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Meeting Notes – Baker River Basin Native Char Consultation
Fish Passage Technical Working Group (FPTWG)

Project: Baker River Project
FERC No. 2150

Written By: Phil Hilgert, R2 Resource Consultants

Meeting Date: January, 2009 (Thu.), 9:30 a.m. – noon

Location: USFWS Office, Lacey, WA

Attendees:

Doug Bruland, PSE	Phil Hilgert, R2
Jeff Chan, USFWS	LouEllyn Jones, USFWS
Cary Feldmann, PSE	Maureen "Mo" Small, WDFW (by phone)
Denise Hawkins, USFWS	Nick Verretto, PSE

Purpose: Review 2008 genetic analysis of tissue samples and coordinate 2009 activities.

Generally following the agenda (attachment 1), the group reviewed the Project layout and pre-licensing studies(attachment 2), License articles affecting bull trout handling, and a summary of char captures and handling in 2008. During 2008, WDFW analyzed tissue samples from char captured in the Baker River basin (attachment 3) to evaluate potential genetic differences. Mo Small discussed the results of the genetic analysis report (Version 12/23/08) and explained the figures and tables included in the report:

Results of WDFW Genetic Analysis

- 239 samples analyzed - consisting of juveniles captured in the Upper Baker River basin, Sulphur Creek and Baker Lake/Lake Shannon downstream fish passage facilities, and adults captured at the Lower Baker adult trap; no other bull trout samples from the Baker River were analyzed in 2008.
- Juvenile samples from Sulphur Creek and Upper Baker River Basin represented two reproductively isolated populations.
- Adult bull trout captured at the Lower Baker adult trap originated from the Upper Baker River, Sulphur, Illabot or Sauk populations.
- Adult bull trout originating from the Baker basin outnumber out-of-basin adults during June, July and August at the Lower Baker adult trap; out-of-basin adults outnumber Baker basin fish during the other months.

- Two juvenile char captured at the Lake Shannon downstream fish passage facility were tentatively identified as Dolly Varden or brook trout (no baseline data available).

In response to comments regarding Figure 6 and Appendix 1 in the December 23, 2008 report, Mo agreed to reorder the sample groups by geographic capture location in an approximate downstream to upstream order (see Table 1). Mo will prepare a revised version of the report with the version date noted on the cover sheet and in the filename. Although the results of the genetic analysis will not change, the group thought that re-ordering the sample groups may make it easier to discern and describe patterns in genetic assignments.

Table 1. Order of tissue sample group designation used in Figure 6 from the 12/23/08 WDFW report titled: Genetic analysis of bull trout in the Baker River Basin, Washington, and proposed re-ordering of tissue sample groups.

12/23/08 Sample Order	Revised Sample Order
03Adult trap	03Adult trap
Upper Baker Gulper	04Adult trap
04Adult trap	05Adult trap
05Adult trap	06Adult trap
05Sulphur	Lower Baker Gulper
Lower Baker Gulper	05Sulphur
06Adult trap	06Sulphur
06Bald Eagle	UpperBakerGulper
06PassCr0	06UpperBakerGulper
06Sulphur	06NearSuphide Cr
06NearSuphide Cr	06CrystalCr
06PassCr26	06Bald Eagle
06PassCr27	06PassCr0
06PassCr28	06PassCr26
06CrystalCr	06PassCr27
06UpperBakerGulper	06PassCr28
Illabot	Sauk
Sauk	Illabot
DiabloLk(DollyVarden)	DiabloLk(DollyVarden)

2009 PSE Bull Trout Activities

The group then discussed and agreed to the following list of bull trout activities to be conducted by PSE during 2009:

- Submit available char tissue samples to WDFW lab for analysis:

  Sample Capture Location Number of Samples

- Upper Baker River sub-basin adults 10
- Baker Lake FSC juveniles/sub-adults 65
- Baker Lake adults 79
- Lake Shannon adults 34
- Lake Shannon FSC juveniles/sub-adults 1
- Lower Baker adults and juveniles 12

- Submit for analysis all juvenile, sub-adult and adult tissue samples collected in 2009 (submit samples in August 2009)
- Capture at least 35 tissue samples from brook trout collected in the Baker River basin. Capture data similar to that recorded for bull trout will be recorded for the brook trout tissue samples (for example, capture location, length, weight).
- Capture by angling, measure/PIT tag/release near point of capture adult char at Upper Baker FSC and Lower Baker gulper, angling will be opportunistic and is expected to be conducted during downstream fish passage monitoring studies
- Transport and release char according to proposed handling protocols (intent is to decrease the number of out-of-basin char transported and released into Baker Lake)

Jeff Chan requested that if there is an opportunity, the USFWS and WDFW would appreciate having 30-40 tissue samples collected from juvenile native char from Park and Swift creeks. Phil mentioned the glacial nature of Park Creek and noted that opportunities for clear water conducive to capturing juvenile char by electrofishing are infrequent; PSE did not commit to providing the samples.

Potential handling protocols were discussed and the group agreed to the following list of protocols for 2009. Next winter, the protocols will be revisited after the results of genetic analysis of the remaining bull trout tissue samples are available.

2009 Baker River Basin Native Char Handling Protocols

- Lower Baker adult trap sub-adults/adults (>150 mm): measure, tissue sample, interrogate if PIT tagged, transport and release into Baker Lake or Lake Shannon depending on tag information.
- Lower Baker adult trap sub-adults/adults (>150 mm): measure, tissue sample, if not tagged, PIT tag and release into Skagit River (priority of release sites: (1)Hamilton, (2)Faber Landing, (3) mouth of Baker River), if the adult char re-enter the trap a second time, transport upstream and release into Baker Lake.
- Lower Baker adult trap juveniles ($\leq$150 mm): measure, tissue sample, PIT tag and release downstream in the Skagit River, continue to release juvenile recaptures into the Skagit River.
- Baker Lake and Lake Shannon FSC juveniles and sub-adults ($\leq$ 300 mm): measure, tissue sample, PIT tag and release downstream.
- Adults captured in Baker Lake or Lake Shannon (>300 mm): measure, interrogate if PIT tagged, otherwise PIT tag, and release near point of capture.

Attachment 1.

Baker River Basin Native Char Investigations
9:30 a.m. – noon, January 8, 2009
Room 133, USFWS Office, Lacey, WA
AGENDA

1. **Review Project Features and Previous Relicensing Study Efforts**
   - Floy-tag adults at Lower Baker River upstream fish passage facility
   - Baker Basin tributary study (production potential)
   - Snorkel surveys in Sulphur Creek and Upper Baker River
   - Electrofishing/snorkel surveys in Lake Shannon tributaries (WRIA .0451, .0439 and Rocky Creek)

2. **Review Decision Process for License Article 103 (Upstream Fish Passage Facility)**
   - Review License Article and current schedule
   - Review options to reduce the number of out-of-basin char transported and released upstream into Baker Basin

3. **Review Decision Process for License Article 104 (Connectivity)**
   - Review License Article and current schedule
   - Juvenile bull trout captured in Sulphur Creek apparently exhibit a genetic signature that has persisted over decades of ongoing transport and release protocols. Review how the results of the genetics analysis affect implementation of Article 104.

4. **Review License Article 410 (Threatened, Endangered and Sensitive Species Plan)**

5. **Recap 2008 Activity**
   - June 2008 through December 2008: 9 char (8 >301 mm, 1@ 150 mm) captured at Lower Baker upstream trap, measured, tissue sample taken, and released upstream into Baker Lake, not tagged
   - June 2008 through December 2008: 7 juvenile (≤150 mm) and 9 sub-adult (151-300 mm) char captured at Upper Baker floating surface collector, measured, tissue sample taken, and released downstream into the Skagit River
   - June 2008 through December 2008: 32 adults captured and released at Upper Baker floating surface collector, measured, tissue sample taken, PIT tagged, and released back into Baker Lake
   - June 2008 through December 2008: no char captured at Lake Shannon floating surface collector
   - No snorkel surveys conducted in Sulphur Creek or Upper Baker River in 2008
   - WDFW genetic analysis of Baker juvenile and sub-adult tissue samples

6. **Results of WDFW Genetic Analysis**

- 239 samples analyzed - consisting of juveniles captured in the Upper Baker River basin, Sulphur Creek and Baker Lake/Lake Shannon downstream fish passage facilities, and adults captured at the Lower Baker adult trap; no other adult tissue samples analyzed
- Juvenile samples from Sulphur Creek and Upper Baker River Basin represented two reproductively isolated populations
- Adult bull trout captured at the Lower Baker adult trap originated from the Upper Baker River, Sulphur, Illabot or Sauk populations
- Adult bull trout originating from the Baker basin outnumber out-of-basin adults during June, July and August at the Lower Baker adult trap; out-of-basin adults outnumber Baker basin fish during the other months
- Two juvenile char captured at the Lake Shannon downstream fish passage facility were tentatively identified as Dolly Varden or brook trout (no baseline data available)

7. Proposed 2009 Activities

- Analyze remaining char tissue samples currently available

Location	Number of Samples
▪ Upper Baker River sub-basin adults	10
▪ Baker Lake FSC juveniles and sub-adults	65
▪ Baker Lake adults	79
▪ Lake Shannon adults	34
▪ Lake Shannon FSC juveniles and sub-adults	1
▪ Lower Baker adults and juveniles	12

- Analyze all juvenile, sub-adult and adult tissue samples collected in 2009 (submit Aug. 2009)
- Capture by angling, measure/PIT tag/release near point of capture adult char at UB FSC
- Transport and release char according to proposed handling protocols (intent is to decrease the number of out-of-basin char transported and released into Baker Lake)

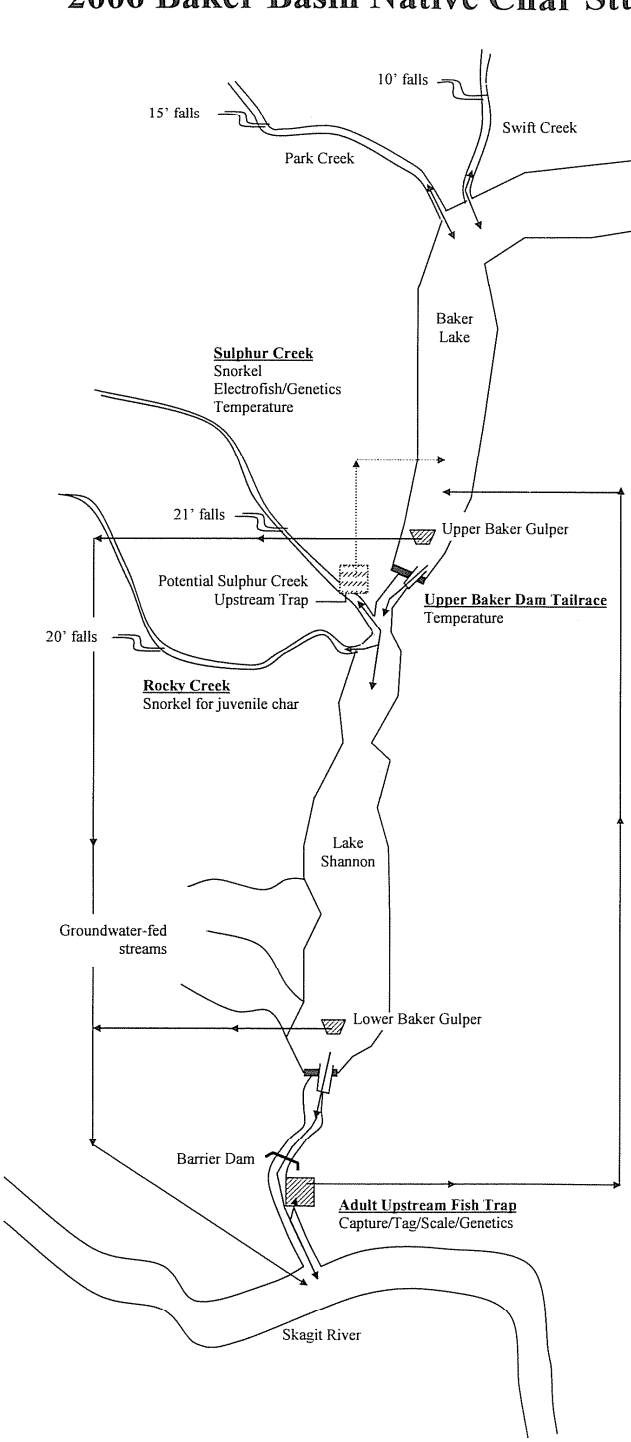
8. Native Char Handling Protocols (2009 Proposal)

- Lower Baker adult trap sub-adults/adults (>150 mm): measure, tissue sample, interrogate if PIT tagged, transport and release into Baker Lake or Lake Shannon depending on tag information
- Lower Baker adult trap sub-adults/adults (>150 mm): measure, tissue sample, if not tagged, PIT tag and release into Skagit River, if re-enter the trap a second time, transport upstream and release into Baker Lake
- Lower Baker adult trap juveniles (≤150 mm): measure, tissue sample, PIT tag and release downstream in the Skagit River, continue to release juvenile recaptures into the Skagit River
- Baker Lake and Lake Shannon FSC juveniles and sub-adults (≤ 300 mm): measure, tissue sample, PIT tag and release downstream
- Adults captured in Baker Lake or Lake Shannon (>300 mm): measure, interrogate if PIT tagged, otherwise PIT tag, release near point of capture

9. Recap Decisions and Outstanding Action Items

Attachment 2.

2006 Baker Basin Native Char Study Efforts



New (☆) or Continued (•) 2006 Study Efforts

- Continue Floy tagging, measure length/weight and scale and tissue samples from char captured at Lower Baker upstream trap (PSE staff)
- Continue scale analysis to determine char age
- Continue to store and maintain native char genetic tissue samples for future analysis
- Continue snorkel surveys of Sulphur Creek to identify char abundance and migration timing
- Continue temperature monitoring in Sulphur Creek to potentially correlate char run timing to water temperature
- ☆ Conduct electrofishing surveys in Sulphur Creek to collect juvenile char genetic samples.
- Continue temperature monitoring at select tribs to characterize existing habitat
- ☆ Conduct electrofishing surveys in upper Baker River subbasins to collect juvenile char genetic samples.
- ☆ Implement opportunistic snorkel surveys of Rocky Creek to identify char abundance

Discontinued Study Efforts from 2005

- Discontinue angling and tagging efforts at downstream fish passage facilities
- Discontinue angling and tagging efforts below Upper Baker Dam and Sulphur Creek
- No electrofishing surveys in WRIA .0451 and WRIA .0439
- Discontinue snorkel surveys of Upper Baker River reaches 2 and 3

Attachment 3. **Total number and collection location of native char tissue samples from the Baker River basin.**

Sub-basin	(Lifestage)	Capture Location	Number of Tissue Samples 2002-2005	2006	2007	2008	Total
Upper Baker River sub-basin	Adult [1]	misc. river reaches	10	- [2]	-	-	10
	Juvenile [1]	BR 5 (RM 24.8-26.3)	- [2]	**13***	-	-	13
		BR 6 (RM 26.3-26.9)	-	**2***	-	-	2
		BR 7 (RM 26.9-27.8)	-	**15***	-	-	15
		BR 8 (RM 27.8-28.5)	-	**32***	-	-	32
		Bald Eagle Cr (RM 0-0.9)	-	**2***	-	-	2
		Pass Creek (RM 0-0.3)	-	**33*[3]**	-	-	33
Baker Lake sub-basin	Adult	misc. reservoir locations	46	-	1	32	79
	Juvenile and sub-adult [1]	Downstream fish passage facility	**1***	**8***	49 [4]	16 [4]	74
Lake Shannon sub-basin	Adult	misc. reservoir locations	34	-	-	-	34
	Juvenile	Sulphur Creek (RM 0-0.66)	**4***	**34***	-	-	38
	Juvenile and sub-adult	Downstream fish passage facility	**3***	**0**	1	0	4
Lower Baker River	Adult	Adult trap	**81***	**11***	3	9 [5]	104
						Total	440

[1] Char ≤ 150 mm total length are considered to be juveniles, 151-300 mm sub-adults, and >300 mm are considered adults.
[2] A dash indicates no sampling effort, a zero indicates sampling effort but no tissue samples collected.
[3] Amplification failed in a contiguous block of samples 2-18 from Pass Creek (n=17); amplification was successful on other Pass Creek samples. The failure of the block of samples is unexplained.
[4] During 2007, tissue samples were collected from 19 juveniles and 30 sub-adults, 2008 tissue samples were collected from 7 juveniles and 9 sub-adults.
[5] One juvenile char (150 mm) was captured in the Lower Baker upstream fish passage facility, transported upstream, and released into Baker Lake in 2008.
* Samples analyzed by WDFW (n=239)