Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)

https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/change2.cfm

State of Practice Report Form (for EDC-5)

1) Reporting Period: Progress Report #1 – June 2019

2) Accomplishments or Changes to Report? If there has been NO CHANGE on this innovation during this reporting period and the previous report is still accurate, select "No Change from Previous Report" without completing Questions 3-6.

☐	Changes indicated in Progress Report Below
☒	No change from Previous Report

3) Current Implementation Stage: What is the State's current stage of innovation implementation? Review the State of Practice Guidance Questions on the next page.

☐	**Not Implementing:** The CHANGE innovation has not been used anywhere in the state, and the State is not interested in pursuing 2D hydraulic modeling and visualization tools.
☐	**Development Stage:** The State is in the process of implementing CHANGE and 2D hydraulic modeling. A champion or champions has(have) been identified, staff have received training and participating in EDC CHANGE related workshops and webinars. The champion, or others, have completed a 2D model. In some states, the champion duties may be filled by a consultant.
☐	**Demonstration Stage:** The State is testing/piloting CHANGE with use of 2D hydraulic modeling on several projects.
☒	**Assessment Stage:** The State is using 2D hydraulic modeling on multiple projects and assessing its use for bridge scour evaluations and/or floodway or floodplain changes. At this level, states have not yet integrated 2D modeling verbiage and guidance into their drainage manual or other policy documents but are regularly using 2D modeling on projects.
☐	**Institutionalized:** The State has adopted 2D hydraulic modeling as a standard practice for complex bridge hydraulics and integrated its use into the state's drainage and policy manuals, where appropriate. Additionally, the state has used 2D hydraulic modeling results to perform bridge scour evaluations for at least one project.

4) Accomplishments and Benefits. Describe the State's accomplishments for this reporting period (both State DOT and local agency accomplishments). Please provide highlights with good results or stories that can be shared with the deployment teams and other states.

NMDOT has used 2D modeling to create significant saving on several bridges by virtue of having better hydraulic data. A savings of $500k in the bridge sub-structure was achieved but using the 2D model to better define the flow distribution and flow patterns around the piers. Another bridge was remodeled using SMS-SRH-2D which accurately defined the flow distribution in the floodplain and eliminated the need to raise the approach roadway grades.

5) Assistance Needed: Describe any additional assistance needed by your state.

We are still wrestling with implementation of the "bridge scour coverage" methodology. Also could use more guidance/examples on using reporting and graphics presentation features.

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6) Lessons Learned: Describe any implementation obstacles or lessons learned. Also indicate if and how your state can provide assistance to others in their implementation. We are moving toward implementing 2D modeling as standard practice, and are slowly figuring out processes for collaborating w/ SURVEY, GEOTECH, ROADWAY, and BRIDGE designers/engineers in the organization. A high level inter-departmental coordingation committee has been formed to address some of those issues.

The information below is to determine the appropriate Innovation Implementation Stage in your State:

	Innovation Implementation Stage Definitions *State is all-inclusive (e.g., state agency, local municipalities, contractors, consultants)	**Guidance Questions** Prompt questions to help assess your current state of practice and help tell your story. *NOTE: Not all questions have to be affirmatively answered to meet any given stage; judgment is required; call the CHANGE Deployment Team w/ questions.*
	Not Implementing: The CHANGE innovation has not been used anywhere in the state, and the State is not interested in pursuing 2D hydraulic modeling and visualization tools.	• After learning its benefits, has the State indicated that 2D modeling is not beneficial to their project delivery? • Does the State lack the internal resources or access to consultant expertise to begin an evaluation of 2D modeling? • Has the State shown no interest in hosting or sending staff to a 2D modeling training course?
	Development Stage: The State is in the process of implementing CHANGE and 2D hydraulic modeling. A champion or champions has(have) been identified, staff have received training and participating in EDC CHANGE related workshops and webinars. In some states, the champion duties may be filled by a consultant.	• Does the State have a 2D modeling implementation champion or team? • Has the State hosted 2D modeling training or sent staff to training (e.g. NHI Course 135095, Two-dimensional Hydraulic Modeling of Rivers at Highway Encroachments)? • Has the State participated in workshops, webinars, or peer exchanges related to 2D modeling? • Has the State completed at least one hydraulic analysis using 2D modeling (either in-house or by a consultant)? • Has the State requested 2D modeling technical assistance for a project?
	Demonstration Stage:	• Has the State used 2D modeling on several projects?

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Innovation Implementation Stage Definitions *State is all-inclusive (e.g., state agency, local municipalities, contractors, consultants)	Guidance Questions Prompt questions to help assess your current state of practice and help tell your story. *NOTE: Not all questions have to be affirmatively answered to meet any given stage; judgment is required; call the CHANGE Deployment Team w/ questions.*
The State is testing/piloting CHANGE with use of 2D hydraulic modeling on at least one project.	• Has the State compared 2D modeling results with any previous 1D modeling results or measured data?
Assessment Stage: The State is using 2D hydraulic modeling on multiple projects and assessing its use for bridge scour evaluations. At this level, states have not yet integrated 2D modeling verbiage and guidance into their drainage manual or other policy documents.	• Does the State considering 2D modeling for regular use on projects? • Does the State plan to incorporate 2D modeling into their design manuals, contract language, and other documents? • Has the State used 2D modeling to: calculate bridge scour, analyze floodplain or floodway changes, and/or evaluate environmental impacts?
Institutionalized: The State has adopted 2D hydraulic modeling as a standard practice for complex bridge hydraulics and integrated its use into the state's drainage and policy manuals, where appropriate. Additionally, the state has used 2D hydraulic modeling results to perform bridge scour evaluations for at least one project.	• Does the State routinely use 2D hydraulic modeling and graphical visualization tools on projects including for bridge scour calculations and analysis of impacts? • Has 2D modeling language been successfully integrated into the State's policies, procedures, and guidance (e.g., design manuals)? • Has the State hosted or lead a peer exchange on 2D modeling?

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