

## Tahoe Science Program Quarterly Progress Report

### P084: Development of an Online Watershed Interface to predict the effects of forest and fire management on sediment and phosphorus loads in surface runoff in the Lake Tahoe Basin

**Principal Investigator: William Elliot**

**QUARTER: April - June, 2015**

Deliverables	Task	Start Date	End Date	Status Update	Percent Complete	
IGO, Task Order, or Initial Funding Transfer	Initiate project	7/1/12	11/20/12	Received first and second year's funding. Still awaiting final year's funding	80%	
Agreements	Establish agreements	1/1/13	5/30/13	Complete	100%	
Inventory/assessment/monitoring	Install a server specific for this project	1/1/13	12/31/13	Complete	100%	
	Carry out rainfall simulations on landings	9/1/12	12/31/13	Complete	100%	
	Carry out concentrated flow simulations on landings	10/1/12	1/31/13	Complete	100%	
	Incorporation of DEM and Soil layers on server	2/1/13	7/31/13	Complete	100%	
	Incorporation of groundwater flow	2/1/13	7/31/13	The computer codes for incorporating the base flow are nearly complete.	80%	
	Incorporation of nutrient and fine sediment prediction into WEPP output	2/1/13	7/31/13	Preliminary work shows that P budget is a mix of particulate and dissolved components, varying with watershed and season.	75%	
	Incorporate flood and sediment routing	7/1/13	1/31/14	The new WEPP model with the sediment routing developed by Wang, 2010 is on the server	80%	
	Validation		7/1/13	1/31/14	Awaiting completion of interface	

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Scientific reports, systems, or related products	Draft peer-reviewed manuscript	2/1/14	9/30/14	Working towards a publication of a WEPP watershed assessment of hydrology and sediment transport for five watersheds in Tahoe Presented a proceedings paper on modeling P delivery in the Tahoe Basin	70%
	Final report	6/1/14	4/30/16	Project Extended due to delayed funding	
Stakeholder Meetings		1/1/13	12/31/14	Two onsite meetings completed with stakeholders	100%
Outreach/training	Workshop	4/1/14	7/31/14	Planning on April, 2016 Workshop	
Contract Administration	Quarterly report	1/1/13	12/31/14	This is the tenth of 13 reports	77%
	Yearly report	1/1/13	12/31/15	Two out of three reports completed	67%

The overall goal of this project is to develop an online watershed GIS interface to predict the effects of forest and fire management on sediment and nutrient loads in surface runoff in the Tahoe Basin. A secondary goal was to compare the performance of two styles of rainfall simulator that had been used for past research in the basin.

**Project Management**

Discussion is ongoing with PSW administrators to receive the final year’s funding for the project. The challenge is in getting the funds transferred from the BLM, and processed so they can be used by Forest Service Research. The University of Idaho has leveraged additional funding to support developing the incorporation in P into the WEPP as forest sources of P are of great interest in the Coeur d’Alene Basin in northern Idaho. In addition to the post doc partially supported by this project, another post doc is also working on P modeling within WEPP.

**Joint Interagency Sedimentation/Hydrology Conference**

Elliot attended the Joint Interagency Sedimentation Conference in Reno and presented a paper incorporating P modeling into WEPP. Following the conference, Elliot and ARS collaborator, Dennis Flanagan, visited the Lake Tahoe Basin. Elliot emphasized the importance of snow hydrology, the challenge of modeling erosion from jackpot burns, the importance of stream sedimentation processes during the trip. Elliot and Flanagan met with LTBMU collaborator, Joey Keely, and visited a stream channel restoration site in the Upper Truckee, just upstream of the South Lake Tahoe airport.

**Phosphorus Modeling**

Phosphorus pathways in the basin are either through surface runoff, shallow lateral flow, or base flow. Work on improving the hydrology using observed P concentrations continues.

**Manuscripts**

A manuscript entitled “*Watershed-scale evaluation of the Water Erosion Prediction Project (WEPP) model in the Lake Tahoe basin*” was submitted to the Journal of Hydrology for peer review.

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**Other Products**

An MS student in Agricultural Engineering at Purdue University was partially supported by funds from this project. Elliot assisted in identifying a modeling study in the Lake Tahoe Basin, providing input for the modeling, and writing the thesis chapter. The student graduated in May, 2015. The title of his thesis was:

Trotochaud, J. 2015. Climate change impact assessments using the Water Erosion Prediction Project. MS thesis, Purdue University. 134 p.

A presentation of the thesis chapter related to the Tahoe Basin will be presenting in September, 2015, at the Tahoe Science Conference.

**Next Quarter**

We expect to address review comments from the *Journal of Hydrology* paper and address those comments. Modeling work on incorporating P into the WEPP model will continue. We will continue to try to get the final year's funding in place. We will also be making two presentations at the Tahoe Science Conference, one related to Trotochaud's thesis (see above), and a general one about the watershed interface.