

Technical WorkGroup Meeting Fish and Aquatics Instream Flow 1<sup>st</sup> Quarter 2013

27 March 2013

Prepared by R2 Resource Consultants

### **Meeting Outline: FAs-Instream Flow Studies**

- FERC Study Determination
- Progress updates on 2012–2013 FA-IFS studies
  - Technical Memoranda Filed:
    - Technical Memorandum: Open-Flow Routing Model
    - Technical Memorandum: Focus Area for Middle River– January 31
    - Technical Memorandum: Focus Area for Middle River and Lower River – March 1
    - Technical Memorandum: Compendium of TMs (Study Site Selection, Summary of 1980s Fish Studies, Habitat Suitability Criteria, Habitat Modeling, Physical Processes)

SUSITNA-WATAN

HYDROELECTRIC PROJECT

- HSC Data Collection in 2012
- Winter Pilot Studies
- Other topics:

### FERC Letter of January 17, 2013

 AEA file final implementation plans for Fish Distribution and Abundance in the Upper Susitna River (study 9.5), the Fish Distribution and Abundance in the Lower and Middle Susitna River (study 9.6), and River Productivity (study 9.8) studies; and final focus areas for 2013 middle and lower river studies.

## FERC Letter of January 17, 2013: FERC Study Plan Determination - 1 April 2013

 Per FERC Letter of January 17, 2013: Director's Study Plan Determination for studies 5.5, 5.6, 5.7, 6.5, 6.6, 7.5, 7.6,
 8.5 – Fish and Aquatics – Instream Flow,
 8.6 – Riparian Instream Flow, 9.5, 9.6, 9.8, and 9.9. TM - Hydrology and Open Water flow routing model

- TM completed and submitted for Middle River and upper Lower River – January 31, 2013; discussed at TWG – February 14, 2013
- Decision to expand OWFRM to Lower River
- Additional Cross-sections have been identified
- Field Preparation in progress

# Focus Areas Identified in Middle River: RSP and 1 March FA TM



# Study sites identified in Lower River Segment – 1 March FA TM



# TM – Middle Segment Focus Area Discussion

"Finally, during the February 14 TWG meeting, AEA received feedback regarding potentially moving the location of a MR-2 FA to MR-7. The results of both the FA-IFS and R-IFS FA analysis clearly indicate that the selected areas listed in Tables 1 and 15 are representative of other areas in the Middle River Segment and hence are appropriate and sufficient for detailed study. However, AEA does not oppose making the suggested relocation of a MR-2 FA to MR-7 (or other possible adjustments to existing FA locations) prior to the initiation of the 2013 field studies so long as there is sufficient justification for such relocation and the resulting FA remains representative of other areas in the Middle River Segment."

# TM – IFS Compendium

- Technical Memorandum River Stratification and Study Site Selection Process: 1980s Studies and 2013/2014 Studies –
- Technical Memorandum Summary of Fish Distribution and Abundance Studies Conducted during the 1980s Su-Hydro Project
- Technical Memorandum Selection of Target Species and Development of Species Periodicity Information:1980s Studies and 2013/2014 Studies
- Technical Memorandum Development of Habitat Suitability Curves and Habitat Utilization Information:1980s Studies and 2013/2014 Studies
- Technical Memorandum Review of Habitat Modeling Methods: 1980s Studies and 2013-2014 Studies
- Technical Memorandum Biologically Relevant and Flow Dependent Physical Processes: 1980s Studies and 2013-2014 Studies

 Technical Memorandum – River Stratification and Study Site Selection Process: 1980s Studies and 2013/2014 Studies

#### Middle River

- Mainstem
- Side channel
- Side Slough
- Upland Slough
- Tributary mouth habitats

#### Lower River

- Mainstem channel
- Side channel complexes
- Maintem habitats
- Primary side channels
- Turbid backwater habitats
- Clearwater habitats
- Side slough habitats
- Tributary mouth habitats



 Technical Memorandum - Summary of Fish Distribution and Abundance Studies Conducted during the 1980s Su-Hydro Project



Middle River Chum Salmon Spawning Distribution

Technical Memorandum – Selection of Target Species and **Development of Species Periodicity Information:1980s Studies** and 2013/2014 Studies Chinook salmon periodicity – Middle and Lower River

			Habita	t Typ	e													
Life Stage	Main Channel	Side Channel	Tributary Mouth	Side Slough	Upland Slough	Tributary	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Middle Susitna River																		
Adult Migration																		
Spawning																		
Incubation																		
Fry Emergence																		
Age 0+ Rearing												·						
Age 0+ Migration																		
Age 1+ Rearing																		
Age 1+ Migration																		
Lower Susitna River		-	-												-			
Adult Migration																		
Spawning																		
Incubation																		
Fry Emergence																		
Age 0+ Rearing																		
Age 0+ Migration																		
Age 1+ Rearing																		
Age 1+ Migration																		

 Technical Memorandum – Development of Habitat Suitability Curves and Habitat Utilization Information:1980s Studies and 2013/2014 Studies



 Technical Memorandum – Review of Habitat Modeling Methods: 1980s Studies and 2013-2014 Studies



Transects and model types applied during the 1980s Su-Hydro studies - Whiskers Slough complex. Breaching flows also depicted for various side channel and side slough habitats.

 Technical Memorandum – Biologically Relevant and Flow Dependent Physical Processes: 1980s Studies and 2013-2014



# Update on Habitat Suitability Criteria Development – 2012 – Q1 2013





# Winter Pilot Studies – March 19-26

			P	roposed Schedul	e				Ū
Monday 18th	Tuesday 19th	Wednesday 20th	Thursday 21st	Friday 22nd	Saturday 23rd	Sunday 24th	Monday 25th	Tuesday 26th	LOGISTICS
3	Talkeetna	Pit Tag T	esting (Whisker	rs Slough)		1			PIT Tests - Whiskers
Arrive to	Safty Training,	Assembly	Testing	Testing					2 Snow Machines
Talkeetna	Equipment	JG	DRoon	DRoon					
MG	Check, and	DRoon	TS	TS					
AW	Logistics	TS	1412-0142	20120-003					
JG	MG	1 GWS	1 GWS	1 GWS					
TS	AW		Helicopter Reco	n - CANCELLED	5. C				
RK	JG	HSC, Fish	Presence and C	GWS tasks					Slough 8A
	TS	Slough 8A	Slough 8A	Slough 8A					3 snow machines
	RK	MG	MG	MG					*possible use of Geovara helicopt
	20.274	AW	AW	AW					Second de la companya
		MW	MW	MW					
MG-Mike Ga	agner (R2)	2 GWS staff?	2 GWS staff?	2 GWS staff?	н	SC			
					Whiskers	Whiskers			Whiskers HSC
					MG	MG	]		1-2 snow machines
					AW	AW			1.200.000000000000000000000000000000000
					DR	DR			
AW-Adam V	Veybright (R2)	í l			LGL (I	DIDSON)			LGL (DIDSON)
G-Jerry Geo	orge (R2)			Whiskers	Whiskers	Whiskers	Whiskers	]	1-2 snow machines
DRoon - Dav	vid Roon (R2)			JG	JG	JG	JG	1	Contraction of the second second
MW-Mike W	Vood (GWS)			2 LGL	2 LGL	2 LGL	2 LGL		
ML-Mike Lill	ly (GWS)				Fish Cap	ture Tests, HS	C (Whiskers)	]	Fish Tests - Whiskers
DR-Dan Reic	chardt (GWS)			[	TS	TS	TS		1-2 snow machines
15 - James Sł	hinas (GWS)				DRoon	DRoon	DRoon		
TS-Tim Sulliv	van (R2)				0.000		AW		
RK - Ryan Ki	Igren (TetraTech)				1 GW5	1 GWS	1 GW5		
		Ger	wara Survey Eff	fort			Winter G	aging	Geovara
			and survey ch				trinter o	0.00	1 Helicopter
			Arrive to		Radio Tag		Depart to ANC	1	
			Talkeetna	Depart to ANC	Tests		(Morning)		
			LGL (DIDSON)	RK	LGL		ML, MG		
							Depart to ANC	Depart to	
							(Evening)	Lower 48	

### Winter Pilot Studies – March effort Whiskers Slough and Slough 8a



### Winter Pilot Studies – March effort Whiskers Slough and Slough 8a





### Winter Pilot Studies – March effort Whiskers Slough and Slough 8a



# Winter Pilot Studies – March effort

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Activity	2012	2013	2014	2015
Activity	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q
Study Area Selection (Focus and Supplemental Areas )				
Compile aquatic habitat (RSP Sec 9.09) and geomorphology (Sec 6.5) characterization study results				
Identify proposed Focus Areas	_			
Refine Focus Areas and identify supplementary area if needed for any underrepresented habitats				
TWG confirmation of 2013 areas		-		
Review available data and modify or add Focus Areas and supplementary sampling areas		-	Δ	
TWG review and confirmation of additional areas in 2014 as needed		· ·		
TWG review of proposed area weighting factors to extrapolate modeled to non-modeled areas			—	
TWG meeting on area weighting			-	
SUSITNA-WATANA HYDRO Clean, reliable energy for the next 100 years.	Planned A Follow-up	ctivity △ Activity ▲	Initial Study Re Updated Study	eport Report

Activity	2012	2013	2014	2015	
Activity	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q	
Review of 1980s Data and Information			Δ		
Model Selection by habitat type (2-D, 1-D, etc.)	_				
Propose habitat models for Focus Areas and supplemental area	_	-			
TWG review and meeting on habitat model selection		_	Δ		



Activity			2012			2013			2014			2015	
			3Q	4Q	1Q	2Q 3Q	4Q	1Q	2Q 3	Q 4Q	1Q 2	Q	
Hydraulic Routing		_	_				_					+	
Review 2012 transect data RM 184 to 75		_		-									
Develop executable mainstem ice-free flow routing model				_									
Model verification using stage recorder data				_			•••••						
Identify need for additional data				_		_		Δ					
Distribute draft Mainstem Ice-free Flow Routing Model to TWG for review													
Use draft model to support IFS and fisheries 2013-14 study efforts										•			
Refine ice-free routing model using 2013 and 2014 data									_				
Distribute final Mainstem Ice-free Routing Model to TWG for review										_			
Use final Mainstem Ice-free Routing Model for scenario evaluations												•	

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Activity	2012	2013	2014	2015	
Activity	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q	
Periodicity					
Review draft species and lifestage periodicity data developed under Fish Distribution and Abundance (Sec 9.06)	—				
Identify specific HSC/HSI periodicity data needs	-				
Distribute HSC/HSI periodicity to TWG	-		Δ		
TWG meeting on HSC/HSI periodicity used to model scenarios			_		

Activity	2012	2013	2014	2015	
Activity	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q	
HSC/HSI Fish: Field Data Collection (summer, fall, winter)				-	
Use 1980s Susitna data and other existing HSC curves to develop draft species / lifestage HSC curves for the lower and middle Susitna River		-			
Propose target HSC species, lifestages, substrate and cover	-				
TWG meeting on HSC/HSI targets and data collection study details		-			
Conduct HSC/HSI summer surveys (snorkel, seining, electrofishing)	—	—			
Conduct fish HSC/HSI winter surveys (underwater camera, electrofishing)		<b>-</b> .			
Conduct aquatic biota stranding and trapping surveys		—			
Coordinate and review adult/spawning HSC data collected by Fish and Aquatic biotelemetry (Sec 9.06)	—				
Distribute preliminary findings of wintertime surveys to TWG		-	-	-	
Distribute preliminary results of HSC/HSI surveys and changes to draft HSC/HSI			Δ		
TWG meeting on species and life stage HSC/HSI					

Activity	2012	2013	2014	2015	
Activity	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q 3Q 4Q	1Q 2Q	
Collect Physical and Hydraulic Data for Habitat Modeling					
Collect data for digital terrain model					
Collect x-section and stage:discharge data at Focus Areas and supplemental areas		—			
Collect substrate/cover data at Focus Areas and supplemental areas		-			
Provide summaries of data collection efforts			Δ		

# **Other Topics**



### • Area Weighting – Extrapolation

