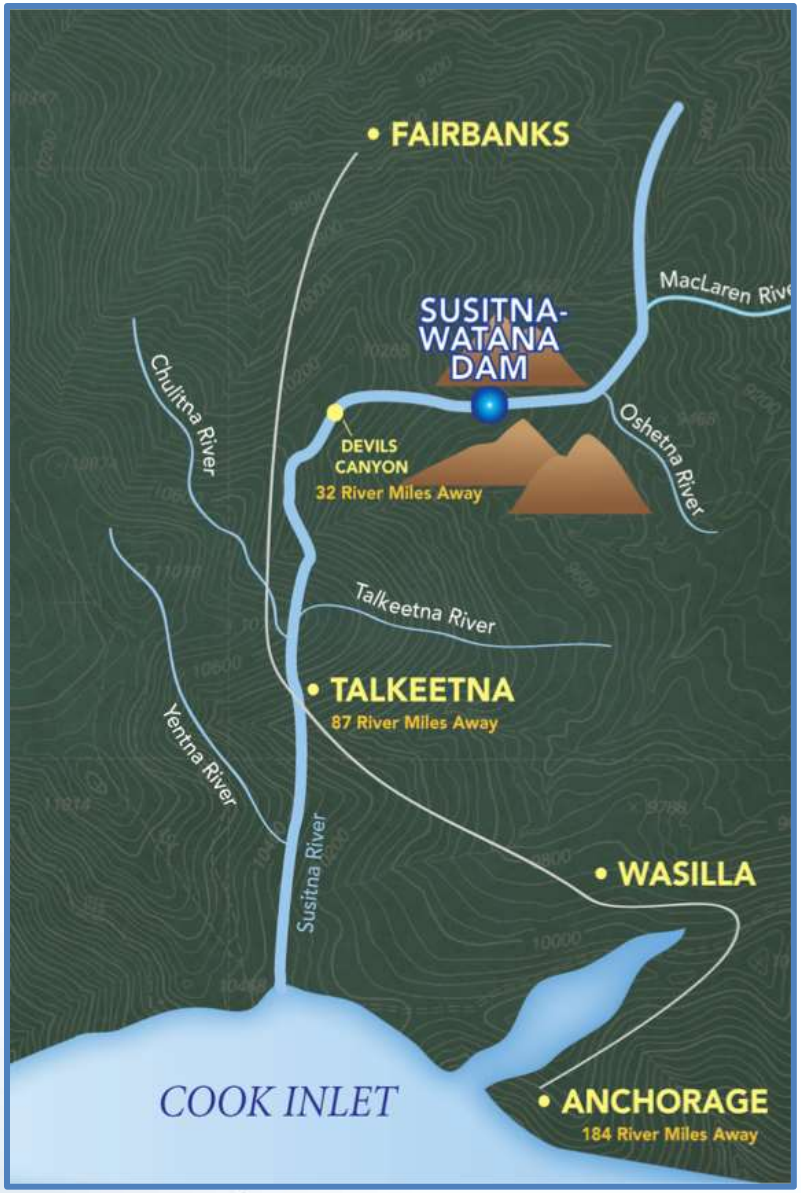


SUSITNA-WATANA HYDRO *Clean, reliable energy for the next 100 years.*

Technical WorkGroup Meeting

Fish and Aquatics Instream Flow

1st 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)
  - 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.**

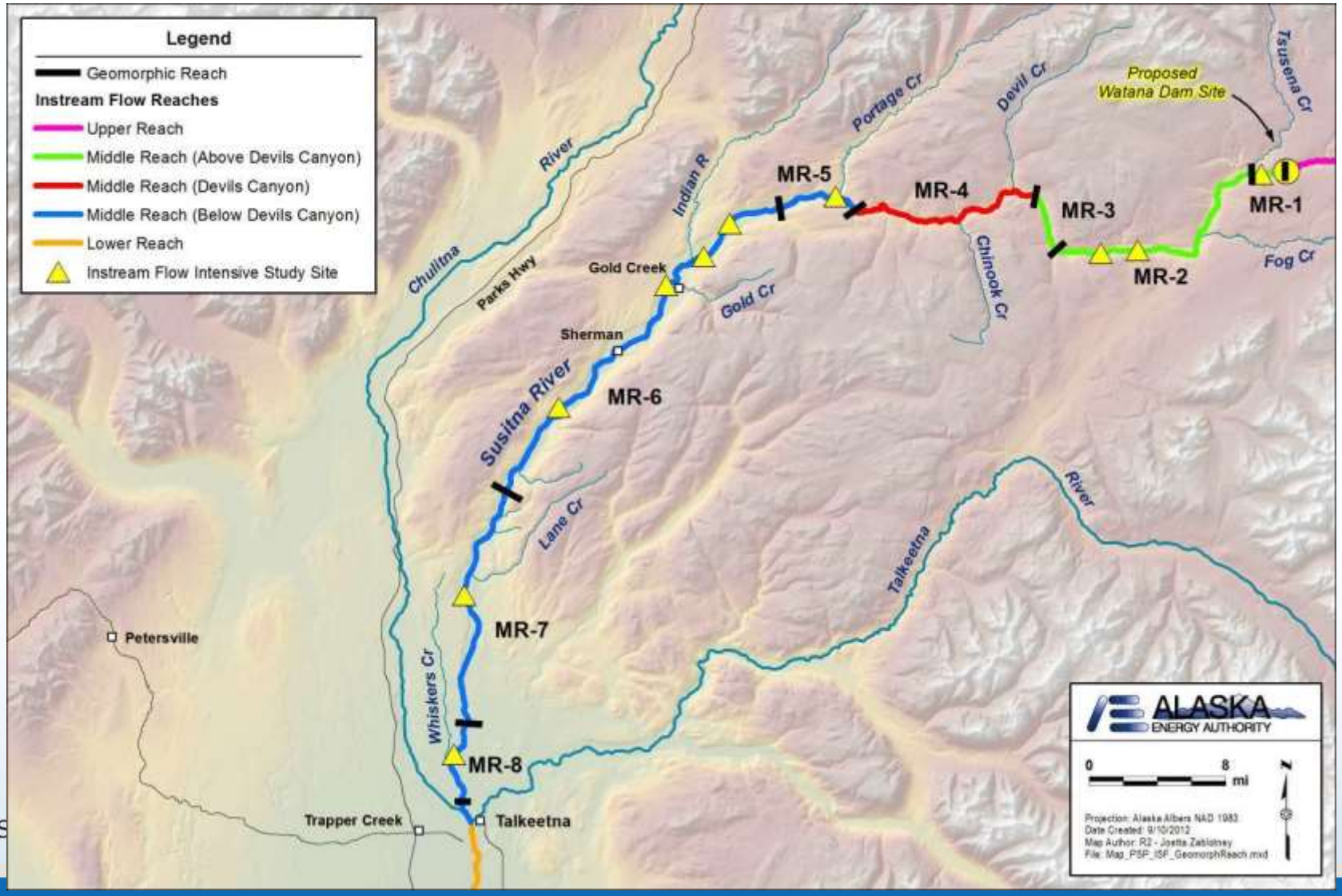
FERC Letter of January 17, 2013: FERC Study Plan Determination - 1 April 2013

- 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.

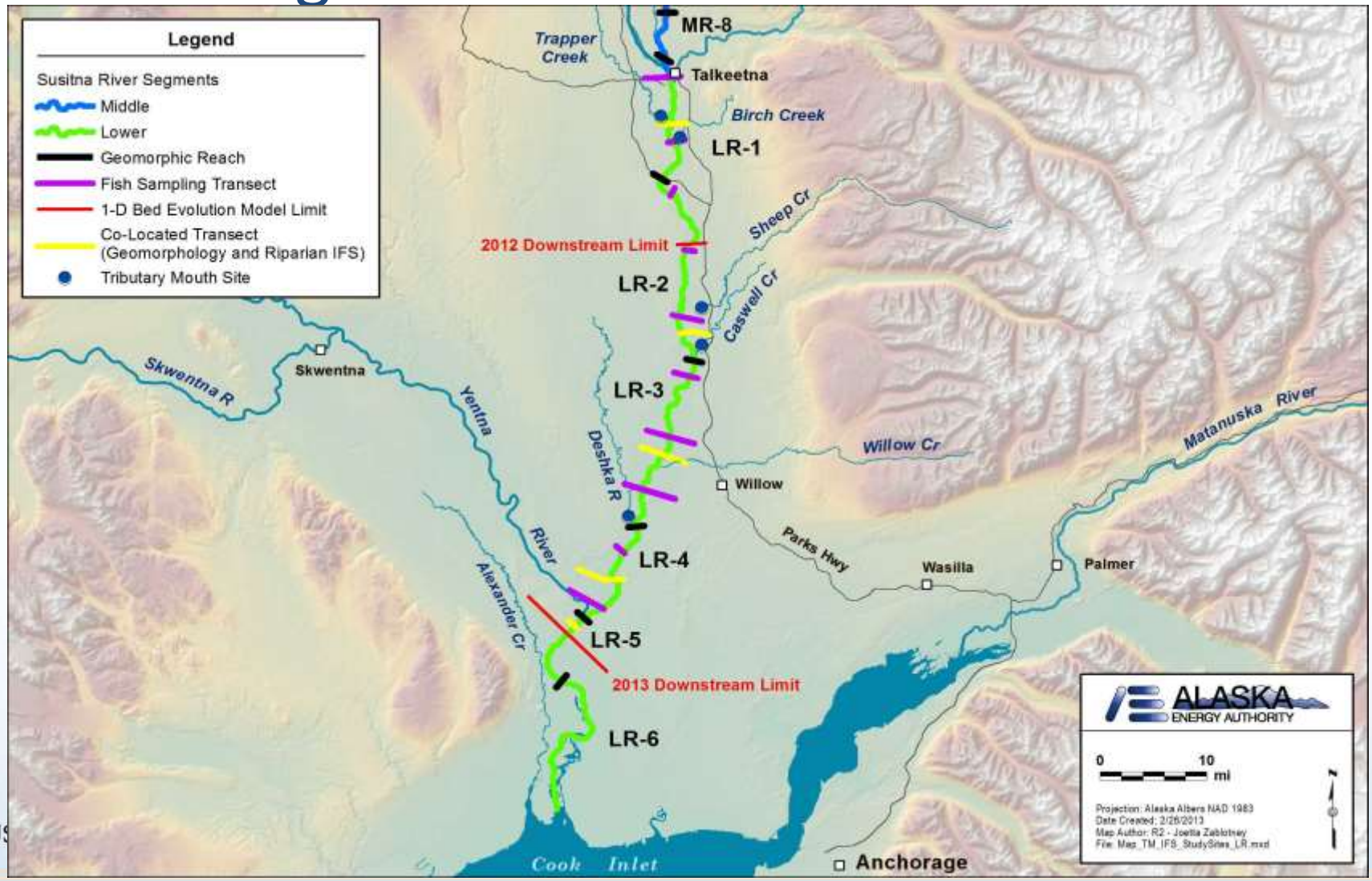
TM - Hydrology and Open Water flow routing model

- 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

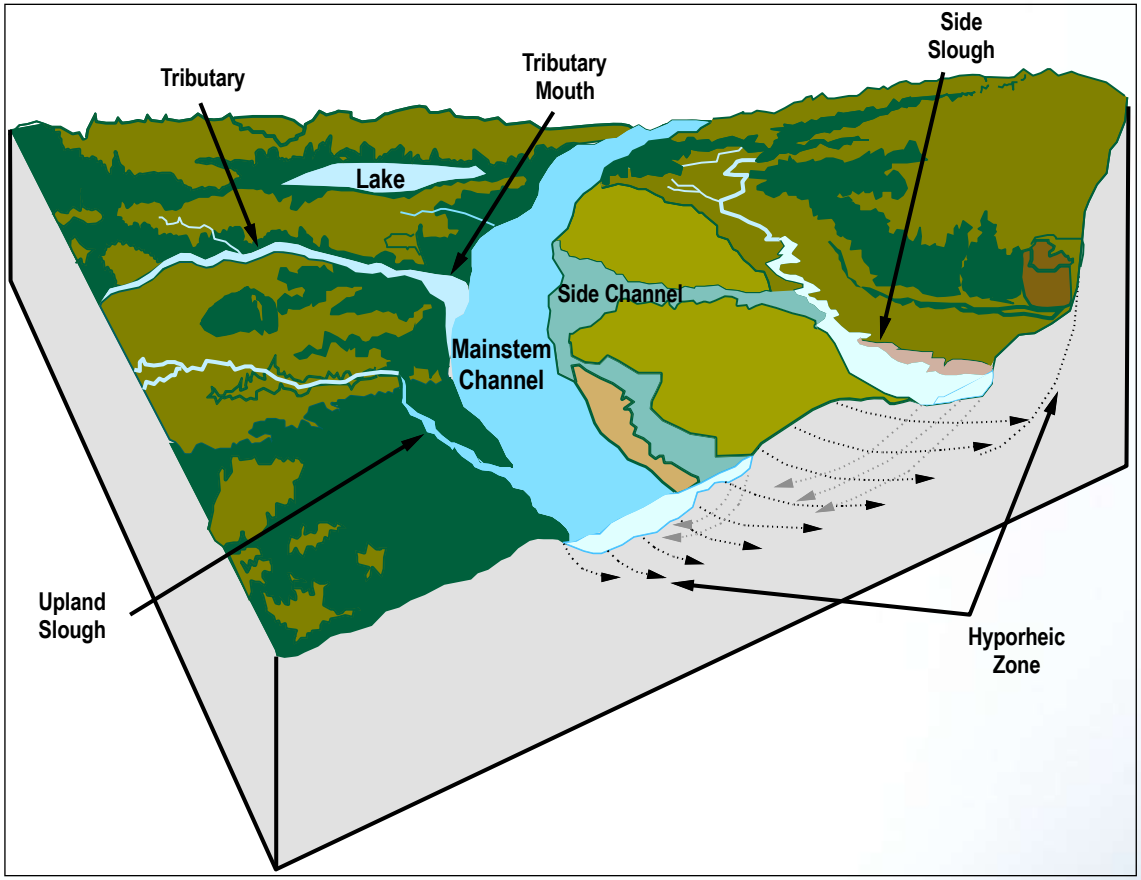
"Finally, during the February 14 TWG meeting, AEA received feedback regarding potentially moving the location of a MR-2 FA to MR-7. The results of both the FA-IFS and R-IFS FA analysis clearly indicate that the selected areas listed in Tables 1 and 15 are representative of other areas in the Middle River 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

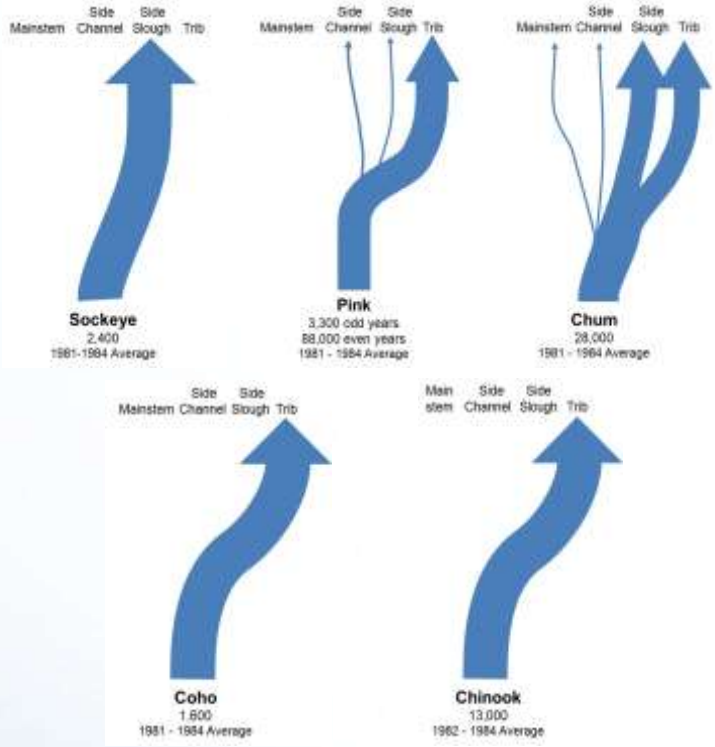
- Technical Memorandum – River Stratification and Study Site Selection Process: 1980s Studies and 2013/2014 Studies –
- Technical Memorandum - Summary of Fish Distribution and Abundance Studies Conducted during the 1980s Su-Hydro Project
- Technical Memorandum – Selection of Target Species and Development 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

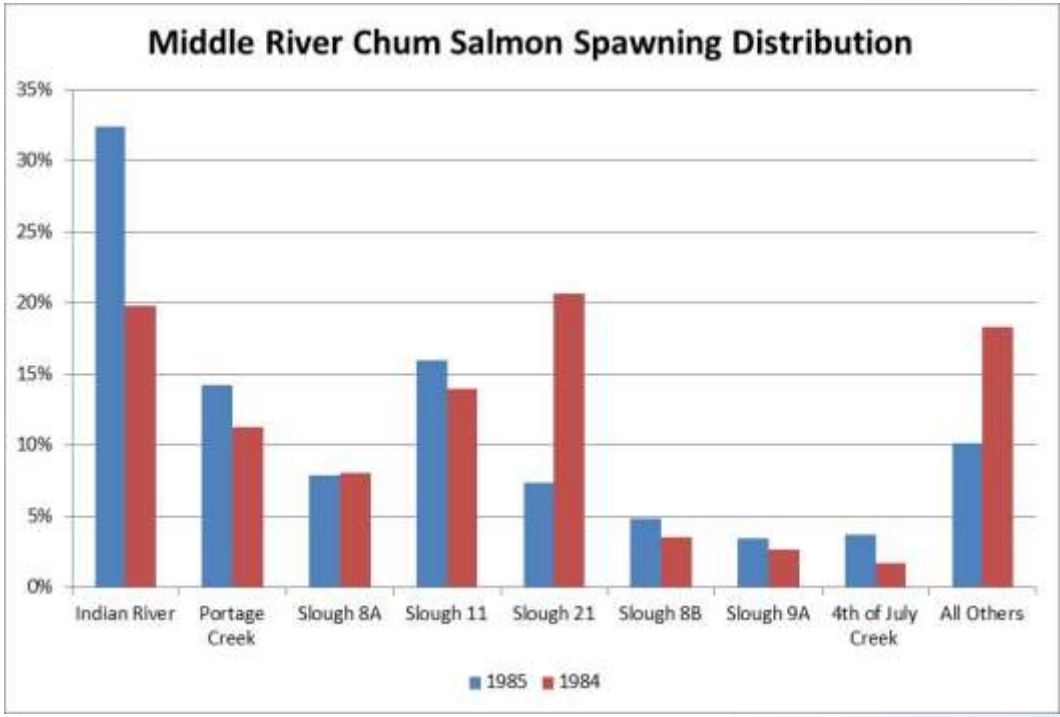
Technical Memorandum – River Stratification and Study Site Selection Process: 1980s Studies and 2013/2014 Studies

- 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



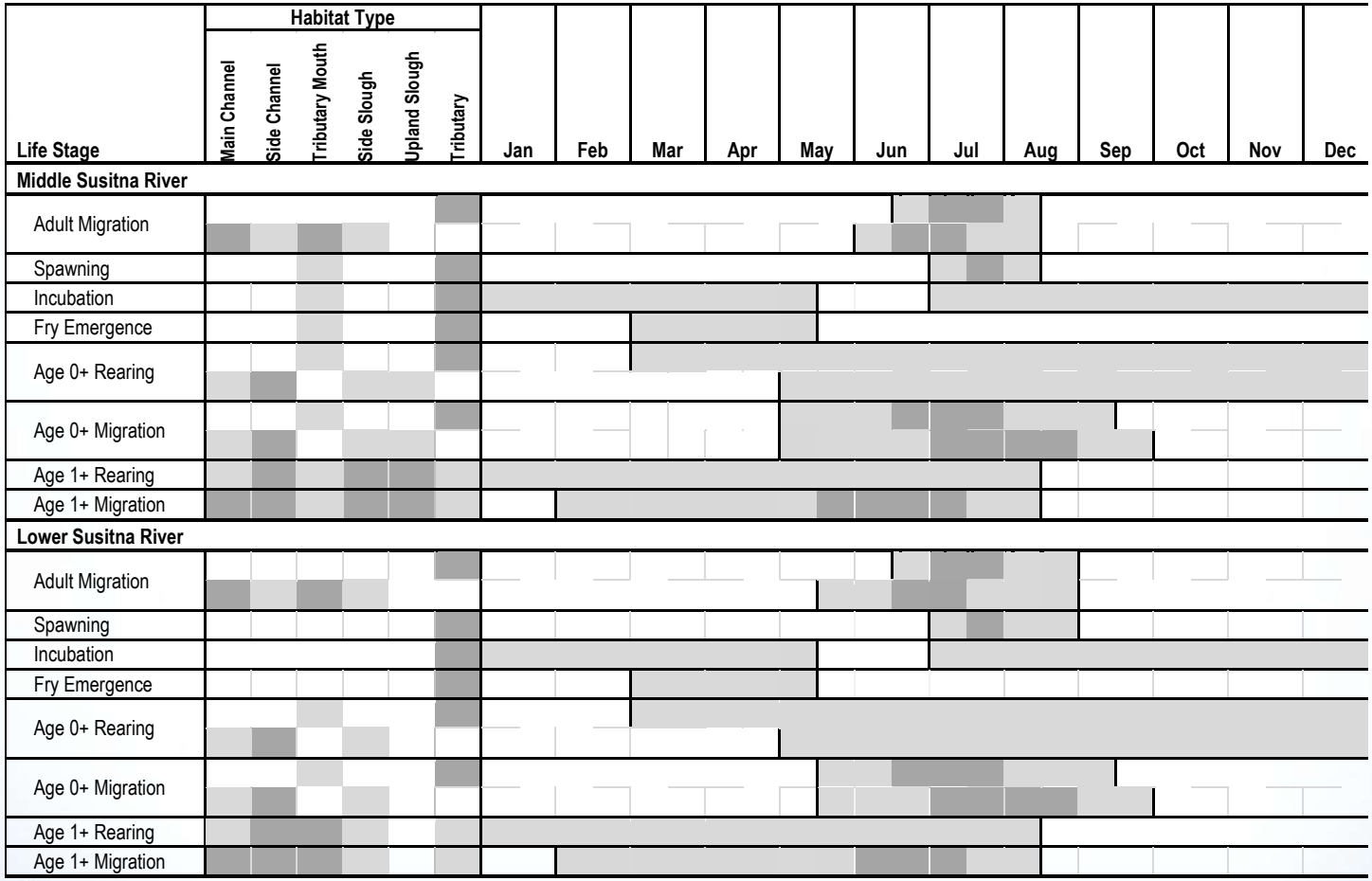
- Technical Memorandum - Summary of Fish Distribution and Abundance Studies Conducted during the 1980s Su-Hydro Project



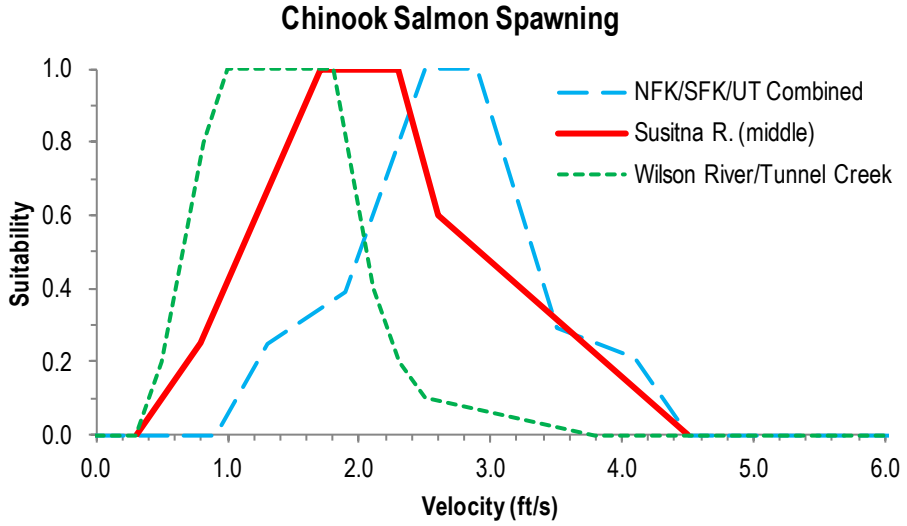


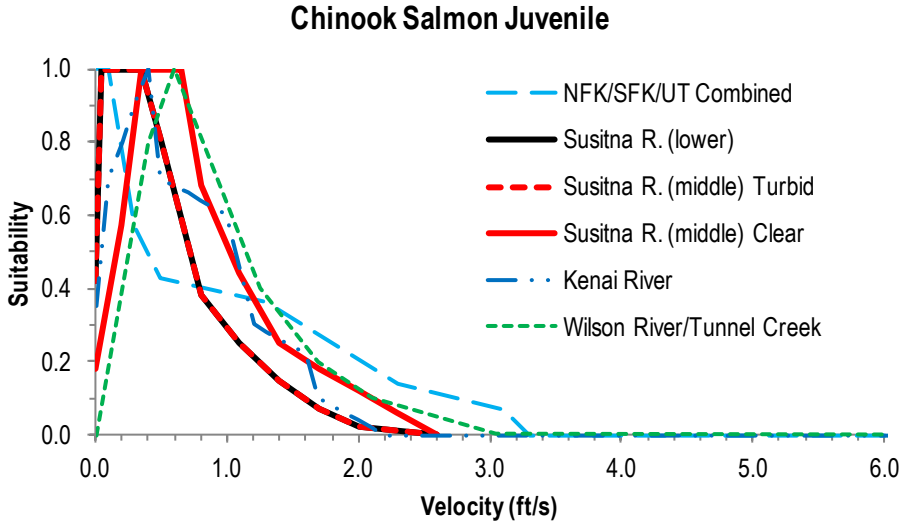
- Technical Memorandum – Selection of Target Species and Development of Species Periodicity Information:1980s Studies and 2013/2014 Studies

Chinook salmon periodicity – Middle and Lower River

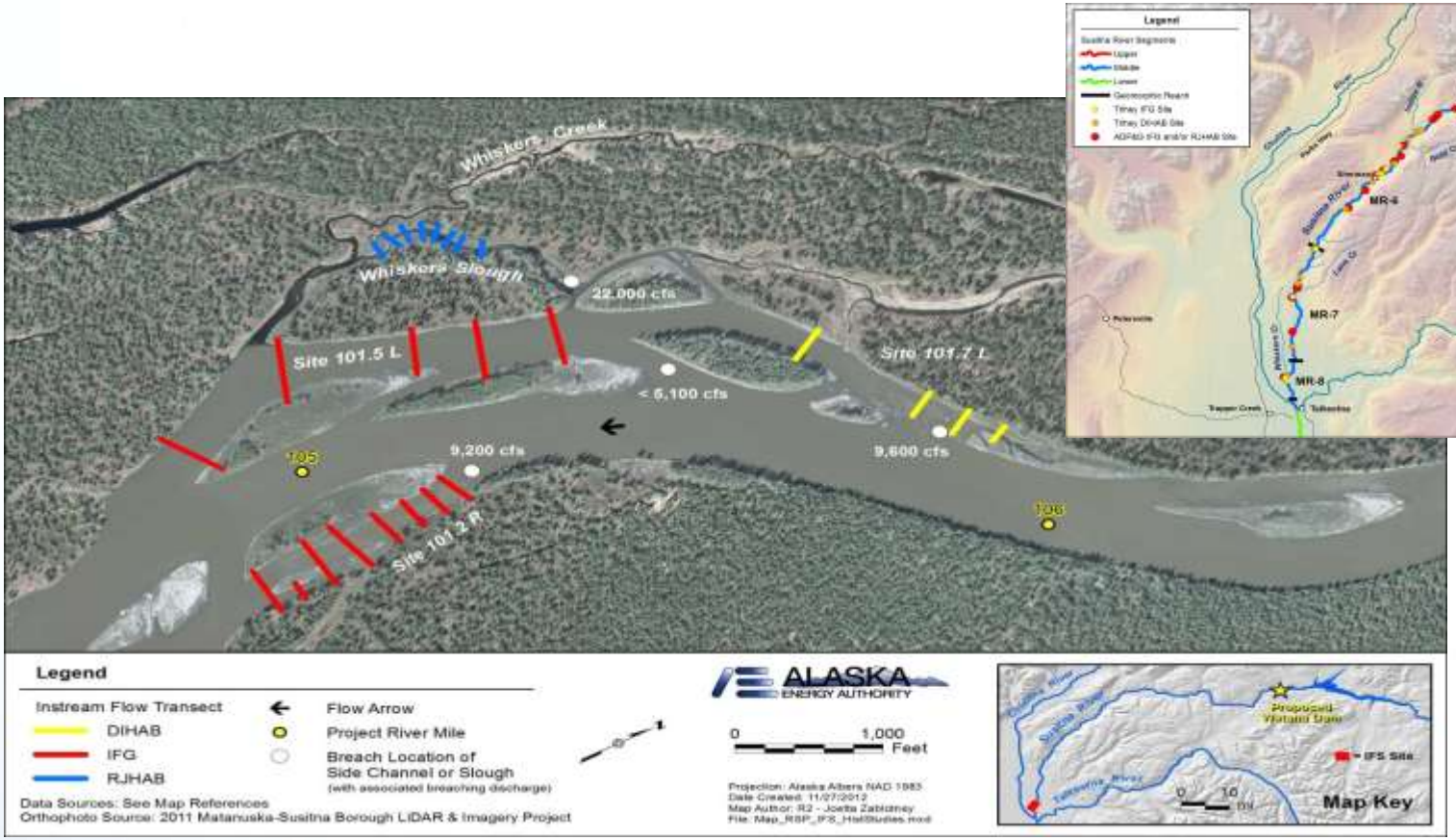


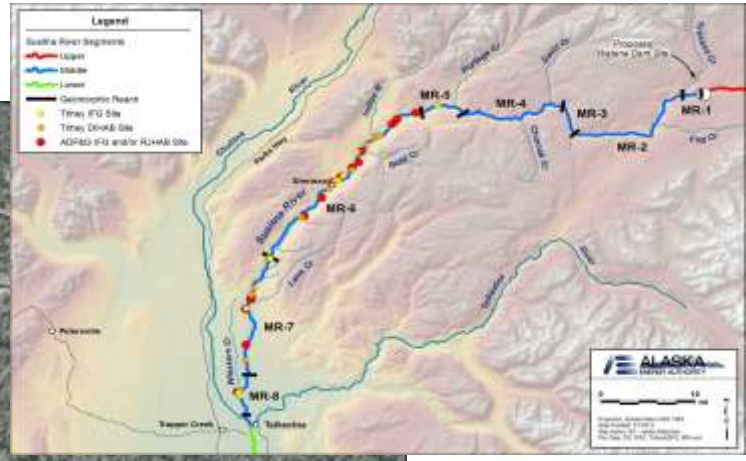
- Technical Memorandum – Development of Habitat Suitability Curves and Habitat Utilization Information:1980s Studies and 2013/2014 Studies





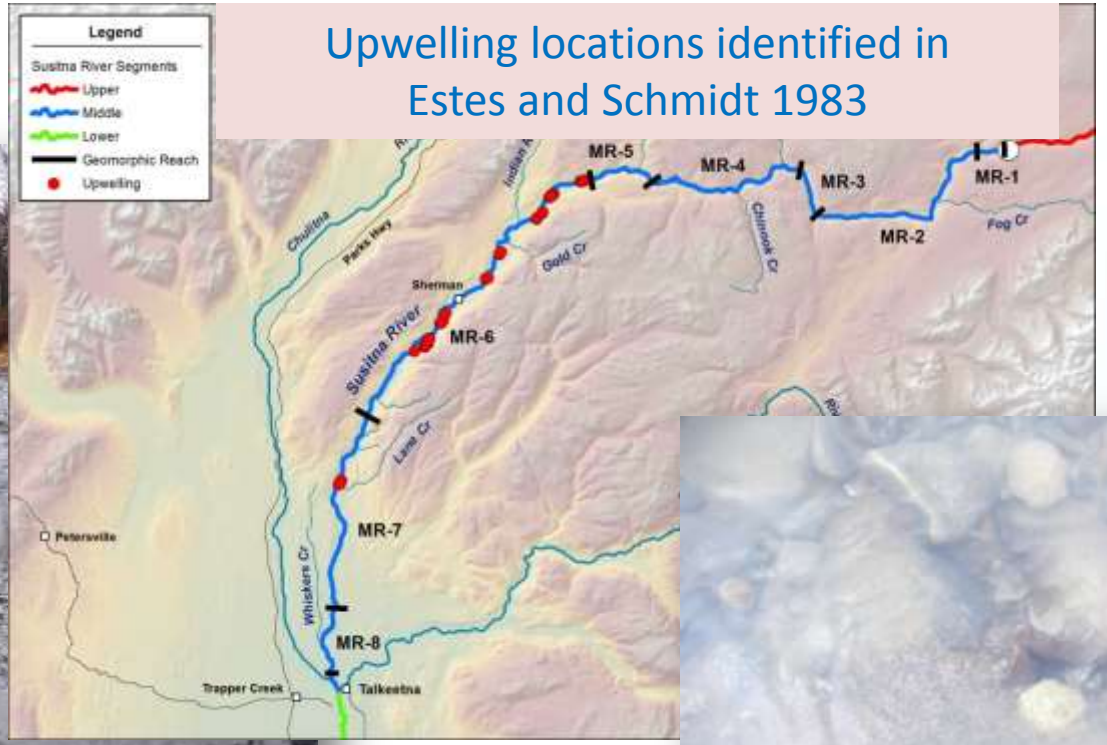
- Technical Memorandum – Review of Habitat Modeling Methods: 1980s Studies and 2013-2014 Studies





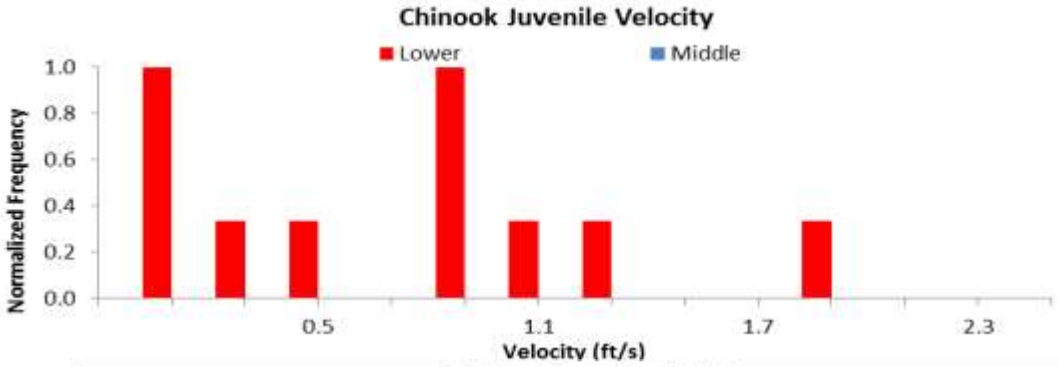
Transects and model types applied during the 1980s Su-Hydro studies - Whiskers Slough complex. Breaching flows also depicted for various side channel and side slough habitats.

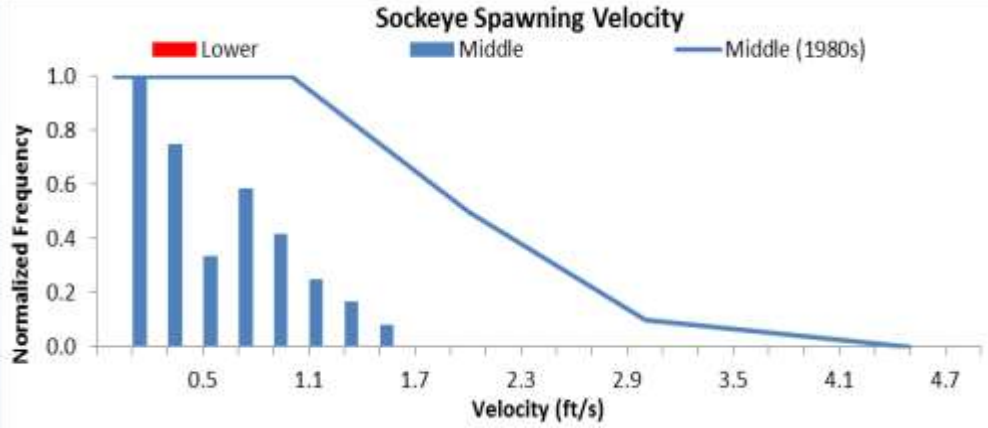
- Technical Memorandum – Biologically Relevant and Flow Dependent Physical Processes: 1980s Studies and 2013-2014 Studies



Upwelling locations identified in Estes and Schmidt 1983

Update on Habitat Suitability Criteria Development – 2012 – Q1 2013





Winter Pilot Studies – March 19-26

Proposed Schedule

Monday 18th	Tuesday 19th	Wednesday 20th	Thursday 21st	Friday 22nd	Saturday 23rd	Sunday 24th	Monday 25th	Tuesday 26th
	Talkeetna	Pit Tag Testing (Whiskers Slough)						
Arrive to Talkeetna	Safty Training, Equipment Check, and Logistics	Assembly	Testing	Testing				
MG	MG	JG	DRoon	DRoon				
AW	AW	DRoon	TS	TS				
JG	JG	TS						
TS	TS	1 GWS	1 GWS	1 GWS				
RK	RK	Helicopter Recon - *CANCELLED*						
		HSC, Fish Presence and GWS tasks						
		Slough 8A	Slough 8A	Slough 8A				
		MG	MG	MG				
		AW	AW	AW				
		MW	MW	MW				
MG-Mike Gagner (R2)		2 GWS staff?	2 GWS staff?	2 GWS staff?	HSC			
					Whiskers	Whiskers		
					MG	MG		
					AW	AW		
					DR	DR		
AW-Adam Weybright (R2)				LGL (DIDSON)				
JG-Jerry George (R2)				Whiskers	Whiskers	Whiskers	Whiskers	
DRoon - David Roon (R2)				JG	JG	JG	JG	
MW-Mike Wood (GWS)				2 LGL	2 LGL	2 LGL	2 LGL	
ML-Mike Lilly (GWS)					Fish Capture Tests, HSC (Whiskers)			
DR-Dan Reichardt (GWS)					TS	TS	TS	
JS - James Shinas (GWS)					DRoon	DRoon	DRoon	
TS-Tim Sullivan (R2)							AW	
RK - Ryan Kilgren (TetraTech)					1 GWS	1 GWS	1 GWS	
Geovara Survey Effort							Winter Gaging	
			Arrive to Talkeetna	Depart to ANC	Radio Tag Tests		Depart to ANC (Morning)	
			LGL (DIDSON)	RK	LGL		ML, MG	
							Depart to ANC (Evening)	Depart to Lower 48
							JG, TS, DRoon, AW	JG, TS, DRoon, AW

LOGISTICS
PIT Tests - Whiskers
2 Snow Machines
Slough 8A
3 snow machines
*possible use of Geovara helicopter
Whiskers HSC
1-2 snow machines
LGL (DIDSON)
1-2 snow machines
Fish Tests - Whiskers
1-2 snow machines
Geovara
1 Helicopter

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

Fish and Aquatics Instream Flow Study Schedule

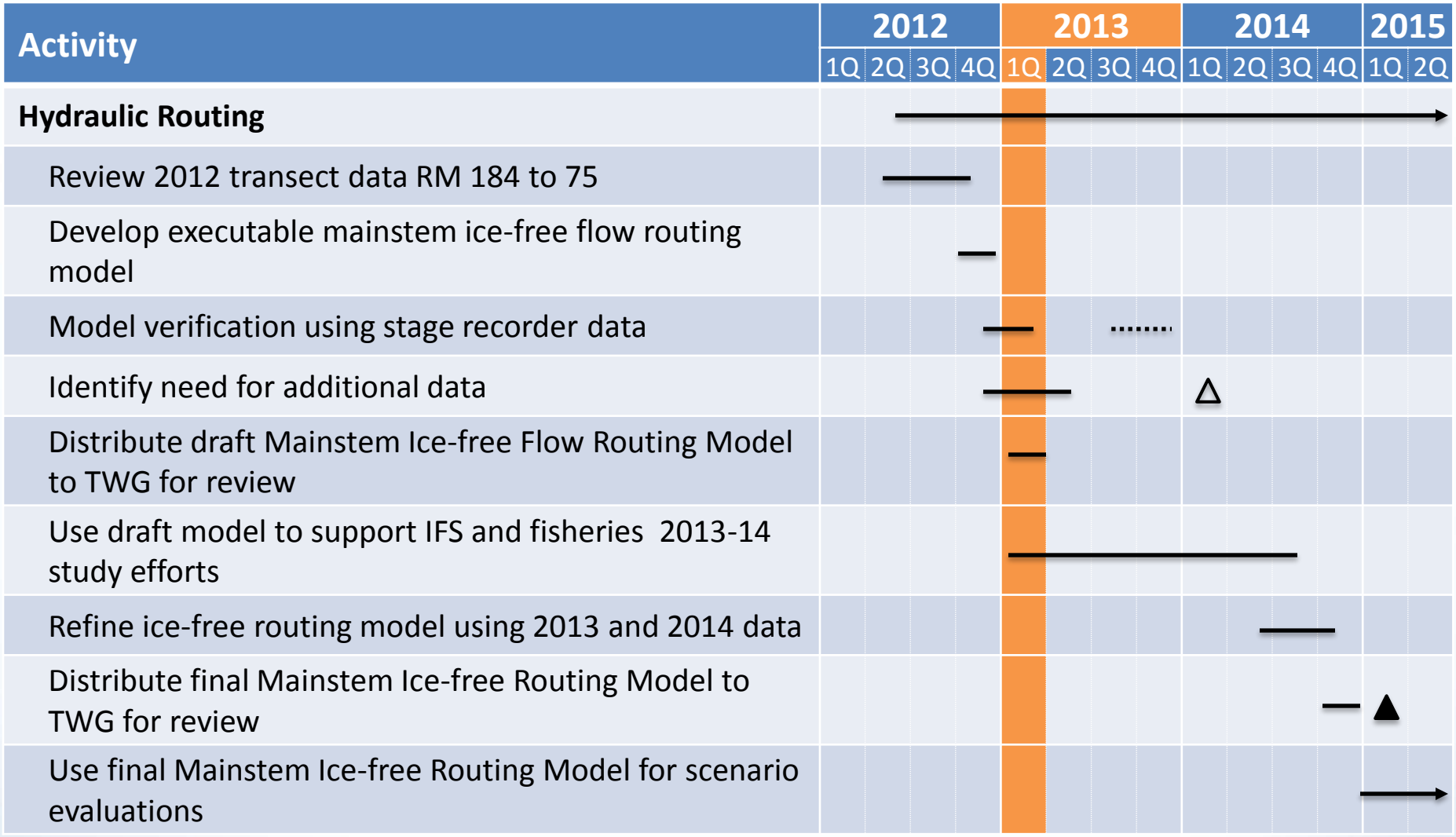
Activity	2012				2013				2014				2015	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Study Area Selection (Focus and Supplemental Areas)														
Compile aquatic habitat (RSP Sec 9.09) and geomorphology (Sec 6.5) characterization study results														
Identify proposed Focus Areas														
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														
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														

Planned Activity
Follow-up Activity
Initial Study Report
Updated Study Report

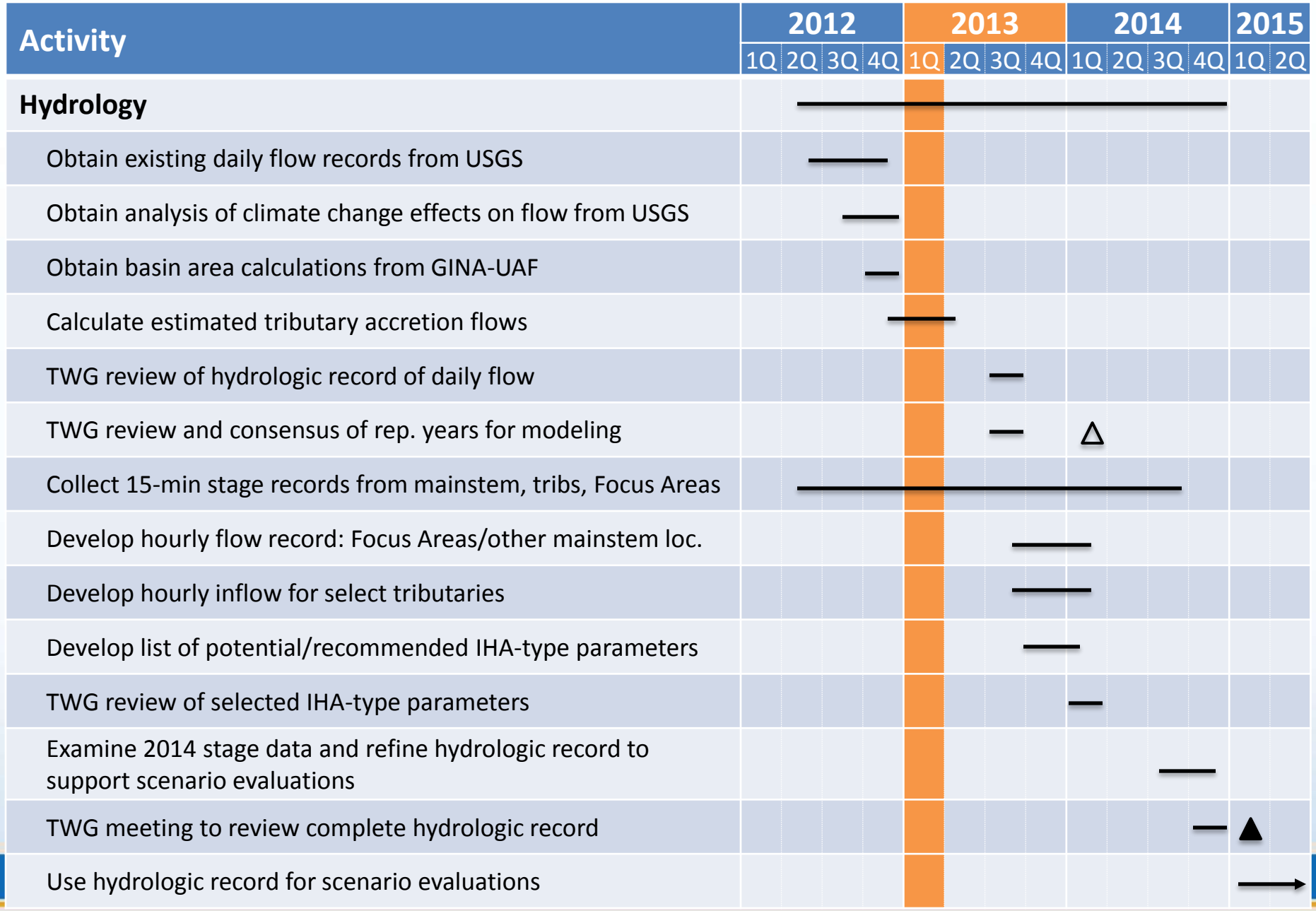
Fish and Aquatics Instream Flow Study Schedule (cont.)

Activity	2012				2013				2014				2015	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Review of 1980s Data and Information														
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														

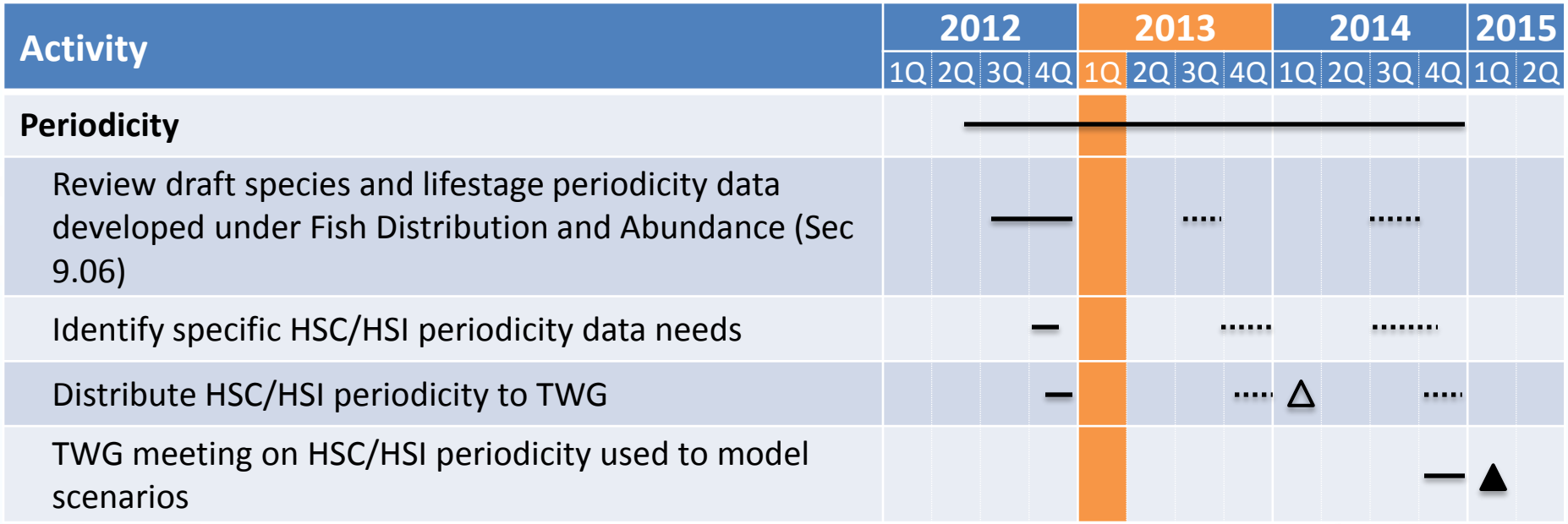
Fish and Aquatics Instream Flow Study Schedule (cont.)



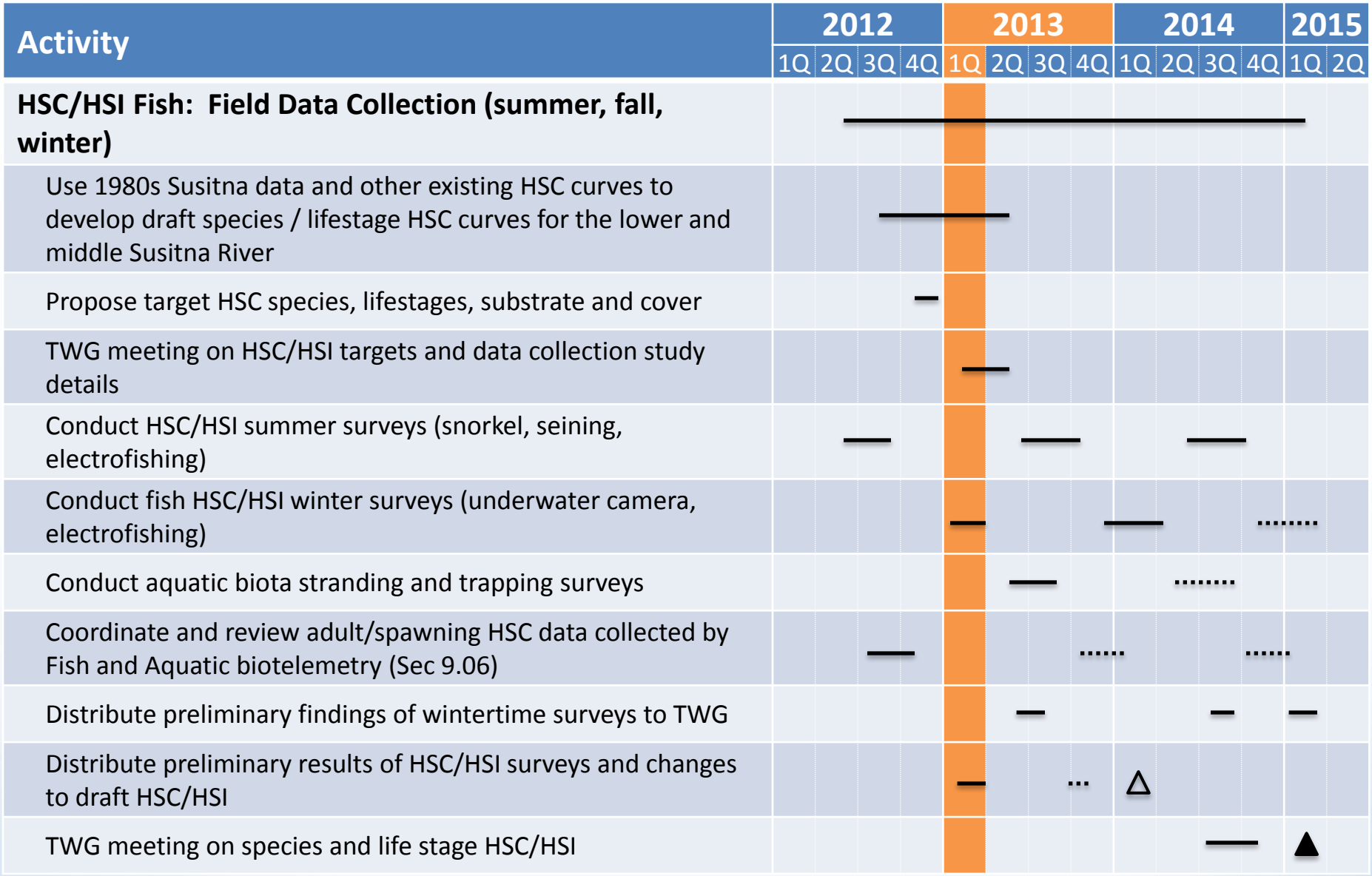
Fish and Aquatics Instream Flow Study Schedule (cont.)



Fish and Aquatics Instream Flow Study Schedule (cont.)



Fish and Aquatics Instream Flow Study Schedule (cont.)



Fish and Aquatics Instream Flow Study Schedule (cont.)

Activity	2012				2013				2014				2015	
	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									△				▲	

Other Topics

- Area Weighting – Extrapolation