

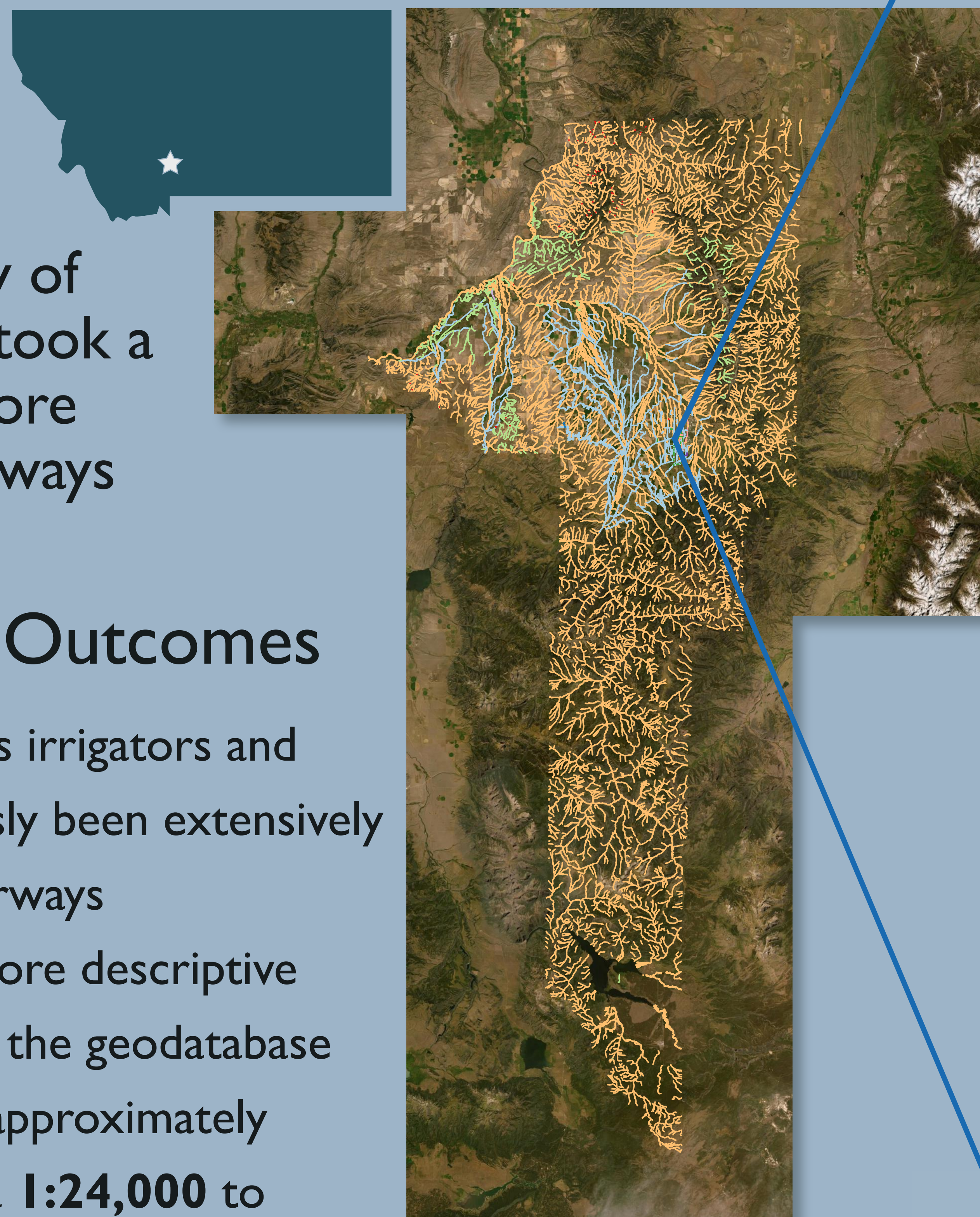
Updating the Waterways Map for Bozeman, Montana

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To facilitate better informed development in a period of rapid growth, Montana State University, along with the Gallatin Watershed Council, National Park Service, City of Bozeman and local irrigators undertook a collaborative effort to develop a more comprehensive and accurate waterways geodatabase for the Bozeman area.

Background, Motivations and Outcomes

- The project aimed to consult groups such as irrigators and longtime land owners who had not previously been extensively consulted on their knowledge of local waterways
- In order to account for this knowledge, a more descriptive classification scheme was incorporated into the geodatabase
- Within two newly annexed parcels of land, approximately **45km** of waterways were remapped from a **1:24,000** to **1:680** scale, improving accuracy by over 3,000 percent
- This more accurate and comprehensive resource may now be used by city officials to make a variety of planning decisions, from green infrastructure tie-ins to new construction setbacks



Gallatin County, MT waterways GIS layer showing features classified as 'Stream', 'Ditch', 'Spring', 'TBD', etc.

Workflow Walkthrough



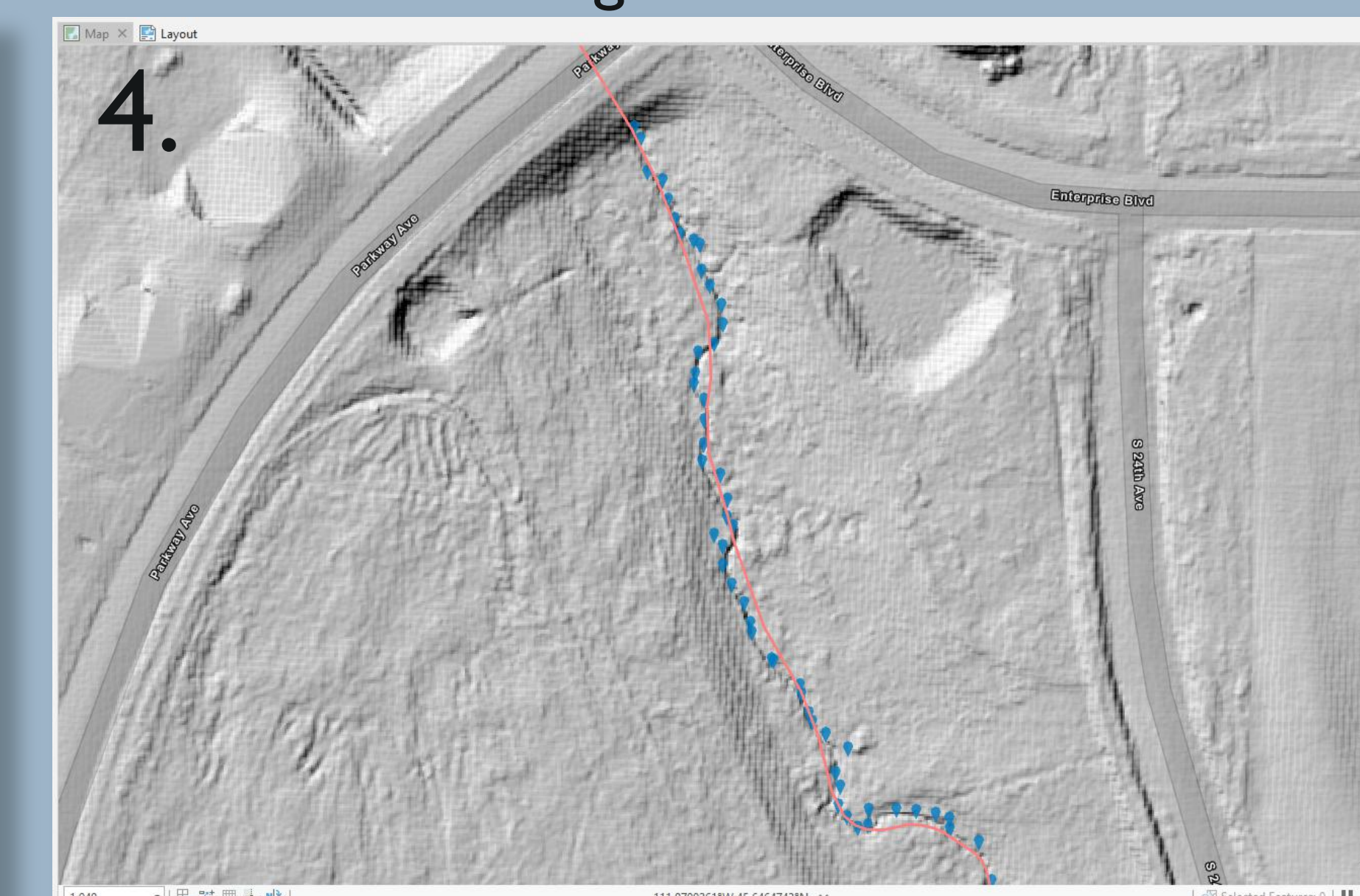
Line segment for stream last edited in 2011 shown over 2021 imagery



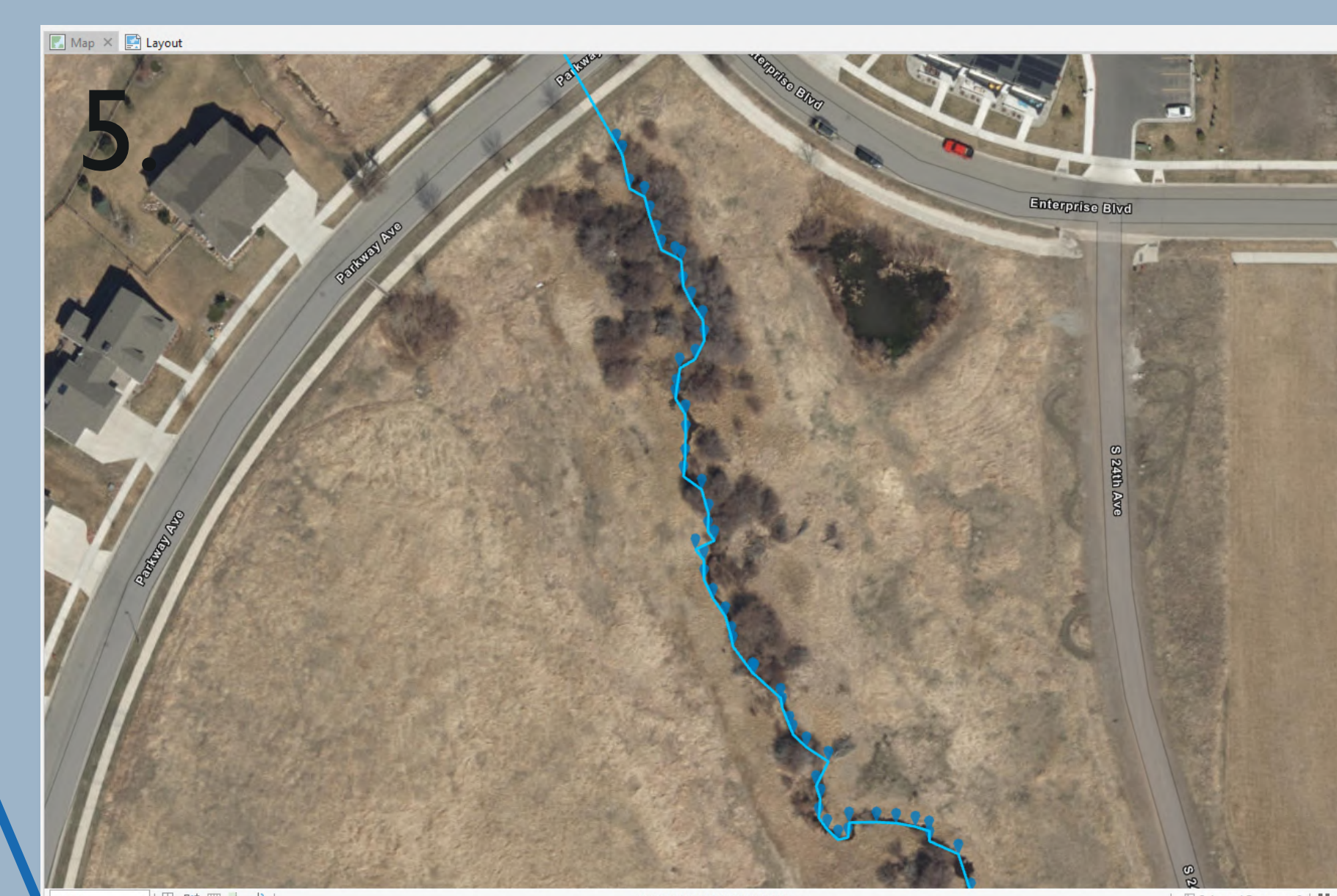
Line segment overlaid with 2018 LiDAR revealing waterway sections obscured by tree cover and other vegetation



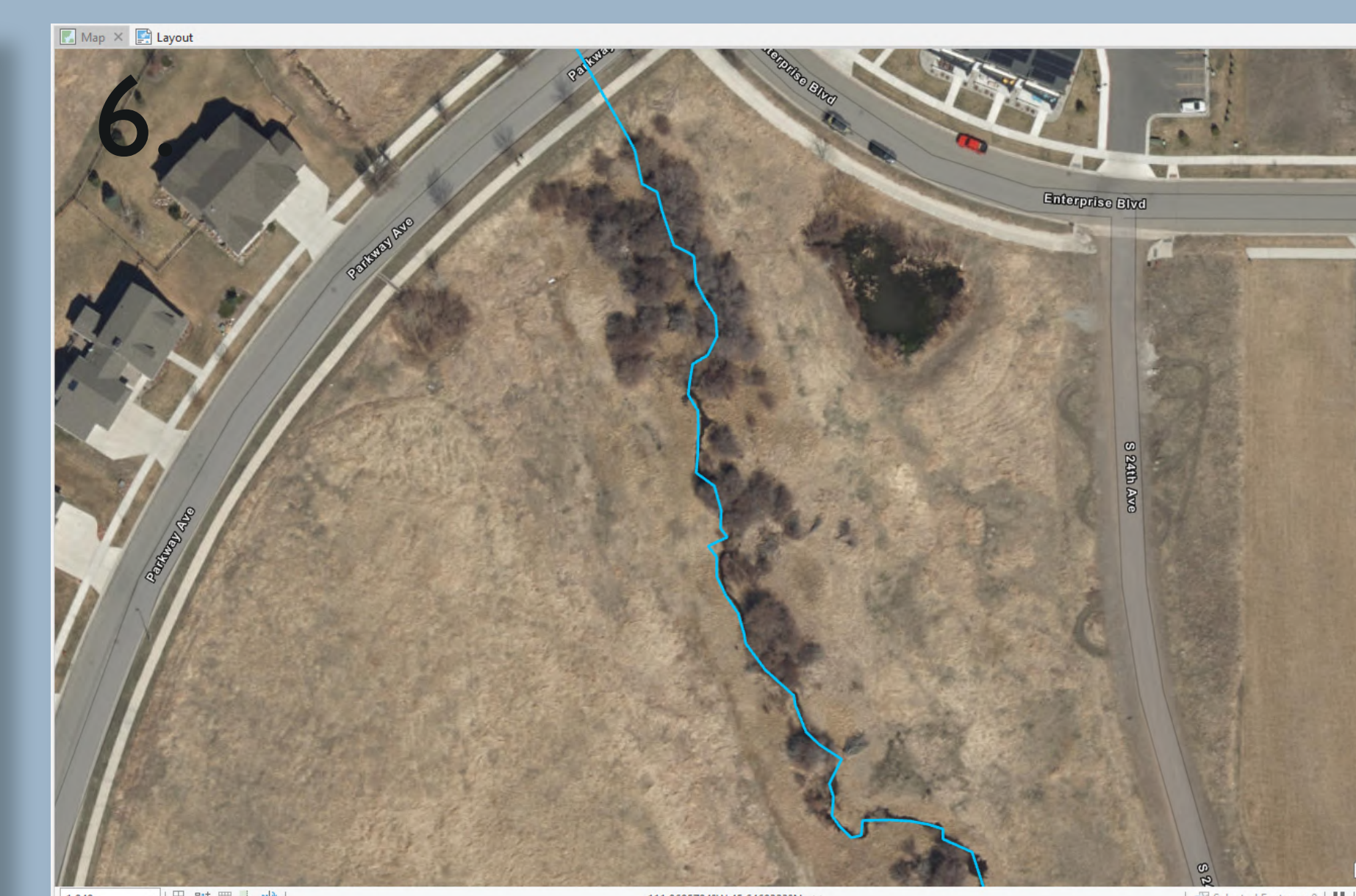
Pins represent GPS points collected



Collected GPS points appear to align with stream course shown in LiDAR much better than 2011 GIS Data



Vertices of the existing line segment are updated to the newly collected GPS points



Shown is the updated waterway line feature

Field Data Collection



Groundtruthing the course of an unnamed irrigation ditch using an Emlid Reach RS2 GPS Receiver

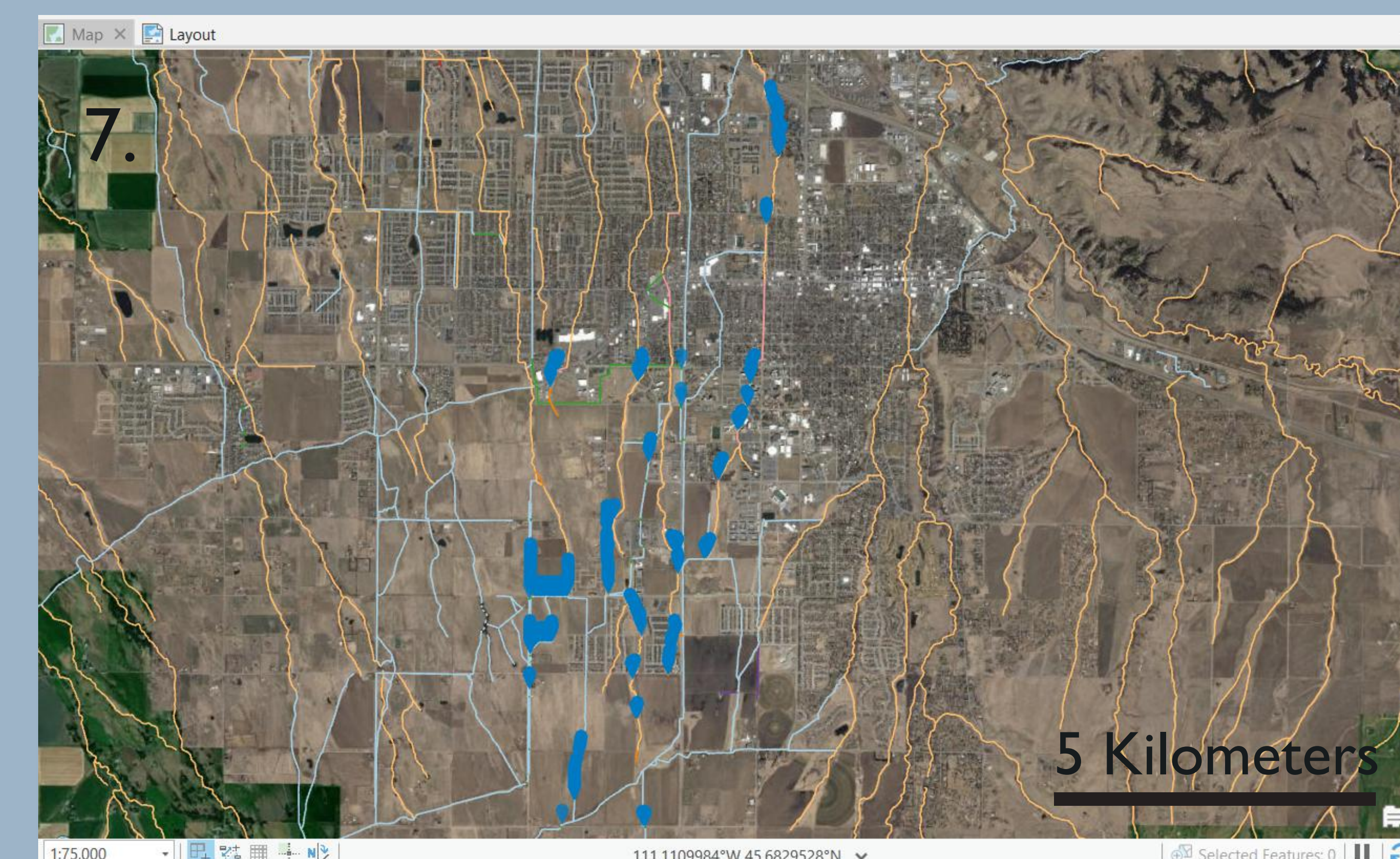


Field walking the Middle Creek Ditch, which has provided water for irrigation south of Bozeman for nearly 140 years.

Project Support From



BOZEMAN MT



Mapping efforts within City from 6/9/22 to 8/19/22