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Senate Education, Health, and Environmental Affairs Committee

Testimony in SUPPORT Senate Bill 540

Federal Clean Water Act – Authority of State

Wednesday, February 24, 2021

The Clean Chesapeake Coalition supports SB 540 to the extent such an enactment by the General Assembly will gain leverage for the State of Maryland and the Hogan Administration (and subsequent administrations) in addressing the Conowingo Dam factor¹ in the context of Bay TMDL water quality improvement goals, in litigation and/or negotiations with the Dam's owner (Exelon Corporation), in asserting the State's environmental protection authority in the Federal Energy Regulatory Commission (FERC) arena, or otherwise.

While such legislation may raise separation of powers issues between the Executive and Legislative branches of State government, and the timing may be off, SB 540 brings much warranted attention to the single largest source of pollution loading to Chesapeake Bay (the Susquehanna River). Conowingo Dam relicensing is still pending in the hands of FERC and is indeed a once-in-a-generation opportunity to measurably and cost-effectively improve the Maryland portion of the Bay by tackling the accumulated pollution in Conowingo reservoir so Maryland's downstream restoration efforts and expenditures, especially in the upper Bay, are not in vain.

Since 2012, after a clarion call from Dorchester County elected officials, the following Maryland county governments have participated in the Coalition since inception or for a portion of that time to raise awareness and pursue improvement to the water quality of Chesapeake Bay in the most prudent and fiscally responsible manner – through research, coordination and advocacy: Allegany, Caroline, Carroll, Cecil, Dorchester, Frederick, Harford, Kent, Queen Anne's and Wicomico. After the U.S. Geological Survey (USGS) issued a report in August 2012 ([SIR 2012-5185](#)) confirming the exponential loss of trapping capacity in the Conowingo Dam reservoir and associated threats to downstream water quality, the Coalition adopted as its calling card the striking NASA satellite image on page 2 of the report. (see copy attached)

Since inception, Coalition counties have submitted substantive and well-sourced testimony whenever legislation or joint resolutions have been introduced dealing with Conowingo Dam in the context of Bay restoration and protection. To date, there has been no enactment by the General Assembly whatsoever on this most important issue related to Bay health – sad and curious amidst all we in Maryland are doing and spending to improve Bay water quality.

¹ The Emmy Award winning documentary video "[The Conowingo Factor](https://www.youtube.com/watch?v=LvK86Ripmc4&feature=youtu.be)" summarizes the Dam's history and the water quality issues posed by both the Dam and sediment, nutrients and debris coming down the Susquehanna River. <https://www.youtube.com/watch?v=LvK86Ripmc4&feature=youtu.be>

We share the collective disappointment in Exelon's refusal to embrace the mantle of Bay stewardship as we've been monitoring their legal filings against the State and before FERC to deflect attention and shirk responsibility for the adverse downstream environmental impacts attributable to Conowingo Dam operations and maintenance (or lack thereof in the reservoir).

For better or for worse, the proposed Settlement Agreement between the State and Exelon related to Conowingo Dam relicensing as negotiated by the Hogan Administration has indeed moved the needle, as evidenced by the sudden popularity in the General Assembly and among NGOs and the media regarding Conowingo Dam relicensing and the significance of the 50-year relicense request now in the hands of FERC. We also understand the context in which the State felt pressured to concede its WQC authority for a settlement (or sorts) with Exelon as multiple federal policy, regulatory and FERC related case law stars lined up nicely for big energy.

To see or support this legislation as a means to vilify the Hogan Administration for their efforts to address the Conowingo factor is misguided and counterproductive. Had the General Assembly, the Maryland Congressional Delegation, UMCES, EPA Chesapeake Bay Program, CBF and other large, wheel-healed and entrenched NGOs, USACE, etc. taken this issue more seriously (instead of denying, downplaying or distracting from the Conowingo Factor) there would have been considerably more leverage for the Administration in addressing this vexing issue.

The greatest concern about the current state of the Conowingo reservoir is the inevitability of storm events (more frequent and intense due to climate change) that propel vast amounts of the accumulated nutrients, sediment and other contaminants through and over the Dam in catastrophic surges that far exceed the Bay's ability to adequately assimilate such loadings. As a result, the sediment settles to the Bay bottom and smothers the Bay's oyster beds and submerged aquatic vegetation – Mother Nature's most efficient filters.

Agencies and NGOs may quibble about degrees of impact while citing estimated percentages of pollution attributable to scour during storms; but so much pollution loading to the Bay comes from the Susquehanna River and so much pollution has accumulated in the upstream reservoirs that any percentage of scour is still an enormous amount of pollution being delivered in shock loadings in a few days. See exhibit images of the 2020 Year End Flush that occurred thanks to Exelon after the Susquehanna River flow exceeded 300,000 cfs on December 26, 2020.

Simply put, the Coalition counties cannot accept as the new normal for the Maryland portion of the Bay that all of the reservoirs in the lower Susquehanna River are full, that enormous amounts of Susquehanna River pollution are no longer being trapped, that more storms and harmful scour are inevitable and that dredging Conowingo reservoir is off the table. Nor should any Marylander who cares about the Bay. With predictions for more frequent and intense storms comes the scouring of enormous amounts of nutrient-laden sediments and other contaminants from the Conowingo reservoir, which has lost its trapping capacity. Denial and downplaying risk widespread taxpayer fatigue watching the government ignore the elephant in the room.



All things considered, the Bay is declining, in spite of billions of dollars spent to restore it (and glossy colored reports reminding us just how little progress we've made). By bringing as much attention as possible to the single largest source of pollution to the Bay and the greatest threat to Bay restoration effects at every level, all the while pointing out that today nobody is responsible for dredging or otherwise addressing the accumulated nutrients and sediments above the Conowingo Dam and that our upstream neighbors are doing very little in comparison to the collective efforts of Marylanders, the Coalition has been stoking an overdue and deserving public policy discussion about the smartest, most cost-effective ways to save the Bay and help local economies in the process. It is time to take a step back and look again at the big Chesapeake Bay watershed picture, and to recognize the perfect storm of political, economic, governmental, regulatory, environmental and special interest forces – including Mother Nature herself. It is time to reprioritize what we do and spend to meaningfully improve the water quality of the Bay.

Keeping it simple: the 14-mile reservoir above Conowingo Dam is the largest stormwater management pond in the Bay watershed and it is full. It must be dredged and properly maintained in order to trap some of the sediment and other pollutants that flow down the Susquehanna River before entering the Bay. We support stopping all pollution from ever entering the Susquehanna River; however, we are realistic about how long that will take and at what costs (see widespread and justified criticism of the Draft Conowingo WIP and Pennsylvania's Phase III WIP). In the meantime, by dredging and maintaining Conowingo reservoir (and the other dam reservoirs in the lower Susquehanna River), the Maryland portion of the Bay will get the ecological breathing room that it needs to recover and thrive. The Administration's "Conowingo Sediment Characterization and Innovative Reuse and Beneficial Use Pilot Project" will show positive economic opportunities and commercial benefits related to dredging the Conowingo reservoir, in addition to the environmental benefits downstream. With the sediment characterization component of that project underway we look forward to the scientific information about the accumulated sedimentation in Conowingo reservoir that is so critical to assessments and decisions being made regarding the Conowingo Factor.

Like many other stakeholders, we are disappointed in the direction, scope and feasibility of the Draft Conowingo WIP and filed written comments in January 2021 accordingly. We understand how really tackling the Conowingo factor will test the fortitude of the watershed states' partnership and Exelon Corporation; but a healthier Chesapeake Bay is well worth the effort. We also understand that without addressing the Conowingo factor the Bay TMDL goals and WIPs for downstream jurisdictions are unachievable and unaffordable.

For these reasons, the Coalition urges a FAVORABLE report on SB 540.

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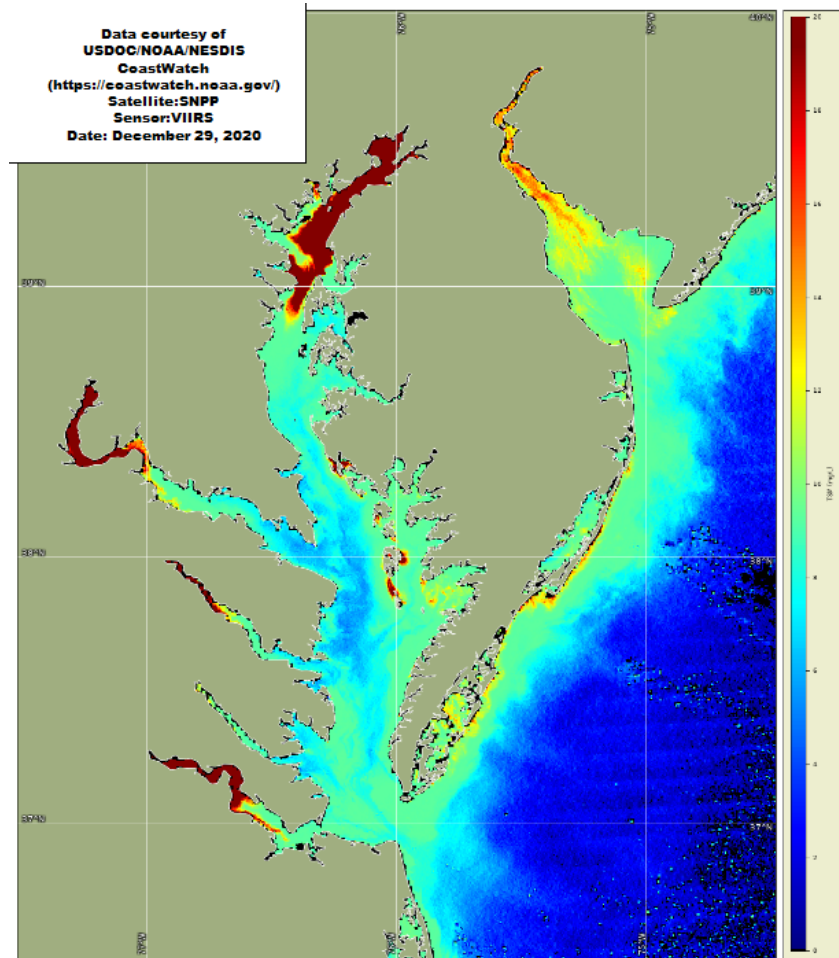
Exhibits



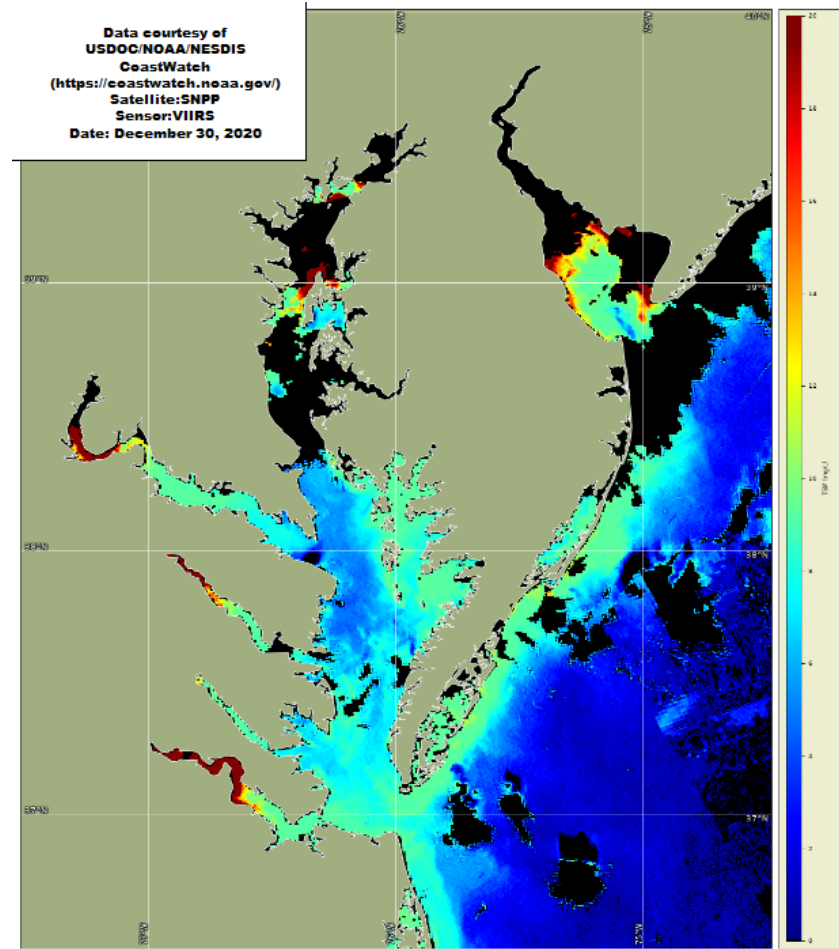
2020 Year End Flush - Conowingo Dam Sediment Plume (December 29-30, 2020)
Per [USGS](#), Susquehanna River flow at Conowingo exceeded 310,000 cfs on 12/26/20; the gage height exceeded 24 ft.



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12/29/20

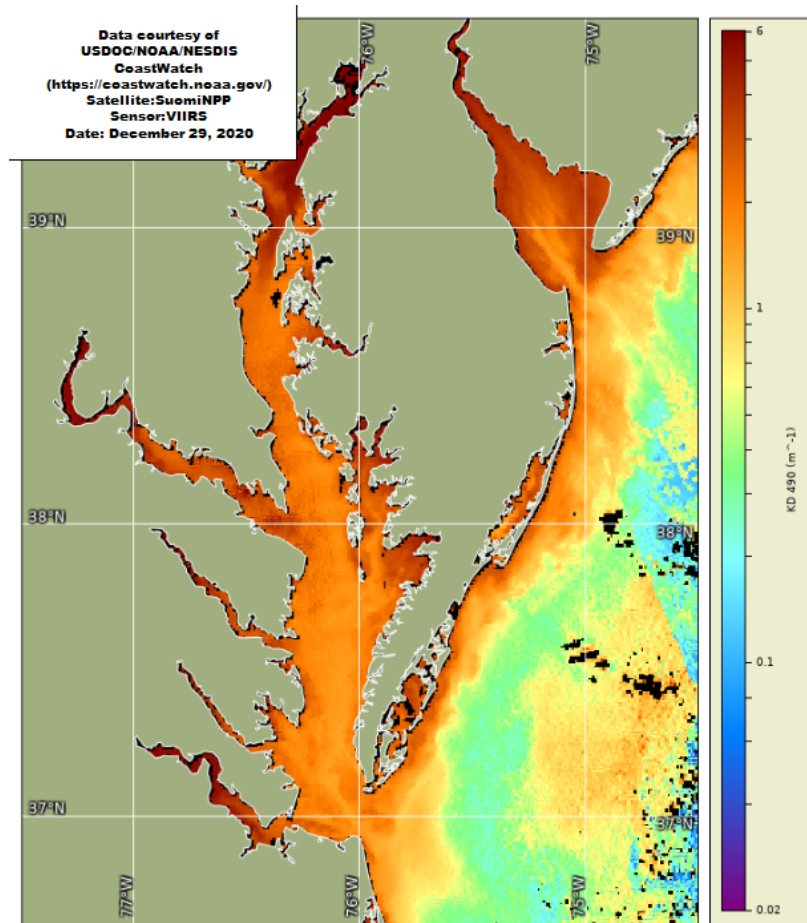


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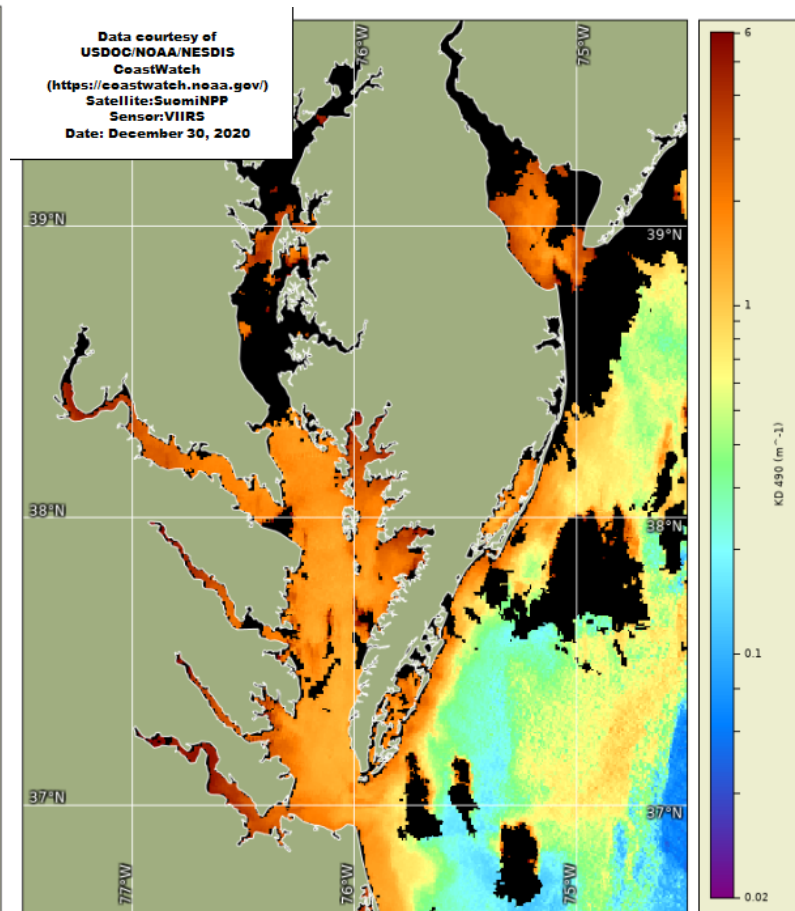
Suspended Matter images per MD DNR Eyes on the Bay [website](https://eyesonthebay.org/).



2020 Year End Flush - Conowingo Dam Sediment Plume (December 29-30, 2020)
Per [USGS](https://www.usgs.gov/monitoring-reports/nr00000001), Susquehanna River flow at Conowingo exceeded 310,000 cfs on 12/26/20; the gage height exceeded 24 ft.



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12/30/20

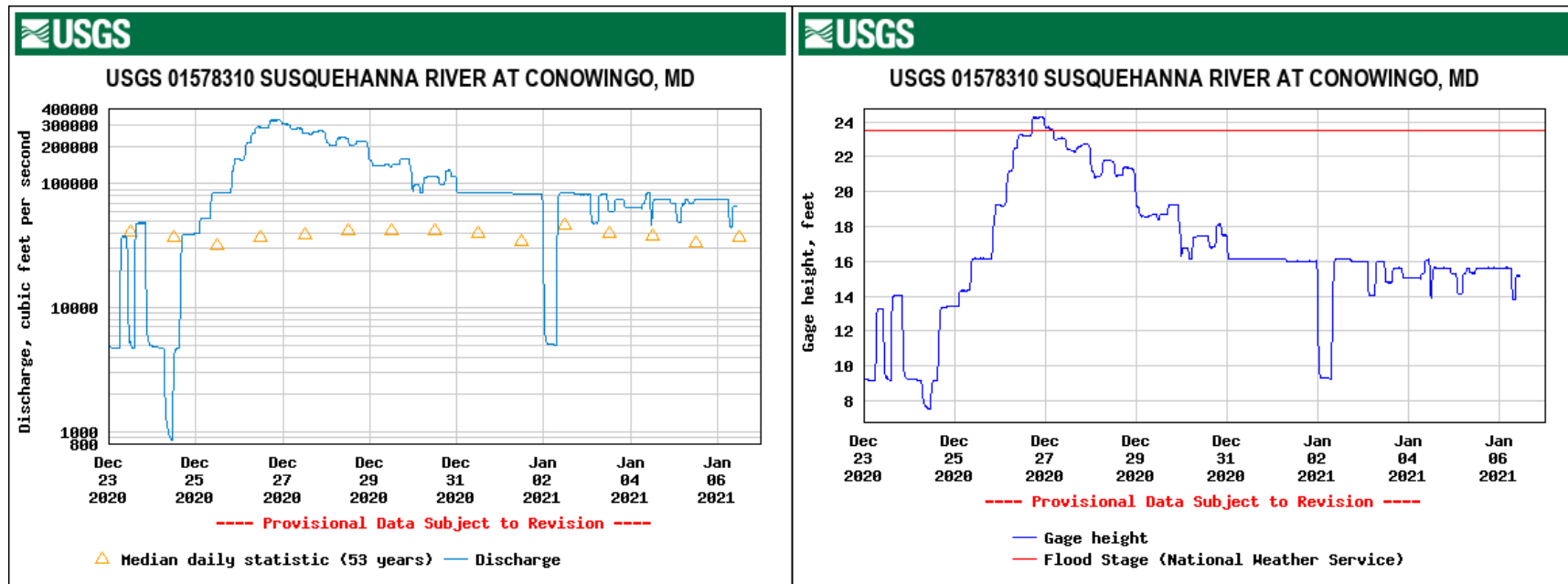
Turbidity images per MD DNR Eyes on the Bay [website](https://eyesonthebay.org/).

Turbidity is a measure of the degree to which the water loses its transparency due to the presence of suspended particulates. The more total suspended solids in the water, the murkier it seems and the higher the **turbidity**. **Turbidity** is considered as a good measure of the quality of water.



2020 Year End Flush - Conowingo Dam Sediment Plume (December 29-30, 2020)

Per [USGS](#), Susquehanna River flow at Conowingo exceeded 310,000 cfs on 12/26/20; the gage height exceeded 24 ft.



River Flow / Discharge

Gage Height ("Flood Stage" is 23.5 ft.)

Notes:

It has been determined that scour occurs at discharges greater than 175,000 ft³/s (cubic feet per second or cfs) with concentrations of discharges rising steeply when discharges are above that amount. (see Hirsch, R.M., 2012, *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*: U.S. Geological Survey Scientific Investigations Report 2012–5185, 17 p.

According to the Lower Susquehanna River Watershed Assessment ([LSRWA](#); May 2015), the predicted sediment load to Chesapeake Bay from Conowingo at a river flow rate of 300,000 to 400,000 cfs is 0.5 to 1.5 million tons. The average annual sediment load to Conowingo reservoir from Susquehanna River is est. 3.5 million tons. With the loss of trapping capacity, much of that load now flows freely into upper Bay. So, in a matter of days during the final week of 2020, the Bay was loaded with nearly one-half of the annual nutrient-laden sediment loading from Susquehanna River.



CLEAN CHESAPEAKE COALITION



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 <i>U.S. Geological Survey</i> :		
42,000 tons nitrogen		10,600 tons phosphorus
19 million tons sediment		**4 million tons scoured (at least)
According to the <i>UMCES - Horn Point (Cambridge, MD) Survey</i> :		
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):

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

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

Clean Chesapeake Coalition Advocates for Conowingo Pond Dredging

The Conowingo Dam (the “Dam”) converted the lower Susquehanna River into a large stormwater management pond that Exelon, the Dam’s owner, calls the “Conowingo Pond.” The Dam widened the natural course of the river and increased the depth of the river. Widening and deepening the river slowed the rate of flow of water in the river, which allowed suspended solids in the river to settle (fall out of suspension) on the bottom of the reservoir and become “trapped” in the same manner that a stormwater management pond “traps” sediments.

Like all stormwater management ponds, the Dam has altered the otherwise normal or natural flow of water in the Susquehanna River. Like all stormwater management ponds that have not been maintained (*i.e.*, periodically dredged of the sediments that accumulate in the artificially created reservoir), during significant storm events, accumulated sediments have been scoured from the bottom of the pond and dumped in mass below the Dam, shocking the Maryland portion of the Chesapeake Bay with a blanket of deadly sediments.

Sediment Scoured From The Conowingo Reservoir During Significant Storm Events¹				
<u>Storm</u>	<u>Year</u>	<u>Month</u>	<u>Peak Flow Cu³/sec</u>	<u>Volume of Sediment Scoured into Bay (Million Tons)</u>
Hurricane Agnes	1972	June	1,130,000	20
Hurricane Eloise	1975	September	710,000	5
Unnamed	1993	April	442,000	2
Unnamed	1996	January	909,000	12
Hurricane Ivan	2004	September	620,000	3
Unnamed	2011	March	487,000	2
Hurricane Irene	2011	July	Unmeasured	Unmeasured
Tropical Storm Lee	2011	September	778,000	4
Hurricane Sandy	2012	October	Unreported	Unreported

¹ Jeffrey Brainard, *Big Year for Bay Storms, Bad Year for Bay Sediment?*, Chesapeake Quarterly Vol. 10 No. 4, Dec. 2011. See link: <http://www.mdsg.umd.edu/CQ/V10N4/main1/>. See also *The Impact of Sediment on the Chesapeake Bay and its Watershed*: U.S. Geological Survey, June 3, 2005. See link: <http://chesapeake.usgs.gov/SedimentBay605.pdf>.



Billions of taxpayer dollars have been spent to dredge the navigable shipping channels in the upper Bay and the channels into local marinas that have been clogged with sediments. The largest source, if not the sole source, of those sediments is the Susquehanna River, including scour from the bottom of the Conowingo Pond. Economically and environmentally, those sediments should be dredged from the pond behind the Dam where they have accumulated (approximately 9,000 acres or 3,600 hectares), not after they are dumped into the Bay and spread across approximately 4,479 square miles.

Exelon, a company with over \$30 billion in annual revenues, receives at least two benefits from the Dam: (1) it produces 572 megawatts of electricity, which is enough electricity to power an average of 572,000 or more homes; and (2) it receives renewable energy credits that may be used or sold to offset air emissions from power plants that burn fossil fuels.

Sediment Loading From Storm Event Scour In Comparison to Average Annual Sediment Loading from Susquehanna River				
<u>Storm</u>	<u>Year</u>	<u>Avg. Annual Sed. Load from Susquehanna River (Million Tons)</u>	<u>Sed. Load From Scour (Million Tons)</u>	<u>% of Avg. Annual Load from Scour</u>
Hurricane Agnes	1972	1.5	20	1,333%
Hurricane Eloise	1975	1.5	5	333%
Unnamed	1993	1.5	2	133%
Unnamed	1996	1.5	12	800%
Hurricane Ivan	2004	1.5	3	200%
Unnamed	2011	1.5	2	133%
Tropical Storm Lee	2011	1.5	4	266%
Hurricane Sandy	2012	1.5	Undetermined	Undetermined



The photographs below were taken within 2-4 days after Tropical Storm Lee in September 2011.



Scour during significant storm events occurs in less than one week. Thus, in a matter of days, scour from the Conowingo Pond during a significant storm has added anywhere from 133% to 1,333% more than the average annual sediment loading from the Susquehanna River. Such loading results in a big die-off of oysters and underwater grasses in the Bay north of the Choptank River. In 1972, up to a meter of sediments was added to the floor of the upper Bay; two-thirds of that sediment was attributed to scour from the floor of the lakes and reservoirs behind the three dams in the lower Susquehanna River. During Tropical Storm Lee, over two inches of sediments were deposited on the floor of the upper Bay. In short, the shock effect of this rapid loading of scoured sediments is devastating to all fauna that cannot flee (swim) to the lower Bay and to all SAV in the upper Bay. The oysters and SAV in the upper Bay and the upper Bay tributaries have never recovered from the devastation caused by the scour from Hurricane Agnes. SAV in the Susquehanna Flats was killed to pre-1985 levels (thousands of acres of SAV were killed) as a result of the two storm events in 2011.

The Dam traps the best sediment - sand - and releases the most damaging sediments - clay and silt - into the Bay. The Bay has thus been deprived of sand that is necessary: (1) to hold the roots of SAV during storm events; (2) to support the shell beds of oysters; (3) to fortify shorelines and thus reduce erosion; and (4) to cover and suppress the clays and silts that are washed into the Bay so that those clays and silts (a) do not continue to emit phosphorus and nitrogen bound to them in the Susquehanna estuary, (b) do not continue to agitate into suspension and cloud the Bay waters; and (c) do not deprive Bay flora and fauna of needed sunlight and habitat.

If the Conowingo Pond is not dredged and maintained, the Bay will never recover. Coalition members have intervened in the relicensing of the Dam to urge the Federal Energy Regulatory Commission (FERC) to place conditions on the license to be issued that will require Exelon to dredge and maintain the stormwater management pond created by the Dam so that a blanket of deadly sediments cannot be scoured from the bottom of the reservoir and deposited in the Bay now with regularity and in devastating proportions during significant storm events.

The Coalition observes that the science underpinning the points being made all comes from federal agencies and institutions funded by federal agencies and federal tax dollars. The Coalition hopes that FERC will act consistently with federally conducted and federally funded studies, unless it is able to offer a scientifically based rationale for why such studies are invalid or unreliable and undeserving of due consideration in the relicensing of the Dam.

The Coalition observes that significant federal financial resources have been devoted to dredging below the Dam. Federal resources should be directed to the capture of sediments above the Dam before such sediments are widely dispersed over the Bay. It would be more cost effective to capture sediments above the Dam than below. To the extent that dredging of the Conowingo Pond will reduce the federal funds required to dredge the upper Bay in order to keep the Port of Baltimore and the stream of marine commerce viable, a portion of such savings could equitably be directed to assist Exelon with the cost of dredging and maintaining the Conowingo Pond.

