Veterans Affairs Medical Center (VAMC)
1970 Roanoke Boulevard
Salem, Virginia 24153

Upper Roanoke River
Sediment and Bacteria TMDL Action Plan
2018-2023

PERMIT NUMBER: VAR040050

May 11, 2020

By: Melissa Lanzara, PDG
A. Background Information

Salem Veterans Affairs Medical Center (VAMC) is submitting a TMDL Action Plan for permit years 2018-2023. The VAMC Salem must meet the requirement of the Upper Roanoke River Total Maximum Daily Load (TMDL) according to their Small Municipal Separate Storm Sewer Systems (MS4) permit, Permit Number VAR040050. The permit requires that the VAMC prepare a TMDL Action Plan for review and acceptance by the Virginia Department of Environmental Quality (VaDEQ). This Action Plan was prepared according to the VAMC General VPDES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) permit Part II B – Local TMDL Special Conditions.

The purpose of this action plan is to provide an outline of Best Management Practices (BMP’s) to be implemented over the permit years. The goal is to reduce the pollutants of concern (POCs) allocated to the permittee through their waste load allocation (WLA). This goal is in place to work together to achieve the common goal of keeping state waters acceptable for recreational use such as swimming and fishing.

The Salem VAMC has identified one outfall (Outfall #10) that discharges to the Upper Roanoke River. The Roanoke River originates in southwest Virginia in Montgomery County. The river runs through southcentral Virginia including Salem, VA. The Upper Roanoke River is listed as impaired for sediment and bacteria. The Roanoke River was approved for sediment impairment on May 10, 2006 and bacteria on September 2, 2006.

B. TMDL and Pollutants Causing Impairment

The Implementation Plans were provided by the VaDEQ. According to the “Benthic TMDL Development for the Roanoke River, Virginia” prepared by The Louis Berger Group, INC and dated March 2006 the Roanoke River is impaired for sediment. Biological assessments were conducted on the bottom dwelling (benthic) macroinvertebrates of the Roanoke River. This assessment identified that the Roanoke River was moderately impaired. This finding lead to the identification of which stressors (pollutants) were causing the impairments. Sediment was identified as one of the POCs of benthic macroinvertebrates. Excess sediment accumulates on the bottom of the stream beds and can carry harmful pollutants which causes habitat destruction for benthic macroinvertebrates. The sources of sedimentation have been identified as both non-point and point source pollution. Some of these sources include land...
degradation from urbanization, stream bank erosion, and land-use loading of small MS4s. Section “E” outlines how the Salem VAMC intends to reduce their sediment load to the Roanoke River.

According to the “Bacteria TMDLs for Wilson Creek, Ore Branch and Roanoke River Watersheds, Virginia” prepared by George Mason University and The Louis Berger Group, INC and dated February 2006 the Roanoke River is impaired for Escherichia Coli (E.Coli) because of the state’s violation of fecal coliform bacteria. Some sources outlined to contribute to this impairment are domestic pet waste, livestock waste, and industrial/residential processes. See section “D” for how the Salem VAMC intends to reduce their waste load allocation (WLA) for E.Coli in the Roanoke River.

C. Waste Load Allocation (WLA) and the corresponding percent reduction

An estimate of the annual pollutants of concern (POCs) load from existing sources as of June 30, 2012 were calculated according to the MS4 permit. The POCs identified under the Salem VAMC MS4 permit are bacteria (E. coli) and Benthic (sediment). The Waste Load Allocation (WLA) for E. coli is 7.87E+9 colony forming units per year (cfu/yr) and for Sediment is 9.3 tons/yr. The existing POCs and WLA reductions for this permit cycle were identified as followed:

<table>
<thead>
<tr>
<th>Pollutant of Concern</th>
<th>Waste Load Allocation</th>
<th>Waste Load as of 2012</th>
<th>Required Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. Coli</td>
<td>7.87E+9 cfu/yr</td>
<td>3.11E+9 cfu</td>
<td>None</td>
</tr>
<tr>
<td>Sediment</td>
<td>9.3 tons/yr</td>
<td>12.45 tons</td>
<td>25.3%</td>
</tr>
</tbody>
</table>

These WLA’s were the same from the previous permitting year cycle and were confirmed for this permit cycle in an email from MS4 Coordinator Emma Danz on April 28, 2020.
D. BMP Designed to Reduce Bacteria TMDL

The VAMC plans to meet the required bacteria (E.Coli) reduction by implementing a dog waste management policy. At the VAMC patients, guests, and staff are permitted to bring their service animals when they visit the facility. Service dogs include but are not limited to therapy dogs, hearing and site dogs, and mobility assistance dogs. The VAMC campus grounds are open to patients, guests, and staff during their visits. Animal waste from service dogs that is not picked up has the potential to contribute harmful bacteria and diseases into the environment. Dog waste, if unmanaged can be carried by stormwater to the Roanoke River. Dog waste that is washed to the river could carry E.Coli contributing to the impairment classification of this watershed.

The VAMC proposes to reduce their bacteria load by the following measures:

1. Install dog waste stations with informational signs and disposal baggies.
2. Educate the staff and patients on the importance of disposing of dog waste properly to protect our local waterways.
3. Install additional educational signs near waterways outlining the importance to protect environmentally sensitive areas.
4. Adopt a new policy to maintain dog waste within the campus.
5. Create standard operating procedures to maintain waste bags and refill the stations as necessary.
6. Create a schedule to check the grounds periodically for any waste not disposed of properly.

Please see the table below for a tentative schedule of implementation:

<table>
<thead>
<tr>
<th>Schedule of Implementation</th>
<th>BMP Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>Dog waste stations will be installed around the campus. They will include an informational sign and access to bags to properly dispose of the pet waste.</td>
</tr>
<tr>
<td>2021</td>
<td>Informational brochures will be distributed at events and/or via email educating the staff and patients on proper use of the waste stations.</td>
</tr>
<tr>
<td>2022</td>
<td>Additional educations signs will be installed around the campus focusing on environmentally sensitive areas.</td>
</tr>
<tr>
<td>2023</td>
<td>VAMC policy will be updated with a pet waste disposal policy.</td>
</tr>
<tr>
<td>As needed</td>
<td>Waste receptacles will be emptied and bags will be replenished.</td>
</tr>
<tr>
<td>TBD</td>
<td>A schedule will be created and implemented for grounds staff to maintain any waste that is left unmanaged.</td>
</tr>
</tbody>
</table>
The effectiveness of this BMP will be measured by the following:

1. Counting the number of emails/brochures delivered for information purposes.
2. Providing a means to keep track of the number of bags for pet waste disposal that have been used.
3. Continuing to measure the levels of E.Coli during routine sampling at Outfall #10 in accordance with the MS4 Permit.
4. Creating a procedure to keep track of when grounds personnel inspect the property for unmanaged waste.

E. BMPs Designed to Reduce Sediment TMDL

According to the document received by VaDEQ MS4 Coordinator Emma Danz titled “Chesapeake Bay TMDL Action Plan Guidance 2015” and dated May 18, 2015, street sweeping is an acceptable BMP for sediment reduction.

The Salem VAMC has recently purchased a street sweeper and intends to use this in aiding the removal of sediment from imperious surfaces, such as streets and parking lots, at the facility. Sediment accumulation occurs on the streets from a number of external sources such as cars and organic debris. When this debris is unmanaged it is washed into the storm drains by stormwater. Ensuring that parking lots and streets are swept regularly will help eliminate pollutants (sediment and E.Coli) that are carried to the Roanoke River.

The VAMC intends to implement this BMP by the following measures:

1. Creating a schedule for regular street sweepings outlining priority areas.
2. Providing educational training to the operator, patients, and staff outlining the importance of street sweeping on stormwater management.
3. Creating a preventative maintenance schedule for the street sweeper to ensure it stays operational (i.e. washing and inspection of the broom).
4. Adopting the new schedules and standard operating procedures into the VAMC policies.
Please see the table below for a tentative schedule of implementation:

<table>
<thead>
<tr>
<th>Schedule of Implementation</th>
<th>BMP Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>Create a schedule for street sweeping outlining priority areas</td>
</tr>
<tr>
<td>2021</td>
<td>Focus on educational outreach to operator, staff, and patients via brochures and/or emails.</td>
</tr>
<tr>
<td>2022</td>
<td>Create a preventative maintenance schedule</td>
</tr>
<tr>
<td>2023</td>
<td>Adopting the new schedules into the VAMC policies.</td>
</tr>
</tbody>
</table>

Please note that streets will be swept at a minimum of bi-annually until the street sweeping schedule is created and implemented.

The BMP will be measured for effectiveness by the following:

1. Calculating the reduction of pollutants by miles swept (see chart below).
2. Counting the number of staff and patients that educational outreach and training is provided to.
3. Implementing the preventative maintenance schedule.
4. Evaluation of the maintenance schedule and sweeping schedule for successes/failures.
5. Continuing to measure the levels of sediment during routine sampling at Outfall #10.

The Chesapeake Bay TMDL Action Plan Guidance (Guidance Memo #20-2005) was used to produce total nitrogen (TN) and total phosphorus (TP) reductions through the qualifying street lane approach. The reductions are outlined below.

<table>
<thead>
<tr>
<th>Lane Miles Swept</th>
<th>Impervious Acres</th>
<th>Pre-sweeping annual nutrient load</th>
<th>Pre-sweep baseline load</th>
<th>Reductions from Street Sweeping (lbs/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>9.696969697</td>
<td>TN = 2 lbs/impervious acre/yr</td>
<td>19.39393939</td>
<td>0.775757576</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TP = 15.4 lbs/impervious acre/yr</td>
<td>149.3333333</td>
<td>5.973333333</td>
</tr>
<tr>
<td>Parking Lot sqft</td>
<td>1.259756657</td>
<td>TN = 2 lbs/impervious acre/yr</td>
<td>2.519513315</td>
<td>0.100780533</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TP = 15.4 lbs/impervious acre/yr</td>
<td>19.40025253</td>
<td>0.776010101</td>
</tr>
</tbody>
</table>
Please note these numbers reflect the total impervious surface area at the Salem VAMC that will be swept. The reduction will be higher based on the street sweeping schedule.

F. Public Education and Outreach

In addition to the public outreach and education outlined in the BMPs to reduce sediment and bacteria the Salem VA preforms a number of measures to ensure all current and new staff is up to date on the facilities stormwater efforts.

Employees receive emails and newsletters throughout the permit cycle educating them on stormwater principles and practices. The facility will continue sending out informational materials to employees through an all employee message. These educational newsletters will outline the important of sediment and bacteria reduction in stormwater as well as the methods set forth in this action plan to reduce the pollutants. New employees receive information regarding stormwater pollution prevention practices during their initial orientation.

The facility initiated a facility wide program to mark inlets instructing the public to avoid pouring contaminants in the drains. The project is contracted out with Clean Valley Council which includes a unique stencil designed by a veteran to be painted in a minimum of 10 inlet locations a year. The first 10 were completed in the Fall of 2018 and the next 10 have been contracted to be completed this Spring of 2020.

Environmental Pride Day - Environmental Pride Day is an annual event aimed at reducing the medical center’s impact on the environment. One of the activities involves conducting general cleanup of debris that may be blocking storm drains and removing unserviceable equipment that may have oils and greases that could leak into the stormwater system. The Environmental Pride event is organized by Logistics Service Agency who manages the disposition of all used equipment. Any equipment that cannot be disposed through General Service Administration (GSA) will be recycled or disposed as solid waste. Multiple emails are sent out as an all employee email message reminding them of Environmental Pride Day. The old equipment is given directly to Logistics for disposal.
GEMS Committee - The Salem VAMC has the Green Environmental Management Systems (GEMS) Committee for public participation. This is a multi-disciplinary committee chaired by the Associate Director with 18 members and is tasked with oversight for all environmental programs including stormwater management and pollution prevention. Each meeting has an open forum session and a session to discuss any ethical, patient safety, or employee safety concerns. Any Salem VAMC employee has the right to bring any concern to the committee during these sessions. The minutes from the GEMS Committee are posted on the Safety Service SharePoint so all employees can access them.

G. Public Comment Period

In accordance with the VAMC MS4 General Permit prior to submittal of the action plan required in Part II B 1 the action plan must be posted for public comment for no less than 15 days. The Local TMDL Action Plan was posted to the VA’s public website and an email was distributed to all employees stating where it was located and that it was open to public comment. The posting was located at the Salem VA’s public website at https://www.salem.va.gov/

The plan was open for public comment for the minimum requirement of 15 days.

H. Reporting

In accordance with the MS4 Permit the annual reports submitted each year will include a summary of efforts made to achieve the schedule set out in this document to reduce TMDLs. The Salem VAMC will continue collecting and analyzing storm water for the (TMDL) special conditions for the Upper Roanoke River. Data will be analyzed to determine if BMPs are effectively reducing the waste load allocations (WLA) for the facility. The annual reports will be submitted by October 1 of each permitting year for a summary of the previous year which runs from July 1 – June 30.
Sources

