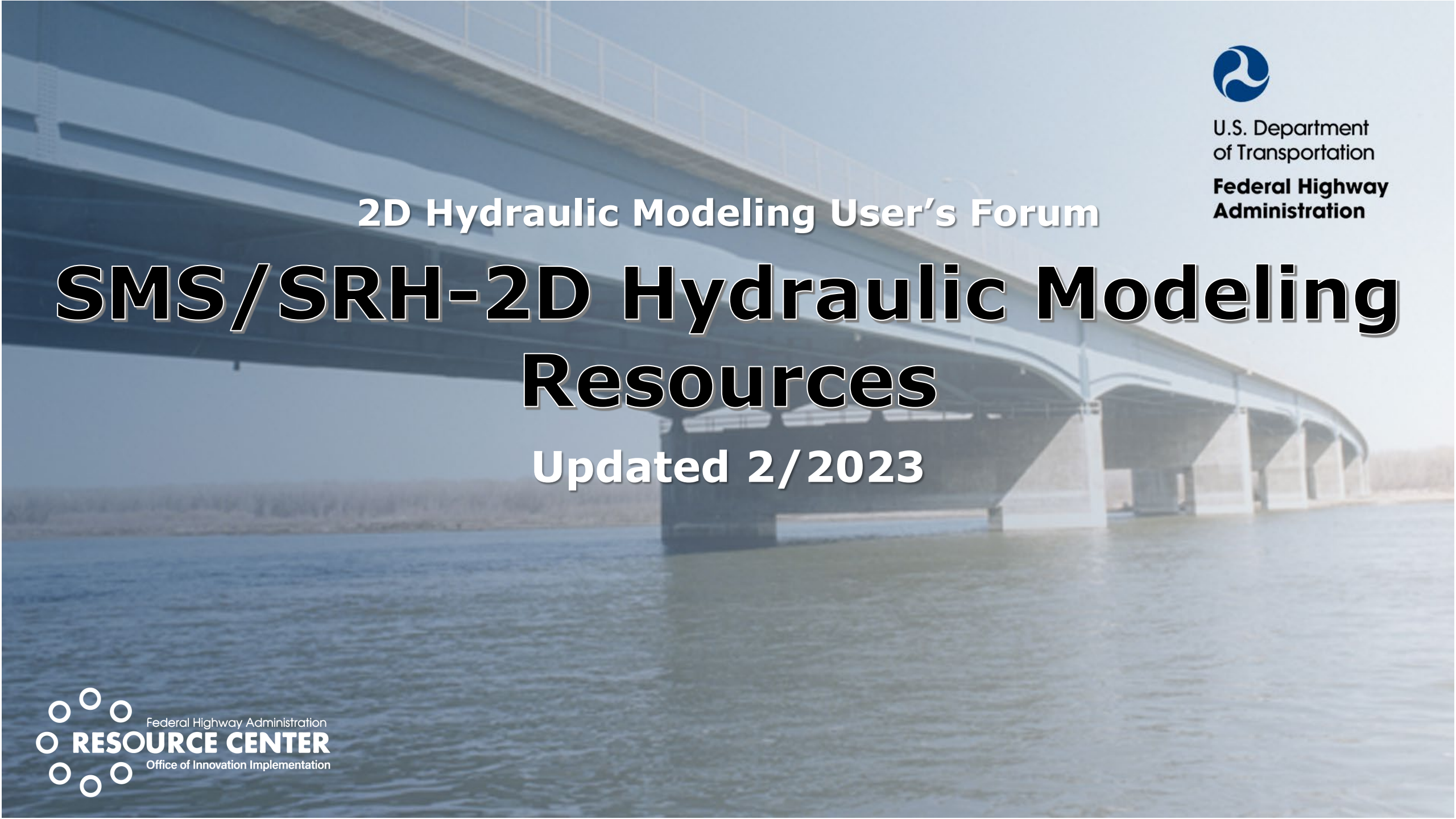


U.S. Department of Transportation
Federal Highway Administration

2D Hydraulic Modeling User's Forum

SMS/SRH-2D Hydraulic Modeling Resources

Updated 2/2023

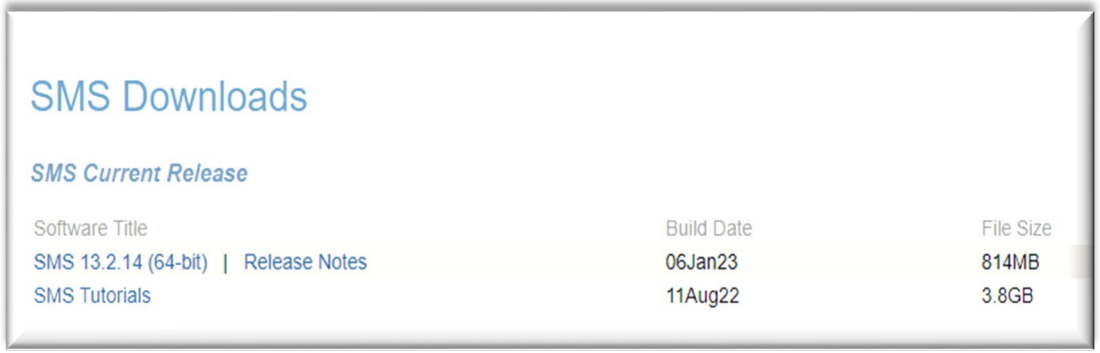
Federal Highway Administration
RESOURCE CENTER
Office of Innovation Implementation

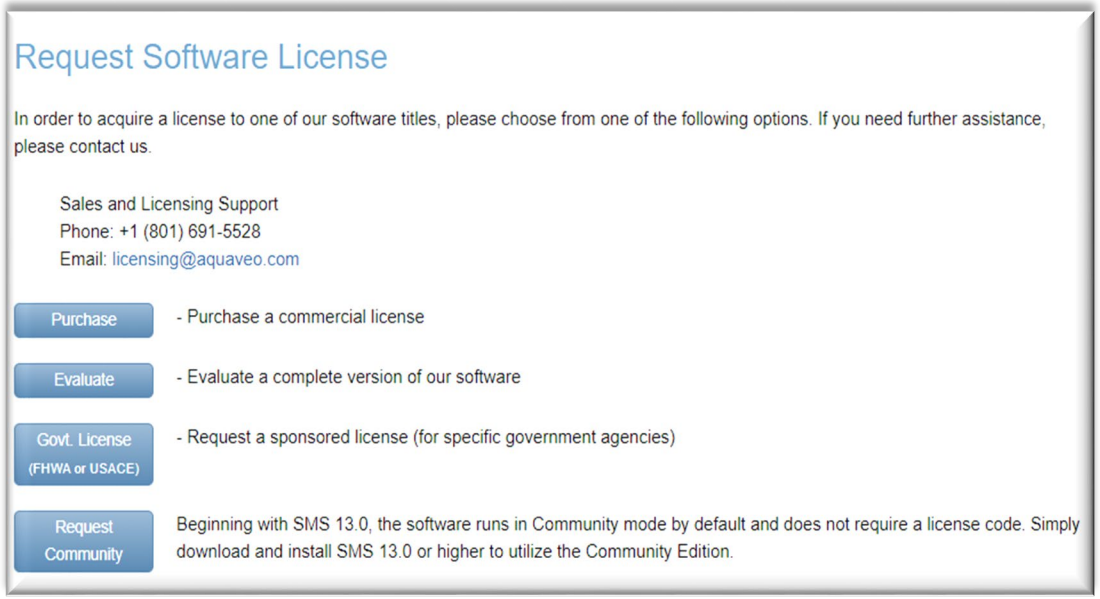
Overview of FHWA 2D Hydraulic Modeling Resources

- Software download and licensing
- NHI Training Courses
- 2D Hydraulic Modeling Reference Document
- SMS Wiki Page
- 2D Modeling Tutorials
- YouTube 2D Hydraulic Modeling Videos
- YouTube 2D Sediment Transport Videos
- 2D Hydraulic Modeling User's Forum
- FHWA Bridge Scour Workshop

Software Download and Licensing

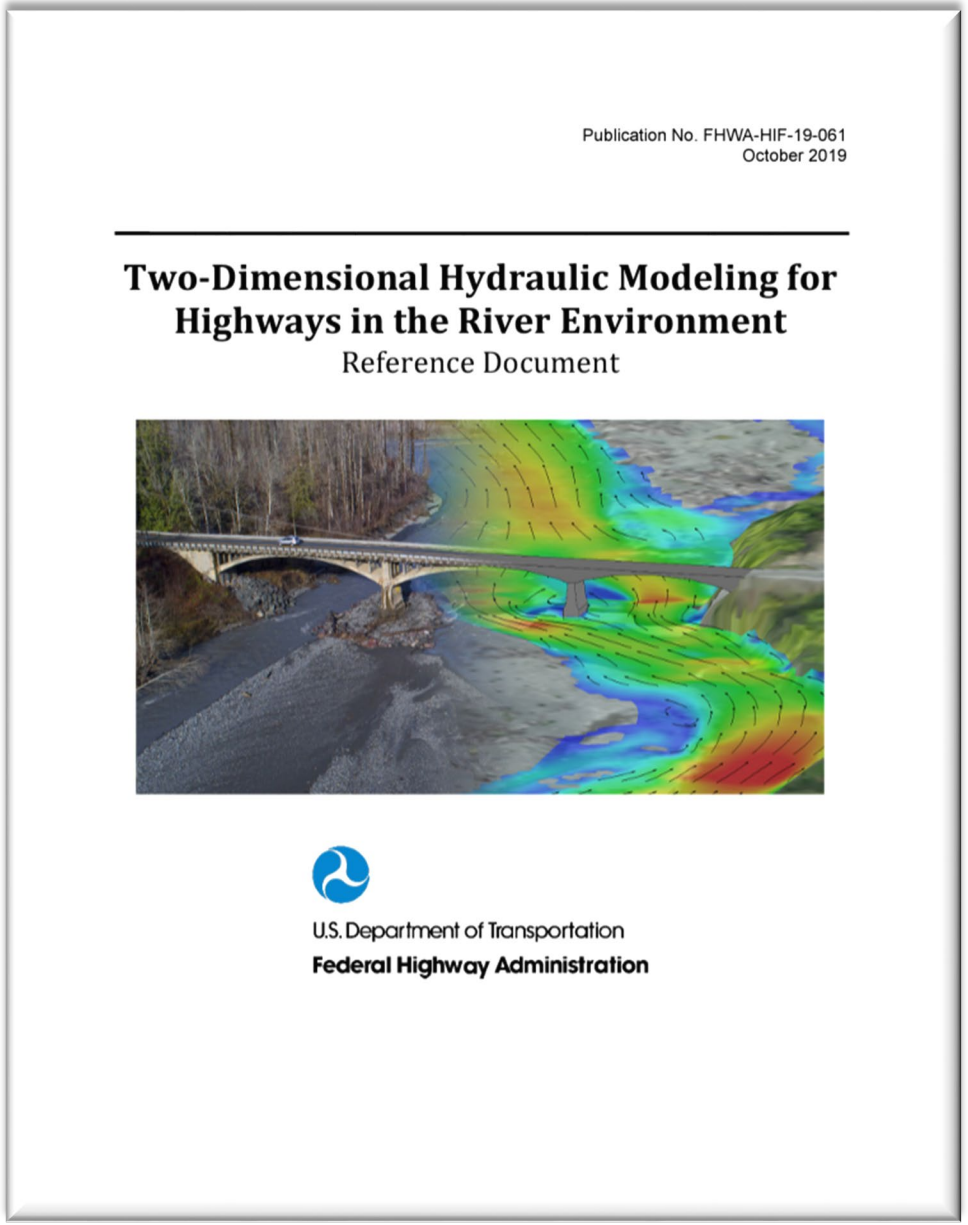
- Review website for current release and notes
- Community license (free to all)
  - No license code needed
- Pro-version
  - Request/Renew from SMS Menu: *Help → Register→ Request License*
  - Includes technical support
  - DOT/FHWA staff contact *scott.hogan@dot.gov or laura.Girard@dot.gov*
  - All others contact *support@Aquaveo.com*
- Reviewers License – Pro-Version
  - Complete form and Contact Aquaveo





2D Hydraulic Modeling Reference Document

- 2D Hydraulic Modeling for Highways in the River Environment
- Modeling fundamentals
- Data requirements
- Model development
- Model review and calibration
- SMS/SRH-2D User Interface
- Sample report outline
- Survey request form

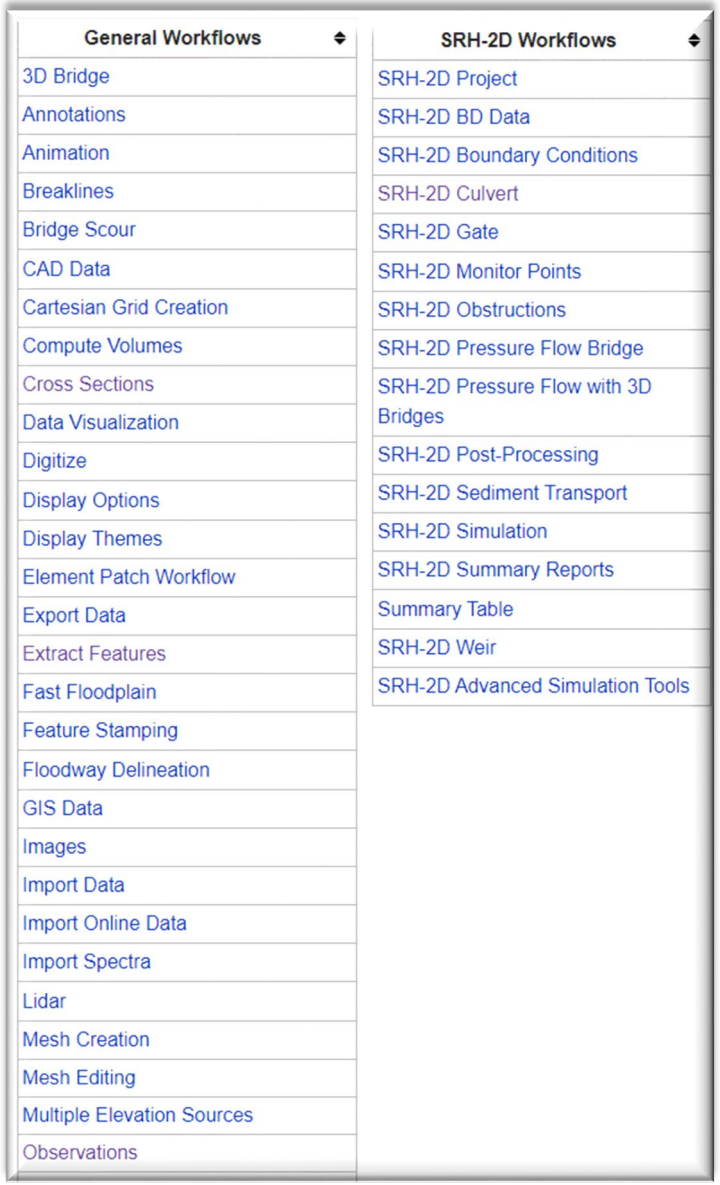


NHI Training Courses

- In-person training (NHI Course 135095)
- Virtual training available (NHI Course 135095V)
- Virtual Training (NHI Course 135095A) SRH-2D Model Data files, Diagnostics & Verifying 2D Model Results
- Virtual Training (NHI Course 135095B) Model Terrain Development with Various Data Sources

Online SMS Wiki Page and Other Resources

- SMS Workflows Overview
- Table of SRH-2D Errors and Solutions
- SMS Blog



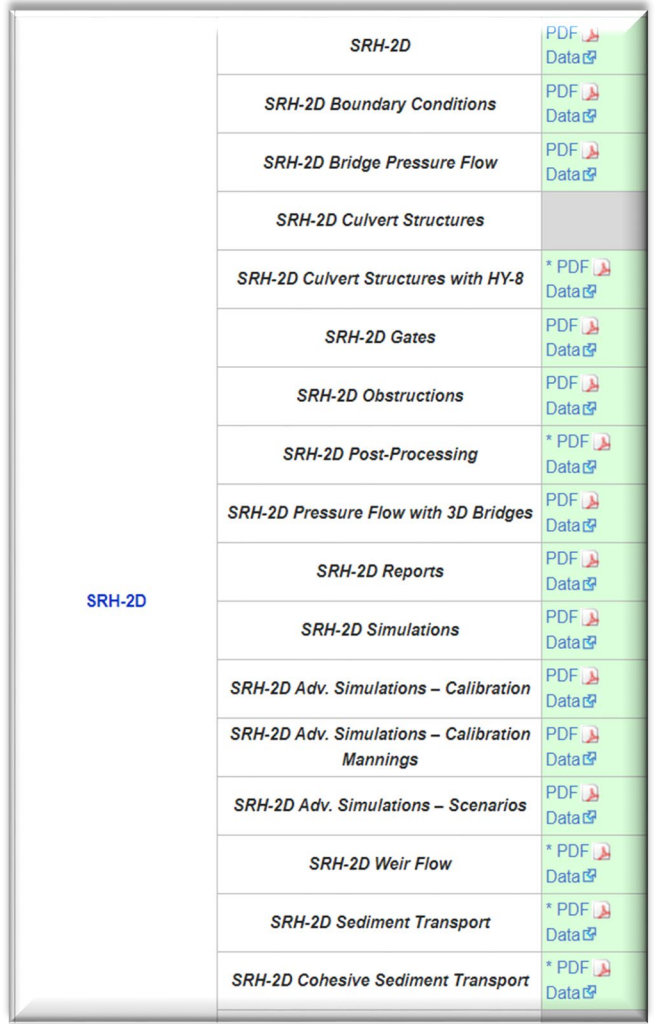
General Workflows	SRH-2D Workflows
3D Bridge	SRH-2D Project
Annotations	SRH-2D BD Data
Animation	SRH-2D Boundary Conditions
Breaklines	SRH-2D Culvert
Bridge Scour	SRH-2D Gate
CAD Data	SRH-2D Monitor Points
Cartesian Grid Creation	SRH-2D Obstructions
Compute Volumes	SRH-2D Pressure Flow Bridge
Cross Sections	SRH-2D Pressure Flow with 3D Bridges
Data Visualization	SRH-2D Post-Processing
Digitize	SRH-2D Sediment Transport
Display Options	SRH-2D Simulation
Display Themes	SRH-2D Summary Reports
Element Patch Workflow	Summary Table
Export Data	SRH-2D Weir
Extract Features	SRH-2D Advanced Simulation Tools
Fast Floodplain	
Feature Stamping	
Floodway Delineation	
GIS Data	
Images	
Import Data	
Import Online Data	
Import Spectra	
Lidar	
Mesh Creation	
Mesh Editing	
Multiple Elevation Sources	
Observations	

2D Modeling Tutorials

- Tutorial Link
- Over 75 SMS/SRH-2D Tutorials, including:
  - Data importing, processing, and conversions
  - Raster data features and tools
  - Display and Visualizations
  - Mesh development tools
  - Culverts and other 1D hydraulic structures
  - Bridge and culvert pressure flow
  - Floodway tools
  - Sediment transport
  - Calibration and advanced simulations

General SMS Tutorials

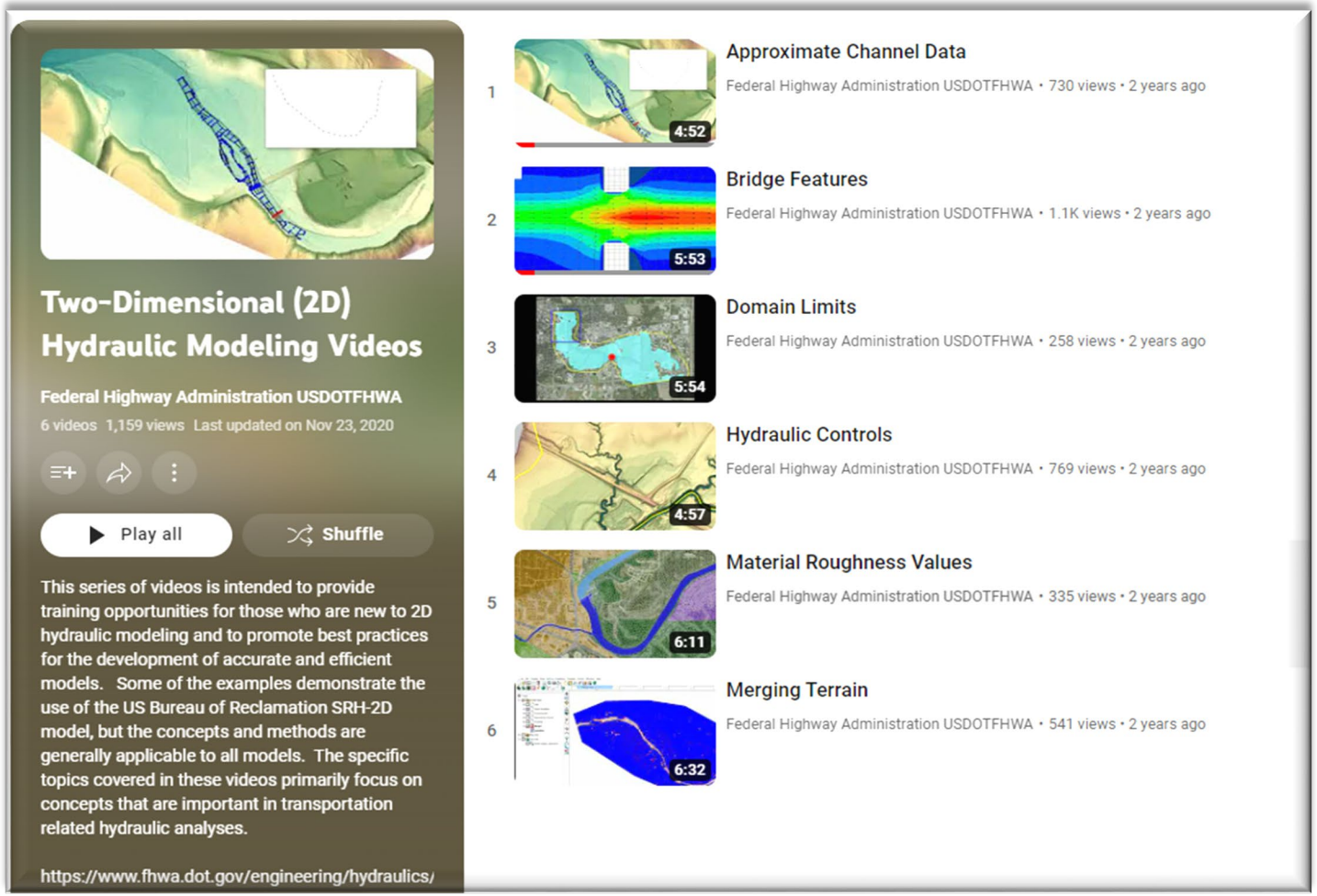
Title	SMS 13.2
Overview	PDF Data
2D Summary Table	PDF Data
3D Bridge	PDF Data
Annotated Cross Sections	PDF Data
Bridge Meshing	PDF Data
Bridge Scour	PDF Data
Bridge Scour Scenarios	PDF Data
Cell-Centered Grid	PDF Data
Cross Section	PDF Data
Cross Section to Surface	PDF Data
Data Visualization	PDF Data
Dataset Toolbox	PDF Data
Datasets to Rasters	PDF Data
Display Themes	PDF Data
Display Themes – Additional	PDF Data
Display Themes – Vector	PDF Data
Extract Features	PDF Data
Extract Features for Mesh Generation	PDF Data
Fast Floodplain	PDF Data
Feature Stamping	PDF Data
Floodway Methods	PDF Data
Floodway Delineation – Equal Conveyance	PDF Data
Floodway Delineation – Unit Q	PDF Data
GIS	PDF Data
Google Earth	PDF Data
Grid Generation	PDF Data
Import From Web	PDF Data
Importing Spectral Data	PDF Data



SRH-2D	SRH-2D	PDF Data
	SRH-2D Boundary Conditions	PDF Data
	SRH-2D Bridge Pressure Flow	PDF Data
	SRH-2D Culvert Structures	
	SRH-2D Culvert Structures with HY-8	* PDF Data
	SRH-2D Gates	PDF Data
	SRH-2D Obstructions	PDF Data
	SRH-2D Post-Processing	* PDF Data
	SRH-2D Pressure Flow with 3D Bridges	PDF Data
	SRH-2D Reports	PDF Data
	SRH-2D Simulations	PDF Data
	SRH-2D Adv. Simulations – Calibration	PDF Data
	SRH-2D Adv. Simulations – Calibration Mannings	PDF Data
	SRH-2D Adv. Simulations – Scenarios	PDF Data
	SRH-2D Weir Flow	* PDF Data
	SRH-2D Sediment Transport	* PDF Data
	SRH-2D Cohesive Sediment Transport	* PDF Data

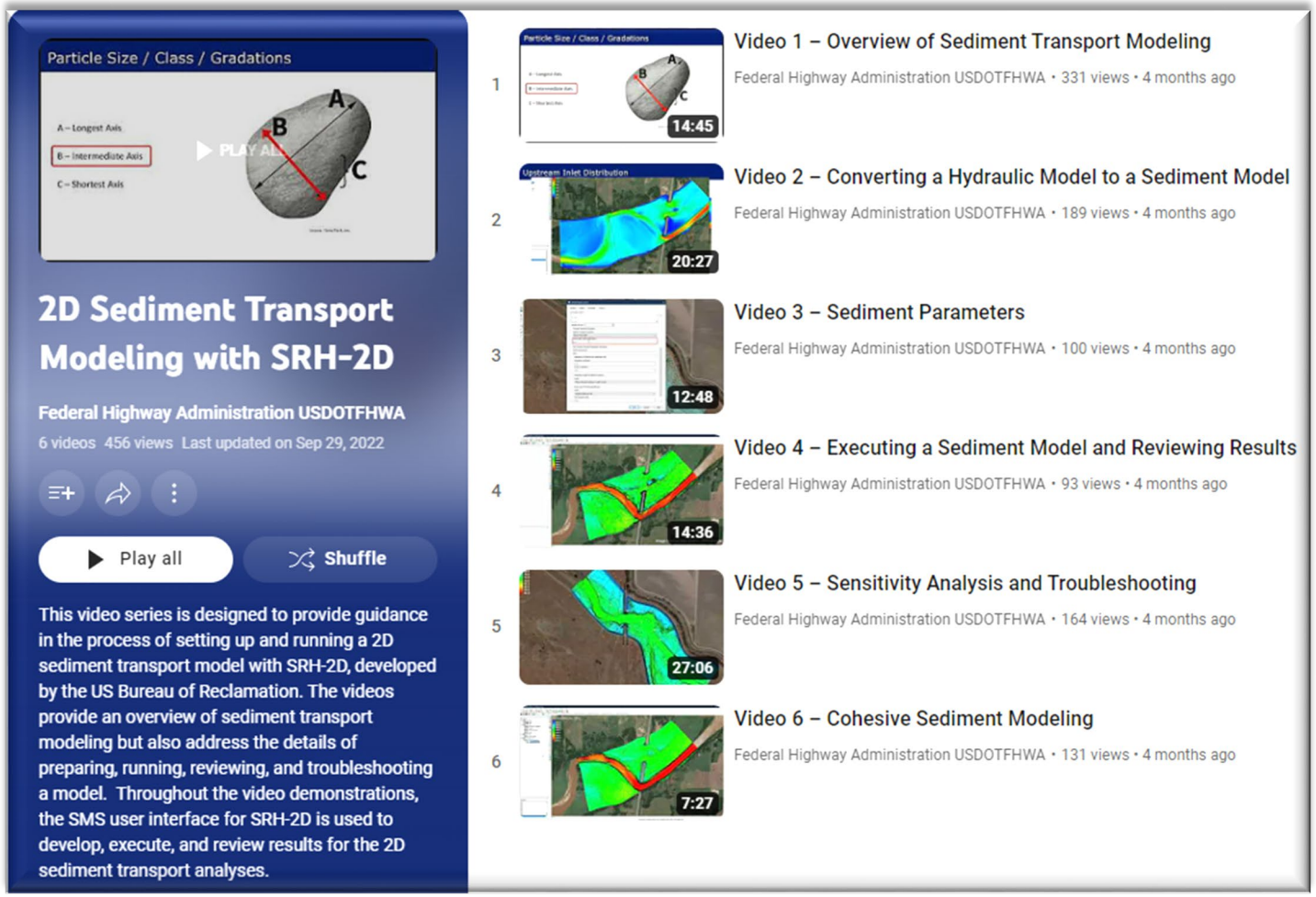
Short YouTube Training Videos – 2D Hydraulic Modeling

- 2017 Videos (11)
- 2020 Videos (6)
- Other SMS Learning Videos

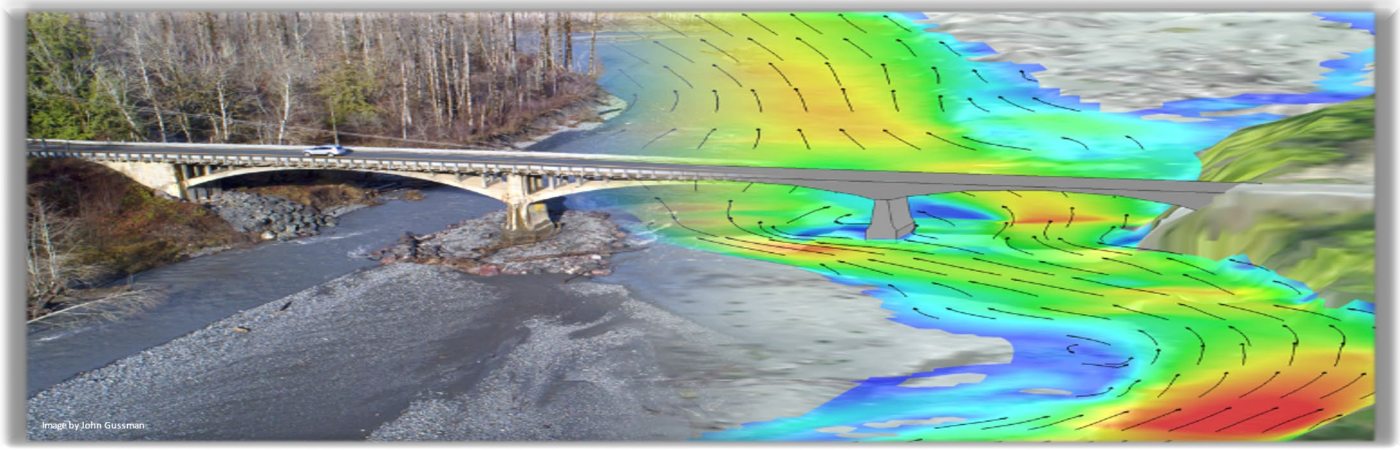


Short YouTube Training Videos – 2D Sediment Transport Modeling

- 2022 [2D Sediment Transport Videos](#) (6)



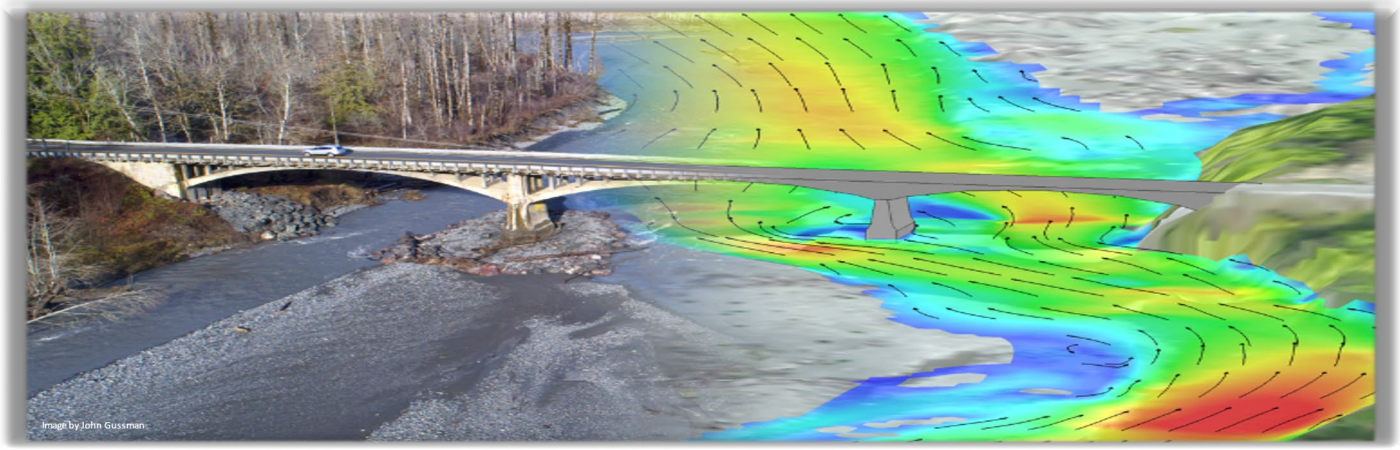
FHWA 2D Hydraulic Modeling User's Forum



- Subscribe to receive web meeting invites
- Web meetings held roughly every 2-3 months
- Updates on the latest SRH-2D and SMS developments
- 2D modeling best practices
- Tips and tricks in SMS
- Access to past eight years of web meeting recordings
- Contact Scott Hogan for more information

Scott Hogan
FHWA Resource Center
Scott.hogan@dot.gov
(720) 576-6026

FHWA 2D Hydraulic Modeling User's Forum



- Web Links to web meeting recording links after March 2022 (Zoom)
  - April 7, 2022 – Colorado DOT 2D Modeling Success Stories (Recording / Handout)
  - November 16, 2022 - Automated Bridge and Culvert Meshing Tools (Recording / Handout / Demo)
  - January 19, 2023 – How to Generate An Accurate and Efficient Mesh (Recording / Handout)
  - February 23, 2020 - Troubleshooting SMS Projects (Recording / Handout)

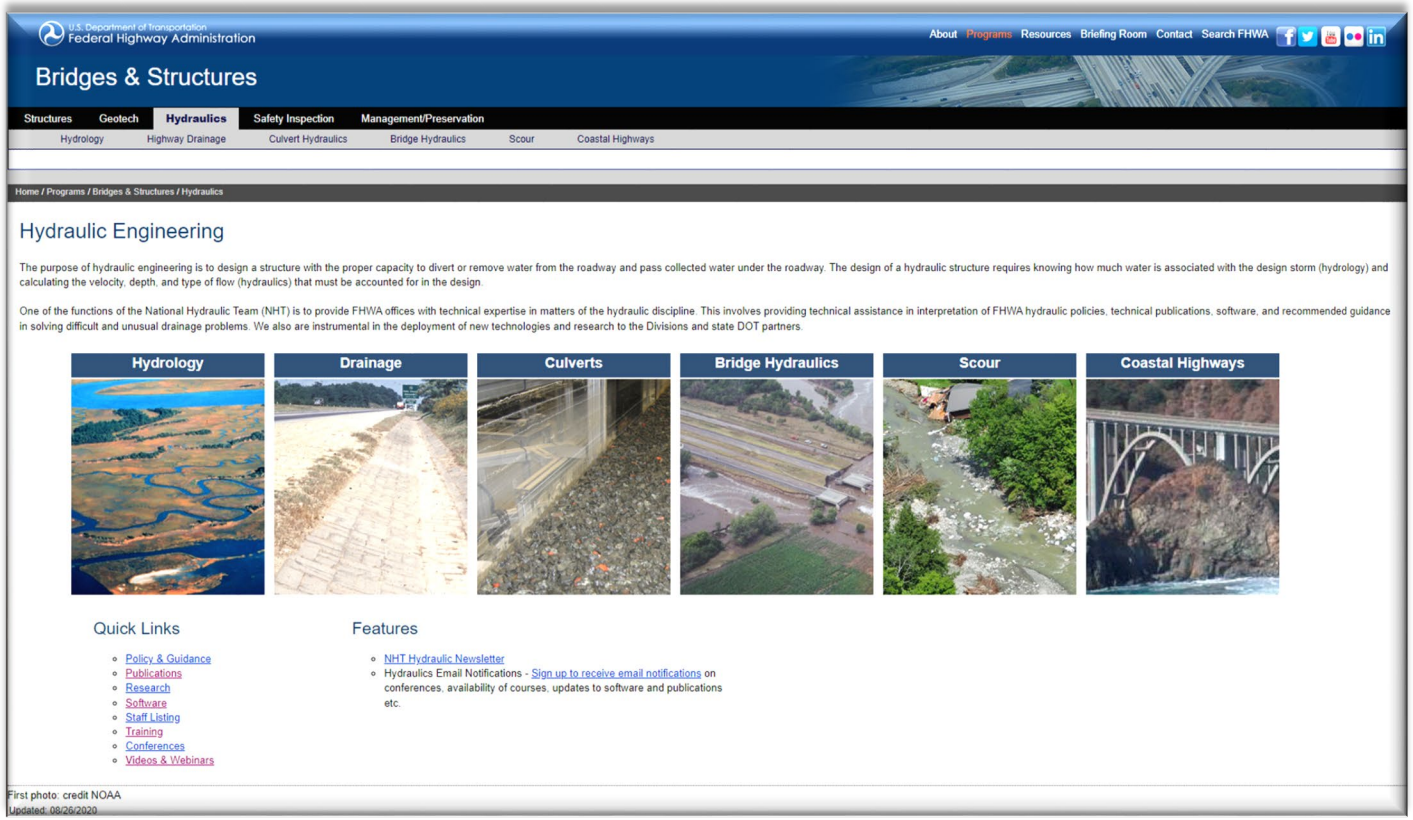
FHWA 2D Hydraulic Modeling User's Forum

- Link to meeting recordings prior to March 2022 (Through Adobe Connect)

- July 15, 2015 - SRH-2D Model Development
  August 26, 2015 - Managing information in SMS and reviewing results for adequacy
  April 27, 2016 - Mesh Development and Review
  February 2, 2017 - Evaluating bridge scour with 2D model results
  April 19, 2017 - SRH-2D Boundary Conditions
  June 21, 2017 - Developing Terrain Data
  August 31, 2017 - Back to the Basics for mesh development
  October 18. 2017 - Potential mesh stability issues and solutions
  January 25, 2018 - CDOTs 2D modeling experience
  March 1, 2018 - Nevada DOT terrain mapping with UAVs
  May 31, 2018 - Bridge and Culvert Best Modeling Practices
  August 20, 2018 - Minnesota Data Collection and Model Calibration
  November 14,2018 - 2D Hydraulic Model Review
  January 17, 2019 - New features in the SMS SRH2D interface
  March 14, 2019 - SRH-2D Model Development Overview
  June 18, 2019 - Importing and Compiling Terrain Data
  August 8, 2019 - Presenting and Exporting Results
  November 14,2019 - 2D Hydraulic Modeling Reference Document Overview
  February 20, 2020 - 2D Hydraulic Model Review - Terrain Data
  April 4, 2020 - 2D Hydraulic Model Review - 2D Mesh
  May 13, 2020 - 2D Hydraulic Model Review - 2D Boundary Conditions and Materials
  July 16, 2020 - 2D Hydraulic Model Review - Hydraulic Structures
  December 1, 2020 – What's new in SMS 13.1 and SRH-2D 3.3
  March 2, 2021 -2D Hydraulic Model Review - Model Controls and Results (3D Bridges)
  June 17, 2021 – Understanding the Importance of Hydraulic Controls/Mesh Resolution
  January 13, 2022 - FEMA Flood Mapping Using 2D Modeling

Additional FHWA 2D Hydraulic Modeling Resources

- FHWA Bridge Hydraulics Page
  - 2D Hydraulic Modeling Sample Scope of Work
  - 2D Hydraulic Modeling Video Summary Pages
  - Benchmarking of SRH-2D Report
  - A Primer on Modeling in the Coastal Environment



FHWA Bridge Scour Workshop

- Recordings and Handouts
- Bridge Scour Overview
- Long Term Degradation
- Contraction Scour
- Pier Scour
- Abutment Scour
- 2D Bridge Scour Tools Demo