

**Comment Response Document Regarding the Water Quality Analyses of Fecal Coliform for Eight Basins in Maryland: Assawoman Bay, Sinepuxent Bay, Newport Bay, and Chincoteague Bay in Worcester County; Monie Bay in Somerset County; Kent Island Bay in Queen Anne’s County; Rock Creek in Anne Arundel County; and Langford Creek in Kent County**

### Introduction

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Water Quality Analysis (WQA) of fecal coliform for eight basins in Maryland (Assawoman Bay, Sinepuxent Bay, Newport Bay, Chincoteague Bay, Monie Bay, Kent Island Bay, Rock Creek, and Langford Creek). The public comment period was open from August 27, 2004 through September 25, 2004. MDE received four sets of written comments.

Below is a list of commentors, their affiliation, the date comments were submitted, and the numbered references to the comments submitted. In the pages that follow, comments are summarized and listed with MDE’s response.

### List of Commentors

Author	Affiliation	Date	Comment Number
Jay Charland	Assateague Coastkeeper	August 31, 2004	1 through 4
Dr. Eileen McLellan	Chester Riverkeeper and Chester River Association	September 22, 2004	5 through 9
Susan Hughes, R.S.	Worcester County Department of Environmental Programs	September 24, 2004	10 through 12
Carol J. Cain	Maryland Coastal Bays Program	September 20, 2004	13 through 18

1. The commentor requested more detailed rationale regarding why each of the eight basins is being removed from the 303(d) list, “including for example an explicit statement to the effect that ‘current data indicate no impairment and listing in 1996 was in error’”.

**Response:** Chapter 4 of Maryland’s 2002 303(d) list describes the listing methodologies for each pollutant, including the methodology for listing shellfish harvesting water. If shellfish harvesting areas are open to harvesting (approved or conditionally approved) the designated use is being met and they are not listed. The basins addressed in this document were listed for bacteriological impairment of shellfish harvesting waters prior to the 2002 list and there is no data documenting impairment of these waterbodies prior to 2002. These areas have not been closed to shellfish harvesting in over a decade and data collected at shellfish stations for at least that long also meet shellfish water quality criteria. Current data used in this document confirm that these eight basins meet bacteriological water quality standards.

Chapter 4 of Maryland's 2002 303(d) list can be downloaded from MDE's website at [http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/Maryland%20303%20dlist/2002\\_303d\\_list.asp](http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/Maryland%20303%20dlist/2002_303d_list.asp). Since they are and have been open to shellfish harvesting, the designated use is met and the 1996 listing was in error.

2. The commentor requested a clearer explanation of how fecal coliform testing is conducted.

**Response:** Water samples are scheduled for collection a minimum of once per month and are sent to the Department of Health & Mental Hygiene, Laboratories Administration for analysis using a three-tube dilution method for estimating fecal coliform bacteria, as required under the National Shellfish Sanitation Program (detailed information can be found at <http://www.issc.org>). Please note that ice cover sometimes prevents scheduled samples from being collected.

3. The commentor requested an analysis of expected fecal coliform concentrations in Assawoman Bay and Newport Bay, which are noted to be relatively small, enclosed embayments with limited freshwater input, limited tidal flushing, and significant human and wildlife populations.

**Response:** The assessment of shellfish water quality in Assawoman Bay and Newport Bay includes a comprehensive sanitary survey. The survey involves evaluating WWTP performance, looking for actual and potential pollution sources that could impact shellfish water quality including inspecting septic systems, walking the shoreline, evaluating farms, businesses, marinas etc. All of the factors mentioned in the comment are considered when assessing shellfish water quality in Assawoman Bay and Newport Bay. Please see also the Response to Comment 4 below.

4. The commentor noted that the levels of fecal coliform in Newport Bay seem low, given the discharge from the Town of Berlin wastewater treatment plant (WWTP) and the significant number of septic systems in the area. As such, the commentor stated that an analysis of Berlin's discharge and the expected discharge from septic tanks in the area, combined with Newport Bay's residence time and flushing rate would add credibility and level of confidence in this analysis.

**Response:** The Berlin WWTP discharges to non-tidal waters over 10 miles above shellfish waters in Newport Bay. The plant utilizes spray irrigation in the summer and only discharges to Hudson Creek, a small tributary, during the winter. Plant operations have been satisfactory, and the plant provides disinfection to reduce fecal coliform to meet water quality standards. The plant is not considered a significant source of fecal coliform levels to shellfish waters downstream in Newport Bay. Please also see the Department's response to Comment #3 regarding expected sources.

As part of the sanitary survey, MDE field personnel walk the shoreline to look for actual and potential pollution sources, including testing and identifying failing septic systems. When problems are found MDE works with the local health department to correct any septic system failures. Septic systems are designed to protect public health by treating human waste onsite.

When performing properly, septic systems provide effective protection to public health and to water quality from human pathogens and bacteria. Therefore, MDE is confident in the fecal coliform data used to assess shellfish water quality in Newport Bay and its decision to remove the fecal coliform from Maryland's 303(d) list for Newport Bay.

5. The commentor stated that the three sampling stations in Langford Creek do not provide an adequate data set to determine water quality conditions in that basin, because the stations are located in "the most extreme downstream reaches of the Creek". Of particular concern to the commentor are that: a) fecal coliform concentrations are greatly diluted by the time they reach the stations and that the concentrations upstream near populations are not captured; b) the stations are not representative of the shellfish harvesting area, which extends miles above the most upstream station; and c) due to tidal exchange with the Chester River mainstem, the data may be impacted by cleaner Chester River water.

**Response:** Shellfish monitoring stations are placed to best represent the characteristics of the shellfish growing area and are placed to reflect actual or potential pollution sources that impact shellfish water quality. In Maryland, shellfish harvesting waters include areas where oysters and clams are harvested. In addition, stations may be placed to mark the boundary between approved, conditionally approved, and restricted waters. The east and west fork of Langford Creek, upstream of the shellfish monitoring station, is considered conditionally approved. This means that Langford Creek, including the upstream region, is closed to shellfish harvesting for three days following a rainfall event of greater than one inch in twenty-four hours. Chapter 4 of the 2002 303(d) list describes the listing methodologies for each pollutant (please see [http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/Maryland%20303%20dlist/2002\\_303d\\_list.asp](http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/Maryland%20303%20dlist/2002_303d_list.asp)), including the methodology for shellfish harvesting waters, which are not listed if they are conditionally approved. Current data used in this document support that Langford Creek meets water quality criteria when the area is open to shellfish harvesting.

Consumers of raw and undercooked molluscan shellfish can be exposed to enteric pathogens such as bacteria or virus that shellfish have accumulated from the water in which they grow. Historical data show the levels of indicator bacteria in molluscan shellfish generally change more slowly than the levels in the surrounding water. Therefore, it is not necessary to monitor the levels in waters used to manage shell fishing as frequently as estuarine or ocean waters used for swimming and other water-based recreation. Under the National Shellfish Sanitation Program (NSSP) administered by the Food and Drug Administration (FDA), state governments survey the shoreline of shellfish waters to identify actual and potential sources of pollution that can affect water quality. Under the NSSP, states also collect water quality samples to better determine the effect of pollution sources and to help understand how water quality varies in response to currents, tides, and storm events. This information is used to set the management classification for the area, including the monitoring plan. The states then monitor the indicator bacterial content of shellfish harvest waters under approved monitoring plans. The monitoring is conducted in accord with NSSP monitoring guidelines. The water quality standards against which the monitoring data are compared are different between recreational and shellfish uses because accidental ingestion of water presents different risks than eating raw or undercooked shellfish. There are areas where shellfishing occurs in the

same location as swimming, or where shellfishing otherwise occurs in shallow, in-shore waters. In those areas, particular attention is paid to the changes in water quality because of the area's closer proximity to potential shoreline sources of pollution and the presence of less water to dilute any contamination.

6. The commentor stated that when her organization was notified of this regulatory action, they started their own sampling study and submitted their data during the public comment period for the water quality analysis document. The commentor stated that, while the median of their collected data falls within the water quality standard, the mean is more than twice the standard, which is presumed to reflect a number of samples with very high bacteria counts. The commentor further stated that the data provided in the report show that fecal coliform concentrations in Langford Creek exceeded Use II (i.e., its designated use as shellfish harvesting waters) water quality standards 20% of the time, which suggests at least an intermittent bacteria problem.

**Response:** When the 303(d) list was available for public comment, the commentor did not submit comments with regard to the change in the listing. The data was collected after the submittal of the 303(d) list to EPA. However, MDE has reviewed the data and although this organization is gathering additional data, the volume of data is not sufficient to compare to the standards. Also, it is not clear from the data submittal what analytical method or the QA/QC process that was used. Due to these circumstances, the data cannot be used for evaluation at this time. However, when the 303(d) list is reevaluated in 2006 this data and any additional data, if a QA/QC plan is submitted to the Department in advance and is approved, may be used to support a relocation to another part of the 303(d) list for fecal coliform in Langford Creek.

7. The commentor provided bacteria sampling data collected during July, August, and September 2004 in Langford Creek by the Chester River Association. The commentor stated that the data provided shows that: a) a majority of the samples fail to meet water quality criteria for both Use I and Use II waters and b) water quality appears to improve downstream (probably due to dilution), which supports that samples collected downstream give an incorrect impression of water quality throughout the Langford Creek system.

**Response:** Please see the Department's response to Comment #5 and Comment #6.

8. The commentor requested that the Department not proceed with removal of the fecal coliform listing for Langford Creek from the State's 303(d) list without conducting additional testing of upstream sites.

**Response:** Please see the Department's response to Comment #5 and Comment #6.

9. The commentor requested a public hearing.

**Response:** Comments received by the Department have been considered in preparing the final draft TMDL document to be submitted to the Environmental Protection Agency (EPA). While the Department has determined that comments submitted by the commentor do not

necessitate or warrant a change at this time in the actual TMDL calculations as contained in the draft document, the Department welcomes the opportunity to meet for the purpose of discussing the issues of concern to the commentor. As there appears to be insufficient broader interest in this draft TMDL to warrant a formal public hearing at this time, the Department believes such a meeting would provide ample opportunity to both further explain the draft TMDL, and address the formal comments presented as well as any other questions the commentor may have.

10. The commentor stated that enterococcus samples collected by Worcester County's Bathing Beach Sampling Program at Public Landing in the Chincoteague Bay basin frequently exceed the geometric mean standard of 35 MPN, although the fecal coliform standard of 200 MPN was never exceeded. The commentor additionally provided the data collected in 2000 as part of the aforementioned program.

**Response:** In May 2004, MDE formally adopted water quality criteria specific to bathing beaches, thereby establishing the use of enterococcus in estuarine and marine waters and E. coli or enterococcus in fresh water (<http://www.dsd.state.md.us/comar/26/26.08.02.03%2D3.htm>). MDE has also established a new beach program within MDE to better coordinate with local health departments how, when, and where to monitor waters used recreationally for swimming. The new regulation includes a description of designated natural bathing areas and monitoring requirements for these areas. The 303(d) list is an ongoing process and any new data received may be considered in developing the next 303(d) list. MDE plans to review and change the listing methodology for beaches to incorporate the new bacteriological standard and monitoring requirements for beaches. MDE is confident in the fecal coliform data used to assess water quality for all eight basins in this document and that the data used support removing them from the list. MDE's new Beaches Program and May 2004 revised water quality criteria provide an opportunity to reevaluate new data for future listings. Please also see the Department's response to Comment #5.

11. The commentor stated that it may be inappropriate to remove Chincoteague Bay or any other coastal bay from the list of impaired waters until more adequate testing (i.e., more frequent sampling, particularly after rainfall events using the enterococcus standard) is conducted.

**Response:** Please see the Department's response to Comment #10.

12. The commentor questioned whether fecal coliform is an appropriate indicator organism for determining the safety of Use II waters.

**Response:** Federal, state, and local governments are increasing efforts to coordinate beach advisories and shellfish harvest area restrictions, but there will always be some differences. Because predicting heightened risk differs in the ways described in response # 6, waters can be open for recreation while the same or adjacent waters are restricted or closed for shellfish harvesting and vice versa, without exposing the public to a heightened risk of illness, when managed under approved programs. Switching from using fecal coliform to the EPA beaches standard (enterococci for marine and estuarine waters) for use in classifying shellfish waters

in the NSSP would require new research. EPA's May 2002 Draft Implementation Guidance for Ambient Water Quality Criteria for Bacteria (page 61), states: "The 1986 *E. coli* and enterococci criteria were developed to protect against human health effects, namely acute gastroenteritis, that may be incurred due to incidental ingestion of water while recreating. These criteria do not account for exposure that may be incurred by the consumption of shellfish, and therefore, are not appropriate for waters designated for shellfish." The same document also states that "data and information do not yet exist that would support the use of *E. coli* or enterococci as criteria to protect waters designated for shellfishing". Maryland water quality regulation, EPA, and FDA require that fecal coliform be used to assess shellfish water quality.

13. The commentor expressed pleasure that the analysis of fecal coliform data shows that the aquatic life criteria and designated uses are being met in Assawoman, Sinexuxent, Newport and Chincoteague Bays.

**Response:** The Department too is glad to see that these waters are meeting the criteria for their use as shellfish harvesting areas.

14. The commentor stated that it isn't immediately clear how the recent results from 2000 through 2003 monitoring compares to earlier data, which initially lead these bays to be listed in 1996.

**Response:** Please see the Department's response to Comment #1.

15. The commentor stated that the positive impact of efforts to reduce pollution in recent years couldn't be substantiated, and noted that an analysis of this type would be helpful.

**Response:** Please see the Department's response to Comment #1.

16. The commentor expressed concern regarding enterococcus levels measured at Public Landing by the Worcester County Health Department, and provided data collected in 2003 and 2004 by the Health Department at Public Landing.

**Response:** Please see the Department's responses to Comment #5 and Comment #10.

17. The commentor stated that preliminary results from a University of Maryland study of nitrogen inputs to Chincoteague Bay indicate that there may be sewage inputs near Johnson's Bay.

**Response:** Shoreline survey documents of the area state that this area is served by on-site septic systems only. Shellfish waters near Johnson's Bay continue to meet shellfish water quality standards. While the Department's responses to Comment #3 and Comment #4 are specific to Assawoman Bay and Newport Bay, they provide a description of the sanitary survey process.

18. The commentor asked that the State closely monitor these areas (Public Landing and Johnson's Bay), add new monitoring sites where necessary, and if possible, conduct an

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Antibiotic Resistance Analysis to help determine the magnitude and source areas of bacteria inputs. The commentor further stated that the Maryland Coastal Bays Program would be glad to coordinate a search for potential improvement projects and funding, should the source(s) be identified.

**Response:** Shellfish waters near Public Landing and Johnson's Bay continue to meet shellfish water quality standards. There is no need to look for sources since water quality standards are being met. Antibiotic Resistance Analysis cannot measure magnitude of bacteria inputs. Please also see the Department's response to Comment #5, Comment #6, and Comment #10 regarding possibilities for relisting areas as needed.