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Creating forest sector solutions

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One vision.
Global competitiveness.

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NEW VALUE FOR A CHANGING MARKETPLACE

Scaling Under Artificial Light

- Background
- Methodology
- Results

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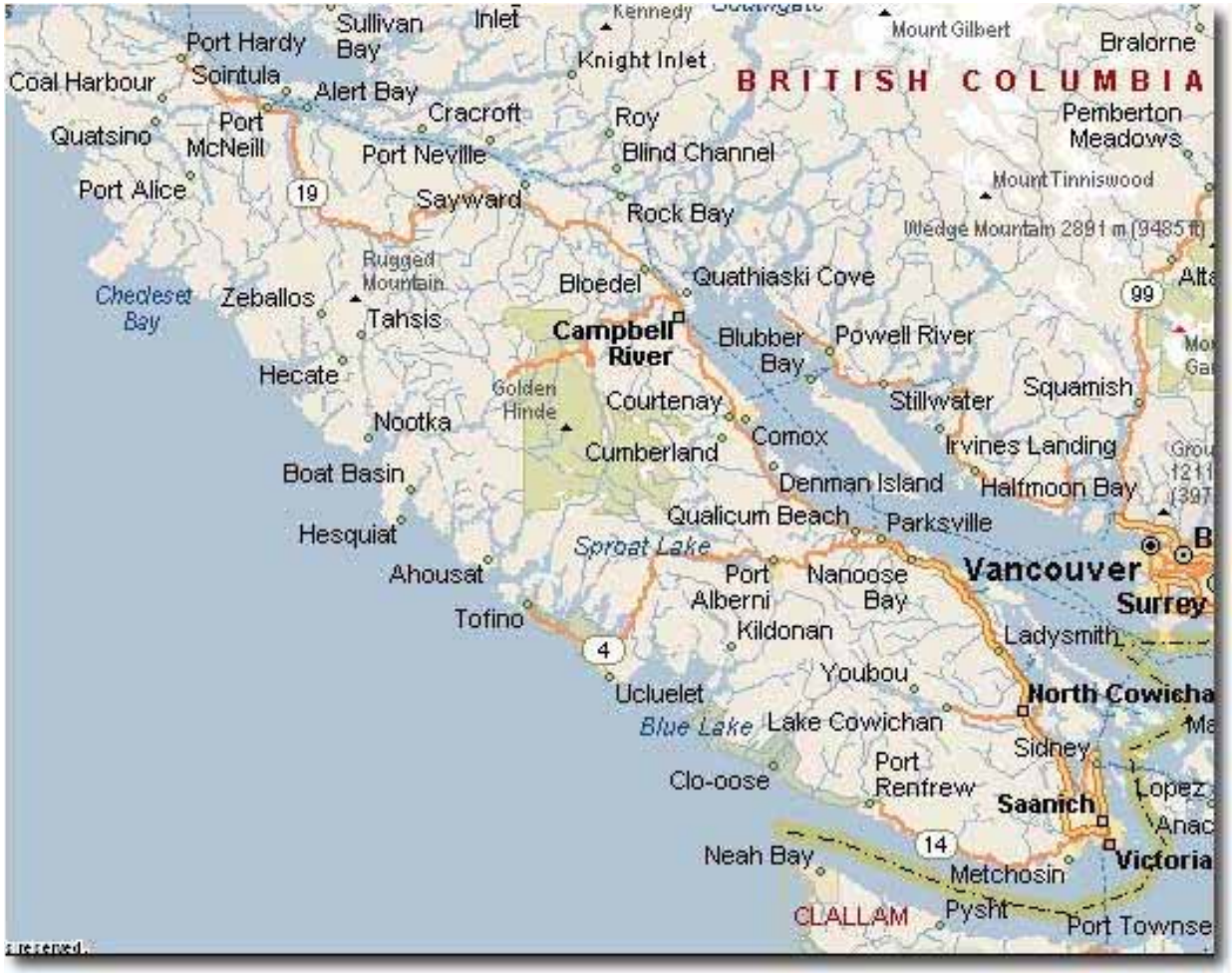
Background
Preliminary work

Location



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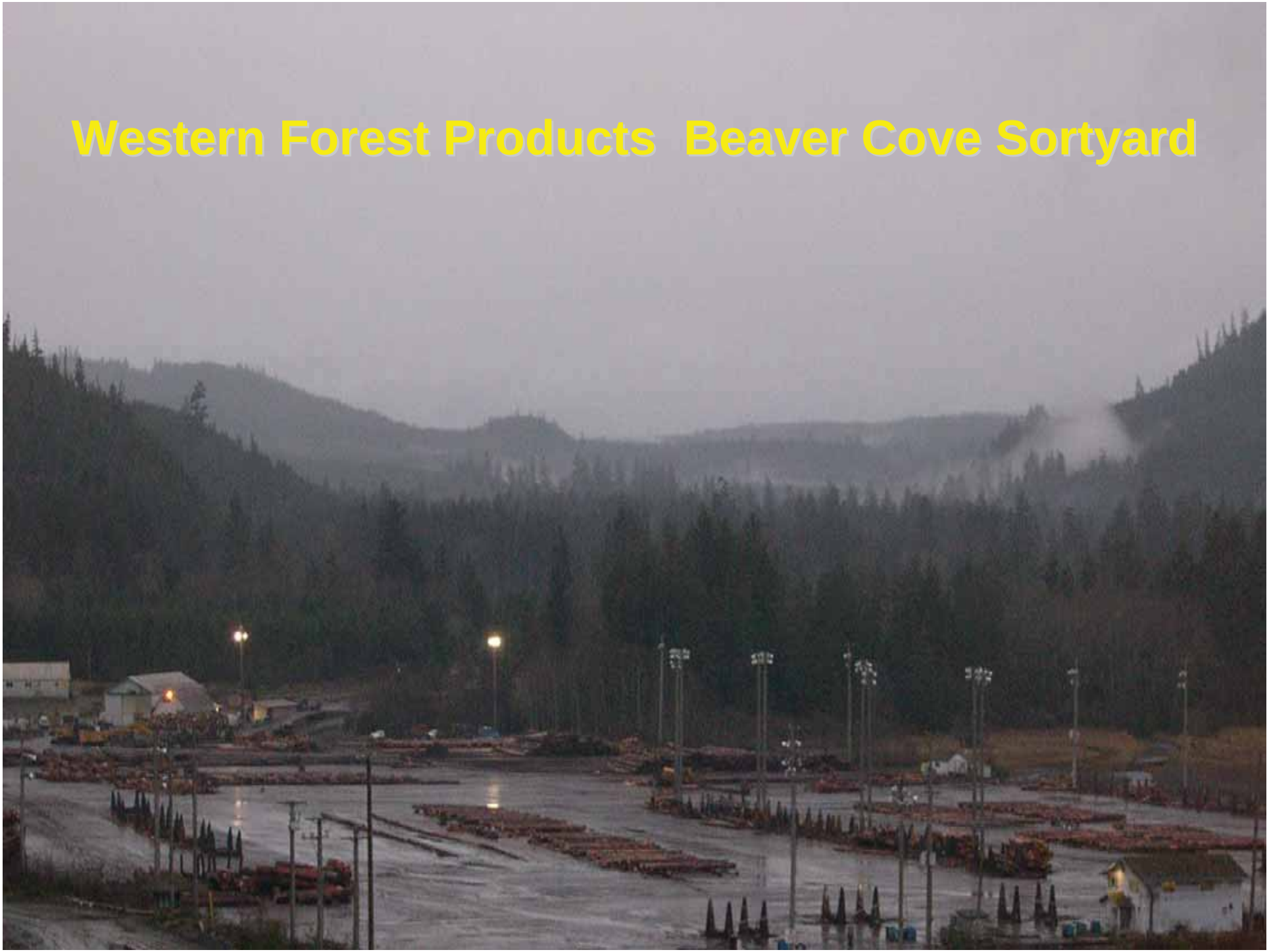
Western Forest Products Beaver Cove Sortyard

Weyerhaeuser Sortyard Longview Washington

Objective

Trial 1

Determine if British Columbia Ministry of Forests and Range check scaling accuracy can be met at a specific light level.

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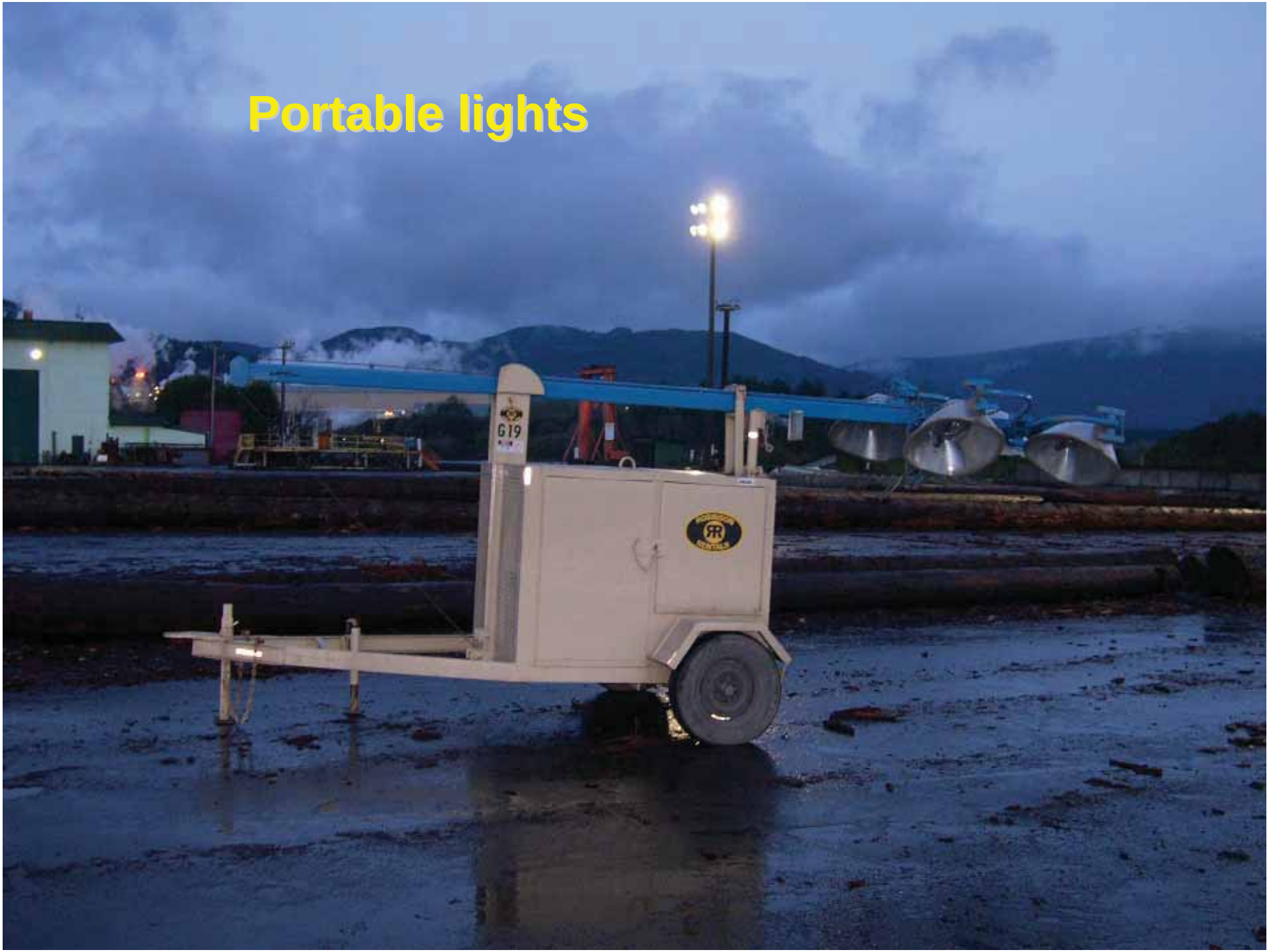
Study Methodology

- Light levels
- Camp run logs
- Compare scales

Portable lights



Trial 1 Scaled Volumes

	Old Growth			Second Growth		
	Light Type			Light Type		
	Art.	Nat.	Diff. %	Art.	Nat.	Diff. %
Gross	630.6	629.4	-0.2	569.6	567.1	-0.4
Net	619.6	617.6	-0.3	560.7	558.0	-0.5
Defect	11.0	11.8	0.1	8.9	9.1	0.0
Difference % = (Natural-Artificial)/Net Natural						

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Trial 1 Value Old and Second Growth

	Light Type		
	Artificial	Natural	% Difference
	$	$	
Old Growth	55,588	55,352	-0.4
Second Growth	47,531	46,470	-2.3
Total	103,119	101,822	-1.3

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Trial 1 Value by grade old growth (75 lux)

	Artificial		Natural		Diff.
Grade	$	% of Total	$	% of Total	
D	6,160	11.1	3,296	6.0	-5.1
F	1,122	2.0	3,426	6.2	4.2
C	1,571	2.8	712	1.3	-1.5
H	23,741	42.7	26,137	47.2	4.5
I	9,758	17.6	8,787	15.9	-1.7
J	10,169	18.3	9,842	17.8	-0.5
Other	3,067	5.5	3,152	5.7	0.2
Total	55,588		55,352		-0.4

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Trial 1 Value by grade second growth (63 lux)

	Artificial		Natural		Diff.
Grade	$	% of Total	$	% of Total	
C	4,324	9.1	2,934	6.3	-2.8
H	6,062	12.8	5,146	11.1	-1.7
I	9,667	20.3	10,898	23.5	3.1
J	26,065	54.8	25,965	55.9	1.0
U	628	1.3	748	1.6	0.3
X	218	0.5	218	0.5	0.0
Y	567	1.2	561	1.2	0.0
Total	47,531		46,470		-2.3

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Trial 1 Conclusions

Difference in both total volume and value of logs scaled under artificial and natural light was less than 3%.

Recognizing certain log grade characteristics is different under artificial light.

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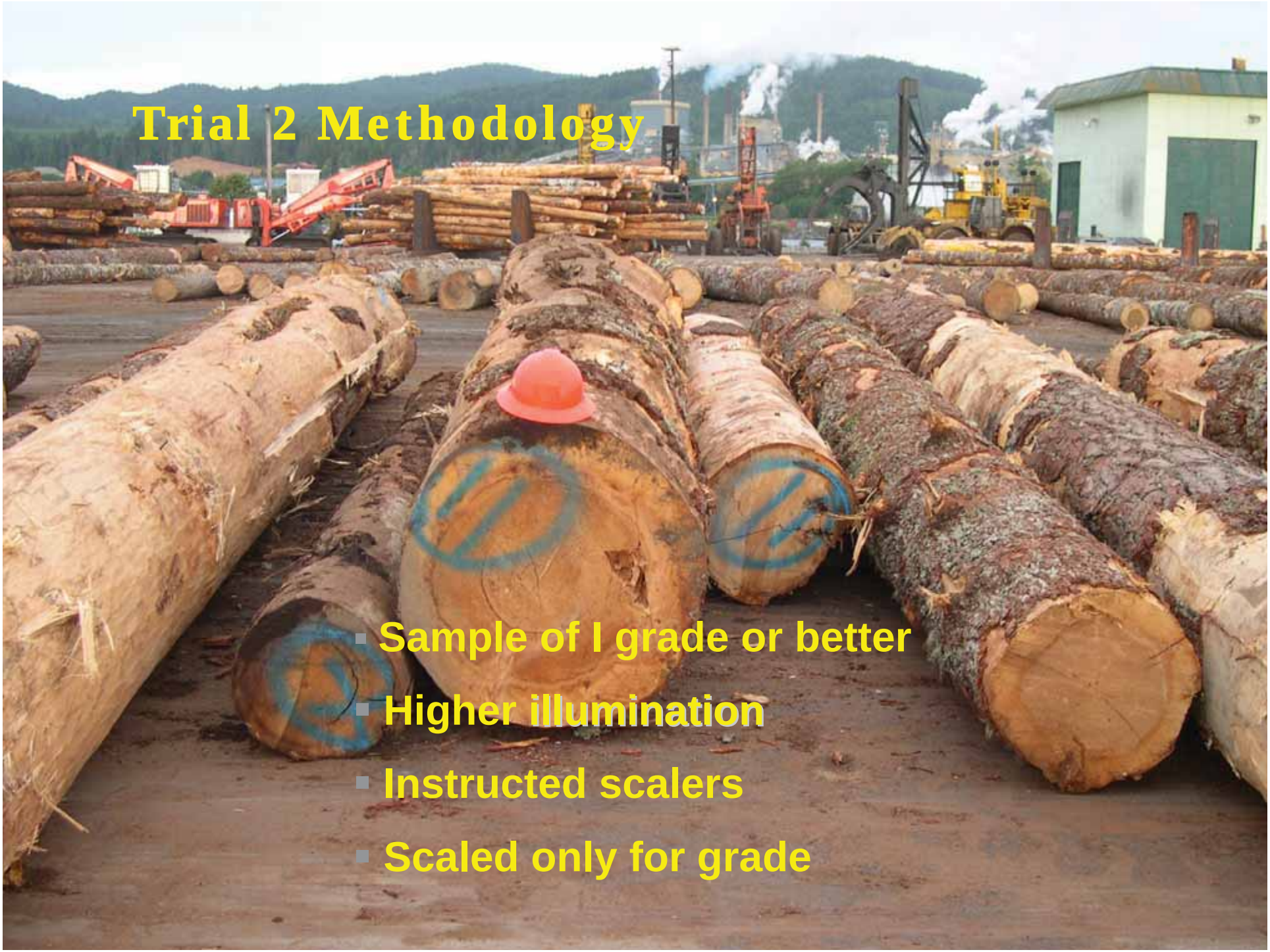
Trial 2 Objectives

To determine if better grading accuracy in higher value grades can be achieved by:

- Higher illumination.

- Informing scalers that log grade characteristics may have a different appearance under artificial light.

Trial 2 Methodology



- Sample of I grade or better
- Higher illumination
- Instructed scalers
- Scaled only for grade

Second Growth Value Difference (Artificial-Natural Light)

	Trial 1 63 lux	Trial 2 120 lux	Trial 2 70-109 lux
Grade	%	%	%
C	- 2.8	- 2.2	- 3.0
H	- 1.7	- 0.9	- 3.5
I	3.2	3.1	6.5
Total*	- 2.3	-1.2	- 2.0
*Percentage difference of total			

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Old Growth Value Difference (Natural-Artificial Light)

	Trial 1 75 lux	Trial 2 120 lux	Trial 2 70-109 lux
Grade	%	%	%
D	5.1	-1.2	0.0
F	4.2	1.8	2.8
B	0.0	0.0	-1.3
C	1.5	-2.9	-2.6
H	4.5	2.5	0.7
I	-1.7	-0.2	0.3
Total*	0.4	-0.9	1.7
* Percentage difference of total			

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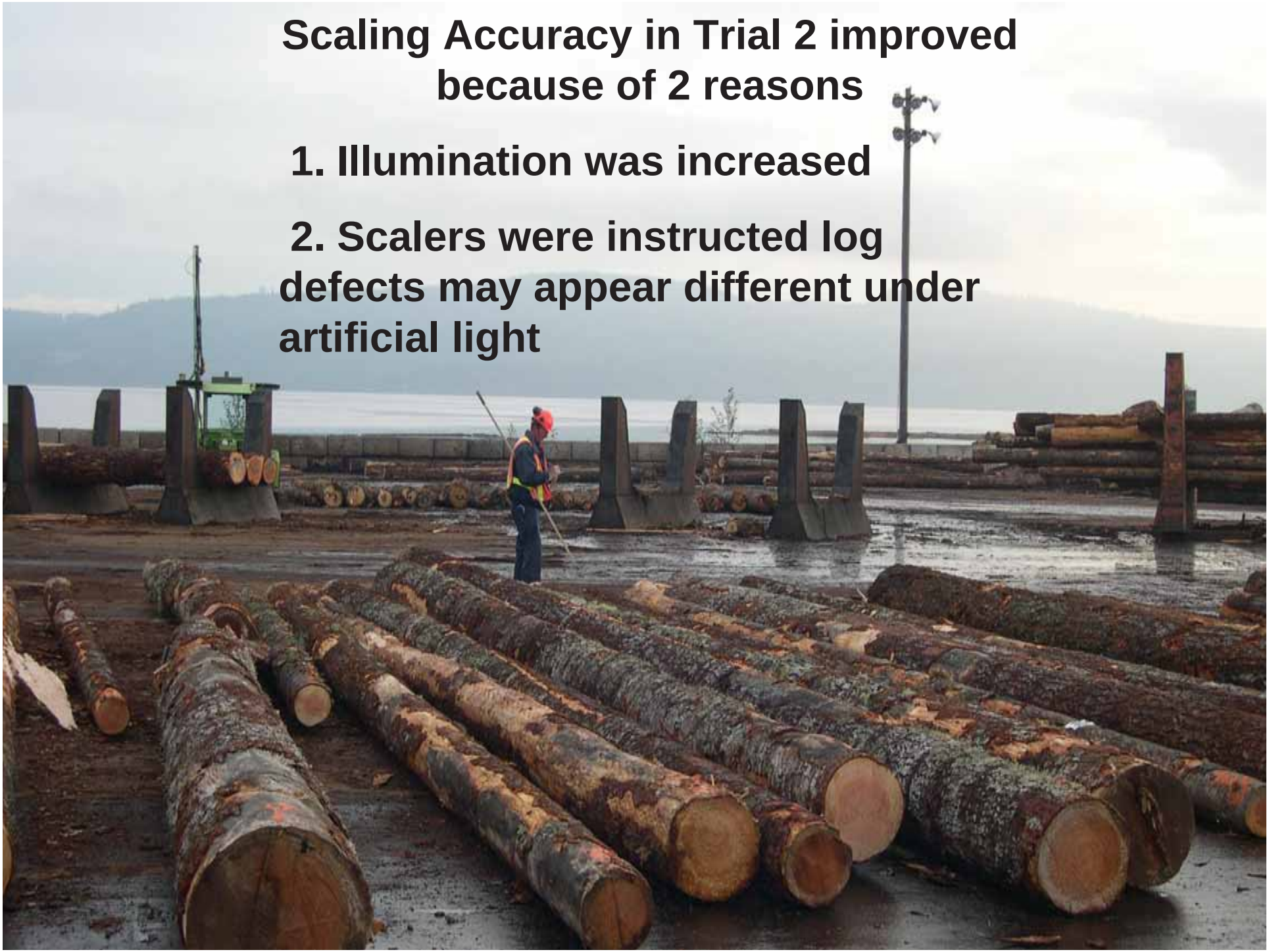

Scaling Accuracy in Trial 2 improved because of 2 reasons

1. Illumination was increased

2. Scalers were instructed log defects may appear different under artificial light

Overall Conclusion

Scaling under artificial light in Trials 1 and 2 met BCMOF check scaling guideline.

Grade variation between artificial and natural light categories was reduced when illumination was increased and scalers spent more time accurately identifying log grade features.

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Lighting Recommendations

Average illumination should be 100 lux and not fall below 70 lux.

Illumination should be uniform.

Lights should provide good colour rendering (metal halide)

Lights should be positioned to minimize shadows between logs

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Recommendations for Scalers

Scalers be equipped with flashlights or a similar lighting aid.

Scalers be informed that scaling under artificial light is “different” than under natural light.

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