

# Emergency Fish Restoration Project

**Final Report  
2002**



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# EMERGENCY FISH RESTORATION PROJECT

FINAL REPORT 2002

## **CONFEDERATED TRIBES OF THE COLVILLE INDIAN RESERVATION**

**BPA Project No. 2001-066-00**

**Project Funded By  
United States Department of Energy  
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Division of Fish and Wildlife  
Portland, Oregon**

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## **Introduction;**

Lake Roosevelt is a 151-mile impoundment created by the construction of Grand Coulee Dam during the early 1940's. The construction of the dam permanently and forever blocked the once abundant anadromous fish runs to the upper Columbia Basin. Since the construction of Grand Coulee Dam in 1943 and Chief Joseph Dam in 1956 this area is known as the blocked area. The blocked area is totally dependant upon resident fish species to provide a subsistence, recreational and sport fishery. The sport fishery of lake Roosevelt is varied but consists mostly of Rainbow trout (*Oncorhynchus mykiss*), Kokanee salmon (*Oncorhynchus nerka*), Walleye (*Stizostedion vitreum*) Small mouth bass (*Micropterus dolomieu*) and white sturgeon (*Acipenser transmontanus*).

Currently, Bonneville Power Administration funds and administers two trout/kokanee hatcheries on Lake Roosevelt. The Spokane Tribe of Indians operates one hatchery, the Washington Department of Fish and Wildlife the other. In addition to planting fish directly into Lake Roosevelt, these two hatcheries also supply fish to a net pen operation that also plants the lake. The net pen project is administered by Bonneville Power funded personnel but is dependant upon volunteer labor for daily feeding and monitoring operations. This project has demonstrated great success and is endorsed by the Colville Confederated Tribes, the Spokane Tribe of Indians, the Washington Department of Fish and Wildlife, local sportsmen associations, and the Lake Roosevelt Forum.

The Lake Roosevelt/Grand Coulee Dam area is widely known and its diverse fishery is targeted by large numbers of anglers annually to catch rainbow trout, kokanee salmon, small mouth bass and walleye. These anglers contribute a great deal to the local economy by fuel, grocery, license, tackle and motel purchases.

Because such a large portion of the local economy is dependant upon the Lake Roosevelt fishery and tourism, any unusual operation of the Lake Roosevelt system may have a substantial impact to the economy.

During the past several years the Chief Joseph Kokanee Enhancement project has been collecting data pertaining to fish entraining out of the lake through Grand Coulee Dam. During 1996 and 1997 the lake was deeply drawn down to accommodate the limited available water during a drought year and for the highly unusual draw-down of Lake Roosevelt during the critical Northwest power shortage. The goal of the project is to enhance the resident rainbow trout fishery in Lake Roosevelt lost as a result of the unusual operation of Grand Coulee dam during the drought/power shortage.

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## **PROJECT GOAL:**

### **ENHANCEMENT OF THE LAKE FRANKLIN D. ROOSEVELT RAINBOW TROUT FISHERY and NET PEN REPAIR, REPLACEMENT and STOCKING.**

The goal of the Colville Tribes/Lake Roosevelt Emergency Fish Restoration project is to provide short-term enhancement of the present rainbow trout fishery.

## **BACKGROUND**

Since the construction of Grand Coulee and Chief Joseph Dams in 1939 and 1956 respectively, the anadromous fishery above these structures has been completely extirpated. The area above Chief Joseph and Grand Coulee dam is totally dependant upon the resident fish resource to support local fisheries and as a functioning component of the ecosystem. Target species in the existing fishery include, but are not limited to, rainbow trout (*Oncorhynchus mykiss*), walleye (*Stizostedion vitreum*) and kokanee (*Oncorhynchus nerka*). Rainbow trout are a species of special interest due to their historic significance to native cultures and to the functioning ecosystem in the affected area. Natural production rainbow trout stocks in Lake Roosevelt and Lake Rufus Woods (impoundments created by Grand Coulee and Chief Joseph Dams respectively) are thought to be limited to tributary spawning populations in various tributaries of the aforementioned lakes and annual recruitment from areas upstream from Lake Roosevelt. Scholz et. al.(1985), Peone et. al. (1989), Griffith and Scholz (1990),and McDowell and Griffith (1993), all identified annual water regimes as affecting hatchery reared, net-pen reared and naturally produced rainbow trout.

During the mid to late 1990's a great deal of empirical data was collected and analyzed regarding fish entrainment through Grand Coulee Dam. Entrainment investigations provided data that identified entrainment as substantial, ranging from 211,685 to 576,676 fish, averaging 402,000 fish annually (LeCaire, 1999). Furthermore, high entrainment was strongly correlated to annual water regimes, reservoir retention times, hydropower project operations and net pen and hatchery releases. Further data analysis determined that entrainment was higher at the third powerhouse than at the left or right powerhouses (LeCaire, 1999). Eighty five percent of entrained fish were entrained through the third power plant.

Factors related to high entrainment include hydro system operations, lake retention time, net pen release dates, spill (drum gate and draft tube) and water year. The highest entrainment occurred during the years of highest annual water cycles. During low water years, if Grand Coulee Dam is operated as it has been during a high water cycle year, entrainment rates may be further exacerbated.

## **OBJECTIVE 1:**

Replace fish potentially lost to entrainment with triploid steelhead to overcome the loss resulting from the extraordinary operations of Lake Roosevelt to meet emergency power needs. It is intended that this objective proceed in a number of parts or phases.

**Part I.** Provide immediate relief to the fishery.

The initial purchase and out-planting of triploid steelhead is meant to replace those fish lost during the draw down. We plan on replacing these fish with a two-pound catch able fish that will provide immediate relief to the fishery.

**Part II.** Provide short-term relief to the fishery.

The second purchase of triploid steelhead will be fingerlings at approximately 17/lb. This eight thousand pound purchase will be placed into net pens and reared for spring release in 2002. This purchase serves two duties. One, to provide a short-term contribution to the fishery and two, replace the lot of tagged fish and data presumed lost to entrainment due to the early release.

**Part III.**

Purchase additional triploid trout for later release into Lake Roosevelt following the spring 2002 draw down period. This will carry the short-term benefit into another calendar year and provide a fishery base for the spring and summer fishery while providing a base for the local economy to build upon.

**OBJECTIVE 2.**

Replace net pen complexes that were damaged by high wind and un-seasonal grounding resulting from unusual early draw down of Lake Roosevelt when lake was drafted to supply power for the energy shortage

**OBJECTIVE 3.**

We intend to conduct limited tag return study. Due to the early release of a tagged lot of rainbow trout we will tag 10% of the fish raised in net pens and release to gather information on fish behavior and movement potentially lost as a result of reservoir operations during 2001.

**NARRATIVE FOR OBJECTIVES**

**OBJECTIVE 1.**

Replace fish potentially lost to entrainment with triploid steelhead to overcome the loss to the fishery resulting from the emergency operation of Grand Coulee Dam during the drought cycle and power shortage period. The initial purchase and out-planting of triploid steelhead is meant to replace those fish lost during the draw down with fish of similar size of those lost to the fishery, thus providing immediate relief to the fishery. Triploid rainbow trout were chosen for their in-ability to reproduce thus reducing any chance for genetic dilution of natural production stocks and for their accelerated growth habits. We anticipate planting the fish as soon as water temperatures moderate to accommodate safe out-planting conditions in Lake Roosevelt (mid to late October). The fish will be released at various sites along the reservoir. Pre-selected sites include the Sherman Creek hatchery, French Point Rocks, Hall Creek, Inchelium Ferry landing, San Poil/Keller Ferry landing, Spring Canyon, Wilmont Creek and U.S.B.O.R. boat launch near Grand Coulee Dam. We anticipate a collaborative effort in transporting fish to the various sites for release. We have commitments from hatchery managers at the Colville Tribal Hatchery at

Bridgeport, the Spokane Tribal Hatchery near Ford and the Sherman Creek Hatchery to supply vehicles and drivers. The project will reimburse fish distribution vehicle operators for fuel if they so desire. Salaries for operators will be in kind and in the spirit of cooperative efforts in support of the funding agency.

The initial purchase of triploid fish will be immediately out-planted at the aforementioned locations. Purchase 24,000 lbs of triploid steelhead from Columbia River Fish Farms. This will be approximately equal to 12,000 legal size fish of larger size lost due to the emergency power generation. The choice of a larger fish is to provide immediate relief with a catch able size fish.

The second purchase (8000 lbs) will be delivered directly to the net pen locations for rearing by the Lake Roosevelt Net Pen Project over an 8-month period before release next June.

An important benefit to be realized from this fish replacement effort will be that fishery managers will have the opportunity to evaluate the performance of triploid steelhead vs. other hatchery rainbow trout stocks. Current BPA funded projects evaluate both the Lake Roosevelt fishery and the performance of selected fish stocks by the analysis of data collected from anglers by several creel census takers. The purchase, tagging and release of fish over two different years will provide a limited chance to evaluate the success/failure of using a triploid stock as surrogate for rainbow trout.

## **OBJECTIVE 2.**

Replace net pen complexes that were damaged by high wind and un-seasonal grounding resulting from unusual early draw down of Lake Roosevelt when lake was drafted to supply power for the energy shortage

We intend to purchase a minimum of four, quad net, net pen complexes with non-skid fiberglass decks, supporting docks and sundry miscellaneous equipment necessary for the safe, efficient operation of the pens during inclement weather over the winter and spring periods. The expenditure for the pen arrays and supporting structures is itemized on the financial statement page.

## **OBJECTIVE 3.**

The intention of this objective is to conduct a limited tag return study to replace data lost as a result of the early release caused by emergency power operations at Grand Coulee Dam.

Purchase 22,000 floy tags in sequence to the Eastern Washington University tags series. The initial purchase of 12,000 floy tags will be inserted into the legal size fish at the time of release from the chosen sites. The manpower required for this effort will come from state and tribal agencies as part of the co-management effort on Lake Roosevelt. The majority of the labor will come from many BPA funded projects of the Colville Tribal Fish and Wildlife Department.

The second lot of tags will be inserted into 10,000 of the fingerling fish just prior to release following an 8-month rearing cycle. The tagging of the second lot of triploid steelhead will provide an opportunity to evaluate the success of Objective 1, part 1 while supplementing lost tagging data. This opportunity will come from routine tag return analysis. Creel census clerks already under salary to various agencies on Lake Roosevelt will collect the data on tags from anglers, submit it to the Lake Roosevelt Monitoring



Project as part of their day to day work (Cost sharing, and spirit of cooperation). This will enable area fish managers the opportunity to assess the success/failure of using triploid steelhead in the net pen project. (Since we have the fish in hand it seemed prudent to tag them and get some usable data for our effort)

Finally, a portion of the funding will go directly to the Confederated Tribes of the Colville Reservation to cover expenses related to contract administration, book keeping and audit activities.

## **METHODS**

### **OBJECTIVE 1.**

Load and transport fish

Loading densities were calculated by the following formula.

$$\text{Loading Density} = \frac{\text{Pounds of fish}}{\text{Tank Capacity- water displaced by fish}}$$

$$\text{Loading Density} = \frac{800}{500-96}$$

Loading Density = 1.98 pounds of fish per gallon water  
(Piper, et al. 1982)

## **RESULTS/DISCUSSION**

### **OBJECTIVE 1.**

#### **PHASE 1; SUPPLEMENT LAKE ROOSEVELT RAINBOW TROUT FISHERY WITH TRIPLOID STEELHEAD TROUT.**

Replace fish lost to entrainment with triploid steelhead to overcome the loss to the fishery resulting from the emergency operation of Grand Coulee Dam during the drought cycle and power shortage period

This objective has been fulfilled and then some. Commencing on November 13, 2001 a large-scale fish hauling project began. Fish hatchery trucks from the Colville Confederated Tribes Hatchery at Bridgeport, the Spokane Tribal Hatchery at Metamootles Springs, and Washington Department of Fish and Wildlife hatcheries including the Sherman Creek Hatchery, Ford Trout Hatchery, Spokane Hatchery Complex and Wells Hatchery began hauling triploid steelhead stock to the following revised locations, Kettle Falls Marina, Keller Marina and Two Rivers marina.

When lake water temperatures moderated to a point where the temp differential between net pen sites and release site fell below 10 deg F a modified delivery plan was chosen.

Beginning so late in the year we felt that snow was a possibility at any time. Most hatchery managers would not let their trucks move over snowy or icy roads so we reduced the number of sites and hauled to the northern most site first (Kettle Falls).

Three truckloads of the triploid fish were delivered to the Kettle Falls Marina site and off loaded into a pair of net pens and associated docks. The fish were anesthetized prior to tag insertion. Co<sub>2</sub> was bubbled into a seventy-gallon plastic tank at 30 psi through a small diameter hose and air stone. The tanked water was buffered to a pH of 7 using baking soda prior to releasing fish into the tank. After anesthetizing they were tagged using a 3/4 inch monofilament floy tag, numbered in a series addressed to Eastern Washington University. The fish were then held 24 hours prior to being released to observe tag shed and mortality from handling or transporting. No mortality was observed post tagging or post transportation. Fish tagged after the first day were anesthetized and released without any recovery time. The tagging site was across from the marina site and down-stream to minimize the number of fish returning to the net pen site thereby reducing the immediate catch in the vicinity of the pens. The tagging site consisted of a 16X20 ft. dock secured between the net pens. The dock was pushed to a shallow location just off shore using a powerboat. The shallow offshore site was selected to reduce any mortality associated with bladder problems encountered as the fish sank into deep water. Again, no mortality was observed or reported.

In addition to the three truckloads of fish delivered to Kettle Falls, two loads were delivered to net pens located at Two Rivers near the mouth of the Spokane River. These fish were tagged and released by Spokane Tribal Fisheries staff members the following day (11/14/2001).

On November 14, three more truckloads of fish were delivered to Kettle Falls, tagged and released. A total of 5,902 fish were tagged and released at Kettle Falls. A single mortality was observed at Kettle Falls. It was associated with a hole cut into the net pen cover, bird net and the attempted theft of the stock.

During the following week, beginning on November 14, five truckloads of triploid rainbow trout were delivered to Keller Marina for tagging and release. Three loads were tagged and released that day with the balance being tagged and released the following day. On November 14 the final two truckloads were delivered to Two Rivers. The fish delivered to the Two Rivers Marina site were tagged and released by Spokane Tribal Fisheries technicians following the 11/14/01 delivery.

It must be stated, that this phase of the project is an unqualified success from a financial standpoint and from a fishery standpoint.

Letters, phone calls, statements made by various officials at different meetings and general gossip among fishermen all point to a large number of happy fishermen. Fish stories abound about the success of anglers catching the big ones. Several local business men have related to this author how the fishery boosted their business during a slow time of the year. On local business man (A tribal descendant) wrote a letter (Attached) about how touched he was to be able to relate to his ancestors fishing for salmon while he fished for the triploid steelhead near his traditional fishing ground at Kettle Falls, WA. He further offered that his experience of taking local disadvantaged youth fishing and having them catch a truly large fish for the first time was rewarding beyond words. This person offered his help in the future with any further endeavors of this nature.

Local anglers in the Northport region have expressed appreciation for the project and stated that many tagged and untagged fish have been caught. I have had British Columbia citizens relate to me that they personally took fish from the upper Columbia that had to have come from this project.

Tag returns from the Lake Roosevelt Monitoring Project indicate that the planted triploid stock contributed readily to the fishery (TABLE 1)

**PHASE 11, STOCK LAKE ROOSEVELT NET PEN OPERATION WITH TRIPLOID STEELHEAD**

Beginning on January, 2002 triploid steelhead were delivered to the Keller Marina. Approximately 33,000 fingerling at 15/lb. were delivered by Trout Lodge Hatchery.

Photo #1



Gene Smith, Lake Roosevelt Net Pen Coordinator and others  
Unloading triploids from Trout Lodge truck.

Photo #2



Vic Melin, Lake Roosevelt net pen volunteer, aids fish transfer through collapsible tubing into net pen.

Photo #3



Weather conditions at time of fish transfer. Photo of lake surface  
Taken from vehicle cab on Keller Ferry looking toward Colville Indian  
Reservation and mouth of San Poil River

Photo #4



Cole Weatherman, WDFW, Sherman Creek Hatchery, observing Fish transfer at Kettle Falls Marina.

Photo #5



Cole Weatherman WDFW on net pen, Steve Francis, CCT and Mitch Combs, WDFW observing transfer at Kettle Falls Marina. Other unidentified persons are Trout Lodge employees

In the above photo, please observe the new net pen purchased by the Lake Roosevelt Emergency Fish Restoration Project. The safety handrail and walkway are clearly visible. The pen complexes were purchased from Familian Northwest Industrial Plastic Co. of Camas WA.

The second phase of the triploid release for augmentation was initiated on January 28, 2002 with the delivery of 100,000 sub-legal triploid fish from Trout Lodge fish hatchery. This delivery is less than the 136,000 triploids budgeted for. The original order for 136,000 from the Columbia River Fish Farm was lost. The additional fish were secured from the aforementioned hatchery. Incidentally, Trout Lodge is the source for the Columbia River Fish Farm. .

I anticipate the additional purchase of 6-8,000 triploids in the 1.7-2 lb range for late spring planting. Generally in mid-May the lake elevation has reached nearly 1,280 ft. m.s.o.l.; an elevation just below full pool. We anticipate out-planting during this time period to correspond with the normal refill curve of Lake Roosevelt. Additionally it is believed that out-planting during this time period will help reduce entrainment through Grand Coulee Dam (Scholz, 1999, Personal Communication) Keith Underwood, Personal communication 2000).

## **OBJECTIVE 2.**

### **Replace wind damaged net pen complexes.**

During the course of the project period, a total of 4 net pen complexes, support docks, feed containers, electric winches, electrical generators, clamps, cable were ordered for the Lake Roosevelt Net Pen Project. In mid-December the support docks, and frames were delivered to several sites along Lake Roosevelt including the Inchelium Ferry landing. They were assembled and installed into the water awaiting the delivery of the nets and fish. With the initial pen/dock delivery the first of many problems surfaced concerning the project, this and other incurred expenses led to overspending the budgeted amount. The pens and support docks were shipped F.O.B. a total of \$4,187.20. Following this; the purchase of steel cable, cable clamps and other necessary items to anchor the new pens was authorized. Additionally, the net pen volunteer crew was in need of tools to assemble and deploy the net pens, again this purchase along with plastic fish totes with lids was authorized. This was for the purpose of providing secure, dry storage for fish food on the decks and reduction of trips to haul feed to the docks.



Photo #6



April 2002. Volunteer net pen crew at work assembling Floating net pen frame at Gifford Camp Ground launch.

Photo #7



Assembled frame for net pen on boat launch at Gifford

Photo #8



Davenport High School FFA class member at work

Photo #9



Expanded plastic decking being put into place on pen frame



Photo #10



Expanded plastic decking with Lake Roosevelt Net Pen association volunteers at Gifford boat launch site.

Photo #11



Partially assembled net pen, background pens have the safety handrail installed, fish nets will be installed when pens are floated to locations prior to loading with fish.

Photo #12



Net pen volunteers carrying the top safety handrail.

Photo #13



Gene Smith (left) observing Davenport FFA Chapter volunteer, carrying handrail uprights.

Photo #14



Nearly done with assembly process.

### **OBJECTIVE 3.**

#### **Conduct tag return survey utilizing a dual tagging approach**

The initial tagging study was undertaken by tagging all of the catch able size triploid rainbow trout (average weight 1.84 lbs). To minimize encountering any adverse road conditions, the initial fish hauls began at Kettle Falls; the northern most release site. Other release sites included the Two Rivers net pen complex and the Keller Marina site.. In February of 2001, the unusual operation of the Lake Roosevelt system (Power Crisis) forced the net pen operators to release 6,000 floy-tagged rainbow trout intended for a September 2002 release.

In the spring of 2002 the project purchased an additional 100,000 triploid rainbow trout fingerlings for seeding into the net pen program Our intention for the 100,000 triploid purchase and the 10,000 tags was to closely duplicate the aborted effort that occurred in February 2001. The second tagging study will take place in late 2002 when 10,000 tags will be inserted into approximately 10% of the fish released from the net pen program.

**TABLE 1;** Location, date, tag numbers etc of fish planted during the initial out plant effort.

LOCATION	DATE	NUMBERS	NO. TAGGED	NO OF OUT TAGS
Kettle Falls	11/13/2001	50001-51000	1500	
Kettle Falls	11/14/2001	51001-53000	1500	
Kettle Falls	11/19/2001	53001-56000	3000	17 plus 82
Two Rivers	11/20/2001	59001-59750	1500	
Two Rivers	11/27/01	59751-62000	1500	
Keller Marina	11/20/01	55701-55703	3	
Keller Marina	“	55376-55386	11	
Keller Marina	“	58829-58849	21	
Keller Marina	“	55963-55975	13	
Keller Marina	“	54876-54900	25	
Keller Marina	“	54776-54800	25	
Keller Marina	11/20/01	56001-57500	1500	
Keller Marina	11/21/01	57501-59000	1500	

Number Tagged at Kettle Falls Marina 5,884

Number Tagged at Two Rivers Marina 3,000

Number Tagged at Keller Marina 3,099

Total tagged 11,983

**TABLE 2,** Tag numbers not inserted at Kettle Falls, broken and /or lost tags not inserted at Kettle Falls. WA. NO=17

LOCATION	Tag Number
Kettle Falls	50334
	50135
	50619
	50788
	51304
	50300
	50750
	52025
	50623
	50285
	53272
	52411
	50025
	50850
	52311

	53370
	50162

Other tags not inserted and recovered from glove bucket 58,505; 51,333; 52,839; 55,423; 57,143. These tags are out tags and are not considered in the data set.

**TABLE 3,** Numbers from tags returned to EWU and WDFW from different number series tabulated by Spokane Tribe of Indians

Tag Series	Planted at	Number of returned tags
50 K	Kettle Falls	90
51 K	Kettle Falls	111
52K	Kettle Falls	117
53K	Kettle Falls	106
54K	Kettle Falls	96
55K	Keller Marina	103
56K	Keller Marina	71
57K	Keller Marina	59
58K	Keller Marina	59
59K	Two Rivers	83
60K	Two Rivers	105
61K	Two Rivers	118
Total tags returned		1117
Percent tags returned		.09%

**TABLE 4,** Number of returned tags per plant site.

Plant site	Number of tags returned
Kettle Falls	520
Two Rivers	292
Keller Marina	306

## **Second, Fish Transport Effort.**

Beginning on June 4, 2002; the second fish relocation effort began at the Columbia River Fish Farms. Two loads of approximately 400 triploid steelhead trout (2.1 lb each) were delivered and released at the boat launch ramps at Keller and Inchelium WA, both locations on the Colville Indian Reservation, a single load (438) was delivered to the Kettle Falls Marina by a fish tanker from the WDFW.

The initial two loads to reservation locations used Colville Tribal hatchery trucks. On June 6, 2002, each Colville Tribal hatchery truck delivered a load each to Snag Cove and French Point Rocks respectfully. The aforementioned locations are off of the reservation proper but are on the old north half of the Colville Indian Reservation. A staff photographer/reporter from the Statesman Examiner was present during the release. No fish were moved the following week due to scheduling conflicts.

On June 18, fish transportation efforts began again with a load of triploids being delivered to the Spokane Arm of Lake Roosevelt. The Spokane Tribe Fisheries Program provided this truck and planted the fish below Little Falls Dam. Colville Tribal Hatchery trucks each delivered single loads to the boat launch ramps at Northport, WA. and China Bend. The addition of the far north sites to the Lake Roosevelt planting effort, provide an excellent lake wide planting effort. A WDFW truck delivered a third and final load to Snag Cove, located north of the Kettle River and Columbia confluence. Generally speaking, the release sites were diverse in location providing access for all anglers all along the lake

The above table (Table 3) indicates the locations of fish planted during the second planting effort. Logistically the fish were planted in ideal locations making them easily available to all area anglers. Northport and China Band are the locations farthest north that allow access by trucks and is adjacent and east of the old north half. The Little Falls Dam site is located on the Spokane River, within the Spokane Indian Reservation, in Stevens Co WA. The Keller boat launch was chosen for its location on the Colville Indian Reservation upstream of Grand Coulee yet somewhat mid point in the lake in general. Spill is a known attractant to fish at Grand Coulee Dam (Sullivan 1999). Because of the spill activity at Grand Coulee Dam, no fish were released from Spring Canyon or the primitive launch site nearby. Hydro acoustic data analysis revealed that numbers of fish are attracted to the drum gates during light show spill episodes; however light show spill is limited to .4 ft in depth. Currently, they are spilling 2-3 ft deep across all drum gates (9) for flood control concerns. Colleen Sullivan in her 1999 report on entrainment; stated that spill deeper than .4 feet would certainly contribute to a higher rate of entrainment.

During the second out planting effort a total of 8,688 triploid steelhead trout were purchased and delivered to various Lake Roosevelt locations. The fish were received and transported in two groups, the first of 5,840 at an average weight of 2.1 lb each the second group of 2,848 at an average weight of 2.2 lb each. In the interest of cooperation, the enhancement and promotion of the Lake Roosevelt fishery, no transport costs were accrued during the transport effort since the entities owning the fish tankers absorbed the costs. The entities involved in the hauling effort included the Spokane Tribe of Indians, the Colville Tribal hatchery and the Washington Department of Fish and Wildlife. The cost for this final fish plant was \$24,273.00.

No specific records were kept relating to which locations receiver the larger or smaller fish lots.

Due to management error the final fish purchase over spent the allocated budget amount by \$6,678.00. Every effort is being made at this end to repay the overspent funds.

**TABLE 5; June Fish Plant Locations, Numbers and Truck Affiliation**

Date	Location of plant	Number planted	Truck Affiliation	Gen Loc
June 4, 2002	Keller Boat Launch	430	CCT	CIR
June 4, 2002	Keller Boat Launch	439	CCT	CIR
June 4, 2002	Kettle Falls Marina	438	WDFW	EAST
June 4, 2002	Inchelium Ferry	400	CCT	CIR

June 4, 2002	Inchelium Ferry	401	CCT	CIR
June 5, 2002	Keller Boat Launch	404	CCT	CIR
June 5, 2002	Keller Boat Launch	402	CCT	CIR
June 5, 2002	Inchelium Ferry	527	CCT	CIR
June 5, 2002	Inchelium Ferry	536	CCT	CIR
June 6, 2002	Snag Cove	403	CCT	N-Half
June 6, 2002	French Point Rocks	404	CCT	N-Half
June 6, 2002	Snag Cove	527	CCT	N-Half
June 7, 2002	French Point Rocks	529	CCT	N-Half
June 7, 2002	Little Falls Dam	402	STI	SIR
June 18, 2002	Northport Boat Ramp	411	CCT	East
June 18, 2002	China Bend Ramp	407	CCT	EAST
June 18, 2002	Snag Cove	405	WDFW	N-Half
June 18, 2002	Northport Boat Ramp	410	CCT	East
June 19, 2002	China Bend Ramp	408	CCT	N-Half
June 19, 2002	Two Rivers	405	STI	SIR
TOTAL		8688		

**TABLE 6,** Additional Tags and location of catch returned to Colville Tribal Fish and Wildlife and tribal creel clerk.

<b>Tag Color</b>	<b>Number</b>	<b>Date</b>	<b>Location</b>
Yellow	56918	7/10/02	Spring Canyon
	58274	2/22/02	Spring Canyon
	58664	2/24/02	San Poil
	59002	7/28/02	Rufus Woods
	61094	2/17/02	Spring Canyon
	59483	8/14/02	Keller Ferry
	54783	8/11/02	Crescent Bay
	56776	5/10/02	Lake Roosevelt
	56845	5/13/02	East of S. Poil
	58114	2/02/02	Not given
	60245	2/16/02	Spring Canyon
	59624	2/16/02	Spring Canyon
	55975	7/14/02	Keller Ferry
	56227	5/24/02	Spring Canyon
	50579	4/20/02	Stranger Creek

	53152	4/20/02	Stranger Creek
	55148	4/20/02	Stranger Creek
	57075	5/16/02	Rufus Woods
	58102		
	58344		
	57998		
	56775	1/05/02	Spring Canyon
	59405	2/01/02	Spring Canyon

Photo #15



Successful, happy angler at China Bend boat launch less than 1 hour following plant.



## **DISCUSSION**

Tag returns to the Lake Roosevelt Monitoring Project indicate that the out-planting of triploid steelhead was very successful. Out of 12,000 tags installed a minimum of 1117 have been returned. This is a 9 percent return of the fish to the fishery (Table 3).

Lake Roosevelt Monitoring project information places the normal rainbow trout tag return at approximately 2-4 percent.

One tag was returned 79 days after the fish release at the Keller marina. The fish was caught near North Gorge camp ground approximately 90 miles upstream. Yellow floy tags continue to be returned, some from near Bonneville Dam on the lower Columbia River.

A limited number of tags have been recovered from fish caught in Lake Rufus Woods, confirming that entrainment is continuing. Tag return data at times is incomplete, as anglers do not always put location of catch however we assume that a tag in the Spring Canyon tag return box was caught nearby.

During the spring high flow period, a group of untagged fish was planted at the Northport boat launch. It was assumed that they would immediately begin moving downstream with the high flow present at the time. Recently, Northport area anglers have harvested many of these easily identified fish. Other reports indicate that the tagged fish are being caught as far north as British Columbia, Canada.

Did the project meet its goal and objectives? Yes, beyond any shadow of doubt.

The documentation of fish from British Columbia water, the letters from local anglers, and phone calls praising the tribes stocking effort is testimony to the effectiveness of the triploid planting effort. The intent was to supplement the fishery with a readily catchable, larger size fish. From a tag return standpoint and a cost effectiveness standpoint the project was a complete success. In a nine-month period of time a 09% percent tag return was documented compared to 1% or 2% from previous Lake Roosevelt tagging efforts (Deanne Pavlic, personnel Communication 2002).

### **Final, Fish Tagging Effort.**

The final fish tagging effort took place at the Kettle Falls marina over a two-day period. Beginning on September 9, 2002 a tagging crew was put together consisting of fishery personnel from the Spokane Tribe of Indians, Washington Department of Fish and Wildlife (Sherman Creek hatchery) and the Colville Tribe, Chief Joseph Kokanee Project.

The tagging facility/site was the net pen location at the Kettle Falls Marina. Prior to tag insertion, fish were anesthetized using Co2 bubbled into a 40 gallon plastic water tub. The solution was then buffered to a neutral pH of 7, using Bicarbonate of soda. Fish were directly released into Lake Roosevelt following tag insertion.

The tags used during the final tagging operation were Grey in color and numbered from 1-10,000; all had an EWU return address. A total of 5,000 tags were inserted on Monday September 9 and the final 5,000 on Tuesday September 10, 2002.

Since tag returns are not immediately expected, a short addendum report will be submitted at a later date discussing the success/failure of the triploid steelhead in the

fishery. Early tag returns (9% and increasing) from the fish planted during December of 2001 indicate that the use of triploid steelhead may be the route that other projects need to follow.

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## **Personal Communication**

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Kirk at Grahams Exxon

Gary LeCaire, Vaagen Lbr CO, Colville

Jerry Matteson, Mayor, Northport WA.

Dennis Broderius, Angler

Dennis Dial, Angler

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**TABLE 6**, Additional Tags and location of catch returned to Colville Tribal Fish and Wildlife and tribal creel clerk.

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## **ADDENDUM**

Subsequent to the completion of the final editing process additional tag recovery data has been received and recorded. Analysis further emphasizes the success of the triploid steelhead planting concept.

The use of the triploid steelhead stock seems to indicate that a large number of the fish stay in Lake Roosevelt, do not entrain and are readily recruited to the fishery over time. The initial plants were a success as evidenced by the immediate report of these large tagged fish being caught. Later catches also are being caught indicating their propensity to stay in the lake and not migrate south and be entrained through Grand Coulee Dam. In March of 2002 we purchased 100,000 triploid fingerlings from the Trout Lodge fish hatchery. These fish were delivered and stocked into the Lake Roosevelt Net Pen Project nets and reared until September. At the time of release the fingerlings had grown to an approximate average size of 9-10 inches. At this time we tagged approximately 10% (11,000) of the triploids that had been stocked into the Kettle Falls net pens during March. The tags were Grey in color to differentiate themselves from earlier triploid planting and from other Rainbow trout planted in the lake. Tag returns will allow an evaluation of the success of this stock in the current fishery. Evidence of this plantings success is beginning to surface as we are now receiving tags that are Grey in color. We expect a detailed analysis of the Grey tag return in late 2003. This data will be presented in the Lake Roosevelt Monitoring Project annual report for Bonneville Power Administration by the Spokane tribe of Indians.