

MONITORING PLAN

Four “phased” Total Maximum Daily Load (TMDL) reports for impaired streams in southwestern Virginia’s coalfields will be submitted to the U. S. Environmental Protection Agency (EPA) Region III before May 1, 2010. The reports address biological impairments in the Powell River, Levisa Fork River, North and South Fork Pound Rivers, and Bull Creek. As part of the “phased” TMDLs, additional monitoring of the streams will be conducted over the next two years by Virginia’s Department of Mines, Minerals, and Energy (VADMME) and Department of Environmental Quality (VADEQ).

Plans for the monitoring follow. The VADMME and VADEQ will be selecting professional services contractors to assist the agencies with “phased” revisions to the four TMDLs. The contractors will be included in the development of final monitoring plans and approaches. The results of the monitoring will be utilized in the “phased” revisions.

VADMME and VADEQ anticipate monitoring to begin within six months from the date a contractor is selected.

TSS Phased TMDL Monitoring Plan

Statement of Concern

Concerns over the use of SMCRA instream and NPDES monitoring data for TMDL modeling purposes were raised by the Bull Creek TMDL consultant Biological Systems Engineering (BSE) and subsequently by VADEQ and EPA during TMDL development. The primary concern was that due to the alternate effluent limits allowed under 40 CFR 434, storm events over 0.2 inches were not measured. Numerous discussions were held between VADEQ, DMME, EPA, OSM, BSE, and MapTech, Inc (MapTech), the two consultants conducting TMDL models in the southwest Virginia coalfields. DMME requested OSM to conduct an independent review of the precipitation and NPDES sampling conducted for the Bull Creek TMDL. The OSM report concluded *“The actual number of NPDES and NPDES TSS sampling dates and samples consistently exceeds the predicted amounts based on the probabilities. In other words, there are slightly more actual samples collected during precipitation events than would be expected based on the overall probability.”* Additionally, MapTech stated the following in a letter to modelers and forwarded to EPA dated August 13, 2009 regarding the modeling approach for the Powell River TMDL *“The frequency of sample collection when there was no recorded rainfall, 2 to 3 inches of rainfall, or 3.4 to 4 inches of rainfall was slightly lower than the overall frequency of these rainfall events, while the frequency of sample collection in [t]he remaining rainfall regimes was slightly greater than the overall frequency of these rainfall events”* Nevertheless, the doubts remained as to the representative nature of the compliance samples. Therefore, we intend to address the data uncertainties for TSS utilizing the following monitoring plan.

Monitoring Plan for TSS

1. VADMME’s Division of Mined Land Reclamation (DMLR) required on June 1, 2009 that all mining permits with NPDES discharges into impaired watersheds must sample for

TSS when utilizing alternate effluent limits. The data collected will be utilized for determining mining waste loads modeling.

2. Sampling of a stormwater event within the watershed exceeding 2 inches of rainfall will be coordinated by VADEQ and DMLR. DEQ will collect additional TSS data in concert with their ambient monitoring program and DMLR will collect information from coal mining discharges and instream locations.
3. DMLR will utilize rainfall data from IFLOWS and NCDC to compare with instream and NPDES sampling events coalfield wide in order to ascertain whether or not sampling occurs during storm events greater than 0.2 inches.
4. DMLR will solicit input from modelers to determine if any additional data are needed.

TDS Phased TMDL Monitoring Plan

Statement of Concern

Modeling for the Bull Creek and South Fork Pound River TMDLs included background and mining contributions of TDS in the same load allocation, thus increasing the TDS loading reported for the mining industry. Additionally, the modeling did not account for all abandoned underground mining discharges of TDS to the watersheds. Pre-SMCRA pollutional discharge loading to the South Fork Pound River watershed was not separated from active mining waste load contributions increasing the active mining contribution of TDS to the watershed. Prior to June 1, 2009, mining discharges to impaired watersheds were not required to analyze for TDS, therefore little data exist for TDS contributions from mining NPDES discharges. For these reasons additional field reconnaissance work and data collection are necessary to resolve these deficiencies.

Monitoring Plan for TDS

1. DMLR will develop groundwater monitoring plan to quantify groundwater contribution of TDS from mine backfill areas and background levels of TDS from active mining operations and abandoned mine land areas. The monitoring plan will also quantify contributions of interflow.
2. DMLR and DEQ will conduct field reconnaissance of watersheds with TDS as a stressor to identify all abandoned deep mine discharges, not just those currently monitored as groundwater monitoring locations.
3. DMLR required on June 1, 2009 that all mining permits with NPDES discharges into impaired watersheds must sample for TDS when utilizing alternate effluent limits. The data collected will be utilized for determining mining waste loads modeling.

PCB Phased TMDL Monitoring Plan

Statement of concern

The development of the Phased Levisa PCB TMDL revealed the need for additional monitoring to determine the source and loading rates of PCBs in the watershed.

1. The phased period will allow both DEQ and DMME to collect additional PCB data. The first step in the monitoring process is to do a second water column sweep of the Levisa

watershed to determine “hot spots” in the area. The goal is to evaluate the data from the first sweep that was done in 2007, prior to the TMDL development, to determine additional sampling locations to assist in the source assessment. Low level PCB water column samples including various tributaries and at least one mainstem station will be collected at high flow conditions.

2. Once the data are received and evaluated the second step in the monitoring process will begin. Based on the two water column sweeps we should have a better idea which tributaries are contributing to the PCB loading in the Levisa. On site field investigations and historic land use research will be conducted on those tributaries that appear to be major contributors. The third step in the process will then begin with site specific PCB monitoring to conclude the source assessment.

3. The PCB phased TMDL for the Levisa Fork demonstrated a need for PCB reductions from Conaway WWTP. DEQ will require the facility to do additional monitoring as well as develop a pollution minimization plan to meet the reductions called for in the phased TMDL. Based on data provided by Norfolk and Southern Railroad the TMDL also called for a large reduction of PCBs from Weller Yard’s stormwater discharge. Norfolk and Southern will be asked to resample using the correct protocol (EPA Method 1668A) specifically, sample volumes of two liters or greater as well as attainment of PCB reporting level of approximately 10 pg/L on a congener basis.

PAH Phased TMDL Monitoring Plan

Statement of concern

The Phased Benthic TMDL for the Powell River revealed that “high concentrations of PAHs were found in sediment samples taken by the VADEQ at several sites and at different times on the Powell River. The PAHs that consistently exceed screening levels used by Virginia are 2-methyl naphthalene and naphthalene. The exact source or sources of these compounds is not known at the present time.” It also appears that no studies are available on the chronic toxicity of dissolved PAHs to the benthic community and very few on the acute toxicity. The phased TMDL states that “dissolved acute toxicity studies indicate that PAH toxicity to invertebrates is inconsistent.” Due to the inconclusive research on the toxicity of PAHs to benthics as well as the unidentified sources PAHs were considered a possible stressor in the phased TMDL.

1. During the phased portion of the TMDL DEQ and DMLR would like to continue to investigate the available research on the toxicity of PAHs to the benthic macroinvertebrate community. The investigation will also include an extensive search of current PAH data and collaboration with contractors to determine if additional research is needed.

2. If additional research is needed, bioassays will be conducted to determine toxicity levels and sampling of pollutant discharges will be conducted.

3. If additional research is not needed, PAH will be reduced from a possible benthic stressor in the TMDL.