

Pennsylvania Operator's Experience on CFBC Ash for Beneficial Use at a Surface Mine Site - a Case Study

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ABSTRACT

A PA. coal operator's 7 years hands-on 'negative experience' from early 1996 in operating a permitted 84.8 ac. multi-seam surface Sub-F Re- mine "Demonstration Project" located at Jackson Township, Cambria County by emplacing about 247,177 tons of highly alkaline CFBC ash composites (fly and bottom) for beneficial use from local ash generators is presented. This paper utilizes only a few technical and other researched database from 'in-house' collected voluminous evidences as to validate the circumstances and the causes of post-activation groundwater degradation at three down-gradient 'off-the-permit' ash monitoring points #CFB-12, #CFB-5, #CFB-3. Degradation of monitoring points are on acid mine drainage (AMD) parameters and not by any leachable precursor ash constituents. The validations are essential to affirmatively invalidate the State Regulatory Agency's (the Agency) contention that the post- operational degradations with consequential adverse hydrologic impacts on receiving streams, have been caused by up-gradient very presence of this re-mining site. Agency's position is based on the regulatory setting. Regulatory interpretation is that an operator being a conditional "owner" and "occupier" of a coal industry site, as per Clean Streams Law 35P.S. §691. 316, has affected the 'recharge area', and therefore, has created 'hydrologic connections' to the discharging points. Operator is now facing a potential 50-year perpetual treatment liabilities at off-locations of more than millions of dollar. Each point has its unique settings, triggering circumstances and conditions for degradation and are addressed separately in this paper. This project is one of the 85 surface coal permits with coal ash emplacement for beneficial use issued until July 2000.

This re-mining project was planned to affect 73.1 ac. for three coal seams of the Lower and Upper Allegheny group with intervening rocks of marine and brackish /marginally brackish paleo-depositional environments. The Agency's focal "trade-off" in approving this re-mining project was in saving millions of the Federal AML Reclamation Fund. In post-activation phase, highly reactive and spontaneously fissile ash had been emplaced at an application rate of 3,717 tons /ac. coal removal area in anticipation to ameliorate already degraded receiving streams. Of this total, about 47,250 tons to 50,000 tons of ash had been uniformly spread in the coal blocks' pit floor (fireclay) averaging 4.5" as against minimum required 3.5". Rest blended carefully with handled spoil materials in backfilling process and was utilized to encapsulate all identified acidic-toxic materials in elevated 'pods' .Application rate equated to a 2.32 factor of safety in excess of host rocks' overall alkaline deficiency, significantly higher than 1.62 when permitted.

Primarily objective of this paper is to share operator's experience in recognizing intricacies and the complexities when ash emplacement in a surface mine site is a mis-match with the mine settings and most importantly, to advocate appropriate regulatory reforms with retrospective relief to the ash receivers, if generated 'waste' has to be utilized 'beneficially recyclable' following the 'cradle to grave' theory.