TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): __FHWA_____

INSTRUCTIONS:
Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project #	**Transportation Pooled Fund Program - Report Period:**
TPF-5(256)	☐Quarter 1 (January 1 – March 31) 2014 ☐Quarter 2 (April 1 – June 30) 2014 √Quarter 3 (July 1 – September 30) 2014 ☐Quarter 4 (October 1 – December 31) 2014

Project Title: *HY-12 Storm Drain Hydraulic Analysis Program - Phase Two of Development Efforts*		
Name of Project Manager(s): *Kornel Kerenyi*	**Phone Number:** *(202) 493-3142*	**E-Mail** *kornel.kerenyi@fhwa.dot.gov*
Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:**
Original Project End Date:	**Current Project End Date:**	**Number of Extensions:**

Project schedule status:

√ On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	**Total Cost to Date for Project**	**Percentage of Work Completed to Date**

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	**Total Amount of Funds Expended This Quarter**	**Total Percentage of Time Used to Date**

Project Description:
Background:
HY-12 is a computerized implementation of FHWA pavement drainage and storm drain hydraulic design approaches and methodologies. The primary technical references for this software are the FHWA publications "Hydraulic Engineering Circular 22: Urban Drainage Design Manual, Third Edition"; [Publication FHWA-NHI-10-009]"; "Hydraulic Design Series 2, Highway Hydrology, Second Edition"; [Publication FHWA-NHI-02-001], "Hydraulic Design Series 4, Introduction to Highway Hydraulics"; [Publication FHWA-NHI-08-090, 2008 Revision], and "Hydraulic Engineering Circular 24, Highway Storm Water Pump Station Design"; [Publication FHWA-NHI-01-007, 2001 Edition].

In 2009 FHWA contracted with AQUAVEO to develop a 32-bit non-proprietary software product, designated as HY-12, for the analysis and design of storm drains associated with transportation systems. This HY-12 software will replace a 16 bit FHWA program called PFP-HYDRA. The contract with AQUAVEO did not require development of a graphical user interface, GUI, as part of software development.

A stand-alone BETA version of HY-12 has been completed and successfully tested using the required input format of a text document using Notepad. The myriad of situational applications and user controlled options available through HY-12 provides a difficult and lengthy learning curve for efficient implementation with the current text document input format. Numerous State DOT Hydraulic Engineers have voiced their needs for a stand-alone HY-12 product with a graphical user interface to ensure an effective and efficient implementation.

FHWA anticipated the HY-12 software would be implemented with only one phase to the development process; however, State DOT's have requested initiation of a second phase to develop a GUI for a more efficient and successful implementation.

Objectives:
The objective of this research effort is to develop a graphical user interface, GUI, for the HY-12 storm drain software. The effort would be funded by FHWA and other State DOT contributors (PFP members).
Scope of Work:
The anticipated scope of work consists of continued development efforts on the HY-12 software and an accompanying GUI.
The project will consist of the tasks described below. Where possible the tasks may be developed concurrently. Some tasks may require technical review and approval by PFP members before any programming efforts.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

- A hydraulics computation consultant started working on the Graphic User Interface (GUI) of HY-12. Tasks are listed below:

1) Coordination with FHWA HY-12 sponsors including a kick-off meeting and progress meetings.
2) Development of a project work plan.
3) Resolution of existing bugs/weaknesses identified in the HY-12 GUI including:
   a) Remove unneeded extra lines in the HY-12 properties dialog.
   b) Resolve problems with the rational method runoff coefficients.
   c) Compute ration method Tc values to floating point precision.
   d) Improve filename specification and management.
   e) Remove the old Storm Drain-FHWA (HYDRAIN) coverages to prevent confusion.
   f) Convert the results plot to run in a modeless fashion.
   g) Change the “River Module” name to “Hydraulic Modeling Module”.
4) Enhance the interface to include:
   a) Add a simplified “Project Parameters” dialog that includes a link to the existing “Advanced Parameters” options.
   b) Add a simplified Link Properties dialog to edit several pipes in a single dialog spreadsheet similar to the SWMM link properties.
   c) Add a simplified Node Properties dialog to edit several access holes/inlets and other node attributes in a single spreadsheet similar to the SWMM node properties.
   d) Support multiple storm drain networks in a project.
   e) Create a Link/Node Elevation Profile View Editor
   f) Revise WMS copy protection and expose the commercial HY-12 GUI with enhancements to handle “Free”

version.

5) Create tutorials to illustrate GUI and model capabilities including:
   a) A tutorial that shows how to model a storm drain network with a background map
   b) A tutorial that shows how to model a storm drain network with a DGN or DWG file
   c) A tutorial that shows how to model a storm drain network without a background map
6) Create a set of autoregressive GUI tests for sample applications for QA/QC
7) Finalize the HY-12 GUI

Anticipated work next quarter:

- Tasks shown above

Significant Results:

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

None to report.

Potential Implementation: