
FREP's
Routine Riparian Effectiveness Evaluation
What's New in 2008?
Lots!!

New Stuff!!!

- Pocket field guides for “Bugs”, with good color photographs
- CDs on aquatic invertebrates, identification, use as monitoring tools, analysis of
- Clear “viewing” trays to help see streambed when water high or turbid

Procedural Changes

- Assess riparian area on both sides of the stream, regardless of treatment
- Only sample cut blocks harvested over 5 years from 2002 to 2006, inclusive

Main Protocol Changes

- More info on exactly what to collect for each indicator
- More example data for complex indicators
- More direction on when to answer Yes or No for Indicator Statements on some Questions

Protocol Change

Stream Riparian Classes, RRZs, RMZs, default office widths, minimum stream lengths, maximum distances from cut block

Stream Riparian Class	Stream Width (m)	RRZ (Reserve Zone) Width (m)	RMZ (Management Zone) Width (m)	Total RMA Width (m)	Default Stream Width in Office (m)	Min. Stream Length (m)	2 RMA Widths
S1	>20	50	20	70	20	600	140
S2	>5, ≤20	30	20	50	5	150	100
S3	1.5, ≤5	20	20	40	1.5	100	80
S4	<1.5	0	30	30	1.5	100	60
S5	>3	0	30	30	3	100	60
S6	≤3	0	20	20	1.5	100	40

Protocol Change

New Stream Card for Assessing Eligible Streams

It has to be a stream.

No Fisheries Sensitive Zones (FSZs) or Non-Classified Drainages (NCDs) that have been over-classified as streams.

A Key for Identifying

Fish Streams, Non-Fish Streams, FSZs and NCDs

1	Does the drainage feature have any alluvial deposits and/or scour to a mineral substrate, or continuous definable banks?	Y (4)	N (2)
2	Does the drainage feature have a gradient <20%?	Y (3)	N (NCD)
3	Does the drainage feature flow into known non-fish-bearing water, or end before reaching a water body with no possibility of a connection at high flows?	Y (NCD)	N (FSZ)
4	Does the drainage feature have any alluvial deposits or scour to a mineral substrate?	Y (5)	N (13)
5	Are the alluvial deposits or scour to a mineral substrate continuous or in sections less than 10m apart?	Y (6)	N (13)
6	Is the drainage feature < 100m long?	Y (7)	N (10)
7	Does the drainage feature flow into known non-fish-bearing water, or end before reaching a water body with no possibility of a connection at high flows?	Y (NCD)	N (8)
8	Is the drainage feature directly connected to potential fish bearing water (stream, wetland, lake or FSZ), or potentially connected to these features at high flows?	Y (9)	N (NCD)
9	Is the gradient <20%?	Y (S1–S4)	N (S5–S6)
10	Does the drainage feature flow into a known non-fish bearing stream?	Y (S5–S6)	N (11)
11	Is the gradient <20%?	Y (S1–S4)	N (12)
12	Is there any potential fish habitat upstream?	Y (S1-S4)	N (S5-S6)
13	Is the drainage feature <100m long?	Y (14)	N (17)
14	Is the drainage feature directly connected to a potential fish-bearing stream, wetland, lake or FSZ, or potentially connected to any of these features?	Y (15)	N (NCD)
15	Is the gradient <20%?	Y (16)	N (S5-S6)
16	Does the drainage feature receive more than 2/3 of its water from groundwater seepage, overland flow, or floodwater from adjacent water bodies, with less than 1/3 of its water from a lake, wetland or stream?	Y (FSZ)	N (S1-S4)
17	Is the gradient <20%?	Y (18)	N (NCD)
18	Does the drainage feature flow into known non-fish-bearing water, or end before reaching a water body with no possibility of a connection at high flows?	Y (19)	N (20)
19	Does the drainage feature receive more than 2/3 of its water from groundwater seepage, overland flow, or floodwater from adjacent water bodies, with less than 1/3 of its water from a lake, wetland or stream?	Y (NCD)	N (S5-S6)
20	Does the drainage feature receive more than 2/3 of its water from groundwater seepage, overland flow, or floodwater from adjacent water bodies, with less than 1/3 of its water from a lake, wetland or stream?	Y (FSZ)	N (S1-S4)

* A wetland can end up being classified as a FSZ, NCD or S1-S6 stream. If the stream reach, FSZ or NCD in question has hydrophytic plants and subhydric or hydric soils, wetland is probably a more appropriate classification.

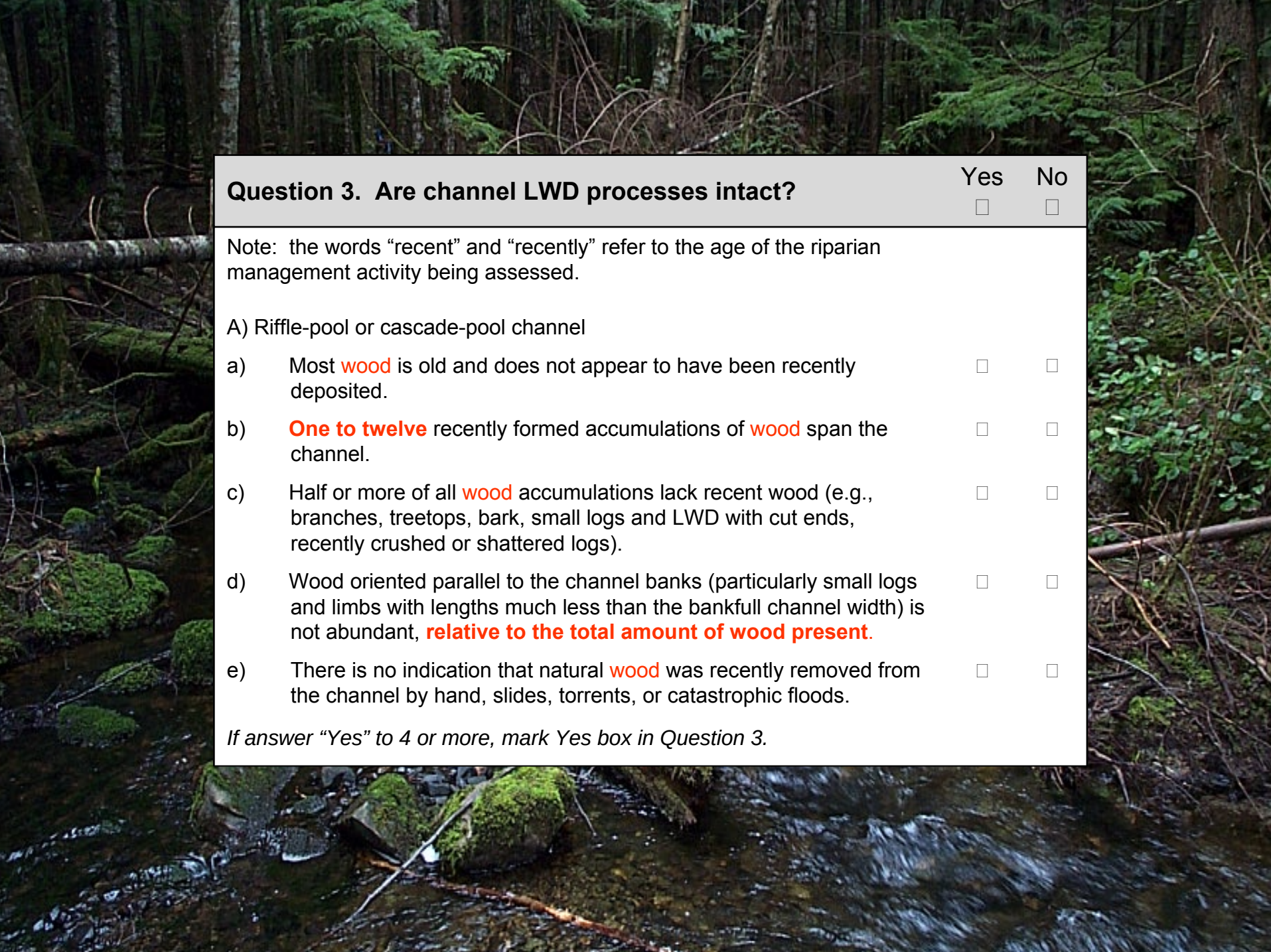
Protocol Change

(Also On Page 7 of Checklist)

Channel Morphology - General Features of Small to Medium Size Streams					
Channel Feature	**Riffle-Pool**	**Cascade-Pool**	**Step-Pool**	**Large Non-Alluvial**	**Small Non-Alluvial**
Gradient (%)	0-3	>3-7	>5	variable	variable
Stones	small, smooth	medium, smooth	large, smooth	large, sub-angular	small, angular
Pools	lateral	pockets, plunge	plunge	plunge	plunge
Moss	present on stable stones in riffles	present on stable boulders in riffles	common on steps, sides	common on sides of channel	common everywhere
Wood	typically present, with effects on sediment movement and pool-riffle form	often absent, with minor effects on pool formation if present	typically absent, little to no effect on pool formation if present	typically absent, no effects on channel morphology if present	often present, roots and small logs across stream may form small plunge pools
Main bank material	alluvium	alluvium, colluvium. till	bedrock, coluvium, till, allvium	bedrock, colluvium, ill	Colluvium. till
Floodplains	yes	yes	limited	no	no
Gravel bars	yes	yes	limited	no	no
Deposition or transport characteristics	mainly deposition	mainly deposition	mixed	mainly transport	mainly transport

Main Checklist Changes

- Field Data pages re-organized (Point, Continuous and Other Indicators)
- Added 4 Tables to help collect field data on wood, steps or stone lines, and riparian vegetation characteristics
- Approximately 25 other organizational or word changes to clarify checklist and improve data collection



Question 3. Are channel LWD processes intact?	Yes ☐	No ☐

Note: the words “recent” and “recently” refer to the age of the riparian management activity being assessed.

A) Riffle-pool or cascade-pool channel

a)	Most wood is old and does not appear to have been recently deposited.	☐	☐
b)	**One to twelve** recently formed accumulations of wood span the channel.	☐	☐
c)	Half or more of all wood accumulations lack recent wood (e.g., branches, treetops, bark, small logs and LWD with cut ends, recently crushed or shattered logs).	☐	☐
d)	Wood oriented parallel to the channel banks (particularly small logs and limbs with lengths much less than the bankfull channel width) is not abundant, **relative to the total amount of wood present**.	☐	☐
e)	There is no indication that natural wood was recently removed from the channel by hand, slides, torrents, or catastrophic floods.	☐	☐

If answer “Yes” to 4 or more, mark Yes box in Question 3.

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Question (Indicator)	Point Indicators (Measure at 6 equidistant points along the reach)							Total	Mean
	Transect Number.	1	2	3	4	5	6		
Q7(a)	% Moss								
Q8(a)	% Fines/sands								
Q9(a)	No. of sensitive invertebrate types								
Q9(b)	No. of major invertebrate groups								
Q9(c)	No. of insect types								
Q9(d)	Total No. of invertebrate types								
Q13(b)	% Shade								
Q14(a)	% Disturbance - increasers								
Q14(b)	% Noxious weeds/invasives								

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Question (Indicator) No.	Stream Type	**Continuous Indicators** (These are measured all along the reach to determine total length, numbers or areas present, as appropriate. Record the totals in the "total" column, even if the total is an estimate. Calculate the percentage of the reach length, riparian area or number of trees represented by each total. If the total is an estimate, indicate this in the space provided for the measurements)		Total	%
Q1(a)	RC	Mid-channel bars, wedges (m, measure all but no overlap)			
Q1(c)	RC	Lateral bars (m, measure all but no overlap)			
Q1(b,c)	RCS	Multiple or braided channels (m, measure all but no overlap)			
Q1(a)	Non-alluvial	Moss along the channel bed (m, measure all but no overlap)			

Pages 4 and 5 of Checklist

"Other Indicators"

Question No.	Other Indicators to Note (Answer Yes, No, or NA as appropriate for the Questions)			
Q01-04	**Boulder Line/Step Pool Characteristics - For Step-Pool Streams Only** (Use Table 1 to help answer the questions)			
Q1(a)	Do 50% or more of the boulder lines/steps span the channel?	Yes	No	NA
Q1(b)	Do 25% or more of the boulder lines/steps have moss?	Yes	No	NA
Q4(a)	Do 25% or more of the boulder lines/steps have plunge pools as deep as the largest rock in the line?	Yes	No	NA
Q4(b)	Do cascades lacking boulder lines/steps represent less than 25% of the reach?	Yes	No	NA
Q01	**Sediment and LWD Storage Characteristics - For Non-Alluvial Streams Only**			
Q1(b)	Do sediment and/or LWD deposits that completely fill the channel up to the top of the banks represent less than 5% of the reach length?	Yes	No	NA
Q1(c)	Are sediment deposits widely distributed in small pockets along the stream reach, not concentrated in a few relatively large compartments?	Yes	No	NA
Q03	**Wood Characteristics** (Use Table 2 to help answer the questions)			
Q3(a)	Is the wood in the channel mainly old?	Yes	No	
Q3(b)	Do 1-12 accumulations of wood span the channel?	Yes	No	
Q3(c,b)	Do half or more of the wood accumulations present lack new wood?	Yes	No	
Q3(d,c)	Is the wood in the channel mainly across or diagonal to the main axis of the stream?	Yes	No	
Q3(e,d)	Is the wood in the channel intact; i.e., not recently lost or removed by hand, catastrophic floods, debris flows, debris torrents?	Yes	No	

Wood Characteristics of a Riffle-Pool Type Sample Reach

Number of wood accumulations	Number of wood accumulations with new wood	Number of channel spanning wood accumulations	Main age of wood in each accumulation	Main orientation of wood in each accumulation (parallel or diagonal/across)
///// ///// ///	///// ////	///	**OOONOOON OOOOO**	**XXX/XX//XXX/**
Σ = 13	**Σ = 9**	**Σ = 3**	**Σ "O" = 11**	**Σ "X" = 8**

Number of wood accumulations	Number of wood accumulations with new wood	Number of channel spanning wood accumulations	Main age of wood in each accumulation	Main orientation of wood in each accumulation (parallel or diagonal/across)
Σ = 13	**Σ = 9**	**Σ = 3**	**Σ "O" = 11**	**Σ "X" = 8**

Q03	**Wood Characteristics** (Use Table 2 to help answer the questions)			
Q3(a)	Is the wood in the channel mainly old? **(11 out of 13 means "YES")**	Yes ■	No □	
Q3(b)	Do 1-12 accumulations of wood span the channel? **(3 means "YES")**	Yes ■	No □	
Q3(c,b)	Do half or more of the wood accumulations present lack new wood? **(9 out of 13 means "NO")**	Yes □	No ■	
Q3(d,c)	Is the wood in the channel mainly across or diagonal to the main axis of the stream? **(8 "X's" means "YES")**	Yes ■	No □	
Q3(e,d)	Is the wood in the channel intact; i.e., not recently lost or removed by hand, catastrophic floods, debris flows, debris torrents? **(Abundance, age and orientation all indicate "YES")**	Yes ■	No □	

Boulder-line/step characteristics of a 7m wide by 210m long step-pool type reach

Number of boulder lines/steps	Number of channel spanning boulder lines/steps	Number of boulder lines/steps with moss	Number of boulder lines/steps with a deep pool	Length of reach with no boulder steps and plunge pools
///// ///// ///// ///// ///// //	///// ////	///// /	/////	25, 33, 10 (Total = 68m)
Σ = 23	Σ = 9	Σ = 6	Σ = 5	% = 32

Number of boulder lines/steps	Number of channel spanning boulder lines/steps	Number of boulder lines/steps with moss	Number of boulder lines/steps with a deep pool	Length of reach with no boulder steps and plunge pools
Σ = 23	**Σ = 9**	**Σ = 6**	**Σ = 5**	**% = 32**

Q01-04	**Boulder Line/Step Pool Characteristics - For Step-Pool Streams Only** (Use Table 1 to help answer the questions)			
Q1(a)	Do 50% or more of the boulder lines/steps span the channel? **(9 out of 23 means "NO")**	Yes ☐	No ■	NA ☐
Q1(b)	Do 25% or more of the boulder lines/steps have moss? **(6 out of 23 means "YES")**	Yes ■	No ☐	NA ☐
Q4(a)	Do 25% or more of the boulder lines/steps have plunge pools as deep as the largest rock in the line? **(5 out of 23 means "NO")**	Yes ☐	No ■	NA ☐
Q4(b)	Do cascades lacking boulder lines/steps represent less than 25% of the reach? **(32% means "NO")**	Yes ☐	No ■	NA ☐

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Record the Question #'s that had "No" answers by each impact that applies

Checklist of Specific Impacts for All "NO" Answers. Please record the Question numbers that had 'No' answers in the space provided beside the specific impacts.		
	Stream Impacts that Apply	
Logging Related Impacts	Within Stream Reach	Above Stream Reach
Falling and yarding (slash/cut logs in channel)	3	
Machine disturbance during harvesting		
Machine disturbance during site preparation		
Windthrow	10,11	
Low retention		
Old logging	3	
Slides/sloughs	11	
Torrenting		
Water courses diverted	5	
Roads, Crossings		
Running surface eroding into stream	1, 2, 4, 7, 8	
Ditches eroding into stream	11	
Fill or cut slopes eroding into stream	1, 2, 4, 7,8, 11	1, 4
Road lens failing/collapsing	1, 2, 4, 7, 8	
Cross ditching inadequate		1, 4
Ditch blocks inadequate		1, 4
Cross drains inadequate		
Sediment traps inadequate	1, 2, 8, 4	1, 4
Berms/ruts trap water on road		
Crossing leaks fines into stream		
Water courses diverted	5	
Crossing opening too small		
Crossing misaligned		

Additional Riparian Information Requested on Page 18 of Checklist

Additional Riparian Information Requested		
Does the retention information on Page 1 accurately describe the conditions present along the stream reach? (If the answer is "No", please describe the retention by completing statements (A) to (G) below).	Yes	No
	Left Side	Right Side
(A) Distance from stream edge to start of harvesting (m, max. 500).	____	____
(B) Distance from stream edge to start of main harvest area (m, max 500). Note that distance (B) defines the riparian area referred to in (C) and (D).	____	____
(C) % of riparian area with merchantable size trees before harvesting.	____	____
(D) % of merchantable size trees in harvested portion of riparian area that were conifers before harvesting.	____	____
(E) % of original merchantable size conifers retained in harvested portion of riparian area only.	____	____
(F) % merchantable size trees retained in harvested portion of riparian area only (will equal (E) if no deciduous trees present).	____	____
(G) % non-merchantable size trees retained in harvested portion of riparian area	____	____

Finally. Thanks for listening.

Please review Riparian checklist for grammar, punctuation, nonsense, and potential improvements.