

**American Water Resources Association**  
**2009 SUMMER SPECIALTY CONFERENCE**  
***Adaptive Management of Water Resources II***  
**June 29 – July 1, 2009**  
Snowbird, UT

**Tuesday, June 30**

**8:30 AM – 10:00 AM**

**Session 16: Monitoring Strategies Supporting Adaptive Management I**

**1. Natural Stream Stability / Erosion Monitoring Program for Urbanizing Watersheds - Bruce Phillips, PACE, Fountain Valley, CA**

Urbanization within natural watersheds has an uncertain influence on the stability of alluvial creeks and river systems. However, these systems are important resources to preserve due to their inter-relationship as a habitat corridor within a watershed system. The purpose of a Stream Stability / Erosion Monitoring Plan is to implement an Adaptive Management Program with respect to stream erosion and sedimentation within a natural alluvial stream or river system. This program should be based on field inspection/observations and quantitative monitoring/qualitative assessment. The monitoring plan establishes the required data to be collected, the guidelines for assessment procedures, and reporting requirements for important stream characteristics and indicators related to stability. This plan allows changes in the stream character to be quantified in order to support management decisions as part of the Adaptive Management Program. Alluvial stream systems are dynamic in nature and their monitoring must be flexible to adjust with changing conditions and lessons-learned. This monitoring plan includes customized stream reconnaissance guidelines and specific techniques including geomorphic assessments useful for the evaluation of stream stability. This methodology applies both geomorphic and hydraulic factors to help identify sources of stability problems based on qualitative trends. The tasks associated with formulating a comprehensive stream monitoring plan are based on standard field techniques and stream reconnaissance programs commonly used for gathering data regarding the physical characteristics of streams and rivers. Minimum requirements for the stream monitoring program are designed to satisfy mitigation monitoring requirements outlined in environmental monitoring programs. Minimum requirements include (1) surveying cross-section geometry, (2) field reconnaissance inspections, (3) channel indicators, (4) streambed and bank characterization, and (5) reporting / observations using standard geomorphic conventions such as the international Vigil Standards. A variety of specialized monitoring techniques has been developed for the monitoring plan that incorporates diverse state-of-the art mapping and computer generated data interpretation procedures to assist in the assessments. A case study is reviewed for the application and development of this type of monitoring program in southern Orange County, California, associated with new development by the Rancho Mission Viejo Company within the 175 square mile San Juan Creek watershed.

**2. On-line Monitoring Systems Supporting an Adaptively Managed Water Conservation Policy in South Korea - Hyunook Kim, University of Seoul, Seoul, South Korea (co-authors: Byung J. Lim, Sukki Lee, Mark F. Colosimo)**

Due to an incident that happened in 1991 in which 30 tons of phenol was discharged into Nakdong River (the 2nd largest river in Korea) from a local electronics company, river water used for drinking in several cities located along the river was polluted. With the incident, the government realized more frequent analysis of water quality was needed. If the 1991 phenol contamination of the river was immediately identified, prompt response could have been conducted and supply of polluted water would have been prevented. Therefore, since 2002, the government has installed online water quality monitoring stations (WQMSs) for early detection of pollution incidents. Currently, a total of 49 online WQMSs are installed in nationwide rivers and lakes; the parameters monitored by the stations include pH, Temp., DO, TN, TP, TOC, VOCs, Chlorophyll-a, toxicity and heavy metals. So far, the data from the online WQMSs have been used only by the government and have not been opened to the public. Recently, the public has demanded the government to provide open access to the data, so they can monitor local water quality of interest. Responding to the public, the Korean government decided to make the data available to the public from its online WQMSs via an internet webpage starting Jan. 1st, 2010. Since many members of

the public do not know how to interpret values of each water quality parameter, the government is developing a system to transform the raw data into an index which can be easily understood. The water quality index will be used to adaptively manage the water conservation policy collaboratively with the public. In this paper, the procedure the South Korean government is taking now associated with their water conservation policy, including public access to data from online WQMSs will be discussed in detail. The governmental long-term plan to use its online stations to support adaptively managing its water conservation policy is also presented.