# SR 107 Hydraulic Assessment

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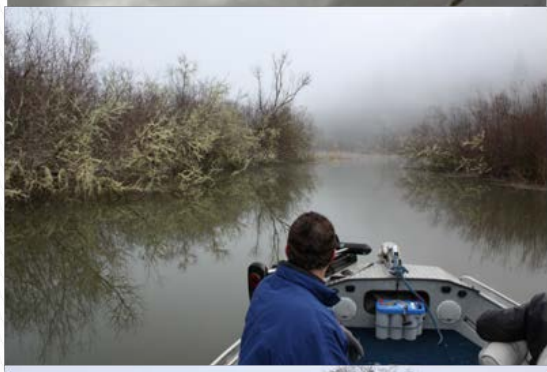



# Outline

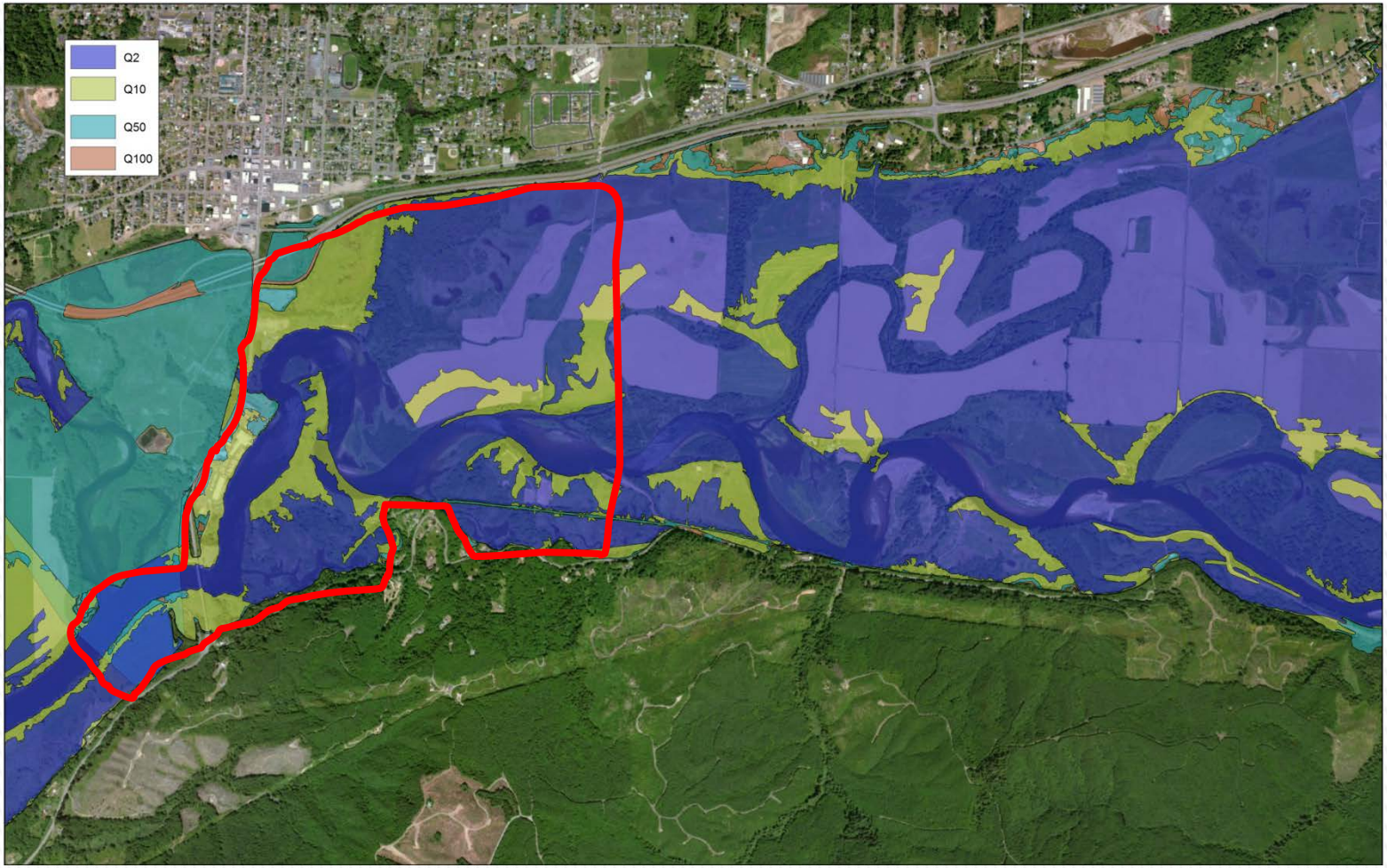
- ✓ Study Purpose
- ✓ Study Area and Approach
- ✓ Model Setup
- ✓ Model Scenarios
- ✓ Preliminary Model Results
- ✓ Next Steps

# Study Purpose

- Marys River Lumber Mill recently installed a sheet pile wall to protect the mill from a sudden avulsion
- Sheet pile wall may have effects on downstream SR 107/4 Bridge (Scour Critical). Not accessed as part of project
- However, several stakeholders voiced support for encouraging the Chehalis River to flow in relic channel alignment to south ("Full Channel Bypass")
- This Full Channel Bypass alignment would alter the flows approaching the SR 107/4 Bridge
- Assess whether this Full Channel Bypass alignment might provide "better" hydraulics for scour conditions at the bridge

# Study Area

# Study Area



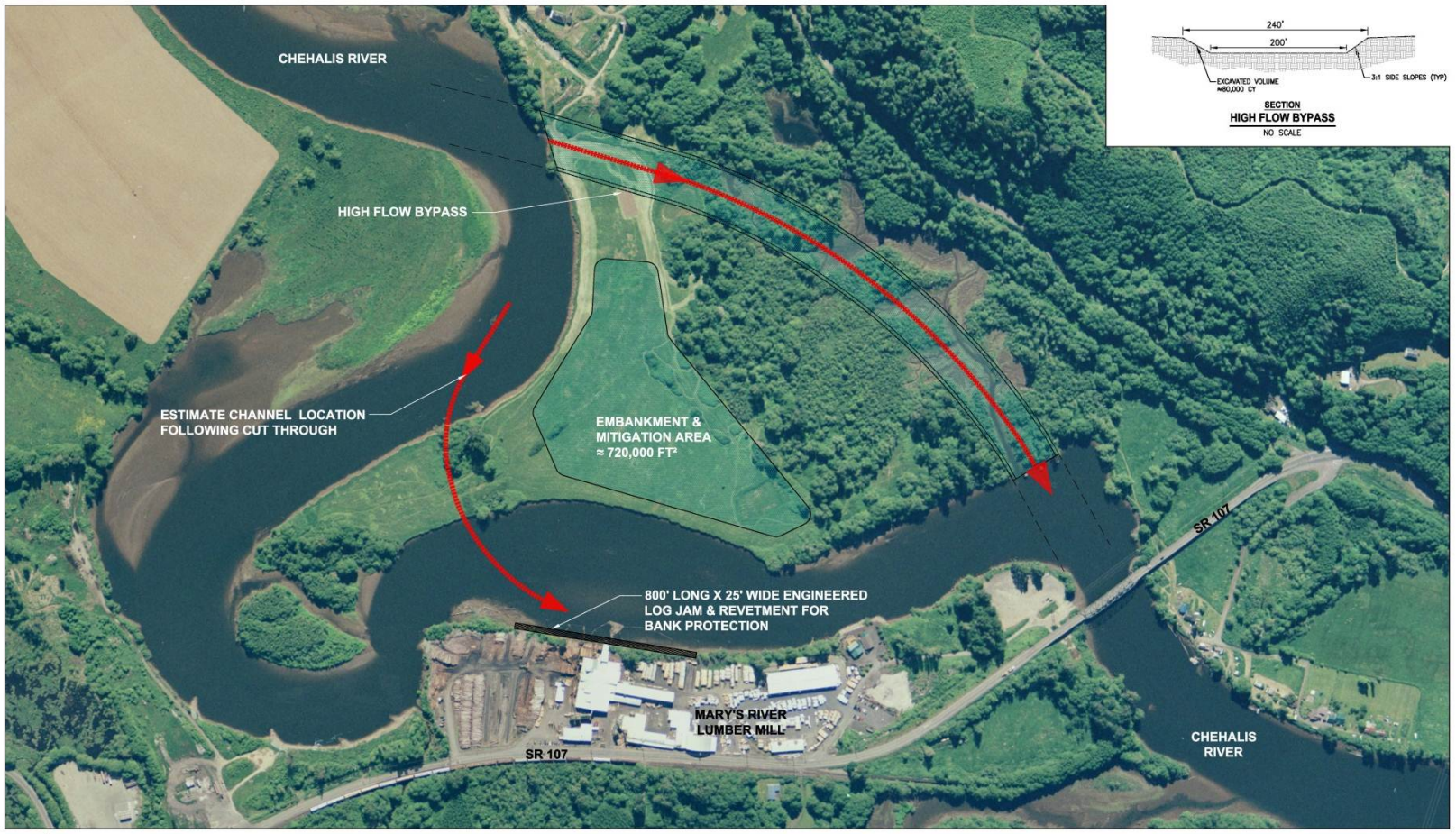
# Study Approach

- Develop a 2D hydraulic model of flows upstream and through the SR 107/4 Bridge
- Simulate a range of geometry “alternatives”
- Simulate a range of flow conditions
- Assess the difference in hydraulic regimes between the alternatives
- Assess the benefits/impacts of each alternative on the SR 107/4 Bridge

# Numerical Model

- Develop a 2D model using SRH-2D
- Develop upstream and downstream boundary conditions using the existing HEC-RAS model
- Simulate different geometries
  - Existing conditions
  - Avulsion of upstream meander bend
  - Chehalis River along relic channel
  - Another condition (TBD)
- Simulate different flow conditions
  - ✓2007 flood
  - ✓2-year synthetic flood (with average tide)
  - ✓100-year synthetic flood (with average tide)

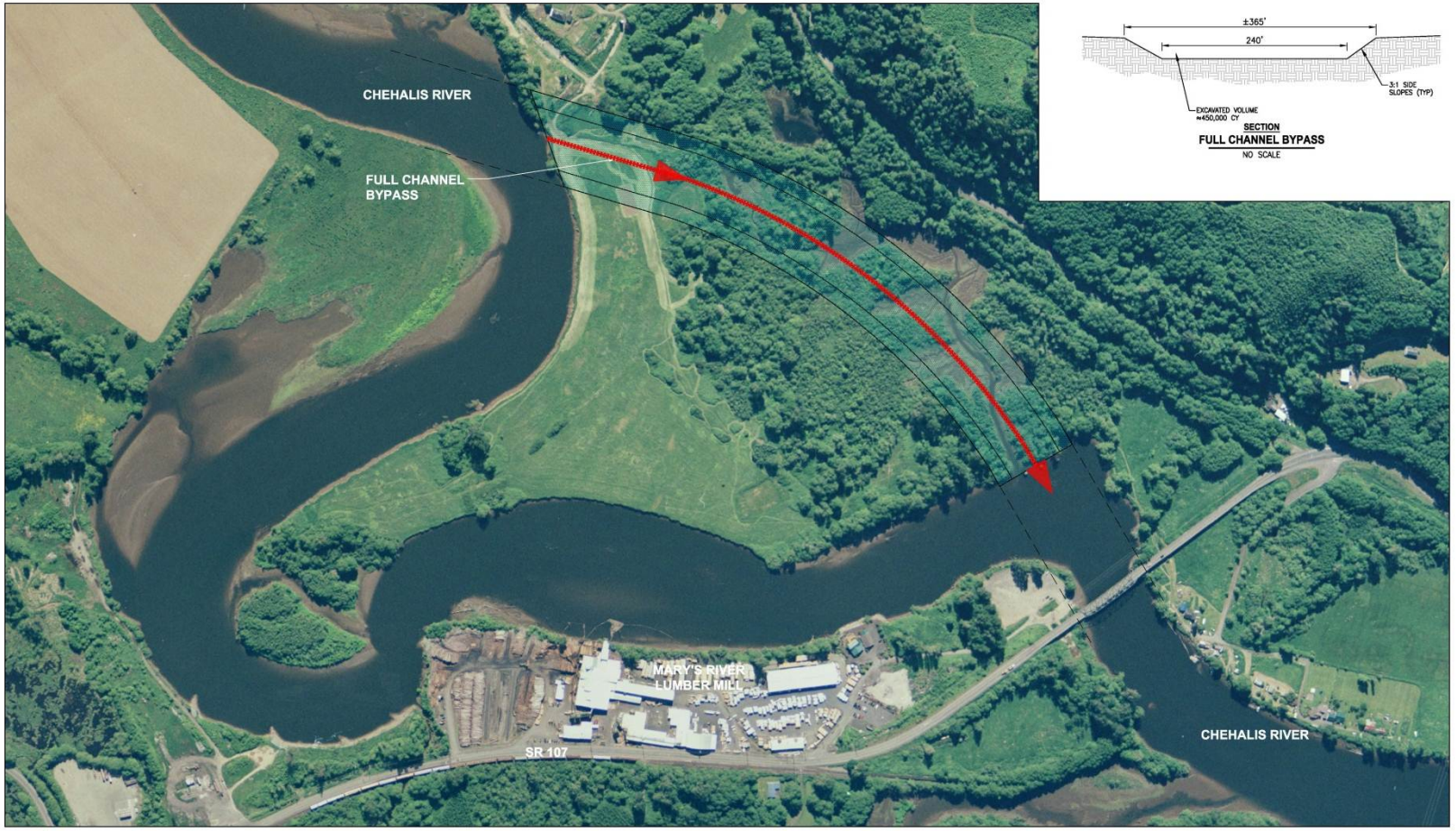
# Avulsion (and High Flow Bypass)




Parametrix

ALT# 1 - ELG & HIGH-FLOW BYPASS
MARY'S RIVER LUMBER
CITY OF MONTESANO

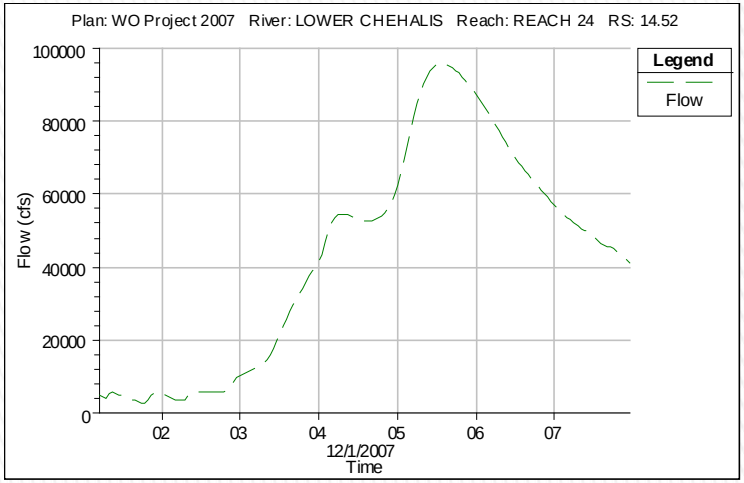
# Full Channel Bypass

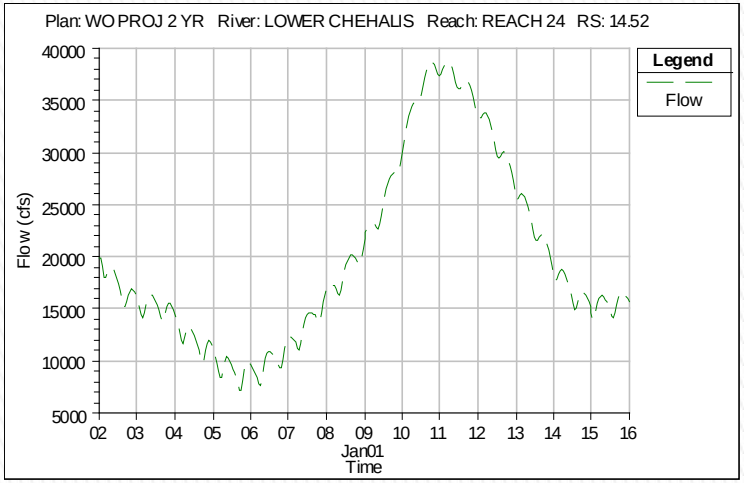


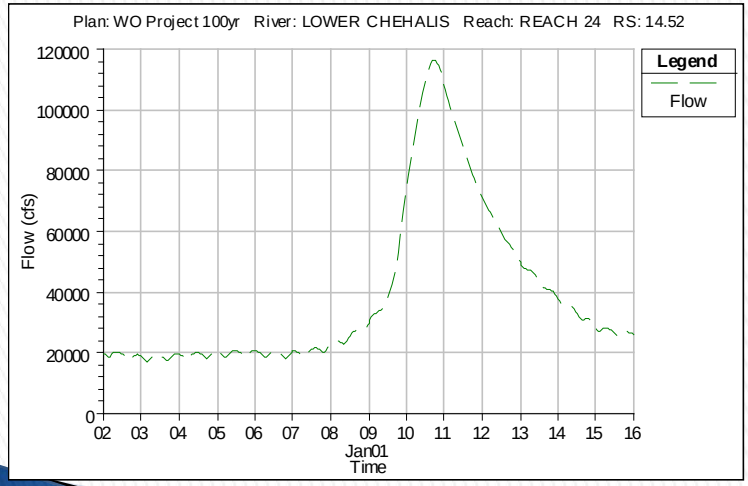

Parametrix

ALT# 2 - FULL CHANNEL BYPASS
MARY'S RIVER LUMBER
CITY OF MONTESANO

# Flow Conditions

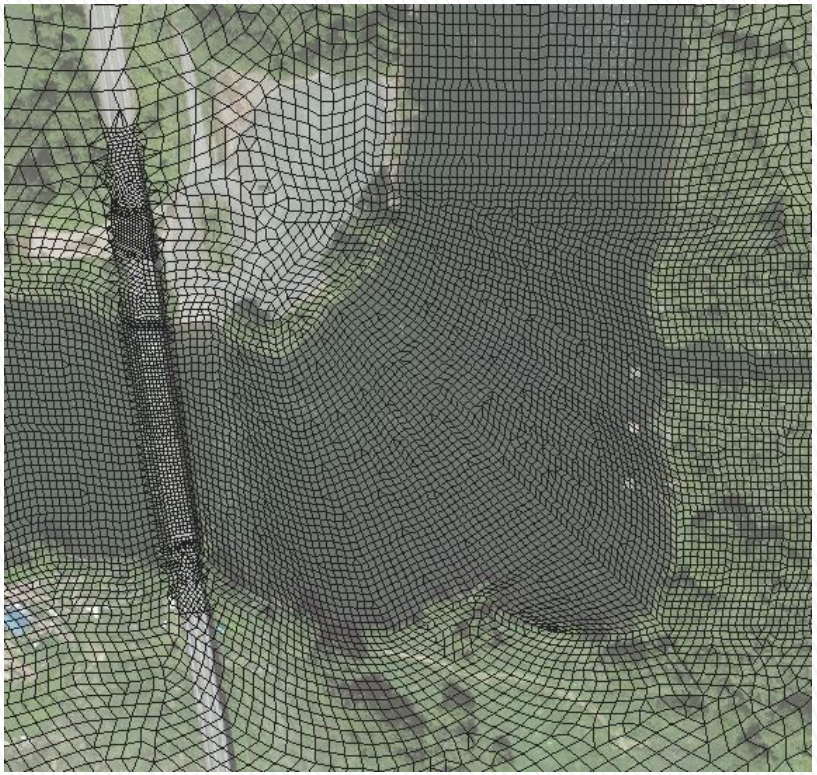


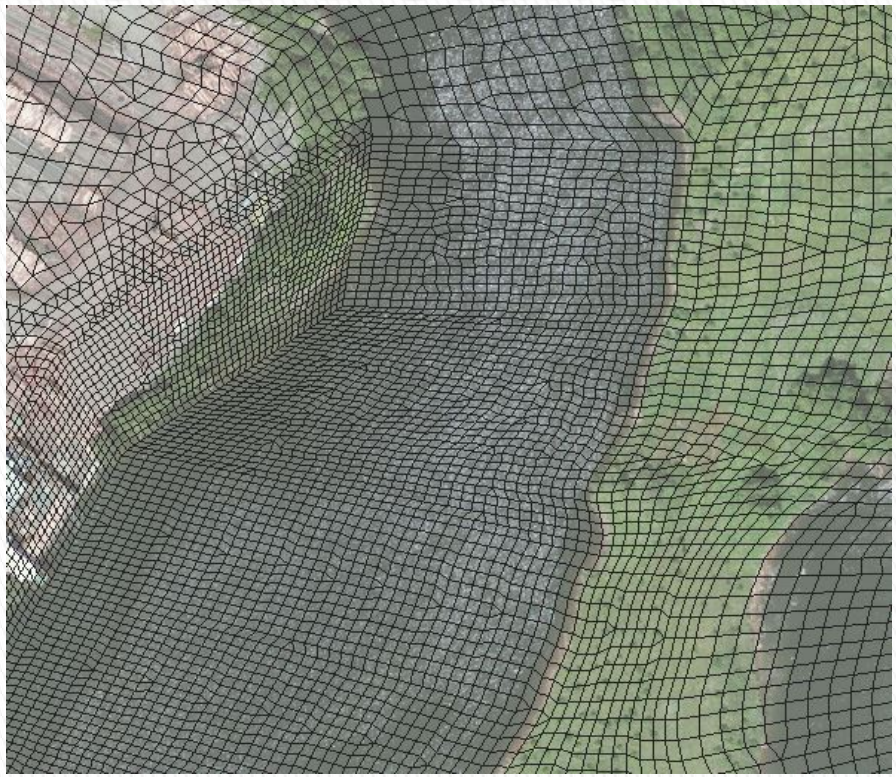



# Numerical Model Grid

# Numerical Model Grid Details





# 2-year Synthetic Flood with Existing Channel

# 2-Year Synthetic Flood with New Channel

# Differences between Geometries

# Next Steps

- Complete simulation of all Alternative geometries and design flows
- Evaluate differences between Alternative Scenarios
- Prepare a report and make presentation

# QUESTIONS?