

Project Proposal Request for FY 2007 - FY 2009 Funding (Revised Summer 2006)

Proposal 199101901: Hungry Horse Mitigation/Flathead Lake

Table of Contents

Part 1. Administration and Budgeting

- Section 1: General Administrative
- Section 2: Project Location
- Section 3: Project Species
- Section 4: Past Accomplishments
- Section 5: Relationship to Other Projects
- Section 6: Biological Objectives
- Section 7: Work Elements
- Section 8: Budget
- Section 9: Project Future
- Section 10: Documents

Part 2. Reviews

Part 1 of 2. Administration and Budgeting

Section 1: General Administrative Information

Process Information:	Date Proposal Submitted & Finalized December 19, 2005	Status Finalized	Form Generator Barry Hansen
Proposal Type:	Ongoing		
Proposal Number:	199101901		
Proposal Name:	Hungry Horse Mitigation/Flathead Lake		
BPA Project Manager:	Joe Deherrera		
Agency, Institution or Organization:	Salish & Kootenai Confederated Tribes		
Short Description:	This project mitigates the impacts of Hungry Horse Dam on downstream aquatic environments within the Flathead Indian Reservation. It includes components of monitoring, research, and implementation.		
Information Transfer:	We use information transfer locally by educating the public about our projects. We actively transfer information between cooperating agencies with the Flathead Subbasin, we publish in journals when possible, and rely on BPA for online dissemination of information.		

Project Proposal Contacts

Contact	Organization	Address	Phone/Email	Roles	Notes
Form Submitter					
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Section 2: Project Location

Sponsor Province:	Mountain Columbia	ARC Province:	No Change		
Sponsor Subbasin:	Flathead	ARC Subbasin:	No Change		
Latitude	Longitude	Waterbody	Location Description	County/State	Subbasin Primary?
47N & 48N	114W & 115W	Flathead Lake and River	Flathead Subbasin	Lake/Montana, Flathead	Yes

Section 3: Focal Species

Primary	Secondary	Additional Species
Bull Trout Freshwater Mussels Westslope Cutthroat	Lake Trout Rainbow Trout	

Section 4: Past Accomplishments for Each Fiscal Year of This Project

Fiscal Year	Accomplishments
2005	1. Native species monitoring, 2. Lake creel survey, 3. Biological parameters of lake trout, 4. Evaluated off-site fish planting, 5. Bioenergetics model, 6. Monitored shoreline erosion, 7. removed 3.5 miles of road, 8. two non-native fishing contests
2004	1. Native species monitoring, 2. Lake creel survey, 3. Biological parameters of lake trout, 4. Evaluated off-site fish planting, 5. Bioenergetics model, 6. Monitored shoreline erosion, 7. 3,000 m of riparian fence, 8. two non-native fishing contests
2003	1. Native species monitoring, 2. Lake creel survey, 3. Biological parameters of lake trout, 4. Evaluated off-site fish planting, 5. Bioenergetics model, 6. Evaluated white sturgeon distribution, 7. Removed 1 streamside corral, and repaired one streambank.
2002	1. Native species monitoring, 2. Removed 1.5 miles of road, 15 ft high dam, and 1 culvert, 3. Conducted lake creel survey, 4. Evaluated biological parameters of lake trout, 5. Partially developed bioenergetics model, 6. Quantified diet of Mysis relicta

Section 5: Relationships to Other Projects

Funding Source	Related ID	Related Project Title	Relationship
BPA	[no entry]	Flathead Subbasin Flowering Rush and Yellow Flag Iris Project	We are a cooperator in this new project proposal. We have been closely involved with the problem identification and survey, and will conduct the macroinvertebrate portion of this project.
BPA	199101903	Hungry Horse Mitigation/Habita	This project operates with similar objectives within the Flathead Basin but off the Flathead Indian Reservation. Numerous objectives are coordinated between the agencies, including monitoring, implementation, and project identification.
BPA	199101904	Hungry Horse Mitigation - Koka	This project raises the fish for planting in off-site reservoirs to replace lost recreational and subsistence opportunity
BPA	199608701	Montana Focus Watershed Coordi	This project provides the landowner contact component necessary for restoration activities on private lands.
BPA	200200300	Secure & Restore F&W Habitat	Land protection/preservation project. Sister project. This project often lays the groundwork with landowners leading to the possibility of acquisition or easement on candidate properties.

Section 6: Biological Objectives

Biological Objective	Full Description	Associated Subbasin Plan	Strategy	Page Nos
Improve channel stability	Improve channel stability to a level equivalent to the channel stability habitat restoration score of reference streams.	Flathead	Upgrade or remove problem roads, restore bank integrity, and improve instream habitat	27,28
Improve forest management	Use appropriate silvicultural techniques to alter forest structure and composition	Flathead	Schedule and implement restoration treatments and full implementation of BMP's	60
Improve habitat connectivity	Restore passage to migratory fish by removing potential man-made barriers	Flathead	Restore connectivity by removing barriers related to entrainment, culverts, habitat degradation, low flows, etc.	31
Improve habitat diversity	Restore the habitat diversity of the mainstem to a level that supports sustainable, harvestable levels of focal species.	Flathead	Restore woody debris recruitment, sinuosity, and channel morphometry	22,23,28
Improve hydraulic regime	Reduce reservoir drawdown and implement Kerr License	Flathead	Reduce reservoir operational impacts and provide instream flow downstream of dams.	34

Improve riparian condition	Improve riparian condition to a level that supports sustainable, harvestable levels of focal species	Flathead	Revegetate denuded areas, improve grazing practices, control noxious weeds, and provide habitat protection	21,22,26,27
Improve riparian forest management	Restore forest communities on 10% of riparian/wetland watershed acres over the next 15 years	Flathead	Identify and prioritize areas in need of restoration and achieve full implementation of BMP's	52
Improve shoreline condition	Restore lake shoreline conditions to a level equivalent to the shoreline condition habitat restoration score of reference lakes	Flathead	Implement shoreline restoration techniques to stabilize shorelines that are destabilized by fluctuating lake levels	37
Increase bull trout population sizes	Achieve at least 5 local with more than 100 adult bull trout in all primary core areas.	Flathead	Minimize mortality, reduce non-native competitors, and conserve gene flow	40
Increase bull trout population stability	Achieve an overall bull trout population trend that is stable or increasing	Flathead	Minimize mortality, reduce non-native competitors, and conserve gene flow	41
Increase number of westslope cutthroat populations	Maintain or increase the total number of local populations of westslope cutthroat trout	Flathead	Minimize mortality, reduce non-native competitors, and conserve gene flow	44
Increase westslope cutthroat trout population size	Achieve at least 20 genetically pure populations with a minimum of 50 adults	Flathead	Minimize mortality, reduce non-native competitors, and conserve gene flow	45
Maintain number of local bull trout populations	Maintain or increase the total number of local populations of bull trout	Flathead	Minimize mortality, reduce non-native competitors, and conserve gene flow	39
Maintain tribal subsistence and angler harvest	Maintain or increase harvestable sportfish	Flathead	Create alternate harvest opportunities in off-site lakes	48
Protect Class I watersheds	Protect and maintain prime, functioning tributary habitat	None	Implement actions necessary to protect Class I status	32
Reduce fine sediments	Reduce the delivery of fine sediments in the mainstem to a level that supports sustainable, harvestable levels of focal species	Flathead	Eliminate or reduce sediment sources through road removal, BMP's, and riparian restoration	24,25,29,30
Reduce lake pollutants	Reduce pollution to a level equivalent to the pollution habitat restoration score of reference lakes	Flathead	Eliminate or reduce pollutant sources and implement water quality regulations	38

Reduce non-native species	Prevent further expansion, suppress, and where possible eradicate non-native species	Flathead	Prevent non-native introductions, upgrade fish hatchery practices, educate the public, and remove non-natives	42,46,47
Reduce non-native species in riparian areas	Treat an average of 10% of acres currently in a disturbed condition	Flathead	Develop and implement comprehensive weed management plans	54
Reduce overgrazing	Restore grassland or shrubland communities on 10% of grassland/shrubland acres over 10-15 years	Flathead	Coordinate with landowners to reduce stocking or exclude with fencing or other management techniques	57
Reduce rate of land conversion	Using acquisitions, conservation easements and management agreements, conserve and restore 10% over 10-15 years in those subunits for which the floodplain vegetation index in the TBA spreadsheet tool are 8 or lower	Flathead	Pursue acquisition, conservation easements, landowner incentives, and management plans	50,55
Reduce roads	Reduce road densities in watersheds exceeding 4 miles/section	Flathead	Schedule and implement road removals and BMP's	60
Restore hydrograph	Restore the hydrography within a natural range of variability on 10% of riparian/wetland acres over 10-15 years in those subunits for which the freshette impact index/water level difference Index in the TBA spreadsheet tool ranges from 4 thru 8 (riparian) below 8 (wetlands)	Flathead	Reduce reservoir operational impacts, improve instream flows, and restore functional channel morphometry	51

Section 7: Work Elements and Associated Biological Objectives

Work Element Name	Work Element Title	Start Date	End Date	Estimated Budget
01: Collect/Generate/Validate Field and Lab Data	Monitor native species in Flathead Lake	5/1/2007	6/1/2009	\$16,000
Description				
Annual spring gillnetting in fixed locations to determine trends in abundance of bull and westslope cutthroat trout.				
Biological Objectives		Metrics		
<i>No Biological Objectives Associated with this Work Element</i>		<i>No Metrics for this Work Element</i>		
02: Collect/Generate/Validate Field and Lab Data	Flathead Lake creel survey	10/1/2006	9/30/2009	\$126,000
Description				
Year-round Flathead Lake creel survey conducted with roving angler interviews and aerial counts of pressure				
Biological Objectives		Metrics		
<i>No Biological Objectives Associated with this Work Element</i>		<i>No Metrics for this Work Element</i>		

03: Collect/Generate/Validate Field and Lab Data	Monitor lake trout biology	10/1/2006 9/30/2009	\$54,000
Description			
Collection of lake trout in fall with 48 gillnets consisting of 12 mesh sizes set randomly within five geographic areas and five depth strata.			
Biological Objectives		Metrics	
<i>No Biological Objectives Associated with this Work Element</i>		<i>No Metrics for this Work Element</i>	
04: Analyze/Interpret Data	Analyze biological parameters of lake trout	10/1/2006 9/30/2009	\$9,000
Description			
Annual measurement and analysis of lake trout captured in fall to determine 1)age structure, 2)growth, 3)age at maturity, 4)mortality rate, 5)fecundity, and 6)condition.			
Biological Objectives		Metrics	
<i>No Biological Objectives Associated with this Work Element</i>		<i>No Metrics for this Work Element</i>	
05: Collect/Generate/Validate Field and Lab Data	Monitor off-site stocking	10/1/2006 9/30/2009	\$6,000
Description			
Cost-effective creel surveys and stock assessments of off-site reservoirs stocked to increase angler opportunities			
Biological Objectives		Metrics	
Maintain tribal subsistence and angler harvest		<i>No Metrics for this Work Element</i>	
06: Collect/Generate/Validate Field and Lab Data	Inventory population status and habitat associations of western pearl mussels	10/1/2006 9/30/2009	\$31,000
Description			
Determine distribution of western pearl mussels on the Flathead Indian Reservation. Quantify habitat parameters and identify possible sites for re-introduction and habitat restoration			
Biological Objectives		Metrics	
Improve channel stability		<i>No Metrics for this Work Element</i>	
07: Develop RM&E Methods and Designs	Research food web interactions in Flathead Lake	10/1/2007 9/30/2009	\$16,000
Description			
Update and maintain Flathead Lake bioenergetics model and investigate dynamic food web interactions			
Biological Objectives		Metrics	
Increase bull trout population stability Reduce non-native species		<i>No Metrics for this Work Element</i>	
08: Collect/Generate/Validate Field and Lab Data	Research aquatic invasives: flowering rush and yellow iris	10/1/2006 9/30/2009	\$48,000
Description			
Cooperative research conducted with Salish-Kootenai College and the University to understand in ecology and control of invasive aquatic plants.			
Biological Objectives		Metrics	
Protect Class I watersheds Reduce non-native species Reduce non-native species in riparian areas		<i>No Metrics for this Work Element</i>	

09: Develop RM&E Methods and Designs	Research shoreline erosion processes	10/1/2006	9/30/2009	\$60,000
Description				
Monitor rates of shoreline erosion in Flathead Lake. Correlate erosion rates with wind data and shoreline type. Develop restoration methods specific to unique littoral cells.				
Biological Objectives		Metrics		
Improve riparian condition		<i>No Metrics for this Work Element</i>		
Improve shoreline condition				
Protect Class I watersheds				
Reduce fine sediments				
Reduce lake pollutants				
10: Other	Construct gravel beach at Salish Point	4/1/2007	5/15/2007	\$50,000
Description				
Construct a gravel beach at Salish Point to predetermined slope, crest height, and particle size that is currently in a highly degraded state consisting of a failing wooden seawall				
Biological Objectives		Metrics		
Improve riparian condition		<i>No Metrics for this Work Element</i>		
Improve shoreline condition				
Protect Class I watersheds				
Reduce lake pollutants				
11: Remove or Relocate Predaceous Animals	Conduct fishing contests for lake trout	10/1/2006	9/30/2007	\$62,000
Description				
Reduce lake trout abundance in Flathead Lake by means of fishing contests that engage the angling public.				
Biological Objectives		Metrics		
Reduce non-native species		<i>No Metrics for this Work Element</i>		
12: Remove or Relocate Non-predaceous Animals	Remove brook trout from westslope cutthroat trout streams	10/1/2007	9/30/2008	\$75,000
Description				
Apply piscicides to remove brook trout from tributaries of Flathead Lake that support native westslope cutthroat trout.				
Biological Objectives		Metrics		
Reduce non-native species		<i>No Metrics for this Work Element</i>		
13: Install Fence	Protect riparian areas from grazing by fencing	10/1/2006	9/30/2009	\$18,000
Description				
Restore riparian and channel condition by reducing grazing by excluding cows with fences				
Biological Objectives		Metrics		
Improve channel stability		<i>No Metrics for this Work Element</i>		
Improve riparian condition				
Increase bull trout population stability				
Protect Class I watersheds				
Reduce fine sediments				
Reduce overgrazing				
14: Decommission Road	Restore watershed function by recontouring roads	10/1/2006	9/30/2009	\$36,000
Description				

Recontour 3 miles of road and remove 2 stream crossings in the north Missions landscape

Biological Objectives	Metrics
Improve channel stability	
Improve habitat diversity	
Improve hydraulic regime	
Improve riparian condition	
Increase bull trout population sizes	* # of road miles decommissioned
Maintain tribal subsistence and angler harvest	:
Protect Class I watersheds	20 miles
Reduce fine sediments	
Reduce lake pollutants	
Reduce non-native species	
Reduce overgrazing	
Reduce roads	

15: Realign, Connect, and/or Create Channel	Reconstruct degraded stream channels	10/1/2006 9/30/2009	\$120,000
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Description
Physically reconstruct over-widened, incised, channelized, or otherwise degraded stream channels

Biological Objectives	Metrics
Improve channel stability	
Improve habitat diversity	
Increase bull trout population stability	<i>No Metrics for this Work Element</i>
Reduce fine sediments	
Reduce non-native species	

16: Create, Restore, and/or Enhance Wetland	Construct wetlands to remediate polluted irrigation return flows	10/1/2006 9/30/2009	\$50,000
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Description
Construct wetlands to remediate polluted irrigation return flows

Biological Objectives	Metrics
Improve hydraulic regime	
Reduce fine sediments	<i>No Metrics for this Work Element</i>
Reduce lake pollutants	

17: Plant Vegetation	Restore riparian vegetation and function	10/1/2006 9/30/2009	\$50,000
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Description
Restore riparian vegetation and function by planting and maintaining native vegetation

Biological Objectives	Metrics
Improve channel stability	
Improve forest management	
Improve habitat diversity	
Improve riparian condition	
Improve riparian forest management	<i>No Metrics for this Work Element</i>
Improve shoreline condition	
Reduce fine sediments	
Reduce lake pollutants	

18: Develop Alternative Water Source	Develop off-channel water sources	10/1/2006 9/30/2009	\$9,000
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Description
Develop off-channel water sources to facilitate the removal of livestock from riparian areas

Biological Objectives	Metrics
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Improve channel stability Reduce fine sediments Reduce overgrazing				<i>No Metrics for this Work Element</i>
19: Operate and Maintain Habitat/Passage	Remove/upgrade passage barriers	10/1/2006	9/30/2009	\$30,000
Description				
Remove/upgrade culverts that are improperly designed or placed and present passage barriers.				
Biological Objectives		Metrics		
Improve habitat connectivity		<i>No Metrics for this Work Element</i>		
20: Install Fish Passage Structure	Install ladders at irrigation diversion sites	10/1/2006	9/30/2009	\$22,000
Description				
Install ladders at irrigation diversion sites				
Biological Objectives		Metrics		
Improve habitat connectivity		<i>No Metrics for this Work Element</i>		
21: Remove/Modify Dam	Remove in-channel dams	10/1/2006	9/30/2009	\$18,000
Description				
Remove in-channel dams that act as passage barriers and alter watershed processes				
Biological Objectives		Metrics		
Improve habitat connectivity		<i>No Metrics for this Work Element</i>		
22: Provide Public Access/Information	Maintain AM advisory radio system	10/1/2006	9/30/2007	\$3,000
Description				
Maintenance of AM traveler's advisory radio system to educate and inform anglers and boaters of the importance of prevention in the spread of disease and exotic organisms				
Biological Objectives		Metrics		
Reduce non-native species		<i>No Metrics for this Work Element</i>		
23: Produce Environmental Compliance Documentation	Conduct NEPA and permitting compliance for project implementation	10/1/2006	9/30/2009	\$15,000
Description				
Conduct NEPA and permitting compliance for project implementation				
Biological Objectives		Metrics		
<i>No Biological Objectives Associated with this Work Element</i>		<i>No Metrics for this Work Element</i>		
24: Identify and Select Projects	Pre-planning and coordination of projects	10/1/2006	9/30/2009	\$36,000
Description				
The synthesis of physical/biological data, planning, and logistics required to identify priorities in watershed restoration				
Biological Objectives		Metrics		
<i>No Biological Objectives Associated with this Work Element</i>		<i>No Metrics for this Work Element</i>		
25: Manage and Administer Projects	Project management	10/1/2006	9/30/2009	\$27,000
Description				

The budgeting, contracting, purchasing, coordinating necessary to complete projects on the ground				
Biological Objectives			Metrics	
<i>No Biological Objectives Associated with this Work Element</i>			<i>No Metrics for this Work Element</i>	
26: Produce Annual Report	Annual report	10/1/2006	9/30/2009	\$7,000
Description				
Annual report				
Biological Objectives			Metrics	
<i>No Biological Objectives Associated with this Work Element</i>			<i>No Metrics for this Work Element</i>	

Section 8: Budget

Itemized Estimated Budget

Item	Note	FY 2007 Cost	FY 2008 Cost	FY 2009 Cost
Personnel	[blank]	\$79,000	\$82,000	\$85,000
Fringe Benefits	[blank]	\$19,000	\$20,000	\$21,000
Supplies	[blank]	\$15,000	\$20,000	\$20,000
Other	Sub-contracts	\$27,000	\$250,000	\$250,000
Overhead	[blank]	\$34,000	\$36,000	\$36,000
Totals		\$174,000	\$408,000	\$412,000

Total Estimated FY 2007-2009 Budgets

Total Itemized Budget	\$994,000
Total Work Element Budget	\$994,000

Cost sharing

Funding Source or Organization	Item or Service Provided	FY 2007 Est Value (\$)	FY 2008 Est Value (\$)	FY 2009 Est Value (\$)	Cash or in-kind?	Status
CSKT	technical support and facilities	\$40,000	\$40,000	\$40,000	In-Kind	Confirmed
Flathead Lakers, Flathead Land Trust and others	technical assistance and landowner contacts	\$25,000	\$25,000	\$25,000	In-Kind	Under Development
NRCS	grant dollars and technical support	\$30,000	\$30,000	\$30,000	Cash	Under Development
ongoing recruitment	cost share	\$200,000	\$200,000	\$200,000	Cash	Under Development
USFWS	grant dollars	\$25,000	\$25,000	\$25,000	Cash	Confirmed
Totals		\$320,000	\$320,000	\$320,000		

Section 9: Project Future Costs and/or Termination

FY 2010 Est Budget	FY 2011 Est Budget	Comments
\$425,000	\$425,000	[Outyear comment field left blank]

Future Operations & Maintenance Costs
cannot make a reasonable estimate at this time

Termination Date	Comments
NA	This project began in 1991 and is an on-going project of the CSKT to mitigate the impacts of Hungry Horse Dam.

Final Deliverables
Annual reports

Section 10: Project Documents

Document	Type	Size	Date
Fix-it Loop Documents			
isrp response199101901_2006	doc	11.7 M	7/14/2006

Documents Originally Submitted with this Proposal:

Narrative for proposal 199101901	doc	104 kb	1/10/2006
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Part 2 of 2. Reviews of Proposal

Administrative Review Group (ARG) Results

Account Type: Expense	No changes were made to this proposal
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NPCC Final Funding Recommendations (October 23, 2006) [\[Full NPCC Council Recs\]](#)

FY 2007 NPCC Rec	FY 2008 NPCC Rec	FY 2009 NPCC Rec	Total NPCC Rec
\$139,000	\$338,000	\$412,000	\$889,000
Budget Type:	Expense		
Budget Category:	ProvinceExpense		
Recommendation:	Fund		
NPCC Comments: Funding contingent on ISRP and Council review of revised proposal. Revised proposal due end of December, 06.			

NPCC Draft Funding Recommendations (September 15, 2006) [\[Full NPCC Council Recs\]](#)

FY 2007 NPCC Rec \$139,000	FY 2008 NPCC Rec \$338,000	FY 2009 NPCC Rec \$412,000	Total NPCC Rec \$889,000
FY 2007 MSRT Rec \$ 0	FY 2008 MSRT Rec \$ 0	FY 2009 MSRT Rec \$ 0	Total MSRT Rec \$ 0
Budget Category:	ProvinceExpense		
NPCC Comments:			
NPCC Staff Comments: Funding contingent on ISRP, Council review of revised proposal. Revised proposal due end of December, 06.			

Independent Scientific Review Panel Final Review (August 31, 2006) [\[Download full document\]](#)

Recommendation: Not fundable

Comments: The tone of the response was so defensive that it was difficult to see the substance of the response. The project sponsor does include graphs in the response that surely should have been included in the original proposal. However, there still is no evidence of progress in meeting the initial goals and objectives regarding biological response to habitat initiatives. They do provide some assessment of trends in fish populations in Flathead Lake, but there is no effort to tie these trends to the habitat program. With regard to all the road restoration work, it is true that population-level improvements will take several generations to be apparent; however, monitoring fish presence above an improved road crossing is quite achievable and could yield a rough estimate of increased potential productivity if you knew how many miles of stream were now available. Indicating a willingness to adjust the M&E to address the ISRP's concerns would have been helpful.

Reviewers remain of the opinion that Not Fundable is the appropriate recommendation. By any reasonable standard that we might apply, this effort falls short of demonstrating biologically significant results (and current/proposed actions) that benefit fish and wildlife.

Independent Scientific Review Panel Preliminary Review (June 2, 2006) [\[Download full document\]](#)

Recommendation: Not fundable

Comments: The project sponsors report that "The project began in 1992 with monitoring emphasis in order to evaluate the success of on-going mitigation efforts within the sub-basin." Further, "Monitoring of ecosystem and biological responses to our mitigation projects is ongoing since 1992, and has grown to address targeted tributaries as well as biological population changes in the lake trout of Flathead Lake." However, the results provide no basis to assess progress in these original and expanded goals and objectives.

Their results to date were described as follows:

"Monitoring Results:

(1) detailed monitoring of a five year kokanee reintroduction experiment (1993-1997) in Flathead Lake that

identified and quantified the reason for the failure of the experiment.

(2) accurate and repeatable quantification of baseline angler use of the Flathead Lake fishery in 1992-3 and development of a continuous dataset from 1998 to present.

(3) continuation of annual trend monitoring of native westslope cutthroat and bull trout in Flathead Lake to establish a 24 year period of record.

(4) quantification of parameters of lake trout biology used to measure population changes based on trends in mortality rates, age at maturity, growth, and fecundity.

Research Results

(1) Development of a bioenergetic model to quantify consumption rates of planted kokanee by lake trout in Flathead Lake resulting in the conclusion that lake trout consumed 87% of planted kokanee within one year of their release

(2) Determination of limiting factors in *Mysis relicta* population dynamics resulting in the conclusion that the *Mysis* population is not resource limited but is top-down controlled.

(3) Development of a lakewide, multispecies bioenergetic model that quantifies predation rates on bull and westslope cutthroat trout)

(4) Quantification of erosion rates in South Bay of Flathead Lake and correlation with wave climates and reservoir pool elevations"

This project needs to be justified based on results. The project has expended more than \$1 million in just the past three years, and few results were provided. Only a brief list of activities with inadequate substantiating background detail or data synthesis was provided. Reviewers previously concluded, "...the funding agency should be assured that monitoring in a series of tributaries is rigorous and continuing so that diminishing returns from habitat renovation can be identified. If habitat measures are effective, there should be a tendency for juvenile abundance to increase at any given parent density. If efforts to improve escapement to the spawning grounds are successful there should be a tendency for parent numbers to increase along the curve (relating parents and offspring) described for the improved habitat conditions. The funding agency needs to be confident that strategies and methods exist for obtaining these data." This proposal provides no such assurance and no demonstrated progress toward initial objectives; thus, there is no basis for continuing the project.