

**Reader Notes:**

- a) Subject to change and annual scientific review.
- b) The scope of this document does not include administrative or infrastructure operations.
- c) All data analysis and reporting is completed by FLNR; including calculations of nutrient inputs to Arrow and Kootenay.

Ref No.	CATEGORY	PRIMARY ACTION PLAN REFERENCE	Primary Action No. & Priority	DESCRIPTION	2014/15	2015/16	2016/17	2017/18 (Current year)	2018/19
<b>ARROW LAKES RELATED PROGRAMS</b>									
A1	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Physical Variables</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Physical variables include:</b> Water temperature, dissolved O2, pH, specific conductance, turbidity, Secchi depth measurements.	UC	UC	UC	UC	UC
A2	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Water Chemistry Sampling &amp; Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Water chemistry sampling includes:</b> Silica, alkalinity, nutrients (TP, TDP, LL SRP, NO3+NO2, NH3), Total and dissolved metals; chlorophyll a, TIC, TOC.	UC	UC	UC	UC	UC
A3	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Phytoplankton Sampling</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Phytoplankton</b> sampling for taxonomy by abundance and biomass in Arrow Lakes Reservoir.	UC	UC	UC	UC	UC
A4	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Phytoplankton Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Phytoplankton analysis includes:</b> Phytoplankton taxonomy abundance and biomass by species within 5 algal groups.	UC	UC	UC	UC	RFP/RFQ
A5	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Zooplankton Sampling</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Zooplankton</b> sampling for abundance and biomass of copepods and cladocerans by species in Arrow Lakes Reservoir.	UC	UC	UC	UC	UC
A6	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Zooplankton Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Zooplankton analysis includes:</b> Abundance and biomass of Copepods and cladocerans - by species.	UC	UC	UC	UC	RFP/RFQ
A7	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Mysid Sampling</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Mysid</b> sampling for abundance and biomass of various lifestages of mysids in Arrow Lakes Reservoir.	UC	UC	UC	UC	UC
A8	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Mysid Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Mysid</b> analysis, within Arrow Lakes Reservoir. Analysis includes abundance and biomass of various lifestages.	UC	UC	UC	UC	RFP/RFQ
A9	NUTRIENT RESTORATION PROGRAM IMPLEMENTATION - <b>Fertilizer Supply</b> (nitrogen and phosphorus)	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	This activity includes the provision of transporting liquid fertilizer for dispensing into both Arrow Lakes Reservoir and Kootenay Lake.	UC	UC	UC	UC	RFP/RFQ
A10	NUTRIENT RESTORATION PROGRAM IMPLEMENTATION - <b>Fertilizer Dispensing</b> (Small Scale)	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	This activity includes the provision of dispensing of fertilizer during the growing season (April to September).	UC	UC	UC	UC	RFP/RFQ
A11	NUTRIENT RESTORATION PROGRAM IMPLEMENTATION - <b>Fertilizer Dispensing</b> (Large Scale)	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	This activity includes the provision of dispensing of fertilizer during the growing season (April to September).	UC	UC	In-kind	In-kind	In-kind

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Ref No.	CATEGORY	PRIMARY ACTION PLAN REFERENCE	Primary Action No. & Priority	DESCRIPTION	2014/15	2015/16	2016/17	2017/18 (Current year)	2018/19
A12	KOKANEE - pelagic abundance and density monitoring (Hydroacoustic)	Large Lakes Plan - Status Indicator #4 - Kokanee	Action #20; Priority #1	<b>Hydro Acoustic surveys</b> are conducted in the fall; data analysis and report writing.	FLNR	FLNR	FLNR	FLNR	FLNR
A13	KOKANEE - pelagic abundance and density monitoring (Trawl Surveys)	Large Lakes Plan - Status Indicator #4 - Kokanee	Action #20; Priority #1	<b>Trawl surveys</b> are conducted in the fall to confirm length distribution and relative abundance of age classes; surveys occur during similar times as hydroacoustic survey.	UC	UC	UC	UC	UC
A14	KOKANEE - spawner abundance surveys - aerial counts of index streams	Large Lakes Plan - Status Indicator #4 - Kokanee	Action #20; Priority #1	<b>Aerial spawner counts</b> are conducted 2 times per spawning season on the following streams: Jordan, Tonkawatla, Halfway River, St. Leon Creek, Kuskanax Creek, Mosquito Creek, Burton Creek, Snow Creek, Caribou Creek, Eagle Creek	FLNR	FLNR	FLNR	FLNR	FLNR
A15	KOKANEE - spawner abundance surveys - ground counts of index streams	Large Lakes Plan - Status Indicator #4 - Kokanee	Action #20; Priority #1	<b>Ground spawner counts</b> are conducted at a minimum of one to two times per spawning season on the following streams: Deer, Taite, Octopus, McKay, Cranberry, Drimmie	FLNR	FLNR	FLNR	FLNR	FLNR
A16	KOKANEE - Hill Creek Spawning Channel (HCSC) - Operations & Maintenance	Large Lakes Plan - Status Indicator #4 - Kokanee	Actions 20, 21, 22; Priority #1	The operation and maintenance of HCSC including the collection of size/age, sex ratio, fecundity information. This also includes fry production within the channel.	UC	UC	UC	UC	UC
A17	KOKANEE - Hill Creek Spawning Channel (HCSC) - Scarification	Large Lakes Plan - Status Indicator #4 - Kokanee	Actions 20, 21, 22; Priority #1	Annual scarification (gravel cleaning) of the spawning channel during the summer months.	UC	UC	UC	UC	RFP/RFQ
A18	BULL TROUT - Monitoring	Large Lakes Plan - Status Indicator #5 - bull trout	Action #27; Priority #2	<b>Redd counts and spawner monitoring</b> in index spawning streams for Arrow Lakes Reservoir (Burton, Snow, Caribou, MacDonald, Kuskanax, Halfway, Incomappleux, Illecillewaet).	-	UC	UC	-	TBD
A19	RAINBOW TROUT - Monitoring	Large Lakes Plan - Status Indicator #3 - Piscivorous rainbow trout	Action #11; Priority #1	<b>HCSC redd counts</b> in the spawning channel, currently a component of HCSC operations.	UC	UC	UC	UC	UC
A20	FISHERIES MONITORING - Creel Surveys - (rainbow, bull trout, kokanee, burbot)	Large Lakes Plan - Status Indicator #8 - Socio-economic value (Priority #2)	Action #45; Priority #2	<b>Creel survey</b> estimates of angler effort, catch, harvest, fish size and predator condition (Kn) at 3 access sites. Field collection of information under contract; analysis conducted by FLNR.	UC	UC	UC	UC	RFP/RFQ
A21	FISHERIES MONITORING - Boat Surveys - (rainbow, bull trout, kokanee)	Large Lakes Plan - Status Indicator #8 - Socio-economic value (Priority #2)	Action #45; Priority #2	<b>Aerial boat counts</b> are conducted periodically in conjunction with the access site creel survey to expand site data to whole lake estimates.	-	-	-	-	TBD

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<b>KOOTENAY LAKE RELATED PROGRAMS</b>									
K1	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Physical Variables</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity (Priority #1)	Action #1; Priority #1	<b>Physical variables include:</b> Water temperature, dissolved O2, pH, specific conductance, turbidity, Secchi depth measurements.	UC	UC	UC	UC	UC
K2	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Water Chemistry Sampling &amp; Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity (Priority #1)	Action #1; Priority #1	<b>Water chemistry sampling includes:</b> Silica, alkalinity, nutrients (TP, TDP, LL SRP, NO3+NO2, NH3), total and dissolved metals; chlorophyll a, TIC, TOC.	UC	UC	UC	UC	UC
K3	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Phytoplankton Sampling</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Phytoplankton</b> sampling for taxonomy by abundance and biomass in Kootenay Lake.	UC	UC	UC	UC	UC
K4	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Phytoplankton Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Phytoplankton analysis includes:</b> Phytoplankton taxonomy abundance and biomass by species within 5 algal groups.	UC	UC	UC	UC	RFP
K5	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Zooplankton Sampling</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Zooplankton</b> sampling for abundance and biomass of copepods and cladocerans by species in Kootenay Lake.	UC	UC	UC	UC	UC
K6	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Zooplankton Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Zooplankton analysis includes:</b> Abundance and biomass of Copepods and cladocerans - by species	UC	UC	UC	UC	RFP
K7	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Mysid Sampling</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Mysid</b> sampling for abundance and biomass of various lifestages of mysids in Kootenay Lake.	UC	UC	UC	UC	UC
K8	NUTRIENT RESTORATION PROGRAM MONITORING - <b>Mysid Analysis</b>	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity	Action #1; Priority #1	<b>Mysid</b> analysis includes abundance and biomass of various lifestages	UC	UC	UC	UC	RFP/RFQ
K9	NUTRIENT RESTORATION PROGRAM IMPLEMENTATION - <b>Fertilizer Supply</b> (nitrogen and phosphorus)	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity (Priority #1)	Action #1; Priority #1	This activity includes the provision of liquid fertilizer for dispensing into both Arrow Lakes Reservoir and Kootenay Lake.	UC	UC	UC	UC	RFP/RFQ
K10	NUTRIENT RESTORATION PROGRAM IMPLEMENTATION - <b>Fertilizer Dispensing</b> (Small Scale)	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity (Priority #1)	Action #1; Priority #1	This activity includes the provision of transporting and dispensing of fertilizer for four weeks in late April and mid-May for the North Arm.	UC	UC	UC	UC	RFP/RFQ
K11	NUTRIENT RESTORATION PROGRAM IMPLEMENTATION - <b>Fertilizer Dispensing</b> (Large Scale)	Large Lakes Plan - Status Indicator #1 - Aquatic Productivity (Priority #1)	Action #1; Priority #1	This activity includes the provision of dispensing of fertilizer during late April to early September.	UC	UC	UC	UC	RFP/RFQ
K12	KOKANEE - <b>pelagic abundance and density monitoring</b> (Hydroacoustic)	Large Lakes Plan - Status Indicator #4 - Kokanee (Priority #1)	Action #20; Priority #1	<b>Hydro Acoustic surveys</b> are conducted in the spring (partenered funding through MoFLNRO) and fall (FWCP funded); data analysis and report writing.	FLNR	FLNR	FLNR	FLNR	FLNR

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K13	KOKANEE - pelagic abundance and density monitoring (Trawl Surveys)	Large Lakes Plan - Status Indicator #4 - Kokanee (Priority #1)	Action #20; Priority #1	<b>Trawl surveys</b> are conducted in the fall to confirm length distribution and relative abundance of age classes; surveys occur during similar times as hydroacoustic survey.	UC	UC	UC	UC	UC
K14	KOKANEE - spawner abundance surveys - Kootenay Lake	Large Lakes Plan - Status Indicator #4 - Kokanee (Priority #1)	Action #20; Priority #1	<b>Three aerial spawner counts</b> are conducted on the Lardeau River annually. Counts occur on other tributaries in the North Arm (FWCP) and South Arm (partnered funding through FLNR).	FLNR	FLNR	FLNR	FLNR	FLNR
K15	KOKANEE - Meadow Creek Spawning Channel (MCSC) - Operations & Maintenance	Large Lakes Plan - Status Indicator #4 - Kokanee	Actions 20, 21, 22; Priority #1	The operation and maintenance of MCSC including the number of spawning kokanee, collection of size/age, sex ratio, fecundity information and numbers of fry emigrating.	FLNR	FLNR	FLNR	FLNR	FLNR
K16	KOKANEE - Meadow Creek Spawning Channel (MCSC) - Scarification	Large Lakes Plan - Status Indicator #4 - Kokanee	Actions 20, 21, 22; Priority #1	<b>Annual scarification</b> (gravel cleaning) of the spawning channel during the summer months.	UC	UC	UC	UC	RFP/RFQ
K17	BULL TROUT - Monitoring	Large Lakes Plan - Status Indicator #5 - Bull Trout (Priority #2)	Action #27; Priority #2	<b>Redd counts and spawner monitoring</b> in index spawning streams for Kootenay Lake (index stream details to be determined).	-	UC	-	FLNR/ UC	TBD
K18	TROPHIC INTERACTIONS for both Kootenay Lake and Arrow Lakes Reservoir	Large Lakes Plan - Status Indicator #8 - Socio Economic Value (Priority #1)	Action #42; Priority #1	Data analyses and modelling to address key knowledge gaps relating to food web interactions and factors affecting the efficiency of nutrient transfer to kokanee and piscivorous fish.	UC	-	-	-	-

**Legend:**

UC = Under Contract (Note: contract terms re: annual renewals are defined but variable across contracts)
RFP/RFQ = Request For Proposal/Request for Quote e.g. BC BID, limited bid, etc. based on standard agency procurement practices
TBD = To Be Determined i.e. based on annual technical review of outcomes
"-" = Not Planned
CA = Contribution Agreement with FWCP
FLNR = Ministry of Forests, Lands and Natural Resource Operations