

Freshwater Atlas

Obstacle Processing Technical Documentation

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1 FWA OBSTACLES

FWA includes the following obstacles from TRIM into the dataset:

- Beaver Dam (linear)
- Dam Base (linear)
- Dam Top (linear)
- Falls (point and linear)
- Rapids (point and linear)
- Spillway (linear)
- Dam (point and linear)
- Sinkhole (point)

These obstacles underwent two major processes:

- Name Matching
- Projection to FWA LineWork

1.1 Name Matching Trim Obstacles to GNIS Names

GNIS contains the following name types:

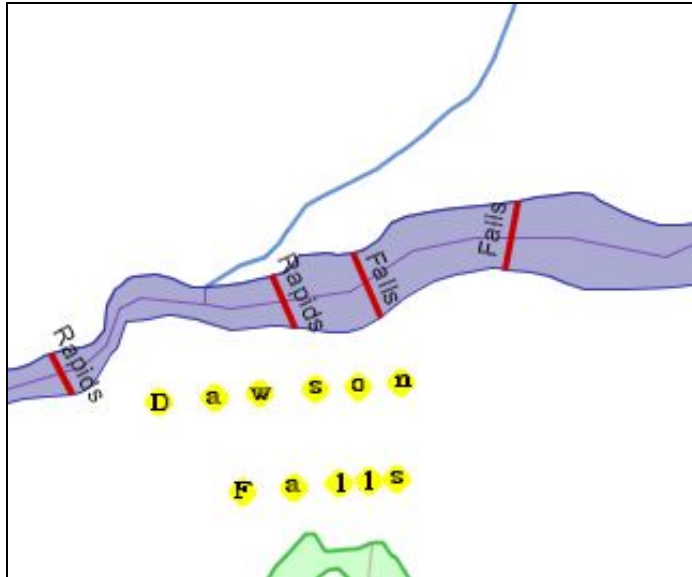
Term	code (GNIS code)	number of GNIS names
Tidal Rapids	1358	6
Rapid	735	0
Dam	4507	5
Falls	731	135
Rapids	730	54
Rapide	762	0
Waterfall	768	12

Trim Dam Features (Dam Base, Dam Top, Dam) were only matched to toponyms of type Dam.

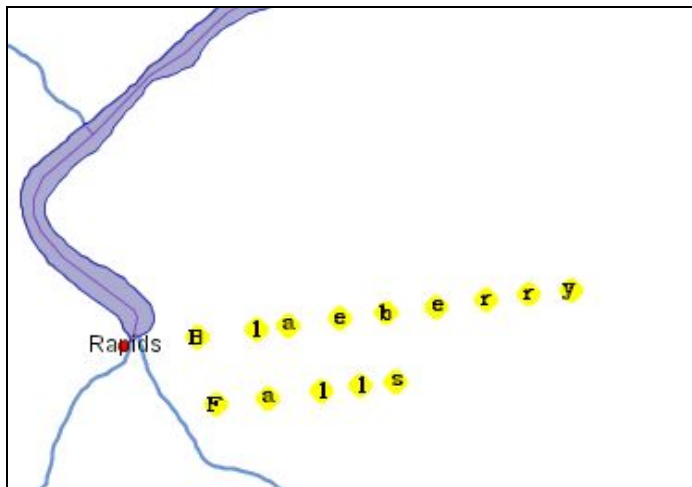
Trim Falls and Rapids Features were matched to toponyms of types Tidal Rapids, Falls, Rapids, and Waterfalls. Therefore a 'Fall' TRIM feature could be matched to a 'Rapids' GNIS type toponym. This occurred when there were no TRIM features of the same type as the toponym within a reasonable distance of the toponym.

If a TRIM feature of the same type as the GNIS toponym exists within a reasonable distance then the toponym is matched to the TRIM feature of the same type regardless of what other types of features existed.

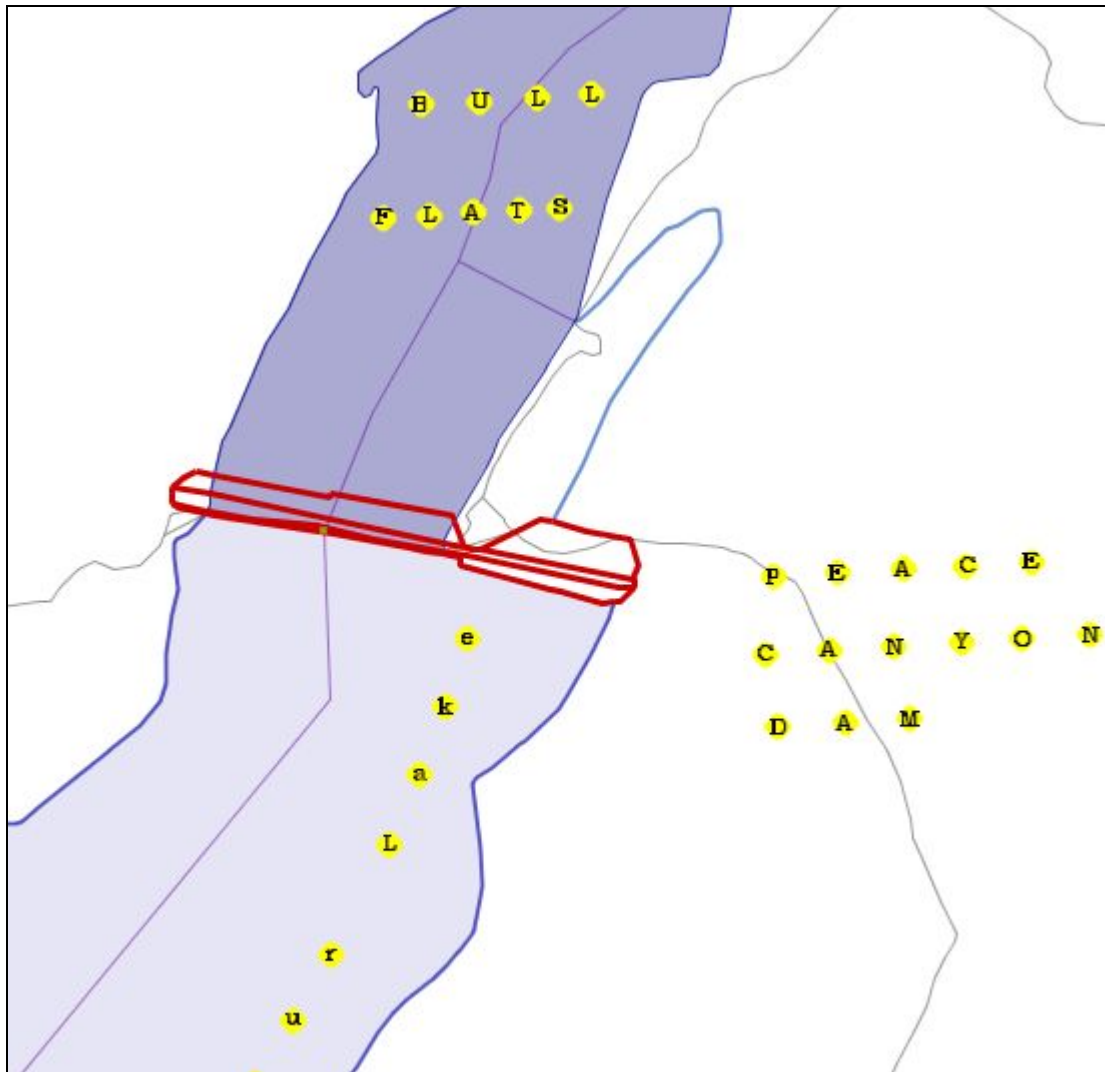
Not all GNIS toponyms were matched to TRIM features. If there were no TRIM features within a reasonable distance of the toponym than it was not matched to anything.



Here Dawson Falls is matched to the two 'Falls' TRIM features and not the Rapid features.



Here the 'Falls' GNIS toponym is matched to the Rapid TRIM feature.



The Peace Canyon Dam is matched to the TRIM lines shown in red. Each of these TRIM lines is of type Dam Top, Dam Base, or Spillway.

Email Regarding the Name Issue Between Gary Wong and Janet Mason:

Janet,

Thanks for the quick reply... we'll treat these types of matches as 'acceptable', barring any information to the contrary.

Gary

From: Mason, Janet SRM:EX [mailto:Janet.E.Mason@gov.bc.ca]
Sent: April 11, 2005 2:42 PM
To: Gary Wong
Cc: 'egouge@refractions.net'
Subject: RE: Possible Issue with TRIM Point Names

Hi Gary -

I can confirm that both Blaeberry Falls and B.X. Falls are official names, and are identifiable features along their respective watercourses, so presumably should be linked to the TRIM features you have found.

Don't know why TRIM codes these as "rapids". Maybe these waterfalls don't have much vertical drop, or perhaps "rapids" is the TRIM feature code for all disturbances in a stream (falls, cascades, rapids, whirlpools) ?

cheers,
Janet.

-----Original Message-----

From: Gary Wong [mailto:gwong@sbd.ca]
Sent: April 11, 2005 12:05 PM
To: Mason, Janet SRM:EX
Cc: egouge@refractions.net
Subject: FWA: Possible Issue with TRIM Point Names

Janet,

Good morning, how are you? As part of our NHN work, we are incorporating TRIM 1 points into our FWA dataset. These are 'obstructions' and 'man-made events' (in NHN terms). While doing preliminary investigation, we found some names that don't seem to match up to the TRIM points (see below).

Can you answer the question "... should be matching the 'falls' type toponym to the 'rapid' type feature..?".

Gary

From: Emily Gouge [mailto:egouge@refractions.net]
Sent: Mon 4/11/2005 11:53 AM
To: Gary Wong
Subject: Trim Point Name Matching Issues

Gary,

Here are two examples of 'falls' whose closest TRIM point is typed 'rapids'

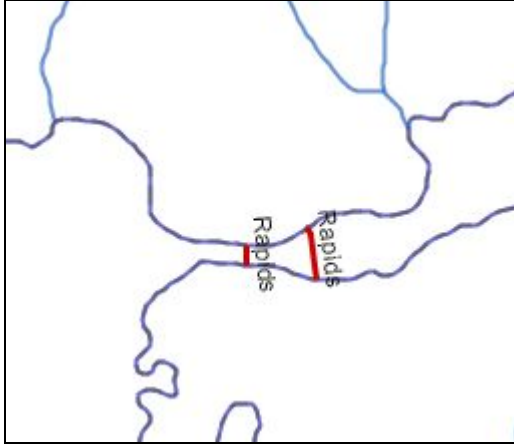
Example 1:
BlaeberryFalls
GNIS ID: 13622
Coordinate: 1625012.28692836 762085.072103508 BC Albers

Example 2:
B.X. Falls
GNIS ID: 38205
Coordinate 1484098.4359228422, 611761.0790307794 BC Albers

Can you confirm with Janet if we should be matching the 'falls' type toponym to the 'rapid' type feature.

1.1.1 Coastal Rapids

It was decided that coastal rapids were outside the scope of FWA; therefore they are not included in the FWA dataset.



Coastal Rapids are outside the scope of FWA.

1.2 Projection to FWA Linewrok

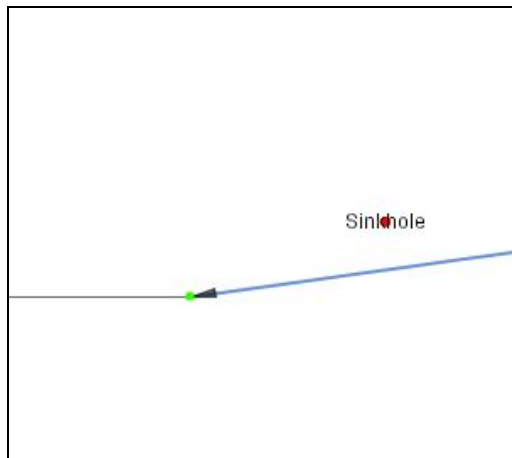
Each of the TRIM features was projected to a FWA edge. Different feature types were projected differently. If a feature could not be projected (see rules for each feature type), then the feature was dropped from the FWA dataset.

1.2.1 Point Features – SinkHoles

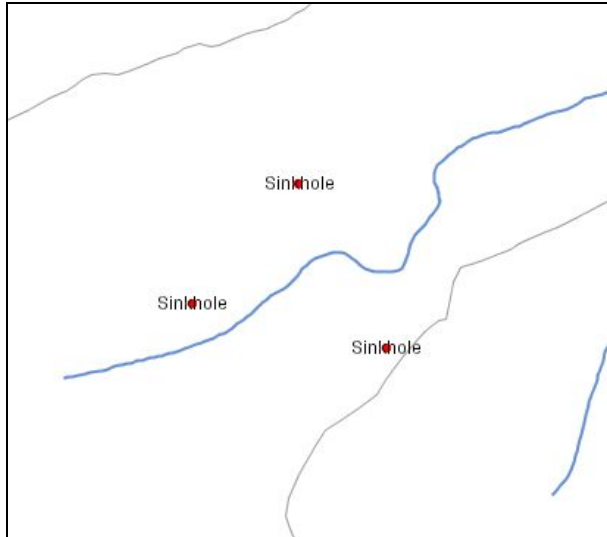
Sink holes were projected to the nearest sink node within 20m of TRIM feature. A sink node was defined to be a node that has an 'observed' flow flowing into the node, and either no flow or an 'inferred' flow flowing out of the node. Observed flows include all rivers, lakes, and observed flows inside wetlands (but not construction lines inside wetlands – 1200, 1300, 1400 inside wetlands). An inferred flow is defined to be a 1410, 1425 or a construction line inside a wetland - 1200, 1300, 1400 inside wetland.

Sink holes that could not be projected to a sink node were removed from the FWA dataset.

Every TRIM obstacle feature is associated with an edge. In the case of sink holes they are associated with the observed flow.



Sink hole projected to the nearest sink node in the dataset.



These three sink hold features could not be projected to any sink in the FWA network; therefore they were dropped from the FWA dataset.

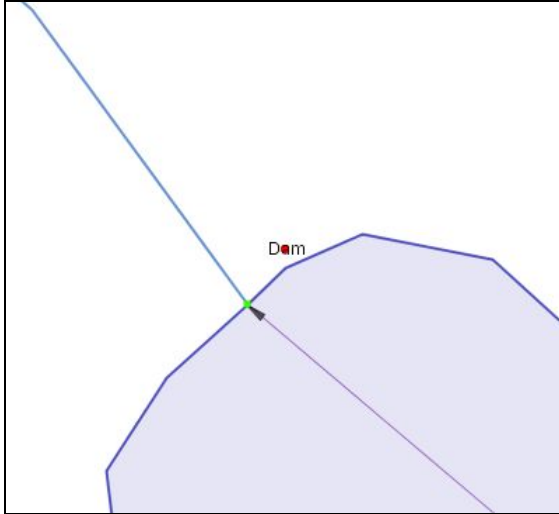
1.2.2 Point Features – Dams

Point dams are projected to a point along a FWA flow edge within 20m using the following rules:

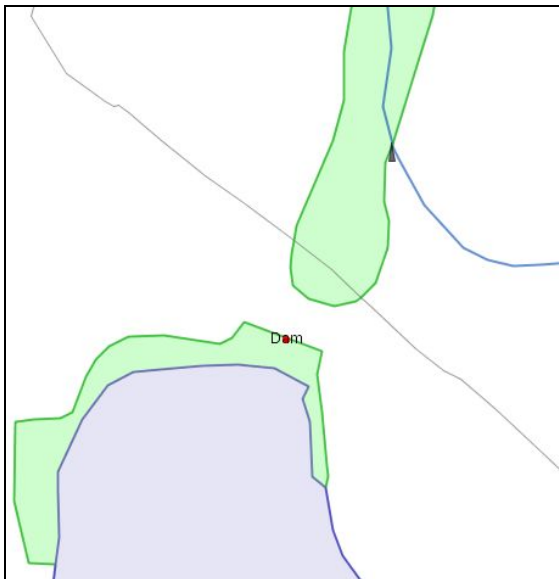
- if a lake mouth exists within 20m of the dam point, then the dam was projected to the lake mouth
- if a flow edge (or skeleton line) exists within 20m of the dam point, then the dam was projected to the closest point on the flow edge
- otherwise the dam was dropped from the FWA dataset.

In cases where two dams were projected to the same point, only one dam feature was recorded at this point, the other dam feature was dropped.

Every TRIM obstacle feature is associated with an edge. In the case of point dams they are associated with the observed flow flowing out of the lake (if projected to lake mouth), otherwise they are associated with the edge they are projected to.



Dam was within 20m of lake mouth, so feature was projected to the lake mouth node.



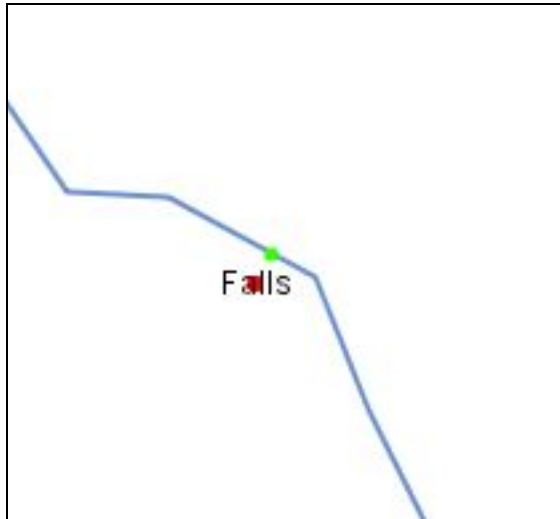
There is no flow line or lake mouth within 20m of this dam feature; therefore it was dropped from the FWA dataset.



There was no lake mouth within 20m of this dam; however there was a flow edge, therefore the dam is projected to the flow edge.

1.2.3 Point Features – Falls and Rapids

Fall and Rapid point features were treated the same. They were projected to the nearest flow or skeleton line (but not 1450 edges) within 20m and associated with this edge. If no edge existed then the feature was dropped from the FWA dataset.



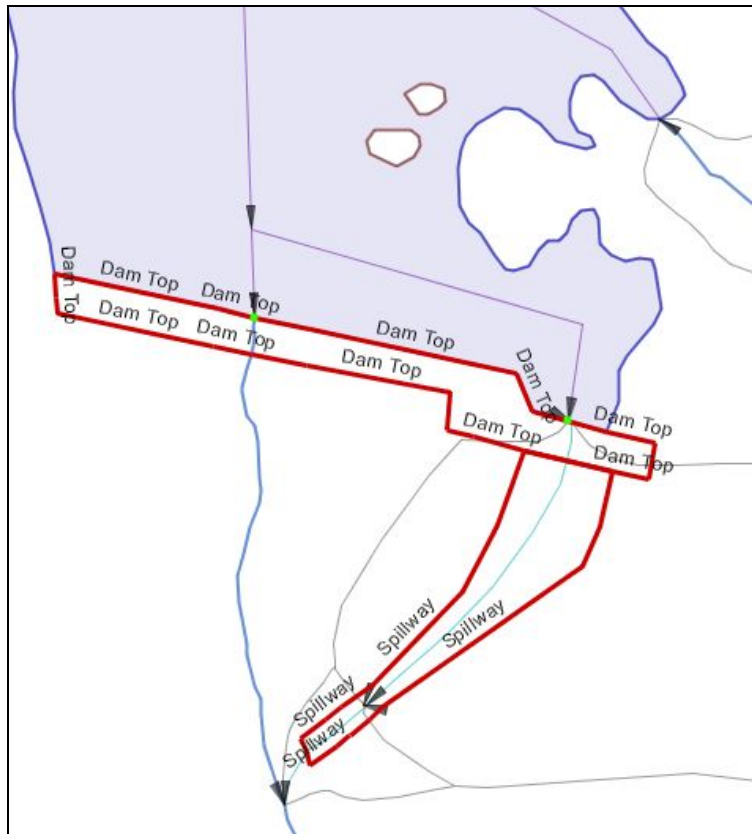
This fall feature is projected to the nearest flow line within 20m

1.2.4 Line Features – Man Made Dams

Man made dams went through the following processing:

1. Manually grouped together so that all TRIM lines representing the same feature were grouped together. During the manual process a point was also placed 'near' the located where the dam obstructs flow.
2. The manually points were projected to the line work similar to the way point dams were projected – if a lake mouth exists within 20m of the point, the dam is projected to that point, otherwise it is projected to a point along the nearest flow line within 20m.

Dams that were projected to lake mouth nodes are associated with the observed flow edge leaving the lake.



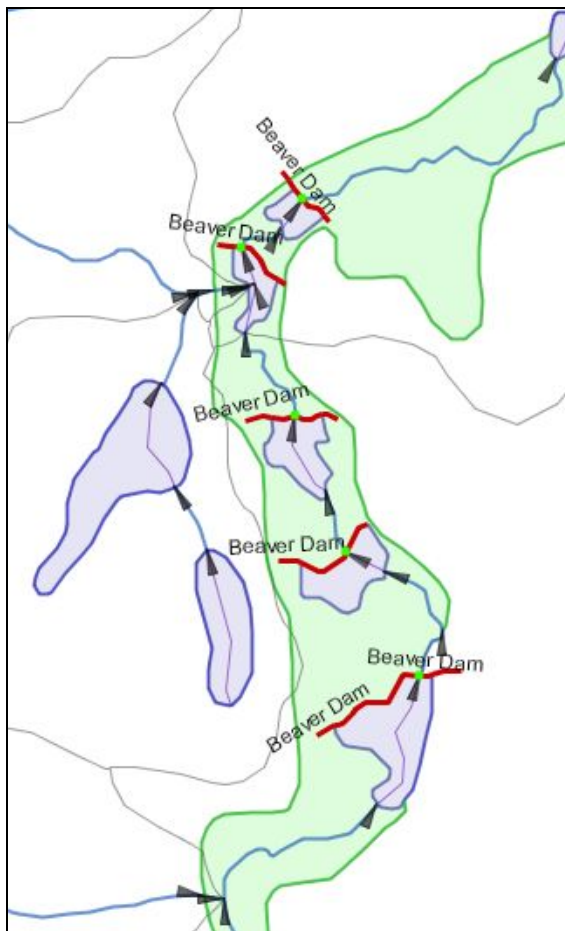
Each of these TRIM lines was grouped for form a single Dam Feature. Then two points were manually places near the points where the flow exited the lake. These points were then projected to the actually lake mouth nodes (the green points). These two points actually result in two different features in the FWA dataset.

1.2.5 Line Features – Beaver Dams

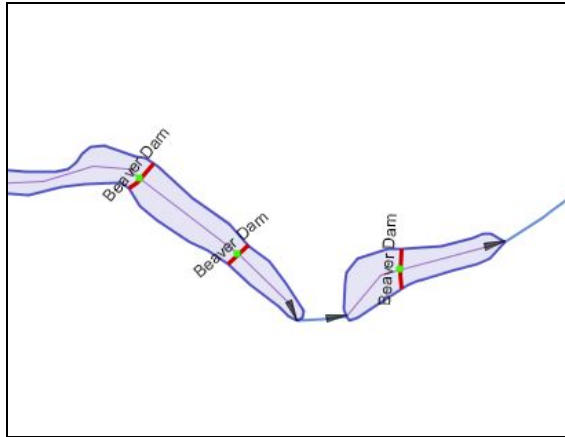
Beaver Dams were projected to a FWA edge using the following rules:

- If the beaver dam was within 1m of a lake mouth the dam was projected to the lake mouth.
- If the beaver dam was within 1m of any flow edge or skeleton line then it was projected to this edge.
- Otherwise the beaver dam was dropped from the FWA dataset.

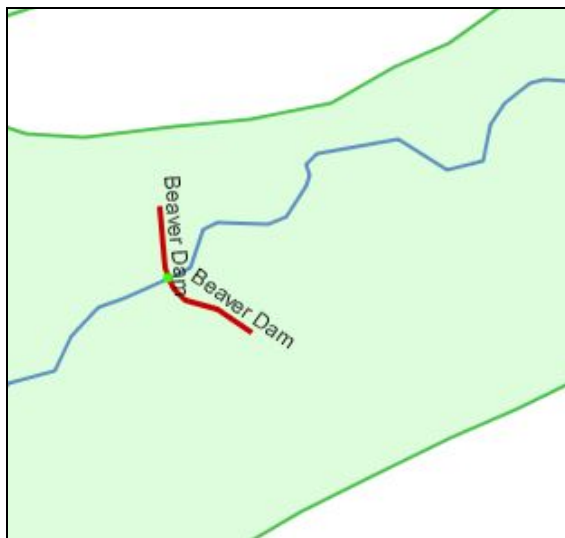
This processing resulted in Beaver Dams inside of lakes (see example below), however we decided to leave these as they may be accurate obstructions.



These beaver dams are all within 1m of a lake mouth node, therefore they were projected to this node (and associated with the flow edge leaving the lake).



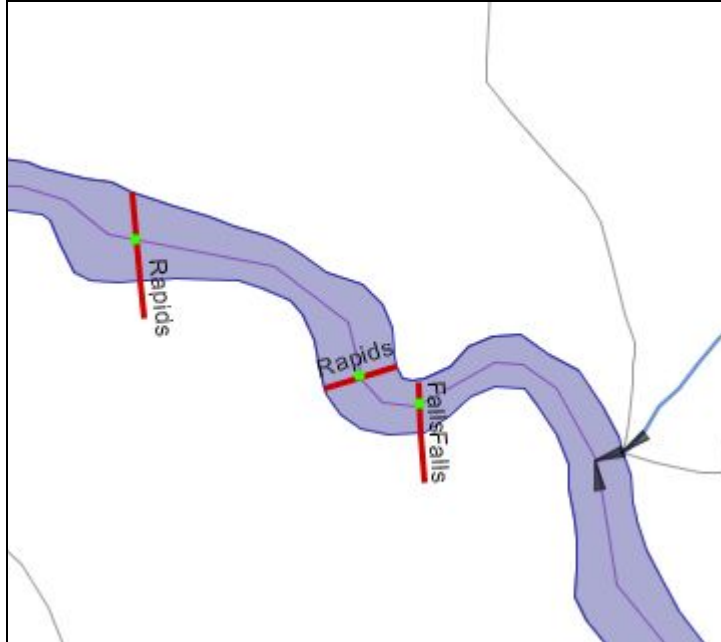
These three beaver dams are all >1m from the lake mouth, therefore they were projected to the skeleton lines through the lakes (green points).



This beaver dam is >20m away from any lake, however it crosses a flow line therefore it was projected to this flow edge (green point).

1.2.6 Line Features – Rapids and Falls

All line rapid and fall features were projected to the nearest flow or skeleton line (not 1450) within 20m of the TRIM feature. Features that did not project to an edge within 20m were dropped from the FWA dataset.



Each of these rapid and fall features are projected to the skeleton line they cross.