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March 12, 2014

Gina McCarthy, Administrator
Mail code: 4101M
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administrator McCarthy:

The Allegany County Board of County Commissioners, the County Commissioners of Carroll County, the County Commissioners of Caroline County, the County Executive and County Council of Cecil County, the County Council of Dorchester County, the Frederick County Board of County Commissioners, the County Commissioners of Kent County, and the County Executive and County Council of Wicomico County (collectively, the Clean Chesapeake Coalition) are submitting this letter to express our grave concerns regarding the U.S. Environmental Protection Agency's lack of due diligence and meaningful oversight in protecting our state waters and the Chesapeake Bay. The Clean Chesapeake Coalition is an evolving association of Maryland local governments that have coalesced to pursue improvement to the water quality of the Chesapeake Bay in a prudent and fiscally responsible manner.

As local government officials we understand and appreciate the value of EPA's role in protecting human health and the environment given that we also serve that role on environmental matters at the county government level. We appreciate and understand the passions, especially in regards to the Chesapeake Bay as our watermen, farmers, businesses and citizens are extremely distraught over the fact that upstream nutrient laden sediments are devastating our waters and they are the ones paying the price. The reason for this letter is to request a meeting with you and anyone else on your staff associated with the Chesapeake Bay to discuss the environmental impacts and threats related to state of the reservoir above the Conowingo Dam in the lower Susquehanna River.

The Susquehanna River is the single largest source of pollution loading to the Chesapeake Bay and because all that flows down the mighty Susquehanna flows through the Conowingo Dam, the Dam is a significant point source of sediment and nutrient pollution that negatively impacts the Chesapeake Bay. The Dam converted the lower Susquehanna River into the Bay watershed's largest stormwater management pond that the owner of the Dam calls the "Conowingo Pond." The Conowingo Pond has been trapping upstream nutrients, sediments and other contaminants for more than eighty (80) years; has never been dredged or otherwise maintained and today nobody is legally

responsible to dredge or otherwise maintain it. Since Hurricane Agnes in 1972, the devastating impacts on the Bay from the accumulated nutrients and sediments above the Conowingo Dam when coupled with the forces of Mother Nature have been well-known, well-documented and thoroughly studied.

The current relicensing process of the Dam, through the Federal Energy Regulatory Commission ("FERC"), offers EPA, the Bay watershed states, impacted local governments and other interested parties a once in a generation opportunity to require the owner and operator of the Dam to properly manage and control the vast quantities of nutrients, sediment and other contaminants that are scoured and discharged into the Bay during major storm events and now with more regularity in equally harmful proportions because of the loss of trapping capacity in the Conowingo Pond.

We have been greatly disappointed in the EPA's lack of due diligence in their role in FERC's relicensing application process associated with Exelon Corporation's Conowingo Hydroelectric Plant (FERC Docket P-405). As local government officials it is very difficult to administer programs that require industry and businesses to abide by environmental requirements established to protect and restore the Chesapeake Bay when the Federal EPA handles their responsibility in a license application of significant import to the Bay as if it were a feel good exercise with industry. The depth of the Conowingo Pond behind the Dam has contracted from 120 feet in depth when originally constructed in the 1920s to approximately 20 feet or less in depth in most locations today. The Conowingo Pond is full and has never been dredged or maintained by the Dam's owner-operator. As you can see by the attached U.S. Geological Survey (USGS) satellite image (Enclosure A), the Conowingo Pond can no longer trap nutrients and sediments during episodic events. The volume of scoured nutrients and sediment wreaks havoc on Maryland waters and on the Chesapeake Bay, as well-documented by the impacts of Hurricane Agnes, Tropical Storm Lee and Hurricane Irene; and undermines Bay restoration efforts below the Dam, including achievement of the Bay TMDL goals.

Exelon's failure to conduct a satisfactory sediment transport study as a basic requirement of the Conowingo Dam relicense application process has been blatantly disregarded by EPA. While the USGS had reported concerns over the use of outdated models and the lack of consideration for scour in the sediment transport study submitted by Exelon in the FERC relicensing, EPA nevertheless supported FERC's decision to move forward with the relicensing (see Enclosure B) without an adequate sediment transport study from the license applicant. Where is the enforcement of accountability for the licensee Exelon to sufficiently complete a bona fide sediment transport study as required for the Dam's relicensing? Instead, in EPA's official comment letter to FERC regarding the agency's approval to move forward with the relicensing process EPA cited a 2011 magazine article with little scientific merit and a 2003 USGS report as their scientific sources (see Enclosure B). More troubling is that in the same August 2013 comment letter EPA also referenced a study being coordinated by the U.S. Army Corps of Engineers and the Lower Susquehanna River Watershed Assessment (LSRWA), stating that: "EPA strongly recommends that FERC include the results of the Corps study as part of the EIS under the National Environmental Policy Act." Shifting the execution and costs of this important environmental requirement in the FERC licensing process from a private corporation reporting billions of dollars each year in revenues to the public sector with limited resources will undoubtedly compromise the scientific merits of the LSRWA and the thoroughness of FERC's environmental impact considerations, and will unquestionably impact the

Chesapeake Bay's water quality and Bay restoration efforts for over four (4) decades (*i.e.*, the potential term of the FERC license for the Conowingo).

The LSRWA Study

The publicly available meeting notes from the workgroup's meeting in August 2013 reinforced our concerns (see Enclosure C); given the following statement: "The group determined that data on nutrient (and sediment) in water outflows from Conowingo Pond was inadequate, and collecting data to fill gaps was scoped into the study. It was recognized that it would be useful to have additional information on Conowingo Pond bottom sediment biogeochemistry, particularly with regard to phosphorus. However, it was determined that existing information/data was adequate for study modeling purposes, and it was decided to not undertake such investigations in light of need to control study costs." Thus, FERC's initial requirement for a sediment transport study is simply being discarded at the hands of EPA.

In addition, Lewis Linker of EPA's Chesapeake Bay Program presented findings in his PowerPoint presentation entitled "DO Water Quality Standard Attainment Analysis of the Estimated Influence of Conowingo Infill on Chesapeake DO Using Linked WSM, ADH, and WQSTM Simulations" on January 16, 2014 to the LSRWA study team (see Enclosure D). Mr. Linker's analysis is riddled with inaccurate information, including pertinent time frames. In addition, Mr. Linker's analysis regarding scour clearly states that additional data is required, and yet this important analysis is simply being ignored.

As you can see, when it comes to safeguarding our waters and our restoration efforts from the single largest source of nutrient and sediment loading to the Chesapeake Bay, the USEPA has not only neglected their oversight as a regulatory agency, but has also encouraged the use of inaccurate and poorly conducted environmental impact studies in furtherance of a new 46-year license for the Conowingo Dam. Quite frankly, we have higher expectations for the EPA in protecting our State waters. Until there is evidence of a more robust and considered EPA involvement in the pending FERC relicensing process, we see our concerted water quality improvement efforts below the Dam being undermined, we see obstacles to achieving Bay TMDL goals, and we will continue to experience unchecked harm to the natural environment.

As local government officials in the State of Maryland, we bring this significant concern to your attention as Administrator of the USEPA. We request a meeting to discuss our concerns and potential actions that can be taken to offset the potential threat that the current state of the Conowingo Pond poses to our waters and to our efforts and expenditures to improve the water quality of the Chesapeake Bay.

Sincerely,

CLEAN CHESAPEAKE COALITION

Ronald H. Fithian
*Chair and Kent County Commissioner*

Enclosures

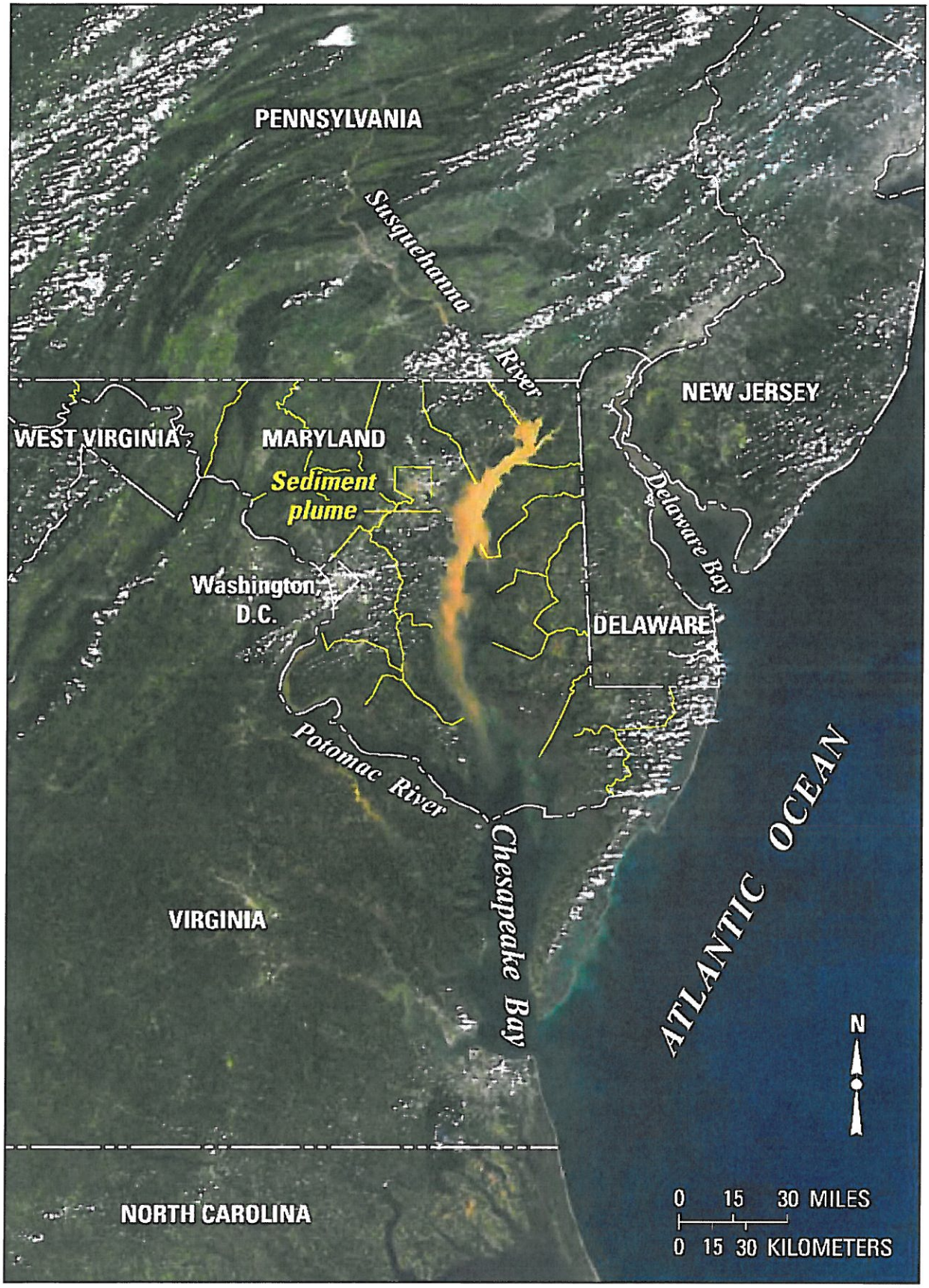
cc: Bob Perciasepe, Deputy Administrator
Nancy Stoner, Acting Assistant Administrator
Michael H. Shapiro, Prinicpal Deputy Assistant Administrator
Shawn M. Garvin, Administrator, EPA, Region III
Nicholas DiPasquale, Director, EPA Chesapeake Bay Program Office
Linda Miller, EPA Liaison
Robert M. Summers, Ph.D, Secretary, Maryland Department of the Environment
Shawn A. Seaman, Program Manager, MDNR Power Plant Research Program
Clean Chesapeake Coalition

Clean Chesapeake Coalition

# Enclosure A

U.S. Geological Survey Satellite Image

Letter to Gina McCarthy, U.S. EPA Administrator
March 12, 2014




NASA photograph from the Terra satellite, September 13, 2011 (a few days after Tropical Storm Lee) showing sediment plume extending about 100 miles to the mouth of the Potomac River.

*The objective of the Clean Chesapeake Coalition is to pursue improvement to the water quality of the Chesapeake Bay in a prudent and fiscally responsible manner.*

**A picture is worth a 1,000 words...**

**This NASA satellite image appeared in the August 2012 U.S. Geological Survey report that confirmed the exponential loss of trapping capacity in the Conowingo Dam reservoir, and has since served as a calling card for the Coalition. We added the county jurisdictional boundaries.**

**Here are the staggering numbers behind the photograph of the 100-mile long sediment plume emanating from the Conowingo Dam a few days after Tropical Storm Lee in September 2011.**

| **Estimated amounts transported into the Bay during this single storm event (over 9 days), According to the *U.S. Geological Survey:*** | |
|---|---|
| **42,000 tons nitrogen** | **10,600 tons phosphorus** |
| **19 million tons sediment** | ****4 million tons scoured (at least)** |
| **According to the *UMCES - Horn Point (Cambridge, MD) Survey:*** | |
| **115,910 tons nitrogen** | **14,070 tons phosphorus** |
| **By comparison (yearly Susquehanna River pollutant loading averages 1978-2011):** | |
| **71,000 tons nitrogen \| 3,300 tons phosphorus \| 2.5 million tons sediment** | |

**Pollution reduction targets per EPA Bay TMDL and Maryland WIP (through 2025):**

| | **State WIP Costs (billions)** | **State WIP Results (tons/year)** |
|---|---|---|
| ***Stormwater*** | **$ 7.38** | Nitrogen – **1,100** \| Phosphorus – **116** \| Sediment – **102,370** |
| ***Septics*** | **$ 3.71** | Nitrogen – **620** \| Phosphorus – **0** \| Sediment – **0** |
| ***WWTP*** | **$ 2.36** | Nitrogen – **1,909** \| Phosphorus – **46** \| Sediment – **0** |
| ***Agriculture*** | **$ .928** | Nitrogen – **2,372** \| Phosphorus – **187** \| Sediment – **37,108** |
| **TOTAL** | **$ 14.4** | Nitrogen – **6,001** \| Phosphorus – **349** \| Sediment – **139,478** |

**Learn more at CleanChesapeakeCoalition.com and follow us on Facebook.**

Clean Chesapeake Coalition

# Enclosure B

U.S. Environmental Protection Agency Official Comment Letter to FERC

Letter to Gina McCarthy, U.S. EPA Administrator
March 12, 2014

ORIGINAL

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**REGION III**
**1650 Arch Street**
**Philadelphia, Pennsylvania 19103-2029**



The Honorable Kimberly D. Bose
Secretary, Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: Environmental Protection Agency's Comments on the Federal Energy Regulatory Commission's Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, Soliciting Comments, Recommendations, Preliminary Terms and Conditions and Preliminary Fishway Prescriptions, and Intent to Prepare an Environmental Impact Statement. (COMMENTS – Exelon Generation Company, LLC, Project No. 405-106)**

Dear Secretary Bose:

The Federal Energy Regulatory Commission (FERC) issued the above referenced notice on April 29, 2013 as part of the Exelon Generation Company, LLC's relicensing for the Conowingo Hydroelectric facility (Conowingo Dam) located on the Susquehanna River in Maryland (Harford and Cecil Counties) and Pennsylvania (Lancaster and York Counties). The U.S. Environmental Protection Agency (EPA) is providing comments on that notice in accordance with 18 CFR 385.2001 through 385.2005.

EPA supports FERC's decision to move forward with the relicensing environmental review through the use of an Environmental Impact Statement (EIS). Due to the nature and the sensitivity of the environmental issues related to the Conowingo Dam, EPA believes the EIS has the potential to provide FERC with a detailed environmental analysis and to assist in the decision making process. We would be pleased to provide scoping comments when the Notice of Intent to prepare an EIS is announced.

As FERC moves forward with reviewing the information obtained through the relicensing application, consideration should be given to on-going studies that may be useful for analysis of current environmental conditions. There is a growing concern for the environmental consequences related to the sediment and associated nutrients accumulating behind the Conowingo Dam and the other three dams located on the lower Susquehanna River. The U.S. Geological Survey estimated that the Conowingo Dam traps nearly 2 million tons of sediment annually (Maryland Sea Grant's Chesapeake Quarterly Magazine, December 2011). As the Conowingo Dam pool fills with sediment, the trapping capacity diminishes causing more sediment and nutrients to reach the Chesapeake Bay. Estimates indicate that the flow of sediment past the Conowingo Dam could double to 3.3 million tons annually within 15 years

(Maryland Sea Grant's Chesapeake Quarterly Magazine, December 2011). There are also concerns that flood events could provide additional sediment loading to the Bay. According to the US Climate Change Science Program (Our Changing Planet, The U.S. Climate Change Science Program for Fiscal Year 2009, Highlights of Recent Research and Plans for FY 2009) climate change in the region may result in increased frequency and intensity of storm events further exasperating dam pool scour.

The 2010 Chesapeake Bay Total Maximum Daily Load (Bay TMDL) identifies the nitrogen, phosphorus and sediment reductions across the entire watershed that are necessary to meet applicable water quality standards in the Bay and its tidal rivers and embayments ( http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/tmdlexec.html). As the trapping capacity of nutrients and sediment by the Conowingo Dam (along with the York Haven, Safe Harbor and Holtwood Dams) is a significant factor in the delivery of those pollutants to the Chesapeake Bay, EPA considered that issue in the development of the Bay TMDL. EPA sets forth its analysis, the data supporting its conclusions, and assumptions of storage capacity in Section 10.6 (page 10.7-8 of the TMDL) and Appendix T to the Bay TMDL (enclosed for your convenience). EPA is concerned that once the storage capacity (and thus the pollutant trapping efficiency) is reached at the Dam, the suspended sediment load to the Chesapeake Bay may increase by up to 150 percent, nitrogen load by up to 2 percent, and the phosphorus load by up to 40 percent. "A Summary Report of Sediment Processes in Chesapeake Bay and Watershed," U.S. Geologic Survey, edited by Langland and Cronin, 2003. If future monitoring shows that trapping efficiencies are reduced in the Conowingo Dam, Chesapeake Bay Jurisdictions may need to increase sediment-reduction efforts to meet their respective Bay TMDL allocations. The EPA recognizes that addressing the environmental consequences related to sediment and associated nutrients accumulating behind the dams are an important part of any watershed implementation approach. Therefore, EPA and the Chesapeake Bay Partnership (CBP) will consider this issue as part of the 2017 midpoint assessment to review progress toward meeting the nutrient and sediment pollutant load reductions identified in the Bay TMDL and jurisdictions' Phase I and Phase II Watershed Implementation Plans (WIPs).

As you may be aware, the Baltimore District of the U.S. Army Corps of Engineers (the Corps), in coordination the Maryland Department of the Environment, the Susquehanna River Basin Commission and The Nature Conservancy, has initiated a comprehensive study to fully assess sediment and nutrient flow in the Susquehanna River. The study will analyze the role of the Conowingo Dam as well as the other three dams on the lower Susquehanna River in storing sediment and nutrients. The study will further provide analysis and estimated cost ranges for management options to address the accumulation of sediment and nutrients. The EPA strongly recommends that FERC include the results of the Corps study as part of the EIS under the National Environmental Policy Act.

EPA believes progress toward water quality improvements to the Chesapeake Bay requires a comprehensive watershed effort by all of the contributors. Addressing sediment and nutrients accumulating behind the dams along the lower Susquehanna River can play a significant role in the continued success.

EPA appreciates the opportunity to comment on the Conowingo Dam relicensing effort and looks forward to continued coordination. If you have any questions regarding our concerns, please feel free to contact me or Kevin Magerr at (215) 814 5724.

Sincerely,

John R. Pomponio
Director, Environmental Assessment and
Innovation Division

Enclosure

Clean Chesapeake Coalition

# Enclosure C

LSRWA Workgroup Meeting Notes – August 2013 (Excerpts of meeting notes pages 1- 3)

## MEMORANDUM FOR THE RECORD

**SUBJECT:** Lower Susquehanna River Watershed Assessment
Quarterly Meeting, August 15, 2013

1. On August 15, 2013 agency team members met to discuss ongoing and completed activities for the Lower Susquehanna River Watershed Assessment (LSRWA). The meeting was hosted by the Maryland Department of the Environment (MDE) in their Terra Conference Room at the Montgomery Park Building in Baltimore, Maryland. The meeting started at 10:00 am and continued through 2:00 pm. The meeting attendees are listed in the table below.

2.

| Lower Susquehanna River Watershed Assessment Team Meeting Sign-In Sheet | | | |
|---|---|---|---|
| August 15, 2013 | | | |
| **Agency** | **Name** | **Email Address** | **Phone** |
| American Geophysical Union | Harry Furukawa | hfurukawa@agu.org | 202-777-7430 |
| City of Baltimore, DPW | Prakash Mistry | Prakash.Mistry@baltimorecity.gov | 410-396-0732 |
| City of Baltimore, DPW | Clark Howells | clark.howells@baltimorecity.gov | 410-795-6151 |
| City of Baltimore, DPW | James Price | James.Price@baltimorecity.gov | 410-396-0539 |
| Chesapeake Bay Commission | Ann Swanson | aswanson@chesbay.us | 410-263-3420 |
| Chesapeake Bay Foundation | Beth McGee | bmcgee@cbf.org | 443-482-2157 |
| EPA, Chesapeake Bay Program | Lew Linker | llinker@chesapeakebay.net | 410-267-5741 |
| Exelon | Kimberly Long | kimberly.long@exeloncorp.com | 610-756-5572 |
| Gomez and Sullivan | Kirk Smith | | |
| Exelon - Gomez and Sullivan | Gary Lemay | glemay@gomezandsullivan.com | 603-428-4960 |
| Exelon - URS Corp. | Marjorie Zeff | marjorie.zeff@urs.com | 215-367-2549 |
| Exelon-Gomez and Sullivan | Tom Sullivan | tsullivan@gomezandsullivan.com | 603-428-4960 |
| Lower Susquehanna Riverkeeper | Michael Helfrich | LowSusRiver@hotmail.com | 717-779-7915 |
| MDE | Herb Sachs | sachsh@verizon.net | 410-537-4499 |
| MDE | John Smith | jsmith@mde.state.md.us | 410-537-4109 |
| MDE | Matt Rowe | mrowe@mde.state.md.us | 410-537-3578 |
| MDE | Tim Fox | tfox@mde.state.md.us | 410-537-3958 |
| MDE | Lee Currey | lee.currey@maryland.gov | 410-537-3913 |
| MDNR | Bob Sadzinksi | bsadzinski@dnr.state.md.us | |
| MDNR | Bruce Michael | bmichael@dnr.state.md.us | 410-260-8627 |
| MDNR | Shawn Seaman | sseaman@dnr.state.md.us | 410-260-8662 |
| MDAGO | Brent Bolea | bbolea@energy.state.md.us | 410-260-7578 |
| MPA | David Blazer | dblazer@marylandports.com | 410-726-2235 |
| NOAA-NMFS | Christopher Boelke | christopher.boelke@noaa.gov | |
| PADEP | Patricia Buckley | pbuckley@pa.gov | 717-772-1675 |
| PADEP | Ted Tesler | thtesler@pa.gov | 717-772-5621 |
| SRBC | David Ladd | dladd@srbc.net | 717-238-0425x204 |
| SRBC | John Balay | jbalay@srbc.net | 717-238-0423 x217 |
| TNC | Kathy Boomer | kboomer@tnc.org | 607-280-3720 |
| USFWS | George Ruddy | george_ruddy@fws.gov | 410-573-4528 |
| USFWS | Robbie Callahan | Carl.Callahan@fws.gov | 410-573-4524 |
| USFWS | Genevieve LaRouche | genevieve_larouche@fws.gov | 202-341-5882 |
| USACE | Anna Compton | anna.m.compton@usace.army.mil | 410-962-4633 |
| USACE | Dan Bierly | daniel.m.bierly@usace.army.mil | 410-962-6139 |
| USACE | Bob Blama | robert.n.blama@usace.army.mil | 410-962-6068 |
| USACE | Chris Spaur | christopher.c.spaur@usace.army.mil | 410-962-6134 |
| USACE | Claire O'Neill | claire.d.o'neill@usace.army.mil | 410-962-0876 |
| USACE | Tom Lazco | thomas.d.lazco@usace.army.mil | 410-962-6773 |
| USACE | Steve Elinsky | Steve.Elinsky@usace.army.mil | 410-962-4503 |
| USACE-ERDC | Carl Cerco | carl.f.cerco@erdc.usace.army.mil | 601-634-4207 |
| USACE-ERDC | Steve Scott | steve.h.scott@usace.army.mil | 601-634-2371 |
| USGS | Mike Langland | langland@usgs.gov | 717-730-6953 |

The meeting agenda is provided as enclosure 1 to this memorandum.

Status of Action Items from May Quarterly Meeting:

a. Michael Helfrich will forward info to Danielle Aloisio on Funkhauser Quarry. *Status. Complete. No point of contact is available due to abandoned conditions, see response to "d" for more info.*
b. Claire will coordinate the next quarterly meeting for August 2013. Status: *Complete. Meeting occurred today.*
c. Anna will distribute NMFS agency letter discussing concerns over sediment bypassing management strategy to group and have it posted on website. *Status Complete.*

d. Bob Blama will call the Funkhauser Quarry to get more information on utilizing this as a sediment placement option. *Status Complete. While no POC was provided (it is an abandoned quarry), USACE did some preliminary calculations; volume is very limited, only 3 million cubic yards (mcy), and access to the quarry is a big concern. Michael Helfrich noted that he thought this would be a good place for a staging area. The LSRWA report/spreadsheets with potential alternatives have been updated with this info.*

e. Michael Helfrich will touch base with Jeff Cornwell (UMCES) to get his opinion on phosphorus bioavailability in sediments as it relates to the LSRWA study. *Status. Complete. Chris Spaur updated the group on this item. He noted that he will prepare a write up for the report and will run it by Jeff Cornwell for comments. Chris noted that during study scoping in 2010/2011, water column and sediment nutrient-content data needs were discussed and evaluated. Anna and Chris coordinated with Carl Cerco, Steve Scott, Mike Langland, and Joel Bloomquist (USGS) for this purpose. The group determined that data on nutrient (and sediment) in water outflows from Conowingo Pond was inadequate, and collecting data to fill gaps was scoped into the study. It was recognized that it would be useful to have additional information on Conowingo Pond bottom sediment biogeochemistry, particularly with regard to phosphorus. However, it was determined that existing information/data was adequate for study modeling purposes, and it was decided to not undertake such investigations in light of need to control study costs. With regard to (P) phosphorus biogeochemistry, Carl had identified Jordan and others (2008) as presenting a concept applicable to utilize for our situation. P is generally bound to iron in fine-grained sediments in oxygenated freshwater and of limited bioavailability. Under anoxic/hypoxic conditions iron is reduced and P can become more bioavailable. P rebinds to iron in sediments if oxygen is again present. P adsorbed to Conowingo Pond bottom sediments would remain bound to those sediments in the freshwater uppermost Bay. In saltwater, biogeochemical conditions change. Jordan and others (2008) indicate that as salinities increase above about 3-4 ppt/psu (parts per thousand/practical salinity units, P is increasingly released from sediments and becomes mobile and bioavailable to living resources, which is likely due to increased sulfate concentrations in marine water water (e.g., Caraco, N., J. Cole, and G. Likens, 1989. Evidence for Sulphate-controlled Phosphorus Release from Sediments of Aquatic Systems. Nature 341:316–318.). The upper Bay remains generally below salinities of 3 ppt all year south to about the Sassafras River on the Eastern Shore and Bush River on the Western Shore.*

*Chris noted that in the original scoping, the purposeful removal/release of sand from Conowingo Pond into the Bay was considered, but not the current bypassing alternative that could release fine-grained sediments into the upper Bay. The Bay model has determined that a release of Conowingo bottom sediments into the upper Bay in fall/winter would have fewer impacts to Bay water quality than in spring/summer, in part because the microbially-facilitated P release mechanisms occur more slowly in winter months. The winter timing allows for sediment deposition and P burial and long-term storage to occur before warm water conditions enhance P release in suspended and surface sediments. Additionally UMCES work has shown that there are less negative impacts when excessive flows enter the Upper Bay system during late fall/winter months because the life cycles for the species of concern are such that they are less susceptible to degraded water quality at this time. Mike Helfrich asked what depth P would need to be buried and how we would know whether waves would scour bottom. Chris said that MGS (1988) maps the upper Bay and shows that the channel on the west side as depositional so this region is presumably burial. Also, during the SAV growing season, large SAV beds would provide wave protection in the bed vicinity. During non-growing season when non-persistent SAV is absent, this wouldn't be the case though.*

*Chris offered to provide information summarizing 2010/2011 nutrient scoping to anyone that was interested, as well as copies of Jordan and others (2008). MGS report is available online:*

Clean Chesapeake Coalition

# Enclosure D

PowerPoint Presentation - "DO Water Quality Standard Attainment Analysis of the Estimated Influence of Conowingo Infill on Chesapeake DO Using Linked WSM, ADH, and WQSTM Simulations" by Lewis Linker of EPA's Chesapeake Bay Program

Letter to Gina McCarthy, U.S. EPA Administrator
March 12, 2014

Scour is a major concern. According to the presentation, the data required for this analysis was not used. In addition, the analysis also considered the wrong season during the year to best evaluate scouring.

| | 1. What is the system's current (existing) condition? **Scenario LSRWA-4** | 2. What is the system's condition if the WIPs are in full effect and reservoirs are still trapping? Scenario **LSRWA-3** | 3. What is the system's condition when WIPS are in full effect, reservoirs are still trapping sediments and a scour event occurs during winter? **Scenario LSRWA-21** | 4. What is the system's condition when WIPS are not in effect, reservoirs are full and there is a winter scour event? Scenario **LSRWA-18** | 5. What is the system's condition when WIPs are in full effect, the reservoirs are full and there is a winter scour event? **LSRWA-30** | 6. What is the system's condition if WIPs are in full effect, reservoirs are full and a large scour event occurs during **(a) summer LSRWA-24 or (b) fall LSRWA-25 or (c) winter? LSRWA-3 (Need to use 1996-2008 period for these scenarios.)** |
|---|---|---|---|---|---|---|
| Deep Channel DO Water Quality Standard Achievement for Total Maximum Daily Load (TMDL) | Widespread nonattainment of TMDL of Deep Channel DO. Nonattainment of 23% in the CB4 mainstem, 14% in Eastern Bay, and 28% in the Lower Chester River was estimated. This and other areas of nonattainment in the Deep Channel amounted to more than half of the Deep Channel habitat. | Complete attainment of the Deep Channel DO standard was estimated to be attained. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, an estimated increase of 1% nonattainment over the Base TMDL Scenario (LSRWA-3) was estimated for CB4MH, EASMH, and CHSMH. | Using for comparison, the scenario of the systems current condition (LSRWA-4), an increase of 1% nonattainment for CB4MH, and PATMH was estimated. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, an estimated increase of 1% nonattainment over the Base TMDL Scenario (LSRWA-3) was estimated for CB4MH, EASMH, and CHSMH. | Generally, 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. A 'no large storm" condition has the highest level of Deep Channel DO attainment. |

→ So, why was the January 1996 event considered and not an event in the Summer? Tropical Storm Lee (September 2011) would have been a better choice.

13 We have been informed that this is a typo and the date range is actually from 1996-1998.

| | 1. What is the system's current (existing) condition? **Scenario LSRWA-4** | 2. What is the system's condition if the WIPs are in full effect and reservoirs are still trapping? Scenario **LSRWA-3** | 3. What is the system's condition when WIPS are in full effect, reservoirs are still trapping sediments and a scour event occurs during winter? **Scenario LSRWA-21** | 4. What is the system's condition when WIPS are not in effect, reservoirs are full and there is a winter scour event? Scenario **LSRWA-18** | 5. What is the system's condition when WIPs are in full effect, the reservoirs are full and there is a winter scour event? **LSRWA-30** | 6. What is the system's condition if WIPs are in full effect, reservoirs are full and a large scour event occurs during **(a) summer LSRWA-24 or (b) fall ~~LSRWA-25 or (c)~~ winter? LSRWA-3 (Need to use 1996-2008 period for these scenarios.)** |
|---|---|---|---|---|---|---|
| Deep Water DO Water Quality Standard Achievement for TMDL | Widespread nonattainment of TMDL of Deep Water DO. Estimated nonattainment of 11% in the CB4 mainstem, 2% in Eastern Bay, and 11% in the Lower Chester River. | Complete attainment of the Deep Water DO standard was estimated to be attained. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, an estimated increase of 1% nonattainment over the Base TMDL Scenario (LSRWA-3) was estimated for CB4MH and CB5MH. | Using for comparison, the scenario of the systems current condition (LSRWA-4), an increase of 1% nonattainment for CB3MH and PAXMH was estimated. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, an estimated increase of 1% nonattainment over the Base TMDL Scenario (LSRWA-3) was estimated for CB4MH and CB5MH. | Generally, 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. A 'no large storm" condition has the highest level of Deep Channel DO attainment. |
| Open Water DO Water Quality Standard Achievement for TMDL | Widespread, but not complete attainment of the Open Water DO standard was estimated to be attained. | Complete attainment of the Open Water DO standard was estimated. | Complete attainment of the Open Water DO standard was estimated. | Complete attainment of the Open Water DO standard was estimated. | Complete attainment of the Open Water DO standard was estimated. | Complete attainment of the Open Water DO standard was estimated. |

→ Need to use but did not use this period of date.

→ Only significant event was the Big Melt event in January 1996, Report did not consider a June or Summer event.

1996-1998

| | 1. What are the effects of agitation dredging? **No WQSTM Run** | 2. What are the effects of strategic dredging? **LSRWA-28** | 3a. What are the effects of passing sediment downstream for 3 winter months, one time? **No WQSTM Run** | 3b. What are the effects of passing sediment downstream for 3 winter months, over-time for a period of 10 years? **LSRWA-29** | 4. What are the effects of passing sediment downstream for 9 months? **No WQSTM Run** | 5. What are the effects of extreme long-term removal out of system) restoring to 1996 bathymetry? **LSRWA-13** | 6. What are the effects of long-term strategic dredging over time for a period of 10 years? **No WQSTM Run** | 7. What are the effects of moving sediment from scour areas to depositional areas? **No WQSTM Run** | 8. What are the effects of increasing Best management practices in the watershed above that required to meet TMDL? **No WQSTM Run** |
|---|---|---|---|---|---|---|---|---|---|
| **Deep Channel DO Water Quality Standard Achievement for Total Maximum Daily Load (TMDL)** | Not determined. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, an estimated decrease of 1% nonattainment over the Base TMDL **(LSRWA-21)** Scenario was estimated for CB4MH. | Not determined. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, estimated increases of 4%, 5% , 3%,4%, and 2% nonattainment over the Base TMDL **(LSRWA-21)** Scenario were estimated for CB3MH, CB4MH, CHSMH, EASMH, and PATMH respectively. | Not determined. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, an estimated decrease of 1% nonattainment over the Base TMDL **(LSRWA-21)** Scenario was estimated for CB4MH. | Not determined. | Not determined. | Not determined. |



1996 - 1998

| | 1. What are the effects of agitation dredging? **No WQSTM Run** | 2. What are the effects of strategic dredging? **LSRWA-28** | 3a. What are the effects of passing sediment downstream for 3 winter months, one time? **No WQSTM Run** | 3b. What are the effects of passing sediment downstream for 3 winter months, over-time for a period of 10 years? **LSRWA-29** | 4. What are the effects of passing sediment downstream for 9 months? **No WQSTM Run** | 5. What are the effects of extreme long-term removal out of system) restoring to 1996 bathymetry? **LSRWA-13** | 6. What are the effects of long-term strategic dredging over time for a period of 10 years? **No WQSTM Run** | 7. What are the effects of moving sediment from scour areas to depositional areas? **No WQSTM Run** | 8. What are the effects of increasing Best management practices in the watershed above that required to meet TMDL? **No WQSTM Run** |
|---|---|---|---|---|---|---|---|---|---|
| **Deep Water DO Water Quality Standard Achievement for TMDL** | Not determined. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, nonattainment was estimated to be unchanged over the Base TMDL Scenario **(LSRWA-21)** | Not determined. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, estimated increases of 2%, nonattainment in CB4MH and 1% nonattainment in CSHMH, EASMH, MD5MH, and PATMH over the Base TMDL **(LSRWA-21)** | Not determined. | Using the 1996-1988 period to capture the January 1996 "Big Melt" event, nonattainment was estimated to be reduced by 1 % in CB4MH over the Base TMDL Scenario **(LSRWA-21)** | Not determined. | Not determined. | Not determined. |
| **Open Water DO Water Quality Standard** | Not determined. | Complete attainment of the Open | Not determined. | Complete attainment of the Open | Not determined. | Complete attainment of the Open | Not determined. | Not determined. | Not determined. |



1996-1998