

VIA EMAIL

December 1, 2020

Sheila Eyler
US Fish and Wildlife Service
Mid-Atlantic Fish and Wildlife Conservation Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

RE: SAFE HARBOR WATER POWER CORPORATION – 2020 FISH PASSAGE REPORT

Dear Ms. Eyler and Resource Agencies:

Safe Harbor Water Power Corporation (Brookfield) is hereby submitting the 2020 Safe Harbor Fish Passage Report for the Safe Harbor Hydroelectric Project (FERC No. 1025, NATDAM NO. PA00855) in Lancaster County, PA.

The Safe Harbor fish lift operates from mid-April to mid-June each year. It typically commences operation shortly after the Holtwood Fish Lift passes approximately 500 American Shad into Lake Aldred and stops a day or two after the Holtwood lift shuts down for the season.

In early spring of 2020, pre-season equipment maintenance and calibrations were performed before spring fish passage season. However, the 2020 season was delayed and then shortened due to issues related to the COVID-19 pandemic and spread of Northern Snakeheads on the Susquehanna River.

By letter dated April 2, 2020, Brookfield notified resource agencies of certain modified operations due to the COVID-19 pandemic. Consistent with the State of Emergency in Pennsylvania and Centers for Disease Control guidelines, Brookfield took steps to meet the unprecedented conditions including modifying our operations staffing levels at the Safe Harbor station, allowing only essential personnel on site to protect our critical employees and ensure the continued critical service of generating electricity and maintaining dam safety. Agencies were notified that the beginning of fish passage season would be delayed but that once normal operations resumed, the lift would run as committed.

On May 11, Brookfield notified resource agencies that our downstream Holtwood facility would begin resident fish passage season on May 18, when normal staffing levels would be resuming. Safe Harbor would then operate as soon as migratory fish passage season began at the downstream facilities. On May 12, we were notified that Conowingo Dam began migratory fish passage that same day. Holtwood began migratory fish passage on May 14 and Safe Harbor began on May 15.

There were no maintenance or mechanical issues with the lift during its operation.

On May 15, Brookfield was requested by the Susquehanna River Anadromous Fish Restoration Cooperative (SRAFRC) to shut down our fish lifts immediately due to the passage of invasive northern snakehead fish at the downstream dam. Safe Harbor shut the lift down that same night. The lift only operated for one day in 2020.

Please see enclosure for fish passage numbers for spring 2020.

Should any additional information be required, please contact me by phone at 570-226-1371, by e-mail at kathleen.lester@brookfieldrenewable.com, or by mail at Brookfield Renewable, 126 Lamberton Lane, Hawley, PA 18428.

Sincerely,



Kathleen E. Lester
Compliance Manager

Enclosure – Safe Harbor 2020 Fish Passage Report

cc: Amy Burnett (Brookfield)
Dustin Droege (Brookfield)
Dan Stambaugh (Brookfield)
Safe Harbor FPTAC Resource Agencies

Safe Harbor Fish Passage 2020

Prepared For:
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Brookfield Renewable U.S.
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Submitted On:
November 20, 2020

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The data contained in all pages of this document have been submitted in confidence and contain trade secrets and/or privileged or confidential information, and such data shall be used or disclosed only for evaluation purposes, provided that if a contract is awarded to this proposer as a result of or in connection with the submission of this proposal, the client shall have the right to use or disclose the data herein to the extent provided in the contract. This document includes data that shall not be disclosed outside of the purposes of this submittal and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than for evaluation purposes.

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Executive Summary

The 2020 Safe Harbor fish passage season was delayed and shortened due to a series of events stemming from the Covid-19 pandemic and the passage of Northern Snakeheads into Conowingo Pond via the Conowingo East Fish Lift.

After delays caused by the pandemic, fish lift operations commenced at Safe Harbor on May 15, 2020; just 1 day after Holtwood operations commenced; and two days after the Conowingo East fish lift passed 54 American Shad into Conowingo Pond. However, due to the passage of Northern Snakeheads into Conowingo Pond by the Conowingo East fish lift, the Resource Agencies requested that all fish lift operations cease at day's end on May 15, 2020. Due to this decision, and the delay caused by the COVID-19 pandemic, the Safe Harbor fish lift only operated one day in 2020.

This year (2020) marks the twenty-fourth season of volitional fish passage at the Safe Harbor fish lift. During one day of operation, the Safe Harbor Fish Lift passed 429 fish of 11 species into Lake Clarke. Quillback (233), Smallmouth Bass (89), and Shorthead Redhorse (68) dominated the catch, and comprised nearly 91% of the total fish collected and passed. Quillback was the dominant species passed and comprised 54.3% of the catch.

Only one American Shad was passed during the 2020 season at Safe Harbor during the single day of operation, and passed over Safe Harbor during the 1400-hour. This one shad was 3.6% of the 28 American shad passed by Holtwood in two days of operation.

Fishway operations on May 15, 2020 were conducted with seven units in operation, utilizing entrance gates A and C. In addition, the water temperature was 57.2°F, the forebay and tailrace elevations were 226.6 and 170.8 respectively, and the river flow was 40,950 cfs.

Water clarity was very good (36 inches of visibility at the viewing window), allowing the viewing technician to accurately identify American Shad and other fish species. Although viewing conditions were adequate during the brief operation in 2020, no American Shad with Maryland DNR floy tags were observed at the Safe Harbor Fishway.

1.0 Methods

Fish lifted and sluiced into the trough were identified to species and enumerated as they passed the counting window by a biological technician. As fish swim upstream and approach the counting area they are directed by a series of fixed screens to swim up and through a 3 ft wide channel on the east side of the trough. The channel is adjacent to a 4 ft by 10 ft window located in the counting room where fish are enumerated prior to exiting the fishway. Fish passage was controlled by the biological technician, who opened/closed a gate located downstream of the viewing window from a controller mounted inside the counting room. Each night, after operations ended for the day, fish were denied passage from the fishway by closing the gate downstream of the window.

A 1,500 watt halogen lamp mounted above the viewing window and three adjustable 500 watt underwater lights (two at mid-depth on either side of the window and one on the bottom) gave the biologist and/or technician a degree of control over lighting conditions at the window. Overhead and underwater light intensity is adjusted when necessary, based on the constantly changing ambient light conditions. In addition, a screen capable of adjusting the channel width at the counting window from 18 in to 36 in (and a range of intermediate widths) was adjusted as viewing conditions and fish passage dictated. For the 2020 season, the adjustable screen was set at 18 in.

At the end of each hour, fish passage data were recorded on a worksheet and entered into a Microsoft Excel spreadsheet on a personal computer. Data processing and reporting were PC based and accomplished by program scripts, or macros, created within Microsoft Excel software. After the technician verified the correctness of the raw data, a daily summary of fish passage was produced and e-mailed to plant personnel. This single day's data was backed up on electronic media and stored off site. Daily reports and weekly summaries of fish passage were to be electronically distributed to members of the SHFPTAC and other cooperators. Due to the shortness of the season, only one report was generated.

2.0 Results

2.1 Relative Abundance

The relative abundance of fishes collected and passed in 2020 by the Safe Harbor fishway is presented in Table 1. A total of 429 fish of 11 species passed upstream into Lake Clarke. Quillback (233), Smallmouth Bass (89), and Shorthead Redhorse (68) dominated the catch, and comprised nearly 91% of the total fish collected and passed. Quillback was the dominant species passed and comprised 54.3% of the catch.

2.2 American Shad Passage

The Safe Harbor fishway only passed one American Shad in one day of operation in 2020 (Table 2). This American Shad passed over Safe Harbor during the 1400-hour. This one shad was 3.6% of the 28 American shad passed by Holtwood in two days of operation (Table 3).

Water clarity was very good (36 inches of visibility at the viewing window), allowing the viewing technician to accurately identify American Shad and other fish species. Although viewing conditions were adequate during brief operations in 2020, no American Shad with Maryland DNR floy tags were observed at the Safe Harbor Fishway.

2.3 Gizzard Shad Passage and Other Alosids

In 2019, the Safe Harbor fish lift collected and passed 31,147 Gizzard Shad, which accounted for 53.6% of the total fish collected and passed. In 2020, the total number of Gizzard Shad observed was much lower, (17), during one day of operation, and was 3.9% of the total catch (429). This was much lower than that observed in 2018 (113,849), due to the abbreviated season.

Passage of other Alosids, (alewife, blueback herring, and hickory shad), at the Safe Harbor fishway was not observed in 2020.

3.0 Summary

Due to the COVID-19 pandemic and the passage of Northern Snakeheads into Conowingo Pond, the operation of the Safe Harbor fish lift only occurred on one day (May 15, 2020). No operation of the facility occurred prior to or after this date, so caution must be taken when analyzing fish lift data between years that is outside normal parameters, such as what occurred in 2020.

4.0 Literature Cited

Normandeau Associates, Inc. 1998. Summary of operation at the Safe Harbor Fish Passage Facility in 1997. Prepared for Safe Harbor Water Power Corporation, Conestoga, PA.

Normandeau Associates, Inc. 1999. Summary of operation at the Safe Harbor Fish Passage Facility in 1998. Prepared for Safe Harbor Water Power Corporation, Conestoga, PA

Tables

Table 1. Relative Abundance of fish species and number passed during the 1-day operation at Safe Harbor (May 15, 2020).

Species	# Collected/Passed
American Shad (<i>Alosa sapidissima</i>)	1
Gizzard Shad (<i>Dorosoma cepedianum</i>)	17
Carp (<i>Cyprinus carpio</i>)	3
Quillback (<i>Carpoides cyprinus</i>)	233
Shorthead Redhorse (<i>Moxostoma macrolepidotum</i>)	68
Channel Catfish (<i>Ictalurus punctatus</i>)	6
Rock Bass (<i>Ambloplites rupestris</i>)	1
Bluegill (<i>Lepomis macrochirus</i>)	1
Smallmouth Bass (<i>Micropterus dolomieu</i>)	89
Largemouth Bass (<i>Micropterus salmoides</i>)	1
Walleye (<i>Stizostedion vitreum</i>)	9
TOTAL FISH (11 Species)	429

Table 2. Safe Harbor Daily fish catch by hour for May 15, 2020.

Water Temperature: 57.2° F		Date: 5/15/2020									
Entrance Gates: A,C		Secchi (in): 36				Forebay Elev.: 226.6					
Viewing Time: 0800-1600 hrs		Ave. River Flow: 40,950 cfs				Tailrace Elev.: 170.8					
Fishing Time: 0700-1545 hrs		# Lifts: 9				# Units operating: 7					
Time Period:	0800-0859	0900-0959	1000-1059	1100-1159	1200-1259	1300-1359	1400-1459	1500-1559	1600-1659	1700-1759	Daily Total
SPECIES											
<i>American Shad</i>	0	0	0	0	0	0	1	0			1
<i>Gizzard Shad</i>	1	1	0	1	0	1	1	12			17
<i>Carp</i>	0	1	0	0	2	0	0	0			3
<i>Quillback</i>	82	46	21	37	22	4	2	19			233
<i>Shorthead Redhorse</i>	12	15	7	11	13	5	3	2			68
<i>Channel Catfish</i>	0	0	0	1	2	1	1	1			6
<i>Rock Bass</i>	0	1	0	0	0	0	0	0			1
<i>Bluegill</i>	0	0	1	0	0	0	0	0			1
<i>Smallmouth Bass</i>	9	16	5	8	7	19	11	14			89
<i>Largemouth Bass</i>	1	0	0	0	0	0	0	0			1
<i>Walleye</i>	5	1	0	0	0	0	0	3			9
Totals	110	81	34	58	46	30	19	51	0	0	429

Table 3. Summary of American Shad passage counts and percent passage values at Susquehanna River dams, 1997-2020.

	Conowingo		Holtwood		Safe Harbor		York Haven		
	East		Number	% of C.E.L.	Number	% of Holt.	Number	% of S.H.	
1997	90,971		28,063	30.8%		20,828	74.2%	-	-
1998	39,904		8,235	20.6%		6,054	73.5%	-	-
1999	69,712		34,702	49.8%		34,150	98.4%	-	-
2000	153,546		29,421	19.2%		21,079	71.6%	4,687	22.2%
2001	193,574		109,976	56.8%		89,816	81.7%	16,200	18.0%
2002	108,001		17,522	16.2%		11,705	66.8%	1,555	13.3%
2003	125,135		25,254	20.2%		16,646	65.9%	2,536	15.2%
2004	109,360		3,428	3.1%		2,109	61.5%	219	10.4%
2005	68,926		34,189	49.6%		25,425	74.4%	1,772	7.0%
2006	56,899		35,968	63.2%		24,929	69.3%	1,913	7.7%
2007	25,464		10,338	40.6%		7,215	69.8%	192	2.7%
2008	19,914		2,795	14.0%		1,252	44.8%	21	1.7%
2009	29,272		10,896	37.2%		7,994	73.4%	402	5.0%
2010	37,757		16,472	43.6%		12,706	77.1%	907	7.1%
2011	20,571		21	0.1%		8	38.1%	0	0.0%
2012	22,143		4,238	19.1%		3,089	72.9%	224	7.3%
2013	12,733		2,503	19.7%		1,927	77.0%	202	10.5%
2014	10,425		2,589	24.8%		1,336	51.6%	8	0.6%
2015	8,341		5,286	63.4%		3,896	73.7%	43	1.1%
2016	14,276		6,718	47.1%		4,242	63.1%	178	4.2%
2017	16,265		3,170	19.5%		2,007	63.3%	62	3.1%
2018	6,992		1,458	20.9%		661	45.3%	NA	NA
2019	4,787		571	11.9%		316	55.3%	NA	NA
2020*	485		28	5.8%		1	3.6%	NA	NA

*Safe Harbor fish lift operations delayed until May 15, 2020 due to COVID-19 Protocols
 Fish lift operations terminated on May 15, 2020 due to Northern Snakehead (Resource Agency request)