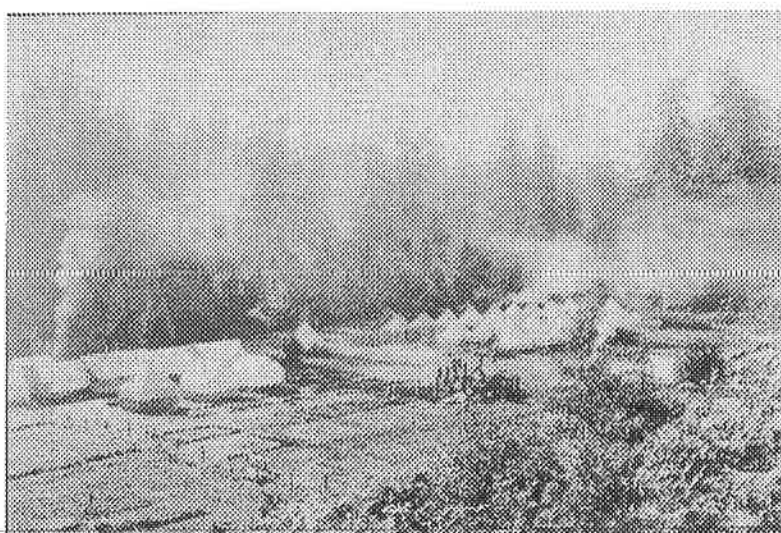
Work on north side of Crescent Lake #38407



Work on tunnel, north side of Crescent Lake #38412



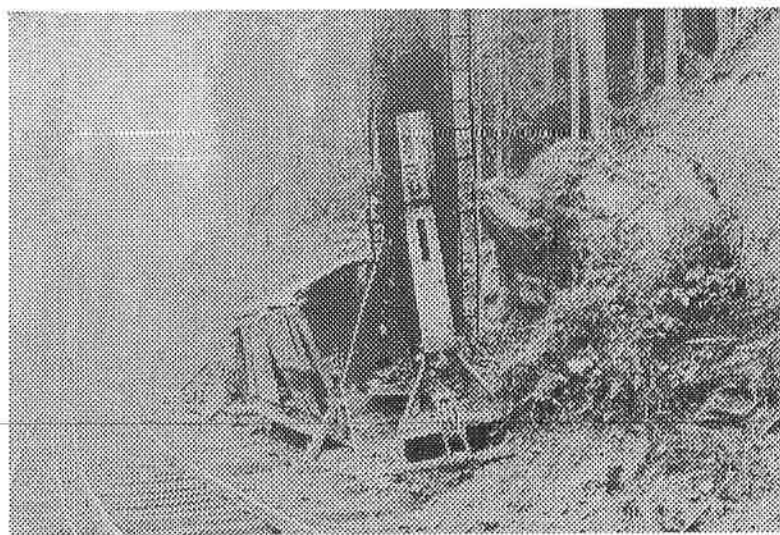
Steel gang laying rail with track-laying machine #38416



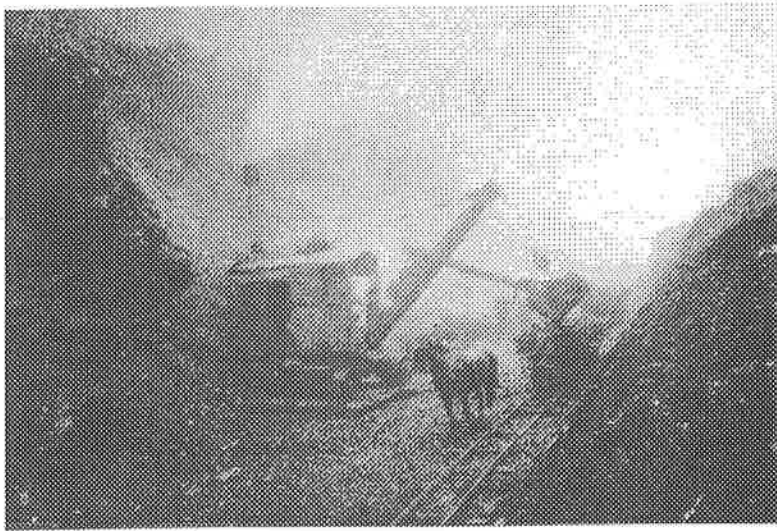
Spruce Production Division camp #38437



Blasting on the north side of Crescent Lake, with construction track to remove material.
No Curtis number; Album 164A pg. 30.



Steam excavator idle by grade, perhaps damaged #36847



Steam excavator working in cut #38882



Piling approach to the second crossing of the Sol Duc #3690



SPD steel gang spiking down the rails #36913



Mill in Port Angeles under construction #38030