



Weyerhaeuser Company Implementation of the Forest and Fish (F&F) Law

Presentation by:
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to the Deschutes Advisory Group
September 29, 2009

Changes to forest practices under the Forest and Fish Law (passed in 2001)

- Increased streamside buffer widths for timber harvest along fish and non-fish bearing streams
- Definitions of fish / fish-bearing waters expanded
- Requirements for improved road building and road maintenance
- Further regulation of forest management on steep and unstable slopes
- Increased regulation on chemical applications
- Adaptive management
- Conduct compliance monitoring

Forest and Fish Riparian Rules

- Goals:
 - Protect covered resources
 - Achieve restoration of high levels of riparian function and
 - Maintain these levels once achieved
- Covered resources:
 - Water quality
 - Fish
 - Six specific stream-associated amphibian species (five salamander species and the tailed frog)
- Riparian functions:
 - Bank stability, recruitment of woody debris, leaf litter fall, nutrients, sediment filtering and shade

Buffer Effectiveness - Shade Production

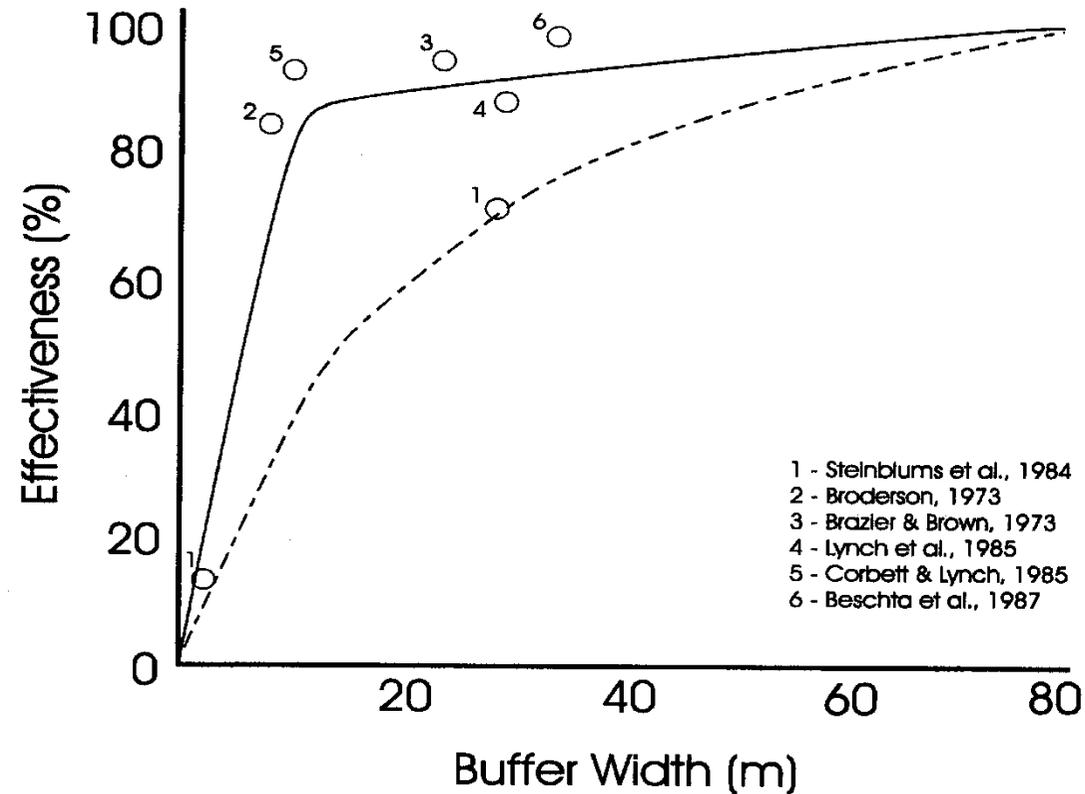
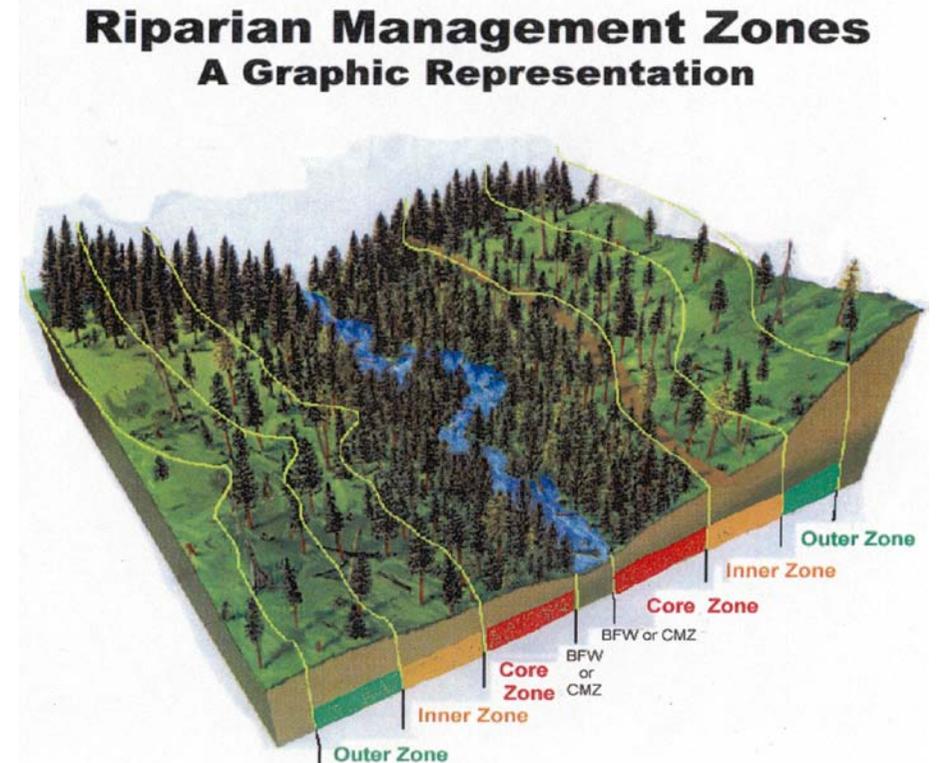


Figure 5. Effectiveness of Vegetation: Shade Production

Source: NCASI Technical Bulletin No. 799 on Riparian Vegetation Effectiveness, page 12.

Forests and Fish — Riparian Protection

- Stream typing based on habitat rather than current use
- Wider buffers on fish streams; widths in Western WA depend on stream size, site class, & conifer stocking
- Added protection for non-fish streams, both perennial and seasonal streams



Fish stream buffers – bit of history

- Type 3 streams (majority of fish-bearing waters on Weyerhaeuser lands)
 - Prior to 1992: minimal buffers – max 25 to 50 feet; 25 to 75 trees left per 1000 feet of stream
 - 1992-1999: buffers averaged 25 to 50 feet, watershed analysis (WA) buffer prescriptions average 50 to 100 feet but no WA in the Deschutes
 - 1997-1999 (Salmonid listings under the ESA): 100-foot wide no-cut emergency buffers
 - Forest and Fish: basal area target - Desired Future Condition (DFC) approach; most harvest on Weyerhaeuser lands are Option 2 buffers – 80 to 100 feet minimum buffer widths; riparian areas that do not meet DFC -- 105 to 150 feet wide
 - September 25, 2009: New DFC basal area target (325 sq.ft.) -- will result in more wide buffers

F&F buffers on non-fish bearing streams

- Affected streams: perennial (Type Np) and seasonal (Type Ns)
- Type Np buffers:
 - At least 50% of a perennial stream's length protected by buffers
 - 50-foot no-harvest buffers on each side of perennial stream for first 300 to 500 feet above fish-bearing streams
 - 50-foot no-harvest area around the outer perimeter of headwall seeps and certain side-slope seeps and springs
 - 56-foot radius no-harvest patches at perennial initiation point and at intersection of two or more perennial streams
 - No harvest permitted within alluvial fans
- Type Np and Ns streams:
 - 30-foot equipment limitation zone; mitigation required for >10% disturbance

Road construction and maintenance

- F&F Forest Road Construction and Maintenance Policy:
 - Maintain or provide passage for fish at all life stages
 - Provide for passage of some woody debris
 - Meet water quality standards
 - Control sediment delivery
 - Protect streambank integrity
 - Divert road run-off to the forest floor

F&F – New Road Construction

- New and major reconstruction of stream-adjacent parallel roads restricted and require mitigation
- Sediment and water delivery standards:
 - “...target...for sediment delivery...does not exceed 50% above background.”
- Revegetation of all erodible soils regardless of proximity to typed waters
- New culverts / bridges meet 100-year flood standard to ensure fish and woody debris passage
- No construction in bogs or low-nutrient fens

F&F – Existing roads

- Mandatory road maintenance and abandonment plans (RMAPs) for all road systems that provide for:
 - Routine, on-going maintenance including plans to address storm events
 - Repair of roads and related fish passages in sub-standard condition, and
 - Abandonment of certain roads
- RMAPs have been submitted for all road systems in the Deschutes; all RMAP work must be completed by 2015
- Approximately 90% of Weyerhaeuser's roads in the Deschutes drainage have been brought up to standard, with several fish blockages remaining to be fixed

Road construction / maintenance best management practices

- Full bench / end haul construction on slopes steeper than 60%
- Place construction spoils / debris outside 100 year floodplain
- Stabilize road prism features and stream crossing structures in landslide prone areas
- Physically disconnect road runoff / drainage from typed water
- Restore natural drainages
- Repairing and maintaining stream-adjacent parallel roads with an emphasis on minimizing or eliminating sediment delivery
 - Maintain sediment-filtering vegetation in ditchlines
 - Reslope oversteepened cutbanks
 - Add cross-drains
- Minimize interruption of surface water drainage, interception of subsurface water, and pirating of water from one sub-basin to another

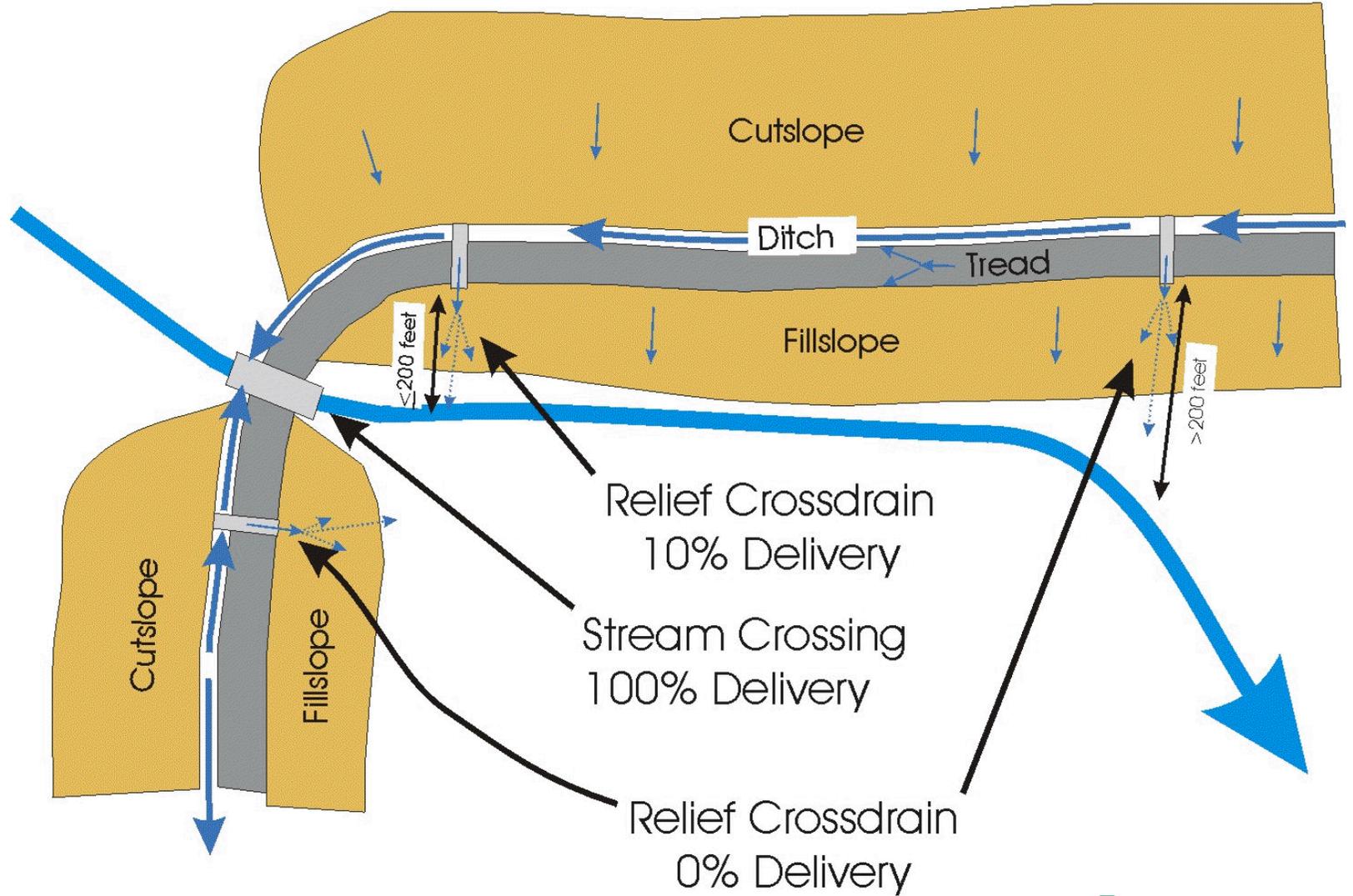
Pre-Construction Checklist		Comments	Post Const. Review
Planning Considerations	N A	Planning/Operating concerns (attach additional detail if needed)	Actions Required (see below)
Safety		standard	
Spill prevention / response		standard	
FPA – conditions		no additional comments	
HP/WP - conditions & timing	X		
Internal routing comments		none	
Seasonal timing concerns		high and moderate risk soils, do during dry conditions	
Property lines & corners	X		
Easements & utilities	X		
Ownership & access permits	X		
Haul route concerns	X		
Neighbor concerns (water, etc)	X		
Aesthetics	X		
Research sites / restrictions	X		
T&E species		standard	
Watershed analysis prescriptions	X		
Slope stability	X		
Stream type & fish concerns		no fish water in unit	
Adjacent regeneration		close to reprod along R/W of road 2125U8	
Sensitive areas	X		
Municipal Watershed concerns	X		

Operating Considerations

Area design & construction specifications		see map	
Ditch waters disconnected		keep ditch water out of live streams	
Fish passage/culverts		no fish, some Np stream crossings	
Erodible soils/mass wasting	X		
Waste sites/end haul	X		
Soil disturbance & veg. cover		hay if needed	
R/W: cutting, decking, loading		standard	
Rock pit concerns		use existing rock pit in Sec 23, T15N, R1E	
Dirt/Temporary spurs	X		
Fire protection		standard	
Housekeeping		standard	

Comments/actions required: Make sure to protect ¼ corner near the end of the new 2125U10B spur. May need to put more RP's up for corner. No fish crossings. Largest pipe is a 36"x30' across a Np stream at station 7+55 on road 2125U9. On this same road the last 4

Road Sediment Delivery Model



Examples:



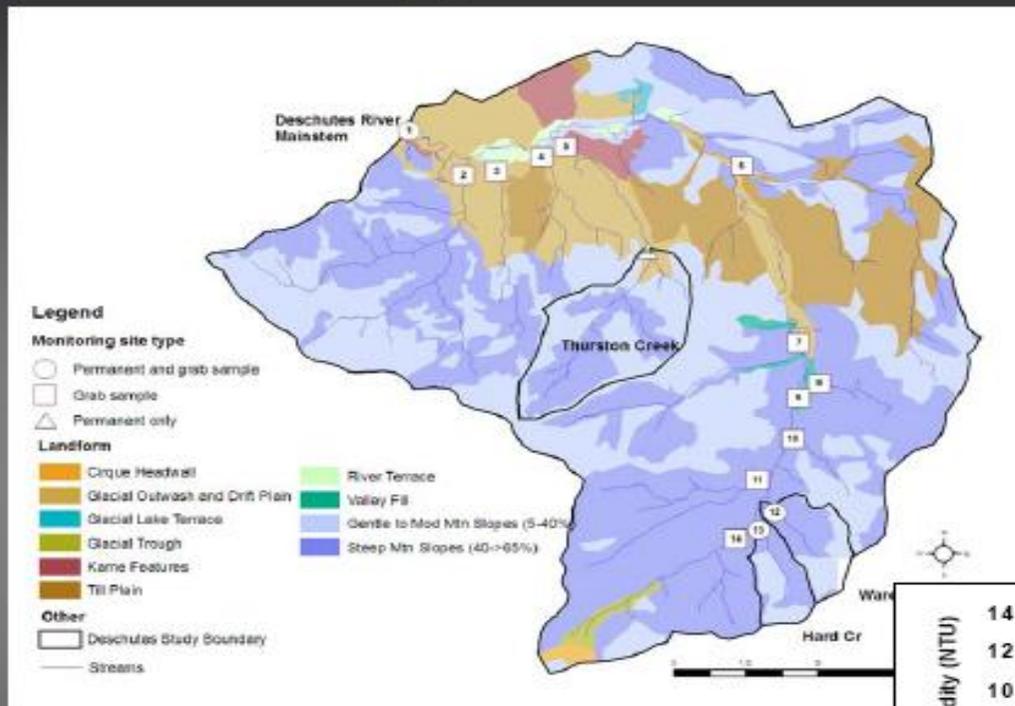
Results of improved road construction / maintenance practices ^{1/}

- Decreasing trends in turbidity have been observed at small and large watershed scales
- The decreasing trends in turbidity in the mainstem Deschutes appears to be mostly directly related to improvements in road construction and maintenance practices

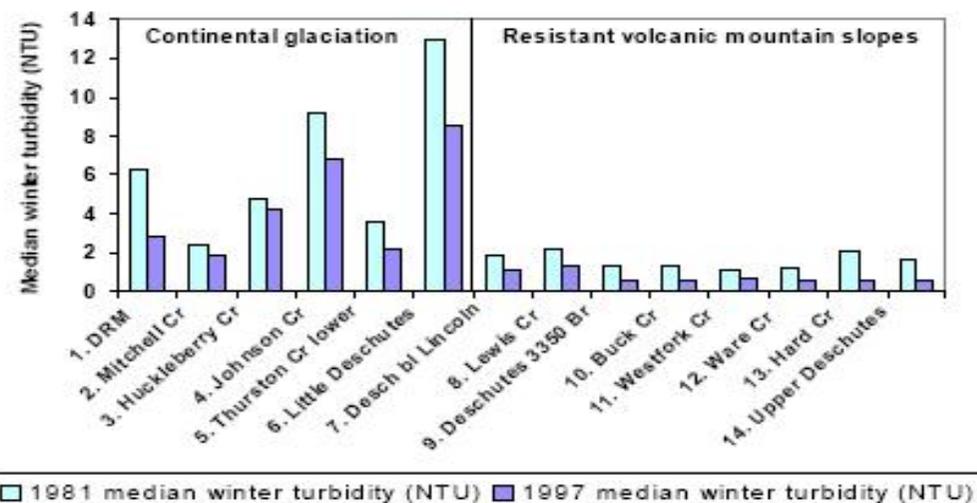
^{1/} Reiter, Maryanne, John T. Heffner, Storm Beech, Ted Turner, and Robert E. Bilby, 2009. Temporal and Spatial Turbidity Patterns Over 30 Years in a Managed Forest of Western Washington. Journal of the American Water Resources Association (JAWRA) 45(3):793-808.

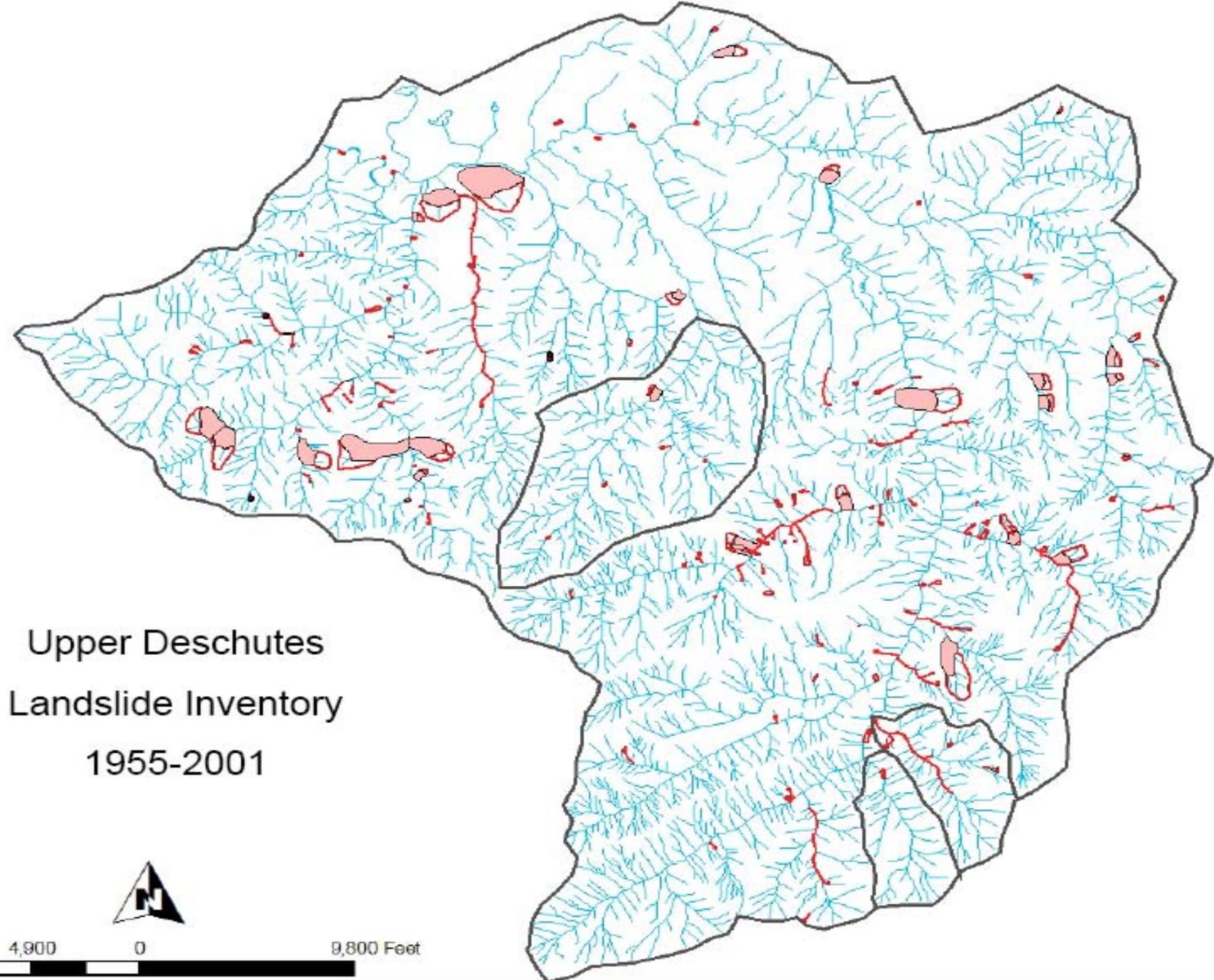
Results

Natural conditions influence turbidity patterns



Those areas underlain by continental glaciation had higher turbidity as compared to volcanic areas, regardless of management intensity (1981 was high intensity and 1997 was low)





Upper Deschutes
Landslide Inventory
1955-2001

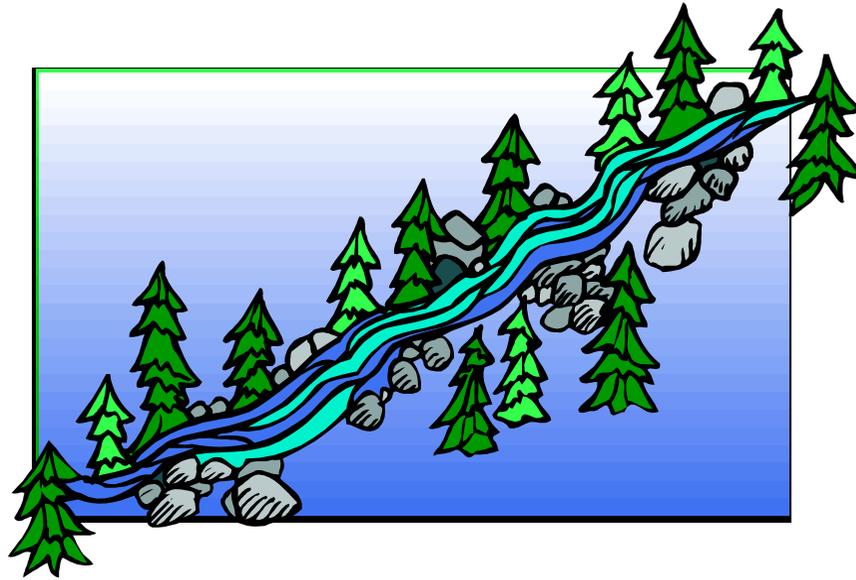


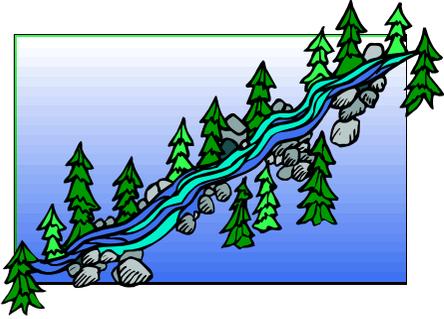
9,800 4,900 0 9,800 Feet

Forest Chemical Applications

- No aerial application of herbicides, pesticides or fertilizer within all riparian or wetland buffers, except the outer zone of an RMZ
- Initial swath of forest chemicals applied parallel to the applicable buffer
- All herbicide buffer limits are delineated on the ground with markers to be visible from the air

Western Timberlands Environmental Management System

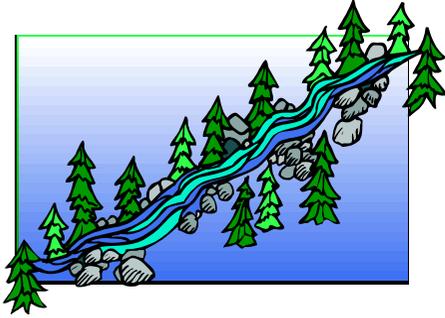




Western Timberlands Environmental Management System

EMS Overview

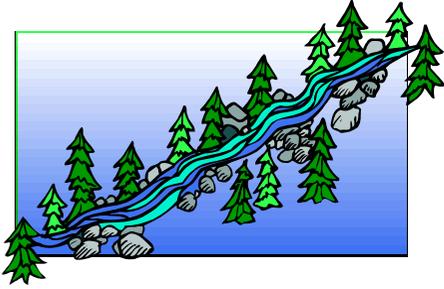
- The EMS is a structured way to **manage** our **impacts** on the environment. It relies on the use of **reliable, documented procedures** to implement the Weyerhaeuser Environmental Policy.
- To be effective, Western Timberlands employees, contractors, and suppliers need to **understand** and **implement** their EMS responsibilities.



Western Timberlands Environmental Management System

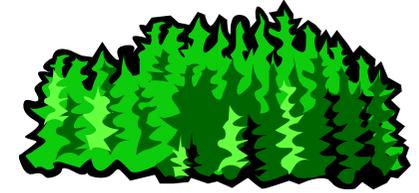
Roles and Responsibilities

- ❏ All employees, contractors, and suppliers have roles and responsibilities that are related to the EMS
- ❏ You need to know how you could potentially impact the environment and what procedures you need to follow to avoid negatively impacting it



Western Timberlands Environmental Management System

Why the EMS is important



→ Protecting the environment is an important part of our long-term business success



→ Our ability to operate depends largely on the public's faith in us as responsible stewards of natural resources



WHAT CAN EACH OF YOU DO TO MANAGE YOUR IMPACT ON THE ENVIRONMENT?

Everyone needs to be able to:

- **recognize and identify environmental risks**
- **recognize how changing conditions can elevate risks**
- **assess and understand the potential consequences if an unwanted event occurs**
- **know when to stop what you are doing and ask your supervisor questions and**
- **Take appropriate actions to prevent and respond to undesirable environmental impacts**

PRE-HARVEST MEETING

- **DISCUSS SAFETY CONCERNS**
- **DISCUSS MARKING STANDARDS**
- **PRE-HARVEST CHECKLIST**
 - **REVIEW MAP**
 - **STREAMS AND RMZs; LEAVE TREE AREAS**
 - **SOILS INFORMATION**
 - **PROPERTY LINES**
 - **RECOMMENDED LOGGING PLAN**
 - **REVIEW ALL REQUIRED LEGAL DOCUMENTS**
 - **FPA / HPA REQUIREMENTS**
 - **LAND USE PERMIT REQUIREMENTS**
 - **DISCUSS ENVIRONMENTAL CONCERNS**
 - **T&E SPECIES AND OTHER TIMING RESTRICTIONS**
 - **MUNICIPAL / DOMESTIC WATER INTAKES**
 - **WET WEATHER CONTINGENCY PLANS**
 - **ANY OTHER SITE-SPECIFIC ENVIRONMENTAL REQUIREMENTS**

Pre-Harvest Checklist / Harvest Closure

Forest Area Vail		FP District / Name Pacific Cascade			WEYCOID # 00090048		
Type: <input checked="" type="checkbox"/> Clear-cut <input type="checkbox"/> C.Thin <input type="checkbox"/> Salvage <input type="checkbox"/> Heli <input type="checkbox"/> R/W <input type="checkbox"/> Other:				<input checked="" type="checkbox"/> Fee <input type="checkbox"/> Non-Fee <input type="checkbox"/> SFP-Cedar			
Plan Yr.Qtr: 2010	Sec 15 Sec	Twn 15 Twn	Rge 2E Rge	Road # 2095G	R/W #	Sett # V9332	
MTP/HPU # 152652		WAU Deschutes Middle		FPA Initiator Stan Lubinus		Date 8/20/2009	
Acres 15.5		Volume / Ac 79		Total Volume 1225		Verification Code	
FPA # 2920013		EFFECTIVE Date 9/17/2009		EXPIRATION Date 9/17/2011		H. Mgr. Von Moos	
Soils Information				Equipment Selection			
Soil Series	Jonas	Baumgard		Ground Systems	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Seasonal <input type="checkbox"/> Year-Round	
Map Symbols	J0	Bd		Cable Systems	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Type Size	
Soil Site Index				Guylines / Tailholds	Reprod Protect corner		
Operability Risk Rating	High	Moder		Scheduled For	Crew/Ctr	Wk Yr	
Comments				Comments Areas of high risk soils - schedule during dry weather			
Stream / Water Quality				Plans			
Water Types (WA)	<input type="checkbox"/> s <input type="checkbox"/> F <input checked="" type="checkbox"/> Np <input type="checkbox"/> Ns			HCP	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
(OR)	<input type="checkbox"/> Sm <input type="checkbox"/> Med <input type="checkbox"/> Lg <input type="checkbox"/> Fish <input type="checkbox"/> Dom <input type="checkbox"/> Non-fish			Watershed Analysis Plan	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
Buffers Required	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N			Threatened & Endangered	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
HPA / Written Plan	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N Blanket 0000C8230-10			Geologic / High Risk Site	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
Shoreline Mgmt.	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N			SEPA (State Env. Policy Act)	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
Comments				Alternate Plan	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
				Comments			
Pre-Harvest Checklist				Harvest Closure			
Applicable?				Adequate?			
1. Engineering	<u>Yes</u>	<u>N/A</u>	<u>Comments</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>Comments</u>
a. Forest Practice Requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Harvest Unit Boundary	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Final Harvest Unit Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Recommended Logging Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Legal Corner Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Protect Corner North of unit during Guyline placement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f. RMZ, BIA, WMZ, BMA	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

a. Mt. Beaver	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Root Rot	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Vegetation Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Logging / Site Prep Synergies	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Mechanical Site Preparation	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f. Logging Debris (Burn, Pile)	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g. Other:				Other:			
6. Harvesting	<u>Yes</u>	<u>N/A</u>	<u>Comments</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>Comments</u>
a. Safety Orientation	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Danger Trees	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Utilities – Power, Gas, etc	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. RMA / RMZ / WMZ Markings	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Date & Initial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Adjacent Plantation Prot.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f. Log Mfg / Sort Specifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g. Soil Protection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Presence of high risk soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
h. Down Logs	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i. Utilization	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
j. Spill Prev. / Control / Cleanup	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
k. Housekeeping	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
l. Landings Pulled Back/Drained	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Do not leave perched material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
m. Other:				Other:			
7. Road Const. / Mtce.	<u>Yes</u>	<u>N/A</u>	<u>Comments</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>Comments</u>
a. Drainage – Culverts / Ditches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Keep functional during harvest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Grading	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Sediment Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Spurs / Landings	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Will build Landing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Waterbars / Abandonment	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f. Other: Potential haul route restrictions during wet weather				Other:			
8. Fiber Recovery	<u>Yes</u>	<u>N/A</u>	<u>Comments</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>Comments</u>
a. Chunks	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Firewood	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Other:				Other:			

SHOVELS & OTHER GROUND SYSTEMS LOGGING

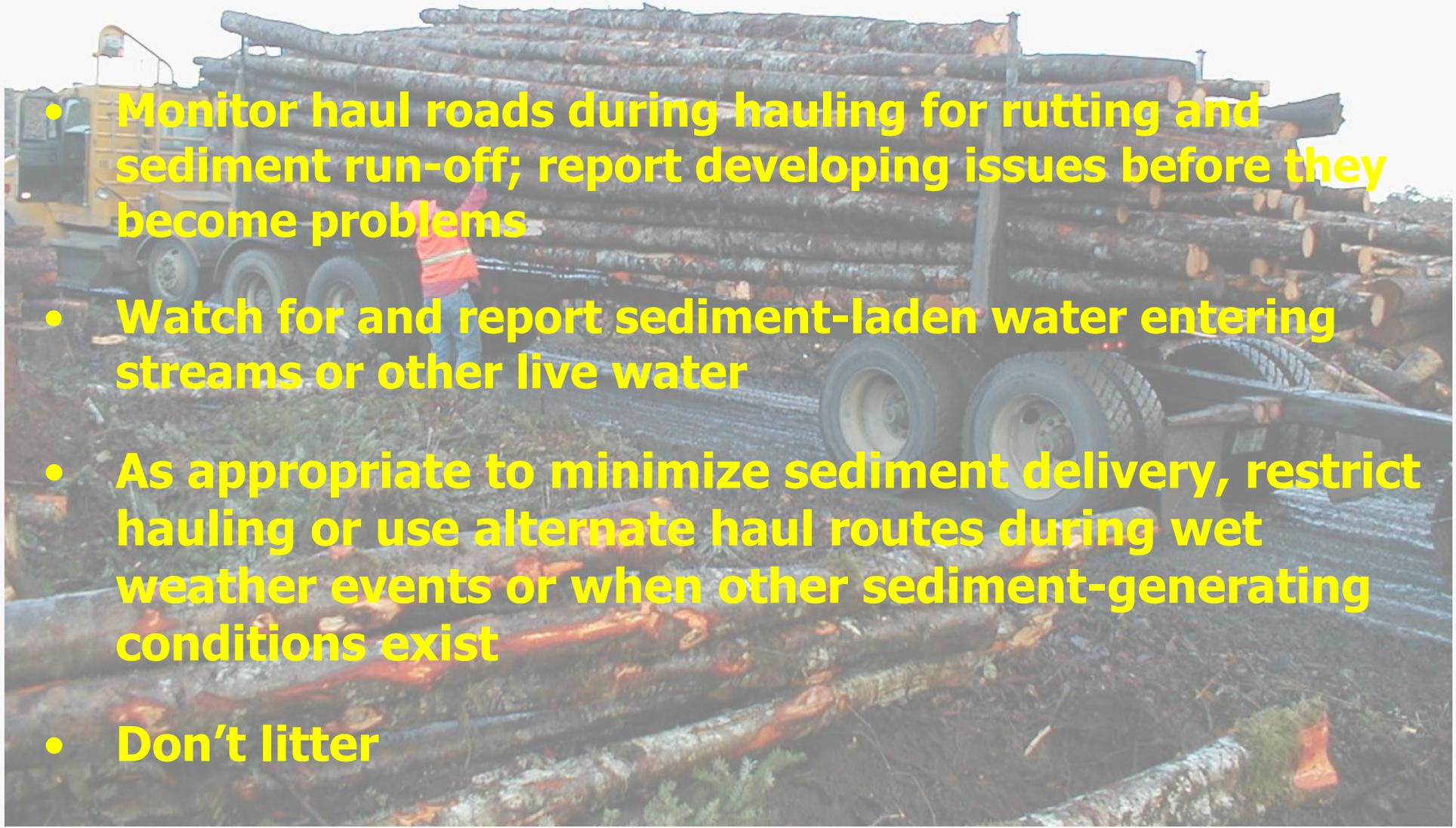
- Know & abide by harvesting restrictions from FPA / HPA
- Plan yarding layouts to minimize number of skid trails used
- Protect RMZs and other leave areas / trees
- Protect soils and adjust for wet weather conditions
- Abide by equipment limitation zone requirements
- Achieve proper utilization
- Leave required number and type of downed logs
- Keep all ditches and other drainage structures open and free of debris
- Clean up operational garbage including grease tubes & oil containers as you go



TRUCKS

TRUCKS

- Monitor haul roads during hauling for rutting and sediment run-off; report developing issues before they become problems
- Watch for and report sediment-laden water entering streams or other live water
- As appropriate to minimize sediment delivery, restrict hauling or use alternate haul routes during wet weather events or when other sediment-generating conditions exist
- Don't litter



HARVEST UNIT CLOSURE / POST HARVEST AUDITS / LOGGING CLEANUP

- **Complete the following activities:**
 - **ensure required downed logs are left in unit**
 - **ditches / drainage structures are open and functioning**
 - **water bar / rehab all dirt spurs and skid trails**
 - **required stream cleanouts**
 - **landing slash piled and stabilized**
 - **road surfaces smoothed, shaped & repaired, as necessary**
 - **assess and schedule fiber recovery opportunity, as appropriate**
 - **perform soil disturbance / utilization / post-CT audits as required**