

Statement for the Record
By the Chesapeake Bay Foundation
Subcommittee on Water and Wildlife
United States Senate

On Finding Cooperative Solutions to Environmental Concerns with the Conowingo Dam to Improve the Health of the Chesapeake Bay

May 5, 2014

The Chesapeake Bay Foundation appreciates the opportunity to provide its views on cooperative solutions to the environmental concerns with the Conowingo Dam to improve the health of the Chesapeake Bay. We thank the Subcommittee on Water and Wildlife and Chairman Cardin for your attention to this issue.

The Conowingo Dam is owned and operated by Exelon Corporation under a license issued by the Federal Energy Regulatory Commission (FERC). This dam is located on the Susquehanna River and impacts water quality below the dam and fish passage along the river. Exelon's current license expires in 2014 and they have applied for a new license from FERC. As part of the re-licensing, FERC must consider potential environmental impacts from the dam and include appropriate conditions in the new permit to minimize these impacts. Exelon is currently negotiating with federal and state agencies that have jurisdiction over potentially affected resources such as U.S. Fish and Wildlife Service for fish passage, Maryland Departments of Environment and Natural Resources for water quality and habitat in an attempt to reach agreement on the conditions of the permit.

The Chesapeake Bay Foundation (CBF) is a non-profit environmental education and advocacy organization dedicated to the restoration and protection of the Chesapeake Bay. With over 200,000 members, CBF works to ensure that changes in policy, regulation, and legislation are protective of, and help improve, the water quality of the Chesapeake Bay and its watershed. In keeping with that mission, on August 20, 2013, CBF filed a motion to intervene in the re-licensing of the Conowingo Dam. On January 30, 2014, CBF also provided formal comments in response to the FERC's Solicitation of Comments for relicensing of the Conowingo Dam and Muddy Run Pumped Storage Project.

CBF is concerned with two principal issues: 1) Water Quality: In particular, the potential downstream impacts of sediment and nutrients behind Conowingo Dam; both in terms of the loss of historic pollution removal capacity, and the scouring of nutrients and sediments behind the dam during high flow events; and 2) Fish Passage: In particular, upstream passage efficiency and timeliness and downstream passage survival at Conowingo Dam. The re-licensing of the Conowingo Dam and the Muddy Run Project must include adequate, long-term, sustainable sediment and nutrient management strategies to ensure that the pollution reduction measures needed to meet applicable water quality standards in the Bay and its tidal rivers will be achieved,

and fish passage strategies that will restore native migratory fish to the Susquehanna and support the overall health of the Bay and its estuaries.

Water Quality

Since its construction, the Conowingo Dam has been trapping sediment and sediment-associated nutrients in the Conowingo reservoir.¹ Today, researchers estimate the reservoir is almost completely filled and, as a result, has lost some of its capacity to trap and store sediment and nutrients. Furthermore, storm events above a certain flow rate will lead to scouring of sediment from behind the dam, resulting in substantial, episodic, loadings of nitrogen, phosphorus and sediment to the Chesapeake Bay.

In September 2011, U.S. Army Corps of Engineers (ACOE), Maryland Department of Natural Resources (MD DNR) and Maryland Department of the Environment (MDE), the Susquehanna River Basin Commission and The Nature Conservancy announced the launch of a 3 year feasibility study to devise solutions to the sediment management problem; The Lower Susquehanna River Watershed Assessment Study (“Lower Susquehanna Study”). The Lower Susquehanna Study was intended to provide a more detailed understanding of sediment flow in the Susquehanna, the role of the dam in storing the material, and effects of the dam on downstream water quality.² The study also identified viable options for addressing these impacts, and the costs of these options. Meetings of the study committee were open to the public and CBF was an active participant. We presume that, in its testimony, the ACOE will be summarizing the preliminary findings of this study that will be released later this year.

Preliminary results from the ACOE study put a new perspective concerning the impact of pollution stored behind the dam. Results indicate that sediment and nutrients scoured from behind the dam during storm events need to be mitigated to meet downstream Bay restoration goals. But, put into perspective, these impacts are small compared to overall pollution loads affecting the Chesapeake Bay. In particular, study results suggest that during typical storm events, roughly 80 percent of the sediment pollution found downstream of the dam is associated with the high river flows and is not due to scouring of sediment from behind the dam. This finding reaffirms the importance of implementing the States’ Clean Water Blueprints to restore the Chesapeake and its tidal rivers.

Fish Passage

CBF is concerned with the restoration of migratory fish to the Susquehanna, specifically American shad, hickory shad, American eels, Atlantic sturgeon, shortnose sturgeon, alewife and blueback herring. Improving upstream and downstream passage for these migratory fish is essential to the recovery of anadromous fish populations (shad, eels, river herring and sturgeon) in the Chesapeake Bay watershed. In the Bay’s tributaries, including the Susquehanna, anadromous fish swim upriver to spawn in their natal fresh water streams after spending most of

¹ Michael J. Langland, 1998; U.S. Geological Survey, *Changes in Sediment and Nutrient Storage in Three Reservoirs in the Lower Susquehanna River Basin and Implications for the Chesapeake Bay*

<http://pa.water.usgs.gov/reports/fs003-98.html>

² <http://www.nab.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/10470/Article/9273/lower-susquehanna-river-watershed-assessment-md-and-pa.aspx>

their lives in the ocean.³ Likewise, the catadromous American eel makes a reverse migration, leaving its fresh water rivers to spawn in the salty Sargasso Sea.⁴ The dams of the Susquehanna, including Conowingo, prevent anadromous fish from reaching historic spawning habitats, which leads to a low rate of natural reproduction.⁵ Anadromous fish populations are at historic lows. River herring have been proposed for endangered species listing.⁶ As part of the re-licensing of the project, fish passage improvements must be secured, including changes to the existing fish lifts and flow modifications to improve fish migration through the lift and reduce fish mortality. The Conowingo dam has two (2) fish lifts. The West Fish Lift was constructed in 1972 and was operated through 1996 as part of a trap and transport program.⁷ Currently, the West Fish Lift is only used to harvest eggs from pre-spawned American shad.⁸ Maintenance is performed on the West Fish Lift on an as-needed basis and no substantial preventive maintenance enhancements have been performed in the last 10 years.⁹ As part of a 1989 settlement agreement with Exelon and the resource agencies, the East Fish Lift was completed in 1991.¹⁰ No substantial upgrades or changes to the structure or operation of the East Fish Lift have been made since its construction and maintenance is performed on an as-needed basis.¹¹ The fish lifts at Conowingo have a remaining life expectancy of 15 to 25 years and will be due for replacement during the life of the Project license.¹² Thus, long-term passage solutions must be addressed in the re-license.

While the Conowingo Dam fishway has passed large numbers of shad, its effectiveness has not been adequately assessed, and upstream fishways have had mixed results.¹³ In fact, American shad passage on the Susquehanna River has not met expectations. The American shad stock in the Susquehanna improved slowly and made an impressive comeback in 2001 when over 200,000 shad were counted at the Conowingo fish lifts.¹⁴ However, since 2001, adult numbers have decreased due to a number of factors including: poor efficiency of fish passage measures and facilities; low hatchery production in recent years; low numbers of spawning fish accessing

³ *Restoring Migratory Fish Passage in the Chesapeake Bay Watershed*, Feb. 23, 2004, http://www.chesapeakebay.net/content/publications/cbp_12246.pdf

⁴ *Id.*

⁵ *Id.*

⁶ NRDC, *Petition to List Alewife (*Alosa pseudoharengus*) and Blueback Herring (*Alosa aestivalis*) as Threatened Species and to Designate Critical Habitat*, Aug. 1, 2011

http://www.nero.noaa.gov/prot_res/CandidateSpeciesProgram/NRDC_Petition_to_List_Alewife_and_BB_Herring_8-1-11.pdf

⁷ Exelon, *Biological and Engineering Studies of the East and West Fish Lifts RSP 3.9*, p.2; 10

http://www.exeloncorp.com/assets/energy/powerplants/docs/Conowingo/Conowingo_RSP_3.9_Part1.pdf

⁸ *Id.* p. 4

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.* at p. 10

¹² Exelon, *Biological and Engineering Studies of the East and West Fish Lifts RSP 3.9*, pp. 4; 10

http://www.exeloncorp.com/assets/energy/powerplants/docs/Conowingo/Conowingo_RSP_3.9_Part1.pdf

¹³ Susquehanna River Anadromous Fish Restoration Cooperative, *Migratory Fish Management and Restoration Plan for the Susquehanna River Basin*, Nov. 15, 2010, p. 20

<http://fishandboat.com/pafish/shad/susg/SRAFRC-RestorationPlan.pdf>

¹⁴ *Id.* at 5.

quality habitat; poor young-of-year recruitment upstream of Conowingo Dam; ocean and Chesapeake Bay mortality; turbine mortality and predation.¹⁵

In addition, fish passage improvements must include measures for passing American eels upstream which the current Conowingo fish lifts are not designed to handle.¹⁶ Restoration of American eel is an important component of overall ecosystem improvement since eel serves as a primary host for freshwater mussel larvae.¹⁷ Mussels are important to improving overall water quality because they can filter water in freshwater.¹⁸ Improving fish passage for American eels into freshwater habitat will facilitate the rebuilding of freshwater mussel populations and improve the health of the freshwater ecosystem in the Susquehanna.¹⁹ Fish passage at Conowingo must be improved during the re-license of the Project. The survival of native fish species, and indeed, the survival of the Bay, depends upon it.

Exelon's Role in Addressing Water Quality and Fish Passage

As part of the FERC re-licensing, Exelon must receive a "Section 401 water quality certification" from Maryland. Under this section of the federal Clean Water Act, states need to evaluate the potential for dams to affect downstream waters and insert conditions in the FERC permit to protect them. The findings of the Lower Susquehanna River study will help inform this process. There are still, however, many questions, about the scale of the impact of the dam on downstream waters and what solutions could be implemented to address them. A likely outcome is that mitigation for these impacts will involve a suite of solutions that address the dam's impacts and maximizes environmental outcomes. For example, reducing pollution from upstream may be cheaper than dealing with it later, when it builds up behind the Dam. Exelon needs to be a full partner in implementing these solutions.

As part of the re-licensing of Conowingo Dam, requirements must be included to improve fish passage to the limit of current technology to meet restoration goals as set by the Susquehanna River Anadromous Fish Restoration Cooperative (SRAFRFC) Migratory Fish Management and Restoration Plan for the Susquehanna River Basin (2010) and American Eel Restoration Plan for the Susquehanna River Basin (2013). Accordingly, CBF recommends requirements to achieve:

1. Upstream passage efficiency for shad and river herring of 85%
2. Downstream passage survival for adult shad and river herring of 80%
3. Downstream passage survival for juvenile shad and river herring of 95%
4. Expansion of the capacity and increase in attraction flow of the East Fish Lift

¹⁵ *Id.*

¹⁶ Steve Minkinen, Ian Park, Maryland Fishery Resources Office, *American Eel Sampling at Conowingo Dam 2009*, <http://www.fws.gov/northeast/marylandfisheries/reports/SRAFRFC%202009.pdf>

¹⁷ 2011 Maryland FMP Report (June 2012), Section 1. American Eel (*Anguilla rostrata*) http://dnr.maryland.gov/fisheries/fmp/2011/Section_1_American_Eel.pdf

¹⁸ *Id.*

¹⁹ *Id.*

5. Upgrade of the East Fish Lift to necessary capacity for trap and transport, including increased attraction flow, with potential to retrofit as a volitional fishway when migrating fish numbers exceed the capacity of the East Fish Lift
6. Construction of an eel capture structure on the west side as a trap and transport facility with potential to retrofit as a volitional fishway
7. Downstream passage survival of 85% for silver eels
8. Modification of flow regimes as necessary to eliminate stranding and provide suitable downstream habitat for sturgeon and other species

In March 2014, Exelon responded to formal comments sent to FERC by CBF, TNC, several federal agencies (NOAA and USFWS) and others. In their response, Exelon summarily dismissed any need for fish passage improvement at Conowingo or Muddy Run and claim they have no responsibility to mitigate for downstream water quality impacts. As our testimony demonstrates, we strongly disagree. CBF strongly believes that Exelon must address impacts to fish passage, water quality, and the other issues of concern from dam operations.

Restoring clean water, good habitat and healthy fish populations to the Chesapeake region – and particularly along interstate waterways like the Susquehanna River -- will depend on collaboration and partnerships among federal, state, nonprofits and private entities. Given the role the Conowingo Dam plays in the health and restoration of the Chesapeake Bay, we thank the Committee for its attention to this important issue.