

4.0 2004 NUMERICAL SUMMARY OF INTEGRATED REPORTING CATEGORIES

Table 12: Numerical summary of water bodies appearing in the various categories of the 2004 Integrated List.

303(d) List Year	Category 2 Listings	Category 3 Listings	Category 3a Listings	Category 3b Listings	Category 4a Listings	Category 4b Listings	Category 4c Listings	Listings Requiring a TMDL for the Comprehensive 2004 303(d) List (Part 5 of List)	2004 Category 6 Listings (Waters de- listed in 2002 no longer appear on the List)	Totals
1996	0	0	0	0	24	4	0	274	28	330
1998	0	0	1	0	12	0	0	34	2	49
2002	3	8	0	0	11	2	0	229	55	308
2004	59	0	77	0	0	1	0	122	0	259
Grand Totals	62	8	78	0	47	7	0	659*	85	946
% of Total	6.55%	0.85%	8.25%	0.0%	4.97%	0.74%	0.0%	69.66%	8.99%	

* See Section 5.7

Overall, a total of 946 listings are on the current 2004 Integrated List. Only 659 of these may require a TMDL. Of these 659, 102 are bacteriological (15.5%), 296 are biological (44.9%), 35 are for metals (5.3%), 96 are for nutrients (14.6%), 10 are pH listings (1.5%), 99 are for sediment (15.0%), and 21 are for toxics (3.2%).

Of the 122 new 2004 listings, 12 are for fecal coliform, 2 are for metals, 2 for low pH, and 106 are biological impairments. All of these 122 new listings in 2004 already had other impairments previously identified in the same watershed.

5.0 PRIORITY RANKING AND TMDL COMPLETION SCHEDULING

5.1 Overview

Priority ranking and scheduling are two separate management activities for the Integrated List. First, states are required to identify a priority ranking for each of the listed waters. EPA regulations require that these priorities take into account the severity of the pollution and the uses made of such waters. The priority ranking approach adopted by Maryland results in the establishment of a **high, medium or low** priority designation. Second, states are required in §130.7(b)(4), Code of Federal Regulations, to identify those “waters targeted for TMDL development in the next two years”. In the current 2004 List, inclusive of the 1996 and 1998 listings, all waters targeted as a **high** priority will have TMDL development initiated over the next two years (i.e., from the date of EPA approval of Maryland’s 2004 Integrated List).

TMDL scheduling considers both the priority designations, which are determined in the first step, and other programmatic and technical factors. Programmatic factors considered in this process include, but are not limited to, the efficient and effective use and allocation of resources, the use of basin planning cycles in support of watershed-based permitting and other relevant factors. Technical factors include, but are not limited to, data availability, problem complexity, and availability of the appropriate technical tools. Only waters that may require the development of TMDLs (i.e., Category 5) or that require future monitoring (i.e., Categories 3, 3a, 3b, 4b) need have a priority designation. Interstate waters are specified a low priority for TMDL development due to the complexities involved with interpretation and implementation of sovereign state water pollution regulations.

Because of these technical and programmatic issues, TMDLs may not be completed in priority order from the highest to the lowest designations. For example, some of the high-priority TMDLs are also the most complex and may take longer to complete. However, TMDL development work will begin on the high-priority waterbodies within two years even though they might not be completed in two years. Alternatively, the alignment of technical and programmatic considerations may allow MDE to both target and complete TMDL development for lower priority waters within two years.

In addition to the federal requirements for setting priorities and identifying waters targeted for TMDL development in the next two years, EPA guidance (August 8, 1997, memorandum from Robert Perciasepe, Assistant Administrator for Water) requests that states establish a long-term schedule for completing TMDLs for all waters on the most recent 303(d) list. It is MDE’s intent to target completion of TMDLs for all water quality limited segments in 8-13 years, consistent with current EPA guidance.

Several key considerations need to be contemplated in ranking WQLS priorities and TMDL scheduling. The overall process for establishing WQLS priorities and TMDL completion schedules is set forth in Figure 6. The general approach is consistent with *EPA Region III Guidance for Listing of Waters and Total Maximum Daily Load Development Under the Clean Water Act Sections 303(d) and 303(e)*.

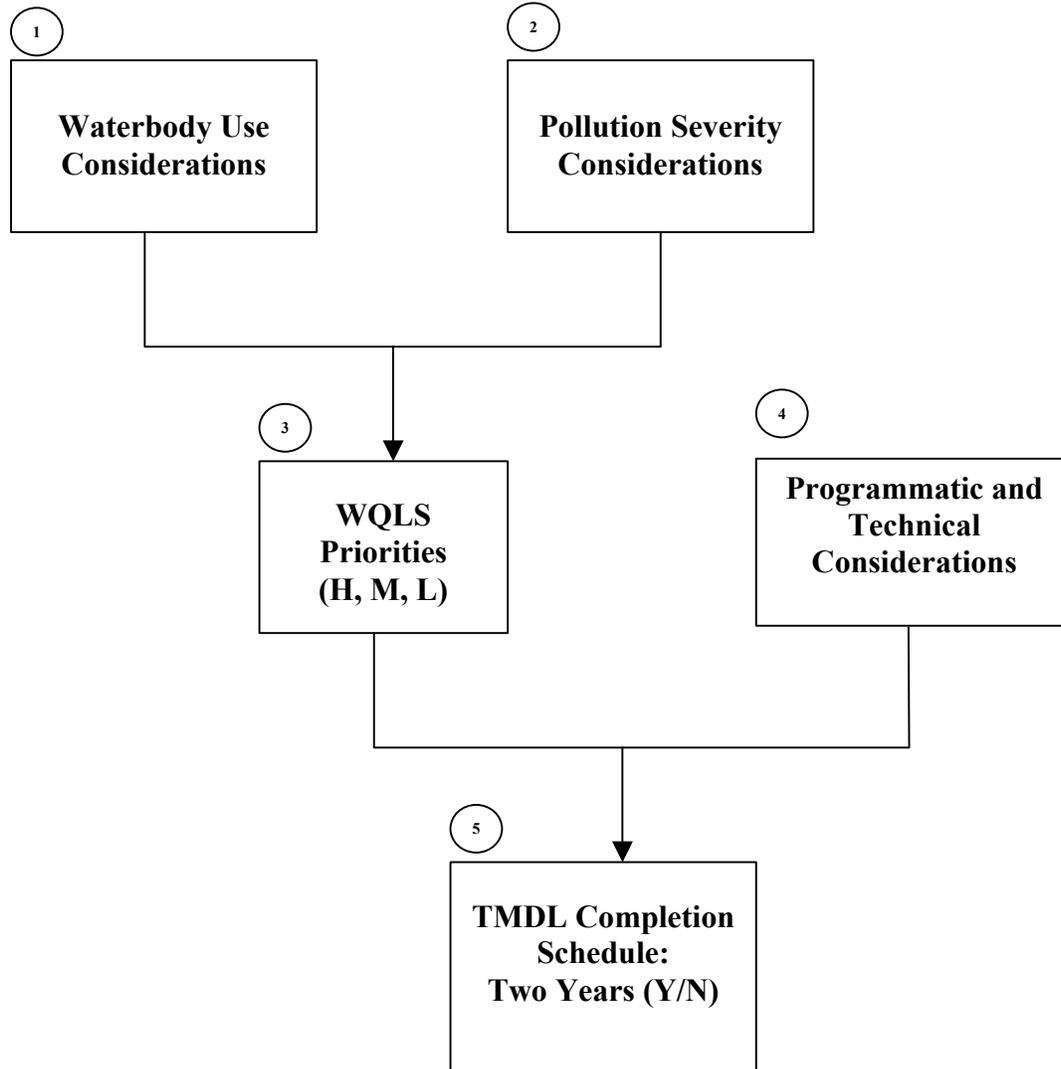


Figure 6: WQLS Priorities and TMDL Completion Scheduling. Information types (1) and (2) are used to determine the priority designation for each water quality limited segment (WQLS), (3). The priorities, (3), and other management factors, (4), serve as inputs to determine the TMDL completion schedule.

5.2 WQLS Priority-setting

In general, criteria that affect human health or have an extreme effect on natural resources will rank **high**. Criteria that indicate a continuing downward trend in the loss of a significant resource, create a serious nuisance, or constitute a significant loss of a natural resource will rank **medium**. The remaining cases will rank **low**.

5.3 WATERBODY USE CONSIDERATION

The following uses are considered in establishing the priority.

Drinking Water⁹

Drinking water source.

Commercial

Fishery
Tourism

Recreational

Direct Contact
Sport Fishing
Boating

Environmental

Threatened/Endangered/Rare Species or Habitats
Critical Areas
Avian and Aquatic Migration Pathways
Aquatic Life Use Support
(See other Pollution Severity Considerations)

5.3.1 Pollution Severity Considerations

- Potential Human Health Risk (with waterbody uses)
- Endangered/Threatened/Rare Species
- Relative Degree of Impact (e.g., info. from 319 listing, various indicators, etc.) (High, Medium, or Low)
- A continuing trend in natural resource loss that could be addressed by a TMDL.

5.4 TMDL Scheduling and Completion

The purpose of this step is to predict which impaired water bodies will be addressed in the two-year period following submittal of 2004 Integrated 303(d) Lists to EPA. This scheduling process incorporates the WQLS priority designations and other management factors.

⁹ Human health concerns of this nature are normally addressed under MDE's Source Water Assessment and Protection under the Water Supply Program. If the 303(d) listing process were to find a new impairment that posed a public health concern, immediate action would be taken to address that concern outside of the TMDL development process. If, however, a public health concern could not be completely addressed through source protection, this would elevate the WQLS to a high priority for TMDL development.

In November 1998 the Maryland Department of the Environment (MDE) entered a *Memorandum of Understanding between the State of Maryland and the United States Environmental Protection Agency (EPA), Region III, regarding Sections 303(d) and 303(e) of the Clean Water Act (MOU)*. MDE is proposing the following updates to the MOU, reflecting the experience gained by both parties during the last five years:

1. Revise the end date of the long-term schedule for addressing waters identified on Maryland's 1998 303(d) list from 2008 to 2011. This is warranted on the basis of:
 - a) completion of Total Maximum Daily Loads (TMDLs),
 - b) Fiscal constraints (legislative budget reductions) that were recognized as a possibility in the original Memorandum,
 - c) The need for consistency with the Chesapeake Bay Program, and efficiency of utilizing and leveraging the modeling, monitoring and research being developed by the Program to address nutrient impairments in the Bay and EPA's general guidelines allowing 8 to 13 years from time of listing to tributaries,
 - d) The identification in subsequent 303(d) lists of impairments warranting more rapid action due their presentation of potential threats to human health and/or the environment, and
 - e) The desire to ensure that TMDL analyses are of high quality.
2. Change the annual due date for submitting TMDLs to EPA from December 31 to September 30. This aligns Maryland's reporting schedule with the end of the federal fiscal year and avoids unnecessary conflicts with the holiday season that hamper the public review process and place a burden on staff.
3. Clarify that a 303(d) listed water may be addressed in several ways, including a TMDL, a use attainability analysis, demonstration that the water quality standards are being met, demonstration of an error in the listing, documentation that another enforceable activity will mitigate the impairment, or demonstration that the cause of the impairment is due to a form of pollution other than a pollutant.
4. Provide a production schedule to address the 1998 List. Maryland will strive to address an average of about 24 of the 1998 listings per year between 2003 and 2011. In addition to setting a more consistent annual production schedule, MDE will devote resources to address 16 open water body segments listed for nutrients that are strongly coupled with Chesapeake Bay waters, and 66 tidal segments impaired by sediment. These 82 impairments will be addressed within the context of the regional Chesapeake Bay Program process and will be scheduled to take advantage of Chesapeake Bay technical efforts such as development of a revised watershed model. A work plan for addressing 1998 listings for the period of September 2004 to September 2006 is hyperlinked at the end of this notice.

The referenced MOU addresses only those impaired waters identified on Maryland's 1998 303(d) List. Waters identified on subsequent 303(d) lists are being addressed in accordance with priorities established through the listing process and with EPA rules and guidance. Interested persons may consult Maryland's 2002 303(d) list and Maryland's draft 2004 Integrated 303(d) List and 305(b) Report for information on waters identified subsequent to 1998 and Maryland's strategy for addressing, and ultimately eliminating, these impairments.

A recent conference call with EPA Region III staff discussed the status of the TMDL MOU program. EPA indicated that an RFP is out for contractor support to begin work on a TMDL for PCBs in Curtis Creek. EPA anticipates that follow-on funds will be needed before the project is completed, and has budgeted a total of \$150,000. Assuming the problem in Curtis Creek does not include active sources of PCB, this project will take a simple approach, in contrast to the PCB TMDL in the Delaware Bay, which is a multi-million dollar effort. MDE plans to delay two mercury TMDLs pending refined estimates of atmospheric mercury loads from EPA. EPA offered a last-minute invitation to TARSA and ARMA staff to attend a training session on the RAMSED model being used for this purpose.

5.5 Consideration of Priority Designations

In response to the tight schedule recommended by the Federal Advisory Committee Act (FACA), the State will focus its resources first on high-priority WQLSs. All other WQLSs will be targeted for TMDL development in 8-13 years consistent with current EPA guidance.

While the current 303(d) List identifies the Anacostia and Chesapeake Bay as low priority for TMDL development, this does not reflect the high level of effort currently underway to identify and document pollution loadings in the watersheds or implement best managements practices and other measures to protect/restore water quality. Maryland is working cooperatively among existing programs and agreements (i.e., the Chesapeake Bay Program/2000 Bay Compact and the Metropolitan Washington Council of Governments/Anacostia Watershed Restoration Committee) to establish and implement watershed plans that set the framework to achieve compliance with Water Quality Standards. Maryland, in cooperation with local citizens and jurisdictions, is finalizing its Tributary Strategies to achieve restoration targets outlined in the Chesapeake 2000 Agreement. Maryland is revising its Water Quality Standards for the Bay to achieve specific habitat and aquatic resource goals recommended by the Chesapeake Bay Program. The Governor of Maryland and the General Assembly recently approved a sewage tax to finance \$750 million to \$1 billion in improvements to Maryland's 66 largest sewage treatment plants. Also, the Chesapeake Bay model is being used to derive allocations to each of the major Bay tributaries to set goals for limiting the amount of pollutants entering the watershed. The Anacostia Watershed Restoration Committee has developed similar goals, strategies and initiatives and MDE is currently chairing this group. There is also on-going work with the U.S. Army Corps of Engineers and other federal agencies to define toxics and sediment transport issues.

Completion of many TMDLs affecting the Bay are dependant upon revisions to the Bay model . In particular, many sediment TMDLs will be completed in aggregate with the new Phase V watershed model.

5.6 Programmatic and Technical Considerations

The following is a list of the key considerations that affect the scheduling of TMDLs for completion. The main goal is to complete a TMDL within the allotted time frame without introducing major inefficiencies, which would prolong the overall schedule. It should be noted that there is no mechanical formula for achieving this goal. The factors considered to help ensure that consistent sets of criteria are used to assure that this goal is achieved are discussed below in Sections 5.6.1 - 5.6.6:

5.6.1 Basin Planning Cycle

Maryland uses a watershed-based permitting approach to manage its waters and integrate all of its water quality based programs. For this purpose, the State has been divided into five regions, and water quality management activities including water quality based

permitting are performed in five-year cycles for each region (Figure 8 and Appendix E). The cycle begins with intensive monitoring, followed by computer modeling, and eventually discharge permit development. The five-year watershed cycling strategy is dictated in large part by the federal law, which establishes a five-year period for discharge permits. Because much of the State's water quality resources will be focused in specific regions according to this five-year cycle, only a limited amount of resources will be available to conduct activities outside of the designated regions. Although the basin planning cycle and resource constraints will impose a practical limitation on the rate at which high-priority WQLSs are completed, the State will give preferential consideration to making progress on all high-priority WQLSs across the State.

Maryland's cycling strategy has been successful in that all monitoring throughout the five regions has been completed for eutrophication. A major portion of the toxic monitoring has also been completed. In years six (2004) and seven (2005), Maryland will be focusing on monitoring for sediments, fecal coliform and additional toxics monitoring to address numerous listings. In year eight (2006), Maryland intends to reevaluate the first large watershed (the Lower Eastern Shore) and return to the original five-year monitoring schedule.

TMDL development initially followed the same pattern as the first few years of water quality monitoring for TMDL development, which focused on one region per year. Maryland's modeling and development has encountered some technically complex systems, such as Baltimore Harbor, causing some delays and shifts of resources to produce the necessary TMDLs to meet the production requirements for the TMDL program. As a result of these challenges, TMDL development has focused on areas where data is available and the systems can be easily modeled using WASP or a Vollenweider analysis. Maryland has many projects underway that do not necessarily produce TMDL documents such as methodology development for sediments and fecal coliform impairments. Maryland also has been coordinating with Chesapeake Bay Program to ensure that information used for TMDL efforts and C2K are the same. Using this cooperation, the next version of the Bay Watershed Model (Phase V) will be used in conjunction with Maryland's water quality models to produce TMDLs for many areas of Maryland, including the Potomac River.

5.6.2 Availability of Resources to Ensure Adequacy of Data and Technical Tools

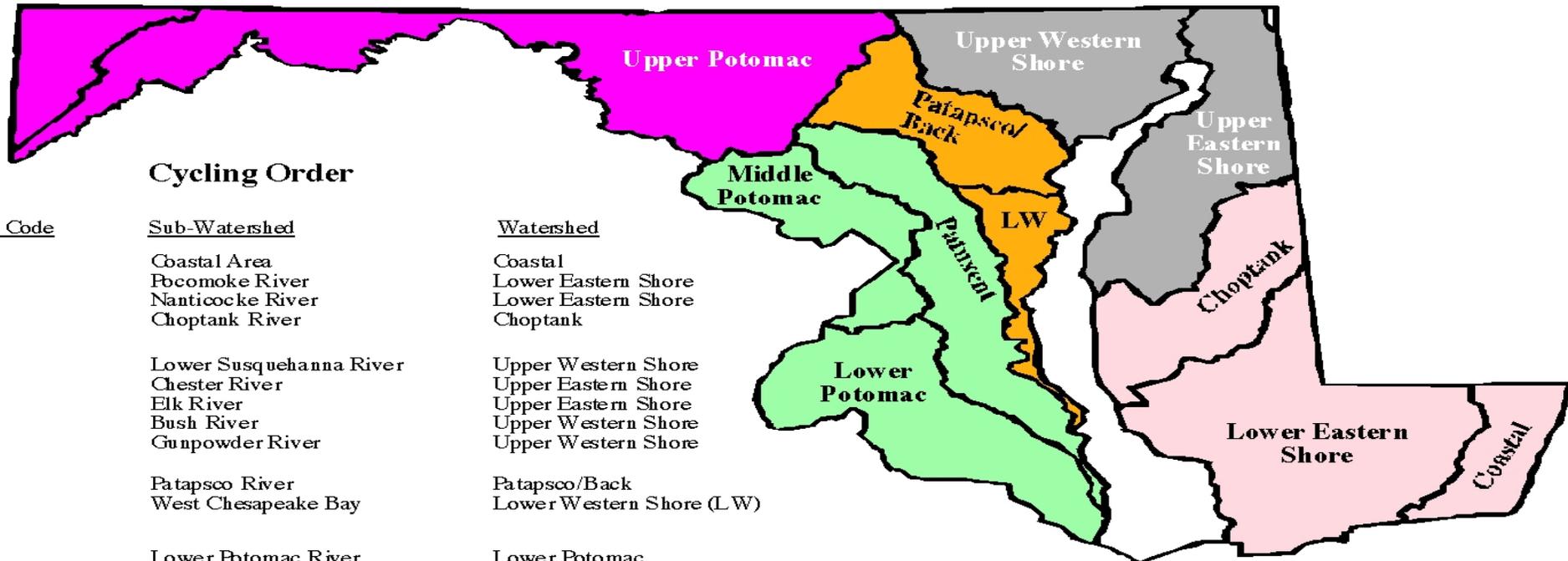
In some cases, due to grant requirements, and other administrative constraints, funding availability might not conform to WQLS priorities. If funds become readily available for lower-priority WQLSs, the State will be obliged to capitalize on the opportunity and schedule its work accordingly. This might occur despite the potential incongruence of WQLS priorities.

5.6.3 Technical Complexity

At times, regardless of resources, the technical complexity of TMDL development can create a barrier to rapid progress on the completion of a TMDL for a high-priority WQLS. To the extent that such technical issues arise, or are known when prioritizing TMDLs, it will be factored into the process.

Regions for the 5-Year Watershed Cycling Strategy

Youghiogheny



Cycling Order

<u>Watershed Code</u>	<u>Sub-Watershed</u>	<u>Watershed</u>
02-13-01	Coastal Area	Coastal
02-13-02	Pocomoke River	Lower Eastern Shore
02-13-03	Nanticoke River	Lower Eastern Shore
02-13-04	Choptank River	Choptank
02-12-02	Lower Susquehanna River	Upper Western Shore
02-13-05	Chester River	Upper Eastern Shore
05-13-06	Elk River	Upper Eastern Shore
02-13-07	Bush River	Upper Western Shore
02-13-08	Gunpowder River	Upper Western Shore
02-13-09	Patapsco River	Patapsco/Back
02-13-10	West Chesapeake Bay	Lower Western Shore (LW)
02-14-01	Lower Potomac River	Lower Potomac
02-14-02	Washington Metro Area	Middle Potomac
02-13-11	Patuxent River	Patuxent
05-02-02	Youghiogheny	Youghiogheny
02-05-03	Conewago River Creek	Upper Potomac
02-14-03	Middle Potomac River	Upper Potomac
02-14-05	Upper Potomac River	Upper Potomac
02-14-10	North Branch Potomac River	Upper Potomac



Figure 7: Five different regions in Maryland's designated for the Watershed Cycling Strategy.

5.6.4 Coordination with Other Program Needs

At times, the WQLS priorities of Maryland will come into scheduling conflicts with the activities of other programs such as permitting, interstate efforts (e.g., the Potomac River) and other programs (e.g., the Coastal Bays Program). The State will make efforts to minimize these conflicts, by seeking additional resources to accelerate activities in support of these efforts, or factoring these other interests into future WQLS priorities.

5.6.5 Cooperation of Affected Parties

Maryland is committed to an open and thorough public involvement process in the development of TMDLs. This process ensures that TMDLs are scientifically and technically supported while balancing the interests and impacts upon all affected parties. It is recognized, however, that this process can affect the completion date of high-priority TMDLs. To the fullest extent possible, the State will attempt to anticipate such delays in establishing the schedule for TMDL completion. The State recognizes that considerable public dialogue is vital to augmenting the process of TMDL development and will seek adequate resources to ensure a timely and effective public involvement process.

5.6.6 Other Factors

In some instances, other factors can affect the scheduling of TMDL completion and are beyond the control of the State. When these factors conflict with schedules previously established on high-priority WQLSs, the State will be compelled to establish the TMDL on a revised schedule. To the extent practicable, the State will make efforts to minimize the impact of such barriers.

5.7 Discussion of Priority Ranking and Scheduling for Maryland's 2004 303(d) List

Waters impaired by toxic substances have been designated as high priority because of the environmental concerns and potential human health risks associated with these impairments. Such waters have not been targeted for completion of TMDLs in the next two years due to complexities of the TMDL methodology development, intensive data requirements, model development, and the level of public participation, which is anticipated in the TMDL process. According to the long-term schedule described above, TMDLs for these waters are targeted for TMDL completion in five years, consistent with FACA recommendations regarding TMDLs.

The priorities for the lake listings were established primarily on the basis of their Designate Uses. Lakes that serve as drinking water sources, or are subject to significant direct contact recreation, were classified as medium priority for TMDL development. Lakes not meeting these criteria were classified as low priority. Some of the larger drinking water reservoirs, which are given a medium priority but have not been targeted for TMDL development in the next two years, will require more complex modeling. For example, because of the tendency of some lakes to have naturally occurring low DO due to stratification, additional studies might be required. In addition, the process might take longer for those reservoirs due to the anticipated involvement of many interested parties.

Where biological impairments occur in watersheds already listed for an impairing substance such as sediments or nutrients, the priority for completion of TMDLs is low because: (1) MDE believes that in many cases relief from the sediment or nutrient stress will allow partial or complete recovery of the biological communities and (2) if there is another impairing substance responsible for the biological degradation, it is probably not discernable until the other impairing substances are evaluated. Biological impairments found in otherwise unimpaired watersheds will receive a medium priority for TMDL development.

6.0 2004 REPORT FORMAT AND STRUCTURE

Each listing is followed by the current data source(s) used to justify the listing (Figure 8). The actual listing is italicized and the supporting data for that listing are indented and not italicized (see Figure 6). The listing category is also clearly designated to identify part of the List (Categories 2, 3, 3a, 4a, 4b, 5 or 6) upon which a water body is placed. Only those waters placed on Category 5 of the list [303(d) List] may require a TMDL. All others are part of the State's integrated assessment of water quality and do not require TMDL development, although stressor identification or additional monitoring may be required.

Some listed segments, particularly those listed for biological impairments, have multiple data sources. In addition, the 1996, 1998, and 2002 303(d) Lists are included in the current List so that stakeholders can easily identify all of the 303(d) impairments that have been identified in a given basin (Figure 8). Horizontal lines are included to help separate each listing and associated data from another.

303(d) Listing Year	Basin Name	Basin Code	Subbasin Code	Attainment Status	Impairment Category	Source of Impairment	Priority	Subbasin Name	Notes	Data Source	Data Result
		02140511	021405110144		Biological			UT FIFTEEN MILE CREEK		MBS5 100%	FIBI>2.25; BIBI>3
2002	<i>Fifteen Mile Creek</i>	<i>02140511</i>	<i>021405110144</i>	<i>4c</i>	<i>Biological</i>	<i>Unknown</i>					
		02140511	021405110144		Biological			UT FIFTEEN MILE CREEK		MBS5 100%	FIBI>2.25; BIBI>3
2002	<i>Fifteen Mile Creek</i>	<i>02140511</i>	<i>021405110134</i>	<i>4c</i>	<i>Biological</i>	<i>Unknown</i>					
		02140511	021405110134		Biological			DEEP RUN		MBS5 100%	no FIBI; BIBI>2.25
2002	<i>Fifteen Mile Creek</i>	<i>02140511</i>	<i>021405110136</i>	<i>4c</i>	<i>Biological</i>	<i>Unknown</i>					
		02140511	021405110136		Biological			WHITE SULFUR RUN		MBS5 100%	no FIBI; BIBI>2.25
2002	<i>Fifteen Mile Creek</i>	<i>02140511</i>	<i>021405110137</i>	<i>4c</i>	<i>Biolo</i>	<i>Unknown</i>					
		02140511	021405110137		Biolo						
1996	<i>Town Creek</i>	<i>02140512</i>		<i>5</i>	<i>Nutrients</i>	<i>NPS natural</i>	<i>Low</i>				
		02140512									
1996	<i>Town Creek</i>	<i>02140512</i>		<i>5</i>	<i>Sediments</i>	<i>NPS natural</i>	<i>Low</i>				
		02140512									report
		02140512									100% 305(d) report
2002	<i>Town Creek</i>	<i>02140512</i>	<i>021405120123</i>	<i>4c</i>	<i>Biological</i>	<i>Unknown</i>					

Figure 8: 2004 Integrated 303(d) List highlighting listed segments and supporting data.