

Attachment B:
Data and Location Errors

Background

Some of the watercourses included in the Commissioner's Order are the result of 1) errors in data values or 2) location errors due to the precision of the mapped location of public waters and public ditches. An explanation and example of each are discussed below.

1. Errors in Data Values

The watercourses in category 1 fall into this category. The PWI data layer attributes are derived from the original PWI scanned maps. There are some discrepancies between the PWI data layer and the original scanned map. The original map is a solid line but is a heavy dashed line on the PWI data layer. The watercourse may or may not be on the original PWI list. These watercourses were included in Appendix A. Several such discrepancies have been identified. One such example is in Lincoln County (Figures 1-4). This watercourse is ditched but is not a dashed line on the historic PWI and is also on the PWI list.

Example 1 - Error in data values

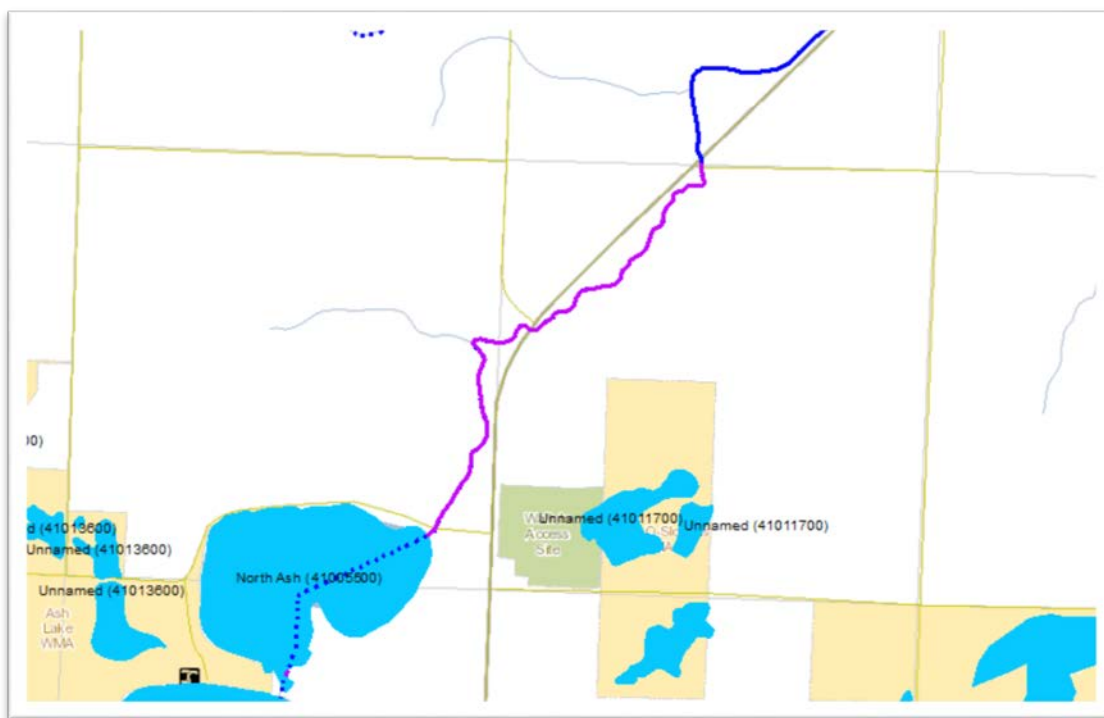


Figure 1. Example from Lincoln County. Purple line represents watercourse removed from PWI.

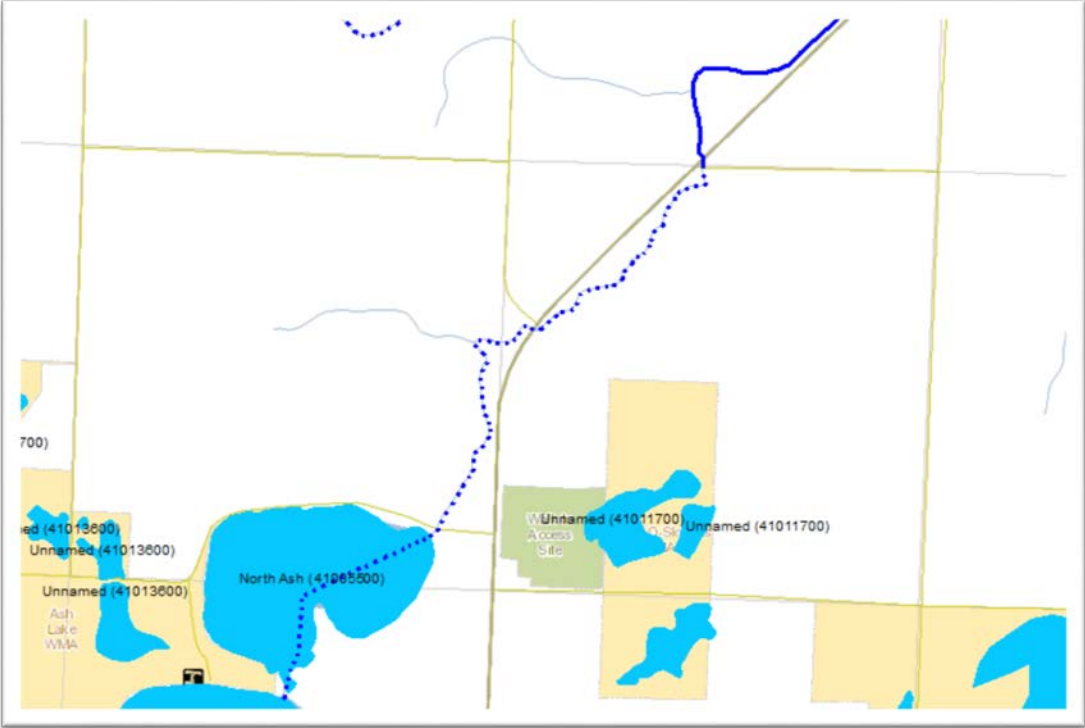


Figure 2. The PWI data layer indicates shows this as a dashed line (blue, dashed line), indicating it is an altered natural watercourse.

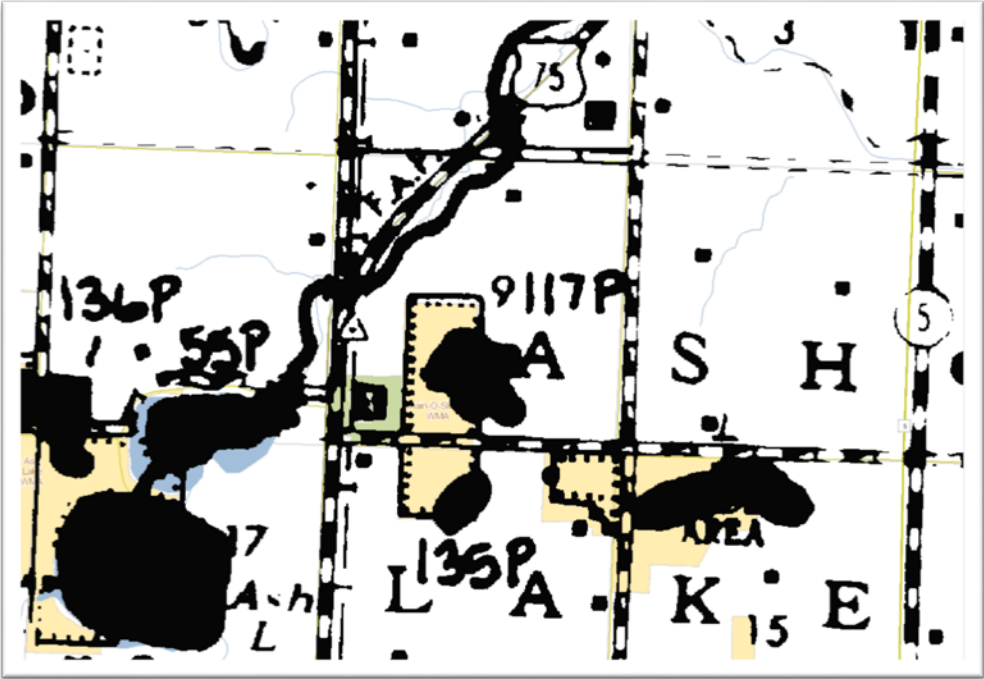


Figure 3. Original PWI map showing solid line in same location of purple line in Figure 1.

Unnamed to YMR	17(Basin 111 57)	45	4	111	45
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Figure 4. Excerpt from the Lincoln County PWI list. It indicates that the PWI watercourse 'unnamed to Yellow Medicine River' begins at South Ash Lake (PWI #41-57P) in T111 R45 Sec 17 and extends to T111 R 45 Sec 4. This description is consistent with the watercourse in purple in Figures 1-3 that was included in Appendix A.

2. Location Errors

Many of the watercourses that were included in Appendix A may have been included on the original PWI as heavy dashed lines in locations where there is not a public ditch because of one or more of the following reasons.

- The ditch location data provided to the DNR during the PWI was not accurate or has changed.
- The ditch location provided to the DNR for the buffer map is not accurate or complete.
- The map scale and map making methodology used for the original PWI maps may have resulted in precision errors in the mapped ditch locations. The watercourses on the original PWI maps were hand drawn on map papers. The base maps used for each county using a scale of 1/2 inch to the mile for rural counties and 1 inch to the mile for metropolitan counties. This methodology, plus the manual interpretation and transposing of original PWI map data to create the PWI data layer, resulted in precision errors where public water and public ditch meet or at section/county lines, basin inlets, outlets etc.
- Watercourse is already noted as public ditch, but was included in Appendix A due to slight mismatch between the mapped location of a public ditch and a public water.

Example 2 - Location Error – Map Precision

This location (Figure 5) is in Kittson County. A 0.3 mile segment (in red) was removed via the Commissioner's Order. The green line represents the location of the public ditch as provided in 2016 by the County for the buffer map. The blue line is a public watercourse. The PWI data layer (Figure 6) shows the public ditch (dashed blue line) extending east to the section line. The PWI data layer is consistent with the original PWI map (Figure 7). A number of explanations might explain why this 0.3 mile segment was mapped as a public ditch during the original PWI. The actual reason may never be known. Is it actually currently a public ditch but the county's data provided for the buffer map did not include it? Did the location change, dropping the 0.3 mile segment since the PWI? Is the current ditch location correct on the buffer map, but due to the map scale and map making methodology of the original PWI, using hand-drawn lines, was

the ditch extended to the section line. (Given a map scale of $\frac{1}{2}$ in per mile, a 0.3 mile segment would have been represented by a miniscule line $\frac{3}{16}$ of an inch long on the original PWI map.)



Figure 5. Location in Kittson County. The green line is the public ditch, the red line is a 0.3 mile segment removed and the blue line is a natural public watercourse.



Figure 6. The PWI map layer shows the altered natural watercourse (dashed line) extending east to the section line.

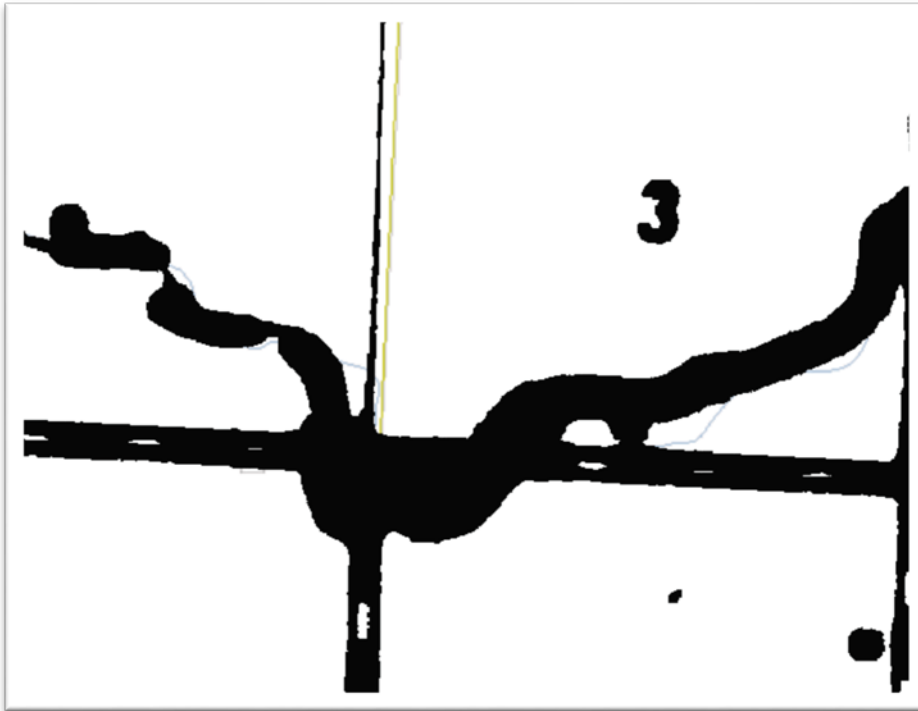


Figure 7 Original PWI map is consistent with the PWI data layer (see Figure 6).

Example 3 – Location Error – Small mismatch between the public watercourse and public ditch locations

The buffer map was created using DNR PWI data from the PWI data layer and public ditch location data provided by the drainage authorities. In many cases, the location of a watercourse in the PWI data layer and the location of a public drainage ditch are the same. In these cases, when the drainage authority provided the ditch data, DNR merged the PWI data layer record and the ditch location record, combining attributes from both into a single watercourse record. In some cases, usually in a very small geographic area, the merging of the line work from the two datasets was not completed because the watercourse has been relocated (or mapped at a location slightly different). A 'double line' appears on the buffer map in these locations, one representing the PWI data and one the ditch data. Many of these were corrected via the map review process but some situations still exist. If the PWI watercourse was an altered natural watercourse, it would have been included in Appendix A of the Commissioner's Order because the public ditch attribute would have been 'no' because the attributes from the 2 sets of line work had not been combined. In most cases, the removal has no practical impact on the buffer map -- the public ditch line is still there. The removal partly corrected the error by removing the extra line but the watercourse is no longer a public water. See Figure 8 for an example from the buffer map.

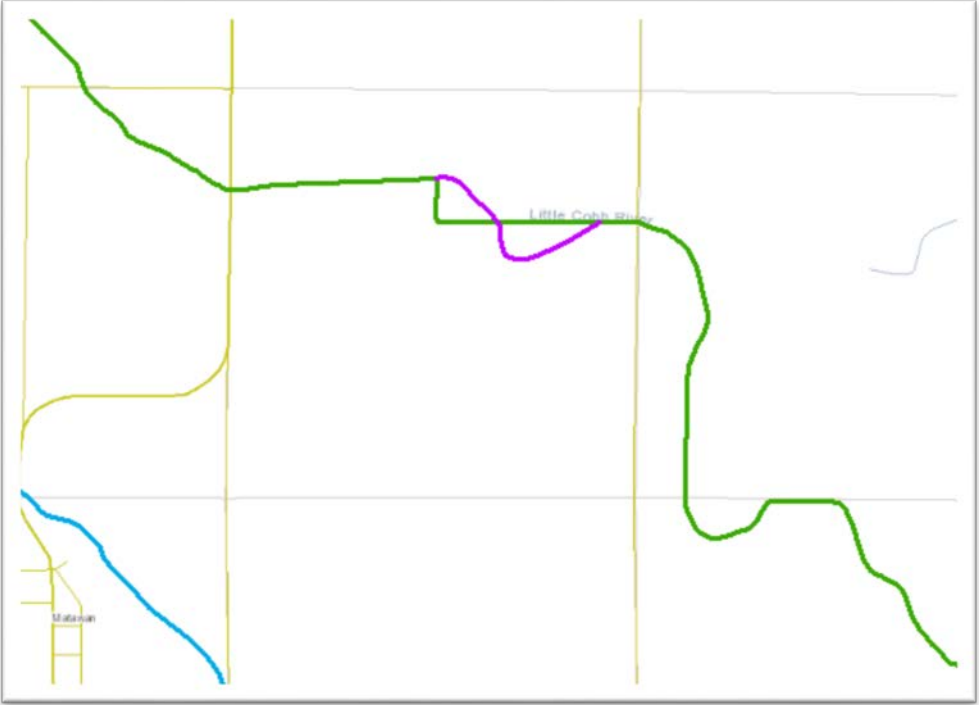


Figure 8. An example from the buffer map in Waseca County where the public watercourse and the public ditch lines did not coincide and were not merged as intended into a single watercourse. The green line represents the public ditch and the purple line represents the portion of the PWI watercourse that was not merged with the ditch. Due to this error, the purple line was included in Appendix A of the Commissioner’s Order.