

Appendix I: Comments on Interim Boat Pump-Out Practices (Received July through August 2018)

Normand Goulet, Chair-Urban Stormwater Workgroup

First and foremost, I would like to state for the record that I am not opposed to this BMP, what I am opposed to however is the present methodology and assumptions that were used to calculate loads and reductions. I believe the methodologies have significant issues and weaknesses that need to be addressed before this BMP can be brought forward, as even an interim BMP.

While I understand that this is not a significant load source, this BMP still needs to meet the same amount of scientific rigor as any other BMP going into the Chesapeake Bay model. All nutrient sources whether controllable or uncontrollable need to be accounted for, especially as this is a new source to the Bay model.

Vessels in the 16 to 21-foot range are typically skiffs, jon boats, bass boats, center consoles and larger ribs; the vast majority of which will not even be equipped with a porta-potty and unquestionably not a holding tank. They are destination vessels for the most part going from point A to point B (i.e. restaurants, bars, etc.) and should not be counted in the calculation of load. At the very most, the load source would be an input of nitrogen potentially from urine sources. There needs to be a better metric than boat size; a 25 ft express cruiser will typically have a holding tank while a 25 ft cuddy cabin or a 25 ft center console usually will not, to calculate a baseline load from.

The current methodology does not account for waste sources from commercial vessels such as cargo vessels, container ships, tankers and cruise ships. These vessels will have a Type 1 or Type 2 MSD which allows them to discharge within the Chesapeake Bay. These treatment technologies center around the reduction of fecal coliform and not the reduction of nutrients. Baltimore is currently one of only four U.S. East Coast ports with the necessary infrastructure to handle some of the largest vessels utilizing the new wider Panama Canal and the amount of cargo that the Port handles has been increasing.

Even with this BMP targeting recreational pump-outs, all nutrient sources, whether controllable or uncontrollable, need to be accounted for. I don't think it would be a large stretch of the imagination to believe that a fleet of cruise ships with a capacity of 3,000 people could present a greater waste load than all marine vessels that illegally discharge in the Bay. In 2015 more than 212,000 people set sail on a cruise from the Baltimore cruise terminal. (<https://pobdirectory.com/port-plays-lead-role-as-economic-engine-for-maryland/>)

The current methodology does not also account for transient pleasure vessels. Annapolis is the proclaimed sailing capital of the US. According to a 2005 report from the Maryland Sea Grant Extension Program they estimated that 4,900 (11.1%) of Maryland DNR's estimate of 44,103 Maryland boat slips are used at least some time during the year for transient boaters. They estimated that 26,157 transient vessels spent at least one day renting space at a Maryland marina or visited a Maryland boatyard during 2004. (Transient Boating In Maryland: The Economic Impact Of Out Of-State Boater Spending, Douglas Lipton, Department of Agricultural and Resource Economics, Maryland Sea Grant Extension Program, University of Maryland, College Park, MD 20742, May 2005). These numbers indicate that this is a load source that cannot be ignored.

The BMP report also did not estimate loads for vessels registered in the District of Columbia and Delaware. According to the website [marinetitle.com](http://www.marinetitle.com) there are approximately 2,500 registered vessels in the District of Columbia (<http://www.marinetitle.com/boat-registration/DC-Washington-DC.htm>, year unknow). Those vessels are more apt to visit the Bay than one of the vessels from within the 50-mile Virginia target radius.

The 50-mile radius for Virginia boats is much too large, most boat owners are not going to trailer their vessel 50 miles for a trip in the bay, those vessels are primarily used in local waters. If they do trailer to the Bay, it's only a couple times per year and not at the rate that is associated with the load estimation methodology. Additionally, those trailered vessels are on the smaller size and are covered in the prior discussion on vessel size.

Question: how is the volume load associated with a pump out being estimated? The 19 gallons stated in the report are undocumented. Holding tanks vary in size substantially, ranging anywhere from 5 to 50 gallons. Pump out frequency also varies substantially, boaters typically do not wait until the tank is full to perform a pump out, thus the volume will vary substantially with each pump. Unless the waste is being metered at the pump any kind of volumetric estimates are going to be nothing more than wild guesses.

Question: how are the pump outs prior to the establishment of the TMDL being accounted for? In theory a BMP needs to change a condition, if a boater was religiously pumping out prior to the TMDL and still pumps out post TMDL, then the BNP has had no effect as the waste has never entered the system.

Porta-potties are typically not pumped out at a marina and many marinas prohibit boaters from pouring the contents of a porta-potty into a toilet at the marina. Most boaters prefer to empty the contents at home as opposed to lugging it down the boat docks all while attempting not to spill it. Pump out facilities are typically located at the outer fringe of the marina docks with the gas/diesel service and can be well removed from the boat ramp.

This is not a source control BMP, the load removed from the Bay (or Tributary) via a pump out just does not disappear, it is in fact going to a wastewater facility or a septic facility where some portion of that load will be returned to the Bay. How is this being accounted for?

At the very least the BNP crediting needs to occur at the location of the pump out facility or even more accurately at the location of the wastewater facility processing the waste. It could however be argued that this is a double counting issue by crediting the nutrient reduction as BMP Pump out and also at the POTW.

Given all these issues it seems that the only possible way that nutrient credits could be generated from a Pump-out BMP would be by:

- Prohibiting those vessels that utilize a Type I or a Type II MSD from overboard discharging into the Bay or Tributary and documenting the volume pumped in-lieu off;
- Decreasing the number of vessels that illegally overboard discharge their waste from a Type III holding tank via a pump-out.

Amanda Albright, Pretreatment & Pollution Prevention Supervising Specialist (Hampton Roads Sanitation District)

1. Executive Summary, page i: "Each Individual pump-out facility..." Is this referring to each pump-out facility at a marina?
2. Introduction, page 1: "NDZs are also required to have boat pump out facilities." Is this referring to permanent pump out/dump stations?
3. 4.2.1, Number of Boats operating in the Bay, page 14: "A total of 90.9% of vessels are registered in counties within approximately 50 miles of the bay based on the available data from 2011 to 2015." Page 32 note 1 states approximately 88%. Was that number not within the 50 mile radius?
4. 4.3.1, Number of Boats Operating in the Bay, page 22: "A total of 66.5% of vessels are registered in counties within approximately 50 miles of the bay based on the available data from 1997 to 2015." MD had 90.9%. What were the determine factors that would produce such a difference between the states? Geographical? Due to available data/time frame?
5. 4.3.5, Sewage Removal by Boat Pump-Outs, page 24: "Boat size classification data were aggregated into two categories, 26'-40' and greater than 40'..." Do we know why VA and MD categorized boat sizes so differently? How much of an impact could this have on the data?
6. Appendix B, Virginia Calculation worksheets: Estimated MD N tonnage removed ~3 times the P tonnage removed, whereas estimated VA N tonnage removed is ~14 times the P removed. The Excel county tables show ~3 to 1 N vs P removal for both MD and VA.

Bill Keeling, Virginia Department of Environmental Quality

Executive Summary page i

It is very concerning that the report mentions the desire of EPA to incentivize the practice and using the expert panel process to do so when on page 7 of the BMP protocol it indicates the following: "It is important to note that the purpose of the Panels is not to incentivize or promote the use of any BMP; it is to increase the understanding of the nutrient and sediment reductions associated with these practices." Similarly in the conclusions section on page 28 it states "the Panel does not want to disincentivize the practice". This expressed concern and desire to create an incentive or to not disincentivize the practice seems a violation of the intent of the BMP protocol and expert panel process. Incentivizing or to not disincentivize a practice should never be discussed in any panel meeting or mentioned in any BMP panel report. The concept behind this stated purpose in the BMP Protocol is to shield the panel from charges of ulterior motives or conflicts of interest and allow the panel the freedom to be the arbiters of the available science. Rightly or wrongly by including this language in this report it has removed that shielding and opens the door for such accusations.

In the executive summary and later in the report it says boat discharged loads are a new load in the estuary modeling and that there is no background loadings accounted for in that modeling. This is to our understanding completely incorrect and a fundamental flaw in the panel's understanding of model calibration and comparison to observed monitoring data. All loading sources whether explicitly or implicitly simulated are accounted for in the calibration of the watershed and estuary models. Observed (monitored) data includes all sources contributing to an observation and observed data are used to calibrate both models. Therefore, these boat discharge loads are currently implicitly captured as well as all other background sources like wildlife loadings via the observed monitored data. We think what the panel is trying to say is that these boat discharge loads as a source are not currently explicitly accounted for in the modeling but could be explicitly simulated in any future versions of the estuary modeling. Additionally the summary mentions this BMP is being proposed as a programmatic BMP for

use in WIP 3 planning. Programmatic BMPs in WIP planning are generally those that have no quantifiable benefit in the modeling. Is the panel recommending a programmatic BMP that does not need model quantification or a BMP that is to be verified, tracked, reported, and simulated or otherwise accounted for somewhere in the models being used by CBP?

These are clearly loads that are not generated in the watershed but are a direct loading to tidal waters and are accounted for in the data used for calibration of the estuarine modeling and not part of the calibration data used for the phase 6 watershed model (WSM). As stated at the WTWG meeting we have a fundamental issue with reducing a load in the WSM for a load not simulated explicitly or implicitly in that modeling environment. Even though these loads are very small we believe it is inappropriate to calculate a loading reduction from a source not explicitly or implicitly included in the observed data used in model calibration. To do so without that source at all in the WSM creates an accounting disconnect between inputs and outputs and compounds any additional defects known or unknown in that model.

Section 4 pages 14 to 16

It does not appear to us that it is valid to assume boats registered in the listed localities are being used in the tidal waters exclusively. We know of boats registered in coastal counties in VA that are kept exclusively on non-tidal waters such as Lake Anna, Lake Gaston, or Kerr Reservoir. Therefore, it appears that the number of boats used for calculation purposes is likely over predicted significantly and recommend the panel should consider a way to estimate boats registered that are used in non-tidal environments and deprecate that from the calculation methodology. There appears to be assumptions that every boat in coastal localities or otherwise proximal to the Bay are assumed to have a MSD type 3 on board that is capable of being pumped out. The report reads that there a 3 MSD types with 1 and 2 being flow-through devices that may not need or have the capacity to be pumped.

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Assumption regarding 16 hour days for waste production is not explained or justified in the report. Considering the nutrient content of human excreta are expressed as unit per day and no information is presented from these sources indicating these values represent anything other than what is expected to be produced by a human in any 24 hour period. It would seem unjustified to apply this assumption to calculate the prorated factors. For mathematical consistency we recommend this prorated factor be calculated by taking the boating hours per day by vessel type (power or sail) divided by 24 hours. This results in a TN prorated factor of 0.25 and 0.33 for TP.

It is unclear how the 13 and 4 grams per person per day was calculated from the listed references for N and P respectively. The average of both studies minimum N values is 10.11 g/p/d and the average for the maximum values is 14.35 g/p/d. The median value between these is 12.23 g/p/d not 13 as proposed in the report. For P using the median value between the averages of the minimum and maximums listed is 3.71 g/p/d not the 4 g/p/d listed in the report. Please provide the mathematical basis for using 13 g/p/d N and 4 g/p/d as these values seem randomly selected to fall somewhere in between the minimum and maximum values cited.

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The report mentions statistics on the percentage of Maryland boats that have the ability to use pump-outs. Meaning some other amount do not have such capacity yet we do not see any depreciation of the total number of boats used for baseline calculation based on the estimated number of boats not eligible for pump-outs. What percent of the total boats 16 to 21 feet in length and what percentage greater than 22 feet in length have or do not have MSD's of any type? Based on the information in the report

69.2% of boats 16 to 21 feet in length do not have the ability to use pump-outs and 12% of boats 22 feet or longer don't. Where in the baseline loading calculations is this accounted for?

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The report states the "methodology described and applied in the Maryland and Virginia estimates provides a current baseline tracking". This is valid only if one agrees with the many assumptions used for the estimation and that an estimate is the same as actual tracking. And as stated in the next sentence that the report "may significantly overestimate the baseline loads". It is not clear what the panel is saying when it recommends CBP consider the relative lack of data available to verify its recommendations in granting load reduction credits for this practice. It sounds as if the panel is saying there is insufficient data to justify granting any reduction credits. Despite the recommendation that these loads should be explicitly simulated in the CBP modeling and the proposed methods to estimate loads it is not clear if the estuarine modeling data needs can be satisfied with this methodology or if the modeling can differentiate such small loadings across the 3-dimensional grid used for simulation. It is possible this is asking the modelers to account for numbers that are far to the right of the decimal place. This would also seem to be a request for future modeling and not a modification of the current estuarine model inputs.

Appendix C

It appears that a blanket load reduction would be applied to some source in the WSM applied to the localities shown in these figures. This does not seem justifiable to apply a tidal reduction to localities that are not tidal or have no shoreline or direct tidal loadings in the WSM. It is unclear which load source in the WSM would be diminished by application of this BMP. The localities being proposed to receive loadings reductions from this BMP include localities that have no shoreline in the WSM. It was discussed at the WTWG that CBP could reduce the shoreline loadings from the WSM if so it has not been explained how much of the shoreline load would be treated by a single pump-out or in mass for at least the localities that have shoreline in the WSM. Or if blanket assumptions are to be applied across all localities with registered boats. Like other tidal BMPs (Shoreline erosion controls, Algal flow pathways, and oyster BMPs) if this Boat pump-out BMP is being proposed to reduce loads from the nearby shoreline loadings we have concern that alone or in combination with other tidal BMPs one could calculate more loadings reduction than available shoreline loads. The technical appendix mentions the land use/load source as recreational boat discharge. Without re-calculating estuary model inputs (re-calibration) and creating this load source explicitly either in the WSM or estuary models the stated load source does not exist. Since there is no load source there seems no way to apply a percentage reduction of N or P wholesale or to individual pump-outs.

Appendix G- Reporting section

As stated above it is not clear how one credits a reduction to the land uses in the watershed for a load that does not originate in the watershed. Therefore, it does not seem appropriate to provide a reduction to one or more land uses loadings (load sources in phase 6) for activities occurring outside those load sources and for pollutant inputs not accounted for in that modeling environment. It further states using DMR format for reporting a pump-out or non-discharging event and that it can be included in the locality MS4 reporting. What about non-MS4 localities and the fact that these are not loads originating in the area draining to or discharged by any regulated outfall? It also seems strange to indicate this BMP is subject to the provisions of a stormwater permit when pump-outs are not rainfall dependent nor are part of a watershed's loadings

regulated or not. These aspects of the proposed verification methodology seem insufficient and mixing sources of pollution, with controls for those sources, and regulatory established reporting requirements.

Overall

It is completely unclear how VA would track, verify, and report these pump-outs. What is supplied in the report is inadequate as compared to other BMP reports on verification methods and does not provide specific requirements needed for VA to know how to modify our verification procedures to allow collection and reporting of this proposed BMP's data via NEIEN protocols. It appears that the panel is proposing a method of estimating loadings from boat discharges as part of a method to verify that the BMP has been implemented. This is confusing to us and does not appear to qualify as BMP verification as we understand verification of BMP reporting. We do not know of any current mechanism in VA that would allow the pump-out stations to report the number of boats pumped or the volume pumped. Considering the size differential between boats (not to mention ships) it is not clear if this is a credit per vessel or per unit volume of materials not discharged or some kind of overall programmatic credit or where the credit is to be applied specifically in the WSM. We would need additional guidance on how to verify a programmatic credit applied especially to non-tidal portions of the watershed for actions impacting exclusively tidally derived loads. The appendix detailing reporting requirements is devoid of enough specifics to allow transmission via NEIEN protocols and is still very draft and insufficiently developed to facilitate reporting. It also specifies a load source to be applied against that does not exist and would seem to require re-calibration of one or more modeling environments.

The County table 7-18-18.xlsx contains circular calculations for the Maryland tab that creates concern over the calculations provided and we cannot follow the logic used to create the resulting load estimate. The Virginia table is structured differently and does not have any circular referenced formulas. It is not clear where the values in this table originated and or calculated from especially for the Maryland tab. We are not able to follow the calculations and or replicate them based on the information provided.

Considering the concerns on specific calculations regarding the number of boats, those with MSD's capable of being pumped, nutrient values, and other calculated factors that impact the estimated loadings and benefits. And the lack of clarity on specific sources in the WSM to be diminished or justification for the localities listed. Additionally, with the lack of sufficient information on tracking and verification it does not seem warranted to include boat pump-outs as a simulated BMP in CBP modeling or needing to be tracked and reported at this time. Also considering the relatively small loadings there does not seem adequate justification for the Commonwealth to expend resources in the effort needed to adequately provide verifiable BMP reporting data to CBP considering the complexity of NEIEN and significant burden to provide adequate verification.

And as mentioned at the WTWG it is already against federal law to discharge within 3 nautical miles of the coast of the United States and this includes the entire surface area of the Chesapeake Bay tidal waters. Therefore, this seems to be a request to get credit for doing something already required or should already be happening. Other similar requests for credit from already required actions have been denied for this reason alone.

[Dianne McNally, EPA Region III, Water Protection Division](#)

We would like to address the following questions/concerns we have with this interim BMP:

1. Crediting under an MS-4, since this discharge is not part of an MS-4 (this discharge is really part of the LA, not WLA).
2. Ensuring no double-counting since this waste ultimately ends up in a WWTP for treatment (again, is this discharge part of the LA or part of the WWTP WLA—it cannot be both).
3. How to account for this as a credit in a “No-Discharge Zone” where these discharges are illegal.