BRAT-cIS – BEAVER DAM CAPACITY ASSESSMENT FORM - BASIC

OBSERVATION INFO

Observer Name: _____

Reach ID: _____

Observation Date:_____

Stream Name: _____

LOCATION OF ASSESSMENT REACH

GPS UTM Easting: _____

GPS UTM Northing: _____

LENGTH OF REACH

Length _____ meters OR _____ x bankfull widths

VEGETATION CAPACITY TO SUPPORT DAM BUILDING ACTIVITY

SUITABILITY OF STREAMSIDE VEGETATION

o Unsuitable
o Barely Suitable
o Moderately Suitable
o Suitable
o Preferred

Vegetation within 30 m of water's edge

What vegetation types are abundant?
□ Desirable woody (e.g. Aspen, Willow, Cottonwood)
□ Other woody (e.g. conifers, sagebrush)
□ Grasses □ Crops □ Ornamentals □ Developed

SUITABILITY OF RIPARIAN/UPLAND VEGETATION

o Unsuitable
o Barely Suitable
o Moderately Suitable
o Suitable
o Preferred

Vegetation within 100 m of water's edge

What vegetation types are abundant?
□ Desirable woody (e.g. Aspen, Willow, Cottonwood)
□ Other woody (e.g. conifers, sagebrush)
□ □ Grasses □ Crops □ Ornamentals □ Developed

DAM DENSITY CAPACITY ASSESSMENT BASED ON SUITABILITY OF VEGETATION ONLY (USE TABLE 1)

o None (no dams)
o Rare (0-1 dams/km)
o Occasional (1-4 dams/km)
o Frequent (5-15 dams/km)
o Pervasive (15-40 dams/km)

COMBINED CAPACITY TO SUPPORT DAM BUILDING ACTIVITY

CAN BEAVER BUILD A DAM AT BASE FLOWS?

o Probably can build dam
o Can build dam
o Can build dam (saw evidence of recent dams)
o Could build dam at one time (saw evidence of relic dams)
o Cannot build dam (stream power really high)

IF BEAVERS BUILD A DAM, CONSIDER WHAT HAPPENS TO THE DAM(S) IN A TYPICAL FLOOD (E.G. MEAN ANNUAL FLOOD)?

o Blowout
o Occasional Blowout
o Occasional Breach
o Dam Persists

HOW DOES THE REACH SLOPE IMPACT THEIR ABILITY OR NEED TO BUILD DAMS?

o Too steep they cannot build a dam (e.g. > 20% slope)
o Probably can build dam
o Can build dam (inferred)
o Can build dam (evidence or current or past dams)
o Really flat (can build dam, but might not need as many as one dam might back up water > 0.5 km)

COMBINED DAM DENSITY CAPACITY ASSESSMENT BASED ON ALL (USE TABLE 2)

o None (no dams)
o Rare (0-1 dams/km)
o Occasional (1-4 dams/km)
o Frequent (5-15 dams/km)
o Pervasive (15-40 dams/km)

Maximum Dam Density (dams/km)
0 - None 0 - 1 Rare 1 - 4 Occasional 5 - 15 Frequent 16 - 40 Pervasive

INFERENCE SYSTEM OF CAPACITY BASED ON VEGETATION ONLY:

Table 1. Rule table for two input inference system that models the capacity of the reach to support dam building activity (in dam density) using the suitability of streamside vegetation and suitability of riparian/upland vegetation as inputs.

	Inputs				Output
Rules	**Suitability of streamside vegetation**	&	**Suitability of riparian/upland vegetation**		**Dam density capacity**
1	*If* Unsuitable	&	Unsuitable	*, then*	None
2	*If* Unsuitable	&	Barely suitable	*, then*	Rare
3	*If* Unsuitable	&	Moderately suitable	*, then*	Rare
4	*If* Unsuitable	&	Suitable	*, then*	Occasional
5	*If* Unsuitable	&	Preferred	*, then*	Occasional
6	*If* Barely suitable	&	Unsuitable	*, then*	Rare
7	*If* Barely suitable	&	Barely suitable	*, then*	Rare
8	*If* Barely suitable	&	Moderately suitable	*, then*	Occasional
9	*If* Barely suitable	&	Suitable	*, then*	Occasional
10	*If* Barely suitable	&	Preferred	*, then*	Occasional
11	*If* Moderately suitable	&	Unsuitable	*, then*	Rare
12	*If* Moderately suitable	&	Barely suitable	*, then*	Occasional
13	*If* Moderately suitable	&	Moderately suitable	*, then*	Occasional
14	*If* Moderately suitable	&	Suitable	*, then*	Frequent
15	*If* Moderately suitable	&	Preferred	*, then*	Frequent
16	*If* Suitable	&	Unsuitable	*, then*	Occasional
17	*If* Suitable	&	Barely suitable	*, then*	Occasional
18	*If* Suitable	&	Moderately suitable	*, then*	Frequent
19	*If* Suitable	&	Suitable	*, then*	Frequent
20	*If* Suitable	&	Preferred	*, then*	Pervasive
21	*If* Preferred	&	Unsuitable	*, then*	Occasional
22	*If* Preferred	&	Barely suitable	*, then*	Frequent
23	*If* Preferred	&	Moderately suitable	*, then*	Pervasive
24	*If* Preferred	&	Suitable	*, then*	Pervasive
25	*If* Preferred	&	Preferred	*, then*	Pervasive

COMBINED INFERENCE SYSTEM:

Table 2. Rule table for four input inference system that models the capaicty of the reach to support dam building activity (in dam density) uisng the vegetation dam density capacity (output of Table 1 model), the two-year flood stream power, baseflow stream power and reach slope.

	Inputs					Output
Rules	**Vegetation dam density capacity**	& **Baseflow stream power**	& **2-year flood stream power**	& **Reach slope**		**Dam density capacity**
1	*If* None	& -	& -	& -	*, then*	None
2	*If* -	& Cannot build dam	& -	& -	*, then*	None
3	*If* -	& -	& -	& Cannot build dam	*, then*	None
4	*If* Rare	& Can build dam	& Dam persists	& Can build dam	*, then*	Rare
5	*If* Rare	& Probably can build dam	& Dam persists	& Can build dam	*, then*	Rare
6	*If* Rare	& Can build dam	& Occasional breach	& Can build dam	*, then*	Rare
7	*If* Rare	& Probably can build dam	& Occasional breach	& Can build dam	*, then*	Rare
8	*If* Rare	& Can build dam	& Occasional blowout	& Can build dam	*, then*	Rare
9	*If* Rare	& Probably can build dam	& Occasional blowout	& Can build dam	*, then*	Rare
10	*If* Rare	& Can build dam	& Blowout	& Can build dam	*, then*	None
11	*If* Rare	& Probably can build dam	& Blowout	& Can build dam	*, then*	None
12	*If* Occasional	& Can build dam	& Dam persists	& Can build dam	*, then*	Occasional
13	*If* Occasional	& Probably can build dam	& Dam persists	& Can build dam	*, then*	Occasional
14	*If* Occasional	& Can build dam	& Occasional breach	& Can build dam	*, then*	Occasional
15	*If* Occasional	& Probably can build dam	& Occasional breach	& Can build dam	*, then*	Occasional
16	*If* Occasional	& Can build dam	& Occasional blowout	& Can build dam	*, then*	Occasional
17	*If* Occasional	& Probably can build dam	& Occasional blowout	& Can build dam	*, then*	Occasional
18	*If* Occasional	& Can build dam	& Blowout	& Can build dam	*, then*	Rare
19	*If* Occasional	& Probably can build dam	& Blowout	& Can build dam	*, then*	Rare
20	*If* Frequent	& Can build dam	& Dam persists	& Really flat	*, then*	Occasional
21	*If* Frequent	& Can build dam	& Dam persists	& Can build dam	*, then*	Frequent
22	*If* Frequent	& Can build dam	& Dam persists	& Probably can build dam	*, then*	Occasional
23	*If* Frequent	& Probably can build dam	& Dam persists	& Really flat	*, then*	Occasional
24	*If* Frequent	& Probably can build dam	& Dam persists	& Can build dam	*, then*	Frequent
25	*If* Frequent	& Probably can build dam	& Dam persists	& Probably can build dam	*, then*	Occasional
26	*If* Frequent	& Can build dam	& Occasional breach	& Really flat	*, then*	Occasional
27	*If* Frequent	& Can build dam	& Occasional breach	& Can build dam	*, then*	Frequent
28	*If* Frequent	& Can build dam	& Occasional breach	& Probably can build dam	*, then*	Occasional
29	*If* Frequent	& Probably can build dam	& Occasional breach	& Really flat	*, then*	Occasional
30	*If* Frequent	& Probably can build dam	& Occasional breach	& Can build dam	*, then*	Frequent
31	*If* Frequent	& Probably can build dam	& Occasional breach	& Probably can build dam	*, then*	Occasional
32	*If* Frequent	& Can build dam	& Occasional blowout	& Really flat	*, then*	Occasional
33	*If* Frequent	& Can build dam	& Occasional blowout	& Can build dam	*, then*	Frequent
34	*If* Frequent	& Can build dam	& Occasional blowout	& Probably can build dam	*, then*	Occasional
35	*If* Frequent	& Probably can build dam	& Occasional blowout	& Really flat	*, then*	Rare
36	*If* Frequent	& Probably can build dam	& Occasional blowout	& Can build dam	*, then*	Occasional
37	*If* Frequent	& Probably can build dam	& Occasional blowout	& Probably can build dam	*, then*	Rare
38	*If* Frequent	& Can build dam	& Blowout	& Really flat	*, then*	Rare
39	*If* Frequent	& Can build dam	& Blowout	& Can build dam	*, then*	Rare
40	*If* Frequent	& Can build dam	& Blowout	& Probably can build dam	*, then*	Rare
41	*If* Frequent	& Probably can build dam	& Blowout	& Really flat	*, then*	Rare
42	*If* Frequent	& Probably can build dam	& Blowout	& Can build dam	*, then*	Rare
43	*If* Frequent	& Probably can build dam	& Blowout	& Probably can build dam	*, then*	Rare
44	*If* Pervasive	& Can build dam	& Dam persists	& Really flat	*, then*	Frequent
45	*If* Pervasive	& Can build dam	& Dam persists	& Can build dam	*, then*	Pervasive
46	*If* Pervasive	& Can build dam	& Dam persists	& Probably can build dam	*, then*	Frequent
47	*If* Pervasive	& Probably can build dam	& Dam persists	& Really flat	*, then*	Frequent
48	*If* Pervasive	& Probably can build dam	& Dam persists	& Can build dam	*, then*	Pervasive
49	*If* Pervasive	& Probably can build dam	& Dam persists	& Probably can build dam	*, then*	Frequent
50	*If* Pervasive	& Can build dam	& Occasional breach	& Really flat	*, then*	Frequent
51	*If* Pervasive	& Can build dam	& Occasional breach	& Can build dam	*, then*	Pervasive
52	*If* Pervasive	& Can build dam	& Occasional breach	& Probably can build dam	*, then*	Frequent
53	*If* Pervasive	& Probably can build dam	& Occasional breach	& Really flat	*, then*	Frequent
54	*If* Pervasive	& Probably can build dam	& Occasional breach	& Can build dam	*, then*	Pervasive
55	*If* Pervasive	& Probably can build dam	& Occasional breach	& Probably can build dam	*, then*	Frequent
56	*If* Pervasive	& Can build dam	& Occasional blowout	& Really flat	*, then*	Frequent
57	*If* Pervasive	& Can build dam	& Occasional blowout	& Can build dam	*, then*	Pervasive
58	*If* Pervasive	& Can build dam	& Occasional blowout	& Probably can build dam	*, then*	Frequent
59	*If* Pervasive	& Probably can build dam	& Occasional blowout	& Really flat	*, then*	Occasional
60	*If* Pervasive	& Probably can build dam	& Occasional blowout	& Can build dam	*, then*	Frequent
61	*If* Pervasive	& Probably can build dam	& Occasional blowout	& Probably can build dam	*, then*	Occasional
62	*If* Pervasive	& Can build dam	& Blowout	& Really flat	*, then*	Occasional
63	*If* Pervasive	& Can build dam	& Blowout	& Can build dam	*, then*	Occasional
64	*If* Pervasive	& Can build dam	& Blowout	& Probably can build dam	*, then*	Rare
65	*If* Pervasive	& Probably can build dam	& Blowout	& Really flat	*, then*	Occasional
66	*If* Pervasive	& Probably can build dam	& Blowout	& Can build dam	*, then*	Occasional
67	*If* Pervasive	& Probably can build dam	& Blowout	& Probably can build dam	*, then*	Rare