



Incorporating Local Data into the NHD Provides Better Data for All

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Abstract

The Idaho Department of Water Resources (IDWR) has developed an approach for local water managers to submit updates to the National Hydrography Dataset (NHD). Using a custom naming tool and edit dataset in ArcGIS, local agencies review current NHD, make edits, and submit changes to the IDWR. IDWR, as the NHD data steward for Idaho, then submits the edits to the USGS for incorporation into the NHD. The Burley Irrigation District served as a case study. The Burley Irrigation District irrigates over 47,000 acres annually and services about 1,500 customers.

Introduction

Water Managers at all levels rely on accurate canal and ditch hydrography data for various tasks. Currently, much data resides in the "heads of local water managers" and on paper maps maintained by irrigation organizations.

The NHD is the ideal place to maintain and store the best available hydrography data but it can be difficult to directly update for most irrigation organizations.

IDWR is developing customized tools that makes it easier for local agencies to submit NHD updates to IDWR who will process those updates and submit them to the USGS for inclusion into the NHD.

Methods

IDWR supplied the Burley Irrigation District (BID) with NAIP imagery and current NHD data as well as a geodatabase with an empty feature class to be used for editing. The only editing action required by BID staff was to draw new lines indicating a geographic or attribute change. After finishing a line, a dialog box automatically pops up prompting the user to enter required attributes (figure 1).

Although the NHD is a complex dataset involving many different tables and attributes, IDWR determined that only three attributes per line segment were required for the data steward to adequately update the NHD.

The dialog box allows users to update those three required attributes; FTYPE, NAME and EDIT_ACTION. The FTYPE determined whether a line segment represents stream type such as "River", "Canal", "Pipeline" etc. The edit action indicates whether this line represents a new feature, an existing feature that needs to be modified, or a line segment that needs to be removed from the existing NHD data. This process is illustrated in figure 1.

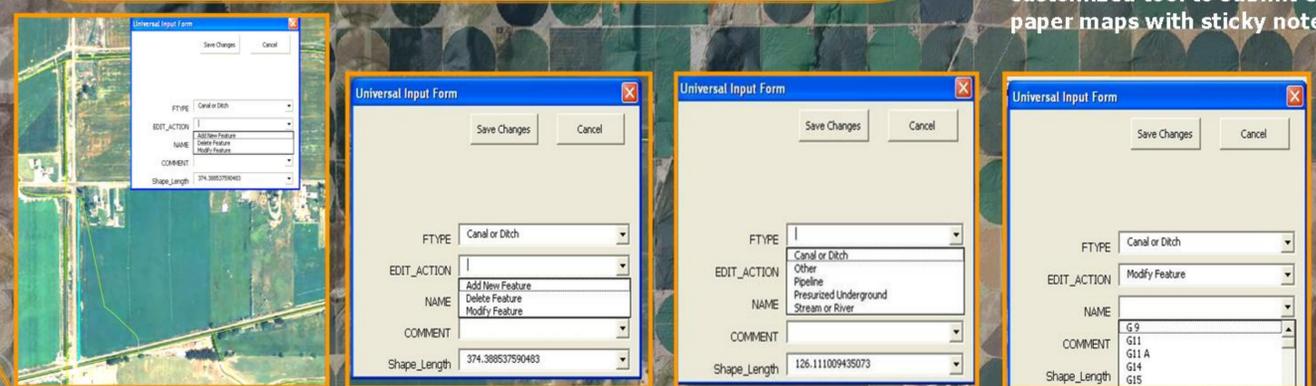


Figure 1: Screen captures of the customized tool showing how canal companies populate a personal geodatabase indicating the changes that need to be made to the existing NHD. The Dialog box automatically appear when a user finishes a sketch.

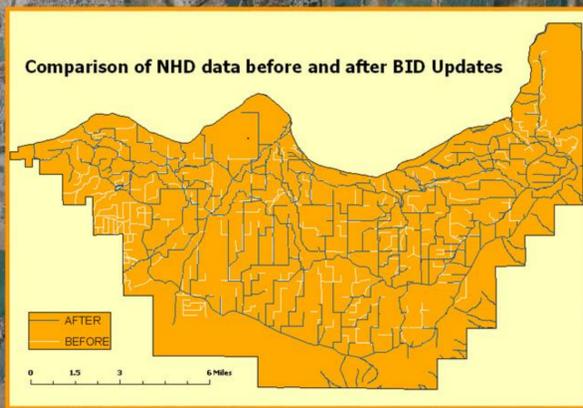


Figure 2: Geometry of canal and lateral system changed dramatically from existing NHD (BEFORE) to updated NHD (AFTER).



Figure 3: The Burley Irrigation District used a customized tool to submit edits to IDWR, as well as paper maps with sticky notes.

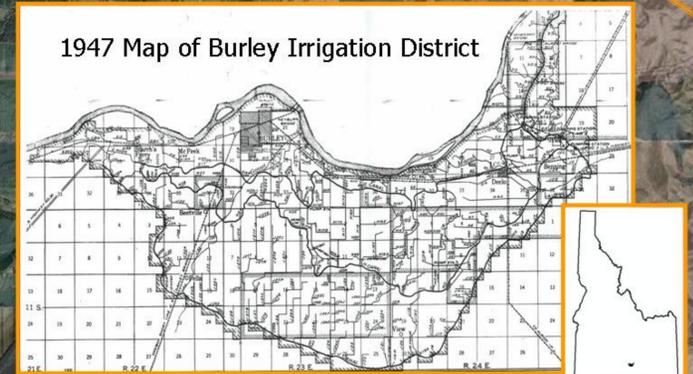


Figure 4: Historical map of the Burley Irrigation District.

Results

Burley Irrigation District staff were able to use the customized editing tools and successfully submit updates to IDWR. The importance of the geometric updates to the NHD is apparent when comparing NHD before and after the changes (figure 2). Additionally over 200 new canal and lateral names were added to the NHD.

After incorporating BID edits, it became clear that more information, especially about flow direction and connectivity was required (figure 3). IDWR submitted maps to BID (figure 5) to obtain this information.

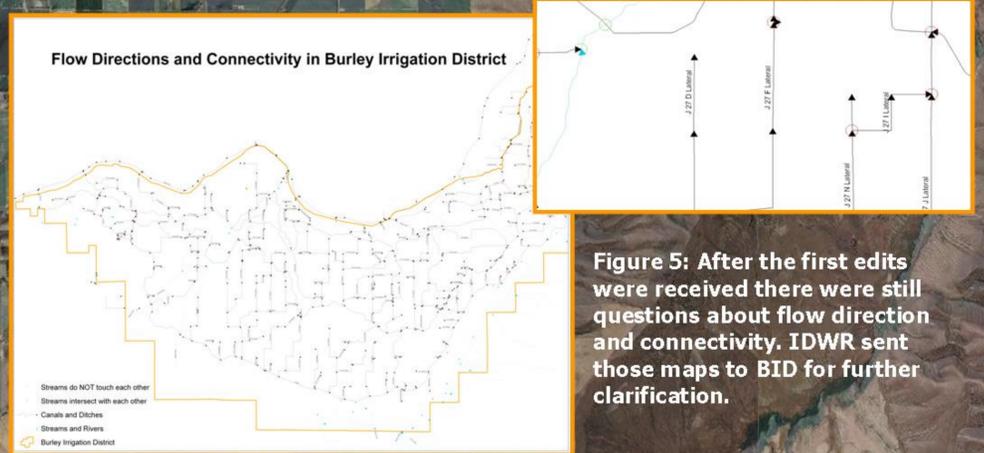


Figure 5: After the first edits were received there were still questions about flow direction and connectivity. IDWR sent those maps to BID for further clarification.

Discussion

The first trial of the customized tool was successful and resulted in significant improvements to the NHD. During this pilot project it became obvious that the tool needs to be expanded to allow users to set flow directions and verify which canals and laterals are connected and which are not.

Future development also includes adding a point feature class and associated dialog box that can be used to edit points of diversion. IDWR plans to work with the USGS to clarify and refine how those points of diversion of interest to local agencies should be represented in the NHD.

Simplified editing tools allow IDWR as the NHD data steward to acquire updates from local agencies and include them into the NHD. Local agencies benefit by having their most current data in the NHD for up-to-date map development and for the ability to incorporate the NHD into their business operations and for data analyses.