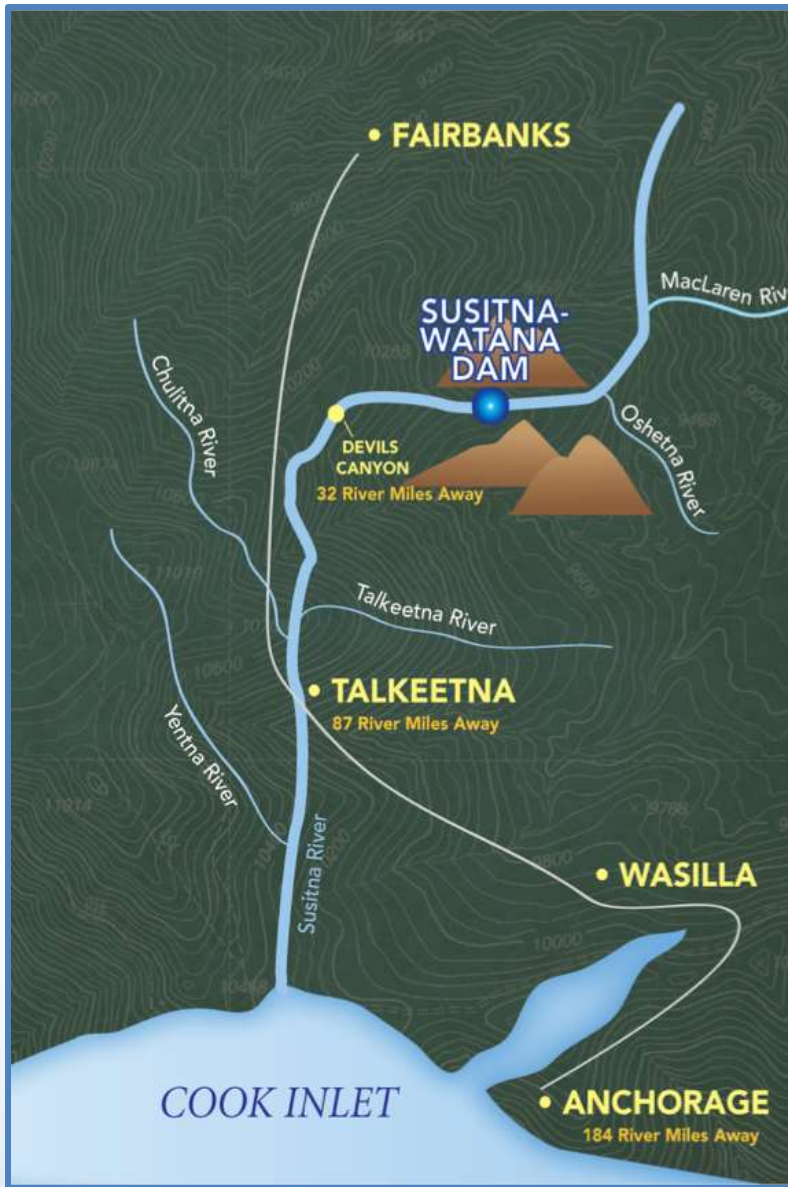


Technical Team Meeting

Study 9.6 Fish Distribution and Abundance in the Middle and Lower Susitna River: Winter Studies

3/21/14

Prepared by R2 Resource
Consultants, Inc.



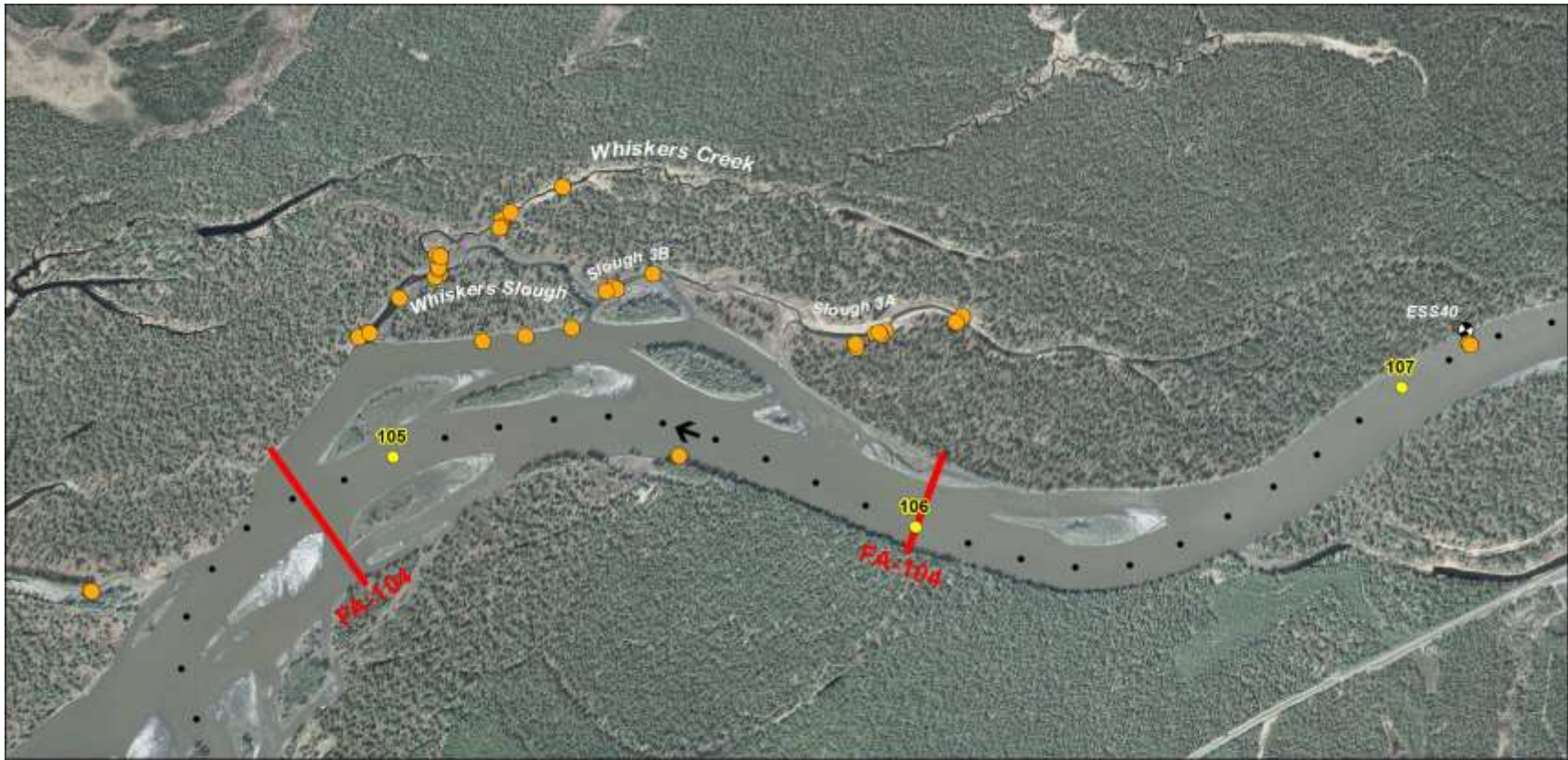
Study 9.6 FDA ML Winter Studies²

Winter Sampling Report filed as Appendix C of ISR Study 9.6 Fish Distribution and Abundance in the Middle and Lower Susitna River in the draft ISR (2/3/2014).

Study goals for evaluation of fish sampling techniques :

- Evaluate the effectiveness and feasibility of winter sampling methods: underwater video, minnow traps, seines, electrofishing, trotlines, set lines, and angling.
- Assess winter sampling logistics..
- Evaluate the feasibility of sampling during spring break-up.
- Develop recommendations for 2013–2014 studies





Legend

-  Instream Flow Focus Area (Upper and Lower Extent)
-  Project River Mile
-  Flow Arrow
-  Winter Pilot Fish Sample Site

Orthophoto Source: 2011 Matanuska-Susitna Borough LiDAR & Imagery Project



Projection: AK SP Zone 4 NAD 1983
 Date Created: 11/22/2013
 Map Author: R2 - Joetta Zabloney
 File: Map_SP_FA_WinterStudies.mxd



Fish Species Caught by Gear Type in 2013

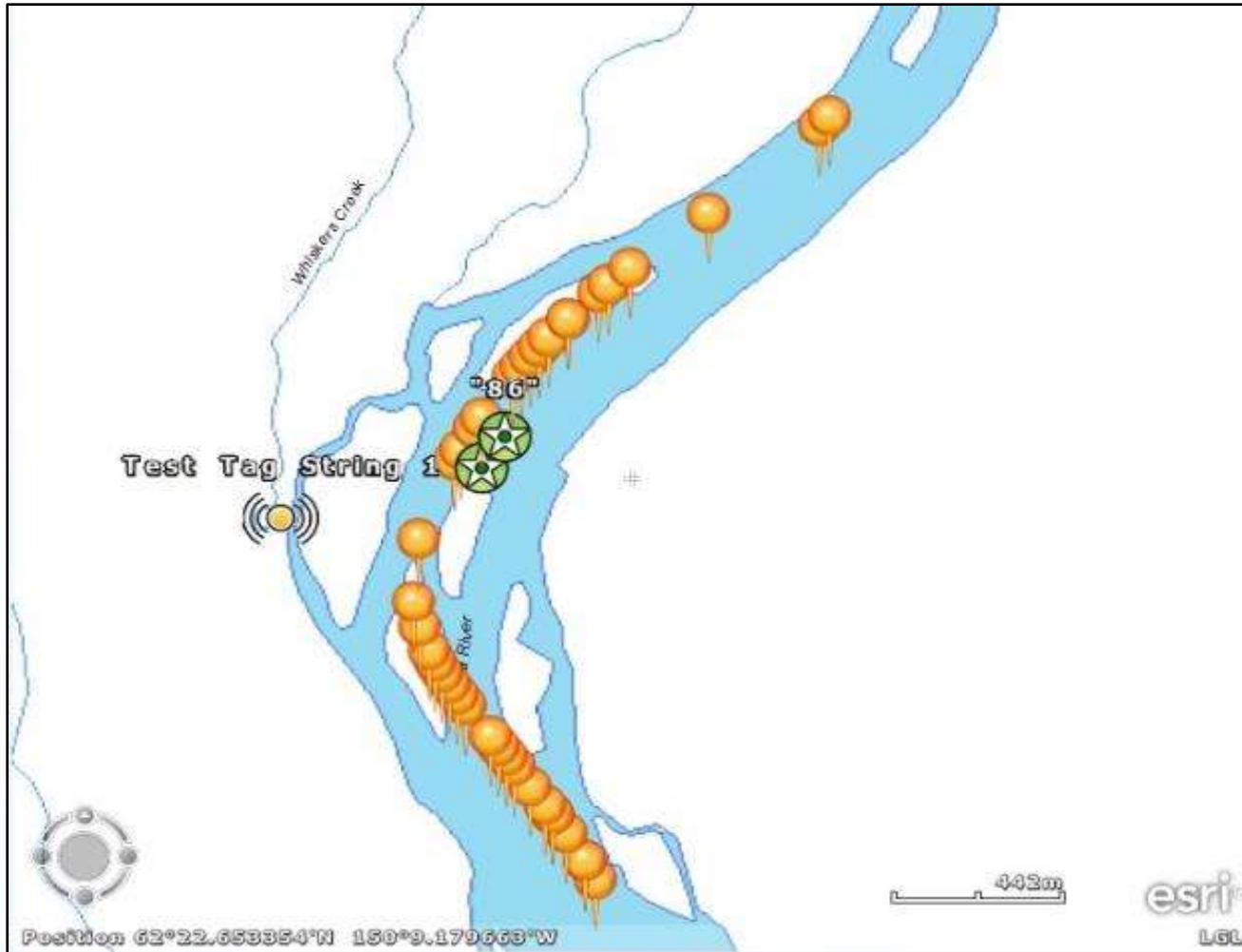
Species	Gear Type					
	Angling	Backpack Electrofisher	Baited Trot or Set Line	Minnow Trap	Seine	Underwater Video
Chinook salmon		X		X		X
Chum salmon		X				
Coho salmon		X		X		X
Pink salmon		X				
Burbot			X	X		
Rainbow trout	X	X	X			X
Lamprey		X				
Round whitefish						X
Sculpin		X		X		X
Sockeye salmon				X		
Threespine stickleback		X		X		

Fish Species Caught by Habitat Type in 2013

Species	Main Channel	Side Channel	Side Slough	Upland Slough	Tributary Mouth	Tributary	Other Off-Channel Habitat	Total
Chinook Salmon	0	0	32	2	5	16	21	76
Chum Salmon	0	0	0	0	0	6	0	6
Coho Salmon	0	0	1	2	4	9	52	68
Pink Salmon	0	0	0	0	0	3	0	3
Sockeye Salmon	0	0	1	0	0	0	4	5
Burbot	7	0	0	1		0	0	8
Lamprey	0	0	0	0	0	10	0	10
Rainbow Trout	0	0	2	0	0	1	0	3
Sculpin	0	0	8	5	0	26	0	39
Threespine Stickleback	0	0	0	5	0	0	45	50
TOTAL	7	0	44	15	9	71	122	268



Test Radio Tag Detections



The yellow circles indicate the location of the tag and the star is the location of the highest power detection. The power of the detection is indicated above the star and is on a scale from 40 to 154.

Study 9.6 FDA ML Winter Studies⁸



Recommendations included:

- *Logistics*
- *Fish Sampling*
- *Sonar*
- *PIT Tags*
- *Radio Telemetry*

Logistics

- Interdisciplinary Field Trips:
 - FDA (Study 9.6), Instream Flow (Study 8.5), Water Quality (Study 5.5), Groundwater (Study 7.5), and Riparian (Study 8.6) study teams
- Data collection in November for FDA and 3 interdisciplinary trips February - April 2014
- Schedule dependent on safe and practical winter transportation conditions.
- Locations in and near:
 - FA-104 (Whiskers Slough) – based in Talkeetna
 - FA-128 (Slough 8A) – based at Gold Creek camp
 - FA-138 (Gold Creek) – based at Gold Creek camp.
- Follow with early life history (ELH) sampling in May and June.

Fish Sampling

- Sampling in multiple off-channel macrohabitat types if possible using GRTS sampling of macrohabitat types
- Additional satellite locations may include the Cut (upland slough between Susitna and Chulitna Rivers) and important Middle River tributary mouths: Whiskers Creek, Fourth of July Creek, Gold Creek and Indian River.
- Techniques:
 - 4 to 8 baited minnow traps overnight.
 - 1 additional technique based on site conditions (electrofishing, small mesh Fyke netting, hoop trapping, trotlining, setlining, angling, or underwater video).
 - Repeat sampling of some sites using underwater video , electrofishing and/or fyke netting to characterize diurnal/diel fish presence and behavior.

Sonar

- Adaptive Resolution Imaging Sonar (ARIS).
- At each site within each Focus Area, 24 hours of continuous data will be acquired.
- Mesohabitat is characterized.
- Data: number of fish observed, estimated total lengths of fish, directional movements and behaviors (foraging, schooling, milling, predator-prey interactions).
- CPUE will be calculated in terms of fish per hour for each size class (small, medium, large).
- Spatial comparison of abundance, movement and behavioral patterns among mesohabitat types.



Pit Tags

AEA will attempt to operate three sites to collect data on direction of movement, but success will be determined by:

- channel conditions,
- equipment constraints
- power supply



Radio Telemetry

- Radio Tags Deployed:
 - Upper River: 32 Arctic grayling and 5 longnose sucker
 - Middle River: 29 Arctic grayling, 16 burbot, 9 Dolly Varden, 38 longnose sucker, 5 northern pike, 34 rainbow trout, 7 humpback whitefish and 39 round whitefish
- Monitoring (October 2013 - April 2014):
 - Fixed Stations:
 - Limited to air temperatures higher than -4°F
 - Whiskers Creek (PRM 105), Indian River (PRM 142), Devils Island (PRM 167), & Kosina (PRM 209.1)
 - Serviced approximately every three weeks
 - Aerial surveys:
 - Mainstem Susitna and tributaries proximate to tag release locations.
 - Three day surveys approximately monthly.