

Salmon Habitat Indicator Monitoring Project

Summary of Data, Methodology, Results, and Thresholds

For Pressure Indicators Representing Habitat Quantity

Total Key Salmon Habitat (Stream Length) Total Accessible Stream Length (Fish Presence)

Total key salmon habitat consists of streams (or portions of) where salmon presence has been observed and recorded by provincial, federal, and local resource professionals. The data distinguishes between stream reaches identified as spawning areas, as well as reaches that have identified salmon presence but not necessarily any spawning activity.

Lakeshore spawning is presented separately from the key salmon habitat. It is only reported out for certain analysis units, such as the Morice Lake and Atna River sub-watersheds, where data is available.

Total accessible stream length (ASL) consists of streams (or portions of) where resident and anadromous fish presence has been observed or is inferred based on gradient and fish passage. The analysis results are broken down by ASL – observed (fish presence) and ASL – inferred (fish presence).

In the resultant tables presented, the salmon data results are reported out separately to highlight the proportion of the collected data that is specific to salmon.

For graphing purposes (see figures 3.1.1, 3.2.1, 3.3.1, and 3.4.1) the total key salmon habitat values have been rolled up within the ASL – observed category as the same underlying dataset (the Freshwater Atlas) is used to identify streams. This is reflected in the legend, where ASL Observed - Resident Fish plus Total Key salmon habitat = Total ASL Observed

1. GIS Data

- Salmon presence and spawning data produced by SkeenaWild 2010-2012
- Fish Habitat Data (BC Environment Culvert Assessment Project)
- Freshwater Atlas Lakes (1:20,000)
- DFO Lake Conservation Units
- Freshwater Atlas Assessment Watersheds (edited by K. Rabnett Nov 2012)
- Wet'suwet'en House Territory boundaries
- Morice Watershed Management Area

2. Methodology

The Salmon data was edited to ensure it is coincident with the 1:20,000 Freshwater Atlas streams to allow a comparable representation of salmon habitat to accessible stream length data. The Fish Habitat layer was queried by the field FISH_HAB_1 = FISH HABITAT – OBSERVED, FISH HABITAT – INFERRED, and empty, indicating no inferred fish habitat. The GIS System Manifold was used to generate area and stream length. The spatial overlay tool was used to assign analysis units to stream segments. The resultant table was exported to excel where a pivot table was generated to summarize results.

3. Thresholds – To be determined.

4. Results

The results of the habitat quantity indicators are reported out by analysis units including the Morice Watershed, nineteen subwatersheds and face units within the Morice Watershed, the Morice Watershed Management Area (designated through the Morice LRMP), and the ten Wet'suwet'en house territories within or partly within the Morice Watershed.

4.1. Morice Watershed

The total accessible stream length within the Morice Watershed is 69.4% (5,771.6 km) of the total stream length (8,315.1 km). The total accessible stream length consists of 15.2% (878.6 km) of observed and 84.7% (4,892.9 km) of inferred habitat. Of the 878.6 km of observed accessible stream length, 296.57 km is key salmon habitat. This habitat consists of 231.3 km of identified spawning habitat, and 65.2 km of streams with identified salmon presence.

Within the Morice Watershed, Atna Lake and Morice Lake have respectively 28% and 30% of the shoreline as documented salmon spawning habitat.

Table 4.1.1 Total Accessible Stream Length (ASL) for Resident and Anadromous Fish (km)

Total Stream Length (km)	Observed	Observed as % of Total ASL	Inferred	Inferred as % of Total ASL	Total ASL	ASL as % of Total Stream Length
8315.15	878.61	15.22	4892.99	84.78	5771.60	69.41

Table 4.1.2 Observed Salmon Presence (km)

Spawning	Presence	Total Salmon	Total Salmon as % of Total ASL
231.35	65.22	296.57	5.14

Table 4.1.3 Identified Lakeshore Spawning in Morice and Atna Lakes

	Total Shoreline (km)	Spawning (km)	Spawning as % of Total Length of Shoreline
Morice Lake	96.33	29.58	30.71
Atna Lake	51.91	14.67	28.26

Figure 4.1.1 Breakdown of Total Accessible Stream Length for Morice Watershed

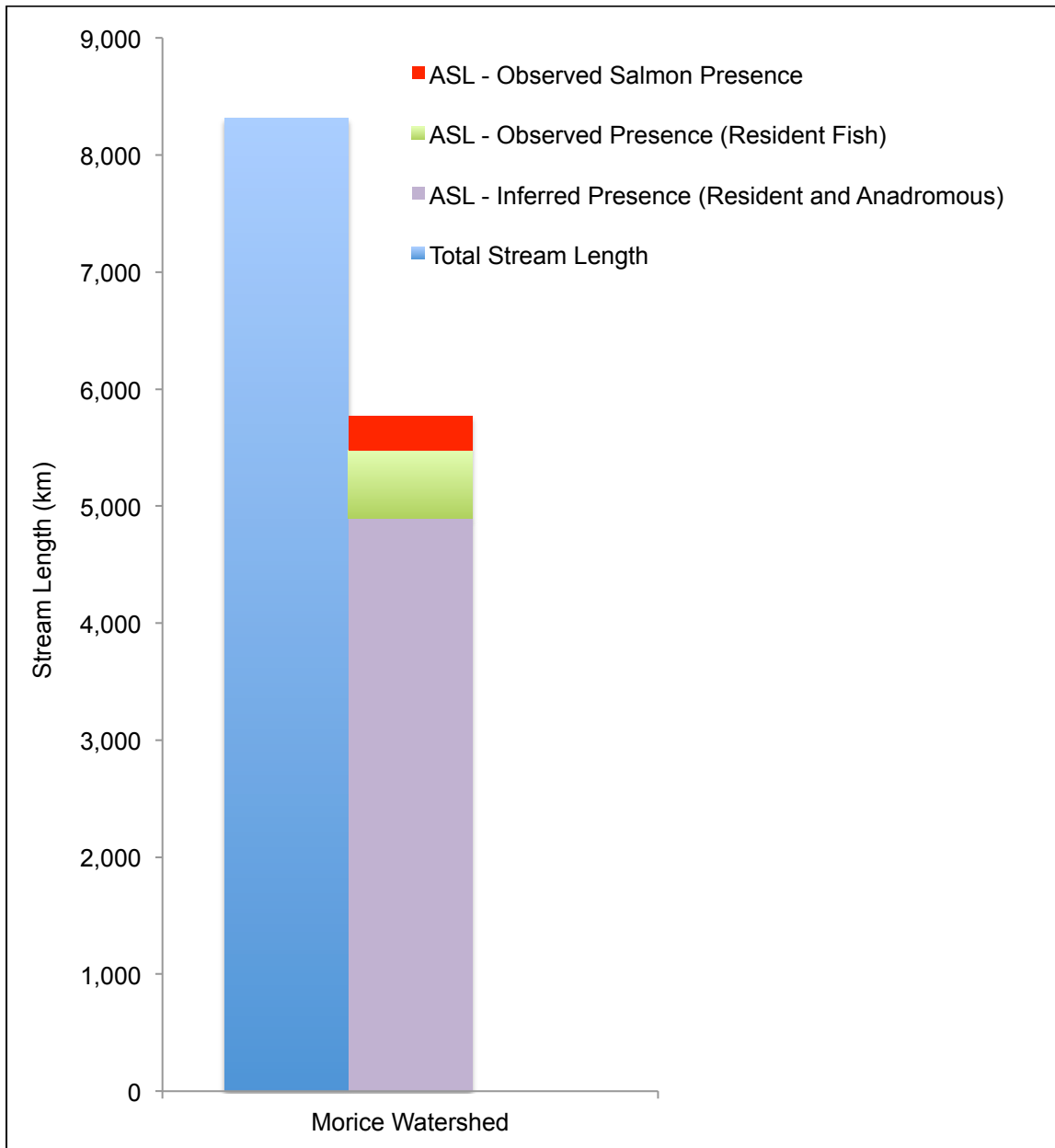
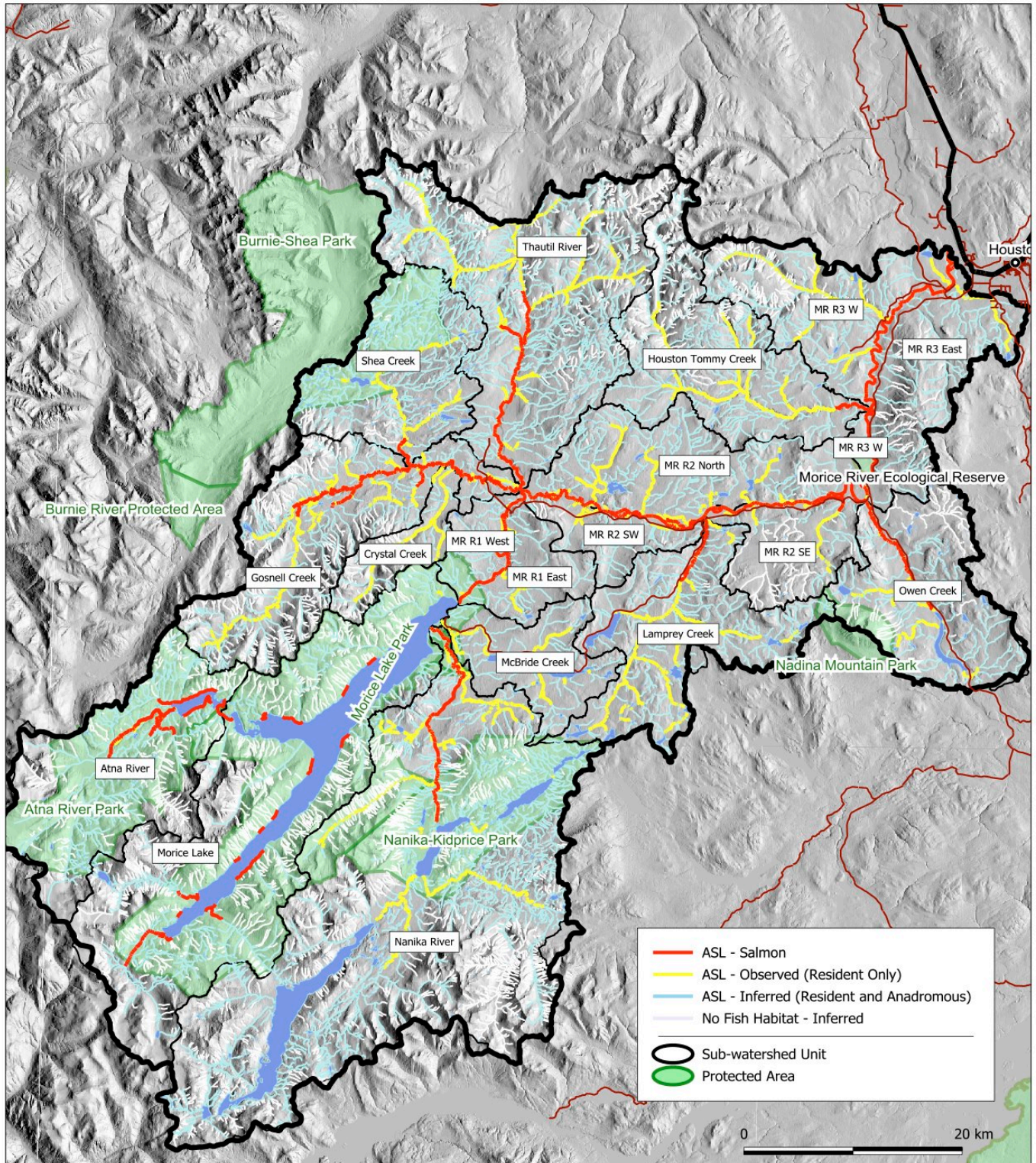


Figure 4.1.2



**Habitat Indicator Monitoring Project
Salmon Pressure Indicator: Total Accessible Stream Length
within the Morice Watershed**

Eclipse GIS



4.2. Morice Watershed Management Area

The Morice Watershed Management Area (MWMA) has a total stream length of 7,049.7 km with a drainage density of 2.07 km/km². The total fish presence of 4,501 km is 63.8% of the total stream length within the Morice watershed management area. The total fish presence consists of 552.2 km (12.3%) of observed presence and 3,949.0 km (87.7%) of inferred presence. The MWMA contains 132.2 km of salmon spawning habitat, and 54.7 km of streams with identified salmon presence. The total salmon presence is 4.1% of the total fish presence.

Table 4.2.1 Total Accessible Stream Length (ASL) for Resident and Anadromous Fish (km)

Total Stream Length (km)	Observed	Observed as % of Total ASL	Inferred	Inferred as % of Total ASL	Total ASL	ASL as % of Total Stream Length
7,049.77	552.27	12.27	3,949.01	87.73	4,501.28	63.85

Table 4.2.2 Observed Salmon Presence (km)

Spawning	Presence	Total Salmon	Total Salmon as % of ASL
132.154	54.74	186.89	4.15

Figure 4.2.1 Breakdown of Total Accessible Stream Length for Morice Watershed Management Area.

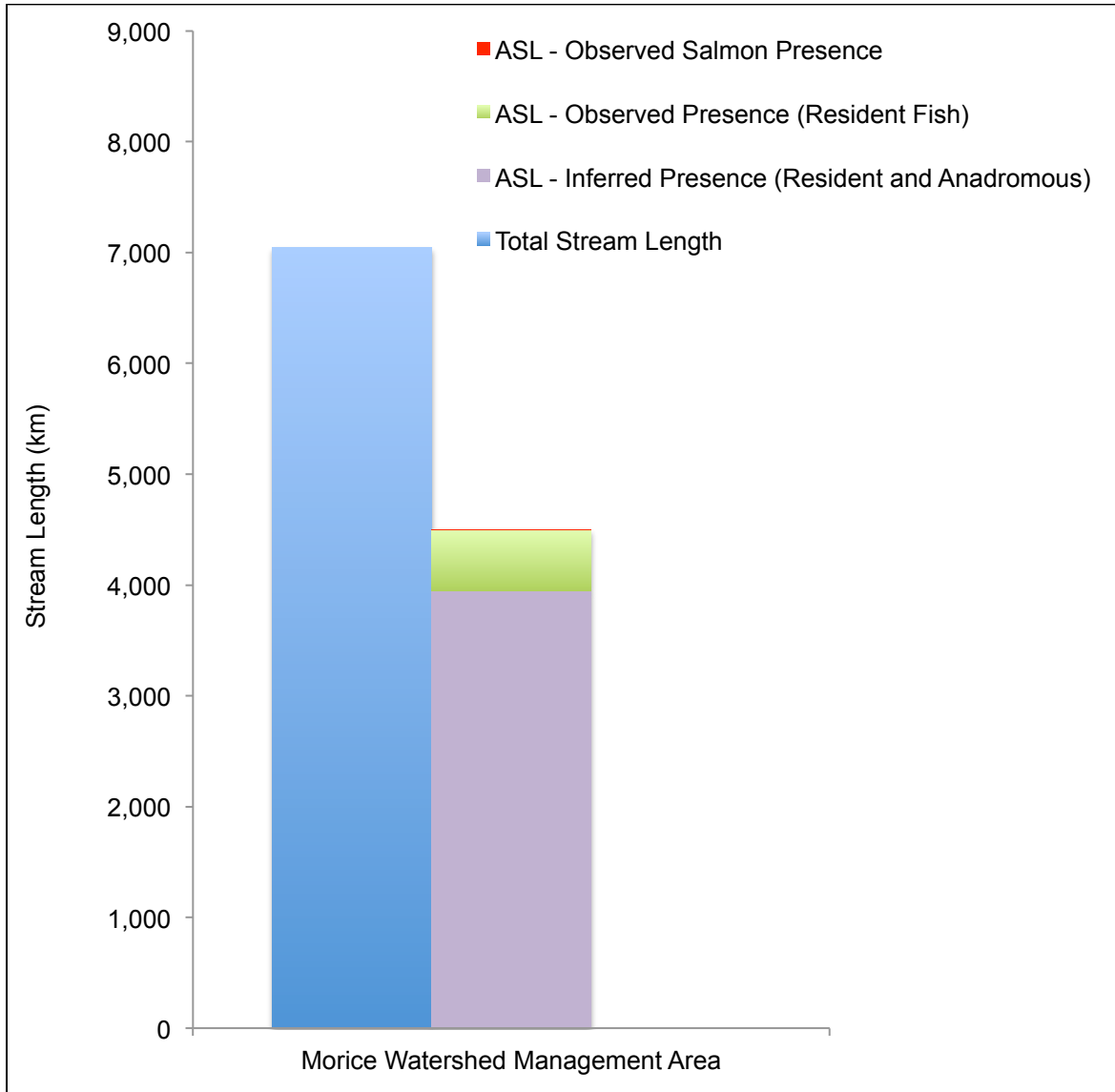
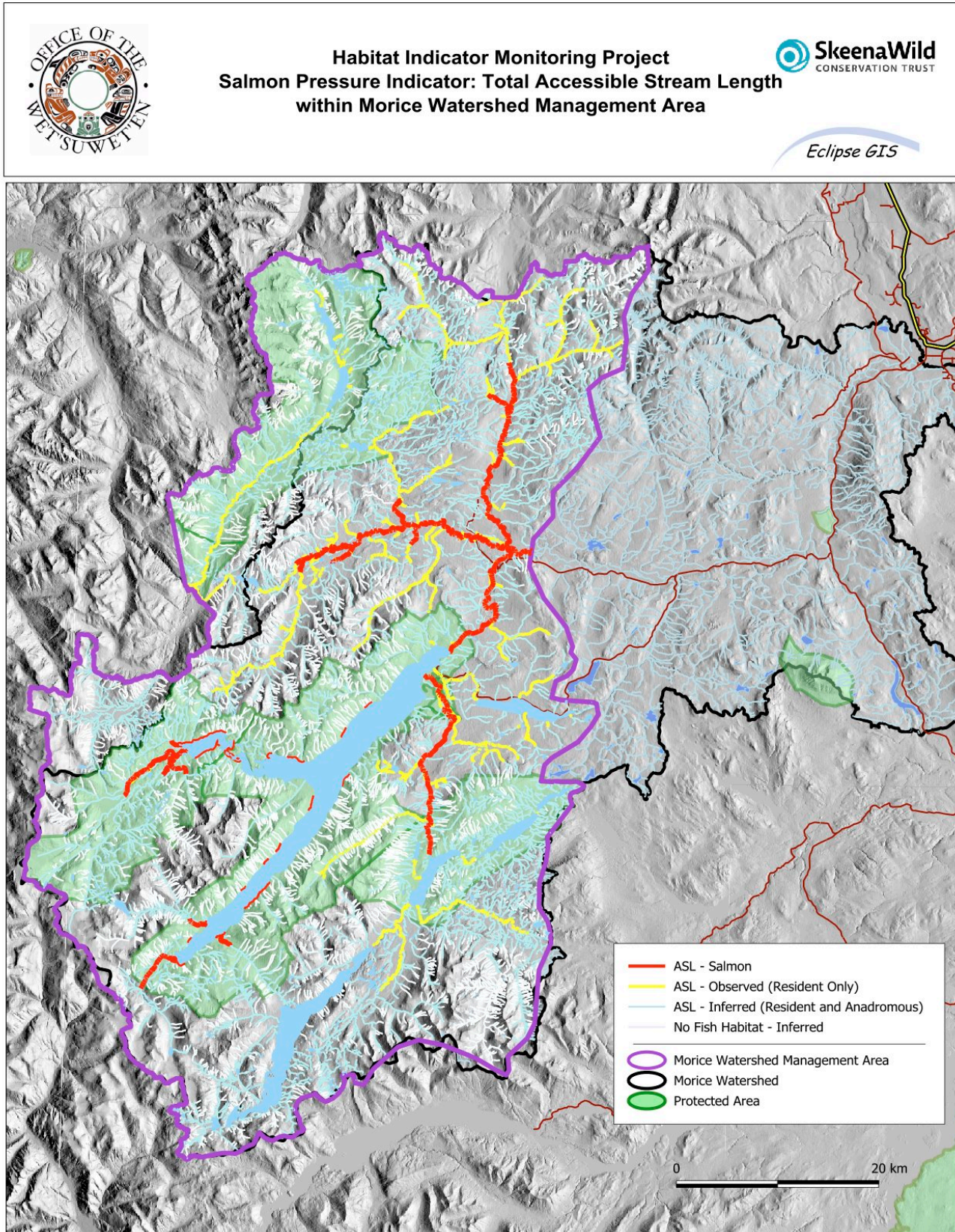


Figure 4.2.2



4.3. Wet'suwet'en House Territories within Morice Watershed

The ten Wet'suwet'en House Territories within the Morice Watershed have a total stream length of 11,196.5 km with an average drainage density of 1.9 km/km². The total fish presence ranges from 235.6 km in Bikh C'idilyiz Ts'anli to 1,403.5 km in the C'iniggit Nenikekh House Territory. The total fish presence consists of 1,243.7 km of observed presence and 6,548.1 km of inferred presence. The MWMA contains 351.9 km of salmon spawning and presence.

Table 4.3.1 Total Accessible Stream Length (ASL) for Resident and Anadromous Fish (km)

House Territory	Total Stream Length	Observed	Observed as % of Total ASL	Inferred	Inferred as % of total ASL	Total ASL	ASL as % of Total Stream Length
Talhdzi Wiyez Bin (T01)	1,228.9	76.9	9.2	757.6	90.8	843.7	68.7
C'iniggit Nenikekh (G02)	2,563.8	79.8	5.7	1,318.1	94.3	1,403.6	54.7
Nelgi'l'at (L07)	978.0	105.8	16.3	541.8	83.7	664.0	67.9
Bikh C'idilyiz Ts'anli (W05)	304.7	41.5	19.2	174.8	80.8	235.6	77.3
Talbits Kwah (G06)	1,454.0	273.6	24.4	848.6	75.6	1,146.6	78.9
Lhudis Bin (W02)	1,609.9	200.5	16.7	1,002.2	83.3	1,219.3	75.7
C'idi To Stan (S03)	922.1	124.2	18.7	540.1	81.3	683.0	74.1
Bi Wini (W04)	1,382.9	209.2	20.2	827.9	79.8	1,057.3	76.5
Ts'in K'oz'ay (W06)	388.1	71.0	20.2	281.1	79.8	372.2	95.9
Nelgi Cek (L09)	364.1	61.2	19.3	256.0	80.7	336.5	92.4
Total	11,196.5	1,243.7	16.0	6,548.1	84.0	7,961.7	71.1

Table 4.3.2 Observed Salmon Presence (km)

House Territory	Spawning	Presence	Total Salmon	Total Salmon as % of Total Fish Presence
Talhdzi Wiyez Bin (T01)	No known salmon presence			
C'iniggit Nenikekh (G02)	44.1	10.0	54.1	3.9
Nelgi'l'at (L07)	2.2		2.2	0.3
Bikh C'idilyiz Ts'anli (W05)	2.3		2.3	1.0
Talbits Kwah (G06)	71.7	34.3	106.1	9.2
Lhudis Bin (W02)	53.6	13.6	67.2	5.5
C'idi To Stan (S03)	2.8	18.3	21.1	3.1
Bi Wini (W04)	41.1	9.0	50.1	4.7
Ts'in K'oz'ay (W06)	18.1	8.4	26.5	7.1
Nelgi Cek (L09)	6.7	15.6	22.3	6.6
Total	242.7	109.2	351.9	4.4

Figure 4.3.1 Breakdown of Total Accessible Stream Length for Wet'suwet'en House Territories within the Morice Watershed.

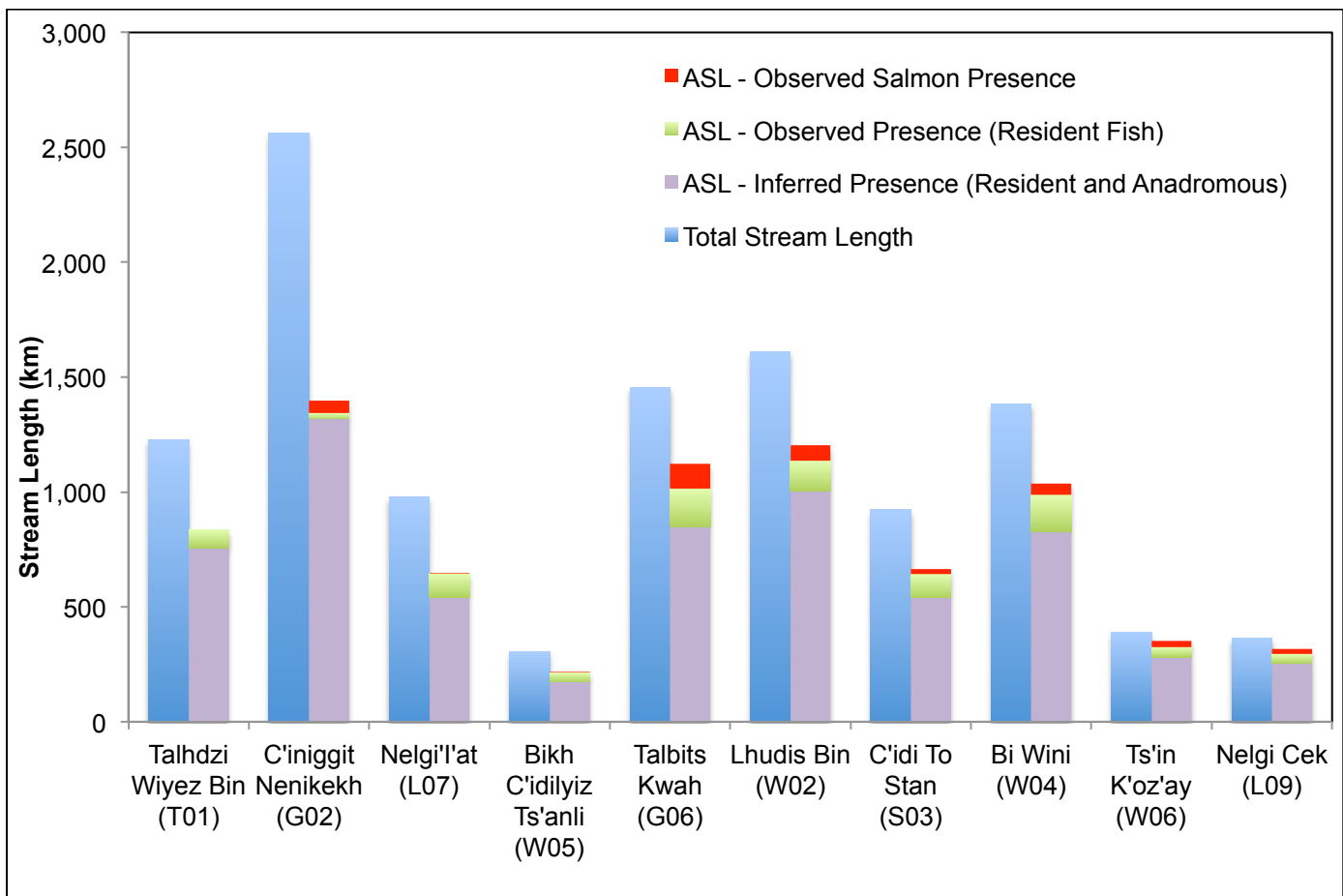
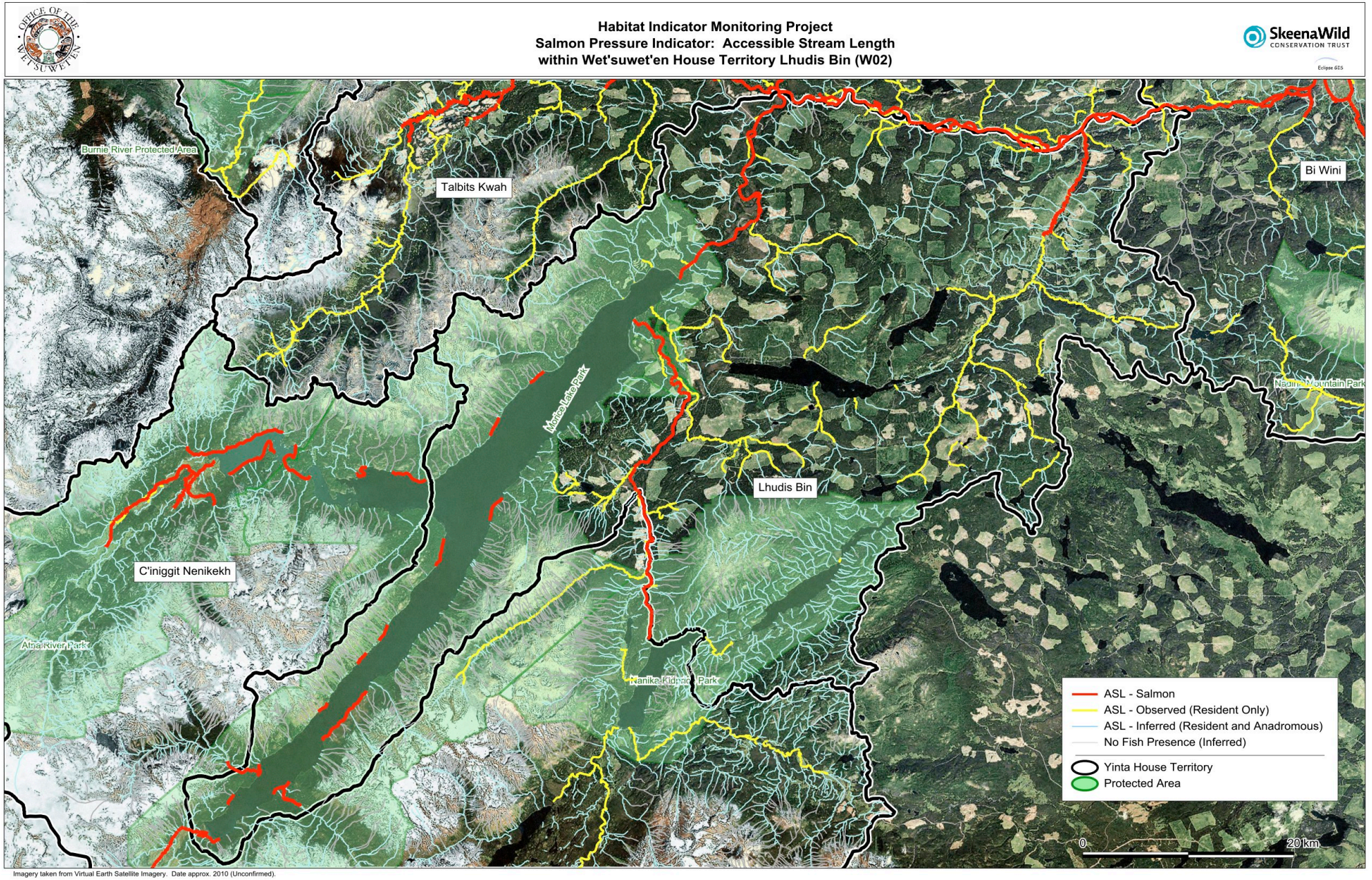


Figure 4.3.2



4.4. Morice Subwatersheds

The Morice watershed is divided up into nineteen subwatersheds and face units. The Gosnell watershed is broken out into three subwatersheds: Crystal Creek, Shea Creek, and Gosnell Creek. The Morice River is separated into eight face units, describing the three reaches and the corresponding aspect of each reach.

Table 4.4.1 Total Accessible Stream Length (ASL) for Resident and Anadromous Fish (km)

Subwatershed Unit	Total Stream Length (km)	Observed	Observed as % of Total ASL	Inferred	Inferred as % of Total ASL	Total ASL	ASL as % of Total Stream Length
Gosnell Watershed							
Crystal Creek	119.8	28.6	40.4	42.2	59.6	70.9	59.2
Shea Creek	456.5	37.8	9.0	381.8	91.0	419.6	91.9
Gosnell Creek	635.8	116.8	30.0	272.2	70.0	389.1	61.2
Subtotal	1,212.1	183.3	20.8	696.2	79.2	879.6	72.6
Atna River	520.6	13.1	4.1	305.9	95.9	319.0	61.3
Houston Tommy Creek	516.5	62.0	16.6	310.4	83.4	372.3	72.1
Lamprey Creek	348.4	75.2	21.7	271.7	78.3	346.8	99.6
McBride Creek	124.6	24.3	19.5	100.3	80.5	124.6	100.0
Nanika River	1,974.7	124.2	10.2	1,092.2	89.8	1,216.4	61.6
Owen Creek	262.8	36.5	19.2	153.6	80.8	190.0	72.3
Thautil River	1,057.7	123.2	14.6	720.1	85.4	843.4	79.7
Morice Lake	972.6	1.3	0.3	382.9	99.7	384.2	39.5

Morice River Face Units	Total Stream Length (km)	Observed	Observed as % of Total ASL	Inferred	Inferred as % of Total ASL	Total ASL	ASL as % of Total Stream Length
MR R1 East	97.1	25.5	26.6	70.3	73.4	95.8	98.7
MR R1 West	63.7	5.8	9.0	57.9	91.0	63.7	100.0
MR R2 North	316.7	84.3	26.7	230.9	73.3	315.2	99.5
MR R2 SE	134.3	19.5	32.4	40.7	67.6	60.2	44.9
MR R2 SW	81.1	11.7	16.1	60.9	83.9	72.6	89.5
MR R3 East	278.7	30.7	13.7	194.0	86.3	224.7	80.6
MR R3 NW	341.2	53.5	21.2	199.4	78.8	252.9	74.1
MR R3 SW	10.2	4.8	46.8	5.4	53.2	10.2	100.0
Subtotal	1,323.0	235.7	21.5	859.6	78.5	1,095.3	82.8
Total	8,315.1	878.6	15.2	4,893.0	84.8	5,771.6	69.4

Table 4.4.2 Observed Salmon Presence (km)

Subwatershed Unit	Spawning	Presence	Total Salmon	Total Salmon as % of Total ASL
Gosnell Watershed				
Crystal Creek	0.0	0.0	0.0	0.0
Shea Creek	4.1	0.0	4.1	1.0
Gosnell Creek	25.5	16.6	42.1	10.8
Subtotal	29.6	16.6	46.2	5.3
Atna River	29.0	2.7	31.7	9.9
Houston Tommy Creek	0.0	4.5	4.5	1.2
Lamprey Creek	6.6	2.5	9.1	2.6
McBride Creek	0.0	0.0	0.0	0.0
Nanika River	18.0	5.8	23.8	2.0
Owen Creek	16.0	0.0	16.0	8.4
Thautil River	10.3	17.0	27.3	3.2
Morice Lake	28.1	0.0	28.1	7.3
Morice River Face Units				
MR R1 East	8.5	4.2	12.7	13.3
MR R1 West	3.6	1.6	5.2	8.1
MR R2 North	34.8	4.8	39.6	12.6
MR R2 SE	10.6	0.4	10.9	18.2
MR R2 SW	5.3	0.5	5.8	8.0
MR R3 East	26.0	4.7	30.7	13.7
MR R3 NW	2.1	0.0	2.1	0.8
MR R3 SW	2.8	0.0	2.8	27.4
Subtotal	93.7	16.2	109.9	10.0
Total	231.4	65.2	296.6	5.1

Figure 4.4.1

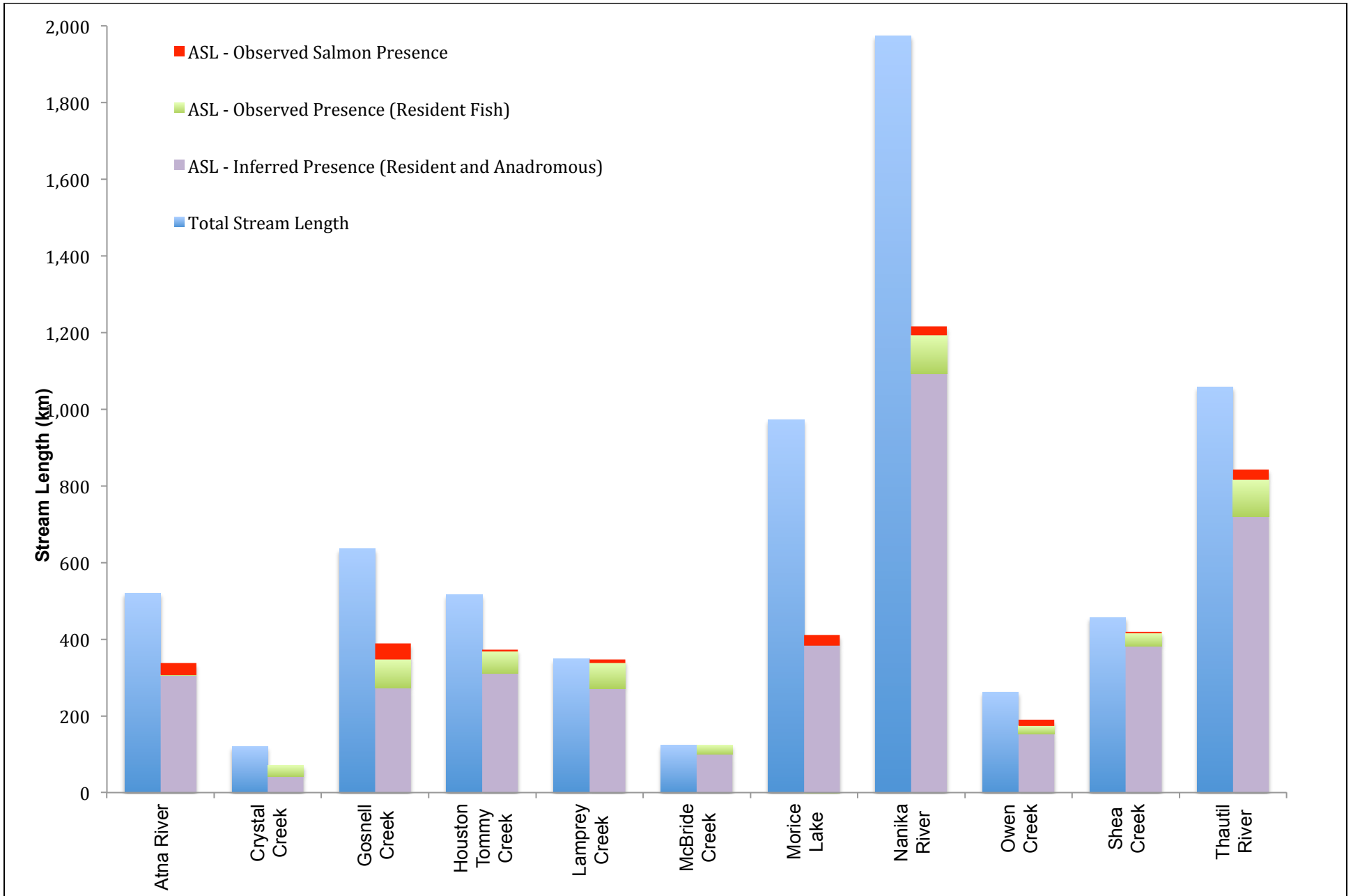


Figure 4.4.2

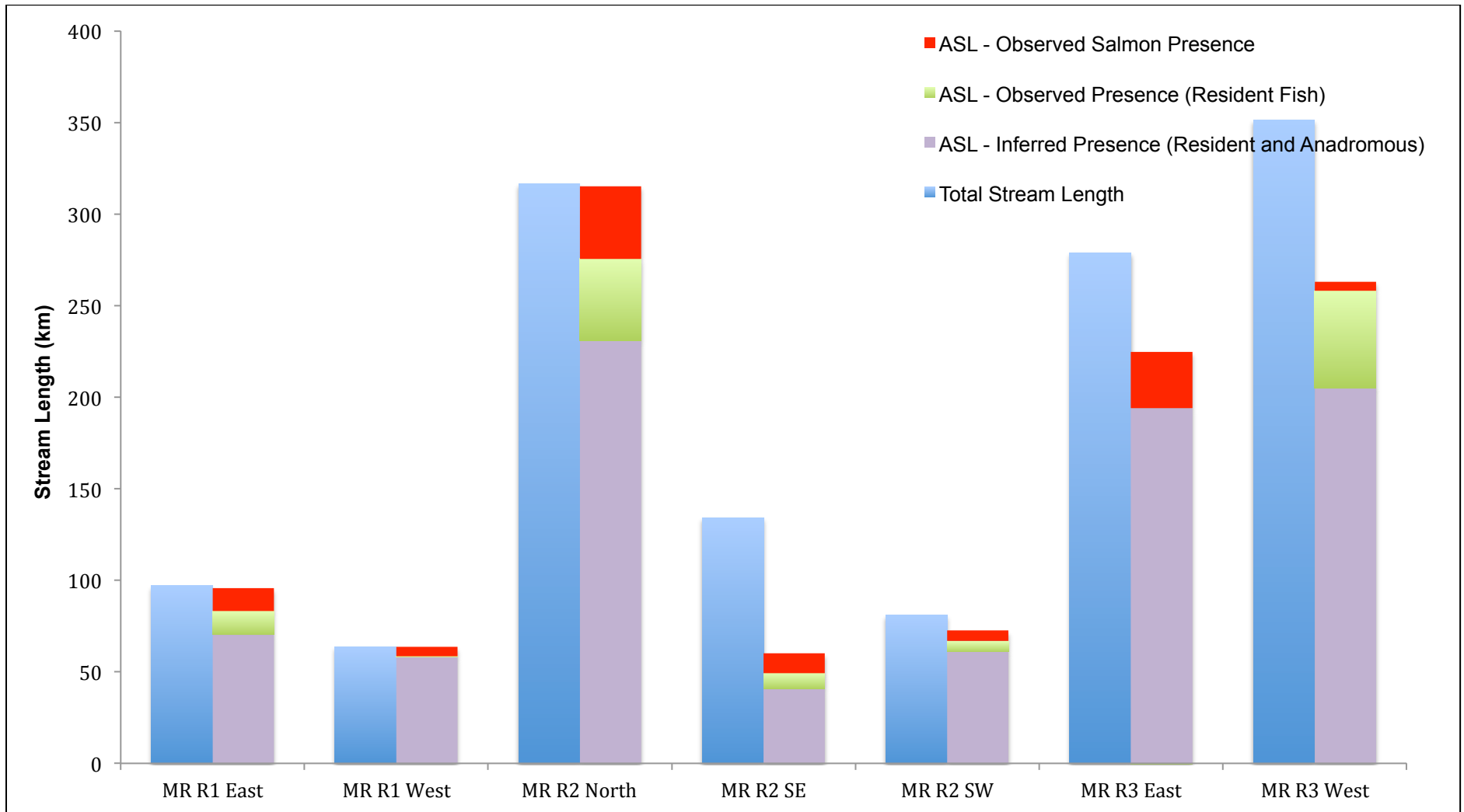


Figure 4.4.3

