

Selecting water balance covers as landfill final covers**Preecha Apiwantragoon**

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Water balance landfill covers are being used with increasing frequency as the landfill final covers to limit percolation into underlying waste in lieu of conventional final covers such as compacted clays and geomembranes. In contrast to the conventional covers designed as resistive barriers, water balance covers rely on natural hydrologic processes to limit percolation by using the water storage capacity of fine-textured soils to store infiltration during wetter periods and evapotranspiration to remove the stored water from the covers to the atmosphere during drier periods. Designs of water balance covers generally employ a monolithic barrier (a single layer of engineered fine-textured soil) or a capillary barrier (commonly a fine-textured soil underlain by a coarse-textured capillary break). Based on this design principle of water balance covers, soil pedogenesis and plant community, as well as meteorological conditions could affect the performance of the water balance covers. Case studies showing field data from several test sections simulating water balance covers will be presented. These covers have different designs (monolithic and capillary barriers), different profiles (layering and thickness), different types of soils and vegetation, and climates ranging from arid to humid. Key factors affecting the performance of the water balance covers will be illustrated. These factors could be used as design considerations when designing and selecting the water balance covers to be used as the landfill final covers.

Biography

Preecha Apiwantragoon has completed his PhD from the Department of Civil and Environmental Engineering, University of Wisconsin-Madison, in 2007. He was a Research Assistant in the Alternative Cover Assessment Program sponsored by the US Environmental Protection Agency. He is currently an Associate Professor and the Deputy Head of the Department of Civil Engineering, Chulachomklao Royal Military Academy, NakhonNayok, Thailand. He has published papers in reputed journals and conferences and has been serving as a reviewer of *Journal of Geotechnical and Geoenvironmental Engineering*.

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