

Office of PROJECT DEVELOPMENT & ENVIRONMENTAL REVIEW



U.S. Department of Transportation
Federal Highway Administration
Office of Planning, Environment and Realty

<http://www.fhwa.dot.gov/environment/>

THE STOCHASTIC EMPIRICAL LOADING AND DILUTION MODEL (SELDM)

What is SELDM?

SELDM is a stormwater model designed to estimate storm-event flows, loads and concentrations in: stormflows from upstream basins, the highway, best management practice (BMP) outfalls and in the receiving water downstream of a highway. It is designed to transform complex scientific data into meaningful information, about the risk of adverse effects from stormwater runoff on receiving waters, the potential need for mitigation measures, and the effectiveness of management measures. SELDM comes pre-loaded with precipitation, stormflow, and water-quality statistics. This robust modeling tool replaces the earlier and simpler Driscoll model.

Why Use SELDM?

SELDM is designed to provide meaningful information about the risk of adverse effects from stormwater runoff on receiving waters, the potential need for BMPs, and the potential effectiveness of such mitigation measures to reduce those risks. Users can quickly model different sites, assess those risks and evaluate different options. The SELDM model uses Monte Carlo methods to produce the random combinations of input variable values needed to generate the stochastic population for each input and output variable. Results are ranked and plotted, to indicate the level of risk of adverse effects caused by runoff concentrations, flows, and loads on receiving waters, by a storm and by year. Input values for SELDM are based on site characteristics and representative statistics for each hydrologic variable.

SELDM has been beta-tested by fifteen State DOTs as well as the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service and other State regulators. Several State DOTs including Colorado, Massachusetts and Oregon have already adopted the use of SELDM.

When to Use SELDM?

SELDM is used as a planning-level highway runoff model to estimate water quality risks with available data. The model can be used when the quality of existing receiving waters is known and whether highway impacts are adversely affecting downstream waters. It is designed to help answer the question, "Is there a significant impact?"

How to Learn More?

For more information, please contact Susan C. Jones, FHWA Office of Project Development and Environmental Review, at susan.jones@dot.gov or (202) 493-2139, or Gregory Granato, USGS, at ggranato@usgs.gov or (508) 490-5055.

The Federal Highway Administration's (FHWA) Office of Planning, Environment, and Realty offers opportunities under the Moving Ahead for Progress in the 21st Century (MAP-21) legislation to improve transportation decision making and promote efficiency while protecting communities and the environment. The Office supports and conducts research under MAP-21 that:

- Informs Decisions
- Reduces Environmental Impacts
- Improves Quality of Life
- Streamlines Project Delivery
- Integrates Planning

For more information, please visit http://www.fhwa.dot.gov/hep/map-21_research/.