

# Editing, Data Handling, and Geoprocessing in HEC-RAS

Zach Morris

Cameron Ackerman, P.E., BC.WRE



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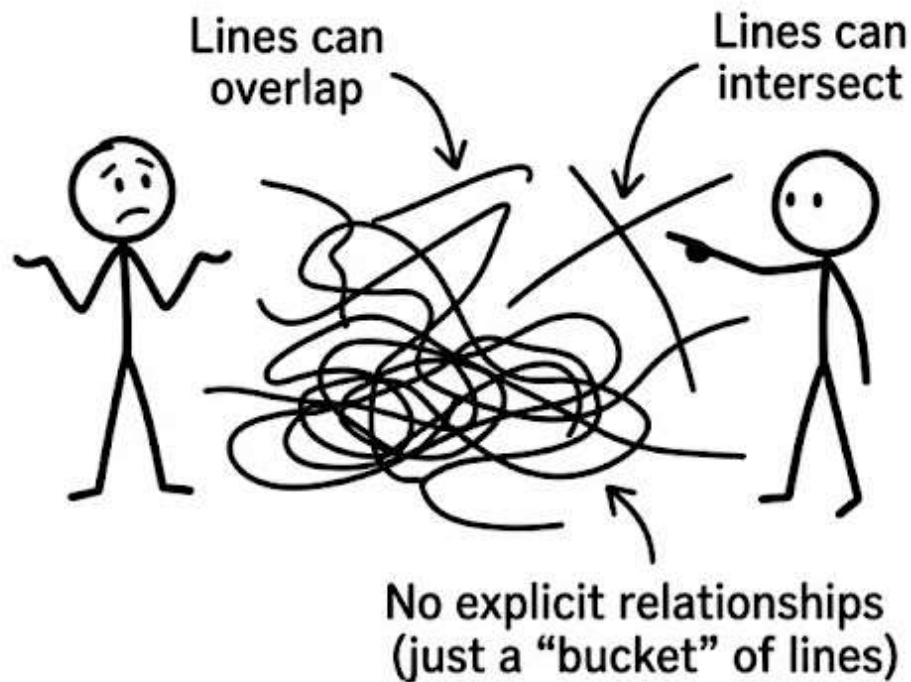
# Overview of Vector Data in HEC-RAS

- Shapefiles
  - **Spaghetti model** where features are stored independently
  - Features do not know about connections or neighbors
- Conceptual Mesh
  - Is an Arc/Node **Topology**
  - Arcs know who they are connected to
  - All Regions share an Arc – no gaps

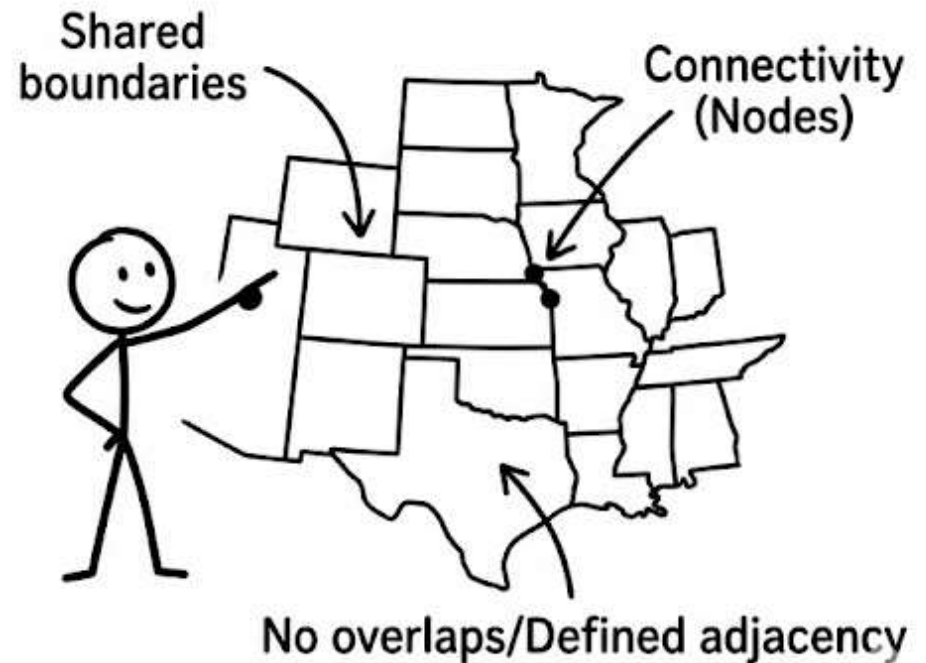
*\*We try to handle editing/processing of both spaghetti & topological vector similarly, but tooling is inconsistent as it matures*

# COMPARING GIS DATA MODELS

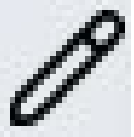
## SPAGHETTI GIS MODEL (A "Bucket of Lines")



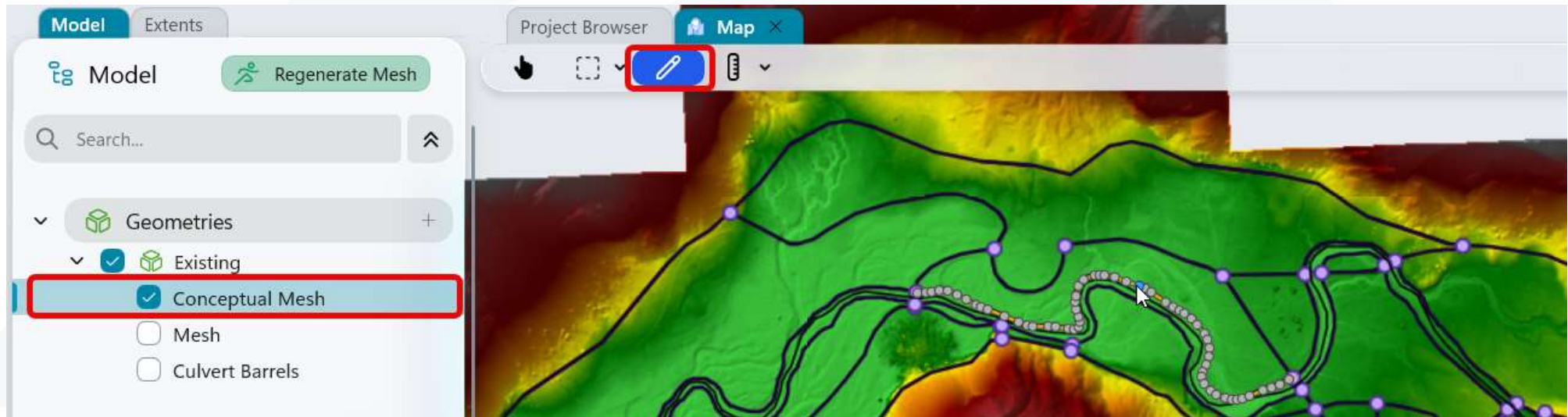
## TOPOLOGICAL GIS MODEL (Defined Relationships)



# Edit – Selected Layer



- **Start** - Double-click
- **Add vertex** - Single-click
- **End** - Double-click or *ESC* key
- **Edit Feature** - Double-click
- **Delete Feature/Point**- *Delete* key or *D* key
- **Split Line** – Hold *S* key





# Quick Editor



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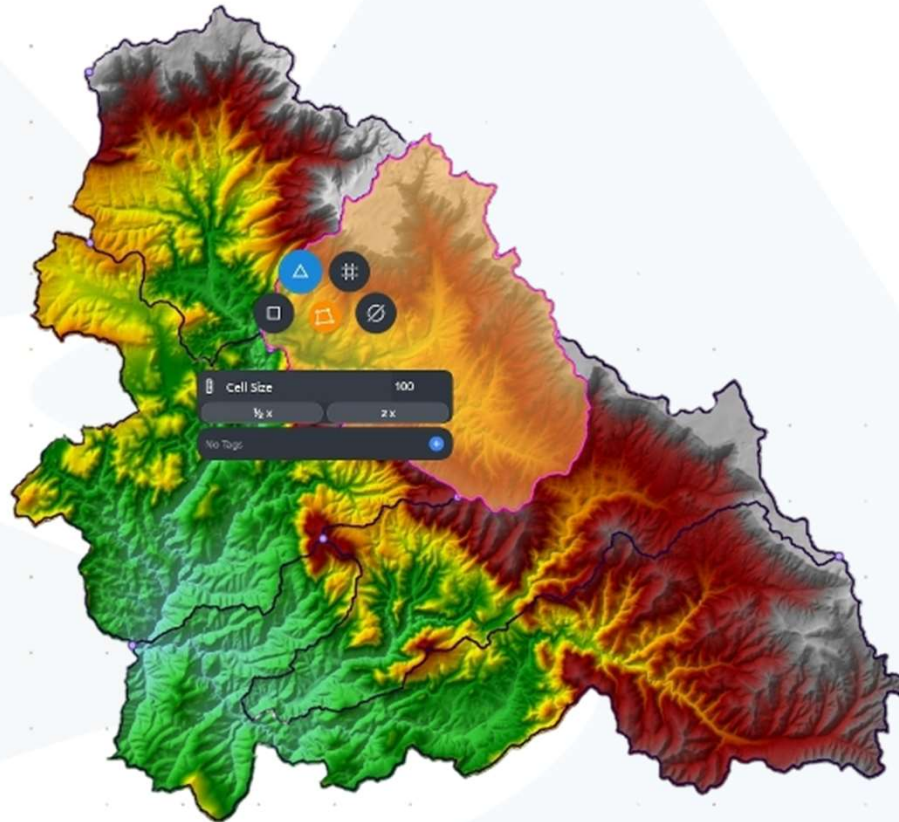


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# Region Quick Editor

- Hover any region with the edit tool active
- Right-click and click **Quick Edit**



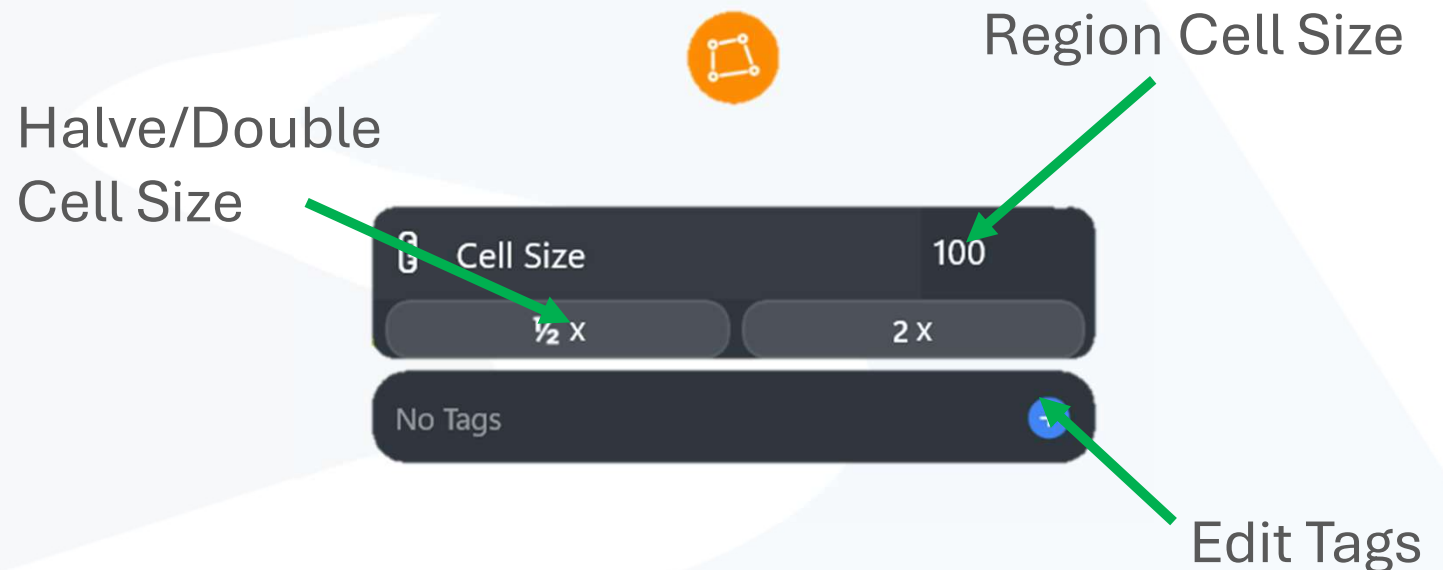
# Region Quick Editor - Pick Patch Type

- Pick the desired type of cells to generate in the region



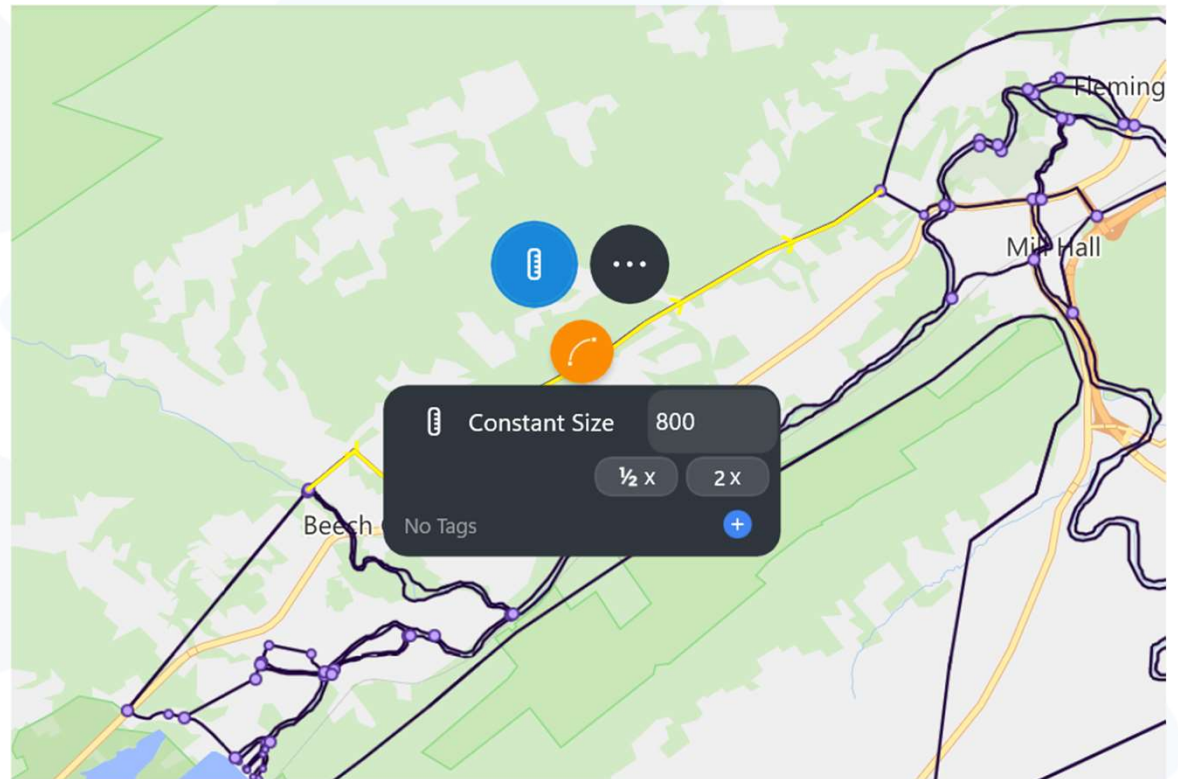
# Region Quick Editor – Sizing & Tags

- Modifies **region** cell-size and connected external **arcs** cell-size



# Arc Quick Editor

- Hover any arc with the edit tool active



# Pick Size Type

- Pick the mode to specify the cell size in

Size  
(Length)

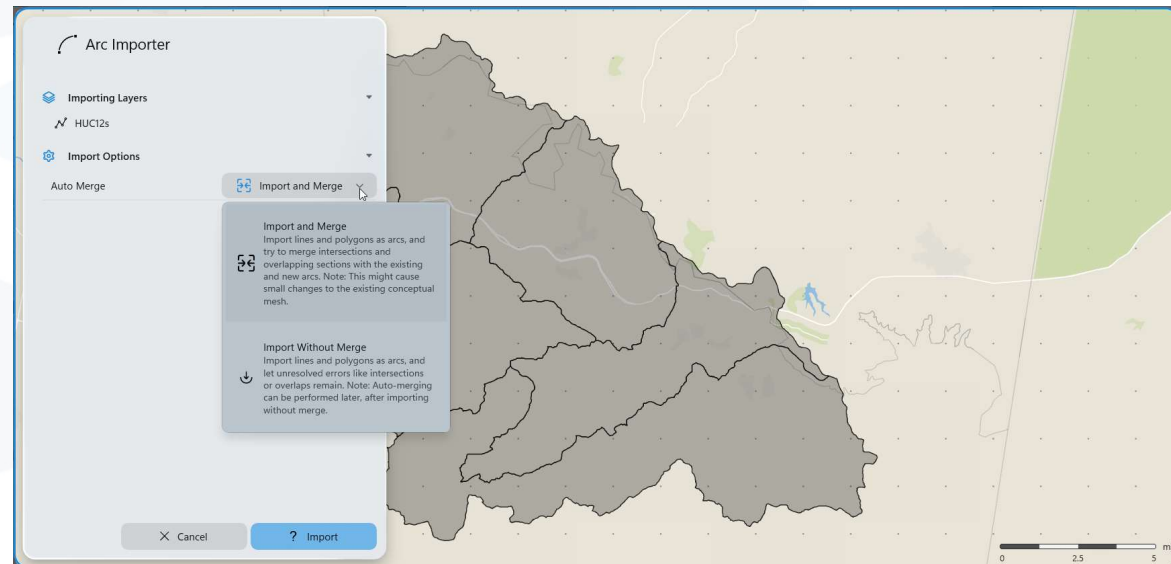
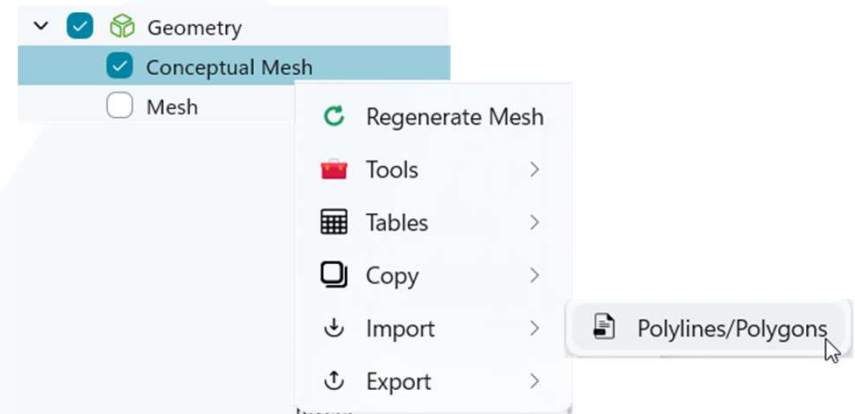


Count



# Shapefile Import

- Open
  - Right-click on Conceptual Mesh
  - Select **Import | Polylines/Polygons**
- Pick Merge Option
  - Merge
    - Automatically insert nodes at line intersections
  - Without Merge
    - Bring in features as-is
- Merge Contiguous Arcs
  - Remove nodes where it connects only two arcs
- Remove External Arcs
  - Any arcs that are not contained within any region will be deleted

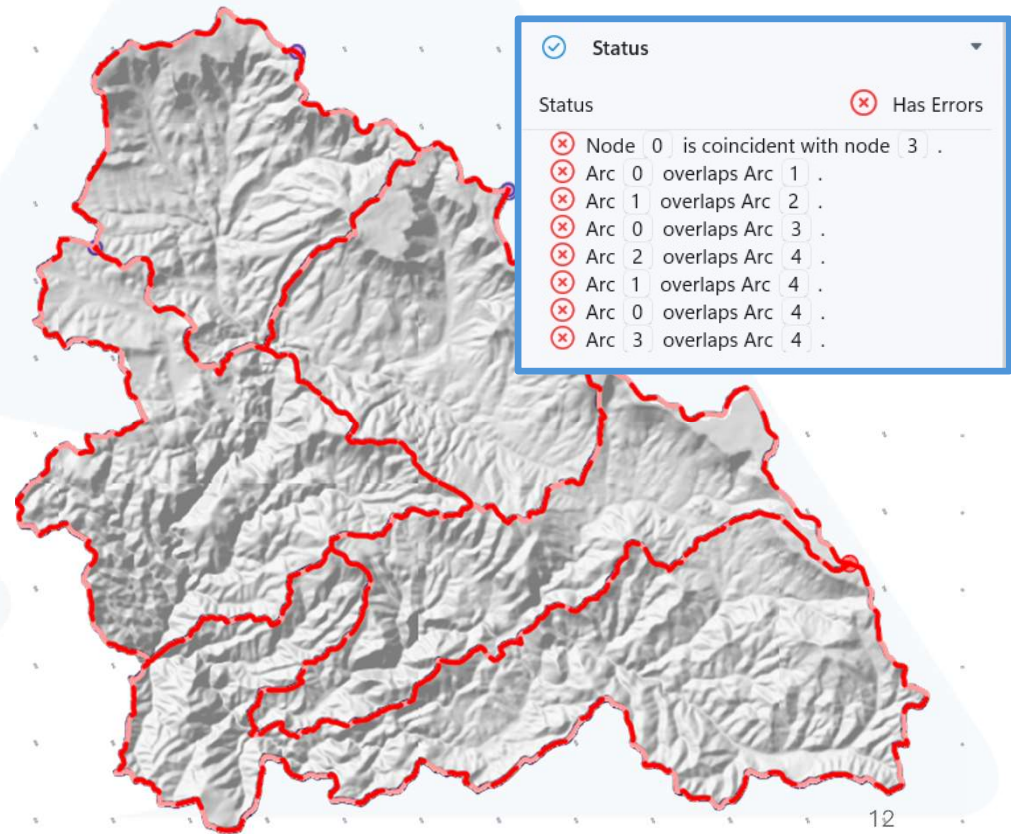


# Merge Options

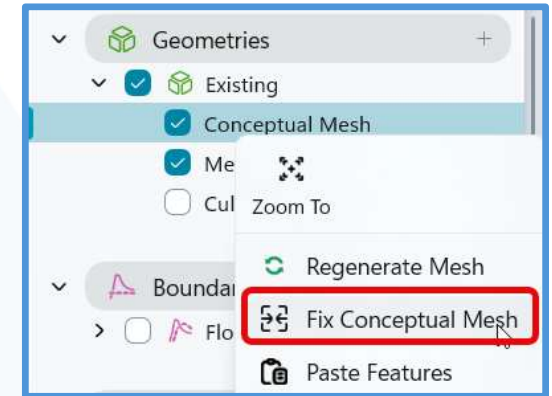
- Import and Merge



- Import Without Merge



# Merge = Fix Conceptual Mesh



- Imported data *may* change
  - Tolerance for detecting overlapping Arcs may result in very small adjustments to vertices

# Geoprocessing Tools

- Line/Polygon
  - Convert to polygon/line
  - Buffer (*to polygon*)
  - Offset (*to lines*)
  - Filter
  - Reverse
  - Smooth
  - Densify
  - Merge
  - Snap To High Ground
  - Rasterize Distance To Line
- Raster
  - Resample
  - Round
  - Fill NoData (Fill Polygon)