BC Hydro
Power smart

Site C Clean Energy Project

Permanent Upstream Fish Passage Facility Operations Report

Reporting Period: May 1 to 31, 2025

Prepared by BC Hydro

July 8, 2025

Introduction

BC Hydro filled the Site C Reservoir and started to operate the generating station in the fall of 2024. As such, the permanent upstream fish passage facility (hereafter permanent facility) was operated at the outlet of the generating station to provide for fish passage during the operations phase of the Project.

Structure of the report

This report summarizes the data and information presented in weekly reports prepared by the facility operator, as described in the Manual of Operational Parameters and Procedures (OPP), and covers the full extent of operations in May 2025.

This report has the following sections:

- Biological operation;
- Environmental conditions;
- Mechanical operation; and
- Adjustments.

Biological operation is defined as the sorting, sampling, tagging, transport and release of fish. Mechanical operation is defined as the operation of the pumps, gates, crowder, lock, sensors, loggers, and other mechanical equipment to ensure the permanent facility achieves the biological objectives described in Section 4.1 of the Fish Passage Management Plan[1].

Summary

Three thousand and forty eight fish – 1465 Largescale Sucker, 1193 Longnose Sucker, 215 Mountain Whitefish, 82 Rainbow Trout, 49 Arctic Grayling, 36 Bull Trout, 5 White Sucker, and 3 Northern Pikeminnow – were sorted and sampled at the permanent facility, and transported and released into the Site C Reservoir (Table 1, Photos 1 and 2).

Large numbers of suckers (primarily Largescale Sucker and Longnose Sucker) passed the permanent facility during the reporting period; the operator observed two large pulses on May 22 (771 fish) and May 28 (721 fish) (Table 1, Figure 1, Photo 1). Suckers are known to spawn in the late spring or early summer, so these high numbers were expected and are consistent with what was observed at the temporary upstream fish passage facility from 2020 to 2024. High numbers of Arctic Grayling (49 fish) and Rainbow Trout (82 fish) also passed the permanent facility; these species are also known to spawn in the spring in tributaries upstream of the Project (Photo 2). Finally, the permanent facility also passed 36 Bull Trout (Table 1, Photo 2).

[1] Available at: http://sitecproject.com/sites/default/files/Fish%20Passage%20Management%20Plan.pdf

Biological operation

In total, 3048 fish were sorted in the permanent facility during the reporting period (Table 1; Figure 1). Six mortalities were observed during the reporting period (0.2% of all fish sorted in 2025), which is in-line with the anticipated levels of mortality during operations[2].

Table 1. Total number of fish sorted, sampled, transported and released during the reporting period.

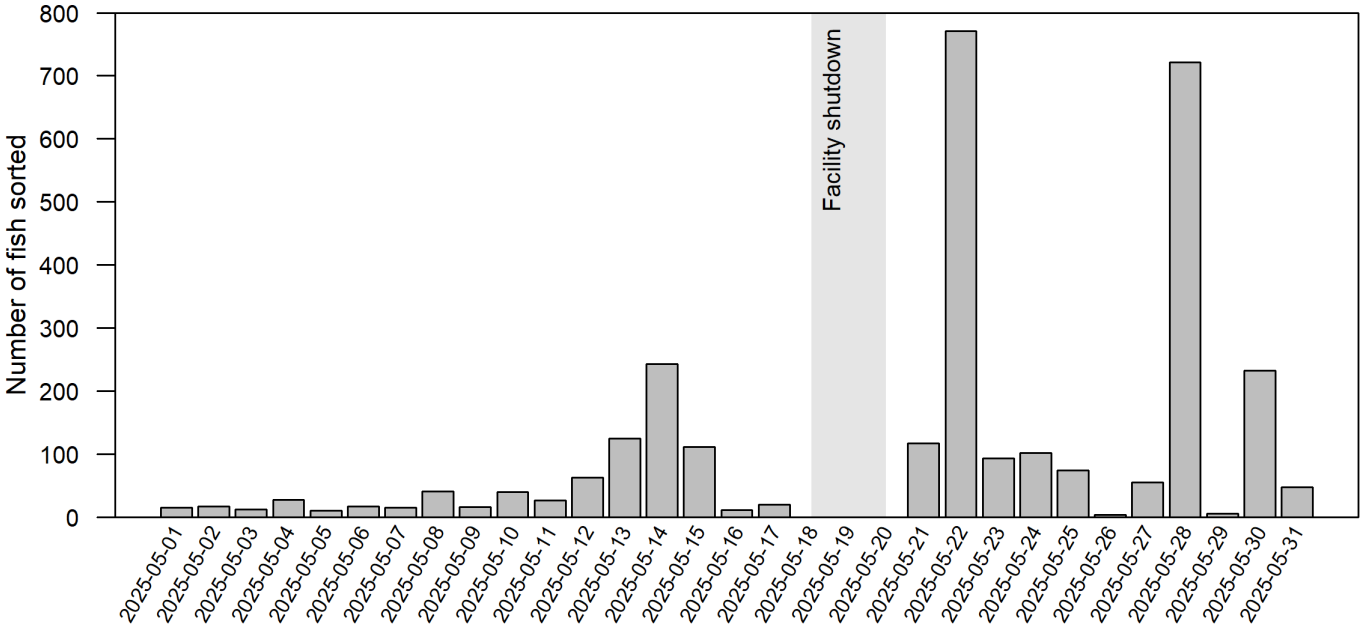
Species	Sorted	Transported and released	PIT tagged	Mortalities	Genetics	Microchemistry or ageing
Arctic Grayling	49	49	36		30	43
Brook Stickleback						
Brook Trout						
Bull Trout	36	36	27		23	26
Burbot						
Finescale Dace						
Flathead Chub						
Goldeye						
Kokanee						
Lake Chub						
Lake Trout						
Lake Whitefish						
Largescale Sucker	1465	1465	386	1		
Longnose Dace						
Longnose Sucker	1193	1193	375	3		
Mountain Whitefish	215	215	182	1		10
Northern Pike						
Northern Pikeminnow	3	3				
Northern Redbelly Dace						
Peamouth						
Pearl Dace						
Prickly Sculpin						
Pygmy Whitefish						
Rainbow Trout	82	82	72	1	67	70
Redside Shiner						
Slimy Sculpin						
Spoonhead Sculpin						
Spottail Shiner						
Trout-perch						
Walleye						
White Sucker	5	5	1			
Yellow Perch						
Grand total	3048	3048	1079	6	120	149

Not all fish species were PIT tagged or sampled for genetics, microchemistry, or ageing, as described in the OPP.

[2] The FAA for Main Civil Works and Facility Operations (15-HPAC-01160) describes an acceptable level of incidental mortality to be no more than 5% of the total number of fish sorted in the temporary facility on an annual basis.

Between four and 771 fish were sorted daily during the reporting period (Figure 1).

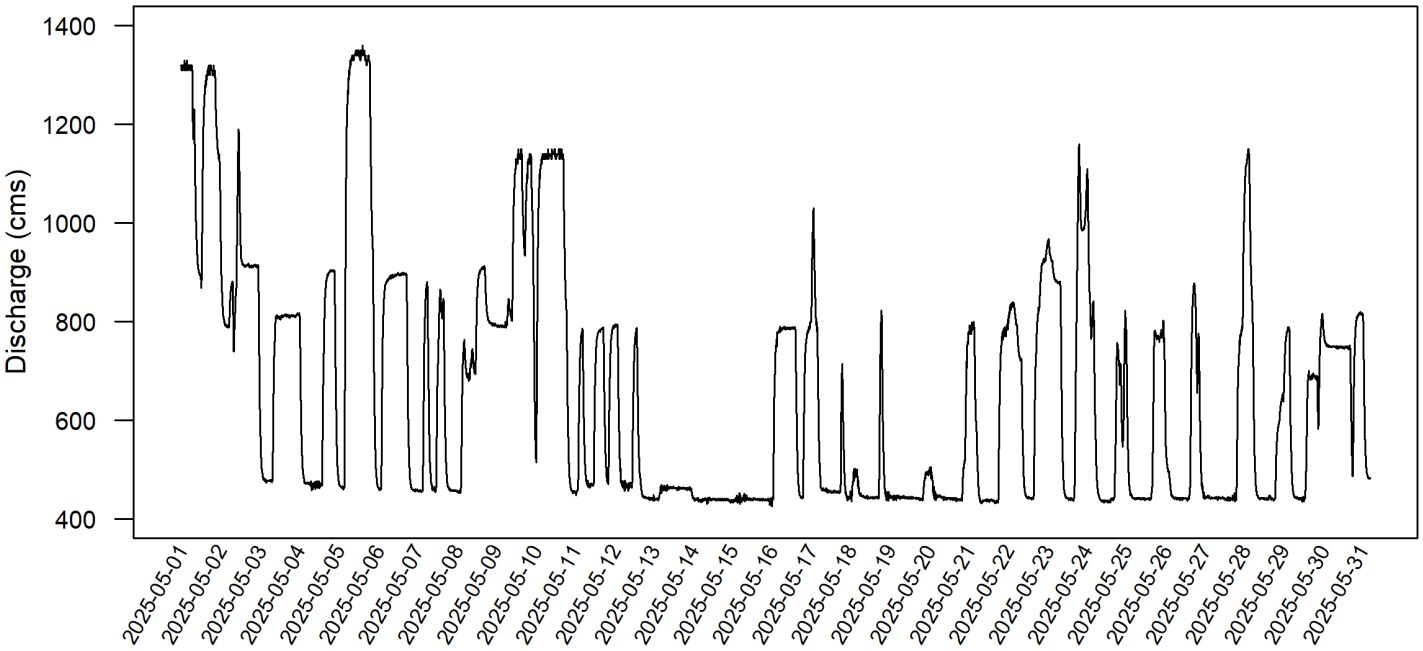
Figure 1. Daily number of fish sorted in the permanent facility during the reporting period.



Environmental conditions

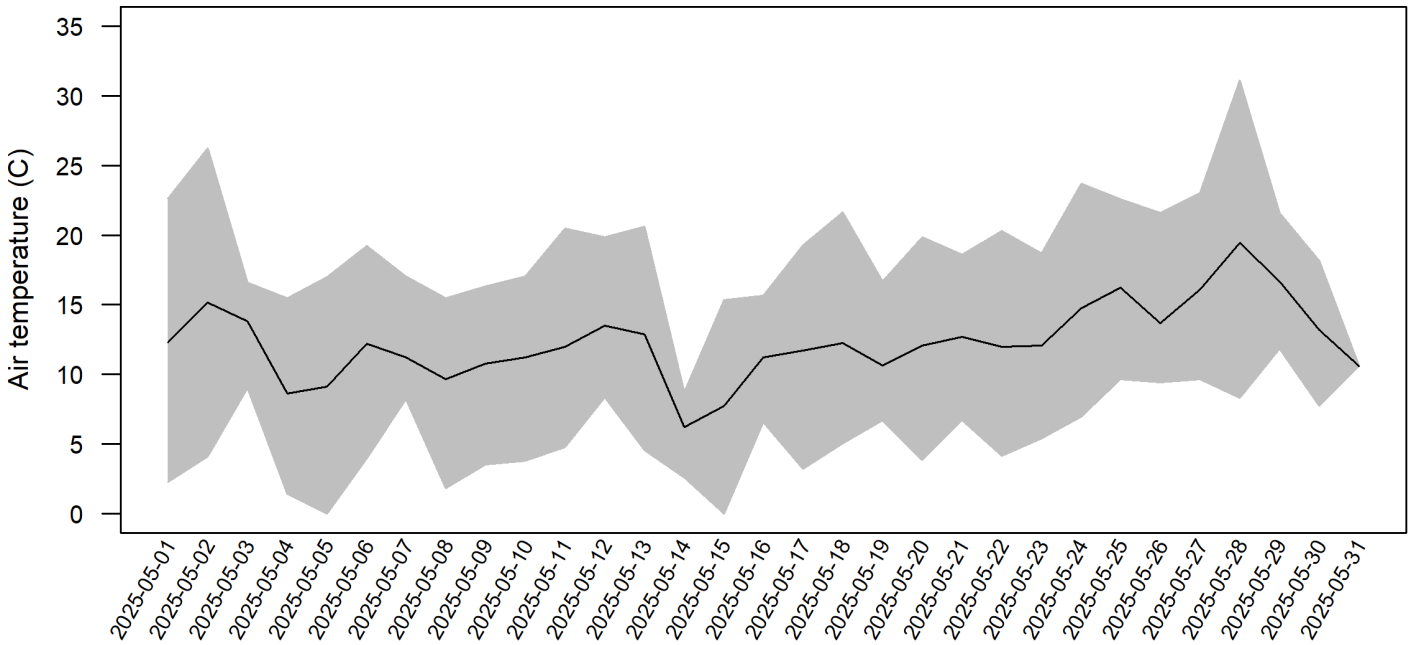
Discharge in the Peace River fluctuated during the reporting period from a low of 425 cms on May 16 to a high of 1360 cms on May 5 (Figure 2).

Figure 2. Discharge in the Peace River during the reporting period as measured at the Peace River above Pine River (07FA004) Water Survey of Canada (WSC) hydrometric station. Data were downloaded from the WSC on June 3; the downloaded data were provided at 5-minute intervals and were listed as provisional by the WSC.



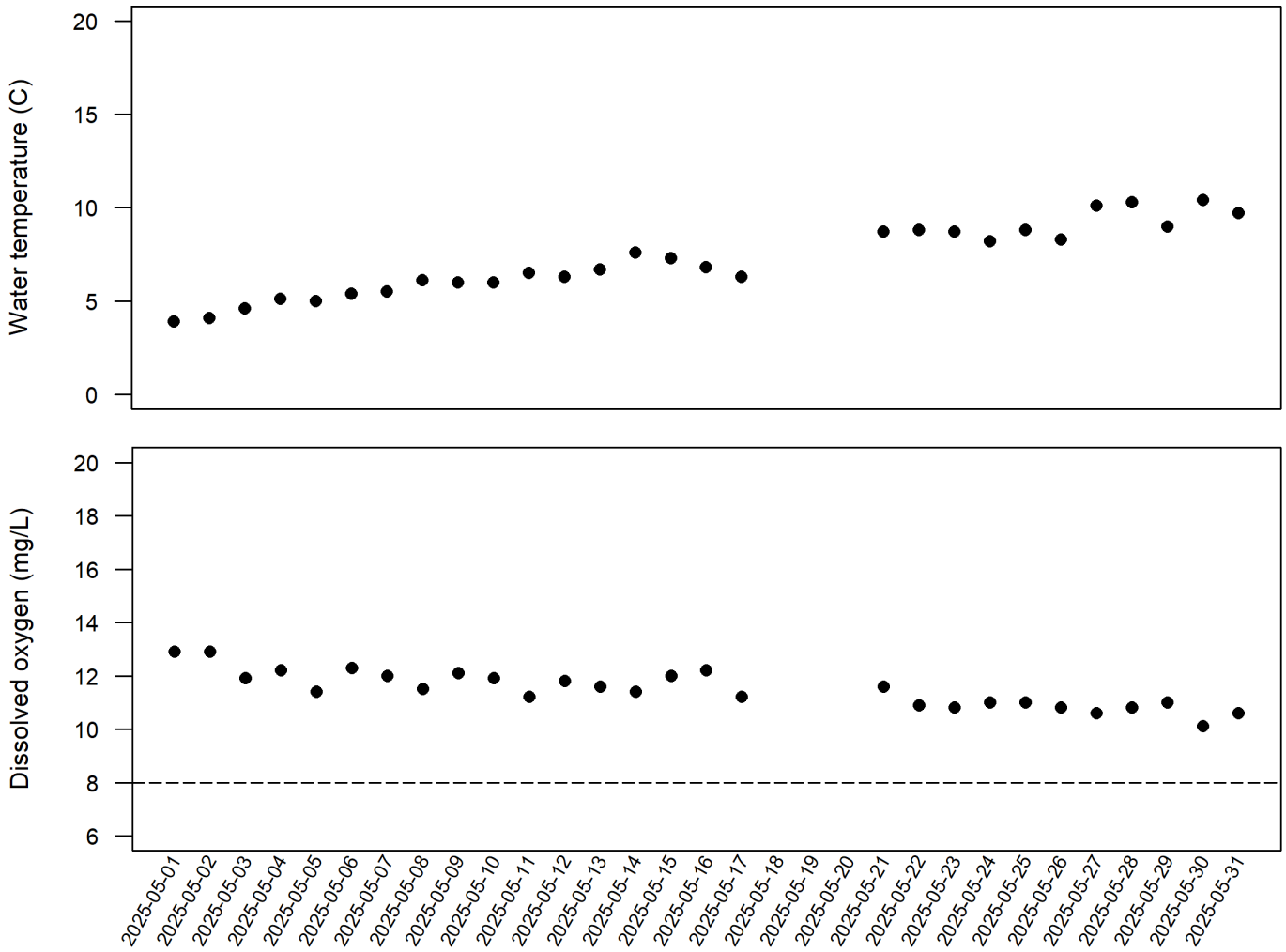
Air temperature fluctuated during the reporting period from a low of 0.0°C on May 5 to a high of 31.1°C on May 28 (Figure 3).

Figure 3. Mean daily air temperature (black line; °C) during the reporting period as measured by a temperature sensor at the permanent facility (TIT-919002). Shaded area represents the minimum and maximum daily air temperatures.



Water temperature slowly increased during the reporting period (Figure 4). Dissolved oxygen remained above the minimum dissolved oxygen level (8.0 mg/L) described in the design report of the permanent facility.

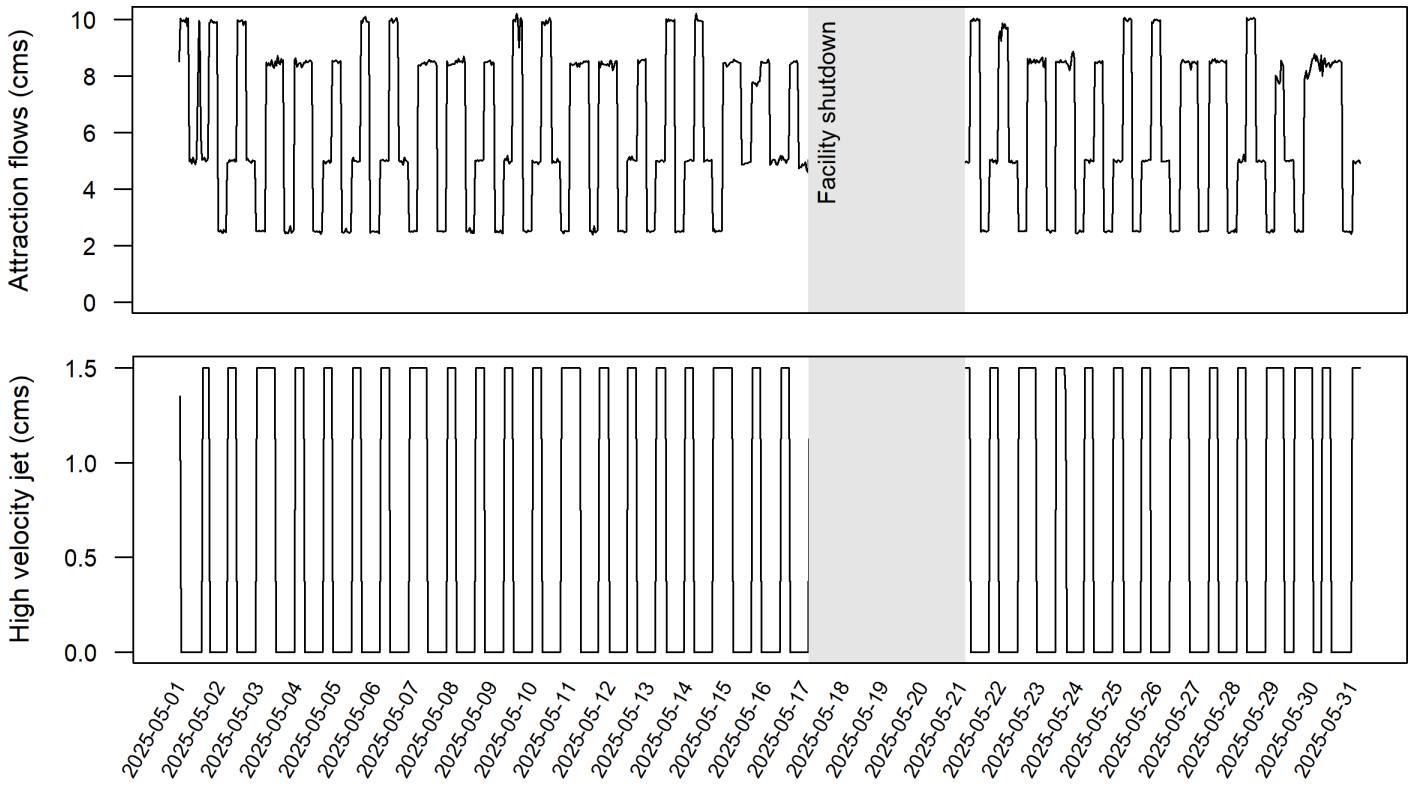
Figure 4. Daily water temperature (°C) and dissolved oxygen (mg/L) during the reporting period as measured in the pre-sort holding pool of the permanent facility.



Mechanical operation

Operation of the attraction flows and high velocity jet intends to attract fish towards the fishway entrance. Once fish have entered the permanent facility, flows within the fishway intend to provide a flow signal for fish to detect and swim up each pool to the sorting facility.

Figure 5. Operation of the attraction flows and high velocity jet during the reporting period.



Fish were crowded daily from the pre-sort holding pool into the fish lock. Operators then proceeded to raise crowded fish to the elevation of the sorting facility. Note that this process is referred to as a “sorting cycle”. Between one and eight sorting cycles were conducted each day during the reporting period, with the exception of May 18 to 20 when the facility was shutdown (Table 2).

Table 2. Daily total number of sorting cycles.

Date	Number of sorting cycles	Start time
2025-05-01	6	09:02, 10:27, 11:09, 11:51, 12:58, 13:47
2025-05-02	5	08:50, 10:01, 11:24, 13:25, 14:02
2025-05-03	7	09:08, 09:52, 10:43, 11:18, 12:33, 13:05, 14:02
2025-05-04	5	09:20, 10:20, 11:34, 12:35, 13:57
2025-05-05	8	08:47, 10:06, 10:43, 11:31, 12:29, 12:47, 13:21, 14:06
2025-05-06	7	08:41, 09:35, 10:16, 11:07, 12:31, 13:39, 14:20
2025-05-07	5	09:00, 10:07, 11:47, 13:12, 14:16
2025-05-08	5	09:11, 10:40, 12:07, 12:46, 15:04
2025-05-09	6	08:57, 09:39, 11:25, 11:31, 13:20, 14:50
2025-05-10	8	08:56, 09:47, 11:15, 11:47, 13:05, 13:27, 14:07, 14:48
2025-05-11	6	08:46, 09:53, 11:59, 13:19, 13:50, 14:19
2025-05-12	5	09:09, 10:18, 11:14, 12:40, 13:20
2025-05-13	4	09:01, 10:55, 11:38, 13:47
2025-05-14	3	08:51, 13:09, 13:49
2025-05-15	5	09:35, 12:42, 14:38, 15:26, 15:37
2025-05-16	8	08:49, 09:42, 10:29, 11:33, 12:06, 13:19, 14:01, 14:34
2025-05-17	4	08:44, 09:38, 10:10, 11:00
2025-05-18	-	Facility shutdown
2025-05-19	-	Facility shutdown
2025-05-20	-	Facility shutdown
2025-05-21	2	09:51, 13:41
2025-05-22	5	09:00, 09:39, 12:52, 13:14, 14:12
2025-05-23	8	09:29, 10:27, 11:06, 11:58, 12:30, 13:17, 15:03, 15:26
2025-05-24	7	08:55, 10:00, 10:35, 11:56, 13:21, 14:50, 15:20
2025-05-25	3	09:00, 09:56, 12:01
2025-05-26	4	08:49, 09:36, 10:48, 11:56
2025-05-27	3	09:16, 11:27, 13:14
2025-05-28	2	09:11, 14:58
2025-05-29	6	09:39, 12:01, 13:27, 14:05, 14:12, 15:02
2025-05-30	3	10:15, 13:03, 14:40
2025-05-31	1	09:15

Table 3. Summary of standby or shutdown periods during the reporting period.

Date	Standby or shutdown	Rationale
2025-05-17 11:00 to 2025-05-21 08:00	Shutdown	One of the two crowder chains fell off; the operator shut the facility down in order to safely repair the issue.
2025-05-31 10:00 to 2025-05-31 17:00	Shutdown	One of the cables connecting the vertical crowder screen to the winch line on the crowder platform snapped. BC Hydro responded to this issue immediately, which involved shutting the facility down for the remainder of the reporting period.

Table 4. Root causes and corrective actions as a result of equipment malfunctions, breakdowns, or damage during the reporting period.

Date	Malfunction, breakdown or damage	Description	Root cause	Corrective action
May 17	Breakdown	One of the set screws came loose on the U-joint of the crowder, which made the joint slide back and caused the chain to come off as well as the key in the sprocket to fall out.	Unknown.	Crowder was lifted out of the pre-sort holding pool by a crane. Chain was re-installed and re-aligned, and replacement set screws were installed.
May 31	Breakdown	One of the cables connecting the vertical crowder screen to the winch line on the crowder platform snapped.	Cable was improperly installed.	Issue was responded to immediately, which involved shutting down the facility and conducting a thorough safety and engineering design investigation into the cable failure. Replacement cable was installed and wrapped correctly, and a plexiglass shield was installed at the front of the crowder to protect the operator from the cable system.

Adjustments

Several adjustments were made during the reporting period to improve the biological and mechanical operation of the permanent facility (Table 5). BC Hydro described the potential for adjustments to the day-to-day biological and mechanical operation of the permanent facility in Section 7 of the Fish Passage Management Plan[2]. In general the permanent facility was operated as planned and described in the OPP.

Table 5. Summary of adjustments made to the biological and mechanical operation of the permanent facility during the reporting period.

Component	Adjustment
Biological operation	A number of minor adjustments were made to improve the biological and mechanical operation of the permanent facility during the reporting period. None of the adjustments changed the operation in a material way.
Mechanical operation	

Photos

Photo 1. More than 2500 Suckers (1465 Largescale Sucker, 1193 Longnose Sucker, and 5 White Sucker) passed the permanent facility during the reporting period (May 22, 2025).

Photo 2. Operator processed 36 Bull Trout (left; May 28, 2025) and 82 Rainbow Trout (right; May 29, 2025) during the reporting period.

Prepared by

This report was prepared by the following individuals:

Qualified Individual	Expertise
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