



STATE OF DELAWARE
**DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL**
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DOVER, DELAWARE 19901

Office of the
Secretary

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Secretary's Order No. 2005-W-0048

**Re: Final Regulations Approving Total Maximum Daily Loads for the Shellpot
Creek and Naamans Creek Watersheds**

Date of Issuance: **November 15, 2005**
Effective Date: **December 11, 2005**

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC") under *29 Del. C. §§8001 et seq.*, *29 Del. C. §§10111 et seq.* and *7 Del C. §6010 (a)*, the following findings, reasons and conclusions are entered as an Order of the Secretary in the above-referenced rulemaking proceeding.

Based on the record, including the public hearing record reviewed in the November 10, 2005, Hearing Officer's Report ("Report"), attached as Appendix A, I find that the proposed regulation is well supported and is not arbitrary or capricious. The Report reviews and summarizes the public hearing record, which was developed at the September 7, 2005, public hearing. The Report recommends approval of the proposed regulation as a final regulation without modification. I agree with the Report and adopt it as part of this Order along with its reasons.

The proposed regulation is based upon sound scientific evidence, is consistent with state and federal law, and is a reasoned regulation that will result in improved water

quality within the two watersheds. The improvements will occur through the Total Maximum Daily Loads (“TMDLs”), which will require nonpoint sources to reduce or cap nitrogen, phosphorous and bacteria loads. The TMDLs will reduce pollutants to levels that the Department’s experts have determined are necessary to improve the quality within these waters. The levels should meet the water quality standards that the Department and the federal government have determined are necessary to support the waters’ beneficial uses. Thus, the establishment of these TMDLs for these watersheds is part of a multi-step federal and state regulatory process that will result in improved water quality for both watersheds.

The Report discusses the comments submitted by the Mid-Atlantic Environmental Law Clinic (“MAELC”). The Report notes that these comments, if adopted, would result in a significant delay in the establishment of any TMDLs. The Report further states that the proposed regulation reflects a reasonable regulation that should be approved now, as opposed to later, because it represents a clear improvement over not establishing any TMDLs. The proposed regulation was the subject of considerable public outreach efforts, including contacting interested persons when the process was first approved. The public participation culminated in the public hearing on the proposed regulation. The public comments received during the hearing were excellent, but do not convince me to change the prompt promulgation of the proposed regulation as a final regulation because that will improve the environment sooner than if the comments were to be adopted.

The comments, if adopted, would require the Department to undertake more studies, which would delay the establishment of any TMDLs for a long time. Moreover, the studies that the comments seek may result in no change to the conclusion supported in

the present record. If the studies do not change the conclusions, then the result would be a considerable delay in the regulatory progress towards cleaner waters in the two watersheds. The Department considers it more important to move forward now and direct definite pollution control steps now through establishing well-supported TMDLs that will be in effect next month, as opposed to possibly years from now.

The Report also recommends that MAELC participate earlier in the regulatory process. I agree and encourage the early and often participation of MAELC and others in this and other of the Department's regulatory proceedings.

In conclusion, the following findings and conclusions are entered:

1. The Department, acting through this Order of the Secretary, adopts the proposed regulation as a final regulation, as set forth in the Appendix B to the Report, under *29 Del. C. §6010 (a)* and pursuant to the federal Clean Water Act, *33 U.S.C §1251 et seq.* and the United States Environmental Protection Agency's regulations pursuant to the Clean Water Act;

2. The issuance of the proposed regulation as a final regulation will protect and improve the water quality of the Shellpot Creek and Naamans Creek watersheds, as defined by elevation maps, and allow Pollution Control Strategies to be developed for them;

3. The TMDLs that are approved by this Order were developed consistent with the applicable law and regulatory standards, and are adequately supported by expert technical analysis;

4. The Department provided adequate public notice of the proceeding and the public hearing in a manner required by the law and regulations, held a public hearing

in a manner required by the law and regulations, and considered all timely and relevant public comments in making its determination;

5. The Department's proposed regulation, as published in the August 1, 2005, *Delaware Register of Regulations*, and set forth in Appendix B to the Report, is adequately supported, not arbitrary or capricious, is consistent with the applicable laws and regulations, and should be approved as a final regulation to go into effect ten days after its publication in the next available issue of the *Delaware Register of Regulations*; and that;

6. The Department shall provide written notice to the persons affected by the Order, as determined by those who participated in this rulemaking at either the public workshop or at the public hearing, including participation through the submission of timely and relevant written comments.

[s/John A. Hughes](#)
John A. Hughes
Secretary

HEARING OFFICER'S REPORT

TO: The Honorable John A. Hughes
Secretary, Department of Natural Resources and Environmental Control

FROM: Robert P. Haynes, Esquire
Hearing Officer, Office of the Secretary
Department of Natural Resources and Environmental Control

RE: Proposed Regulations to Establish Total Maximum Daily Loads for the Shellpot Creek and Naamans Creek Watersheds

DATE: November 10, 2005

I. BACKGROUND

This Hearing Officer¹ presided over a duly noticed public hearing commencing at 6:00 p.m. on September 7, 2005 at the Mount Pleasant Elementary School, Wilmington, Delaware. The hearing was held to consider public comments on the Department's proposed regulation to establish Total Maximum Daily Loads ("TMDLs") for the adjoining watersheds of Shellpot Creek and Naamans Creek, which are located in the northeast corner of New Castle County, north of the Christina River watershed and south of the Brandywine River watershed.

The Shellpot Creek watershed includes Shellpot Creek and its tributary streams known as Stoney Run, Matson Run and Turkey Run that together drain approximately 9,200 acres, or 15 square miles, before emptying into the Delaware River near Cherry Island. The Naamans Creek watershed is located north of the Shellpot Creek watershed and extends to the Pennsylvania-Delaware border, and has two main branches, the North Branch and South Branch, which drains approximately 4,000 acres in New Castle County. The North Branch is six miles long and drains primarily in Pennsylvania west of Marcus Hook, Pennsylvania. The two Branches converge near Route 13 in Claymont, and then the Naamans Creek flows for two miles into the Delaware River near Claymont.

¹ The public hearing was held pursuant to 7 Del. C. §§6604 and 6606, and this hearing officer acted under delegated authority pursuant to 29 Del. C. §§8803.

The proposed regulation is required under the federal regulation established by the federal Clean Water Act, *Clean Water Act*, 33 U.S.C. §§1251 *et seq.*, *as amended*, and federal regulations administered by the federal Environmental Protection Agency (“EPA”). This law requires the states to study their surface waters, and then develop regulations to bring the waters into compliance with the water quality standards that each state is to establish. Pursuant to this regulatory scheme, the Department, on July 11, 2004, adopted regulations known as the *State of Delaware Surface Water Quality Standards* (“Standards”), which established the water quality standards for all of the state’s surface waters, including the Shellpot and Naamans Creeks. The Standards designated the waters’ beneficial uses, and established the water quality parameters necessary to support the designated uses.

The next regulatory step under the Clean Water Act’s regulation was for the Department to determine the existing water quality of the surface waters. On February 25, 2005, the Department issued its comprehensive report entitled ‘*Delaware’s 2004 Combined Watershed Assessment Report (305(b)) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs*,’ This report determined that the Shellpot and Naamans Creeks were below the *Standards* for nitrogen, phosphorous, and enterococcus bacteria. Similar determinations were made during Department’s biannual water quality assessment of 1996, 1998, and 2002. Consequently, Department undertook a specific study of the two watersheds in order to develop TMDLs for them. The TMDLs, in turn, will be used by the Department to develop a Pollution Control Strategy, which is the final regulatory step to control the pollution sources identified by the TMDLs. The end result of the federal and state regulatory process is that all the state’s impaired waters will improve, ultimately to meet the water quality established by the *Standards*. Thus, the means to improve water quality is through establishing appropriate TMDLs, and then enforcing the limits through an effective Pollution Control Strategy.

Secretary Hughes approved the Start Action Notice for a proposed regulation on January 5, 2005. This process entailed contacting the list of interested persons on file for the Department's regulations, and any other persons that the Department determined would be interested in this particular proposed regulation. On June 1, 2005, the Department issued draft TMDLs for the Shellpot and Naamans Creeks watershed, and published notices to allow for public comment and attendance at a public workshop that was held on June 15, 2005. Based upon the public workshop, the Department did not propose any changes to the draft TMDLs.

On August 1, 2005, the Department published as a proposed regulation the TMDLs. *Delaware Register of Regulations*, 9 Del. Reg. 224-26. A duly noticed public hearing was held on September 7, 2005.

II. SUMMARY OF THE PUBLIC HEARING RECORD

The public hearing record contains a thirty page verbatim transcript of the public hearing, and documents, marked as Exhibits ("Ex."), which were admitted into the record as hearing exhibits. In addition, the Department's Division of Water Resources, Watershed Assessment, provided additional information that is included in the record.

Hassan Mirasjadi, D.Sc., P.E., an Environmental Engineer with the Department's Division of Water Resources ("DWR") presented the Department's exhibits into the record, which consisted of the following: DNREC Ex. 1, a copy of the proposed regulation as published in the August 1, 2005 *Delaware Register of Regulations*; DNREC Ex. 2, the Department's "*Total Maximum Daily Loads (TMDLs) Analysis for Naamans Creek, Delaware*," dated August 1, 2005; DNREC Ex. 3, the Department's "*Total Maximum Daily Loads (TMDLs) Analysis for Shellpot Creek, Delaware*," dated August 1, 2005; DNREC Ex. 4, DNREC's slide presentations at the June 15, 2005, public workshop; DNREC Ex. 5, the *Delaware Surface Water Quality Standards*, dated July 11, 2004; and DNREC Ex. 6, the *Delaware 2004 Combined Watershed*

Assessment Report (305(b) and Determination for the Clean Water Act Section 303(d) List of Waters Needing TMDLs, dated February 25, 2005.

A representative from New Castle County government commented on the impact on the county's Municipal Separate Stormwater Sewer System ("MS4"). The county's MS4 was included in the proposed TMDLs calculations for the Shellpot Creek as a component of the Waste Load Allocation ("WLA"). The county's comment requested that compliance be conditioned upon "maximum extent practicable." In addition, the county requested that the proposed bacteria reductions appeared to be unattainable. The comments also requested the Department conduct a use attainability analysis, particularly for bacteria.

A representative from Mid-Atlantic Environmental Law Center ("MAELC") presented comments, and provided MAELC's written comments as exhibits included in the record as MAELC Ex. 1 (Naamans Creek) and MAELC Ex. 2 (Shellpot Creek). MAELC's comments, some with subparts, are summarized in the DWR October 4, 2005 memorandum, which I include as part of this record along with the November 7, 2005 supplemental response.

III. DISCUSSION AND REASONS

The Department's Division of Water Resources ("DWR"), Watershed Assessment Section, prepared an October 4, 2005 memorandum, which provides technical advice from the Department's experts. I find that this memorandum, attached hereto as Appendix A, thoroughly addresses the public comments, and I incorporate the memorandum into this report. The October 4, 2005 memorandum acknowledged in response to MAELC comments that some of the documents relied on for the proposed TMDLs should be changed. Consequently, I requested DWR to provide the revised documents for the record, which were provided along with a November 7, 2005 supplemental memorandum response to my question, and this supplemental memorandum also is included in Appendix A and incorporated herein.

I find that the changes to the documents are minor. These changes could have readily been addressed informally prior to the hearing. Consequently, I urge MAELC to submit informal comments earlier and to be involved earlier in any future TMDL regulations. I note that MAELC was served with the initial Start Action Notice, and yet MAELC representatives did not appear at the workshop or otherwise participate until the public hearing. Under the state Administrative Procedures Act, the rulemaking process entails a public hearing for each substantive change to a proposed regulation. What this means is that for administrative efficiency the Department reasonably tries to work with all interested persons in advance of a public hearing in order to avoid multiple hearings on a proposed regulation. Multiple hearings entail considerable time and effort for each hearing, and, more importantly, considerable delay. Delay in establishing TMDLs means that there will be a delay in improving water quality, because without TMDLs the existing harmful pollutants as identified by the Department may enter the water without any regulatory control.

In this proposed regulation, the Department clearly sought out and encouraged public participation in advance of the public hearing through the Start Action Notice and the public workshop and MAELC comments could have easily been provided sooner.

I find that the public hearing record include considerable scientific evidence that demonstrates the reasons why the proposed regulations are appropriate and necessary to improve the water quality. The Department's experts provided extensive documentation of the underlying studies to show that the TMDLs were designed to improve the water quality and that the improved water quality will to meet the *Standards*. The Division of Water Resources has conducted extensive research on the water quality of the Shellpot and Naamans Creeks.

The Department's analysis of the two watersheds supports the proposed reductions to pollutants under the TMDLs' components, which are: 1) Waste Load Allocation ("WLA") for Point Sources, 2) Load Allocation ("LA") for Nonpoint Sources, and 3) Margin of Safety

("MOS"). DWR used EPA approved computer modeling, known as QUAL2E, to develop the TMDLs, and this model has been accepted by other states and previously used in Delaware. DWR used the model and added the inputs of collected data collected during 2000-2004 for stream geometry and flow, non-point source loads, point source loads, boundary condition, initial water conditions and parameters and constants. The models were calibrated for the baseline to predict annual average conditions under the EPA approved methodology. The calibration process entailed comparing the models results to field data, and adjusting the parameters until there is an acceptable agreement between model predictions and actual field results.

The result of the modeling produced proposed TMDLs components and TMDLs for nitrogen ("N"), phosphorus ("P") and bacteria for both watersheds. DWR's experts determined that both watersheds have no point source discharges, which means that all reductions in the pollutants would have to come from nonpoint sources.

For Shellpot Creek, the experts proposed dividing the stream into two segments based upon their review of water quality test data from the monitoring stations. The segments were below Business Route 13 and above it, and DWR determined that the proposed nonpoint source load for N for the Shellpot Creek from the area south of Business Route 13 should be reduced by 35% from the baseline level, or a reduction from 73 lbs per day to 47 lbs per day. For the watershed above Business Route 13, the proposed TMDL should be capped at the baseline level of 106 lbs of N per day.

For Naamans Creek, the experts proposed TMDL for N was a yearly average load based upon the 2000-2004 base-line level of 228 pounds per day. For P, the proposed TMDL is also capped at the 2000-2004 base-line level of 13 pounds per day. For bacteria, the proposed TMDL is a 78% reduction from the 2000-2004 baseline level, or from 5.8E+10 CFU per day baseline level down to the proposed TMDL of 1.6E+10 CFU per day.

I have considered the MAELC comments and the DWR response to them and find that the comments do not warrant any change to the proposed regulations. The MAELC comments do not provide any proposed regulation language, but question the underlying scientific research and data. The questions do not pose any information or fact to require revision of the proposed regulation. The supplemental memorandum of DWR highlights the sound scientific and rational basis for the proposed regulations and their supporting data as follows:

1. Adoption of the Mid-Atlantic Environmental Law Center's comments by the Secretary would require Department to conduct additional monitoring and collect additional site-specific data. This will result in significant time delay in adopting the proposed TMDLs for the Naamans and Shellpot Creek watersheds. At the same time, we don't believe collection of these additional data would result in substantial change to the proposed regulations. This is because prior to developing water quality models for the Shellpot and Naamans Creek watersheds and establishing proposed TMDLs, Division implemented a comprehensive, multi-year, monitoring plan to collect site-specific data for the critical parameters needed for the water quality modeling study. For the remaining (secondary) parameter, the Division used an acceptable, and commonly practiced, approach for estimating their values by using data from neighboring watersheds, literature values, and/or best professional judgments. This approach generally produces very reasonable values for the parameters of interest. Therefore, we believe collection of additional site-specific data for these secondary parameters, as requested by MAELC, would not produce significantly different values than those already used in the models, would not change the results of the modeling study, or would not result in substantial change in the proposed TMDLs regulations.

2. Based on our best estimates, collection of additional site-specific data requested by MAELC and incorporating them in the Shellpot Creek and Naamans Creek water quality models will be time consuming and very costly. Implementation of the MAELC comments would require significant amount of time to:

- a) Plan and design a monitoring plan and develop a monitoring protocol
- b) Develop a budget and secure funding for implementing the above monitoring plan
- c) Coordinate with other agencies and research institutions to implement the monitoring plan
- d) Collect site-specific data for at least one year
- e) Analyze the collected data

- f) Incorporate the collected data in the models
- g) Reevaluate the adequacy of the proposed TMDLs considering additional data.

As indicated in response to question 1, we don't expect collection of additional data would result in substantial change to the proposed TMDLs regulations.

The above highlights the balance between studying an issue to death and moving forward with a reasonable and well supported TMDLs that will, without dispute, result in improved water quality sooner than if the water quality was studied for several more years and no TMDLs are established now, as MAELC apparently advocates. I find that the proposed TMDLs are based upon the comprehensive research and expert judgment and that the proposed regulations are rational, will improve the environment and well supported in the record. I find that the public comments also do not support any amendment or other delay to the prompt approval of the proposed regulations as final regulations.

This recommendation is based on the practical reality of having the TMDLs should be approved as final regulations, which will then allow the Pollution Control Strategy to be developed based upon the established TMDLs. The Department may want to consider MAELC's comments in this and other TMDLs as possible future amendments. Regulations are always subject to review and revision as warranted by better or newer information. Unfortunately, under the procedures for promulgating regulations, it is very difficult to amend a proposed regulation after a public hearing because any substantive amendment will trigger the need for another public hearing. *See Administrative Procedures Act, 29 Del. C. §§10118(c).*

IV. RECOMMENDED FINDINGS AND CONCLUSIONS

Based on the record developed, I find and conclude that the record supports approval of the proposed regulations, as set forth in Appendix B hereto, as final regulations. In conclusion, I recommend the Secretary adopt the following findings and conclusions:

1.) The Department has jurisdiction under its statutory authority to make a determination in this proceeding;

2.) The Department provided adequate public notice of the proceeding and the public hearing in a manner required by the law and regulations;

3.) The Department held a public hearing in a manner required by the law and regulations;

4.) The Department considered all timely and relevant public comments in making its determination;

5.) The Department's proposed regulations establishing TMDLs, as published in the August 1, 2005, *Delaware Register of Regulations* and set forth in Appendix B hereto, are adequately supported, have a reasonable and sound basis that will improve the environment, and are consistent with the applicable laws and regulations. Consequently, the proposed regulations should be approved as final regulations as promptly as possible, and be allowed to go into effect ten days after publication in the next available issue of the *Delaware Register of Regulations*; and that

6.) The Department shall submit the proposed regulations as final regulations to the *Delaware Register of Regulation* for publication in its next available issue, and shall provide written notice to the persons affected by the Order approving the final regulations.

[s/Robert P. Haynes](#)
Robert P. Haynes, Esquire
Hearing Officer

Appendix A
Division Response Documents

MEMORANDUM

TO: Robert P. Haynes, Esquire
Hearing Officer, Office of the Secretary

FROM: Hassan Mirsajadi
Samuel P. Myoda

THROUGH: Brad L. Smith
John W. Schneider

DATE: October 4, 2005

Section 1.01 SUBJECT: Division of Water Resources Response to Public Comments re Proposed Total Maximum Daily Loads Regulations for the Naamans Creek Watershed and Shellpot Creek Watershed

INTRODUCTION AND BACKGROUND

The Delaware Department of Natural Resources and Environmental Control (DNREC) has proposed Total Maximum Daily Loads (TMDLs) for nutrients, oxygen demanding materials, and bacteria for the Naamans Creek Watershed and Shellpot Creek Watershed. The proposed TMDLs establish the maximum amount of nutrients, oxygen demanding materials, and bacteria that can be discharged from point and nonpoint sources into the surface waters of the Naamans Creek and Shellpot Creek and still maintain water quality standards and targets. The proposed TMDLs include Waste Load Allocations (WLAs) for point sources, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS).

The Proposed Naamans Creek and Shellpot Creek TMDLs were presented during a public workshop on June 15, 2005. A public hearing was also held on September 7, 2005. The notices advertising the public workshop and hearing were published in two local and regional newspapers. In addition, notice of the public hearing and proposed regulations were published in August 1, 2005 issue of the Delaware Register of Regulations (Volume 9, Issue 2).

Prior to and during the public hearing of September 7, 2005, DNREC received comments regarding proposed TMDLs for the Naamans Creek and Shellpot Creek Watersheds. The

following table lists commenter's name, affiliation, the date the comment was received, and comment number. The comments and DNREC's responses follow.

Article II. Comments re. Proposed Naamans Creek and Shellpot Creek TMDLs

Commenter	Article III. Affiliation	Date of Comment	Comment Number	Naamans Creek TMDLs	Shellpot Creek TMDLs
Wayne Merritt	New Castle County Special Services Department	9/7/2005	1-6	x	x
Jennifer Murphy and David J. Jablonski	Mid-Atlantic Environmental Law Center	9/7/2005	7-33	x	
Jennifer Murphy and David J. Jablonski	Mid-Atlantic Environmental Law Center	9/7/2005	34-55		x

- 1. New Castle County requests any reductions required of MS4-regulated municipal stormwater discharges should be qualified as being required to the "maximum extent practicable," as provided in Section 402(p) of the Federal Clean Water Act.**

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDL Regulations for the Shellpot Creek and Naamans Creek are designed to achieve applicable water quality standards. Furthermore, as required by the EPA guidelines, nonpoint source loads generated from municipalities covered under Municipal Separate Stormwater Sewer Systems (MS4) are considered as a component of the overall Waste Load Allocation (WLA) for those municipalities in the proposed TMDLs.

Implementation of the proposed regulations will be through development of a Pollution Control Strategy (PCS). The PCS will be developed by DNREC in concert with Tributary Action Teams, other stakeholders, and the public. Practical, financial, and other programmatic considerations including provisions of Section 402(p) of the Federal Clean Water Act will be considered during development of the PCS.

- 2. Second issue, proposed bacteria reductions from the MS4 system appear to be in some cases unattainable. We note that Table 5-7 of the U.S. EPA publication "Preliminary Data Summary of Urban Stormwater Best Management Practices" lists less than 30**

percent for typical percent removal for pathogens for all but infiltration technologies. Infiltration technologies may not be appropriate for application in urban areas.

Thus, the question is, what BMPs did DNREC assume would be implemented that would be capable of achieving reductions of 78 percent in Naamans Creek and 74 percent in Shellpot Creek? And what would be the cost of those BMPs?

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDL Regulations for the Shellpot Creek and Naamans Creek are designed to achieve applicable water quality standards. As indicated in the response to comment number 1, the cost of each BMP will be evaluated and the best alternative(s) will be chosen during development of the PCS.

- 3. Third, the County recommends that DNREC conduct a use attainability analysis in light of the significant attainability questions evidenced by the unattainable levels in point source reductions called for in the TMDL, particularly as it relates to bacteria.**

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDL Regulations for the Shellpot Creek and Naamans Creek are designed to achieve applicable water quality standards. However, the Department can consider site specific standard modification(s) requests as outlined in Section 9.1.2 of Delaware Surface Water Quality Standards as Amended July 11, 2004.

- 4. And fourth, at a minimum, TMDLs should acknowledge the attainability issue and commit to reopening the TMDL if a use attainability analysis is performed.**

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDL Regulations for the Shellpot Creek and Naamans Creek are designed to achieve applicable water quality standards. If and when the applicable water quality standards and designated uses are changed through the full public participation process, the TMDLs may need to be modified.

- 5. New Castle County understands and supports the concept of aggressively improving the quality of water through the TMDL process. Our only concern is setting unrealistic and we believe in many cases unattainable goals that would place an unrealistic financial burden upon local government.**

Response: DNREC acknowledges and appreciates commentor's support of the TMDL program. As stated in response to comment number 1, a comprehensive evaluation of all aspects of TMDL implementation will be considered during the development of the PCS.

- 6. In the final analysis, we recognize the TMDL's reality, and whatever the outcome of this we look forward to working with DNREC and trying to come up with the best practices possible in this process.**

Response: DNREC acknowledges and appreciates the commentor's support of the TMDL program and will work with all interested parties to develop and implement a PCS.

- 7. The purpose of establishing TMDLs is to ensure that the water quality standards established for a given water body will be attained after implementation of the TMDL. A conservative approach to all aspects of the TMDL, including waste load allocations ("WLA"), load allocations ("LA"), and the margin of safety ("MOS") must be utilized to ensure the attainment of the established water quality standards. Our comments stem from the critical importance of establishing appropriate TMDLs for Naamans Creek, which is impaired for elevated nutrient levels and bacteria.**

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDL Regulation for the Naamans Creek is designed to achieve applicable water quality standards. Furthermore, DNREC believes that reasonable, appropriate, and conservative approach has been used to establish the proposed TMDLs.

- 8. Naamans Creek is affected by nonpoint sources, correct monitoring should be used to define the health of the stream and the data needs to be expanded to include sediment load and bioassays. The TMDL analysis makes no mention of biosurveys or bioassessment.**

Response: DNREC conducts a comprehensive water quality monitoring of State's surface waters to assess their physical, chemical, and biological characteristics. When the monitoring data show impairments, the impacted stream segments are placed on the State's List of impaired waters (303(d) List) and will be targeted for TMDL development.

DNREC believes that appropriate physical, chemical, and biological monitoring was conducted in the Naamans Creek watershed. Furthermore, DNREC believes the above monitoring data was used appropriately to identify water quality impairments, to develop water quality models, and to establish TMDLs.

- 9. The dates supplied by the DNREC for the water quality sample data provided in Appendix B are incorrect. The DNREC lists the dates for dissolved oxygen measurements at station 101021 as "02/11/13", station 101031 as "02/06/17" and station 101041 as "02/08/07". These dates are obviously incorrect. In addition, the dates listed throughout Appendix B are of a similar nature. Naamans TMDL, Appendix B. The DNREC should correct these apparent oversights. Correct dates should be provided, so the public and stakeholders may have an opportunity to reasonably review the TMDL analysis in relation to the water quality data the DNREC is using to support its TMDL proposals.**

Response: The date format referred by commentor is of "YY/MM/DD" format and was generated by a computer database program. However, based on this comment, the TMDLs Analysis for Naamans Creek, Delaware report has been updated with a more traditional format of "MM/DD/YYYY".

10. The DNREC has not adequately presented the information and data, which lead to the classification of Naamans Creek watershed as impaired for nitrogen and phosphorus. The DNREC has identified approximately eight miles of Naamans creek as impaired by nutrients, and placed the watershed on the 1998 and 2002 303(d) lists. Naamans TMDL, Executive Summary, p. v. The Naamans TMDL analysis states that in reference to the 2000-2004 water quality monitoring data, “the dissolved oxygen concentration met the standard of 5.5 mg/l in most samples . . . [with] [o]nly two samples . . . show[ing] that dissolved oxygen levels were below the standard.” The TMDL analysis indicates that two samples of nitrogen and two samples of phosphorus exceeded their respective threshold levels, but their average concentrations, at the stations where the nutrient SWQS violations took place, “were below their respective threshold values.” Naamans TMDL, p. 5. The analysis of the data collected from 1996-2001 led to the conclusion in the “2002 305(b) Report . . . that dissolved oxygen concentration and nutrient levels met the applicable water quality standard and nutrient thresholds; and therefore, designated uses of Naamans Creek were reported to be fully supported except for primary contact recreation use which was impaired by high bacteria levels.” Naamans TMDL, p. 5. The DNREC’s discussion of the water quality condition in Naamans Creek watershed appears to be more concerned with showing there is not a nutrient water quality problem, than it is in clearly identifying the reasons for its 303(d) listing in 1998 and 2002.

Response: As required under Section 305(b) of the Clean Water Act, DNREC performs biannual water quality assessment by analyzing the most recent data available at the time of analysis and prepares 305(b) reports. Using this analysis, impaired segments are identified and are placed on the list of waters needing TMDLs (303(d) List). Delaware’s TMDL development schedule is based on the 1996 303(d) list in which segments of the Naamans Creek Watershed were listed. Despite variations in water quality in certain segments and during different time periods, a watershed-wide TMDL is required to ensure that all applicable water quality standards are achieved.

11. The DNREC allocates the lion’s share of the TMDL analysis to showing the current pollution loads of nitrogen and phosphorus do not need to be reduced from their present levels. In comparison, approximately 10% of the TMDL analysis is focused on establishing the TMDL for bacteria. The DNREC spends more time making the argument, it essentially does not have to do anything in response to the nutrient impairment, (“These [nutrient] loads will be capped at the current level.” Naamans TMDL, p. 23.), than it does in response to what the DNREC states is the only real water quality problem in the watershed, (“the 2002 305(b) Report reported that dissolved oxygen concentration and nutrient levels met the applicable water quality standard and nutrient thresholds; and therefore, designated uses of Naamans Creek were reported to be fully supported except for primary contact recreation use which was impaired by high bacteria levels.” Naamans TMDL, p. 5.). The DNREC should address this glaring inequity by providing a more comprehensive analysis and TMDL proposal for the bacteria impairment.

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDLs Regulation for the Naamans Creek are designed to achieve applicable water quality standards. However, based on the commentor’s suggestion, the TMDLs Analysis for Naamans Creek, Delaware report has been updated to

include additional information to provide increased clarity regarding the bacteria impairments and reduction levels that are required.

- 12. The DNREC states, “[s]everal NPDES facilities are located in the watershed, but none of them discharges into the Naamans Creek. Therefore all of the pollutants considered in this analysis are generated from nonpoint sources such as surface runoffs from urban and other land use activities, septic tanks, and groundwater discharges loaded with nutrients.” Naamans TMDL, pp.5-6. The DNREC’s pollution source assessment is fundamentally flawed for multiple reasons.**

First, it equates point sources directly and exclusively with National Pollution Discharge Elimination System (NPDES) facilities, which is incorrect. The definition of a point source states, “[t]he term 'point source' means any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged." 33 U.S.C. 1362 (14). Discharge of a pollutant is defined as, "any addition of any pollutant to navigable waters from any point source." 33 U.S.C. 1362 (14). These definitions do not tie the term “point source discharge” exclusively to NPDES facilities. In essence, there can be a point source discharge to a waterbody, which is not a NPDES facility. An example of this scenario would be a sanitary sewer overflow (SSO) directly into a creek.

Response: DNREC believes that its pollution source assessment in the TMDL analysis for the Naamans Creek Watershed is accurate and complete. As stated in the TMDLs Analysis for Naamans Creek, Delaware report, three facilities with NPDES permits are located within the watershed; however, they discharge into the Delaware River, not into Naamans Creek. Furthermore, there are no known sanitary sewer overflows discharging into the Naamans Creek. The TMDLs Analysis for Naamans Creek, Delaware report has been updated to clarify this.

- 13. Second, the DNREC states, “[s]everal NPDES facilities are located in the watershed, but none of them discharges into the Naamans Creek.” Naamans TMDL, p. 5. This is not a valid reason for excluding these facilities from the TMDL analysis. Figure 1-1 indicates the entire Naamans Creek watershed is impaired due to nutrients, (no map is provided which indicates the areas of bacteria impairment). Naamans TMDL, p. 1. If the entire watershed is impaired for nutrients, and a NPDES facility is discharging into the watershed, then that facility is discharging into an impaired segment of the watershed, and therefore should be included in the source assessment. In addition, a NPDES facility discharging into the watershed can still be a contributing impairment to the main river segments of the watershed. The TMDL analysis should identify the NPDES permitted facilities in the watershed, where they are located and what they are discharging. The DNREC should then provide a rationale as to why the NPDES permitted facilities located within Naamans Creek watershed are not included in the TMDL analysis.**

Response: Please see response to comment number 12.

- 14. Third, the DNREC incorrectly characterizes the Municipal Separate Storm Sewer System (MS4) permit covering New Castle County as a nonpoint source. MS4s discharge aggregate amounts of nonpoint sources of pollution through discrete conveyances, and therefore are point sources. This is the only source of pollution which**

was assigned a WLA or LA in the TMDL analysis. Although the DNREC correctly assigns this source a WLA, its mischaracterization is evidence of the fundamentally flawed and inadequate nature of the source assessment.

Response: DNREC believes that the source assessment in the TMDLs Analysis for Naamans Creek, Delaware report is accurate. Nonpoint source loads from urbanized areas are collected in the MS4 system, consolidated and discharged at discrete locations. Therefore, the MS4 loading is initially considered as nonpoint source in terms of collection, however, it is considered point source in terms of discharge and is assigned a Waste Load Allocation (WLA) instead of a Load Allocation (LA).

15. Fourth, the DNREC contention that only nonpoint sources are responsible for the impairment cannot be verified without correct sample dates in Appendix B. The DNREC implicitly links the impairment in Naamans Creek watershed to nonpoint sources, specifically stormwater discharges associated with the MS4 permit covering New Castle County. Naamans TMDL, pp. 6, 23-24. This in turn, highlights the importance of the sampling dates that were analyzed to be in violation of the SWQS. The sampling dates are important because they can be an independent verifying source of the DNREC's source assessment conclusions. If the impairment is linked to stormwater discharges, the dates of the samples can be compared to precipitation events to see if there is a continuous relationship between the samples in violation of the SWQS and temporal precipitation events. In illustration, if the samples discovered to be in violation of the SWQS where collected at a time far removed from the last precipitation event, then this would indicate a continuous source of pollution independent of stormwater runoff, and contradict the DNREC's source assessment conclusions. Therefore, the incorrect dates in Appendix B are fatal to the public and stakeholders double-checking the DNREC's source assessment conclusions.

Response: As stated in response to comment number 9, DNREC has modified dates in Appendix B from "YY/MM/DD" format to a more familiar format of "MM/DD/YYYY".

16. Fifth, the source assessment section of the TMDL should include more than two sentences. Naamans TMDL, pp. 5-6. The EPA guidance document, *Protocol for Developing Pathogen TMDLs* states, "[a]ll possible sources of information should be consulted."¹ The *Protocol for Developing Pathogen TMDLs* also envisions the use of other sources of information in developing the source assessment section of the TMDL, such as "public health agencies", "literature and historical records searches", phone and door to door surveys, "field reconnaissance" and "driving through the watershed".² The EPA guidance document, *Protocol for Developing Nutrient TMDLs* states, "[s]ources of information that can be used to identify and document [nutrient sources] include land use maps, aerial photographs, local conservation organizations, tax maps, field surveys, and point source discharge permits."³ An example of another source of information utilized in the source assessment section of a TMDL is the EPA utilizing a DNREC Geographic Information System (GIS) database to estimate the number of septic systems in New Castle County, which was then used to estimate the nutrient load from those septic systems in the development of the TMDL for the Christian River watershed.⁴ In stark contrast, the Naamans TMDL analysis' two sentence source assessment section was apparently concluded after the identification of the NPDES facilities in the watershed, (which were not identified and not included in the TMDL

analysis). The references for the above documents are contained in the attached references page.

Response: Based on commentor's suggestion, additional information and discussion has been included in the source assessment section of the TMDLs Technical Analysis for Naamans Creek, Delaware report.

- 17. Finally, a source assessment that is comprised of two sentences is fundamentally inadequate to accomplish the goals of the TMDL process. The two sentence source assessment needs to be put in context to illustrate this point. The DNREC is proposing TMDLs for nitrogen, phosphorus and bacteria, the TMDL proposal will cover approximately eight stream miles that encompasses approximately 8,600 acres of land, in which, half is located in Pennsylvania. Naamans TMDL, pp. 1-6.**

The DNREC's source assessment should include a more comprehensive analysis of the sources of pollution in the watershed. The sources of pollution in the watershed are the reason the DNREC has continually listed Naamans Creek as impaired. The DNREC should consult the above-mentioned EPA guidance documents, (these guidance documents are not listed in the references to the Naamans TMDL) as well as review other approved TMDLs for guidance on appropriate TMDL source assessments. An adequate source assessment should lead to the ultimate goal of the TMDL process, which is the waterbody meeting the water quality criteria.

Response: Please refer to response to comment 16.

- 18. For the foregoing reasons, section 1.5 Sources of Pollution is inadequate, and therefore the Naamans TMDL is inadequate.**

Response: The proposed TMDL is established based on an accurate assessment of water quality data, proper use of a calibrated model and other assessment tools, and consideration of all sources of pollution contributing to water quality in the Naamans Creek. Furthermore, the proposed TMDL is designed to achieve applicable water quality standards as required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations.

- 19. This section states, "[t]he objective of the TMDL analysis for Naamans Creek is to estimate the total maximum amount of dissolved oxygen consuming compounds and nutrients that Naamans Creek can receive without violating water quality standards." Naamans TMDL, p. 6. Inexplicably, there is no mention of the bacteria TMDL within this statement, even though in section 1.4 Stream Water Quality Condition, it is stated "the 2002 305(b) Report reported [the] designated uses of Naamans Creek were reported to be fully supported except for primary contact recreation use which was impaired by high bacteria levels." Naamans TMDL, p. 5.**

Response: Based on commentor's suggestion, section 1.6 of the TMDLs Analysis for Naamans Creek, Delaware report has been updated to include bacteria impairment.

- 20. The model analysis either estimates or assumes the following data input values:**

- Daily flows are estimated from data for Shellpot Creek,

- **The water quality characteristics of the incremental inflow are estimated for the Naamans Creek, based on previous estimates in developing a model for the Murderkill River Watershed,**
- **Concentrations of organic nitrogen, nitrite nitrogen, nitrate nitrogen and organic phosphorous, and**
- **In the critical condition analysis, the DNREC assumed stream flow was at 7Q10 levels and a water temperature of 20° celsius.**

Naamans TMDLs, pp. 12-17. The model, (an estimate itself), should not be based on estimated data, but instead use data collected directly from Naamans Creek.

Response: DNREC incorporates all available site-specific data to develop, calibrate and validate all water quality models. In certain instances, site-specific data for some parameters is not available. To calculate these parameters, DNREC utilizes the scientifically accepted practice of making reasonable assumptions, considering data from watershed(s) in close proximity or similar to the target watershed, and from other sources such as scientific literature and case studies.

- 21. The DNREC states, “[t]herefore all of the pollutants considered in this analysis are generated from nonpoint sources such as surface runoffs from urban and other land use activities, septic tanks, and groundwater discharges loaded with nutrient.” Naamans TMDL, p. 6. Although identifying groundwater discharges loaded with nutrients as a nonpoint source contributing to the impairment of the watershed, the DNREC does not identify where these discharges are emanating from and consequently does not assign a LA for them. Groundwater discharges are not part of the MS4 permit covering New Castle County, because they are a result of subsurface flows not overland surface flows. The DNREC should have identified these discharges, including their contribution to the nutrient pollution load entering the watershed, and then assign the appropriate LA to these discharges.**

Response: The modeling tool used to represent and predict the hydrological cycle and water quality within the Naamans Creek Watershed considered the ground water load as an integrated component of the nonpoint source load, not independently. However, since all phases in the hydrological cycle are related, implementation of best management practices required to meet the proposed MS4 WLAs will positively impact ground water quality.

- 22. The DNREC should use flow rates acquired from Naamans Creek watershed not Shellpot Creek to establish the bacteria TMDL for Naamans Creek. Naamans TMDL, p. 25.**

Response: Please refer to the response to comment number 20.

- 23. The DNREC does not provide a map to show its break down of Naamans Creek into “four ranges: the first, second, third and fourth quartile.” Naamans TMDL, p. 25. This is important because the DNREC is allocating its 78% reduction in the baseline nonpoint loading to the watershed among these quartiles. Naamans TMDL, p. 25. The DNREC needs to define these four quartiles, so as to fulfill the public participation regulatory requirement. The public may not adequately participate in the TMDL**

process if they are not provided geographical information, which defines the quartiles, so they may assess the logic of the DNREC’s proposed bacteria loading allocations.

Response: Quartiles do not have a geographic component, they refer to flow ranges and therefore it is not appropriate to illustrate them on a map. The flow ranges that are included in each quartile are included in a table in the TMDLs Analysis for Naamans Creek, Delaware report.

24. The DNREC states, “daily enterococci loading were estimated at each of the flow quartiles.” Naamans TMDL, p. 26. The DNREC does not explain how they estimated the bacteria loading for each of the quartiles. The DNREC needs to provide an explanation as to how they calculated the estimated loading rates for the quartiles.

Response: Enterococcus bacteria load (represented by colony forming units (CFUs)/time) is calculated by multiplying flow (volume/time) by concentration (CFUs/volume). The TMDLs Analysis for Naamans Creek, Delaware report has been updated to include this information.

25. Table 5-1 does not provide a column heading for the first column in the table, which contains the values: 0.94, 1.79, 3.31 and 32.22, respectively. Naamans TMDL, p. 25. The DNREC should provide a column heading to the first column in Table 5-1, so as to give the above values context.

Response: There was a typographical error in the document, the first column should contain: 1st, 2nd, 3rd, and 4th quartile, not the numbers mentioned above. The TMDLs Analysis for Naamans Creek, Delaware report has been updated to include this information.

26. The DNREC assumes, “the only sources of bacteria entering the Naamans Creek are non-point sources (NPS: runoff, subsurface flow, failing septic systems, resuspension from sediment, direct deposition, etc.). All NPS sources are combined and are considered as one and a MS4 WLA is determined by reducing the NPS baseline loading by an appropriate level to ensure the State water quality standards are met.” Naamans TMDL, p. 27. The DNREC cannot include subsurface flows within the MS4 WLA allocation because they are not a result of overland surface flows. The DNREC should identify these subsurface flows contributing to the bacteria impairment in the watershed, and allocate the appropriate LA to them as necessary.

Response: Please refer to the response to comment number 21. It should also be noted that in general, enterococcus bacteria concentrations in groundwater are very low and under natural conditions have a diminimus impact.

27. The DNREC does not provide any description in how they intend to attain this 78% reduction from the nonpoint baseline loading. The DNREC does not provide an implementation schedule or a provision for follow-up monitoring. As indicated below, the DNREC does not provide a reasonable assurance discussion regarding whether the bacteria TMDL can be met. The bacteria TMDL is therefore inadequate.

Response: Please refer to the responses to comments number 1 and number 2. In addition, DNREC conducts comprehensive monitoring of all the State’s surface waters (including

Naamans Creek) and will continue this effort in the future. Data collected for the Naamans Creek will be evaluated routinely to assess water quality conditions and monitor progress of TMDL implementation.

- 28. In this section the DNREC offers its rationale why they believe the Naamans TMDL is adequate under the current TMDL regulations. This section does not discuss the proposed bacteria TMDL in reference to the regulatory requirements. Naamans TMDL, pp. 29-30. The DNREC should include the proposed bacteria TMDL within the discussion presented in section 6.0, as to whether the proposed bacteria TMDL meets the regulatory requirements.**

Response: The TMDLs Analysis for Naamans Creek, Delaware report has been updated to clarify that Section 6.0 refers to all the requirements in the TMDL for both nutrients and bacteria.

- 29. The implicit MOS used in the TMDL analysis for nutrients is inadequate as presented. Section 1313 (d)(1)(c) of the CWA states, “[e]ach State shall establish . . . the total maximum daily load . . . at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. 33 U.S.C. § 1313(d)(1)(c). “There are two basic methods for incorporating the MOS . . . [i]mplicitly incorporate the MOS using conservative model assumptions to develop allocations. In many cases, the MOS is incorporated implicitly. In these cases, the conservative assumptions that account for the MOS should be identified.”**

The implicit MOS is not adequate because the DNREC does not identify all of the conservative assumptions used to calibrate the nutrients model. The DNREC states, “[t]he Naamans Creek Qual2E model was calibrated using conservative assumptions regarding reaction rates, pollutant loads, and other environmental conditions.” Naamans TMDL, pp. 24, 30. A complete identification of the conservative assumptions, including the “other environmental conditions” is needed to meet the regulatory implicit MOS requirement. This is especially so, because in apparent contradiction to the conservative assumption statement, the DNREC states in regard to the nutrients model, “the assigned phosphorous concentration of surface runoffs was reduced based on observed concentrations at monitoring sites.” Naamans TMDL, p. 15.

Response: Several conservative assumptions were made during development of the Naamans Creek Qual2E Model. These conservative assumptions included but are not limited to: 1) choosing a conservative option for estimating oxygen reaeration rate, 2) applying a conservative value for sediment oxygen demand, and 3) considering simultaneous occurrence of critical environmental conditions (such as low stream flow and high water temperature). Since the above conservative assumptions were made during development of the Naamans Creek Qual2E model, DNREC believes the use of an implicit margin of safety is justifiable.

With regard to adjustment of phosphorous concentration of surface runoffs and incremental flow for the Naamans Creek, appropriate adjustments were made after a careful review of instream water quality data of the Naamans Creek.

30. The DNREC does not indicate that a MOS was incorporated or even considered in the construction of the bacteria TMDL. Naamans TMDL, pp. 25-27, 30. Therefore, the proposed TMDL analysis is inadequate because of a lack of specificity in regard to the implicit nutrients MOS, and a complete lack of a bacteria MOS.

Response: As indicated in the TMDLS Analysis for the Naamans Creek, Delaware, the Source Tracking Adjustment Factor (STAF) will be incorporated in the development of the Pollution Control Strategy. Both an implicit and explicit margin of safety are included in the STAF, therefore, the flow duration approach utilized in this analysis includes an adequate margin of safety.

31. Contrary to the DNREC contentions, the public participation regulatory requirement for the TMDL process requires more than holding work shops and public hearings. The public at large and stakeholders cannot always attend these functions scheduled by the DNREC. The TMDL analysis must stand on its own, to be read at the convenience of its intended audience, within the designated time frame. In this regard the Naamans TMDL is insufficient as to the public participation requirement. The Naamans TMDL contain incorrect dates, an inadequate two sentence source assessment section, contradictory statements as to the objectives and scope of the TMDL proposals and is lacking overall in its supporting documentation, specifically the proposal for the bacteria TMDL. The Naamans TMDL is the equivalent to a magician pulling a rabbit out of his hat, without giving the audience the common courtesy of inspecting the hat prior to and after the appearance of the rabbit. The Naamans TMDL does not meet the public participation regulatory requirement because the document standing alone does not support its conclusions and proposals.

Response: This comment does not address any specific article(s) of the proposed TMDL regulation.

DNREC has adhered to and in some areas exceeded the legal requirements of the regulatory development process. DNREC made a significant effort to provide ample opportunity for public participation and comment for the proposed Naamans Creek TMDLs. The availability of the draft TMDL report was announced to the public through newspaper notices and Department's News Releases. The draft TMDL report was posted on Department's web site in the beginning of June, 2005 and was presented and discussed with the public during a public workshop on June 15, 2005. All comments received during and after the workshop were addressed and the TMDL report was updated based on comments received. Furthermore, a public hearing was held on September 7, 2005. Again, DNREC has addressed all comments received from the public during the public comment period and has updated the TMDL technical documents accordingly.

Also, please see responses to comment numbers 12, 14, 15, and 16.

32. The Naamans TMDL does not contain reasonable assurances that the nutrient loads will be or can be capped at their present levels. This is because the DNREC does not provide any indication that they currently have a strategy to implement the TMDL proposals. The DNREC promises to, "in association with local citizens groups and other affected parties, will develop a Strategy to implement this requirement." Naamans TMDL, p. 30. The DNREC has not contacted the Naamans Creek Watershed Association in conjunction with developing this strategy. In addition, the Naamans

TMDL offers no indication that the DNREC has been in contact with the appropriate officials of the Commonwealth of Pennsylvania where half the watershed is located. The DNREC proposes to cap the pollution loads coming into Delaware at their current levels. This alone will be an immense task, i.e. the logistics of coordinating with another State agency(ies) to ensure unidentified pollution loads can and will be capped at the border, and according to the Naamans TMDL, DNREC has not yet contacted the appropriate Pennsylvania officials regarding this task.

Response: As stated in Article 5 of the proposed TMDLs for the Naamans Creek, following adoption of the regulation, a tributary action team will be formed to develop a Pollution Control Strategy (PCS) for implementing the requirements of the TMDLs. The PCS will address all coordination efforts between parties involved in implementing the requirements of the TMDL.

- 33. In addition, the Naamans TMDLs does not provide an implementation schedule or a provision for follow-up monitoring. On the DNREC web site, in the “TMDL Information Center”, the link to the “Delaware’s Tributary Action Teams” web page, which contains information as to the development of pollution control strategies to implement approved TMDLs is not a functional link. The proposed TMDLs for Naamans Creek are therefore inadequate because they do not provide a reasonable assurance that the TMDLs can be met.**

Response: As stated in response to comment number 32, a tributary strategy team will be formed for the Naamans Creek watershed. The team will develop a PCS and schedule for implementing the requirements of the TMDLs.

With regard to follow-up monitoring, please refer to the response to comment number 27.

With regard to “not functional” link from the “TMDL Information Center” to the “Delaware’s Tributary Action Team” web page, the link has been corrected. However, it should be noted that the Delaware Tributary Action Team web page can be accessed through several other links within DNREC’s web site.

- 34. The purpose of establishing TMDLs is to ensure the water quality standards established for a given water body will be attained after implementation of the TMDL. A conservative approach to all aspects of the TMDL, including waste load allocations ("WLA"), load allocations ("LA"), and the margin of safety ("MOS") must be utilized to ensure the attainment of the established water quality standards. Our comments stem from the critical importance of establishing appropriate TMDLs for Shellpot Creek impaired as a result of both point and nonpoint source discharges, which have resulted in low DO levels, elevated nutrient levels and bacteria impairment.**

Response: As required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations, the proposed TMDL Regulation for the Shellpot Creek is designed to achieve applicable water quality standards. Furthermore, DNREC has used a reasonable, appropriate, and conservative approach to establish the proposed TMDLs.

35. The dates supplied by the DNREC for the water quality sample data provided in Appendix B are apparently listed backwards. On page Appx.-15 in Appendix B, the first three dates are listed as; 00/04/25, 00/05/23 and 00/05/23. Shellpot TMDL, pp. Appx.-15. It is assumed these dates are listed as year, month, day. All of the dates in Appendix B are of a similar nature. Shellpot TMDL, pp Appx.-15 – Appx.-19. The DNREC should specify the format in which they have chosen to present the sampling data dates, so as not to confuse the reader, and therefore allow the public and stakeholders to participate in the TMDL process.

Response: The date format referred by commentor is of “YY/MM/DD” format and was generated by a computer database program. However, based on commentor’s suggestion, the TMDLs Analysis for Shellpot Creek, Delaware report has been updated using a more traditional format of “MM/DD/YYYY”.

36. The DNREC states, “water quality data collected during the 1996-2001, the State of Delaware 2002 305(b) Report concluded that elevated nutrient levels and low DO concentrations impaired the lower one-mile long of the Shellpot Creek and in result, the fish and aquatic life use of this segment was not fully supported.” Shellpot TMDL, p.6. Table 1-1 indicates the 14.2 miles of “Upper Shellpot Creek” was also listed as impaired for nutrients in the 2002 303(d) Report. Shellpot TMDL, p. 1. The DNREC should correct this apparent mistake, and state actually what segments of Shellpot Creek are impaired, and why those segments are impaired.

Response: As required under Section 305(b) of the Clean Water Act, DNREC performs biannual water quality assessment by analyzing the most recent data available at the time of analysis and prepares 305(b) reports. Using this analysis, impaired segments are identified and are placed on the list of waters needing TMDLs (303(d) List).

As noted by commentor, Upper Shellpot Creek was identified as impaired because of high levels of nutrients and bacteria during 1996 assessment period. In addition, the lower 1.0 mile of the Shellpot Creek was identified to be impaired because of high nutrients, low DO, and high bacteria levels during the same assessment period. Although additional data collected during subsequent years used for 2002 305(b) reporting showed that water quality standards with regard to dissolved oxygen and nutrient are met in the Upper Shellpot Creek, this segment was kept on the 2002 303(d) list of waters needing TMDLs because of previous impairments.

37. The DNREC does not discuss the water quality sampling data, which lead it to list bacteria as an impairment in Shellpot Creek. Shellpot TMDL, pp. 5-6. The DNREC should provide the same level of detail in describing the water quality sampling data that lead the DNREC to list Shellpot Creek as impaired for bacteria, as it did for nitrogen, phosphorus and low dissolved oxygen.

Response: The summary bacteria data was included in the TMDLs Analysis for the Shellpot Creek, Delaware report and the majority of the raw data was included in the appendixes. However, based on this comment, figures illustrating the raw data were added to the report and the appendix was expanded to include all raw data used in the technical analysis.

38. The DNREC states, as to identifying the sources of pollution that are impairing Shellpot Creek, “[s]everal NPDES facilities are located in the watershed, but none of them discharges into the Shellpot Creek. Therefore all of the pollutants considered in this analysis are generated from nonpoint sources such as surface runoffs from urban and other land use activities, septic tanks, and groundwater discharges loaded with nutrients.” Shellpot TMDL, p. 9. The DNREC’s pollution source assessment is fundamentally flawed for multiple reasons.

First, it equates point sources directly and exclusively with National Pollution Discharge Elimination System (NPDES) facilities, which is incorrect. The definition of a point source states, “[t]he term ‘point source’ means any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged.” 33 U.S.C. 1362 (14). Discharge of a pollutant is defined as, “any addition of any pollutant to navigable waters from any point source.” 33 U.S.C. 1362 (14). No where do these definitions tie the term “point source discharge” exclusively to NPDES facilities. In essence, there can be a point source discharge to a creek, which is not a NPDES facility. An example of this scenario would be a sanitary sewer overflow (SSO) that discharges directly to Shellpot Creek.

Response: DNREC believes that its pollution source assessment in the TMDL analysis for the Shellpot Creek Watershed is accurate and complete. As stated in the TMDLs Analysis for Shellpot Creek, Delaware report, five facilities with NPDES permits are located within the watershed; however, they discharge into the Delaware River or Brandywine River, not into Shellpot Creek. Furthermore, there are no known sanitary sewer overflows discharging into the Shellpot Creek. The TMDLs Analysis for Shellpot Creek, Delaware report has been updated to clarify this.

39. Second, Figure 1-1 indicates the entire length of the main stem of Shellpot Creek is impaired due to nutrients, (no map is provided which indicates the areas of bacteria impairment). Shellpot TMDL, p. 2. If the entire length of Shellpot Creek is impaired for nutrients, the DNREC’s statement, “[s]everal NPDES facilities are located in the watershed, but none of them discharges into the Shellpot Creek” is not a logical rationale for not including them in the source assessment. Shellpot TMDL, pp. 5. Figure 1-1 indicates there are monitoring stations in the area of the headwaters of Turkey Run and Matson Run, which are tributaries to Shellpot Creek. Shellpot TMDL, p. 2. There are no monitoring stations located in the other tributaries of Shellpot Creek and the nutrient impairment is identified as extending to the headwaters of Shellpot Creek. Shellpot TMDL, p. 2. The DNREC cannot categorically exclude the NPDES permitted facilities from the source assessment and TMDL analysis based on the geographically information presented in Figure 1-1. The TMDL analysis should identify the NPDES permitted facilities in the watershed, where they are located and what they are discharging. The DNREC should then provide its rationale as to why these NPDES facilities are not included in their TMDL analysis for Shellpot Creek.

The following NPDES permitted facilities, which discharge in Shellpot Creek watershed were obtained from a search conducted through the DNREC’s “Environmental Navigator 2.0”.

- **Amtrak Wilmington Facility,**
- **Wilmington Sewage Treatment Plant,**
- **Connectiv Edgemoor Power Plant Wilmington,**

- DuPont Edgemoor Titanium Oxide Plant Wilmington, and
- IKO Edge Moor Plant.

In addition, 19 land development and erosion control sites, four land recycling/application of sludge/industrial waste sites, three landfills and one combined sewer overflow site, (CSO 31) were identified as located within the Shellpot Creek watershed. The DNREC did not include these facilities in the TMDL analysis, except for CSO 31, and CSO 31 was only considered in the establishment of the TMDL for bacteria. Shellpot TMDL, pp. 29-31.

Response: Please see the response to comment number 38.

With regard to other possible sources of nutrients load and oxygen consuming compounds into the Shellpot Creek (land development and erosion control sites, land recycling/application of sludge, industrial waste sites, and landfills, and combined sewer overflows), it should be noted that although each source was not assessed individually, their combined impact on ambient water quality was reflected in the monitoring data used for model development and TMDL analysis. Furthermore, pollution loads associated from the above sources are covered under the Waste Load Allocation to the New Castle County (MS4 municipality).

With regard to CSO 31, discharges from this outfall only occur during precipitation events and their impact on bacterial levels in Shellpot Creek is significant. Therefore, CSO 31 is considered individually and an appropriate bacteria allocation is assigned to it. However, the TMDL allocations for nutrients are designed to protect water quality during critical, low-flow conditions during which time CSO discharges are not expected to occur, hence they are not considered individually.

40. Third, the DNREC incorrectly characterizes the Municipal Separate Storm Sewer System (MS4) permit covering New Castle County as a nonpoint source. Shellpot TMDL, pp. 9, 28. MS4s discharge aggregate amounts of nonpoint sources of pollution through discrete conveyances, and therefore are point sources. This is the only source of pollution which was assigned a WLA or LA in the TMDL analysis. Although the DNREC correctly assigns this source a WLA, its mischaracterization is evidence of the fundamentally flawed and inadequate nature of the source assessment.

Response: DNREC believes that the source assessment in the TMDLs Analysis for Shellpot Creek, Delaware report is accurate. Nonpoint source loads from urbanized areas are collected in the MS4 system, consolidated and discharged at discrete locations. Therefore, the MS4 loading is initially considered as nonpoint source in terms of collection, however, it is considered point source in terms of discharge and is assigned a Waste Load Allocation (WLA) instead of a Load Allocation (LA).

41. Fourth, the DNREC contention that only nonpoint sources are responsible for the impairment cannot be verified without correct sample dates in Appendix B. The DNREC links the impairments in Shellpot Creek to nonpoint sources, specifically stormwater discharges associated with the MS4 permit covering New Castle County. Shellpot TMDL, pp. 9, 27-28. This in turn, highlights the importance of the sampling dates for the samples analyzed to be in violation of the SWQS. The sampling dates are important because they can be an independent verifying source of the DNREC source assessment conclusions. If the impairment is linked to stormwater discharges, the dates

of the samples can be compared to precipitation events to see if there is a continuous relationship between the samples in violation of the SWQS and temporal precipitation events. In illustration, if the samples discovered to be in violation of the SWQS where collected at a time far removed from the last precipitation event, then this would indicate a continuous source of pollution independent of stormwater runoff, and contradict the DNREC's source assessment conclusions and subsequent WLA allocation. Therefore, the incorrect dates in Appendix B are fatal to the public and stakeholders double-checking the DNREC's source assessment conclusions.

Response: The date format referred by commentor is of "YY/MM/DD" format and was generated by a computer database program. However, based on this comment, the TMDLs Analysis for Shellpot Creek, Delaware report has been updated using a more traditional format of "MM/DD/YYYY".

42. Fifth, the source assessment section of the TMDL should include more than two sentences. Shellpot TMDL, p. 9. The EPA guidance document, *Protocol for Developing Pathogen TMDLs* states, "[a]ll possible sources of information should be consulted." The *Protocol for Developing Pathogen TMDLs* also envisions the use of other sources of information in developing the source assessment section of the TMDL, such as "public health agencies", "literature and historical records searches", phone and door to door surveys, "field reconnaissance" and "driving through the watershed". The EPA guidance document, *Protocol for Developing Nutrient TMDLs* states, "[s]ources of information that can be used to identify and document [nutrient sources] include land use maps, aerial photographs, local conservation organizations, tax maps, field surveys, and point source discharge permits." An example of another source of information utilized in the source assessment section of a TMDL is the EPA utilizing a DNREC Geographic Information System (GIS) database to estimate the number of septic systems in New Castle County, which was then used to estimate the nutrient load from those septic systems in the development of the TMDL for the Christian River Watershed. In stark contrast, the Shellpot TMDL analysis' two sentence source assessment section was apparently concluded after the identification of the NPDES facilities in the watershed, (which were not identified and not included in the TMDL analysis). The references for the above documents are contained in the attached references page.

Response: Based on this comment, the source assessment section of the TMDLs Analysis for Shellpot Creek, Delaware report has been updated to include additional details and discussion about the sources of pollutants in the watershed.

43. Finally, a source assessment that is comprised of two sentences is fundamentally inadequate to accomplish the goals of the TMDL process. The two sentence source assessment needs to be put in context to illustrate this point. The DNREC is proposing TMDLs for nutrients, bacteria and low levels of dissolved oxygen, it will cover approximately nine stream miles, which encompasses approximately 9,200 acres of land. Shellpot TMDL, pp. 1-6.

The DNREC's source assessment should include a more comprehensive analysis of the sources of pollution in the watershed. The sources of pollution in the watershed are the reason the DNREC has continually listed Shellpot Creek as impaired, (1996, 1998 and 2002). Shellpot TMDL, Executive Summary, p. v. The DNREC should consult the

above-mentioned EPA guidance documents, (these guidance documents are not listed in the references to the Shellpot TMDL) as well as review other approved TMDLs for guidance on appropriate TMDL source assessments. The DNREC will not be able to achieve the desired pollution loading reductions without a more comprehensive and in-depth source assessment, i.e. specifically identifying the sources of pollution. A more comprehensive and in-depth source assessment will lead to the ultimate goal of the TMDL process, which is the targeted waterbody meeting its water quality criteria.

Response: Please refer to response to comment 42.

- 44. For the foregoing reasons, section 1.5 Sources of Pollution is inadequate, and therefore the Shellpot TMDL is inadequate.**

Response: The proposed Shellpot Creek TMDL is established based on an accurate assessment of water quality data, proper use of a calibrated model and other assessment tools, and consideration of all sources of pollution contributing to water quality in the Shellpot Creek. Furthermore, the proposed TMDL is designed to achieve applicable water quality standards as required under Section 303(d) of the Clean Water Act (CWA) and its implementing regulations.

- 45. This section states, “[t]he objective of the TMDL analysis for Shellpot Creek is to estimate the total maximum amount of dissolved oxygen consuming compounds and nutrients that Shellpot Creek can receive without violating water quality standards.” Shellpot TMDL, p. 9. Inexplicably, there is no mention of the bacteria within this statement, even though according to Table 1-1 the entire length of Shellpot Creek is impaired because of bacteria. Shellpot TMDL, p. 1.**

Response: Based on this comment, Section 1.6 of the TMDLs Analysis for Shellpot Creek, Delaware report has been updated to include bacteria impairments.

- 46. The water quality characteristics of the incremental inflow are estimated for Shellpot Creek based on previous estimates in developing a water quality model four years ago, for the Murderkill watershed. Shellpot TMDL, p. 16-17. The incremental inflow values used to represent nonpoint source runoff values entering Shellpot Creek from the individual land uses present in the watershed should instead be actual values obtained from field measurements and observations or the DNREC should have updated the incremental values used for the Murderkill watershed using data directly applicable to Shellpot Creek.**

Response: DNREC incorporates all available site-specific data to develop, calibrate and validate all water quality models. In certain instances, site-specific data for some parameters is not available. To calculate these parameters, DNREC utilizes the scientifically accepted practice of making reasonable assumptions, considering data from watershed(s) in close proximity or similar to the target watershed, and from other sources such as scientific literature and case studies.

- 47. The DNREC states, “[t]herefore, the sources of pollutants of concern in this watershed are nonpoint sources such as surface runoffs from urban and other land use activities, septic tanks, and groundwater discharges.” Shellpot TMDL, p. 9. Although identifying groundwater discharges as a nonpoint source contributing to the impairment of**

Shellpot Creek, the DNREC does not identify where these discharges are emanating from and consequently does not assign an allocation for them. Groundwater discharges are not part of the MS4 permit covering New Castle County, because they are a result of subsurface flows not overland surface flows. The DNREC should have identified these discharges, including their contribution to the nutrient pollution load entering the watershed, and then include an allocation for them in establishing the nutrient TMDL for Shellpot Creek.

Response: The modeling tool used to represent and predict the hydrological cycle and water quality within the Shellpot Creek Watershed considered the ground water load as an integrated component of the nonpoint source load, not independently. As all phases in the hydrological cycle are related, the best management practices required to meet the proposed MS4 WLAs will positively impact ground water quality.

48. The DNREC does not assign a WLA or a LA for the dissolved oxygen consuming compounds contributing to the low dissolved oxygen impairment observed within Shellpot Creek. The DNREC states, “[t]he objective of the TMDL analysis for Shellpot Creek is to estimate the total maximum amount of dissolved oxygen consuming compounds and nutrients that Shellpot Creek can receive without violating water quality standards.” Shellpot TMDL, p. 9. The DNREC does not then identify the total maximum amount of dissolved oxygen consuming compounds that Shellpot Creek can receive without violating the water quality standards and subsequently does not assign WLAs or LAs for these pollutants.

Response: Low dissolved oxygen concentrations in the Shellpot Creek are caused by several parameters including nutrients (nitrogen and phosphorous), algae, biochemical oxygen demand (BOD), and fluxes from sediment. All of these factors are considered in the TMDL analysis for the Shellpot Creek. This analysis shows that among the above factors, nutrients are the primary cause of low dissolved oxygen levels in the stream; hence, controlling nutrients is the most effective management action to ensure attainment of water quality standards in the Shellpot Creek. In addition, any best management practices utilized to control nutrient loading into the Shellpot Creek will directly and indirectly result in the control of the other oxygen consuming substances.

49. The DNREC does not provide a map to show its break down of Shellpot Creek into “four ranges: the first, second, third and fourth quartile.” Shellpot TMDL, p. 29. This is important because the DNREC is allocating its proposed 77% reduction in the bacteria loading among these quartiles. Shellpot TMDL, p. 29. The DNREC needs to define these four quartiles, so as to fulfill the public participation regulatory requirement. The public may not adequately participate in the TMDL process if they are not provided a map defining the quartiles, to assess the logic of the DNREC=s proposed bacteria loading allocations.

Response: Please see response to comment number 23.

50. The DNREC states, “daily enterococci loading were estimated at each of the flow quartiles.” Shellpot TMDL, p. 30. The DNREC does not explain how they estimated

the bacteria loading for each of the quartiles. The DNREC needs to provide an explanation as to how they calculated the estimated loading rates for the quartiles.

Response: Please see response to comment number 24.

51. The DNREC does not provide any description in how they intend to attain the overall 77% reduction in bacteria loading, nor does the DNREC indicate how they intend to reduce the bacteria loading from CSO 31. The DNREC does not provide an implementation schedule or a provision for follow-up monitoring in regards to the proposed bacteria TMDL. As indicated below, the DNREC does not provide a reasonable assurance discussion regarding whether the bacteria TMDL can be met. The bacteria TMDL is therefore inadequate.

Response: Please see response to comment numbers 1, 2, 27, 28 and 33.

52. In this section the DNREC offers its rationale why they believe the Shellpot TMDL is adequate under the current TMDL regulations. This section does not discuss the proposed bacteria TMDL in reference to the regulatory requirements. Shellpot TMDL, pp. 33-34. The DNREC should include its proposed bacteria TMDL within the discussion presented in section 6.0, as to whether the proposed bacteria TMDL meets the regulatory requirements.

Response: The TMDLs Analysis for Shellpot Creek, Delaware report has been updated to clarify that Section 6.0 refers to all the requirements in the TMDL for both nutrients and bacteria.

53. Section 1313 (d)(1)(c) of the CWA states, “[e]ach State shall establish . . . the total maximum daily load . . . at a level necessary to implement the applicable water quality standards with seasonal variations and a *margin of safety* which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. 33 U.S.C. § 1313(d)(1)(c), emphasis added. “There are two basic methods for incorporating the MOS . . . [i]mplicitly incorporate the MOS using conservative model assumptions to develop allocations. In many cases, the MOS is incorporated implicitly. In these cases, the conservative assumptions that account for the MOS should be identified.”⁶

The implicit margin of safety is not adequate because the DNREC does not identify all of the conservative assumptions used to construct the nutrients model. The DNREC states, [t]he Shellpot Creek Qual2E model was calibrated using conservative assumptions regarding reaction rates, pollutant loads, and other environmental conditions.” Shellpot TMDL, pp. 28, 30. A complete identification of the conservative assumptions, including the “other environmental conditions” is needed to meet the regulatory implicit MOS requirement. This is especially so, because in apparent contradiction to the conservative assumption statement, the DNREC states in regard to the nutrients model, Athe assigned phosphorous concentration of surface runoffs was reduced and dissolved oxygen concentration was increased based on observed concentrations at monitoring sites.” Shellpot TMDL, p. 17.

Response: Several conservative assumptions were made during development of the Shellpot Creek Qual2E Model. These conservative assumptions included but are not limited to: 1) choosing a conservative option for estimating oxygen reaeration rate, 2) applying a conservative value for sediment oxygen demand, and 3) considering simultaneous occurrence of critical environmental conditions (such as low stream flow and high water temperature). Since the above conservative assumptions were made during development of the Shellpot Creek Qual2E model, DNREC believes the use of an implicit margin of safety is justifiable.

With regard to adjustment of phosphorous concentration of surface runoffs and incremental flow for the Shellpot Creek, appropriate adjustments were made after a careful review of instream water quality data of the Shellpot Creek.

54. In addition, the DNREC does not provide a discussion of whether a margin of safety was incorporated or even considered in the construction of the bacteria TMDL. Shellpot TMDL, pp. 29-31, 34.

Response: Please see response to comment number 30.

55. Contrary to the DNREC contentions, the public participation regulatory requirement for the TMDL process requires more than holding work shops and public hearings. The public at large and stakeholders cannot always attend these functions scheduled by the DNREC. The TMDL analysis must stand on its own, to be read at the convenience of its intended audience, within the designated time frame. In this regard the Shellpot TMDL is insufficient as to the public participation requirement. The Shellpot TMDL contain incorrect dates, an inadequate two sentence source assessment section, contradictory statements as to the objectives and scope of the TMDL proposals and is lacking overall in its supporting documentation, specifically the proposal for the bacteria TMDL. The Shellpot TMDL is the equivalent to a magician pulling a rabbit out of his hat, without giving the audience the common courtesy of inspecting the hat prior to and after the appearance of the rabbit. The Shellpot TMDL does not meet the public participation regulatory requirement because the document standing alone does not support its conclusions and proposals.

Response: This comment does not address any specific article(s) of the proposed TMDL regulation.

DNREC has adhered to and in some areas exceeded the legal requirements of the regulatory development process. DNREC made a significant effort to provide ample opportunity for public participation and comment for the proposed Shellpot Creek TMDLs. The availability of the draft TMDL report was announced to the public through newspaper notices and Department's News Releases. The draft TMDL report was posted on Department's web site in the beginning of June, 2005 and was presented and discussed with the public during a public workshop on June 15, 2005. All comments received during and after the workshop were addressed and the TMDL report was updated based on comments received. Furthermore, a public hearing was held on September 7, 2005. Again, DNREC has addressed all comments received from the public during the public comment period and has updated the TMDL technical documents accordingly.

Also, please see responses to comment numbers 38, 39, 40, 41, and 42.

56. The Shellpot TMDL does contain reasonable assurances that the proposed TMDLs can be met. This is so because the DNREC does not provide any indication that they currently have a strategy to implement the TMDL proposals. The DNREC promises to, “in association with local citizens groups and other affected parties, will develop a Pollution Control Strategy to implement the requirements of the proposed Shellpot Creek TMDL Regulation.” Shellpot TMDL, p. 34. The DNREC does not provide an implementation schedule or provisions for follow-up monitoring. On the DNREC web site, in the “TMDL Information Center”⁷, the link to the “Delaware’s Tributary Action Teams” web page which contains information as to the development of pollution control strategies to implement approved TMDLs is a dead link. The proposed TMDLs Shellpot Creek are therefore inadequate because they do not provide a reasonable assurance that the TMDLs can be met.

Response: As stated earlier, following adoption of the proposed TMDLs, a tributary strategy team will be formed for the Shellpot Creek watershed. The team will develop a Pollution Control Strategy and schedule for implementing the requirements of the TMDLs.

With regard to follow-up monitoring, please refer to the responses to comments number 1 and number 2. In addition, DNREC conducts comprehensive monitoring of all the State’s surface waters (including Shellpot Creek) and will continue this effort in the future. Data collected for the Shellpot Creek will be evaluated routinely to assess water quality conditions and monitor progress of TMDL implementation.

With regard to “not functional” link from the “TMDL Information Center” to the “Delaware’s Tributary Action Team” web page, the link has been corrected. However, it should be noted that the Delaware Tributary Action Team web page can be accessed through several other links within DNREC’s web site.

MEMORANDUM

TO: Robert P. Haynes, Esquire
Hearing Officer, Office of the Secretary

FROM: Hassan Mirsajadi

THROUGH: Brad L. Smith
John W. Schneider

DATE: November 7, 2005

Section 3.01 SUBJECT: Division of Water Resources' Supplemental Response

Per the questions contained in your e-mail message of October 14, 2005, the Division of Water Resources provides the following supplemental responses:

1. Adoption of the Mid-Atlantic Environmental Law Center's comments by the Secretary would require the Department to conduct additional monitoring and collect additional site-specific data. This will result in a significant time delay in adopting the proposed TMDLs for the Naamans and Shellpot Creek watersheds. At the same time, we do not believe that the collection of these additional data would result in substantial changes to the proposed regulations. This is because prior to developing water quality models for the Shellpot and Naamans Creek watersheds and drafting proposed TMDLs, the Division implemented a comprehensive, multi-year, monitoring plan to collect site-specific data for the critical parameters needed for the water quality modeling study. For the remaining (secondary) parameters, the Division used an acceptable and commonly practiced approach for estimating their values by using data from neighboring watersheds, literature values, and/or best professional judgment. This approach generally produces very reasonable values for the parameters of interest. Therefore, we believe that the collection of additional site-specific data for these secondary parameters, as requested by MAELC, would not produce significantly different values than those already used in the models, would not change the results of the modeling study, and would not result in substantial changes to the proposed TMDL regulations.
2. Based on our best estimates, the collection of additional site-specific data requested by MAELC and incorporating them into the Shellpot Creek and Naamans Creek water quality models will be time consuming and very costly. Implementation of the MAELC comments would require a significant amount of time to:
 - h) Plan and design a monitoring plan and develop a monitoring protocol;
 - i) Develop a budget and secure funding for implementing the monitoring plan;

- j) Coordinate with other agencies and research institutions to implement the monitoring plan;
- k) Collect site-specific data for at least one year;
- l) Analyze the collected data;
- m) Incorporate the collected data into the models; and
- n) Reevaluate the adequacy of the proposed TMDLs considering the additional data.

As indicated in the response to question 1, we do not expect the collection of additional data to result in substantial changes to the proposed TMDL regulations.

- 3. Please note that, as required by the Consent Decree and Settlement Agreement in the case of *ALS v. EPA* (Civil NO. 96-591, D. Delaware), if Delaware fails to establish the TMDLs for the Shellpot Creek and Naamans Creek by December 15, 2005, then EPA shall establish TMDLs for the above two watersheds by the said date. Considering the fact that EPA has not objected to the Division's water quality models and proposed TMDLs for the Shellpot and Naamans Creek, we believe that if the Department fails to adopt the TMDL regulations by December 15, 2005, then the EPA would adopt the same TMDLs as federal TMDLs.
- 4. Finally, as it was stated in the Division's response of October 4, 2005 to MAELC's comments, although the Division does not disagree with MAELC's position that it is better to collect site-specific data for all parameters used in a water quality modeling study, we believe the collection of site-specific data for each and every parameter is cost prohibitive, would cause unmanageable time constraints, and most importantly, is unnecessary.

Please do not hesitate to contact us if you have any questions about these responses.

Appendix B
Regulations Recommended to be adopted

Department of Natural Resources and Environmental Control

Division of Water Resources

Statutory authority: 7 Delaware Code, Chapter 60

Total Maximum Daily Loads (TMDLs) for Naamans Creek, Delaware

A. Introduction and Background

Water quality monitoring performed by the Department of Natural Resources and Environmental Control (DNREC) has shown that Naamans Creek is impaired by high levels of bacteria and elevated levels of the nutrients nitrogen and phosphorous, and that the designated uses are not fully supported by water quality in the stream.

Section 303(d) of the Federal Clean Water Act (CWA) requires states to develop a list (303(d) List) of waterbodies for which existing pollution control activities are not sufficient to attain applicable water quality criteria and to develop Total Maximum Daily Loads (TMDLs) for pollutants or stressors causing the impairment. A TMDL sets a limit on the amount of a pollutant that can be discharged into a waterbody and still protect water quality. TMDLs are composed of three components, including Waste Load Allocations (WLAs) for point source discharges, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS).

DNREC listed the Naamans Creek on several of the State's 303(d) Lists and proposes the following Total Maximum Daily Load regulation for nitrogen, phosphorous, and Enterococcus bacteria.

B. Total Maximum Daily Loads (TMDLs) Regulation for Naamans Creek, Delaware

- Article 1. The nonpoint source nitrogen load shall be capped at the 2000-2004 baseline level. This shall result in a yearly-average total nitrogen load of 228 pounds per day.
- Article 2. The nonpoint source phosphorous load shall be capped at the 2000-2004 baseline level. This shall result in a yearly-average total phosphorous load of 13 pounds per day.
- Article 3. The nonpoint source bacteria load shall be reduced by 78%. This shall result in reducing a yearly-mean bacteria load from 5.8E+10 CFU per day to 1.6E+10 CFU per day.

- Article 4. Based upon water quality model runs and assuming implementation of reductions identified by Articles 1 through 3, DNREC has determined that, with an adequate margin of safety, water quality standards will be met in Naamans Creek.
- Article 5. Implementation of this TMDL Regulation shall be achieved through development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with a Naamans Creek Tributary Action Team, other stakeholders, and the public.

Department of Natural Resources and Environmental Control

Division of Water Resources

Statutory authority: 7 Delaware Code, Chapter 60

Total Maximum Daily Loads (TMDLs) for Shellpot Creek, Delaware

A. Introduction and Background

Water quality monitoring performed by the Department of Natural Resources and Environmental Control (DNREC) has shown that the Shellpot Creek is impaired by high levels of bacteria and elevated levels of the nutrients nitrogen and phosphorous, and that the designated uses are not fully supported by water quality in the stream.

Section 303(d) of the Federal Clean Water Act (CWA) requires states to develop a list (303(d) List) of waterbodies for which existing pollution control activities are not sufficient to attain applicable water quality criteria and to develop Total Maximum Daily Loads (TMDLs) for pollutants or stressors causing the impairment. A TMDL sets a limit on the amount of a pollutant that can be discharged into a waterbody and still protect water quality. TMDLs are composed of three components, including Waste Load Allocations (WLAs) for point source discharges, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS).

DNREC listed Shellpot Creek on several of the State's 303(d) Lists and proposes the following Total Maximum Daily Load regulation for nitrogen, phosphorous and Enterococcus bacteria.

B. Total Maximum Daily Loads (TMDLs) Regulation for the Shellpot Creek, Delaware

- Article 1. The nonpoint source nitrogen load from the area south of Business Route 13 shall be reduced by 35% (from the 2000-2003 baseline). This shall result in reducing the yearly-average total nitrogen load from 19.2 pounds per day to 12.5 pounds per day.
- Article 2. The nonpoint source nitrogen load from the area north of Business Route 13 shall be capped at the 2000-2003 baseline level. This shall result in a yearly-average total nitrogen load of 89.4 pounds per day.
- Article 3. The nonpoint source phosphorous load from the area south of Business Route 13 shall be reduced by 35% (from the 2000-2003 baseline). This shall result in reducing the yearly-average total phosphorous load from 2.0 pounds per day to 1.3 pound per day.
- Article 4. The nonpoint source phosphorous load from the area north of Business Route 13 shall be capped at the 2000-2003 baseline level. This shall result in a yearly-average total phosphorous load of 5.7 pounds per day.

- Article 5. The nonpoint source bacteria load shall be reduced by 74% from the 1998-2004 baseline level. This shall result in reducing a yearly-mean bacteria load from 3.7E+10 CFU per day to 9.0E+9 CFU per day.
- Article 6. The bacteria load from Wilmington CSO 31 shall be reduced by 28% from the 1998-2004 baseline level. This shall result in reducing a yearly-mean bacteria load from 5.4E+10 CFU per day to 3.9E+10 CFU per day.
- Article 7. Based upon water quality model runs and assuming implementation of reductions identified by Articles 1 through 6, DNREC has determined that, with an adequate margin of safety, water quality standards will be met in Shellpot Creek.
- Article 8. Implementation of this TMDLs Regulation shall be achieved through development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with a Shellpot Creek Tributary Action Team, other stakeholders, and the public.