Table 1-1

Water depths, flow deflectors, and stilling basin characteristics of John Day, NcNary, Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Dams on the Columbia and Snake Rivers. Source: U.S. Army Corps of Engineers.

	John Day	McNary		Ice Harbor		Lower Monumental		Little Goose	Lower Granite
Spillbays	16* and 17	20*	21 and 22*	1	2*, 3, and 5	7	8*	1, 2, and 3	1*, 2
Water Depths									
Minimum tailwater (fmsl)	155	262	262	337	337	437	437	537	633
Spillway crest elevation (fmsl)	210	291	291	391	391	483	483	581	681
Minimum forebay (fmsl)	262	335	335	437	437	537	537	633	733
Maximum forebay (fmsl)	265	340	340	440	440	540	540	638	738
Stilling basin invert (fmsl)	114	228	228	304	304	392	392	466.5	580
Min tailwater to spillway crest (ft)	55	29	29	54	54	46	46	44	48
Min forebay to spillway crest (ft)	52	44	44	46	46	54	54	52	52
Min tailwater to deflector (ft)	7	6	6	3	-1	3	3	5	3
Min tailwater to stilling basin invert (ft)	41	34	34	33	33	45	45	70.5	53
Flow Deflectors									
Elevation of lip (fmsl)	148	256	256	334	338	434	434	532	630
Radius (ft)	15	0	15	15	15	None	15	None	15
Deflection angle (°)	45	43	43	55	55	45	45	45	45
Deflector to basin (ft)	34	28	28	30	34	42	42	65.5	50
Horizontal section length (ft)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	8	12.5
Stilling Basin									
Length from deflector (ft)		283.9	283.9	181.4	181.4	224.5	224.5	136	238.5
Volume at min tailwater (ft^3)	485,000**	551,000**	551,000**	327,000	327,000	518,000	518,000	573,000	638,000
Baffle block type (ft)	12 Perp	15.5 Perp	15.5 Perp	8 Perp	8 Perp	N/A	N/A	Roller bucket w/dentates	N/A
End sill to baffle block (ft)	63 and 88	90 and 135	90 and 135	42	42	N/A	N/A	20	N/A

* Spillbays with a TSW or RSW

** Single bay, centerline between piers, simple rectangular shapes (not subtracting for ogee slope, transitions, or baffle blocks)

Table 2-3

Station parameters (averages for each scenario) recorded during the survival/condition investigation of juvenile Chinook salmon passed at mid depth through TSW and Spillbay 17. Control fish were released via the Juvenile Fish Facility bypass pipe at John Day Dam, March - April 2008.

Release Location	Number Released	Forebay Elevation (fmsl)	Tailwater Elevation (fmsl)	Head (fmsl)	Turbines No. Operating	Turbines Total kcfs	Spillbays (kcfs) 14	15	16	17**	18	Total Spill (kcfs)
Spillbay 16												
Mid	305	264.1	159.2	104.9	8	123.8	1.6	9.4	9.7	6.2	2.4	29.2
Spillbay 17												
Mid	241	264.2	159.4	104.8	9	135.4	1.6	9.2	9.7	6.2	2.4	29.1
Spillbay 17*												
Vortex	25	263.8	159.0	104.8	8	122.2	1.6	9.6	9.6	6.2	2.4	29.4
Control	120	263.9	159.2	104.8	8	126.1	0.3	5.6	8.8	1.1	0.4	16.2

* Fish released at surface into vortex in forebay of Spillbay 17

** Spillbay opened (4.5 stops ft resulting in 6.2 kcfs discharge (3.6 ft)

Table 2-4

Required sample sizes for detecting a statistical difference (Δ = treatment 1 minus treatment 2) of 0.05 between two survival[1] estimates at $\alpha = 0.05$ and $(1 - \beta) = 0.80$.

Proportion of controls alive	Proportion alive		Difference	Probability of recapture alive		
	Treatment 1	Treatment 2	Δ	0.95	0.98	0.99
1.00	0.99	0.94	0.05	416	262	213
	0.97	0.92	0.05	501	350	302
	0.95	0.9	0.05	582	434	387
0.99	0.99	0.94	0.05	467	311	261
	0.97	0.92	0.05	550	398	350
	0.95	0.9	0.05	630	481	434
0.98	0.99	0.94	0.05	518	361	311
	0.97	0.92	0.05	601	447	398
	0.95	0.9	0.05	680	529	481
0.97	0.99	0.94	0.05	571	413	362
	0.97	0.92	0.05	653	498	448
	0.95	0.9	0.05	731	579	530
0.96	0.99	0.94	0.05	625	465	414
	0.97	0.92	0.05	706	549	499
	0.95	0.9	0.05	782	629	580

[1] Table values also are applicable for detecting differences between malady-free estimates.

Table 2-5

Required sample sizes if control survival is 1.00, 0.99 or 0.98, recapture rate is 0.99, 0.98 or 0.95 and expected survival[1] of treatment fish passed is 0.90, 0.95 and 0.97 to achieve a precision level (ε) of ≤ ± 0.025 95% of the time.

	Expected Survival ($\hat{\eta}$)		
Control Survival	**0.95**	**0.97**	**0.99**
		Recapture Rate = 0.99	
1.00	287	210	130
0.99	369	294	217
0.98	453	381	305
		Recapture Rate = 0.98	
1.00	370	295	217
0.99	453	381	305
0.98	537	468	395
		Recapture Rate = 0.95	
1.00	628	562	492
0.99	714	650	583
0.98	801	740	676

[1] Table values also applicable for malady free estimates.

Table 2-6

Daily schedule of releases of juvenile Chinook salmon and sensor fish passing through the TSW and Spillbay 17 at mid depth. Control fish released via Juvenile Fish Facility (JFF) bypass pipe at John Day Dam, March - April 2008.

		Passage Location									
		Spillbay 16		Spillbay 17				Control			
		Mid		Mid		Vortex*		(JFF)			
Date	Water Temp (°C)	Fish	Sensor	Fish	Sensor	Fish	Sensor	Fish	Sensor	Fish Total	Sensor Total
31-Mar	7.0	5		5				5		**15**	**0**
1-Apr	6.0	73	8	68	8			30	1	**171**	**17**
2-Apr	6.5	84	8	73	7			30	1	**187**	**16**
3-Apr	6.5	99	15	75	9			30	1	**204**	**25**
4-Apr	6.5	44	2	20	6	25	5	25		**114**	**13**
Total		**305**	**33**	**241**	**30**	**25**	**5**	**120**	**3**	**691**	**71**

* Fish released at surface into vortex in forebay of Spillbay 17

Table 2-7

Condition codes assigned to fish and dislodged balloon tags for fish passage survival studies.

Status Codes	Description
*	Turbine/passage-related malady
4	Damaged gill(s): hemorrhaged, torn or inverted
5	Major scale loss, > 20% scale loss per side
6	Severed body or nearly severed
7	Decapitated or nearly decapitated
8	Damaged eye(s): hemorrhaged, bulged, ruptured or missing
9	Damaged operculum: torn, bent
A	No visible marks on fish
B	Flesh tear at tag site(s)
C	Minor scale loss, < 20%
E	Laceration(s): tear(s) on body or head (not severed)
F	Torn isthmus
G	Hemorrhaged, bruised head or body
H	LOE
K	Failed to enter system
L	Fish likely preyed on (telemetry, circumstances relative to recapture)
M	Substantial bleeding at tag site
P	Predator marks
Q	Other information
R	Replaced due to unrecoverable conditions
T	Trapped inside tunnel/gate well
V	Fins displaced, or hemorrhaged (ripped, torn, or pulled) from origin
W	Abrasion / Scrape
Survival Codes	
1	Recovered alive
2	Recovered dead
3	Unrecovered – tag & pin only
4	Unrecovered – no information or brief radio telemetry signal
5	Unrecovered – trackable radio telemetry signal or other information

Dissection Codes			
1	Shear	F	Hemorrhaged internally
2	Mechanical	J	Major
3	Pressure	L	Organ displacement
4	Undetermined	M	Minor
5	Mechanical/Shear	N	Heart damage, rupture, hemorrhaged
6	Mechanical/Pressure	O	Liver damage, rupture, hemorrhaged
7	Shear/Pressure	R	Necropsied, no obvious injuries
B	Swim bladder ruptured or expanded	S	Necropsied, internal injuries
D	Kidneys damaged (hemorrhaged)	T	Tagging/Release
E	Broken bones obvious	W	Head removed; i.e., otolith

Table 3-1

Summary tag-recapture data for juvenile Chinook salmon passed through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility (JFF) bypass pipe at John Day Dam, March - April 2008.
Proportions given in parentheses.

	Spillbay 16 TSW		Spillbay 17				Control	
	Mid		Mid		Vortex*		(JFF)	
Discharge (kcfs)	**9.7**		**6.2**		**6.2**			
Number Released	305		241		25		12	
Number Recaptured alive	300	(0.984)	241	(1.000)	21	(0.840)	120	(1.000)
Number Recaptured dead	1	(0.003)	0	(0.000)	0	(0.000)	0	(0.000)
Number Assigned dead**	4	(0.013)	0	(0.000)	4	(0.160)	0	(0.000)
Dislodged Tags	3	(0.010)	0	(0.000)	4	(0.160)	0	(0.000)
Stationary Signal	1	(0.003)	0	(0.000)	0	(0.000)	0	(0.000)
Number Unknown	0	(0.000)	0	(0.000)	0	(0.000)	0	(0.000)
Number Held	300	(0.984)	241	(1.000)	21	(0.840)	120	(1.000)
Number Alive 48 h	299	(0.980)	241	(1.000)	20	(0.800)	120	(1.000)

* Fish released at surface into vortex in forebay of Spillbay 17
** Primarily fish where only HI-Z tag(s) recaptured

Table 3-

Summary of passage related maladies, including visible injury, loss of equilibrium, and scale loss (> 20% per side) observed on recaptured juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March - April 2008.

Propotions given in parentheses.

			With Maladies			
Operation Level	**No. Released**	**No. Examined**	**Total With Maladies**	**No. Dead 48 h**	**Exclusively LOE**	**Visibly Injured**
				RSW		
Mid	305	301 (0.987)	9 (0.030)	0 (0.000)	1 (0.003)	8 (0.027)
				Spillbay 17		
Vortex	25	21 (0.840)	6 (0.286)	0 (0.000)	2 (0.095)	4 (0.190)
				Spillbay 17		
Mid	241	241 (1.000)	8 (0.033)	0 (0.000)	1 (0.004)	7 (0.029)
				Control		
	120	120 (1.000)	0 (0.000)	0 (0.000)	0 (0.000)	0 (0.000)

Table 3-17

Summary malady data for juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March - April 2008. Propotions given in parentheses.

Passage Location	TSW Mid		Spillbay 17 Mid		Spillbay 17 Vortex		Control	
Number released	305		241		25		120	
Number examined	301	(0.987)	241	(1.000)	21	(0.840)	120	(1.000)
Passage related maladies	10	(0.033)	8	(0.033)	6	(0.240)	0	(0.000)
Visible injuries	8	(0.026)	7	(0.029)	4	(0.160)	0	(0.000)
Loss of equilibrium only	1	(0.003)	1	(0.004)	2	(0.080)	0	(0.000)
Scale loss only	--		--		--		--	
Without maladies	290	(0.951)	233	(0.967)	14	(0.560)	120	(1.000)
Without maladies that died*	1		0		1		0	
Malady-free rate	97.01%		71.43%		96.68%			
95% CI (+/-)	1.900		19.300		2.300			

*Fish dead due to non-passage related malady

Table 3-19

Probable sources and severity of maladies observed on recaptured juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility Bypass pipe at John Day Dam, March - April Propotions given in parentheses.

Passage Location	No. of Fish Examined	Total With Maladies		Probable Injury Source: Mechanical		Probable Injury Source: Shear		Probable Injury Source: Mechanism Undetermined		Severity: Minor		Severity: Major	
						TSW							
Mid	301	9	(0.030)	3	(0.010)	5	(0.017)	1	(0.003)	6	(0.020)	3	(0.010)
						Spillbay 17							
Mid	241	8	(0.033)	2	(0.008)	5	(0.021)	1	(0.004)	6	(0.025)	2	(0.008)
						Spillbay 17							
Vortex	21	6	(0.286)	0	(0.000)	4	(0.190)	2	(0.095)	4	(0.190)	2	(0.095)
						Control							
	120	0	(0.000)	0	(0.000)	0	(0.000)	0	(0.000)	0	(0.000)	0	(0.000)

Table 3-18

Summary of visible injury types and rates (passage induced) observed on recaptured juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March - April 2008.

Proportions given in parenthese.

Passage Location	No. Released	No. Examined	Passage Related Visibly Injuried No. of fish	Injury Type: Eye(s) Hemorrhaged, Bulged, Ruptured,	Injury Type: Operculum/Gills Hemorrhaged Torn, Scraped,	Injury Type: Body/Head Cut, Torn, Scraped	Injury Type: Body/Head Hemorrhaged, Bruised
				TSW			
Mid	305	301 (0.987)	8 (0.027)	4 (0.013)	1 (0.003)	1 (0.003)	2 (0.007)
				Spillbay 17			
Mid	241	241 (1.000)	7 (0.029)	5 (0.021)	1 (0.004)	0 (0.000)	1 (0.004)
				Spillbay 17			
Vortex	25	21 (0.840)	4 (0.190)	4 (0.190)	0 (0.000)	0 (0.000)	0 (0.000)
				Control			
	120	120 (1.000)	0 (0.000)	0 (0.000)	0 (0.000)	0 (0.000)	0 (0.000)

Table 6-1

Summary of alive at 48 h and malady-free data for juvenile Chinook salmon released through Spillbay 16 (TSW) and Spillbay 17 (conventional) at mid depth. Control fish released via the Juvenile Fish Facility Bypass pipe at John Day Dam, March - April 2008.

	Passage Location			
	Spillbay 16 TSW Mid	Spillbay 17 Vortex*	Spillbay 17 Conventional Mid	Control
Discharge (kcfs)	**9.7**	**6.2**	**6.2**	
Number released	305	25	241	120
Alive and malady free	290	14	233	120
With maladies, or died	11*	7**	8	0
Number assigned dead	4	4	0	0
Undetermined	0	0	0	0

* Fish released at surface into vortex in forebay of Spillbay 17

** 1 fish with non-passage related malady

Appendix Table A

Station parameters recorded during conduct of passage and condition investigation with juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish bypass pipe at John Day Dam, March-April 2008.

		Elevations (ft)			Turbines		Spillbays (kcfs)					Total
Date	Release Time	Forebay	Tailwater	Head	No. Operating	Total kcfs	14	15	16	17	18	Spill (kcfs)
						TSW						
31-Mar	1656-1700	264.2	159.9	104.3	9	146.0	1.6	0	9.7	6.2	2.4	19.9
1-Apr	0807-0815	264.2	160.0	104.2	9	147.0	1.6	9.7	9.7	6.2	2.4	29.6
	0834-0849	264.2	160.0	104.4	9	142.9	1.6	9.7	9.7	6.2	2.4	29.6
	0922-0929	264.4	160.0	104.4	10	140.4	1.6	9.7	9.7	6.3	2.4	29.7
	0945-0953	264.5	160.0	104.5	9	130.3	1.6	9.7	9.7	6.3	2.4	29.7
	1018-1023	264.6	159.4	105.2	8	115.2	1.6	9.7	9.7	6.3	2.4	29.7
	1100-1110	264.5	159.5	105.0	7	117.3	1.6	9.7		6.3	2.4	29.7
	1136-1146	264.4	159.3	105.1	7	115.3	1.6	9.7	9.7	6.3	2.4	29.7
2-Apr	1228-1237	264.5	158.8	105.7	6	114.3	1.6	9.7	9.7	6.3	2.4	29.7
	1250-1257	264.5	158.7	105.8	8	111.2	1.6	9.7	9.7	6.3	2.4	29.7
	1324-1329	264.4	158.9	105.5	6	114.5	1.6	9.7	9.7	6.3	2.4	29.7
	1351-1356	264.4	159.0	105.4	7	114.2	1.6	9.7	9.7	6.3	2.4	29.7
	1426-1433	264.4	158.8	105.7	7	112.9	1.6	9.7	9.7	6.3	2.4	29.7
	1457-1502	264.5	158.9	105.7	7	111.6	1.6	9.7	9.7	6.3	2.4	29.7
	1540-1545	264.6	158.9	105.7	7	111.2	1.6	9.7	9.7	6.3	2.4	29.7
	1604-1610	264.5	159.1	105.5	7	114.4	1.6	9.7	9.7	6.3	2.4	29.7
	1636-1640	264.5	158.9	105.6	7	114.2	1.6	9.7	9.7	6.3	2.4	29.7

Appendix Table A

Appendix Table A

Continued.

		Elevations (ft)			Turbines		Spillbays (kcfs)					Total
Date	Release Time	Forebay	Tailwater	Head	No. Operating	Total kcfs	14	15	16	17	18	Spill (kcfs)
3-Apr	1327-1331	263.8	159.3	104.5	8	126.2	1.6	9.6	9.6	6.2	2.4	29.4
	1350-1355	263.9	159.1	104.8	8	123.4	1.6	9.6	9.6	6.2	2.4	29.4
	1420-1426	263.9	159.1	104.8	8	120.9	1.6	9.6	9.6	6.2	2.4	29.4
	1503-1508	263.9	159.4	104.5	8	122.6	1.6	9.6	9.6	6.2	2.4	29.4
	1533-1539	263.9	159.4	104.5	8	125.8	1.6	9.6	9.6	6.2	2.4	29.4
	1551-1556	263.8	159.4	104.5	8	126.0	1.6	9.6	9.6	6.2	2.4	29.4
	1620-1626	263.8	159.2	104.6	8	123.4	1.6	9.6	9.6	6.2	2.4	29.4
	1643-1649	263.7	159.2	104.5	8	127.2	1.6	9.6	9.6	6.2	2.4	29.4
	1709-1714	263.7	159.2	104.5	8	126.3	1.6	9.6	9.6	6.2	2.4	29.4
	1724-1730	263.7	159.4	104.3	8	126.3	1.6	9.6	9.6	6.2	2.4	29.4
4-Apr	0819-0824	263.4	158.8	104.6	8	126.4	1.6	9.6	9.6	6.2	2.4	29.4
	0845-0849	263.3	159.1	104.2	8	127.7	1.6	9.6	9.6	6.2	2.4	29.4
	0915-0918	263.7	158.7	105.0	8	127.2	1.6	9.6	9.6	6.2	2.4	29.4
	0938-0942	263.8	159.1	104.8	8	128.3	1.6	9.6	9.6	6.2	2.4	29.4
	0950-0952	263.8	159.2	104.6	8	131.3	1.6	9.6	9.6	6.2	2.4	29.4
Average		**264.1**	**159.2**	**104.9**	**8**	**123.8**	**1.6**	**9.4**	**9.7**	**6.2**	**2.4**	**29.2**
						Spillbay 17						
31-Mar	1713-1714	264.2	159.7	104.5	9	149.4	1.6	0	9.7	6.2	2.4	19.9
1-Apr	1241-1305	264.3	159.1	105.2	7	110.9	1.6	9.7	9.7	6.2	2.4	29.6
	1330-1342	264.3	158.9	105.4	7	113.2	1.6	9.7	9.7	6.2	2.4	29.6
	1410-1445	264.4	159.1	105.3	7	111.9	1.6	9.7	9.7	6.3	2.4	29.6
	1515-1520	264.4	159.0	105.4	7	112.2	1.6	9.7	9.7	6.3	2.4	29.6
	1545-1550	264.4	159.2	105.3	7	110.4	1.6	9.7	9.7	6.3	2.4	29.6

Appendix Table A

Continued.

		Elevations (ft)			Turbines		Spillbays (kcfs)					Total
Date	Release Time	Forebay	Tailwater	Head	No. Operating	Total kcfs	14	15	16	17	18	Spill (kcfs)
2-Apr	0808-0814	264.2	160.0	104.2	10	168.4	1.6	9.7	9.7	6.2	2.4	29.6
	0849-0853	264.2	160.0	104.2	10	164.5	1.6	9.7	9.7	6.2	2.4	29.6
	0912-0915	264.3	159.3	105.0	9	145.5	1.6	9.7	9.7	6.2	2.4	29.6
	0938-0943	264.4	159.3	105.1	9	141.6	1.6	9.7	9.7	6.3	2.4	29.7
	0955-1001	264.5	159.0	105.5	8	136.5	1.6	9.7	9.7	6.3	2.4	29.7
	1034-1038	264.7	159.0	105.7	8	125.9	1.6	9.7	9.7	6.3	2.4	29.7
	1046-1049	264.7	159.2	105.5	8	126.0	1.6	9.7	9.7	6.3	2.4	29.7
3-Apr	0923-0929	264.1	160.2	103.9	10	160.5	1.6	9.6	9.6	6.2	2.4	29.4
	0946-0952	264.1	160.1	104.0	10	155.5	1.6	9.6	9.6	6.2	2.4	29.4
	1019-1024	264.1	159.9	104.2	10	156.2	1.6	9.6	9.6	6.2	2.4	29.4
	1039-1044	264.1	159.9	104.2	11	152.6	1.6	9.6	9.6	6.2	2.4	29.4
	1116-1122	264.0	159.2	104.8	9	121.8	1.6	9.6	9.6	6.2	2.4	29.4
	1150-1156	263.9	159.2	104.7	8	124.7	1.6	9.6	9.6	6.2	2.4	29.4
	1218-1223	263.9	159.5	104.4	9	133.2	1.6	9.6	9.6	6.2	2.4	29.4
	1235-1238	263.9	159.5	104.4	9	132.5	1.6	9.6	9.6	6.2	2.4	29.4
4-Apr	1009-1019	263.9	158.8	105.1	8	130.3	1.6	9.6	9.6	6.2	2.4	29.4
	1030-1036	263.9	159.2	104.7	8	131.3	1.6	9.6	9.6	6.2	2.4	29.4
Average		**264.2**	**159.4**	**104.8**	**8.6**	**135.4**	**1.6**	**9.2**	**9.7**	**6.2**	**2.4**	**29.1**
					Vortex							
4-Apr	1105-1113	264.1	159.3	104.8	9	126.9	1.6	9.6	9.6	6.2	2.4	29.4
	1134-1143	263.7	158.8	104.9	8	123.8	1.6	9.6	9.6	6.2	2.4	29.4

Appendix Table A

Continued.

Date	Release Time	Elevations (ft) Forebay	Tailwater	Head	Turbines No. Operating	Total kcfs	Spillbays (kcfs) 14	15	16	17	18	Total Spill (kcfs)
	1219-1226	263.7	158.9	104.8	8	115.8	1.6	9.6	9.6	6.2	2.4	29.4
Average		**263.8**	**159.0**	**104.8**	**8.3**	**122.2**	**1.6**	**9.6**	**9.6**	**6.2**	**2.4**	**29.4**
						Control						
31-Mar	1223-1225	264.2	160.2	104.0	10	161.0	0	0	0	0	0	0
1-Apr	1632-1641	264.4	159.0	105.4	7	112.6	0	9.7	9.7	0	0	19.4
	1658-1708	264.5	159.1	105.4	7	114.9	0	9.7	9.7	0	0	19.4
2-Apr	1122-1135	264.6	159.0	105.6	8	122.3	1.6	9.7	9.7	6.3	2.4	29.7
	1153-1201	264.6	158.9	105.7	8	122.8	1.6	9.7	9.7	6.3	2.4	29.7
3-Apr	0807-0814	264.0	160.1	103.9	10	161.9	0	0	9.6	0	0	9.6
	0834-0841	263.9	160.1	103.8	10	158.3	0	0	9.6	0	0	9.6
4-Apr	1341-1343	263.5	158.7	104.8	6	110.0	0	9.6	9.6	0	0	19.2
	1408-1410	263.3	158.6	104.7	7	111.7	0	9.6	9.6	0	0	19.2
	1415-1417	263.3	158.7	104.6	7	112.0	0	9.6	9.6	0	0	19.2
	1425-1427	263.4	158.7	104.7	7	112.6	0	0	9.6	0	0	9.6
	1434-1436	263.4	158.9	104.5	7	113.1	0	0	9.6	0	0	9.6
Average		**263.9**	**159.2**	**104.8**	**8**	**126.1**	**0.3**	**5.6**	**8.8**	**1.1**	**0.4**	**16.2**

Appendix Table B-1

Daily tag-recapture data for juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March-April 2008.

	3/31	4/1	4/2	4/3	4/4	Totals
		TSW				
Number released	5	73	84	99	44	**305**
Number alive	5	72	83	96	44	**300**
Number recovered dead	0	0	0	1	0	**1**
Assigned dead*	0	1	1	2	0	**4**
Dislodged tags	--	1	1	1	--	**3**
Stationary radio signals	--	--	--	1	--	**1**
Undetermined	0	0	0	0	0	**0**
Held and Alive 1 h	5	72	83	96	44	**300**
Alive 24 h	5	71	83	96	44	**299**
Alive 48 h	5	71	83	96	44	**299**
		Spillbay 17				
Number released	5	68	73	75	20	**241**
Number alive	5	68	73	75	20	**241**
Number recovered dead	0	0	0	0	0	**0**
Assigned dead*	0	0	0	0	0	**0**
Dislodged tags	--	--	--	--	--	**0**
Stationary radio signals	--	--	--	--	--	**0**
Undetermined	0	0	0	0	0	**0**
Held and Alive 1 h	5	68	73	75	20	**241**
Alive 24 h	5	68	73	75	20	**241**
Alive 48 h	5	68	73	75	20	**241**
		Spillbay 17 - Vortex				
Number released	--	--	--	--	25	**25**
Number alive	--	--	--	--	21	**21**
Number recovered dead	--	--	--	--	0	**0**
Assigned dead*	--	--	--	--	4	**4**
Dislodged tags	--	--	--	--	4	**4**
Stationary radio signals	--	--	--	--	--	**0**
Undetermined	--	--	--	--	0	**0**
Held and Alive 1 h	--	--	--	--	21	**21**
Alive 24 h	--	--	--	--	20	**20**
Alive 48 h	--	--	--	--	20	**20**

Appendix Table B-1

Continued.

	3/31	4/1	4/2	4/3	4/4	Totals
		Control				
Number released	5	30	30	30	25	**120**
Number alive	5	30	30	30	25	**120**
Number recovered dead	0	0	0	0	0	**0**
Assigned dead*	0	0	0	0	0	**0**
Dislodged tags	--	--	--	--	--	**0**
Stationary radio signals	--	--	--	--	--	**0**
Undetermined	0	0	0	0	0	**0**
Held and Alive 1 h	5	30	30	30	25	**120**
Alive 24 h	5	30	30	30	25	**120**
Alive 48 h	5	30	30	30	25	**120**

*Primarily fish where balloon tag(s) were recaptured

Appendix Table B-2

Daily malady data for juvenile Chinook salmon released through TSW and Spillway 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March-April 2008.

	3/31	4/1	4/2	4/3	4/4	Totals
		Spillbay 16				
Number released	5	73	84	99	44	**305**
Number examined	5	72	83	97	44	**301**
Passage related maladies	0	6	1	2	0	**9**
Visible injuries	0	5	1	2	--	**8**
Loss of equilibrium only	--	1	--	--	--	**1**
Scale loss only	--	--	--	--	--	**0**
Without maladies	5	66	82	95	44	**292**
Without maladies that died	0	0	0	1	0	**1**
		Spillbay 17				
Number released	5	68	73	75	20	**241**
Number examined	5	68	73	75	20	**241**
Passage related maladies	0	3	1	3	1	**8**
Visible injuries	0	2	1	3	1	**7**
Loss of equilibrium only	--	1	--	--	--	**1**
Scale loss only	--	--	--	--	--	**0**
Without maladies	5	65	72	72	19	**233**
Without maladies that died	0	0	0	0	0	**0**
		Spillbay 17 - Vortex				
Number released	--	--	--	--	25	**25**
Number examined	--	--	--	--	21	**21**
Passage related maladies	--	--	--	--	6	**6**
Visible injuries	--	--	--	--	4	**4**
Loss of equilibrium only	--	--	--	--	2	**2**
Scale loss only	--	--	--	--	--	**0**
Without maladies	--	--	--	--	14	**14**
Without maladies that died	0	0	0	0	1	**1**
		Control				
Number released	5	30	30	30	25	**120**
Number examined	5	30	30	30	25	**120**
Passage related maladies	0	0	0	0	0	**0**
Visible injuries	--	--	--	--	--	**0**
Loss of equilibrium only	--	--	--	--	--	**0**
Scale loss only	--	--	--	--	--	**0**
Without maladies	5	30	30	30	25	**120**
Without maladies that died	0	0	0	0	0	**0**

Appendix Table B-3

Daily 48 h survival/malady-free data for juvenile Chinook salmon released through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March-April 2008.

	3/31	4/1	4/2	4/3	4/4	Totals
			TSW			
Number released	5	73	84	99	44	**305**
Number alive and malady free	5	66	82	93	44	**290**
Maladies / died	0	6	1	4	0	**11***
Number assigned dead	0	1	1	2	0	**4**
Undetermined	0	0	0	0	0	**0**
			Spillbay 17			
Number released	5	68	73	75	20	**241**
Number alive and malady free	5	65	72	72	19	**233**
Maladies / died	0	3	1	3	1	**8**
Number assigned dead	0	0	0	0	0	**0**
Undetermined	0	0	0	0	0	**0**
			Spillbay 17 - Vortex			
Number released	--	--	--	--	25	**25**
Number alive and malady free	--	--	--	--	14	**14**
Maladies / died					7	**7***
Number assigned dead	--	--	--	--	4	**4**
Undetermined	0	0	0	0	0	**0**
			Control			
Number released	5	30	30	30	25	**120**
Number alive and malady free	5	30	30	30	25	**120**
Maladies / died	0	0	0	0	0	**0**
Number assigned dead	0	0	0	0	0	**0**
Undetermined	0	0	0	0	0	**0**

* 1 fish with no visible maladies died at 24 h.

Appendix Table B-4

Incidence of maladies, including injury, scale loss, and temporary loss of equilibrium (LOE) observed on recaptured juvenile Chinook salmon passed through TSW, Spillbay 17 at mid depth and Spillbay 17 vortex. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March-April 2008.

Date	Test Lot	Fish VI	Live / Dead		Maladies	Passage Malady	Photo taken	Probable Cause	Status
					TSW				
4/1/08	2	Z16	alive	48h	Damaged right eye: hemorrhaged 20%	Yes	No	Shear	Minor
4/1/08	2	Z38	alive	48h	Slight bleeding around mouth; Flesh tear at tag site	Yes	No	Mechanical	Minor
4/1/08	2	Z28	alive	48h	LOE	Yes	No		Minor
4/1/08	2	Z14	dead	24h	LOE; Bruised right side behind head	Yes	Yes	Mechanical	Major
4/1/08	2	Z43	alive	48h	Damaged left eye: hemorrhaged > 50%, and slight bulge	Yes	Yes	Shear	Major
4/1/08	2	Z48	alive	48h	Damaged right eye: hemorrhaged < 50%	Yes	Yes	Shear	Minor
4/2/08	3	U75	alive	48h	Bruised on nose	Yes	No	Mechanical	Minor
4/3/08	4	N30	alive	48h	Damaged left operculum: torn	Yes	No	Shear	Minor
4/3/08	4	M90	alive	48h	Damaged right eye: bulged	Yes	No	Shear	Major
					Spillbay 17				
4/1/08	2	Z66	alive	48h	LOE	Yes	No		Minor
4/1/08	2	T05	alive	48h	Damaged left operculum: scraped	Yes	No	Mechanical	Minor
4/1/08	2	T22	alive	48h	Damaged left eye: hemorrhaged > 50%, ruptured, & bulged	Yes	Yes	Shear	Major
4/2/08	3	U21	alive	48h	Bruised on nose	Yes	No	Mechanical	Minor
4/3/08	4	V92	alive	48h	Damaged right eye: hemorrhaged 20%	Yes	No	Shear	Minor
4/3/08	4	M34	alive	48h	Damaged left eye: hemorrhaged < 50%; Flesh tear at dorsal tag site	Yes	Yes	Shear	Minor
4/3/08	4	M57	alive	48h	Damaged right eye: hemorrhaged > 50%, slightly bulged	Yes	Yes	Shear	Major
4/4/08	6	O15	alive	48h	Damaged right eye: hemorrhaged 20%	Yes	No	Shear	Minor
4/3/08	4	M87	dead	1h	Flesh tear at dorsal tag site; LOE; Necropsied, no obvious injuries	No	Yes	Tagging/Release	

Appendix Table B-4

Continued.

Date	Test Lot	Fish VI	Live / Dead		Maladies	Passage Malady	Photo taken	Probable Cause	Status
					Spillbay 17 - Vortex				
4/4/08	6	O26	alive	48h	Damaged left eye: hemorrhaged 10%	Yes	No	Shear	Minor
4/4/08	6	O35	alive	48h	LOE	Yes	No		Minor
4/4/08	6	O48	alive	48h	LOE	Yes	No		Minor
4/4/08	6	O42	alive	48h	Damaged left eye: hemorrhaged 10%	Yes	No	Shear	Minor
4/4/08	6	O38	dead	24h	Flesh tear at dorsal tag site; LOE; Necropsied, no obvious injuries	No	Yes	Unknown	
4/4/08	6	O36	alive	48h	Damaged right eye: hemorrhaged > 50%, and blown pupil	Yes	Yes	Shear	Major
4/4/08	6	O49	alive	48h	Damaged right eye: hemorrhaged < 50% and ruptured pupil	Yes	Yes	Shear	Major

Appendix Table C-1

Short term passage survival data on recaptured juvenile Chinook salmon passed through TSW and Spillbay 17 at mid depth. Control fish released via the Juvenile Fish Facility bypass pipe at John Day Dam, March-April 2008.

Description of codes and details on injured fish are presented in Appendix Table C-2.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
31-Mar-08		**Testlot 1 Control**			**Water temp = 7.0 °C**					
I60	140	12:25	12:31	6	2	1	A			
I61	131	12:23	12:27	4	2	1	A			
I62	134	12:24	12:29	5	2	1	A			
I64	135	12:24	12:31	7	2	1	A			
I63	128	12:24	12:27	3	2	1	A			
31-Mar-08		**Testlot 1 TSW**			**Water temp = 7.0 °C**					
I65	130	16:58	17:04	6	2	1	A			
I66	140	16:56	17:09	13	2	1	A			
I67	129	16:57	17:04	7	2	1	A			
I68	134	17:00	17:11	11	2	1	A			
I69	138	16:59	17:14	15	2	1	A			
31-Mar-08		**Testlot 1 Spillbay 17**			**Water temp = 7.0 °C**					
I70	139	17:14	17:22	8	2	1	A			
I71	136	17:14	17:24	10	2	1	A			
I72	150	17:13	17:24	11	2	1	A			
I73	137	17:14	17:26	12	2	1	A			
I74	129	17:13	17:21	8	2	1	A			
1-Apr-08		**Testlot 2 Control**			**Water temp = 6.0 °C**					
T25	132	16:34	16:47	13	2	1	A			
T26	127	16:36	16:41	5	2	1	A			
T27	127	16:35	16:38	3	2	1	A			
T28	132	16:37	16:44	7	2	1	A			
T29	131	16:33	16:47	14	2	1	A			
T30	127	16:34	16:36	2	2	1	A			
T31	140	16:36	16:40	4	2	1	A			
T32	135	16:35	16:38	3	2	1	A			
T33	128	16:38	16:42	4	2	1	A			
T34	132	16:32	16:43	11	2	1	A			
T35	145	16:39	16:42	3	2	1	A			
T36	114	16:40	16:43	3	2	1	A			
T37	144	16:38	16:45	7	2	1	A			
T38	129	16:41	16:42	1	2	1	A			
T39	132	17:05	17:14	9	2	1	A			
T40	131	17:04	17:16	12	2	1	A			
T41	138	17:06	17:11	5	2	1	A			
T42	145	17:04	17:09	5	2	1	A			
T43	136	17:03	17:05	2	2	1	A			
T44	136	17:08	17:12	4	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
T45	137	17:07	17:13	6	2	1	A			
T46	136	17:05	17:13	8	2	1	A			
T47	145	17:06	17:25	19	2	1	A			
T48	154	17:07	17:21	14	2	1	A			
T49	140	16:59	17:14	15	2	1	A			
T50	144	17:02	17:08	6	2	1	A			
T51	149	17:00	17:02	2	2	1	A			
T52	131	16:58	17:26	28	2	1	A			
T53	140	16:59	17:02	3	2	1	A			
T54	148	17:00	17:03	3	2	1	A			
1-Apr-08		**Testlot 2 TSW**			**Water temp = 6.0 °C**					
I75	138	8:09	8:16	7	2	1	A			
I76	140	8:10	11:00	170	2	1	A	T		
I77	154	8:11			1	3				
I78	128	8:12	8:20	8	2	1	A			
I79	130	8:11	8:19	8	2	1	A			
I80	137	8:14	8:21	7	2	1	A			
I81	139	8:14	8:24	10	2	1	A			
I82	136	8:13	10:46	153	2	1	A	T		
I83	137	8:15	8:27	12	2	1	A			
I84	125	8:13	8:18	5	2	1	A			
I85	143	8:46	8:54	8	2	1	A			
I86	136	8:44	11:05	141	2	1	A	T		
I87	127	8:45	8:54	9	2	1	A			
I88	131	8:45	8:50	5	2	1	A			
I89	126	8:46	8:56	10	2	1	A			
I90	124	8:49	8:57	8	2	1	A			
I91	128	8:49	11:10	141	2	1	A	T		
I92	121	8:48	8:58	10	2	1	A			
I93	130	8:47	9:00	13	2	1	A			
I94	138	8:48	9:00	12	2	1	A			
I95	128	9:24	9:32	8	2	1	A			
I96	143	9:24	9:30	6	2	1	A			
I97	128	9:24	9:32	8	2	1	A			
I98	140	9:25	9:38	13	2	1	A			
I99	136	9:26	9:34	8	2	1	A			
Z00	136	9:28	9:34	6	2	1	A			
Z01	138	9:29	9:39	10	2	1	A			
Z02	136	9:27	9:36	9	2	1	A			
Z03	128	9:26	9:34	8	1	1	B			
Z04	132	9:28	11:17	109	2	1	A	T		
Z05	127	9:51	9:59	8	2	1	A			
Z06	135	9:50	9:58	8	2	1	A			
Z07	125	9:53	10:03	10	2	1	A			
Z08	128	9:49	10:01	12	2	1	A			
Z09	141	9:52	10:00	8	2	1	A			
Z10	145	9:45	9:52	7	2	1	A			
Z11	145	9:48	9:56	8	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
Z12	148	9:48	9:59	11	2	1	A			
Z13	128	9:47	9:56	9	2	1	A			
Z14	130	9:46	11:20	94	2	1	H	T		*
Z15	140	10:22	10:36	14	2	1	A			
Z16	157	10:22	10:33	11	2	1	8	*		
Z17	137	10:23	11:18	55	1	1	B	T		
Z18	140	10:23	10:32	9	2	1	A			
Z19	135	10:21	10:52	31	2	1	A			
Z20	147	10:20	10:26	6	2	1	A			
Z21	131	10:20	10:28	8	2	1	A			
Z22	137	10:18	10:27	9	2	1	A			
Z23	129	10:18	10:32	14	1	1	B			
Z24	134	10:19	10:28	9	1	1	B			
Z25	140	11:06	11:16	10	2	1	A			
Z26	129	11:07	11:16	9	2	1	A			
Z27	132	11:07	11:14	7	2	1	A			
Z28	140	11:05	11:12	7	2	1	H	*		
Z29	143	11:06	11:11	5	2	1	A			
Z30	134	11:10	11:25	15	2	1	A			
Z31	130	11:09				5	R			
Z32	130	11:08	11:18	10	2	1	A			
Z33	127	11:09	11:19	10	1	1	B			
Z34	135	11:10	11:22	12	2	1	A			
Z35	155	11:39	11:44	5	2	1	A			
Z36	141	11:40	12:55	75	2	1	A	T		
Z37	133	11:39	14:44	185	2	2	R			
Z38	134	11:38	11:47	9	2	1	G	B	*	
Z39	129	11:40	11:48	8	2	1	A			
Z40	130	11:43	12:55	72	2	1	A	T		
Z41	136	11:44	11:52	8	2	1	A			
Z42	132	11:46	11:59	13	2	1	A			
Z43	145	11:47	11:53	6	2	1	8	*		
Z44	143	11:41	11:48	7	2	1	A			
Z45	127	11:46	11:55	9	2	1	A			
Z46	143	11:45	11:51	6	2	1	A			
Z47	134	11:42	11:50	8	2	1	A			
Z48	136	11:43	11:58	15	2	1	8	*		
Z49	131	11:45	11:51	6	2	1	A			
1-Apr-08		**Testlot 2**			**Water temp = 6.0 °C**					
		Spillbay 17								
Z50	137	13:02				5	R			
Z51	140	12:48	12:58	10	2	1	A			
Z52	127	13:03				5	R			
Z53	133	13:04	13:16	12	2	1	A			
Z54	125	12:48	12:58	10	2	1	A			
Z55	144	13:05	13:16	11	2	1	A			
Z56	133	12:43	12:55	12	2	1	A			
Z57	135	13:05	13:12	7	2	1	A			
Z58	138	12:43	12:57	14	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
Z59	126	12:44	12:52	8	2	1	A			
Z60	139	12:45	12:52	7	2	1	A			
Z61	137	12:46	13:00	14	2	1	A			
Z62	146	12:45	12:53	8	2	1	A			
Z63	149	12:43	13:01	18	2	1	A			
Z64	135	12:42	12:55	13	2	1	A			
Z65	138	13:36	13:42	6	2	1	A			
Z66	127	13:39	13:51	12	2	1	H	*		
Z67	153	13:41	13:55	14	2	1	A			
Z68	141	13:37	13:45	8	2	1	A			
Z69	131	13:36	13:48	12	2	1	A			
Z70	129	13:39	13:50	11	2	1	A			
Z71	132	13:39	13:59	20	2	1	A			
Z72	122	13:42	13:55	13	2	1	A			
Z73	133	13:32	13:47	15	2	1	A			
Z74	143	13:31	14:08	37	2	1	A	T		
Z75	133	13:34	13:40	6	2	1	A			
Z76	144	13:35	13:41	6	2	1	B			
Z77	140	13:33	13:41	8	2	1	A			
Z78	134	13:35	13:49	14	2	1	A			
Z79	127	13:33	13:46	13	2	1	A			
Z80	126	14:12	14:28	16	2	1	A			
Z81	136	14:16	14:24	8	2	1	A			
Z82	149	14:15	14:23	8	2	1	A			
Z83	125	14:15	14:21	6	2	1	A			
Z84	138	14:15	14:23	8	2	1	A			
Z85	139	14:14				5	R			
Z86	131	14:13	14:29	16	2	1	A			
Z87	134	14:13	14:19	6	2	1	A			
Z88	155	14:12	14:19	7	2	1	A			
Z89	129	14:38	14:48	10	2	1	A			
Z90	128	14:16	14:18	2	2	1	A			
Z91	131	14:36	17:59	203	1	1	R			
Z92	139	14:37	14:48	11	2	1	A			
Z93	142	14:38	14:46	8	2	1	A			
Z94	123	14:37	14:45	8	2	1	A			
Z95	125	14:40				5	R			
Z96	131	14:42	14:51	9	2	1	A			
Z97	137	14:44	14:51	7	2	1	A			
Z98	138	14:43	15:01	18	2	1	A			
Z99	131	14:43	14:55	12	2	1	A			
T00	131	14:43	15:02	19	2	1	A			
T01	136	14:41	14:56	15	2	1	A			
T02	129	14:43				5	R			
T03	118	14:44	14:54	10	2	1	A			
T04	135	14:45	14:52	7	2	1	A			
T05	136	15:18	15:26	8	2	1	9	*		
T06	141	15:20	15:27	7	2	1	A			
T07	136	15:21	15:27	6	2	1	A			
T08	130	15:19	15:32	13	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
T09	137	15:22	15:32	10	2	1	A			
T10	132	15:21	15:36	15	2	1	A			
T11	129	15:17	15:23	6	2	1	A			
T12	132	15:22				5	R			
T13	138	15:19	15:54	35	2	1	A			
T14	132	15:17	15:31	14	2	1	A			
T15	138	15:49	15:57	8	2	1	A			
T16	135	15:46	15:56	10	2	1	A			
T17	132	15:48	15:55	7	2	1	A			
T18	130	15:47	16:00	13	2	1	A			
T19	136	15:45	15:51	6	2	1	A			
T20	135	15:49	16:04	15	2	1	A			
T21	144	15:51	16:06	15	2	1	A			
T22	126	15:47	15:53	6	2	1	8	*		
T23	139	15:48	15:54	6	2	1	A			
T24	124	15:50	15:59	9	2	1	A			
2-Apr-08		**Testlot 3 Control**			**Water temp = 6.5 °C**					
U35	132	11:33	11:36	3	2	1	A			
U36	137	11:27	11:33	6	2	1	A			
U37	140	11:27	11:31	4	2	1	A			
U38	130	11:35	11:38	3	2	1	A			
U39	121	11:33	11:38	5	2	1	A			
U40	130	11:26	11:32	6	2	1	A			
U41	121	11:34	11:39	5	2	1	A			
U42	126	11:34	11:36	2	2	1	A			
U43	128	11:24	11:31	7	2	1	A			
U44	138	11:24	11:28	4	2	1	A			
U45	139	11:26	11:31	5	2	1	A			
U46	137	11:24	11:31	7	2	1	A			
U47	127	11:25	11:33	8	2	1	A			
U48	130	11:25	11:29	4	2	1	A			
U49	140	11:23	11:25	2	2	1	A			
U50	150	11:53	11:58	5	2	1	A			
U51	136	11:53	11:56	3	2	1	A			
U52	130	11:56	12:01	5	2	1	A			
U53	124	11:54	11:57	3	2	1	A			
U54	127	11:55	12:00	5	2	1	A			
U55	135	11:54	11:58	4	2	1	A			
U56	130	11:55	11:59	4	2	1	A			
U57	137	11:56	12:00	4	2	1	A			
U58	137	11:57	12:04	7	2	1	A			
U59	130	11:57	12:00	3	2	1	A			
U60	142	12:00	12:04	4	2	1	A			
U61	133	12:01	12:05	4	2	1	A			
U62	136	12:00	12:05	5	2	1	A			
U63	148	12:01	12:07	6	2	1	A			
U64	125	12:01	12:07	6	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
2-Apr-08		**Testlot 3 TSW**			**Water temp = 6.5 °C**					
U65	142	12:37	12:44	7	2	1	A			
U66	150	12:35	12:44	9	2	1	A			
U67	142	12:37	12:46	9	2	1	A			
U68	145	12:36	12:42	6	2	1	A			
U69	123	12:36	12:41	5	2	1	A			
U70	140	12:33	12:38	5	2	1	A			
U71	129	12:35	12:42	7	2	1	A			
U72	129	12:33	12:40	7	2	1	A			
U73	132	12:34	12:43	9	2	1	A			
U74	131	12:34	12:45	11	2	1	A			
U75	125	12:55	13:03	8	2	1	G	*		
U76	133	12:55	13:08	13	2	1	A			
U77	128	12:57	13:05	8	2	1	A			
U78	133	12:56	14:08	72	2	1	A	T		
U79	132	12:56	13:04	8	2	1	A			
U80	131	12:52	13:06	14	2	1	A			
U81	130	12:53	12:59	6	2	1	A			
U82	134	12:51	12:59	8	2	1	A			
U83	132	12:52	12:57	5	2	1	A			
U84	141	12:52	13:26	34	2	1	A	T		
U85	140	13:29	13:37	8	2	1	A			
U86	135	13:29	13:36	7	2	1	A			
U87	141	13:29	13:37	8	2	1	A			
U88	123	13:28	13:35	7	2	1	A			
U89	122	13:28				5	R			
U90	134	13:26	13:37	11	2	1	A			
U91	127	13:25	13:35	10	2	1	A			
U92	130	13:25	13:43	18	2	1	A			
U93	134	13:26				5	R			
U94	130	13:27	13:39	12	2	1	A			
U95	137	13:55	14:05	10	2	1	A			
U96	129	13:55	14:01	6	2	1	A			
U97	145	13:54	14:11	17	2	1	A			
U98	128	13:56	14:04	8	2	1	A			
U99	138	13:54	14:04	10	2	1	A			
V00	129	13:52	14:00	8	1	1	B			
V01	135	13:53	14:35	42	2	1	A	T		
V02	130	13:51	14:07	16	2	1	A			
V03	121	13:52	14:00	8	2	1	A			
V04	125	13:53	14:00	7	2	1	A			
V05	155	14:32	14:38	6	2	1	A			
V06	142	14:31	14:37	6	2	1	A			
V07	129	14:32	14:44	12	2	1	A			
V08	117	14:33				3				
V09	125	14:31	14:40	9	2	1	A			
V10	135	14:26				5	R			
V11	123	14:28	14:34	6	2	1	A			
V12	138	14:29				5	R			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
V13	130	14:28				5	R			
V14	142	14:30	14:38	8	2	1	A			
V15	134	15:02	15:08	6	2	1	A			
V16	153	15:00	15:16	16	2	1	A			
V17	142	15:01	15:08	7	2	1	A			
V18	140	15:01	15:11	10	2	1	A			
V19	135	15:02	15:12	10	2	1	A			
V20	131	14:59	15:06	7	2	1	A			
V21	132	14:58	15:40	42	2	1	A	T		
V22	141	14:59	15:57	58	2	1	A	T		
V23	127	14:59	15:06	7	2	1	A			
V24	147	14:58	15:14	16	2	1	A			
V25	128	15:44	17:32	108	2	1	A	T		
V26	132	15:43	15:56	13	2	1	A			
V27	130	15:45				5	R			
V28	125	15:44	16:04	20	2	1	A			
V29	148	15:45	15:57	12	2	1	A			
V30	125	15:40	15:47	7	2	1	A			
V31	136	15:41	15:51	10	2	1	A			
V32	142	15:42	15:49	7	2	1	A			
V33	130	15:43	15:51	8	2	1	A			
V34	133	15:41	15:48	7	2	1	A			
V35	140	16:07	16:12	5	2	1	A			
V36	132	16:08	16:14	6	2	1	A			
V37	146	16:05	16:23	18	2	1	A			
V38	136	16:06	16:14	8	2	1	A			
V39	134	16:06	16:13	7	2	1	A			
V40	138	16:09	16:16	7	2	1	A			
V41	129	16:10	16:20	10	2	1	A			
V42	139	16:10	16:17	7	2	1	A			
V43	131	16:09	16:14	5	2	1	A			
V44	126	16:08	16:16	8	2	1	A			
V45	135	16:38	16:45	7	2	1	A			
V46	132	16:36	16:42	6	2	1	A			
V47	138	16:37	16:48	11	2	1	A			
V48	139	16:37	16:44	7	2	1	A			
V49	141	16:36	16:42	6	2	1	A			
V50	138	16:40	16:47	7	2	1	A			
V51	123	16:39	16:50	11	2	1	A			
V52	140	16:38	16:50	12	2	1	A			
V53	140	16:39	16:46	7	2	1	A			
V54	134	16:40	16:47	7	2	1	A			
2-Apr-08		**Testlot 3**			**Water temp = 6.5 °C**					
		Spillbay 17								
T60	152	8:11	8:23	12	2	1	A			
T61	146	8:11	8:18	7	2	1	A			
T62	145	8:10	8:21	11	2	1	A			
T63	136	8:09	8:19	10	2	1	A			
T64	148	8:10	8:16	6	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
T65	136	8:12	8:20	8	2	1	A			
T66	139	8:14	8:22	8	2	1	A			
T67	130	8:13	8:24	11	2	1	A			
T68	139	8:12	8:24	12	2	1	A			
T69	128	8:13	8:23	10	2	1	A			
T70	138	8:30	8:42	12	2	1	A			
T71	149	8:30	8:38	8	2	1	A			
T72	135	8:28	8:34	6	2	1	A			
T73	137	8:29	8:45	16	2	1	A			
T74	128	8:29	8:40	11	2	1	A			
T75	142	8:27	8:39	12	2	1	A			
T76	143	8:28	8:36	8	2	1	A			
T77	141	8:28	8:36	8	2	1	A			
T78	130	8:26	8:35	9	2	1	A			
T79	124	8:27	8:38	11	2	1	A			
T80	132	8:53	9:03	10	2	1	A			
T81	130	8:52	9:05	13	2	1	A			
T82	137	8:52	9:02	10	2	1	A			
T83	145	8:53	9:09	16	2	1	A			
T84	136	8:51	8:58	7	2	1	A			
T85	135	8:51	9:03	12	2	1	A			
T86	125	8:49	9:25	36	2	1	A	T		
T87	134	8:51	9:09	18	2	1	A			
T88	134	8:50	9:00	10	2	1	A			
T89	132	8:50	8:59	9	2	1	A			
T90	130	9:15	9:22	7	2	1	A			
T91	132	9:16	9:26	10	2	1	A			
T92	124	9:14	12:46	212	2	1	A	T		
T93	110	9:15	9:26	11	2	1	A			
T94	132	9:15	9:30	15	2	1	A			
T95	133	9:12				3	R			
T96	149	9:12	9:24	12	2	1	A			
T97	128	9:13	9:21	8	2	1	A			
T98	135	9:13	9:23	10	2	1	A			
T99	144	9:14	9:30	16	2	1	A			
U00	140	9:43	9:52	9	2	1	A			
U01	136	9:42	9:51	9	2	1	A			
U02	139	9:41	9:55	14	2	1	A			
U03	131	9:42	9:49	7	2	1	A			
U04	142	9:41	9:50	9	2	1	A			
U05	130	9:40	9:49	9	2	1	A			
U06	134	9:40	9:48	8	2	1	A			
U07	134	9:41	9:56	15	2	1	A			
U08	140	9:40	9:47	7	2	1	A			
U09	130	9:41	9:50	9	2	1	A			
U10	137	9:57	10:10	13	2	1	A			
U11	138	9:58	10:06	8	2	1	A			
U12	137	9:58	10:28	30	2	1	A	T		
U13	139	9:57	10:20	23	2	1	A			
U14	143	9:56	10:04	8	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
U15	140	10:01	10:28	27	2	1	A			
U16	140	9:59	10:06	7	2	1	A			
U17	134	10:00	12:41	161	2	1	A	T		
U18	132	9:59	10:24	25	2	1	A			
U19	133	10:00				5	R			
U20	131	10:38	10:46	8	2	1	A			
U21	135	10:37	11:04	27	2	1	T	G	*	
U22	144	10:38	11:09	31	2	1	A	T		
U23	128	10:35	10:45	10	2	1	A			
U24	137	10:38	10:51	13	2	1	A			
U25	145	10:35	10:45	10	2	1	A			
U26	141	10:36	10:45	9	2	1	A			
U27	135	10:34	10:42	8	2	1	A			
U28	130	10:36	10:42	6	2	1	A			
U29	135	10:37	10:48	11	2	1	A			
U30	135	10:49	10:56	7	2	1	A			
U31	124	10:46	11:05	19	2	1	A			
U32	145	10:48	11:02	14	2	1	A			
U33	135	10:47	11:00	13	2	1	A			
U34	140	10:48	10:56	8	2	1	A			
3-Apr-08		**Testlot 4 Control**			**Water temp = 6.5 °C**					
V60	148	8:07	8:10	3	2	1	A			
V61	125	8:11	8:14	3	2	1	A			
V62	122	8:08	8:11	3	2	1	A			
V63	124	8:09	8:13	4	2	1	A			
V64	121	8:08	8:11	3	2	1	A			
V65	154	8:11	8:14	3	2	1	A			
V66	141	8:09	8:12	3	2	1	A			
V67	142	8:10	8:15	5	2	1	A			
V68	142	8:12	8:19	7	2	1	A			
V69	135	8:14	8:17	3	2	1	A			
V70	131	8:13	8:18	5	2	1	A			
V71	141	8:13	8:18	5	2	1	A			
V72	135	8:12	8:21	9	2	1	A			
V73	138	8:12	8:16	4	2	1	A			
V74	151	8:14	8:15	1	2	1	A			
V75	137	8:34	8:38	4	2	1	A			
V76	151	8:35	8:39	4	2	1	A			
V77	135	8:34	8:37	3	2	1	A			
V78	136	8:36	8:40	4	2	1	A			
V79	135	8:36	8:40	4	2	1	A			
V80	129	8:34	8:36	2	2	1	A			
V81	132	8:34	8:38	4	2	1	A			
V82	137	8:37	8:41	4	2	1	A			
V83	131	8:41	8:44	3	2	1	A			
V84	142	8:39	8:42	3	2	1	A			
V85	127	8:40	8:46	6	2	1	A			
V86	127	8:39	8:43	4	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
V87	139	8:37	8:40	3	2	1	A			
V88	146	8:41	8:45	4	2	1	A			
V89	126	8:37	8:41	4	2	1	A			
3-Apr-08		**Testlot 4 TSW**			**Water temp = 6.5 °C**					
M65	135	13:31	13:45	14	2	1	A			
M66	131	13:31	13:43	12	2	1	A			
M67	130	13:30	13:39	9	2	1	A			
M68	136	13:31	13:37	6	2	1	A			
M69	129	13:30	13:40	10	2	1	A			
M70	122	13:28	13:36	8	2	1	A			
M72	129	13:29	13:35	6	2	1	A			
M71	132	13:28	13:36	8	2	1	A			
M73	146	13:29				5	R			
M74	143	13:29	13:41	12	2	1	A			
M75	142	13:52	14:08	16	2	1	A			
M76	140	13:53	13:57	4	2	1	A			
M77	138	13:54	14:00	6	2	1	A			
M78	145	13:54	14:01	7	2	1	A			
M79	141	13:53	14:00	7	2	1	A			
M80	149	13:55	14:02	7	2	1	A			
M81	143	13:55	14:03	8	2	1	A			
M82	126	13:56	14:02	6	2	1	A			
M83	142	13:54	14:01	7	2	1	A			
M84	145	13:55	14:02	7	2	1	A			
M85	149	14:24	14:41	17	2	1	A			
M86	134	14:26	14:32	6	2	1	A			
M87	130	14:25	14:32	7	1	2	B	H		
M88	135	14:25				3				
M89	124	14:26	14:33	7	2	1	A			
M90	122	14:22	14:30	8	2	1	8	*		
M91	135	14:23	14:35	12	2	1	A			
M92	138	14:21				5				
M93	129	14:22	14:28	6	2	1	A			
M94	133	14:23	14:42	19	2	1	A			
M95	133	15:04	15:22	18	2	1	A			
M96	125	15:05	15:14	9	2	1	A			
M97	134	15:06	15:22	16	2	1	A			
M98	138	15:04	15:11	7	2	1	A			
M99	130	15:05	15:11	6	2	1	A			
N00	143	15:06	15:13	7	2	1	A			
N01	139	15:08	15:14	6	2	1	A			
N02	127	15:08	15:15	7	2	1	A			
N03	136	15:07	15:19	12	2	1	A			
N04	126	15:07	15:17	10	2	1	A			
N05	127	15:36	15:42	6	2	1	A			
N06	141	15:35	15:46	11	2	1	A			
N07	133	15:34	15:50	16	2	1	A			
N08	140	15:35	15:50	15	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
N09	131	15:36	15:47	11	2	1	A			
N10	132	5:37	15:45	608	1	1	B			
N11	129	15:38	15:49	11	2	1	A			
N12	138	15:38	15:44	6	2	1	A			
N13	136	15:39	15:58	19	2	1	A			
N14	132	15:36	17:02	86	2	1	A	T		
N15	132	15:53	16:01	8	2	1	A			
N16	127	15:51	16:13	22	2	1	B			
N17	136	15:53	16:02	9	2	1	A			
N18	135	15:52	15:59	7	2	1	A			
N19	144	15:52	15:59	7	2	1	A			
N20	131	15:55	16:02	7	2	1	A			
N21	130	15:55	16:06	11	2	1	A			
N22	143	15:54	16:00	6	2	1	A			
N23	138	15:56	16:10	14	2	1	A			
N24	131	15:55	16:02	7	2	1	A			
N25	122	16:22	16:39	17	2	1	A			
N26	137	16:23	16:33	10	2	1	A			
N27	140	16:21	16:38	17	2	1	A			
N28	133	16:24	16:30	6	2	1	A			
N29	147	16:23	16:34	11	2	1	A			
N30	145	16:26	16:41	15	2	1	9	*		
N31	131	16:25	16:35	10	2	1	A			
N32	121	16:26	16:32	6	2	1	A			
N33	146	16:24	16:32	8	2	1	A			
N34	132	16:25	16:31	6	2	1	A			
N35	152	16:48	16:54	6	2	1	A			
N36	132	16:46	16:54	8	2	1	A			
N37	130	16:47	16:55	8	2	1	A			
N38	132	16:48	16:55	7	2	1	A			
N39	143	16:49	17:00	11	2	1	A			
N40	123	16:44	16:57	13	2	1	A			
N41	136	16:44	16:51	7	2	1	A			
N42	129	16:45	16:55	10	2	1	A			
N43	129	16:46	16:56	10	2	1	A			
N44	147	16:45	17:04	19	2	1	A			
N45	131	17:12	17:22	10	2	1	A			
N46	136	17:14	17:22	8	2	1	A			
N47	147	17:13	17:20	7	2	1	A			
N48	146	17:14	17:21	7	2	1	A			
N49	131	17:13	17:19	6	2	1	A			
N50	131	17:10	17:15	5	2	1	A			
N51	136	17:12	17:19	7	2	1	A			
N52	138	17:11	17:21	10	2	1	A			
N53	133	17:10	17:17	7	2	1	A			
N54	135	17:11	17:58	47	2	1	A	T		
T55	131	17:28	17:42	14	2	1	A			
N61	141	17:29	17:33	4	2	1	A			
N62	140	17:27	17:36	9	1	1	B	H		
N63	140	17:26	17:35	9	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
N64	134	17:25	17:34	9	2	1	A			
N55	133	17:26	17:37	11	2	1	A			
N56	139	17:25	17:30	5	2	1	A			
N57	145	17:27	17:32	5	2	1	A			
N58	133	17:30	17:37	7	2	1	A			
N59	135	17:28	17:34	6	2	1	A			
3-Apr-08		**Testlot 4**			**Water temp = 6.5 °C**					
		Spillbay 17								
V90	141	9:25	9:36	11	2	1	A			
V91	141	9:24	9:30	6	2	1	A			
V92	138	9:26	9:34	8	2	1	8	*		
V93	138	9:24	9:45	21	2	1	A			
V94	135	9:29	9:38	9	2	1	A			
V95	130	9:50	10:08	18	2	1	A			
V96	133	9:28	9:41	13	2	1	A			
V97	138	9:28	9:38	10	2	1	A			
V98	133	9:28	9:40	12	2	1	A			
V99	140	9:27	9:35	8	2	1	A			
M00	143	9:48	10:02	14	1	1	B			
M01	142	9:47	9:55	8	2	1	A			
M02	133	9:46	9:53	7	2	1	A			
M03	135	9:47	9:58	11	2	1	A			
M04	135	9:48	9:57	9	2	1	A			
M05	129	9:49	10:01	12	2	1	A			
M06	136	9:51	10:04	13	2	1	A			
M07	131	9:52	10:07	15	2	1	A			
M08	132	9:50	10:00	10	2	1	A			
M09	131	9:52	10:05	13	2	1	A			
M10	128	10:23	10:40	17	2	1	A			
M11	131	10:24	10:37	13	1	1	B			
M12	124	10:23	10:42	19	2	1	A			
M13	127	10:22	10:31	9	2	1	A			
M14	135	10:24	10:36	12	2	1	A			
M15	141	10:22	10:29	7	2	1	A			
M16	132	10:20	10:29	9	2	1	A			
M17	142	10:21	10:35	14	2	1	A			
M18	147	10:21	10:28	7	2	1	A			
M19	129	10:20	10:41	21	2	1	A			
M20	135	10:44	11:45	61	2	1	A			
M21	143	10:43	11:47	64	2	1	A	T		
M22	127	10:44	10:50	6	2	1	A			
M23	130	10:42	10:53	11	2	1	A			
M24	127	10:43	10:54	11	2	1	A			
M25	140	10:41	10:50	9	2	1	A			
M26	136	10:39	10:47	8	2	1	A			
M27	129	10:41	10:47	6	2	1	A			
M28	127	10:39	10:53	14	2	1	A			
M29	141	10:40	10:44	4	2	1	A			
M30	135	11:19	11:26	7	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
M31	151	11:21	11:44	23	2	1	A			
M32	129	11:22	11:39	17	2	1	A			
M33	147	11:20	11:30	10	2	1	A			
M34	135	11:20	11:45	25	1	1	B	*		
M35	130	11:19	11:27	8	2	1	A			
M36	137	11:18	11:29	11	2	1	A			
M37	135	11:17	11:25	8	2	1	A			
M38	136	11:17	11:25	8	2	1	A			
M39	133	11:18	11:29	11	2	1	A			
M40	123	11:53	11:58	5	2	1	A			
M41	138	11:52	11:59	7	2	1	A			
M42	126	11:54	12:00	6	2	1	A			
M43	134	11:53	11:59	6	2	1	A			
M44	134	11:52	12:12	20	2	1	A			
M45	127	11:55	12:05	10	2	1	A			
M46	124	11:55	12:02	7	2	1	A			
M47	140	11:54	12:07	13	2	1	A			
M48	135	11:55	12:02	7	2	1	A			
M49	132	11:56	12:08	12	2	1	A			
M50	127	12:38	12:48	10	2	1	A			
M51	131	12:37	12:45	8	2	1	A			
M52	132	12:37	12:43	6	2	1	A			
M53	131	12:35	12:46	11	2	1	A			
M54	131	12:36	12:49	13	2	1	A			
M55	131	12:20	12:39	19	2	1	A			
M56	135	12:23	12:29	6	2	1	A			
M57	155	12:21	12:29	8	2	1	A	*		
M58	137	12:19	12:33	14	2	1	A			
M59	123	12:20	12:28	8	2	1	A			
M60	137	12:22	12:32	10	2	1	A			
M61	137	12:22	12:36	14	2	1	A			
M62	140	12:21	12:29	8	2	1	A			
M63	138	12:23	13:28	65	2	1	A	T		
M64	136	12:19	12:27	8	2	1	A			
4-Apr-08		**Testlot 5 Vortex**			**Water temp = 6.5 °C**					
O25	139	11:13	11:27	14	2	1	A			
O26	135	11:11	11:26	15	2	1	8	*		
O27	131	11:12	11:18	6	1	1	B			
O28	140	11:13	11:30	17	2	1	A			
O29	139	11:13	11:32	19	2	1	A			
O30	126	11:11	11:17	6	2	1	A			
O31	132	11:10				3				
O32	137	11:06				3				
O33	140	11:07	11:17	10	2	1	A			
O34	131	11:08	11:18	10	2	1	A			
O35	140	11:38	11:58	20	2	1	H	*		
O36	125	11:40	12:02	22	2	1	8	*		
O37	137	11:39	11:54	15	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
O38	135	11:43	11:49	6	1	1	B	H		
O39	135	11:37				5	R			
O40	133	11:36	12:51	75	1	1	B			
O41	133	11:35	11:42	7	2	1	A			
O42	133	11:35	11:59	24	2	1	8	*		
O43	133	11:36				3				
O44	141	11:35	11:44	9	2	1	A			
O45	135	12:24				5	R			
O46	144	12:25	12:30	5	2	1	A			
O47	136	12:26	12:31	5	2	1	A			
O48	121	12:24	12:34	10	1	1	H	*		
O49	148	12:25	12:37	12	2	1	8	*		
O50	127	12:22				5	R			
O51	137	12:23				5	R			
O52	127	12:20				5	R			
O53	123	12:23	12:35	12	2	1	A			
O54	133	12:19				3				
4-Apr-08		**Testlot 5 Control**			**Water temp = 6.5 °C**					
O55	152	13:41	13:52	11	2	1	A			
O56	137	13:42	13:44	2	2	1	A			
O57	140	13:42	13:44	2	2	1	A			
O58	126	13:43	13:46	3	2	1	A			
O59	105	13:43	13:53	10	1	1	B			
O60	133	14:10	14:13	3	2	1	A			
O61	140	14:10	14:14	4	2	1	A			
O62	133	14:08	14:11	3	2	1	A	Q		
O63	134	14:09	14:10	1	2	1	A			
O64	131	14:09	14:13	4	2	1	A			
O65	138	14:15	14:21	6	2	1	A			
O66	136	14:17	14:23	6	2	1	A			
O67	131	14:17	14:24	7	2	1	A			
O68	129	14:15	14:21	6	2	1	A			
O69	141	14:16	14:22	6	2	1	A			
O70	126	14:36	14:39	3	2	1	A			
O71	125	14:36	14:38	2	2	1	A			
O72	129	14:36	14:39	3	2	1	A			
O73	137	14:36	14:39	3	2	1	A			
O74	127	14:34	14:39	5	2	1	A			
O75	132	14:26	14:33	7	2	1	A			
O76	137	14:26	14:33	7	2	1	A			
O77	137	14:27	14:34	7	2	1	A			
O78	127	14:25	14:33	8	2	1	A			
O79	146	14:25	14:32	7	2	1	A			
4-Apr-08		**Testlot 5 Spillbay 16 TSW**			**Water temp = 6.5 °C**					
N79	146	8:20	8:26	6	2	1	A			
N78	138	8:21	8:28	7	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time: Released	Time: Recovered	Minutes at large	No. HI-Z tags recovered	Survival Code	Status Codes 1	2	3	4
N77	154	8:21	8:31	10	2	1	A			
N76	133	8:20	8:26	6	2	1	A			
N75	133	8:21	8:30	9	2	1	A			
N74	130	8:22	8:31	9	2	1	A			
N73	139	8:24	8:32	8	2	1	A			
N72	130	8:23	8:27	4	2	1	A			
N71	132	8:23	8:31	8	2	1	A			
N70	124	8:24	8:29	5	2	1	A			
N69	138	8:47	8:58	11	2	1	A			
N68	140	8:46	8:53	7	2	1	A			
N67	132	8:47	8:54	7	2	1	A			
N66	134	8:46	9:07	21	2	1	A			
N65	142	8:45	8:51	6	2	1	A			
N64	127	8:49	8:56	7	2	1	A			
N63	126	8:47	8:56	9	2	1	A			
N62	131	8:48	8:54	6	2	1	A			
N61	137	8:49	8:55	6	2	1	A			
N60	135	8:48	9:04	16	2	1	A			
N80	130	9:16				5	R			
N81	129	9:16	9:25	9	2	1	A			
N82	137	9:17	9:21	4	2	1	A			
N83	126	9:17	9:24	7	2	1	A			
N84	135	9:15	11:20	125	2	1	A	T		
N85	133	9:18	9:33	15	2	1	A			
N86	120	9:17	9:23	6	2	1	A			
N87	144	9:17	12:04	167	2	1	A	T		
N88	131	9:18	9:27	9	2	1	A			
N89	120	9:18	9:25	7	2	1	A			
N90	129	9:39	9:46	7	2	1	A			
N91	126	9:38	9:49	11	2	1	A			
N92	153	9:40	9:45	5	2	1	A			
N93	137	9:38	9:47	9	2	1	A			
N94	128	9:41	9:48	7	2	1	A			
N95	130	9:38	9:44	6	2	1	A			
N96	129	9:39	9:54	15	2	1	A			
N97	136	9:42	9:49	7	2	1	A			
N98	129	9:41	9:51	10	2	1	A			
N99	136	9:40	9:53	13	2	1	A			
O00	136	9:51	10:00	9	2	1	A			
O01	135	9:50	9:57	7	2	1	A			
O02	128	9:52	9:58	6	2	1	A			
O03	134	9:50	9:59	9	2	1	A			
O04	148	9:51	10:00	9	2	1	A			
4-Apr-08		**Testlot 5**			**Water temp = 6.5 °C**					
		Spillbay 17								
O05	132	10:16	10:24	8	2	1	A			
O06	134	10:15	10:24	9	2	1	A			
O07	127	10:14	10:22	8	2	1	A			
O08	128	10:15	10:26	11	2	1	A			

Appendix Table C-1

Continued.

Fish ID	Total Length (mm)	Time			No. HI-Z tags recovered	Survival Code	Status Codes			
		Released	Recovered	Minutes at large			1	2	3	4
O09	119	10:15	10:29	14	2	1	A			
O10	123	10:13	10:27	14	2	1	A			
O11	128	10:11	10:23	12	2	1	A			
O12	127	10:11	10:32	21	2	1	A			
O13	129	10:12	10:21	9	2	1	A			
O14	140	10:12	10:18	6	2	1	A			
O15	143	10:30	10:36	6	2	1	8	*		
O16	140	10:31	10:36	5	2	1	A			
O17	142	10:32	10:39	7	2	1	A			
O18	150	10:31	10:37	6	2	1	A			
O19	147	10:31	10:38	7	2	1	A			
O20	137	10:35	10:42	7	2	1	A			
O21	144	10:34	10:55	21	2	1	A			
O22	144	10:34	10:41	7	2	1	A			
O23	125	10:36	13:07	151	2	1	A	T		
O24	133	10:36	10:53	17	2	1	A			

Appendix Table C-2

Condition codes assigned to fish and dislodged balloon tags for fish passage survival studies.

Status Codes	Description
*	Turbine/passage-related malady
4	Damaged gill(s): hemorrhaged, torn or inverted
5	Major scale loss, > 20% scale loss per side
6	Severed body or nearly severed
7	Decapitated or nearly decapitated
8	Damaged eye(s): hemorrhaged, bulged, ruptured or missing
9	Damaged operculum: torn, bent
A	No visible marks on fish
B	Flesh tear at tag site(s)
C	Minor scale loss, < 20%
E	Laceration(s): tear(s) on body or head (not severed)
F	Torn isthmus
G	Hemorrhaged, bruised head or body
H	LOE
K	Failed to enter system
L	Fish likely preyed on (telemetry, circumstances relative to recapture)
M	Substantial bleeding at tag site
P	Predator marks
Q	Other information
R	Replaced due to unrecoverable conditions
T	Trapped inside tunnel/gate well
V	Fins displaced, or hemorrhaged (ripped, torn, or pulled) from origin
W	Abrasion / Scrape
Survival Codes	
1	Recovered alive
2	Recovered dead
3	Unrecovered – tag & pin only
4	Unrecovered – no information or brief radio telemetry signal
5	Unrecovered – trackable radio telemetry signal or other information

Dissection Codes			
1	Shear	F	Hemorrhaged internally
2	Mechanical	J	Major
3	Pressure	L	Organ displacement
4	Undetermined	M	Minor
5	Mechanical/Shear	N	Heart damage, rupture, hemorrhaged
6	Mechanical/Pressure	O	Liver damage, rupture, hemorrhaged
7	Shear/Pressure	R	Necropsied, no obvious injuries
B	Swim bladder ruptured or expanded	S	Necropsied, internal injuries
D	Kidneys damaged (hemorrhaged)	T	Tagging/Release
E	Broken bones obvious	W	Head removed; i.e., otolith