ADDENDUM TO THE CHRISTINA LAKE MANAGEMENT PLAN AND IMPLEMENTATION STRATEGY – 2006/2007

February 21st, 2008

The following information is updated information for the Christina Lake Management Plan. Note: Items in red will be updated when the information becomes available.

Section Number	Title	Page Reference

5.3.0.1 Population and Settlement Page 37

In the Christina Lake area the population is 1,435 per Statistics Canada (2006) census results. This is a decrease of -1.4% since the 2001 census.

5.3.0.1.0 Residential

Require an update on the number of permanent, seasonal, and vacant residential lots from the RDKB.

5.3.0.1.1 Commercial/Utility/Institutional/Recreational/Government

Require an update on the number of commercial, utility, institutional, recreational and government lots for services to the community from the RDKB.

Table 6. Land Designations per 2007 Assessment – RDKB **Page 38**

LAND USE DESCRIPTION	NUMBER OF LOTS
Residential	
Year Round	
Vacant Lots	
Seasonal	
TOTAL	

Commercial - Services (Includes easements and foreshore holdings)	
Active	
Vacant	
TOTAL	
Utility (includes easements)	
Railway	
Communications	
Water Distribution Systems	
Electrical Power Systems (incl. Non-Utility Co.)	
TOTAL	
Institutional/Recreational/Government	
Active	
Vacant	
TOTAL	

5.3.0.4 Forestry **Page 40**

Table 7 requires completion. Pending Interfor

5.3.0.4.0 Forest Tenures **Page 41**

Pending Interfor

5.3.0.4.2 Wildfire **Page 43**

An "Emergency Fire Preparedness Plan" will be completed by the Regional District of Kootenay Boundary. At this time we are 3rd on the list for this planning process behind Rossland and Big White. Estimated timing of completion is 3 years. The process may take less time if a region wide plan is initiated in the spring of 2008.

5.3.0.6 Parks (Provincial and Regional) Other Considerations **Page 47**

As of September, 2007, the Regional District of Kootenay Boundary has received approval through the Ministry of Environment for a "Parks Function" within the Christina Lake watershed area.

5.3.1.0.1 Christina Waterworks District (CWD) Page 49

Details on upgrade to system required.

5.3.1.0.2 Sutherland Creek Water District (SCWD) Page 50

The following information of the SCWD was provided by (Black, 2007).

The Sutherland Creek Waterworks District is the second largest system within the Christina Lake watershed and was established in 1974. There are currently 245 connections within this district as of 2007. Users of this system include residential and commercial water consumers. The SCWD is considered local government is governed by the current "Local Improvement District" policies, which is overseen by the Ministry of Community Services. The SCWD also reports to the Interior Health Authority and must adhere to the Safe Drinking Water Regulations, and other related legislation.

- Total storage capacity: (2) 40,000 US gallon reservoirs

- Annual Audit of Water Supply:

  - Year 2000 58,911,955 US gallons
  - Year 2001 63,092,280 US gallons
  - Year 2002 66,618,360 US gallons (leak at Skand's started in December)
  - Year 2003 76,401,419 US gallons (leak at Skand's Jan – Mar)
  - Year 2004 77,079,370 US gallons
  - Year 2005 53,104,266 US gallons
  - Year 2006 70,792,660 US gallons

- Sampling Requirements: sample treated water daily for chlorine residual, weekly bacteriological samples of treated water, raw samples upon request from Interior Health
- Residential: 222
- Commercial: 22
- Agriculture: 1
- Other Pertinent Information:
  SCWD has 4 water licenses as follows
    - Sutherland Creek C045606 Domestic 27,375,000.000
    - Sutherland Creek C060473 Domestic 27,375,000.00
    - Sutherland Creek C108743 Irrigation 14.750
    - Sutherland Creek C106744 Irrigation 10.875
- Water restrictions: Voluntary water restrictions, Water Restriction Bylaw in place and will be used when voluntary water restrictions are not sufficient and enforced restrictions are necessary because of drought conditions

Sutherland Creek Waterworks District is presently operating on (2) deep wells – one 6 inch and one 10 inch, with electrically powered in-line pumps. The district has maintained Sutherland Creek as an emergency back-up supply system. The deep in-ground wells went into full operation on September 27th, 2007. All water is being chlorinated and the system is operating within the newest Health Regulations. The well project was undertaken at a cost of nearly $350,000.00.

The occurrence of flooding in the spring of 2006 and subsequent drought conditions in the late summer of that year have left their mark on both Sutherland Creek and McRae Creek. Debris accumulation and low flows left the mouth of McCrae Creek completely dry and therefore 0 spawners returned to this stream. Access was not completely blocked in Sutherland Creek, however, sediment build-up and low flows may have contributed to the low returns on this stream as well.

The channel of Sutherland Creek in reach one (from the mouth to the highway 3 culvert) has in filled with sediments and gravel due to the flood of 2006 and virtually all of the spawning gravel from reach two and three is now located in reach one. The summer drought conditions in 2006 meant very low water flows, thus the enumeration for 2006 came in with a low count. In the summer of 2007, drought conditions persisted leaving very little water for Kokanee (*Oncorhynchus nerka)* to navigate the channel. There was a minimal amount of water flow at the mouth of the creek with water levels improving in sections by the park bridge and highway 3 culvert and sporadic pool sequences throughout reach two and three. With the absence of spawning gravel in reach two and three and very little water to allow for movement, the enumeration for 2007 came in with a very low count. According to the field data sheets juvenile Rainbow Trout (*Oncorhynchus mykiss)* were abundant where water availability was highest in reach one, two, and three. See Table 11 below for updated stream spawning Kokanee (*Oncorhynchus nerka)* enumeration information on all creek systems that generally support this species.

On McRae Creek (historically the second highest population for stream spawning Kokanee with Sandner Creek being the highest), conditions are dire. In May of 2006, a debris torrent swept down McRae Creek from above the Trans Canada Trail. A large logjam which was first reported in 1973 was washed out with the debris from the upper reaches. The plume in Christina Lake from the debris was several kilometres long. When the spring freshette subsided, the debris build-up at the mouth of the creek system which consisted of various sizes of substrate materials (cobbles and boulders) blocked a proper flow to the lake. With the drought conditions in the late summer and the creek bed high and dry from the mouth to approximately 30 meters up the channel, fish access was impossible.

The Sandner Creek system also came in with very low counts as determined by the enumeration. This system is in a fairly good pristine state as it is located within the Gladstone Provincial Park. Even though the water was low and recreational activities had some impact on the kokanee (*Oncorhynchus nerka*), access to the upper reaches was possible.

Table 11

Kokanee Stream Spawner Enumeration Results

	2004	2005	*2006	**2007	Dates 2007
Sandner Creek	2353	2225	450	1135	Sept 9
(historically highest)	**5703**	**4285**		**1500**	Sept 14
	5180	2425		1220	Sept 19
				470	Sept 26
Estimated Spawning Population	***8555***	***6428***	**n/a**	***2250***	
McRae Creek	185	20	0	0	Aug 17
(historically second highest)	314	90			Aug 30
	371	158			
	274	**175**			
Estimated Spawning Population	***557***	***263***	**n/a**	**n/a**	
Sutherland Creek	125	61	94	8	Sept 11
(historically third)	676	**161**		**19**	Sept 13 → 53 redds
	696	71		4	Sept 23
	418			8	Sept 25
				11	Sept 28
Estimated Spawning Population	***1044***	***242***	**n/a**	***29***	

Peak Count in red multiplied by 1.5 to give estimated spawning population

Summary of Field Notes:

*** 2006 ENUMERATION NOT COMPLETED (peak count not determined)**
Sandner Creek - Due to Bears, unsafe for Volunteers

McRae Creek - Dry due to blow out above Trans Canada Trail, channel deposits at mouth of system

Sutherland Creek - High flood year in the spring - spawning gravel washed down to reach one, low water levels in the late summer has made access difficult

****NOTES ON 2007 ENUMERATION (kokanee monitoring commenced August 17th**
Sutherland Creek- High sediment deposits from last years flood in reach one (channel fill-in), spawning gravel from upper reaches has been deposited into reach one, very low water flows, hard for fish to access upper reaches (2 and 3) and very small amounts of spawning gravel available in reach two and and three - note very low lake level

McRae Creek - Due to the debris torrent and debris flow from above the Trans Canada trail in 2006, a large amount of cobbles and boulders have been deposited at the mouth of this creek system leaving no water in the channel for approximately 30 meters from the mouth going upstream – note very low lake Level

Sandner Creek - High recreational usage at the mouth of creek disturbs the fish that also have to deal with high predation levels by Mergansers, Bears, Bass, Rainbow Trout etc.

*** 2006 ENUMERATION NOT COMPLETED (peak count not determined)**
Sandner Creek - Due to Bears, unsafe for Volunteers

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Sutherland Creek - High flood year in the spring - spawning gravel washed down to reach one, low water levels in the late summer has made access difficult

****NOTES ON 2007 ENUMERATION**
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McRae Creek - Due to the debris torrent and debris flow from above the Trans Canada trail in 2006, a large amount of cobbles and boulders have been deposited at the mouth of this creek system leaving no water in the channel for approximately 30 meters from the mouth going upstream – note very low lake Level

Sandner Creek - High recreational usage at the mouth of creek disturbs the fish that also have to deal with high predation levels by Mergansers, Bears, Bass, Rainbow Trout etc.

The Stewardship Centre received several calls pertaining to concerns on all three creek systems

5.3.5 Wildlife Page 56

Additional information for Table 13 – Summary of harvest rates from 2004 to 2006 for Management Unit 8-15, which includes Christina Lake. (Harris, 2007)

SPECIES		2006	2005	2004
Whitetailed Deer		338	405	277
Mule Deer		97	155	60
Mountain Goat		0	0	0
Moose		8	14	7
Elk		12	15	6
Black Bear				13
Bighorn Sheep		4	3	4
Cougar		4	3	3

5.3.6 Introduction of Non-Native Plant Species Page 62

Invasive Aquatic Plants
An assessment of the RDKB Eurasian Watermilfoil Control Program was undertaken and completed in 2006. The Christina Lake Eurasian Milfoil Control Program Evaluation and Report (November 2006) by AquaTechnex is available at the Stewardship Centre. The RDKB Eurasian Watermilfoil Control Program Annual Reports are available at rdkb.com.

7.2 Water Quality Data Collection Page 70

The Interior Health Authority did not conduct the summer recreational water quality testing program at local beaches on Christina Lake in 2006 and 2007. It is not known at this time if IHA will resume this program in the near future.

7.2.1 Bacteriological Sampling Page 70

The Interior Health Authority was conducting recreational water quality testing once per month during June, July, and August at local beaches. These sample sites included Christina Lake Provincial day use area at the south end of the lake, Schulli's campground, Skand's campground, CLARA beach, and Gladstone Provincial Park beach. Samples from each beach were collected and were tested for fecal coliform bacteria only. Previous water samples have tested well below the Guidelines for Canadian Recreational Water Quality (1992) as outlined in the Christina Lake Watershed Plan August 2005. However, the tributaries to the lake have had elevated coliform counts since testing in these systems commenced in 1991. As some of these creeks serve as major sources of drinking water, the raw water 90th percentile values exceeding 10/100 mL for Christina, McRae, and Sutherland Creeks are cause for concern. (Cavanagh *et al,* 1994). As mentioned above, IHA has not been conducting the recreational water quality monitoring program on the lake since 2005 and it is not known at this time which Ministry or Agency (if any) are conducting fecal coliform testing on the creek systems mentioned above. It must be noted here that community water systems do testing in adherence to the Safe Drinking Water Regulations and other related legislation.

7.2.2 Water Chemistry Sampling Page 71

The following section pertaining to environmental water quality sampling will be available on the Ministry of Environment website May 2008 - http://www.env.bc.ca/wat/wq .

Items in red indicate what information changes are required to update the existing documentation in the original 2005 Christina Lake Watershed Management Plan

Require updated information on sampling for 2005, 2006 (monthly), and 2007.

7.2.3 Extinction Depth Page 74

MOE data for 2005, 2006, and 2007 required. CLSS weekly sampling for 2005 and 2006 and biweekly sampling for 2007.

Table 23c Christina Lake extinction depths (m) during spring and fall sampling at three deep stations 1972-2004.

	Station 0200078				Station E215758				Station 0200520			
Year	n	Spring	n	Fall	n	Spring	n	Fall	n	Spring	n	Fall
1993	1	10.0	1	13.2	1	12.3			1	10.5	1	14.8
1994	1	10.5	2	11.5	1	12.5	1	13.8	1	11.5	1	13.6
1995	1	12.8	1	13.5	1	12.8	1	14.5	1	13.0		
1996	1	9.5	1	13.0	1	9.8						
1997	1	8.5	1	11.5	1	9.2	1	12.0				
1998	1	9.0	1	11.8	1	12.0	1	14.1				
1999	1	10.8	1	10.3	1	11.5	1	11.0	1	11.0		
2000	1	11.6	1	10.8	1	12.8	1	11.8				
2001	1	12.0	1	12.5	1	12.7	1	13.5				
2002	1	10.9	1	11.8	1	9.7	1	13.5				

2003	1	9.9	1	13.0	1	9.2	1	13.2
2004	1	10.9	1	10.3	1	9.2	1	11.8
2005								
2006								
2007								

7.2.4 Temperature Page 75

Require updated information on sampling for 2005, 2006 (monthly), and 2007.

Table 24. Christina Lake Ice cover

YEAR	ICE ON	ICE OFF	COMMENTS
1959-60		Apr 4/60	
1960-61			No ice
1961-62		Apr 4/62	
1962-63	Feb 3/63	Mar 14/63	
1963-64	Jan 18/64	Apr 8/64	
1964-65	Jan 26/65	Apr 11/65	
1965-66	Feb 25/66	Mar 21/66	Ice on south end only
1966-67			No ice
1967-68	Feb 5/68	Mar 2/68	Ice on south end Jan 10/68
1968-69	Jan 11/69	Apr 10/69	
1969-70	Feb 3/70	Mar 24/70	
1970-71	Feb 1/71	Apr 10/71	
1971-72	Jan 8/72	Apr 6/72	
1972-73	Jan 9/73	Apr 5/73	
1973-74	Feb 9/74	?	
1974-75	Jan 15/75	Apr 15/75	
1975-76	Jan 21/76	Apr 6/76	Open water Lavalley Point to English Point
1976-77	Feb 4/77	Mar 15/77	Ice off lower (southern) half Mar 9/77
1977-78	Jan 20/78	Mar 27/78	
1979-80	Jan 18/80	?	
1980-81			No ice
1981-82	Jan 15/82	Apr 2/82	
1982-83	Jan 10/83	Feb 28/83	
1983-84	Jan 18/84	Apr 2/84	
1984-85	Jan 8/85	Apr 14/85	
1985-86	Dec 4/85	Apr 8/86	
1986-87			No ice
1987-88	Jan 18/88	Mar 25/88	
1988-89	Feb 5/89	Apr 2/89	
1989-90	Jan 22/90	Apr 22/90	
1990-91	Jan 2/91	Apr 6/91	
1991-92			No ice
1992-93	Jan 17/93	?	
1993-94	Jan 2/94	Feb 2/94	Froze again Feb 9/94 to Mar 1/94
1994-95	Dec 30/94	Apr 6/95	
1995-96	Feb 11/96	Apr 5/96	
1996-97	Jan 8/97	Apr 13/97	
1997-98			No ice
1998-99			No ice
1999-00			No ice
2000-01	Jan 13/01	Mar 25/01	

2001-02			No ice
2002-03			No ice
2003-04	Jan 23/04	Mar 18/04	Off with high wind
2004-05	Feb 10/05	Mar 12/05	Off with high wind
2005-06	Feb 15/06	Mar 19/06	Open water Lavalley Point to English Point
2006-07	Jan 14/07	Mar 21/07	
2007-08	Jan 30/08		Lake completely covered with ice, with warm weather open patches started Feb 5/08

1959 to 2004-05 (Walker 2005) 2005-06 to 2007-08 (LaCroix, 2008)

7.2.5 Dissolved Oxygen (D.O.) Profile Page 75

Require updated information on sampling for 2005, 2006 (monthly), and 2007.

7.2.6 Nutrients Page 76

Require updated information on sampling for 2005, 2006 (monthly), and 2007. (for all subsections)

Phosphorus
Nitrogen
N:P Ratios

Table 25 - requires updates for south/north basin – English Point?
Table 27 - requires updates for south/north basin – English Point?

7.3.1 Phytoplankton Page 81

Require updated information on sampling for 2005, 2006 (monthly), and 2007.

Table 28 requires updates

7.3.2 Periphyton Page 81

Require updated information on sampling for 2006.

Table 30 requires updates with data collected in 2006

7.3.4 Fish Page 83

A call was received at the Christina Lake Community Stewardship Resource Centre on September 25th, 2007, pertaining to the sighting of Yellow Perch *(Perca flavescens)*. Dale Haberstock (Head Diver for 21 years with the Eurasian Watermilfoil Program, Regional District of Kootenay Boundary) reported to have seen this species in mid July at the south end of the lake. He was able to have a good look and has seen this species before in Okanagan Lake. As the provincial government protocol is not known at this time to actually list this species as a confirmed sighting without a sample, this information will be placed on Table 31 as unconfirmed. Currently, 18 fish species are confirmed to be present and 16 other fish species may also occur in the lake but are unconfirmed.

Table 31
Unconfirmed species

SPECIES	FISH WIZARD	FISS DATA	COMMENTS – (ARL, 2000) unless otherwise referenced
White Sturgeon *(Acipenser transmontanus)*			Anecdotal reports from Christina Lake but unconfirmed
Chiselmouth *(Acrocheilus aleuticus)*			Rare species. Present in Kettle River system, but probably not in the Christina Lake Watershed but unconfirmed.
Lake Chub *(Couesius plumbeus)*			Present in Kettle River system. Possibly occurs in Christina Lake, but unconfirmed.
Peamouth Chub *(Mylocheilus caurinus)*			Present in Kettle River system. Possibly occurs in Christina Lake, but unconfirmed.
Longnose Dace *(Rhinichthys cataractae)*			Present in Kettle River system. Mainly river-dwelling, but could potentially occur in Christina Lake but unconfirmed.
Leopard Dace *(R. falcatus)*			Present in Kettle River system. Possibly occurs in Christina Lake, but unconfirmed.
Speckled Dace *(R. osculus)*			Present in Kettle River system. Possibly occurs in Christina Lake, but unconfirmed.
Umatilla Dace *(R. umatilla)*			Present in Kettle River system. Possibly occurs in Christina Lake, but unconfirmed.
Redside shiner *(Richardsonius balteatus)*			Present in Christina Creek downstream from lake. Most likely to occur in Christina Lake but unconfirmed.
Longnose Sucker *(Catastomus catastomus)*			Present in Christina Creek downstream from lake. Most likely to occur in Christina Lake but unconfirmed.
Brown Trout *(Salmo trutta)*			**Introduced** into Kettle River system. Not known for Christina Lake Watershed.
Brook Trout *(Salvelinus fontinalis)*			**Introduced** into Kettle River system. Bob Freeman local resident and avid angler states that he has caught Brook Trout at north end of lake in the marsh area near Sandner Creek. (Freeman, 2004)
Mottled Sculpin *(C. bairdi)*			Collected in Christina Creek and Sutherland Creek. Most likely to occur in Christina Lake

			but unconfirmed.
Shorthead Sculpin *(C. confusus)*			Present in Kettle River. Not recorded from Christina Lake, but may occur. Not confirmed
Torrent Sculpin *(C. rhotheus)*			Present in Kettle River. Not recorded from Christina Lake, but may occur. Not confirmed
Yellow Perch *(Perca flavescens)*			**Introduced** Dale Haberstock (Head Diver, Eurasian Watermilfoil Program for the Regional District of Kootenay Boundary) reported on Sept 25, 2007 that he saw this species in the south end of the lake in mid July. (Haberstock, 2007)

7.3.4.0 Fish Species **Page 84**

There are 16 unconfirmed species that could potentially occur in the lake's watershed. See table 31 for confirmed and unconfirmed fish species listing.

7.3.4.2 Introduced Species Account for Christina Lake **Page 85**

Table 33
Introduced Species Account for Christina Lake

INTRODUCED SPECIES	COMMENTS AND POTENTIAL IMPACT ON NATIVE SPECIES
Carp *(Cyprinus carpio)*	The carp was introduced into the Columbia River system in Washington State during the 1880's (Scott and Crossman, 1973), and the fish in Christina Lake are believed to be descendents of these fish which immigrated via the Kettle River. (ARL, 2000)
Tench *(Tincta tincta)*	Populations currently established in BC may have originated from a series of small lakes near Spokane, Washington, where Tench were introduced around 1895 (Carl et al ., 1967)
Black Bullhead *(Ameiurus melas)*	It is believed that Black Bullhead immigrated into Christina Lake from Washington State via the Kettle river. (ARL, 2000)
Brown Bullhead *(A. nebulosus)*	It is believed that Brown Bullhead immigrated into Christina Lake from Washington State via the Kettle river. (ARL , 2000)
Rainbow Trout *(Oncorhynchus mykiss)*	Native and Introduced Stock. Extensively stocked from 1914 to 1963. See Table 7.3.4.1 for stocking records
Kokanee *(Oncorhynchus nerka)*	Native and Introduced shore and stream spawning stock. It is believed shore spawning kokanee have always been present prior to stocking and that stream spawning kokanee were introduced into Christina Lake and not present prior to stocking in the 1930's.

	(Molnar, 2004) Lincoln Sandner wrote that when his father Charles Sandner came to Christina Lake in 1896, there were literally millions of kokanee in the lake, and they spawned not only on the beaches but also in the creeks (Sandner et al, 1994). See Table 7.3.4.1 for stocking records.
Brown Trout *(Salmo trutta)*	Introduced into Kettle River system. Not known for Christina Lake Watershed. (ARL, 2000)
Brook Trout *(Salvelinus fontinalis)*	Introduced into Kettle River system. Not known for Christina Lake Watershed. (ARL, 2000)
Largemouth Bass *(Micropterus salmoides)*	May have dispersed into the lake from an introduced population in Washington State via the Kettle River. (ARL, 2000) Note per RBMC (2005) it was smallmouth bass that was stocked in 1901 and largemouth bass came here escaped from a private pond near the Kootenai River in Idaho (Carl et al. 1967)
Smallmouth Bass *(M. dolomieui)*	It is believed that Smallmouth Bass immigrated into Christina Lake from an introduced population in Washington State via the Kettle river. (ARL, 2000) Note per RBMC (2005) it was smallmouth bass that was stocked in 1901 and largemouth bass came here escaped from a private pond near the Kootenai River in Idaho (Carl et al. 1967)
Pumpkinseed Sunfish (*Lepomis gibbosus*)	It is believed that Pumpkinseed Sunfish immigrated into Christina Lake from an introduced population in Washington State via the Kettle river. (ARL, 2000)
Walleye *(Schizostedion vitreum)*	It is believed that Walleye immigrated into Christina Lake from an introduced population in Washington State via the Kettle River. (G.L. Ventures, 2001)
Tiger Musky (Tiger Muskellunge) (*Esox masquinongy x E. lucius*)	Suspected arrived from Curlew Lake. Sterile Stock. (G.L. Ventures, 2001)
Inconnu *(Stenodus leucichthys)*	Recorded in December 1952 Christina Lake Angling Survey (FISS, 2005). This may have been entered in error onto the FISS database as this species range is northern drainages (species is similar to whitefish)
Yellow Perch *(Perca flavescens)*	Reported in September 2007 to be seen in the lake at the south end in mid July (one fish only). (Haberstock, 2007)

7.3.4.4 Creel Surveys, Shore Spawner Kokanee Enumerations, and Acoustical Surveys

Shore Spawner Kokanee Enumerations

Shore spawning kokanee enumerations have continued on an annual basis. The following table summarizes observed kokanee and redds from 2001 to 2007.

Table 1. Reach breakdown of observed kokanee and redds for years 2001 through 2007.

	Redds Visible (Y/N)	# of kokanee	Redds Visible (Y/N)	# of kokanee	Redds Visible (Y/N)	Redds Visible (Y/N)	Redds Visible (Y/N)	Redds Visible (Y/N)

Reach #	2007	2005/2006	2005/2006	2004	2004	2003	2002	2001
1	N	300	Y	1130	Y	Y	Y	Y
2	Y	0	N	70	Y	Y	Y	N
3	Y	55	Y	700	Y	Y	Y	Y
4	N	0	N	2	Y	Y	Y	N
5	N	0	N	0	Y	Y	Y	N
6	Y	0	N	0	N	Y	Y	N
7	Y	0	Y	65	Y	Y	Y	Y
8	Y	75	Y	250	Y	Y	N	Y
9	Y	0	Y	45	N	N	N	Y
10	Y	5	Y	95	Y	Y	Y	Y
11	N	0	Y	35	Y	Y	N	Y
12	Y	0	N	40	Y	N	N	N
13	N	n/a	N	n/a	Y	N	N	N
14	N	n/a	N	n/a	N	Y	N	N
15	N	n/a	N	n/a	N	N	N	N
16	N	n/a	N	n/a	N	N	N	N
17	N	n/a	N	n/a	N	N	N	N
18	N	n/a	N	n/a	N	N	N	N
19	N	n/a	N	n/a	N	N	N	N
20	N	n/a	N	n/a	N	N	N	N
21	N	n/a	N	n/a	N	N	N	N
22	N	200(staging)	N	60	Y	N	N	N
23	Y	0	Y	85	Y	N	N	N
24	Y	40	Y	275	Y	Y	Y	Y

Report - Christina Lake Kokanee Shore-Spawner Redd Count 2007 by Chara Consulting, Vernon, BC

Acoustical and Trawl Surveys

Acoustic and trawl surveys were completed in July of 2005 and October of 2006. This type of survey was not done in 2007.

The results for the 2006 survey were as follows:

- densities of kokanee were high (776 fish/ha)
- It was noted that the fish size was small

9.01 Recommended Short Term Action Items Page 93

See addendum 2 Implementation Strategy

9.02 Recommended Long Term Action Items for Annual Review Page 94

See addendum 2 Implementation Strategy

10.1.0 Regulatory Agencies Page 99

Provincial Government:

Ministry of Environment
Previously called Ministry of Water Land and Air Protection www.env.gov.bc.ca

An addition to this section:

Front Counter BC
Single window service for clients of provincial natural resource ministries and agencies
www.frontcounterbc.gov.bc.ca

- Working in and around water – Kamloops office – 250-372-2127
- All land applications – Cranbrook office – 250-426-1766

10.1.1 Best Management Practices Page 99

Change in website address: http://wlapwww.gob.bc.ca/okr/esd/bmp.html

Another valuable document for reference and guidelines is the **High Value Habitat Maps and Associated Protocol for Works Along the foreshore of Christina, Okanagan, Kalamalka, Wood and Other Large Lakes within the Okanagan (MOE, Region 8).** Copies are available at the Stewardship Centre.