

AUTOMATED VERIFICATION AND VALIDATION OF CALTRANS STORM WATER ANALYTICAL RESULTS

Richard M. Amano

*Laboratory Data Consultants, Inc.
7750 El Camino Real, Suite 2L
Carlsbad, California 92009*

Larry R. Flynn

*Laboratory Data Consultants, Inc.
7750 El Camino Real, Suite 2L
Carlsbad, California 92009*

M. Kayhanian

*Center for Environmental and Water Resources Engineering
Department of Civil and Environmental Engineering
University of California
Davis, CA 95616*

Edward F. Othmer, Jr.

*Law Engineering and Environmental Services, Inc.
9177 Skypark Court
San Diego, California 93123*

ABSTRACT

Laboratory Data Consultants, under a contract with Caltrans Storm Water Management Program through Law Crandall designed and developed a computer application for assessing analytical data presented in an electronic data deliverable (EDD) format. The Caltrans automated data validation application was developed to standardize electronic monitoring data, improves EDD integrity and quality, and provides a cost effective, expedited process to support technical staff in evaluation analytical data. This application, developed within Microsoft Access 97, performs a verification check and automated data validation on a Caltrans-specific formatted EDD. The EDD format uses data fields specified in the Caltrans 2000-2001 Data Reporting Protocols and additional data fields that include quality control batch links and routine accuracy and precision parameters such as surrogate, matrix spike, and laboratory control sample recoveries. The application imports an EDD and verifies completeness and conformance with EDD format specifications. Analytical results from related test methods are compared for technical consistency. An error report provides detail for each EDD non-conformance and technical inconsistency. Automated data validation uses a reference project library that contains quality control (QC) and validation criteria specific to the project at hand. The application validates EDDs against these project requirements and a modified version of the EPA Functional Guidelines. Command buttons generate a variety of data validation and QC outlier reports. Database forms also provide on-line review and allow documented editing of data qualifies, if necessary. A historical assessment report indicates when analytical results fall outside historical ranges. After validation and review, the EDD can be exported either as a text file or Microsoft Excel spreadsheet containing the fields and field order specified in the Caltrans 2000-2001 Data Reporting Protocols.