**ORAL ARGUMENT NOT YET SCHEDULED**

**IN THE UNITED STATES COURT OF APPEALS**
**FOR THE DISTRICT OF COLUMBIA CIRCUIT**

No. 21-1139 and 21-1186 (consolidated)

---

WATERKEEPERS CHESAPEAKE, *et al.*,
*Petitioners*,
v.

FEDERAL ENERGY REGULATORY COMMISSION,
*Respondent*.

---

PETITION FOR REVIEW OF ORDERS OF THE FEDERAL ENERGY REGULATORY COMMISSION, 174 FERC ¶ 61,217 (MARCH 19, 2021), AND 176 FERC ¶ 61,029 (JULY 15, 2021)

---

# ADDENDUM TO FINAL OPENING BRIEF OF PETITIONERS

**DATED: June 21, 2022**

Paul W. Smail
Brittany E. Wright
Chesapeake Bay Foundation
6 Herndon Avenue
Annapolis, MD 21403
443-482-2153
psmail@cbf.org
bwright@cbf.org

*Counsel for Petitioner Chesapeake Bay Foundation, Inc.*

James S. Pew
Kathleen Riley
Earthjustice
1001 G Street, NW, Ste. 1000
Washington, DC 20001
(202) 667-4500
jpew@earthjustice.org
kriley@earthjustice.org

*Counsel for Petitioners Waterkeepers Chesapeake, Lower Susquehanna Riverkeeper Association, and ShoreRivers*

# DECLARATIONS

# TABLE OF CONTENTS

**ORAL ARGUMENT NOT YET SCHEDULED**

**IN THE UNITED STATES COURT OF APPEALS**
**FOR THE DISTRICT OF COLUMBIA CIRCUIT**

| | |
|---|---|
| WATERKEEPERS CHESAPEAKE, *et al.*,<br><br>*Petitioners*,<br><br>v.<br><br>FEDERAL ENERGY REGULATORY COMMISSION,<br><br>*Respondent*. | No. 21-1186 |
| WATERKEEPERS CHESAPEAKE, *et al.*,<br><br>*Petitioners*,<br><br>v.<br><br>FEDERAL ENERGY REGULATORY COMMISSION,<br><br>*Respondent*. | No. 21-1139 |

**DECLARATION OF JEFFERY ANDREWS**

I, Jeffery ("Jeff") Andrews, hereby declare and state as follows:

1. I am over 18 years of age, competent to testify, and have personal knowledge of the facts stated herein.

2. I am a member of the Chesapeake Bay Foundation.

3. I am the Dockmaster and General Manager of Tidewater Marina, located at 100 Bourbon Street in Havre de Grace, Maryland 21078. The marina is located where the Susquehanna River empties into the Chesapeake Bay, northwest of the Susquehanna Flats area of the Bay.
4. I have worked at Tidewater Marina since 1981. I am responsible for the overall operation of the marina including license applications and oversight for waterway projects including dredging operations.
5. The marina is directly impacted by sediment scoured from Conowingo Reservoir and discharged from Conowingo Dam during storm events.
6. Sediment discharged from the Conowingo Dam impacts access to the marina. The marina's deepwater bulkhead has historically had a depth of approximately fifteen feet. In 2013, soundings show that it now has a depth of between only seven and nine feet.
7. We have had to perform more frequent maintenance dredging at the marina in recent years due to the increased rate of sedimentation. We last maintenance dredged in 2012 and will have to dredge again this winter due to shoaling from sediment deposition.
8. A decision vacating the license will redress the injuries to my interests from the continued discharges of too much sediment and other pollution from the Conowingo Dam into the Susquehanna River and the Chesapeake Bay.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 27, 2022.

Jeffery Andrews

# DECLARATION OF SCOTT BUDDEN

I, Scott Budden, hereby declare as follows:

1. I currently live in Queen Anne's County, Maryland. Before that, I lived in neighboring Kent County, Maryland. I have lived in this area since 2015, and I grew up here in Kent County.

2. I am a member and board member of ShoreRivers, and starting February 2022, I will be the Treasurer of ShoreRivers. I have been a member of ShoreRivers since 2017. Before that, I was a member and board member of the Chester River Association. I also serve on the Steering Committee of the Chesapeake Oyster Alliance; as an External Advisory Board Member of Maryland Sea Grant; on the board of the Oyster Recovery Partnership; and as a Founding Board Member of Bonus Point Oyster Company, a nonprofit focused on educating high schoolers on oyster farming. Recently, I was also appointed (not yet confirmed) by the Maryland Governor to the Chesapeake Executive Council Citizens Advisory Committee and nominated to the Maryland Tidal Fisheries Advisory Commission.

3. I understand that because Exelon has not maintained the reservoir behind Conowingo Dam it has filled up with nutrients, sediment, and debris over the years and, as a result, the Dam now discharges large quantities of nutrients, sediment, and debris into the Lower Susquehanna River and the

Chesapeake Bay whenever we have a major rain event. I got involved with the Chester River Association and then ShoreRivers because it is important to me both professionally and personally that our water quality is improved, and reducing the pollution discharged from the Dam is a necessary part of that.

4. I co-own an oyster aquaculture business in Maryland, the Orchard Point Oyster Company. My business depends on clean water because we farm our oysters directly in the waters of the Chester River and the eastern portion of the Chesapeake Bay.

5. The Dam negatively affects our oyster farming operations in at least two ways. First, the excess nutrients from the Dam cause our farming gear to foul more quickly with algae, which causes slower growth and higher mortality in our oysters. Our Chester River grow site, which is closer to the Dam than our Eastern Bay site, had some of the heaviest algal fouling rates in the region due to its proximity to the Dam. Second, the Dam's high flows and extended gate openings during the springtime artificially suppress the water salinity, which slows the oysters' growth and negatively affects their flavor.

6. We have also had to plan and engineer our operations around sediment loads from the Dam. We avoid farming in the mainstem of the Bay because of the

sediment loads discharged from the Dam, and we use surface floats and off bottom cages to avoid the sediment that the Dam dumps on the Bay floor. Off-bottom farming is more labor intensive than farming on the bay floor, and the equipment is much more expensive, both to purchase, maintain, and work. We would like to consider bottom farming, since it is cheaper and less labor intensive, but the sediment discharged from the Dam deters us.

7. In addition to working on the water as part of my business, I also boat, fish, and crab recreationally several times a month from spring through fall on the Chester River, Eastern Bay, Sassafras River, and Bayside Creeks (which includes Still Pond, Worton Creek, and others). I enjoy being out on the water without it being work, and I think it is beneficial to my mental health and state of mind. However, it is less enjoyable for me when I see telephone poles and tires coming down from the Dam, and the debris poses a navigation hazard. Large influxes of water from the dam can also throw off the species I like to fish, and the lack of water clarity from sediment and algae can make it harder to track those species. The sediment and nutrient pollution discharged from the Dam diminishes the quality of and my enjoyment of our recreational fisheries and crabs in that way.

8. The Dam's operations harm my oyster farming business and diminish my enjoyment of recreational fishing, crabbing, and boating in the waters

downstream of the Dam. FERC's issuance of a license that allows Exelon to operate the Dam for another 50 years without undertaking the cleanup measures Maryland has found necessary to assure the Dam complies with water quality standards, and without adequately considering the environmental effects, prolongs and exacerbates this harm.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct.

Date: January 25, 2022

Scott Budden

# DECLARATION OF THEODORE (TED) EVGENIADIS

I, Theodore Evgeniadis, declare as follows:

1. My name is Ted Evgeniadis and I currently reside in Mount Wolf, Pennsylvania, where I've lived for approximately five years. Prior to that, I lived in Harrisburg, Pennsylvania for approximately three years, and in York, Pennsylvania for approximately five years.
2. In the last more than ten years, since I moved to York, I've had a strong personal connection with the watersheds of the Lower Susquehanna River and the Chesapeake Bay. I also have a strong professional interest in the Lower Susquehanna River and the Chesapeake Bay as the Lower Susquehanna Riverkeeper.
3. Since April 2017, I have served as the Lower Susquehanna Riverkeeper. Our organization was established in 2006 and has hundreds of individual and organization members who volunteer, contribute financial support, and engage in advocacy to advance our organizational mission.
4. The mission of the Lower Susquehanna Riverkeeper Association is to protect and improve the ecological and aesthetic integrity of the Lower Susquehanna River watershed and the Chesapeake Bay. Current and future citizens of the watershed deserve high water quality, wise and sustainable use of all aquatic resources, and preservation of aesthetic value of our

waterways. Improvement will come about through education, research, advocacy, and insistence on compliance with the law.

5. As Riverkeeper, I lead the organization's work in advocating for strong environmental standards and policies that protect and serve the public interest. We have participated actively in the relicensing process for the Conowingo Dam, including testifying and filing comments. I am also a member of Waterkeepers Chesapeake and I serve on the Board.

6. We host public events, like cleanups, educational paddle tours, and races. This year we hosted our third annual paddle race on the Susquehanna River, the Dam Bridge Challenge, and our second annual Great Plastic Purge of the Lower Susquehanna River.

7. I also patrol the waterways, including below the Dam once or twice a quarter, to monitor water quality and habitat degradation, including from low flows and the deposition of scoured sediment.

8. I also use the waters below the Dam for my own personal recreational use. About eight times a year, I use the Lower Susquehanna River and Chesapeake Bay, whether for fishing, kayaking, boating, oyster diving, crabbing, birdwatching, or viewing other wildlife and sightseeing. I intend to continue using these waters for these and similar recreational activities for as long as I can into the future, including striped bass fishing directly below the

dam. The sediment also inhibits my ability to fish because fish disperse to escape sediment pollution.

9. I also enjoy fishing in the reservoir above the Dam a few times a year. However, high levels of algae and high temperatures stress the fish, so I avoid fishing during these times. The fishing isn't as good, and I don't want to fish when I know the fish are stressed because stressed fish are more likely to die when caught and released. I also enjoy going out with charter boats, but I avoid doing so if the conditions aren't good to fish.

10. Knowing all the effects the Dam has on water quality and habitat detracts from my enjoyment of my time on the water—particularly after storms. I also enjoy my activities on the water less when I see sediment scoured from behind the Dam, or algal blooms from the nutrients in that sediment. I avoid recreating on the waters below the Dam when I see or know of scoured nutrients and sediment discharged from the Dam, and I would enjoy my time on and around the waters more without visible sediment and nutrient pollution.

11. I am particularly concerned that the future will bring more frequent and larger storms due to global climate change and that those large storms will scour more sediment and nutrients from behind the Dam. I am very concerned that discharges from the Dam during these scour events will

negatively affect aquatic species including crabs and oysters by smothering them during critical life stages, or by fueling algal blooms. In my personal observation, it has become more difficult to fill a bushel of oysters, and I believe this trend is in part due to scoured sediment and nutrient pollution. I hope to continue oyster diving in the future.

12. The Dam's operations diminish my enjoyment of my activities on and around the Lower Susquehanna River and the Chesapeake Bay. FERC's issuance of a license that allows Exelon to operate the Dam for another 50 years without undertaking the cleanup measures Maryland has found necessary to assure the Dam complies with water quality standards, and without adequately considering the environmental effects, prolongs and exacerbates this harm.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Date: January 27, 2022

Theodore Evgeniadis

# DECLARATION OF ISABEL HARDESTY

I, Isabel Hardesty, declare as follows:

1. My name is Isabel Hardesty and I am the Executive Director of ShoreRivers. I joined ShoreRivers in December 2017. Before that, I worked with the Chester River Association. I started working with the Chester River Association in 2011. The following is based on my personal knowledge and information available to me in my roles with ShoreRivers and with the Chester River Association.
2. The entity now known as ShoreRivers was founded in August 2008 under the name of "Choptank River Eastern Bay Conservancy." *See* Attachment 1, Articles of Incorporation for the Choptank River Eastern Bay Conservancy (Aug. 20, 2008). In January 2011, the Choptank River Eastern Bay Conservancy changed its name to "Midshore Riverkeeper Conservancy." *See* Attachment 2, Articles of Amendment (Jan. 1, 2011) (selecting "Change of Name").
3. In August 2017, the Chester River Association and the Sassafras River Association merged into Midshore Riverkeeper Conservancy. As part of this merger, the Chester River Association and the Sassafras River Association donated their assets to the Midshore Riverkeeper Conservancy, the surviving entity, and Midshore Riverkeeper Conservancy then changed its name to

ShoreRivers. *See* Attachment 3, Agreement between Donors Sassafras River Association and Chester River Association to Recipient, Midshore Riverkeeper Conservancy (Aug. 31, 2017); Attachment 4, Accompanying Transfer Agreement (Dec. 29, 2017); Attachment 5, Articles of Amendment (Oct. 11, 2017) (selecting "Change of Name"); Attachment 6, Confirmation Letter from State of Maryland, Department of Assessments and Taxation (Oct. 11, 2017) ("This Amendment record indicates the name change from: Midshore Riverkeeper Conservancy, Inc. to: ShoreRivers, Inc.").

4. ShoreRivers is the same legal entity as Midshore Riverkeeper Conservancy, with the same Maryland ID number and the same Employer Identification Number (EIN). *See* Attachment 1, Articles of Incorporation (Aug. 20, 2008) (ID# D12681938); Attachment 2, Articles of Amendment (Jan. 1, 2011) (ID# D12681938); Attachment 5, Articles of Amendment (Oct. 11, 2017) (ID# D12681938); Attachment 7, Letter from State of Maryland, Department of Assessments and Taxation (Feb. 19, 2020) (showing ShoreRivers is the same entity (ID# D12681938) that was incorporated in August 20, 2008") (emphasis added).

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Date: January 28, 2022

Isabel Hardesty

Isabel Hardesty

**List of Attachments:**

Attachment 1, Articles of Incorporation for the Choptank River Eastern Bay Conservancy (Aug. 20, 2008);

Attachment 2, Articles of Amendment (Jan. 1, 2011);

Attachment 3, Agreement between Donors Sassafras River Association and Chester River Association to Recipient, Midshore Riverkeeper Conservancy (Aug. 31, 2017);

Attachment 4, Accompanying Transfer Agreement (Dec. 29, 2017);

Attachment 5, Articles of Amendment (Oct. 11, 2017);

Attachment 6, Confirmation Letter from State of Maryland, Department of Assessments and Taxation (Oct. 11, 2017); and

Attachment 7, Letter from State of Maryland, Department of Assessments and Taxation (Feb. 19, 2020).

Attachment 1

# CORPORATE CHARTER APPROVAL SHEET

****EXPEDITED SERVICE**** **** KEEP WITH DOCUMENT ****

DOCUMENT CODE 02 BUSINESS CODE 04

# _____

Close _____ Stock _____ Nonstock ✓

P.A. _____ Religious _____

Merging (Transferor) _____

1000361996845602

ID # D12681938 ACK # 1000361996845602
PAGES: 0004
CHOPTANK RIVER EASTERN BAY CONSERVANCY, INC.
MAIL BACK

08/20/2008 AT 12:44 P WO # 0001616225

Surviving (Transferee) _____

New Name _____

FEES REMITTED

| | | |
|---|---|---|
| | Base Fee: | 100 |
| | Org. & Cap. Fee: | 20 |
| | Expedite Fee: | 70 |
| | Penalty: | |
| | State Recordation Tax: | |
| | State Transfer Tax: | |
| 1 | Certified Copies | |
| | Copy Fee: | 24 |
| | Certificates | |
| | Certificate of Status Fee: | |
| | Personal Property Filings: | |
| | Mail Processing Fee: | 5 |
| | Other: | |
| | TOTAL FEES: | 219 |

_____ Change of Name
_____ Change of Principal Office
_____ Change of Resident Agent
_____ Change of Resident Agent Address
_____ Resignation of Resident Agent
_____ Designation of Resident Agent and Resident Agent's Address
_____ Change of Business Code
_____
_____ Adoption of Assumed Name
_____
_____
_____ Other Change(s)
_____
_____

Credit Card _____ Check _____ Cash _____

_____ Documents on _____ Checks

Approved By: 9

Keyed By: _____

COMMENT(S):

Code _____

Attention: _____

TIMOTHY JUNKIN
10820 RED BARN LN
POTOMAC MD 20854-1957

Stamp Work Order and Customer Number HERE

CUST ID:0002173187
WORK ORDER:0001616225
DATE:08-20-2008 12:44 PM
AMT. PAID:$219.00

DEC0017

ARTICLES OF INCORPORATION
OF
CHOPTANK RIVER EASTERN BAY CONSERVANCY, INC.

FIRST: The undersigned Timothy Junkin, whose post office address is 10820 Red Barn Lane, Potomac, Md. 20854; Russell C. Powell, whose post office address is 4404 Ridge Street, Chevy Chase, MD 20815, all being at least eighteen years of age and citizens of the United States, do hereby form a nonstock corporation under the laws of the State of Maryland.

SECOND: The name of the corporation is "Choptank River Eastern Bay Conservancy, Inc." (the "Corporation").

THIRD: The Corporation is not formed for pecuniary profit or financial gain. The Corporation is organized exclusively for charitable, educational, and scientific purposes, including, for such purposes as the making of distributions to organizations that qualify as exempt organizations under section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future federal tax code.

FOURTH: The purposes for which the Corporation is formed are:

(a) to be an environmental advocate for the Choptank River Watershed, Eastern Bay, and the Miles and Wye Rivers in Maryland.
(b) to educate stakeholders.
(c) to identify, prioritize, and address environmental issues and problems in the rivers and watershed.
(d) to partner with other groups that share the Corporation's vision.
(e) to use all properties held or controlled by the Corporation and the net earnings thereof for the benefit of the general public and for charitable, educational, recreational, conservation, and scientific purposes.
(f) to carry on any and all additional activities incident, related, or appropriate to the furtherance of the above purpose.

FIFTH: No part of the net earnings of the Corporation will inure to the benefit of, or be distributable to its members, trustees, officers, or other private persons, except that the Corporation will be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article Third hereof.

SIXTH: No substantial part of the activities of the Corporation will be the carrying on of propaganda, or otherwise attempting to influence legislation, and the Corporation will not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of or in opposition to any candidate for public office.

SEVENTH: Notwithstanding any other provision of these articles, the Corporation will not carry on any other activities not permitted to be carried on: (a) by a corporation exempt from federal income tax under section 501(c)(3) of the Internal Revenue Code or the corresponding section of any future federal tax code; or (b) by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code or the corresponding section of any future federal tax code.

EIGHTH: The post office address of the principal office of the Corporation in Maryland is to be located at 10820 Red Barn Lane, Potomac, Md. 20854.

NINTH: The name and post office address of the resident agent of the Corporation in Maryland is Timothy Junkin, 10820 Red Barn Lane, Potomac, Md. 20854. The resident agent is a citizen of the State of Maryland and of the United States and actively resides there.

TENTH: The Corporation has no authority to issue capital stock.

ELEVENTH: The Corporation will initially have two (2) directors. That number may be increased or decreased pursuant to the bylaws of the Corporation. The names and addresses of the initial Directors of the Corporation, who shall act until the first meeting or until their successors are duly chosen and qualified, are:

| | |
|---|---|
| Russell C. Powell | 4404 Ridge Street, Chevy Chase, Md. 20815 |
| Timothy Junkin | 10820 Red Barn Lane, Potomac Md. 20854 |

TWELFTH: Upon the dissolution of the Corporation, assets will be distributed for one or more exempt purposes within the meaning of section 501(c)(3) of the Internal Revenue Code or the corresponding section of any future federal tax code, or will be distributed to the federal government or to a State or local government for a public purpose. Any such assets not so disposed of will be disposed of by a Court of Competent Jurisdiction of the county in which the principal office of the Corporation is then located, exclusively for such purposes or to such organization or organizations as said Court will determine, which are organized and operated exclusively for such purposes.

IN WITNESS WHEREOF we have signed these Articles this 19th day of August, 2008, and acknowledge the same to be our act.

SIGNATURES OF INCORPORATORS:

Timothy W. Trumbo

Russell C. Powell

FILING PARTY'S RETURN ADDRESS:

10820 Red Barn Lane
Potomac, MD 20854

CONSENT OF DESIGNATED RESIDENT AGENT

I hereby consent to my designation in this document as resident agent for this Corporation.

Signature of Resident Agent listed in Ninth:

Timothy W. Trumbo

Date: August 19, 2008

CUST ID:0002173187
WORK ORDER:0001616225
DATE:08-20-2008 12:44 PM
AMT. PAID:$219.00

Attachment 2

# CORPORATE CHARTER APPROVAL SHEET

** EXPEDITED SERVICE ** KEEP WITH DOCUMENT **

DOCUMENT CODE 09A BUSINESS CODE 04

# D12681938

1000362001061557

Close _____ Stock _____ Nonstock _____

P.A. _____ Religious _____

Merging (Transferor) _____

ID # D12681938 ACK # 1000362001061557
PAGES: 0002
MIDSHORE RIVERKEEPER CONSERVANCY, INC.

01/04/2011 AT 12:14 P WO # 0003745913

Surviving (Transferee) _____

New Name MIDSHORE RIVERKEEPER CONSERVANCY, INC.

FEES REMITTED

| | |
|---|---|
| Base Fee: | 100 |
| Org. & Cap. Fee: | |
| Expedite Fee: | 50 |
| Penalty: | |
| State Recordation Tax: | |
| State Transfer Tax: | |
| Certified Copies | |
| Copy Fee: | |
| Certificates | |
| Certificate of Status Fee: | |
| Personal Property Filings: | |
| Mail Processing Fee: | |
| Other: | |
| TOTAL FEES: | 150 |

Credit Card ✓ Check _____ Cash _____

_____ Documents on _____ Checks

Approved By: 2

Keyed By: _____

COMMENT(S):

✓ Change of Name
✓ Change of Principal Office
✓ Change of Resident Agent
✓ Change of Resident Agent Address
_____ Resignation of Resident Agent
_____ Designation of Resident Agent and Resident Agent's Address
_____ Change of Business Code
_____ Adoption of Assumed Name
_____ Other Change(s)

Code _____

Attention: _____

Mail: Name and Address

MIDSHORE RIVERKEEPER CONSEVANCY, INC.
23 NORTH HARRISON STREET
EASTON MD 21601

**Stamp Work Order and Customer Number HERE**

CUST ID:0002529333
WORK ORDER:0003745913
DATE:01-07-2011 04:53 PM
AMT. PAID:$150.00

DEC0022

DB

# ARTICLES OF AMENDMENT

(1)

(2) Choptank River Eastern Bay Conservancy, Inc.
a Maryland corporation hereby certifies to the State Department of Assessments and Taxation of Maryland that:

(3) The charter of the corporation is hereby amended as follows:

The original Articles of Incorporation are amended to change the name and address as follows:

The new name will be:

Midshore Riverkeeper Conservancy, Inc.

The new address will be:

23 North Harrison Street
Easton, MD 21601

This amendment of the charter of the corporation has been approved by

(4) The Directors. There is not membership entitled to vote on amendments.

We the undersigned President and Secretary swear under penalties of perjury that the foregoing is a corporate act.

(5) Dan Koslow
Secretary

(5) Timothy W. Trumbauer
President

(6) Return address of filing party:
23 North Harrison Street
Easton, MD 21601

CUST ID:0002529333
WORK ORDER:0003745913
DATE:01-07-2011 04:53 PM
AMT. PAID:$150.00

Attachment 3

**AGREEMENT**

**Dated as of**

**August 31, 2017**

**By, Between and Among**

**SASSAFRAS RIVER ASSOCIATION, INC., as Donor,**

**CHESTER RIVER ASSOCIATION, INC., as Donor,**

**And**

**MIDSHORE RIVERKEEPER CONSERVANCY, INC., as Recipient**

# AGREEMENT

THIS AGREEMENT (the "Agreement") is made as of the 31st day of August, 2017 by, between and among Midshore Riverkeeper Conservancy, Inc., a Maryland non-profit corporation ("Midshore" or "Recipient"), Sassafras River Association, Inc., a Maryland non-profit corporation ("Sassafras") and Chester River Association, Inc., a Maryland non-profit corporation ("Chester," and together with Sassafras, the "Donors").

## RECITALS:

WHEREAS, Sassafras, Chester and Midshore each operate a non-profit charitable organization dedicated to preserving and protecting different geographic regions of the Chesapeake Bay and its watersheds in Maryland and Delaware (the "Mission"); and

WHEREAS, in order to improve efficiencies and better be able to attract donations and grants, Sassafras, Chester and Midshore have engaged in lengthy discussions regarding the combination or merger of their organizations (the "Combination"), and retained an outside consultant to facilitate such discussions and assist in reaching mutual agreement regarding the governance and organizational structure of such combined organization ("Combined Entity"); and

WHEREAS, Sassafras, Chester and Midshore each agree that there are significant benefits to undertaking the Combination and forming the Combined Entity, and have agreed in principle to the discussion points, governance and general terms described in the "Merger Team Outcomes Report," attached hereto as Exhibit A; and

WHEREAS, to effectuate the Combination, (i) Chester desires to donate to Midshore, and Midshore desires to receive from Chester, all of Chester's assets, and (ii) Sassafras desires to donate to Midshore, and Midshore desires to receive from Sassafras, all of Sassafras's assets; and

WHEREAS, as part of the Combination, Midshore will be renamed, adopt new bylaws and, as of the consummation of the transaction, have a new governing Board of Directors and Officers, all as described in the Merger Team Outcomes Report.

NOW, THEREFORE, in consideration of the mutual representations, warranties and covenants contained in this Agreement and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

## ARTICLE I

## DONATION AND ACCEPTANCE OF DONATED ASSETS

**1.1** Assets to Be Donated and Accepted. Except as set forth in Section 1.2 hereof, (a) Recipient agrees to receive from Sassafras, and Sassafras agrees to donate to Recipient, good title in and to all of the tangible and intangible assets of Sassafras ("Sassafras Assets"), and (b) Recipient agrees to receive from Chester, and Chester agrees to donate to Recipient, good title

in and to all of the tangible and intangible assets of Chester ("Chester Assets," and together with the Sassafras Assets, the "Donated Assets"), in each case as of the Closing (as defined in Section 1.3 below) including, without limitation, the following:

(a) Fixed Assets. Each of Sassafras' and Chester's respective boats and other water vehicles, machinery, appliances, vehicles, equipment, including computer hardware and software, manuals, forms, guides and other materials with respect thereto owned, but not leased or licensed, and all parts, tools, supplies, inventory, leasehold improvements, construction in progress, and furniture and fixtures, used or held for use by Sassafras or Chester, respectively, including, without limitation, those items listed on **Schedule 1.1(a)** attached hereto (the "Fixed Assets").

(b) Contracts. Each of Sassafras' and Chester's respective right, title and interest under only those agreements, contracts, leases and other arrangements to which either Sassafras or Chester, respectively, is a party and which constitute Assumed Liabilities and Contracts.

(c) Intangible Assets. All Intangible Assets of Sassafras or Chester, respectively, including, without limitation, intellectual property (as defined in Section 3.10 below), tradenames, website URLs, website domain name, goodwill and other intangible assets, together with the goodwill of the Mission associated therewith.

(d) Licenses. Each of Sassafras' and Chester's respective licenses, consents, permits, variances, certifications and approvals of governmental agencies set forth on **Schedule 3.6**, to the extent assignable.

(e) Deposits. Each of Sassafras' and Chester's respective prepaid expenses, credits, security and other deposits, and rights to refunds or reimbursements (collectively, the "Deposits").

(f) Inventory. Each of Sassafras' and Chester's respective supplies, inventory on hand at the Closing, including, without limitation, all water quality testing equipment and other existing inventory stored at either Sassafras' or Chester's respective office or facilities (collectively, the "Inventory").

(g) Bank Accounts and Cash Balances. Each of Sassafras' and Chester's respective bank accounts, money market accounts, cash balances and other monies, all as set forth on **Schedule 1.1(g)**.

(h) Donations, Grants and Pledges. Any outstanding donations or grants pledged or awarded to either Sassafras or Chester prior to the Closing Date, respectively, to the extent that the respective donor or grantor has not yet paid the amounts pledged or granted. For the avoidance of doubt, if any donation or grant payment is received by either Sassafras or Chester after the Closing Date (as defined in Section 1.3), such amounts shall be directed to the Recipient and/or deposited in the bank accounts transferred to Recipient at Closing as described in Section 1.1(g) above, provided, however, that any such donation, grant, or pledge restricted to a specific watershed, effort, cause or project ("Dedicated Assets") shall remain dedicated to such watershed, effort, cause or project unless it is the result of a mutually agreed-upon (both Donors

and Recipient) joint fundraising initiative. A list of Dedicated Assets is set forth in **Schedule 1.1(h)**. The specific amounts of money comprising such Dedicated Assets shall be identified as soon as reasonably possible.

(i) Data, Books and Records. Each of Sassafras' and Chester's respective data, books, records (including, without limitation computer records) (collectively, the "Records"), files and other materials relating to the Donated Assets and the Mission, unless Sassafrass or Chester is required by applicable law to maintain the originals of any such Records.

(j) Lists. Each of Sassafras' and Chester's respective past and current mailing lists, current donor lists and all materials used for the development thereof.

(k) Personal Property. All supplies and other tangible or intangible assets and personal property and goodwill of Sassafras and Chester, respectively, relating to the Mission (the "Personal Property")

(l) Real Property Interests. All real property interests owned by each of the Donors.

**1.2** Excluded Assets. The Donated Assets shall not include those certain assets of Sassafras and/or Chester listed on **Schedule 1.2** (the "Excluded Assets").

**1.3** Closing. The closing of the transactions contemplated hereby (the "Closing") shall take place on Friday, December 29, 2017, at the offices of Recipient's counsel in Baltimore, Maryland or at such other place as the parties may mutually agree, or on such other date as is mutually agreed upon by the parties (such date to be herein referred to as the "Closing Date"), and shall become effective at 11:59 p.m. on Sunday, December 31, 2017. All computations, adjustments, and transfers for the purposes hereof shall be effective as of 11:59 p.m. on Sunday, December 31, 2017. Unless specifically otherwise provided herein, all documents to be delivered pursuant to this Agreement by one party to the other party to this Agreement or any affiliate thereof shall be in form and substance reasonably satisfactory to the other parties and their counsel.

## ARTICLE II

## CONSIDERATION FOR DONATION; ASSUMPTION OF LIABILITIES

**2.1** Consideration for Donation. Chester is donating the Chester Assets to Recipient and Sassafras is donating the Sassafras Assets to Recipient as part of the Combination and the Merger Team Outcomes Report described in Exhibit A hereto. Neither Donor shall receive cash compensation for the Donated Assets. However, each of Chester and Sassafras shall participate in the governance of the Combined Entity as set forth in the Merger Team Outcomes Report described in Exhibit A hereto. In addition, Recipient shall assume the Assumed Liabilities and Contracts (as defined below) as additional consideration for receiving and accepting the Donated Assets.

**2.2** Assumed Liabilities and Contracts. Recipient agrees to assume from and after the Closing only those agreements, contracts, leases and other arrangements to which Sassafras or Chester are a party relating to the Mission listed on **Schedule 2.2** and the reasonable and normal remaining costs and expenses associated with the winding down and dissolution of Sassafras and Chester (collectively, the "Wind Down Liabilities"), including but not limited to costs associated with (i) any insurance policies put into place (including but not limited to a D&O and/or tail policy), (ii) completing their 2017 audit, (iii) filing their 2017 tax returns, and (iv) any other such reasonable and necessary corporate expenses incurred after Closing (such agreements, contracts, leases, other arrangements and the Wind Down Liabilities, collectively, the "Assumed Liabilities and Contracts"), and only those liabilities and obligations arising after the Closing Date and relating to the Assumed Liabilities and Contracts.

**2.3** Retained Liabilities. Recipient will not assume or have any responsibility with respect to any obligation or liability of any Donor not included within the definition of Assumed Liabilities and Contracts (collectively, the "Retained Liabilities"), which shall include, without limitation: (i) liability claims for injuries, property damage or other losses occurring prior to the Closing Date; (ii) any claims brought by any employee or volunteer of either Donor relating to such employment or termination thereof or volunteer efforts prior to the Closing Date; (iii) claims alleging damage to the environment as a result of events occurring or in existence prior to the Closing Date; (iv) any income tax liabilities or similar assessments arising from the conduct of the Mission or occurrences prior to the Closing Date or arising from the transfer of the Assets and consummation of the transactions contemplated hereby, including any liabilities for use, sales, transfer, real estate recording or stamp taxes; (v) any liabilities for reimbursement, indemnification, breach or default by either Donor arising prior to the Closing under any contract, lease or agreement assigned to Recipient hereunder; (vi) any liability with respect to any claim, suit, action or judicial or arbitral proceeding (1) made or pending or commenced against either Donor prior to the Closing Date or (2) made or commenced after the Closing Date in respect of any action, omission or condition occurring or existing prior to the Closing Date; (vii) any checks issued by either Donor prior to the Closing Date; (viii) any liability of either Donor arising prior to the Closing Date relating to such Donor's obligations as lessee under any real property leases and (ix) any liability relating to the accounts payable of the Mission, and the accrued liabilities related to the normal operations of the Mission.

Except as specifically provided in this Agreement, the Recipient shall not assume or have any liability for any liabilities or obligations of either Sassafras or Chester, and each of Sassafras and Chester shall pay, perform and discharge all of its liabilities and obligations which are not so assumed by Recipient.

## ARTICLE III

## REPRESENTATIONS AND WARRANTIES OF THE DONORS

In order to induce the Recipient to enter into this Agreement and consummate the transactions contemplated hereby, each of Sassafras and Chester separately represents and warrants to Recipient and to each other as follows:

**3.1** Organization and Authority of Donor. (i) Sassafras represents that it is a non-profit corporation duly organized, validly existing and in good standing under the laws of the State of Maryland with current 501(c)(3) status under the Internal Revenue Code (the "Code") regulations, and (ii) Chester represents that it is a non-profit corporation duly organized, validly existing and in good standing under the laws of the State of Maryland with current 501(c)(3) status under the Code. Each Donor respectively represents that it has all necessary corporate power and authority to own, lease and operate its properties and conduct the Mission as it is currently being conducted.

**3.2** Due Authorization of Transaction. (i) Sassafras represents that it has full power and authority to execute and deliver this Agreement and the Donor's Transaction Documents (as defined in Section 5.4) and to consummate the transactions contemplated hereby, and (ii) Chester represents that it has full power and authority to execute and deliver this Agreement and the Donor's Transaction Documents and to consummate the transactions contemplated hereby. The execution, delivery and performance of this Agreement by Sassafras and Chester, respectively, has been duly authorized by all necessary corporate action of such Donor. This Agreement has been duly executed and delivered by Sassafras and Chester, respectively. The Board of Directors of Sassafras and Chester, respectively, has duly approved and authorized the consummation of the transactions contemplated hereby, and no other consents are necessary for such purposes. Assuming that this Agreement constitutes a valid and binding agreement of Recipient, this Agreement constitutes, or will constitute when executed and delivered, a valid and binding agreement of each Donor, enforceable against such Donor in accordance with its terms.

**3.3** Title to Assets. (i) Sassafras represents that it has good title to all of the Sassafras Assets, free and clear of any mortgages, liens, pledges, security interests, encumbrances, claims or similar rights of every kind and nature (collectively, "Encumbrances", and (ii) Chester represents that it has good title to all of the Chester Assets, free and clear of any Encumbrances, other than any Encumbrances with respect to any Dedicated Assets.

**3.4** No Conflict; Required Consents. The execution and delivery by each Donor of this Agreement and the Donor's Transaction Documents, and the consummation by such Donor of the transactions contemplated hereby do not and will not with or without the giving of notice or the passage of time (a) require the consent, approval or action of, or any filing with or notice to, any individual, partnership, corporation, trust, limited liability company, governmental authority or agency or other entity (collectively, a "Person"); (b) except as listed on **Schedule 3.4**, require a consent for assignment or otherwise violate the terms of any instrument, document or agreement to which such Donor is a party, or by which such Donor or the property of such Donor is bound, or be in conflict with, result in a breach of or constitute (upon the giving of notice or lapse of time or both) a default under or result in the termination of any such instrument, document or agreement, or result in the creation of any lien upon any of the Donated Assets or the property or assets of such Donor; (c) violate such Donor's bylaws; or (d) violate any order, writ, injunction, decree, judgment, ruling, law, rule or regulation of any federal, state, county, municipal, or foreign court or governmental authority applicable to such Donor, or the Mission or assets of such Donor.

**3.5** Compliance with Laws. Each Donor represents that it is in material compliance with all applicable federal, state, local or foreign or other laws, regulations and/or orders, and/or all other applicable requirements of any governmental, regulatory or administrative agency or authority or court or other tribunal (collectively, "Governmental Authority") relating to such Donor or the Donated Assets (including, but not limited to, any law, regulation, order or requirement relating to state or local sales and use taxes, securities, properties, business, products, advertising, sales or employment practices, state or federal franchise or business opportunity laws, terms and conditions of employment, wages and hours, safety, occupational safety, health or welfare conditions relating to premises occupied, environmental protection, or civil rights); and each Donor represents that is not now charged with, and to the knowledge of such Donor, such Donor is not now under investigation with respect to any possible violation of any applicable law, regulation, order or requirement relating to any of the foregoing in connection with Donor or the Donated Assets.

**3.6** Licenses and Permits. (i) To the best of its knowledge, Sassafras represents that it holds and is in compliance with all licenses, permits, approvals and authorizations necessary or required for the use or ownership of the Sassafras Assets and the operation of the Mission, and (ii) to the best of its knowledge, Chester represents that it holds and is in compliance with all licenses, permits, approvals and authorizations necessary or required for the use or ownership of the Chester Assets and the operation of the Mission, which collectively are listed on **Schedule 3.6** (the "Licenses and Permits"). Each Donor represents that it has not received written notice of, nor does such Donor have any knowledge of, any violations in respect of any such licenses, permits, approvals or authorizations. No proceeding is pending or, to the knowledge of such Donor, is threatened, which seeks revocation or limitation of any such licenses, permits, concessions, grants, franchises, approvals or authorizations.

**3.7** Tax Returns. Each Donor represents that it has correctly and timely filed all tax returns or other tax filings required by law to be filed on or before the date of this Agreement, or has obtained valid extensions to the applicable filing deadlines, and will timely file all tax returns or other tax filings required by law to be filed on or prior to the Closing Date. Specifically, such Donor represents that it is responsible for, and will timely file, all necessary tax returns or other tax filings for 2017 and will complete any audit or review that may be required of such Donor, or any Board Member of such Donor, for 2016 and earlier. Such Donor has not received a claim of taxes due or notice of any such claims from any tax authority with respect to such Donor. There are no pending or, to such Donor's knowledge, threatened audits, investigations or claims by any tax authority for or relating to any liability in respect of any taxes.

**3.8** Grants, Donations and Pledges. The Donors have delivered to Recipient a true, correct and complete list of all grants, donations or pledges of third parties which are outstanding and not yet paid as of the Closing Date.

**3.9** Contracts. With respect to the contracts and agreements that constitute Assumed Liabilities and Contracts, such contracts and agreements are valid, legally binding and enforceable in accordance with their terms against the parties thereto subject to laws of general application in effect affecting creditors' rights and subject to the exercise of judicial discretion in accordance with general equitable principles. Each Donor represents that neither it nor, to

the knowledge of such Donor, any other party to any of such contracts, is in breach of, or in default under, any of the contracts, and no event has occurred which, with the giving of notice or lapse of time, or both, would constitute a default by such Donor or, to the knowledge of such Donor, any other party to any of the contracts. Except as shown in Schedule 3.4, the rights and interests of such Donor in the contracts which constitute Assumed Liabilities and Contracts may be assigned to the Recipient without the consent of any other person and at the Closing the Recipient will acquire all such rights and interests.

**3.10** Intellectual Property. Each of Sassafras and Chester have the right to use all of their respective intellectual property, tradenames, service marks, copyrights, website and website domain names used by such Donor in the operation of its Mission, or to which such Donor is otherwise a party (collectively, "Intellectual Property"). Upon the consummation of the transactions contemplated hereby and compliance with applicable laws as to the assignment of such Intellectual Property, the Recipient will have the sole and exclusive right to own and use the Intellectual Property. No claims have been asserted and no claims are pending nor, to such Donor's knowledge, threatened by any Person, as to the use of any such Intellectual Property or challenging or questioning the validity or effectiveness of any state or federal registration of the Intellectual Property. To each Donor's respective knowledge, such Donor's use of its Intellectual Property, and the Recipient's continued use of its Intellectual Property following the Closing in the same manner as heretofore used by such Donor, does not and will not infringe on the rights of or require the consent of any Person.

**3.11** Litigation; Judgments. (i) Sassafras represents that to the best of its reasonable knowledge after due inquiry, there is no action, proceeding or investigation pending or threatened against or relating to the Sassafras Assets, Assumed Liabilities and Contracts or the Mission, and (ii) Chester represents that to the best of its reasonable knowledge after due inquiry, there is no action, proceeding or investigation pending or threatened against or relating to the Chester Assets, Assumed Liabilities and Contracts or the Mission. Each Donor further represents that there is no action or proceeding pending or, to the reasonable knowledge of such Donor after due inquiry, threatened before any court, tribunal or governmental body seeking to restrain or prohibit or to obtain damages or other relief in connection with the consummation of the transactions contemplated by this Agreement, or such Donor's ability to consummate the transactions contemplated by this Agreement and the Donor's Transaction Documents to which such Donor is a party. Neither Sassafras nor Chester, respectively, are subject to any judgment, order or decree, or entered in or become subject to any lawsuit or proceeding relating to the Donated Assets or the operation of such Donor's Mission.

**3.12** Environmental Compliance. (i) Sassafras represents that to its knowledge no substance defined as hazardous or toxic by any applicable federal, state, or local laws, rules or regulations has been or is being discharged or spilled on, or stored, processed, or treated at any facilities owned, leased or used by Sassafras, other than as permitted under applicable law; (ii) Chester represents that to its knowledge no substance defined as hazardous or toxic by any applicable federal, state, or local laws, rules or regulations has been or is being discharged or spilled on, or stored, processed, or treated at any facilities owned, leased or used by Chester, other than as permitted under applicable law; and (iii) there currently is no pending or threatened claim relating to either Donor's improper use, handling, storage, discharge, or

disposal of any such hazardous or toxic substance, or with causing or permitting any pollution of any ground water aquifer, surface waters, or other lakes, streams, rivers or bodies of water.

**3.13** Payment of Wind Down Liabilities. Each of Sassafras and Chester agree that they shall use their reasonable best efforts to ensure that their respective bank accounts, money market accounts, cash balances and other monies as of the Closing Date shall be sufficient to pay for their own Wind Down Liabilities (as defined in Section 2.2) plus the items described in subsections (*i*) through (*iv*) of Section 2.2. If, prior to the Closing Date, either Sassafras or Chester becomes aware it is unlikely that their assets as of the Closing Date will be sufficient to pay for their own Wind Down Liabilities and the additional costs described in the preceding sentence, such party shall promptly notify the other parties to this Agreement.

**3.14** Definition of Knowledge. For purposes of the representations and warranties of each Donor in this Article III, the "knowledge" of Donor shall mean the actual knowledge of the following officers, without independent investigation: (a) for Sassafras, Executive Director Kim Righi, and (b) for Chester, Executive Director Anna Wolgast.

## ARTICLE IV

## REPRESENTATIONS AND WARRANTIES OF THE RECIPIENT

In order to induce the Donors to enter into this Agreement and consummate the transactions contemplated hereby, the Recipient represents and warrants to Donors as follows:

**4.1** Corporate Power and Authority; Due Authorization. The Recipient represents that it is a non-profit corporation duly organized, validly existing and in good standing under the laws of the State of Maryland with current 501(c)(3) status under the Code. The Recipient represents that it has all necessary corporate power and authority to own, lease, and operate its properties and conduct the Mission as it is currently being conducted. The Recipient has full corporate power and authority to execute and deliver this Agreement. Prior to the Closing, the Board of Directors of the Recipient shall have duly approved and authorized the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby, and no other corporate proceedings on the part of the Recipient are necessary to approve and authorize the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby. Assuming that this Agreement and each of the Recipient's Transaction Documents (as defined below) constitutes a valid and binding agreement of Donor, this Agreement and each of the Recipient's Transaction Documents constitutes, or will constitute when executed and delivered, a valid and binding agreement of the Recipient, enforceable against the Recipient in accordance with its terms, subject to laws of general application in effect affecting creditors' rights and subject to the exercise of judicial discretion in accordance with general equitable principles.

**4.2** No Conflict; Consent. The execution and delivery by the Recipient of this Agreement, the Recipient's Transaction Documents and the consummation by the Recipient of the transactions contemplated hereby and thereby do not and will not (a) require the consent, approval or action of, or any filing or notice to, any Person; (b) violate the terms of any

instrument, document or agreement to which the Recipient is a party, or by which the Recipient or the property of the Recipient is bound, or be in conflict with, result in a breach of or constitute (upon the giving of notice or lapse of time, or both) a default under any such instrument, document or agreement; (c) violate the Recipient's Certificate of Incorporation; or (d) violate any order, writ, injunction, decree, judgment, ruling, law or regulation of any federal, state, county, municipal, or foreign court or governmental authority applicable to the Recipient, or the business or assets of the Recipient, and relating to the transactions contemplated herein.

**4.3** Compliance with Laws. Recipient is in material compliance with all applicable federal, state, local or foreign or other laws, regulations and/or orders, and/or all other applicable requirements of any governmental, regulatory or administrative agency or authority or court or other tribunal (collectively, "Governmental Authority") relating to Recipient (including, but not limited to, any law, regulation, order or requirement relating to state or local sales and use taxes, securities, properties, business, products, advertising, sales or employment practices, state or federal franchise or business opportunity laws, terms and conditions of employment, wages and hours, safety, occupational safety, health or welfare conditions relating to premises occupied, environmental protection, or civil rights); and Recipient is not now charged with, and to the knowledge of Recipient, Recipient is not now under investigation with respect to any possible violation of any applicable law, regulation, order or requirement relating to any of the foregoing in connection with Recipient.

**4.4** Licenses and Permits. To the best of its knowledge, Recipient holds and is in compliance with all licenses, permits, approvals and authorizations necessary or required. Recipient has not received written notice of, nor does Recipient have any knowledge of, any violations in respect of any such licenses, permits, approvals or authorizations. No proceeding is pending or, to the knowledge of Recipient, is threatened, which seeks revocation or limitation of any such licenses, permits, concessions, grants, franchises, approvals or authorizations.

**4.5** Tax Returns. Recipient has correctly and timely filed all tax returns or other tax filings required by law to be filed on or before the date of this Agreement, or has obtained valid extensions to the applicable filing deadlines, and will timely file all tax returns or other tax filings required by law to be filed on or prior to the Closing Date. Recipient has not received a claim of taxes due or notice of any such claims from any tax authority with respect to Recipient. There are no pending or, to Recipient's knowledge, threatened audits, investigations or claims by any tax authority for or relating to any liability in respect of any taxes.

**4.6** Litigation; Judgments. There is no action, proceeding or investigation pending or, to Recipient's knowledge, threatened against Recipient relating to the Recipient's Mission, nor is there any action or proceeding pending or, to the knowledge of Recipient, threatened before any court, tribunal or governmental body seeking to restrain or prohibit or to obtain damages or other relief in connection with the consummation of the transactions contemplated by this Agreement, or Recipient's ability to consummate the transactions contemplated by this Agreement and the Recipient's Transaction Documents to which Recipient is a party. Recipient is not subject to any judgment, order or decree, or entered in or become subject to

any lawsuit or proceeding relating to the Recipient's Mission, which would have a material adverse effect on the Mission of either party.

**4.7** Environmental Compliance. To Recipient's knowledge, no substance defined as hazardous or toxic by any applicable federal, state, or local laws, rules or regulations has been or is being discharged or spilled on, or stored, processed, or treated at any facilities owned, leased or used by the Recipient, other than as permitted under applicable law. There currently is no pending or threatened claim relating to Recipient's improper use, handling, storage, discharge, or disposal of any such hazardous or toxic substance, or with causing or permitting any pollution of any ground water aquifer, surface waters, or other lakes, streams, rivers or bodies of water.

**4.8** Financial Capacity. Recipient has as of the date hereof, and at the Closing will have the resources and capabilities (financial or otherwise) to perform its obligations under this Agreement and Recipient's Transaction Documents, and has not incurred any obligation, commitment, restriction or liability of any kind, which would impair or adversely affect such resources and capabilities. After giving effect to this Agreement, Recipient will be solvent as of the Closing Date, assuming both (i) the satisfaction of the conditions precedent to Recipient's obligations to effect this agreement and (ii) the accuracy of the representations and warranties set out in this Article IV.

**4.9** Definition of Knowledge. For purposes of the representations and warranties of Recipient in this Article IV, the "knowledge" of Recipient shall mean the actual knowledge of the following officer, without independent investigation: Jeff Horstman, Executive Director.

## ARTICLE V

## CONDITIONS TO OBLIGATIONS OF THE RECIPIENT TO CLOSE

Each and every obligation of the Recipient under this Agreement shall be subject to the fulfillment, on or prior to the Closing, of each of the following conditions unless and to the extent any such condition is expressly waived in writing by the Recipient:

**5.1** Representations and Warranties True at Closing. The respective representations and warranties made by Sassafras and Chester pursuant to this Agreement shall be true and correct in all material respects on and as of the Closing Date with the same effect as though such representations and warranties had been made or given on and as of the Closing Date.

**5.2** Obligations Performed. Each of Sassafras and Chester shall have performed and complied in all material respects with all agreements, conditions and obligations required by this Agreement to be performed or complied with by them prior to or at the Closing.

**5.3** Employee and Independent Contractor Matters. Prior to the Closing, each of Sassafras and Chester shall ensure payment of all compensation (including accrued vacation for any employees) payable to their respective employees for the period through the Closing Date and shall discharge or retain all liabilities and obligations, including without limitation

any and all liabilities and obligations relating to the withholding of federal and/or state income taxes, Federal Insurance Contributions Act (FICA) taxes and/or any and all other payroll deductions, terminations or severance obligations, all with respect to such employees.

**5.4** Closing Deliveries of Donor. Each of Sassafras and Chester must deliver to Recipient each of the following, together with any additional items which Recipient may reasonably request to effect the transactions contemplated herein (collectively, "Donor's Transaction Documents"):

(a) good title to and possession of the Sassafras Assets and the Chester Assets, respectively (i.e. all of the Donated Assets), including delivery of a duly executed deed to any real property;

(b) a certified copy of the corporate resolutions of the Board of Directors of such Donor authorizing the transactions contemplated herein and the execution, delivery and performance of this Agreement and the Donor's Transaction Documents by Donor;

(c) the Transfer Agreement in the form of **Exhibit 5.4**;

(d) Evidence that such Donor has no outstanding debt as of the Closing Date, which evidence may include a Release or similar agreement from each person or party who has loaned money to such Donor and who has agreed to forgive their loan;

(e) Each of Sassafras and Chester shall have prepared documents sufficient to wind down its own affairs and dissolve; shall have taken all other steps necessary to wind down and dissolve (including publishing all necessary notices), and shall have instructed attorneys to file such wind down and dissolution documents on the first business day following the Closing Date; and

(f) Prior to closing, any other documents or agreements contemplated hereby and/or reasonably necessary or appropriate to consummate the transactions contemplated hereby.

**5.5** Consents and Approvals. All material licenses, permits, consents, approvals, authorizations, qualifications and orders of governmental or regulatory bodies which are (a) necessary to enable the Recipient to conduct the Mission from and after the Closing substantially in the same manner as the Mission is being conducted as of the date hereof shall have been obtained and be in full force and effect, including licenses, permits consents, approvals, authorizations, qualifications and orders of governmental or regulatory bodies held in the name or on behalf of such Donor but under which the Recipient may legally continue to conduct such business or (b) necessary for the consummation of the transactions contemplated hereby, shall have been obtained. Consents by the other parties to each contract constituting part of the Donated Assets to the assignment to and assumption thereof by the Recipient shall have been obtained.

**5.6** Trade Names. Each of Sassafras and Chester shall have taken such actions as may be necessary to enable Recipient to conduct the Mission after the Closing under all trade names used by such Donor in connection therewith prior to the Closing.

**5.7** Public Announcements. Donors shall consult with Recipient regarding the content of any Press Releases, and will mutually agree on the content and timing thereof. Each of the Donors and the Recipient agree that such party's consent to any press release and the contents thereof shall not be unreasonably withheld or delayed.

## ARTICLE VI

## CONDITIONS TO OBLIGATIONS OF THE DONORS TO CLOSE

Each and every obligation of Sassafras and Chester, respectively, under this Agreement to be performed on or prior to the Closing, shall be subject to the fulfillment, on or prior to the Closing, of each of the following conditions unless and to the extent any such condition is specifically waived in writing by such Donors:

**6.1** Representations and Warranties True at Closing. The representations and warranties made by the Recipient in or pursuant to this Agreement or given on their behalf hereunder shall be true and correct in all material respects, on and as of the Closing Date with the same effect as though such representations and warranties had been made or given on and as of the Closing Date.

**6.2** Obligations Performed. The Recipient shall have performed and complied in all material respects with all agreements, conditions and obligations required by this Agreement to be performed or complied with by it prior to or at the Closing.

**6.3** Employment and Independent Contractor Matters. Prior to Closing, the Recipient shall have offered to hire the current employees of Sassafras and Chester on an "at will" basis, on substantially the same terms and conditions as such employees are currently working for Sassafras or Chester. Further, the Recipient shall have entered into an agreement to hire the current independent contractor(s) of Sassafras and Chester on substantially the same terms and conditions as such independent contractor(s) are currently being retained.

**6.4** Closing Deliveries of Recipient. The Recipient shall have delivered to the Donors each of the following, together with any additional items which the Donors may reasonably request to effect the transactions contemplated herein (collectively, "Recipient's Transaction Documents"):

(a) A certified copy of the corporate resolutions of the Board of Directors of the Recipient authorizing the transactions contemplated herein and the execution, delivery and performance of this Agreement and the Recipient's Transaction Documents by the Recipient;

(b) the Transfer Agreement; and

(c) Prior to closing, any other documents or agreements contemplated hereby and/or reasonably necessary or appropriate to consummate the transactions contemplated hereby.

**6.5** Public Announcements. Recipient shall consult with Donors regarding the content of any Press Releases, and will mutually agree on the content and timing thereof. Each of the Donors and the Recipient agree that such party's consent to any press release and the contents thereof shall not be unreasonably withheld or delayed.

## ARTICLE VII

## MISCELLANEOUS PROVISIONS

**7.1** Severability. If any provision of this Agreement is prohibited by the laws of any jurisdiction as those laws apply to this Agreement, that provision shall be ineffective to the extent of such prohibition and/or shall be modified to conform with such laws, without invalidating the remaining provisions hereto.

**7.2** Modification. This Agreement may not be changed or modified except in writing specifically referring to this Agreement and signed by each of the parties hereto.

**7.3** Assignment, Survival and Binding Agreement. This Agreement and the Transaction Documents may not be assigned by either party without the prior written consent of the other parties. The terms and conditions hereof shall survive the Closing as provided herein and shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, personal representatives, successors and assigns.

**7.4** Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

**7.5** Notices. All notices, requests, demands, claims or other communications hereunder will be in writing and shall be personally delivered, sent by electronic mail, sent by a recognized overnight delivery service which guarantees next day delivery ("Overnight Delivery") or mailed by registered or certified mail, return receipt requested, postage prepaid and addressed to the intended recipient as set forth below:

If to Sassafras:
7479 Augustine Herman Hwy
Georgetown, Maryland 21930
Attention: Kim Righi

If to Chester:
400 South Cross Street; Suite 2
Chestertown, Maryland 21620
Attention: Isabel Hardesty

If to Midshore:
On or before September 29, 2017
24 North Harrison Street
Easton, Maryland 21601
Attention: Jeff Horstman

On or after September 30, 2017

114 S. Washington Street
Easton, Maryland 21601
Attention: Jeff Horstman

or at such other address as any party hereto notifies the other parties hereof in writing. The parties hereto agree that notices or other communications that are given in accordance herewith (i) by personal delivery or electronic mail, will be deemed effective on the day sent or on the first business day thereafter if not sent on a business day, (ii) by Overnight Delivery, will be deemed effective on the first business day immediately following the date delivered, and (iii) by U.S. mail, will be effective five (5) business days immediately following the date sent. For purposes of this Agreement, a "business day" is a day on which Recipient is open for business and shall not include a Saturday or Sunday or legal holiday. Notwithstanding anything to the contrary in this Agreement, no action shall be required of the parties hereto except on a business day and in the event an action is required on a day which is not a business day, such action shall be required to be performed on the next succeeding day which is a business day.

**7.6** Entire Agreement, No Third-Party Beneficiaries. This Agreement, together with the Exhibits and Schedules attached hereto, constitutes the entire agreement and supersedes any and all other prior agreements and undertakings, both written and oral, among the parties, or any of them, with respect to the subject matter hereof and, except as otherwise expressly provided herein, is not intended to confer upon any Person other than the Donors and the Recipient or their respective affiliates, any rights or remedies hereunder.

**7.7** Further Assurances. The parties to this Agreement agree to execute and deliver, both before and after the Closing, any additional information, documents or agreements contemplated hereby and/or necessary or appropriate to effect and consummate the transactions contemplated hereby. Donors agree to provide to the Recipient, both before and after the Closing, such information as the Recipient may reasonably request in order to consummate the transactions contemplated hereby and to effect an orderly transition of the Mission following Closing.

**7.8** Governing Law. THIS AGREEMENT SHALL BE GOVERNED BY, CONSTRUED AND ENFORCED UNDER AND IN ACCORDANCE WITH THE LAWS OF THE STATE OF MARYLAND, WITHOUT REGARD TO THE PRINCIPLES THEREOF RELATING TO CONFLICT OF LAWS.

**7.9** Pronouns. All personal pronouns in this Agreement, whether used in the masculine, feminine or neuter gender shall include all other genders, and the singular shall include the plural and the plural shall include the singular.

[Signatures on next page]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

**DONORS:**

**SASSAFRAS RIVER ASSOCIATION, INC.**

By: Susan Warriner
Name: Susan Warriner
Title: President

**CHESTER RIVER ASSOCIATION, INC.**

By: _____
Name: Brennan Starkey
Title: President

**RECIPIENT:**

**MIDSHORE RIVERKEEPER CONSERVANCY, INC.**

By: _____
Name: John Kelly
Title: Chair

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

**DONORS:**

**SASSAFRAS RIVER ASSOCIATION, INC.**

By: _____
Name: Susan Warriner
Title: President

**CHESTER RIVER ASSOCIATION, INC.**

By: Brennan Starkey
Name: Brennan Starkey
Title: President

**RECIPIENT:**

**MIDSHORE RIVERKEEPER CONSERVANCY, INC.**

By: _____
Name: John Kelly
Title: Chair

*[Signature Page to Agreement]*

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

**DONORS:**

**SASSAFRAS RIVER ASSOCIATION, INC.**

By: _____
Name: Susan Warriner
Title: President

**CHESTER RIVER ASSOCIATION, INC.**

By: _____
Name: Brennan Starkey
Title: President

**RECIPIENT:**

**MIDSHORE RIVERKEEPER CONSERVANCY, INC.**

By: John Kelly
Name: John Kelly
Title: Chair

Attachment 4

# TRANSFER AGREEMENT

**THIS TRANSFER AGREEMENT** (this "Transfer Agreement") is made and entered into as of December 29, 2017 (the "Closing"), by and between the Sassafras River Association, Inc., a Maryland non-profit corporation ("Sassafras" or "Donor") and ShoreRivers, Inc. (f/k/a Midshore Riverkeeper Conservancy, Inc.), a Maryland non-profit corporation ("ShoreRivers" or "Recipient").

## RECITALS

WHEREAS, Sassafras and ShoreRivers, together with the Chester River Association, Inc., a Maryland non-profit corporation that has the same Mission, have entered into that certain agreement dated as of August 31, 2017 ("Agreement"), pursuant to which Sassafras agreed to donate to Midshore certain assets described in more detail in the Agreement (the "Sassafras Assets"); and

WHEREAS, pursuant to the Agreement, Sassafras and ShoreRivers now seek to implement the transfer and assignment of the Sassafras Assets from Sassafras to ShoreRivers in accordance with, and subject to, the terms and conditions set forth in the Agreement.

**NOW, THEREFORE**, in consideration of the premises set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto, intending to be legally bound, covenant and agree as follows:

1. Transfer; Acceptance of Transfer. As of the Closing, Donor hereby donates, assigns, transfers, conveys and delivers to Recipient and Recipient hereby accepts from Donor all of Donor's rights, title and interest in and to all of the Sassafras Assets, on the terms and conditions set forth in the Agreement.

2. Assumption of Liabilities. As of and from and after the Closing, Recipient hereby assumes, becomes responsible for and shall pay and perform, all of the Assumed Liabilities and Contracts of Sassafras described on Schedule 2.2 of the Agreement (the "Assumed Sassafras Liabilities"). Recipient does not assume, undertake, accept or agree to be bound by any liability of Sassafras other than the Assumed Sassafras Liabilities.

3. Further Assurances. Each of Recipient and Donor hereby covenants and agrees that, upon the request of the other party, whether before or after the Closing, such party shall do, execute, acknowledge and deliver, or cause to be done, executed, acknowledged and delivered, any and all instruments and documents and to take any and all actions reasonably necessary and appropriate to consummate the transfer and donation of the Sassafras Assets to Recipient, and to complete the transfer and donation of the Sassafras Assets to Recipient in such a manner that the donation qualifies for treatment as a tax deduction under applicable federal law.

4. Notices. Any notice or demand which by any provision of this Transfer Agreement is required or permitted to be given or served by one party to or on any other party shall be given to the addresses and in the manner provided in the Agreement.

5. Successors and Assigns. This Transfer Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective permitted successors and assigns.

6. Governing Law. This Agreement shall be construed and enforced in accordance with, and all questions concerning the construction, validity, interpretation and performance of this Agreement shall be governed by, the internal laws of the State of Maryland, without giving effect to provisions thereof regarding conflict of laws.

7. Counterparts. This Transfer Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original and all of which taken together shall constitute but one and the same instrument. Faxed, scanned or photocopied signatures shall be deemed equivalent to original signatures. No party hereto shall raise the use of electronic transmission to deliver a signature or the fact that any signature was transmitted or communicated through the use of electronic transmission as a defense to the formation or enforceability of a contract and each such party forever waives any such defense.

8. Amendments. No amendment, waiver, modification, termination or cancellation of this Transfer Agreement shall be effective unless made in writing and signed by each of the parties hereto.

9. Severability. Wherever possible, each provision of this Transfer Agreement shall be interpreted in such a manner as to be effective and valid under applicable law, but if any provision of this Transfer Agreement shall be prohibited by or invalid under such law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Transfer Agreement.

10. Agreement. Nothing herein shall be deemed to modify or diminish the representations, warranties, covenants and obligations of the parties hereto under the Agreement. In the event of any conflict between the terms and conditions of this Transfer Agreement and the terms and conditions of the Agreement, the Agreement shall govern.

*[The remainder of this page has been intentionally left blank.]*

**IN WITNESS WHEREOF,** ShoreRivers and Sassafras have executed and delivered this Transfer Agreement as of the day and year first above written.

**DONOR:**

**SASSAFRAS RIVER ASSOCIATION, INC.**

By: Susan Warriner
Name: Susan Warriner
Title: President

**RECIPIENT:**

**SHORERIVERS, INC.**

By: Joe Kelly
Name: John Kelly
Title: Chair

# TRANSFER AGREEMENT

**THIS TRANSFER AGREEMENT** (this "Transfer Agreement") is made and entered into as of December 29, 2017 (the "Closing"), by and between the Chester River Association, Inc., a Maryland non-profit corporation ("Chester" or "Donor") and ShoreRivers, Inc. (f/k/a Midshore Riverkeeper Conservancy, Inc.), a Maryland non-profit corporation ("ShoreRivers" or "Recipient").

## RECITALS

WHEREAS, Chester and ShoreRivers, together with the Sassafras River Association, Inc., a Maryland non-profit corporation that has the same Mission, have entered into that certain agreement dated as of August 31, 2017 ("Agreement"), pursuant to which Chester agreed to donate to Midshore certain assets described in more detail in the Agreement (the "Chester Assets"); and

WHEREAS, pursuant to the Agreement, Chester and ShoreRivers now seek to implement the transfer and assignment of the Chester Assets from Chester to ShoreRivers in accordance with, and subject to, the terms and conditions set forth in the Agreement.

**NOW, THEREFORE**, in consideration of the premises set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto, intending to be legally bound, covenant and agree as follows:

1. Transfer; Acceptance of Transfer. As of the Closing, Donor hereby donates, assigns, transfers, conveys and delivers to Recipient and Recipient hereby accepts from Donor all of Donor's rights, title and interest in and to all of the Chester Assets, on the terms and conditions set forth in the Agreement.

2. Assumption of Liabilities. As of and from and after the Closing, Recipient hereby assumes, becomes responsible for and shall pay and perform, all of the Assumed Liabilities and Contracts of Chester described on Schedule 2.2 of the Agreement (the "Assumed Chester Liabilities"). Recipient does not assume, undertake, accept or agree to be bound by any liability of Chester other than the Assumed Chester Liabilities.

3. Further Assurances. Each of Recipient and Donor hereby covenants and agrees that, upon the request of the other party, whether before or after the Closing, such party shall do, execute, acknowledge and deliver, or cause to be done, executed, acknowledged and delivered, any and all instruments and documents and to take any and all actions reasonably necessary and appropriate to consummate the transfer and donation of the Chester Assets to Recipient, and to complete the transfer and donation of the Chester Assets to Recipient in such a manner that the donation qualifies for treatment as a tax deduction under applicable federal law.

4. Notices. Any notice or demand which by any provision of this Transfer Agreement is required or permitted to be given or served by one party to or on any other party shall be given to the addresses and in the manner provided in the Agreement.

5. Successors and Assigns. This Transfer Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their respective permitted successors and assigns.

6. Governing Law. This Agreement shall be construed and enforced in accordance with, and all questions concerning the construction, validity, interpretation and performance of this Agreement shall be governed by, the internal laws of the State of Maryland, without giving effect to provisions thereof regarding conflict of laws.

7. Counterparts. This Transfer Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original and all of which taken together shall constitute but one and the same instrument. Faxed, scanned or photocopied signatures shall be deemed equivalent to original signatures. No party hereto shall raise the use of electronic transmission to deliver a signature or the fact that any signature was transmitted or communicated through the use of electronic transmission as a defense to the formation or enforceability of a contract and each such party forever waives any such defense.

8. Amendments. No amendment, waiver, modification, termination or cancellation of this Transfer Agreement shall be effective unless made in writing and signed by each of the parties hereto.

9. Severability. Wherever possible, each provision of this Transfer Agreement shall be interpreted in such a manner as to be effective and valid under applicable law, but if any provision of this Transfer Agreement shall be prohibited by or invalid under such law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Transfer Agreement.

10. Agreement. Nothing herein shall be deemed to modify or diminish the representations, warranties, covenants and obligations of the parties hereto under the Agreement. In the event of any conflict between the terms and conditions of this Transfer Agreement and the terms and conditions of the Agreement, the Agreement shall govern.

*[The remainder of this page has been intentionally left blank.]*

**IN WITNESS WHEREOF,** ShoreRivers and Chester have executed and delivered this Transfer Agreement as of the day and year first above written.

**DONOR:**

**CHESTER RIVER ASSOCIATION, INC.**

By: Brennan Starkey
Name: Brennan Starkey
Title: President

**RECIPIENT:**

**SHORERIVERS, INC.**

By: Joe Kelly
Name: John Kelly
Title: ~~Chair~~

Attachment 5

# CORPORATE CHARTER APPROVAL SHEET

** EXPEDITED SERVICE ** ** KEEP WITH DOCUMENT **

DOCUMENT CODE 09A BUSINESS CODE 04

D-12681938

Close _____ Stock _____ Nonstock X

A _____ Religious _____

Merging (Transferor) _____

Surviving (Transferee) _____

1000362010685941

ID # D12681938 ACK # 1000362010685941
PAGES 0002
SHORERIVERS, INC

10/11/2017 AT 03 00 P WO # 0004806457

New Name Shore Rivers, Inc.

FEES REMITTED

| | | |
|---|---|---|
| | Base Fee | 100 |
| | Org & Cap Fee | |
| | Expedite Fee | 70 |
| | Penalty | |
| | State Recordation Tax | |
| | State Transfer Tax | |
| 1 | Certified Copies | |
| | Copy Fee | 22 |
| | Certificates | |
| | Certificate of Status Fee | |
| | Personal Property Filings | |
| | Mail Processing Fee | |
| | Other | |
| | TOTAL FEES | 192 |

| | |
|---|---|
| X | Change of Name |
| | Change of Principal Office |
| | Change of Resident Agent |
| | Change of Resident Agent Address |
| | Resignation of Resident Agent |
| | Designation of Resident Agent and Resident Agent's Address |
| | Change of Business Code |
| | Adoption of Assumed Name |
| | Other Change(s) |

Credit Card _____ Check 7 Cash _____

1 Documents on 2 Checks

Approved By 13

Keyed By _____

COMMENT(S)

Code _____

Attention _____

Mail Names and Address
Duane Morris LLP
111 S. Calvert St Ste 2000
Baltimore, MD 21202

CUST ID 0003589880
WORK ORDER 0004806457
DATE 10-11-2017 03 00 PM
AMT PAID $192 00

MIDSHORE RIVERKEEPER CONSERVANCY, INC.

ARTICLES OF AMENDMENT

Midshore Riverkeeper Conservancy, Inc , a Maryland non-profit corporation, having its principal office in Talbot County, Maryland (the "Corporation") hereby certifies to the State Department of Assessments and Taxation ("SDAT") that:

FIRST: The charter of the Corporation is hereby amended by deleting Article SECOND and substituting in lieu thereof the following:

"SECOND: The name of the corporation (the "Corporation") is:

ShoreRivers, Inc." JP

SECOND. The amendment to the charter of the Corporation set forth in these Articles of Amendment (the "Articles of Amendment") has been duly advised by the Board of Directors by written consent, in accordance with Section 2-408 of the Maryland General Corporation Law. The Corporation is not authorized to issue capital stock and its members are non-voting members.

THIRD: The effective time of the amendment to the charter of the Corporation set forth in these Articles of Amendment shall be upon the acceptance of these Articles of Amendment by the SDAT.

IN WITNESS WHEREOF, these Articles of Amendment were signed and acknowledged this 29 day of September, 2017 in the name and on behalf of the Corporation by its Chairman and attested to by its [Executive Director], and its Chairman acknowledges this document to be the corporate act of the Corporation and states under the penalties of perjury that the matters and facts set forth herein with respect to approval are true in all materials respects to the best of his knowledge, information, and belief.

ATTEST:

By: Jeffrey H. Horstman
Name: Jeffrey H. Horstman
Title: [Executive Director]

MIDSHORE RIVERKEEPER CONSERVANCY, INC.

By: John Kelly
Name: John Kelly
Title: Chairman

CUST ID.0003589880
WORK ORDER 0004806457
DATE.10-11-2017 03·00 PM
AMT PAID.$192 00

DM3\4825564 1

Attachment 6

State of Maryland
**Department of Assessments and Taxation**

Taxpayer Services

**Larry Hogan**
*Governor*

**Michael L. Higgs**
*Director*

Date: 10/11/2017

DUANE MORRIS, LLP
SUITE 2000
111 S CALVERT ST
BALTIMORE MD 21202-6174

THIS LETTER IS TO CONFIRM ACCEPTANCE OF THE FOLLOWING FILING:

| | |
|---|---|
| ENTITY NAME | : SHORERIVERS, INC. |
| DEPARTMENT ID | : D12681938 |
| TYPE OF REQUEST | : ARTICLES OF AMENDMENT / NAME CHANGE |
| DATE FILED | : 10-11-2017 |
| TIME FILED | : 03:00 PM |
| RECORDING FEE | : $100.00 |
| EXPEDITED FEE | : $70.00 |
| COPY FEE | : $22.00 |
| FILING NUMBER | : 1000362010685941 |
| CUSTOMER ID | : 0003589880 |
| WORK ORDER NUMBER | : 0004806457 |

PLEASE VERIFY THE INFORMATION CONTAINED IN THIS LETTER. NOTIFY THIS DEPARTMENT IN WRITING IF ANY INFORMATION IS INCORRECT. INCLUDE THE CUSTOMER ID AND THE WORK ORDER NUMBER ON ANY INQUIRIES.

Charter Division
Baltimore Metro Area (410) 767-1350
Outside Metro Area (888) 246-5941

0010858675

*301 West Preston Street-Room 801-Baltimore, Maryland 21201-2395*
*Telephone (410)767-4950 / Toll free in Maryland (888)246-5941*
*MRS (Maryland Relay Service) (800)735-2258 TT/Voice*
*Website: www.dat.maryland.gov*

| | |
|---|---|
| ENTITY TYPE: | ORDINARY BUSINESS - NON-STOCK |
| STOCK: | N |
| CLOSE: | N |
| EFFECTIVE DATE: | 10-11-2017 |
| PRINCIPAL OFFICE: | 23 NORTH HARRISON STREET<br>EASTON MD 21601 |
| RESIDENT AGENT: | TIMOTHY JUNKIN<br>23 NORTH HARRISON STREET<br>EASTON MD 21601 |

COMMENTS:
THIS AMENDMENT RECORD INDICATES THE NAME CHANGE
FROM: MIDSHORE RIVERKEEPER CONSERVANCY, INC.
TO: SHORERIVERS, INC.

Attachment 7

# *STATE OF MARYLAND*
# *Department of Assessments and Taxation*

I, MICHAEL L. HIGGS OF THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION OF THE STATE OF MARYLAND, DO HEREBY CERTIFY THAT THE DEPARTMENT, BY LAWS OF THE STATE, IS THE CUSTODIAN OF THE RECORDS OF THIS STATE RELATING TO THE FORFEITURE OR SUSPENSION OF CORPORATIONS, OR THE RIGHTS OF CORPORATIONS TO TRANSACT BUSINESS IN THIS STATE, AND THAT I AM THE PROPER OFFICER TO EXECUTE THIS CERTIFICATE.

I FURTHER CERTIFY THAT SHORERIVERS, INC. (D12681938), INCORPORATED AUGUST 20, 2008, IS A CORPORATION DULY INCORPORATED AND EXISTING UNDER AND BY VIRTUE OF THE LAWS OF MARYLAND AND THE CORPORATION HAS FILED ALL ANNUAL REPORTS REQUIRED, HAS NO OUTSTANDING LATE FILING PENALTIES ON THOSE REPORTS, AND HAS A RESIDENT AGENT. THEREFORE, THE CORPORATION IS AT THE TIME OF THIS CERTIFICATE IN GOOD STANDING WITH THIS DEPARTMENT AND DULY AUTHORIZED TO EXERCISE ALL THE POWERS RECITED IN ITS CHARTER OR CERTIFICATE OF INCORPORATION, AND TO TRANSACT BUSINESS IN MARYLAND.

IN WITNESS WHEREOF, I HAVE HEREUNTO SUBSCRIBED MY SIGNATURE AND AFFIXED THE SEAL OF THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION OF MARYLAND AT BALTIMORE ON THIS FEBRUARY 19, 2020.

Michael L. Higgs
Director

*301 West Preston Street, Baltimore, Maryland 21201*
*Telephone Baltimore Metro (410) 767-1340 / Outside Baltimore Metro (888) 246-5941*
*MRS (Maryland Relay Service) (800) 735-2258 TT/Voice*

Online Certificate Authentication Code: suYQmNtWzEqYVbywtgwEOg
To verify the Authentication Code, visit http://dat.maryland.gov/verify

# DECLARATION OF MICHAEL HELFRICH

I, Michael Helfrich, declare as follows:

1. I reside in the City of York, Pennsylvania, where I was born and near where I grew up in the York suburb of Shiloh in West Manchester Township. I have lived in the City of York since 2001. I am a member of the Lower Susquehanna Riverkeeper Association.
2. I am the Mayor of York, Pennsylvania, and was elected to this position on Tuesday, November 7th, 2017. I also served as a member of York City Council from January 2012 through January 2018. As a York City Council member, I deliberated and voted on ordinances that benefited the public good; helped establish and adopt the annual budget; generally oversaw the City of York and its business; and addressed citizen concerns and complaints.
3. Prior to being elected Mayor of York, I served as the Lower Susquehanna Riverkeeper and Executive Director of Stewards of the Lower Susquehanna (now the Lower Susquehanna Riverkeeper Association) from 2005 to 2017. I served as the President of the Codorus Creek Improvement Partnership in York, Pennsylvania from 2002 until 2005. I have also served on the Board of Waterkeepers Chesapeake and the Watershed Alliance of York County.

4. I have worked in my various roles to address the water quality issues associated with the Conowingo Dam since 2006, when the Patuxent, West Rhode, Severn and South Riverkeepers brought the problem to the attention of the Lower Susquehanna Riverkeeper. At that time, the Lower Susquehanna Riverkeeper convened a meeting in Port Deposit with the Susquehanna River Basin Commission ("SRBC"), United States Geological Survey ("USGS"), and other Riverkeepers. The USGS was concerned about the filling of the Conowingo Reservoir with sediment, but regional lawmakers had decided not to undertake any significant action to address the looming problem. I began compiling studies demonstrating that the Conowingo Reservoir was rapidly losing its capacity to trap sediment and nutrients and posed an imminent threat to the Chesapeake.
5. As a Riverkeeper, I met with the SRBC and other entities to advocate for action to increase the trapping capacity of the Dam. In conjunction with SRBC, I lobbied Senator Ben Cardin to compel the Dam's owner and the responsible agencies to study the capacity of the Reservoir. I also lobbied the Environmental Protection Agency and the Chesapeake Bay Program to include a section in the Chesapeake Bay Total Maximum Daily Load ("TMDL")—Appendix T—discussing the impending loss of trapping capacity.

6. In 2009, I convened meetings to review the study designs for the FERC licensing process for the Dam. I also attended and participated in all of the scoping meetings for this process.
7. In 2011, I participated in the Lower Susquehanna River Watershed Assessment ("LSRWA"), a multi-party cooperative study that examined the loss of trapping capacity behind the Dam and various Susquehanna River flows and their associated scouring events, including the effects of these scouring events on the lower Susquehanna River and Chesapeake Bay. I attended all meetings related to the LSRWA and raised questions and commented on the draft studies. I also sat on an internal team as a non-research participant to review the draft studies.
8. I was concerned that the final LSRWA under-estimated the impacts of scour, and only modeled dredging scenarios that are nowhere near proportionate to the problem. I worked to raise these concerns with the agencies, including MDE Secretary Ben Grumbles and staff at the Maryland Department of the Environment who are responsible for the state's Clean Water Act water quality certification, as well as Exelon. I pressed them to use the certification process to address the problem of scour. I was particularly concerned by the increased accumulation of sediment and associated nutrients trapped by the Dam and Reservoir, the rapid approach of "dynamic equilibrium"—and the

inevitable time when millions of tons of trapped sediment would be scoured out and discharged by the Project all at once.

9. In 2012, I became a York City Council member. As a council member, I deliberated and voted on ordinances that benefited the public good; helped establish and adopt the annual budget; generally oversaw the City of York and its business, and addressed citizen concerns and complaints—including about the Conowingo Dam and water quality in the Bay.

10. From my time as the Lower Susquehanna Riverkeeper, a York City Council member, and now as Mayor, I know that both York County and York City have a direct connection to the health and viability of the Chesapeake Bay, and vice versa. For more than 250 years, York has been continuously connected to the Chesapeake through the seafood trade.

11. Today, York has an extensive community of fishers and crabbers that are directly connected to the health and success of aquatic life in the Bay. York also has more than a dozen seafood businesses and restaurants that get their seafood from the Bay—oysters, striped bass, catfish, and of course, crabs. The people of York love Chesapeake crabs. Many of the City's residents also use and enjoy the Bay recreationally, and own boats that are docked there. I am particularly invested in the relicensing of the Conowingo Dam as the Mayor of York, because the City's success depends on the health of the

Bay—people ask me what I am doing about the Dam and about water quality in the Bay and surrounding waters.

12. The Dam affects me personally. I am one of the City's many residents that enjoy eating seafood. I go to a local restaurant on Thursdays to enjoy their raw Chesapeake oyster specials. I understand that wild oysters have been diminished, in part from sediment and nutrient scoured from behind the Dam. Wild oysters are more expensive now, so I eat them less often than I would like. Crabs are more expensive as well, in part due to the Dam, and I also eat crab less often than I would like to.

13. I am also a frequent fisherman and kayaker—mostly around York, but also in the Susquehanna River and the Reservoir. I also host and participate in trash and river clean-ups, including in Conowingo Creek. In 2006 or 2007, I kayaked the entire Reservoir with Susquehanna Sojourn. In 2015, I led a kayak trip from just below the Dam to the mouth of the Bay. The Dam impacts fisheries—sturgeon and shad populations have declined for example. I enjoy shad fishing down in Deer Creek by the Dam, but I haven't done it in a while—there aren't as many shad anymore because of the Dam. I also like to fish for bass in the upper Reservoir, and hike along the rocks there, but the algae blooms due in part to the Dam make these activities less enjoyable. The upper Reservoir has small pools, which collect life and create

interesting microecosystems. Having those pools full of algae doesn't allow me to see the wildlife and lessens the enjoyment of my experience. Reduced water clarity also makes it harder to fish. The last time I went to the upper Reservoir was a few years ago, but I would like to do so more in the future, and I would enjoy fishing and hiking there more without the algae. I would also enjoy shad fishing more below the Dam if the impacts from the Dam were reduced and the fisheries were closer to the original fish stock.

14. The sediment and nutrients trapped behind the Dam are a ticking time bomb. From working with the scientists at USGS, I know that another storm like Agnes—or worse—is inevitable, and I worry that such a storm will do severe and permanent damage to the waterways that I and my community rely on, including to the seafood businesses of York that I enjoy, and to the seafood I like to eat.

15. The Dam's operations harm my recreational fishing, kayaking, and hiking activities, and my ability to enjoy seafood from the Bay. FERC's issuance of a license that allows Exelon to operate the Dam for another 50 years without undertaking the cleanup measures Maryland found necessary in the Certification to assure the Dam complies with water quality standards, and without adequately considering the environmental effects, prolongs and exacerbates this harm.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Date: January 25, 2022

Michael Helfrich

# DECLARATION OF ZACK KELLEHER

I, Zack Kelleher, hereby declare as follows:

1. My name is Zack Kelleher and I am over the age of 18. I grew up on the Eastern Shore of Maryland and I currently live in Millington, Maryland.
2. I am the Sassafras Riverkeeper and a member of ShoreRivers. As the Sassafras Riverkeeper, I am also a member of Waterkeepers Chesapeake. I joined ShoreRivers about three years ago and became the Sassafras Riverkeeper about four months after that. I am also a member of other conservation organizations like Ducks Unlimited.
3. ShoreRivers focuses on protecting and restoring the water quality and ecosystems of the Chester, Sassafras, Choptank, and Miles-Wye Rivers, and educating our community about water pollution. We have about 3,500 members along Maryland's Eastern Shore.
4. As the Sassafras Riverkeeper, I organize and participate in river clean-ups, invasive species removals, submerged aquatic vegetation harvesting and replanting, water quality sampling, and bacteria monitoring. In the busiest times of year, I am out on the waters four to six times a week for these activities. I also lead community kayaking events and guided boat tours once or twice a month for six or seven months out of the year—although the pandemic has made scheduling these events more difficult.

5. I first became aware of the Conowingo Dam and its effect on water quality over 20 years ago as a kid. I saw firsthand how it harmed water quality, ecosystems, and the surrounding communities. Every time the gates were opened, even 20 years ago, you could see the sediment and debris coming downstream—and then the watermen and working families couldn't put fish, crabs, and oysters on the table. Things have only gotten worse in the last 20 years, as the Dam pushes out more sediment, nutrients, and debris with heavy rainfall.
6. As the Sassafras Riverkeeper, I have also actively participated in the relicensing process for the Dam over the last three years—drafting comment letters, participating in the watershed implementation plan process, organizing and attending town halls and other public forums, and giving presentations.
7. Whether professionally or personally, I am out on or around the waterways most days. I enjoy doing anything outdoors, particularly hunting, fishing, crabbing, kayaking, and hiking.
8. I like to hunt for waterfowl, a couple times a week during the hunting season. Waterfowl feed on submerged aquatic vegetation—the grasses and their roots. Sediments and nutrients suffocate those grasses, and when the grass beds are destroyed or unhealthy, the ducks leave or starve. I have lost

more and more hunting days every year due to habitat destruction from the Dam's discharges of sediment and nutrient pollution. The Susquehanna Flats for example are a particularly important overwintering area for waterfowl where the grasses are being diminished by sediment and nutrients from behind the Dam. I enjoy hunting less when there are fewer waterfowl.

9. I also like to fish and go crabbing a couple of times a week. The best fishing is in the lower third of the Sassafras River and the Chesapeake Bay itself, but the fishing isn't as good when the gates are opened. When that happens, the fish clear out of the area to avoid the sediment and nutrient plumes from behind the Dam. It is also more difficult, even dangerous, to go fishing during these times because of the debris floating downstream, which could damage my boat. I would prefer to fish in these areas, because the fishing is good and because they are close to me, but when the gates are opened I either can't go or I have to go somewhere else—which means more travel and more expense.

10. I also like to buy locally caught fish and crabs, but they are harder to find and more expensive now. The crabbers aren't allowed to come up the rivers, so they keep their pots by the mouth, near the Bay. When the gates open, they have to pull the pots, or risk thousands of dollars of gear. Anytime they have to pull the pots up, they are losing money so the prices for crabs go up.

Prices this year have been incredibly high, in part due to the effects of the Dam openings on supply and demand. I would like to eat more locally caught fish and crab if they were cheaper.

11. I enjoy kayaking, at least once or twice a week. I check the status of the Dam before deciding where to go kayaking, because some waterways aren't safe or just aren't worth visiting when the gates are open. Sediment and debris makes it harder to navigate the waters and harder to see fish and vegetation, and I enjoy kayaking less as a result. In August, I paddled the entire length of the Bay. The sediment plume extended far down the Bay—we paddled for several days before we were out of it.

12. I also enjoy hiking along the water, in the Sassafras Natural Resource Management Area for example, about once or twice a month. During the spring and summer I will also be out there a couple of times a week removing invasive species. Much of the debris and trash from behind the Dam often washes up on that shoreline. I enjoy hiking there less when I see trash, and I have to be careful that I or my dogs don't step on anything dangerous. I've seen medical waste and syringes with Pennsylvania addresses wash up there.

13. I love spending time outdoors, and I would like to continue doing so. I feel very fortunate to live on Maryland's Eastern Shore, which is one of the most

incredible ecological areas in the state with amazing preserves, waterways everywhere, and tremendous recreational and professional opportunities. It is terrible that I am not able to enjoy all that the Eastern Shore has to offer because of pollution and debris coming down from behind the Dam.

14. The Dam's operations diminish my enjoyment of hunting, fishing, crabbing, and hiking in and around the Sassafras River, the Lower Susquehanna River, and the Chesapeake Bay. FERC's issuance of a license that allows Exelon to operate the Dam for another 50 years without undertaking the cleanup measures Maryland has found necessary to assure the Dam complies with water quality standards, and without adequately considering the environmental effects, prolongs and exacerbates this harm.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct.

Date: January 26, 2022

Zack Kelleher

Zack Kelleher

# DECLARATION OF ELIZABETH (BETSY) NICHOLAS

I, Elizabeth Nicholas, declare as follows:

1. My name is Elizabeth Nicholas, and I am also known as Betsy Nicholas. I reside in Washington, DC and have lived here since 2008.

2. I am the Executive Director of Waterkeepers Chesapeake, Inc., (WKC), and have worked for the organization since December 1, 2012. WKC has its offices at 6930 Carroll Avenue, Suite 408, Takoma Park, MD.

3. WKC is a nonprofit organization, founded in 2012, as a coalition of independent, non-profit Waterkeepers, united around a shared goal of swimmable, fishable, drinkable waters. The original nine Waterkeepers in this region began working together in 2004 and hired a regional coordinator. In 2007, the alignment of Waterkeepers working together began to use the name "Waterkeepers Chesapeake" and in 2011, they voted to establish an independent nonprofit organization under the name of Waterkeepers Chesapeake.

4. Now, WKC includes seventeen member Waterkeepers, including: the Anacostia Riverkeeper, Assateague Coastkeeper, Baltimore Harbor Riverkeeper, Chester Riverkeeper, Choptank Riverkeeper, Gunpowder Riverkeeper, James Riverkeeper, Lower Susquehanna Riverkeeper, Middle Susquehanna Riverkeeper, Miles-Wye Riverkeeper, Patuxent Riverkeeper, Potomac Riverkeeper, Sassafras

Riverkeeper, Severn Riverkeeper, Shenandoah Riverkeeper, South, West & Rhode Riverkeeper, and Upper Potomac Riverkeeper.

5. WKC works throughout the 64,000 mile Chesapeake Bay watershed, which includes the full length of the Potomac, Susquehanna, and James Rivers, and encompasses territory in Maryland, Virginia, West Virginia, Pennsylvania, Delaware and the District of Columbia.

6. WKC's mission is to fight for clean water and a healthy environment by supporting Waterkeepers throughout the Chesapeake and Coastal Bays region as they protect their communities, rivers, and streams from pollution. By sharing resources and drawing on individual strengths, the members of WKC can strategize and work regionally to fight for safe and healthy waterways. While each of our members works to protect their local waterways and communities, WKC represents our members on matters that have state-wide, region-wide and national importance.

7. Starting back in 2011, prior to the formation of the organization of WKC, the members of WKC have been working to address water quality concerns due to operations of the Conowingo Hydroelectric Project (Conowingo Dam). Once formed as an organization, WKC has acted on behalf of its members to inform FERC, Exelon, Maryland government, other Bay states, cooperating federal

agencies, its members, the Maryland General Assembly and the public water quality issues due to the operations of Conowingo Dam.

8. In particular, WKC intervened in the FERC relicensing process, and provided numerous sets of comments through the relicensing and water quality certification process and raised concerns about the bathymetry in Conowingo Reservoir and the increased accumulation of sediment and associated nutrients trapped by the dam and reservoir.

9. WKC participated in settlement discussions with Maryland Department of the Environment (MDE) during 2018 and 2019 in an effort to resolve our administrative appeal claims. However, in 2019, MDE ended discussions with WKC.

10. MDE also engaged in private settlement negotiations with Exelon. In my role as Executive Director, I made several requests for WKC to participate but MDE did not grant our requests.

11.

12. In my role as Executive Director of WKC, I have reviewed and analyzed the findings of numerous documents and studies conducted throughout the Conowingo relicensing process. One such document was the Lower Susquehanna River Watershed Assessment (LSRWA) which was published in a final report in February of 2015. This study was conducted by the U.S. Geological

Survey, the Army Corps of Engineers and numerous other stakeholder participants, including the Lower Susquehanna Riverkeeper (LSRK), Michael Helfrich, at the time. The report sought to analyze the impacts of sediment and nutrient transport through Conowingo Dam on the Chesapeake Bay.

13. Following publication of the final LSRWA, WKC and LSRK obtained grant funding to conduct an independent analysis of the LSRWA. In my role as Executive Director of WKC, I authorized payment of $15,000 for a professional hydrological engineer to analyze the LSRWA, focusing on the modeling inputs, data analysis and resulting conclusions. The engineering consultant, Paul Frank of Flow West, prepared a report providing an assessment that the LSRWA underestimated peak flows in storm events modeled, failed to model storms that are likely to occur in the during the license period, didn't consider climate impacts, and used the wrong months to analyze impacts on submerged aquatic vegetation impacts.

14. In my role as Executive Director for WKC, I arranged meetings with MDE personnel to share the information from the independent assessment. I also raised these issues in comment letters and testimony in public hearings regarding the development of the 401 Water Quality Certification for Conowingo, comments on the final Water Quality Certification in 2018, and in the proposed settlement

between Exelon and MDE in October, 2019. The study was also included as an attachment to the comment letters filed in the FERC docket.

15. WKC regularly engages in advocacy work, in our own capacity and on behalf of our members to improve water quality and restore healthy aquatic life to the rivers, streams, creeks and Chesapeake and Coastal Bays. This work includes advocacy to ensure implementation and completion of the 2010 Chesapeake Bay Total Maximum Daily Load ("TMDL") or Chesapeake Bay Clean Up Plan. The Chesapeake Bay TMDL has set goals for restoring water quality in the Chesapeake Bay by reducing the inputs of nitrogen, phosphorus and sediment. This set of pollutants has been discharged by various sources for decades and resulted in poor water quality, impaired waterways, decimation of aquatic species such as oysters, crabs and fish, and reduced opportunity for recreational activities in the local waterways.

16. WKC also provides services to our members such as coordination, training, annual retreats, communications support, legal and legislative support, representation of members on regional and national boards, fundraising support and a variety of other services depending on the needs of each member and in line with our mission.

17. WKC relies on the Chesapeake Bay and its rivers and streams to support its water-based organizational operations, including hosting regional

retreats for our members and engaging in on-the-water activities throughout the basin, including in the Lower Susquehanna River. WKC depends on community engagement and fundraising through water-based activities and our organization is exclusively dependent on private donations. The organization's interests are harmed when we are not able to engage local communities with their waterways, where nutrient pollution and algae create poor water quality and bad smells, and where we are unable to fundraise.

18. Conowingo Dam's discharges of sediment and nutrient pollution also hurt my organization by creating navigational hazards and safety concerns for activities downstream of the dam. These discharges also harm oxygen levels in the waterways through blocking sunlight to aquatic grasses and creation of algae. These poor water quality conditions prevent WKC and its members from hosting kayaking, swimming and boating activities, harming our interests in community engagement, environmental education, and fundraising. Further, it is difficult to inspire our communities and donors to invest in water quality protection and pollution prevention when they witness waters in such a state of sedimentation and nutrient pollution.

19. In 2021, several of our members expressed interest in participating in a new event called the Bay Paddle to raise awareness and fundraise. The Bay Paddle begins immediately downstream of the Conowingo Dam in Havre-de-

Grace, Maryland and extends across eight days and 200 miles south to Virginia Beach. Our members didn't have the capacity to participate individually. Thus, WKC organized, registered and sponsored a Waterkeeper team comprised of WKC staff and WKC's members.

20. Before the event, WKC supported our members' fundraising efforts by creating fundraiser pages for the team as well for each of our participating members. WKC also sent out promotional information and fundraising requests through email and social media.

21. WKC and several of our members, including the Sassafras Riverkeeper, participated on kayaks and paddleboards. This event raised money for WKC and our participating members as well as raised awareness about recreation on our local waterways.

22. During the event, WKC provided ground support, ground transportation, food, and overnight lodging essential for our team of members to participate—as well as chase boats, which are motorized boats that follow along with the paddlers to ensure their safety in case of emergencies. However, due to the excessive sedimentation in areas below the Dam, it was too shallow for the motorized chase boats, thus leaving our paddlers at risk in those areas. The sediment interfered with three of the eight days of the Bay Paddle.

23. The event was also disrupted for a day by Hurricane Ida, by then only a tropical storm. We were concerned that wind and rain, and sediment and debris from Conowingo Dam if the floodgates were opened—would threaten the paddlers.

24. In 2022, WKC is again planning to participate in the Bay Paddle and we will now be one of the three hosting organizations and a primary beneficiary of all funds raised, in addition to the funding raised by our team and individual donors. Further, we are planning environmental education along with the event to focus on the 50th anniversary of the Clean Water Act.

25. Events such as the Bay Paddle cannot go forward where there are unsafe conditions downstream of Conowingo Dam, such as accumulation of large debris, opening of the flood gates at the dam, large amounts of algae, or excessive sediment accumulation that prevents the operation of motorized boats essential for safety and rescue. The sediment and nutrient pollution from Conowingo Dam will deters participation by making the Paddle more dangerous and less appealing. Because of the sedimentation, we will need chase boats of a smaller size, thus increasing the overall expense for WKC.

26. When we have to cancel or curtail an event such as the Bay Paddle because of unsafe conditions for paddlers due to Conowingo Dam's discharges of sediment, nutrients and debris, I am harmed both in my personal capacity, as a

participant in the event, as well as professionally in my role as Executive Director for Waterkeeper Chesapeake. Cancelling or curtailing events hurts our professional reputation, costs valuable staff time, and prevents us from raising funds at the event.

27. In my role as executive director for Waterkeepers Chesapeake, I use and enjoy the Lower Susquehanna River, many sections of the Chesapeake Bay, as well as many other rivers and streams and rivers in the Chesapeake Bay. I participate in educational and fundraising events hosted both by WKC and by our members such as group kayaking trips, trash clean ups, on-the-water fundraisers and boat trips and exploration and understanding of the waterways, themselves, for use in my advocacy work to protect water quality and aquatic species.

28. In my role as executive director for WKC, I join our members on their patrol boats to assist in water quality monitoring, view their waterways, identify pollution sources, and participate in member events. I am engaging with members on the water at least two times every month.

29. In my role as executive director of WKC, outdoor time on the water has been one of the few types of activities that WKC and our members host that can continue during Covid restrictions that ensures we can continue to engage with our colleagues, our members and the community. Kayaking trips, river clean ups, and socially-distanced boat trips continue to be one of few types of engagement

activities and fundraising events that our organizations can continue to safely conduct under the current restrictions. Protecting these events from interference by the Conowingo Dam's discharges is important to WKC's continued operation.

30. In my personal capacity, I use and enjoy the Lower Susquehanna River, many sections of the Chesapeake Bay, as well as many other rivers and streams and rivers in the Chesapeake Bay for kayaking, boating and rafting about twice a month. During warmer months, usually from April through November, I regularly kayak and white-water raft on Chesapeake waterways several times a month.

31. During the last few years of semi-seclusion due to the coronavirus, my time spent on our local waterways has been my greatest pleasure and a method of emotional recharge. These activities have included walking alongside the river, kayaking, tackling some whitewater, swimming, where it is safe to do so, and simply just enjoying a cruise on the river. I plan to continue to use and enjoy these waterways for the foreseeable future and hope to continue to do so at least twice a month, if not more often.

32. I also personally enjoy the products of a healthy river and Chesapeake Bay such as fresh local oysters, Maryland blue crabs, and Maryland Rockfish. I eat and enjoy these local foods two-three times a month and hope to be able to continue to enjoy them. I also take pleasure in supporting local small businesses

such as the oyster and crab business, local fishermen, and sustainable oyster farming.

33. The sediment and nutrient pollution from Conowingo Dam has destroyed oyster colonies and submerged aquatic vegetation that provides habitat for oysters and crabs. The destruction of aquatic habitat has decimated the populations of crabs, oysters and fish, resulting in catch limits, harvest restrictions and resulted in significant reductions in availability as well as corresponding increases in the price of these products which reduces my ability to purchase and enjoy eating these local seafood products.

34. I have also spent time in the park immediately adjacent to Conowingo Dam as well as having spent time both upstream and downstream of the dam on the Susquehanna River. In my personal capacity, I enjoy watching birds at the Conowingo park as well as sitting by the river reading a book. But these activities are far less enjoyable when witnessing trash and debris, as well as algae due to the excessive nutrient pollution from the dam.

35. I also use and enjoy the areas at the point where the Susquehanna River meets the Chesapeake Bay, through trips with Waterkeeper members on their boats, kayaking, and participating in local events at least once a month. Again, the dam's discharges of sediment and nutrients result in unsafe navigations conditions due to cloudy water and algae, which could obscure view of

navigational hazards and have resulted in such trips being cancelled at least twice every season. I fear that the cancellation of events due to these conditions will become more frequent as climate change and Exelon's failure to mitigate the impacts of the dam result in larger discharges of sediment and nutrient pollution.

36. I have seen first-hand the harm caused to downstream marinas, harbors, streams and creeks due to sediment, flood waters, debris, and garbage being discharged from the dam when the floodgates are open. This harm to our local water resources hurts my personal and professional uses of the waterways and interferes with my enjoyment of the natural beauty. Water that is filled with sediment is dark and cloudy and often the color of chocolate milk. It is difficult to see hazards such as rocks and trees, making it much less safe. All of these factors interfere with my enjoyment of time on the river and bay.

37. In my role as Executive Director of WKC, I am aware that the majority of tidal rivers, streams and creeks in Maryland have been formally identified as impaired by nutrients (phosphorus, nitrogen) and sediment, the same pollutants that discharge from Conowingo Dam. These same pollutants are also the subject of the Chesapeake Bay TMDL.

38. I am also aware that on October 30, 2019, MDE and Exelon issued a joint offer of settlement on Conowingo Dam that failed to address the water quality impacts associated with the operations of Conowingo Dam. The impacts of the

Dam's operations were clearly identified in the Water Quality Certification issued by MDE on May 11, 2018.

39. I understand that over the past century, the Northeast (including the Chesapeake Bay region) has experienced increases in the average annual temperature, amount of precipitation, and amount of extreme precipitation events, and these trends are expected to continue and strengthen in the coming years due to climate change.

40. This combination of factors only furthers the problems associated with the Dam's operations. When a large storm occurs in the area, it results in storm scour – a large load of the trapped sediment and nutrients that have accumulated in the reservoir will be, essentially, scooped-up, or scoured by the storm, and discharged downstream by Conowingo Dam.

41. The storm scour works differently through the Conowingo Dam than when the Susquehanna River was a natural river system. Natural river systems constantly move sediments downstream through natural attenuation. However, when a dam accumulates sediment by stopping this natural process, it results in large loads at once, instead of slowly over time. These giant discharges of sediment smother aquatic grasses and destroy aquatic species habitat.

42. Past large storms such as Hurricane Agnes have resulted in sediment and nutrient pollution being discharged from the dam at one time that it has taken

50-years for the Chesapeake Bay to recover. With storm intensity on a continuous upwards trajectory, the damage from a future storm could be much worse than what we witnessed during Hurricane Agnes. This type of situation is virtually certain to happen again during the 50-year license period, and the results will be worse than ever since there is now more sediment than ever behind the dam.

43. I am deeply concerned that virtually all of my personal and professional use and enjoyment of the Susquehanna River and the Chesapeake Bay could be obliterated due to the fifty-year license issued by FERC. This license fails to require mitigation of these current impacts and fails to address future, potentially more severe, future impacts.

44. Further, Maryland Department of the Environment has waived virtually all of their authority to enforce any clean water laws for the entire fifty-year term. This means that a future unexpected issue could arise and the state will not have the power or authority to address it.

45. FERC's issuance of a license to operate the dam without proper conditions to mitigate the water quality impacts of Conowingo Dam's operations will continue and further harm my interests. There are no conditions to address the risk of scour from the impounded sediment and recent storm data and climate projections show that there will be several large storm events resulting in sediment and nutrient discharges that will harm downstream water quality and species

habitat. The sediment and nutrients will smother submerged aquatic vegetation, oyster beds and prevent reproduction of crabs and fish.

46. Oysters, rockfish and Maryland blue crab populations will suffer or be completely extirpated by these sediment and nutrient discharges. This will prevent me from eating and enjoying these aquatic species. Additionally, the accumulation of sediment and nutrient pollution will worsen water quality and exacerbate the Chesapeake Bay dead zone. The sediment will create navigational hazards for my recreational kayaking and boating and the algae and sedimentation obscure the beauty of the water when sitting by the lower Susquehanna, kayaking, taking pictures or boating downstream of the dam.

47. I am personally and professionally dependent on—and Waterkeepers Chesapeake is dependent on—doing these activities in the future, but the fifty-year license granted by FERC for Conowingo operations puts all of these activities at risk.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Executed on this 28th day of January 2022.

ELIZABETH NICHOLAS

**ORAL ARGUMENT NOT YET SCHEDULED**

**IN THE UNITED STATES COURT OF APPEALS**
**FOR THE DISTRICT OF COLUMBIA CIRCUIT**

| | |
|---|---|
| WATERKEEPERS CHESAPEAKE, *et al.*,<br><br>*Petitioners*,<br><br>v.<br><br>FEDERAL ENERGY REGULATORY COMMISSION,<br><br>*Respondent*. | No. 21-1186 |
| WATERKEEPERS CHESAPEAKE, *et al.*,<br><br>*Petitioners*,<br><br>v.<br><br>FEDERAL ENERGY REGULATORY COMMISSION,<br><br>*Respondent*. | No. 21-1139 |

**DECLARATION OF GARRETT PENSELL**

I, Garrett Pensell, hereby declare and state as follows:

1. I am over 18 years of age, competent to testify, and have personal knowledge of the facts stated herein.

2. I am a member of the Chesapeake Bay Foundation.
3. I am the President and Service Manager of Tidewater Marina, located at 100 Bourbon Street in Havre de Grace, Maryland 21078. The marina is located where the Susquehanna River empties into the Chesapeake Bay, northwest of the Susquehanna Flats area of the Bay.
4. My family has owned and operated Tidewater Marina since 1964. I am the third-generation owner and operator of the marina.
5. Our marina operation and its related on-site service providers employ twenty (20) full-time employees. It is a destination for recreational boaters and fisherman from Baltimore, Lancaster, Philadelphia, Wilmington, and elsewhere in Maryland, Pennsylvania, and Delaware.
6. Our marina has a community of boaters who like to swim, and I have noticed a growth in the marine business in the Upper Chesapeake Bay for this reason since the lower salinity results in a lack of jellyfish (or sea-nettles) when compared to downstream sections of the Chesapeake Bay.
7. I was born in 1970 and have seen overall water quality steadily improve in the Susquehanna Flats portion of the Upper Chesapeake Bay. Storm events that result in high flow volumes from Conowingo Dam are egregious exceptions.

8. Since the early 1990s, Tidewater Marina has been a leader in the Clean Marina Program of the Maryland Department of Natural Resources and a strong voice for environmental stewardship within the Marine Trades Association of Maryland. Our customers strongly support our investments in these best management practices.
9. Despite these efforts, our business is directly impacted by the discharge of sediment and debris from Conowingo Dam. During storm events, increases in water turbidity and floating debris make recreation in the waters near the marina hazardous and undesirable. These conditions affect our community of anglers who fish in the Lower Susquehanna and the Susquehanna Flats. Our customers do not use their boats or our services under these conditions.
10. Even under normal conditions, the flows released from the Conowingo Dam affect our operations. In my experience there does not appear to be any thought given to the recreational maritime industry and or Upper Chesapeake Bay fisheries. I have witnessed widespread kills of herring due to low dissolved oxygen associated with low-flow summer releases from the Conowingo Dam.
11. The uncertainty of the timing and magnitude of releases from Conowingo Dam and the discharges of sediment and debris during storm events impact hunting and fishing trips from the marina.

12. A decision vacating the license will redress the injuries to my business and interests from the continued discharges of too much sediment and other pollution from the Conowingo Dam into the Susquehanna River and the Chesapeake Bay.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 21, 2022.

Garrett Pensell

**ORAL ARGUMENT NOT YET SCHEDULED**

**IN THE UNITED STATES COURT OF APPEALS**
**FOR THE DISTRICT OF COLUMBIA CIRCUIT**

| | |
|---|---|
| WATERKEEPERS CHESAPEAKE, *et al.*,<br><br>*Petitioners*,<br><br>v.<br><br>FEDERAL ENERGY REGULATORY COMMISSION,<br><br>*Respondent*. | No. 21-1186 |
| WATERKEEPERS CHESAPEAKE, *et al.*,<br><br>*Petitioners*,<br><br>v.<br><br>FEDERAL ENERGY REGULATORY COMMISSION,<br><br>*Respondent*. | No. 21-1139 |

**DECLARATION OF ALISON PROST**

I, Alison Prost, declare as follows:

1. I am over 18 years of age, competent to testify, and have personal knowledge of the facts stated herein.

2. I am employed at the Chesapeake Bay Foundation, Inc. (CBF) as Vice President for Environmental Protection. I have been employed at CBF since December, 2007.

3. In my current role, I am responsible for overseeing CBF's Environmental Protection and Restoration department, which operates throughout the Chesapeake Bay watershed. My current responsibilities include overseeing CBF's advocacy and lobbying work at state legislatures, community outreach and engagement, policy analysis and development, and watershed restoration. I am familiar with CBF's mission, organization, and activities, as well as the environmental interests and concerns of our members.

4. CBF is a regional, nonprofit, nonpartisan, public-interest advocacy organization with members throughout the Chesapeake Bay region. As of January 27, 2022, CBF has approximately 200,000 members.

5. CBF maintains offices in Annapolis and Easton, MD; Richmond and Virginia Beach, VA; Harrisburg, PA; and Washington, DC. CBF operates several environmental education centers on the Chesapeake Bay: Karen Noonan Center, Crocheron, MD; Port Isobel, Tangier, VA; Smith Island, Tylerton, MD; Fox Island, Crisfield, MD; and the Arthur Sherwood Environmental Education Center, Annapolis, MD. CBF also maintains oyster restoration centers in Shady Side, Maryland and Gloucester Point, Virginia.

6. CBF is the only independent organization dedicated solely to restoring and protecting the Chesapeake Bay and its tributary rivers. Our goal is to improve water quality through the implementation of the Chesapeake Bay Clean Water Blueprint. The "Blueprint" refers to the Chesapeake Bay Total Maximum Daily Load (TMDL), issued by the United States Environmental Protection Agency (EPA) in December 2010, and state-developed Watershed Implementation Plans (WIPS) which outline Bay jurisdictions' strategies to meet the goals of the TMDL. The Bay jurisdictions are Maryland, Pennsylvania, Virginia, Delaware, West Virginia, New York, and the District of Columbia.

7. CBF, as a co-plaintiff with several signatories to the Chesapeake Bay Agreements, sued EPA in 2009 to require the agency to establish a TMDL for the Bay. *Fowler v. EPA*, No. 1:09-CV-00005-CKK (D.D.C. 2009). That litigation was settled later that year and in the settlement agreement between the parties, EPA agreed to develop and begin implementation of the Bay TMDL by December 31, 2010.

8. The Chesapeake Bay TMDL set pollution reduction targets for the Bay's three primary pollutants: nitrogen, phosphorus, and sediment. These targets represent the pollution limits necessary to meet water quality standards. The pollution limits were further divided by Bay jurisdiction and by major river basin. CBF continues to work with EPA's Chesapeake Bay Program and the Bay

jurisdictions to ensure compliance with TMDL pollution allocations by participating in Program work groups such as the Water Quality Goal Implementation Team, Sustainable Fisheries Goal Implementation Team and the Citizens Advisory Committee.

9. CBF's interest in improving the water quality of the Chesapeake Bay is intimately tied to reducing upstream pollution from entering the Bay. CBF has spent millions of dollars over 50 years trying to reduce and mitigate nitrogen, phosphorous, and sediment pollution to the Chesapeake Bay.

10. Excessive amounts of nitrogen and phosphorous lead to an overabundance of algae which blocks sunlight from reaching underwater grasses that serve as food and habitat. As the algae decays, it robs the Bay of oxygen and impairs water quality. As a result, the addition of nitrogen and phosphorous from the Conowingo Dam adversely impacts CBF's ability to achieve the goals of the organization, including restoring and protecting the living resources and water quality of the Bay and its tributaries and adversely impacts the aesthetic, economic, educational, recreational, and human health interests of CBF's members.

11. CBF has actively been involved in the relicensing process for the Conowingo Dam. In August 2013, CBF intervened in the Federal Energy Regulatory Commission's relicensing proceedings for the Dam. Exhibit 1. CBF

also provided comments on the draft Environmental Impact Statement developed by FERC during the relicensing process. Exhibit 2.

12. CBF has also been involved at the state level over the Water Quality Certification. CBF filed public comments to MDE on the proposed 401 Water Quality Certification on August 23, 2017 detailing the impacts of the Dam on Maryland's water quality and the achievability of the Bay TMDL nutrient reduction goals. CBF provided oral comments during the December 5, 2017 public hearing and filed additional written comments on January 16, 2018. Exhibit 3.

13. The Conowingo Dam fundamentally alters the form and timing of pollution reaching the Chesapeake Bay.

14. Reducing nitrogen, phosphorous, and sediment loads entering the Bay is a priority for the Chesapeake Bay Foundation.

15. One of CBF's principal objectives is to improve water quality by reducing the amounts of pollutants discharged to the Bay and its tributaries. CBF's objectives and programs are also designed to reduce or eliminate the harm and threats of harm to human health and the environment caused by discharges of pollutants.

16. CBF members use the waters of the Bay watershed for bird watching, boating, kayaking, sailing, fishing, swimming, and other aesthetic and recreational pursuits in the waters of the Bay and its rivers and streams. The interests of CBF

and its members have been harmed by the discharges of nitrogen, phosphorous, and sediment from the Conowingo Dam which harms water quality and natural resources.

17. CBF operates numerous programs which are designed to protect and restore the quality of the Bay and its tributaries, and, in so doing, seeks to restore and maintain sustainable populations of crabs, fish, and oysters; thriving water-based and agricultural economies; and a clean and healthy ecosystem for our children and grandchildren.

CBF's Restoration Programs

18. CBF's restoration programs within the Chesapeake Bay watershed are designed to improve water quality in the Bay and its tributaries by taking up nitrogen in the air and water. Those restoration efforts include planting vegetative buffers along rivers and streams, planting trees, and growing and planting oysters and underwater grasses. During fiscal year 2021, CBF spent over $10 million on restoration programs in Maryland alone.

19. Nitrogen, phosphorous, and sediment pollution harms oysters and underwater grasses that have been planted by CBF staff, volunteers, students and educators through CBF's education and restoration programs.

20. In Maryland, CBF operates several restoration programs for the creation of streamside buffers and wetlands, including forest buffers which help

increase oxygen to the waters of the Chesapeake Bay and its tributaries. For instance, in fiscal year 2021, CBF and our volunteers planted 6,517 trees and installed 2 miles of stream fencing, spending over $600,000 on restoration efforts in Maryland.

CBF's Oyster Programs

21. CBF recognizes that saving the Bay is uniquely tied to restoring the native oyster. CBF and its members have undertaken oyster restoration activities and helped volunteers cultivate "oyster gardens" throughout Maryland and Virginia waters. CBF grows oysters in holding tanks on specially designed barges at its Brock Environmental Center in Virginia Beach until they are large enough to be planted on either existing or new reefs.

22. In 2021, Maryland's oyster restoration program produced and planted over 21 million spat and planted them on sanctuary reefs using CBF's Oyster Restoration Vessel *Patricia Campbell*. In addition, CBF oyster gardeners grew more than 198,000 adult oysters and planted them on reefs from Baltimore to the southern Eastern Shore. In Maryland, CBF built 86 new reef balls with the help of our partners and volunteers, all of which were deployed in Maryland waters.

23. Funds for administering these oyster programs are provided by member donations and grants.

24. CBF spearheaded the Chesapeake Oyster Alliance. Created in 2018, the Chesapeake Oyster Alliance is a coalition of non-profits, community organizations, and oyster growers. The Chesapeake Oyster Alliance aims to plant 10 billion oysters in the Chesapeake Bay by 2025 to harness the filtering qualities of oysters to restore the Bay.

25. Good water quality free of harmful pollutants is important to the success of the oysters and underwater grasses. If oysters that are planted by members, students, and volunteers are continually harmed, members and volunteers may limit or cease participating in CBF's education and restoration programs. The addition of nitrogen and phosphorous to the Bay and its tributaries causes harmful algae blooms that die and deprive the water of oxygen necessary for oysters to live. Sediment added to the water smothers oysters and prevents them from feeding. Prolonged low salinity after flooding events can be lethal to oysters in the Bay. Low salinity from flooding was determined to be the primary source of mortality of reefs in the upper Bay after Hurricane Agnes in 1972.

26. The Conowingo Dam contributes to the introduction of excess nitrogen, phosphorous, and sediment to the Bay. The Conowingo Dam also alters how much pollution flows downstream and the form that pollution takes when it passes through the dam. Thus, the Conowingo Dam harms water quality and

natural resources like oysters within the Bay and its tributaries, harming CBF's ability to successfully conduct these restoration programs.

CBF's Education Programs

27. CBF operates 15 environmental education programs throughout the Chesapeake Bay watershed that conduct student leadership projects, in-the-field educational experiences, and other activities in and around the Chesapeake Bay. CBF conducts educational field experiences for students, teachers, and adults. These educational programs enable students and teachers to conduct their own research through biological sampling, chemical analysis, and physical measurements by taking them on canoe, kayak, hiking and boating trips on and along the Bay and its tributaries. CBF also operates several marine vessels in the Chesapeake Bay and its tributaries. During the last fiscal year, CBF spent approximately $4.4 million on its educational programs.

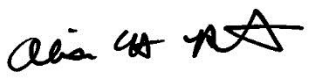
28. Participants in these programs learn about local streams, rivers and the Chesapeake Bay, test water quality, perform plankton studies, trawl for fish, and learn about environmental challenges and restoration issues. Annually, CBF takes thousands of participants out on the Bay or one of its tributaries like the Susquehanna River aboard one of its work boats or canoes for a direct experience on the water. Each year, more than 30,000 students and teachers participated in CBF's education programs.

29. CBF's education programs allow students and teachers to explore local rivers and streams monitoring the effect of pollution on water quality. Students enjoy in-depth educational experiences on the Bay at CBF's Maryland and Virginia residential island centers; Karen Noonan, Smith Island, and Port Isobel, and the one-day field programs in Maryland, Pennsylvania, Virginia and the District of Columbia.

30. CBF's advocacy, education programs, and restoration efforts are harmed by the discharge of pollutants through the dam. Consequently, CBF has a vested interest in the pending litigation to ensure that Exelon reduces the amount of pollution released by the dam.

31. A decision vacating the license would redress the injuries to CBF's organizational interests and the interests of its members from the continued discharges of nutrients and sediment by the Conowingo Dam.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 28, 2022.



_____

Alison Prost

**List of Exhibits:**

Exhibit 1 – Chesapeake Bay Foundation Motion to Intervene (Aug. 20, 2013);

Exhibit 2 - Chesapeake Bay Foundation and Midshore Riverkeeper Conservancy Comments on the Draft Environmental Impact Statement for the Susquehanna River Hydroelectric Projects Nos. 1888-030, 2355-018, and 405-106 (Sept. 29, 2014); and

Exhibit 3 – Chesapeake Bay Foundation, Comments Re: Application #17-WQC-02, Lower Susquehanna River and Upper Chesapeake Bay, Use I & 2 Waters (Aug. 23, 2017).

Exhibit 1

**UNITED STATES OF AMERICA**
**FEDERAL ENERGY REGULATORY COMMISSION**

| | |
|---|---|
| **In the Matter of**<br><br>**Exelon Generation Company LLC**<br>**Conowingo Hydroelectric Project** | **Project No. P-405-106** |

**MOTION TO INTERVENE OF CHESAPEAKE BAY FOUNDATION, INC.**

Pursuant to Rule 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC") and 18 C.F.R. §385.214(a)(3), Chesapeake Bay Foundation, Inc. (CBF), hereby moves to intervene in the above-captioned proceedings. On August 30, 2012, Exelon Generation Company, LLC ("Exelon") filed a Final License Application ("FLA") for the Conowingo Hydroelectric Project (the "Project") located on the Susquehanna River in Maryland. On April 29, 2013, FERC issued notice of acceptance of Exelon's application and notice that the project is ready for environmental analysis (REA). As set forth below, CBF represents interests that may be directly affected by the outcome of the Project re-licensing and its participation in these proceedings is in the public interest.

The following are the names and addresses of the representatives of CBF who should be added to the service list for this proceeding:

Jon A. Mueller
Chesapeake Bay Foundation
6 Herndon Avenue
Annapolis, MD 21403
Phone: (443) 482-2162
Email: Jmueller@cbf.org

Christine K. Tramontana
Chesapeake Bay Foundation
6 Herndon Avenue
Annapolis, MD 21403
Phone: (443) 482-2153
Email: Ctramontana@cbf.org

**STATEMENT OF CBF'S INTERESTS SUPPORTING INTERVENTION**

CBF is the only independent, private, nonprofit organization dedicated solely to protecting and restoring the Chesapeake Bay and its tributary rivers. CBF was established in 1966. Its headquarters are located in Annapolis, Maryland, on the Chesapeake Bay. CBF also has offices in Harrisburg, Pennsylvania; Richmond, Virginia; Hampton Roads, Virginia, and Washington, DC.

The Chesapeake Bay ("the Bay") is North America's largest and most biologically diverse estuary, home to more than 3,600 species of plants, fish and animals.[1] The Bay watershed encompasses 64,000 square miles from Cooperstown, New York to Virginia Beach, Virginia.[2] Portions of the watershed are found in Delaware, Maryland, New York, Pennsylvania, Virginia, Washington, D.C., and West Virginia.[3] The Susquehanna River is one of the five major tributaries of the Chesapeake Bay.[4] The Susquehanna contributes about 50% of the freshwater discharged to the Chesapeake Bay and, in a normal flow year, about 25% of the sediment load and the greatest quantity of nutrients from non-tidal areas (nearly 66% of the nitrogen and 40% of the phosphorus transported to the Bay from the major river basins which contribute almost 90% percent of the freshwater)[5].

One of CBF's principal objectives is to improve water quality by reducing the amounts of pollutants discharged to the Bay and its tributaries. *See* www.cbf.org. CBF fights for strong and effective laws and regulations to reduce pollution and other harmful activities that degrade the

[1] http://www.chesapeakebay.net/discover/bay101/facts
[2] *Id*.
[3] *Id*.
[4] *Id*.
[5] Robert M. Hirsch, 2012; U.S. Geological Survey, Scientific Investigations Report 2012-5185, *Flux of Nitrogen, Phosphorus, and Suspended Sediment from the Susquehanna River Basin to the Chesapeake Bay during Tropical Storm Lee, September 2011, as an Indicator of the Effects of Reservoir Sedimentation on Water Quality* 2-4 (2012) http://pubs.usgs.gov/sir/2012/5185/pdf/sir2012-5185-508.pdf

Bay. CBF works cooperatively with government, business, and citizens in partnerships to protect and restore the Bay. CBF also works closely with The American States Marine Fisheries Commission (ASMFC) on fishery management plans for all interstate fisheries along the coast including American shad, hickory shad, American eel, Atlantic sturgeon, alewife and blueback herring. Bill Goldsborough, CBF's Director of Fisheries, serves as the Governor's Appointee Commissioner for the Maryland delegation to ASMFC.

CBF has over 200,000 members, volunteers, and electronic subscribers nationwide. CBF members enjoy swimming, boating, kayaking, sailing, fishing, crabbing, bird watching, and other aesthetic and recreational pursuits in the waters of the Bay and its rivers and streams. CBF funds and operates programs specifically designed to improve the water quality of the Bay and its tributaries and educate people of all ages concerning the relationship between human activities on the land and the Bay. CBF has spent millions of dollars restoring waterways and educating students and teachers about the value of the Chesapeake Bay and its tributaries such as the Susquehanna. Some of these programs are designed to address the adverse impacts to water quality caused by excessive discharges of nitrogen and phosphorus (nutrients) and sediment.

High levels of nutrients and sediment enter the water from agricultural operations, urban and suburban stormwater runoff, wastewater facilities, air pollution, and other sources. [6] These pollutants cause algae blooms that, as they decay, consume oxygen and create "dead zones" where fish and shellfish cannot survive, block sunlight that is needed for underwater grasses, and smother aquatic life on the bottom.[7] Sediment runoff causes significant impairment of some streams and rivers within areas of the Bay watershed. Through its various programs designed to protect and restore the quality of the Bay and its tributaries by reducing the sediment and

[6] http://www.chesapeakebay.net/issues/issue/nutrients#inline; and, http://www.chesapeakebay.net/issues/issue/sediment#inline.
[7] *Id*.

nutrients discharged to the Bay, CBF seeks to restore and maintain sustainable populations of crabs, fish, and oysters; and a clean and healthy ecosystem for our children and grandchildren.[8]

CBF has also led the decades-long fight to establish a plan for cleaning up the Chesapeake Bay, which, in 2010 finally culminated in EPA's establishment of a pollution diet or Total Maximum Daily Load (TMDL) for the Bay.[9] The TMDL requires each jurisdiction to develop Watershed Implementation Plans (WIPs) providing how the load and waste load allocations set forth in the TMDL would be met.[10] Subsequently, the six Bay states and the District of Columbia released their plans to implement strategies to meet the pollution limits by 2025.[11] Collectively the TMDL and states' WIPs comprise the Clean Water Blueprint for the Chesapeake ("Blueprint"), which includes allocations for the amount of nutrients and sediment that point and non-point sources can contribute to the Bay while still meeting water quality standards. CBF works with point and non-point sources to find ways to reduce pollution and meet their allocations, and to ensure that the pollution reduction goals of each state are being implemented. The Blueprint is the most comprehensive plan yet and possibly the last opportunity for real restoration of the Bay.[12]

Accordingly, CBF has interests, and represents interests, that may be directly affected by the outcome of this proceeding. As set forth below, two issues of concern in the re-licensing, sediment management behind the dam and fish passage, are of particular concern to CBF and its members and must be adequately addressed as part of the re-licensing of the Project.

---

[8] http://www.cbf.org/how-we-save-the-bay
[9] EPA Bay TMDL Executive Summary at http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/tmdlexec.html
[10] *Id.*
[11] *Id.*
[12] http://www.cbf.org/how-we-save-the-bay/chesapeake-clean-water-blueprint/what-is-the-chesapeake-clean-water-blueprint

## GROUNDS FOR INTERVENTION

Exelon is seeking a 46 year license for the Project.[13] The re-licensing will therefore have broad and long-term programmatic effects on the success of CBF's education and restoration work and the Blueprint. CBF is concerned with two principal issues of the Project: 1) management of accumulated sediment behind the dam; both the loss of historic pollution removal capacity, particularly for sediments and phosphorus, and the scouring of sediments behind the dam during high flow events, which results in a net increase in loads to downstream waters; and 2) the ability of migratory fish to reach their historic habitats upstream and return to the Bay and ocean successfully (fish passage). The re-licensing of the Project must include adequate, long-term, sustainable sediment 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 allow native migratory fish populations to rebuild to healthy levels in the Susquehanna and support the overall health of the Chesapeake Bay ecosystem.

[End of page left intentionally blank]

[13] Exelon Generation Company, LLC's Final License Application for the Conowingo Hydroelectric Project and Request for Waiver of the Requirement to Include a Draft Biological Assessment p. 1 (FERC Submittal/Accession No. 20120830-5174, Aug. 30, 2012)

Sediment Management

Since its construction, the Conowingo dam has been trapping sediment and sediment-associated nutrients in the Conowingo reservoir.[14] Between 1996 and 2008, about 12,000,000 tons of sediment was deposited in the Conowingo reservoir.[15] Today, researchers estimate the reservoir is almost completely filled and, as a result, has lost much of its capacity to trap and store sediment and nutrients.[16] Furthermore, according to U.S. Geological Survey studies, the recent severe storm events of Tropical Storm Lee and Hurricane Irene scoured sediment and nutrients from behind the dam into the Bay, resulting in some of the highest measured concentrations of sediment, phosphorus and nitrogen on record and substantial loadings of these pollutants, particularly sediment, to the Chesapeake Bay.[17] The effects of climate change are expected to increase the occurrence of such events. Thus, not only has the pollution removal capacity of the dam been diminished, but storm events can release more sediment from upstream sources and scour sediments and nutrients from behind the dam, resulting in large pulses of these pollutants to downstream waters. In the long-term, scientists believe that the sediment dynamics in the reservoir system will include periods of gradual accumulation, punctuated by episodes of flood-driven scouring.[18] Appropriate sediment management strategies designed to minimize the effects of increased flooding and scour events in the future, must be included in the re-licensing

[14] 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

[15] Michael J. Langland, 2009; U.S. Geological Survey, Scientific Investigations Report 2009-5110, *Bathymetry and Sediment-Storage Capacity Change in Three Reservoirs on the Lower Susquehanna River, 1996–2008.* http://pubs.usgs.gov/sir/2009/5110/pdf/sir2009-5110.pdf

[16] Robert M. Hirsch, 2012; U.S. Geological Survey, Scientific Investigations Report 2012-5185, *Flux of Nitrogen, Phosphorus, and Suspended Sediment from the Susquehanna River Basin to the Chesapeake Bay during Tropical Storm Lee, September 2011, as an Indicator of the Effects of Reservoir Sedimentation on Water Quality* 2-4 (2012) http://pubs.usgs.gov/sir/2012/5185/pdf/sir2012-5185-508.pdf

[17] *Id.*

[18] Academy of Natural Sciences, Division of Environmental Research. 1994. Issues Regarding Estimated Impacts of the Lower Susquehanna River Reservoir System on Sediment and Nutrient Discharge to Chesapeake Bay. Report no. 94-20, Philadelphia, PA.

of the Project, otherwise the dam will be contributing to the violation of downstream water quality standards.

As part of the re-licensing, Exelon submitted "The Sediment Introduction and Transport Study", RSP 3.15.[19] The study involved 3 tasks: a review and compilation of existing information (Task 1); a quantitative assessment of sediment-related impacts of the Project on downstream habitat (Task 2); and an evaluation of options to manage sediment at the Project (Task 3).[20] Exelon's study, specifically Task 3, the evaluation of options to manage sediment, is inadequate and inconclusive. In fact, Exelon acknowledged the limitations of its sediment study, citing to the need for a "single comprehensive and integrated analysis of the lower Susquehanna River watershed" such as the study proposed by the U.S. Army Corp of Engineers ("USACOE").[21] The USACOE study is now underway.

In September 2011, USACOE, 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 is 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.[22]

---

[19] http://www.exeloncorp.com/assets/energy/powerplants/docs/Conowingo/Conowingo_RSP_3.15,Part1.pdf

[20] *Id.*

[21] *Id*. at iii.

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

Most importantly, the study is expected to provide options for managing the sediment, as well as cost estimates.[23] Management options being considered include: dredging, modifying dam operations, and sediment by-pass strategies. A final report is scheduled to be issued sometime around fall 2014, but preliminary recommendations are expected to be available prior to that time. Consideration of the feasibility of strategies that will be set forth in the Lower Susquehanna Study will be critical in determining what can be done to control sediment flow in the Susquehanna as well as the impact of sediment and nutrient loads on water quality in the Chesapeake Bay. Accordingly, appropriate sediment management conditions for the re-license of the Project cannot be fully assessed absent consideration of the Lower Susquehanna Study and a final decision on the re-license for the Project should not be issued until the findings of the Lower Susquehanna Study are available. Based on the findings of the Lower Susquehanna Study, appropriate sediment management conditions must be included in the Section 401 Water Quality Certifications of the states and the Final License for the Project.

Fish Passage

CBF is concerned with the restoration of migratory fish to the Susquehanna, specifically American shad, hickory shad, American eel, Atlantic sturgeon, shortnose sturgeon, alewife and blueback herring. Improving upstream and downstream passage for these migratory fish is essential to the recovery of diadromous fish populations (shad, eel, 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 their lives in the ocean.[24] Likewise, the catadromous American eel makes a reverse migration,

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

leaving its fresh water rivers to spawn in the salty Sargasso Sea.[25] The dams of the Susquehanna, including Conowingo, prevent anadromous fish from reaching historic spawning habitats, which leads to a low rate of natural reproduction.[26] Anadromous fish populations are at historic lows. River herring have been proposed for endangered species listing.[27] 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.[28] Currently, the West Fish Lift is only used to harvest eggs from pre-spawned American shad.[29] 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.[30] As part of a 1989 settlement agreement with Exelon and the resource agencies, The East Fish Lift was completed in 1991.[31] 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.[32] The fish lifts at Conowingo have a remaining life expectancy of 15 to 25 years and will be due

---

[25] *Id.*
[26] *Id*.
[27] 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
[28] 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
[29] *Id.* p. 4
[30] *Id*
[31] *Id*.
[32] *Id*. at p. 10

for replacement during the life of the Project license.[33] 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.[34] 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.[35] 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 quality habitat; poor young-of-year recruitment upstream of Conowingo Dam; ocean and Chesapeake Bay mortality; turbine mortality and predation.[36]

In addition, fish passage improvements must include measures for passing American eels upstream which the current Conowingo fishlifts are not designed to handle.[37] Restoration of American eel is an important component of overall ecosystem improvement since eel serves as a primary host for freshwater mussel larvae.[38] Mussels are important to improving overall water quality because they can filter water in freshwater.[39] Improving fish passage for American eels into freshwater habitat will facilitate the rebuilding of freshwater mussel populations and

---

[33] 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
[34] 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/susq/SRAFRC-RestorationPlan.pdf
[35] *Id.* at 5.
[36] *Id*.
[37] Steve Minkkinen, Ian Park, Maryland Fishery Resources Office, *American Eel Sampling at Conowingo Dam 2009, http://www.fws.gov/northeast/marylandfisheries/reports/SRAFRC%202009.pdf*
[38] 2011 Maryland FMP Report (June 2012), Section 1. American Eel ((*Anguilla rostrata)* http://dnr.maryland.gov/fisheries/fmp/2011/Section_1_American_Eel.pdf
[39] *Id*.

improve the health of the freshwater ecosystem in the Susquehanna.[40] Fish passage at Conowingo must be improved during the re-license of the Project. The survival of native fish species, and indeed, the health of the Bay, depends upon it.

**CONCLUSION**

As set forth above, CBF meets the criteria required for intervention in this proceeding pursuant to 18 C.F.R. §385.214(b)(2)(ii) and its intervention is in the public interest. CBF intends to participate with Exelon, agencies and stakeholders in this re-licensing process to attempt to negotiate the best possible solutions to the sediment management and fish passage issues associated with the Project to ensure that appropriate conditions are included in the re-license to that protect the water quality and natural habitat of Bay and its rivers and streams.

Respectfully submitted,

Jon A. Mueller
Christine K. Tramontana
Chesapeake Bay Foundation
6 Herndon Avenue
Annapolis, MD 21403
Phone: (410) 268-8816
Email: Jmueller@cbf.org
Email: Ctramontana@cbf.org

*Counsel for Chesapeake Bay Foundation, Inc.*

Date: August 20, 2013

[40] *Id.*

**CERTIFICATE OF SERVICE**

I hereby certify that on the 20th day of August, 2013, I caused the foregoing Motion to Intervene of Chesapeake Bay Foundation, Inc. to be served via FERC's electronic service system upon each person designated on the official list compiled by the Secretary in this proceeding, to be followed by service by U.S. Mail on those not on the Secretary's e-service list.

Jon A. Mueller

Document Content(s)

Exhibit 2

CHESAPEAKE BAY FOUNDATION
*Saving a National Treasure*

September 29, 2014

Via efile: http://www.ferc.gov/docs-filing/efiling.asp
The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory
Commission
888 First Street, NE
Washington, DC 20426

**RE: Chesapeake Bay Foundation and Midshore Riverkeeper Conservancy Comments on the Draft Environmental Impact Statement for the Susquehanna River Hydroelectric Projects Nos. 1888-030, 2355-018, and 405-106**

Dear Secretary Bose:

We have reviewed the Draft Environmental Impact Statement (DEIS) issued on July 30, 2014 by the Federal Energy Regulatory Commission (FERC) for the Susquehanna River Hydroelectric projects. We submit these comments on behalf of both the Chesapeake Bay Foundation and the Midshore Riverkeeper Conservancy. 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. The Midshore Riverkeeper Conservancy (MRC) is a non-profit organization dedicated to the restoration and protection of the waterways that comprise the Choptank River watershed, Eastern Bay, and the Miles and Wye Rivers. The organization serves as an advocate for the health of these tributaries and the living resources they support.

As previously stated in our Motions to Intervene (filed August 20, 2013 and December 11, 2013, respectively) and Comments provided on the "Notice of Application" (both filed in January 2014), all of which are incorporated by reference herein, CBF and MRC have two principal concerns with the Conowingo Project (no. 405-106): 1) downstream water quality impacts of the accumulated sediment and nutrients behind Conowingo Dam; and, 2) passage for migratory fish including upstream passage efficiency and timeliness and downstream passage survival at Conowingo Dam and Muddy Run. The re-licensing of the Projects must include adequate, long-term, sustainable management strategies to ensure that applicable water quality standards in the Bay and its tidal rivers will be met, and fish passage strategies that will restore native migratory fish to the Susquehanna and support the overall health of the Bay and its estuaries. Unfortunately, as detailed below the findings and recommendations by FERC in the DEIS do not support these objectives.

PHILIP MERRILL ENVIRONMENTAL CENTER | 6 HERNDON AVENUE | ANNAPOLIS, MD 21403
410/268-8816 | FAX: 410/268-6687 | WWW.CBF.ORG

**Water Quality**

The DEIS recognizes that the soon-to-be-released Lower Susquehanna River Watershed Assessment Study led by the U.S. Army Corps of Engineers (COE) will provide useful information for the DEIS (see DEIS at 69 and 70), yet FERC does not definitively state that these findings will be incorporated into the final EIS (see DEIS at 71). Given that the new license at Conowingo will last nearly fifty years, we believe it should be based on the best available information, even if that means delaying the issuance of the final EIS and operating license until all relevant studies are available.

We disagree with FERC's finding that there is "...no justification at this time for requiring Exelon to implement measures such as dredging to help control sediment and nutrient loading in the Bay, which would occur in the long term whether or not Conowingo dam was in place." (DEIS at 128). While it is true that the origin of the sediment and nutrients is mostly from upstream of Conowingo Dam, the Dam does alter the form of these sediments and nutrients and the timing by which they enter the Chesapeake Bay. For example, as noted in the DEIS, the Dam changes the grain size profile of downstream sediments, preferentially passing finer sediments that tend to stay in solution longer, with potential negative effects on downstream water clarity. Coarser materials are preferentially retained by the Dam, again with negative downstream impacts as these materials are needed to build and protect desirable habitats, like islands and shorelines.

Preliminary results of the Lower Susquehanna River Watershed Assessment[1] (LSRWA) evaluated the impact of scouring events on downstream water quality, namely dissolved oxygen, water clarity, and chlorophyll-a concentrations. Modeling results indicate detectable negative effects on these water quality parameters and these effects are more severe if the scour event occurs during the summer. Results also suggest that nutrients from scour events deposit downstream and may contribute to negative water quality impacts for years, though these effects diminish over time. Based on these results, CBF and MRC believe that the Dam operations are contributing to the violation of downstream water quality standards and therefore Exelon should be required to mitigate for these impacts. *See* 33 U.S.C. 1311; MD. CODE ANN, ENVIR. §§ 9-302(b) and -322.

It is our understanding that the State of Maryland has requested, and Exelon has agreed to fund, additional studies in order to better understand the form, fate, and effects of nutrients that are scoured from behind the Dam. These study results should be used in conjunction with those from the LSRWA to determine the extent and magnitude of downstream impacts. Appropriate mitigation measures should be required as part of the new license for the operation at Conowingo Dam. These measures could include selective dredging of the Conowingo Reservoir, nutrient reduction projects upstream of the Dam and in Maryland like agricultural practices, wastewater treatment plant upgrades, green infrastructure, as well as restoration of the system's "natural filters" such as freshwater mussels and oysters.

The DEIS cannot be considered legally adequate until the final results of the LSRWA and additional study requested by the State of Maryland are obtained and analyzed. Furthermore, FERC must withhold issuance of the license until those studies are complete and has fully evaluated the findings in the context of the EIS framework and applicable NEPA regulations.

[1] *See generally* LSRWA Agendas, Minutes, and News available at http://mddnr.chesapeakebay.net/LSRWA/agendas.cfm

**Fish Passage**

CBF and MRC are concerned with the restoration of migratory fish to the Susquehanna, specifically the diadromous species American shad, hickory shad, American eels, Atlantic sturgeon, shortnose sturgeon, alewife and blueback herring. These species once supported vibrant and valuable fisheries, and on a coastwide basis all are considered at or near historic lows. All but American eel are now prohibited from harvest in the Chesapeake Bay and its tributaries. Both sturgeon species are listed as protected species under the Endangered Species Act (ESA), and river herring and eel have recently been considered for listing. Improving upstream and downstream passage and providing suitable habitat is essential to the recovery of diadromous fish 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 their lives in the ocean. Likewise, the catadromous American eel makes a reverse migration, leaving its fresh water rivers to spawn in the salty Sargasso Sea. The dams of the Susquehanna, including Conowingo, prevent diadromous fish from reaching historic spawning and nursery habitats, which reduces reproductive success.

In the DEIS, FERC deviates from the recommendations of the Department of Interior (DOI) regarding measures to improve fish passage. In particular, DOI's prescription requires major renovations to the existing east and west fish lifts, and implementation of upstream eel passage at the project. FERC has recommended an alternative that would substantially reduce the recommended fish lift capacity arguing that the current low status of the shad population does not support such an expansion. We believe the capacity and improvements to fish passage should be based on an expectation of someday achieving the restoration goals as set by the Susquehanna River Anadromous Fish Restoration Cooperative (SRAFRC) Migratory Fish Management and Restoration Plan for the Susquehanna River Basin (2010) and American Eel Restoration Plan for the Susquehanna River Basin (2013). As such, FERC must include the DOI's recommendations in the final EIS.

We take exception to the fact that FERC denied on September 8, 2014 the Department of the Interior's request for a sixty day extension to the comment period for the DEIS given its length and complexity. FERC has a duty under NEPA and its implementing regulations to obtain comments from federal agencies with jurisdiction by law over a project or with special expertise. 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1503.1(a)(1) and 1503.2.

**Endangered Species**

According to the National Marine Fisheries Service (letter to FERC dated September 18, 2014) the best available information indicates that shortnose sturgeon are present in the Susquehanna River from the Susquehanna Flats to the Conowingo tailrace and the presence of suitable habitat for the Atlantic sturgeon indicates this species may also be present. The DEIS is therefore flawed in its assessment regarding potential impacts to these species. We support the recommendation by the National Marine Fisheries Service that FERC prepare a Biological Assessment to evaluate the effects of the continued operation of Conowingo on shortnose and Atlantic sturgeon. Furthermore, any necessary conditions or recommendations that result from the ESA Section 7 consultation should be incorporated into the final EIS and license.

In conclusion, the DEIS is incomplete and therefore fatally defective, and any decision by FERC to issue a license to Exelon based upon this DEIS would be in violation of the law. Moreover, FERC must require the additional actions noted in this letter and the comments we reference for the adequate protection, mitigation, and enhancement of fish and wildlife and other beneficial public uses. 16 U.S.C. § 803(a). We respectfully request that FERC address these deficiencies in the final EIS. Thank you for the opportunity to provide comments.

Sincerely,

Kim Coble
Vice President
Environmental Protection and Restoration

cc: Jon Mueller, CBF
Beth McGee, CBF
Bill Goldsborough, CBF
Timothy Junkin, MRC

Document Content(s)

Exhibit 3

CHESAPEAKE BAY FOUNDATION
*Saving a National Treasure*



Via electronic and first class mail

August 23, 2017

Elder Ghigiarelli, Jr.
Deputy Program Administrator, Wetlands and Waterways Program
Water management Administration,
Maryland Department of the Environment
1800 Washington Boulevard, Suite 430, Baltimore, MD 21230
elder.ghigiarelli@maryland.gov.

**Re: Application #17-WQC-02, Lower Susquehanna River and Upper Chesapeake Bay, Use I & 2 Waters**

**Dear Mr. Ghigiarelli,**

Chesapeake Bay Foundation provides these comments in response to the Maryland Department of the Environment's Public Notice of the Proposed Relicensing of the Conowingo Hydroelectric Project Application for Water Quality Certification (Notice) issued on July 10, 2017. CBF represents over 200,000 members throughout the watershed interested and directly affected by the decision to grant water quality certification to Exelon for a project that will persist over the next 50 years or more. Moreover, we conduct environmental education programs in the Lower Susquehanna and Susquehanna Flats regions, support advocacy and on the ground restoration projects designed to enhance water clarity to the Susquehanna Flats that contribute to the persistence and expansion of submerged aquatic vegetation, a crucial habitat for the bay's blue crabs and many other species.

Thank you for the opportunity to comment on the application for a Water Quality Certification ("WQC") under Section 401(a)(1) of the Clean Water Act for the Conowingo Hydroelectric Project, FERC Project Number 405 ("Conowingo Dam" or "the Dam"). The Chesapeake Bay Foundation (CBF) is committed to fully implementing the Chesapeake Bay Total Maximum Daily Load ("TMDL"), or the Chesapeake Bay Blueprint, to reduce pollution levels by 25 percent for nitrogen, 24 percent for phosphorus, and 20 percent in sediment pollution, Bay-wide[1] by 2025 to make the Bay once more a productive estuary safe for swimming and fishing. This effort requires all six states in the Bay watershed, as well as the District of Columbia, to reduce pollution from every source. CBF recognizes that the Conowingo Dam has played a crucial role in curtailing the sediment pollution that travels down the Susquehanna River and eventually reaches the Bay. However, over time, the Dam's ability to trap pollution has diminished due to sediment build up behind the dam. As discussed below, studies have also shown that the Dam itself has the ability to impact water quality. Therefore, the state of Maryland must ensure that impacts of Conowingo Dam's

[1] U.S Environmental Protection Agency, CHESAPEAKE BAY TMDL, ES-1 (Dec. 2010), *available at* https://www.epa.gov/sites/production/files/2014-12/documents/bay_tmdl_executive_summary_final_12.29.10_final_1.pdf

operations on downstream water quality are addressed and mitigated as part of the new operating permit. This is why CBF has formally intervened as a party to the Federal Energy Regulatory Commission (FERC) relicensing of the Dam, and submits the following comments regarding the impacts of the Dam on Maryland's water quality. CBF also requests inclusion on the "interested persons" and "service" lists to receive timely notice of all applications, public notices, information and studies, and decisions regarding the Conowingo Dam.

We have focused our comments on the WQC on effects relative to achievement of the water quality standards (i.e., dissolved oxygen, water clarity, chlorophyll a) associated with the Chesapeake Bay TMDL for nutrients and sediment.[2] We defer the general scientific basis for defining project Project impacts from flow regulation, impeding fish passage and trapping coarse sands and gravel on from flow regulation, impeding fish passage and trapping coarse sands and gravels on habitat and designated uses incorporating by reference the more detailed discussion submitted by The Nature Conservancy.

Under the Clean Water Act and applicable Maryland state laws and regulations, a federal permit or license to conduct any activity that may result in any discharge to navigable waters may not be issued unless the state certifies that the activity does not violate State water quality standards or limitations.[3] It is fully within the state's authority to impose more stringent water quality standards than those set by the federal Act,[4] and any WQC must comply with all applicable provisions of the Clean Water Act, including the provisions governing TMDLs.[5] Finally, it is well-established that the alteration of water, including the alteration of movement, flow, circulation, or chemical composition, is included in the Clean Water Act's definition of pollution and is within a State's legitimate interests when considering a WQC.[6] To that end, we disagree with Exelon's contention that the Conowingo project, as proposed, is consistent with applicable Maryland Water Quality Standards. While it is true that the origin of the sediment and nutrients from behind the Dam is mostly from upstream of Conowingo, the Dam does alter the form of these sediments and nutrients and the timing by which they enter the Chesapeake Bay.[7] [8] For example, the Dam changes the grain

[2] https://www.epa.gov/chesapeake-bay-tmdl
[3] 33 USCS §1341; COMAR 26.08.02.10.
[4] 33 USCS §1370.
[5] 33 USCS 1341(1)(a) requiring a WQC to ensure any discharge "will comply with the applicable provisions of sections 301, 302, 303 [TMDLs], 306, and 307 of this Act…"
[6] *See, e.g., S.D. Warren Co. v. Maine Board of Environmental Protection,* 547 US 370 (2006) (finding that a dam's alteration of water movement and flow fell under the Clean Water Act's definitions of pollution and discharge).
[7] Lawrence P. Sanford, Stephanie Barletta, UNCES Horn Point Laboratory, Cambridge, MD, Grace Massey, Kelsey Fall, Virginia Institute of Marine Science, Gloucester Point, VA. The Impacts of Conowingo Particulates on the Chesapeake Bay: Suspended Particle Size, Settling and Transport. UMCES Contribution TS-705-17. Final Report to Exelon Generation and Gomez and Sullivan, July 2017.
[8] Cornwell, J., M. Owens, H. Perez, and Z. Vulgaropulos. 2017. The Impact of Conowingo Particulates on the Chesapeake Bay: Assessing the Biogeochemistry of Nitrogen and Phosphorus in

size profile of downstream sediments, preferentially passing finer sediments that tend to stay in suspension longer, with potential negative effects on downstream water clarity and underwater grasses. Coarser materials are preferentially retained by the Dam, again with negative downstream impacts as these materials are needed to build and protect desirable habitats, like islands and shorelines, for fish spawning and rearing, mussels and Submerged Aquatic Vegetation, for fish spawning and rearing, mussels and Submerged Aquatic Vegetation. In addition, scouring events caused by high flows mean more nutrients and sediments will flow downstream than are attributed to upstream sources. These are all incremental impacts directly, indirectly, or cumulatively caused by Conowingo Dam's impoundment and artificial release of the Susquehanna River.

Of particular relevance to the WQC are the findings of the Lower Susquehanna River Watershed Assessment[9] (LSRWA). The LSRWA evaluated the impact of scouring events on downstream water quality, namely additional loads of nutrients, as well as effects on dissolved oxygen (DO), water clarity, and chlorophyll a concentrations. These findings were reviewed and confirmed at a more recent workshop sponsored by the Chesapeake Bay Program Scientific and Technical Advisory Committee. [10] As detailed below, modeling results indicate detectable negative effects on these water quality parameters and these effects are more severe if the scour event occurs during the summer. Results also suggest that nutrients from scour events deposit downstream and may contribute to negative water quality impacts for years, though these effects diminish over time.

The study included the coupling of multi-dimensional hydrodynamic and eutrophication models that included estimates of sediment transport for multiple grain sizes and of diagenetic processes in bottom sediments. Both of these features were deemed important in estimating the effect of reservoir scour on downstream water quality. These models were used to run several different scenarios; probably the most relevant to downstream impacts are scenarios 4 through 6 (see Table 4-9 in the Lower Susquehanna River Watershed Assessment report).

Scenario 4 assumed that the Watershed Implementation Plans (WIPs) were not in effect, the reservoirs had all reached dynamic equilibrium and there is a winter scour event. Results of this scenario indicated a scour event would add 7,800 tons of particulate (organic) nitrogen and 2,600 tons of particulate phosphorus, in addition to watershed loads, over a 4-day period.

---

Reservoirs and the Chesapeake Bay. UMCES Contribution TS-703-17. Final Report to Exelon Generation and Gomez and Sullivan. July 28, 2017.

[9] Lower Susquehanna River Watershed Assessment, Maryland and Pennsylvania, May 2015 Final. Found at: http://dnr.maryland.gov/waters/bay/Pages/LSRWA/Final-Report.aspx

[10] Linker, L., R. Hirsch, W. Ball, J. Testa, K. Boomer, C. Cerco, L. Sanford, J. Cornwell, L. Currey, C. Friedrichs, R. Dixon. 2016. Conowingo Reservoir Infill and Its Influence on Chesapeake Bay Water Quality. STAC Publication Number 16-004, Edgewater, MD. 51 pp. Found at: http://www.chesapeake.org/pubs/356_Linker2016.pdf

Scenario 5 assumed the WIPs are in full effect, the reservoirs have reached dynamic equilibrium and there is a winter scour event. Additional loads were estimated to be the same as Scenario 4, indicating the amount scoured is not affected by WIP implementation.

Scenario 6 assumes the WIPs are in full effect, the reservoirs are trapping at current condition and there is a scour event that occurs during summer, fall or winter. Additional loads of phosphorus and nitrogen were estimated to be as high as 14,300 tons of nitrogen and 3,180 tons of phosphorus, but these include watershed and scour loads.

It should be noted the additional loads associated with lost capacity and increased scouring are not quantified or offset by any sector under the Chesapeake Bay Blueprint[11] The applicant for the WQC should be held responsible for mitigating loads associated with these scour events, as again, they are proximately caused by the Dam's operation itself.

The water quality effects of these scour events, including effects on water quality standards attainment were also quantified. Scenarios 4 – 6 all indicated increased chlorophyll a concentrations downstream as well as decreases in water clarity. A June storm event had the most impact on water quality, stimulating higher chlorophyll concentrations and decreases in water clarity that extended up to 37 miles downstream of the dam and persisting throughout the summer.
In terms of attainment of the dissolved oxygen standards, the study examined, for each of the 92 TMDL segments and applicable water quality standard, the percent of time and volume that a given water quality criterion (i.e., DO, chlorophyll, water clarity) was outside an allowed exceedance. Attaining DO standards in the volume-time integral represented by deep-channel water from June to September is a main driver of the Bay TMDL.

Scenario 4 indicates that a reservoir scour event occurring in the winter places an additional 1 percent of the volume-time integral outside of DO standards in segments CB4MH (in the mainstem of the Bay) and PATMH (the mesohaline part of the Patapsco River). Scenario 5 indicates an increase of 1% nonattainment in segments CB4MH, EASMH (the Eastern Bay), and CHSMH (the lower part of the Chester River). Scenario 6 indicated that a June high-flow storm event has the most detrimental influence on deep channel DO followed by a storm of the same magnitude in January, and then October. The June event scenario had an estimated increase in deep-channel DO nonattainment of 1%, 4%, 8%, and 3% in segments CB3MH (in the mainstem of the Bay, north of CB4MH), CB4MH, CHSMH, and EASMH, respectively when compared to the No Storm Scenario. The January storm condition had an estimated increase in deep-channel DO nonattainment of 1%, 1%, 2%, and 2% in segments CB3MH, CB4MH, CHSMH, and EASMH, respectively, when compared to the No Storm Scenario.

---

[11] U.S. Environmental Protection Agency Chesapeake Bay Program Office, *Lower Susquehanna River Assessment Appendix D: Estimated Influence of Conowingo Infill on the Chesapeake Bay Water Quality*. September 25, 2014. Page 31-32 (finding that TMDL allocations may need adjustment when Conowingo Dam is found to have reached dynamic equilibrium, and identifying further research and analysis needs in order to "advance considerably the understanding of the influence Conowingo Reservoir infill has on Chesapeake water quality").

For the October high-flow event, the estimated deep-channel DO saw increased nonattainment of 2% and 1% in CHSMH and SEVMH (Severn River), respectively, compared to the No Storm Scenario.
Although these percentages may seem small, Clean Water Act regulatory requirements prohibit any increase in nutrient loads that causes diminishment of water quality standard achievement.[12]

More recently, Exelon agreed to fund additional studies at the request of the State of Maryland that, among other things, would lead to better understanding of the form, fate, and effects of nutrients that are scoured from behind the Dam. These studies, conducted by the University of Maryland Center for Environmental Studies (UMCES), were to be used in conjunction with those from the LSRWA to determine the extent and magnitude of downstream water quality impacts. Final reports from these studies were not available for stakeholders to review when the Department initiated public comment for the water quality certification process.

CBF requested an extension to the public comment period based on the missing information, and the UMCES studies were released on July 28, 2017 within the extended comment period. Of particular relevance is the work by Cornwell et al. [13] One key finding is that much of the phosphorus released during scour is, initially, in a form that is not bioavailable (due to binding with iron). However, some particles do settle in the mid-Bay and others will eventually be transported there. Under conditions in the mid-Bay, particularly anoxia, this phosphorus can become available for uptake by phytoplankton and, therefore, can contribute to eutrophic conditions, including depressed DO.

An unexpected result from Cornwell et al. 2017 is the finding of a substantial amount of adsorbed ammonium in sediments in the Conowingo Pond, at concentrations exceeding those in similar sediments downstream. This ammonia could be mobilized during scour events (or during dredging) adding nitrogen loads to downstream waters. Both these findings regarding increased mobilization of nutrients during scour events affirm the findings of the LSRWA study regarding increases in the nonattainment of the DO standard in some segments downstream.

The Maryland Department of the Environment (MDE) should include these findings in their water quality certification. Specifically, we recommend that additional modeling scenarios, similar to those conducted as part of the LSRWA study, be run with the new information from the UMCES study about the fate, transport, form, and concentrations of nutrients and sediments from the Conowingo Reservoir, to assess the impact on water quality standards attainment. In addition, we believe MDE should also consider projected effects of climate

[12] 40 CFR §122.4.
[13] Cornwell, J., M. Owens, H. Perez, and Z. Vulgaropulos. 2017. The Impact of Conowingo Particulates on the Chesapeake Bay: Assessing the Biogeochemistry of Nitrogen and Phosphorus in Reservoirs and the Chesapeake Bay. UMCES Contribution TS-703-17. Final Report to Exelon Generation and Gomez and Sullivan. July 28, 2017.

change on the water quality response, given the long-term duration of the permit. Of particular interest is the projected increase in the frequency and intensity of storms, as these will mean more scour events, and higher temperatures that could affect DO. [14] The Chesapeake Bay Program is currently working to include climate change into its models and MDE could leverage this ongoing work for this evaluation. The scenarios should include critical conditions such as severe storms during the summer as this is when impacts are likely to be the greatest. The uncertainties of impact noted above are surely sufficient to seek adequate scientific resolution prior to issuing a WQC, and the studies sought are reasonably implemented modeling runs, not the multi-year work of the previous research.
In its application, Exelon does not propose any mitigation for its downstream water quality impacts. They cite the LSRWA findings, but ignore those that specifically address impacts to downstream water quality. As described above, operation of the Conowingo Dam alters the form of nutrients and the timing by which they enter the Chesapeake Bay and these changes cause incremental effects on DO and the achievement of water quality standards. Consequently, appropriate mitigation measures should be required as a condition for a new license to Exelon for the operation at Conowingo Dam in order to provide reasonable protection to Maryland waters.

As part of the WQC process under the Clean Water Act, Maryland is responsible for setting forth any effluent limitations or any other conditions or limitations and monitoring requirements that may be necessary to assure compliance with the Act and the Chesapeake Bay TMDL.[15] Federal regulations explicitly prohibit issuing such certifications where the conditions of the permit do not provide for compliance with water quality standards or where conditions cannot ensure compliance with applicable water quality requirements of affected states.[16] As has been demonstrated, scour events result in violation of downstream water standards and the WQC must ensure that there are sufficient offsets to mitigate these impacts.

These measures could include financial assistance for nutrient reduction projects upstream of the Dam, in Maryland, Pennsylvania, and New York such as agricultural practices, wastewater treatment plant upgrades, green infrastructure, and restoration of the system's "natural filters" such as propagation of freshwater mussels in fresh water and oyster restoration downstream. Such mitigation efforts should result in pollution reductions that are

---

[14] Johnson, Z., M. Bennett, L. Linker, S. Julius, R. Najjar, M. Mitchell, D. Montali, R. Dixon. 2016. The Development of Climate Projections for Use in Chesapeake Bay Program Assessments. STAC Publication Number 16-006, Edgewater, MD 52 pp. Available here: http://www.chesapeake.org/pubs/360_Johnson2016.pdf

[15] 33 USCS §1341(d) ("Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 301 or 302 of this Act [33 USCS § 1311 or 1312], standard of performance under section 306 of this Act [33 USCS § 1316], or prohibition, effluent standard, or pretreatment standard under section 307 of this Act [33 USCS § 1317], and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section").

[16] 40 CFR §122.4.

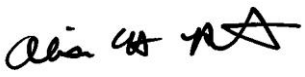
equivalent to the maximum amounts of nutrients estimated to be associated with sediments scoured from behind the Dam and any additional pollution produced as a result of the Dam's presence and operation. CBF remains skeptical of dredging as a viable option to mitigate these water quality impacts, but if this activity is pursued, MDE must consider the potential water quality effects of adsorbed ammonia in Conowingo Pond that would be released during dredging. [17]

Finally, CBF realizes that a public hearing will be held as part of the water quality certification process. We feel that incorporating the findings of the UMCES study and suggested additional model runs should occur prior to such a hearing and that the Department should propose a draft water quality certification for public review that incorporates appropriate mitigation measures to offset the additional nutrient loads, prior to, and to be discussed at that hearing.

Again, we thank you for the opportunity to comment on this important state action.

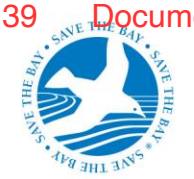
Sincerely,

Sincerely,



Alison Prost
Maryland Executive Director

[17] Cornwell, J., M. Owens, H. Perez, and Z. Vulgaropulos. 2017. The Impact of Conowingo Particulates on the Chesapeake Bay: Assessing the Biogeochemistry of Nitrogen and Phosphorus in Reservoirs and the Chesapeake Bay. UMCES Contribution TS-703-17. Final Report to Exelon Generation and Gomez and Sullivan. July 28, 2017.



CHESAPEAKE BAY FOUNDATION
*Saving a National Treasure*



January 16, 2018

Elder Ghigiarelli, Jr.
Deputy Program Administrator, Wetlands and Waterways Program
Water management Administration,
Maryland Department of the Environment
1800 Washington Boulevard, Suite 430, Baltimore, MD 21230

VIA Email: elder.ghigiarelli@maryland.gov

**Re: Application #17-WQC-02, Lower Susquehanna River and Upper Chesapeake Bay, Use I & 2 Waters**

**Dear Mr. Ghigiarelli,**

Thank you again for the opportunity to provide comments on the above-referenced Water Quality Certification (WQC) application. Please refer to our initial letter dated August 23, 2017 and oral comments of Chesapeake Bay Foundation Maryland Executive Director Alison Prost made during the public hearing on December 5, 2017 as a basis for this supplemental written comment.

Conowingo Dam and the deep pond created by the dam, change the form and timing of pollutant discharges to downstream waters including the Lower Susquehanna River and Chesapeake Bay mainstem [1]. Therefore, the Chesapeake Bay Foundation believes the dam's continued operation is itself directly and proximately responsible for some of the pollution coming through the Dam – especially that which occurs during high-flow storm and scour events – and that these additional loads contribute to the violation of downstream water quality standards.

Furthermore, though we recognize that the Conowingo Dam has, historically, played a role in reducing the sediment and associated nutrients from the Susquehanna River that reach the Bay – some have called it the "Bay's biggest best management practice (BMP)"- we also note that the accumulating sediments and associated nutrients that reached the Conowingo Reservoir were not managed by Exelon. Because of Exelon's failure to address sediment accumulation, the Bay jurisdictions are faced with needing to reduce additional pollutant loads to achieve the sediment, phosphorus and nitrogen allocations of the Chesapeake Bay Total Maximum Daily Load (TMDL).

**Negative Effects on Attainment of Downstream Water Quality Standards Must be Mitigated**
The most recent estimates of the additional load reductions that are needed to achieve downstream water quality standards and account for the lost trapping capacity of Conowingo, that includes the effect of scouring events, is roughly 6 million pounds of nitrogen and 0.26 pounds of phosphorus. [2] Exelon needs to play a role in achieving these additional reductions.

[1] Linker, L., R. Hirsch, W. Ball, J. Testa, K. Boomer, C. Cerco, L. Sanford, J. Cornwell, L. Currey, C. Friedrichs, R. Dixon. 2016. Conowingo Reservoir Infill and Its Influence on Chesapeake Bay Water Quality. STAC Publication Number 16-004, Edgewater, MD. 51 pp. Found at: http://www.chesapeake.org/pubs/356_Linker2016.pdf

[2] https://www.chesapeakebay.net/channel_files/25782/wqgit_dec_4-5_2017_mpa_policy_decisions_briefing_presentation_story_board-12.3.17_jsadd.pdf slide 351

As detailed in our August 23, 2017 letter, the Lower Susquehanna River Watershed Assessment (LSRWA) study[3] evaluated the impact of scouring events on downstream water quality including effects on attainment of the dissolved oxygen (DO) water quality standard. Results indicate scour events cause increases in non-attainment of the DO standards in some downstream segments. For example, a scour event occurring in June had an estimated increase in deep-channel DO nonattainment of 1%, 4%, 8%, and 3% in segments CB3MH, CB4MH, CHSMH, and EASMH, respectively when compared to the No Storm Scenario. Results also suggest that nutrients from scour events deposit downstream and may contribute to negative water quality impacts for years.

As part of the WQC process under the Clean Water Act, Maryland is responsible for setting forth any effluent limitations or any other conditions or limitations and monitoring requirements that may be necessary to assure compliance with the Act and the Chesapeake Bay TMDL. As has been demonstrated, scour events result in violation of downstream water standards and the WQC must ensure that there are sufficient pollutant offsets to mitigate these impacts. **Therefore, Exelon should be held responsible for their contribution to the impacts on downstream water quality**.

Consequently, we recommend that MDE run scenarios similar to those that were conducted as part of the LSRWA study, but with the Phase 6 model. In addition, given the long-term duration of the proposed permit, we recommend these scenarios consider the effects of climate change that includes increases in the size of storm events and the frequency of their occurrence, both of which will lead to increased pollution and more scour events. The Chesapeake Bay Program has quantitative estimates for expected effects of climate change by 2050. These input parameters should be used in the updated modeling scenarios.

With these results in hand, we recommend the following approach to estimate the amount of phosphorus and nitrogen load reductions necessary to mitigate for these impacts. We caution, however, that the numbers used below are for illustrative purposes since they are based on the "old" Chesapeake Watershed Model (Phase 5.3.2), not the "newer" version (Phase 6) that includes many refinements, including updated modeling inputs for the Conowingo. As noted above, increases in non-attainment due to scour events range from 1% - 8%. The LSRWA estimated that to offset a 1 percent increase in Deep-Channel DO nonattainment would require a reduction of about 2.4 million pounds of nitrogen and 0.27 million pounds of phosphorus (p.95). So, for example, to offset a 4% increase in nonattainment in CB4MH would require nitrogen (N) reduction of 9.6 million pounds and 1.08 million pounds of phosphorus (P). These load reductions, however, are not solely Exelon's responsibility as they result from nutrients that originate upstream of the Dam during storms as well as those that are scoured from behind the Dam.

Results of the LSRWA (p. 79) indicate that, on average, scoured loads of sediments represented about 20% of the total loads that enter the Bay from storm events. We note that this proportion is likely conservative. This percentage increases with the size of the storm and more severe storms are likely in the future due to climate change. In addition, a study by the Lower Susquehanna Riverkeeper suggested that scour may have been underestimated by the LSRWA study.[4]

Under this scenario, Exelon would be responsible for achieving 20% of the 9.6 million pounds of N or **2.4 million pounds** and 20% of the 1.08 million pounds of P or **0.27 million pounds**. Again, these numbers are for illustration, but represent a logical, scientifically-based approach for estimating mitigation requirements for Exelon.

The most efficient and permanent practices are those that plant trees because of the land conversion factor and permanence on the landscape once complete. If impervious surfaces are converted to forest, the most

---

[3] Lower Susquehanna River Watershed Assessment, Maryland and Pennsylvania, May 2015 Final. Found at: http://dnr.maryland.gov/waters/bay/Pages/LSRWA/Final-Report.aspx

[4] LSRWA Modeling Review Final Report, Prepared for Earth Justice and Lower Susquehanna Riverkeeper by Paul Frank, P.E., August 25, 2017

efficient load reduction, then 207,253 acres would be needed for nitrogen and 148,351 acres for phosphorus. While less efficient, there's more opportunity to convert turf or highly erodible ag lands to forest. That scenario would require 287,735 acres for the nitrogen offset and 613,636 acres for the phosphorus offset. Using these two scenarios and the BMP cost per acre range of these practices from $150 to $300 per acre as reasonable boundaries for cost, the total offset would range between $22.2 Million and $184 Million. These calculations are derived from two Chesapeake Bay Program Draft reports and current Chesapeake Assessment Scenario Tool (CAST) BMP cost spreadsheets.[5]

If these land conversions are made early in the license term, the benefits will propagate through time as annual load reductions. Conversely, if offset contributions were applied to annual practices such as cover crops, the load reduction efficiency is much less and the benefit will cease at the end of the license term. CBF would discourage a cost-based offset approach that does not take permanence of load reduction into account.

A Chesapeake Stormwater Network report [6] is instructive for looking at opportunity. The top 4 counties in turf acreage in Pennsylvania (Lancaster, York, Dauphin and Luzerne) contain 350,413 acres of turf. If we are to consider that certain counties in Maryland also contribute loads to CB4MH and adjacent segments, we could include an additional 306,621 acres of opportunity from Harford, Baltimore and Anne Arundel Counties. Of course, the phasing of payments into an account for these BMPs and application of optimization tools for N and P effectiveness should also be encouraged.

CBF suggests an appropriate mechanism to manage the mitigation contribution of Exelon to the Chesapeake Bay Program Partnership effort and its distribution should be through a special account held for this purpose. This would allow the leveraging of additional private and public investments to offset loads attributed to the Conowingo Dam infill and lost capacity estimated by the Phase 6 Chesapeake Bay Model[7]. CBF would prefer that disbursements to this account be made annually through the timeframe of any approved Chesapeake Bay Partnership plan to address additional reductions due to Conowingo Dam infill.

At this time, given the extreme costs, risk of resuspension of adsorbed ammonia and limited utility in replacing lost sediment storage capacity, CBF is not recommending dredging of the Conowingo pond as a mitigation measure. Perhaps within an adaptive management framework as discussed below, the technology and markets will in the future be developed sufficiently for an innovative or beneficial use of dredged sediments from the pond to be cost-effective while protecting downstream water quality, but that is yet to be determined. In addition, the lack of a remedy for bypassing beneficial coarse sediment identified by some stakeholders is likely contributing to habitat degradation in the segment downstream of the dam to the mouth of the river. Future iterations of a sediment management plan that might include dredging of a sediment trap at the appropriate location within the reservoir should take into account the

---

[5] Urban Tree Canopy Expansion and Urban Forestry Planting BMPs, DRAFT Fact Sheet, Chesapeake Bay Program
https://www.chesapeakebay.net/channel_files/23644/attach_c._utc_fact_sheet_draft_for_feedback.pdf

A Guide for Forestry Practices in the Chesapeake TMDL Phase III WIPs, Prepared by the Forestry Workgroup, Chesapeake Bay Program Office, DRAFT July 31, 2017
https://www.chesapeakebay.net/channel_files/24878/draft_forestry_bmp_info_packet_for_wip_iii.pdf

[6] The Grass Crop of the Chesapeake Bay Watershed, Technical Bulleting #8: The Clipping Point, Chesapeake Stormwater Network, April 1, 2010
http://chesapeakestormwater.net/2009/06/the-grass-crop-of-the-chesapeake-bay-watershed/

[7] Allocation of Conowingo Infil Nutrient and Sediment Loads: Comparing Cost Effectiveness in Different Phosphorus Load Allocation Scenarios Among Jurisdictional Partners, Chesapeake Bay Program, Revised 6/27/17
https://www.chesapeakebay.net/channel_files/24809/conowingocostofphosreductions_20170622_2.pdf

potential for separation and beneficial use of coarse sediments downstream, rather than sediments being sold for commercial purposes.

**Downstream Beneficial Uses Need to be restored**

As outlined by our Nature Conservancy colleagues, the Susquehanna River Basin Commission (SRBC), and others, Conowingo Dam's daily peaking operations have had a significant and unmitigated impact on the ecosystem of the lower River and Upper Chesapeake Bay. Modifying current operations to restore habitat quality and availability below the dam will be necessary to achieve designated uses under the requested license term. Dam operations impact aquatic resources of the non-tidal and tidal segments of the river[8] and impacts may extend as far south as oyster aquaculture operations near Rock Hall.[9]

MDE must consider requiring Exelon to modify existing operations to provide meaningful restoration to downstream aquatic habitat for diadromous and resident fish, bivalves, macroinvertebrates, submerged aquatic vegetation and water quality. As documented in biological surveys and hydraulic habitat models, these communities are currently in fair to poor condition, or absent, below Conowingo Dam. CBF supports the proposed initial flow schedule shared by TNC and SRBC and an adaptive management plan, to manage flows to accommodate the myriad of designated uses of downstream segments and the economies on which they depend. To that end, CBF incorporates by reference the comments submitted by TNC to the extent they do not conflict with our own.

Evidence from TNC and CBF's submitted economic study by E3 suggest both the aforementioned nutrient load mitigation and operational changes are financially feasible while still maintaining profitability for Exelon.

**Economic Study**

An analysis was conducted by Energy + Environmental Economics, Inc. (E3) to estimate the range of market revenues for Conowingo Hydroelectric Dam, assuming it remains a merchant generator in the Mid-Atlantic electricity market, in order to inform how much economic "headroom" (i.e. "excess" profits available after a reasonable return on investment) exist to mitigate the Dam's incremental environmental and ecological impacts on the Bay.[10] A copy of the study is attached to this comment letter.

For its analysis, E3 used publicly available information, including: historical river flows and monthly Conowingo generation data (the latter from SNL Energy); historic hourly flow and monthly generation data for a representative base case, and two additional operational/hourly flow scenarios from the Susquehanna River Basin Commission; market and price data from regional electricity transmission organization PJM; and financial information (market revenues and projections of capital and operating costs for Conowingo) from Exelon's 2011 and 2013 Conowingo relicensing filings with the Federal Energy Regulatory Commission.

To arrive at an unlevered internal rate of return (IRR), E3 researched fully merchant projects, and chose 10 percent as a reasonable target IRR, within a range shown from independent power producers. E3 examined average seasonal prices and dispatch for the dam, and the differences among the scenarios for

---

[8] The Nature Conservancy's August 23rd letter and associated filings.

[9] Since the public hearing, CBF has learned that freshwater flows from dam operations may even create prolonged freshets which could impair the designated uses of EASMH for oyster aquaculture operations as far south as Rock Hall (Scott Budden Orchard Point Oysters, personal communication).

[10] Energy + Environmental Economics, Inc., "An Economic Analysis of the Conowingo Hydroelectric Generating Station," August 2017. It should be noted that some of these calculations are necessarily estimates, as Exelon does not make available proprietary data. In addition, compensation to Exelon through renewable energy markets was not explicitly assessed, although it could add value and revenues. It should also be noted that revenues for the dam have declined in recent years due to the suppression of energy market prices in PJM, and that the dam's total generation does vary significantly from year to year, which can change revenue estimates. Muddy Run's operations and economics were not included in this analysis, as the intent was to focus solely on Conowingo dam's operations and incremental economics.

average hourly prices and output by season. It then calculated total revenues for the base case and the two alternative scenarios and performed a *proforma* analysis to calculate the unlevered IRR and the annual headroom available, with the resulting headroom ranging from a low of $27.1M to a high of $44.1M.

**Draft Conditions**

In light of these recommendations, the WQC should at a minimum include the following or similar conditions:

1) Given the direct and proximate relationship between the operation of Conowingo Dam and deep pool, and the fact that the form and timing of nutrient pollution discharged through the Dam during certain storm events is altered by both residence and scour, and the fact that known accumulating sediments went unmanaged by Exelon for decades, and given that the result is a certain level of nonattainment of specific Maryland water quality standards in some segments of the deep channel below the dam which persist over a period of time, Exelon Corporation shall provide sufficient mitigation for the addition of such pollution. Such mitigation shall generally be accomplished in concert with that being undertaken or contributed to by the Chesapeake Bay Program partnership, as outlined by the Principals' Staff Committee of the Chesapeake Bay Program.[11]
2) An average amount of increase in several Chesapeake Bay downstream segment(s)' nonattainment of dissolved oxygen standards, due to storm events at the dam, should be calculated with the Phase 6 watershed model and include future effects of climate change expected by 2050. Exelon's responsibility for contributing to this nonattainment should be based on up to date estimates of the contribution of scour during storm events to non-attainment. Then as illustrated above this number should be translated to annual pounds of nitrogen and phosphorus and cost estimates to achieve these reductions.
3) Such mitigation shall be annually deposited into an account to be managed and directed by a neutral third-party funds administrator into grants for the purpose of reducing sediment and nutrient inputs into the Susquehanna by upstream land uses such as agriculture. The locations, specific grantees, and best management practices so supported shall be chosen by the fund manager for their benefit/cost-efficiency and relative ease of implementation. The account shall be used to collect and distribute both public sector and private investments to offset pollution loads attributable to the Conowingo Dam infill and lost capacity estimated by the Phase 6 Chesapeake Bay Model.
4) Exelon shall manage flow so as to restore downstream beneficial uses which have been and continue to be heavily impacted by the current highly unnatural flow regime utilized at the dam. Changes required include implementation of the proposed initial flow schedule shared by TNC and SRBC and implementing an adaptive management plan to ensure that operational changes result in meaningful restoration of diadromous fish, mussels, SAV and related aquatic communities and downstream water quality conditions, to achieve designated uses.

A recommended adaptive management condition follows below.

**Adaptive Management Condition**

Since the current FERC operating license will be in place for the next 37 years, and since various conditions are very likely to change over that timeframe (e.g., modeled or monitored pollution flows and downstream impacts, the frequency and severity of adverse weather events due to climate change, changing nutrient and sediment pollution management practices and technologies, data on fish/habitat, and the financials of dam management) this Water Quality Certification should have a mechanism or framework for adaptive management. The following constitutes our outline of that framework.

1) In addition to meeting the WQC's conditions for flow and habitat, fish passage, and water quality, set out in this WQC, financial resources provided as mitigation by Exelon shall also be used to contribute

[11] https://www.chesapeakebay.net/channel_files/25523/draft_conowingo_wip_framework_december_19_to_psc.pdf

to ongoing monitoring and research so that such WQC conditions may be amended, as changes in modeled or monitored pollutant flows, the frequency and severity of adverse weather events due to climate change, and changing nutrient and sediment pollution management practices and technologies occur, and as new information about nutrient changes in the pond, downstream impacts, and healthy fisheries is developed over the life of the operating license.

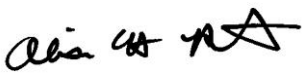
2) Every seven years until the operating license expires or is reissued for this facility in 2055, there shall be convened by Maryland Department of the Environment (MDE) or its successor agency a combined expert and stakeholder panel to consider the changes in flows, pollution loads, downstream impacts, fish and habitat data, and technology noted above, as such information is collected from monitoring and modeling, or new studies or circumstances provide new relevant operating, financial, environmental, or technical information. A potential turning point for such information may be 2030 to consider the effects of any flow changes affected by other licenses such as Muddy Run upstream. The panel will meet and make recommendations for altering any of the conditions specified in this Certificate according to its best professional judgement.

   The expert and stakeholder panel shall be comprised of such regional NGO, state agency, federal agency, and academic experts, as well as interested stakeholders and Exelon's representatives, with demonstrated expertise and continuing interest in water quality and the Chesapeake Bay Total Maximum Daily Load (TMDL), climate change, best management practices for point and nonpoint source pollution control, fish passage, flow management and habitat, and hydropower management, as MDE shall appoint at each seven-year increment.

3) At each seven-year increment, MDE shall consider the recommendations of the expert and stakeholder panel, and after public notice and hearing, shall make whatever changes to the WQC's conditions it deems necessary and appropriate. Such changes shall be in effect until the next seven-year evaluation.

Again, the Chesapeake Bay Foundation and its 240,0000 members throughout the watershed are depending on a prudent and swift decision on firm water quality certification conditions by MDE so that development of the Phase III Watershed Implementation Plans for completing the Bay TMDL and any additional TMDL for implementing the Conowingo Watershed Plan will ensure that Maryland's Water Quality Standards and Designated Uses of the Lower Susquehanna and Chesapeake Bay are met once again.

Sincerely,



Alison H. Prost, Esq.,
Maryland Executive Director
Interim Vice President of Environmental Protection and Restoration
Chesapeake Bay Foundation

# Executive Summary

## An Economic Analysis of the Conowingo Hydroelectric Generating Stations

### Prepared for: Water Power Law Group

An analysis was conducted by Energy and Environmental Economics, Inc. (E3) to estimate the range of market revenues for Conowingo Hydropower Dam, assuming it remains a merchant generator in the Mid-Atlantic electricity market, in order to inform how much economic headroom (i.e., excess profits) exists to mitigate the incremental impacts of the Dam's continued operation on ecological resources of the Susquehanna River and Chesapeake Bay. The analysis focused on identifying market revenue estimates for the project, costs associated with owning and operating the project, how benefits and costs change under different operational scenarios and how much economic headroom is potentially available.

E3 used publicly available information including river flow information and market data from PJM, the regional electricity transmission organization in the Mid-Atlantic, to develop estimates for electricity generation and associated market revenues for a variety of operational scenarios. E3 estimated economic headroom through financial *proforma* modeling.

Estimates for the total revenues for Conowingo range between $115 million to $121 million annually. Estimates for available headroom---after a 10% rate of return--- ranged from $27 million to $44 million annually depending on the operational scenario and climate conditions, as well as the range of revenue estimates. These values translate to a present value capital investment that could be used towards mitigation efforts of at least $268 million (real 2008 $).

The estimates of revenues and headroom, did not include the following sensitivities. First, compensation through renewable energy markets, for example a Renewable Energy Credit (REC) payment that the project could potentially be eligible for if it were able to get certified as an eligible resource, was not explicitly assessed. This additional value stream could potentially increase the revenues Conowingo could earn over the term of their requested license. Based on preliminary estimates, the REC payment necessary to offset revenue losses is within range of REC market values. Secondly, it is likely that revenues for Conowingo have declined in recent years due to the suppression of energy market prices in PJM. In addition, the total generation from Conowingo seems to vary significantly from year to year, which may change the revenue estimates for the project. Finally, this analysis does not include the operations or economics of Muddy Run pumped storage, rather it focused on the incremental economics of Conowingo dam. The operations and combined economics of the projects were filed with FERC.

Energy+Environmental Economics

# An Economic Analysis of the Conowingo Hydroelectric Generating Station

## Prepared for: Water Power Law Group

**Final: August 8th, 2017**

**Attorney-Client Work Product, Privileged and Confidential**

Energy+Environmental Economics

# An Economic Analysis of the Conowingo Hydroelectric Generating Station

## Prepared for: Water Power Law Group

**Final: August 8th, 2017**

**Attorney-Client Work Product, Privileged and Confidential**



Energy and Environmental Economics, Inc.
101 Montgomery Street, Suite 1600
San Francisco, CA 94104
415.391.5100
www.ethree.com

**This report is prepared by:**

Kiran Chawla, Consultant

Nora Xu, Sr. Associate

Michele Chait, Director

Dr. Nancy Ryan, Partner

# Table of Contents

# 1 Background

Energy and Environmental Economics, Inc. (E3) was retained by the Water and Power Law Group PC ("WPLG" or "client") to perform an economic analysis of the Conowingo Hydroelectric Generating Station ("Conowingo" or "Project"), which is wholly owned and operated by Exelon Corporation. The project is a 570 MW hydroelectric peaking plant located on the Susquehanna River in northern Maryland.[1]

The purpose of this analysis is to provide an estimation of the range of market revenues for Conowingo assuming it remains a merchant generator in the PJM market[2]. This analysis has been performed to help WPLG, The Nature Conservancy and the Chesapeake Bay Foundation develop a more informed strategy associated with Exelon's relicensing process for the Project with the Federal Energy Regulatory Commission (FERC) and Maryland regulatory agencies. Ultimately, the economic valuation can be used to inform how much economic headroom exists to support Exelon's investment in mitigating its effects on ecological resources of the Susquehanna River and Chesapeake Bay.

We address the following questions with this report:

- What are the market revenue estimates for the project?
- What are the costs associated with owning and operating the project?
- How do these benefits and costs change under different operational scenarios?
- How much headroom is potentially available for mitigation efforts in the Susquehanna River and Chesapeake Bay?

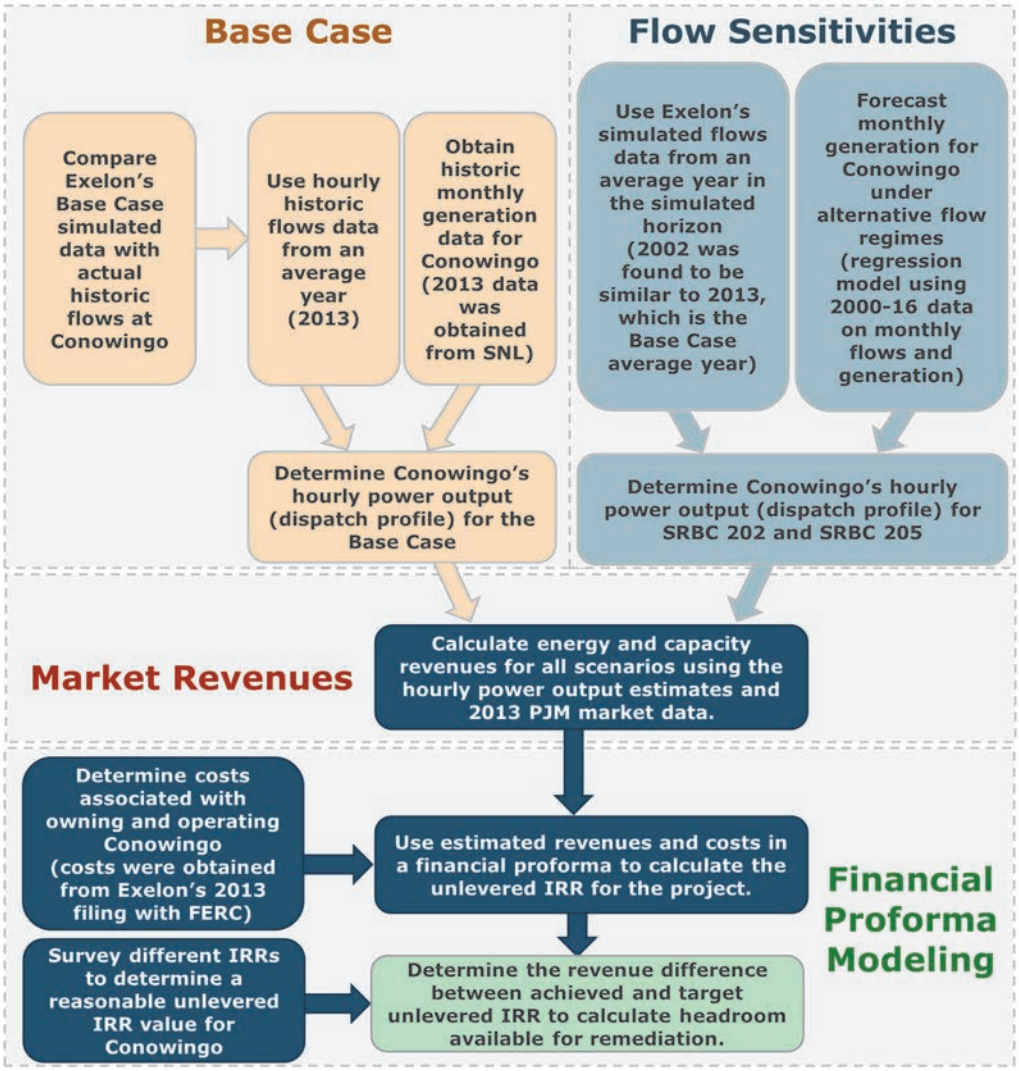
[1] More details can be found on Exelon's website: http://www.exeloncorp.com/locations/power-plants/conowingo-hydroelectric-generating-station

[2] PJM Interconnection is a regional transmission organization (RTO) responsible for maintaining wholesale electricity markets for energy, capacity and ancillary services in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. More details can be found here: http://www.pjm.com/about-pjm/who-we-are.aspx

# 2 Analysis Approach

The inputs and methodology used in the analysis are described in detail in sections 2.1 and 2.2 respectively. For the analysis, E3 used available flows and PJM market data, and developed estimates for hourly Conowingo generation and associated market revenues for the Base Case as well as the flow scenarios. An overview of the analysis is shown in Figure 1.

Figure 1: Analysis overview for the Base Case as well as the flow scenarios.



## 2.1 Input Data, Assumptions and Limitations

### 2.1.1 INPUTS

In order to identify which year to use for the Base Case, E3 analyzed PJM market prices, USGS flows at Conowingo, and historic generation levels for the project. Table 1 shows the values for the parameters used to identify an 'average' year for the Base Case. Even though annual average flows at Conowingo are closer to the period average in 2010 and 2014, E3 picked 2013 as an average year due to the annual average day ahead LMP and total annual generation at Conowingo being close to the period average.

**Table 1: Base Case Selection - 2013 flows, prices, and generation approximate the average values in the 2010-2016 period.**

| Year | Annual Average Day Ahead LMP[3] ($/MWh) | Annual Average Flows (cfs) | Total Annual Generation (MWh) |
|---|---|---|---|
| 2010 | 49 | 35,528 | 1,645,359 |
| 2011 | 45 | 72,090 | 2,518,452 |
| 2012 | 33 | 31,697 | 1,639,132 |
| 2013 | 38 | 33,351 | 1,699,398 |
| 2014 | 52 | 34,927 | 1,594,647 |
| 2015 | 32 | 30,909 | 1,597,488 |
| 2016 | 23 | 27,295 | 1,369,003 |
| Average 2010-16 | 39 | 37,971 | 1,723,354 |

Table 2 summarizes the data used for the analysis, and the corresponding sources, for the Base Case and the two sensitivity scenarios.

[3] (LMP) Locational marginal pricing

**Table 2: Key data inputs and a description of data sources.**

| Key Inputs | Base Case | SRBC 202 | SRBC 205 |
|---|---|---|---|
| **Flows:** Flows at Conowingo | Historic hourly flows for 2013 from United States Geological Survey (USGS) | 2002 SRBC 202 hourly flows simulated by Exelon (provided to E3 by the Nature Conservancy) | 2002 SRBC 205 hourly flows simulated by Exelon (provided to E3 by the Nature Conservancy) |
| **Power Production:** Monthly generation | Historic 2013 monthly generation data obtained from SNL Energy | Forecasted from 2002 cumulative monthly flows simulated by Exelon for SRBC 202 | Forecasted from 2002 cumulative monthly flows simulated by Exelon for SRBC 205 |
| **Generation profile:** Hourly power production | Calculated by E3 using hourly to monthly flow ratios to allocate 2013 historic monthly generation | Calculated by E3 using hourly to monthly flow ratios to allocate forecasted 2002 SRBC 202 monthly generation | Calculated by E3 using hourly to monthly flow ratios to allocate forecasted 2002 SRBC 205 monthly generation |
| **Market data**: PJM energy and capacity market data | 2013 historic PJM market data used across all flow scenarios<br>- Hourly energy prices<br>- Seasonal capacity prices | | |

### 2.1.2 ASSUMPTIONS AND LIMITATIONS.

It is important to note that Exelon operates Conowingo and Muddy Run, which is a pumped hydro storage facility upstream of Conowingo, as a coordinated facility. Conowingo pond provides the after bay for generation at Muddy Run. For the purpose of this analysis, E3 has focused on Conowingo only, and assumed Muddy Run's impacts

on Conowingo operations are captured in historic operations data, as well as Exelon's simulated data for the alternative flow regimes (SRBC 202 and SRBC 205).

In addition, energy prices and flow regimes for a Base Year (2013) were assumed to be constant for the study horizon. Changes to either would change the valuation results, but the examination of those sensitivities is outside of the scope of the analysis.

## 2.2 Methodology Description

In order to address the four study questions, E3 utilized a combination of publicly available data published market and hydro flow data, and generation data developed by Exelon and provided by The Nature Conservancy. E3 analyzed three scenarios, described in more detail below.

E3's methodology included the following steps for each scenario:

1. Determining flows at Conowingo
2. Developing Conowingo dispatch profile
3. Estimating market revenues
4. Estimating target and achieved unlevered IRR
5. Calculating annual and upfront capital available for mitigation

These steps are described in detail below.

### 2.2.1 STEP 1: DETERMINING FLOWS AT CONOWINGO

#### *2.2.1.1 Overview of Operational Scenarios*

For this study, the economics of Conowingo dam were estimated using three operational scenarios; the base case scenario and two potential future scenarios that were developed and proposed by stakeholders through the FERC re-licensing process.[4] A description of each scenario is included in Table 3 and the operational parameters for each scenario are included in Appendix 5.2. The scenarios are approximations based on best available data, therefore each has limitations in its ability to simulate future conditions.

[4] TNC MOI 2015.

| Scenario Name | | Description |
|---|---|---|
| The Base Case | | Current operations with primary goal of maximizing revenue. This does not include moderate increases to minimum flow releases proposed by Exelon in their recent CWA 401 application. |
| Alternative Flow Regimes | SRBC 202 | Potential future operations to restore up to 50% of maximum available habitat. Includes higher minimum releases, a capped maximum generation flow during key spawning and reproductive months and a guided rate of change. |
| | SRBC 205 | Potential future operations, similar to SRBC 202, but include run-of-river operations during spring to improve migratory fish habitat. It is hypothesized that this level of mitigation may make the facility eligible for compensation under renewable energy markets.[5] |

The Base Case was developed using data from a year representative of average PJM market prices, average Conowingo flows, and average annual power generation at the dam. The client was also interested in understanding the impact of alternative flow regimes at Conowingo on the revenues, and consequently the available headroom. The alternative flow regimes analyzed were SRBC 202 and SRBC 205. SRBC 202 is an alternative flow regime proposed by a group of stakeholders in the relicensing proceeding of Conowingo in Maryland, provided to E3 by The Nature Conservancy.

Base Case Flows: Benchmarking Exelon's simulated flows

[5] It is noted that this is hypothetical. In order to be eligible for RPS in Pennsylvania, the facility requires Low Impact Hydropower Institute certification. LIHI certification requires the applicant to meet eight criteria including ecological flows and fish passage.

For the Base Case, E3 compared historic flows data from an average year obtained from the United States Geological Survey (USGS) website to Exelon's Base Case hydro simulation. With this verification analysis, E3 confirmed that currently, Exelon operates Conowingo in a manner consistent with its Base Case hydro flow simulation.[6]. For the verification analysis E3 compared the hourly USGS flows to Exelon's simulated hourly flows for the Base Case. The datasets had overlap for the October 2007 to December 2007 period.

**Figure 2: Benchmarking hourly average Exelon and USGS flows at Conowingo – October 2007 to December 2007.**

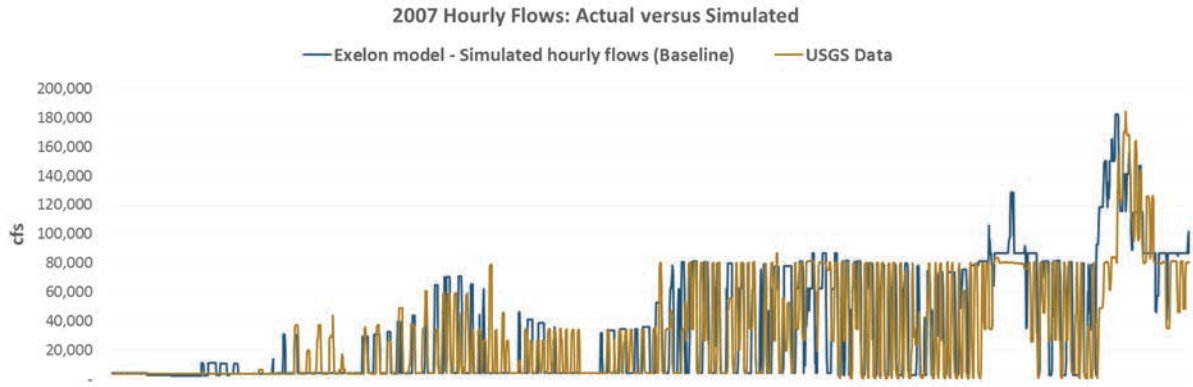
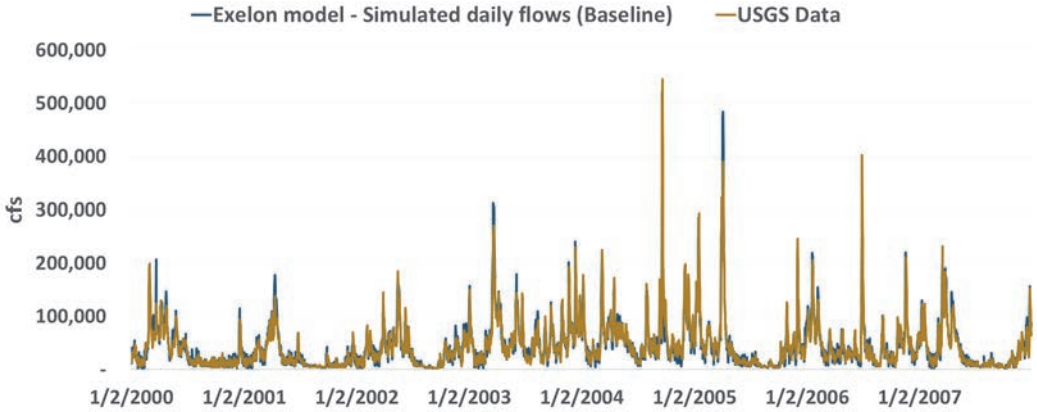



**Figure 3: Benchmarking daily average Exelon and USGS flows at Conowingo – 2000 to 2007.**

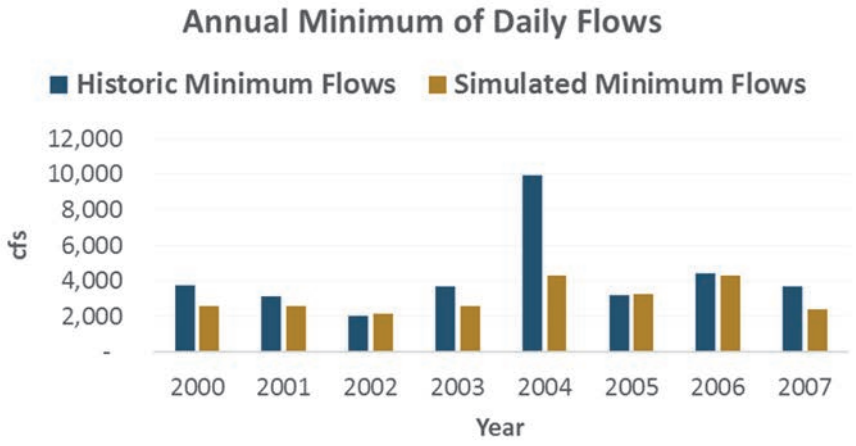


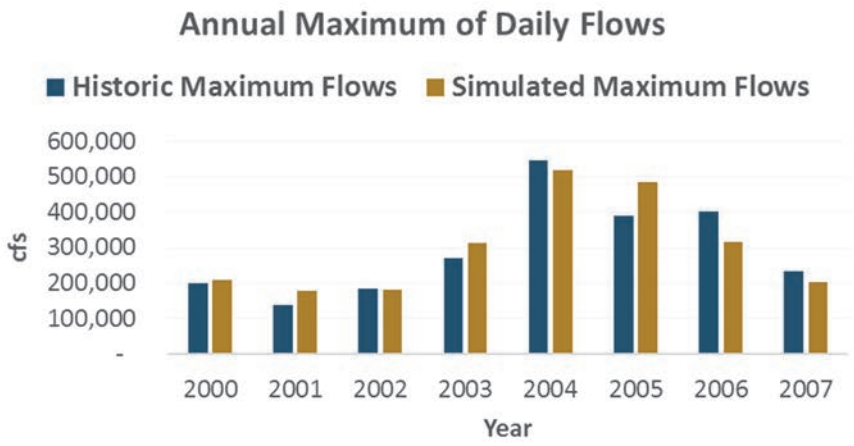

[6] Historical flows data was obtained from USGS: https://waterdata.usgs.gov/usa/nwis/uv?01578310

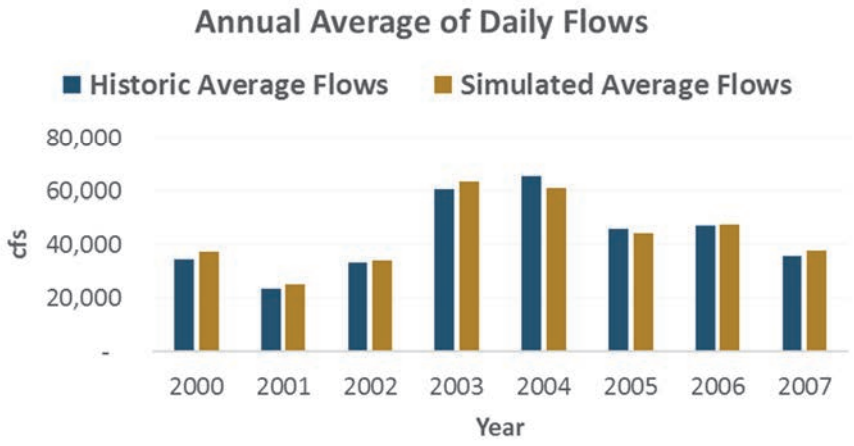
In addition to comparing the flows at the hourly time step, E3 also verified that the historical daily flows were similar to the Base Case daily flows simulated by Exelon. As seen in Figures 2 and 3, Exelon's simulated daily flows in the 2000-2007 timeframe match historically observed data from USGS. Given the similarity in actual and simulated flows, E3 utilized actual flows from 2013 to estimate Conowingo's dispatch profile.

Figure 4 show the comparison between annual minimum, maximum and average flows for the 2000-2007 time horizon.

**Figure 4: Comparison of historic and simulated annual daily minimum, maximum and average Conowingo flows.**






The comparison of hourly flows by month and daily flows by year can be found in Appendix B.

#### *2.2.1.2 Alternative flow scenarios: SRBC 202 and SRBC 205*

For the alternative flow scenarios (SRBC 202 and SRBC 205), E3 used flows data simulated by Exelon,[7] and provided to E3 by The Nature Conservancy. The simulated data was available for the 1967-2007 period. In order to keep the scenario analysis consistent with the Base Case year assumptions, E3 tried to identify a year in the simulation period with flows closely resembling 2013 flows for Conowingo.

[7] The Nature Conservancy provided E3 with data simulated by Exelon for Conowingo flows under different regimes

After comparing the annual minimum, maximum and average flows levels, E3 concluded that year 2002 has similar hydrological conditions at Conowingo to year 2013. E3 also compared the flow duration curves of daily flows, which are the daily flows for the years sorted from the highest to lowest values, for the two years. The comparison is shown in Figure 5.

Table 3 shows the minimum, maximum, average and total flows for the 1980-2007 horizon, and how the values for each of those years compare to the Base Case average year 2013. Figure 3 shows the comparison of the flow duration curves for the year selected from the simulation period (2002) and the Base Case average year (2013).

**Table 3: Comparison of flows in the 1980 – 2007 time horizon to the Base Case average year 2013 (target year shown in green in the table).**

| | Baseline flows | Baseline flows | Baseline flows | Baseline flows | Difference from target year | Difference from target year | Difference from target year | Difference from target year |
|---|---|---|---|---|---|---|---|---|
| | Minimum | Maximum | Average | Total | Minimum | Maximum | Average | Total |
| 2013 | 3,680 | 192,000 | 33,351 | 12,173,220 | - | - | - | - |
| 1980 | 719 | 215,000 | 28,430 | 10,405,422 | (2,961) | 23,000 | (4,921) | (1,767,798) |
| 1981 | 726 | 301,000 | 30,358 | 11,080,514 | (2,954) | 109,000 | (2,994) | (1,092,706) |
| 1982 | 781 | 211,000 | 34,619 | 12,635,852 | (2,899) | 19,000 | 1,267 | 462,632 |
| 1983 | 848 | 357,000 | 41,928 | 15,303,806 | (2,832) | 165,000 | 8,577 | 3,130,586 |
| 1984 | 798 | 470,000 | 49,779 | 18,219,256 | (2,882) | 278,000 | 16,428 | 6,046,036 |
| 1985 | 821 | 165,000 | 30,469 | 11,121,262 | (2,859) | (27,000) | (2,882) | (1,051,958) |
| 1986 | 938 | 361,000 | 41,242 | 15,053,248 | (2,742) | 169,000 | 7,890 | 2,880,028 |
| 1987 | 893 | 236,000 | 32,263 | 11,776,040 | (2,787) | 44,000 | (1,088) | (397,180) |
| 1988 | 2,260 | 184,000 | 27,159 | 9,940,180 | (1,420) | (8,000) | (6,192) | (2,233,040) |
| 1989 | 2,900 | 232,000 | 39,859 | 14,548,460 | (780) | 40,000 | 6,508 | 2,375,240 |
| 1990 | 4,270 | 215,000 | 48,311 | 17,633,450 | 590 | 23,000 | 14,960 | 5,460,230 |
| 1991 | 3,810 | 199,000 | 29,665 | 10,827,810 | 130 | 7,000 | (3,686) | (1,345,410) |
| 1992 | 1,730 | 163,000 | 35,497 | 12,991,830 | (1,950) | (29,000) | 2,146 | 818,610 |
| 1993 | 4,120 | 467,000 | 52,476 | 19,153,600 | 440 | 275,000 | 19,124 | 6,980,380 |
| 1994 | 2,560 | 358,000 | 51,700 | 18,870,530 | (1,120) | 166,000 | 18,349 | 6,697,310 |
| 1995 | 2,770 | 174,000 | 27,972 | 10,209,960 | (910) | (18,000) | (5,379) | (1,963,260) |
| 1996 | 5,270 | 622,000 | 63,467 | 23,228,860 | 1,590 | 430,000 | 30,116 | 11,055,640 |
| 1997 | 3,620 | 118,000 | 29,705 | 10,842,380 | (60) | (74,000) | (3,646) | (1,330,840) |
| 1998 | 1,550 | 332,000 | 41,327 | 15,084,440 | (2,130) | 140,000 | 7,976 | 2,911,220 |
| 1999 | 2,110 | 222,000 | 26,831 | 9,793,150 | (1,570) | 30,000 | (6,521) | (2,380,070) |
| 2000 | 3,760 | 199,000 | 34,350 | 12,572,060 | 80 | 7,000 | 999 | 398,840 |
| 2001 | 3,100 | 138,000 | 23,560 | 8,599,260 | (580) | (54,000) | (9,792) | (3,573,960) |
| 2002 | 1,990 | 185,000 | 33,386 | 12,185,850 | (1,690) | (7,000) | 35 | 12,630 |
| 2003 | 3,680 | 271,000 | 60,681 | 22,148,730 | - | 79,000 | 27,330 | 9,975,510 |
| 2004 | 9,910 | 545,000 | 65,536 | 23,986,310 | 6,230 | 353,000 | 32,185 | 11,813,090 |
| 2005 | 3,200 | 390,000 | 45,805 | 16,718,950 | (480) | 198,000 | 12,454 | 4,545,730 |
| 2006 | 4,400 | 403,000 | 47,075 | 17,182,500 | 720 | 211,000 | 13,724 | 5,009,280 |
| 2007 | 3,660 | 232,000 | 35,618 | 13,000,610 | (20) | 40,000 | 2,267 | 827,390 |

**Figure 5: 2002 and 2013 flow duration curves (log scale).**

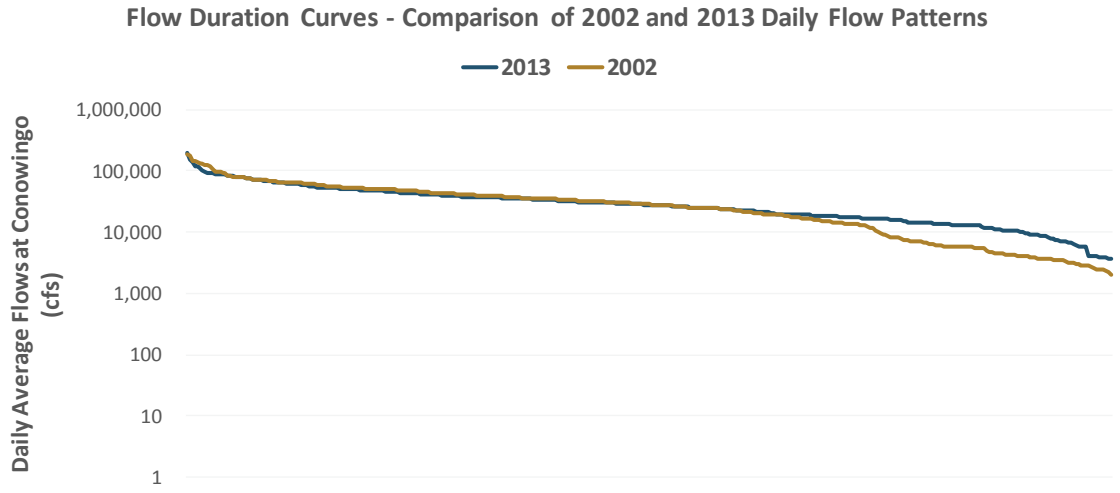


Figure 5 shows that the flows on the lower end are much lower in 2002 than in 2013. However, relative to the other years in the 1980 – 2007 sample, 2002 has mean, minimum, maximum as well as total cumulative flows closest to 2013, which is the Base Case year. All other years have cumulative annual flows, minimum flows and/or maximum flows that are considerably more different from 2013 than 2002 is.

The selection of 2002 as the analysis year for the flow scenarios implies that E3 estimates for total annual generation, as well as corresponding revenues for Conowingo under SRBC 202 and SRBC 205 are likely underestimated.

### 2.2.2 STEP 2: DEVELOPING HOURLY CONOWINGO DISPATCH PROFILE

Once the flows for the Base Case, SRBC 202 and SRBC 205 were obtained, E3 developed generation data associated with these flow regimes. For the Base Case, E3 was able to utilize historic data on Conowingo's monthly power output obtained from SNL energy, given that historic generation at Conowingo is consistent with the Base Case generation profile.[8] For determination of the generation associated with SRBC 202 and SRBC 205, E3 developed a regression model that utilized historic relationships between monthly cumulative flows and monthly power output. Using the regression model, E3 was able to predict what Conowingo's monthly generation would be for the SRBC 202 and SRBC 205 regimes by using Exelon's simulated data for the monthly flows associated with those two operational regimes.[9]

#### *2.2.2.1 Base Case*

E3 obtained monthly generation data from SNL. No hourly generation was available for Conowingo. To estimate power output from flows, E3 used the following formula:

[8]Can be downloaded at: https://www.snl.com/web/client?auth=inherit#powerplant/PP_GenerationChart?ID=2487
[9] Please see Appendix 5.3

**Equation 1: Determining the hourly power output from monthly power generation, hourly flows, and cumulative monthly flows.**

**Hourly power generation = Monthly power generation x (Hourly flows/Monthly flows)**

E3 allocated the total historic monthly generation in 2013 to each hour consistent with how total monthly flows were allocated to the hours of the month. This implies that the relationship between flows and power generation is linear, which is a simplifying assumption made for this analysis.

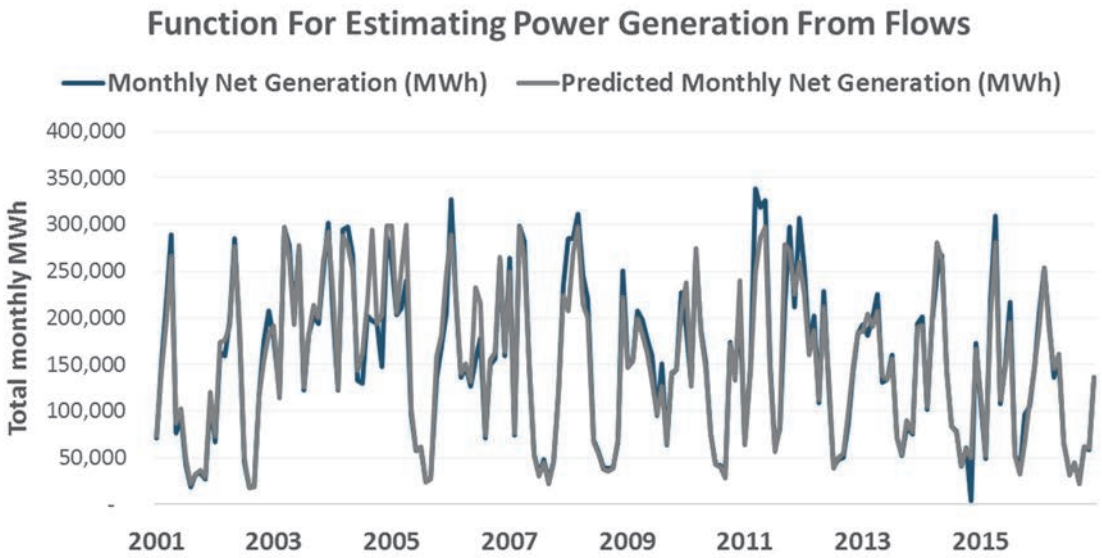
For some hours, using this allocation resulted in power generation that exceeded the project's nameplate capacity. For those hours, the generation was capped at the maximum power output of the project (nameplate capacity), and the difference between the estimated generation and maximum possible generation in each hour was assumed to be compensated at the average annual on-peak energy price.

#### *2.2.2.2 Stakeholder Scenarios (SRBC 202 and SRBC 205)*

E3 could not use historic power generation at Conowingo for analyzing SRBC 202 and SRBC 205 as flow regimes, because current operations at Conowingo are different from those two regimes. To estimate generation for the SRBC 202 and SRBC 205 flow regimes, E3 developed a regression model[10] to establish the relationship between cumulative monthly flows and total monthly generation. E3 used 2001 to 2016 historic monthly flows and generation data to develop the model due to Conowingo historic generation data only being available from 2001[11]. Using the relationship established with this simple model, E3 estimated what the monthly power generation for the 2002 simulated year would be, under the SRBC 202 and SRBC 205 operational regimes, by utilizing the monthly cumulative flows provided by Exelon for the two regimes.

[10] Specifications of the model can be found in the Appendix.
[11] SNL data for monthly generation at Conowingo only begins in 2001.

**Figure 6: Regression model prediction of monthly flows and actual monthly flows for the 2001-2016 time frame.**




E3 compared the estimates from this regression model to Exelon's estimates of the changes in power generation relative to the Base Case for each of these flow scenarios.

For both the sensitivity analyses, E3 used the same methodology for allocating the monthly total generation to create an hourly profile described in Equation 1.

### 2.2.3 STEP 3: ESTIMATING MARKET REVENUES

Using the estimated dispatch profile for the project, E3 calculated the energy market revenues by multiplying the hourly estimated power output for the different flow regimes (Base Case, SRBC 202, and SRBC 205) and the average year's (2013) hourly day-ahead energy market prices.

In addition, E3 calculated the potential capacity revenues in PJM that could be earned by Conowingo by multiplying the project's unforced capacity value (UCAP) by the average year's seasonal capacity prices posted by PJM. These were assumed to be constant across all the flow regimes.

For ancillary services revenues, E3 used the values filed by Exelon in 2013 to develop revenue estimates the project could potentially earn in the ancillary service markets for the Base Case. E3 decreased the Base Case ancillary services revenues proportionally to the decline in energy revenues for the SRBC 202 and SRBC 205 flow regimes.

For SRBC 205, E3 estimated the REC price that would be needed for the lost energy and ancillary service revenues due to more constrained operations to be compensated for through the REC markets, i.e. E3 calculated the REC payment that would be needed per MWh of energy generated to make up for the lost PJM market revenues.

For this, E3 calculated the expected revenue losses for SRBC 205 relative to the Base Case, and divided them by the expected change in generation. E3 calculated the implied REC price for Exelon to be indifferent between the Base Case and SRBC 205 using both E3 modeled revenue losses and change in generation, as well as those filed by Exelon and provided by The Nature Conservancy.

### 2.2.4 STEP 4: ESTIMATING TARGET AND ACHIEVED UNLEVERED IRR

Using the estimated market revenues, and projections of the capital and operating costs associated with owning and operating of Conowingo filed by Exelon with FERC, E3 calculated the 46-year unlevered Internal Rate of Return (IRR) for the project under different flow regimes. We utilized the unlevered IRR metric because return on equity is driven by the amount of debt in the capital structure.

#### *2.2.4.1 Financing Costs*

E3 developed a financial proforma model to estimate the unlevered after-tax IRR for Conowingo. To estimate annual capital and operating costs, E3 used Exelon's 2011 and 2013 FERC filings, which had values for annual operations and maintenance costs (O&M), property taxes, capital expenditures, relicensing fees, as well as costs associated with any protection, mitigation and enhancement measures (PM&E). The O&M costs (including O&M associated with environmental measures), and property taxes are assumed to be incurred on an annual basis, whereas the estimated acquisition cost is a one time cost. The estimates for costs associated with the 2016

Fish Passage Settlement Agreement are assumed to be reflected in the annual ongoing PM&E capital expenditures. A summary of the costs can be found in Table 4.

E3 calculated the after-tax unlevered IRR using these cost assumptions, and the revenues for each scenario. Exelon acquired Conowingo in 2008, and is requesting a renewed license to operate the asset through 2055. For calculation of the IRRs, E3 assumed that the revenues stayed constant in each scenario for the 2008 – 2055 time frame.

**Table 4: Capital and operating costs from Exelon's 2011 and 2013 FERC filings.**

| Component | Value |
|---|---|
| O&M costs | $16M (escalated at 2%) |
| Property taxes | $3.8M |
| Estimated 2008 acquisition cost | $281.7M |
| Annual ongoing capital expenditures | $15.7M |
| Relicensing costs | $15M |
| PM&E O&M costs | $55M |
| PM&E capital costs | $5.4M |

#### *2.2.4.2 Determining a reasonable target IRR*

E3 compared the unlevered IRR achieved for the different flow regimes to what a reasonable unlevered IRR for the project would be. A reasonable IRR provides Exelon with an unlevered, after-tax return commensurate with the risk it bears owning and operating Conowingo. If Conowingo were fully contracted, the unlevered after-tax IRR should be priced greater than the off-taker's weighted average cost of capital (WACC). For instance, Potomac Electric's WACC is currently

8.01%.[12] However, Conowingo, as a fully merchant project in PJM, bears energy and capacity market risk, so the expected return would need to be higher than 8%.

E3 researched appropriate rates of return for a fully merchant project and found two potentially appropriate benchmarks. The benchmarks were used to estimate an after-tax IRR that would be reasonable for Conowingo, and compensate Exelon appropriately for the risk associated with Conowingo. The California State Board of Equalization's 2017 capitalization rate study, which is used to assess property taxes, recommends IRRs of 11.2% to 12.8%.[13] This range is based on analysis of independent power producers that hold a mix of contracted and merchant generation assets (Calpine, AES, NRG Energy, Dynegy) and diversified electric utilities (Xcel Energy, Duke Energy, NextEra Energy). A Brattle report prepared in 2014 for 2018 online dates recommends an 8% after-tax IRR in PJM.[14]

Given this range, E3 determined 10% to be a reasonable target IRR.

### 2.2.5 STEP 5: CALCULATING ANNUAL AND UPFRONT CAPITAL AVAILABLE FOR REMEDIATION

#### *2.2.5.1 Annual Headroom Available*

E3 utilized the proforma model to determine what level of annual revenues would provide a 10% unlevered IRR for Conowingo. After determining this revenue level, E3 calculated the annual headroom available for remediation to be the difference between these target revenues and Base Case revenues estimated as described in section 2.2.3.

[12] Can be found on Exelon's investor relations webpage: http://www.exeloncorp.com/investor-relations/recent-rate-cases
[13] https://www.boe.ca.gov/proptaxes/pdf/2017capratestudy.pdf
[14] The report can be downloaded at: http://www.brattle.com/system/publications/pdfs/000/005/010/original/Cost_of_New_Entry_Estimates_for_Combustion_Turbine_and_Combined_Cycle_Plants_in_PJM.pdf?1400252453

#### *2.2.5.2 Upfront Capital Available*

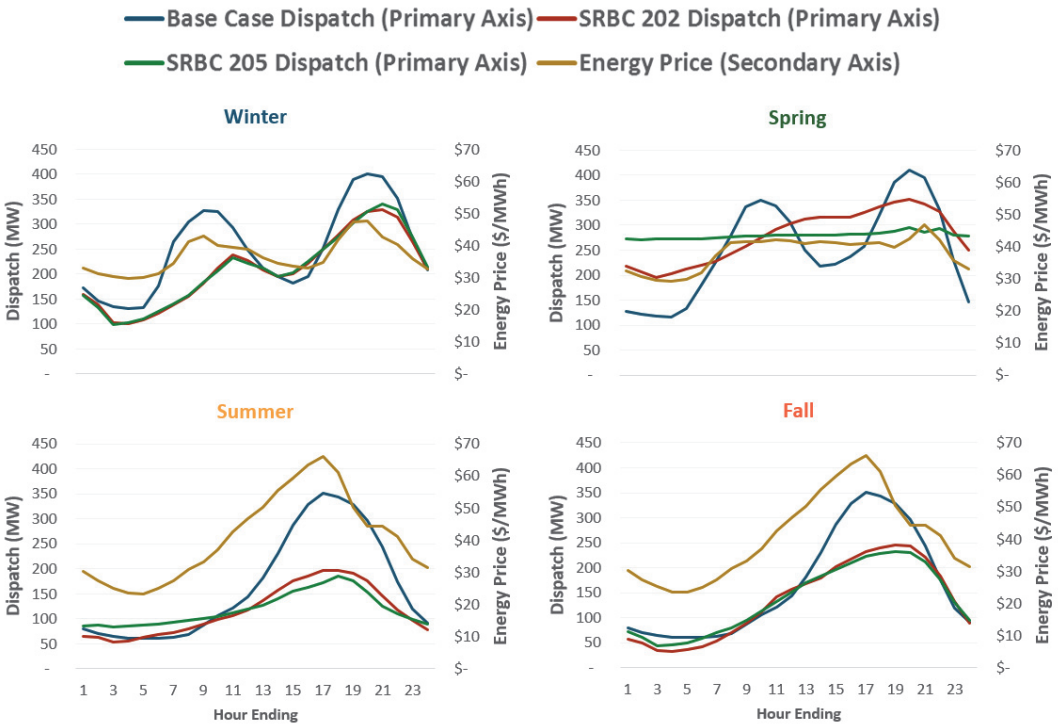
After calculating the annual headroom available for remediation by using the methodology described in section 2.2.5.1, E3 estimated the upfront capital available for remediation as the present value (10%) of the annual headroom stream for the 2008-55 period.

# 3 Results

## 3.1 Conowingo Hourly Dispatch

Using the approach described in section 2.2.2., E3 estimated the operations of Conowingo. In general, the project's dispatch seems to be correlated with energy prices in the Base Case, except in the spring. Under the Base Case, the Project is likely more constrained in its operations in the spring due to higher seasonal run-off. For the stakeholder alternatives (SRBC 202 and SRBC 205), in the spring, the project is constrained in its peaking ability; SRBC 202 includes higher minimum flows, maximum flows and ramping rates and SRBC 205 is instantaneous run-of-river in the Spring.

**Figure 7: 2013 Average seasonal prices and dispatch for Conowingo. Figure represents average of hourly prices and estimated hourly power output for all the months in the season.**



## 3.2 Market Revenues

Using the methodology described in Section 2, E3 calculated the total revenues from Conowingo in the Base Case to be $121 million annually. These estimates are higher than Exelon's 2013 FERC filings by $11.5 million, but in the same overall range, with the exception of capacity market revenues. The breakdown of the different revenue components, and how they compare to Exelon's filing is summarized in Table 5.

For SRBC 202 and SRBC 205, E3 estimated the annual revenues to be $116 million and $115 million respectively. These values do not include the revenues that Conowingo could make by selling into the REC market. E3 calculated the implied REC price, i.e. the value per MWh of Conowingo's generation if it were certified as a REC resource, that would be needed in the SRBC 205 scenario for Exelon to be indifferent between the Base Case operations and the SRBC 205 flow regime. E3 calculated the implied REC price using both E3 modeled revenue losses and change in generation, as well as Exelon's estimates. Exelon's revenue loss estimates include the losses for Muddy Run, and would be lower for Conowingo. Therefore, the implied REC price by using Exelon's filings is likely overestimated if only Conowingo is taken into consideration.

**Table 5: Comparison of E3 estimates and Exelon 2013 filing for different components of PJM market revenues**

| Base Case | | | |
|---|---|---|---|
| **Revenue Source** | **E3 Model Estimates** | **Exelon 2013 FERC Filing** | **Difference (E3 Estimates – FERC Filing)** |
| Energy | $70M | $68M | $2.6M |
| Capacity[15] | $51M | $42M | $8.7M |

[15] Exelon uses 2013 calendar year to calculate PJM's capacity prices, whereas E3 uses the capacity prices from the 2013-2014 capacity year.

| | | | |
|---|---|---|---|
| Ancillary Services | $0.4M | $0.4M | - |
| Total Revenues ($) | $121M | $110M | $11M |
| Generation (MWh) | 1,699,398 | 1,669,000 | 30,398 |
| Total Revenues ($/MWh) | $71 | $66 | $5 |

Similarly, E3 compared its estimates for the flow scenarios to the values filed in 2013 by Exelon, which are for both Conowingo and Muddy Run, and are therefore likely lower for Conowingo alone. The results are summarized in Table 6.

**Table 6: Comparison of E3 estimates and Exelon's revenue estimates under alternative flow regimes (SRBC 202 and SRBC 205).**

| SRBC 202 | | | |
|---|---|---|---|
| **Revenue Source** | **E3 Model Estimates** | **Exelon 2013 FERC Filing[16]** | **Difference (E3 Estimates – FERC Filing)** |
| Energy | $64M | | |
| Capacity | $51M | | |
| Ancillary Services | $0.4M | | |
| Total Revenues ($) | $116M | $108M | $8M |
| Generation (MWh) | 1,640,009 | 1,678,000 | (37,991) |

[16] Exelon simulated data has changes in total generation and revenues, but they were not broken out by component.

| | | | |
|---|---|---|---|
| Total Revenues ($/MWh) | $71 | $64 | $6 |
| **SRBC 205** | | | |
| **Revenue Source** | **E3 Model Estimates** | **Exelon 2013 FERC Filing[17]** | **Difference (E3 Estimates – FERC Filing)** |
| Energy | $64M | | |
| Capacity | $51M | | |
| Ancillary Services | $0.4M | | |
| Total Revenues ($) | $115M | $105M | $10M |
| Generation (MWh) | 1,652,373 | 1,701,000 | (48,627) |
| Total Revenues ($/MWh) | $69 | $62 | $8 |

In addition, the REC prices needed for the revenues in the SRBC 205 flow scenario to be the same as the Base Case are summarized in Table 7. Therefore, if Conowingo was able to supplement its revenues with REC prices of $3/MWh - $4.25/MWh, the revenues in the SRBC 205 operational scenario would be identical to the revenues estimated for the Base Case. With these additional REC revenues, Exelon would be indifferent between operating Conowingo consistent with the Base Case, or under the SRBC 205 operational flow regime.

[17] Exelon simulated data has changes in total generation and revenues, but they were not broken out by component.

**Table 7: REC payment needed per MWh of energy generated in SRBC 205 operational scenario by Conowingo to make up for the lost PJM energy and ancillary service market revenues using Exelon's filings as well as E3's modeled estimates.**

| | E3 SRBC 205 | Exelon SRBC 205 |
|---|---|---|
| **Total generation (MWh)** | 1,652,373 | 1,701,000 |
| **Total revenue reduction relative to Base Case ($)** | $7,023,091 | $5,100,000 |
| **Implied REC price needed ($/MWh)** | $4.25 | $3.00 |

## 3.3 Proforma Analysis Results

With the financial proforma analysis, E3 was able to calculate the after-tax unlevered IRRs for Conowingo under different flow regimes. E3 also calculated the after-tax unlevered IRRs implied by Exelon's revenue estimates from the FERC filing. The results of this analysis are shown in Table 8.

**Table 8: Comparison of after-tax unlevered IRRs for the different flow regimes.**

| Scenario | E3 Model Estimates | Calculations Using Exelon's Revenue Estimates |
|---|---|---|
| **Base Case** | **20.84%** | **18.04%** |
| **SRBC 202** | **19.41%** | **17.51%** |
| **SRBC 205** | **19.19%** | **16.82%** |

## 3.4 Headroom Calculation Results

As described in section 2.2.5, E3 calculated the annual headroom and upfront capital available for investment in mitigation. The available headroom is lowest for the SRBC 205 regime, due to the overall revenues being lower, however the SRBC 205 operational regime could have access to additional revenues through sale of RECs associated with Conowingo's generation. Based on E3's analysis, the REC payment needed in the SRBC 205 flow scenario is $3/MWh to $4.25/MWh depending on whether Exelon's assumptions on market revenues and annual generation are used or E3's modeled estimates. Across the different flow scenarios, and based on differences in modeling between E3's estimates and Exelon's estimates, the annual available headroom is in the $27 million to $44 million range per year.

Exelon has already modified their Base Case operations to increase minimum flow levels. Therefore, the Base Case, although closest to their current operations, may still overestimate market revenues by assuming a higher level of dispatchability for Conowingo than currently exists due to the 401 Cert application.

**Table 9: Estimate of annual headroom.**

| Annual headroom available ($) | E3 Model Estimates | Calculations Using Exelon's Revenue Estimates |
|---|---|---|
| Base Case | $44.1M | $32.2M |
| SRBC 202 | $37.9M | $30.0M |
| SRBC 205 | $37.0M | $27.1M |

Using the annual headroom stream provided in Table 9, E3 calculated the available upfront capital that could be used for undertaking remediation efforts in the Chesapeake Bay as the present value of the annual headroom discounted at the target 10% after-tax unlevered IRR.

**Table 10: Present value (10%) of annual headroom available in the 2008 to 2055 time horizon.**

| PV of annual headroom available (2008$) | E3 Model Estimates | Calculations Using Exelon's Revenue Estimates |
|---|---|---|
| Base Case | $436.4M | $318.9M |
| SRBC 202 | $375.9M | $297.1M |
| SRBC 205 | $366.9M | $268.4M |

It is important to note that if Conowingo were able to access REC markets and receive a payment of $3/MWh - $4/MWh for its generation in the SRBC 205 operational scenario, the headroom available for SRBC 205 would be the same as the Base Case.

# 4 Conclusions

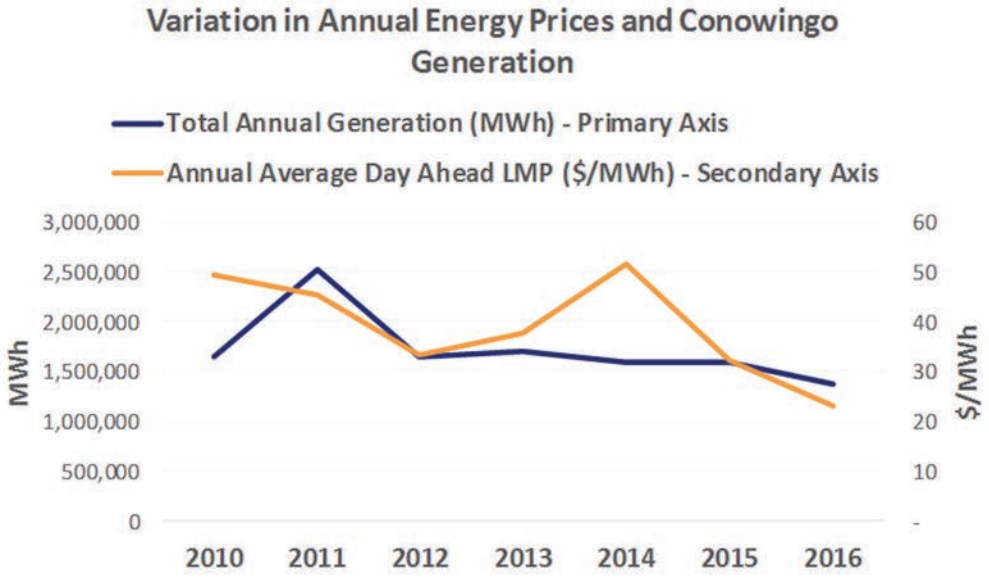
E3's estimates for the total revenues for Conowingo range between $115 million to $121 million depending on the operational scenario. For the Base Case, SRBC 202 and SRBC 205 regimes, E3's calculated revenues were higher than Exelon's model estimates. The difference in revenues primarily stems from the capacity value of the project in PJM in 2013. E3 utilized the seasonal capacity values posted by PJM, whereas Exelon used a calendar year average capacity market price, which was lower. E3 utilized seasonal capacity prices due to PJM posting its capacity market clearing prices seasonally. However, if E3 were to calculate calendar year capacity revenues for the Base Case assuming annual capacity prices, the estimated revenues would be lower and more in line with Exelon's filings. In addition to differences in capacity market revenue estimates, E3's modeled energy market revenues were also higher than Exelon's.

The estimates for available headroom for remediation ranged from $27 million to $44 million annually depending on the flow regimes, access to renewable energy markets, as well as the range of revenue estimates calculated through E3's analysis versus those filed by Exelon. These values translated to a present value capital investment that could be used towards remediation efforts of $268 million (real 2008 $) to $436 million (real 2008 $), depending on the flow regime and whether E3's estimates or Exelon's filing estimates were used.

For the SRBC 205 operations regime, E3 did not include the REC payment that the project would potentially be eligible for if it were able to get certified as a REC eligible resource. This additional value stream could increase the revenues Conowingo could earn, and make Exelon indifferent between the Base Case and SRBC 205 operational regimes. In order for the total revenues for SRBC 205 to be the same as the Base Case, Conowingo would need a REC payment of $3/MWh-$4.25/MWh for its generation, depending on whether E3's modeled estimates or Exelon's filings are used.

It is likely that revenues for Conowingo have declined in recent years due to the suppression of energy market prices in PJM. In addition, the total generation from Conowingo seems to vary significantly from year to year, which may change the revenue estimates for the project. Figure 6 shows the variation in total annual generation at Conowingo as well as the range of energy prices in the 2010 to 2016 horizon.

**Figure 8: 2010 to 2016 variation in Conowingo annual generation and PJM energy market prices.**

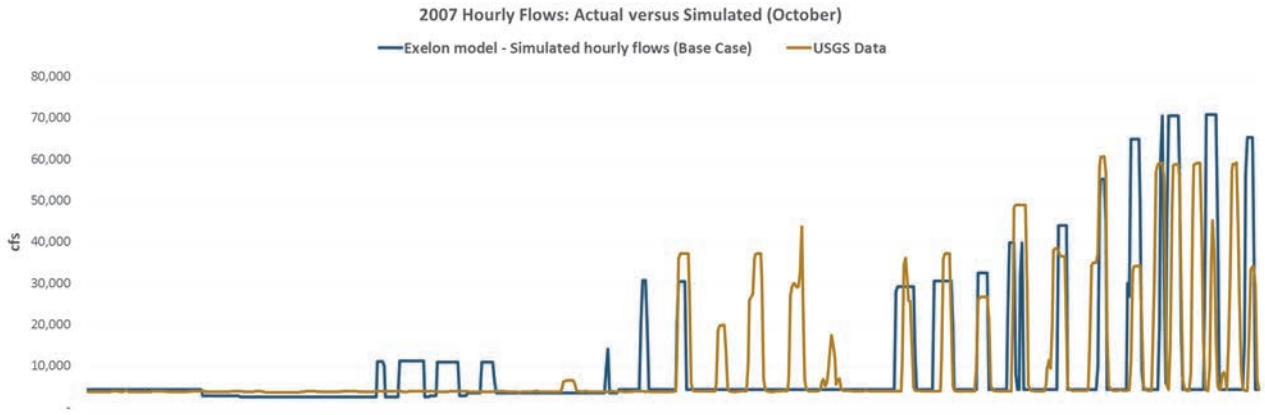


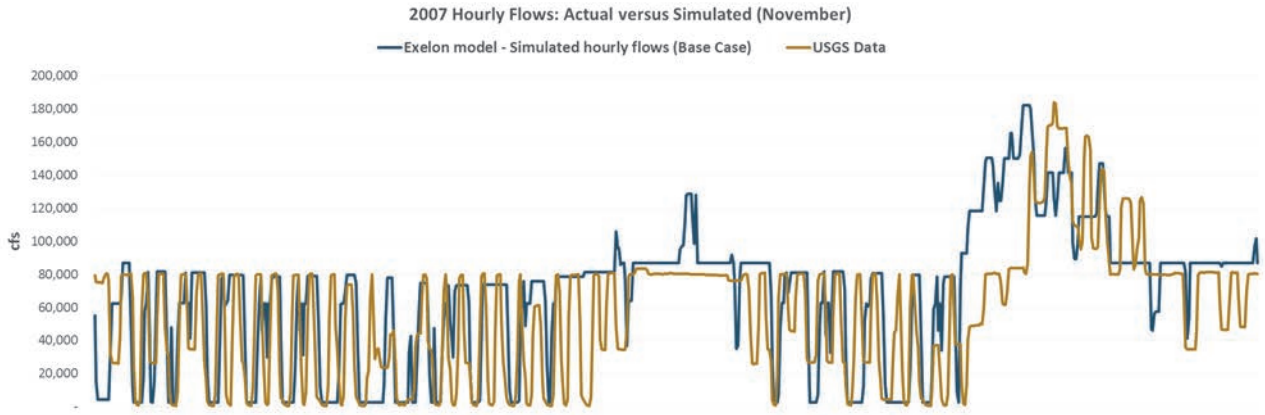

Further analysis would be needed to capture the impact of lower energy prices and changes in power generation on Conowingo's long term revenue forecasts.

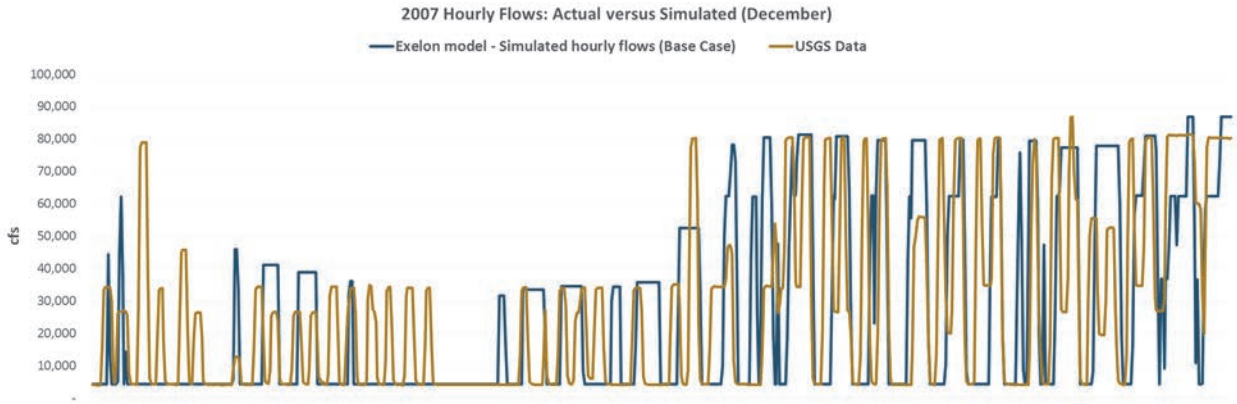
# 5 Appendix

## 5.1 Comparison of historic and simulated flows

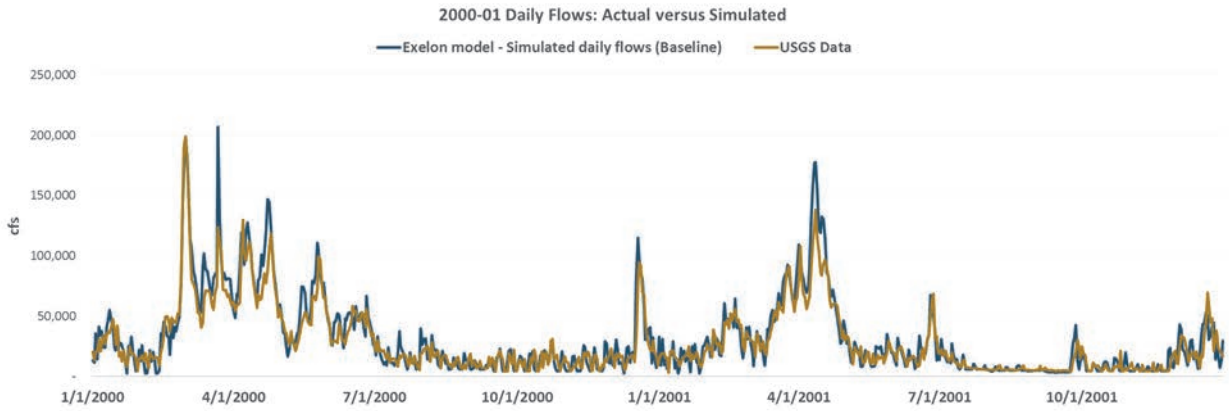
### 5.1.1 COMPARISON OF HOURLY FLOWS: OCTOBER 2007 – DECEMBER 2007

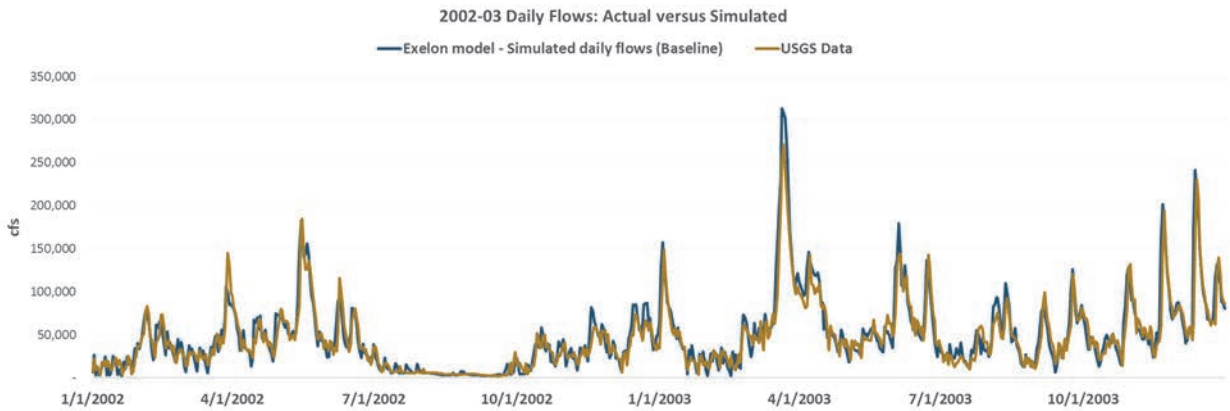


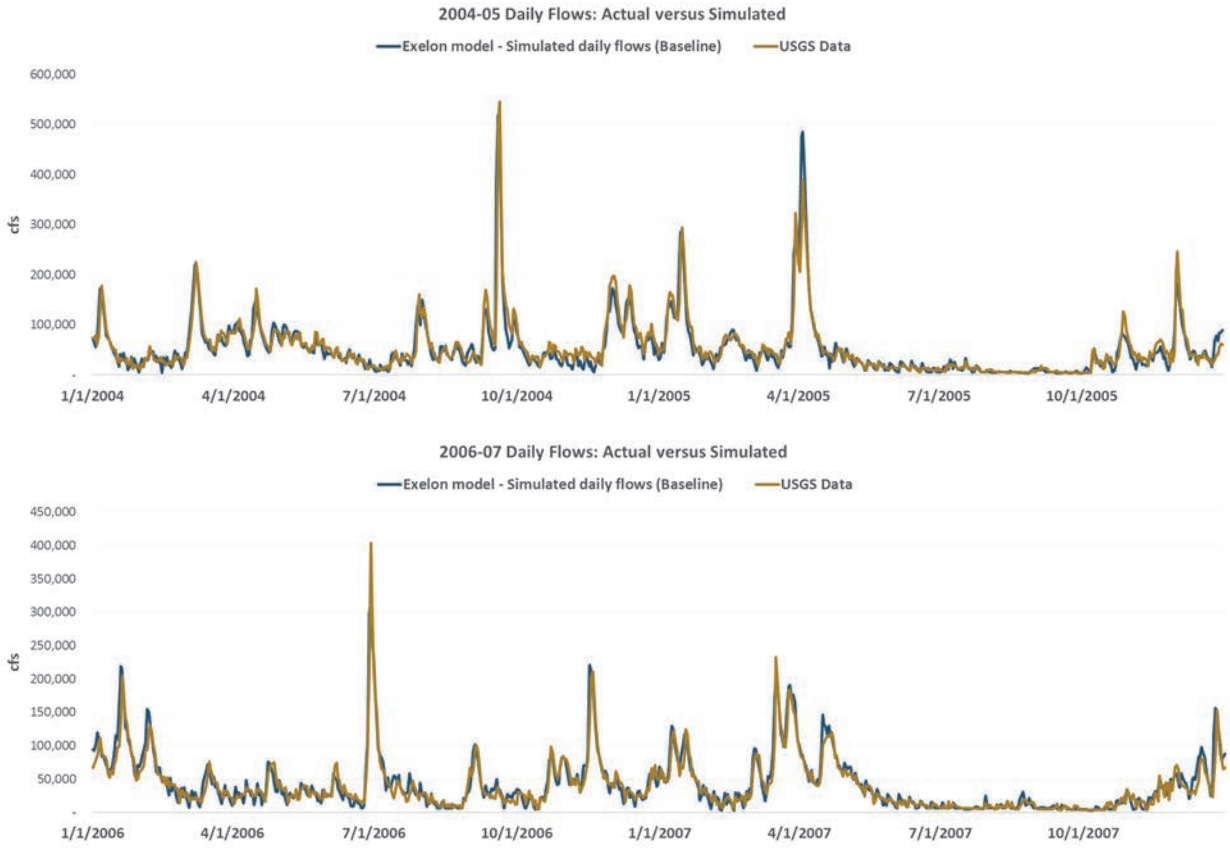






### 5.1.2 COMPARISON OF DAILY FLOWS: 2001 – 2007





## 5.2 Operational parameters for flow scenarios

| Scenario name | Hourly Min Flow (cfs) | | Hourly Max Flow (cfs) | | Hourly Flow Change (cfs/hr) |
|---|---|---|---|---|---|
| Base Case | Jan | 1,750 | | 86,000 cfs | 86,000 cfs |
| | Feb | 1,750 | | | |
| | Mar | 3,500 | | | |
| | Apr | 10,000 | | | |
| | May | 7,500 | | | |
| | Jun | 5,000 | | | |
| | Jul | 5,000 | | | |
| | Aug | 5,000 | | | |
| | Sept. 1-15 | 5,000 | | | |
| | Sept. 15-30 | 3,500 | | | |
| | Oct | 3,500 | | | |
| | Nov | 3,500 | | | |
| | Dec | 1,750 | | | |
| | | | | | |
| SRBC 202 | 1/1-1/31 | 10,900 | 4/1 to 11/30: | 65,000 | 20k |
| | 2/1-2/29 | 12,500 | otherwise: | 86,000 | |
| | 3/1-3/31 | 24,100 | | | |
| | 4/1-4/30 | 29,300 | | | |
| | 5/1-5/31 | 17,100 | | | |
| | 6/1-6/30 | 9,700 | | | |
| | 7/1-7/31 | 5,300 | | | |
| | 8/1-8/31 | 5,000 | | | |
| | 9/1-9/30 | 5,000 | | | |
| | 10/1-10/31 | 4,200 | | | |
| | 11/1-11/30 | 6,100 | | | |
| | 12/1-12/31 | 10,500 | | | |
| | | | | | |
| SRBC 205 | 1/1-1/31 | 10,900 | 4/1 to 11/30: | 65,000 | 5k if flow < 10k cfs |
| | 2/1-2/29 | 12,500 | otherwise: | 86,000 | 10k if flow <30k cfs |
| | 3/1-3/31 | | | | 20k of flow <86k |
| | 4/1-4/30 | Marietta flow + | | | |
| | 5/1-5/31 | intervening inflow | | | |

| | | | |
|---|---|---|---|
| | 6/1-6/15 | | |
| | 6/16-6/30 | 9,700 | |
| | 7/1-7/31 | 5,300 | |
| | 8/1-8/31 | 4,300 | |
| | 9/1-9/30 | 3,500 | |
| | 10/1-10/31 | 4,200 | |
| | 11/1-11/30 | 6,100 | |
| | 12/1-12/31 | 10,500 | |

## 5.3 Regression model for determining relationships between cumulative monthly flows and total monthly generation for Conowingo

SUMMARY OUTPUT

| ***Regression Statistics*** | |
|---|---|
| **Multiple R** | 97% |
| **R Square** | 94% |
| **Adjusted R Square** | 94% |
| **Standard Error** | 20396 |
| **Observations** | 192 |

| **ANOVA** | | | | | |
|---|---|---|---|---|---|
| | ***df*** | ***SS*** | ***MS*** | ***F*** | ***Significance F*** |
| **Regression** | 2 | 1.29316E+12 | 6.46578E+11 | 1554.221331 | 4.5487E-118 |
| **Residual** | 189 | 78626695703 | 416014263 | | |
| **Total** | 191 | 1.37178E+12 | | | |

| | ***Coefficients*** | ***Standard Error*** | ***t Stat*** | ***P-value*** | ***Lower 95%*** | ***Upper 95%*** | ***Lower 95.0%*** | ***Upper 95.0%*** |
|---|---|---|---|---|---|---|---|---|
| **Intercept** | -8.22E+03 | 3.65E+03 | -2.25E+00 | 2.56E-02 | -1.54E+04 | -1.01E+03 | -1.54E+04 | -1.01E+03 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Sum of monthly flows** | 7.42E-03 | 1.99E-04 | 3.72E+01 | 6.57E-89 | 7.03E-03 | 7.81E-03 | 7.03E-03 | 7.81E-03 |
| **Sum of monthly flows squared** | -4.48E-11 | 2.14E-12 | -2.09E+01 | 5.48E-51 | -4.90E-11 | -4.05E-11 | -4.90E-11 | -4.05E-11 |

# DECLARATION OF KEITH WILLIAMS

I, Keith Williams, hereby declare as follows:

1. My name is Keith Williams. I am 55 years old, and I currently reside in Conowingo, Maryland, where I have lived since 1994. I am a member of the Lower Susquehanna Riverkeeper.
2. For much of my life, I have had a strong connection to the watersheds in which I lived. In high school, I spent a lot of time on the Delaware River canoeing, kayaking, swimming, and fishing. Inspired by my early experiences, I went on to earn a Bachelor's degree in Environmental Biology and a Master's degree in Ecological Teaching and Learning.
3. For more than ten years (from 1990 to 1996 and 2001 to 2005), I worked as an environmental biologist for the United States Army Health Services Command, based at the Aberdeen Proving Ground in Maryland, located on the western shore of Chesapeake Bay. My work involved conducting ecological risk assessments on sites covered by the Resource Conservation and Recovery Act. These sites were located across the country and around the globe, including some sites near Chesapeake Bay. During wartime, I conducted ecological assessments for troops stationed in Kuwait and Saudi Arabia.

4. Now, I and my entire family are deeply connected to the Lower Susquehanna River and the upper Chesapeake Bay. I built a relationship with my wife that began with many recreational trips to the land and water immediately below the Conowingo Dam, and we have raised our kids on the waters of the Lower Susquehanna River and Chesapeake Bay.
5. I have spent many hours over the last ten to fifteen years snorkeling and taking photographs underwater both above and below the Dam. I used to go snorkeling almost every day, but lately I go about once a month. I also kayak on the river about once a month. Last summer I kayaked and snorkeled the length of the Susquehanna River—more than 400 miles. I intend to continue these activities. The effects of the Dam diminish my snorkeling and kayaking experiences both above and below it.
6. Above the Dam, I don't see the abundance and diversity of fish that I would like to when snorkeling, such as eels and migratory fish like shad and herring. These species should run all the way up the Susquehanna, but the Dam has severed their migration route. I understand that the number of shad, herring, and eel that pass through the Dam is only a fraction of what it used to be. I snorkel below the Dam more often than above in part because of the Dam's limiting effect on aquatic life above it.

7. Below the Dam, snorkeling conditions vary. Sometimes I won't see any fish because of the high flows from the Dam, particularly in the springtime—the fish can't keep up with those flows. Sometimes algae covers everything, particularly in the summertime, from the excess nitrogen and phosphorus discharged from the Dam. Sometimes I cannot snorkel at all because the water is unsafe for me to get in to or even touch because of harmful blue or green algal blooms fed by nutrients discharged from the Dam.
8. The harms caused by the Dam are apparent in one of my favorite areas to snorkel, the Susquehanna Flats, located below the Dam in the upper Chesapeake Bay. At their best, the Flats are like an emerald city when the underwater grasses grow in each year—snorkeling in them is like flying over a tropical rainforest. They hold a wealth and diversity of freshwater life with colors that rival those one might see on a coral reef. Observing these species and their behavior on their own terms and in their own element is a kind of beauty that can't be replaced by viewing them in a tank. Sometimes however, scoured sediment discharged from the Dam diminishes my ability to see in the water. The Flats have also lost a lot of the underwater grasses that I enjoy—the vegetation is smothered either by sediments from behind the dam or by algal growth fed by nutrients from behind the Dam. I enjoy

snorkeling here less when the visibility is bad from sediment or algal fouling, and it is more difficult to get good photographs.

9. In addition to my recreational interests, the Dam affects my professional interests. I have worked to promote snorkeling in the Chesapeake Bay and elsewhere, including publishing two books on freshwater snorkeling, published in June 2016 and in February 2020, which feature many of my underwater photographs. I have a third book on the way, which will explore the Susquehanna Flats over the course of a year. I also started Freshwater Journeys to guide river snorkeling trips, including in the creeks below the Dam—though these have been mostly on hold due to Covid. I would like to continue to run snorkeling trips below the Dam, but these trips are totally dependent on visibility and water safety. I have had to cancel or reschedule trips if there are high flows through the Dam, if there is a harmful algal bloom, or if water visibility is poor due to scoured sediment discharged from the Dam after big rain events, or excess algae growth fueled by that nutrient-laden sediment pollution. I have also had to set up trips to other locations, like in Tennessee and Florida, because of water clarity problems due to the Dam. The Dam's effects on water quality harm my ability to get people into the water as part of my snorkeling business, and out-of-state trips are less convenient and more expensive.

10. I fear that all the amazing diversity of underwater grasses and other aquatic life that I enjoy and rely on will continue to be diminished by the Dam's discharges or may disappear entirely as a result of discharges after even one catastrophic storm. Excess sediment and nutrients will impact the quality of the Flats for my recreational and commercial snorkeling uses, as well as my other recreational uses like kayaking.

11. I also fish about once a month—mainly catch and release because I am concerned about what is in the water, such as chemicals like DDT, DDE, and PCBs. I worry that the Dam discharges these sediments after scour releases them from the sediment. Lately, the smallmouth bass have been suffering from a wasting disease too. Fish are more susceptible to disease when they are stressed, and I worry the Dam is stressing them—low flows mean stagnant water, which heats up, algae grows feeding on nutrients, the water becomes hypoxic, and the bass get sick. I don't enjoy catching sick fish.

12. I joined the Lower Susquehanna Riverkeeper because I thought it was time for me to give back to the River and help give it a voice in matters like the relicensing of the Conowingo Dam. I joined the organization's board after years of following the organization's accomplishments, and I have been a board member for about three years.

13. The Dam's operations harm my snorkeling business and my ability to take and publish photographs for my books promoting snorkeling. The Dam's operations also diminish my enjoyment of recreational snorkeling, photography, kayaking, and fishing in the waters above and below the Dam. FERC's issuance of a license that allows Exelon to operate the Dam for another 50 years without undertaking the cleanup measures Maryland has found necessary to assure the Dam complies with water quality standards, and without adequately considering the environmental effects, prolongs and exacerbates this harm.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct.

Date: January 27, 2022

Keith Williams