TO:	**Permitting and I&E Personnel**
SUBJECT:	**SWROA Modeling, Runoff Monitoring, and Data Recording**
DATE:	**November 24, 2015 – Revised January 04, 2022**
APPROVAL:	**Jonathan Rorrer, Acting Director**

Surface Water Runoff Analysis (SWROA) requirements were codified in the West Virginia Surface Mining Reclamation Regulations (38-CSR2-5.6, et seq.) and became effective June 1, 2003. At its inception, SWROA was effectively applied to existing permits and became a routine design requirement for future permits. Nevertheless, some confusion still exists relating to hydrologic modeling, runoff monitoring, data collection, field reporting, and termination aspects of this rule. The purpose of this policy is to provide clarification for permits containing SWROA designs.

Evaluation Point Siting Requirements

Any evaluation point (EP) chosen for hydrologic modeling shall be located so that pre-mining, during-mining, and post-mining peak flow volumes can be compared at a common location. To comply with the "no-net increase" SWROA requirement, calculated during-mining and post-mining peak flow volumes cannot exceed those of the pre-mining condition. Also, EP locations must be as close as practical to the permitted acreage while being located upstream of any critical structures such as, houses, buildings, stream constrictions/encroachments, etc.

SWROA pre-mining modeling should consider existing ground cover conditions at the time of permit issuance. Hydrologic analyses for the pre-mining condition must rely on realistic curve number and hydrologic soil group (HSG) assumptions applicable to actual on-ground conditions. HSG assumptions shall be substantiated by using the United States Department of Agriculture – Natural Resources Conservation Service – Web Soil Survey, as follows: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Failure to account for available sheet flow can exaggerate peak flows from pre-mining areas and result in reduced SWROA protection. Therefore, all pre-mining flow calculations should assume sheet flow conditions of three hundred feet (300 ft.) at the onset of the hydraulic flow path through any component watershed, unless otherwise documented.

SWROA Design Storm

The minimum SWROA design storm is a 25 year/24-hour precipitation event. The SWROA design storm is based upon the design standard applied to the most immediate hydraulic structure upstream of each EP within the associated watershed area. Typically, this will result in a 25 year/24-hour event to base SWROA designs upon, but occasionally a 100 year/24 hour design standard may apply. Other instances triggering the 100 year/24-hour SWROA design requirement would be the presence of occupied dwellings or significant stream constrictions/encroachments located upstream of an EP.

Runoff Monitoring Plan and Data Collection

Each permit, or application for a permit, for which a SWROA is required shall contain a runoff monitoring plan which shall include, but not be limited to, the installation and monitoring of rain gauges. The plan shall be specific to local conditions and shall be detailed in Section U-3.

All operations must record daily precipitation and compile monitoring results on a monthly basis. Monthly monitoring reports shall be submitted through the Electronic Submission System (ESS) on a quarterly basis by the 21st of the month following the end of a quarter. Monthly monitoring reports shall also be provided to the permit inspector upon request.

Inspection of Drainage/Sediment Structures and Reporting on Integrity/Function

Any precipitation event of 1 year/24 hour or greater, based upon the permittee's designated rain gauge in Section U-3, will require the permittee to conduct a permit-wide inspection to evaluate all constructed drainage/sediment structures. Such inspection should verify that the structures remain structurally intact and can still function as intended. A report is to be submitted to the Secretary addressing such findings. Present rule language allows 48 hours before a report has to be submitted to the Secretary.

Reporting is to be in written format so that a tangible record can be included in the permit file. Reporting to the inspector via email will be deemed acceptable; a telephone call to the inspector is also acceptable provided that timely follow-up (within one week) is uploaded and submitted via ESS as "SWROA Report".

Implementation/Termination of SWROA Requirements

All permits are required to have approved SWROA designs prior to any on-ground disturbance, unless otherwise exempted. For permits less than 50 acres, SWROA may be exempted on a case-by-case basis, if adequately justified and approved in a permit revision. Further, haulroads, loadouts, and ventilation facilities are excluded from any SWROA requirements. If a SWROA exemption is granted for any permit, all aspects of the SWROA rule are waived, including U-3 rainfall/runoff monitoring.

When a permit becomes Phase II eligible and complete drainage structure removal occurs, the SWROA runoff monitoring plan (U-3) can be terminated. At this time, recording of rainfall will no longer be required. The permittee should submit a letter to the inspector addressing proposed SWROA termination for a permit.