Steep Slope Logging in Southwest Oregon; A landowner perspective

Exploring the cost effectiveness and ground impacts of emerging harvest technologies for steep slopes on LRTM Managed Lands

Photo Credit: http://www.tnhistoryforkids.org

Lone Rock Resources
Roseburg, Oregon

LONE ROCK RESOURCES

Tether Bar Saw Purchase

Questions to answer:

- Is this is a good financial investment?
- How does it impact our timber company?
  - Logging Cost (ROI)
  - Resource impacts
  - Reforestation success
- How does it impact our logging company?
  - Safety
  - Productivity
  - Maintenance
  - Labor

Lone Rock's Bar Saw Operations

330D Cat Excavator with Summit Machinery winch and tether modification.

TigerCat 855D with 36" TigerCat Bar Saw Head

How LRT operates with Bar Saw

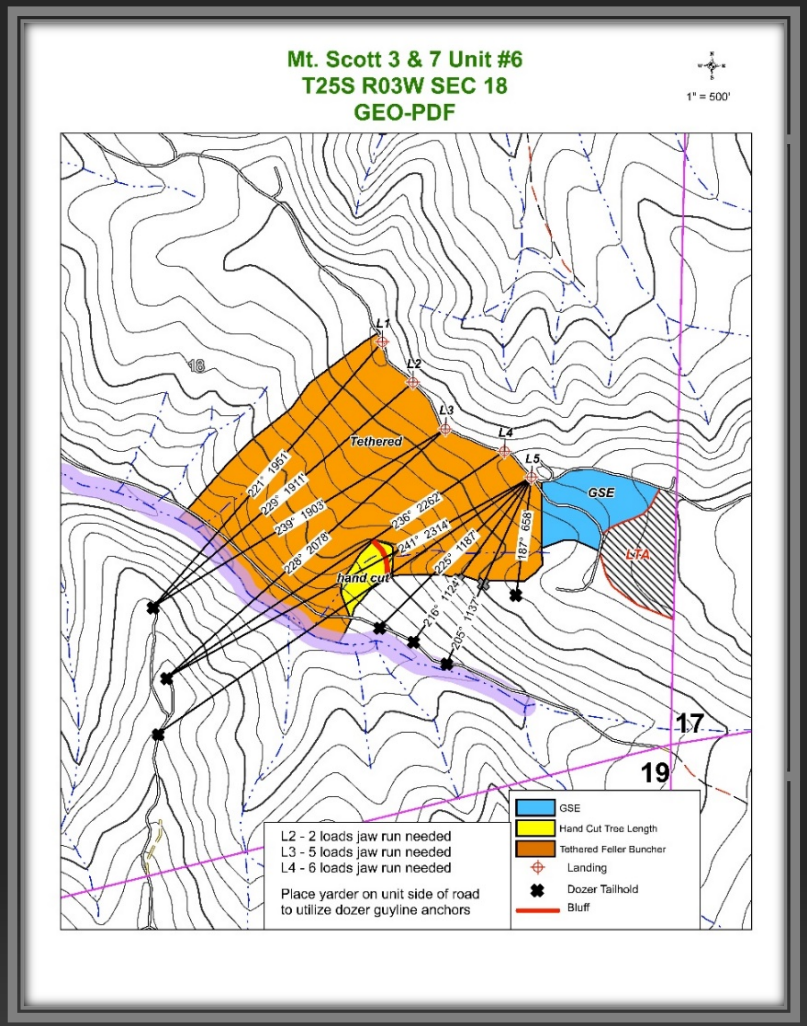
Cutting designed to maximize yarding productivity:

- Cut and pile to maximize turn payload and crew safety.
- Eliminate low production yarder settings where possible.

Lone Rock's Bar Saw Operations

Detailed Logging Plan:

- Hand cut areas pre-identified
- Yarder tailholds and roadlines pre-identified
- Challenging lift areas identified
- Georeferened PDF maps with roadlines for operators



How LRT operates with Bar Saw

Piling methods:

- Pile bunching

How LRT operates with Bar Saw

Piling methods:

- Herringbone bunching

How LRT operates with Bar Saw

How LRT operates with Bar Saw

Maximize roadside volume:

- Allows volume delivery before yarder arrives
- Allows for consistent deliveries throughout job

How LRT operates with Bar Saw

How LRT operates with Bar Saw

Slopes, Soil and Sensitive Areas:

- Soil types and soil moistures are the most influential contributor to machine and operator capabilities.
- Supervisor or operator walk and know the ground.
- Know what to expect on the unit; no surprises.

Productivity Results

- 2018 Year-End Results

Productivity Results: Cutting

- Hand Cutting (2 cutters):
  - Average productivity:
    - 37 gMBF / day
- Tethered Bar Saw:
  - Average productivity:
    - 71 gMBF/day

Productivity Results: Yarding

- Average loads per day delivered: 13+
- Increase in loads per day delivered from ‘anticipated’ conventional: 38%
  - One unit witnessed an 84% increase in deliveries per day
  - Several units were +50% +60%

Productivity Results: Cost Recovery

For Timber Company:

- Decreased logging cost and increased production, gave timberland owner higher profit margins / MBF.

For Logging Company:

- increased annual production, lower operating cost and larger profit margins led to increase company profit.

Cutting Cost:	**+ 12% per gMBF**
Yard & Load Cost:	**- 32% per gMBF**
Overall logging cost savings to timber owner:	**28%**

Resource Impacts

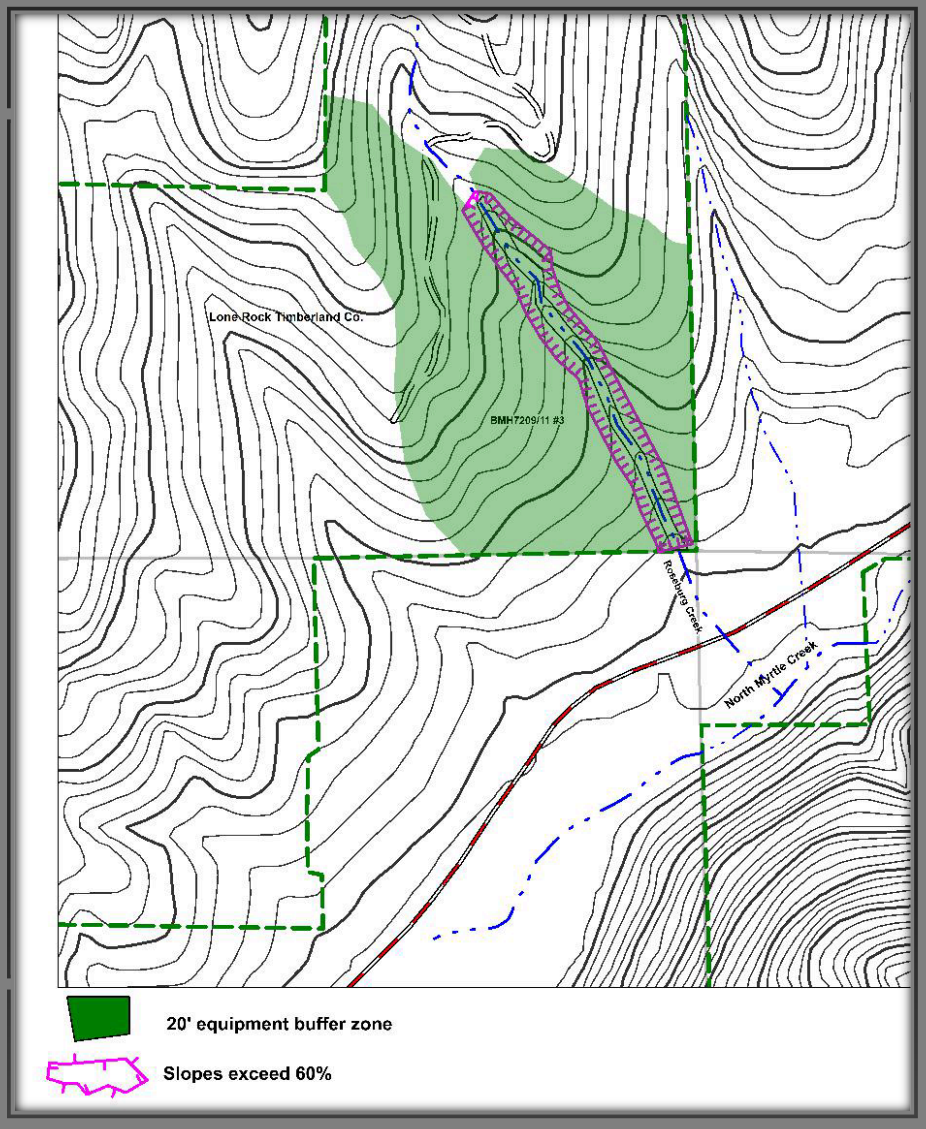
Resource Impacts

- Observed Tethered Cutting impacts
  - *General Unit:*
    - No noticeable significant difference in ground disturbance between tether cut areas and hand cut areas.
    - Cable yarding mostly ‘wiped’ equipment ground disturbance (grouser marks and ruts).
  - *Within the Riparian Management Area:*
    - Capable of considerable reduction in impacts relative to impacts from conventional logging methods.

Resource Impacts: upland

Fill slope damage:

Resource Impacts: riparian



Resource Impacts: riparian

Before

After

Resource Impacts: riparian

Resource Impacts: riparian

Resource Impacts: riparian


Safety

Safety: Exposure to risk per MBF

Harvest Method	Ground Exposure (Man hr / gMBF)	Machine Exposure (Man Hr / gMBF)
Conventional	2.0	1.0
Yarder w/ tether bar saw	0.9 -53%	0.8 -19%

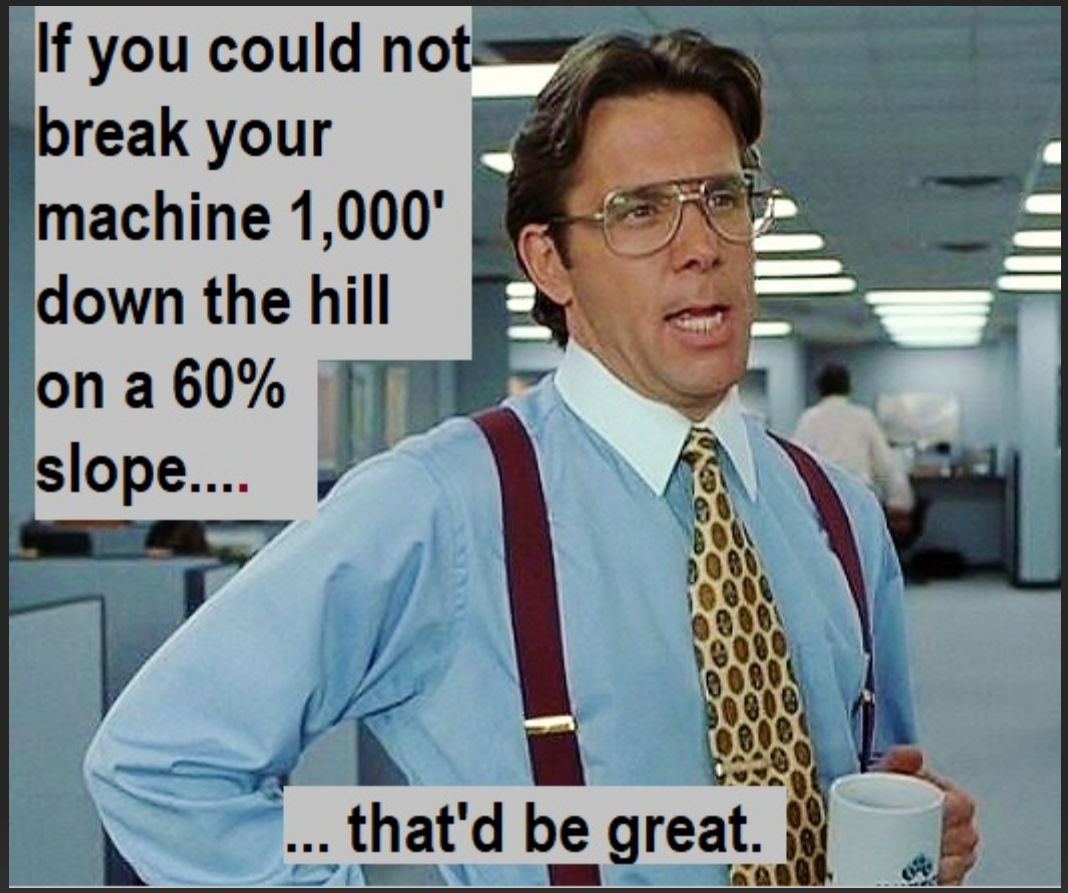
Safety:

Safety:

Machine Breakdowns in the brush

HAPPENS

Machine Breakdowns:



The future of tethered logging in the PNW

The Future, addressing some immediate challenges:

- *Addresses Labor Shortages, but…*
  - What is the succession path for future operators?
  - Training opportunities? High skilled employees needed.

- *Improves Safety*
  - Reduces exposure to some cutting and logging high risk situations, but…

The Future, addressing some immediate challenges:

The Future, new and old technologies:

- *Grapple Logging*
- *Tethered skidding*
- *Helicopter logging?*

The Future, requirements:

- Skilled and conscience operators
- Need to show regulators and the public the benefits and how we mitigate the impacts
- Landowner buy-in
- Address misconceptions that a machine on steep slopes = erosion to streams, landslides, etc

Questions?

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