To complete the Function Checklists, observe and consider the following in addition to the indicators listed on the checklists.

Streams Riparian Function Checklist

Channel Structure, Function and Diversity

1. Channel characteristics and associated floodplain are adequate to dissipate energy.

   Note: Is stream energy naturally dissipated through the presence of rocks/boulders, large woody debris, shrubs/sedges or natural sinuosity? Does the stream have easy access to its floodplain during high flow?

2. Channel and banks are relatively stable.

   Note: Channels and banks are not static; it is natural for channels to move and evolve over time. Do not confuse natural channel movement with accelerated change. Bank undercutting should be balanced by bank building on the opposite side.

3. Lateral movement is associated with natural sinuosity.

   Note: Do not confuse natural sinuosity with accelerated lateral movement across the floodplain. Lateral erosion leads to an increase in channel width.

4. Erosion, deposition and movement of bed materials are normal for this reach.

   Note: Is meander erosion balanced by point bar deposition? Are point bars revegetating? Is there evidence of excessive movement of bed materials as indicated by extensive riffles?

5. Bank shearing, soil compaction and bare ground are uncommon.

   Note: Some bank collapse will be related to natural undercutting, but on the whole, bank collapse, compaction/trampling and bare ground should be minimal. Is trampling to a point water source or along the entire reach?

6. Sinuosity, width/depth ratio, gradient, pool/riffle ratio, and other aspects of channel geometry are in balance with the landscape setting.

   Note: Sinuosity should be balanced with the slope and landscape position of the stream. Is the channel deep relative to its width? Pools should represent 2/3 of the length of any reach; riffles should represent 1/3 the length of any reach. The sequence of pools and riffles should repeat itself every 5 to 7 bankfull widths. Pools should be fine textured and deep and riffles should be coarse-textured and shallow. Excessive riffle length is evidence of excessive movement of bed materials. Channel bars should be at the margins, not in mid-channel.

7. Inputs of organic debris from adjacent riparian area and subsequent incorporation into the channel are normal for area.

   Note: Are trees and shrubs being incorporated by natural mortality and windfall at a normal rate?

8. Banks are undercut.

   Note: Are undercut banks appropriate for the stream segment? Consider the gradient, bank texture and bed materials.

9. Riffle bed materials and gravels are free of sediment. Fish spawning and use of rock undersides by insects and other invertebrates are possible.

   Note: Looks at rock undersides for evidence of invertebrate life. Water temperature, purity and turbidity will influence the invertebrate species found there.

Flow Regime

1. Flow rates and timing remain unchanged over time.

   Note: Any water control structures will influence flow rates, timing and sediment loads (and the ability to rebuild banks). Has the stream changed from permanent to intermittent or ephemeral or from continuous to interrupted?

Biotic Community

1. Roots of trees, shrubs and grasses extend into the stream. Root masses are capable of withstanding high streamflow events and allowing formation of overhanging banks.

   Note: Are there overhanging banks? Are there deep rooted sedges as opposed to shallow rooted grasses on the streambank? Do the root masses of shrubs or trees extend into the channels influencing its depth and direction of flow? Check the soil texture. Willows require coarse textured substrates and will not grow in oxygen poor soils. Sedges will grow in anaerobic conditions.

2. The plant community exhibits high vigour and indicates maintenance of riparian soil moisture characteristics.

   Note: Are the species present vigorous riparian species, or have upland species encroached?

3. Occurrences of trampling, rubbing or browsing are uncommon.

   Note: Excessive trampling leads to soil compaction and poor water infiltration. Trampling, rubbing and browsing will reduce the vigour of the plant community.

4. Riparian plant communities are an adequate source of replacement woody debris, both now and in the foreseeable future.

   Note: Woody species are present and able to contribute to the stream system. There are new recruits to replace those that have fallen.

5. A diversity of vertebrate and invertebrate like is evident.

   Note: In both the stream itself and in the riparian zone.

Nutrient Inputs and Water Quality

1. Nutrient levels are normal.

   Note: Is there excessive livestock dung? Are there thick algal mats? Is there evidence of organism die-offs? Does the invertebrate population indicate a worsening in habitat or water quality (species shifts, lower diversity).

2. Inputs of fine organic matter are appropriate.

   Note: Does detritus form an integral part of the food chain?

Lakes, Ponds and Wetlands - Riparian Function Checklist

Hydrologic

1. Water levels have remained unchanged over time.

   Note: What is the source of water for this wetland? Is it overland flow, groundwater or channel flow? Is this a beaver influenced wetland? Has the hydrology been influenced by land management practices in the watershed? Willows indicate the average high water mark for many wetland types.

Biotic/Vegetation

1. The plant community is showing good vigour and maintenance of riparian soil moisture characteristics.

   Note: Check for vigour and recruitment of phreatophytes.

2. Diversity and structure of the riparian and emergent vegetation has been maintained.

   Note: Widths of riparian and emergent vegetation bands will fluctuate annually. Monitor for longterm changes.

3. The plant community is adequate to filter sediments and pollutants.

   Note: Healthy bands of riparian and emergent vegetation are effective in reducing turbidity and capturing pollutants.

4. Occurrences of trampling, rubbing or browsing are uncommon.

   Note: Is the vigour of the vegetation being reduced by these? Is trampling occurring around the entire perimeter, or is it limited to a few watering locations?

5. Adequate vegetation is present to protect banks.

   Note: There should be adequate vegetation to protect the banks from the actions of winds and waves.

6. A diversity of vertebrate and invertebrate life is evident.

   Note: Low species diversity may be an indication of a problem. Consider both the wetland and in the riparian zone.

7. The riparian plant community is an adequate source of large woody debris, both now and for the foreseeable future.

   Note: Woody species are present and able to contribute to the stream system. There are new recruits to replace those that have fallen.

Erosion/Deposition

1. Bank shearing, soil compaction, and bare ground are uncommon.

   Note: If evident, is it to a watering site, or does it occur around the entire wetland.

2. Soil erosion and deposition in the wetland and riparian area are within natural levels.

   Note: Indicates a problem with the surrounding uplands.

3. Hummocks are rounded and completely vegetated.

   Note: Hummocks can be created by livestock trampling. However, some species of sedge create their own hummocks to avoid prolonged saturation. Hummocks should be rounded and completely vegetated.

Nutrient Inputs and Water Quality

1. Nutrient levels are normal.

   Note: Is there excessive livestock dung? Are there thick algal mats? Is there evidence of organism die-offs? Does the invertebrate population indicate a worsening in habitat or water quality (species shifts, lower diversity).

2. Inputs of fine organic matter are appropriate.

   Note: Does detritus form an integral part of the food chain?

Uplands Function Checklist

Hydrologic and Soils

1. Organic matter protects soil surfaces from raindrop impact and evaporative effects of sun and wind.

   Note: The majority of the ground surface should be protected by live vegetation or dead plant material.

2. Water will easily infiltrate the soil surface.

   Note: Soil surface conditions should allow for precipitation to penetrate. Soil crusting or capping should not occur.

3. Subsurface soil conditions support infiltration.

   Note: Check for soil compaction or impenetrable layers.

4. Standing vegetation and plant litter detain overland flow and trap sediment.

   Note: No sign of rilling.

5. Non-stream ephemeral drainages are stable.

   Note: Well vegetated and no sign of rills.

Biotic/Vegetation

1. The plant community is showing good vigour.

   Note: Proper growth form and stature. Good seed production.

2. There is recruitment of desirable plant species. Deep rooted perennial plants should dominate the plant community.

   Note: This refers to native decreaser species.

3. The plant community reflects a fully occupied root zone.

   Note: Dig a soil pit. Roots should penetrate deeply into the soil profile.

4. Seeps, springs and ephemeral drainages support vigourous stands of phreatophytic plants.

   Note: These are plants which place their roots in the water table.

5. Biological breakdown of plant residues/organic material is apparent.

   Note: Dead plant material should decompose rather than oxidize on the stem. In order for this to happen it needs to made contact with the soil surface.

6. Biological breakdown of livestock dung is rapid.

   Note: Is dung breaking down rapidly, or does it remain intact for years?

7. A diversity of vertebrate and invertebrate life is evident.

   Note: Consider soil organisms, insects, and vertebrates

Erosion/Deposition

1. Evidence of rills, gullies, and other excessive soil movement is uncommon.

   Note: Vegetation should prevent formation of these. Old rills and gullies should be revegetated.

2. There is little evidence of pedestalling of plants or rocks. Pedestals present are sloping or rounding and accumulating litter.

   Note: This is evidence that recovery has occurred.