



2026 WASHINGTON GIS CONFERENCE

Bellevue, WA | May 19-21, 2026

New ArcHydro tools to facilitate connecting data to hydrography through linear referencing.



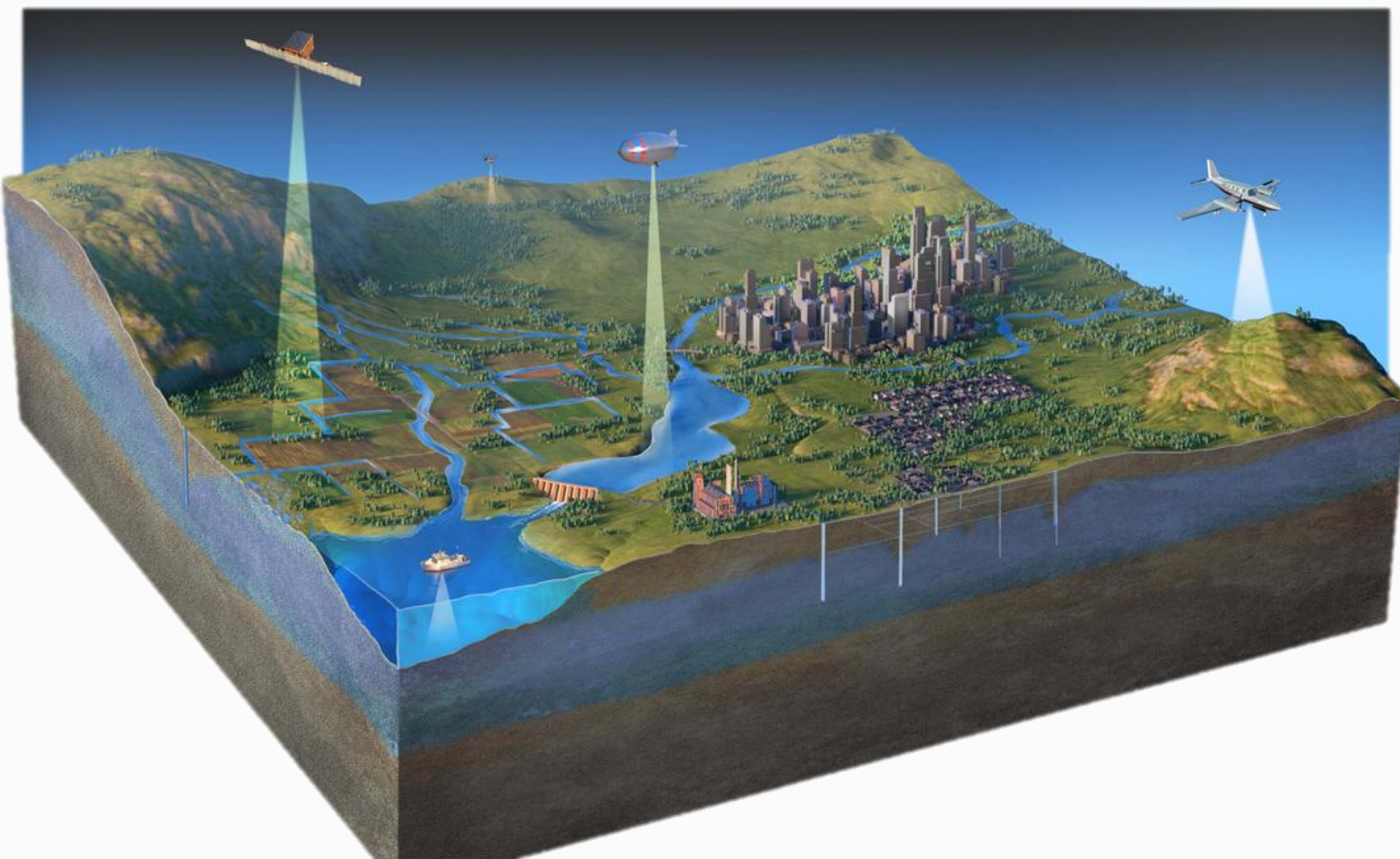


- Elevation Derived Hydrography
 - 3DHP (USGS)
- Connecting Data



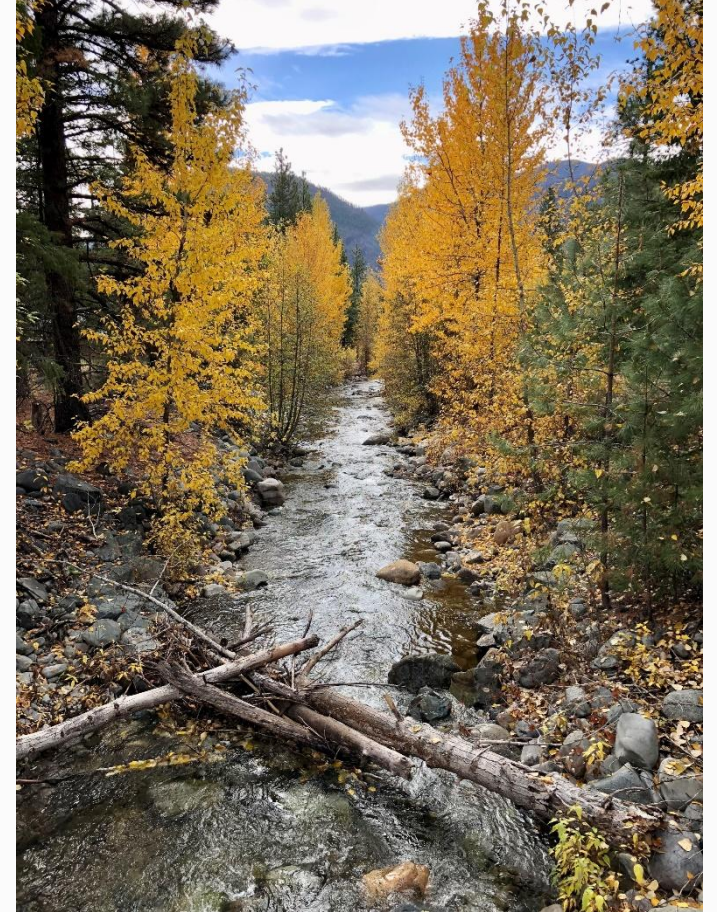
National Hydrography Remap

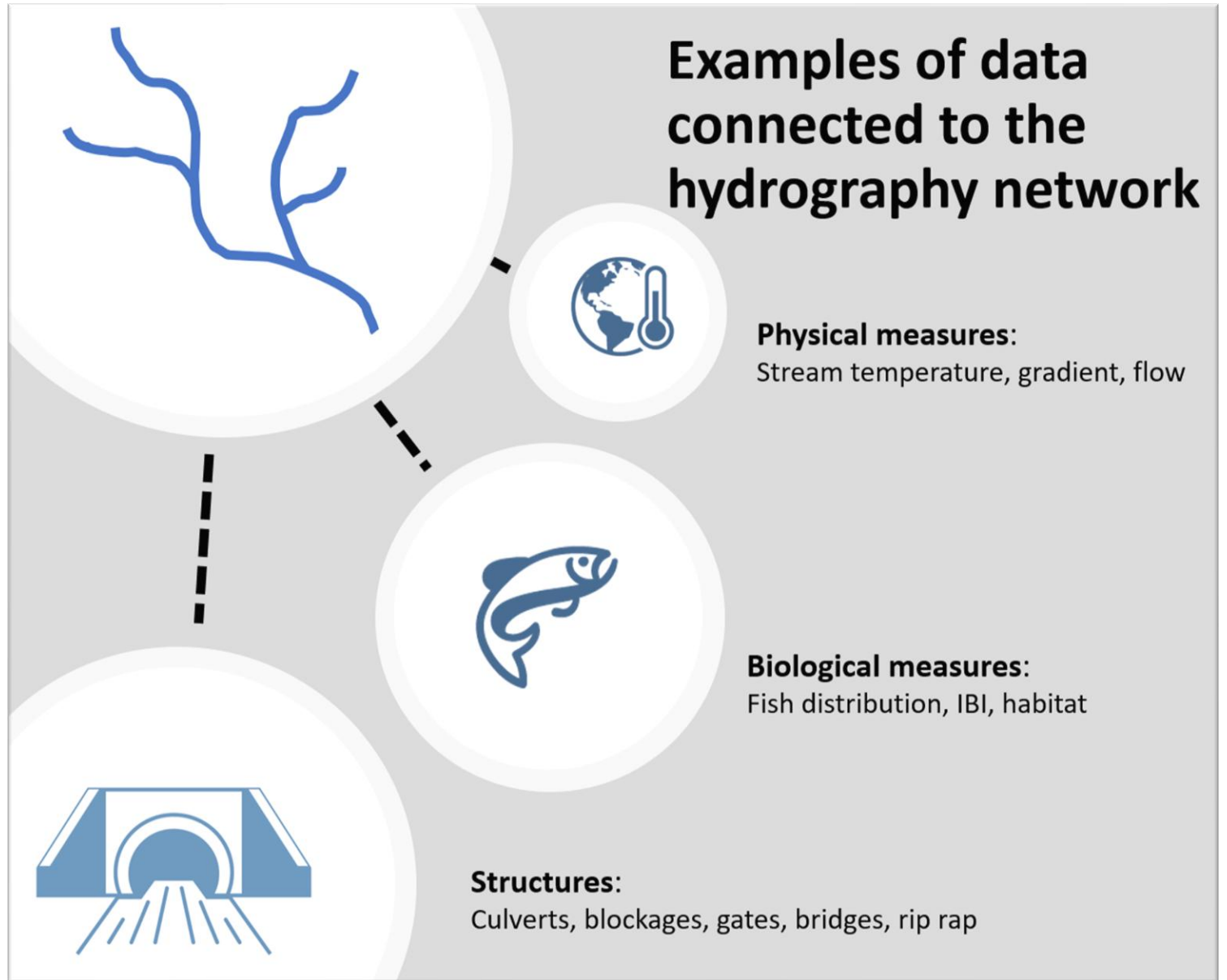
WA state - NHD to 3DHP (3DNTM)



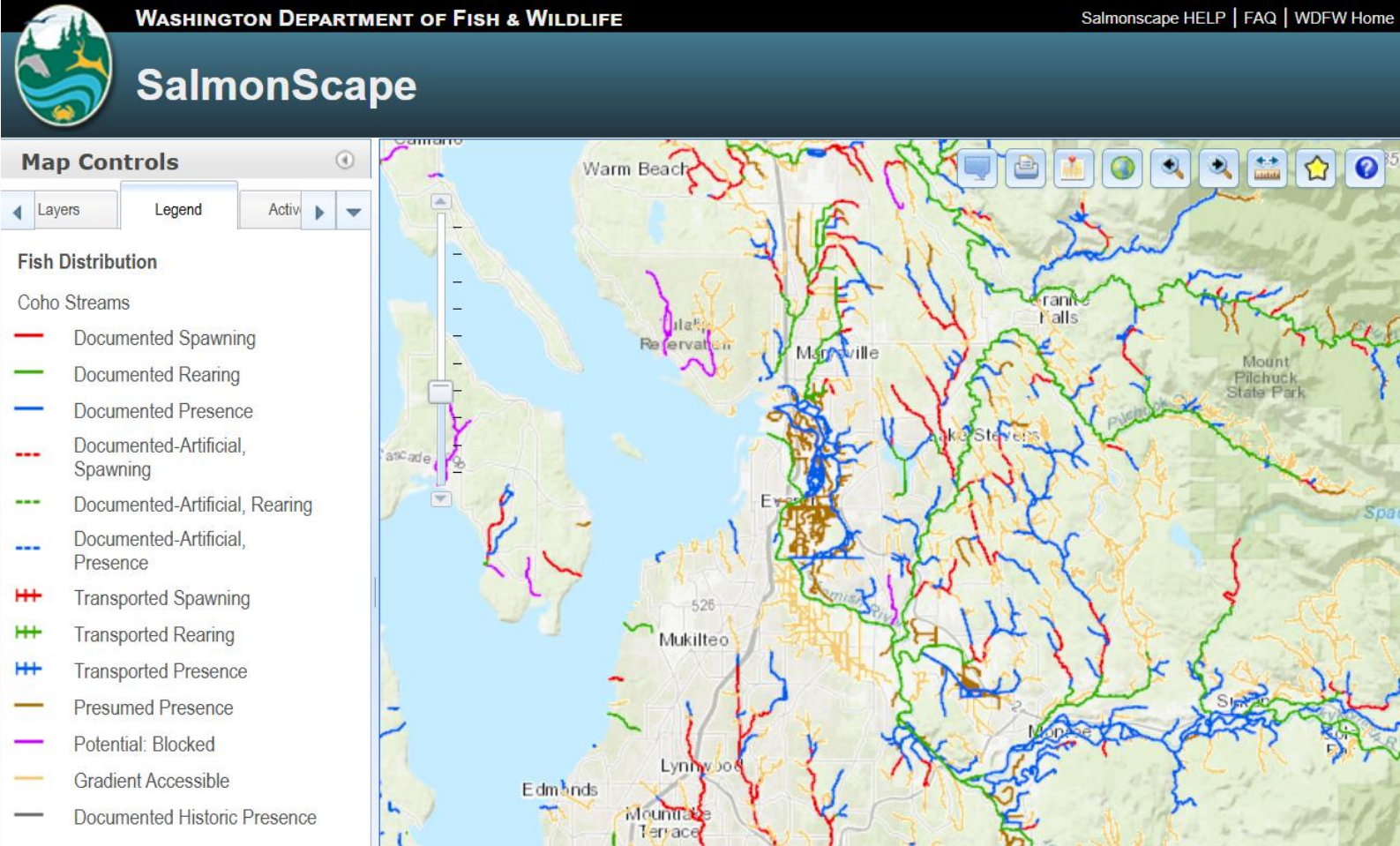
- Improve location
- Simplify database
- Integrate with DEM

Variations in “blue lines”



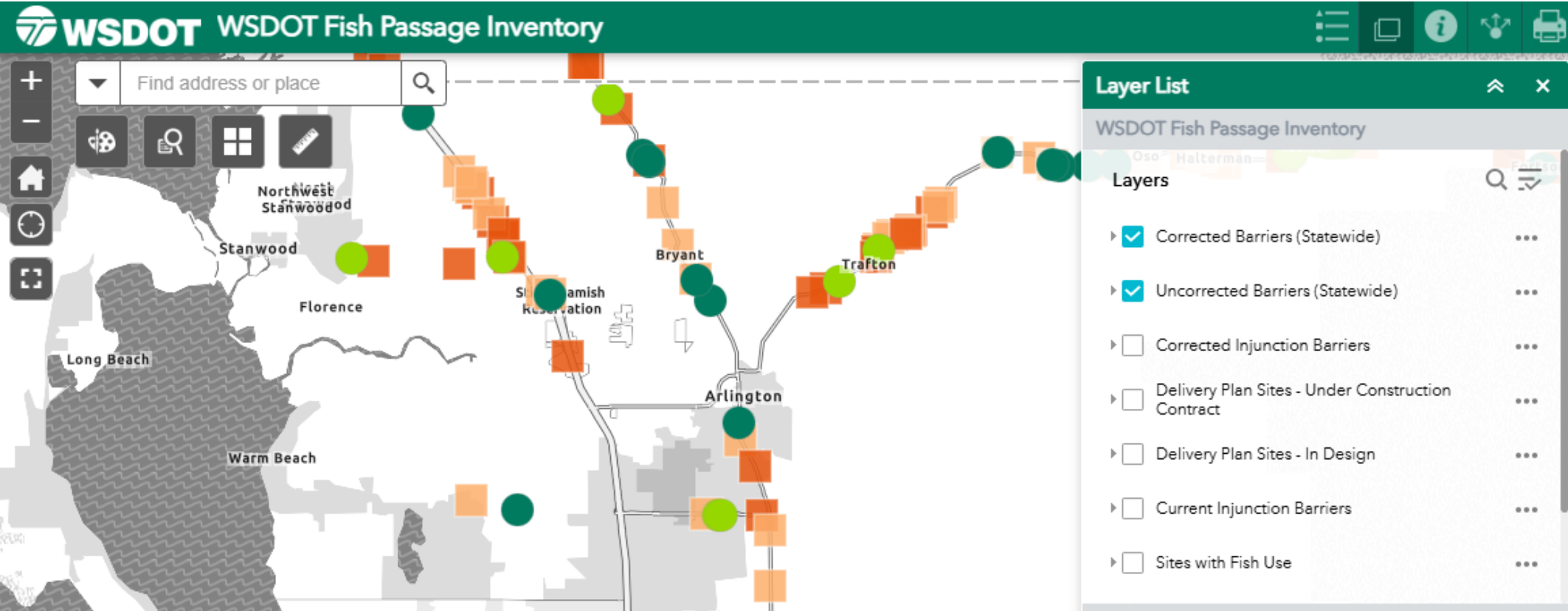


Examples of Linked Data



Examples of Linked Data

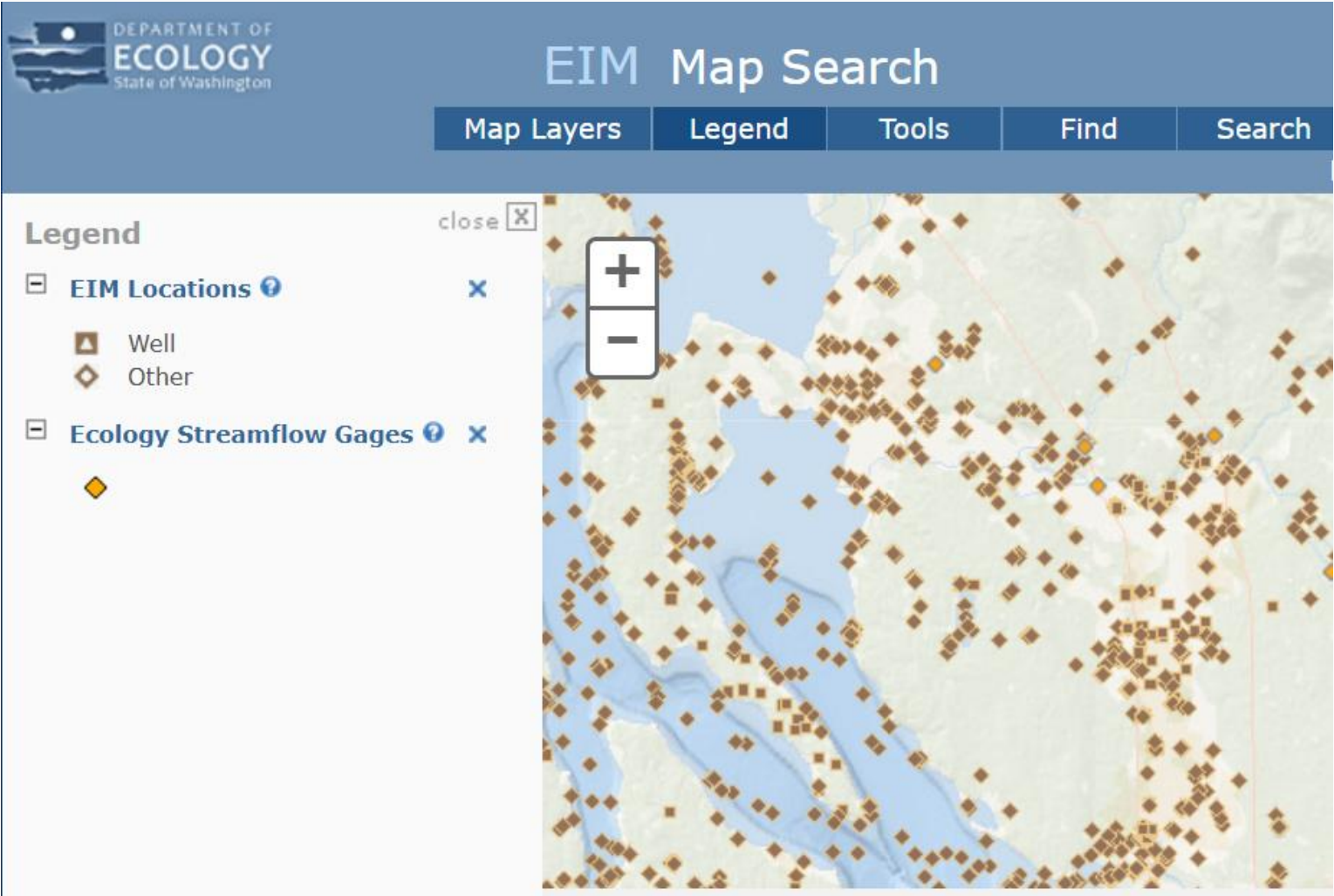
Fish Passage



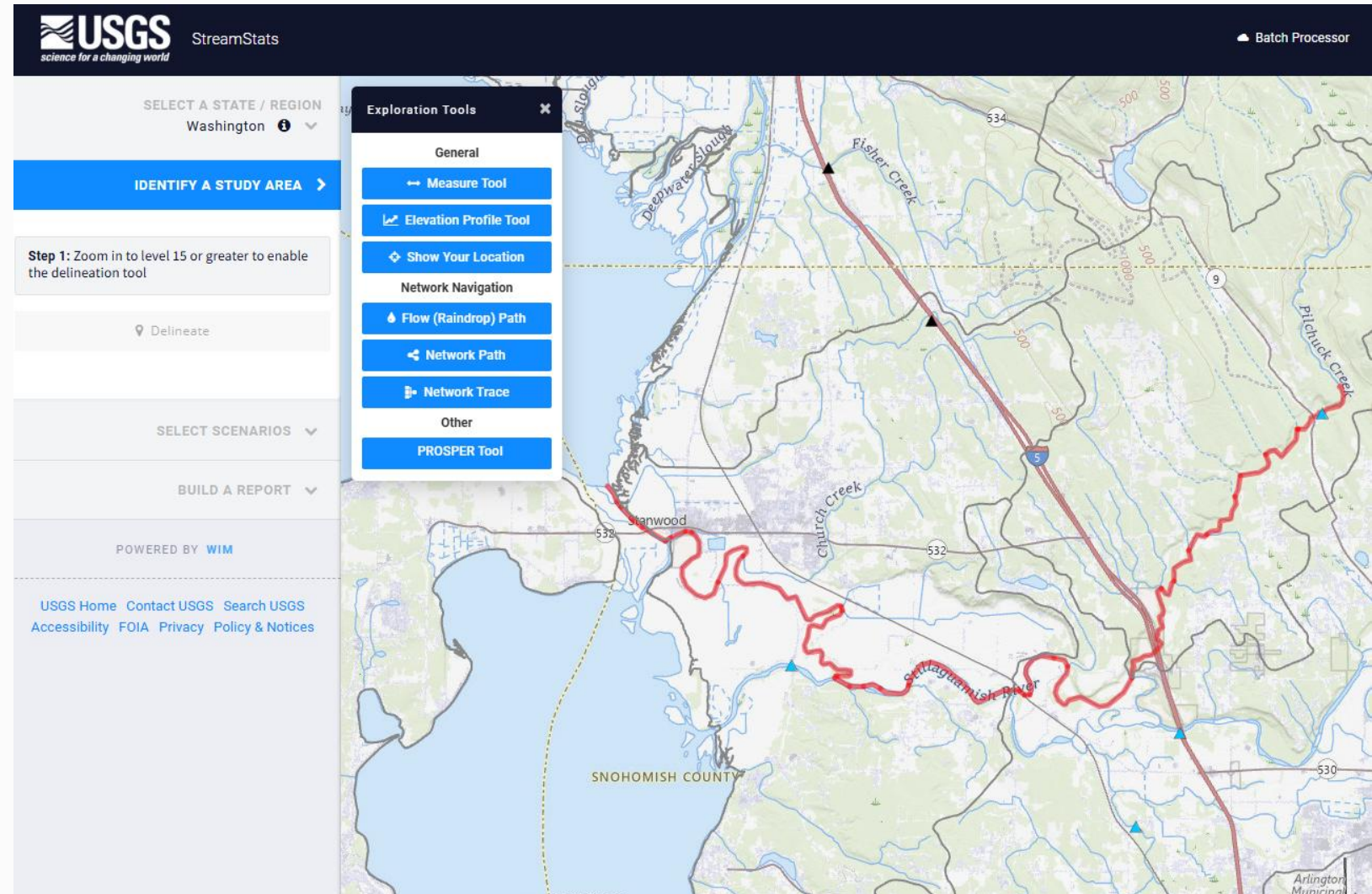
Examples of Linked Data

EIM

Environmental
Monitoring
Data



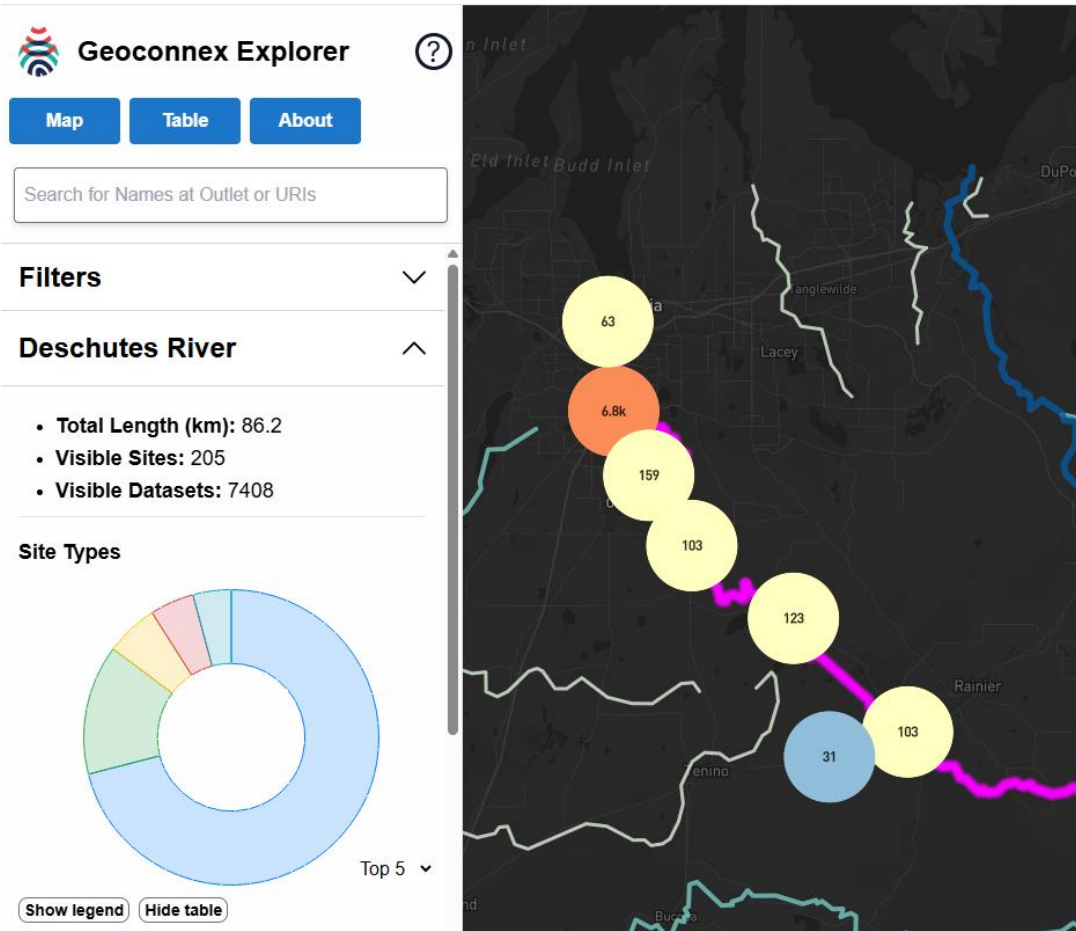
Examples of Linked Data



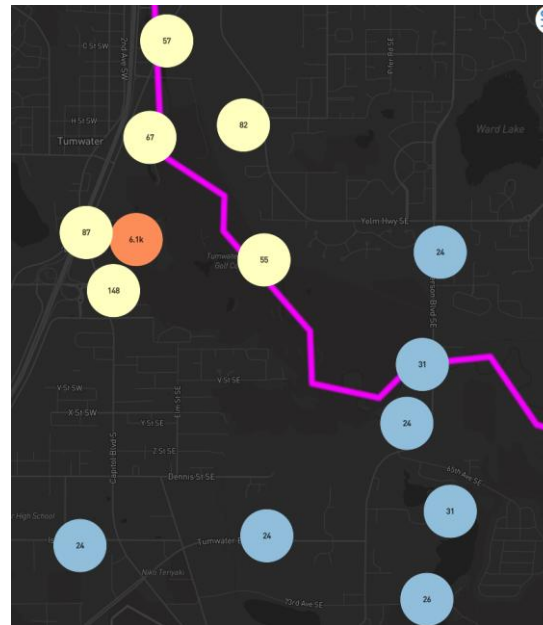
Models

- Prosper
- Flowper

Examples of Linked Data Geoconnex



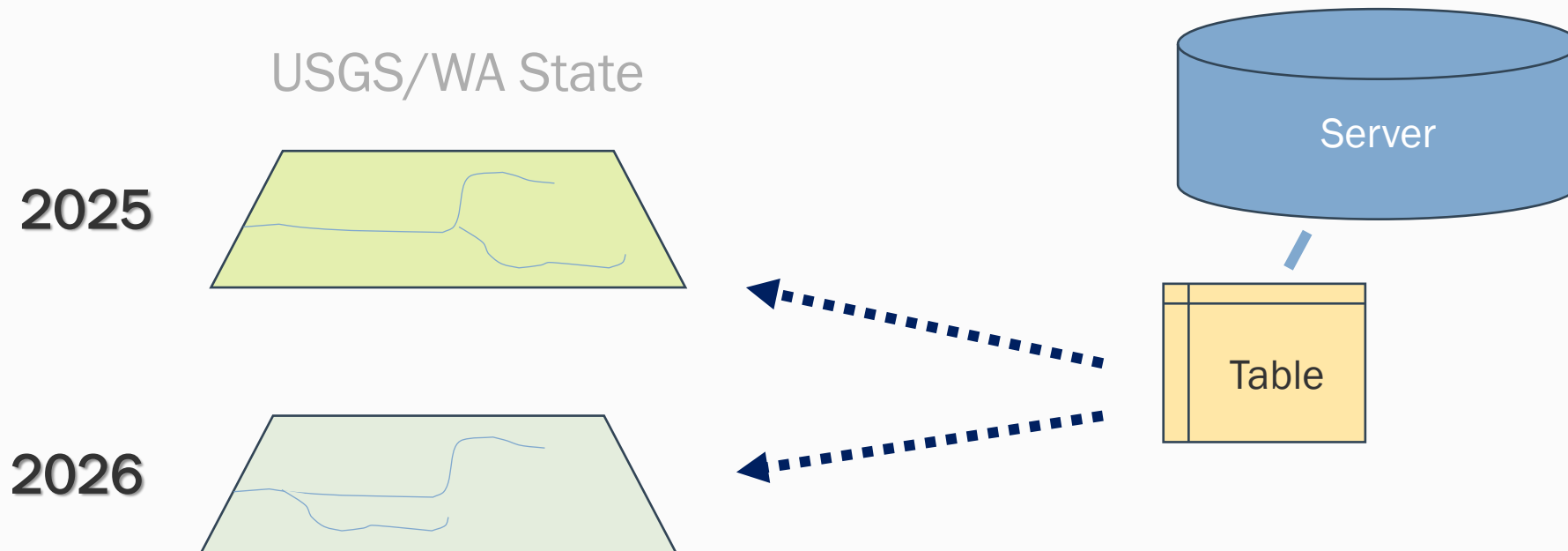
- Developed by the Center for Geospatial Solutions, Geoconnex is an open-source reference system that connects water data to the places it describes.



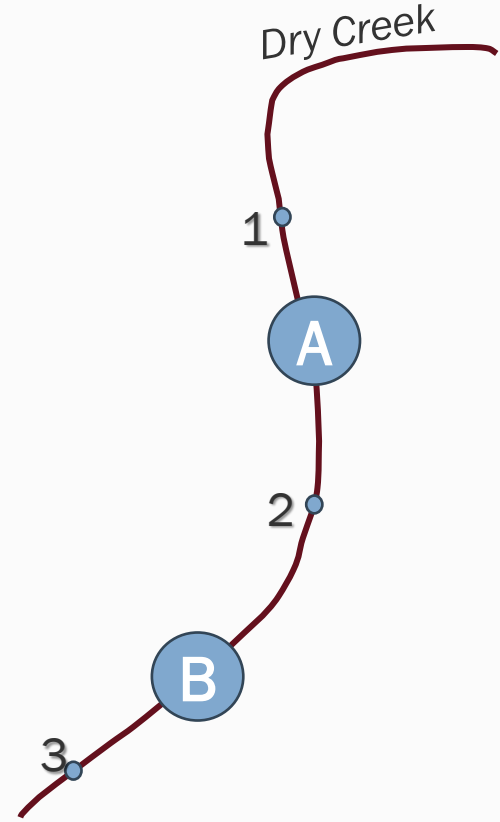
Internet
of Water
COALITION

Linear Referencing 3DHP

Connecting Data in Tables to Lines



Linear Referencing

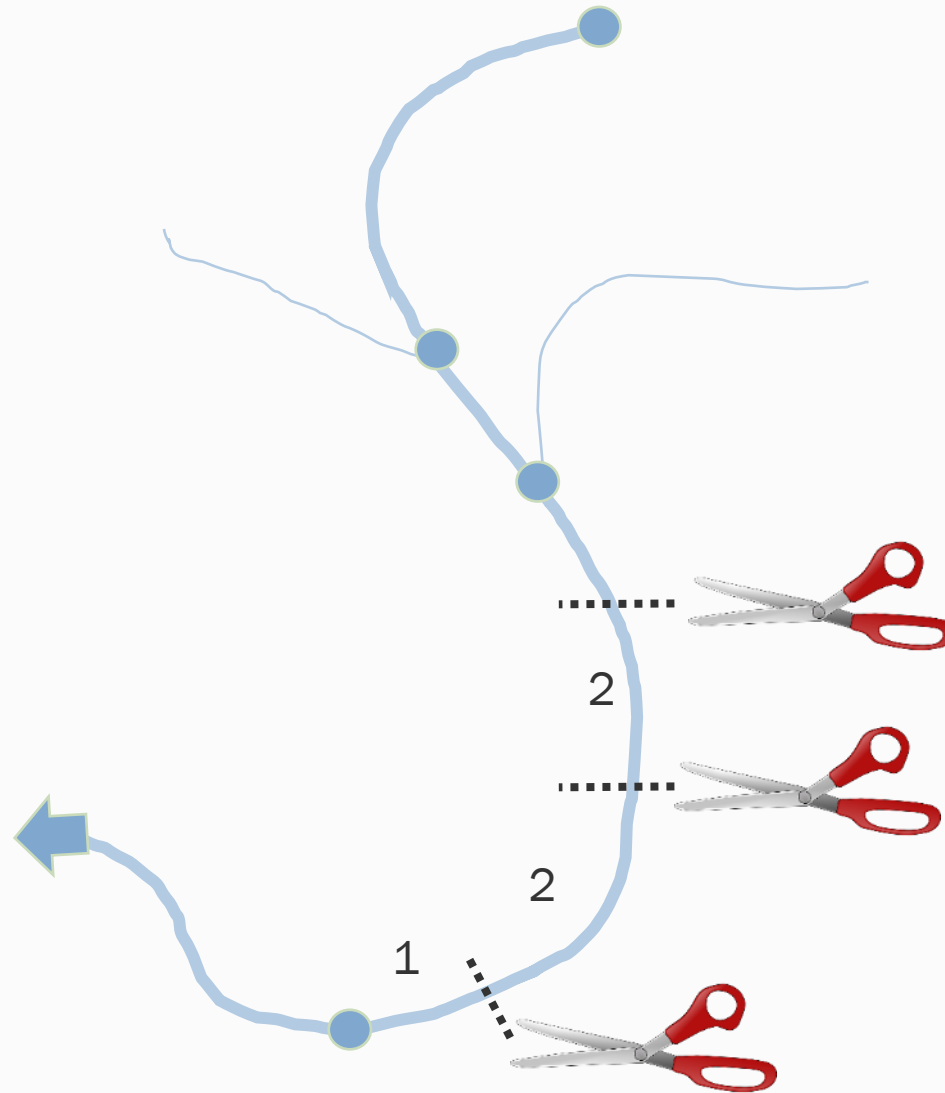


Point	Temp	Fish
1	0.546	No
2	0.895	Yes
3	1.2	Yes

Line	Temp	Fish
A	0.546	No
B	0.895	Yes

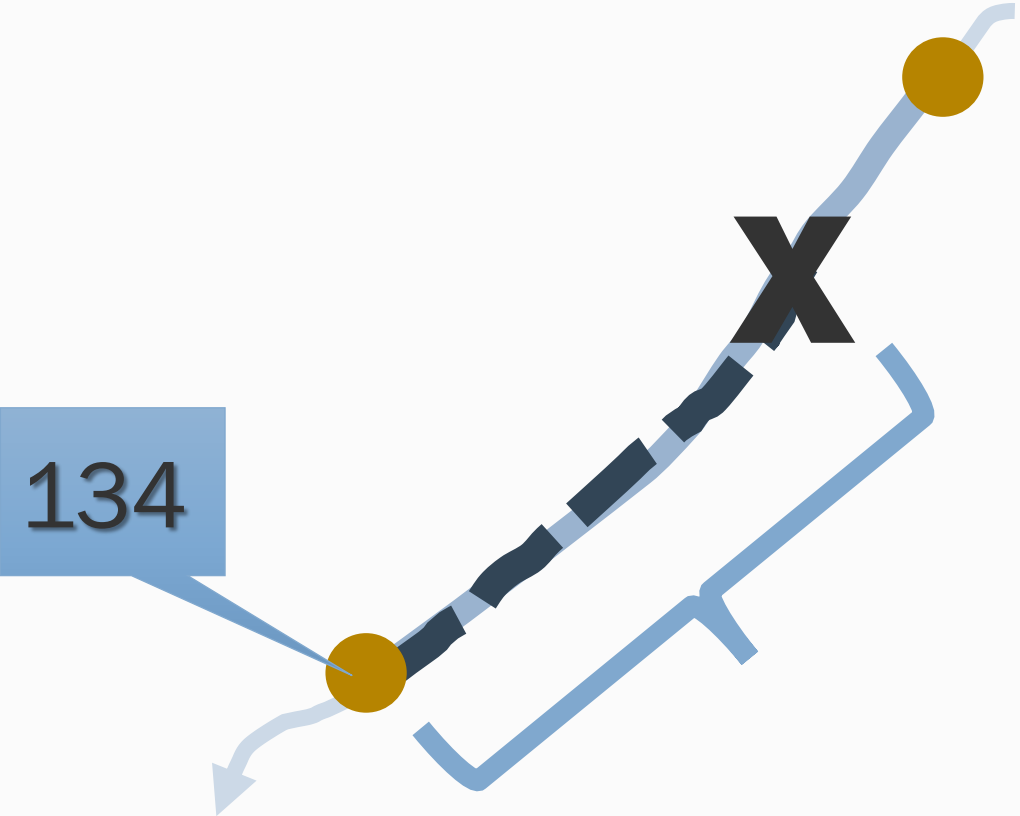
NHD Data Events

FLOWLINE Line Events vs. Line Segments




Attribute Data Connecting to 3DHP Flowline

Linear Referencing



Events Addressing Point Data

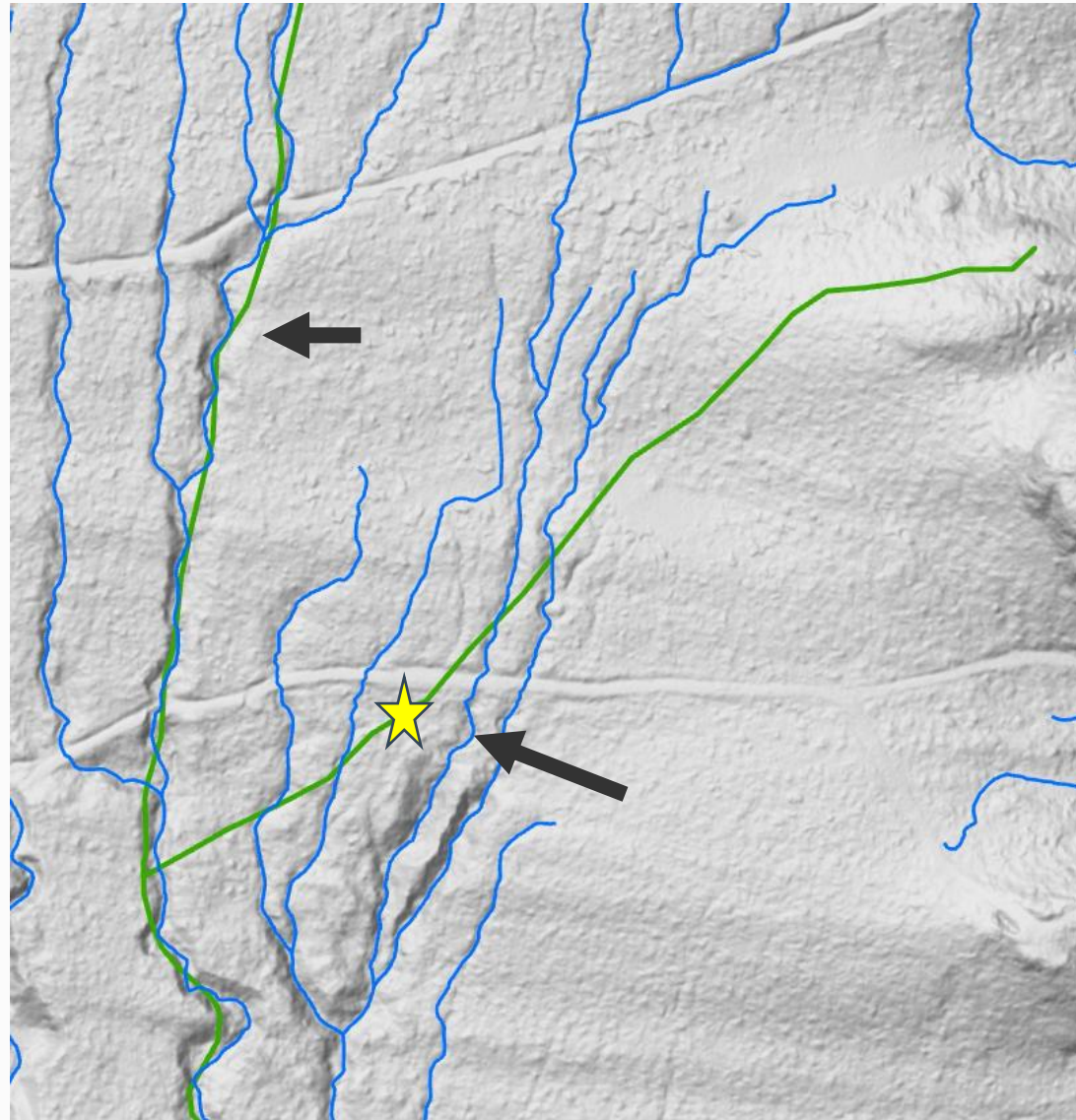
Data	ID	Measure
1	134	100ft or %

An aerial photograph of a river meandering through a dense forest. The river flows from the top left towards the bottom right, forming several large loops. The banks are sandy and covered with fallen logs and debris. The surrounding forest is lush green. A small red square marker is visible on the riverbank in the lower-middle section of the image.

Why are Hydro networks different from other networks?

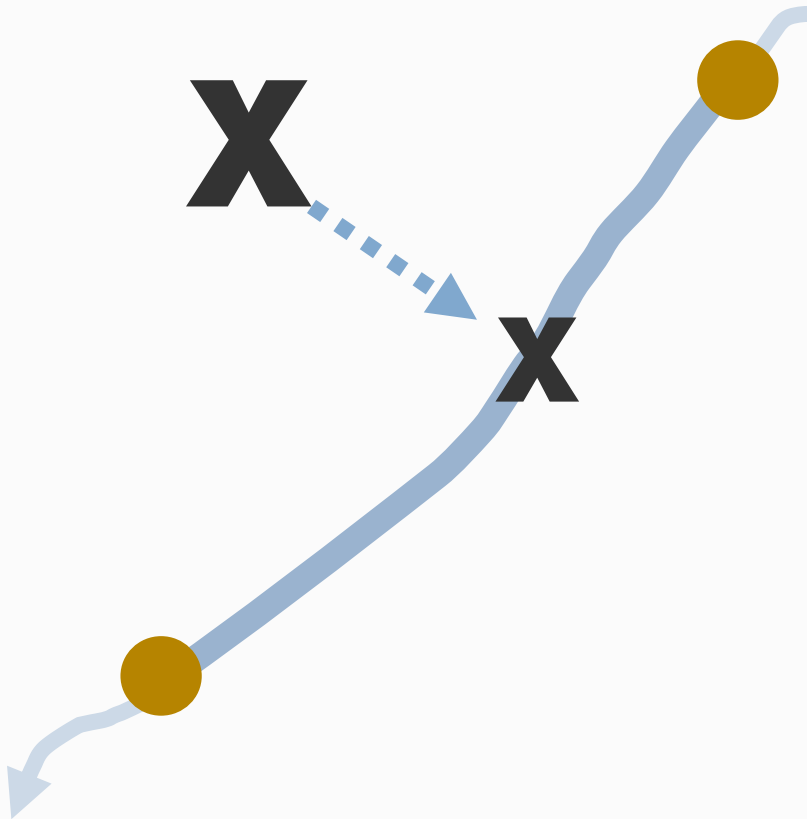
- Not a human made system
- Flow direction is mostly one way
- Has different edges
 - Vary by definition, time and naturally vague;
 - Mapped as line, but sometimes also polygon
- Dynamic ecological system

Challenges of Conflation



Attribute Data Connecting to 3DHP Flowline

Linear Referencing



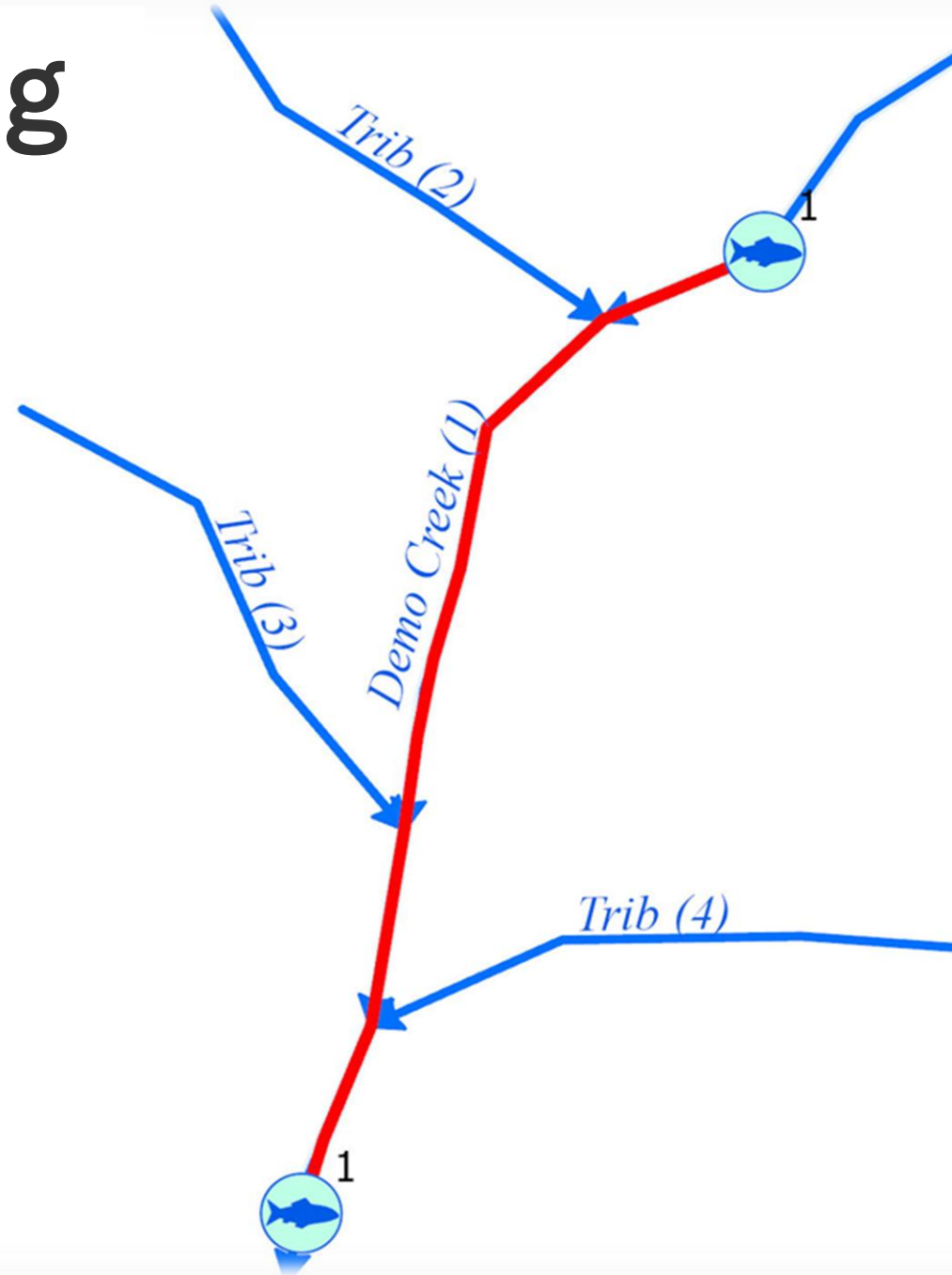
#1 – Lat,Long

Events

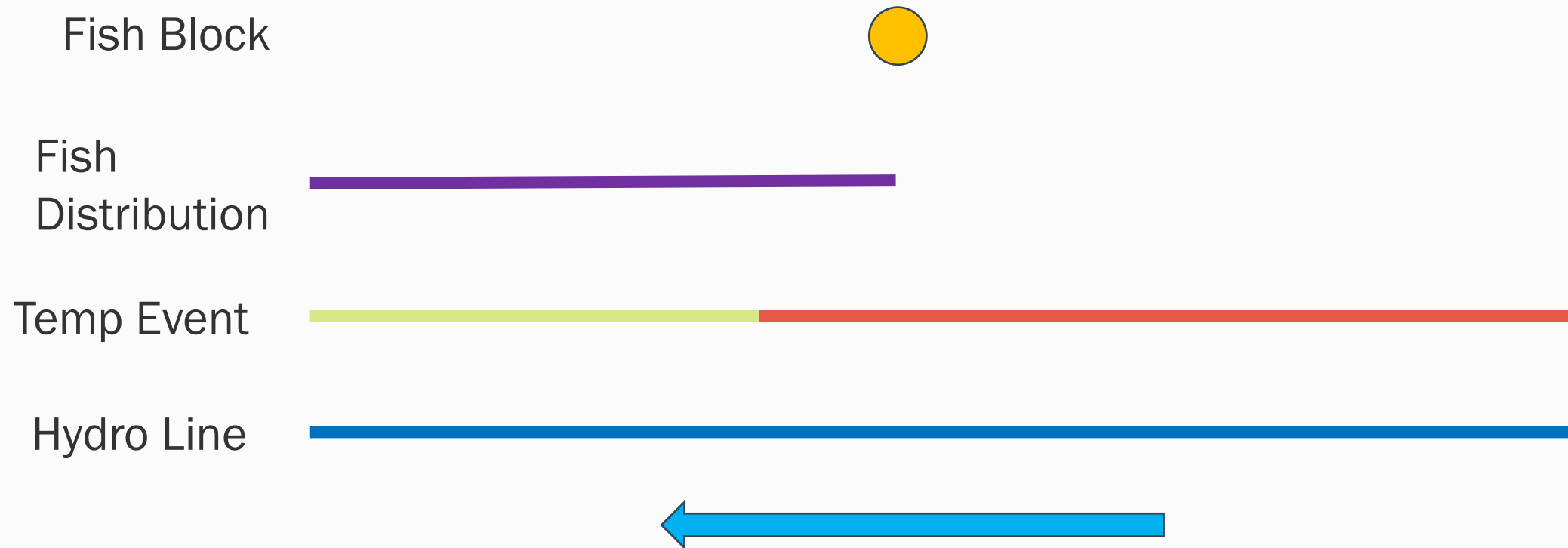
Addressing Point Data

Data	ID	Measure	StreamID
1	134	100ft	Dry Creek

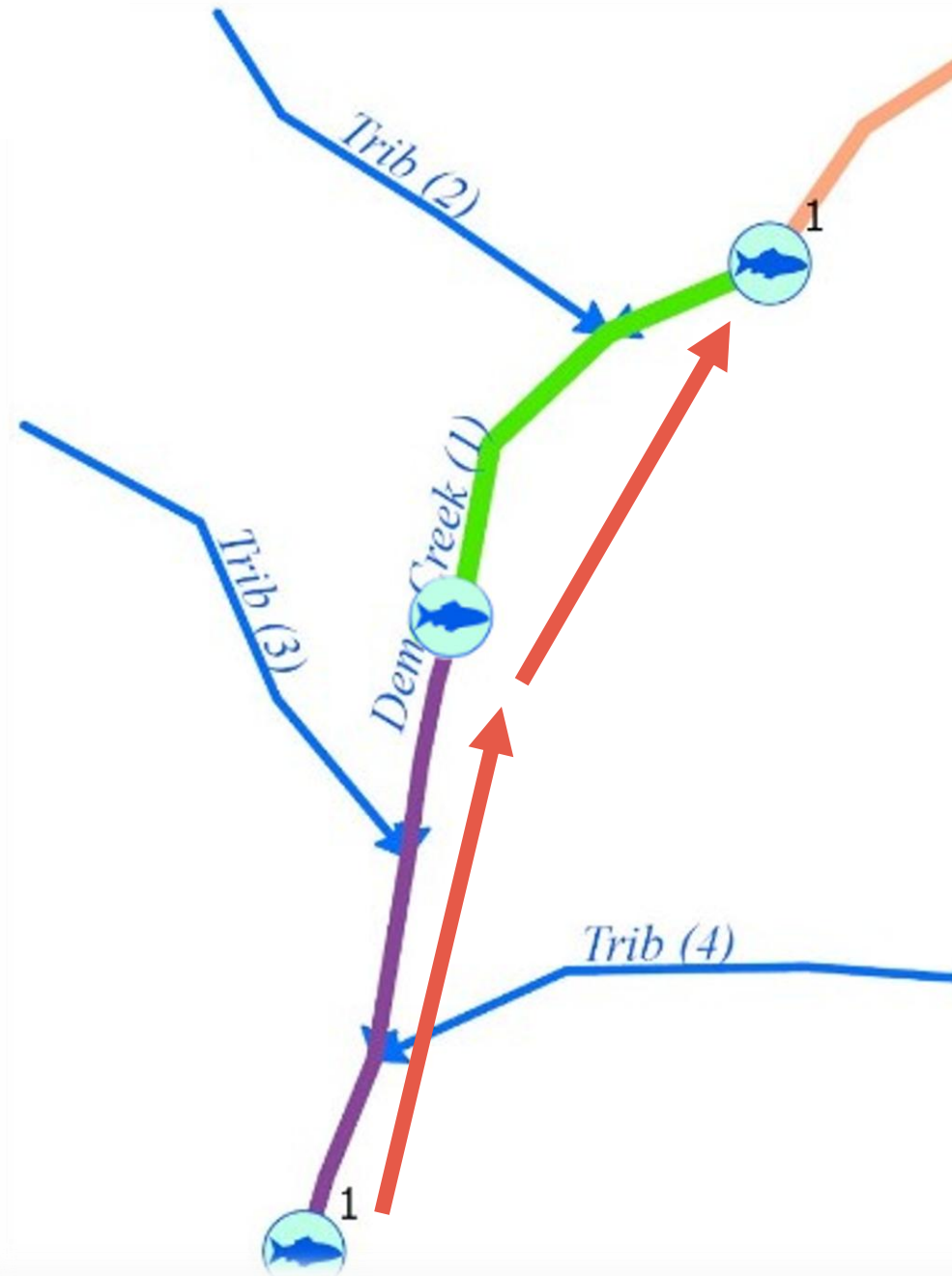
Linear Referencing Lines



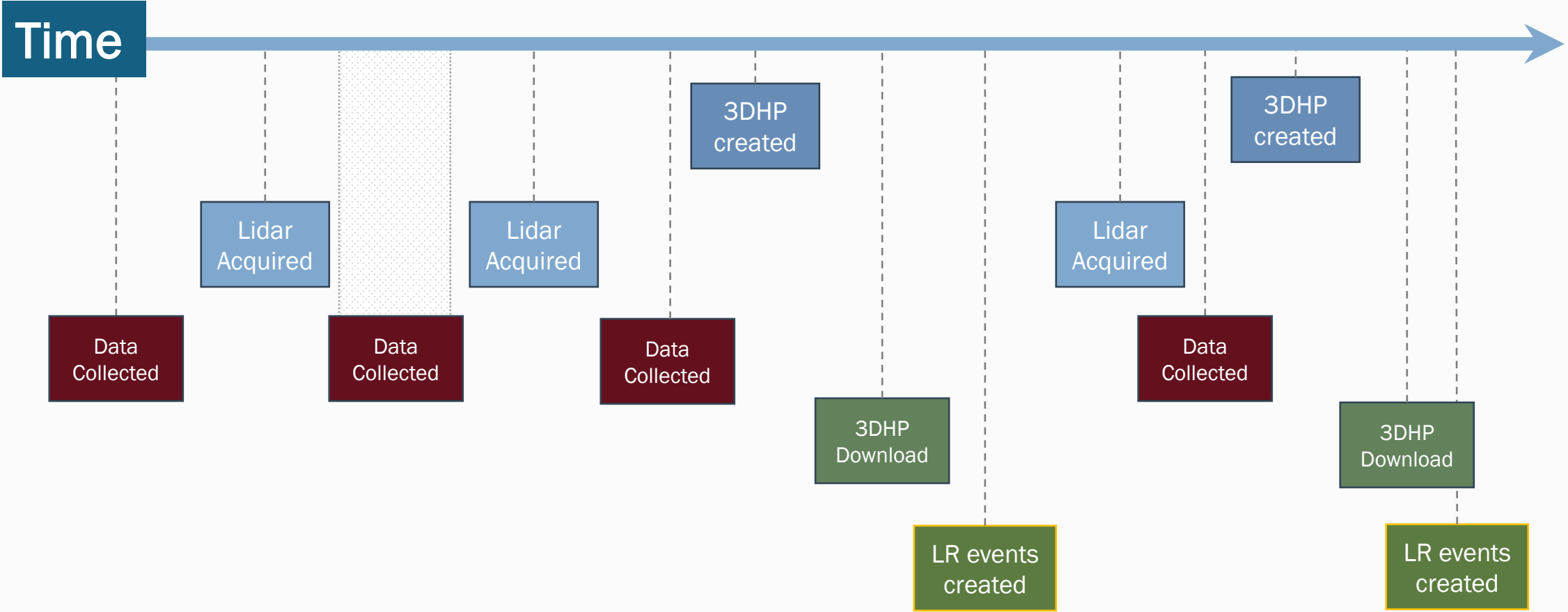
Dynamic Segmentation



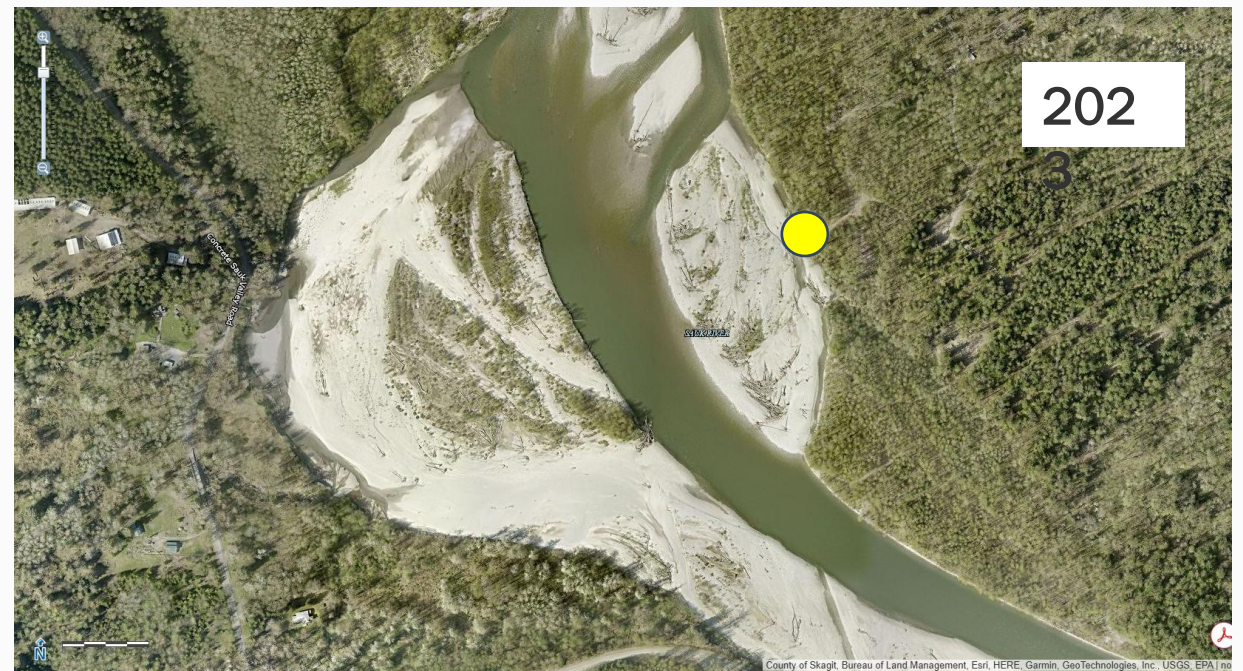
Trace Network



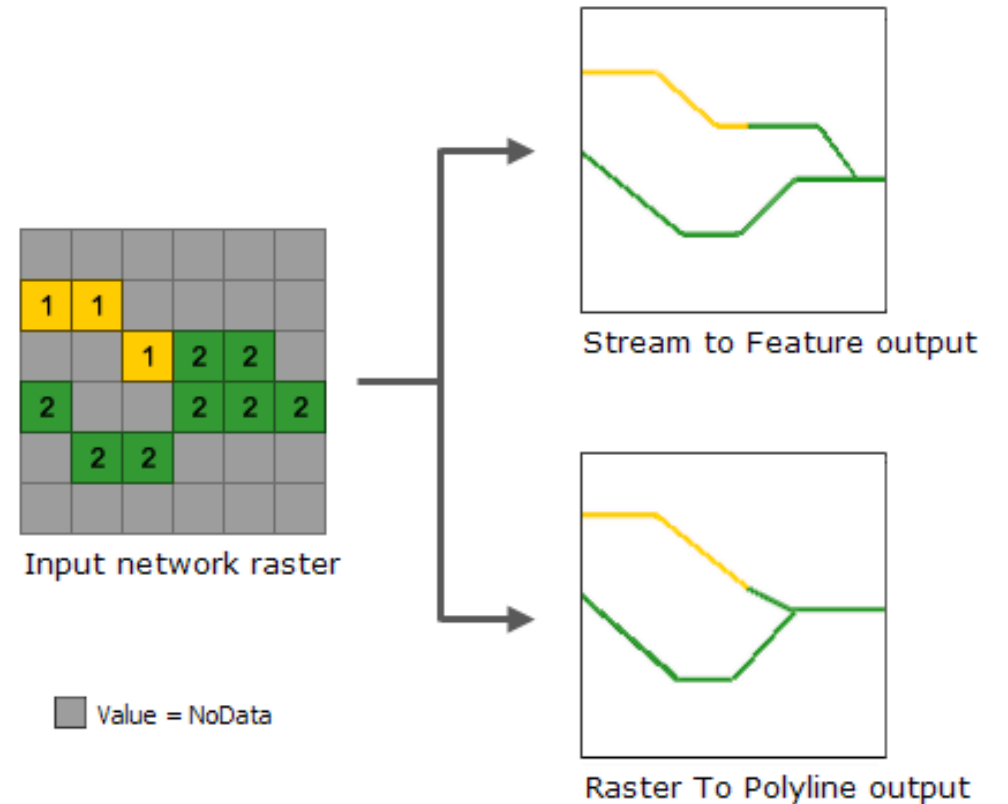
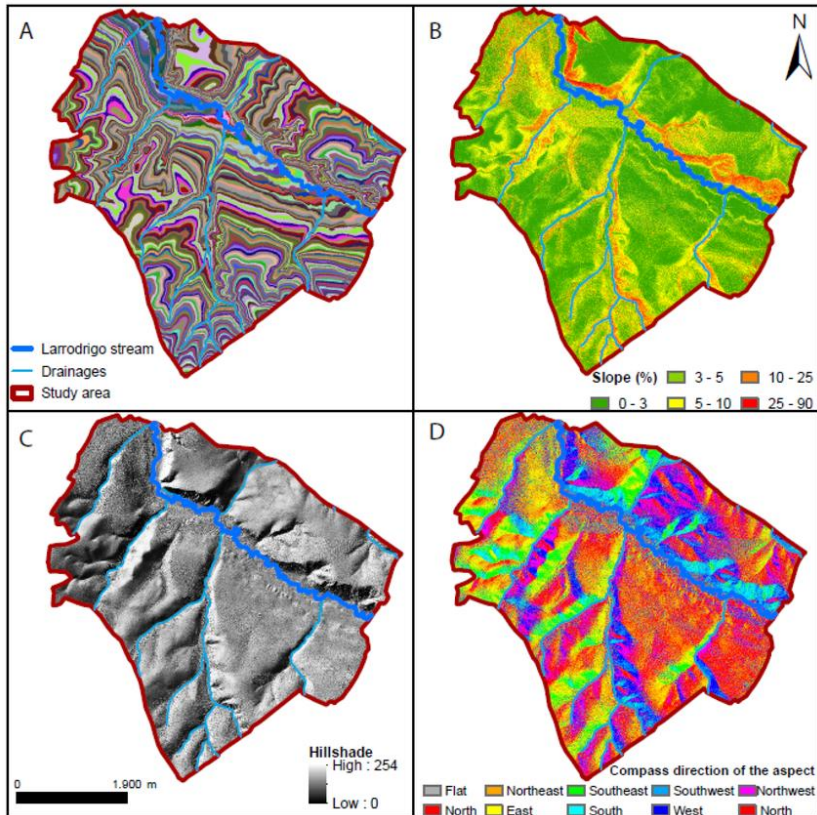
There are many different “time stamps” involved in linear referencing!
They should be available in Metadata or a part of the event.



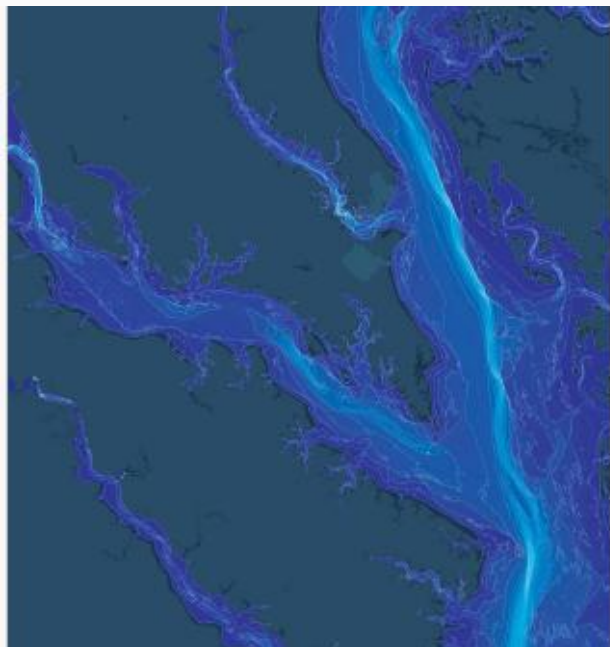
Change over time - Yellow dot for reference (river access point)



Raster to EDH/3DHP



WASHD & Esri - ArcHydro



**Arc Hydro: Linear
Referencing and
Dynamic
Segmentation**



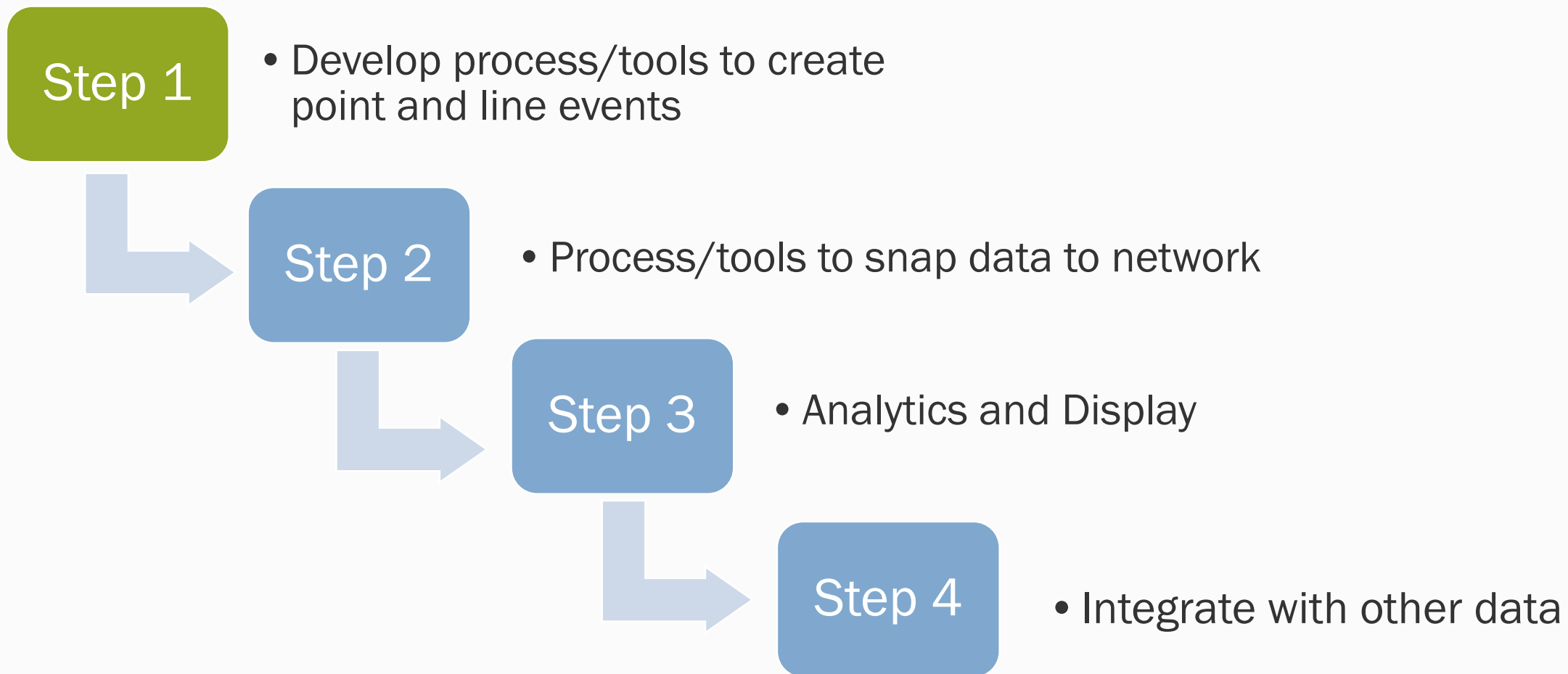
Dean Djokic

Water Resources Practice Manager, Esri



esri

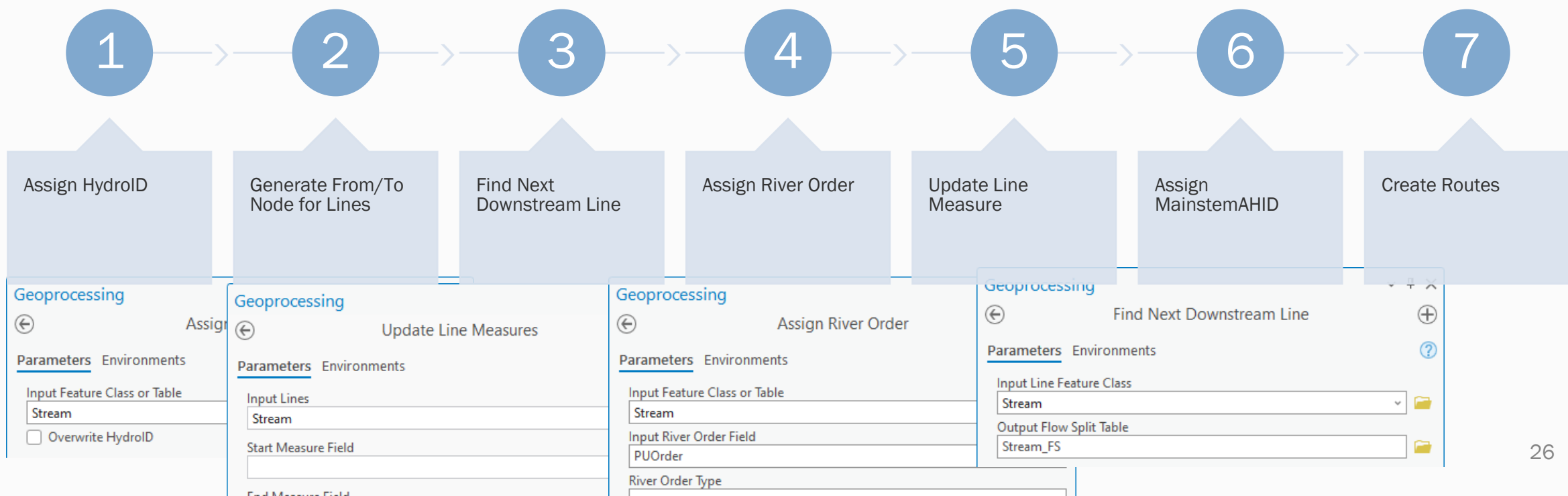
Development of new Arc Hydro tools



Development of new Arc Hydro tools

Step 1

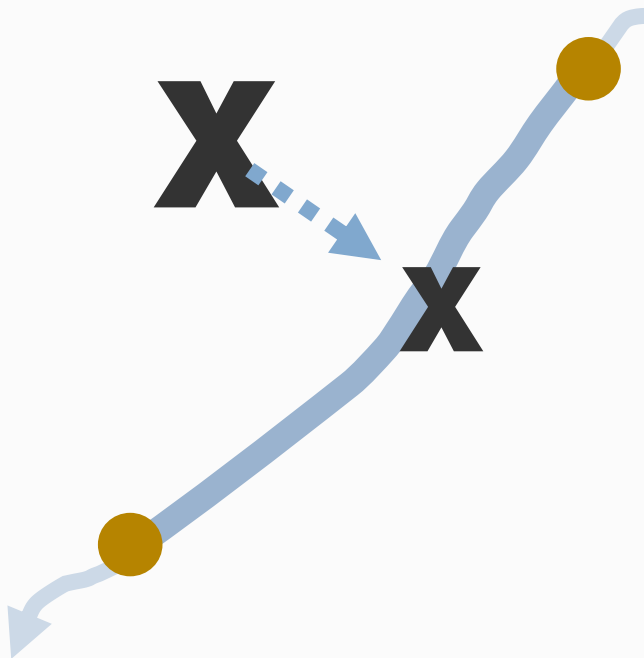
- Tools to prepare network for events
- And create events



Development of new Arc Hydro tools

Step 2

- Process/tools to snap data to network



Geoprocessing

← Snap Point Event →

Parameters Environments ?

* Input Point Features

Optional KP ID Field

* Input Route Features

* Route Identifier Field

Search Radius 10 Meters

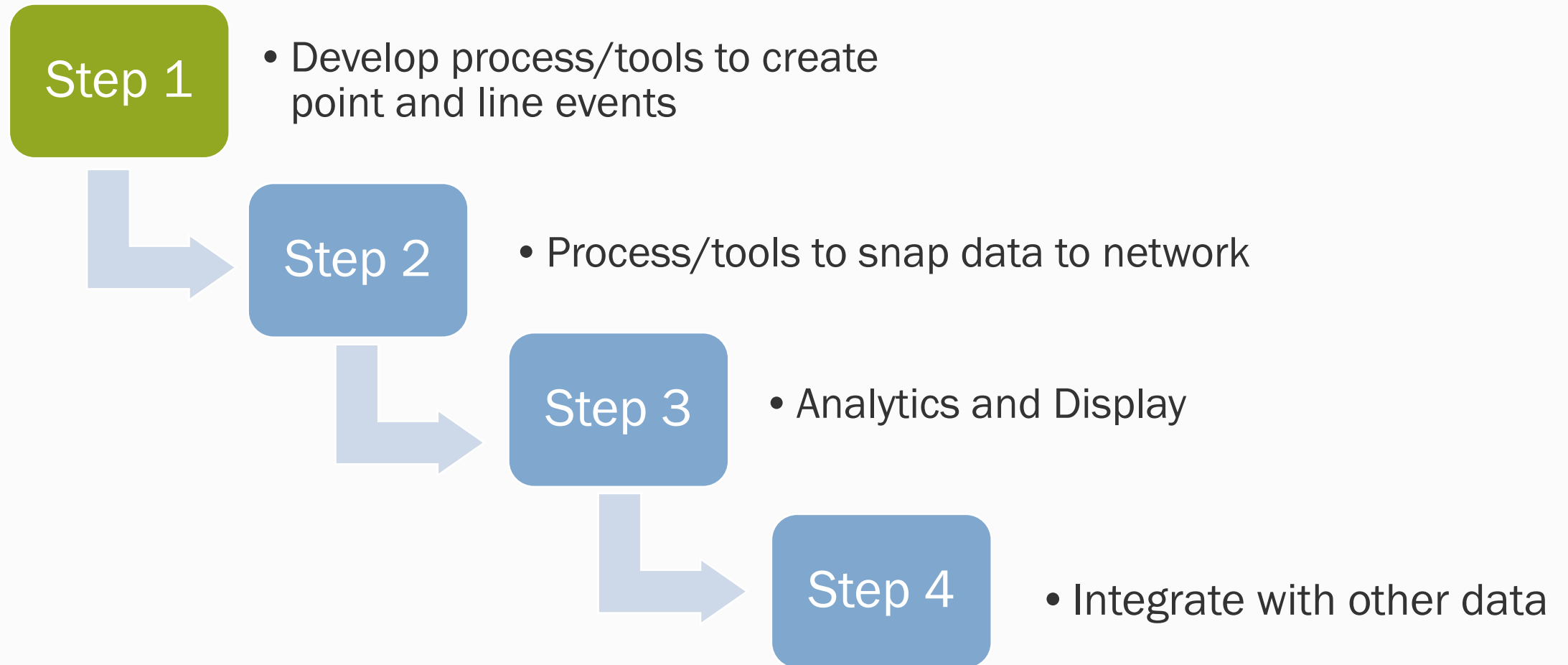
* Output Event Feature Class

Optional Input KP Features

Snap on Confluence

Create KP Features

Development of new Arc Hydro tools



Thank you

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<https://ecology.wa.gov/washd>

