

# FY 2010 RESEARCH PROBLEM STATEMENT

Use this form to submit a problem statement

**Macros must be enabled to use this form.**

To enable macros, close out form. Reopen form. When asked, click "Enable Macros."

ODOT Research Unit  
200 Hawthorne Ave. SE, Suite B-240  
Salem, OR 97301-5192

Office Phone: (503) 986-2700  
FAX Phone: (503) 986-2844

## TITLE ([more info](#))

The use of storage in urban flood frequency regression equations

## PROBLEM (Description of need) ([more info](#))

Regional flow analysis is ineffective in urban areas. Large areas of impervious surfaces, urban storage and routed water pathways result in streamflow regimes exceedingly dissimilar from streams in surrounding rural areas. Consequently, regional streamflow equations using storage as a variable for estimating peaks, flow percentiles and low-flow statistics are sometimes not appropriate for small catchments in highly urbanized areas.

## PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY ([more info](#))

This research would take advantage of two urban streamflow studies conducted in the early 1980's. By incorporating this previously successful approach with data acquired since the previous study and modern tools such as defining storage with GIS coverages, regional flow equations for urban areas will be developed for floods, flow percentiles and/or low-flow statistics. These data will be input into USGS StreamStats and utilize PSU Students through OTREC.

## BENEFITS ([more info](#))

Accurate estimations of urban flow storage parameters provide numerous benefits. More accurate flood estimations result in fiduciary benefits by minimizing the occurrences of failures of stream structures such as bridges and culverts, and by minimizing the occurrences of over-design for those same structures. Low-flow flow percentile statistics serve as benchmarks for setting wastewater treatment plant effluent limits and allowable pollutant loads to meet water-quality standards. In addition, these data are paramount in the study and management of fish passage, erosion control and stream restoration.

## CONTACT INFORMATION:

Name<sup>1</sup>: Adam Stonewall, USGS

Name<sup>2</sup>: Glen Hess, USGS

Address<sup>1</sup>: 2130 SW 5<sup>th</sup> Ave Portland OR 97201

Address<sup>2</sup>: 2130 SW 5<sup>th</sup> Ave, Portland OR 97201

Email<sup>1</sup>: [stonewal@usgs.gov](mailto:stonewal@usgs.gov)

Email<sup>2</sup>: [gwhess@usgs.gov](mailto:gwhess@usgs.gov)

Phone<sup>1</sup>: 503-251-3276

Phone<sup>2</sup>: 503-251-3236

Please save a copy of this form for your files. To submit the form, attach a copy of the document to an email and send it electronically to [barnie.p.jones@odot.state.or.us](mailto:barnie.p.jones@odot.state.or.us).

### *Internal Use Only*

Construction and Maintenance (CM)

Geotechnical, Hydraulic and Environment (GHE)

Integrated Multi-Modal (IM)

Planning and Economic Analysis (PEA)

Pavements and Materials (PM)

Roadway Design and Driver Safety (RDDS)

Structures (ST)

Traffic, Roadway Safety, and ITS (TRS)

Problem Statement Number:

GHE-10-21