Advances in Policy – Headwaters Get Protection!

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What is a Headwater Drainage Feature (HDF)?

HDFs are more important than you think!

HDFs are located across the landscape and are the small stream, swale and wetland features that capture water and transport it to larger streams and rivers. They do not necessarily flow all the time, but may flow after rainfall or snowmelt.

When left in their natural state, these features have many functions like helping to reduce stream flooding, purifying water, and providing food and habitat for wildlife.

However, they can be altered by people through activities like piping, ditching, and channelizing, which reduce or eliminate these functions. This especially becomes a problem when many HDFs are altered in one watershed.

What can you do?

Leave HDFs in their natural, undisturbed state. Leave vegetation within and around them, maintain existing drainage flow, and keep livestock away.

Maintain the vegetation surrounding the streams to improve the quality of water and food carried downstream and to remove nutrients and sediment.

50% - 80% of the rivers length is constituted by Headwater streams

Sediment and pollutants from urbanization and farming practices flows downstream.

HDFs store and slow down flow to help reduce downstream flooding and sustain flow to downstream rivers.

Pipes often replace HDFs but transport rainwater through the sewer system too quickly, leading to flooding.

Open grassed swales can remove over 80% of sediment from the water.

HDFs provide habitat for:
- insects
- amphibians
- fish

The collected water that gets carried downstream into our lakes and rivers ends up as drinking water.

Flood vulnerable area
Under the provisions of section 28 of the Conservation Authorities Act and through its regulations, the authority has the ability to:

(a) prohibit, regulate or require the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland.

**Watercourse**: means an identifiable depression in the ground in which a flow of water regularly or continuously occurs
Guideline Structure

1. Evaluation
2. Classification
3. Management
Evaluation: Pre-screening

Guideline applies to:

- part of the drainage network (i.e. drainage channels that are identified from aerial photography, and/or drainage lines result from ArcHydro analysis), or
- a groundwater seepage area or spring, or
- a connected headwater wetland (a surface outlet connects to downstream), and
- not a mapped or known perennially flowing stream.
Evaluation

OSAP M4:S10

• Hydrology
  – flow conditions (substantial flow, minimal flow, interstitial flow, standing water, dry)
  – feature type (wetland, swale, defined channel, etc.)

• Riparian vegetation
  – dominant vegetation in any of the 0 – 1.5 m, 1.5 – 10 m and 10 – 30 m riparian zones
    (forest, scrubland, meadow, lawn, cropped land, none).

OSAP S3.M1 or S3.M2 and S4.M9

• Fish and Fish Habitat, and barriers
  – year-round, seasonal, or contributing

Marsh Monitoring Protocol, Ecological Land Classification

• Terrestrial Habitat – amphibian habitat, connectivity
Classification

Using the data collected in the Evaluation section, features are assessed in terms of four functional attributes:

1. Hydrology
2. Riparian Conditions
3. Fish and Fish Habitat
4. Terrestrial Habitat
All functional attributes are assessed using a common categories of function*:

1. Important

2. Valued

3. Contributing

4. Limited

*with slight modifications as necessary
Link Classification to Management

**Limited or Recharge Hydrology**
- Is the feature a wetland?*
  - Yes
  - Important Fish Habitat?*
    - Yes
    - Important Terrestrial Habitat?
      - Yes
      - Important Riparian Vegetation?
        - Yes
        - Conservation
        - Protection
      - No
    - No
    - Valued Fish Habitat?
      - Yes
      - Mitigation
      - Conservation
      - Protection
  - No
  - Recharge Hydrology?
    - Yes
    - Minimum of Valued Terrestrial Habitat?
      - Yes
      - Important Terrestrial Habitat?
        - Yes
        - Important Riparian Vegetation?
          - Yes
          - Conservation
          - Protection
        - No
      - No
    - No
    - Contributing Terrestrial Habitat?
      - Yes
      - Maintain/Replicate Terrestrial Linkage
      - Maintain Recharge
      - Mitigation
      - Conservation
      - Protection
    - No

*Other Conservation Authority policies or other legislation with respect to wetlands, watercourses and/or species at risk need to be assessed in the context of this key.
+Note that headwater wetlands are considered to be HDWPs in the context of this guideline.
1. Protection – protect or enhance in-situ feature and riparian corridor
2. Conservation – maintain, relocate and/or enhance feature
3. Mitigation – replicate and enhance function w lot level conveyance
4. Maintain Recharge – maintain overall water balance
5. Maintain Terrestrial Linkage – maintain corridor bw features
6. No Management Required
On-line ponds, distinct HDFs to be sampled

Protection
Conservation
Mitigation
Maintain Terr. Linkage
Maintain Recharge
No Management Requ’d

Unconnected wetland, not an HDF, therefore not sampled

Connected wetland, to be sampled. A second sampling location for outflow

Scale 1:4,000
TRCA’s Living City Policies

TRCA adopted policies to protect headwater functions in 2014!

- Protection
- Conservation
- Mitigation

May be Regulated

Regulated

Mitigation
Conservation
Protection