



# Representing Different Hydrologic Conditions in Geospatial Hydrographic Networks

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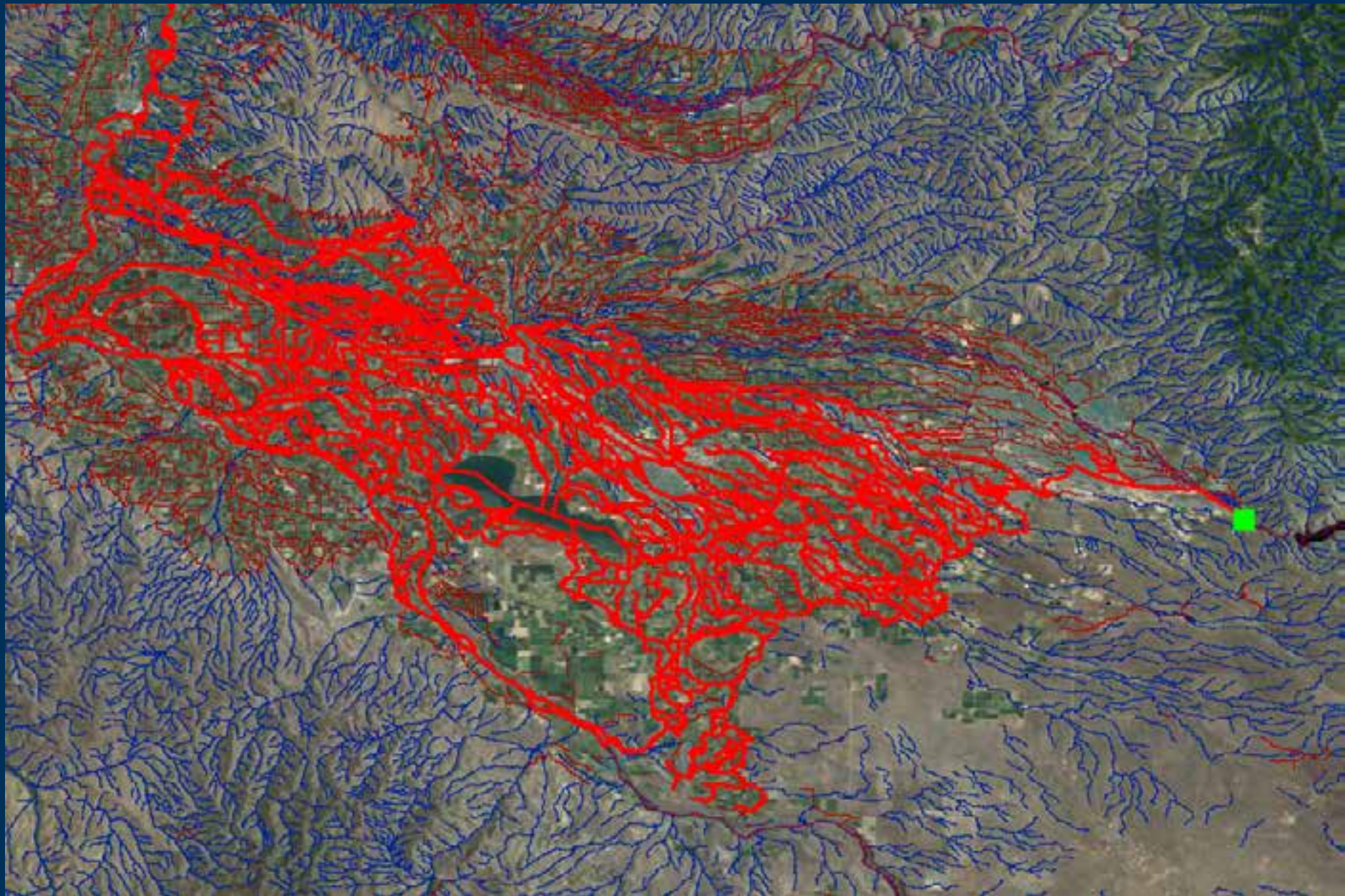
# Problem:

- § Hydro network connectivity may not be static
- § Different hydrologic conditions need different networks, for example:
  - § Irrigation canals are seasonal
  - § Some connections may only exist during floods
  - § Many other situations
- § NHD network is either connected or not connected—need this to be dynamic

# A Solution: NHDPlus Scenarios

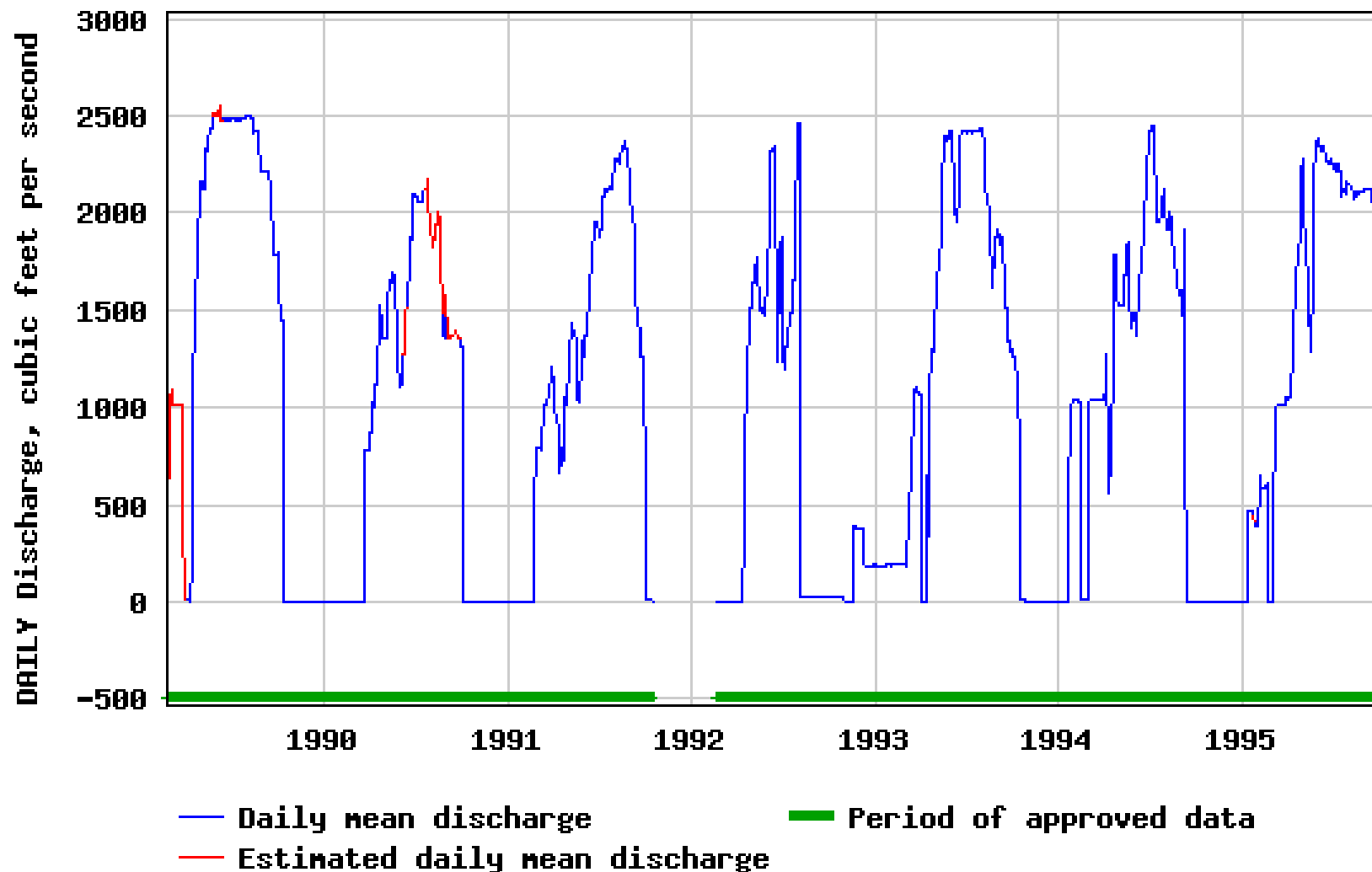
- § Non-geometric user editable tables:
  - § DivFracMP.dbf
  - § PlusFlow.dbf
  - § PlusARPointEvent.dbf
  - § PlusFlowAR.dbf
- § Re-run VAA's, which changes these tables:
  - § CumulativeArea.dbf
  - § elevslope.dbf
  - § PlusFlowlineVAA.dbf
- § All tables are in NHDPlusAttributes folder—keep separate folder for each scenario





# Discharge, cubic feet per second

USGS 13203000 NEW YORK CANAL BL DIVERSION DAM NR BOISE ID

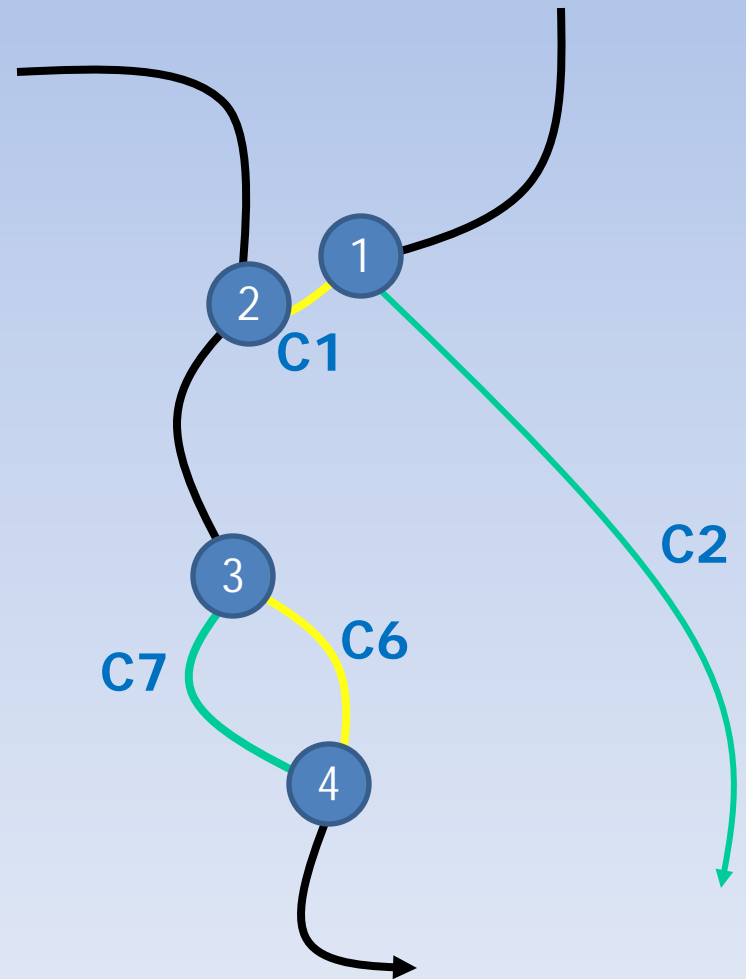


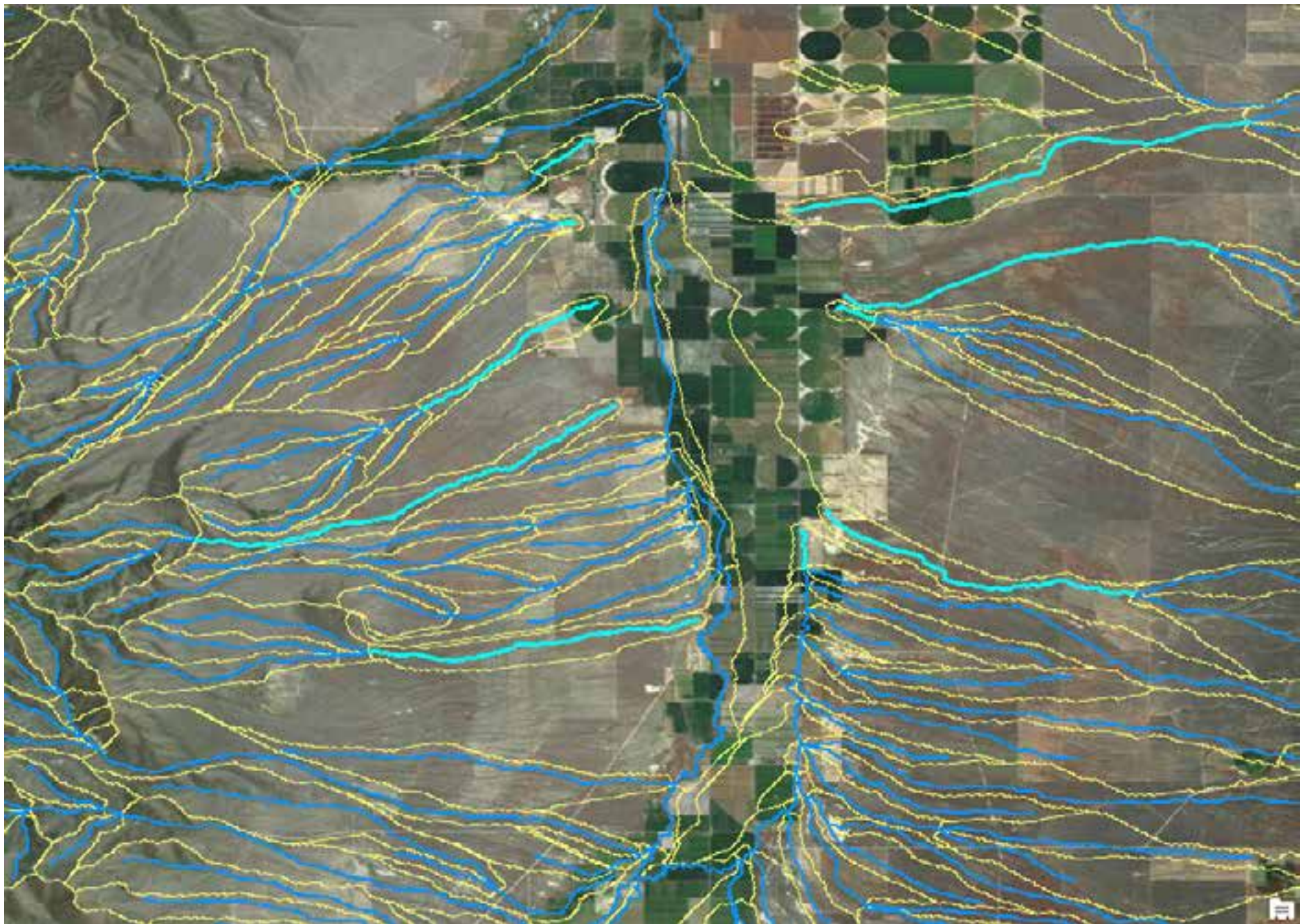
# NHDPlusV2 Diversions Spatial Representation

## Divergence Fraction Table

Node Number	ComID	Fraction
1	C1	0.75
1	C2	0.25
3	C6	1.0
3	C7	0.0

Different tables to represent  
different scenarios:  
Present Day vs Future  
or  
Seasonal Differences







# Changing connectivity

§ Edit PlusFlow.dbf

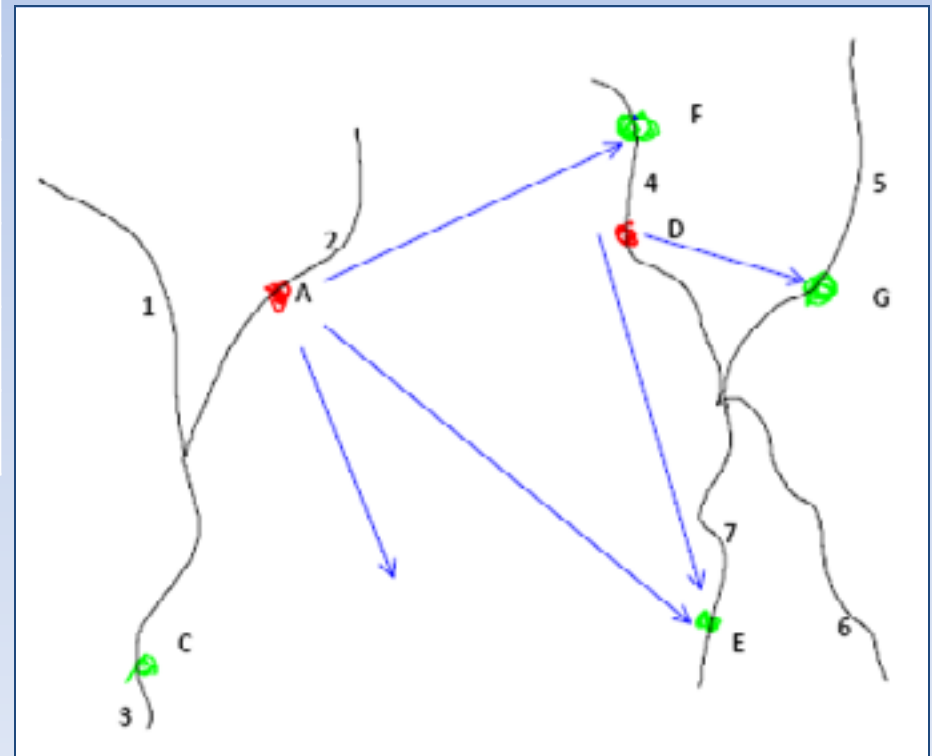
§ Send flow to top or bottom of receiving flowline

§ No change to catchment or flowline geometry

# NHDPlusV2 Diversions & Returns Point Event Representation

Reachcode	Measure	Source_FeatureID	EventType
2	50.5	A	R
3	23.2	C	A
4	67.2	D	R
7	18.0	E	A
4	78.6	F	A
5	40.5	G	A

## PlusARPointEvent



# NHDPlusV2 Diversions & Returns Point Event Representation

PlusARPointEvent	
PK	<u>Comid</u>
	EventDate
	Reachcode
	ReachSMDat
	Reachresol
	FeatureCom
	FeatureCla
	Source_Ori
	Source_Dat
	Source_Fea
	FeatureDet
	Measure
	Offset
	EventType

## PlusARPointEvent

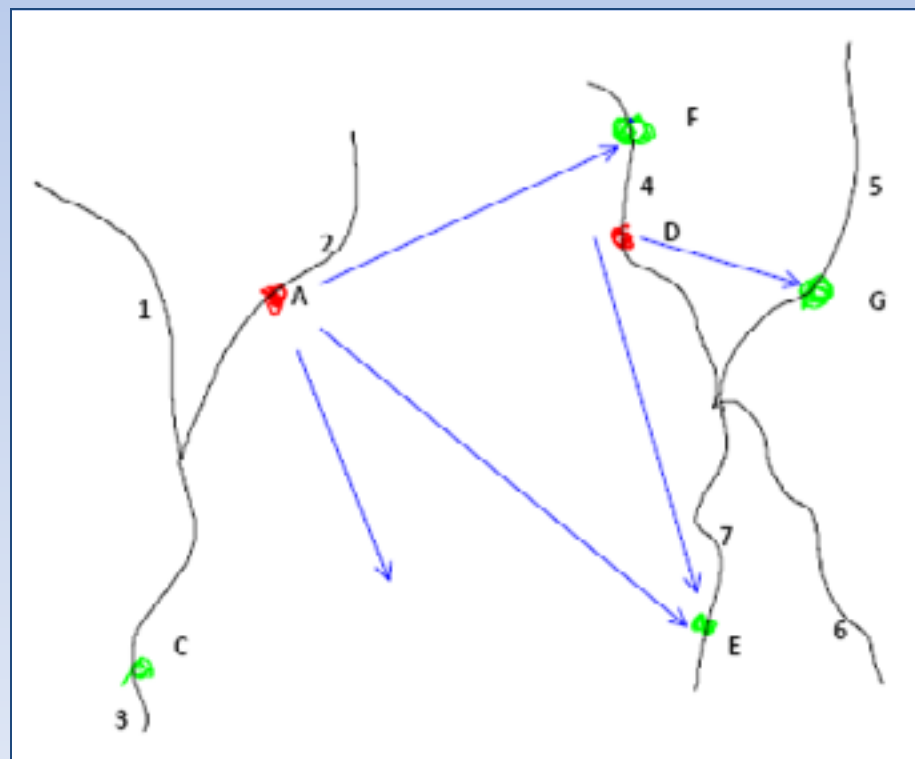
- Standard NHD Point Event Table
- Transferable to/from NHD High Res.

# NHDPlusV2 Diversions & Returns

## Point Event Representation

From	To	Quantity	Units
2	A	350	cfs
A	F	120	cfs
A	E	30	cfs
A	-	200	cfs
F	4	120	cfs
4	D	840	cfs
D	G	320	cfs
G	5	320	cfs
D	E	520	cfs
E	7	520	cfs
C	3	132	cfs

## PlusFlowAR



# NHDPlusV2 Diversions & Returns Point Event Representation

## PlusFlowAR

PlusFlowAR	
	FromComID
	FromFC
	ToComID
	ToFC
	Quantity
	Units

- A non-geometric routing of flow
- From an NHDFlowline to a Removal Point
- From a Removal Point to an Addition Point
- From a Removal Point to Consumptive Use
- From an Addition to an NHDFlowline
- Flow Quantity
- Different versions of table for different scenarios

# Review: NHDPlus Scenarios

§ No changes to geometry, only attributes

§ Four tables users can tweak:

§ DivFracMP.dbf

§ PlusFlow.dbf

§ PlusARPointEvent.dbf

§ PlusFlowAR.dbf

§ ReRun VAA's

# NHDPlus Scenarios (cont.)

§ This will change:

§ CumulativeArea.dbf

§ elevslope.dbf

§ PlusFlowlineVAA.dbf

§ Suggestion: Keep separate  
NHDPlusAttributes folders for each scenario