ABSTRACT

Nowadays, there is a need to plan and control in a systematic and sustainable way for maintaining of the most beneficial environment including the shoreline area. How to implement and evaluate the effective beach nourishment method, as a suitable strategy dealing with beach erosion thus having the ability to adjust with other methods in shoreline management programs for ensuring sustainable development in the coastal area, is becoming a focus of discussion in this paper. The objectives are to provide a source of comprehensive study of beach nourishment methods within shoreline management to all partners involved in South Korea. This study was performed by analyzing the performance and monitoring the methods of beach nourishment in South Korea and the Shoreline Management Plan framework was designed for South Korea to ensure the compatibility of beach nourishment that shall complement with other projects within the plan.

KEY WORDS: Beach nourishment; shoreline management plan; compatibility; beach erosion; monitoring; sustainable.

INTRODUCTION

Beaches are vital ecological, cultural, recreational, and economical resources, and so it is the beaches in South Korea. They are constantly changing with the effects of waves, winds, tides, and currents. Unfortunately, some of the beaches in South Korea are eroding as a result of natural shoreline processes, development and hardening along the shoreline, and other human activities. There is an urgent need to control the development of the coastal area due to the limited capability of natural environments to support the level of sustainable use and the natural systems inability to sustain the impact of unmanaged human activities. To cope with these problems, diverse studies and researches have been presented and are being conducted by some researchers and institutes (MOE, 2002).

Beach nourishment has been implemented as a preferred alternative for shoreline stabilization at Songdo Beach, Busan, South Korea that suffers a deficit of sand due to either natural or man-made causes (Yoo et al., 2005). The coastal management project was established for Songdo Beach area in 2002 that prevented beach erosion and arranged the waterfront remodeling. Beach nourishment, a technique used to restore an eroding or lost beach or to create a new sandy shoreline, involves the placement of sand fill with or without supporting structures along the shoreline to widen the beach. In order to achieve the goal of the project, beach nourishment work must be implemented correctly (Green and King, 2003).

Methods for beach nourishment are still developing, and considerable guidance for the performance of new projects is derived from the observed performance of previous projects. The monitoring program in all types of environments also important and provides a very useful database of information for future designers of beach-fills. Proper monitoring of beach nourishment projects provides detailed information on the durability and lateral impacts of the project, along with an indication of the performance of the particular quality of material used in the beach-fill.

Another aspect that must be considered is the sustainable development and the compatibility between beach nourishment work and another project plans particularly related with coastal protection. It is necessary to take into account that all projects could optimize their performances if the side effects of the work for the other sectors are to be considered. There are many examples of unplanned, uncoordinated, and uncontrolled development in the fragile coastal zone has lead to destruction of natural resources as well as to unsuccessful development (Mangor, 2004). Therefore, it is also proposed by Mangor that a good shoreline management plan is needed and perhaps could be the best solution dealing with that problem. Shoreline management plan has been identified as the most appropriate process for addressing current and long-term shoreline issues, including improvement and preservation of coastal resources, beach erosion, adaptation to sea level rise, and other impacts of global climate change. It is also as a means to identify and anticipate the future opportunities. Thus, shoreline management plan is a major tool for achieving the sustainable development in coastal zone.