

# LAKE BILLY SHAW OPERATIONS AND MAINTENANCE

Final Annual Report 2000



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**Lake Billy Shaw Operations and Maintenance**

**1995-015-06**

**Final Annual Report 2000**

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### *Abstract*

*Lake Billy Shaw is a newly constructed earthen dam reservoir with a surface area of 430 acres. Construction on the dam and structures was complete in November of 1998. The fish screen structures were complete in December of 1998, with initial filling in May 1999. Upon initial filling, dam structures, monitoring wells, fish screen structures, and lake level were monitored daily, with recordings being taken three times/week. During June 1999 the water to the lake was turned off in order to complete additional construction work on the lake. This work included installation of culverts around the perimeter road, installation of boat launches, finish work on the spillway structure, pumphouse and well protection and planting 4 trees along the entrance to the boat launch area. The water was turned on again in late September 1999 with all structures having been checked, fish screens greased and maintained and well levels being monitored. In 2000 the Operations and Maintenance portion of the project began with monitoring of piezometers, water levels, biological monitoring, riparian plantings, protection of shorelines, and maintenance of structures and appurtenances.*

## INTRODUCTION

Construction of the Lake Billy Shaw dam & reservoir was completed in November 1998. The purpose of this reservoir is to provide an additional fishery for sustenance for Shoshone-Paiute Tribal members. By the Northwest Power Planning Councils' (NWPPC) Fish and Wildlife Program measure 10.8C.4 and 10.8C.7 the Lake Billy Shaw project was approved by the NWPPC and the Columbia Basin Fish and Wildlife Authority (CBFWA).

This phase of the Lake Billy Shaw project was approved by the NWPPC and CBFWA for FY2000 funding. This project is an Operations and Maintenance (Monitoring and Evaluation) program for the Billy Shaw Reservoir. The work to be completed includes maintenance of the lake and its shorelines, fencing the reservoir to exclude domestic stock and allow wild stock (antelope) water by installing water troughs (gravity feed) near areas that are fenced to provide water to wild and domestic stock. It also will include maintenance of the delivery system to fill/maintain the reservoir which will include hauling and compacting soil at low or disturbed sections of the system, operation of the dam and structures associated with the dam (see O&M plan). The project's outreach component includes water quality monitoring of the lake and associated wells, along with riparian plantings of native forage, shrubs, and trees, and work on the intermittent tributaries. There is a travel component of this project that will include trips to Fort Hall Idaho to coordinate with the Joint Culture Facility. However, at the time of this report the Joint Culture Facility Project has ceased as it did not pass the Step 3 review by the NWPPC.

The Billy Shaw Project is intended to become a self-sustaining fishery within the next 7-10 years. The work at Lake Billy Shaw will complement the Tribes' Habitat Enhancement/Protection project. In order to provide suitable habitat and cool water temperatures for the fish to survive, this work was completed, and we are awaiting approval to begin stocking fish into the reservoir. The new habitat also provides areas for raptors and mammals in this pristine high desert lake.

The Operations and Maintenance (O&M) project went through the peer review with CBFWA (1998) and was recommended for funding in 1999. The project again went through a peer review by CBFWA and the ISRP in 1999 and was recommended for funding again in 2000 and 2001. The O&M project will continue the work on the reservoir in order to prepare it for a fishery in 2000-2001.

All of the DVIR is in the Columbia Basin and there are currently no documented threatened or endangered (T&E) fish species on the reservation. We will be in contact with National Marine Fisheries Service (NMFS) should we discover any T&E species. As part of this project we are also working with the U.S. Forest Service (USFS) and U.S. Fish and Wildlife Service (USFWS) to determine if any T&E species are present and to what numbers they are present.

## **METHODS**

### *1. Protect shoreline and inlet streams from degradation*

The benefits in protecting the shoreline will be to provide cool water temperatures for the trout that will be in the lake, along with protecting the shoreline from degradation and erosion. In fencing the shoreline we will protect the shore of the lake and riparian area from deterioration from wild/domestic stock and human impacts. The shoreline has been fenced in 2000 with the stream corridors to be fenced in 2001. This work will prevent vehicles from traveling in undesignated areas, foot traffic along critical areas of the lake, as well as degradation from non-human use. The riparian planting (native trees, shrubs, grasses) along the shores and streams of the area will help in maintaining excellent water quality in providing shade, preventing erosion from wave action and wind, and helping prevent entry of excessive nutrients into the lake. Over 700 trees were planted in 1999 along the shore of Lake Billy Shaw, with 100 being planted at the mouth of the inlet stream.

### *2. Disseminate information*

The benefit to this objective will be to inform visitors and the general public of the work that Bonneville Power Administration (BPA), CBFWA, NWPPC, have done to aid the Shoshone-Paiute Tribes, and the Tribes' role in construction and maintenance of the project. This work was funded by the ratepayers of the Pacific Northwest under the Fish and Wildlife Program. We present monthly articles to the Sho-Pai news and have submitted an article to the Idaho Statesman as to what is progressing at the DVIR as well as what other fish and wildlife projects we are doing and BPA's commitment to the Indian Tribes in the Columbia River Basin.

Work for 2000 included signs for the roads leading to Lake Billy Shaw, newspaper articles, and public meetings on the DVIR.

Future work:

Work proposed for FY 2001 will include the newspaper articles, informational signs at the Reservoir this year will include signs directing fishermen to fishing, camping, parking, and facility areas. Informational boards will be built at the reservoirs to inform the public about the regulations and facilities available at the reservoir and the surrounding areas.

### *3. Work with Owyhee Schools*

In working with the Owyhee Schools we hope to benefit both our program and the youth of the DVIR. This goal is to get the youth of the DVIR involved in environmental issues while giving them some on-the-job experience in an environmental project. Tasks included sampling, sampling design, recording and collecting data, analyzing data in interpreting the results.

*4. Follow O&M and M&E plan*

This objective is to monitor and evaluate the water, fishery, and habitat associated with Lake Billy Shaw. This will be accomplished through following the O&M and M&E plan that is in place for Lake Billy Shaw. The data collected from this work can be added to either STREAMNET, STORET or other water quality databases. The O&M and M&E plans are available at the Fish and Game Department of the Shoshone-Paiute Tribes.

*5. Annual and Quarterly reports to BPA and Tribal Council*

This objective keeps BPA and the Shoshone-Paiute Tribes up-to-date on work completed for the Lake Billy Shaw O&M project. Also any budget changes or modifications will be included in the 4 quarterly reports and annual report.

*6. Coordinate with Shoshone-Bannock Tribes on Joint Culture Facility Project.*

This objective is for travel and coordination with Fort Hall Indian Reservation on our Joint Culture Facility. The Shoshone-Paiute Tribes do not receive any funding through the Joint Culture Facility, yet we are required to make trips to Fort Hall to view the hatchery site and meet with the Shoshone-Bannock Tribes on the Project. This task is being added to this project on the request of the Shoshone-Paiute Tribes COTR. As of this writing, this task will no longer be a part of this project.

## **Results:**

### *Protect shoreline and inlet streams from degradation*

The entire reservoir shoreline was fenced with barbed wire and smooth wire on the bottom strand to allow antelope to enter the reservoir area. Approximately 7 miles of area was fenced. The fencing will help exclude domestic stock from trampling shoreline areas. Along with the fencing we planted trees along the shoreline. The riparian planting (native trees, shrubs, grasses) along the shores and streams of the area will help in maintaining excellent water quality in providing shade, preventing erosion from wave action and wind, and helping prevent entry of excessive nutrients into the lake. Over 700 trees were planted in 1999/2000 along the shore of Lake Billy Shaw, with 100 being planted at the mouth of the inlet stream.

### Future work:

Work in 2001 will include more willow and riparian planting and fencing of the streams to maintain spawning areas for the trout in the lake. Along with the fencing and planting, we will install water troughs/developments along the edge of the lake and streams that are to be fenced off to exclude domestic stock. This is needed due to the fact that the lake is in an open range area and, in erecting enclosure fences, we must supply the cattle and horses with water to drink. Approximately 3-5 water troughs/stock water ponds will be installed to provide for the stock in 2001.

### *Disseminate information*

This task is just beginning as we do not want to alert the general public about the reservoir as we do not have fish in the reservoir yet. We have erected signs about the location of the reservoir and have included articles in the local paper regarding the fencing and tree plantings that have occurred. One public meeting was held on the DVIR before we initiated the fencing of the shoreline.

### Future Work:

More informational signs and an information board at the reservoir to alert fishermen about the regulations and the enhancement work that is occurring. This work is contingent on the Tribes (in cooperation with BPA) opening the reservoir to fishing. Also contingent on getting fish in the reservoir.

### *Work with Owyhee Schools*

This task went well during 2000 however there was little work for the students to be involved in. Most of the students helped out on the Habitat Enhancement Project or fish stocking project. As the project progresses we envision more participation from the school. Students did help in planting trees around the reservoir and some helped in an insect transplant to help jump-start the aquatic insect population.

Future Work:

More involvement with the students in water quality monitoring and sampling of the fishery.

*Follow O&M and M&E plan*

See data in the attachments. From the data collected the reservoir is already suitable for the survival of trout species. Water temperatures, Oxygen levels, and food availability are more than adequate for species survival. The Zooplankton and Algae Identification (Attachment III) was completed in July with the help of the Pyramid Lake Paiute Tribe (B. Harry)

Future work:

Continue with O&M, M&E

**Conclusions:**

The spring protection/developments appear to be lowering water temperatures in streams sampled thus far. Data is currently being analyzed and will be included in future reports. Exclosures photos will be included in Final Report as will recommendations for monitoring and evaluation of exclosure areas. NRCS of Idaho and Oregon have recommended either, cutting or allowing grazing in exclosure areas to help prevent smothering of spring areas to allow better re-growth of native grasses. These recommendations will be evaluated and implemented in 2001/2002. The riparian areas of streams that have headwater areas protected will be evaluated through the genetics project in 2001. Data will be included in 2001 Annual Report for this project and the Assess Resident Fish Project.

The fisheries data and information collected is very valuable in it has helped us locate areas for protection/enhancement and has given us information on locations of trout species for work in 2001 and in the Assess Resident Fish Project. Data collected in that project and this project will be included in 2001 reports.

The area that is lacking is our work with the schools. This is very difficult with the inconsistency of teachers being present throughout the year. We have done well working with the environmental club and during the summer, however, it has been difficult to complete year round projects with the students. Work completed to date has included sampling fish and water quality on many streams, riparian plantings and tree plantings, and gill netting on the reservoirs. We hope to begin projects with the students during the fall of 2001.

## Attachment 1: Lake Billy Shaw Water Quality Data

### BS0100.DAT

	Date/Time	Temp	SpCond	Cond	Salinity	DO%	DO Conc	Depth	Ph	ORP
	M/D/Y	C	mS/cm	MS/cm	Ppt	%	Mg/L	Ft		mV
0	06/27/00 13:50:39	20.94	0.212	0.195	0.10	76.5	6.57	5.168	6.99	130
1	06/27/00 13:51:10	21.34	0.210	0.195	0.10	76.4	6.77	3.458	6.56	152
2	06/27/00 13:51:42	22.92	0.209	0.201	0.10	90.1	8.04	0.502	6.51	153

### BS0101.DAT

	Date/Time	Temp	SpCond	Cond	Salinity	DO%	DO Conc	Depth	Ph	ORP
	M/D/Y	C	mS/cm	MS/cm	Ppt	%	Mg/L	Ft		MV
0	06/27/00 14:43:35	19.08	0.187	0.166	0.09	79.3	6.95	10.274	6.85	24
1	06/27/00 14:44:50	19.31	0.184	0.164	0.09	78.3	6.87	8.134	6.85	69
2	06/27/00 14:45:36	20.03	0.186	0.169	0.09	73.3	6.61	5.929	6.82	80
3	06/27/00 14:46:34	20.41	0.187	0.170	0.09	73.8	6.70	4.103	6.83	84
4	06/27/00 14:47:18	21.79	0.187	0.175	0.09	81.3	7.49	2.073	6.85	85
5	06/27/00 14:47:32	21.84	0.187	0.176	0.09	81.8	7.57	1.446	6.89	84

### BS0102.DAT

	Date/Time	Temp	SpCond	Cond	Salinity	DO%	DO Conc	Depth	Ph	ORP
	M/D/Y	C	mS/cm	MS/cm	Ppt	%	Mg/L	Ft		mV
0	06/27/00 15:22:10	15.94	0.191	0.158	0.09	33.5	3.31	22.059	6.88	-20
1	06/27/00 15:23:47	16.00	0.189	0.156	0.09	24.9	2.45	21.818	6.81	-35
2	06/27/00 15:24:33	16.92	0.184	0.155	0.09	34.0	3.29	20.055	6.81	-3
3	06/27/00 15:25:11	17.22	0.183	0.156	0.09	42.1	4.05	18.139	6.62	11
4	06/27/00 15:26:11	17.45	0.182	0.156	0.09	51.2	4.90	16.110	6.85	24
5	06/27/00 15:27:10	18.05	0.182	0.158	0.09	62.0	5.86	14.096	6.89	30
6	06/27/00 15:27:52	18.89	0.184	0.163	0.09	68.7	6.39	12.068	6.90	35
7	06/27/00 15:28:30	19.10	0.183	0.163	0.09	78.3	7.25	10.000	7.03	33
8	06/27/00 15:29:16	19.36	0.184	0.164	0.09	81.0	7.46	7.981	7.14	33
9	06/27/00 15:29:53	19.66	0.184	0.166	0.09	81.1	7.43	6.014	7.23	34
10	06/27/00 15:30:26	19.90	0.185	0.167	0.09	81.4	7.41	4.055	7.29	33
11	06/27/00 15:31:04	21.01	0.186	0.172	0.09	82.3	7.33	2.092	7.27	39
12	06/27/00 15:31:20	21.10	0.186	0.172	0.09	82.7	7.35	0.811	7.36	35

## Attachment II

### Lake Billy Shaw Criteria

Mean Depth	23'
Maximum Depth	36'
Surface Acres @ elevation 5351'	430 Acres
Reservoir Capacity @ elevation 5351'	3300 acre feet
Depth @ 15' or greater (percent)	76%
Miles of Shoreline to fence	22
Designated Use	Camping – Trophy interior redband trout ( <i>Oncorhynchus mykiss gibbsi</i> ) fishery
Biological Use	Big game, fisheries, waterfowl, amphibian, raptors, migratory bird species, furbearers

**Attachment III**  
**Lake Billy Shaw Zooplankton/Algae**

Zooplankton ID

Daphnia  
Ceriodaphnia  
Diaptomus  
Nauplii

Algae ID

Gleotrichia  
Spirogyra  
Ceratium