



Final Regulation Agency Background Document

Agency name	State Water Control Board
Virginia Administrative Code (VAC) citation	9VAC25-720
Regulation title	Water Quality Management Planning Regulation
Action title	Amend Nutrient Waste Load Allocations in Section 720-50.C. (Potomac, Shenandoah River Basin) for two facilities: 1. Frederick-Winchester S.A.-Opequon WRF (VPDES #VA0065552) 2. Merck WWTP (VPDES #VA0002178)
Date this document prepared	May 7, 2009

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Orders 36 (2006) and 58 (1999), and the *Virginia Register Form, Style, and Procedure Manual*.

Brief summary

Please provide a brief summary (no more than 2 short paragraphs) of the proposed new regulation, proposed amendments to the existing regulation, or the regulation proposed to be repealed. Alert the reader to all substantive matters or changes. If applicable, generally describe the existing regulation. Also, please include a brief description of changes to the regulation from publication of the proposed regulation to the final regulation.

The proposal would amend Nutrient Waste Load Allocations in the Water Quality Management Planning Regulation, 9 VAC 25-720-50.C. (Potomac, Shenandoah River Basin), to provide increases for total nitrogen (TN) and total phosphorus (TP) for two facilities:

1. Frederick-Winchester S.A. (FWSA) - Opequon WRF (VPDES #VA0065552).
2. Merck WWTP (VPDES #VA0002178).

The final amendments are modified from the proposed as follows:

1. The allocation increase for FWSA - Opequon was denied.
2. The allocation for Merck WWTP was not changed in the allocation table. However, a footnote was added which among other things granted an allocation increase effective January 1, 2011.

Statement of final agency action

Please provide a statement of the final action taken by the agency including (1) the date the action was taken, (2) the name of the agency taking the action, and (3) the title of the regulation.

At the December 2008 Board meeting, the Board deferred action on the proposed amendments for Merck and disapproved the proposed amendments for FWSA-Opequon. After the meeting, Department staff met several times with representatives of Merck and then later with interested stakeholders to review various options and try to develop a compromise that would address stakeholder concerns as well as provide Merck the compliance certainty needed to conduct business. At the April 2009 meeting, the Board considered the revised recommendation and additional comments by Merck and several stakeholders and adopted the final amendments. Also at the April 2009 meeting, the Board received information from FWSA in response to language in the 2009 Appropriation Act and again, disapproved the proposed amendments.

Legal basis

Please identify the state and/or federal legal authority to promulgate this proposed regulation, including (1) the most relevant law and/or regulation, including Code of Virginia citation and General Assembly chapter numbers, if applicable, and (2) promulgating entity, i.e., agency, board, or person. Describe the legal authority and the extent to which the authority is mandatory or discretionary.

State mandate in § 62.1-44.15(10) of the Code of Virginia is the source of legal authority identified to promulgate these amendments. The promulgating entity is the State Water Control Board.

The scope and purpose of the State Water Control Law is to protect and to restore the quality of state waters, to safeguard the clean waters from pollution, to prevent and to reduce pollution and to promote water conservation. The State Water Control Law (Code of Virginia) at § 62.1-44.15(10) mandates the Board to adopt such regulations as it deems necessary to enforce the general water quality management program of the Board in all or part of the Commonwealth. In addition, § 62.1-44.15(14) requires the Board to establish requirements for the treatment of sewage, industrial wastes and other wastes that are consistent with the purposes of this chapter. Setting the specific effluent limits needed to meet the water quality goals is within the discretion of the Board.

The correlation between the regulatory action and the legal authority identified above is that the amendments being considered are modifications of the current requirements for the treatment of wastewater that will contribute to the protection of Virginia's water quality. State Water Control Law (Code of Virginia) web site: <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15>.

Purpose

Please explain the need for the new or amended regulation. Describe the rationale or justification of the proposed regulatory action. Detail the specific reasons it is essential to protect the health, safety or welfare of citizens. Discuss the goals of the proposal and the problems the proposal is intended to solve.

Necessary and appropriate nutrient allocations are essential to protect the health, safety and welfare of citizens by ensuring protection of water quality in the Chesapeake Bay. The purpose of the regulatory

action was to amend TN and TP waste load allocations (WLAs) in 9 VAC 25-720 for Merck for the following reasons:

- Merck contended in their January 2007 petition for rulemaking, and demonstrated through pilot treatment studies and engineering analyses, that the current WLAs are not technically feasible to achieve. The petition asked for increased WLAs based on discharge levels that Merck claims are technically feasible to achieve with Biological Nutrient Removal technology. Based on a design flow of 1.2 million gallons per day (MGD) for internal outfall 101 (process wastewater only), the facility's current nutrient allocations are 14,619 lbs/yr TN (based on an annual average concentration of 4.0 mg/L) and 1,096 lbs/yr TP (based on an annual average concentration of 0.30 mg/L). Merck requested the WLAs be revised to 43,835 lb/yr (29,216 lb/yr increase; based on an annual average concentration of 12.0 mg/L) and 4,384 lb/year (3,288 lb/yr increase; based on an annual average concentration of 1.20 mg/L).

Substance

Please identify and explain the new substantive provisions, the substantive changes to existing sections, or both where appropriate. A more detailed discussion is required under the "All changes made in this regulatory action" section.

The final amendments add a footnote to the listing for Merck-Stonewall in subsection C which states that: (a) on January 1, 2011, the following waste load allocations [WLAs] are effective and supersede the existing WLAs: total nitrogen of 43,835 lbs/yr and total phosphorus of 4,384 lbs/yr; (b) waste load allocations will be reviewed and possibly reduced based on "full-scale" results showing the optimal treatment capability of the 4-stage Bardenpho technology at this facility, consistent with the level of effort by other dischargers in the region. The "full scale" evaluation will be completed by December 31, 2011, and the results submitted to DEQ for review and subsequent Board action; (c) in any year when credits are available after all other exchanges within the Shenandoah-Potomac River Basin are completed in accordance with §62.1-44.19:18 of the Code of Virginia, Merck shall acquire credits for total nitrogen discharged in excess of 14,619 lbs/yr and total phosphorus discharged in excess of 1,096 lbs/year; and, (d) the allocations are not transferable and compliance credits are only generated if discharged loads are less than the loads identified in paragraph (c).

Issues

Please identify the issues associated with the proposed regulatory action, including:

- 1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions;*
- 2) the primary advantages and disadvantages to the agency or the Commonwealth; and*
- 3) other pertinent matters of interest to the regulated community, government officials, and the public.*

If there are no disadvantages to the public or the Commonwealth, please indicate.

The public will benefit, as the net effect of these amendments is intended to maintain the existing aggregate nutrient waste load allocations in the Shenandoah-Potomac basin (i.e., no net increase in the amounts of discharged nitrogen and phosphorus above the current point source waste load allocations). In addition to the amendment cited above, the Board authorized staff to initiate a rulemaking to reduce or remove unused allocations of other facilities within the Shenandoah-Potomac basin, preferably in the area of Merck's discharge, to offset the needed increased allocations for Merck due to the technological limitations of treatment. This, in turn, will aid in water quality restoration in the Bay and its tributary rivers, and assist in meeting the water quality standards necessary for protection of the living resources that

inhabit the Bay. Merck will benefit, being able to achieve compliance with technically feasible nutrient discharge limitations. There is no disadvantage to the agency or the Commonwealth that will result from the adoption of these amendments.

Changes made since the proposed stage

Please describe all changes made to the text of the proposed regulation since the publication of the proposed stage. For the Registrar’s office, please put an asterisk next to any substantive changes.

Section number	Requirement at proposed stage	What has changed	Rationale for change
50	1) For FWSA-Opequon WRF (VA0065552): <ul style="list-style-type: none"> • Add footnote reference “(10)” after Facility Name. • Delete the TN waste load allocation figure of “102,331”, and replace with “115,122”. • Delete the TP waste load allocation figure of “7,675”, and replace with “11,506”. • Add Footnote (10): “Opequon WRF – waste load allocations (WLAs) based on a design flow of 12.6 MGD. If plant is not certified to operate at 12.6 MGD design flow by 12/31/10, the WLAs will decrease to TN = 102,331 lbs/yr; TP = 7,675 lbs/yr, based on a design flow of 8.4 MGD.” 	The proposed amendments were not approved by the Board.	1. This change is based primarily on the fact that FWSA did not pursue the increased WLAs under the original rulemaking adopted by the Board in 2005. Plants actively involved in expansion at that time, with a “reasonable assurance” that a Certificate to Operate would be secured by 12/31/10, were given conditional allocations for the higher design flow. This included the Authority’s other facility, Parkins Mill STP, which was assigned WLAs based on an expanded design flow of 5.0 MGD. Instead, FWSA contended that Opequon’s design flow for allocation purposes should account for the larger sizing (12.6 MGD) of just the biological treatment basins, or be the highest flow tier in their discharge permit (winter, wet-weather tier of 16 MGD), both of which were disallowed by the agency. Subsequent to Board adoption of the nutrient WLAs in 9 VAC 25-720, FWSA petitioned for increased allocations based on their plans to undertake the expansion needed to get the full plant rating up to 12.6 MGD by December 31, 2010. There is the additional concern about approving increased WLAs based on a plant expansion since the Shenandoah-Potomac basin is already estimated to be “over-

			<p>allocated” for nitrogen, and further WLA increases should be avoided when possible to aid in meeting and maintaining water quality standards. Further, the Authority has the capability to meet its “bubbled” allocation for the combined, expanded design flow of their facilities using the Nutrient Credit Exchange Program and available technology.</p>
<p>50</p>	<p>2) For Merck (VA0002178):</p> <ul style="list-style-type: none"> • Add footnote reference “(11)” after Facility Name. • Delete the TN waste load allocation figure of “14,619”, and replace with “43,835”. • Delete the TP waste load allocation figure of “1,096”, and replace with “4,384”. • Add Footnote (11): “Merck-Stonewall – waste load allocations will be reviewed and possibly modified based on “full-scale” results showing the treatment capability of the 4-stage Bardenpho technology at this facility.” 	<ul style="list-style-type: none"> ▪ Footnote reference changed to (10) ▪ TN waste load allocation figure not increased. ▪ TP waste load allocation figure not increased. ▪ Added and revised Footnote (10): <u>(10) Merck-Stonewall – (a) on January 1, 2011, the following waste load allocations [WLAs] are effective and supersede the existing WLAs: total nitrogen of 43,835 lbs/yr and total phosphorus of 4,384 lbs/yr; (b) waste load allocations will be reviewed and possibly reduced based on “full-scale” results showing the optimal treatment capability of the 4-stage Bardenpho technology at this facility, consistent with the level of effort by other dischargers in the region. The “full scale” evaluation will be completed by December 31, 2011 and the results submitted to DEQ for review and subsequent Board action; (c) in any year when credits are available after all other</u> 	<ul style="list-style-type: none"> ▪ Proposed Footnote (10) for FWSA-Opequon WRF was not approved. ▪ See new Footnote (10). ▪ See new Footnote (10). ▪ The intent is allow time for Merck to negotiate and acquire allocations and have these acquisitions finalized by a change in the Water Quality Management Planning Regulation. This combination is seen as being the best resolution to allow Merck its needed compliance certainty while maintaining the nutrient “cap”, in the interim and over the long term.

		<p><u>exchanges within the Shenandoah-Potomac River Basin are completed in accordance with §62.1-44.19:18 of the Code of Virginia, Merck shall acquire credits for total nitrogen discharged in excess of 14,619 lbs/yr and total phosphorus discharged in excess of 1,096 lbs/year; and (d) the allocations are not transferable and compliance credits are only generated if discharged loads are less than the loads identified in paragraph (c).</u></p>	
	<p>3) For the Potomac-Shenandoah Totals:</p> <ul style="list-style-type: none"> • Delete the TN waste load allocation figure of “5,156,164”, and replace with “5,198,171”. • Delete the TP waste load allocation figure of “246,634”, and replace with “253,753”. 	<ul style="list-style-type: none"> ▪ No changes needed in aggregate TN and TP load allocation figures at this time. 	<ul style="list-style-type: none"> ▪ A subsequent rulemaking authorized by the Board is intended to maintain the existing totals, offsetting the needed increases at Merck, with unused allocations from other facilities within the Shenandoah-Potomac basin.

Public comment

Please summarize all comments received during the public comment period following the publication of the proposed stage, and provide the agency response. If no comment was received, please so indicate.

Summary of comments on the proposed rulemaking:

- **Frederick Winchester Service Authority supports the proposed amendments for the Opequon plant.**
- **Comments opposing the proposal:**
 - Chesapeake Bay Foundation:
 - Violates Clean Water Act and State Water Control Law requiring inclusion of water-quality based effluent limits necessary to meet water quality standards in all VPDES permits.
 - Jeopardizes Bay cleanup; approval would set precedent for all future requests.
 - Exceeds point source cap, contravening the express directives of General Assembly and jeopardizes Virginia’s Bay-cleanup commitment.
 - Nullifies the market-based underpinnings of the credit exchange program.
 - Places further demands on already aggressive nonpoint controls.
 - Proposed delay to address water quality standards concerns under the TMDL is unacceptable.

- Socio-economic benefits of cap-maintenance and value of resources outweigh the biased and unsubstantiated findings in Dept. of Planning & Budget's Economic Impact Analysis. *[NOTE: The EIA stated the benefits likely exceed the costs for all proposed changes, especially regarding the action on the Merck allocations. The EIA went on to state that if the company is forced to be non-compliant, it is possible that Merck will choose to set up a plant elsewhere. A plant closing could cost Virginians jobs and negatively affect economic activity in the region.]*
 - State Water Control Law sets forth other feasible/economical options to meet WLAs, including credit exchange.
 - Also received 431 emails from CBF members and other citizens, opposing amendments for many of the above reasons.
 - Shenandoah Riverkeeper – concerned with inconsistency with applicable regulations, delayed restoration of local water quality and the Bay, and frustrating the basic mechanism of the credit exchange program. Concerned with lost opportunity to improve local conditions in impaired waters affected by fish kills
 - Trout Unlimited - exceeds pollution cap for the Shenandoah-Potomac; we should avoid delay and honor commitments for permanent nutrient pollution caps and fully restore water quality in the Bay and its rivers; we should require Merck and FWSA to find offsets or nutrient credits.
 - VA Watermen's Association – noted extent of impaired waters; that watermen and processors are impacted by an unhealthy Bay and their plight is worsened by new crabbing restrictions.
- **Response to Significant Comments:**
 - Use credit exchange, require offsets – The approach for setting initial WLAs was that each individual discharger could comply with an NRT retrofit at their own facility, using available technology at full design flow, without reliance on credit exchange. Setting Merck's WLAs based on concentrations their "treatability" study has shown aren't achievable is inconsistent with this approach. "Offsets" do not apply to Merck as it is neither a new nor expanding facility. However, FWSA does have the capability to meet its "bubbled" allocation for the combined, expanded design flow of their two facilities using credit exchange and available technology.
 - Basin loading cap for nitrogen already exceeded – Under the proposal recommended for approval, the exceedence above the total basin allocation for nitrogen would increase from about 212,000 pounds to 225,000 pounds (in delivered load). Because of the exceedence, consideration will be given to shifting allocations among nutrient sources in the Shenandoah-Potomac basin, and perhaps even among basins that have the same relative impact on Bay water quality, as we move forward with the Bay TMDL. The importance and magnitude of establishing basin allocations, and assigning sub-allocations to point and non-point sources, cannot be overstated. We are in the relatively early stages of a process that will be completed with EPA's adoption of the Bay TMDL. It should not be surprising to see relatively minor shifts in allocations – some up and some down – as the process unfolds toward establishing a firm "cap" under the TMDL.
 - Amendments will cause loads to increase – The higher allocations for Merck will still result in significant reductions over the prior loads discharged by this facility. Merck's 2007 discharged nitrogen load was about 110,700 pounds; the requested allocation would be almost 66,900 pounds per year lower than the current discharge. In addition, a subsequent rulemaking authorized by the Board is intended to maintain the existing aggregate waste load allocation totals for the basin, offsetting the needed increases at Merck, with unused allocations from other facilities within the Shenandoah-Potomac basin.
 - Merck's technology options not fully explored – Most Shenandoah area dischargers are installing tertiary filtration to meet nutrient limits, especially for phosphorus control. Merck did not immediately plan to test filtration in their full-scale pilot project, since they have an additional clarifier available for the treatment train. Merck wants to evaluate the concentration levels and form of phosphorus that result with this additional unit on-line before looking into tertiary filtration.

Other valley region dischargers don't have surplus clarifiers and that's why they're installing effluent filtration now.

At the December 2008 Board meeting, the Board deferred action on the proposed amendments for Merck and disapproved the proposed amendments for FWSA-Opequon. After the meeting, Department staff met several times with representatives of Merck and then later with interested stakeholders to review various options and try to develop a compromise that would address stakeholder concerns as well as provide Merck the compliance certainty needed to conduct business. At the April 2009 meeting, the Board considered the revised recommendation and additional comments by Merck and several stakeholders and adopted the final amendments. Also at the April 2009 meeting, the Board received information from FWSA in response to language in the 2009 Appropriation Act and again, disapproved the proposed amendments.

All changes made in this regulatory action

Please detail all changes that are being proposed and the consequences of the proposed changes. Detail new provisions and/or all changes to existing sections.

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change and rationale				
50		Merck-Stonewall <table border="1" data-bbox="505 1056 878 1213"> <thead> <tr> <th data-bbox="505 1056 667 1213">Total Nitrogen WLA (lbs/yr)</th> <th data-bbox="667 1056 878 1213">Total Phosphorus WLA (lbs/yr)</th> </tr> </thead> <tbody> <tr> <td data-bbox="505 1182 667 1213">14,619</td> <td data-bbox="667 1182 878 1213">1,096</td> </tr> </tbody> </table>	Total Nitrogen WLA (lbs/yr)	Total Phosphorus WLA (lbs/yr)	14,619	1,096	Addition of the following note: Notes: <u>(10) Merck-Stonewall – (a) on January 1, 2011, the following waste load allocations [WLAs] are effective and supersede the existing WLAs: total nitrogen of 43,835 lbs/yr and total phosphorus of 4,384 lbs/yr; (b) waste load allocations will be reviewed and possibly reduced based on “full-scale” results showing the optimal treatment capability of the 4-stage Bardenpho technology at this facility, consistent with the level of effort by other dischargers in the region. The “full scale” evaluation will be completed by December 31, 2011 and the results submitted to DEQ for review and subsequent Board action; (c) in any year when credits are available after all other exchanges within the Shenandoah-Potomac River Basin are completed in accordance with §62.1-44.19:18 of the Code of Virginia, Merck shall acquire credits for total nitrogen discharged in excess of 14,619 lbs/yr and total phosphorus discharged in excess of 1,096 lbs/year; and (d) the allocations are not transferable and compliance credits are only generated if discharged loads are less than the loads identified in paragraph (c).</u>
Total Nitrogen WLA (lbs/yr)	Total Phosphorus WLA (lbs/yr)						
14,619	1,096						

			<p>In addition the Board directed that staff initiate a rulemaking to reduce or remove unused allocations of other facilities within the Shenandoah-Potomac River Basin, preferably in the area of Merck's discharge, to offset the needed increased nitrogen and phosphorus allocations for Merck due to the technological limitations of treatment. The final amendment, along with the direction to staff to initiate a second rulemaking, will allow Merck its needed compliance certainty while maintaining the nutrient "cap", in the interim and over the long term.</p>
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Enter any other statement here

Regulatory flexibility analysis

Please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5) the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

A Regulatory Flexibility Analysis was presented in November 2005, when nutrient waste load allocations were added to 9 VAC 25-720 as a Final Regulation. The findings and conclusions presented in that document are unchanged by these proposed amendments, and no additional analysis is warranted.

Family impact

Please assess the impact of the proposed regulatory action on the institution of the family and family stability including to what extent the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one's spouse, and one's children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.

The direct impact resulting from limitations on the discharge of total nitrogen and total phosphorus from wastewater treatment plants is for the protection of public health and safety. There is no direct impact on the institution of the family and family stability.