RIVER …… **DATE**…… **LOCATION CODE** ……

HIGH and LOW GRADIENT STREAMS

1. If you are in a steep valley……do HIGH GRADIENT STREAMS sections
   If you are in a plain……...do LOW GRADIENT STREAMS sections
   If you are in a broad valley……go to #2.
2. If >50% of the substrate in the reach is <u>larger</u> than gravel..…do HIGH GRADIENT STREAMS sections
   If >50% of the substrate in the reach is gravel or smaller……do LOW GRADIENT STREAMS sections

HIGH GRADIENT STREAMS ONLY

Habitat Parameter	**Category**			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
Riffle quality	Well developed riffle and run; riffle is as wide as stream and length extends two times the width of stream; abundance of cobble (boulders prevalent in headwater streams).	Riffle as wide as stream but length is less than 2 times width; abundance of cobble; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is less than 2 times the stream width; gravel or bedrock prevalent; some cobbles present.	Riffles or runs virtually nonexistent; bedrock prevalent, cobbles lacking.
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
Embedd-edness	Pebble, cobble and boulder particles are 0-25% surrounded by fine sediment (eg. sand, silt or clay).	Pebble, cobble and boulder particles are 25-50% surrounded by fine sediment (eg. sand, silt or clay).	Pebble, cobble and boulder particles are 50-75% surrounded by fine sediment (eg. sand, silt or clay).	Pebble, cobble and boulder particles are >75% surrounded by fine sediment. (**Include sites dominated by sand particles or smaller here**.)
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
Velocity-depth regime	All 4 velocity-depth regimes present. **Velocity-depth regimes :** **slow-deep (<.3m/s,>.5m)** **slow-shallow** **fast-deep** **fast-shallow**	Only 3 of the 4 velocity-depth regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 depth-velocity regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity-depth regime (usually slow-deep).
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**

LOW GRADIENT STREAMS ONLY

Habitat Parameter	**Category**			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
Pool substrate character-isation	Mixture of substrate materials, with gravel and firm sand prevalent; tree roots and/or submerged vegetation common. (**Do NOT include willow roots**.)	Mixture of soft sand, mud or clay; mud may be dominant; some tree roots and/or submerged vegetation present.	All mud or clay or sand bottom; little submerged vegetation present.	Hard-pan clay or bedrock; no submerged vegetation present.
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
Pool variability	Even mix of large/shallow, large/deep, small/shallow and small/deep pools.	Majority of pools large/deep; very few shallow pools.	Shallow pools much more prevalent than deep pools.	Majority of pools small/ shallow or pools absent.
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**

HIGH and LOW GRADIENT STREAMS: Do this page for BOTH stream types.

Habitat Parameter	Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
Channel flow status	Water reaches base of both lower banks, and minimal amount of channel substrate exposed.	Water fills >75% of available channel or <25% of channel substrate exposed.	Water fills 25-75% of available channel and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**
Bank vegetation (score each bank)	More than 90% of stream-bank surfaces covered by native vegetation; high structural diversity (large & small trees and under-storey shurbs); vegetative disruption through grazing or mowing minimal or not evident. (Undisturbed alpine sites score high.)	50-90% of streambank surfaces covered by native vegetation, or one structural class of plants not well represented; disruption of vegetation evident but not affecting full plant growth potential to any great extent.	10-50% of streambank surfaces covered by native vegetation; disruption of vegetation obvious, with patches of bare soil or closely cropped vegetation common.	Less than 10% of the streambank surfaces covered by native vegetation, or streambank surfaces dominated by exotic vegetation (eg, willows); disruption of vegetation is very high (eg, vegetation has been removed to 5 cm or less).
Score	**Left bank 10 9**	**8 7 6**	**5 4 3**	**2 1 0**
Score	**Right bank 10 9**	**8 7 6**	**5 4 3**	**2 1 0**
Bank stability (score each bank)	Banks naturally stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected by erosion.	Moderately stable; infrequent small areas of erosion mostly healed over; 5 –30% of bank in reach has areas of erosion or stabilised banks e.g. rip rap/gabion	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score	**Left bank 10 9**	**8 7 6**	**5 4 3**	**2 1 0**
Score	**Right bank 10 9**	**8 7 6**	**5 4 3**	**2 1 0**
Width of riparian zone (score each bank)	Width of riparian zone >30 m.	Width of riparian zone 10-30 m.	Width of riparian zone 5-10 m.	Width of riparian zone <5 m.
Score	**Left bank 10 9**	**8 7 6**	**5 4 3**	**2 1 0**
Score	**Right bank 10 9**	**8 7 6**	**5 4 3**	**2 1 0**

NOTE DIFFERENT PERCENTILES FOR HIGH AND LOW GRADIENT STREAMS FOR THIS PARAMETER:

Epifaunal substrate/ available cover	Greater than 70% (**>50% for low gradient streams**) of substrate favourable for epifaunal colonisation and fish cover; can include mix of "seasoned" snags (ie, not newly fallen or transient), submerged logs, undercut banks, cobble or other stable habitat.	40-70% (**30-50% for low gradient streams**) of substrate favourable for epifaunal colonisation and fish cover; still contains a reasonable mix of stable habitat, can include substrate in the form of newly fallen, but not yet "seasoned", logs.	20-40% (**10-30% for low gradient streams**) of substrate favourable for epifaunal colonisation and fish cover; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20%(**>10% for low gradient streams**) substrate favourable for epifaunal colonisation and fish cover; lack of suitable epifaunal habitat obvious; substrate highly unstable.
Score	**20 19 18 17 16**	**15 14 13 12 11**	**10 9 8 7 6**	**5 4 3 2 1 0**