Sava River Modeling Process Overview

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Discussion Outline

- Objectives
- Data Collection
- Limitations
- Development Process
Objectives

- Develop a single HEC-RAS one-dimensional, steady-state, gradually varied flow hydraulic model of the Sava River that can be further developed to provide even greater utility.
- Use the model to calculate flood profiles for the Sava River.
- Use the results to develop floodplain mapping for the study reach.
- Added objective of developing an unsteady flow model for the river.
Data Collection

- Sava River is 945 km long, and drains 95,719 km²
- Data was provided by the International Sava River Commission and participating partners
- Used Digital Elevation Models (DEM) (30M Grid), existing HEC-RAS models, digital aerial photography, existing basin maps, existing stream discharge information
- Collected and combined the multi-source data to produce a cohesive product
Limitations

- **Steady State**
  - Limits the ability to model storage areas
    - Cannot divert flow from the main channel based on stage and rating curves
    - All flows must be known
  - Provides only a “snapshot” in time
  - Use caution when working with levee overtopping scenarios

- **One-Dimensional**
  - Limits ability to model side flows through areas outside the levees
  - Cannot model flows perpendicular to the levee without side-flow channels

- **Flow Behind the Levees**
  - Broad floodplain may not fill to the height of the levee crest during peak discharges (volume-related)
Development Process

- Data collection and collation
  - Data provided by multiple sources, SRC members, USACE…

- Data evaluation
  - Looked at completeness and areas in which data was needed

- Data augmentation
  - Add information from the DEM to the existing geometry, filled holes in the DEM
  - Use photography to identify features and characteristics

- Model correlation
  - Ensure cross section locations are correct along the stream centerline
  - Ensure levees are correctly located in the cross sections and in the model generally
  - Levee crest elevations should be verified in some areas
Development Process (2)

- Initial runs
  - To determine additional data needs
  - To validate or reject initial assumptions
  - To get the model running before refining the solution

- Adjustments
  - Add data as necessary/appropriate
  - Modify coefficients
  - Review levee overtopping (elevation, frequency, etc.)

- Final runs
  - To calculate the refined solution
  - Resulted in two HEC-RAS plans (steady flow & unsteady flow)

- Report of process and results to follow
- More detail of the process is provided in a later topic
Questions?