Columbia River Project Water Use Plan

Arrow Lakes Reservoir Operations Management Plan

CLBWORKS-30B Wildlife Enhancement Program – Wetland Enhancement Program

Implementation Year 3

Reference: CLBWORKS-30B

CLBWORKS-30B Burton Flats Fish Stranding Assessment - 2020 Fish Sampling

Study Period: June 2020 – October 2020

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October 27, 2020

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October 27, 2020

Re: CLBWORKS-30B Wildlife Enhancement Program – Wetland Enhancement Program, Burton Flats. Results of fish sampling in Wetlands A1-A4 and B1

Please find attached a summary of field work completed in 2020 to document fish species present and the risk of fish stranding in the wetlands constructed during Phase 1 of the Wetland Enhancement Project at Burton Flats.

If you have any questions or comments on the report or require further information, please contact us. Thank you for the opportunity to work with BC Hydro on this project.

Yours sincerely,

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1 PROJECT OVERVIEW

1.1 Introduction

BC Hydro's Lower Arrow Reservoir Wildlife Enhancement Program (CLBWORKS-30B) includes the design and construction of wetlands and deep-water pond features in the drawdown zone of the Lower Arrow Lakes Reservoir at the Burton Flats. The project design contains several excavated ponds that are seasonally inundated. Phase 1 of the project was completed in the fall of 2019 and included the construction of ponds A1-A4 and B1. The remainder of the project (Phase 2) is scheduled for the spring of 2021.

A fish stranding risk assessment for the project was completed as part of the design process (Nupqu and Hemmera 2018). The risk of stranding for target species (Rainbow Trout, Bull Trout and Kokanee) was rated as 'Low' for Ponds A1-A4 and B1 based on habitat requirements and life history of these species. The risk of stranding for non-target species was not assessed. Post-construction surveys were recommended to confirm the assessments.

Masse Environmental Consultants Ltd. was retained by BC Hydro to conduct fish surveys in completed works to assess the risk of fish stranding in the ponds. The results of the surveys would be used to determine if any fish salvage is required, as well as to inform Phase 2 of the project.

1.2 Study Area

The Burton Flats wetland enhancement program is located within the drawdown zone of the Arrow Lakes Reservoir on the south side of the Burton Flats. The ponds are fed by a small stream that runs parallel to Highway 6, and are designed to be inundated by the Arrows Lakes Reservoir when the reservoir elevation reaches the outlet elevation of each pond (Table 1). A map showing the location of ponds is provided in Figure 1.

Table 1. Ponds A1-A4 and B1 design summary.

Pond	Outlet elevation (m)	Wetland Bottom Elevation (m)
A1	438.4	437.9
A2	438.1	437.3
A3	437.35	436.3
A4	435.5	435.0
B1	no outlet	434.2

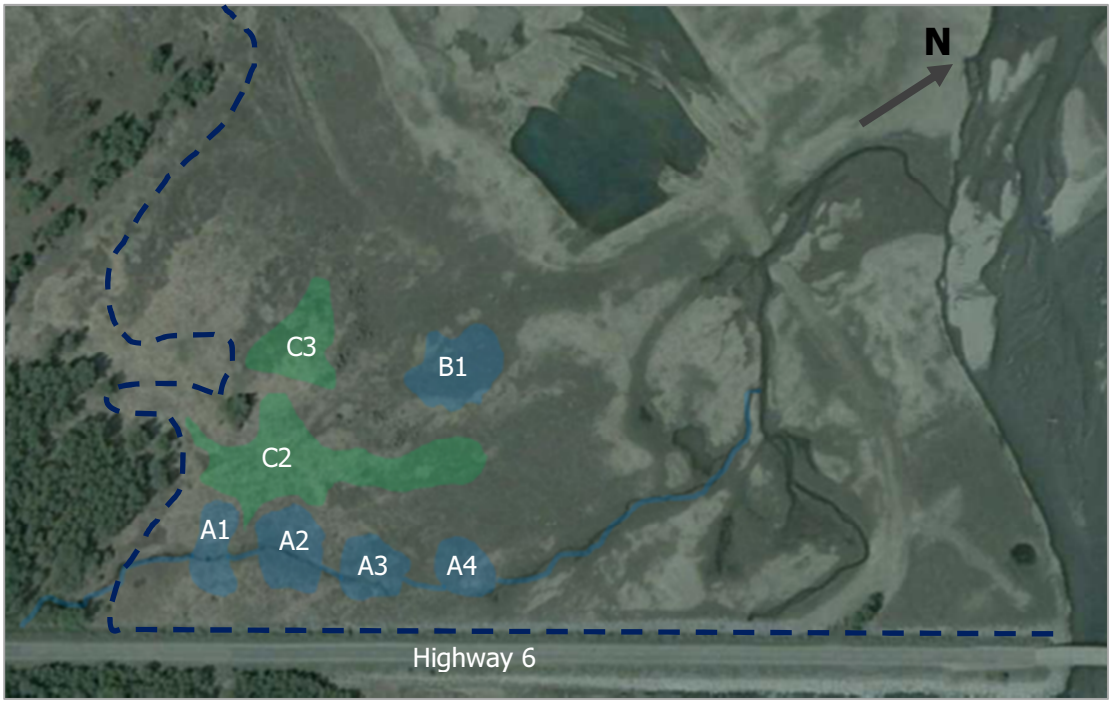

Figure 1. Approximate locations of ponds A1 - A4 and B1 at the Burton Flats wetland enhancement site. C2 and C3 are habitat mounds. Imagery taken on May 9, 2007 when Arrow Lakes Reservoir is at an elevation of 430.5 m. Blue dashed line indicates approximate full pool (440m).

2 STUDY DESIGN

2.1 Schedule

Surveys were completed in June, prior to inundation of the wetlands, and again after reservoir levels and receded. Ponds A1 –A3 were sampled immediately after water levels had receded as the risk of stranding in these ponds was considered the highest. Ponds A4 and B1 are lower in elevation and were sampled at the later date after water levels had dropped further.

Table 2. Sampling schedule.

Date	Locations	Water level (m)	Comments
June 18, 2020	A1-A3	437.7	Prior to inundation. Ponds A4 and B1 were not sampled as they were inundated.
August 14, 2020	A1-A3	437.3	Immediately after water levels had receded below the outlet of A3.
October 8, 2020	A4, B1	433.6	

2.2 Methods

Fish sampling was completed under scientific fish collection permits CB20-605775 and CB20-612814. Prior to fish sampling, water temperature, pH and conductivity were recorded using an Oakton PCTestr35 multiparameter meter. Each wetland was systematically sampled using a combination of visual

observation (VO), back pack electrofishing (EF), seining (SN), or dipnetting (DN). Electrofishing was conducted using a Smith Root- 12b backpack electrofisher. A small stopnet was used in conjunction with electrofishing. Seining was conducted using a 5 m seine with a 1/8" mesh. Dipnetting was conducted using hand held nets. Captured fishes were identified to species and measured (fork length) where possible. Fish <20 mm in length could not be identified and were recorded as fry. Individual fish data is provided in Attachment 1.

3 RESULTS

3.1 June 18, 2020

On June 18, the water level of the Arrow Lakes Reservoir (measured at Fauquier, 08NE102) was 437.7 m and increasing. Pond A3 was just being inundated by the reservoir (Photo 1-Photo 4). Water temperatures were 16.5°C in A1 and 22°C in A2 and A3. The lower temperature in A1 reflects the cooler water that enters this pond from the small stream. A combination of visual observation, dipnetting or electrofishing was conducted (Table 5).

Table 3. Summary of environmental conditions and effort, June 18, 2020.

Pond	Temperature (°C)	pH	Conductivity (μS/cm)	Sampling methods
A1	16.5	8.1	164	VO, EF (323 s)
A2	22	7.5	161	VO, EF (436 s)
A3	22	7.7	143	VO, DN

No fish were captured in A1 or A2. Large numbers of small fishes (30 – 60 mm) were observed in the inundated vegetation between A3 and the reservoir. The majority of these were Redside Shiner (*Richardsonius balteatus*) and Northern Pikeminnow (*Ptychocheilus oregonensis*), with Peamouth Chub (*Mylocheilus caurinus*) and Longnose Dace (*Rhinichthys cataractae*) also present (Table 4). Individual fish data is provided in Attachment 1.

Table 4. Summary of fish observations, June 18, 2020.

Pond	Fish Species	Count	Comments
A1	No fish captured	-	
A2	No fish captured	-	
A3	Redside Shiner (*Richardsonius balteatus*)	21	30-60 mm in length. Fish captured in submerged vegetation between A3 and the reservoir.
	Northern Pikeminnow (*Ptychocheilus oregonensis)*	13	
	Peamouth Chub (*Mylocheilus caurinus*)	2	
	Longnose Dace (*Rhinichthys cataractae*)	2	

Photo 1. View of A1 and A2, June 18, 2020.

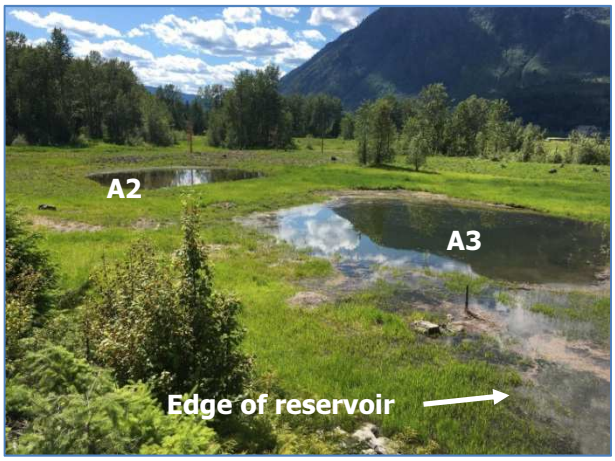

Photo 2. View of A2 and A3. Note inundation by reservoir at lower right, June 18, 2020.

Photo 3. View of A1 outlet, June 18, 2020.

Photo 4. View of A3, June 18, 2020.

3.2 August 14, 2020

On August 14, 2020, the water level of the Arrow Lakes Reservoir (measured at Fauquier, 08NE102) was 437.3 m and decreasing. At this elevation, all three ponds were isolated from the reservoir after having been inundated earlier in the summer (Photo 5-Photo 7). Water temperatures were 18°C in A1 and 22°C in A2 and A3. A combination of visual observation, seining, dipnetting and electrofishing was conducted (Table 5).

Table 5. Summary of environmental conditions and effort, August 14, 2020.

Pond	Temperature (°C)	pH	Conductivity (µS/cm)	Sampling methods/effort
A1	18	8.2	130	VO, DN, EF (308 s)
A2	22	7.9	140	VO, DN, EF (845 s)
A3	21	7.7	150	VO, DN, SN, EF (252 s)

Fishes were observed in all three ponds in areas with higher cover (vegetation, woody debris) along the margins of the ponds. Small fry 10 mm in length were observed in A1. In A2, the same fry were observed, although these were slightly longer (15-20 mm). Fry were captured by dipnetting and all appeared to be the same species. In A3, numerous small fishes up to 50 mm in length were observed. Larger individuals were all identified as Peamouth Chub. Fish smaller than 25 mm could not be identified to species, but were assumed to be Peamouth Chub. Based on the size range, all fish were assumed to be young-of-year. One Sculpin (*Cottus* sp.) was also captured in A3 (Table 6). Fish were observed in vegetated areas along the margins of the ponds (Photo 8), and large numbers of fish were also observed in the vegetated areas between A3 and the main reservoir (Photo 9).

Table 6. Summary of fish observations, August 14, 2020.

Pond	Fish Species	Count	Comments
A1	Fry	8	~ 10 mm in length
A2	Fry	44	10-15 mm in length
A3	Peamouth Chub (*Mylocheilus caurinus*)	17	30-50 mm in length
	Sculpin (*Cottus* sp.)	1	

Photo 5. Panoramic view of ponds A1 – A4, and the Arrow Lakes Reservoir, August 14, 2020. Note A4 is inundated by the reservoir.

Photo 6. View of A1, August 14, 2020.

Photo 7. View of A2, August 14, 2020.

Photo 8. View of A3 showing vegetated areas on margins and small seine used to coral fish, August 14, 2020.

Photo 9. Schools of fish amongst submerged vegetation, A3, August 14, 2020.

3.3 October 8, 2020

On October 8, 2020, the water level of the Arrow Lakes Reservoir (measured at Fauquier, 08NE102) was 433.6 m and decreasing. At this elevation, Pond A4 was connected to the reservoir via a small outlet (Photo 10 - Photo 12). Pond B1 was isolated from the reservoir and a small residual pool ~ 30 cm deep was present (Photo 13). Water temperatures were 15.9°C in B1 and 15.5°C in A4. A combination of visual observation, dipnetting and electrofishing was conducted (Table 7).

Table 7. Summary of environmental conditions and effort, October 8, 2020.

Pond	Temperature (°C)	pH	Conductivity (µS/cm)	Sampling methods/effort
A4	15.5	7.3	122	VO, DN, EF (171 s)
B1	15.9	6.9	170	VO, DN, EF (35 s)

No fish were captured or observed in A4, although fish were observed in the outlet channel which connects to the reservoir. Peamouth Chub, Northern Pikeminnow, Rainbow Trout, Largescale Sucker (*Catostomus macrocheilus*), and Sculpin were captured in the outlet. Based on the maximum size of 60 mm, all fishes were assumed to be young-of year. A school of small fishes up to 55 mm in length was observed in B1 prior to sampling. Redside Shiner, Largescale Sucker and Sculpin were captured using a combination of electrofishing and dipnetting (Table 8). Individual fish data is provided in Attachment 1.

Table 8. Summary of fish observations, October 8, 2020.

Pond	Fish Species	Count	Comments
A4	No fish captured or observed		
A4 outlet	Peamouth Chub (*Mylocheilus caurinus*)	6	In outlet stream ~ 5 m from Pond.
	Northern Pikeminnow (*Ptychocheilus oregonensis)*	3	
	Largescale Sucker (*Catostomus macrocheilus*)	3	
	Rainbow Trout (*Oncorhynchus mykiss*)	1	
	Sculpin (*Cottus* sp.)	1	
B1	Redside Shiner (*Richardsonius balteatus*)	40	20-35 mm in length
	Largescale Sucker (*Catostomus macrocheilus*)	24	23-50 mm in length
	Sculpin (*Cottus* sp.)	17	23-40 mm in length

Photo 10. View of A4, October 8, 2020.

Photo 11. View of A4 outlet, October 8, 2020.

Photo 12. View of outlet connecting A4 to reservoir, October 8, 2020.

Photo 13. View of residual pool in B1, October 8, 2020.

3.4 Incidental observations

Columbia Spotted Frog (*Rana luteiventris*), Long-toed Salamander (*Ambystoma macrodactylum*), Western Toad (*Anaxyrus boreas*) and Terrestrial Garter Snake (*Thamnophis sirtalis*) were observed in or adjacent to the ponds during sampling.

4 Discussion

Ponds A1-A4 and B1 were constructed in the fall of 2019. The lowest elevation ponds (A4 and B1) were inundated soon after construction, while Ponds A1-A3 were inundated by the Arrow Lakes Reservoir for the first time in the summer of 2020 (Figure 2). Fish sampling was conducted prior to inundation of Ponds A1-A3 and immediately after water levels had receded to assess the risk of fish stranding. Sampling was also conducted in Ponds A4 and B1 once these were isolated from the reservoir.

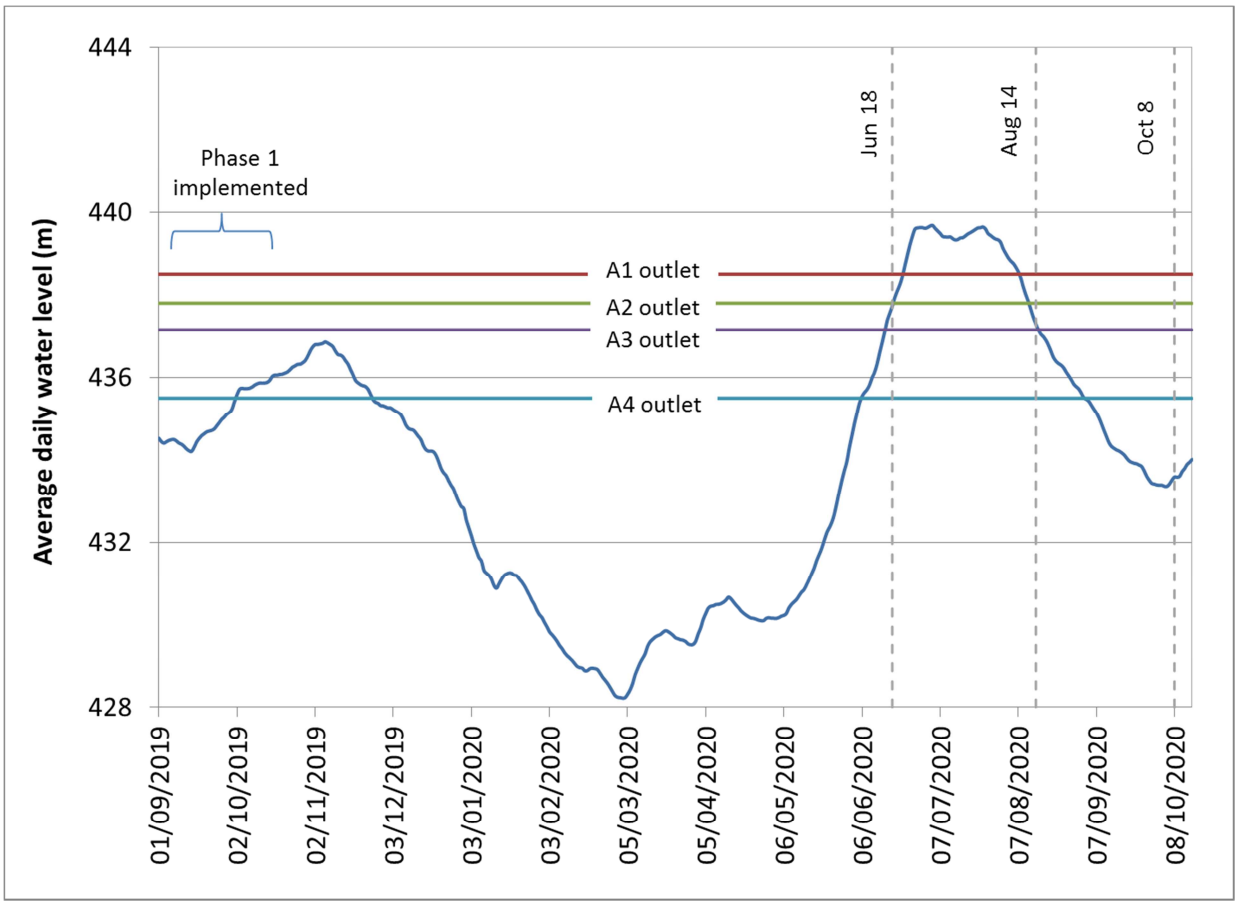

Figure 2. Arrow Lakes Reservoir average daily water elevation (08NE102) from September 1, 2019 to October 15, 2020. The outlet elevation of ponds A1-A4 and the fish sampling dates are indicated.

No fish were observed in A1 or A2 on June 18, 2020, prior to inundation. These ponds were constructed in September 2019 and have limited connectivity to the reservoir unless they are inundated. Pond A3 was just beginning to be inundated and large numbers of minnows were observed in the submerged

vegetation between A3 and the main reservoir. Redside Shiner, Northern Pikeminnow, Peamouth Chub and Longnose Dace were observed, and these species would be expected to access the wetlands as they become inundated. Ponds A4 and B1 are the lowest in elevation and were inundated on June 18, 2020.

The results of sampling after inundation suggests that most species are able to leave the Ponds A1-A4 as water levels recede. Young of year Peamouth Chub were the only minnow species observed in the ponds A1-A3 immediately after the reservoir had receded. The size of Peamouth Chub observed in the ponds suggests unique Peamouth Chub spawning events occurred in each pond. Peamouth Chub spawn in shallow lake margins and small streams where gravel is present. The smallest individuals were observed in A1, which was inundated last. Fish in A2 were intermediate in size between those in Ponds A1 and A3. No fish were observed in the main pond of A4 on October 8, 2020. The outlet stream (Photo 12) provides a natural pathway for fishes to follow as the water levels recede.

The results suggest that the overall risk of fish stranding in Ponds A1-A4 is low. Most individuals appear to be able to leave the area as water levels recede, presumably because their habitat preference is for shallow vegetated areas, which occur around the edges of the ponds, and not for deeper areas with little cover such as found in the center of the ponds. The small stream that connects the wetlands also provides a pathway that reduces the risk of stranding. As water levels in the reservoir decrease, fish that prefer shallow vegetated areas will move with the receding reservoir rather than become isolated in the ponds.

Pond B1 was designed to not have an outlet and becomes isolated as the reservoir recedes. Fish present within this area will become stranded within the pond, which becomes smaller as water levels continue to recede. At the time of sampling, near the lowest water elevation that occurs in the fall, a shallow residual pool was present which contained a school of small fishes (Redside Shiner, Largescale Sucker and Sculpin). Based on current reservoir operations, this pond will fill as water levels in the reservoir rise in the fall and may become reconnected with the reservoir for a short period of time. As water levels recede in the winter, the pond will become isolated again, and may freeze solid.

The risk of stranding for target and observed species was qualitatively assessed based on habitat present, species life history and inundation timing (Table 9). Stranding risk was rated as none or low, moderate and high as follows:

None or Low	no suitable habitat and/or inundation period does not overlap with species life history requirements.
Moderate	suitable habitat is present, species may be present
High	high quality rearing or spawning habitat is present and inundation period coincides with species life history requirements.

A ‘moderate’ risk of stranding was assessed for young-of-year Peamouth Chub and Sculpins in Ponds A1-A4 as these species/life stages have limited mobility. The risk of stranding for all other species was considered to be ‘none’ or ‘low’, either because they do not use this habitat when it is inundated (i.e.

Kokanee) or because they are able to follow the reservoir as water levels recede (i.e. juvenile and adult minnows). Pond B1 was considered to have a 'moderate' risk of stranding for small and juvenile fishes that are found in shallow vegetated areas along the reservoir margins. As Pond B1 has no outlet, as water levels recede some fish will remain within the Pond. The risk of stranding for target species and other larger adult life stages was considered to be 'none' or 'low' as these species are not present in the area when Pond B1 is inundated (i.e. Kokanee, Bull Trout), or are unlikely to use the habitat provided when Pond B1 is inundated (i.e. adult Largescale Sucker).

Although small fishes (minnows, sculpins) are isolated in Pond B1, this is unlikely to have any biological significance. The species and life stages observed are abundant along the margins of the reservoir and relatively few become stranded in Pond B1. These species are also more tolerant of warm water temperatures and lower dissolved oxygen levels that may occur in the pond as water levels recede in the late summer, and may potentially survive until the pond is inundated in the fall.

Table 9. Summary of stranding risk for target and observed species.

		Risk of Stranding			
Pond	**Species**	**Young of Year**	**Juveniles**	**Adults**	**Season**
A1-A4	Rainbow Trout	Low	Low	None	Summer
	Bull Trout	*None*	*None*	*None*	*NA*
	Kokanee	*None*	*None*	*None*	*NA*
	Largescale Sucker	Low	Low	Low	Summer
	Longnose Dace	Low	Low	Low	Summer
	Northern Pikeminnow	Low	Low	Low	Summer
	Peamouth Chub	Moderate	Low	Low	Summer
	Redside Shiner	Low	Low	Low	Summer
	Sculpin spp	Moderate	Moderate	Moderate	Summer
B1	*Rainbow Trout*	*Low*	*Low*	*Low*	*Summer/Fall*
	Bull Trout	*None*	*None*	*None*	*NA*
	Kokanee	*None*	*None*	*None*	*NA*
	Largescale Sucker	Moderate	Moderate	Low	Summer/Fall
	Longnose Dace	*Moderate*	*Moderate*	*Moderate*	*Summer/Fall*
	Northern Pikeminnow	*Moderate*	*Moderate*	*Low*	*Summer/Fall*
	Peamouth Chub	*Moderate*	*Moderate*	*Low*	*Summer/Fall*
	Redside Shiner	Moderate	Moderate	Moderate	Summer/Fall
	Sculpin spp	Moderate	Moderate	Moderate	Summer/Fall

[1] *light grey* text indicates species not observed

5 CLOSURE

We trust the information provided in this report meets your current requirements. As per the requirements of scientific fish collection permits CB20-605775 and CB20-612814, a Microsoft Excel file with the results of fish sampling will be provided to the Province of BC.

If you have any questions or concerns regarding its contents, please contact the undersigned.

This memo was prepared by:

Ico de Zwart. R.P.Bio, P.Chem.
Masse Environmental Consultants

6 REFERENCES

Nupqu & Hemmera 2018. CLBWORKS-30B Burton Flats Fish Stranding Assessment – Risk Analysis and Summary Report, Arrow Lakes Reservoir Wildlife Management Plan, Wildlife Enhancement Program. Report prepared for BC Hydro by Hemmera Envirochem Inc and Nupqu Development Corporation, December 2018.

APPENDIX 1. INDIVIDUAL FISH DATA

Results of fish sampling, June 18, 2020

Date	Pond	Method	Species	Length (mm)
18-Jun-20	A3	dip netting	Redside Shiner	36
18-Jun-20	A3	dip netting	Redside Shiner	33
18-Jun-20	A3	dip netting	Redside Shiner	37
18-Jun-20	A3	dip netting	Redside Shiner	26
18-Jun-20	A3	dip netting	Redside Shiner	35
18-Jun-20	A3	dip netting	Redside Shiner	37
18-Jun-20	A3	dip netting	Redside Shiner	30
18-Jun-20	A3	dip netting	Redside Shiner	30
18-Jun-20	A3	dip netting	Redside Shiner	35
18-Jun-20	A3	dip netting	Redside Shiner	37
18-Jun-20	A3	dip netting	Redside Shiner	40
18-Jun-20	A3	dip netting	Redside Shiner	35
18-Jun-20	A3	dip netting	Redside Shiner	30
18-Jun-20	A3	dip netting	Redside Shiner	31
18-Jun-20	A3	dip netting	Redside Shiner	30
18-Jun-20	A3	dip netting	Redside Shiner	28
18-Jun-20	A3	dip netting	Redside Shiner	35
18-Jun-20	A3	dip netting	Redside Shiner	50
18-Jun-20	A3	dip netting	Redside Shiner	30
18-Jun-20	A3	dip netting	Redside Shiner	38
18-Jun-20	A3	dip netting	Redside Shiner	33
18-Jun-20	A3	dip netting	Peamouth	50
18-Jun-20	A3	dip netting	Peamouth	41
18-Jun-20	A3	dip netting	Longnose Dace	62
18-Jun-20	A3	dip netting	Longnose Dace	55
18-Jun-20	A3	dip netting	Northern Pikeminnow	30
18-Jun-20	A3	dip netting	Northern Pikeminnow	47
18-Jun-20	A3	dip netting	Northern Pikeminnow	30
18-Jun-20	A3	dip netting	Northern Pikeminnow	30
18-Jun-20	A3	dip netting	Northern Pikeminnow	35
18-Jun-20	A3	dip netting	Northern Pikeminnow	36
18-Jun-20	A3	dip netting	Northern Pikeminnow	33
18-Jun-20	A3	dip netting	Northern Pikeminnow	45
18-Jun-20	A3	dip netting	Northern Pikeminnow	36
18-Jun-20	A3	dip netting	Northern Pikeminnow	36
18-Jun-20	A3	dip netting	Northern Pikeminnow	40
18-Jun-20	A3	dip netting	Northern Pikeminnow	33
18-Jun-20	A3	dip netting	Northern Pikeminnow	35

Results of fish sampling, August 14, 2020

Date	Pond	Method	Species	Length (mm)
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A1	electrofishing	Unidentified Species	10
14-Aug-20	A2	electrofishing	Unidentified Species	15
14-Aug-20	A2	electrofishing	Unidentified Species	10
14-Aug-20	A2	electrofishing	Unidentified Species	10
14-Aug-20	A2	electrofishing	Unidentified Species	10
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
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14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12

Date	Pond	Method	Species	Length (mm)
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A2	dip netting	Unidentified Species	12
14-Aug-20	A3	electrofishing	Peamouth	40
14-Aug-20	A3	electrofishing	Peamouth	40
14-Aug-20	A3	electrofishing	Peamouth	40
14-Aug-20	A3	electrofishing	Peamouth	40
14-Aug-20	A3	electrofishing	Peamouth	25
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	28
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	32
14-Aug-20	A3	electrofishing	Peamouth	25
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	20
14-Aug-20	A3	electrofishing	Peamouth	15
14-Aug-20	A3	electrofishing	Peamouth	15
14-Aug-20	A3	electrofishing	Sculpin (General)	15

Results of fish sampling, October 8, 2020

Date	Pond	Method	Species	Length (mm)
08-Oct-20	A4	electrofishing	Northern Pikeminnow	29
08-Oct-20	A4	electrofishing	Northern Pikeminnow	30
08-Oct-20	A4	electrofishing	Northern Pikeminnow	28
08-Oct-20	A4	electrofishing	Peamouth	28
08-Oct-20	A4	electrofishing	Peamouth	28
08-Oct-20	A4	electrofishing	Peamouth	30
08-Oct-20	A4	electrofishing	Peamouth	29
08-Oct-20	A4	electrofishing	Peamouth	25
08-Oct-20	A4	electrofishing	Peamouth	30
08-Oct-20	A4	electrofishing	Rainbow Trout	60
08-Oct-20	A4	electrofishing	Largescale Sucker	31
08-Oct-20	A4	electrofishing	Largescale Sucker	30
08-Oct-20	A4	electrofishing	Largescale Sucker	27
08-Oct-20	A4	electrofishing	Sculpin (General)	35
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	22
08-Oct-20	B1	electrofishing	Redside Shiner	22
08-Oct-20	B1	electrofishing	Redside Shiner	28
08-Oct-20	B1	electrofishing	Redside Shiner	27
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	30
08-Oct-20	B1	electrofishing	Redside Shiner	30
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	30
08-Oct-20	B1	electrofishing	Redside Shiner	22
08-Oct-20	B1	electrofishing	Redside Shiner	22
08-Oct-20	B1	electrofishing	Redside Shiner	23
08-Oct-20	B1	electrofishing	Redside Shiner	22

Date	Pond	Method	Species	Length (mm)
08-Oct-20	B1	electrofishing	Redside Shiner	21
08-Oct-20	B1	electrofishing	Redside Shiner	28
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	20
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	electrofishing	Redside Shiner	22
08-Oct-20	B1	electrofishing	Redside Shiner	23
08-Oct-20	B1	electrofishing	Redside Shiner	25
08-Oct-20	B1	dip netting	Redside Shiner	24
08-Oct-20	B1	dip netting	Redside Shiner	25
08-Oct-20	B1	dip netting	Redside Shiner	25
08-Oct-20	B1	dip netting	Redside Shiner	24
08-Oct-20	B1	dip netting	Redside Shiner	25
08-Oct-20	B1	dip netting	Redside Shiner	25
08-Oct-20	B1	electrofishing	Sculpin (General)	26
08-Oct-20	B1	electrofishing	Sculpin (General)	28
08-Oct-20	B1	electrofishing	Sculpin (General)	30
08-Oct-20	B1	electrofishing	Sculpin (General)	23
08-Oct-20	B1	electrofishing	Sculpin (General)	30
08-Oct-20	B1	electrofishing	Sculpin (General)	30
08-Oct-20	B1	electrofishing	Sculpin (General)	32
08-Oct-20	B1	electrofishing	Sculpin (General)	30
08-Oct-20	B1	electrofishing	Sculpin (General)	26
08-Oct-20	B1	electrofishing	Sculpin (General)	23
08-Oct-20	B1	electrofishing	Sculpin (General)	40
08-Oct-20	B1	electrofishing	Sculpin (General)	28
08-Oct-20	B1	electrofishing	Sculpin (General)	25
08-Oct-20	B1	electrofishing	Sculpin (General)	27
08-Oct-20	B1	electrofishing	Sculpin (General)	35
08-Oct-20	B1	electrofishing	Sculpin (General)	30
08-Oct-20	B1	dip netting	Sculpin (General)	25
08-Oct-20	B1	electrofishing	Largescale Sucker	55
08-Oct-20	B1	electrofishing	Largescale Sucker	50
08-Oct-20	B1	electrofishing	Largescale Sucker	40
08-Oct-20	B1	electrofishing	Largescale Sucker	55
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	35
08-Oct-20	B1	electrofishing	Largescale Sucker	35

Date	Pond	Method	Species	Length (mm)
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	38
08-Oct-20	B1	electrofishing	Largescale Sucker	50
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	25
08-Oct-20	B1	electrofishing	Largescale Sucker	50
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	40
08-Oct-20	B1	electrofishing	Largescale Sucker	30
08-Oct-20	B1	electrofishing	Largescale Sucker	30
08-Oct-20	B1	electrofishing	Largescale Sucker	35
08-Oct-20	B1	electrofishing	Largescale Sucker	30
08-Oct-20	B1	electrofishing	Largescale Sucker	45
08-Oct-20	B1	electrofishing	Largescale Sucker	23