Annual Report

Fish Passage Operations

at the Landsburg Dam Fish Passage Facilities

on the Cedar River from

July 2008 through June 2009

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Summary
This report summarizes the sixth season of fish passage operations from 7/1/08 through 6/30/09 at the Landsburg Dam fish ladder and sorting facility on the Cedar River. Seattle Public Utilities (SPU) operated the ladder and sorting facility in sorting mode from 9/2/08 through 2/3/09 to prevent sockeye from passing above the Landsburg Dam and to aid in the collection of Chinook and coho salmon for recolonization studies. It was operated in passive mode from 7/1/08 – 9/1/08 and from 2/3/09 - 6/30/09, providing unhindered passage above the dam for all fish species. The facility was shut down for forebay cleaning from 6/1/09 through 6/5/09. On 11/7/08 the adult guide panel was broken due to an extra ordinary amount of debris. It was reinstalled on 11/12/08. During this period the ladder was operated in sorting mode during normal business hours by utilizing the diffuser panel. During evening and night hours the diffuser panel was raised and provided unhindered passage for migrating fish. From 1/7/09 to 1/14/09 the fish ladder was shut down during a large storm event. While in sorting mode a total of 59 adult sockeye entered the sorting facility, of which 6 were transported to the lower Cedar River and 53 were transported to the Cedar River Sockeye Hatchery for use as broodstock. A total of 146 adult Chinook salmon were passed above the dam from 9/3/08 to 11/11/08 and 366 adult coho were passed above the dam from 9/18/08 to 1/28/09. The sorting facility did experience some fish mortality, 2 sockeye salmon due to naturally occurring mortalities.

Forward
The construction of the fish ladder and sorting facility was completed as part of the comprehensive Cedar River Watershed Habitat Conservation Plan (HCP). The HCP was approved in the spring of 2000 and includes an extensive array of protective land management practices, instream flow management prescriptions, mitigation measures for the fish migration barrier at the Landsburg Diversion Dam and other habitat protection and restoration measures. The primary purpose of the HCP is to provide certainty for maintaining a safe and high quality drinking water source for the Seattle metropolitan area while protecting and restoring 83 species of fish and wildlife and the habitats upon which they depend in the Cedar River basin. As part of the HCP, SPU constructed a fish ladder and sorting facility to provide passage above the dam for all fish species in the Cedar River with the exception of sockeye salmon. Sockeye, which spawn in the Cedar River in much greater numbers than other fish species, are not passed above the dam because large numbers of decaying carcasses could pose a risk to drinking water quality and public health. The fish passage project successfully reopened more than 12.5 miles of mainstem and approximately 4.5 miles of tributary spawning and rearing habitat for the first time in more than 100 years.

Introduction
This 2009 annual report focuses on the operation of the Landsburg Dam fish ladder and sorting facility from 7/1/08 through 6/30/09. Additional information including previous years reports can be found at:
http://www.seattle.gov/util/About_SPU/Water_System/Habitat_Conservation_Plan/FishPassageAbovetheDam/index.htm

Fish Ladder Components
The fish ladder and sorting facility are composed of four main components the (1) lower ladder, (2) sorting and holding, (3) fish transport, and (4) upper ladder. The lower ladder includes three downward opening fish entrance gates, a series of 11 vertical slot steps in a channel that raises the water elevation in one-foot increments, and an adult guide panel gate. The adult guide panel gate swings on hinges and when it is open the ladder is in passive mode and when it is closed the

ladder is in sorting mode. In general, the sorting and holding facility contain two holding ponds with mechanical crowders, a pescalator (fish lift), a sorting table, and a volitional bypass channel with a fish trap. Holding pond one contains the v-trap, mechanical crowder, and the pescalator. Holding pond two contains a mechanical crowder and a wall that divides the pond lengthwise. The fish transport component contains a foot crowder, fish hopper, a 5-ton hoist, and parking area for the fish transport truck. The upper ladder contains 3 vertical slot steps, a fish counter, and the fish ladder exit. Figure 1 shows the schematic drawing of the fish ladder and sorting facility as well as a photograph of the sorting facility and Figure 2 shows the fish hopper on top of the fish transport truck.

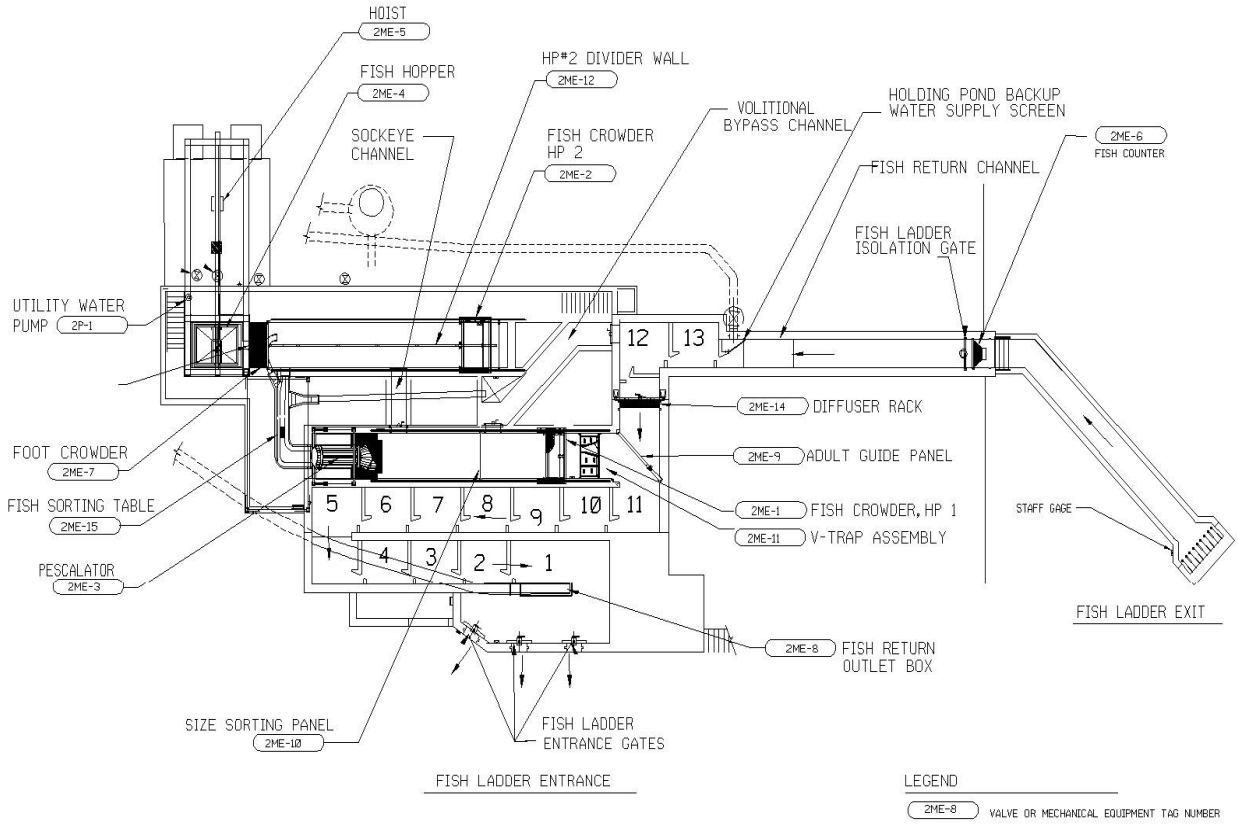

Figure 1: Layout of Landsburg Dam Fish Ladder and Sorting Facility

Methods and Procedures for Sorting Mode

The fish ladder and sorting facility were designed to operate in either sorting mode or passive mode. Sorting mode is used when sockeye are present at the ladder, typically from early September through December. In this mode, the crowder slowly moves fish to the upper part of pond one to the pescalator that raises the fish up and deposits them onto the sorting table. The sorting table (Fig. 2) provides a workstation to sort male and female sockeye into separate halves of holding pond two and move Chinook or coho into totes. To prepare sockeye for transport, a mechanical crowder in holding pond two crowds sockeye into a hopper which is raised with a 5-ton hoist and placed on a water filled tank on the fish truck. The hopper is designed to provide a water-to-water transfer of sockeye from the hopper to the fish truck (Figure 2).

Figure 2: Sorting table operation and fish hopper on top of fish transport truck.

Passive Mode

When the fish ladder is operated in passive mode, the adult guide panel is moved out of the way and fish are not allowed in the sorting facility and they move unhindered through the upper ladder and into the river above the dam. The ladder was designed to be operated in this mode from late December through August (the time period when sockeye are generally absent from the river). In this mode, a Vaki River Watcher fish counter is used to monitor fish passage. The system was installed to aid in the understanding of: run timing, the rate of passage upriver and the rate of recolonization of stream and river habitat in the watershed. The system uses a scanner to count fish and calculate length and an underwater camera to aid in species identification, sex, and document the presence or absence of the adipose fin.

Results and Discussion

Sorting Mode

This was the fifth year SPU created a special assignment for Drainage and Wastewater (DWW) Collection Workers to work at fish passage facility. This opportunity was developed to encourage cross training within SPU and to allow the fish passage project to recruit staff that would return to the project on an annual basis, limiting the training of new staff and developing an experienced technical staff. Three staff members from DWW worked at fish passage this season. Two on regular hours and one worked two days a week at fish passage while continuing to work with DWW three days a week. One DWW staff member has returned for a fifth straight year. This was the first season for DWW apprentices to attend a two rotation at the fish ladder. Fish passage staff trained 2 apprentices at a time and a total of 13 were trained in fish species identification, fish handling, facility equipment, fish hauling, and safety procedures. The ladder was staffed 7 days per week with hours of operation ranging from 7:00 AM to 5:00 PM. Fish were sorted daily to minimize delay of upstream migrating Chinook and coho. In late November the staffing level was reduced to the Landsburg Fish Passage Manager and a DWW Lead Collection Worker. The sorting operation continued until February 3rd to get a better understanding of the daily movement of coho within the ladder and to assist recolonization studies looking at coho movement and distribution within the watershed. The last fish through the ladder while in sorting mode was a coho on January 28th. Stream flows in the Cedar River (USGS gage 12117600 below Landsburg) during sorting mode ranged from 141 ft^3/s to 7,090 ft^3/s on 11/7/08 stream flow was at 1,330 ft^3/s and an extreme amount of debris broke the adult guide panel. On 1/6/09 the main water supply gate (2G-1) was reduced to an opening of 25%. On 1/7/09 the fish ladder was dewatered to prevent possible damage to the guide panel. The flow at this time was near 2,500 ft^3/s. Ambient water temperature at Landsburg ranged from 3.1 to 13.5 °C during this period.

Sockeye

From 9/9/08 to 11/1/08 61 sockeye entered the facility and 12 females and 49 males were collected and hauled to the river or the sockeye hatchery, less two mortalities. Fish that entered the sorting facility were released back into in the Cedar River or they were moved to Cedar River Sockeye Hatchery for use as broodstock.

Table 1: Sockeye counts at the Landsburg Fish Passage Facility in 2008

	Entered Facility	Presort Mortality	Number Sorted	Post-sort Mortality	Transported to Hatchery	Transported to River	Total Mortality	Total Transported
Female	12	1	11	0	11	0	1	11
Male	49	1	48	0	42	6	1	48
Total	**61**	**2**	**59**	**0**	**53**	**6**	**2**	**59**

For the sixth year in a row, WDFW requested broodstock from the Landsburg fish ladder to spawn with fish held at the hatchery. This request was brought before the Anadromous Fish Committee (AFC) and members recommended that up to 1,000 sockeye or 20% of the broodstock for the hatchery could be collected from Landsburg. The fish passage operation provided 11 female and 42 male sockeye to the hatchery.

Chinook

Brood year 2008 marked the sixth year of a multi-year collaborative study to investigate and monitor the effects of recolonization by Chinook and coho on the Cedar River above the Landsburg Dam. Lead researchers included Peter Kiffney (NOAA), George Pess (NOAA), Joe Anderson (UW) and Tom Quinn (UW). To support the study fish passage staff collected biological data (presence/absence of adipose fin, sex, fork length and condition) and a dorsal fin clip from all adult Chinook passed above Landsburg. A small portion of each fin clip was preserved in 100% ethanol for future genetic parentage analysis. The fin clips were triangle shaped and approximately 15 mm wide at the base. The oversized clips provided staff with a mechanism to determine if the fish had already passed through the fish ladder.

Chinook salmon were passed upstream of the Landsburg Dam between 9/3/08 and 11/11/08. Table 2 shows that, of the 146 adult Chinook were passed upstream, a majority of the fish had adipose fins indicating that they were not of hatchery origin.

Table 2: Summary of Chinook passed above the Cedar River Landsburg Dam, 2008

	Adipose Absent	Adipose Present	**Total**
Female	11	39	**50**
Male	14	82	**96**
Total	**25**	**121**	**146**

Coho

To support the recolonization study mentioned above, fish passage staff also collected biological data from all adult coho passed above Landsburg (same methods as with Chinook) and tissue samples for future DNA parentage analysis.

Table 3 shows that a total of 366 coho were passed upstream and that all but one of the fish had adipose fins, indicating that they were almost all of natural origin.

Table 3: Summary of coho passed above the Cedar River Landsburg Dam, 2008/2009

	Adipose Absent	Adipose Present	**Total**
Female	1	184	**185**
Male	8	173	**181**
Total	**9**	**357**	**366**

Passive Mode

From 7/1/08 – 9/2/08 and from 2/3/09 - 6/30/09, the fish passage facility operated in passive mode providing fish unhindered passage above the Landsburg Dam. In passive mode, the Water Treatment Operators at Landsburg conducted routine inspections of the ladder facility to ensure there were no issues with debris. While in passive mode a Vaki River Watcher system installed in the upper ladder enumerated fish migrating upriver. The system was installed to aid in the understanding of run timing, the rate of passage upriver and the rate of recolonization of stream and river habitat in the watershed. The system is designed to count fish, calculate fish lengths, and take five photographs of each fish. A software package can be used to be display the photos alongside other data recorded by the system (i.e., date and time, fish depth, fish length, swimming direction, and water temperature). In some cases the imaging capabilities helped determine the species, sex, and if the fish had a clipped adipose fin. Stream flows in the Cedar River (USGS gage 12117600 below Landsburg) during passive mode ranged from 174 ft^3/s to 1,390 ft^3/s and the fish ladder operated as intended under these flow conditions. Ambient water temperature at Landsburg ranged from 4.6 to 14.9 °C during this period.

Fish Passed Upriver in Passive Mode

A total of 405 fish were enumerated with Vaki River Watcher system in passive mode. Species identification was based on length estimates and photographic interpretation. Of that total, 204 were identified as trout and the peak of the trout migration occurred in July (Table 4). Of the remaining 201 fish observed, these fish were determined to be either whitefish or trout, whitefish, salmonid, undecided, coho or trout, or presumptive steelhead.

Table 4: Summary of species passed above the Landsburg Dam on the Cedar River while in passive mode in 2008/2009

Month/Year	Trout	Whitefish or Trout	Whitefish	Salmonid	Undecided	Coho or Trout	Presumptive Steelhead	Grand Total
July 2008	96	28	6	3	11			144
August 2008	28	2		5	10			45
February 2009	9	7				6		22
March 2009	21	12			3	2		38
April 2009	29	61	1		1		1	93
May 2009	21	40					2	63
Grand Total	**204**	**150**	**7**	**8**	**25**	**8**	**3**	**405**

Fish Passage Facility Improvements Completed in 2008

Throughout the fall and winter of 2008, the fish passage staff made changes to the facility that improved worker safety, job efficiency, and fish handling.

- Made improvements to the fish release chute at the forebay for Chinook, coho and trout.
- Plumbed in water and drain tubes to the fish totes.
- Smoothed out rough/sharp areas that could damage fish throughout the facility.

- Installed chain link fencing around 2G-5, 2G-6 & 2G-7 for fall protection.
- Made changes to pond 1 fish entrance gate that makes it more difficult for fish escapement during sorting mode.

Conclusions

For the 2008-2009 season (7/1/08-6/30/09), the fish ladder and sorting facility operated as intended and provided SPU and researchers with a unique opportunity to participate in long-term recolonization studies and collect biological data on Chinook and coho salmon and trout passed above the Landsburg.

Recommendations

In future years the fish ladder and sorting facility should continue to focus on:

- Providing a safe, efficient, and timely passage for all native fish species (with the exception of sockeye) over the Landsburg Dam.
- Providing a safe, efficient, and timely trap and haul operation for sockeye.
- Handling fish with great care and limit the use of nets when handling fish.
- Monitoring, evaluating, and maintaining the facility to reduce or limit fish mortality.
- Collect relevant data from upstream migrating adult salmon to help monitor various qualitative and quantitative aspects of salmon recolonization upstream of the Landsburg.
- Providing a safe working environment for staff.
- Make improvements to facility to ensure long term reliability of equipment.

Acknowledgements

Fish passage staff from the Drainage and Wastewater Division (in particular John McDowell) for operating the ladder and sorting facility. Bruce Bachen and Gary Sprague for supporting improvements to the fish ladder and sorting facility and for their constructive comments on this report.

Sockeye sorted, transported and mortality at the Landsburg Fish Passage Facility in 2008

Date	Sockeye Female Presort Mortality	Sockeye Male Presort Mortality	Sockeye Female Sorted	Sockeye Male Sorted	Sockeye Female Postsort Mortality	Sockeye Male Postsort Mortality	Sockeye Female to Hatchery	Sockeye Male to Hatchery	Sockeye Female to RM 13.5	Sockeye Male to RM 13.5
9/2/08			0	0						
9/3/08			0	0						
9/4/08			0	0						
9/5/08			0	0						
9/6/08			0	0						
9/7/08			0	0						
9/8/08			0	0						
9/9/08		1	0	0						
9/10/08			0	0						
9/11/08			0	0						
9/12/08			0	0						
9/13/08			0	0						
9/14/08			0	0						
9/15/08			0	0						
9/16/08	1		0	1						
9/17/08			0	0						
9/18/08			0	0						
9/19/08			1	3			1	4		
9/20/08			0	0						
9/21/08			1	3						
9/22/08			1	4						
9/23/08			2	3						
9/24/08			0	2			4	12		
9/25/08			1	2						
9/26/08			0	0						
9/27/08			0	0						
9/28/08			0	0						
9/29/08			1	2						
9/30/08			0	0						
10/1/08			0	5						
10/2/08			0	0						
10/3/08			0	0						
10/4/08			0	0						
10/5/08			0	0						
10/6/08			0	1						
10/7/08			0	0						
10/8/08			1	4						
10/9/08			0	2			3	14		
10/10/08			0	0						
10/11/08			0	0						
10/12/08			1	2						
10/13/08			0	2						

Date	Sockeye Female Presort Mortality	Sockeye Male Presort Mortality	Sockeye Female Sorted	Sockeye Male Sorted	Sockeye Female Postsort Mortality	Sockeye Male Postsort Mortality	Sockeye Female to Hatchery	Sockeye Male to Hatchery	Sockeye Female to RM 13.5	Sockeye Male to RM 13.5
10/14/08			0	0						
10/15/08			0	4			1	10		
10/16/08			0	0						
10/17/08			0	5						
10/18/08			0	0						
10/19/08			1	0						
10/20/08			0	0						
10/21/08			0	0						
10/22/08			0	1						
10/23/08			0	0						
10/24/08			0	0			1			6
10/25/08			0	0						
10/26/08			0	0						
10/27/08			0	0						
10/28/08			0	0						
10/29/08			0	1						
10/30/08			0	1						
10/31/08			0	0						
11/1/08			1	0						
11/2/08			0	0						
11/3/08			0	0						
11/4/08			0	0			1	2		
Subtotal	1	1	11	48	0	0	11	42	0	6
Total	2		59		0		53		6	

Chinook and coho passed above the Landsburg Dam on the Cedar River, 2008

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7501	Chinook	09/03/08	840	m	p
7502	Chinook	09/04/08	780	m	p
7503	Chinook	09/11/08	930	f	p
7504	Chinook	09/11/08	860	m	p
7505	Chinook	09/12/08	810	m	p
7506	Chinook	09/12/08	720	m	p
7507	Chinook	09/12/08	510	m	p
7508	Chinook	09/14/08	790	f	p
7509	Chinook	09/14/08	810	m	p
7510	Chinook	09/14/08	960	m	p
7511	Chinook	09/14/08	750	m	p
7512	Chinook	09/14/08	680	m	p
7513	Chinook	09/14/08	830	f	p
7514	Chinook	09/18/08	770	m	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7515	Coho	09/18/08	610	m	p
7516	Chinook	09/18/08	440	m	p
7517	Chinook	09/18/08	830	f	p
7518	Chinook	09/21/08	760	m	p
7519	Chinook	09/21/08	820	m	p
7520	Chinook	09/21/08	860	m	p
7521	Chinook	09/21/08	890	m	p
7522	Coho	09/21/08	400	m	p
7523	Chinook	09/21/08	650	m	p
7524	Chinook	09/21/08	810	m	p
7525	Coho	09/21/08	480	m	p
7526	Chinook	09/21/08	840	m	p
7527	Chinook	09/22/08	920	m	p
7528	Chinook	09/22/08	850	m	p
7529	Chinook	09/22/08	520	m	p
7530	Chinook	09/22/08	740	m	p
7531	Chinook	09/22/08	890	f	p
7532	Chinook	09/22/08	850	m	p
7533	Chinook	09/23/08	460	m	p
7534	Chinook	09/23/08	920	m	p
7535	Chinook	09/23/08	760	m	p
7536	Chinook	09/23/08	900	f	p
7537	Chinook	09/23/08	880	m	p
7538	Chinook	09/23/08	840	f	p
7539	Chinook	09/23/08	770	m	p
7540	Chinook	09/23/08	900	m	p
7541	Chinook	09/23/08	840	m	p
7542	Chinook	09/23/08	930	m	p
7543	Chinook	09/23/08	890	m	p
7544	Chinook	09/23/08	780	m	p
7545	Chinook	09/23/08	960	m	p
7546	Chinook	09/23/08	670	m	p
7547	Chinook	09/23/08	750	m	p
7548	Chinook	09/23/08	910	m	p
7549	Chinook	09/24/08	860	f	p
7550	Chinook	09/24/08	790	m	p
7551	Chinook	09/24/08	740	m	p
7552	Chinook	09/25/08	620	m	a
7553	Chinook	09/25/08	930	m	p
7554	Chinook	09/25/08	850	m	p
7555	Chinook	09/25/08	830	m	a
7556	Chinook	09/25/08	710	m	p
7557	Chinook	09/25/08	910	f	a
7558	Chinook	09/25/08	820	m	p
7559	Chinook	09/25/08	900	f	p
7560	Chinook	09/25/08	750	f	p
7561	Chinook	09/25/08	820	m	p
7562	Chinook	09/25/08	870	f	p
7563	Chinook	09/25/08	780	m	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7564	Chinook	09/25/08	840	f	a
7565	Chinook	09/25/08	1050	m	p
7566	Chinook	09/25/08	880	m	p
7567	Chinook	09/25/08	540	m	p
7568	Chinook	09/25/08	860	m	p
7569	Chinook	09/25/08	780	m	p
7570	Chinook	09/25/08	930	f	p
7571	Chinook	09/25/08	430	m	p
7572	Chinook	09/26/08	890	m	p
7573	Coho	09/26/08	540	m	p
7574	Chinook	09/26/08	770	m	p
7575	Chinook	09/26/08	900	m	p
7576	Chinook	09/26/08	880	f	p
7577	Chinook	09/26/08	910	f	a
7578	Coho	09/26/08	440	m	p
7579	Chinook	09/26/08	870	m	p
7580	Chinook	09/26/08	710	m	p
7581	Chinook	09/26/08	900	f	p
7582	Chinook	09/26/08	880	f	p
7583	Chinook	09/26/08	740	m	p
7584	Chinook	09/27/08	840	f	p
7585	Chinook	09/27/08	860	f	p
7586	Chinook	09/27/08	760	m	p
7587	Chinook	09/27/08	740	m	p
7588	Chinook	09/27/08	870	m	p
7589	Chinook	09/27/08	790	f	p
7590	Chinook	09/27/08	910	f	a
7591	Chinook	09/29/08	740	m	p
7592	Chinook	09/29/08	440	m	a
7593	Chinook	09/29/08	930	f	p
7594	Chinook	09/29/08	860	m	p
7595	Chinook	09/29/08	770	m	p
7596	Chinook	09/29/08	640	f	a
7597	Chinook	09/29/08	690	m	p
7598	Chinook	10/01/08	840	m	p
7599	Chinook	10/01/08	810	m	p
7600	Chinook	10/01/08	760	m	a
7601	Chinook	10/01/08	800	m	p
7602	Chinook	10/01/08	870	f	p
7603	Chinook	10/01/08	450	m	a
7604	Chinook	10/01/08	830	m	p
7605	Chinook	10/01/08	750	f	p
7606	Chinook	10/01/08	770	f	a
7607	Chinook	10/01/08	920	f	p
7608	Chinook	10/01/08	830	f	a
7609	Chinook	10/01/08	440	m	a
7610	Chinook	10/01/08	1010	f	p
7611	Chinook	10/03/08	790	m	p
7612	Chinook	10/03/08	450	m	a

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7613	Chinook	10/03/08	890	f	p
7614	Chinook	10/03/08	880	f	p
7615	Chinook	10/03/08	810	m	p
7616	Chinook	10/03/08	890	f	a
7617	Chinook	10/03/08	870	f	p
7618	Chinook	10/03/08	780	m	a
7619	Chinook	10/03/08	580	f	p
7620	Chinook	10/03/08	800	m	p
7621	Coho	10/06/08	600	f	p
7622	Chinook	10/06/08	750	m	p
7623	Chinook	10/06/08	960	f	p
7624	Chinook	10/06/08	1090	m	p
7625	Chinook	10/06/08	910	f	p
7626	Chinook	10/06/08	880	m	p
7627	Chinook (mort)	10/06/08	860	m	p
7628	Chinook	10/06/08	860	m	a
7629	Chinook	10/07/08	920	f	p
7630	Chinook	10/07/08	970	f	p
7631	Chinook	10/07/08	910	m	p
7632	Chinook	10/08/08	840	m	a
7633	Chinook	10/08/08	790	m	p
7634	Chinook	10/08/08	910	f	p
7635	Coho	10/08/08	730	f	p
7636	Chinook	10/08/08	860	f	p
7637	Chinook	10/08/08	750	f	a
7638	Coho	10/08/08	510	m	p
7639	Coho	10/08/08	670	f	p
7640	Chinook	10/08/08	800	m	a
7641	Coho	10/08/08	640	m	p
7642	Chinook	10/08/08	780	m	p
7643	Chinook	10/08/08	890	m	p
7644	Coho	10/09/08	480	m	a
7645	Coho	10/10/08	530	f	p
7646	Chinook	10/10/08	840	m	p
7647	Chinook	10/10/08	500	m	p
7648	Chinook	10/10/08	950	f	p
7649	Chinook	10/12/08	900	f	p
7650	Chinook	10/12/08	840	f	p
7651	Chinook	10/13/08	840	f	a
7652	Chinook	10/15/08	920	f	p
7653	Coho	10/15/08	600	f	p
7654	Chinook	10/15/08	950	f	p
7655	Coho	10/19/08	780	m	p
7656	Chinook	10/19/08	840	f	a
7657	Coho	10/19/08	480	m	p
7658	Chinook	10/20/08	920	f	p
7659	Coho	10/21/08	750	f	p
7660	Coho	10/21/08	710	f	p
7661	Coho	10/21/08	720	m	a

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7662	Coho	10/27/08	540	m	p
7663	Coho	10/29/08	660	f	p
7664	Coho	10/29/08	610	m	p
7665	Chinook	10/30/08	370	m	p
7666	Coho	10/30/08	680	f	p
7667	Coho	10/30/08	670	f	p
7668	coho	10/31/08	750	m	p
7669	Coho	11/01/08	580	m	a
7670	Coho	11/04/08	780	f	p
7671	Coho	11/04/08	740	m	a
7672	Coho	11/06/08	720	f	p
7673	Coho	11/06/08	590	m	p
7674	Coho	11/06/08	780	m	a
7675	Coho	11/06/08	730	m	p
7676	Coho	11/06/08	570	m	p
7677	Coho	11/07/08	760	m	p
7678	Coho	11/07/08	760	m	p
7679	Coho	11/07/08	770	m	p
7680	Coho	11/07/08	690	m	a
7681	Coho	11/07/08	720	f	p
7682	Coho	11/07/08	710	m	a
7683	Coho	11/07/08	540	m	p
7684	Coho	11/07/08	580	f	p
7685	Coho	11/07/08	560	f	p
7686	Coho	11/07/08	530	m	p
7687	Coho	11/07/08	780	m	p
7688	Coho	11/07/08	780	m	a
7689	Coho	11/08/08	770	f	p
7690	Coho	11/08/08	640	f	p
7691	Coho	11/08/08	690	f	p
7692	Coho	11/08/08	690	f	p
7693	Coho	11/08/08	500	f	p
7694	Coho	11/08/08	590	f	p
7695	Coho	11/08/08	700	m	p
7696	Coho	11/08/08	730	f	p
7697	Coho	11/08/08	770	m	p
7698	Coho	11/08/08	800	m	p
7699	Coho	11/08/08	710	m	p
7700	Chinook	11/08/08	900	m	a
7701	Coho	11/08/08	650	m	p
7702	Coho	11/08/08	780	f	p
7703	Coho	11/08/08	760	m	p
7704	Coho	11/08/08	630	f	p
7705	Coho	11/08/08	680	m	p
7706	Coho	11/08/08	760	f	p
7707	Coho	11/08/08	630	f	p
7708	Coho	11/08/08	680	f	p
7709	Coho	11/08/08	570	f	p
7710	Coho	11/09/08	710	f	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7711	Coho	11/09/08	470	m	p
7712	Coho	11/09/08	660	m	p
7713	Coho	11/09/08	630	m	p
7714	Coho	11/09/08	670	m	p
7715	Coho	11/09/08	620	m	p
7716	Coho	11/09/08	740	f	p
7717	Coho	11/09/08	720	f	p
7718	Coho	11/09/08	800	m	p
7719	Coho	11/09/08	580	m	p
7720	Coho	11/09/08	740	m	p
7721	Coho	11/09/08	610	f	p
7722	Coho	11/09/08	750	m	p
7723	Coho	11/09/08	780	m	p
7724	Coho	11/09/08	740	m	p
7725	Coho	11/09/08	560	m	p
7726	Coho	11/10/08	640	f	p
7727	Coho	11/10/08	670	m	p
7728	Chinook	11/10/08	520	m	a
7729	Coho	11/10/08	680	f	p
7730	Coho	11/10/08	720	f	p
7731	Coho	11/10/08	690	f	p
7732	Coho	11/10/08	590	f	p
7733	Coho	11/10/08	590	m	p
7734	Coho	11/10/08	700	f	p
7735	Coho	11/10/08	640	f	p
7736	Coho	11/11/08	730	f	p
7737	Coho	11/11/08	670	f	p
7738	Coho	11/11/08	610	m	p
7739	Coho	11/11/08	780	m	p
7740	Chinook	11/11/08	780	m	a
7741	Coho	11/11/08	570	m	p
7742	Coho	11/14/08	690	f	p
7743	Coho	11/14/08	420	m	p
7744	Coho	11/14/08	480	m	p
7745	Coho	11/14/08	720	f	p
7746	Coho	11/14/08	730	f	p
7747	Coho	11/14/08	630	f	p
7748	Coho	11/14/08	680	m	p
7749	Coho	11/14/08	680	m	p
7750	Coho	11/14/08	590	f	p
7751	Coho	11/14/08	650	f	p
7752	Coho	11/14/08	690	f	p
7753	Coho	11/14/08	710	f	p
7754	Coho	11/14/08	730	m	p
7755	Coho	11/14/08	720	m	p
7756	Coho	11/15/08	690	m	p
7757	Coho	11/15/08	680	f	p
7758	Coho	11/15/08	760	f	p
7759	Coho	11/15/08	760	f	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7760	Coho	11/15/08	820	m	p
7761	Coho	11/15/08	690	f	p
7762	Coho	11/15/08	770	f	p
7763	Coho	11/15/08	550	f	p
7764	Coho	11/15/08	520	f	a
7765	Coho	11/17/08	700	f	p
7766	Coho	11/17/08	700	f	p
7767	Coho	11/17/08	710	m	p
7768	Coho	11/18/08	860	m	p
7769	Coho	11/18/08	670	f	p
7770	Coho	11/18/08	680	m	p
7771	Coho	11/19/08	700	f	p
7772	Coho	11/19/08	550	m	p
7773	Coho	11/20/08	670	m	p
7774	Coho	11/20/08	710	m	p
7775	Coho	11/20/08	750	f	p
7776	Coho	11/20/08	790	m	p
7777	Coho	11/20/08	670	m	p
7778	Coho	11/20/08	610	f	p
7779	Coho	11/20/08	680	f	p
7780	Coho	11/20/08	740	m	p
7781	Coho	11/20/08	710	m	p
7782	Coho	11/20/08	700	f	p
7783	Coho	11/20/08	660	f	p
7784	Coho	11/20/08	700	m	p
7785	Coho	11/20/08	740	m	p
7786	Coho	11/21/08	710	f	p
7787	Coho	11/21/08	770	m	p
7788	Coho	11/21/08	610	f	p
7789	Coho	11/21/08	740	m	p
7790	Coho	11/21/08	650	f	p
7791	Coho	11/21/08	780	f	p
7792	Coho	11/21/08	540	m	p
7793	Coho	11/21/08	670	f	p
7794	Coho	11/21/08	550	m	p
7795	Coho	11/21/08	560	f	p
7796	Coho	11/21/08	710	f	p
7797	Coho	11/21/08	710	f	p
7798	Coho	11/21/08	700	m	p
7799	Coho	11/21/08	720	f	p
7800	Coho	11/21/08	640	f	p
7801	Coho	11/21/08	740	m	p
7802	Coho	11/21/08	460	m	p
7803	Coho	11/21/08	520	m	p
7804	Coho	11/21/08	670	f	p
7805	Coho	11/21/08	620	f	p
7806	Coho	11/21/08	580	m	p
7807	Coho	11/21/08	620	f	p
7808	Coho	11/22/08	650	f	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7809	Coho	11/22/08	620	m	p
7810	Coho	11/22/08	750	f	p
7811	Coho	11/22/08	560	f	p
7812	Coho	11/22/08	680	f	p
7813	Coho	11/24/08	650	m	p
7814	Coho	11/24/08	700	f	p
7815	Coho	11/24/08	720	m	p
7816	Coho	11/24/08	530	f	p
7817	Coho	11/24/08	500	m	p
7818	Coho	11/25/08	670	f	p
7819	Coho	11/25/08	640	f	p
7820	Coho	11/25/08	840	m	p
7821	Coho	12/01/08	690	f	p
7822	Coho	12/01/08	730	m	p
7823	Coho	12/01/08	660	m	p
7824	Coho	12/01/08	580	f	p
7825	Coho	12/01/08	610	f	p
7826	Coho	12/01/08	710	m	p
7827	Coho	12/01/08	680	m	p
7828	Coho	12/01/08	690	m	p
7829	Coho	12/01/08	700	f	p
7830	Coho	12/01/08	560	f	p
7831	Coho	12/01/08	730	f	p
7832	Coho	12/01/08	640	m	p
7833	Coho	12/01/08	760	m	p
7834	Coho	12/01/08	690	f	p
7835	Coho	12/01/08	720	f	p
7836	Coho	12/01/08	690	m	p
7837	Coho	12/01/08	690	m	p
7838	Coho	12/01/08	720	m	p
7839	Coho	12/01/08	740	f	p
7840	Coho	12/01/08	780	m	p
7841	Coho	12/01/08	730	m	p
7842	Coho	12/01/08	720	f	p
7843	Coho	12/01/08	750	m	p
7844	Coho	12/01/08	700	f	p
7845	Coho	12/01/08	690	f	p
7846	Coho	12/01/08	580	m	p
7847	Coho	12/01/08	660	f	p
7848	Coho	12/01/08	750	m	p
7849	Coho	12/01/08	670	f	p
7850	Coho	12/01/08	750	m	p
7851	Coho	12/02/08	660	m	p
7852	Coho	12/02/08	710	m	p
7853	Coho	12/02/08	700	f	p
7854	Coho	12/02/08	760	m	p
7855	Coho	12/02/08	630	f	p
7856	Coho	12/02/08	630	f	p
7857	Coho	12/02/08	700	f	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7858	Coho	12/02/08	730	f	p
7859	Coho	12/02/08	760	m	p
7860	Coho	12/02/08	690	f	p
7861	Coho	12/02/08	650	m	p
7862	Coho	12/02/08	720	f	p
7863	Coho	12/02/08	560	m	p
7864	Coho	12/02/08	670	m	p
7865	Coho	12/02/08	440	m	p
7866	Coho	12/02/08	570	m	p
7867	Coho	12/02/08	660	f	p
7868	Coho	12/02/08	640	f	p
7869	Coho	12/02/08	640	f	p
7870	Coho	12/02/08	730	f	p
7871	Coho	12/02/08	740	f	p
7872	Coho	12/02/08	470	m	p
7873	Coho	12/02/08	670	f	p
7874	Coho	12/02/08	770	m	p
7875	Coho	12/02/08	730	f	p
7876	Coho	12/03/08	670	m	p
7877	Coho	12/03/08	720	f	p
7878	Coho	12/03/08	650	m	p
7879	Coho	12/03/08	680	f	p
7880	Coho	12/03/08	560	m	p
7881	Coho	12/03/08	640	m	p
7882	Coho	12/03/08	790	m	p
7883	Coho	12/03/08	660	m	p
7884	Coho	12/03/08	710	f	p
7885	Coho	12/03/08	730	f	p
7886	Coho	12/04/08	680	m	p
7887	Coho	12/04/08	790	m	p
7888	Coho	12/04/08	730	m	p
7889	Coho	12/04/08	680	m	p
7890	Coho	12/04/08	600	f	p
7891	Coho	12/05/08	530	m	p
7892	Coho	12/08/08	580	m	p
7893	Coho	12/08/08	650	f	p
7894	Coho	12/08/08	630	f	p
7895	Coho	12/08/08	710	f	p
7896	Coho	12/08/08	520	m	p
7897	Coho	12/08/08	610	m	p
7898	Coho	12/08/08	710	f	p
7899	Coho	12/08/08	700	f	p
7900	Coho	12/08/08	780	m	p
7901	Coho	12/08/08	630	m	p
7902	Coho	12/08/08	600	f	p
7903	Coho	12/08/08	650	f	p
7904	Coho	12/08/08	580	f	p
7905	Coho	12/09/08	510	m	p
7906	Coho	12/09/08	640	m	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7907	Coho	12/09/08	640	f	p
7908	Coho	12/09/08	750	f	p
7909	Coho	12/10/08	710	f	p
7910	Coho	12/12/08	500	m	p
7911	Coho	12/12/08	720	f	p
7912	Coho	12/12/08	690	m	p
7913	Coho	12/18/08	770	m	p
7914	Coho	12/18/08	720	f	p
7915	Coho	12/28/08	730	f	p
7916	Coho	12/28/08	580	m	p
7917	Coho	12/28/08	600	f	p
7918	Coho	12/28/08	590	m	p
7919	Coho	12/28/08	560	f	p
7920	Coho	12/28/08	460	m	p
7921	Coho	12/28/08	530	m	p
7922	Coho	12/28/08	550	m	p
7923	Coho	12/28/08	690	f	p
7924	Coho	12/28/08	710	m	p
7925	Coho	12/28/08	690	f	p
7926	Coho	12/28/08	740	f	p
7927	Coho	12/28/08	630	m	p
7928	Coho	12/28/08	790	f	p
7929	Coho	12/28/08	660	m	p
7930	Coho	12/28/08	780	m	p
7931	Coho	12/28/08	660	m	p
7932	Coho	12/28/08	670	m	p
7933	Coho	12/28/08	640	m	p
7934	Coho	12/28/08	690	m	p
7935	Coho	12/28/08	700	m	p
7936	Coho	12/28/08	760	f	p
7937	Coho	12/28/08	630	f	p
7938	Coho	12/28/08	750	m	p
7939	Coho	12/29/08	760	m	p
7940	Coho	12/29/08	560	m	p
7941	Coho	12/29/08	660	m	p
7942	Coho	12/29/08	650	f	p
7943	Coho	12/29/08	750	m	p
7944	Coho	12/29/08	560	m	p
7945	Coho	12/31/08	660	f	p
7946	Coho	12/31/08	760	m	p
7947	Coho	12/31/08	730	f	p
7948	Coho	12/31/08	740	f	p
7949	Coho	12/31/08	690	m	p
7950	Coho	01/02/09	580	f	p
7951	Coho	01/02/09	710	f	p
7952	Coho	01/02/09	780	f	p
7953	Coho	01/02/09	700	m	p
7954	Coho	01/02/09	750	m	p
7955	Coho	01/02/09	660	f	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
7956	Coho	01/02/09	690	m	p
7957	Coho	01/02/09	700	m	p
7958	Coho	01/02/09	760	f	p
7959	Coho	01/02/09	620	f	p
7960	Coho	01/02/09	780	f	p
7961	Coho	01/02/09	560	m	p
7962	Coho	01/06/09	710	f	p
7963	Coho	01/06/09	760	m	p
7964	Coho	01/06/09	590	f	p
7965	Coho	01/06/09	670	f	p
7966	Coho	01/06/09	630	f	p
7967	Coho	01/06/09	480	m	p
7968	Coho	01/06/09	680	f	p
7969	Coho	01/06/09	610	m	p
7970	Coho	01/06/09	740	m	p
7971	Coho	01/06/09	630	m	p
7972	Coho	01/06/09	460	f	p
7973	Coho	01/16/09	740	f	p
7974	Coho	01/16/09	660	m	p
7975	Coho	01/16/09	720	m	p
7976	Coho	01/16/09	580	f	p
7977	Coho	01/16/09	660	f	p
7978	Coho	01/16/09	660	f	p
7979	Coho	01/16/09	740	m	p
7980	Coho	01/16/09	790	m	p
7981	Coho	01/16/09	590	f	p
7982	Coho	01/16/09	730	f	p
7983	Coho	01/16/09	700	f	p
7984	Coho	01/16/09	580	f	p
7985	Coho	01/18/09	830	m	p
7986	Coho	01/18/09	690	f	p
7987	Coho	01/18/09	700	f	p
7988	Coho	01/18/09	680	f	p
7989	Coho	01/18/09	650	f	p
7990	Coho	01/18/09	740	f	p
7991	Coho	01/18/09	710	m	p
7992	Coho	01/20/09	680	m	p
7993	Coho	01/20/09	640	f	p
7994	Coho	01/22/09	580	f	p
7995	Coho	01/22/09	540	f	p
7996	Coho	01/22/09	780	m	p
7997	Coho	01/22/09	590	f	p
7998	Coho	01/26/09	750	f	p
7999	Coho	01/26/09	690	m	p
8000	Coho	01/26/09	670	m	p
8301	Coho	01/26/09	570	m	p
8302	Coho	01/26/09	590	m	p
8303	Coho	01/26/09	620	f	p
8304	Coho	01/26/09	720	f	p

Sample Number	Species	Date Sampled and Released	Fork Length (mm)	Sex	Adipose (p=present, a=absent)
8305	Coho	01/26/09	690	f	p
8306	Coho	01/26/09	640	f	p
8307	Coho	01/26/09	670	m	p
8308	Coho	01/28/09	550	f	p
8309	Coho	01/28/09	720	f	p
8310	Coho	01/28/09	660	f	p
8311	Coho	01/28/09	500	f	p
8312	Coho	01/28/09	740	f	p
8313	Coho	01/28/09	820	m	p

All species passed above the Landsburg Dam on the Cedar River in passive mode, 2008/09

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
7/1/08 4:51 PM	52	31	Whitefish or Trout
7/1/08 6:15 PM	80	48	Trout
7/1/08 8:22 PM	47	28	Whitefish or Trout
7/1/08 8:25 PM	35	21	Trout
7/1/08 8:39 PM	45	27	Whitefish or Trout
7/2/08 2:20 PM	40	24	Whitefish
7/2/08 3:55 PM	57	34	Whitefish or Trout
7/2/08 3:59 PM	52	31	Whitefish or Trout
7/2/08 6:45 PM	47	28	Trout
7/2/08 8:18 PM	47	28	Trout
7/2/08 9:11 PM	42	25	Whitefish
7/3/08 9:29 AM	77	46	Trout
7/3/08 1:25 PM	45	27	Trout
7/3/08 4:57 PM	50	30	Trout
7/3/08 8:26 PM	45	27	Trout
7/4/08 10:23 AM	55	33	Trout
7/4/08 5:06 PM	45	27	Whitefish or Trout
7/4/08 8:04 PM	70	42	Trout
7/4/08 8:29 PM	47	28	Trout
7/4/08 9:10 PM	47	28	Whitefish or Trout
7/5/08 6:02 AM	42	25	Whitefish or Trout
7/5/08 9:26 AM	42	25	Whitefish
7/5/08 2:17 PM	40	24	Whitefish or Trout
7/5/08 4:13 PM	47	28	Whitefish or Trout
7/5/08 4:35 PM	55	33	Whitefish or Trout
7/5/08 9:29 PM	62	37	Trout
7/6/08 6:45 AM	116	69	Salmonid
7/6/08 3:55 PM	50	30	Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
7/6/08 4:37 PM	50	30	Trout
7/6/08 8:51 PM	67	40	Trout
7/6/08 9:44 PM	50	30	Trout
7/7/08 8:41 AM	45	27	Trout
7/7/08 11:19 AM	67	40	Trout
7/7/08 1:22 PM	55	33	Trout
7/7/08 8:07 PM	50	30	Trout
7/7/08 9:18 PM	50	30	Trout
7/8/08 6:04 AM	50	30	Trout
7/8/08 1:28 PM	50	30	Trout
7/8/08 1:53 PM	40	24	Whitefish
7/8/08 2:18 PM	40	24	Whitefish
7/8/08 5:19 PM	50	30	Whitefish or Trout
7/8/08 5:30 PM	50	30	Whitefish or Trout
7/8/08 5:53 PM	47	28	Whitefish or Trout
7/8/08 9:03 PM	50	30	Trout
7/9/08 6:21 AM	72	43	Trout
7/9/08 6:09 PM	37	22	Whitefish or Trout
7/9/08 6:13 PM	55	33	Trout
7/10/08 5:45 AM	70	42	Trout
7/10/08 9:46 AM	45	27	Trout
7/10/08 11:25 AM	45	27	Trout
7/10/08 8:00 PM	50	30	Trout
7/10/08 9:15 PM	47	28	Trout
7/11/08 2:24 PM	47	28	Trout
7/11/08 2:54 PM	50	30	Trout
7/11/08 9:27 PM	50	30	Trout
7/11/08 9:39 PM	57	34	Trout
7/12/08 10:01 AM	42	25	Trout
7/12/08 11:28 AM	62	37	Trout
7/12/08 1:31 PM	50	30	Trout
7/12/08 6:14 PM	40	24	Whitefish or Trout
7/12/08 6:24 PM	47	28	Trout
7/12/08 7:45 PM	50	30	Trout
7/12/08 8:57 PM	47	28	Trout
7/12/08 9:06 PM	45	27	Trout
7/12/08 9:35 PM	50	30	Trout
7/13/08 7:55 AM	50	30	Trout
7/13/08 4:44 PM	50	30	Trout
7/13/08 8:33 PM	45	27	Trout
7/13/08 9:22 PM	47	28	Trout
7/13/08 10:23 PM	103	61	Salmonid
7/14/08 7:19 AM	50	30	Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
7/14/08 1:59 PM	50	30	Trout
7/14/08 5:38 PM	47	28	Trout
7/14/08 7:51 PM	50	30	Trout
7/14/08 9:10 PM	47	28	Trout
7/14/08 9:26 PM	67	40	Trout
7/15/08 8:16 AM	50	30	Trout
7/15/08 3:58 PM	85	51	Trout
7/15/08 3:58 PM	70	42	Trout
7/15/08 7:10 PM	45	27	Trout
7/15/08 11:22 PM	125	75	Salmonid
7/16/08 7:29 AM	50	30	Trout
7/16/08 3:26 PM	50	30	Trout
7/16/08 8:31 PM	47	28	Trout
7/16/08 9:15 PM	62	37	Trout
7/16/08 9:40 PM	60	36	Trout
7/17/08 8:39 AM	37	22	Trout
7/17/08 11:07 AM	47	28	Trout
7/17/08 7:42 PM	50	30	Trout
7/17/08 7:58 PM	50	30	Trout
7/17/08 9:36 PM	67	40	Trout
7/18/08 8:06 AM	60	36	Whitefish or Trout
7/18/08 8:59 PM	65	39	Whitefish or Trout
7/19/08 5:59 AM	55	33	Whitefish or Trout
7/19/08 5:08 PM	47	28	Whitefish
7/19/08 6:14 PM	45	27	Whitefish or Trout
7/19/08 8:19 PM	50	30	Trout
7/19/08 9:24 PM	70	42	Trout
7/20/08 7:31 AM	50	30	Whitefish or Trout
7/20/08 9:00 AM	52	31	Trout
7/20/08 12:32 PM	50	30	Trout
7/20/08 9:00 PM	52	31	Trout
7/20/08 10:47 PM	67	40	Trout
7/21/08 11:26 AM	52	31	Trout
7/21/08 3:16 PM	50	30	Trout
7/21/08 4:56 PM	52	31	Trout
7/21/08 8:43 PM	50	30	Whitefish or Trout
7/21/08 9:30 PM	65	39	Trout
7/22/08 9:05 AM	40	24	Trout
7/22/08 8:05 PM	50	30	Trout
7/22/08 8:33 PM	52	31	Whitefish or Trout
7/23/08 9:07 PM	50	30	Trout
7/24/08 8:27 PM	47	28	Whitefish or Trout
7/24/08 9:10 PM	50	30	Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
7/25/08 8:14 PM	87	52	Trout
7/25/08 8:20 PM	50	30	Whitefish or Trout
7/25/08 9:14 PM	65	39	Whitefish or Trout
7/26/08 8:41 PM	45	27	Trout
7/26/08 9:19 PM	67	40	Trout
7/27/08 10:56 AM	47	28	Trout
7/27/08 8:59 PM	50	30	Trout
7/27/08 9:29 PM	65	39	Trout
7/28/08 12:48 PM	42	25	Trout
7/28/08 9:20 PM	62	37	Trout
7/29/08 9:32 AM	50	30	Whitefish or Trout
7/29/08 9:08 PM	52	31	Trout
7/30/08 2:31 PM	50	30	Trout
7/30/08 9:42 PM	50	30	Trout
7/31/08 1:06 PM	42	25	Trout
7/31/08 9:31 PM	67	40	Trout
8/1/08 8:52 PM	45	27	Whitefish or Trout
8/1/08 9:33 PM	65	39	Whitefish or Trout
8/2/08 8:26 PM	45	27	Trout
8/2/08 9:28 PM	60	36	Trout
8/3/08 2:04 PM	50	30	Trout
8/3/08 5:08 PM	47	28	Trout
8/3/08 9:21 PM	62	37	Trout
8/4/08 12:24 PM	52	31	Trout
8/4/08 1:56 PM	55	33	Trout
8/4/08 9:20 PM	65	39	Trout
8/5/08 9:43 AM	52	31	Trout
8/5/08 12:39 PM	52	31	Trout
8/5/08 2:37 PM	37	22	Trout
8/5/08 4:14 PM	45	27	Trout
8/5/08 9:24 PM	67	40	Trout
8/5/08 10:16 PM	142	85	Salmonid
8/6/08 1:35 PM	52	31	Trout
8/7/08 11:14 AM	130	78	Salmonid
8/7/08 9:13 PM	52	31	Trout
8/8/08 4:16 AM	106	63	Salmonid
8/8/08 6:12 AM	100	60	Salmonid
8/8/08 4:49 PM	55	33	Trout
8/8/08 9:26 PM	70	42	Trout
8/9/08 4:28 PM	52	31	Trout
8/9/08 5:05 PM	55	33	Trout
8/9/08 9:18 PM	52	31	Trout
8/10/08 5:53 PM	52	31	Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
8/10/08 8:36 PM	67	40	Trout
8/11/08 8:50 AM	52	31	Trout
8/11/08 12:42 PM	55	33	Trout
8/11/08 7:07 PM	50	30	Trout
8/11/08 9:14 PM	67	40	Trout
8/13/08 12:31 PM	55	33	Trout
8/13/08 2:30 PM	125	75	Salmonid
8/13/08 7:48 PM	70	42	Trout
2/17/09 6:22 PM	65	39	Whitefish or Trout
2/18/09 10:00 PM	120	72	Coho or Trout
2/19/09 3:03 PM	47	28	Whitefish or Trout
2/19/09 5:35 PM	42	25	Whitefish or Trout
2/20/09 3:17 AM	82	49	Trout
2/21/09 4:05 AM	95	57	Coho or Trout
2/21/09 1:49 PM	52	31	Trout
2/21/09 5:54 PM	60	36	Trout
2/21/09 6:01 PM	42	25	Trout
2/22/09 2:18 PM	52	31	Trout
2/22/09 5:51 PM	62	37	Whitefish or Trout
2/23/09 9:00 PM	97	58	Coho or Trout
2/24/09 9:54 AM	102	61	Trout
2/24/09 4:31 PM	55	33	Trout
2/24/09 5:16 PM	55	33	Whitefish or Trout
2/24/09 9:01 PM	50	30	Whitefish or Trout
2/25/09 4:22 PM	80	48	Trout
2/27/09 8:24 AM	95	57	Coho or Trout
2/28/09 6:30 PM	60	36	Whitefish or Trout
2/28/09 7:44 PM	111	66	Coho or Trout
2/28/09 7:47 PM	104	62	Coho or Trout
2/28/09 11:53 PM	81	48	Trout
3/1/09 1:05 AM	76	45	Trout
3/1/09 12:50 PM	95	57	Coho or Trout
3/1/09 2:07 PM	62	37	Whitefish or Trout
3/2/09 12:43 AM	123	73	Coho or Trout
3/2/09 3:45 PM	52	31	Undecided
3/2/09 4:14 PM	62	37	Undecided
3/2/09 4:21 PM	65	39	Undecided
3/2/09 5:51 PM	45	27	Whitefish or Trout
3/3/09 1:25 AM	108	64	Trout
3/3/09 9:46 AM	102	61	Trout
3/3/09 2:26 PM	80	48	Trout
3/3/09 2:46 PM	80	48	Trout
3/3/09 4:16 PM	62	37	Whitefish or Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
3/3/09 6:03 PM	67	40	Trout
3/5/09 5:51 PM	70	42	Trout
3/7/09 7:58 PM	62	37	Whitefish or Trout
3/8/09 3:31 PM	50	30	Whitefish or Trout
3/8/09 6:26 PM	62	37	Whitefish or Trout
3/9/09 1:18 PM	72	43	Trout
3/9/09 1:18 PM	65	39	Whitefish or Trout
3/9/09 1:29 PM	57	34	Whitefish or Trout
3/13/09 11:29 PM	115	69	Trout
3/16/09 5:36 PM	102	61	Trout
3/17/09 3:17 PM	40	24	Whitefish or Trout
3/18/09 2:13 PM	95	57	Trout
3/18/09 6:14 PM	97	58	Trout
3/18/09 10:49 PM	66	39	Whitefish or Trout
3/19/09 11:19 AM	85	51	Trout
3/19/09 3:10 PM	52	31	Trout
3/19/09 11:58 PM	91	54	Trout
3/23/09 2:10 AM	40	24	Whitefish or Trout
3/23/09 6:51 AM	87	52	Trout
3/23/09 11:02 AM	85	51	Trout
3/24/09 6:15 PM	50	30	Whitefish or Trout
3/27/09 5:22 PM	100	60	Trout
3/28/09 3:12 AM	90	54	Trout
3/28/09 5:21 PM	65	39	Trout
3/29/09 4:04 PM	72	43	Trout
4/2/09 10:49 AM	67	40	Trout
4/2/09 2:00 PM	92	55	Trout
4/2/09 2:00 PM	75	45	Trout
4/2/09 5:26 PM	55	33	Whitefish or Trout
4/2/09 5:56 PM	57	34	Whitefish or Trout
4/3/09 5:37 PM	70	42	Trout
4/4/09 3:28 PM	47	28	Whitefish or Trout
4/5/09 8:02 PM	52	31	Whitefish or Trout
4/6/09 4:20 PM	62	37	Whitefish or Trout
4/6/09 5:13 PM	60	36	Whitefish or Trout
4/7/09 3:18 PM	50	30	Whitefish or Trout
4/7/09 5:39 PM	45	27	Whitefish or Trout
4/7/09 5:52 PM	42	25	Whitefish or Trout
4/7/09 7:04 PM	37	22	Whitefish or Trout
4/7/09 7:07 PM	82	49	Trout
4/8/09 3:53 PM	75	45	Trout
4/8/09 6:15 PM	70	42	Whitefish or Trout
4/8/09 6:51 PM	50	30	Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
4/9/09 4:21 PM	47	28	Trout
4/9/09 5:43 PM	42	25	Trout
4/10/09 8:17 AM	85	51	Trout
4/10/09 11:03 AM	100	60	Trout
4/11/09 4:10 PM	55	33	Whitefish or Trout
4/12/09 2:10 PM	62	37	Trout
4/12/09 4:32 PM	60	36	Whitefish
4/12/09 5:51 PM	47	28	Whitefish or Trout
4/12/09 6:08 PM	42	25	Whitefish or Trout
4/12/09 7:58 PM	47	28	Whitefish or Trout
4/12/09 8:11 PM	60	36	Whitefish or Trout
4/13/09 2:08 PM	75	45	Trout
4/13/09 5:13 PM	50	30	Whitefish or Trout
4/13/09 5:35 PM	45	27	Whitefish or Trout
4/13/09 6:45 PM	60	36	Whitefish or Trout
4/13/09 8:32 PM	32	19	Whitefish or Trout
4/14/09 7:20 PM	47	28	Whitefish or Trout
4/15/09 2:00 PM	60	36	Whitefish or Trout
4/15/09 3:04 PM	55	33	Whitefish or Trout
4/15/09 8:08 PM	50	30	Whitefish or Trout
4/16/09 5:12 PM	47	28	Whitefish or Trout
4/16/09 5:34 PM	42	25	Trout
4/16/09 6:03 PM	70	42	Trout
4/16/09 8:21 PM	50	30	Whitefish or Trout
4/17/09 2:39 PM	67	40	Trout
4/17/09 2:39 PM	82	49	Trout
4/17/09 3:59 PM	47	28	Whitefish or Trout
4/17/09 4:06 PM	47	28	Trout
4/17/09 4:50 PM	47	28	Whitefish or Trout
4/17/09 6:42 PM	40	24	Whitefish or Trout
4/17/09 8:02 PM	45	27	Whitefish or Trout
4/17/09 8:06 PM	45	27	Whitefish or Trout
4/18/09 4:32 PM	45	27	Whitefish or Trout
4/18/09 7:34 PM	45	27	Whitefish or Trout
4/19/09 9:28 AM	55	33	Trout
4/19/09 3:38 PM	50	30	Whitefish or Trout
4/20/09 3:59 PM	50	30	Whitefish or Trout
4/20/09 4:09 PM	50	30	Trout
4/20/09 5:21 PM	50	30	Whitefish or Trout
4/20/09 5:21 PM	47	28	Trout
4/20/09 5:26 PM	45	27	Whitefish or Trout
4/20/09 8:00 PM	40	24	Whitefish or Trout
4/21/09 3:13 PM	57	34	Whitefish or Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
4/21/09 3:39 PM	45	27	Trout
4/21/09 4:06 PM	50	30	Whitefish or Trout
4/21/09 4:39 PM	55	33	Whitefish or Trout
4/21/09 5:31 PM	47	28	Whitefish or Trout
4/21/09 5:34 PM	42	25	Whitefish or Trout
4/21/09 5:34 PM	47	28	Whitefish or Trout
4/21/09 6:34 PM	52	31	Whitefish or Trout
4/21/09 8:16 PM	50	30	Whitefish or Trout
4/21/09 8:29 PM	55	33	Whitefish or Trout
4/22/09 3:29 PM	52	31	Whitefish or Trout
4/22/09 4:24 PM	52	31	Whitefish or Trout
4/22/09 6:53 PM	57	34	Whitefish or Trout
4/23/09 3:37 PM	60	36	Whitefish or Trout
4/23/09 5:54 PM	47	28	Whitefish or Trout
4/23/09 7:05 PM	40	24	Whitefish or Trout
4/24/09 5:08 AM	124	74	Presumptive Steelhead
4/24/09 1:13 PM	70	42	Trout
4/24/09 3:51 PM	55	33	Whitefish or Trout
4/24/09 5:34 PM	82	49	Trout
4/24/09 5:34 PM	92	55	Trout
4/25/09 8:49 PM	35	21	Trout
4/26/09 10:29 AM	40	24	Whitefish or Trout
4/26/09 3:26 PM	60	36	Undecided
4/26/09 6:36 PM	42	25	Whitefish or Trout
4/26/09 7:37 PM	50	30	Whitefish or Trout
4/28/09 6:32 PM	47	28	Whitefish or Trout
4/28/09 6:52 PM	42	25	Whitefish or Trout
4/28/09 8:42 PM	52	31	Whitefish or Trout
4/29/09 12:55 PM	67	40	Trout
4/29/09 4:39 PM	45	27	Whitefish or Trout
4/29/09 5:52 PM	70	42	Trout
4/30/09 1:51 PM	82	49	Trout
5/1/09 8:22 PM	45	27	Whitefish or Trout
5/2/09 7:34 PM	45	27	Whitefish or Trout
5/4/09 10:37 AM	82	49	Trout
5/4/09 1:07 PM	55	33	Whitefish or Trout
5/5/09 12:11 PM	183	109	Presumptive Steelhead
5/6/09 8:37 PM	47	28	Whitefish or Trout
5/7/09 2:51 PM	45	27	Whitefish or Trout
5/7/09 8:42 PM	37	22	Whitefish or Trout
5/8/09 12:49 PM	52	31	Whitefish or Trout
5/9/09 11:52 AM	52	31	Whitefish or Trout
5/9/09 1:15 PM	45	27	Whitefish or Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
5/9/09 6:32 PM	55	33	Trout
5/9/09 7:30 PM	45	27	Whitefish or Trout
5/10/09 7:24 PM	45	27	Whitefish or Trout
5/12/09 12:15 PM	45	27	Whitefish or Trout
5/13/09 11:31 AM	42	25	Whitefish or Trout
5/13/09 3:48 PM	47	28	Whitefish or Trout
5/13/09 7:32 PM	40	24	Whitefish or Trout
5/14/09 4:15 PM	45	27	Whitefish or Trout
5/15/09 7:38 AM	107	64	Trout
5/16/09 1:02 PM	82	49	Trout
5/16/09 8:25 PM	40	24	Whitefish or Trout
5/17/09 9:58 AM	35	21	Trout
5/17/09 3:06 PM	37	22	Trout
5/17/09 5:24 PM	35	21	Whitefish or Trout
5/17/09 5:29 PM	55	33	Whitefish or Trout
5/17/09 9:10 PM	42	25	Whitefish or Trout
5/19/09 1:21 PM	55	33	Whitefish or Trout
5/19/09 3:08 PM	55	33	Trout
5/19/09 5:53 PM	50	30	Trout
5/19/09 8:59 PM	72	43	Trout
5/20/09 2:00 PM	45	27	Trout
5/20/09 5:51 PM	75	45	Whitefish or Trout
5/20/09 6:01 PM	37	22	Whitefish or Trout
5/20/09 6:06 PM	42	25	Whitefish or Trout
5/21/09 10:21 AM	122	73	Presumptive Steelhead
5/21/09 3:14 PM	62	37	Trout
5/21/09 5:49 PM	40	24	Trout
5/21/09 6:03 PM	42	25	Whitefish or Trout
5/21/09 7:39 PM	50	30	Trout
5/21/09 9:28 PM	42	25	Whitefish or Trout
5/22/09 3:04 PM	92	55	Trout
5/22/09 4:55 PM	40	24	Whitefish or Trout
5/22/09 7:41 PM	32	19	Whitefish or Trout
5/22/09 8:38 PM	40	24	Whitefish or Trout
5/23/09 1:01 PM	42	25	Whitefish or Trout
5/23/09 2:34 PM	40	24	Whitefish or Trout
5/23/09 4:15 PM	47	28	Trout
5/23/09 4:46 PM	45	27	Whitefish or Trout
5/23/09 5:57 PM	37	22	Whitefish or Trout
5/23/09 6:40 PM	47	28	Trout
5/23/09 7:51 PM	42	25	Whitefish or Trout
5/24/09 6:53 PM	52	31	Whitefish or Trout
5/24/09 7:41 PM	32	19	Whitefish or Trout

Date/Time	Body Depth [mm]	Total Length Est. [cm]	Species
5/24/09 8:18 PM	55	33	Trout
5/25/09 7:38 PM	45	27	Trout
5/26/09 11:54 AM	52	31	Trout
5/26/09 2:52 PM	47	28	Trout
5/26/09 3:25 PM	42	25	Whitefish or Trout
5/26/09 3:36 PM	42	25	Whitefish or Trout
5/27/09 11:44 AM	45	27	Whitefish or Trout
5/27/09 3:38 PM	55	33	Whitefish or Trout
5/27/09 7:45 PM	45	27	Trout