



COMMONWEALTH of VIRGINIA

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October 14, 2009

Mr. Greg Voigt
US EPA Region III TMDL Coordinator
USEPA REGION 3 – 3WP12
1650 Arch Street
Philadelphia, PA 19103-2029

RE: Total Maximum Daily Load Modification of the Wasteload Allocation in the Bacteria TMDL for Mountain Run Watershed.

Dear Mr. Voigt,

The purpose of this letter is to submit for EPA approval, modifications to the Mountain Run Fecal Coliform Bacteria Total Maximum Daily Load (TMDL). The Fecal Coliform Bacteria TMDL study for Mountain Run, located in Culpeper, VA, was approved by EPA on 04/27/2001. The TMDL included a Waste Load Allocation (WLA) for all individual VPDES permits that were issued for the Mountain Run watershed at the time of TMDL development. A list of the VPDES permits included in the original TMDL, along with their assigned WLA is found below:

Table 1. VPDES Permits Included in the Original Mountain Run Fecal Coliform Bacteria TMDL.

Permit Number	Facility Name	Maximum Permitted Design Flow (MGD)	Fecal Coliform WLA (cfu/year)
VA0087149	Mt. Dumplin STP	0.300	8.29E+11
VA0062529	Ferguson STP	0.0025	6.90E+09
VA0090212	Mountain Run STP	0.300	8.29E+11
VA0061590	Town of Culpeper WWTP	3.000	8.29E+12
Total WLA			9.95E+12

The Mountain Run Bacteria TMDL was one of the first TMDLs completed in Virginia. At the time of TMDL development, it was not common practice to include an allocation for the future growth of point sources in the watershed. In addition, small facilities covered by the VPDES General Permit for Domestic Sewage Discharges of Less Than or Equal To 1,000 Gallons Per Day were not included in the original TMDL.

DEQ has determined that it is necessary to modify the existing Mountain Run TMDL to include: an allocation for the growth of point sources in the watershed, an allocation for new permits or expanded discharges that were not included

in the original TMDL, address one source discharge location that is being moved to a more downstream location, and include WLAs for point sources in terms of *E. coli* bacteria.

In order to determine the impacts of these changes on the Mountain Run watershed, DEQ staff performed additional HSPF modeling runs using the original model files from the TMDL study. The modeling runs demonstrate that with a reduced limit for Fecal Coliform bacteria for point sources with design flows greater than 10,000 gallons per day (GPD), it is possible to modify the TMDL to include new point sources and a growth allocation for future point sources, and still ensure that the water quality standards are attained.

Below is a table showing the revised WLAs for the Mountain Run TMDL Modification. Facilities with maximum permitted design flows of less than 10,000 GPD were assigned a WLA based on a permit limit of 200 cfu/100mL of Fecal Coliform (126 cfu/100mL of *E. coli*). Facilities with design flows greater than 10,000 GPD were given a WLA based on a lower limit for Fecal Coliform bacteria (55cfu/100mL, corresponding to 39 cfu/100mL of *E. coli*). An allocation for the future growth of point sources was also included in the modification.

Table 2. VPDES Permits Included in the Mountain Run Fecal Coliform Bacteria TMDL Modification.

Permit Number	Facility Name	Maximum Permitted Design Flow (MGD)	Proposed Permit Limit		Fecal Coliform WLA (cfu/year)	E. coli WLA (cfu/year)
			Fecal Coliform (cfu/100mL)	E. coli (cfu/100mL)		
VA0062529 [#]	Ferguson STP	0.0395	200	126	1.09E+11	6.88E+10
VA0061590 [#]	Town of Culpeper WWTP	6.0	55	39	4.56E+12	3.23E+12
VA0090212 [#]	Mountain Run WWTP	2.5	55	39	1.90E+12	1.35E+12
VA0092002 [#]	Greens Corner WWTP	1.5	55	39	1.14E+12	8.08E+11
VA0092452 [#]	Camp Red Arrow WWTP	0.0055	200	126	1.52E+10	9.57E+09
VAG406032	Fyne Wire Specialties Inc.	0.001	200	126	2.76E+09	1.74E+09
VAG406054	Dykes Richard Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406072	Canland Properties LLC	0.001	200	126	2.76E+09	1.74E+09
VAG406096	Jennings Kenneth L Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406128	Hitt Claude T Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406199	Kipp III John R Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406301	Haught Howard L Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406307	Amick Grover Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406321	Perl Family Property	0.001	200	126	2.76E+09	1.74E+09
VAG406324	Breeding Shane Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406341	Stanley Raymond Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406355	Harmon Mildred - Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406356	Wenzel Dorothy G - Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406371	Tyler Alma - Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406408	Clatterbuck Property	0.001	200	126	2.76E+09	1.74E+09
VAG406446	Settle David Property	0.001	200	126	2.76E+09	1.74E+09
VAG406458	Benford Residence	0.001	200	126	2.76E+09	1.74E+09
VAG406471	First Baptist Church of Culpeper	0.001	200	126	2.76E+09	1.74E+09
WLA					7.77E+12	5.50E+12
Future Growth Allocation for Point Sources (Roughly 1.5x the Current WLA)					1.14E+13	8.07E+12
Final WLA Including Growth					1.92E+13	1.36E+13

- Individual VPDES Permits

Note: The permit for Mt. Dumplin STP (VA0087149) was terminated after the original Mountain Run TMDL was approved; an allocation for this permit is not included in the revised WLA calculation.

Figure 1 below shows the locations of the individual VPDES permits included in the revised WLA for Mountain Run.

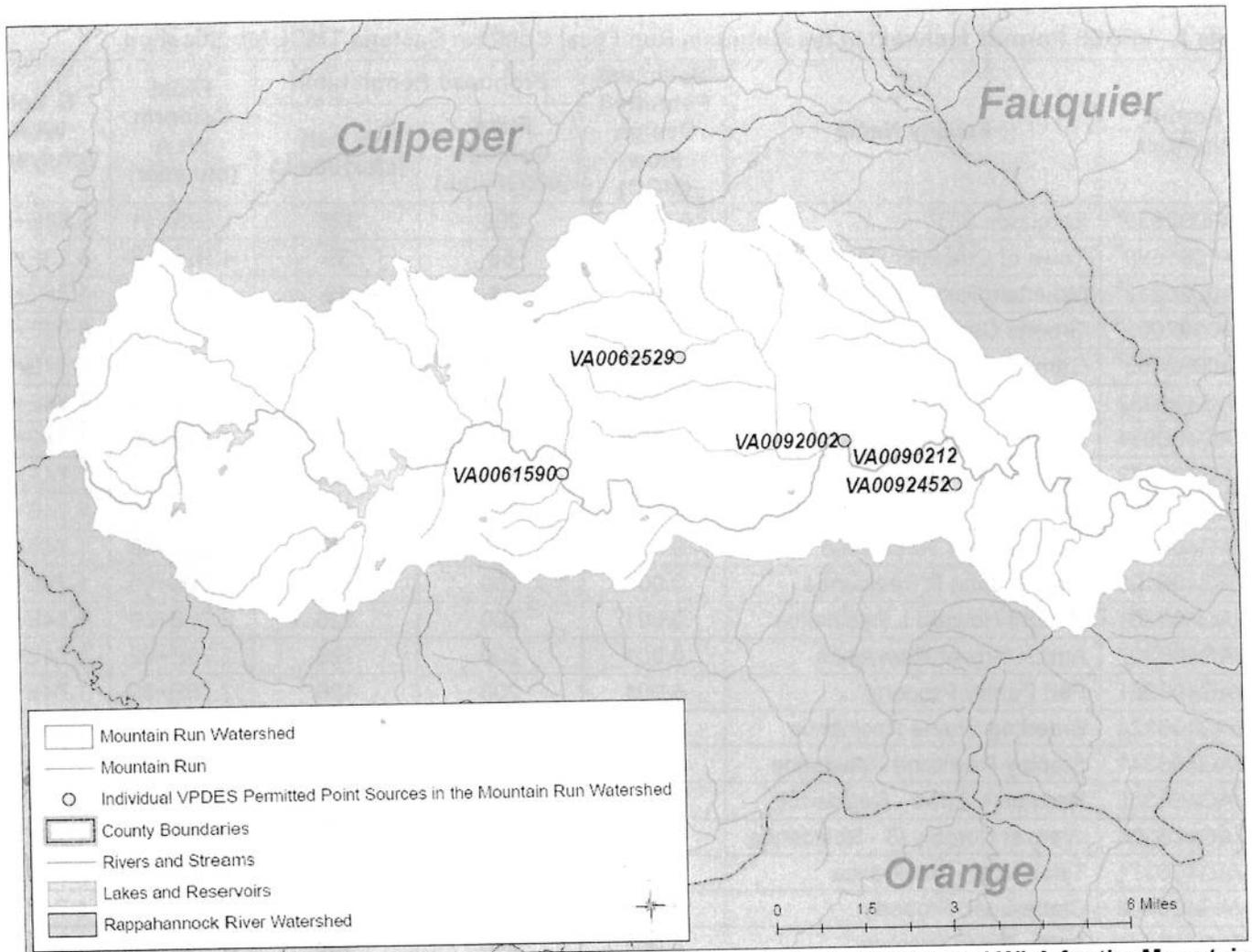


Figure 1. Location of the Individual VPDES Permitted Facilities included in the revised WLA for the Mountain Run Watershed.

The original TMDL equation along with the modified TMDL equation are listed below in Tables 3 and 4, respectively.

Table 3. Original TMDL Equation for Mountain Run (cfu/year of Fecal Coliform).

TMDL	WLA	LA	MOS
9.27E+14	9.95E+12	8.71E+14	4.64E+13

Table 4. Modified TMDL Equation for Mountain Run (cfu/year of Fecal Coliform).

TMDL	WLA	LA	MOS
9.37E+14	1.92E+13	8.71E+14	4.64E+13

Table 5 shows the modified TMDL Equation for Mountain Run in terms of cfu/year of E. coli bacteria. The E. coli values were derived using the Fecal Coliform to E. coli Translator Equation that has been approved by EPA for use in the development of Virginia TMDLs.

Table 5. Modified TMDL Equation for Mountain Run (cfu/year of E. coli).

TMDL	WLA	LA	MOS
5.91E+14	1.36E+13	5.49E+14	2.92E+13

The sum of all changes to the WLA results in an increase of less than 1 percent of the original TMDL (see Equation 1).

Equation 1.

$$(\text{New WLA} - \text{Original WLA}) / \text{Original TMDL} \times 100 = \% \text{ Increase in TMDL}$$

$$(1.92\text{E}+13 - 9.95\text{E}+12) / 9.27\text{E}+14 \times 100 = 0.998\%$$

Finally, below is a chart showing the HSPF modeling results. Model runs revealed that the above listed changes to the WLA do not result in any exceedances of the water quality standard. It should be noted that the additional WLA does not infringe upon the explicit margin of safety included in the original TMDL.

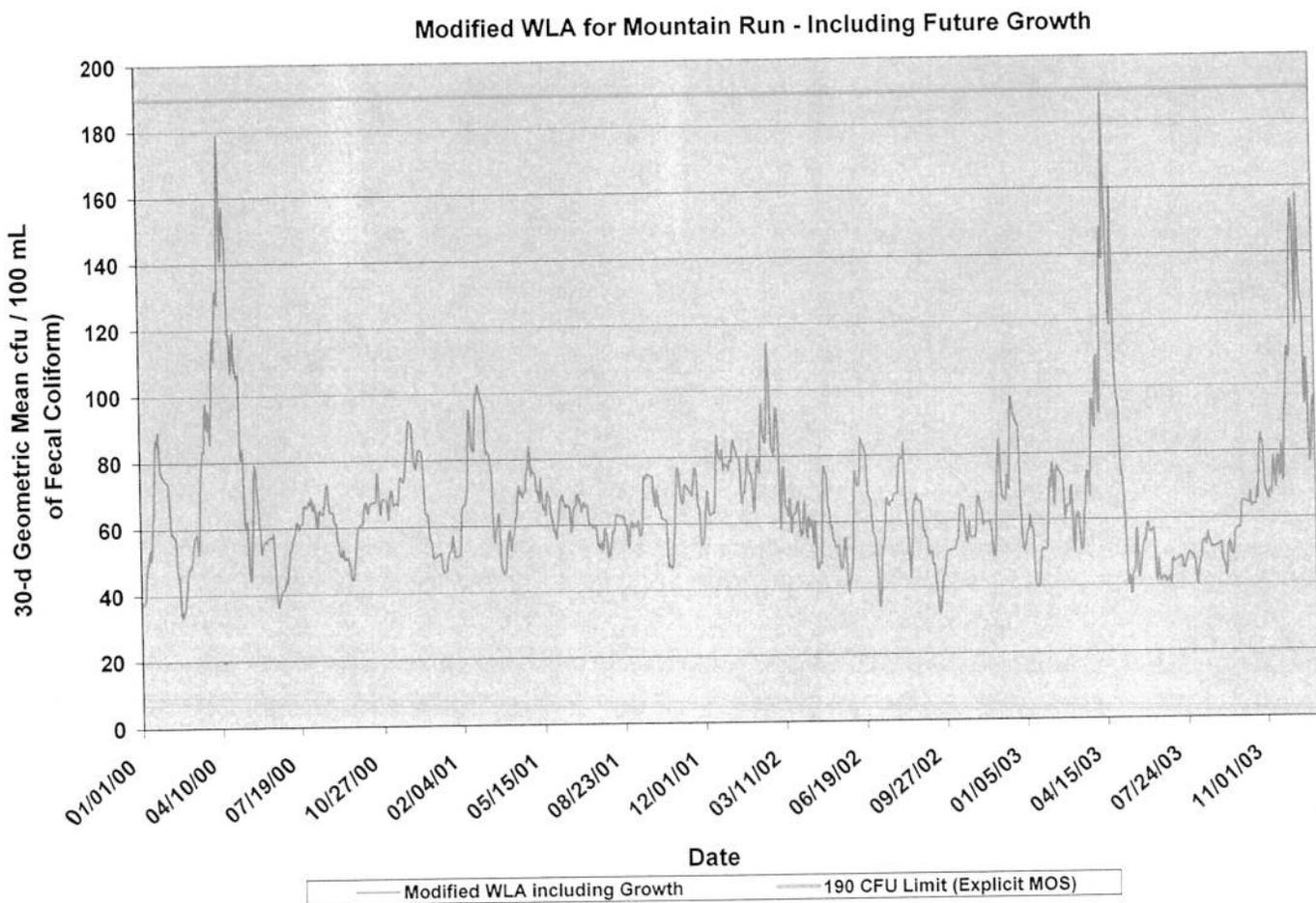
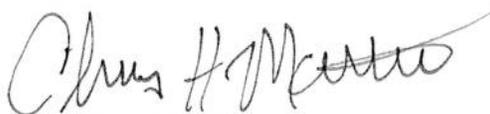


Figure 1. Model run for the Mountain Run TMDL Modification indicating that the revised WLA does not cause an exceedance of the water quality standard, or infringe upon on the explicit Margin of Safety.

This letter will be added as an addendum to the Mountain Run TMDL to indicate that the WLA has been modified.

In accordance with EPA's August 2003 letter to VADEQ, VADEQ hereby requests EPA approval of the proposed modification. If you or your staff has any questions, please contact me at (804) 698-4462.

Sincerely,

A handwritten signature in black ink, appearing to read "Charles H. Martin". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

Charles H. Martin
Environmental Program Manager
Watershed Programs

cc: Jack Frye, VADCR
Sandra Mueller, VADEQ
Katie Conaway, NRO TMDL coordinator
File CO