VIRGINIA ASSOCIATION OF MUNICIPAL WASTEWATER AGENCIES, INC.
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February 28, 2007

By Email and U.S. Mail

Mr. Mark Richards
Department of Environmental Quality
Commonwealth of Virginia
P.O. Box 1105
Richmond, VA 23218

Mr. Carlton Haywood
Director Program Operations
Interstate Commission on the Potomac River Basin
51 Monroe Street, Suite PE-08
Rockville, MD 20850

Re: Lower Potomac PCB TMDL

Dear Mr. Richards and Mr. Haywood:

Please accept the attached comments on the draft Lower Potomac TMDL External Loadings document and related issues. As the comments note, we appreciate the serious and constructive manner in which DEQ and ICPRB have addressed VAMWA's earlier comments on data QA/QC.

Sincerely,

Frank W. Harksen, Jr.
President

Cc: VAMWA members
Richard H. Sedgley

VIRGINIA ASSOCIATION OF MUNICIPAL WASTEWATER AGENCIES COMMENTS ON LOWER POTOMAC TMDL:

Calculation of PCB External Loads for the Potomac PCB Model Jan. 27, 2007 Draft

February 28, 2007

The following comments address the draft Calculation of PCB External Loads for the Potomac PCB Model document, the use of the loadings and other data presented in the TMDL modeling, and related issues.

I. Effluent Data QA/QC

We appreciate the substantial efforts that DEQ and ICPRB have put into addressing VAMWA's earlier comments and concerns about effluent data quality assurance/quality control. The revised procedure presented at the February 23 DEQ meeting uses a statistical approach to adjust reported PCB analysis results to correct for congener concentrations found in blanks. We have not had time to fully evaluate the statistical procedure. However, although the procedure is of course still not consistent with the Method 1668A QA/QC requirements, we believe that the statistical approach, combined with use of the effluent data in a largely qualitative manner, may allow the agencies to properly consider the existing effluent data in the TMDL development.

II. Conversion of PCB Data to PCB_{3-10}

From the External Loads draft we understand that TMDL modeling is being done on the sum of PCB homologs three through ten, rather than total PCBs. The stated principal reason is that the George Mason University data do not include mono- and di-PCBs. This is supported by other points, including the greater toxicity of the higher homologs, and the assertion that "[m]odel based predictions of fate and transport may be more accurate and efficient if a limited number of homologs are modeled and those results extrapolated to total PCBs." No basis is given for this assertion.

The water quality standards are, of course, expressed as total PCBs. VAMWA has concerns about any procedure that artificially manipulates data, and we have particular concerns with this procedure. Those concerns are the following.

- As we have discussed, the poor QA/QC of the effluent and water column data limit the use of the data in any quantitative manner. To take these data and then perform serial manipulations on the data may make the problem worse.

- No support is provided for the assertion that the resulting model may be more accurate using the PCB_{3-10} approach.

- The mono- and di-PCB homologs are dominant in the Chain Bridge water column boundary condition. If the data are able to establish anything, they establish that loadings from upstream are the majority of the problem. Further, the report acknowledges that for air deposition we are unable to calculate PCB_{3-10}. The sum of the Chain Bridge water column and air deposition loadings are more than 50 percent of the total Lower Potomac PCB loadings, and we question the wisdom of the procedure in view of the dominance or lack of information on mono- and di- homologs for more than 50 percent of the loadings. This factor alone seems to counsel against the procedure.

- The data manipulation is confounded by the serial approximations involved in the modeling of the PCB/TSS relationship. Although we understand the reason for the use of the PCB/TSS relationship in the modeling, it is acknowledged to be approximate, with r^2 values as low as 0.52. Note that an r^2 of 0.52 means that 48 percent of the data distribution is not explained by the statistical relationship.

- The draft acknowledges that we do not yet know how to correct the problem that the PCB_{3-10} procedure creates – how to correct back to total PCBs.

For these reasons VAMWA is seriously concerned that the PCB_{3-10} approach may unintentionally do more harm than good. The serial manipulations of data proposed in the External Loads draft appear to be based on so many approximations and judgments that in total they bring the usefulness of the modeling into question. As we mentioned at the February 23 DEQ meeting, we urge the Steering Committee to reconsider the alternative of a procedure that estimates total PCBs for the GMU data. This conversion of the GMU data will need to be made at some point in any event, either explicitly or implicitly through a more general data conversion back to total PCBs. This alternate approach would appear to have less risk of unintended data problems, and it would appear to be a more defensible procedure for the agencies.

III. POTW Effluent Net/Gross Calculations

We have discussed on several occasions whether POTW effluents represent a net addition of PCBs. VAMWA's belief has been and remains that all of the available data support the conclusion that there is no net addition. The agencies' earlier response and the second presentation from the February 23 DEQ meeting take the position that additional data would be needed to establish this fact. Although we disagree with the need for more data, Fairfax County has obtained finished water data from the Fairfax Water Authority and Fairfax City water systems. Attachment 1. Note the Fairfax Water Corbalis (Potomac River source) finished water PCB concentration of 552 pg/l. These data, although we believe (like the effluent data) they must be considered and used largely in a qualitative manner, are in the range of the POTW effluent data. Accordingly, these data support the conclusion that there is little or no net PCB discharge from the POTWs.

Fairfax Water states that it treats its water with activated carbon.[1] Although we are not aware of data supporting the agencies' assertion that activated carbon is effective at removing PCBs in the parts per quadrillion range, these data would be consistent with some water treatment removal of PCBs in the reported Potomac water column concentrations of 1 to 6 ng/l. As you know, the Corps of Engineers Washington Aqueduct system supplies water to the District of Columbia and Arlington County. The Aqueduct reports that its water is occasionally treated with activated carbon for taste and odor control.[2] Accordingly, a correlation should be made that the Washington Aqueduct produces water at PCB concentrations greater than the Fairfax Water numbers. This supports our assertion that for Blue Plains and Arlington (and other systems that may have Washington Aqueduct influence) there is little or no net PCB discharge from the POTWs.

The second presentation from the February 23 DEQ meeting attempts to (1) establish through reference to definitions in DEQ's regulations that "facilities are responsible for their discharge" (a point with which we agree) and (2) establish a high evidentiary burden for POTWs to document no net addition of PCBs. We disagree with the second point. The agencies have <u>no right to establish a higher evidentiary burden</u> for dischargers in disproving facts than the evidentiary burden the agencies have defined for themselves in putting the facts forward. No data support the agencies' attempted rejection of the net/gross mechanism, and we see that rejection as arbitrary and capricious.

Further, the Virginia rule defines how net/gross determinations are to be made, for water quality-based purposes. Consistent with the rule, it is clear here that:[3]

(1) The background concentration of [PCBs] in the receiving water (excluding any amount of [PCBs] in the facility's discharge) is similar to that in the intake water;

(2) There is direct hydrological connection between the intake and discharge points; and

(3) Water quality characteristics (e.g., temperature, pH, hardness) are similar in the intake and receiving waters.

Because these specific conditions are met, the "Pollutants in Intake Water" regulation establishes a substantive right for the POTWs to not be held responsible for PCBs at or below the concentrations found in finished water system water. Blue Plains should also be subject to the same common sense standard. Although the POTW owners may consider additional data collection, we ask that the agencies incorporate the finding

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[1] http://www.fcwa.org/current/special_statement_090606.htm

[2] http://washingtonaqueduct.nab.usace.army.mil/treatment_process.htm

[3] 9 VAC 25-31-230.G.5.

that the POTW effluents do not appear to be net sources of PCBs into the External Loads document and into other external loads determinations.

IV. Blue Plains Effluent Data

As you know, there is one Blue Plains effluent data point at approximately 2.8 ng/l, and three data points at approximately 1.2 – 1.3 ng/l. The effluent data point at 2.8 ng/L is unusual in many ways.

- The sample blank was unusual - completely zero in PCBs, which is atypical, and therefore the entire sample set is an indicator of "unusual" analysis.

- It was the first data point collected for Blue Plains (06/01/06) and may consist of sampling artifacts.

- The congener distribution was unusual (complete absence of lower (1, 2) and higher (8, 9, 10) homologs, but a high presence of homolog 5, again indicating some analytical problems in quantifying homologs - overpredicting some and underpredicting others.

- It does not adequately represent the median value of the four samples at Blue Plains and is greater than the average plus one standard deviation for the Blue Plains samples.

- It skews the overall contribution from point source wastewater treatment facilities, since Blue Plains is such a large source and this anomalous data point represents the largest single outlier occurring for the largest point source.

Although D.C. WASA may submit additional information directly to ICPRB on this point, VAMWA strongly believes that the single higher data point is clearly an outlier and not representative of a true effluent concentration. We recognize that other samples have been excluded for reasons of analytical quality. For all the reasons listed above, we ask that ICPRB delete the outlier from any D.C. WASA effluent data used in the External Loadings draft or otherwise used in the modeling.

V. Water Quality Standards Application

All of the participants appear to agree that the instream water quality targets are the Virginia, Maryland and D.C. water quality standards. We request that the agencies and the Steering Committee take particular care that the modeling incorporates the temporal nature of the water quality standards and the proper averaging periods. The External Loads draft recognizes this issue, and in a substantial understatement notes "relevant time scales for water column PCB concentrations are daily or longer." External Loadings draft at 7. The accumulation of PCBs in fish tissue is presumably a function of exposure over a period of years, and we presume that modeling runs and sensitivity work will demonstrate that water column PCB concentrations over any short period of time are not relevant.

Consistent with this, the Maryland and District of Columbia total PCB water quality standards specify their application in conjunction with average receiving water flow statistics. The Maryland standard is applied using mean annual flow, COMAR 26.08.02.05.E, and the D. C. standard with harmonic mean flow, 21 D. C. ADC 1105.5, both at least annual average measures. Accordingly, modeled impacts from POTW effluents and other sources should focus on averaging periods no shorter than annual. We understand that IPCPR confirmed at the February 23 DEQ meeting that the modeling uses mean annual Potomac River flow.

As you may know, a recent case in the D.C. Circuit Court of Appeals addressed the manner in which TMDLs are expressed. The Court held that the word "daily" in a TMDL means daily, and a TMDL must be expressed in daily terms. However, as applied to criteria such as human health-based criteria there is no need to think of daily in less than a 24-hour sense, encompassing two tidal cycles. More importantly, EPA's recent Guidance on "Establishing TMDL 'Daily' Loads in Light of the Decision in . . . *Friends of the Earth*" emphasizes that (1) the decision does not preclude "alternative non-daily pollutant load expressions in order to facilitate implementation of the applicable water quality standards," EPA Guidance at 2, and (2) TMDL documents should "clearly set forth the implementation-related assumptions underlying any wasteload allocations," EPA Guidance at 3.

The Lower Potomac PCB TMDL is exactly the situation that EPA's Guidance describes where the underlying assumptions are based on long-term water column concentrations and, probably more importantly, sediment concentrations which are in turn based on very long-term processes. Therefore the TMDL, any TMDL documents, and any comments about implementation should clearly reflect the long-term processes controlling PCB fish concentrations. We ask that these factors be reflected throughout the process, including throughout the modeling efforts and the various drafts of TMDL documents. This will ultimately make the tasks of the agencies and the affected entities easier, and will make their conclusions and implementation actions more supportable.

VI. Use of Model Cells

VAMWA is concerned about the proper use of the model "cells." The External Loads draft and earlier loadings documents make the point that PCB concentrations within specific cells adjacent to POTWs may be more influenced by effluent PCB concentrations than are cells within the main stem of the Potomac. After acknowledging that "nonpoint sources are by far the major source of PCBs for the entire Potomac estuary," the External Loads draft then claims that "there are particular localities for which a significant fraction [of] the total external PCB load to a single PCB model cell comes from other sources (WWTP, CSO, contaminated sites)." External Loadings draft at 19-20.[4] Our concern is that there are assumptions that, despite the obvious dominant upstream and air deposition loadings, (1) effluents contribute to water quality standards exceedances at least locally and (2) the TMDL process should use effluent requirements to satisfy an assumed point source requirement for the eventual TMDL.

Accordingly, we request that the agencies and the Steering Committee make sure that the modeling correctly reflects the impacts of effluents. PCB loadings from POTW effluents cannot be divorced from concentration. That is, it is not sufficient to simply look at mass loadings to a cell. Although in particular cases effluent loadings may appear significant, most of the effluents are clearly well below the respective water quality standards. Therefore, the effluents are a positive influence on water quality standards attainment – the effluents bring water column concentrations lower in cases where there are standards exceedances. In those few cases where there are POTW effluent data points at higher concentrations, we believe that the substantial QA/QC problems with the data should prevent the use of such outlying data points. That is, as we have commented before, the effluent data are of such poor quality that at best they establish a range in which the effluent concentrations may be present below Quantitation Levels.

We appear to be in agreement that the only water quality standards applicable within a cell are the standards of the political entity under whose jurisdiction the waters fall. In cases where there are downstream cells of another jurisdiction, the annual average nature of the (Maryland and D.C.) standards require that the modeling correctly reflect the long term average impact of PCB mass and concentration from any effluents. Given the substantial (generally 1 to 6 ng/l) upstream PCB concentrations, well in excess of most effluents, and the massive flow from upstream (apparent average flows in the tens of thousands of mgd), it is difficult to imagine effluents having any substantial impact on even the very low D.C. water quality standard.

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[4] In an even more conclusive statement the prior (Jan. 10, 2007) draft of the External Loads draft stated "it is possible that point sources still are significant contributors to any violation of the PCB water quality standard in particular localities."

Client Sample ID				
Sample Descriptor	Corbalis	Griffith	Fairfax City	
GERG ID	C55635	C55636	C55637	**Avg.**
Sample Type	FFX GRAB	FFX GRAB	FFX GRAB	
SDG	GC491	GC491	GC491	
Dry Weight				
Volume	2.00	2.01	1.98	
Sample Size Units	Liters	Liters	Liters	
Matrix	Water	Water	Water	
Reporting Units	pg/L	pg/L	pg/L	
Calculation Basis (Dry/Wet)	Wet	Wet	Wet	
QC Batch ID	M3426	M3426	M3426	
Method	GC/MS	GC/MS	GC/MS	
Collection Date	12/18/2006	12/18/2006	12/18/2006	
Receive Date	12/20/2006	12/20/2006	12/20/2006	
Extraction Date	1/20/2007	1/20/2007	1/20/2007	
Analysis Date	1/25/2007	1/25/2007	1/25/2007	

Surrogate Compounds	**% Recovery**	**% Recovery**	**% Recovery**	**Avg.**
13C-PCB 1	40.4	65.7	**28.5**	44.9
13C-PCB 3	54.8	74.6	64.0	64.5
13C-PCB 4	41.1	61.6	54.6	52.4
13C-PCB 15	51.6	70.1	96.0	72.6
	39.1	40.7	**28.0**	35.9
	140.1	92.3	110.6	114.3
13C-PCB 54	55.1	32.3	39.2	42.2
13C-PCB 77	**238.2**	**182.7**	113.7	178.2
13C-PCB 81	**228.1**	**164.9**	105.3	166.1
13C-PCB 104	**13.3**	**18.2**	**13.7**	15.1
13C-PCB 105	91.6	82.3	78.1	84.0
13C-PCB 114	86.1	81.5	78.9	82.2
13C-PCB 118	93.1	87.1	84.2	88.1
13C-PCB 123	120.1	114.5	107.6	114.1
13C-PCB 126	96.8	85.1	87.1	89.7
13C-PCB 155	33.2	34.7	31.0	33.0
13C-PCB 156	70.3	69.3	76.7	72.1
13C-PCB 157	59.7	53.3	59.7	57.6
13C-PCB 167	68.2	62.8	63.6	64.9
13C-PCB 169	76.2	63.8	75.4	71.8
13C-PCB 188	26.8	31.1	**19.5**	25.8
13C-PCB 189	38.8	42.2	33.7	38.2
13C-PCB 202	**16.5**	**17.5**	**11.1**	15.0
13C-PCB 205	56.9	56.3	54.4	55.9
13C-PCB 206	48.3	45.9	40.5	44.9
13C-PCB 208	44.3	43.4	40.6	42.8
13C-PCB 209	32.2	30.9	27.5	30.2

Analytes	**Conc.**	**Conc.**	**Conc.**
	pg/L	pg/L	pg/L
PCB 1			
PCB 2			

Attachment 1

PCB 3			79
Chlorination 1			79
PCB 4/10			
PCB 5/8			64
PCB 6			
PCB 7/9			
PCB 11	23		
PCB 12			
PCB 13			
PCB 14			
PCB 15			40
Chlorination 2	23		104
PCB 16/32			
PCB 17			
PCB 18/30			
PCB 19			
PCB 20/21/33			
PCB 22			
PCB 23/34			
PCB 24/27			
PCB 25			
PCB 26			
PCB 28/31			20
PCB 29			
PCB 35			
PCB 36			
PCB 37	18	36	12
PCB 38			
PCB 39			
Chlorination 3	18	36	32
PCB 40			
PCB 41/68			14
PCB 42			
PCB 43/52			121
PCB 44			45
PCB 45			
PCB 46			
PCB 47/48/65/75			
PCB 49			17
PCB 50			
PCB 51			
PCB 53			
PCB 54	7		5
PCB 55			
PCB 56			
PCB 57			
PCB 58			
PCB 59			
PCB 60/64/69			
PCB 61			9
PCB 62			
PCB 63			

PCB 66/80			45
PCB 67			
PCB 70/76			
PCB 71/72			
PCB 73			
PCB 74			
PCB 77	32	40	
PCB 78			
PCB 79			
PCB 81	16	25	
Chlorination 4	55	65	256
PCB 82/107			
PCB 83/112			
PCB 84			33
PCB 85/120			
PCB 86/97/125			29
PCB 87/115			50
PCB 88			
PCB 89/90/101			113
PCB 91			
PCB 92			17
PCB 93			
PCB 94			
PCB 95/121			139
PCB 96			
PCB 98/102			
PCB 99			25
PCB 100			
PCB 103			
PCB 104		12	
PCB 105	18	27	11
PCB 106/118	19	23	20
PCB 108			
PCB 109			
PCB 110			131
PCB 111/116/117			
PCB 113			
PCB 114	14	14	
PCB 119			
PCB 122			
PCB 123	16	21	
PCB 124			
PCB 126	50	82	27
PCB 127			
Chlorination 5	117	179	595
PCB 128			
PCB 129			
PCB 130			
PCB 131/142/165			
PCB 132			2
PCB 133			
PCB 134			

PCB 135			
PCB 136			
PCB 137			
PCB 138/158/160			4
PCB 139/140/149			
PCB 141			
PCB 143			
PCB 144			
PCB 145			
PCB 146/161			
PCB 147			
PCB 148			
PCB 150			
PCB 151			
PCB 152			
PCB 153/168			6
PCB 154			
PCB 155	8	14	5
PCB 156	36	40	14
PCB 157	30	42	11
PCB 159			
PCB 162			
PCB 163/164			
PCB 166			
PCB 167	33	39	11
PCB 169	87	115	49
Chlorination 6	194	250	102
PCB 170/190			
PCB 171			
PCB 172/191			
PCB 173			
PCB 174/181			
PCB 175			
PCB 176			
PCB 177			
PCB 178			
PCB 179			
PCB 180/193			
PCB 182/187			
PCB 183			
PCB 184			
PCB 185			
PCB 186			
PCB 188	9	14	4
PCB 189	34	68	
PCB 192			
Chlorination 7	43	82	4
PCB 194			
PCB 195			
PCB 196/203			
PCB 197			
PCB 198			

PCB 199			
PCB 200/201			
PCB 202		17	
PCB 204			
PCB 205	38	72	22
Chlorination 8	38	89	22
PCB 206	41	63	24
PCB 207			
PCB 208	23	34	9
Chlorination 9	64	97	33
PCB 209			
Chlorination 10			

PCB Totals	**Conc.**	**Conc.**	**Conc.**
Units	pg/L	pg/L	pg/L
Total PCB Congeners	552	798	1227

PCB Homologs by Chlorination Level			
Units			
Chlorination 1			79
Chlorination 2	23		104
Chlorination 3	18	36	32
Chlorination 4	55	65	256
Chlorination 5	117	179	**595**
Chlorination 6	**194**	**250**	102
Chlorination 7	43	82	4
Chlorination 8	38	89	22
Chlorination 9	64	97	33
Chlorination 10			

DEPARTMENT OF TRANSPORTATION
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Mark Richards
Virginia Department of Environmental Quality
629 East Main Street
Richmond, VA 23240

Subject: Comments on *January 27, 2007 Draft calculation of polychlorinated biphenyl (PCB) external loads for the Potomac PCB Model*

Dear Mr. Richards:

On behalf of the City of Alexandria, we thank you for the opportunity to comment on the ***January 27, 2007 Draft calculation of PCB external loads for the Potomac PCB Model.*** As stakeholders in the process we appreciate the opportunity to be involved in the process.

We have four main concerns and questions about the information and calculations reported on the following issues:

1. There is not sufficient data to support the PCB loading calculations for CSO inputs;
2. The regression equation, which was developed using the stormwater data, was used for calculating both stormwater and CSO loads. The variation of PCB with TSS in CSO can not be accurately predicted on the basis of a regression that was not developed using CSO data;
3. There is not sufficient consideration of PCB reservoirs in the sediments as a source and/or discussion of how this contributes to PCB loading; and
4. Overall reductions needed in PCB load as part of a TMDL and calculations of error levels in the estimated loads should be detailed.

Detailed discussion of these issues follows below:

1. There is not sufficient data to support the PCB loading calculations for CSO inputs.

The model calculations utilize total suspended solids (TSS) as a surrogate for PCB_{3-10} loads based on 123 paired PCB and water quality samples divided among 4 areas as described on page 13 of the draft report. Regression equations were then calculated for the four zones for both total PCB (as a function of TSS) and PCB_{3-10} (s a function of TSS).

Only two samples from District of Columbia CSO discharges were used to compare actual CSO discharges with measured PCB levels to the calculated regression as shown on page 14. This comparison was used to conclude that the regression $[PCB_{3-10}] = 0.9967\ [TSS]^{0.9246}$ is sufficient. A more accurate load analysis would be based upon a significant increased number of samples regarding CSO discharges, along with CSOs from different areas to determine the proper relationship. In the absence of more data, it may be more accurate to suggest a range of expected PCB loads from CSO sources.

2. The regression equation, which was developed using the stormwater data, was used for calculating both stormwater and CSO loads. The variation of PCB with TSS in CSO can not be accurately predicted on the basis of a regression that was not developed using CSO data.

The report discusses the use and application of particulate dissolved carbon calculations in the calculation of CSO PCB load (page 19), although it does not seem as though this calculation plays a role in the PCB output. In the report, it seems as though stormwater and CSO loads are calculated using the same regression equations based on TSS.

The City disagrees with the conclusion (arrived on the basis on limited data and justification) that CSOs have a higher level of PCB loads than stormwater loads when similar urban drainage areas contribute flows to the storm water conveyance systems and the combined sewers. Incremental increase of TSS in CSO compared to stormwater are not necessarily associated with PCBs. There does seem to be some valid reasons why the CSO PCB loads may actually be expected to be lower than corresponding stormwater loads with the same TSS level.

The load calculation methodology should account for first-flush that occurs in combined sewer collection systems (CSSs) whereby flows may actually be providing increased delivery of solids and re-suspended solids to the wastewater treatment plant. As a result of the presumption of the TSS/PCB relationship established with the TMDL development, one would expect that, since PCB loads are expressed as a function of TSS levels, then potentially higher levels of PCB reduction is occurring (prior to overflow activation). Agencies owning and operating CSSs are mandated to maximize flows to the wastewater treatment plant, which the City provides. Please confirm and provide results associated with determining the level of TSS and/or PCB load credit used with this approach.

The report does not detail the differences, if any, between the calculations and application for stormwater PCB loads and the CSO PCB loads and the data used to support the differences. Recognizing that CSOs are being treated as end-of-pipe discharges, explain how the diffuse nature of stormwater runoff and related discharges were addressed with the load estimations. If there are no differences between the calculations, the report should state this and explain the reasoning.

3. There is not sufficient consideration of PCB reservoirs in the sediments as a source and/or discussion of how this contributes to PCB loading.

Sources described in the report include tributary and direct drainage loads, wastewater treatment plant loads, PCB loads from contaminated sites, atmospheric deposition, and combined sewer overflows. There does not appear to be consideration of resuspension of PCBs from sediments, a source that has been significant in other PCB models. The report should explain the consideration of PCB reservoirs in the sediments and how it contributes (or fails to contribute) to the PCB load in the Potomac. This will obviously have a large impact on the ultimate goal of attaining PCB criteria.

4. Overall reductions needed in PCB load as part of a TMDL and calculations of error levels in estimated should be detailed.

The PCB load report should include some discussion of the goals needed in order to attain PCB criteria in the Potomac, so that agencies and readers may relate the relative loads to potential reductions necessary to meet water quality standards. Depending on the magnitude of the potential reduction necessary, some of the questions about the model may become insignificant.

Without knowing the overall reductions needed, and the possible allocation of load reductions, it is difficult to determine which loads should be considered as significant sources. Also missing from the report is: at what level a PCB load is equal to or below the level of error in the model estimate. Some discussion of load reductions necessary to meet PCB criteria and calculations of expected error levels in the PCB model would help guide readers.

Please feel free to contact me if you have any questions. I can be reached at 703-519-3400 X-164 or lalit.sharma@alexandriava.gov

Sincerely,

Lalit Sharma, P.E.
Division of Environmental Quality
City of Alexandria

C: Richard Baier, P.E., Director, T&ES
William Skrabak, Chief, Division of Environmental Quality
Kenneth Eyre, P.E., Greeley and Hansen

February 28, 2007

Mr. Mark Richards
Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23240

Subject: Comments on the January 27, 2007 Draft Potomac PCB TMDL External Loads Summary

Reference: Development of a PCB TMDL for the Tidal Potomac River

Dear Mr. Richards:

We appreciate the opportunity to comment on the draft external loads summary developed to address PCB impairments in the Tidal Potomac River. Our primary focus in reviewing the summary was on the external source categories that could potentially affect Fairfax County's Municipal Separate Storm Sewer (MS4) permit: tributary inputs and direct drainage. It is our understanding that comments regarding the point source PCB load estimates will be submitted under separate cover by our sister DPWES agency, Wastewater Management, in coordination with the Virginia Association of Municipal Wastewater Agencies (VAMWA). More detailed comments on the tributary and direct drainage load estimates are attached, and a summary of what we see as the major issues is presented below. We understand the limited time and resources that are available to meet Virginia's and EPA's consent decree deadlines and offer these comments in an attempt to help produce the most accurate and effective TMDL allocations possible.

Our primary concern is that the TMDL is being developed using very little observed data that have been collected over a short time period. In some cases, these data are being used to characterize sources of which they are not representative. For example, Accotink Creek was sampled at Fort Belvoir, which is identified as a contaminated site. In order to distinguish between the watershed load and the load coming from Fort Belvoir, samples should be collected further upstream so that the contaminated site's load can be separated out. Some of the data sources did not include all of the PCB homologs, so homologs 3 through 10 are being used instead of total PCBs, despite the fact that the water quality standard is for total PCBs. Total suspended solids (TSS) have been selected as a surrogate parameter because of the dearth of observed PCB concentration data. In order to do this, the limited data available were used to develop four regional regressions based on paired TSS-PCB_{3-10} data points, but these regressions eliminate any environmental variability in loads that would help focus controls where they are needed most. The model being used, Phase 5 of the Chesapeake Bay Watershed Model (WM5), is not designed to simulate PCBs and is still under development. This is evident in the dramatic change in some of the tributary and direct drainage load estimates from October 2006 to January of this year, which are described in more detail in the attached document. Finally, the regional regressions are being used to calculate PCB_{3-10} loads

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based on questionable TSS model output, which are then converted back to total PCB loads. This complicated, rushed approach using limited data and tools that are still under development does nothing to help identify or quantify the actual sources of PCBs in the watershed, and each assumption made introduces more uncertainty into the estimates developed.

A second concern is the apparent lack of coordination with the Virginia Department of Conservation and Recreation (DCR), the agency in charge of implementing the MS4 permitting program. Given that a substantial portion of the TMDL allocations will be assigned to MS4 permit holders and will be enforced using MS4 permits, the cooperation of the agency responsible for issuing these permits is vital. The Virginia DCR, however, is not represented on the PCB TMDL Steering Committee. We are concerned that the failure to involve the agency charged with so much of the implementation of this TMDL will allow the development of unrealistic allocations.

Finally, we question the appropriateness of developing a TMDL, a total maximum daily load, for a pollutant that is no longer actively generated or discharged and that, because of its chemical stability and mobility, is now present throughout the environment with a significant amount being distributed through atmospheric deposition. It seems that a more appropriate approach would be to identify and remediate the legacy sources of PCBs, i.e. the sites where they were generated and disposed of historically, and to limit TMDL allocations to active, controllable sources.

As you know, plans are either completed or being developed for all of the watersheds in Fairfax County as part of our overall stormwater management program. We are very much interested in improving the conditions of water quality and stream habitat through actual implementation of measures and controls that are both effective and feasible. We hope to continue working through the issues in a cooperative and collaborative way with the community and state in order to achieve a common objective and make a positive difference with our future efforts.

Sincerely,

Randolph W. Bartlett, P.E.
Director of Stormwater Management
Fairfax County Department of Public Works and Environmental Services

Encl.

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Stormwater Management Program

Development of a PCB TMDL for the Tidal Potomac River
February 28, 2007

Questions on Potomac PCB TMDL External Loads Summary (Draft January 27, 2007)

1. Page 11: Please clarify why PCB homologs 3 through 10 were selected for modeling. Figures 8 through 12 show minimal amounts of homologs 9 and 10 and do not show homologs 1 and 2 at all. Why were 1 and 2 excluded? Why weren't 9 and 10 excluded? The write up seems to indicate that 1 and 2 were excluded because they were not available in the GMU data, but many other data sources were used. Is a summary available of the December 1, 2006 conference call on which the decision to use homologs 3 through 10 was made?

2. Page 15: The text states that the TSS load was calculated by summing the modeled daily sand, silt, clay, and algae dry weight loads. Wasn't TSS modeled in WM5? Why wasn't the TSS output used to calculate the PCB concentrations?

3. Page 16: The text indicates that PCBs are also correlated with organic carbon, and that organic carbon dynamics are simulated by the PCB model. Yet the decision to use TSS as the indicator was made, apparently based on the larger number of data pairs available and the higher quality of the TSS model calibration. In terms of physical processes, is organic carbon a better indicator of PCB concentration than TSS? What would the external loads be if organic carbon were used instead of TSS?

4. Page 18: Were the same atmospheric deposition rates used for water and land surfaces? How will atmospheric deposition to land surfaces, which is beyond local control, be accounted for in the loading estimates and eventually in the TMDL allocations?

5. Figure 3: Some of the tributary delineations shown do not follow actual watershed delineations. For example, a significant portion of the Cameron Run watershed is included in the Accotink Creek drainage area, but Cameron Run is an entirely separate stream that flows directly into the Potomac River. Any allocations developed using these inaccurate delineations will misrepresent the loading estimate for the tributary they are assigned to. We recommend using a naming convention that will not be confused with the local watersheds.

6. Figure 3: According to figure 3, Accotink Creek is being simulated as a tributary while neighboring Pohick Creek is being simulated as direct drainage. The watersheds are similar in size, and Pohick Creek contains six PL-566 dams, as well as Burke Lake, all of which trap sediment and reduce the TSS load delivered to the Potomac. Why was the decision made to simulate Pohick Creek as direct drainage, and how will the existing facilities in the watershed be taken into account?

7. The January 30 presentation indicates that the significant increase in PCB loads from direct drainage areas (1,560 g/yr in October vs. 6,187 g/yr in January – a 297 percent

increase) was caused by a recalibration of the flow and TSS simulation in WM5. Can this dramatic change really be attributed to a recalibration? This clearly indicates that the WM5 TSS calibration is not yet complete and that the WM5 model output should not be used to calculate PCB loads. Please provide the average daily flows and TSS concentrations calculated from WM5 output data as well as the data used to calculate each of the zonal regression equations.

8. The January 30 presentation also indicates that the estimated PCB loading from Accotink Creek increased from 55 g/yr in October to 362 g/yr in January, a 558 percent increase. All of the other tributary load estimates remained about the same, except for the Potomac at Chain Bridge which decreased by more than 8,000 g/yr (or 47 percent), and the Occoquan which decreased by almost 700 g/yr (or 84 percent.) What caused the increase in the Accotink Creek estimate? Again, this draws into question the accuracy of WM5 TSS calibration.

9. The January 30 presentation attributes the changes in estimated loads in part to a revised flow and TSS calibration of the Chesapeake Bay Watershed Model (WM5). The concerns about delineation highlighted in questions 5 and 6 and the dramatic changes in estimated loads highlighted in questions 6 and 7 raise the question of the ability of the WM5 to accurately simulate flow and TSS at the smaller scale needed to develop this TMDL.

10. Based on information obtained from DEQ, the samples collected on Accotink Creek were collected at Fort Belvoir, which has been identified as a contaminated site. These samples should not be considered representative of water quality in Accotink creek, and additional samples should be collected upstream of Fort Belvoir.