

# **National Stream Internet**

## **Editing NHDPlus for Spatial Stream-network Models**

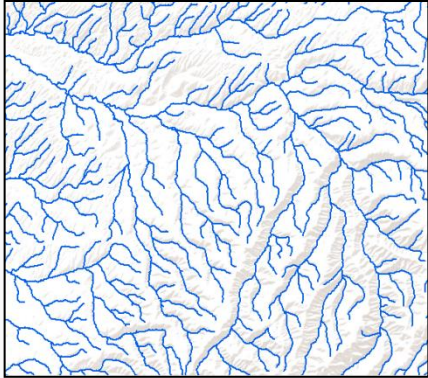
David Nagel

U.S. Forest Service, Rocky Mountain Research  
Station, Boise Aquatic Sciences Lab



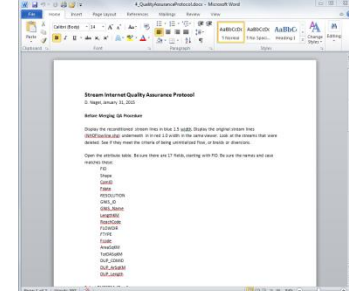
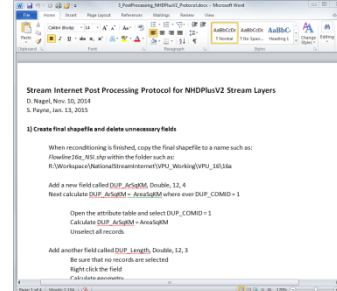
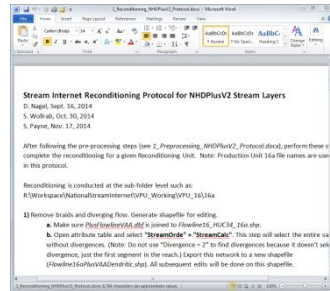
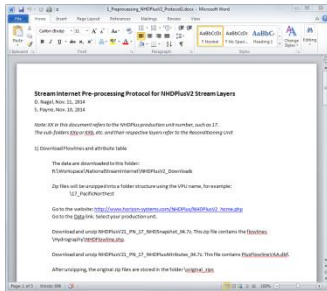
# National Stream Internet

- Edited version of NHDPlusV2 Flowlines
- National in scope
- For use with Spatial Stream-network Models (SSNMs), STARS and SSN



# Documented Procedures

- Preprocessing – Download, sorting, projecting
- **Reconditioning – Editing**
- Post-processing – Preparation for distribution
- Quality assurance



# Reconditioning (Editing)

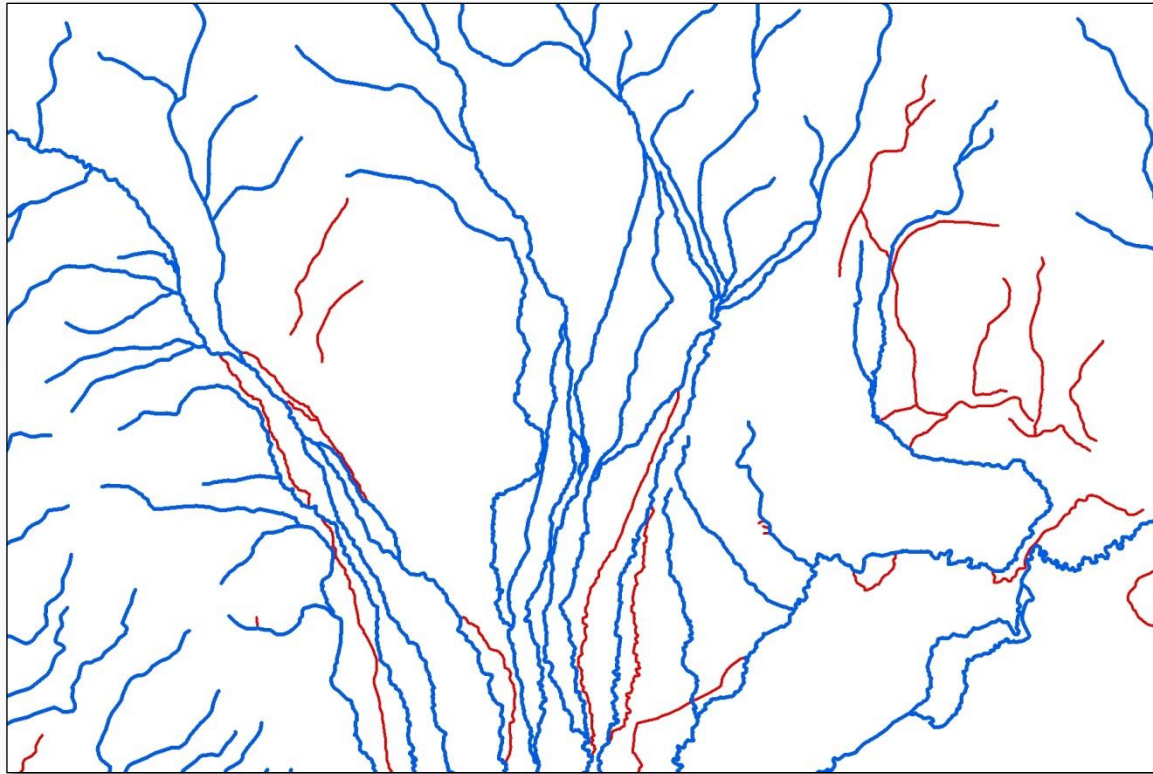
Edit using STARS (Spatial Tools for the Analysis of River Systems) and NHDPlus attributes to generate a dendritic network

- Uninitialized flow
- Braids and diverging flow
- Converging flow
- Complex confluences
- Outlets and sinks



# Remove Uninitialized Flow

Features do not participate in Value Added  
Attribute network

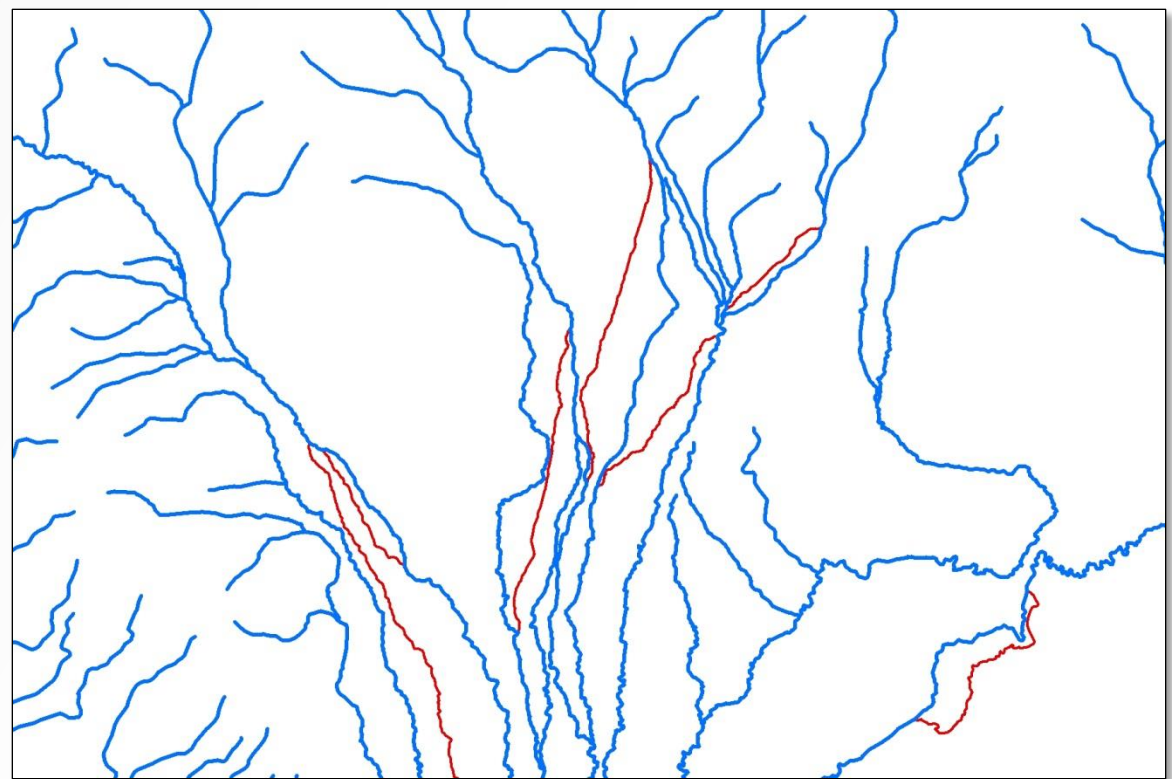


FLOWDIR = Uninitialized

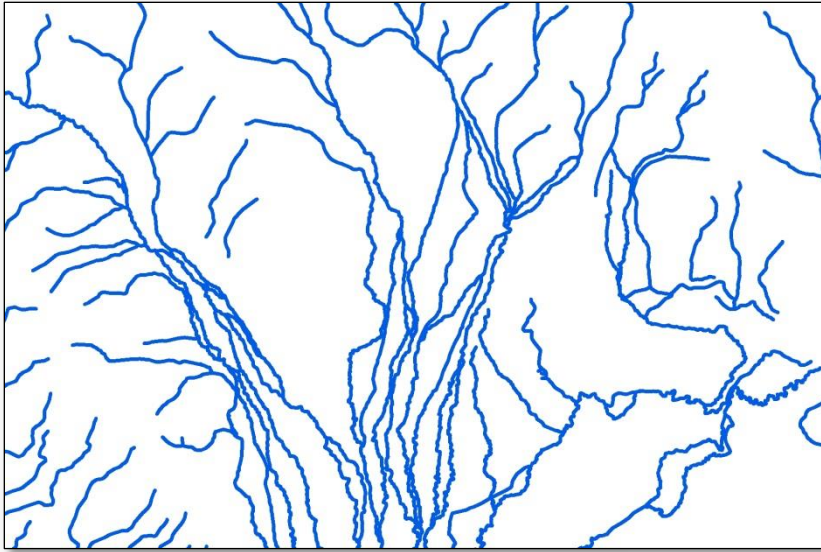


# Remove Braids and Diversions

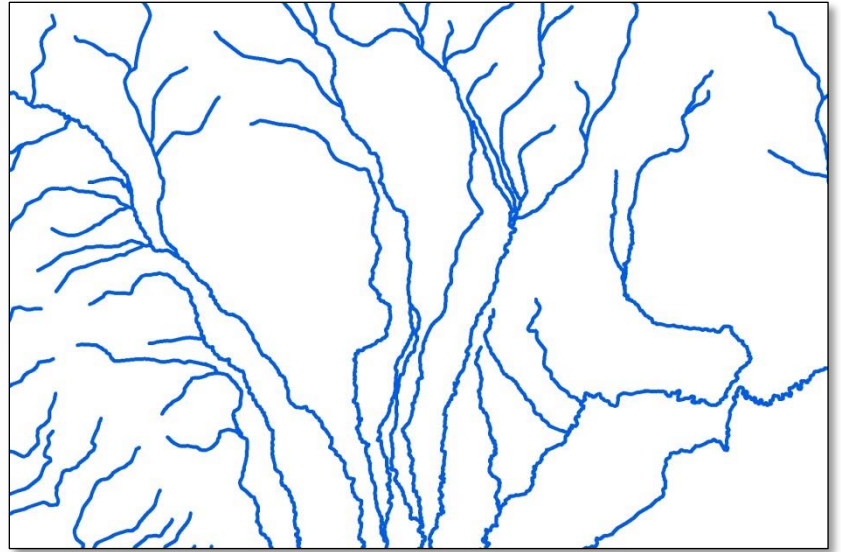
Keep StreamOrde = StreamCalc



# Features Removed



First

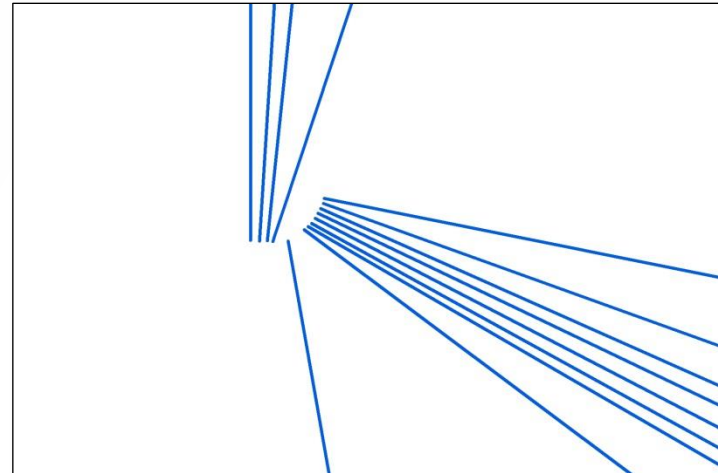
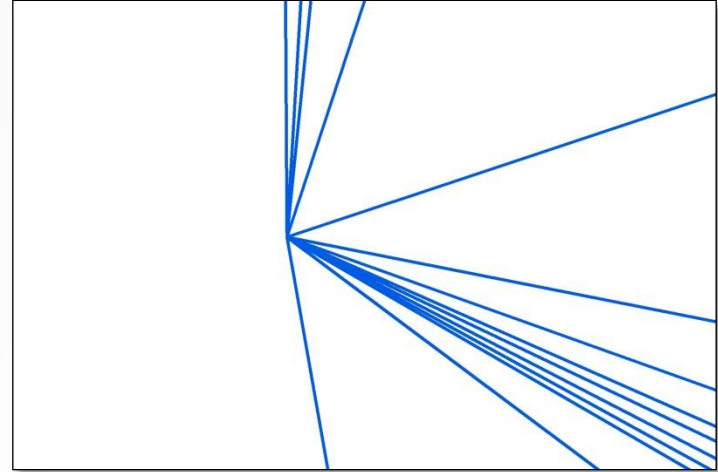
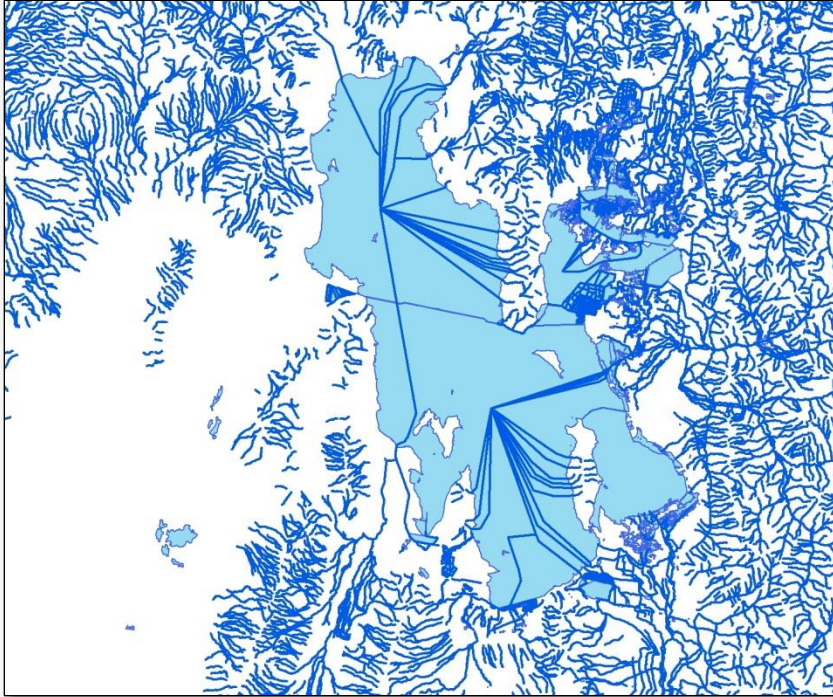


Final



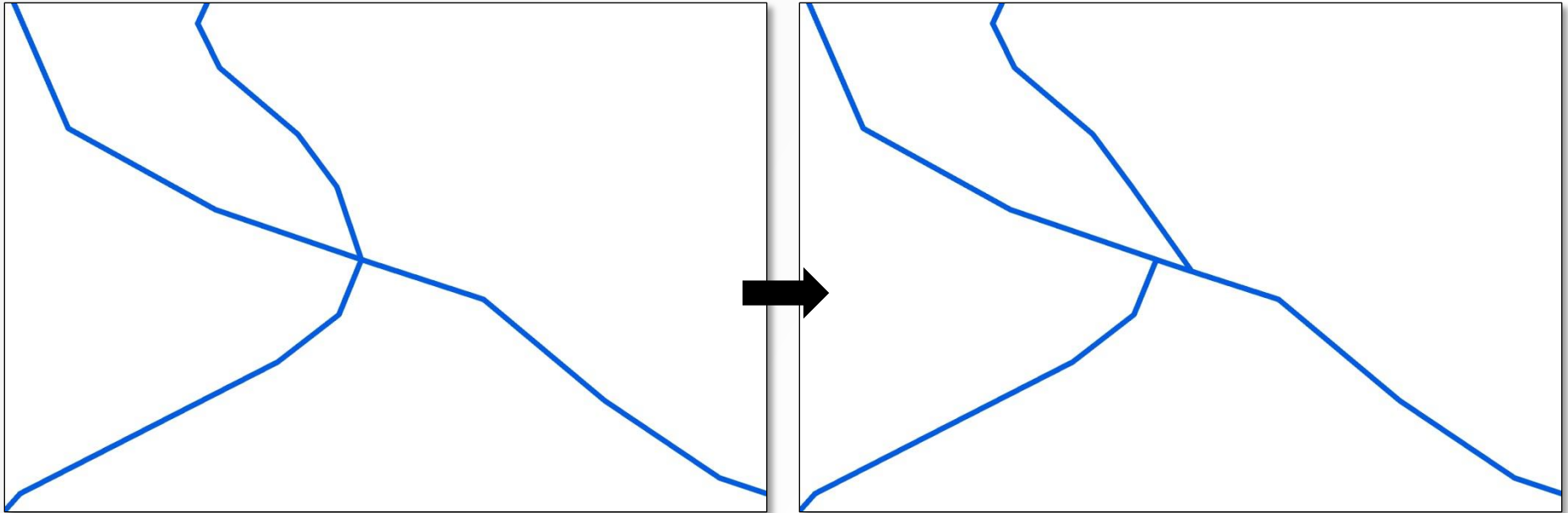
# Edit Converging Streams

Sinks without Outlets



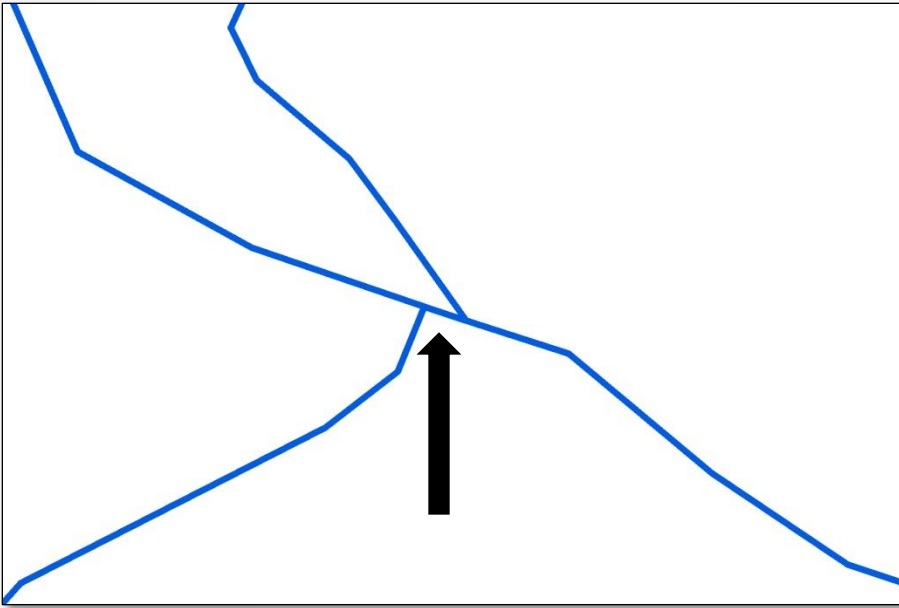


# Edit Complex Confluences



- Move the smallest segment
- ~ 25 m downstream

# Extra Feature



- Duplicate ComID
- No reach contributing area
- Length correction

# Additional Attributes



FCODE	AreaSqKM	TotDA SqKM	DUP_COMID	DUP_ArSqKM	DUP_Length
46006	0	97.8129	1	6.1002	0.026
55800	0	326.5155	1	4.8258	0.026
55800	0	59.6511	1	21.8988	0.026
55800	0	1092.3426	1	0.0315	0.025
46006	0	8.9649	1	0.6345	0.026
46006	0	25.4799	1	1.2177	0.026
46006	0	25.1928	1	1.9476	0.026
46006	0	173.0538	1	0.7614	0.026
46006	0	129.4668	1	2.7153	0.028
46006	0	51.4638	1	1.8738	0.026
46006	0	59.0652	1	1.737	0.026

- DUPCOM\_ID = 1
- AreaSqKM = 0, DUP\_ArSqKM = Original
- DUP\_Length – Length recomputed

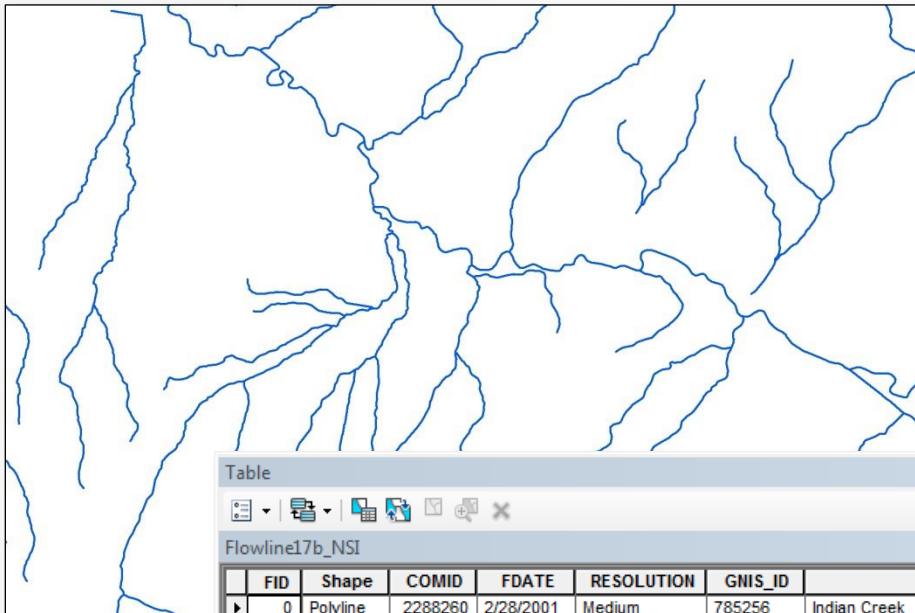
# Outlets and Sinks

## Isolated Networks in VAA Network



- Compare STARS outlets with TerminalFI = 1

# Reconditioned NHDPlusV2 NSI Network



Table

Flowline17b\_NSI

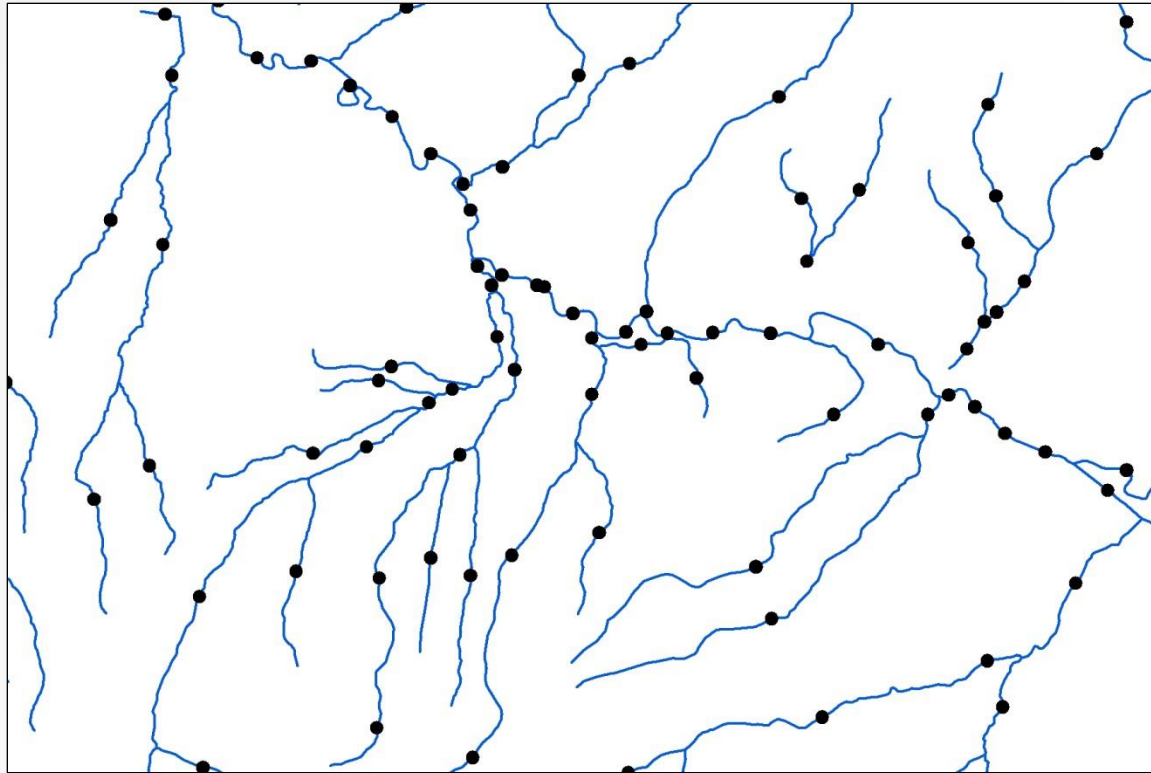
FID	Shape	COMID	FDATE	RESOLUTION	GNIS_ID	GNIS_NAME	LENGTHKM	REACHCODE	FLOWDIR	FTYPE	FCODE
0	Polyline	2288260	2/28/2001	Medium	785256	Indian Creek	6.873	17010101000001	With Digitized	StreamRiver	46006
1	Polyline	2287759	9/6/2005	Medium	384301	Kootenai River	0.247	17010101000002	With Digitized	ArtificialPath	55800
2	Polyline	2287759	2/28/2001	Medium	391351	Star Creek	1.999	17010101000003	With Digitized	StreamRiver	46006
3	Polyline	2287759	2/28/2001	Medium	391351	Star Creek	0.055	17010101000003	With Digitized	ArtificialPath	55800
4	Polyline	2287759	2/28/2001	Medium	391351	Star Creek	0.947	17010101000004	With Digitized	StreamRiver	46006
5	Polyline	2287759	2/28/2001	Medium	391351	Star Creek	1.194	17010101000005	With Digitized	StreamRiver	46006
6	Polyline	2287760	2/28/2001	Medium	391351	Star Creek	1.227	17010101000006	With Digitized	StreamRiver	46006
7	Polyline	2287760	2/28/2001	Medium	391351	Star Creek	2.451	17010101000007	With Digitized	StreamRiver	46006
8	Polyline	2287760	2/28/2001	Medium	391351	Star Creek	5.707	17010101000008	With Digitized	StreamRiver	46006
9	Polyline	2287760	9/6/2005	Medium	384301	Kootenai River	2.654	17010101000009	With Digitized	ArtificialPath	55800

(0 out of 107157 Selected)

Flowline17b\_NSI

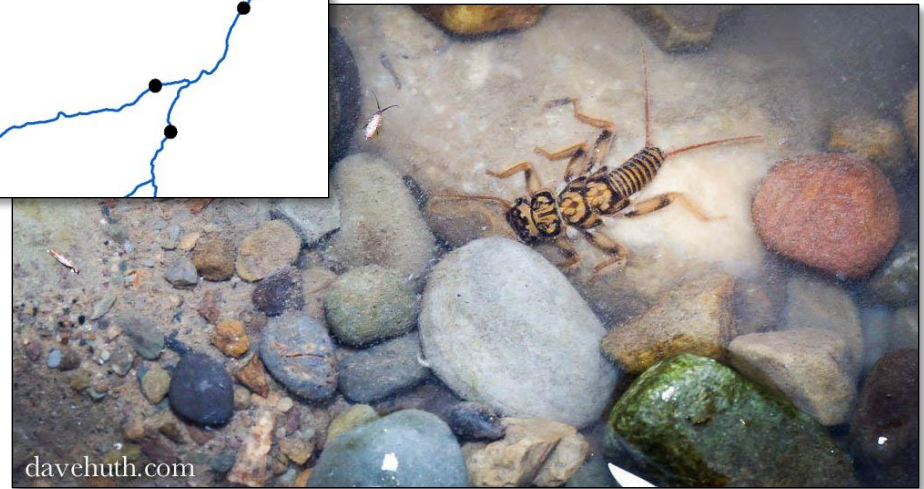
Join VAA to this network

# Prediction Points



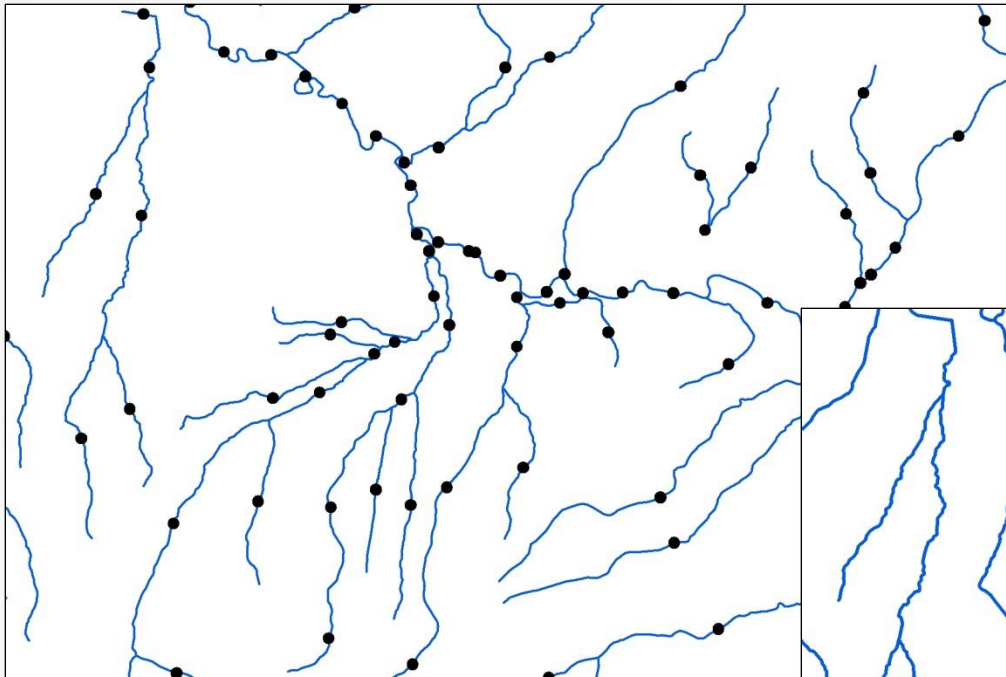
Necessary  
for SSN  
predictions  
of aquatic  
phenomena

Points and lines  
comprise NSI Dataset

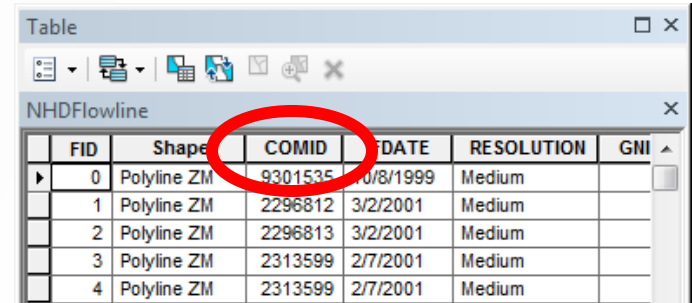


# Join Back to Original NHDPlus

Points to NHDPlus through **COMID**

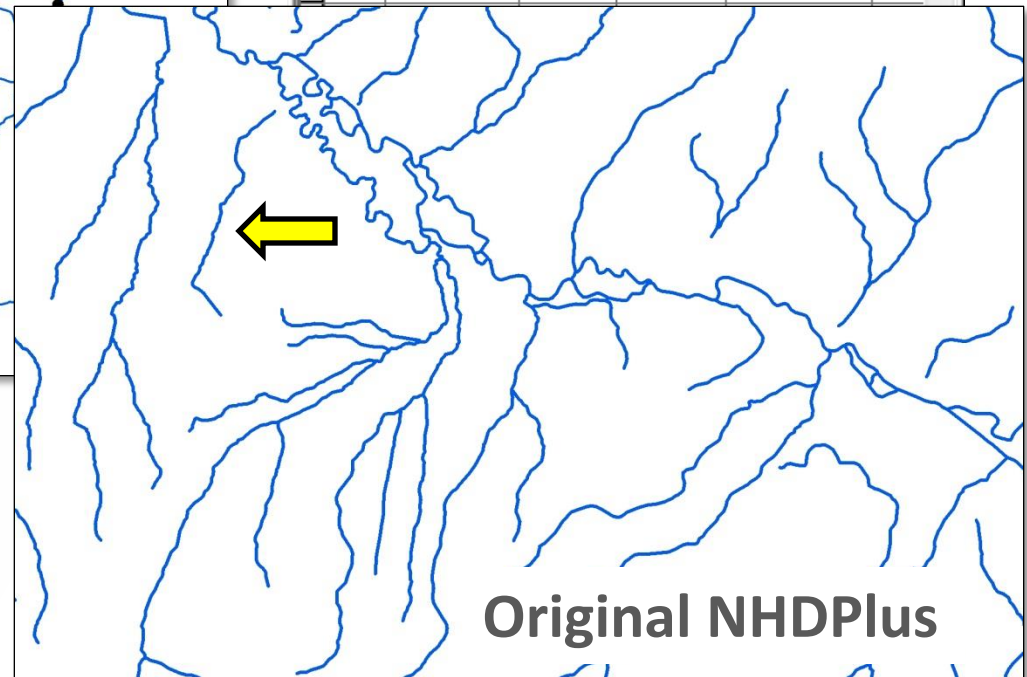


Not all NHD lines  
receive predictions



A screenshot of a table window titled "Table" showing data for "NHDFlowline". The table has columns for FID, Shape, COMID, DATE, RESOLUTION, and GNI. The COMID column is circled in red. The data rows are:

FID	Shape	COMID	DATE	RESOLUTION	GNI
0	Polyline ZM	9301535	10/8/1999	Medium	
1	Polyline ZM	2296812	3/2/2001	Medium	
2	Polyline ZM	2296813	3/2/2001	Medium	
3	Polyline ZM	2313599	2/7/2001	Medium	
4	Polyline ZM	2313599	2/7/2001	Medium	

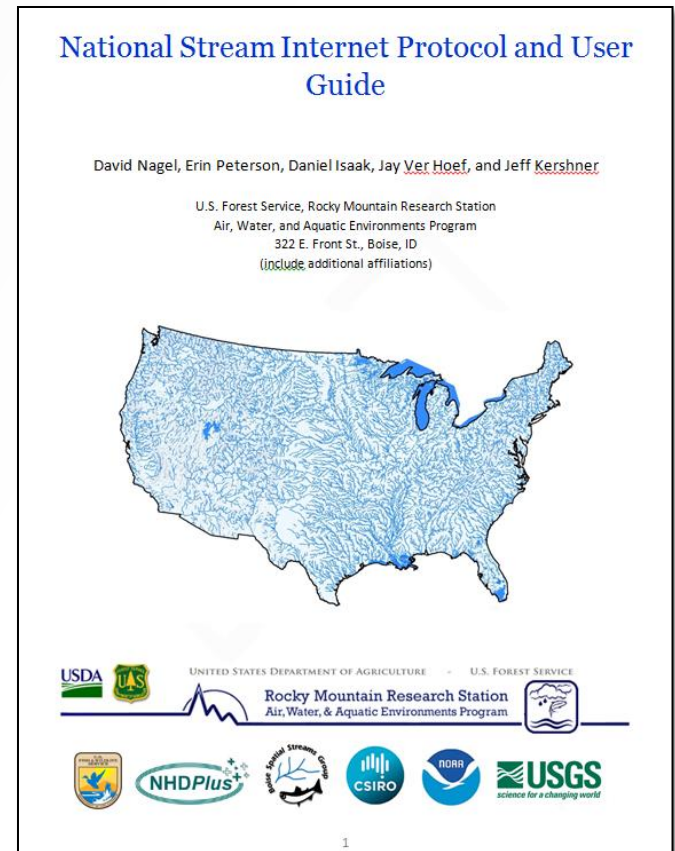
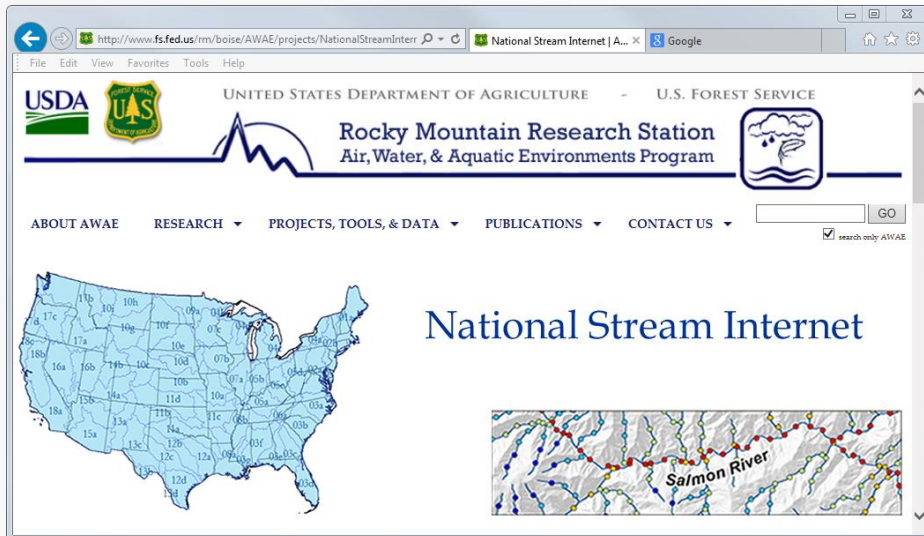


Original NHDPlus

# Products

- Stream line and prediction point shapefiles
- Website

- User Guide





# Status Map

Target date: December 2015

