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**WATER MANAGEMENT APPROACHES IN PEATLANDS BASED ON  
COMPREHENSIVE FIELD SURVEYS AND ANALYSIS IN WEST KALIMANTAN**Asep Andi Yusup<sup>1</sup>, Tsuyoshi Kato<sup>1\*</sup>, Bong Suhandi<sup>1</sup>, Nana Suparna<sup>1</sup> and Michael Allen Brady<sup>2</sup><sup>1</sup>*PT. Wana Subur Lestari, Indonesia*<sup>2</sup>*International Finance Corporation**\* Corresponding author: tk@wanasl.com*

Poorly planned and controlled drainage has often substantially lowered groundwater levels as well as soil moisture content in Indonesian coastal peatlands, particularly during the dry season. During prolonged dry periods the drained peat becomes a fuel hazard, which when burned, will often lead to uncontrolled fires and associated smoke haze. Plantation companies have introduced some management approaches for peatlands after much trial and error, but their effectiveness has seldom been verified from a scientific perspective. A water management approach should include: 1) planning based on available peat information and site-specific field survey data; 2) operations of well-planned drainage and control systems, 3) intensive monitoring of groundwater and soil moisture levels, and 4) analysis for continuous improvements. A key tool for sound water management is topographic maps at a scale of detail to support hydrological understanding and canal system layout. Such detailed maps unfortunately have not been prepared and used. Prior to starting forest plantation operations in the PT Wana Subur Lestari (WSL) concession in Kubu Raya District of West Kalimantan, we conducted topographical surveys with a total length of 1,600 km to generate a contour map with elevation intervals of 0.5 m. Based on the contour map, we delineated several management water zones enabling groundwater levels to be kept constant across the landscape. We also delineated water conservation areas which supply water during dry periods and remain independent of canals. In principle, there are main and secondary canals. The main canals are aligned across contours, while secondary canals are aligned along contours. Control structures such as dams with spillways have been built between water zones to minimize excessive drainage but allow release of excess water caused by heavy rains. As a result of the detailed surveys and careful placement and management of water control drains and structures, monitoring data during the recent dry period (June to October 2015) showed that groundwater levels remained constant and even exceeded the water levels measured in undeveloped forested peat areas. We present our water management approach and results from monitoring data.

**Keywords:** *groundwater, topography, water management, forest plantation, West Kalimantan*