

Biennial Strategy Review System: Logic Table and Work Plan

Instructions: The following Logic Table should be used to articulate, document, and examine the reasoning behind your work toward an Outcome. Your reasoning—or logic—should be based on the Partnership’s adaptive management [decision framework](#). This table allows you to indicate the status of your management actions and denote which actions have or will play the biggest role in making progress.

Some Management Strategies and Work Plans will not immediately or easily fit into this analytical format. However, **all GITs should complete columns one through four** to bring consistency to and heighten the utility of these guiding documents. The remaining columns are recommended for those who are able to complete them. If you have any questions as you are completing this table, please contact SRS Team Coordinator Laura Free (free.laura@epa.gov).

The instructions below should be used to complete the table. An example table is available on the [GIT 6 webpage](#) under “Projects and Resources”.

1. For the first round of strategic review (2017-2018): Use your existing Work Plan actions to complete the **Work Plan Actions** section first. Make sure to number each of the actions under a high-level Management Approach, as these numbers will provide a link between the work plan and the logic table above it. Use color to indicate the status of your actions: a **green** row indicates an action has been completed or is moving forward as planned; a **yellow** row indicates an action has encountered minor obstacles; and a **red** row indicates an action has not been taken or has encountered a serious barrier.
2. **Required:** In the column labeled **Factor**, list the significant factors (both positive and negative) that will or could affect your progress toward an Outcome. The most effective method to ensure logic flow is to list all your factors and then complete each row for each factor. Consult our Guide to Influencing Factors (Appendix B of the Quarterly Progress Meeting Guide on the [GIT 6 webpage](#) under “Projects and Resources”) to ensure your list is reasonably comprehensive and has considered human and natural systems. Include any factors that were not mentioned in your original Management Strategy or Work Plan but should be addressed in any revised course of action. If an unmanageable factor significantly impacts your outcome (e.g., climate change), you might choose to list it here and describe how you are tracking (but not managing) that factor.
3. **Required:** In the column labeled **Current Efforts**, use keywords to describe existing programs or current efforts that other organizations are taking that happen to support your work to manage an influencing factor but would take place even without the influence or coordination of the Chesapeake Bay Program. You may also include current efforts by the Chesapeake Bay Program. Many of these current efforts may already be identified in your Management Strategy; you may choose to link the keywords used in this table to your Management Strategy document for additional context. You may also choose to include some of these efforts as actions in your work plan; if you do, please include the action’s number and hyperlink.
4. **Required:** In the column labeled **Gap**, list any existing gap(s) left by those programs that may already be in place to address an influencing factor. These gaps should help determine the actions that should be taken by the Chesapeake Bay Program through the collective efforts of Goal Implementation Teams, Workgroups, and internal support teams like STAR, or the actions that should be taken by individual partners to support our collective work (e.g., a presentation of scientific findings by a federal agency to a Chesapeake Bay Program workgroup). These gaps may already be listed in your Management Strategy.
5. **Required:** In the column labeled **Actions**, list the number that corresponds to the action(s) you are taking to fill identified gaps in managing influencing factors. Include on a separate line those approaches and/or actions that may not be linked to an influencing factor. To help identify the action number, you may also include a few key words. Emphasize critical actions in **bold**.
6. **Optional:** In the column labeled **Metric**, describe any metric(s) or observation(s) that will be used to determine whether your management actions have achieved the intended result.
7. **Optional:** In the column labeled **Expected Response and Application**, briefly describe the expected effects and future application of your management actions. Include the timing and magnitude of any expected changes, whether these changes have occurred, and how these changes will influence your next steps
8. **Optional:** In the column labeled **Learn/Adapt**, describe what you learned from taking an action and how this lesson will impact your work plan or Management Strategy going forward.

Toxics Policy and Prevention Logic Table and Work Plan

Primary Users: Goal Implementation Teams, Workgroups, and Management Board | **Secondary Audience:** Interested Internal or External Parties

Primary Purpose: To assist partners in thinking through the relationships between their actions and specific factors, existing programs and gaps (either new or identified in their Management Strategies) and to help workgroups and Goal Implementation Teams prepare to present significant findings related to these actions and/or factors, existing programs and gaps to the Management Board. | **Secondary Purpose:** To enable those who are not familiar with a workgroup to understand and trace the logic driving its actions.

Reminder: As you complete the table below, keep in mind that removing actions, adapting actions, or adding new actions may require you to adjust the high-level Management Approaches outlined in your Management Strategy (to ensure these approaches continue to represent the collection of actions below them).

Long-term Target: Continually improve practices and controls that reduce and prevent the effects of toxic contaminants below levels that harm aquatic systems and humans. Build on existing programs to reduce the amount and effects of PCBs in the Bay and watershed. Use research findings to evaluate the implementation of additional policies, programs and practices for other contaminants that need to be further reduced or eliminated.

Two-year Target: Completion of performance targets related to key actions

KEY: Use the following colors to indicate whether a Metric and Expected Response have been identified.

Metric	Specific metrics have not been identified
	Metrics have been identified
Expected Response	No timeline for progress for this action has been specified
	Timeline has been specified

Factor	Current Efforts	Gap	Actions (critical in bold)	Metrics	Expected Response and Application	Learn/Adapt
<i>What is impacting our ability to achieve our outcome?</i>	<i>What current efforts are addressing this factor?</i>	<i>What further efforts or information are needed to fully address this factor?</i>	<i>What actions are essential to achieve our outcome?</i>	<i>Optional: Do we have a measure of progress? How do we know if we have achieved the intended result?</i>	<i>Optional: What effects do we expect to see as a result of this action, when, and what is the anticipated application of these changes?</i>	<i>Optional: What did we learn from taking this action? How will this lesson impact our work?</i>
Broad geographic extent and distribution of PCBs and other contaminants (i.e. PAHs)	PCB Story Map and tidal impairments indicator map to communicate extent of PCB impairments; PCB TMDLs that account for different PCB sources	Continued jurisdictional monitoring programs for PCBs, including fish tissue sampling. Information about management actions most effective for reducing PCBs; Implementation of PCB TMDLs.	Build on jurisdictional monitoring programs to coordinate watershed-wide monitoring and tracking of PCB impairments; Partnership effort on efficient and effective TMDL implementation.			
Political will to modify regulatory programs and/or create voluntary programs	Progress in implementation of local TMDLs, some progress on multi-state TMDL development	Ongoing GIT funded project to study feasibility of voluntary PCB removal program(s) Absence of information on the value and feasibility of a voluntary PCB removal program for PCBs in use.	PCB Consortium to support progress on regulatory and voluntary programs in multiple jurisdictions; Ongoing GIT funded project to study feasibility of voluntary PCB removal program(s)			
High cost of testing and remedies : in-stream sediment remediation; waste water PCB source trackdown studies; electrical equipment replacements; stormwater	Ongoing academic studies, e.g.: WWTP PCB removal GIT funded study, and other activities to find	Complete and release PCB trackdown study and PMP guide.	PCB Consortium to share information in order to reduce high cost of management approaches, and consider more	est		

Factor	Current Efforts	Gap	Actions (critical in bold)	Metrics	Expected Response and Application	Learn/Adapt
<i>What is impacting our ability to achieve our outcome?</i>	<i>What current efforts are addressing this factor?</i>	<i>What further efforts or information are needed to fully address this factor?</i>	<i>What actions are essential to achieve our outcome?</i>	<i>Optional: Do we have a measure of progress? How do we know if we have achieved the intended result?</i>	<i>Optional: What effects do we expect to see as a result of this action, when, and what is the anticipated application of these changes?</i>	<i>Optional: What did we learn from taking this action? How will this lesson impact our work?</i>
controls; contaminated site remediation	cost-efficient methods for PCB reduction.		approaches to prevent release of PCBs			
Variety of sources and pathways for PCBs entering the environment that necessitate a wide-range of very different management responses (e.g., primary sources such as electrical equipment, secondary sources such as wastewater treatment by-products, and pathways such as stormwater runoff contaminated by air deposition or contaminated sites)	Reports from CSN to better understand variety of sources and pathways for toxic contaminants, including PCBs; Development of fact sheet to communicate multiple benefits of nutrient and sediment management practices for toxic contaminants	Further information needed on extent of atmospheric deposition of PCBs in the Bay Watershed; better understand PCB removal rates and efficiencies through nonpoint source management practices for nutrient and sediment reduction.	PCB consortium to share lessons learned on management approaches and best practices to implement PCB reductions through TMDLs, MS4 permits, and NPDES permits.			
Need to continue shifting paradigm by acknowledging that there are ongoing sources of PCBs (i.e., PCBs are not static “legacy” contaminants) Need to shift paradigm to acknowledge that there are ongoing sources of PCBs (i.e., PCBs are not static “legacy” contaminants)	A comprehensive strategy addressing many sources ensures that not only legacy-only PCBs are accounted for. No current efforts	Track potential new sources and inadvertent of PCB production, for example ink and dye manufacturing industries.	Develop approaches for understanding all sources of PCBs in the watershed. Strategies will address ongoing sources beyond in-stream sediment.			
Knowledge gaps on relative sizes of PCB sources	No current efforts	Large scale synthesis and mass balance	PCB consortium could address this			

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		analysis of PCB sources in the watershed	knowledge gap (with resources, e.g GIT funding)			
<u>The extent of collaboration and coordination among the science and management communities at a scale that is commensurate with the extent of PCB impairments and TMDLs</u>	<u>Moderate level of coordination through the Toxic Contaminants Workgroup and other unconsolidated activities</u>	<u>Current extent of collaboration and coordination is not allowing for effective transfer of knowledge and interstate coordination on PCB TMDLs</u>	<u>Explore feasibility and sustainability of a forum for collaboration and coordination (e.g. PCB consortium)</u>			

WORK PLAN ACTIONS

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Action #	Description	Performance Target(s)	Responsible Party (or Parties)	Geographic Location	Expected Timeline
Management Approach 1: Regulatory Approaches					
1.1	Continue jurisdictional monitoring programs for PCB occurrence to assess need for new local	1.1.1 Continue statewide fish tissue sampling for PCBs at 125 sites. Not all are in	PA DEP		

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	TMDLs and progress related to reducing PCB loads.	the Susquehanna Drainage. These are rotated to new locations every year.				
		1.1.2 Estuarine probabilistic monitoring which includes a list of PCB congeners in sediment	VA DEQ		42 sites were sampled within minor tidal tributaries and embayments of the CB Watershed, 35 of which were probabilistic and 7 of which were targeted, comprising a special study within the Potomac River embayments. 3 of the targeted sites were within MD's Potomac River waters, off the mouth of VA embayments. An additional 11 probabilistic sites occurred in coastal Delmarva waters, and 4 in the Back Bay and North Landing River waters of the Albemarle Sound drainage. Sediment chemistry, sediment toxicity, and benthic community samples were collected at all 57 sites. Weight of evidence measurements for aquatic life use will be conducted for all sites, based on the sediment quality triad.	
		1.1.3 Monitor all main stem tributaries to Bay listed as impaired. Fish PCB monitoring used on an as needed basis to monitor status;				Sampling design plan under development. Some stations will be placed in the non-tidal portion of the James River.
		1.1.4 TMDL source investigation studies included where PCB TMDL being developed. Includes sediment monitoring and low level water column samples.				A study plan is currently under development for the non-tidal, middle and upper James River segments.

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		<p>1.1.5 Conduct a PCB monitoring survey on pre and post-ENR WWTPs in Maryland to determine if there is an increase in removal efficiency from the ENR treatment technology. Conduct a second round of sampling on the two plants that are pre-ENR once the upgrade goes online.</p>	MDE		<p>The final round of sampling remains on hold as the Back River and Cox Creek WWTPs ENR treatment processes have not been completed. The contract has been extended through December 2018.</p> <p><u>The Back River WWTP ENR treatment process has been completed and is currently online. It is anticipated that the Cox Creek WWTP treatment process will be completed shortly and the final round of sampling will be conducted fall 2018. The final results of this study will be available early 2019.</u></p>
<p>1.1.6 Continue annual PCB monitoring in support of PCB TMDL development. Monitoring includes collection of water column (non-tidal/tidal), sediment and fish tissue samples for PCB analysis to support the development of water quality models in establishing PCB TMDLs.</p>	<p><u>The monitoring survey for the Conowingo Pool has been completed and a final dataset was provided to MDE in June 2017. VIMS is currently developing a TMDL for the Conowingo Pool and Lower Susquehanna. It is anticipated that this TMDL will be completed and submitted to EPA in 2019. The monitoring survey for the non-tidal Potomac River has been completed and a final dataset was provided to MDE in 2017. MDE is currently developing a PCB TMDL for the non-tidal Potomac River. It is anticipated that this TMDL will be completed and submitted to EPA in 2019.</u></p>				
<p>1.1.7 Conduct toxic contaminant monitoring for the tidal waters of Aberdeen Proving Grounds (APG).</p>	<p><u>The toxic contaminant monitoring survey for APG was completed in October 2017 and a final dataset was provided to MDE in March 2018. MDE will evaluate the data in Fall 2018 to determine whether specific toxic</u></p>				

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					<u>impairments are present within the APG requiring TMDL development.</u>
		1.1.8 Conduct an analysis of Bay-wide PCB concentration data to improve our understanding of PCB dynamics through-out the Bay mainstem and the influence of loadings from the Susquehanna River and C&D Canal. The project will also focus on approaches for developing a PCB TMDL to address the main stem segment listing in MD's portion of the Bay.	MDE & VIMS		<u>The study has been completed and is still a draft is currently undergoing review. It is anticipated that the report will be available in March 2018 A manuscript is currently being developed by VIMS in order to publish the results of the study. It is anticipated that the final document and manuscript will be completed by the end of 2018.</u>
		1.1.9 Continue annual PCB fish tissue monitoring for MDE's Fish Consumption Advisory Program to assign state-wide fish consumption advisories. The program also provides fish tissue data for MDE's Environmental Assessments and Standards (EASP) and	MDE		<u>Contaminant data results from Toxics data for fish tissue collected in 2017 on 2016 will be available in for early 2018. Fish tissue sampling was conducted in 2017 at 25 stations (56 composites) to support the consumption advisory program, IR assessment, and TMDL development needs. Fish composite samples are being analyzed by UMBC and UMCES for PCBs, Hg, and chlordanes. It is anticipated that the data results will be available in winter 2018. The next round of fish tissue sampling in support for the Fish Consumption Advisory Program, IR Assessment, and TMDL development 2018. Collections will be targeted</u>

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		TMDL Programs to support Integrated Report listing assessment and TMDL development.			<u>in waters listed for Hg to determine whether they remained impaired as recent collections have demonstrated a decline in hg in fish tissue in channel catfish from sections of the Non-Tidal Potomac River.</u>
		1.1.10 Conduct fish tissue study.	DOEE (WQD-ESA)		Fish tissue study was initiated July 2017. Expected completion in July 2018.
		1.1.11 Complete toxics monitoring on sediments in the Anacostia.			
		1.1.12 Approximately every five years, West Virginia performs a statewide fish tissue assessment to inform both fish consumption advisory and 303(d) listing processes. Mercury and PCBs will be analyzed.	WV		
		1.1.13 Develop a QAPP to describe objectives, monitoring procedures and laboratory methods to be used to characterize toxics in the Delaware portion of the Chesapeake Bay drainage.	DE DNREC		<u>Completed and approved by EPA in August/September 2017. Placeholder: DE updates on next steps over next two years for workplan actions.</u>
		1.1.14 Compile existing toxics data within the			

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		Delaware portion of the Chesapeake Bay drainage.			
		1.1.15 Collect up-to-date toxics data on surface water, surface sediment and biota within the Delaware portion of the Chesapeake Bay drainage.			<u>Completed and submitted to EPA in summer 2017. All proposed samples were successfully collected and analyzed in 2017; additional samples will be collected and analyzed in 2018.</u>
		1.1.16 Collect deep sediment cores from a depositional area in the tidal Nanticoke River. Radio-date and analyze for contaminants to provide pollution history.			<u>Cores were collected in 2017. Radiodating is still underway. Contaminants will be analyzed as part of 2018 effort.</u>
		<u>1.1.17 Create priority list for sources in need of clean-up and restoration.</u>			<u>Will be completed on receipt and analysis of all data.</u>
1.2	Continue local TMDL implementation utilizing to the extent possible the outputs of this strategy including data compilations, results of	1.2.1 Potomac River PCB implementation - includes point sources and MS4s. Point sources that exceed WLAs will submit PMPs.	VA DEQ		PCB samples have been collected and analyzed from point sources that have been assigned WLA's in the Potomac PCB TMDL. A determination for the need for Pollutant Minimization Plans (PMPs) is forthcoming. Several MS4s are in the process of or have submitted PCB TMDL action plans which are under review within DEQ.

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	enhanced monitoring, guidance documents and local-level input	1.2.2 Tidal James/Elizabeth Rivers – point sources that have not screened effluents using the low level method will be required to do so. Facilities that have screened their effluents and exceed their WLA will be required to submit PMPs.			For the tidal James/Elizabeth River TMDL, a list of point sources has been developed for inclusion in the TMDL. For facilities that have not monitored as part of TMDL development, the initial step post TMDL development will be for them to collect as prescribed number of sample results to compared with the assigned WLAs. The list of facilities includes municipalities, Industrial Individual Permits, and Industrial Stormwater General Permits. Facility effluents with existing loads that exceed WLAs will be asked to develop PMPs.
		1.2.3 Phase 1 MS4's which have been assigned a WLA within a PCB TMDL requiring a PCB load reduction are required to develop a PCB Implementation Plan within one year of an approved TMDL.	MD MS4's		Phase 1 MS4 Implementation Plans have been developed by Anne Arundel County for the Baltimore Harbor, Baltimore County for the Bird/Gunpowder River, and Harford County for the Bush River in 2015-2017. Counties that have submitted plans are currently developing monitoring programs to support PCB TMDL implementation. <u>A Phase I MS4 PCB implementation plan is currently being developed by the Center for Watershed Protection for Howard County to address the Patuxent River PCB TMDL. All counties that have submitted plans are currently developing monitoring programs to support PCB TMDL implementation.</u>
		1.2.4 Finalize the District Consolidated TMDL Implementation	DOEE, DDOT, DGS, and		The TMDL IP was finalized in August 2016; 5 year milestones from the IP have been used to inform the performance metrics in each draft of the District's next

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		Plan, and incorporate elements into District's next MS4 Permit.	Federal Landholders		MS4 permit, which is expected to be finalized in early 2018.
		1.2.5 Implement stormwater BMPs and green infrastructure to meet TMDL IP's first set of 5-year milestones.			Ongoing. DOEE is actively working to compile finalized collection of BMPs.
1.3	Develop guidance on integration of the various programs addressing toxics to reduce inconsistencies in analytical methods, target thresholds, and investigation and remediation approaches (e.g. extent to which risk assessment requirements under contaminated site regulations evaluate potential carcinogenic effects from fish consumption by comparing ambient surface water concentrations of PCBs)	1.3.1 Make a recommendation that STAC (or other partner such as the Interstate Technology and Regulatory Council or ASTSWMO) assemble a workshop of experts to discuss the integration of analytical methods, target thresholds and investigation/remediation approaches to achieve consistency.	TCW	Entire Watershed	TCW may have put in a proposal for a workshop, but if so it was not selected—no progress as of December 2017. Will consider inclusion and feasibility for completion in next round of MS and workplan.
		1.3.2 Develop a "white paper" based upon the outcome of the workshop (e.g. formation of an expert panel).	STAC/other partner		

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	with human health criterion used in site cleanups).	1.3.3 Determine status of efforts to coordinate these processes at a national level and stay informed of/participate in those conversations.	TCW		
1.4	Determine consistent implementation measures to use throughout the Bay watershed for tracking local TMDL development and implementation progress.	1.4.1 Develop maps to track locations where PCB TMDLs are active, under development, and needed.	CBP GIS team and Bay watershed jurisdiction GIS leads	Entire Watershed	Completed. Outreach to jurisdictional partners was conducted and updates to the previous map have been incorporated (reflects current information as of calendar year 2017). Will conduct outreach and data collection to update PCB story map for 2018-2019.
		1.4.2 Assess available information on identified management action implementation and determine next steps (e.g. status of npdes permits with regards to inclusion of PMP; MS4 action plans to ID potential IDDE connections to PMPs)	TCW and Bay watershed jurisdictions' TMDL programs		NPDES Permits and PMPs: Outcome was a memo on incorporating PMP approaches but not numeric effluent limitations. Follow up is needed to examine memo. Unsure if any progress made on ID of potential IDDE connection to PMPs. Will consider inclusion as a separate item for next workplan. Placeholder: New workplan item needed for assessing status of implementation plans/measures for existing TMDLs
1.5	Determine whether the jurisdictions compile existing PCB outfall monitoring data for	1.5.1 Reasonable potential analysis during permit reviews includes PCBs	PA		

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	NPDES dischargers and assist with development of systems to compile all available information from governmental and academic organizations. This inventory will help determine whether there is a need for additional monitoring requirements to support TMDL development and implementation.	1.5.2 Virginia has an Access Database used to store PCB data obtained from a wide array of matrices (sediment, water, effluent, etc.). The database structure, obtained from DRBC, was designed specific to storing data analyzed and reported using method 1668 including 209 PCB congeners (aka DRBC protocol).	VA		All PCB data generated using method 1668 are stored in this database; this includes results from sediment samples, ambient water samples and point source samples. These data are used for purposes of tracking point source PCB results (existing conditions and follow up results when implementing the PMP, provides site specific information that can be used for "fingerprinting" prospective sources when using available data. <u>VADEQ continues to compile permit and ambient PCB data using Method 1668</u>
		1.5.3 Compile an issue paper to describe the current state of monitoring and outline the roadblocks to enhancing those monitoring programs.	STAR and TCW		No progress on issue paper. <u>Placeholder: coordinate with STAR to start work on issue paper.</u>
1.6	PA conducts an on-going National-scale Air Toxics Assessments (NATA).	1.6.1 Conduct a thorough review of the 2011 NATA report.	TCW		Report was reviewed and summary slides produced in March 2016. <u>Found minimal useful information.</u>

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	The 2011 NATA will be reviewed upon release to identify the sources of and exposures to air toxics, including PCBs, within the Chesapeake Bay watershed.	1.6.2 Determine additional activities that could be helpful in determining where more atmospheric source data is needed.	TCW		TCW put forward a proposal for Goal Team funding, <u>but were unsuccessful at finding resources for atmospheric PCB monitoring. Findings by Dr. Upal Ghosh (UMBC) should be assessed for applicability to watershed PCB TMDLs. Strategy is needed for any remaining gaps in jurisdictional PCB models.</u>
1.7	Assess the information that is available and forthcoming (e.g., the characterization of Anacostia river sediments by DC Department of Energy and Environment) that describes the most highly contaminated in-stream sediments in the watershed to engage the jurisdictions and federal regulators to explore the feasibility of additional remedial actions such as capping and/or dredging.	1.7.1 Develop a final Remedial Investigation Report (RI Report) based on the 700 samples already collected along the 9-mile tidal portion of Anacostia River between FY14 and end of FY15.	DOEE and federal partners		DOEE has completed all field activities for the Anacostia River sediment monitoring project. DOEE contractor has submitted a draft RI report to the Agency and is currently under review. Release of the RI report for public comment will be in early 2018. DOEE has held multiple meeting engaging the public on the project, and providing updated during 2017.
		1.7.2 Study brown bullhead tumors in tidal Potomac River and Anacostia River between 2014-2016, establish trends, if any, and to determine whether or not any established trends are local or regional;).	DOEE and FWS		FWS has completed the brown bullhead catfish study and DOEE is awaiting a draft to the final report for this 3rd round of data collection.

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		1.7.3 Install gauging and sampling stations in NW Branch, NE Branch and Lower Beaver dam Creek. Sampling storms by collecting sediment samples using innovative USGS tested methods to calculate loads for six episodes.	DOEE and USGS		DOEE in contract with USGS continues to collect water-quality samples for both low_flow and storm_flow samples at NE Branch, NW Branch, Beaverdam Creek (BDC), Hickey Run, and Watts Branch; and 4 smaller non-gaged tributaries that flow through Washington, D.C. -- Nash Run, Ft. DuPont, Pope's Branch, and Ft. Stanton;
		1.7.4 Collect data to identify sources and characterize contributions from those sources, including CSOs, MS4 outfalls, streams, and upstream contributions.	DOEE and USGS		
1.8	The EPA Region 3 HSCD Site Assessment program will continue to track sites that are being evaluated in the Chesapeake Bay Watershed. Additionally, a GIS desktop tool is being developed to assist HSCD in identifying	1.8.1 Ongoing tracking in SEMs of work in Ches. Bay Watershed Site assessment decision forms have been updated to include checkbox on whether site is in Ches. Bay Watershed, and/or priority areas (Baltimore	EPA HSCD		Tracking is ongoing in the CB watershed. HSCD is still in the process of developing GIS desktop tool.

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	potential land sources of contamination in the watershed. This project is not limited to PCBs, but any type of contamination that could be migrating from CERCLA sites and affecting the watershed. The GIS tool will help to identify potential CERCLA sites and their proximity to environmentally sensitive areas and receptors to better focus on priority site evaluations. The use of EJ SCREEN will be evaluated to identify the location of such sites in areas with diverse populations.	Harbor, Anacostia, Elizabeth River)			
		Site Assessment Mapper (SAM) GIS tool is completed and ready for use – EJscreen is a data layer in SAM	EPA HSCD, TCW		
		1.8.3 Provide information to TCW for potential GIS mapping on CERCLA NPL sites in the watershed that may be undergoing PCB remediation.	EPA HSCD		
1.9	The HSCD Site Assessment Program will conduct work share meetings with our State counterparts once per	1.9.1 During yearly workshare meeting, TCW workplan will be a discussion point at the meetings and will use	HSCD, State Site Assessment Counterparts		Pending source discovery effort

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	year to determine who will be the lead agency for further investigation of any potential PCBs sites that are on the active sites list.	<p>the initiative in the prioritization of sites to be evaluated in the CA</p> <p>1.9.2 Also, other sites identified in #10 below or by other methods in trackdown studies, etc. may be better addressed under State VCP or other State programs. This will also be discussed at workshare meetings.</p>			
1.10	HSCD and TCW will continue to evaluate sites to identify industries or processes that used PCBs. Once this list is generated, the CERCLA, Brownfields, and RCRA programs can better focus resources on identifying and investigating these types of sites. As significant sources of PCBs, or other contaminants that are migrating into the	<p>1.10.1 Identification and mapping of potential industries that historically used PCBs in the watershed</p> <p>1.10.2 Discuss potential PCB sources with TCW and TSCA (e.g., power plants, railroad maintenance yards, etc.)</p> <p>1.10.3 Identify locations of industries within the watershed that may be potential PCB sources</p>	<p>HSCD, TCW, TSCA</p> <p>HSCD</p>		

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	watershed from contaminated land sources are discovered, HSCD will share this information as part of the progress monitoring of this strategy. Additionally, if there are potential land sources that other programs have found, HSCD can investigate those potential sources through coordination with the appropriate authority.	1.10.4 Obtain information on PCB hotspot areas within the watershed and try to correlate CERCLA sites or other sites identified from above with those hotspots. 1.10.5 Use information and data generated from above to pre-screen and prioritize sites to determine whether further assessment is needed and by whom.	HSCD, TCW		
1.11	The EPA R3 NPDES Permits Branch will continue to address PCBs through the CWA framework. Where waters have been identified as impaired and a local TMDL has	1.11.1 The NPDES Permitting Program will draft permits with a focus on ensuring that PCB WLAs are clear and enforceable and consistent with the TMDL.	EPA R3 NPDES Permits Branch		Ongoing

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	<p>been established creating WLA for point sources, the NPDES Permitting program will ensure that permits are consistent with the TMDL. The NPDES Permitting Program will draft and review permits with a focus on ensuring that PCB WLAs are clear and enforceable. The NPDES Enforcement Program, through state oversight and its independent compliance monitoring and enforcement authorities, will ensure that permit requirements are met. If a permittee is in non-compliance with its compliance obligations, EPA will take timely and appropriate action, including exercising its enforcement authority, to ensure that the</p>	<p>1.11.2 The NPDES Permitting Program will review permits developed by the jurisdictions with a focus on ensuring that PCB WLAs are clear and enforceable and consistent with the TMDL.</p>			Ongoing
	<p>been established creating WLA for point sources, the NPDES Permitting program will ensure that permits are consistent with the TMDL. The NPDES Permitting Program will draft and review permits with a focus on ensuring that PCB WLAs are clear and enforceable. The NPDES Enforcement Program, through state oversight and its independent compliance monitoring and enforcement authorities, will ensure that permit requirements are met. If a permittee is in non-compliance with its compliance obligations, EPA will take timely and appropriate action, including exercising its enforcement authority, to ensure that the</p>	<p>1.11.3 The NPDES Enforcement Program, through state oversight and its independent compliance monitoring and enforcement authorities, will ensure that permit requirements are met. If a permittee is in non-compliance with its compliance obligations, EPA will take timely and appropriate action, including exercising its enforcement authority, to ensure that the permittee returns to</p>			Ongoing

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	permittee returns to compliance in an expeditious manner.	compliance in an expeditious manner.			
1.12	The EPA R3 Land and Chemicals (LCD) Toxics Program Branch will continue to ensure compliance with PCB TSCA regulations through its PCB inspection and enforcement program. Inspections will be targeted based on potential for releases, cumulative burden on EJ communities, or permitting. The R3 Toxics Program Branch will also responds to on tips/complaints that involve potential for	In 2016 and 2017, the EPA R3 LCD Toxics Program will perform inspections at facilities within the R3 states based on potential for PCB releases, cumulative burden on EJ communities, or permitting. The R3 Toxics Program Branch will also responds to on tips/complaints that involve potential for illegal disposal and significant risk.	EPA Region 3 Land and Chemicals Division		There were 2 inspections at Aberdeen and Delmarva stations in 2016-2017, and more planned for 2018

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	illegal disposal and significant risk.				
1.13	The EPA R3 LCD Office of Materials Management will continue to partner with the Maryland Department of Environment to oversee the PCB clean up at the Lockheed Martin plant located in Middle River, Maryland. The Middle River facility, which is located on Cowpen Creek, is considered to be a major contributor to PCBs in the Bay. Phase 2 of the clean-up is commencing.	Overall performance target is completion of remedial actions specified in the Feasibility Study approved by MDE and EPA Region III. Incremental steps include permit applications, approvals, mobilization, sediment removal, confirmatory sampling, in situ treatment amendment application, post-closure bioaccumulation monitoring, and a 5-year review submittal	Lockheed Martin; MDE; will require EPA approval of a Risk Based Disposal Approval Application (RBDAA)		Upal Ghosh and UMBC researchers were involved in carbon amendment work for use in remediation activities. Tech decisions for remediation may be useful as case studies to inform other remediation activities (e.g. Anacostia)
1.14	The Chesapeake Bay Commission will work collaboratively with the Bay Program partners to identify legislative, budgetary and policy needs to advance the	CBC will, in turn, pursue action within our member state General Assemblies and the United States Congress. See CBC Resolution #14-1 for additional information on the	CBC		

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	goals of the Chesapeake Watershed Agreement.	CBC's participation in the management strategies.			
1.15	EPA will publish the April 7, 2010 Advanced Notice of Proposed Rulemaking (ANPRM) in the Federal Register for Public Comment. The Proposed Rulemaking is to reassess the ongoing authorized uses of PCBs to determine whether certain use authorizations should be ended or phased out because they can no longer be justified under section 6(e) of the Toxic Substances Control Act, which requires that the authorized use will not present an unreasonable risk of injury to health and the environment.	Publish the Advanced Notice of Proposed Rulemaking (ANPRM: April 7, 2010) in the Federal Register for Public Comment.	EPA Office of Chemical Safety and Pollution Prevention, Office of Pollution Prevention and Toxics		Not anticipated to move forward as a proposed rule. Will consider striking in next workplan.
Management Approach 2: Education and Awareness					
2.1	Develop PMP guidance document for the	Contingent upon completion of VA DEQ's	VA DEQ (The document		Still important to pursue, working to free up staff resources to keep developing materials for draft PMP

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	control and reduction of PCBs in NPDES regulated stormwater and wastewater including an inventory of stormwater BMP options. This document would provide guidance to all Bay jurisdictions in implementing PCB load reductions established for dischargers through local TMDL development while recognizing the need for flexibility in PMP design. Develop guidance for unregulated sources of PCBs for use in developing implementation plans under TMDLs.	work to evaluate and assess cross-jurisdiction applicability	will be Virginia Specific, but can serve as a prototype for a larger effort)		guidance. <u>An effort is underway to have a draft document by Fall/early winter 2018</u>
2.2	Working with local government and non-profit organizations, the TCW will inform the public regarding risks from consuming	2.2.1 Secure GIT Project funding. 2.2.2 Inventory existing approaches to issuing	Diversity Action Team Project award		GIT Project funding was awarded in early 2016 Release of first phase (poster/infographic) expected early 2018. <u>Placeholder: Outreach/roll-out including users' guide on FCA infographic will be done 2018-2019.</u> <u>Literature review was completed as part of GIT project to develop FCA outreach product.</u>

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	contaminated fish by developing communications materials and corresponding procedures for their dissemination throughout the targeted communities.	fish consumption advisories and study effectiveness of and compliance with those advisories in order to develop enhanced tools	recipient in coordination with DAT and TCW		
		2.2.3 Test the new tools and work on optimization	Project award recipient in coordination with DAT and TCW		FCA draft product was presented to TCW, state FCA agencies, community events, Diversity Workgroup in order to receive comments and feedback to optimize final product.
		2.2.4 Implement and disseminate new tools in order to explore the extent to which diverse populations are located in areas where fish advisories are being issued, using EPA's EJSCREEN tool.	Bay Program partners		
		2.2.5 Roll-out and outreach for FCA educational products to diverse populations and partners where fish advisories are being issued.			Will write a users' guide, programmatic toolkit

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2.3	Compile education materials regarding existing procedures and best practices for containment and prevention of release of PCBs.	2.3.1 Identify potential resources	TCW		
		2.3.2 Compile education materials	TCW		

Management Approach 3: Voluntary Programs

3.1	<p>Coordinate a voluntary action program to reduce transformers and other PCB containing equipment (e.g., fluorescent light ballasts). Include those classified as PCB free (less than 50 ppm) Provide to program participants information on remediating PCB contamination on-site from historical releases of these transformers and use EPA's EJ SCREEN tool to help identify where such equipment is located in areas with diverse populations.</p>	<p>3.1.1 Complete a voluntary removal feasibility study: 3.1.1 Identify a project lead</p> <ul style="list-style-type: none"> • 3.1.2 Estimate location and volume of PCB-containing equipment • 3.1.3 Estimate costs of replacing PCB-containing equipment • 3.1.4 Identify potential incentives and present summary of cost information to land owners • 3.1.5 ability to obtain 	TCW Contingent upon available resources		Have RFP out for GIT funded project to do a feasibility study. After awards are given, work will begin and project will be completed by end of calendar year 2018.
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		commitment from land owners to voluntarily replace PCB containing equipment with consideration to include activities in areas with diverse populations			
		3.1.2 Based on results of feasibility study, make decision on value of a voluntary removal initiative.	TCW		Early 2019
Management Approach 4: Science					
4.1	Identify Sources: Support research on cost-effective tools for track-down studies and provide a mechanism for municipalities to share information on lessons learned from PMP development and	4.1.1 Apply for GIT project funding, or secure other resources.	TCW		Further work on trackdown study ongoing. Possibility of a PCB consortium on trackdown and resources in fall 2018 in coordination with Baltimore Urban Waters Partnership (If PCB Consortium goes forward, a new 5 th factor and management approach will be added to the logic table/workplan). Placeholder: Identify additional resources/partners/leads to continue work
		4.1.2 Conduct interviews, literature reviews and hold a technical workshop to gather information on best practices.	Contingent upon resources		

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	implementation strategies and methods for documenting and sharing the information.	4.1.3 Develop a guidance document on best practices for effective implementation of PCB track down studies in the TMDL context			
4.2	Identify Sources/Status and change of environment conditions: Identify barriers and opportunities related to more frequent use of EPA 1668 for contaminated sites, wastewater and regulated and unregulated stormwater dischargers as a screening tool (as is underway in VA) or for a targeted subset of permittees. This effort could also be targeted to industrial stormwater permittees with SIC classifications that indicate the facility has	Apply for a STAC workshop or identify additional potential resources	TCW; VA DEQ		Still important to pursue; VA DEQ and TCW will work to identify resources for Action 4.2. This may be appropriate to address through the PCB Consortium

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	the potential for PCB contamination on site from historical use or current operation or disposal of PCB containing materials.				
4.3	Identify Sources/Status and change of environmental conditions : Encourage use of the high-sensitivity congener-based methods to analyze PCBs to ensure that PCB sources are being characterized accurately when such characterization can help with source identification	Apply for a STAC workshop of identify an alternative funding source to achieve this item.	TCW; VA DEQ		Still important to pursue; TCW and VA DEQ will work to share knowledge and identify resources. This is a requirement for TMDL development and implementation. May be appropriate to address through PCB Consortium
4.4	BMP Effectiveness : A project was completed to determine the relative amount of PCB reduction that might occur across the range of BMPs implemented for the	4.4.1 Estimate the potential toxic contaminant reduction associated with the implementation of BMPs for sediment and nutrient reduction	Chesapeake Stormwater Network and TCW		Exploratory work being done to incorporate qualitative scoring tools into BMP implementation scenarios in Phase 6 CAST. Placeholder: update with next steps to integrate into next-gen co-benefit tools (E.G. CAST)

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	<p>Chesapeake Bay nutrient and sediment TMDL. The BMPs will be cross-correlated with contaminant pathways and their association with land use and industrial sources (e.g., urban stormwater, agriculture, landfills, dredged material disposal facilities, hazardous waste sites, and industrial operations). The study assessed and explained the most beneficial management actions that could leverage current local TMDLs and watershed implementation plans (WIPs) to achieve multiple benefits for nutrient, sediment, and toxic contaminant reductions.</p>	<p>under the Chesapeake Bay TMDL.</p> <p>4.4.2 Provide water resource managers with better BMP data to develop more effective local TMDLs to control toxic pollutants in the watershed.</p> <p>4.4.3 Recommend specific stormwater treatment and pollution prevention practices that could maximize removal of toxic contaminants in the Bay watershed</p>			

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4.5	Identify Sources: Review the 2015 NATA report to determine the need for further investigation of atmospheric sources of PCBs, characterization of PCB concentrations in atmospheric deposition to the watershed and Bay, and determine the significance of these sources for bioaccumulation in fish. Homolog distribution profiles for PCBs in atmospheric deposition could be evaluated to determine whether mid-weight congeners are present at levels that significantly contribute to bioaccumulation in fish.	4.5.1 Review NATA report	TCW		The 2015 NATA report is the same as the 2011 NATA report, but which was updated in December 2015.
		4.5.2 Review atmospheric deposition study based in Delaware estuary			
		4.5.3 Analyze need for next steps			
4.6	Modeling to support TMDLs for PCB sources and transport	Placeholder: Assess needs, coordinate with Modeling Workgroup; support jurisdictional modeling efforts; assess	TCW; state partners; Modeling Workgroup		

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		options for integration into CAST			

Definitions:	
EPA	U.S. Environmental Protection Agency
DE DNREC	Delaware Department of Natural Resources and Environmental Control
DOEE	District of Columbia Department of Energy and Environment
MDE	Maryland Department of the Environment
MD DNR	Maryland Department of Natural Resources
NYS DEC	New York State Department of Environmental Control
PA DEP	Pennsylvania Department of Environmental Protection
VA DEQ	Virginia Department of Environmental Quality
WV DEP	West Virginia Department of Environmental Protection
USGS	U.S. Geological Survey
FWS	U.S. Fish and Wildlife Service
UMCES	University of Maryland Center for Environmental Science
UMBC	University of Maryland Baltimore County
NOAA	National Oceanic and Atmospheric Administration
USDA	U.S. Department of Agriculture
NRCS	National Resource Conservation Service
DoD	U.S. Department of Defense
USACE	U.S. Army Corps of Engineers
DOT	Department of Transportation
SRBC	Susquehanna River Basin Commission
CBP	Chesapeake Bay Program Partnership

CBPO	Chesapeake Bay Program Office
WQGIT	Water Quality Goal Implementation Team
STAC	Scientific and Technical Advisory Committee
MB	Chesapeake Bay Program's Management Board
PSC	Chesapeake Bay Program's Principles' Staff Committee
WIP	Watershed Implementation Plan
TMDL	Total Maximum Daily Load
NATA	National Air Toxics Assessment
DAT	Chesapeake Bay Program Diversity Action Team
HSCD	EPA Hazardous Site Cleanup Division
TSCA	Toxic Substance Control Act
PMP	Pollution Minimization Plan
ASTSWMO	Association of State and Territorial Solid Waste Management Officials
CSN	Chesapeake Stormwater Network