

UC



# NHD and the Esri Utility Network

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# Overview

- Status
- NHD Flowlines with Geometric Network and Network Dataset
- Geometric Network for stormwater support

# NHD and Utility Network Status Status

- Early in the game
- Review with the core team best practices for water resources network implementation
  - Data model
    - Connectivity options
    - Keep it simple
  - Functionality
    - Upstream/downstream tracing with/out limits
- Target
  - NHD Hires
  - 2018 Esri Water Conference
- Provide YOUR requirements



# NHD Flowlines with Geometric Network and Network Dataset

- Successfully built both high (NHD staged) and medium resolution (NWM 1.1) NHDFlowlines into both geometric network and network dataset.
  - Using ArcGIS 10.5 running on “decent” laptop.
  - Out of the box ArcGIS functionality.
  - Reported build “errors”

Type of Network	NWM Flowlines 2,716,897 features	NHD High-Resolution 25,877,685 features	Percentage of Build Errors for NHD High-Resolution
<b>Geometric Network</b>	27' 18" (12 build errors)	4 hours - 43' 12" (91,950 build errors)	0.35533%
<b>Network Dataset</b>	52'	7 hours - 57' (5 build errors)	0.00002%

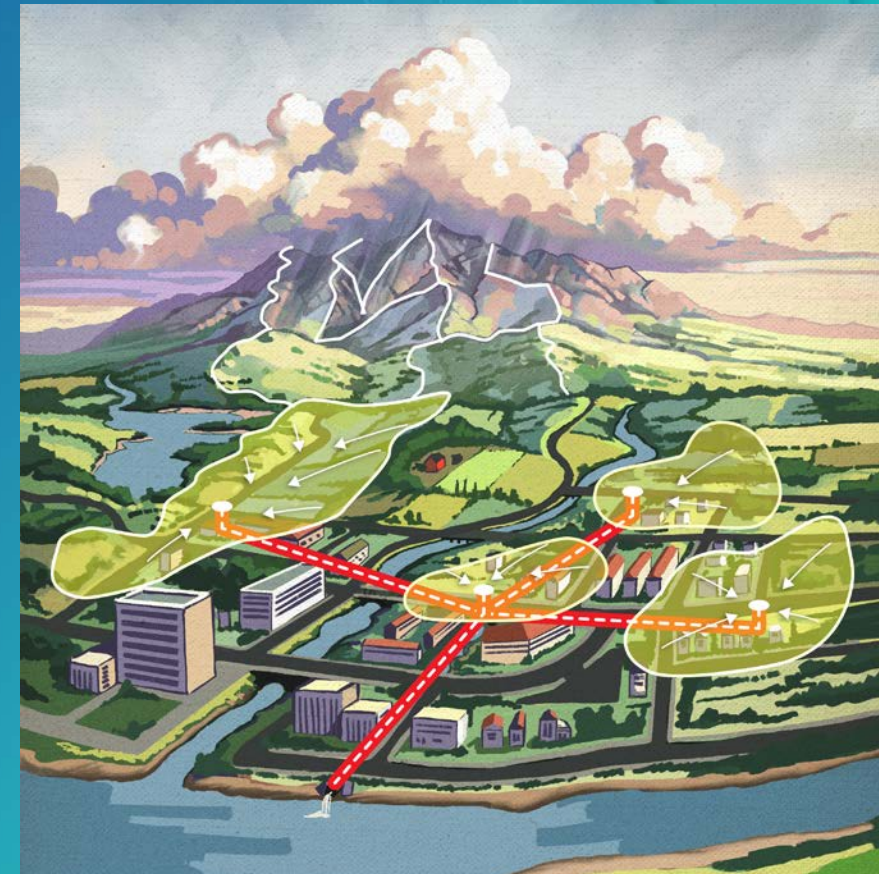
# NHD Flowlines with Geometric Network and Network Dataset

- Successfully (upstream) traced Mississippi.

Type of Network	NWM Flowlines 2,716,897 features	NHD High-Resolution 25,877,685 features
Geometric Network (drawings)	3"	47"
Geometric Network (select)	4"	2' 51"
Network Dataset	4' 19"	1 hour - 11"

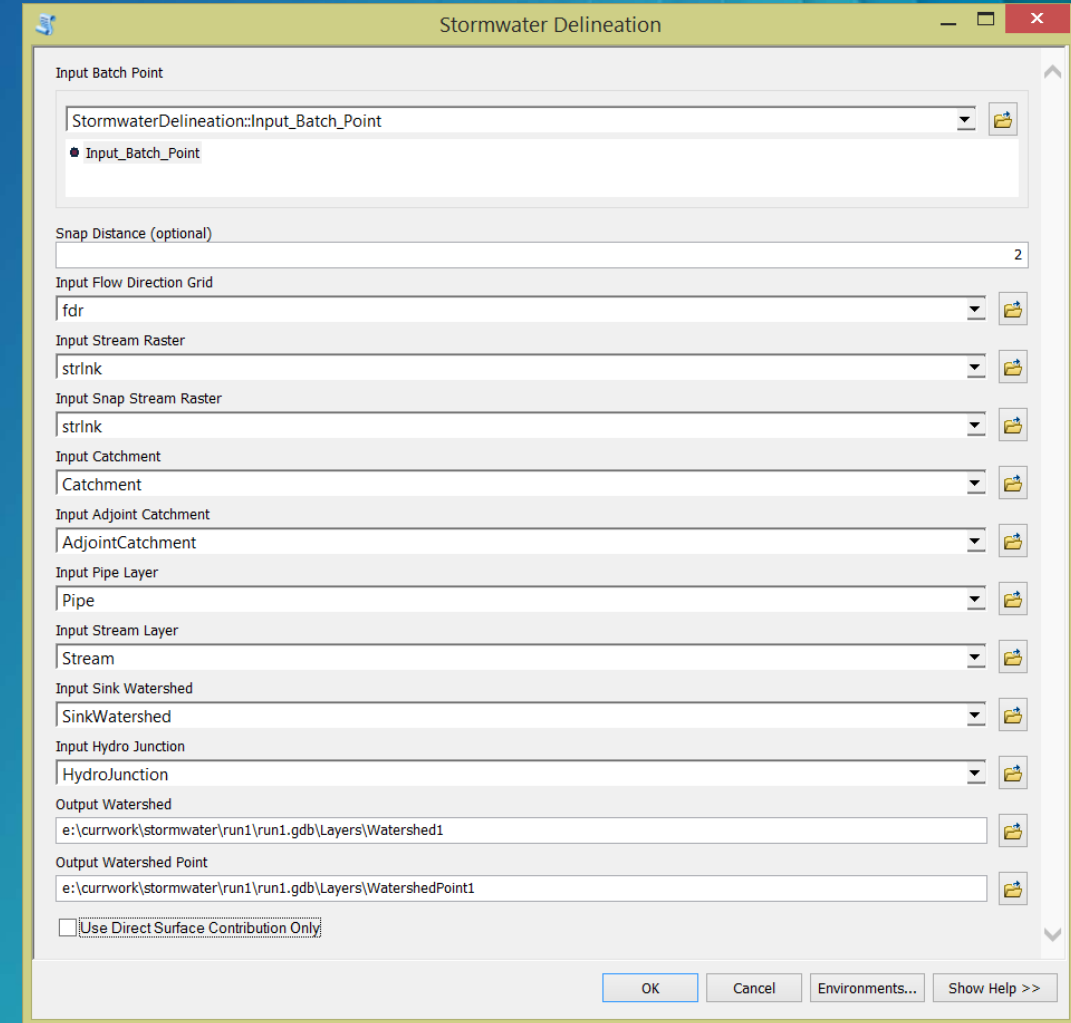
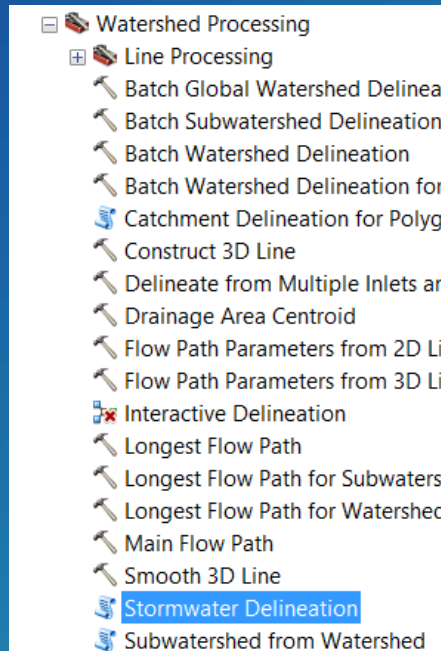
# Geometric Network for stormwater support (Arc Hydro)

- Combining overland flow driven by terrain and network (pipe/channel) driven by built infrastructure.
- Two “systems” in play:
  - Collection system – takes overland flow and places it into the conveyance system.
  - Conveyance system – takes the collected water and moves it through
- These systems interact through open channels and inlets.
  - Overland flow does NOT interact with pipes directly



# Geometric Network for stormwater support (Arc Hydro)

- New Arc Hydro gp tool to capture different options in contributing area determination
  - Single point
  - Multiple points
- StreamStats implementation in urban areas



# Geometric Network for stormwater support (Arc Hydro)

- Tool functionality matrix:
  - Where the point is?
  - Where the line is?
  - Local or global contribution (surface or full conveyance)?
- “How to” (workflows for data prep) documentation on the way

Clicking on	Use Direct Surface Contribution Only: False (Default)	Use Direct Surface Contribution Only: True
Inlet	SinkWatersheds linked to selected + traced upstream HydroJunctions	SinkWatershed related to selected HydroJunction only.
Pipe	SinkWatershed linked to traced upstream HydroJunctions only.	Watershed draining to the surface location.
Stream	Directly connected Surface Area Watershed + SinkWatersheds related to traced upstream HydroJunctions.	Directly connected Surface Area Watershed only.
Land	Directly connected Surface Area Watershed.	Directly connected Surface Area Watershed.





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