



2016 Status Update on Fish Passage Barriers in the Mat Su Borough



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ADF&G

Priorities prior to 2008

- Dominated by Dirt-to-Paving projects
- Top 30 list for the MSB
 - Mainstem, major tributaries
 - Whole stream approach
 - Road Service Area funding match
 - Opportunistic with landowners



2008 Mat-Su Prioritization (TNC)- data collected prior to 2009

- Action 4.2.2 to “Develop and Implement Fish Passage Prioritization and Improvement Plan”.

“Reddest of the Red”

Priority Criteria

- 1) Anadromy – emphasized Anadromous Waters Catalog (ADF&G) and potential salmon streams
- 2) Level of Blockage (Level 1 Red/Gray/Green)
- 3) Constriction – higher score for extreme culverts
- 4) Gradient – higher score for extreme culverts

2009-2011 ADFG Assessment work

Goal

Assess structures on fish bearing streams for impacts to fish passage

Process

- Assess culverts for impacts to juvenile salmonid passage using a standard assessment protocol
- Additional assessments to address Gray culverts or other life stages or species
 - Data is used to identify and prioritize barriers for replacement

Classifications- Level 1 assessment

- Green: conditions at the crossing are likely to be adequate for juvenile fish passage
- Gray: conditions at the crossing may be inadequate for juvenile fish passage
- Red: conditions at the crossing are assumed to be inadequate for juvenile fish passage



The Red, Gray, Green Classification is based on:

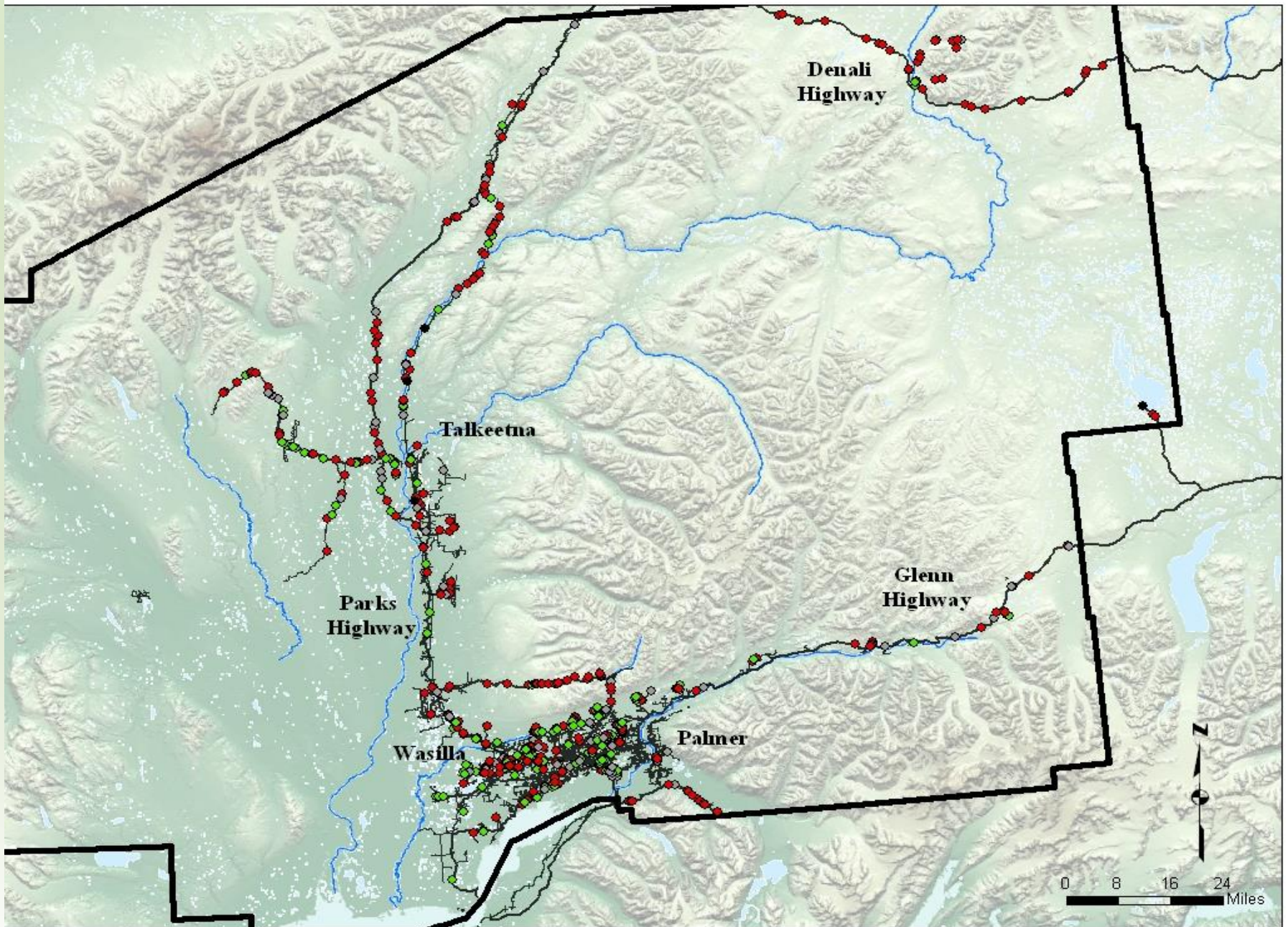
1. a 55mm Coho
2. Culvert Type
3. Measured Critical Values
 - Slope
 - Perch Height
 - Constriction Ratio
4. Overrides
 - Backwatering
 - Tidal influence
 - Fish ladders



Rating	Sites	%
Red	295	52
Gray	107	19
Green	157	28
Black	8	1
Total	567	100

Results from 2009-2011

Factors affecting fish passage	Sites	Percentage
Gradient Red	211	32%
Mechanical or structural problem incl. parted joints.	132	20%
Outfall height Red	116	18%
Condition rating = 2	95	15%
Constriction ratio Red	96	15%
Gradient Gray	95	15%
Constriction Ratio is Gray	80	12%
Insufficient (shallow) roadfill over culvert	64	10%
Compound gradient	48	7%
Hydraulic capacity inadequate	53	8%
Condition rating = 1	50	8%
Beaver activity in vicinity of crossing	49	7%
Outfall height Gray	46	7%
Poor alignment	43	7%
Inlet perch	38	6%
Culvert sagging in middle	34	5%
Woody debris	33	5%
Sediment accumulation at inlet	25	4%
Other	27	4%
Road eroding	14	2%
Debris flow	6	1%
Ice damage	4	<1%



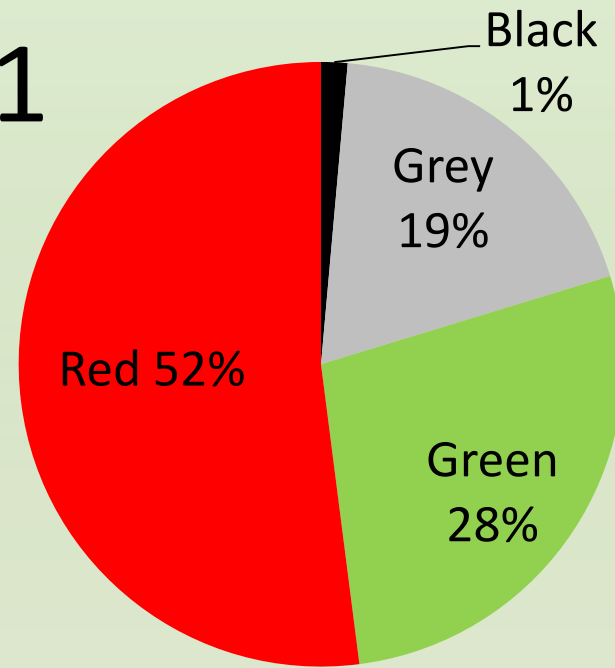
Site ID	Road Name	Stream Name	Prioritization Score	Stream Miles above culvert	AWC stream miles above culvert	Acres of Lake above culvert	No. of salmon species
20501394	Parks Highway	Trapper Creek	38.96771	33.79	31.17	154	2
20501417	Talkeetna Spur Road	Answer Creek	28.69807	14.88	7.66	74	2
20401337	Fishhook Road	Wasilla Creek	18.24558	16.94	10.26	0	4
20501383	Parks Highway	Horseshoe Creek	17.13787	4.2	2.6	0	5
20501173	Cameo Road	Goose Creek	17.05734	10.12	10.12	400	2
20501435	Beaver Lake Road	Meadow Creek	15.19808	10.22	8.24	128	4
20501434	Big Lake Road	Lucille Creek	15.06107	17.43	8.13	0	2
20400584	Alascom Drive	Trail Creek	14.59431	10.62	0	265	
20501480	Petersville Road	Ninemile Creek	13.93367	20.3	1.23	218.5	2
20501238	Willow Creek Parkway	Shirley Lake outlet	11.90167	6.6	6.6	371.2	1
20502068	Valdez Mining District Road	Windy Creek	11.19027	25.29	0	0	
20502151	Parks Highway	Chulitna River tributary	9.10995	5.325	4.13	0	1
20501807	Alaska Railroad	Susitna River tributary	8.92262	5.49	2.27	0	5
20501432	PARKS HIGHWAY	Little Meadow Creek	8.11539	3.74	3.74	0	4
20502065	Valdez Mining District Road	Valdez Creek	7.85841	17.76	0	0	
20501081	Alaska Railroad	Meadow Creek tributary	7.80115	2.7	0	72	2
20501800	Alaska Railroad	Sunshine Creek	7.36893	3.74	3.27	57.4	3
20401279	Parks Highway	Cottonwood Creek	7.32892	5.63	5.63	659.2	2
20501419	Talkeetna Spur Road	Question Creek	6.51272	2.917	1.47	128	3
20502078	Alaska Railroad	Salmon Creek tributary	6.40789	2.26	2.14	0	4
20501375	Parks Highway	Hardage Creek	6.33628	4.9	0	0	1
20501426	PARKS Highway	Grey's Creek	6.15169	12.06	6.03	0	3
20502150	Parks Highway	Chulitna River tributary	6.02899	8.6	0.34	0	2

86 Projects to date (with grant funds)



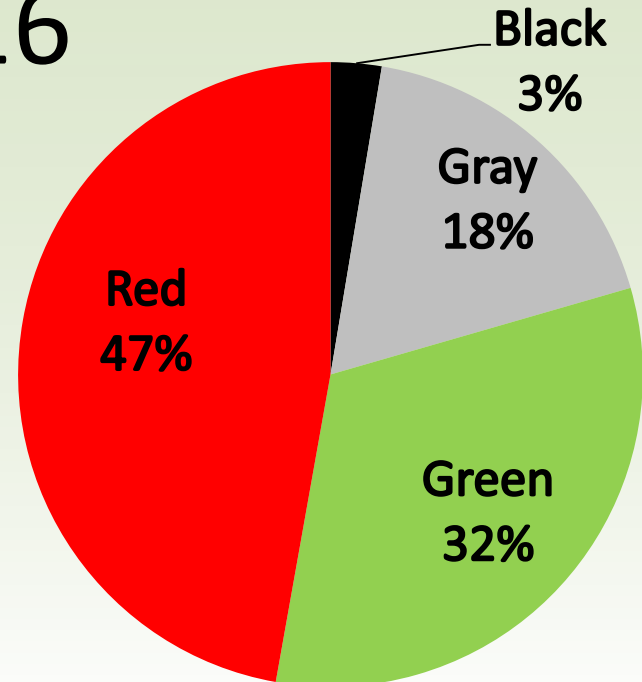
2011

Rating	Sites	%
Red	295	52
Gray	107	19
Green	157	28
Black	8	1
Total	567	100



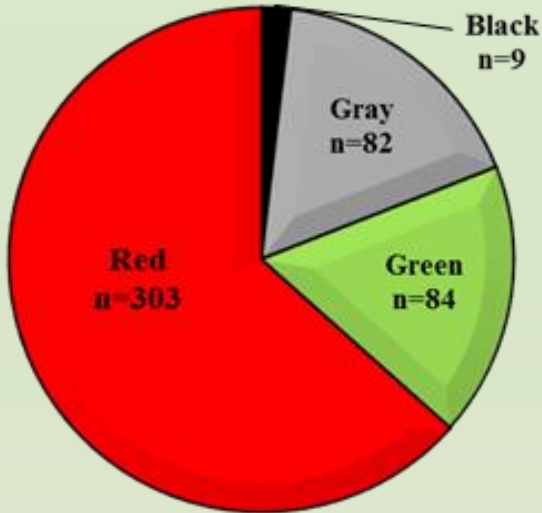
2016

Rating	Sites	%
Black	15	3
Gray	102	18
Green	184	32
Red	269	47
Total	570	100

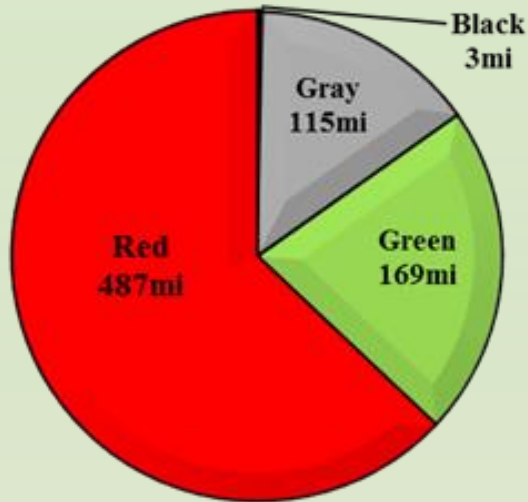


2000

Number of

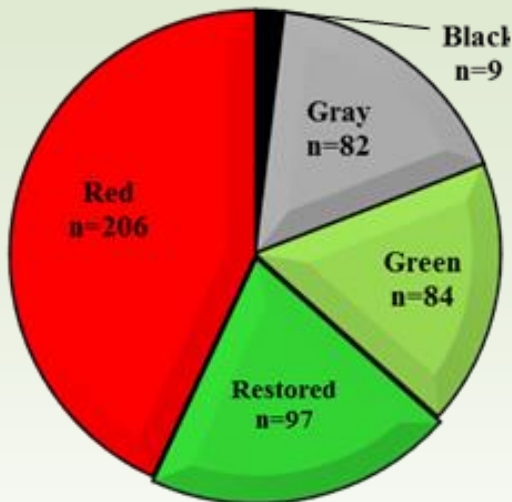


Miles Upstream of Barriers

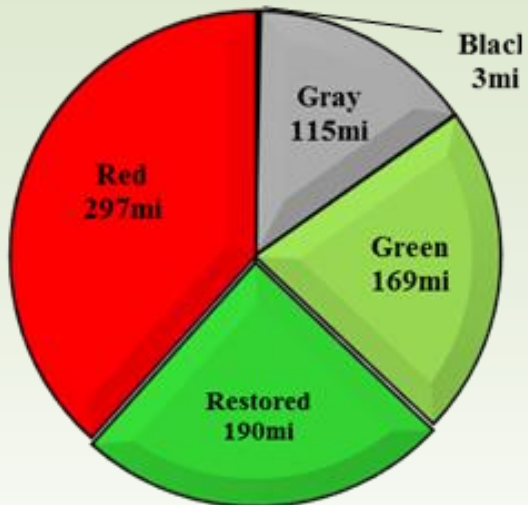


2015

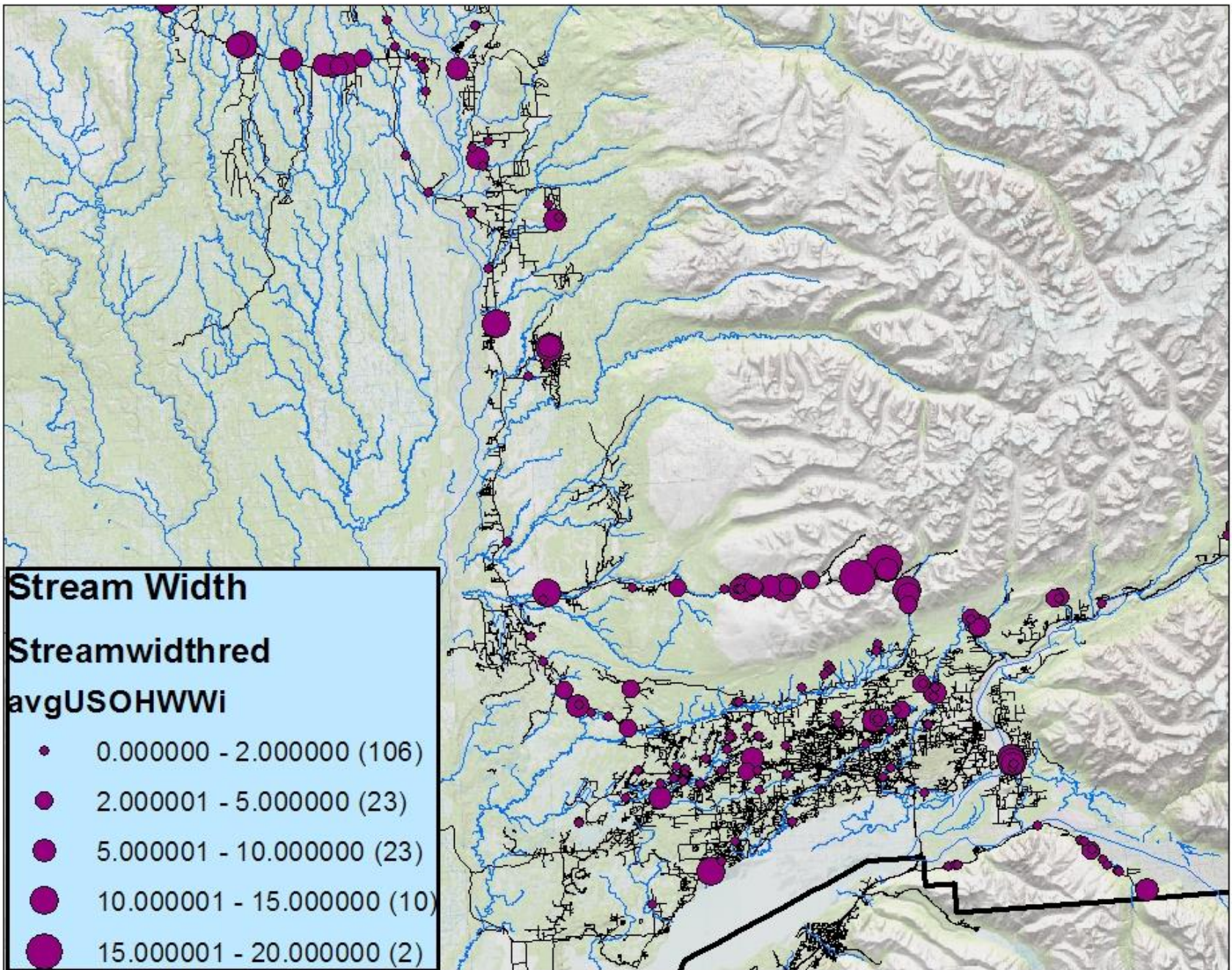
Number of Barriers



Miles Upstream of Barriers



USFWS MatSu Cost-Benefit Report (draft)



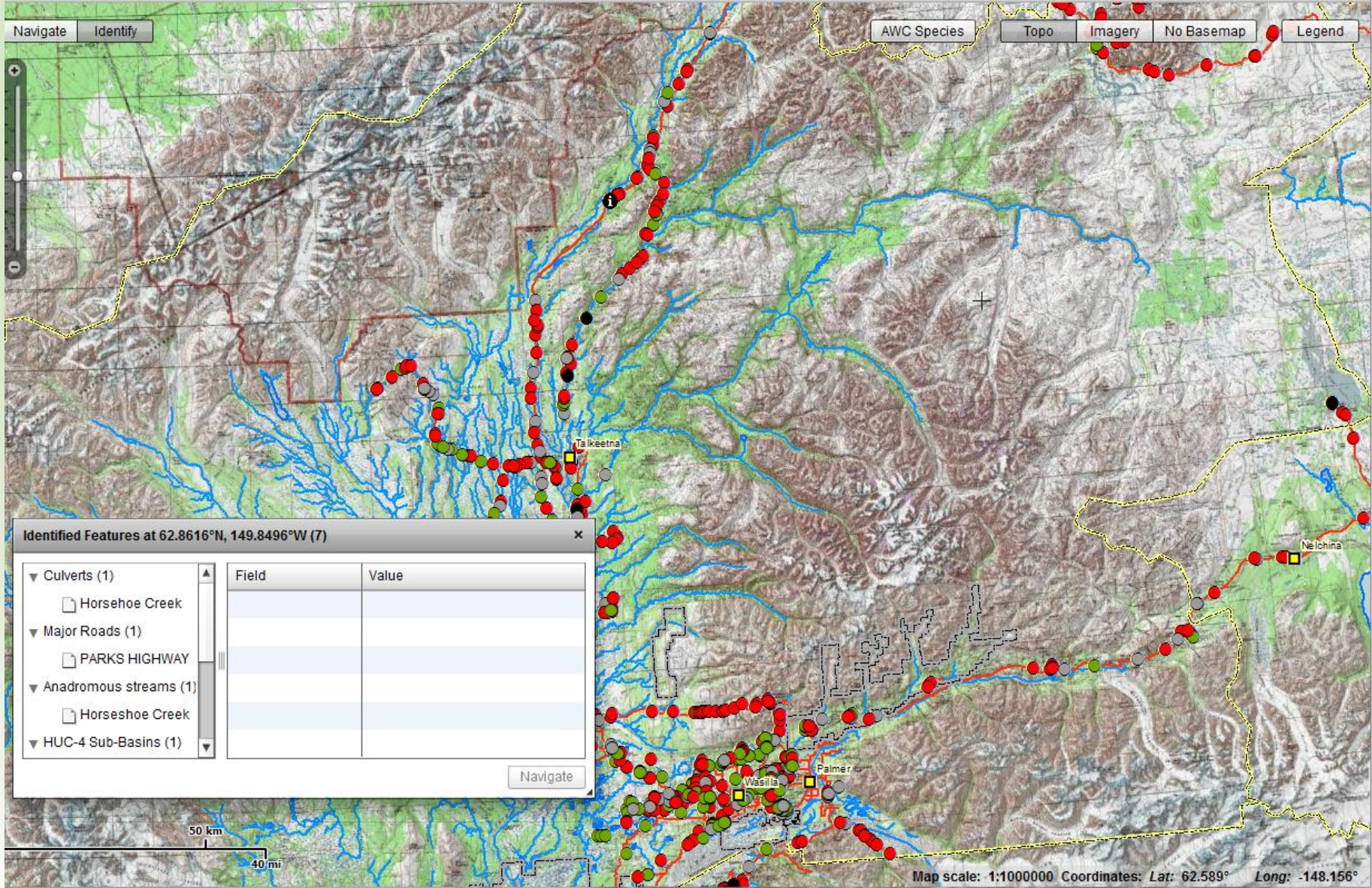
What's next?

- Incorporate new flow data and recalculate
- Work with additional landowners
- Parks Hwy upgrade
- Optimization model
 - Calculate most “bang for the buck” for various scenarios
 - Prevent diminishing returns
- Review success of stream simulation structures in a more formal manner
- Continue to refine dataset

Challenges

- Funding for projects and for success monitoring
- Data for prioritizations
- Fewer, larger projects
- Pike





Identified Features at 62.8616°N, 149.8496°W (7)

Category	Field	Value
▼ Culverts (1)		
<input type="checkbox"/> Horseshoe Creek		
▼ Major Roads (1)		
<input type="checkbox"/> PARKS HIGHWAY		
▼ Anadromous streams (1)		
<input type="checkbox"/> Horseshoe Creek		
▼ HUC-4 Sub-Basins (1)		



Questions?