

Post-Construction Environmental Monitoring of a Fly Ash Based Road Subbase

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ABSTRACT

This paper discusses the results of an ongoing post-construction environmental monitoring study of a 2.1-mile long Industry Access Truck Route with unstabilized F-fly ash subbase. The road utilized 77,000 cu. yards of ponded fly ash as road subbase, generated by a nearby power plant. Since fly ash management in such large volume applications can be an environmental issue, long term environmental monitoring has been an integral part of the project since the completion of the project in October 2002. Six, 30-foot deep boreholes were developed as monitoring wells around the project site to determine the direction of groundwater flow and water quality. Pre-construction water quality studies were performed on water samples collected from the monitoring wells in June 2000, to establish baseline water quality data for groundwater. Samples of fly ash taken from the stockpile were subjected to leaching studies prior to construction of the road. Two lysimeters were installed within the pavement to collect leachates for water quality analyses.

During the post-construction monitoring study, water quality samples were collected from the monitoring wells and lysimeters quarterly for one year and semiannually afterwards. One set of water and soil samples were also collected from roadside ditches and the side slopes of the pavement for analyses. All the water and soil quality analyses results were compared to the leachate test results for the fly ash and the baseline water quality data to analyze changes in water quality. The groundwater quality to date complies with Illinois Class I and II standards. A general decreasing trend in the tested elements has been observed. To date, the fly ash subbase has performed without any adverse environmental effects on the groundwater and neighboring soils.

This paper will present a project overview with the pre- and post-construction environmental studies on this large volume ponded F-fly ash management project for road subbase.

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