Truckee River Regional Hydraulic Model Results

January 2016

Outline

- History of Modeling Effort
- Reasons for updated modeling
  - Improved accuracy
  - Updated topography
  - Integrated model for the entire region
- Model validation
  - Previous model was calibrated to the 1997 event using numerous data sources
  - Regional model matches calibration points quite well
    - Model does slightly over-predict discharge and stage at Vista gage
- Model Results
  - Existing and proposed conditions

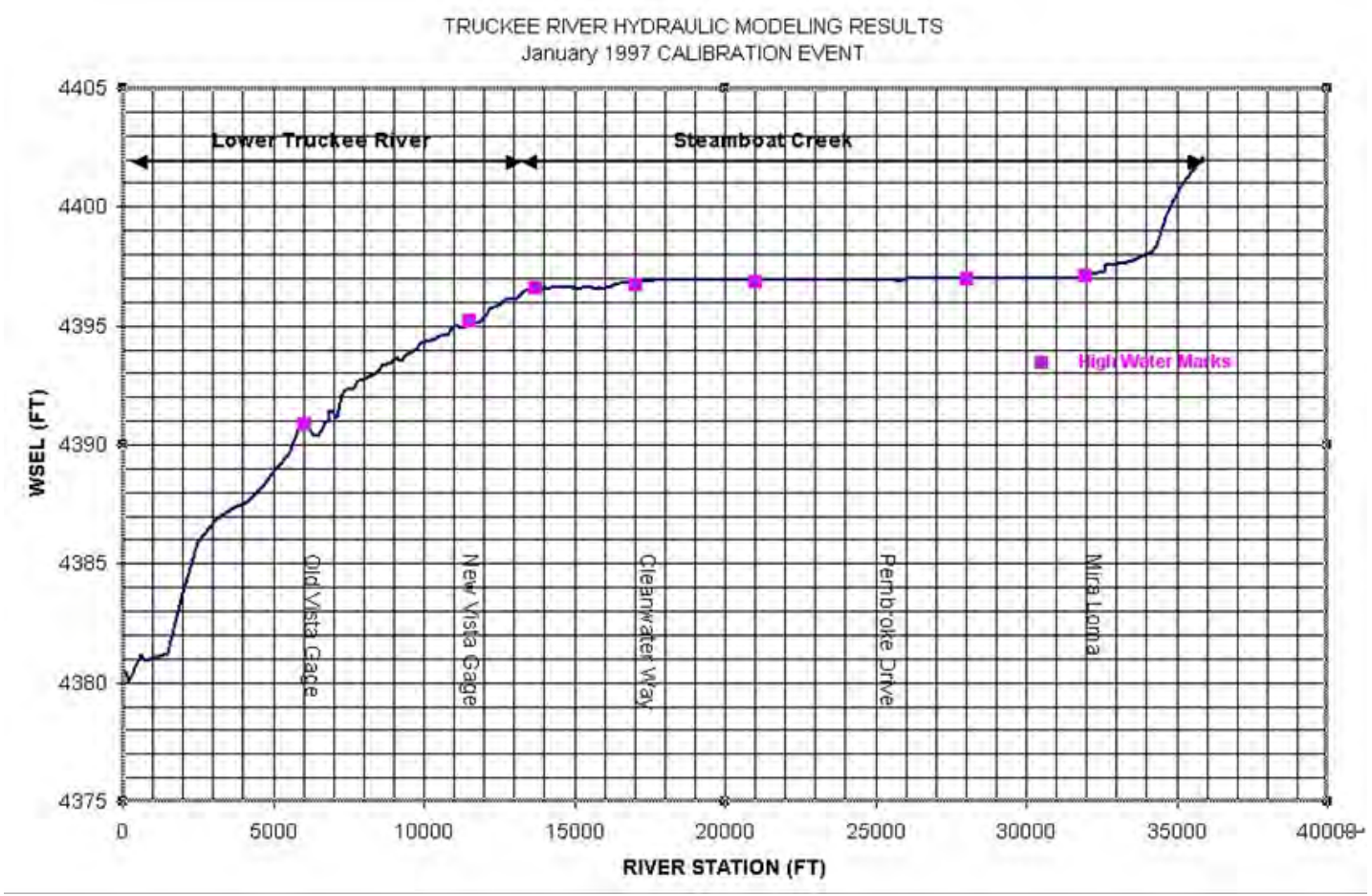
Reasons to Develop Regional Model

- Improved accuracy – Tools Improving!
  - Evaluation of Flood Project
  - Evaluation of other projects
  - Support emergency response
- Newer topographic data
  - IR LiDAR in overbanks
  - Green LiDAR in river channel
- Single integrated model for the Truckee Meadows
  - Region was previously represented using two HEC-RAS models, as well as FLO-2D for some overbank areas
  - Model can be used for emergency response

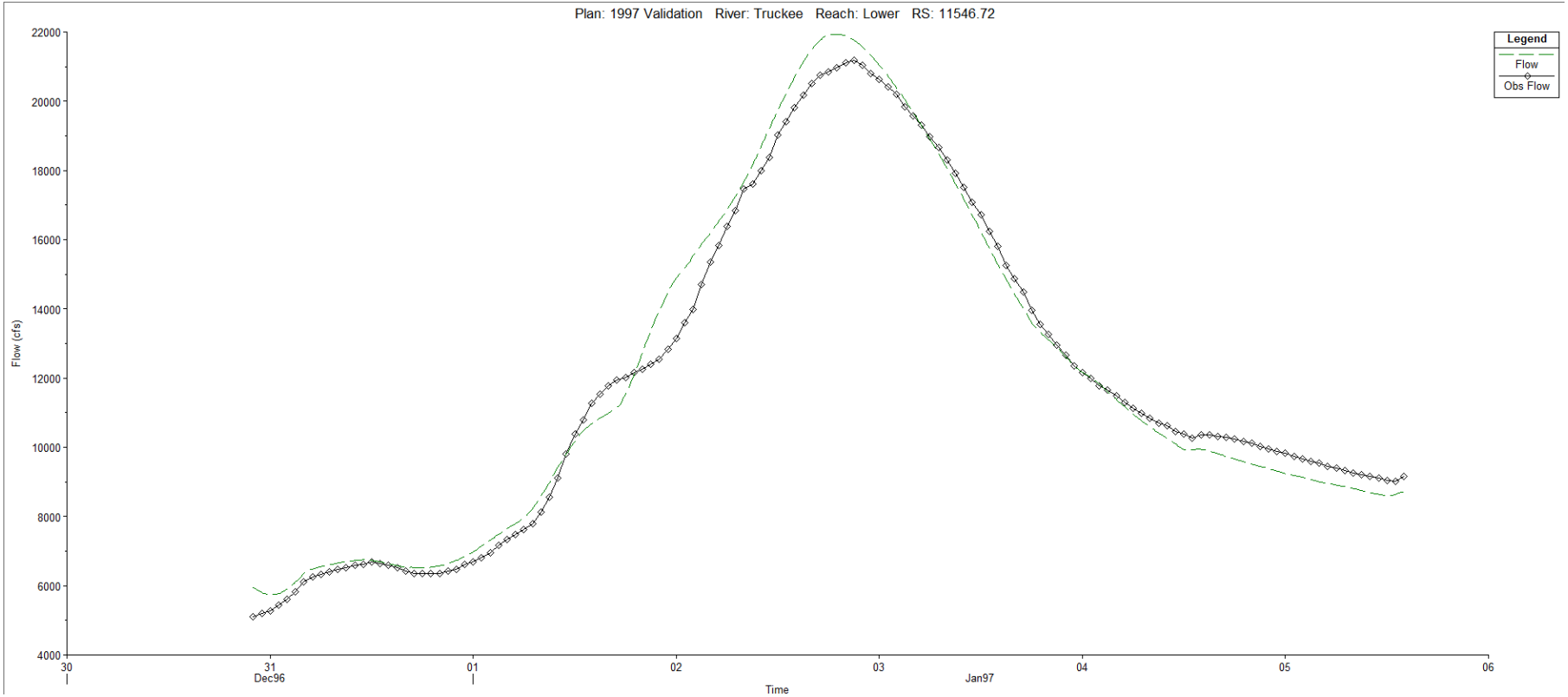
Model Validation

- Previous HEC-RAS model was validated using multiple data sources
  - Surveyed high water marks
  - Time-stamped video recordings
  - Stage and discharge hydrograph records
- Regional model matches validation quite well
  - Examined inundation extents, peak water surface elevations, timing of flooding, etc.
  - Inundation animation allows previously impossible comparison to video recordings
  - Model does slightly over-predict peak discharge and stage at Vista gage
    - Q approximately 5% over observed data
    - Stage approximately 0.3 ft above observed data

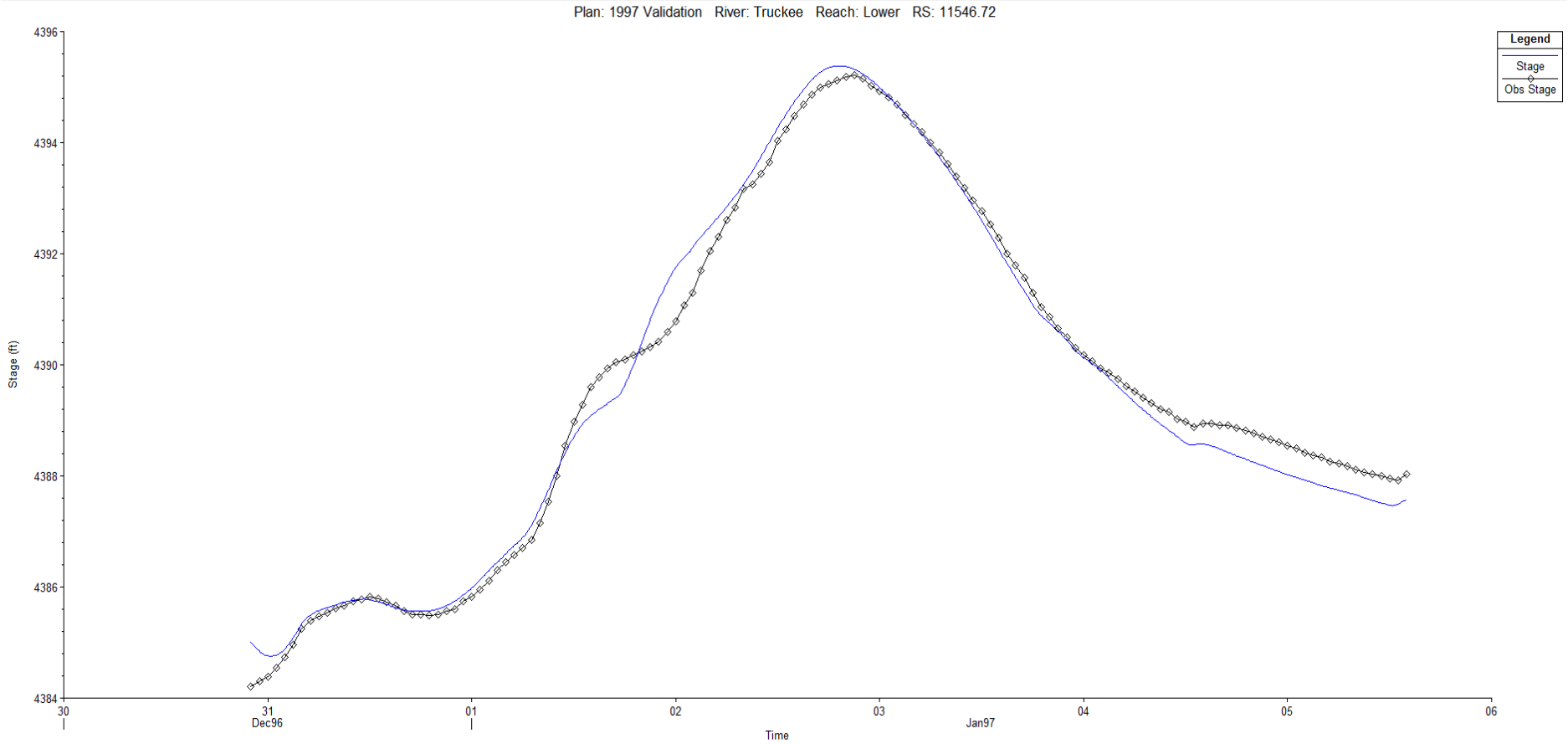
High Water Mark Comparison



Results at Vista Gage - Discharge

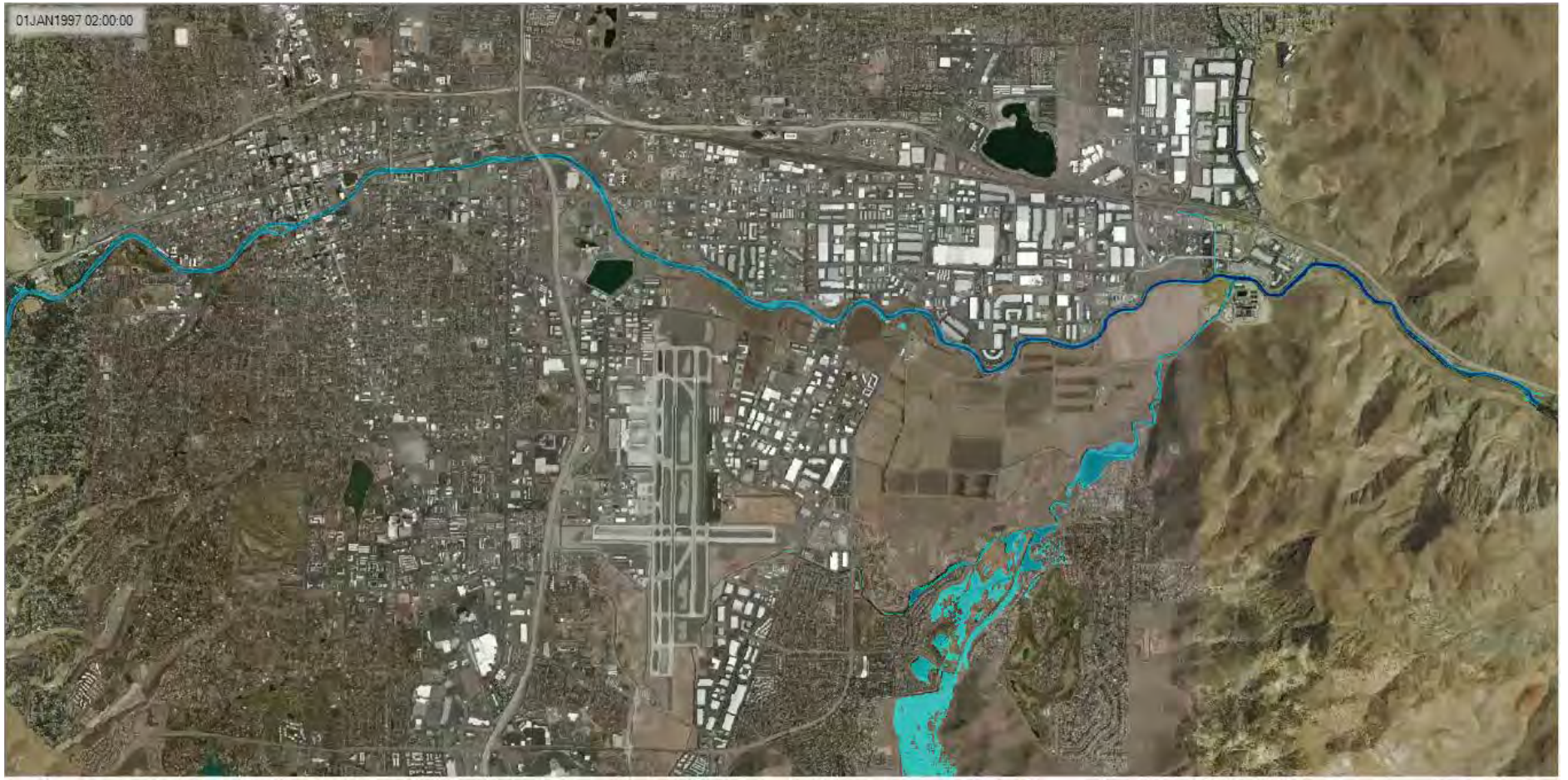


Results at Vista Gage - Stage



Proposed Conditions Terrain Development

1997 Event Model Results



Existing Conditions – 100-Year

Proposed Condition 100-Year

Conclusions

- Model provides more accurate simulation of existing and proposed conditions
- Eliminates the need for multiple models and software packages
- Validation indicates the model represents the 1997 flood event quite well
- Simplifies process of analyzing impacts of proposed conditions alternatives
- Allows for rapid simulation of emergency conditions

Questions?