

# Appendix G

## Dominant Process Indicators and Reach Summary Data Sheets

Content:

- Main Stem Reach Data
- Tributary Reach Data

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Appendix G: Haines Branch Mainstem Reach Data

Reach Name	HBR005	HBR010	HBR015	HBR020	HBR025	HBR030	HBR035	HBR040	HBR045
Channel Length	4436	1206	1883	2825	1446	2187	4541	5760	2344
Valley Length	4152	1071	1688	2618	1262	1827	3789	4118	1249
Reach Sinuosity	1.068401	1.12605	1.115521	1.079068	1.1458	1.197044	1.198469	1.398737	1.876701
Dominant Process	Incision	Incision	Incision	Incision	Incision	Widening	Widening	Widening	Widening
Indicators of Dynamic Equilibrium									
No persistent scour or erosion features	-	-	-	-	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-	-	-	-
Consolidated bed material	-	-	-	-	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-	-	-	-
Indicators of Incision									
V" or "U" shaped channel cross section	TRUE	TRUE	-	TRUE	TRUE	-	-	TRUE	TRUE
Persistent scouring on both banks toe to mid slope	-	-	-	TRUE	TRUE	-	-	-	-
Wedge failures along both banks	TRUE	TRUE	TRUE	TRUE	TRUE	-	-	TRUE	TRUE
Steep near vertical banks	TRUE	TRUE	TRUE	TRUE	TRUE	-	-	-	TRUE
Perched bankfull floodplain or abandoned terraces	TRUE	TRUE	TRUE	TRUE	TRUE	-	-	TRUE	TRUE
Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	-	TRUE	TRUE	-	-	-	-
Steep bed slope	-	-	-	-	-	-	-	-	-
Scoured bed material	-	-	-	-	-	-	-	-	-
Consolidated bed material Incision	-	-	-	-	-	-	-	-	-
Frequent large woody debris jams	-	-	-	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	TRUE	TRUE	TRUE	-	-	-	-
Undercut or perched infrastructure	TRUE	TRUE	TRUE	TRUE	TRUE	-	-	-	-
Indicators of Widening									
Wide "U" shaped channel cross section	-	-	TRUE	TRUE	TRUE	TRUE	TRUE	-	-
Increase in cross sectional area	-	-	-	-	TRUE	TRUE	TRUE	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-	-	-	-
Residual failure material at bank toes	-	-	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Unconsolidated depositional bed material widening	-	-	-	-	TRUE	TRUE	TRUE	TRUE	TRUE
Depositional center bars	-	-	-	-	TRUE	-	TRUE	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-	-	TRUE	-	-
Reinforced knickpoints and knickzones	-	-	-	-	TRUE	TRUE	-	-	-
Large woody debris jams	-	-	-	-	-	-	TRUE	TRUE	TRUE
Lower limit of woody vegetation high with exposed roots	-	-	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Numerous surfing or overhanging trees	-	-	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Indicators of Plan Form Adjustment									
Cutbanks with active scour lines opposite of advancing bar formations	TRUE	TRUE	TRUE	TRUE	TRUE	-	TRUE	-	TRUE
Circular failures along alternating banks or at the outside of banks	TRUE	TRUE	TRUE	TRUE	TRUE	-	TRUE	TRUE	-
Alternating pattern of scour and deposition	TRUE	TRUE	TRUE	TRUE	TRUE	-	TRUE	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	TRUE	TRUE	TRUE	-	TRUE	-	-
Bar material unsorted with fines downstream	-	-	TRUE	TRUE	-	-	-	-	-
Bar is irregularly shaped and more than 1/3 across the channel	-	-	TRUE	TRUE	-	-	TRUE	-	-
Poorly sorted bed material	-	-	-	-	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	2.1,2.3,2.4 ,2.5,2.6,2.11,2.12,4.1,4.2,4.3,	Debris jam Present, 2.1,2.3,2.4,2.5,2.6,2.11,2.12,4.1,4.2,4.3,	2.12,4.1,4.2,4.3,4.4,4.5,4.6,3.1,3.4,3.6,3.1	2.6,2.11,2.12,3.1,3.4,3.6,3.12,3.3,13.4,1.4,2,3.14	late stage incision held by rubble grade controls, 2.1 to 2.6,2.11,2.12,3.1,3.2,3.3,4.3,6.3,7.3,8.3,10,3.12,3.13,4.1,4.2,4.3,4.4	3.1,3.2,3.4,3.6,3.7,3.10,3.12,3.14	3.1,3.2,3.4,3.6,3.7,3.8,3.9,3.11,3.12,3.13,4.1,4.3	late stages of incision - 3.4,3.6,3.7,3.11,3.12,3.13,2.1,2.3,2.4,2.5,2.3,2.1,4.2	3.4,3.6,3.7,3.11,3.12,3.13,2.1,2.3,2.4,2.5,4.1,

Field Observations and Data Input

Appendix G: Haines Branch Mainstem Reach Data

Reach Name	HBR050	HBR055	HBR060	HBR065	HBR070
Channel Length	1015	1482	3297	5619	2419
Valley Length	996	827	2666	2161	1588
Reach Sinuosity	1.019076	1.792019	1.236684	2.600185	1.5233
Dominant Process	Widening	Widening	Widening	Planform Adjustment	Planform Adjustment
<b>Indicators of Dynamic Equilibrium</b>					
No persistent scour or erosion features	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-
Consolidated bed material	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-
<b>Indicators of Incision</b>					
V" or "U" shaped channel cross section	TRUE	TRUE	-	-	-
Persistent scouring on both banks toe to mid slope	-	-	-	-	-
Wedge failures along both banks	TRUE	TRUE	TRUE	-	-
Steep near vertical banks	TRUE	TRUE	TRUE	-	-
Perched bankfull floodplain or abandoned terraces	TRUE	TRUE	TRUE	-	-
Knickpoints and knickzones occurring in channel profile	TRUE	-	-	-	-
Steep bed slope	-	-	-	-	-
Scoured bed material	-	-	-	-	-
Consolidated bed material incision	-	-	-	-	-
Frequent large woody debris jams	TRUE	-	-	-	-
Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	-	-	-
Undercut or perched infrastructure	TRUE	-	-	-	-
<b>Indicators of Widening</b>					
Wide "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	TRUE
Increase in cross sectional area	-	TRUE	TRUE	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-
Scouring or bank failures along both banks	TRUE	TRUE	TRUE	TRUE	TRUE
Persistent scouring on both banks mid to upper slope	-	-	-	-	-
Residual failure material at bank toes	TRUE	TRUE	TRUE	TRUE	TRUE
Unconsolidated depositional bed material widening	-	TRUE	TRUE	-	TRUE
Depositional center bars	-	-	TRUE	TRUE	TRUE
Unconsolidated depositional sediment bars	-	TRUE	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-
Large woody debris jams	TRUE	-	-	-	-
Lower limit of woody vegetation high with exposed roots	TRUE	TRUE	TRUE	TRUE	TRUE
Numerous surfing or overhanging trees	TRUE	TRUE	TRUE	TRUE	TRUE
<b>Indicators of Plan Form Adjustment</b>					
Cutbanks with active scour lines opposite of advancing bar formations	-	-	TRUE	TRUE	TRUE
Circular failures along alternating banks or at the outside of banks	-	-	-	TRUE	TRUE
Alternating pattern of scour and deposition	-	-	-	TRUE	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	TRUE	TRUE
Bar material unsorted with fines downstream	-	-	-	-	-
Bar is irregularly shaped and more than 13 across the channel	-	-	-	TRUE	TRUE
Poorly sorted bed material	-	-	-	TRUE	TRUE
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	2.1,2.3,2.4,2.5,2.6,2.10,2.11,2.12,3.1,3.4,3.6,3.2	2.1,2.3,2.4,2.5,2.11,3.1,3.2,3.4,3.6,3.7,3.9,3.12,	3.1,3.2,3.4,3.6,3.7,3.8,3.12,3.15,2.11,	4.1,4.2,4.3,4.4,4.6,4.7,3.1,3.4,3.6,3.8,3.12,3.14	4.1,4.2,4.4,4.6,4.7,3.1,3.4,3.6,3.8,3.7,3.12,3.14

Field Observations and Data Input

Appendix G: Haines Branch Tributary Reach Data

Reach Name	HB005R005	HB010R005	HB010R010	HB015R005	HB020R005	HB025R005
Channel Length	483	1552	1552	1402	784	2797
Valley Length	447	1328	1328	1212	598	2516
Reach Sinuosity	1.080537	1.168675	1.168675	1.156766	1.311037	1.111685
Dominant Process	Stable	Incision	Incision	Early Stage Incision	Early Stage Incision	Managed Swale
<b>Indicators of Dynamic Equilibrium</b>						
No persistent scour or erosion features	TRUE	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-
Gradually sloping banks	TRUE	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	TRUE	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	TRUE	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-
Consolidated bed material	TRUE	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-
<b>Indicators of Incision</b>						
V" or "U" shaped channel cross section	-	-	-	-	-	-
Persistent scouring on both banks toe to mid slope	-	-	-	-	-	-
Wedge failures along both banks	-	-	-	-	-	-
Steep near vertical banks	-	-	-	-	-	-
Perched bankfull floodplain or abandoned terraces	-	-	-	-	-	-
Knickpoints and knickzones occurring in channel profile	-	-	-	-	-	-
Steep bed slope	-	-	-	-	-	-
Scoured bed material	-	-	-	-	-	-
Consolidated bed material Incision	-	-	-	-	-	-
Frequent large woody debris jams	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-	-
Undercut or perched infrastructure	-	-	-	-	-	-
<b>Indicators of Widening</b>						
Wide "U" shaped channel cross section	-	-	-	-	-	-
Increase in cross sectional area	-	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-
Residual failure material at bank toes	-	-	-	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	-	-
Depositional center bars	-	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-	-
Large woody debris jams	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-	-
Numerous surfing or overhanging trees	-	-	-	-	-	-
<b>Indicators of Plan Form Adjustments</b>						
Planform Adjustment meander advance and lateral migration	-	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-	-
Circular failures along alternating banks or at the outside of banks	-	-	-	-	-	-
Alternating pattern of scour and deposition	-	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	1.1,1.3,1.4,1.5,1.7	early stages of incision. did not walk upper reach. 2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.9,2.10,2.11,4.1,4.2	early stages of incision. did not walk upper reach. 2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.9,2.10,2.11,4.1,4.2	rifle, upper reach not walked. minor erosion evident. no need for further evaluation.	fill in channel 20 ft deep. upstream of fill, channel is no longer defined. an upland forested wetland now exists. railroadculvert 90% filled. slow percolation providing hydrology for upland wetland.	fam drainage swale. did not walk, Note15:farmer installed dumped rubble acting as defacto grade control.

Field Observations and Data Input

Appendix G: Haines Branch Tributary Reach Data

Reach Name	HB025R010	HB125R005	HB030R005	HB030R010	HB035R005	HB035R010
Channel Length	1043	2718	5319	2514	2728	2909
Valley Length	998	1952	4216	2245	2496	2395
Reach Sinuosity	1.04509	1.392418	1.261622	1.119822	1.092949	1.214614
Dominant Process	Early Stage Incision	Early Stage Incision	Managed Swale	Incision	Incision	Incision
Indicators of Dynamic Equilibrium						
No persistent scour or erosion features	-	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-
Consolidated bed material	-	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-
Indicators of Incision						
V" or "U" shaped channel cross section	-	-	-	TRUE	TRUE	TRUE
Persistent scouring on both banks toe to mid slope	-	-	-	TRUE	TRUE	TRUE
Wedge failures along both banks	-	-	-	-	TRUE	TRUE
Steep near vertical banks	-	-	-	TRUE	TRUE	TRUE
Perched bankfull floodplain or abandoned terraces	-	-	-	-	TRUE	TRUE
Knickpoints and knickzones occurring in channel profile	-	-	-	TRUE	TRUE	TRUE
Steep bed slope	-	-	-	TRUE	-	-
Scoured bed material	-	-	-	TRUE	-	-
Consolidated bed material Incision	-	-	-	-	-	-
Frequent large woody debris jams	-	-	-	TRUE	TRUE	TRUE
Lower limit of woody vegetation high with exposed roots	-	-	-	TRUE	TRUE	TRUE
Undercut or perched infrastructure	-	-	-	-	-	-
Indicators of Widening						
Wide "U" shaped channel cross section	-	-	-	-	-	-
Increase in cross sectional area	-	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-
Residual failure material at bank toes	-	-	-	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	TRUE	TRUE
Depositional center bars	-	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	TRUE	TRUE
Reinforced knickpoints and knickzones	-	-	-	-	-	-
Large woody debris jams	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-	-
Numerous surfing or overhanging trees	-	-	-	-	-	-
Indicators of Plan Form Adjustments						
Planform Adjustment meander advance and lateral migration	-	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-	-
Circular failures along alternating banks or at the outside of banks	-	-	-	-	TRUE	TRUE
Alternating pattern of scour and deposition	-	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	stages of incision and planform adjustment. did not walk remainder.	minor erosion, did not walk reach.	lower reach is a farm field held up by a de facto grade control. above lake channel is minor swale in field. farm field, no defined tributary. did not walk. incised tributary has been stabilized by farmer with dumped rubble. stream enters lake. upstream is small drainage swale.	farmfield, no defined tributary. did not walk. 2.1,2.2,2.4,2.6,2.7,2.8,2.10,2.11	2.1,2.2,2.3,2.4,2.5,2.6,2.10,2.11,3.7,3.9,4.2	2.1,2.2,2.3,2.4,2.5,2.6,2.10,2.11,3.7,3.9,4.2

Field Observations and Data Input

Appendix G: Haines Branch Tributary Reach Data

Reach Name	HB035R015	HB035R020	HB035R025	HB035R030	HB035R035	HB035R040
Channel Length	5006	2969	4280	4165	2598	2967
Valley Length	3908	2198	3823	3086	1872	2711
Reach Sinuosity	1.280962	1.350773	1.11954	1.349644	1.38782	1.09443
Dominant Process	Incision	Incision	Incision	Incision	Incision	Incision
<b>Indicators of Dynamic Equilibrium</b>						
No persistent scour or erosion features	-	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-
Consolidated bed material	-	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-
<b>Indicators of Incision</b>						
V" or "U" shaped channel cross section	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Persistent scouring on both banks toe to mid slope	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Wedge failures along both banks	TRUE	TRUE	TRUE	TRUE	TRUE	-
Steep near vertical banks	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Perched bankfull floodplain or abandoned terraces	-	-	TRUE	-	-	-
Knickpoints and knickzones occurring in channel profile	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Steep bed slope	-	-	-	-	TRUE	TRUE
Scoured bed material	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Consolidated bed material incision	TRUE	-	-	-	-	-
Frequent large woody debris jams	-	TRUE	TRUE	TRUE	TRUE	-
Lower limit of woody vegetation high with exposed roots	-	TRUE	TRUE	TRUE	TRUE	TRUE
Undercut or perched infrastructure	-	-	-	-	-	-
<b>Indicators of Widening</b>						
Wide "U" shaped channel cross section	-	TRUE	-	-	-	-
Increase in cross sectional area	-	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-
Residual failure material at bank toes	-	TRUE	-	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	-	-
Depositional center bars	-	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-	-
Large woody debris jams	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-	-
Numerous surfing or overhanging trees	-	-	-	-	-	-
<b>Indicators of Plan Form Adjustments</b>						
Planform Adjustment meander advance and lateral migration	-	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	TRUE	-	TRUE	-
Circular failures along alternating banks or at the outside of banks	-	TRUE	TRUE	-	TRUE	-
Alternating pattern of scour and deposition	-	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	Tributary gone, farm field, channel realigned and flows directly to mainstem.	2.1,2.2,2.3,2.4,2.6,2.8,2.10,2.11,3.1,3.6,4.2	2.1,2.2,2.3,2.4,2.5,2.6,2.8,2.10,2.11,4.1,4.2	2.1,2.2,2.3,2.4,2.6,2.8,2.10,2.11	2.1,2.2,2.3,2.4,2.6,2.7,2.8,2.10,2.11,4.1,4.2	early stage incision, did not walk upper reach. 2.1,2.2,2.4,2.6,2.7,2.8,2.11

Field Observations and Data Input

Appendix G: Haines Branch Tributary Reach Data

Reach Name	HB035R045	HB135R005	HB040R005	HB045R005	HB050R005	HB050R010
Channel Length	1708	1693	1642	741	2358	5404
Valley Length	1709	1479	1378	599	1693	2708
Reach Sinuosity	0.999415	1.144692	1.191582	1.237062	1.392794	1.995569
Dominant Process	Early Stage Incision	Incision	Stable	Incision	Incision	Incision
<b>Indicators of Dynamic Equilibrium</b>						
No persistent scour or erosion features	-	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-
Consolidated bed material	-	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-
<b>Indicators of Incision</b>						
V" or "U" shaped channel cross section	-	TRUE	-	TRUE	TRUE	TRUE
Persistent scouring on both banks toe to mid slope	-	TRUE	-	TRUE	TRUE	TRUE
Wedge failures along both banks	-	TRUE	-	TRUE	-	-
Steep near vertical banks	-	TRUE	-	TRUE	TRUE	TRUE
Perched bankfull floodplain or abandoned terraces	-	-	-	-	-	-
Knickpoints and knickzones occurring in channel profile	-	TRUE	-	TRUE	TRUE	TRUE
Steep bed slope	-	-	-	TRUE	-	-
Scoured bed material	-	TRUE	-	TRUE	TRUE	TRUE
Consolidated bed material Incision	-	-	-	-	-	-
Frequent large woody debris jams	-	TRUE	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	TRUE	-	TRUE	-	-
Undercut or perched infrastructure	-	-	-	-	-	-
<b>Indicators of Widening</b>						
Wide "U" shaped channel cross section	-	-	-	-	-	-
Increase in cross sectional area	-	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-
Residual failure material at bank toes	-	-	-	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	-	-
Depositional center bars	-	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-	-
Large woody debris jams	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-	-
Numerous surfing or overhanging trees	-	-	-	-	-	-
<b>Indicators of Plan Form Adjustments</b>						
Planform Adjustment meander advance and lateral migration	-	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	-	-
Circular failures along alternating banks or at the outside of banks	-	TRUE	-	-	-	-
Alternating pattern of scour and deposition	-	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	early stage incision, did not walk upper reach. install break point	2.1,2.2,,2.3,2.4,2.6,2.8,2.10, 2.11,4.2	channel is stable upstream of confluence. knickpoint at confluence. early stages of incision. did not walk upper reach.	2.1,2.2,2.3,2.4 ,2.6,2.7,2.8,2.11	2.1,2.2,2.4,2.6 ,2.8	2.1,2.2,2.4,2.6 ,2.8

Field Observations and Data Input

Appendix G: Haines Branch Tributary Reach Data

Reach Name	HB050R015	HB055R005	HB060R005	HB065R005	HB065R010	HB065R015
Channel Length	3421	2098	1271	2168	5938	3248
Valley Length	2899	1798	1199	1451	3195	2350
Reach Sinuosity	1.180062	1.166852	1.06005	1.494142	1.858529	1.382128
Dominant Process	Early Stage Incision	Incision	Incision	Incision	Incision	Early Stage Incision
<b>Indicators of Dynamic Equilibrium</b>						
No persistent scour or erosion features	-	TRUE	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-
Gradually sloping banks	-	TRUE	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	TRUE	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-
Consolidated bed material	-	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-
<b>Indicators of Incision</b>						
V" or "U" shaped channel cross section	-	TRUE	TRUE	TRUE	TRUE	-
Persistent scouring on both banks toe to mid slope	-	TRUE	TRUE	TRUE	TRUE	-
Wedge failures along both banks	-	-	TRUE	TRUE	TRUE	-
Steep near vertical banks	-	TRUE	TRUE	TRUE	TRUE	-
Perched bankfull floodplain or abandoned terraces	-	-	-	TRUE	-	-
Knickpoints and knickzones occurring in channel profile	-	TRUE	TRUE	TRUE	TRUE	-
Steep bed slope	-	-	TRUE	TRUE	-	-
Scoured bed material	-	TRUE	TRUE	TRUE	-	-
Consolidated bed material Incision	-	-	-	-	-	-
Frequent large woody debris jams	-	TRUE	TRUE	-	TRUE	-
Lower limit of woody vegetation high with exposed roots	-	TRUE	TRUE	-	TRUE	-
Undercut or perched infrastructure	-	-	TRUE	-	-	-
<b>Indicators of Widening</b>						
Wide "U" shaped channel cross section	-	-	-	-	-	-
Increase in cross sectional area	-	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	-	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-
Residual failure material at bank toes	-	-	-	-	-	-
Unconsolidated depositional bed material widening	-	-	-	-	-	-
Depositional center bars	-	-	-	-	-	-
Unconsolidated depositional sediment bars	-	-	-	-	-	-
Reinforced knickpoints and knickzones	-	-	-	-	-	-
Large woody debris jams	-	-	-	-	-	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	-	-
Numerous surfing or overhanging trees	-	-	-	-	-	-
<b>Indicators of Plan Form Adjustments</b>						
Planform Adjustment meander advance and lateral migration	-	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	TRUE	-	-	-
Circular failures along alternating banks or at the outside of banks	-	-	TRUE	-	-	-
Alternating pattern of scour and deposition	-	-	-	-	-	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	-	-
Bar is irregularly shaped and more than 1 3 across the channel	-	-	-	-	-	-
Poorly sorted bed material	-	-	-	-	-	-
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	-	2.1,2.2,2.4,2.6,2.8,2.10,2.11,1.1,1.3,1.4	2.1,2.2,2.3,2.4,2.7,2.8,2.10,2.6,2.11,2.12,4.1,4.2	2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8	runoff from quarry evident in channel. 2.1,2.2,2.3,2.4,2.6,2.10,2.11	-

Field Observations and Data Input

Appendix G: Haines Branch Tributary Reach Data

Reach Name	HB070R005	HB070R010	HB170R005	HB075R005	HB080R005	HB080R010
Channel Length	5332	1947	2101	712	3656	6717
Valley Length	4119	1501	1790	667	2334	4917
Reach Sinuosity	1.294489	1.297135	1.173743	1.067466	1.56641	1.366077
Dominant Process	Incision	Early Stage Incision	Early Stage Incision	Incision	Planform Adjustment	Incision
Indicators of Dynamic Equilibrium						
No persistent scour or erosion features	-	-	-	-	-	-
Bankfull shelf along one or both banks	-	-	-	-	-	-
Gradually sloping banks	-	-	-	-	-	-
Herbaceous vegetation growing at or near the water surface	-	-	-	-	-	-
Well established woody vegetation on healed failure surfaces	-	-	-	-	-	-
Vegetated consolidated bars	-	-	-	-	-	-
Consolidated bed material	-	-	-	-	-	-
Imbricated rock bed material	-	-	-	-	-	-
De facto grade controls reinforcing knickpoints	-	-	-	-	-	-
Healthy riparian corridor and canopy cover	-	-	-	-	-	-
Indicators of Incision						
V" or "U" shaped channel cross section	TRUE	-	-	TRUE	TRUE	TRUE
Persistent scouring on both banks toe to mid slope	TRUE	-	-	TRUE	-	TRUE
Wedge failures along both banks	TRUE	-	-	-	TRUE	TRUE
Steep near vertical banks	TRUE	-	-	-	TRUE	TRUE
Perched bankfull floodplain or abandoned terraces	-	-	-	-	TRUE	TRUE
Knickpoints and knickzones occurring in channel profile	-	-	-	-	-	-
Steep bed slope	-	-	-	TRUE	-	-
Scoured bed material	TRUE	-	-	-	-	-
Consolidated bed material incision	-	-	-	TRUE	-	-
Frequent large woody debris jams	TRUE	-	-	TRUE	TRUE	TRUE
Lower limit of woody vegetation high with exposed roots	TRUE	-	-	TRUE	TRUE	TRUE
Undercut or perched infrastructure	TRUE	-	-	-	TRUE	-
Indicators of Widening						
Wide "U" shaped channel cross section	-	-	-	-	-	-
Increase in cross sectional area	-	-	-	-	-	-
Increase in channel width and decrease in bank height from upstream	-	-	-	-	-	-
Scouring or bank failures along both banks	-	-	-	-	TRUE	-
Persistent scouring on both banks mid to upper slope	-	-	-	-	-	-
Residual failure material at bank toes	-	-	-	-	TRUE	-
Unconsolidated depositional bed material widening	-	-	-	-	TRUE	-
Depositional center bars	-	-	-	-	TRUE	-
Unconsolidated depositional sediment bars	-	-	-	-	TRUE	-
Reinforced knickpoints and knickzones	-	-	-	-	-	-
Large woody debris jams	-	-	-	-	TRUE	-
Lower limit of woody vegetation high with exposed roots	-	-	-	-	TRUE	-
Numerous surfing or overhanging trees	-	-	-	-	TRUE	-
Indicators of Plan Form Adjustments						
Planform Adjustment meander advance and lateral migration	-	-	-	-	-	-
Cutbanks with active scour lines opposite of advancing bar formations	-	-	-	-	TRUE	TRUE
Circular failures along alternating banks or at the outside of banks	-	-	-	-	TRUE	TRUE
Alternating pattern of scour and deposition	-	-	-	-	TRUE	-
Bar formations are consolidated with an unconsolidated leading edge	-	-	-	-	-	-
Bar material unsorted with fines downstream	-	-	-	-	TRUE	-
Bar is irregularly shaped and more than 1/3 across the channel	-	-	-	-	TRUE	-
Poorly sorted bed material	-	-	-	-	TRUE	TRUE
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	2.1,2.2,2.3,2.4,2.8,2.10,2.11,2.12	-	2.1,2.2,2.7,2.8	2.1,2.2,2.2.7,2.9,2.10,2.11	knickpoint, ds 2ft, us 1ft, incision has perched an oxbow 4 ft. 4.1,4.2,4.3,4.5,4.6,4.7,3.4,3.6,3.7,3.8,3.9,3.11,3.12,3.13,2.1,2.3,2.4,2.5,2.10,2.11,2.12	incision has perched an oxbow 4 ft. 2.1,2.2,2.3,2.4,2.5,2.10,2.11,4.1,4.2,4.7

Field Observations and Data Input

**Appendix G: Haines Branch Tributary Reach Data**

Field Observations and Data Input	<b>Reach Name</b>	<b>HB080R015</b>	
	<b>Channel Length</b>	4237	
	<b>Valley Length</b>	3866	
	<b>Reach Sinuosity</b>	1.095965	
	<b>Dominant Process</b>	Incision	
	<b>Indicators of Dynamic Equilibrium</b>		
	No persistent scour or erosion features	-	
	Bankfull shelf along one or both banks	-	
	Gradually sloping banks	-	
	Herbaceous vegetation growing at or near the water surface	-	
	Well established woody vegetation on healed failure surfaces	-	
	Vegetated consolidated bars	-	
	Consolidated bed material	-	
	Imbricated rock bed material	-	
	De facto grade controls reinforcing knickpoints	-	
	Healthy riparian corridor and canopy cover	-	
	<b>Indicators of Incision</b>		
	V" or "U" shaped channel cross section	TRUE	
	Persistent scouring on both banks toe to mid slope	TRUE	
	Wedge failures along both banks	TRUE	
	Steep near vertical banks	TRUE	
	Perched bankfull floodplain or abandoned terraces	TRUE	
	Knickpoints and knickzones occurring in channel profile	-	
	Steep bed slope	-	
	Scoured bed material	-	
	Consolidated bed material Incision	-	
	Frequent large woody debris jams	TRUE	
	Lower limit of woody vegetation high with exposed roots	TRUE	
	Undercut or perched infrastructure	TRUE	
	<b>Indicators of Widening</b>		
	Wide "U" shaped channel cross section	-	
	Increase in cross sectional area	-	
	Increase in channel width and decrease in bank height from upstream	-	
	Scouring or bank failures along both banks	-	
	Persistent scouring on both banks mid to upper slope	-	
	Residual failure material at bank toes	-	
	Unconsolidated depositional bed material widening	-	
	Depositional center bars	-	
	Unconsolidated depositional sediment bars	-	
	Reinforced knickpoints and knickzones	-	
	Large woody debris jams	-	
	Lower limit of woody vegetation high with exposed roots	-	
	Numerous surfing or overhanging trees	-	
	<b>Indicators of Plan Form Adjustments</b>		
	Planform Adjustment meander advance and lateral migration	-	
Cutbanks with active scour lines opposite of advancing bar formations	TRUE		
Circular failures along alternating banks or at the outside of banks	TRUE		
Alternating pattern of scour and deposition	TRUE		
Bar formations are consolidated with an unconsolidated leading edge	-		
Bar material unsorted with fines downstream	-		
Bar is irregularly shaped and more than 1 3 across the channel	-		
Poorly sorted bed material	-		
Notes - numbers in the notes rows are data codes corresponding to the observed indicators. these codes are displayed as "TRUE" in the above indicators of dynamic equilibrium	resident indicates structure flooding after ditch upstream was cleaned out. 2.1,2.2,2.3,2.4,2.5,2.10,2.11,2.12,4.1,4.2,4.3		

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