

PPL MONTANA, LLC
THOMPSON FALLS UPSTREAM FISH LADDER PROJECT
TECHNICAL ADVISORY MEETING
Montana Fish, Wildlife and Parks Missoula, Montana
February 1, 2010 @ 10:00 AM

PPL Montana, LLC held the Thompson Falls Technical Advisory Meeting (TAC) on February 1, 2010 at the Montana Fish, Wildlife and Parks Missoula Office. The meeting started at 10:00 AM and was adjourned at 4:00 PM.

MEETING ATTENDEES

Name	Agency	Email	Phone
Brent Mabbott	PPL Montana, LLC	lbmabbott@pplweb.com	533-3447
Frank Pickett	PPL Montana, LLC	fjpickett@pplweb.com	533-3445
Jon Jourdonnais	PPL Montana, LLC	jhjourdonnais@pplweb.com	533-3443
Steve Leathe	PPL Montana, LLC	saleathe@pplweb.com	268-2347
Andy Welch	MDEQ	awelch@mt.gov	444-9897
Jeff Ryan	MDEQ	jeryan@mt.gov	444-4626
Jim Vashro	MFWP	jvashro@mt.gov	751-4550
Wade Fredenberg	USFWS	Wade_fredenberg@fws.gov	758-6872
Tim Bodurtha	USFWS	Tim_bodurtha@fws.gov	758-6882
Jon Hanson	MFWP	jonhanson@mt.gov	827-9320
Jay Stuckey	MFWP	jstuckey@mt.gov	827-9205
Pat Saffel	MFWP	psaffel@mt.gov	542-5507
Ladd Knotek	MFWP	lknotek@mt.gov	542-5506
Craig Barfoot	CSKT	craigb@cskt.org	883-2888
Ginger Gillin	GEI Consultants	ggillin@geiconsultants.com	916-662-6233
Kristi Webb	Morrison-Maierle, Inc.	kwebb@m-m.net	542-8880
Rob Roberts	Trout Unlimited	rroberts@tu.org	543-1192
Heather Whiteley	Trout Unlimited	hawhiteley@msn.com	531-8657
Steven Kloetzel	The Nature Conservancy	skloetzel@tnc.org	793-0038

2009 ANNUAL REPORT

During the meeting, PPL Montana presented a power point presentation summarizing 2009 activities that are included in the draft annual report. The draft Thompson Falls Upstream Fish Project Annual Report was prepared and emailed out to TAC members for review on January 25, 2010. **Comments from the TAC are due on February 22, 2010 and can be sent to Ginger Gillin via email at ggillin@geiconsultants.com.**

Below is a summary of the activities PPL Montana and MFWP completed in 2009 and will be included in the 2009 Annual Report submitted to FERC by April 1, 2010.

Fish Sampling

MFWP and PPL Montana have been conducting annual fish monitoring via gillnetting and electrofishing for several years. Data from gillnetting efforts from 2004 through 2009 were presented.

In 2008, PPL Montana lowered the Thompson Falls Reservoir elevation approximately 11 feet in the fall. Prior to 2008, the most common fish species observed in the reservoir during October gillnetting was bullheads. In 2009, no bullheads were captured during fall gillnetting. It appears that lowering the reservoir may have impacted bullheads.

PPL Montana and MFWP will continue to monitor fish through gillnetting and electrofishing activities in 2010.

Northern Pike Study

PPL Montana presented a power point presentation for 2009 northern pike sampling efforts. Brent Mabbott coordinated with David Schmetterling to design the sampling plan for Thompson Falls Reservoir and Island Complex (approximately 7 miles upstream of the reservoir), which was similar to Milltown sampling design for northern pike. The 2009 data summarized in the Annual Report will serve as baseline data for future studies after the ladder is operational.

In 2009 sampling efforts were focused between March and July in Thompson Falls Reservoir and Island Complex. Sampling efforts included three methodologies: gillnetting, electrofishing, and some attempts at angling. Results from sampling efforts found nighttime electrofishing were more effective for northern pike than daytime efforts. Electrofishing was also more effective for capturing northern pike when river flow increased in the spring and was slightly murky (end April/early May).

Information from local anglers indicate approximately 14 percent of the northern pike tagged between March and July 2009 (146 tagged northern pike) were captured (20 northern pike) and reported by anglers.

Northern pike food habits were investigated using stomach lavage. A higher percentage of northern pike had food in their stomachs when captured by electrofishing than when captured by gillnetting. The majority of northern pike diet was fish. Fish species was often unknown due to degradation of the stomach contents. MFWP guess that the proportion of fish in stomachs is similar to the proportion of available species. One bull trout was observed in a gillnet in the reservoir Island Complex. In addition, one bull trout was identified in the stomach content of a northern pike.

Sampling efforts from March through July 2009, population characteristics, population estimates with confidence intervals, diet composition, movement, and angler harvest are summarized in the Draft Annual Report.

PPL Montana and MFWP also performed fall gillnetting (October 2009). This data will be added to the Annual Report. Preliminary analysis indicates the majority of northern pike captured in the fall were < 1 year old.

Reservoir and Thompson River Temperatures

PPL Montana evaluated river temperatures in the Thompson Falls Reservoir and temperatures from waters coming from the Thompson River into the reservoir. The objective was to see if any

temperature refugia for bull trout exist during the summer months as a result of the Thompson River. Data from July 21, 2009 were presented. The temperature data collected during the summer months did not indicate any thermal plume from Thompson River in the reservoir. The water temperature data from 2009 indicates water from the Thompson River becomes well mixed in the reservoir and is homogenous top to bottom and across channel. No thermal refugia were identified during the summer months.

PPL Montana provided a slide that summarized Avista's 2009 upstream adult migrating bull trout trap and haul program. Avista captured a total of 47 individual bull trout (2 bull trout recaptured). Of the 47 bull trout, there were 12 bull trout assigned to Region 4 and transported from below Cabinet Gorge Dam upstream of Thompson Falls Reservoir.

Total Dissolved Gas (TDG) and Gas Bubble Trauma (GBT)

Frank Pickett presented water quality data collected in 2009. This data will be included in a separate study plan for TDG which will be submitted to the TAC for their review at a later date.

Example of TDG levels:

- 100-105 percent upstream of Thompson Falls Dam; 98-102 percent downstream of Thompson Falls powerhouse. Flow through the turbines removes TDG by about 3 percent. Note: TDG was not monitored below turbines in 2009, this conclusion relies on experience from previous years monitoring.
- Birdland Bay Bridge equal (or within 0.5 percent) Noxon Forebay based on DEQ spot check meter.
- Radial Gates appear to impact TDG. Data indicate TDG increases when radial gates open. Identified 1-2 percent TDG to radial gates. TDG increase is about the same duration as the period the radial gates are opened. However, trend is not consistent. DEQ asked if the elevation of the tailrace may be a contributing factor to the inconsistencies. PPL Montana will look at Tailrace elevation in 2010.
- Potential exists for slightly higher (2 percent) TDG at Birdland Bay Bridge being created from the Main Dam fish attractant spill schedule compared to the baseline spill schedule. Because the higher flows have only had limited monitoring for the fish spill schedule, future monitoring will be needed to confirm. We will also consult with T. Falls Operations to explore options to the fish attractant spill schedule to reduce TDG.

PPL Montana anticipates that spill operations in 2010 may be different than past years as a result of construction activities for the ladder. PPL Montana may defer water through the Dry Channel depending on construction activity requirements at the Main Channel. Schedule is to remove the working bridge that is currently over the apron of the Main channel before spring runoff.

Fish Spill Schedule – Lots of options for schedule. Opportunity to modify, but will need to ensure some flow configuration to create attractant flow at ladder. Fish ladder has high velocity jet for attractant flow (60-80 cfs).

TDG monitoring in 2010

- Monitoring sites below the Dry Channel, above the Main Channel Dam, high bridge, and Birdland Bay Bridge. Continue monitoring in 2010. Manipulation of spill dependent on

construction activities for the fish ladder. May see additional spill at Dry Channel in 2010 compared to previous years.

GBT - No fish have been identified to date demonstrating characteristics of GBT, although field crews from MFWP and PPL Montana have not had formal training in detecting GBT. Additional training for field staff to learn to identify GBT symptoms in fish has been recommended.

Genetics Data for Bull Trout

Genetic data was collected on the one bull trout that was captured during spring gillnetting efforts for northern pike in 2009. The bull trout was PIT tagged and genetic sample taken. Genetic analysis indicates fish was assigned to Fish Trap Creek.

Additional genetic sampling was funded by the TAC for 2009 in the middle Clark Fork drainage. However, no fish was collected for genetic testing. MFWP did not sample in 2009. Funding granted in 2009 was not used and was reallocated to TAC Funding for 2010 proposals.

Summary of 2009 TAC Funded Projects

2009 Bull Trout DNA Sampling – Funded by TAC in 2009

\$5000 allocated for DNA samples for bull trout in middle Clark Fork drainage. No samples were collected for DNA analysis. The \$5000 was not used in 2009. MFWP did not sample locations proposed in 2009. Money was not spent and remains in TAC funding for 2010.

Fish Creek and Oregon Gulch – Funded by TAC in 2009

Trout Unlimited (TU) and The Nature Conservancy (TNC) will provide narrative project summaries of the Fish Creek and Oregon Gulch activities that the TAC funded in 2009. These narrative summaries will be included in the 2009 Annual Report. TU and TNC also provided a brief presentation of activities in 2009 at these two locations and future plans, as well as proposals for 2010 funding from TAC.

Fish Creek

In 2009, Phase I was completed for the Fish Creek drainage. Phase I spent approximately \$120,000 on road storage, recontouring, culvert removals, weed management and native grass seeding. Funding from Thompson Falls TAC was included \$24,000 in 2009 for culvert removal. Phase I included a collaborative effort among FWP, TU and Lolo National Forest. Road storage/stabilization (not complete rehabilitation) was completed for approximately 37.2 miles of road, 45 culverts were removed, two undersized culverts on gated roads were converted to drivable ford. The 2009 TAC funding was for replacement of culverts. During project, TNC discovered the presence of culverts not necessary and removed culverts entirely.

PROGRESS REPORT ON UPSTREAM FISH LADDER CONSTRUCTION

PPL Montana provided a progress report and slide show of construction to date and schedule for 2010. The goal is to have all concrete poured by April 1, 2010 followed by removal of the work access bridge prior to high water. The goal for the project is to be complete and tested (to maximum flows) by end of July 2010. If all components of the fish ladder are working, then keys will be passed to PPL Montana.

The lower end of fish ladder may need additional reinforcement adjacent to the rock wall to prevent water movement from eroding the rock wall and compromising integrity of the fish ladder at the inlet for fish entrance.

2010 SCHEDULE

Task/Deliverable	Preparers	Submittal to TAC	Discussion at TAC Meeting	TAC Comments Due	Comments Incorporated - Submitted to TAC for Final Approval	Finalized with Approval from TAC Complete	E-File with FERC	E-Archive on Website
ANNUAL REPORTS	PPL Montana, MFWP, GEI Consultants	25-Jan-10	1-Feb-10	22-Feb-10	12-Mar-10	26-Mar-10	1-Apr-10	1-Apr-10
SOP	GEI Consultants	1-Sep-10	15-Sep-10	1-Oct-10	1-Nov-10	30-Nov-10	31-Dec-10	2-Jan-11
RESERVOIR PLAN (5-Year)	PPL Montana, MFWP, USFWS	1-Sep-10	15-Sep-10	1-Oct-10	1-Nov-10	30-Nov-10	31-Dec-10	2-Jan-11
PHASE 2 ACTION PLAN (10 –Year Evaluation of Efficiency of Upstream Fish Passage)	PPL Montana, MFWP, USFWS	1-Sep-10	15-Sep-10	1-Oct-10	1-Nov-10	30-Nov-10	31-Dec-10	2-Jan-11

The Memorandum of Understanding (MOU) dated January 15, 2008 defines the TAC quorum as one voting representative from PPL Montana, USFWS, CSKT, and MFWP. Quorum decisions by the TAC will require each of these agencies to be present in person or by proxy. The above tasks will require signatory approval from USFWS, CSKT, MFWP, and PPL Montana prior to submittal to FERC.

GENERAL PROPOSAL FOR PHASE 2 ACTION PLAN - UPSTREAM FISH PASSAGE EVALUATION

General outline presented by PPL Montana and to be utilized by TAC committee to develop a Draft Phase 2 Action Plan (fish ladder operation & evaluation of efficiency) for distribution to all TAC members by September 1, 2010.

Fish Ladder General Terms and Conditions of Operation/Evaluation

- Trap monitoring, when possible, 24/7
 - Seasonal operations/fish data collection specified by season (spring, summer, fall).
No operations in winter (climate conditions limit operability).
- When monitoring is not possible:
 - May be closed for short duration: either dewatered or fish allowed to enter but no enumerated in sampling loop
 - Concern for summer temperatures

Ladder Operations

• Spring Operations

- Generally being in February – dependent upon operations safety
- Checked at least twice daily, generally near 9am and 3pm. Fish movement into the trap will determine frequency of monitoring. Monitoring increased based on:
 - Fish movement.
 - Flows.
 - Weather conditions (air, water temps, moon phase).
- Operation will continue until deemed ineffective due to high flows (~20,000 cfs over dam and 45,000 cfs in river, normally no fish approach ladder area).
 - Likely shut down operations.
 - Check operations to verify no fish present.
 - 45,000 cfs anticipated in mid-May until about early July.
 - Peak is usually around June 1 (+/- couple weeks).
- Operations will resume when flows return to high operating streamflow on the descending hydrograph.

• Summer Operations

- Due to high water temperatures, summer operations may require continuous monitoring.
- Fish movements during high temperatures and time of day will determine the schedule for monitoring.
- Upstream passage of invasive species can only be limited by full-time trapping, separation and culling.

• Fall Operations

- Similar to Spring.
- Previous studies have found that fish cease to move when water temperatures decline to ~5 degrees C.
- Fish movement patterns and safety considerations will determine operation.
- Beginning in 2011, PPL will fund, through FWP a full time Tech 2 person for monitoring fish ladder operations.

Ladder Efficiency Evaluation

• Fish Data Collection

- Fish enumerated and recorded by species.
- All fish, except during extreme conditions (excessive numbers, high temperatures, extreme weather events) have length and weights recorded.
- Marking of fish may be used to monitor fallback, movements and growth changes associated with future capture.
- System will monitor PIT tags.
 - Recorded automatically.
 - PIT Tag will be consistent with antennas installed in the fish ladder (TX 1411SST, 134.2 kHz, 12mm) (BioMark).
- When ladder is not in operation for the winter, dismantle PIT monitoring systems.
- Fish moving through the fishway will generally be released at the entrance as opposed to transporting, barring evidence of a need for physical transporting.
 - General rule: less handling the better.
- Request Region 4 bull trout captured in 2010 be moved upstream by Avista. In 2011, fish ladder in use, request Avista move fish to Noxon Reservoir to monitor movement to ladder at Thompson Falls (exception is temperatures).
- Salmonids: receive PIT tag and adipose clip.
 - Avista also adipose clip when PIT tagging.
- Non-salmonids: will receive, when practical, VIE (elastomer) to the left side. VIE will be coded to year.
 - Record fish moving over ladder
- Data form will be completed and fish will be immediately release upstream of fishway.
 - Avista has established access database; may be able to utilize for Thompson Falls.
 - No system-wide coordination yet. FWS to coordinate.

• Radio Tracking (TBD in Phase 2 Action Plan)

- Collaborative effort among regions.
- To be determined level of effort and details.
- If TAC decides to radio tag bull trout:
 - Prior to June 20 and water temperatures less than 16 C.
 - Bull trout larger than 500mm will receive a PIT and radio tag and then either released immediately upstream of the fishway or transported and released at the first bridge upstream from the mouth of Thompson River.
 - No other bull trout captured in the trap will be radio tagged.

• Small Committee Meeting to Develop Phase 2 Action Plan (discuss outline presented above, expand on outline, and draft a Phase 2 Action Plan by September 1, 2010)

- Jon Hanson, Wade Fredenberg, Brent Mabbott
- Meet in last 2 weeks of March 2010 in Missoula for a 2-day meeting
 - Date to be determined. Brent will notify committee
 - Meeting will cover Phase 2 Action Plan and Reservoir Plan preparation

Reservoir 5-Year Plan (2010 – 2015)

Development of the goals and objectives for the 5-year reservoir plan originates from the USFWS Biological Opinion Terms and Conditions #5:

During the first five years of the Phase 2 evaluation (2010 through 2015) PPL Montana, with TAC involvement and Service approval, will conduct a prioritized 5-year evaluation of factors contributing to the potential loss or enhancement of migratory bull trout passage through Thompson Falls Reservoir. Goals and objectives for this assessment and scientifically-based methodology will be developed through the TAC and approved by the Service no later than the end of 2010 and will focus at a minimum on better understanding temperature and water current gradients through the reservoir; travel time, residence time, and pathways that juvenile and subadult bull trout select in moving through the reservoir; and an assessment of impacts of predatory nonnative fish species on juvenile and subadult bull trout residing in or passing through the reservoir. The initial findings will be summarized and supported with scientifically based conclusions, no later than the end of 2015, with a goal of adaptively improving survival of juvenile bull trout in Thompson Falls Reservoir as they pass downstream or reside in the system. A second, more comprehensive summary of conclusions and recommendations regarding reservoir impacts will be submitted as part of the scientific review package by the end of 2020.

In 2009, PPL Montana and MFWP sampled the Thompson Falls Reservoir and Island Complex to study northern pike. The northern pike data collected in 2009 is presented in the 2009 Annual Report scheduled to be filed with FERC by April 1, 2010.

What type of activity or types of activities in the reservoir are proposed for 2010?

PPL Montana proposes to continue to collect the baseline fisheries data with MFWP in 2010 and delay any reservoir specific studies in 2010 until the 5-year study plan as required in the FWS Biological Opinion (see excerpt above).

A committee including, PPL Montana, MFWP, and FWP will meet in Thompson Falls during the last two weeks of March 2010 to draft a 5-year reservoir plan as specified in the Biological Opinion (see excerpt above). Brent will coordinate the meeting and notify committee of date and location.

Goals/objectives or information identified in the Biological Opinion for the 5-year reservoir plan that have already been recorded (e.g. retention time) will be summarized in the draft plan and not require additional studies. During the TAC meeting FWS stated that too often activities and data collection are conducted without fundamentally finding out what the problem is and having defined objectives and methods. FWS agrees defining the goals and objectives will be an important component to developing the reservoir plan. As necessary, the committee may take the language requirements from the Biological Opinion and redefine the plan to fit goals and objectives for the 5-year reservoir plan. Any modification to the goals and objectives of the reservoir plan will need to be approved by FWS.

2010 PROPOSALS

Thompson Falls TAC Proposal Form will be updated to include the following information:

All approved proposals will have a reporting deliverable to PPL Montana on January 15 of the following year.

Add a line that asks: How does this project meet the intent of the MOU? MOU states “*This TAC shall function as the means for collaboration on the expenditure of mitigation funds and the implementation of bull trout minimization measures as specified in the License or other resource measures related thereto taken voluntarily by PPL Montana*”

Trout Unlimited Proposals

Rob Roberts - Proposal for Fish Creek Work in 2010

See Proposal (attached as appendix)

Request for \$37,770

TU will seek out additional funding sources (Mineral County, private funding).

USFWS & PPL Montana request photo points for comparison at future date.

TAC VOTE: Unanimous Yes for \$37,770

USFWS Wade Fredenberg comment: Proposal meets mitigation goals in MOU.

Rob Roberts - Proposal for Oregon Gulch Work in 2010

See Proposal (attached as appendix)

Request \$51,500

TAC VOTE: Unanimous Yes for \$51,500

TAC Comments:

FWS Wade Fredenberg comment - Project runs risk of altering functional habitat where bull trout spawn. Project has no guarantee that there will be an improvement. Also concerned about risk of future assurance that project will not be undone or property sold to someone else. Question – Is there a way to ensure project activities will not be adversely impacted by the landowner at a different date or by a new landowner? Under Future Fisheries – 20 years obligation to not conduct any activity that would adversely impact project.

TU Rob Roberts comment. Goal of project is to set up a conservation easement at a later date. However, TU is waiting for the project to kick start before approaching this topic with the landowner.

Wade – Is this area under new critical habitat? Yes. Tim – Need ESA Section 6 concurrence for project.

TAC requests TU ask the private land owner what his future plans for project and that FWS requests some agreement to ensure project benefits for longevity. TU will provide update to TAC on conversation with private landowner.

MFWP Proposal

Jon Hanson – Proposal for Thompson River in 2010

See Proposal (see attached)

Request \$6,000 for Project.

Funding request will cover the cost for excavator to obliterate road and move materials and money for browse protection.

TAC Vote: Unanimous Yes for \$6,000.

Ladd Knotek presented proposal for Cedar Creek work in 2010

Proposal is to remove car bodies on private land.

Request for \$4,900

TAC VOTE: Majority NO (PPL Montana, CSKT, USFWS), Yes (MFWP).

Project NOT FUNDED.

TAC Comments:

USFWS Wade Fredenberg comment: What does this project have to do with bull trout improvement or fisheries improvement? Project does not improve bull trout habitat.

MFWP Ladd Knotek comment. The project is in a bull trout stream and a “good thing to do” to improve natural conditions.

PPL Montana Brent Mabbott comment. Cars are located in the stream channel, but the channel goes dry. How does it improve bull trout habitat?

CSKT Craig Barfoot comment. Likes project but doesn't see direct link to mitigate bull trout numbers.

PPL Montana Proposal 2010

Bull Trout Genetic Monitoring in 2010

See Proposal (will be same as 2009 proposal from MFWP)

Request \$5,000 for genetic analysis.

Continued funding of the bull trout genetic mapping of tributaries of the Clark Fork River, upstream of Thompson Falls Dam. Funding will be available until used. Sampling areas may include upstream of Thompson Falls Dam, below Rattlesnake Creek, and not include Flathead River drainage.

TAC VOTE: Unanimous YES for \$5,000

2009-2010 TAC BUDGET

2009 Budget	\$100,000
2009 Spent	\$39,000
2009 Remaining Balance	\$61,000
2010 Available Budget	\$163,000

2010 PROPOSALS APPROVALS

1. YES to Bull Trout DNA Sampling	\$5,000
2. YES to Fish Creek	\$37,770
3. YES to Oregon Gulch	\$51,500
4. YES to Thompson River	\$6,000

TOTAL Budget Allocation 2010 \$100,270

BUDGET REMAINING 2010 \$62,730

2010 PROPOSALS DENIED

1. NO to Cedar Creek Car Removal	\$4,900
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2010 TAC MEETINGS

DATE: September 9, 2010 at TFalls @ 9:30am

September 2010 Meeting in Thompson Falls

- On-site meeting with TAC and GEI
- GEI will present preliminary SOP and go through SOP on-site
- Review 5-year Phase 2 Action Plan
- Review 5-year Reservoir Plan

COMMITTEE MEETINGS: END OF MARCH/EARLY APRIL (MISSOULA 2-DAYS)

- Phase 2 Action Plan
- Reservoir Plan

COMMENTS TO 2009 ANNUAL REPORT DUE FEBRUARY 22, 2010 TO GINGER GILLIN