

# An Overview of Fish and Aquatics and Instream Study Programs for the Susitna-Watana Hydroelectric Project

Alaska Chapter National Hydropower Association  
19 September 2017

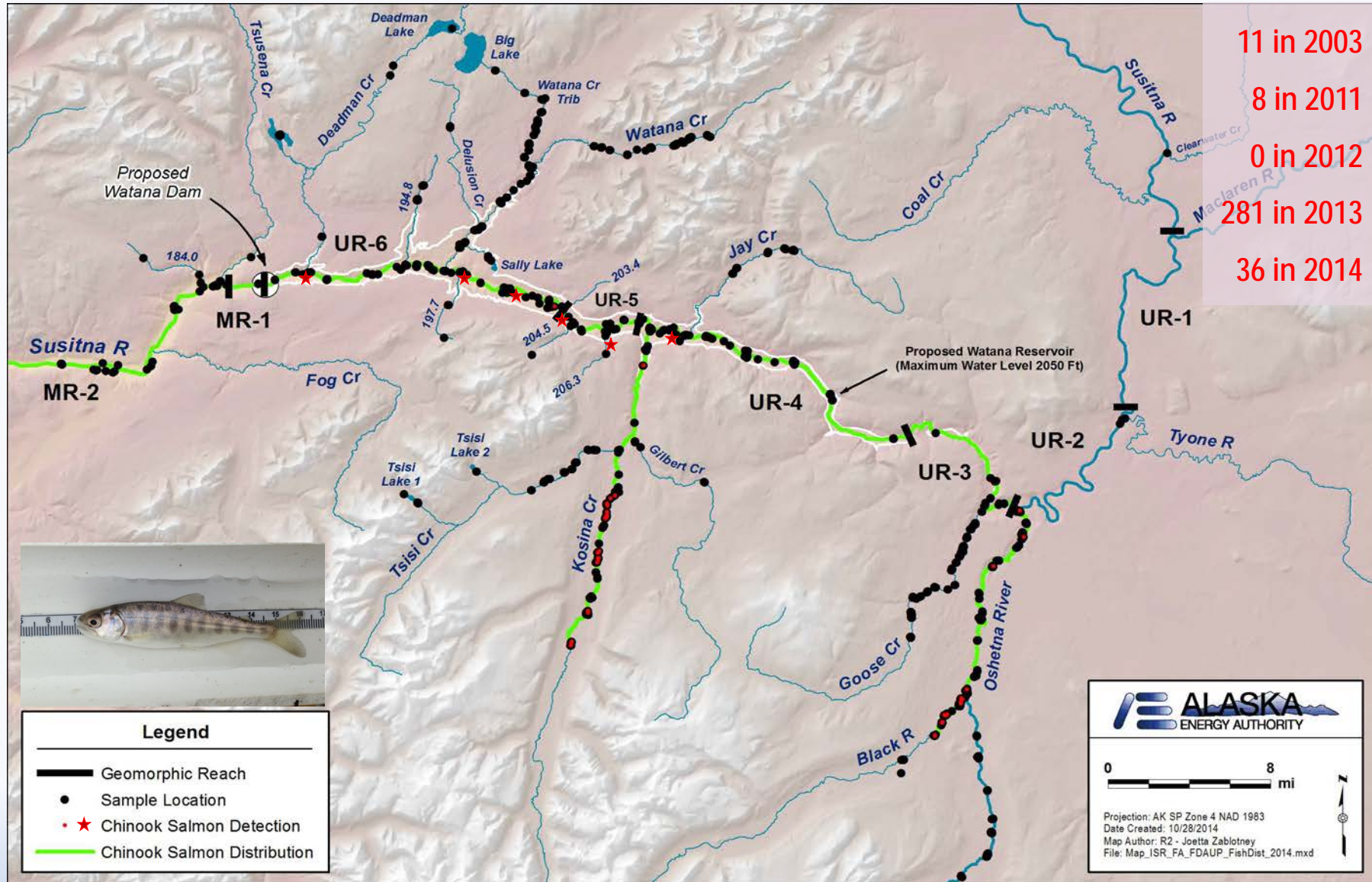
*Presented by Dr. MaryLouise Keefe  
R2 Resource Consultants, Inc.*

# Overview of Upper River Fish Sampling

- >22,750 fish observations; 326 juvenile Chinook Salmon
- Arctic Grayling, Sculpin, Dolly Varden, Burbot, Humpback Whitefish, Longnose Sucker, Lake Trout, Chinook Salmon
- 2,796 fish caught in rotary screw traps, 41 juvenile Chinook salmon
- 2,670 fish PIT tagged, 81 relocated
- 248 fish radio tagged, 5 fish species
- Tissue samples collected for metals/mercury, and genetics (studies 5.5, 5.7 & 9.14).



# Juvenile Chinook Salmon Observations (2012-2014)

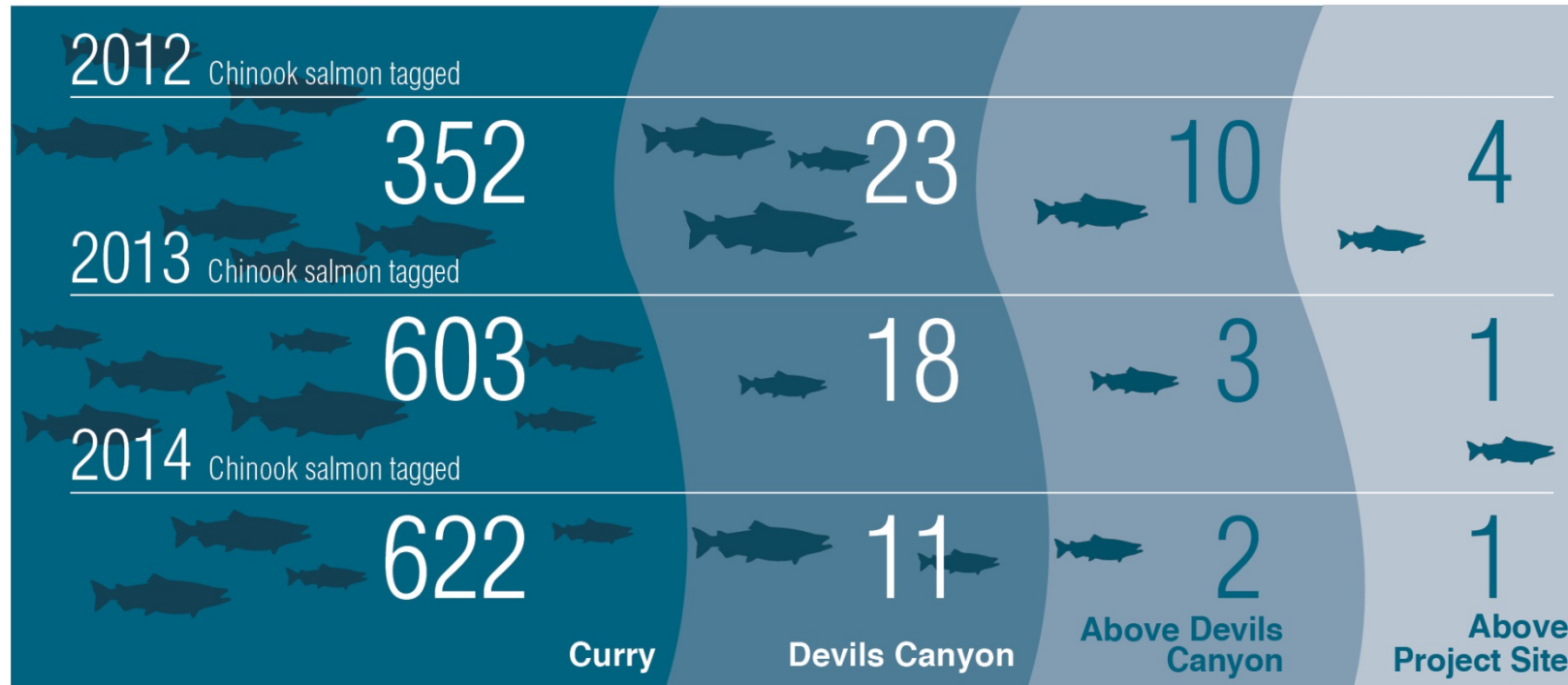




# Chinook by the Numbers

## Tagged Chinook Salmon and Devils Canyon

Only one salmon species has been documented within 30 miles of the project site.



## *Peak Counts of Chinook Salmon from Aerial Surveys*

Stream	1982	1983	1984	1985	2012	2013	2014
<b><u>Within Devils Canyon</u></b>							
Cheechako Creek	16	25	29	18	5	40	16
Chinook Creek	5	8	15	1	5	2	5
<b><u>Upstream of Devils Canyon</u></b>							
Devil Creek	0	1	0	0	7	25	10
Fog Creek	--	--	2	0	1	2	3
Tsusena Creek	--	--	0	0	0	4	0
<b><u>Upstream of dam site</u></b>							
Kosina Creek	--	--	--	--	16	3	0

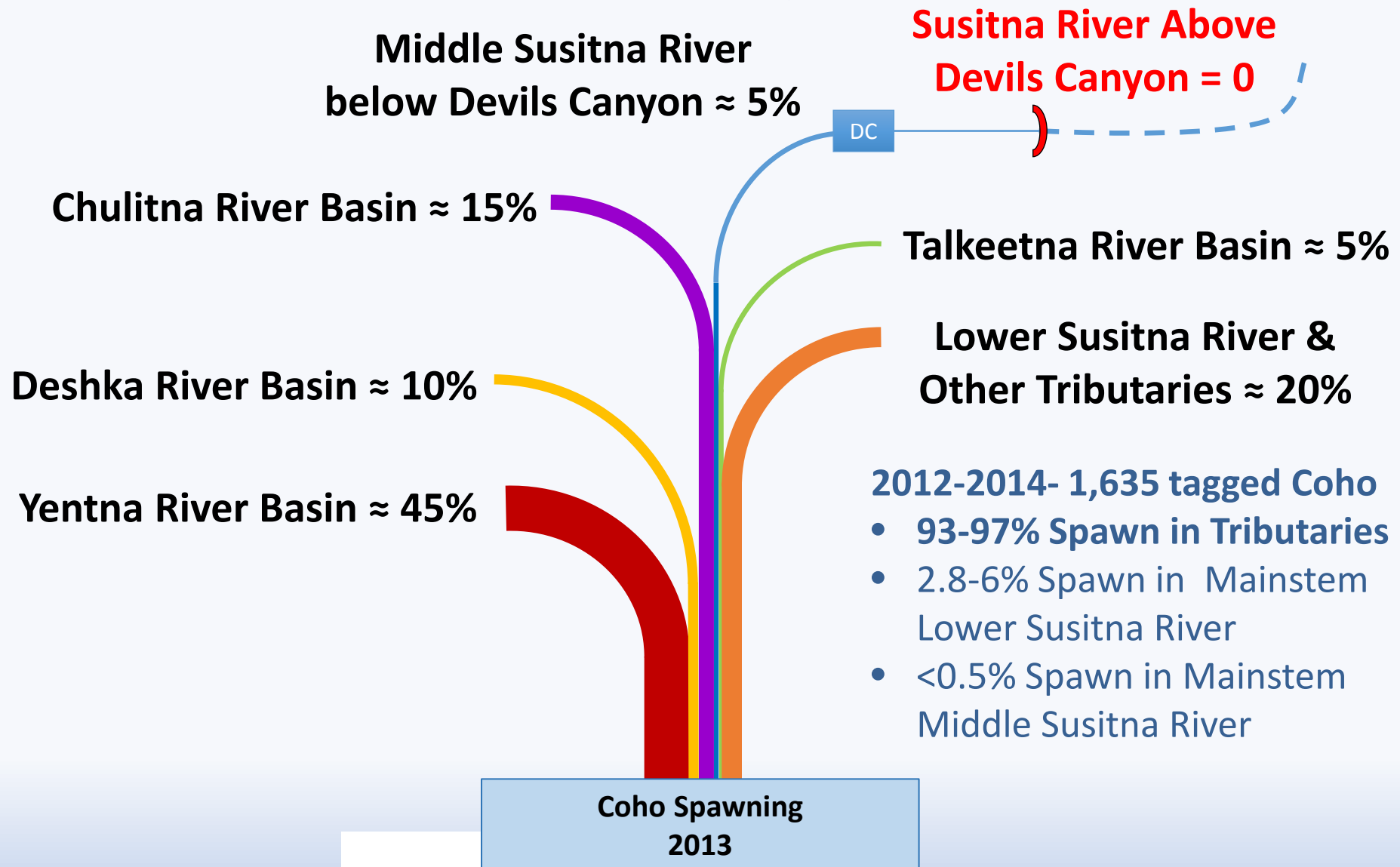
# Overview of Middle and Lower River Sampling

(2014 data preliminary)

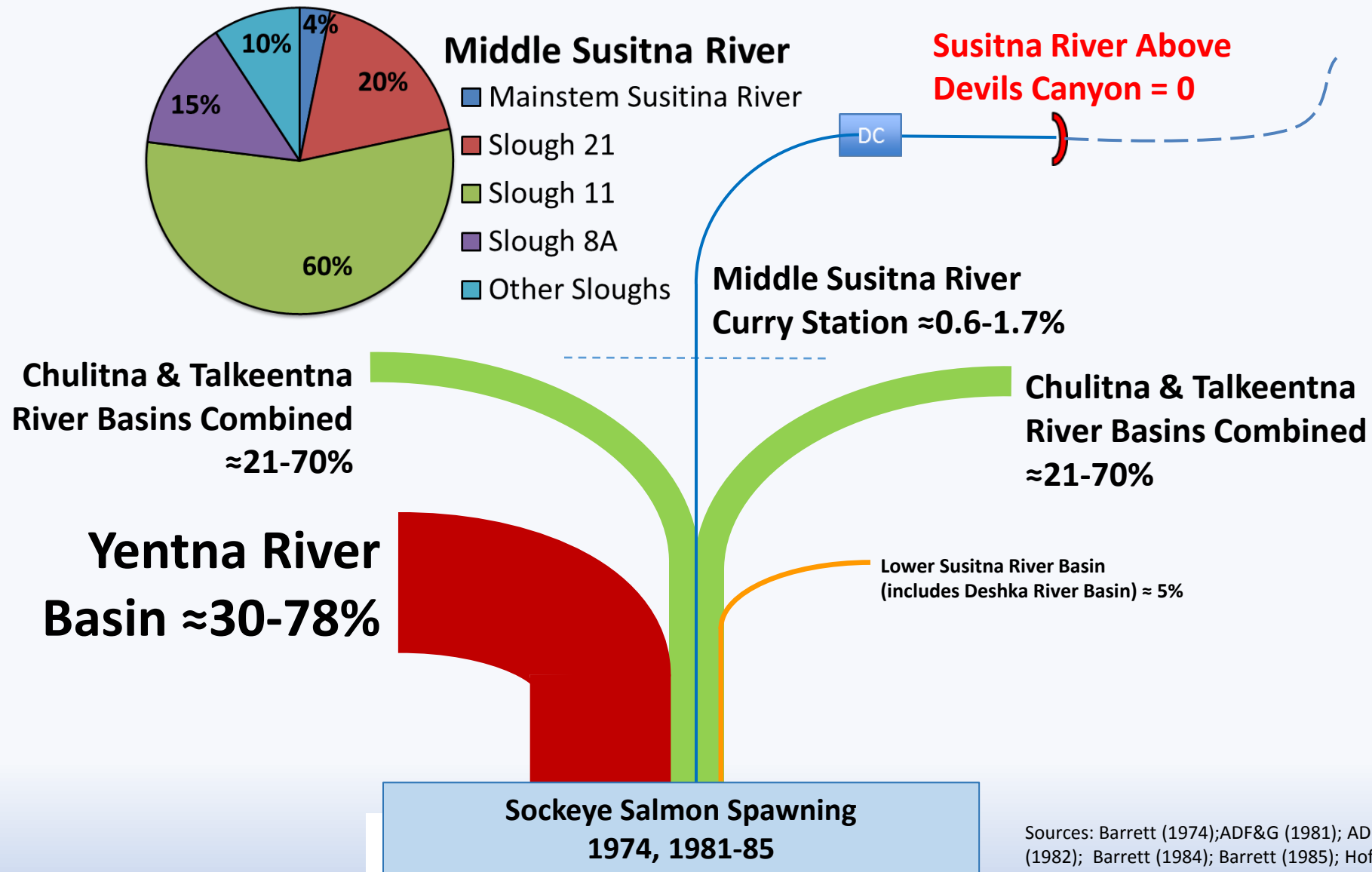
- 18 fish species
- FDA observations
  - Middle River: 51,707
  - Lower River: 8,649
- Early Life History observations
  - > 20,000 juvenile salmon
- Rotary screw trap catch
  - Indian River: 4,551
  - Curry Station: 1,457
  - Talkeetna Station: 2,696
  - Montana Creek: 2,861
- PIT tagging
  - ~ 5,590 fish tagged
  - >126,000 detections
  - 826 fish re-sighted (>15%)
- Radio tagging
  - 179 fish tagged from 8 species
- Fish/tissue collected for other studies



# 2013 Coho Salmon Spawning Distribution by Basin



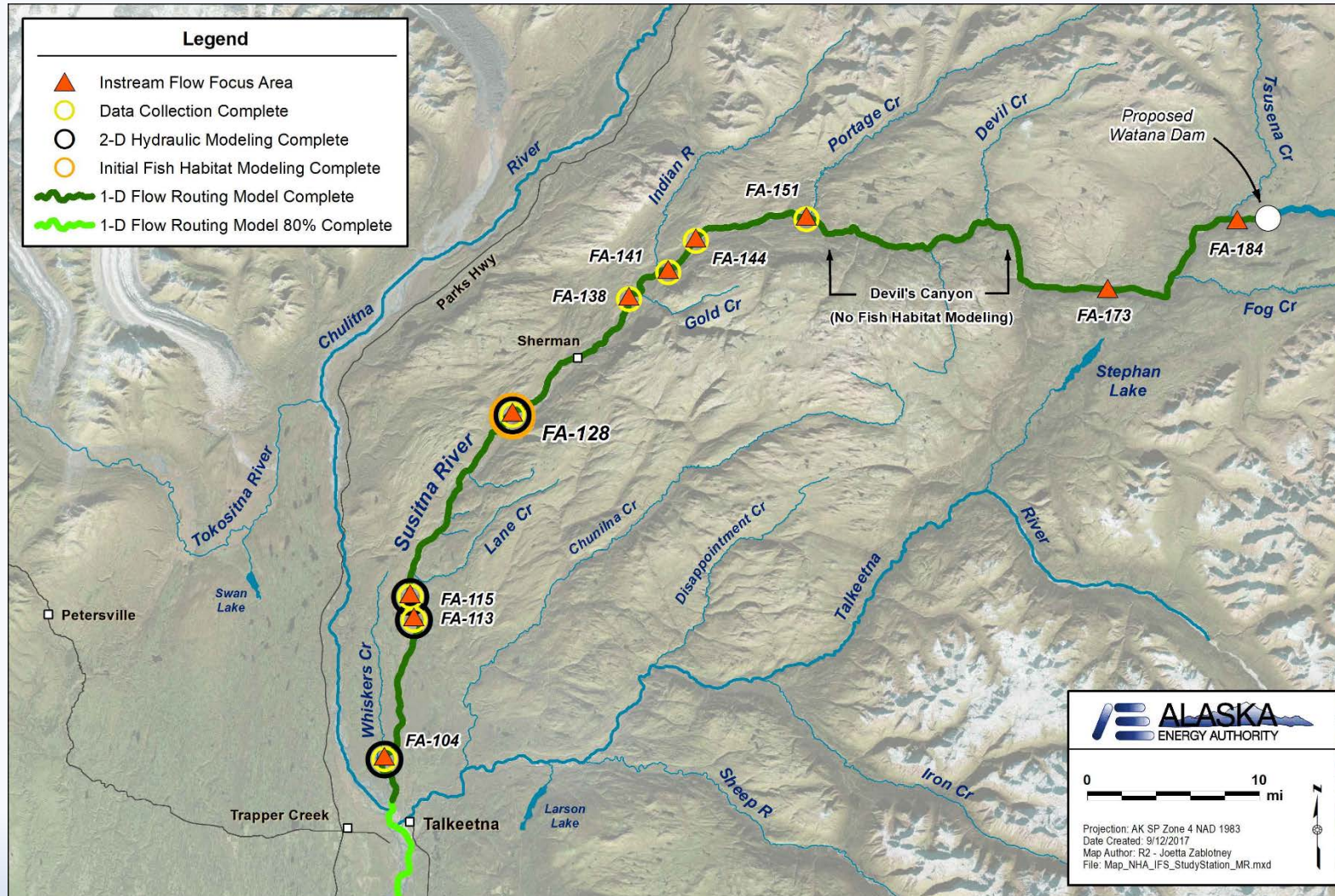
# Historical Middle River Sockeye Salmon Spawning Distribution



Sources: Barrett (1974); ADF&G (1981); ADF&G (1982); Barrett (1984); Barrett (1985); Hoffman (1985); Thompson (1986)

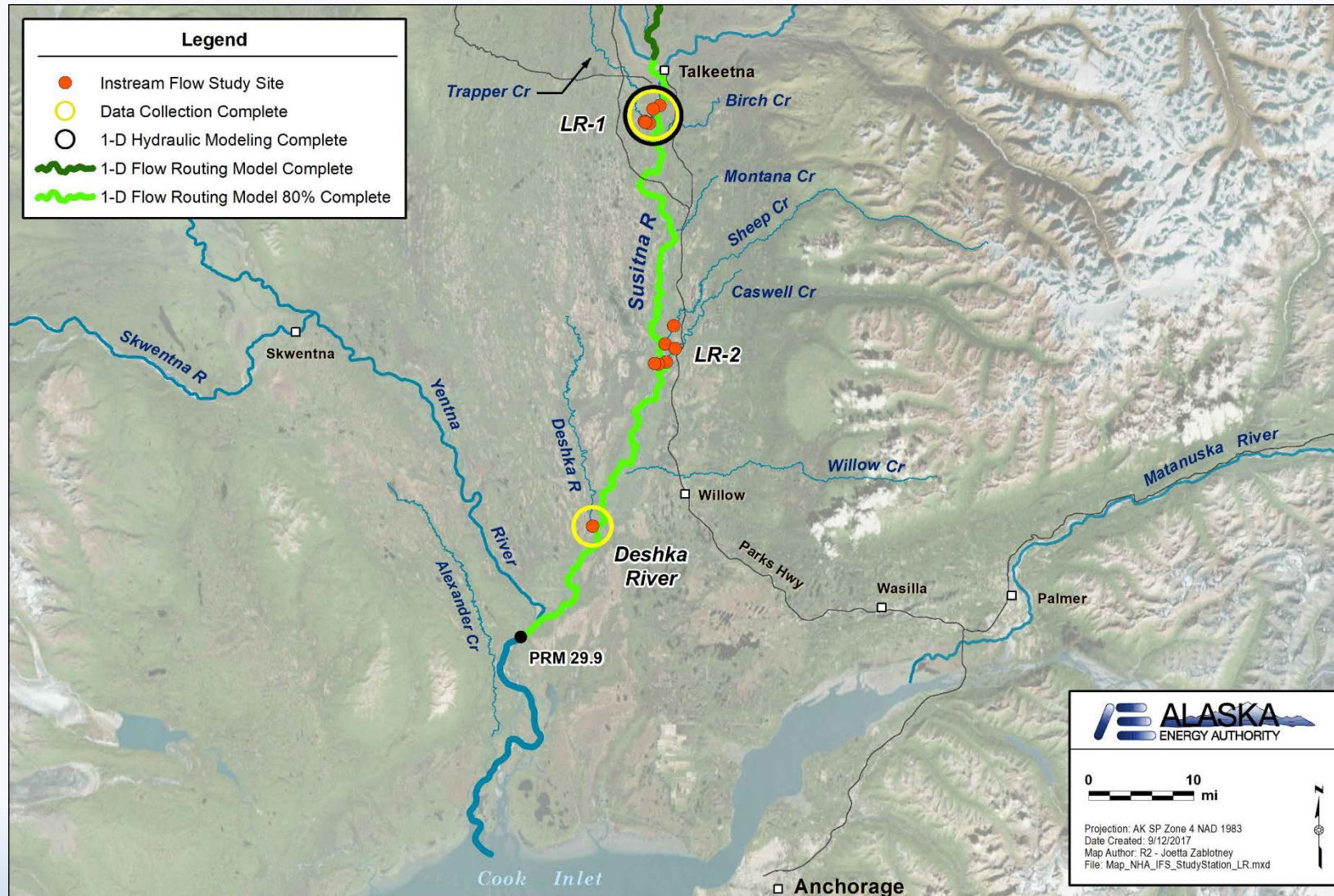


# Study 8.5 Instream Flow Modeling in Middle River



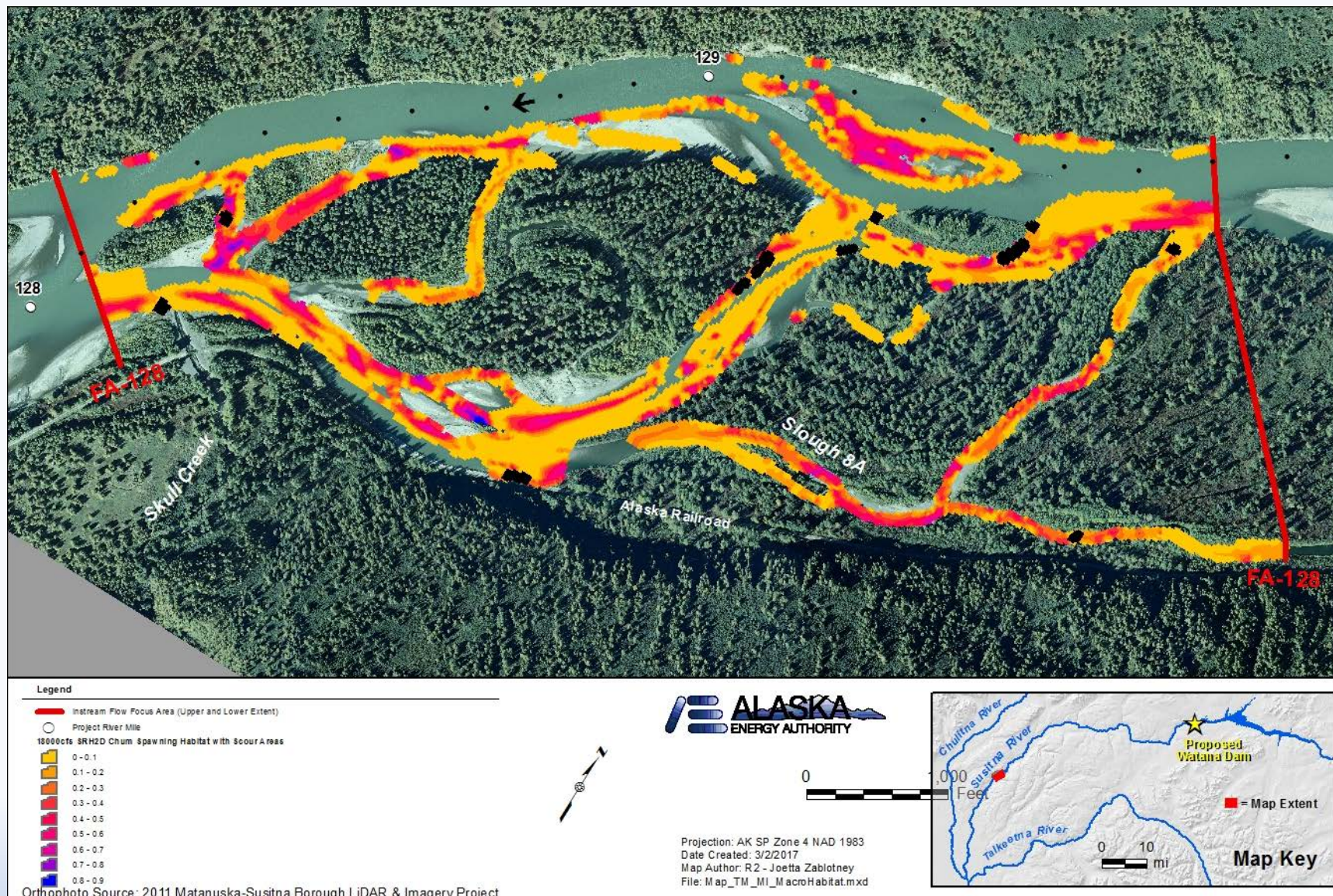


# Study 8.5 Instream Flow Modeling in Lower River



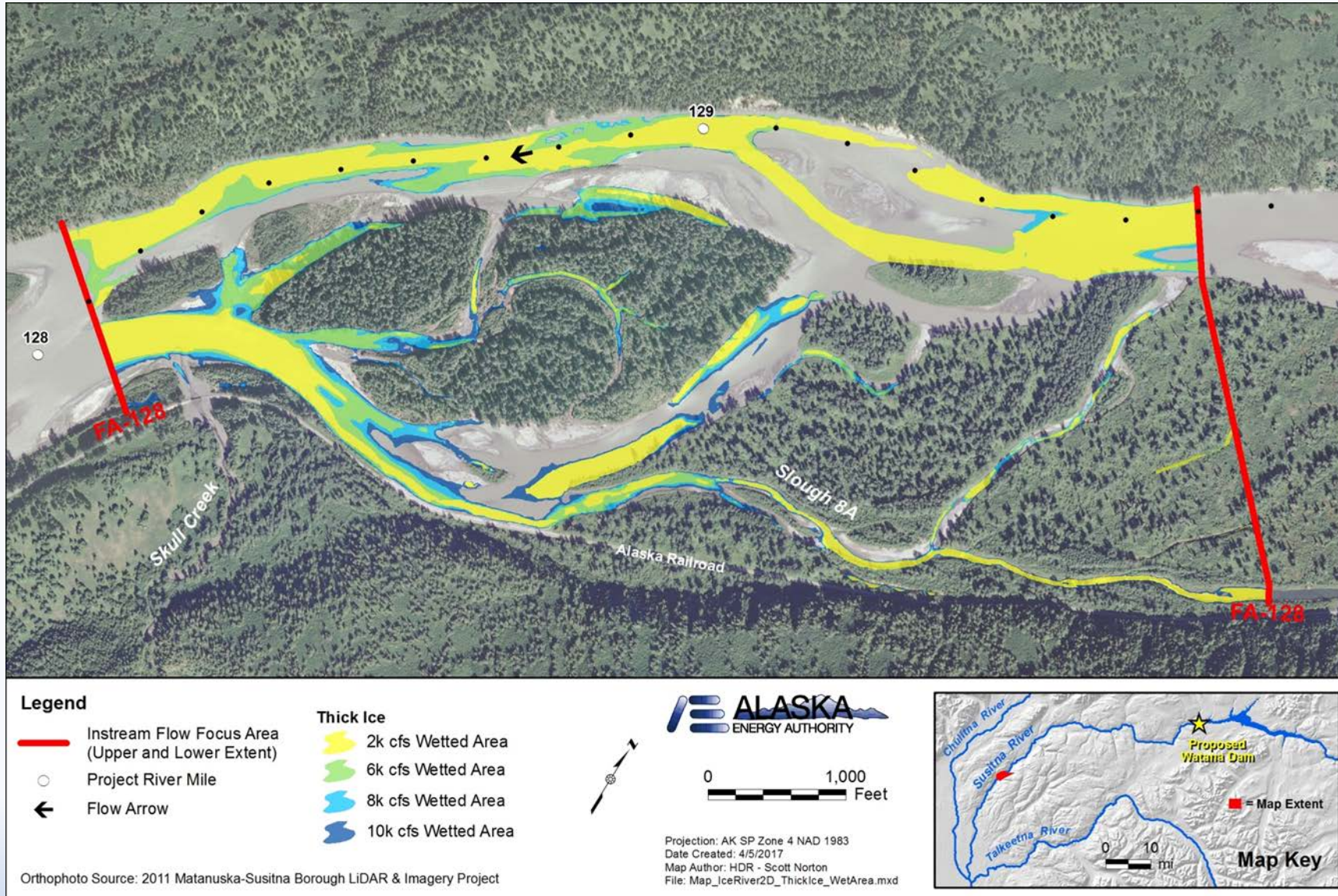


# Ex. Project Effects Analysis Chum Spawning



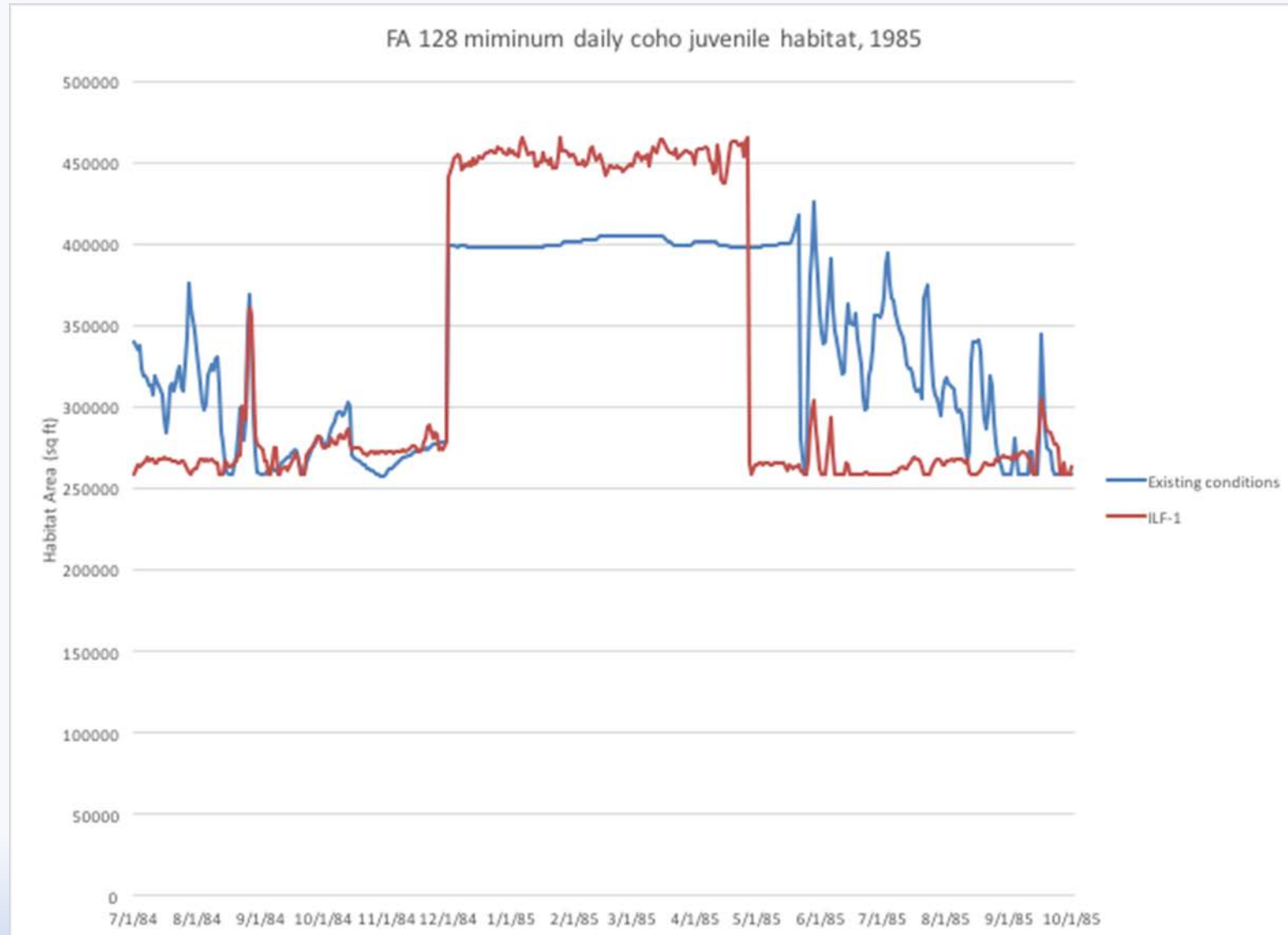


# Ex. Project Effects Analysis Wetted Channel





## Ex. Project Effects Analysis of Juvenile Coho Salmon



## ***FERC Director's Determination***

FERC approved without modification 7 Fish and Aquatic and Instream Flow studies; AEA's plan forward was accepted for:

- Study 9.17 Cook Inlet Beluga Whales
- Study 9.16 Eulachon Run Timing, Distribution, and Spawning
- Study 9.14 Genetics
- Study 9.13 Aquatic Resources Study within Access Alignment, Transmission Alignment and Construction Areas
- Study 9.11 Fish Passage Feasibility at Watana Dam
- Study 9.7 Salmon Escapement
- Study 8.5 Riparian Instream Flow

## ***FERC Director's Determination (cont.)***

Adopted in part modifications for:

- Study 9.12, add a clarifying table in the Updated Study Report (USR)

- Study 9.9, add clarifying text and tables be prepared for the USR

- Study 9.8, make minor adjustments to sampling and analysis to show strength of data for the USR

- Study 9.5 and 9.6, consult with agencies regarding adjusting PIT array location

- Study 8.5, add descriptive text to USR and continue sampling of VHG

Adopted modifications for Study 8.5:

- Include results of HSC site selection in USR

- Continue to evaluate relationship with HSC parameters and fish abundance

AEA agrees with and will incorporate FERC's recommendations in the next year of study.