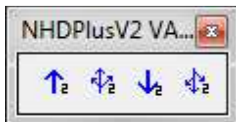**NHDPlusV2 VAA Nav Toolbar**
User Documentation
Horizon Systems Corporation
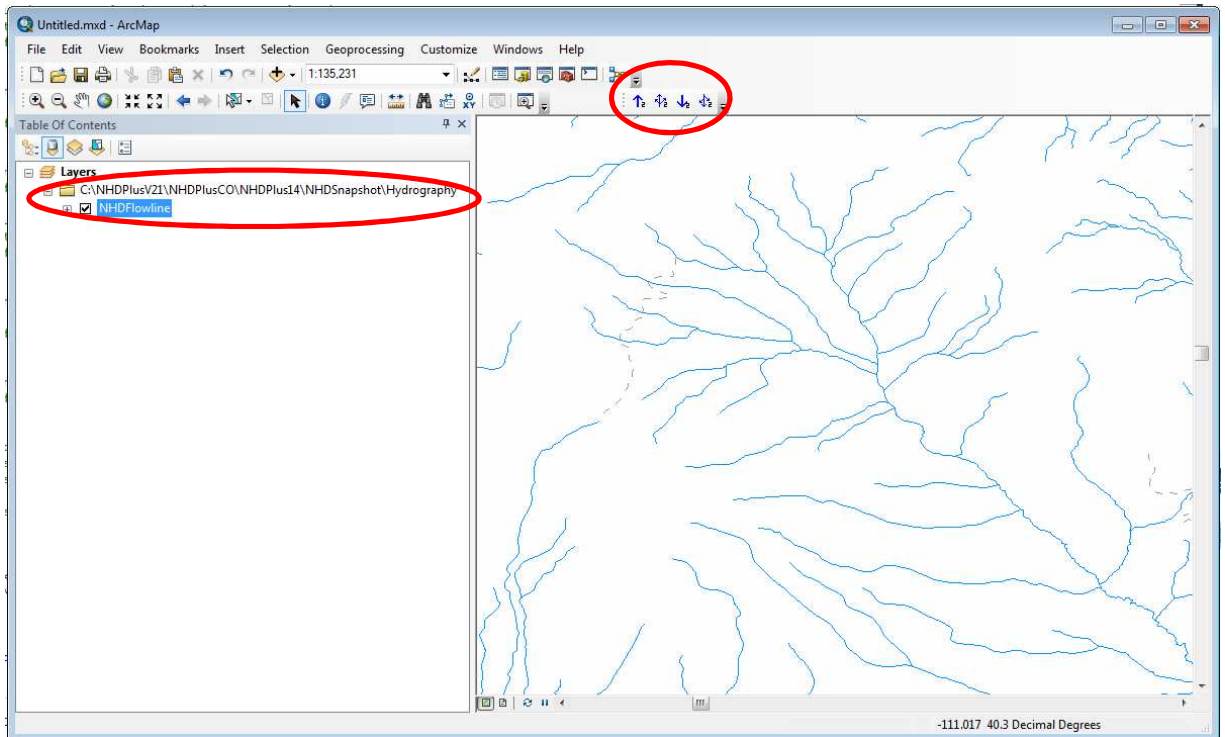**7/14/2014**

1. Description:

The NHDPlusV2 VAA Nav Toolbar is an ArcMap Toolbar with 4 tools representing the 4 primary navigation types and a form allowing users to identify stop conditions and navigation results filtering rules.

Each navigation involves obtaining information from the user, building a navigation database if one does not exist, clearing any previous navigation results, calling the NHDPlusV2Navigator, exporting the results as an event table dbf, and, finally, rendering the results in the map document using the event table dbf and the active NHDFlowline feature class.
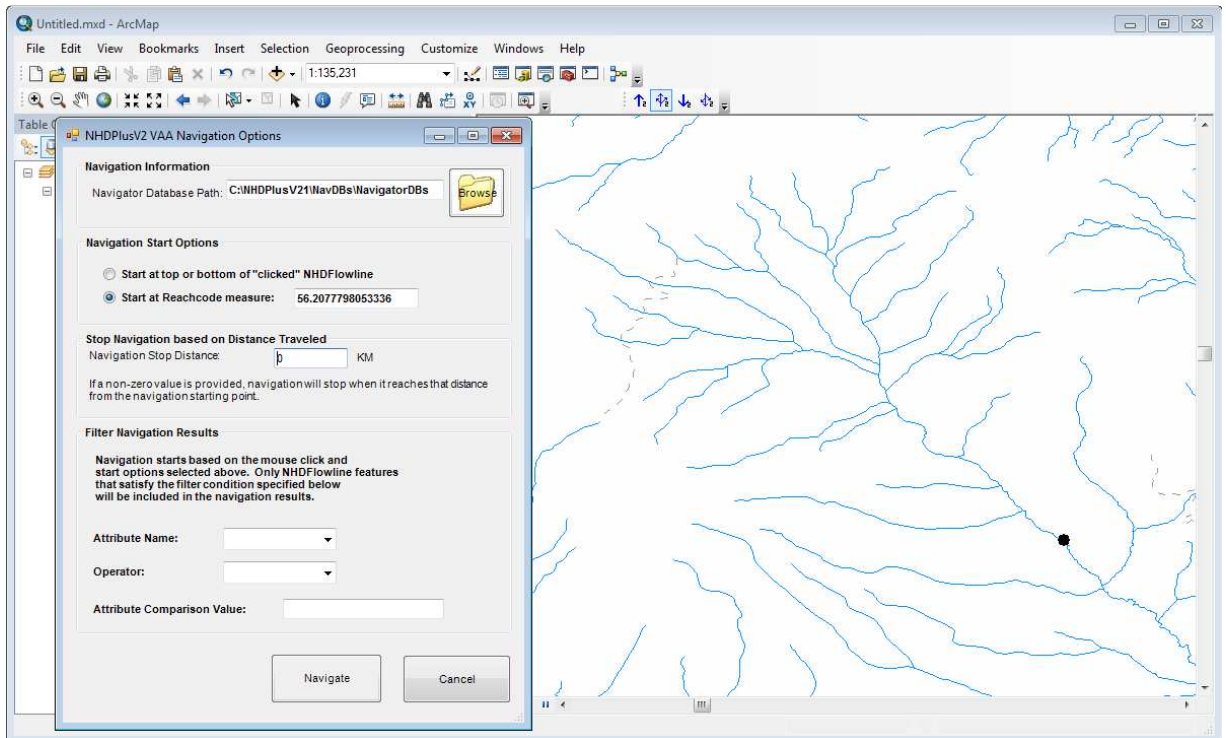
The NHDPlusV2 VAA Nav Toolbar obtains navigation information from the user based on tool selection, a mouse click on a starting comid and measure, and the NHDPlusV2 VAA Navigation Options form.

2. General Usage:

a. Within ArcMap, manually load a \NHDSnapshot\Hydrography\NHDFlowline shapefile from an NHDPlusV2 workspace.

b. Select the desired tool from the NHDPlusV2 VAA Navigator Toolbar. (Upstream Mainstem, Upstream with Tributaries, Downstream Mainstem, or Downstream with Divergences)

c. Click on the desired starting NHDFlowline feature. Zoom in if necessary.

In the above picture, the a black dot has been placed at the location of the mouse click and the Navigation Options dialog is open.

d. Establish start, stop and filtering conditions if necessary using the Navigation Options dialog.
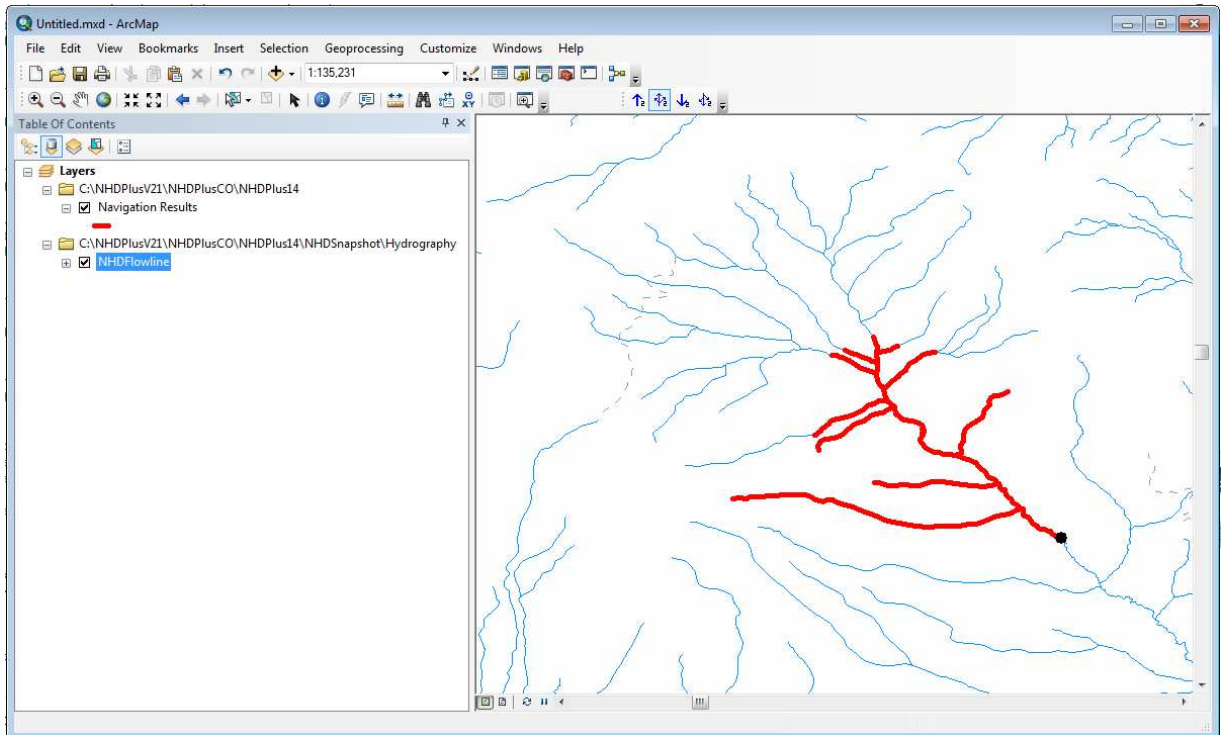
NHDPlusV2 VAA Navigation Options Dialog

1. Navigation Start Options.

   Choose "Start at the top or bottom of the 'clicked' NHDFlowline" to include the whole starting NHDFlowline feature in the navigation results. Including the whole starting NHDFlowline feature means that the navigation will begin at the "from" measure (i.e. bottom) of the NHDFlowline feature for upstream navigations and at the "to" measure (i.e. top) of the NHDFlowline feature for downstream navigations.

   Choose "Start at Reachcode measure" and provide a measure value to start somewhere else along the NHDFlowline feature. The default value is the measure at the mouse click.

2. Stop navigation based on a stop distance.

Supply a stopping distance other than 0 to stop the navigation when it has traveled the specified distance. 0 indicated that there is no stop distance and the navigation proceeds to the end of the network. The picture below shows an "Upstream with tribs" navigation was stopped after navigating 10 km.

3. Filter navigation results based on a specified value of a selected NHDPlus attribute.

Select an Attribute Name.

The possible NHDPlus attribute names are continuous numeric fields shown in the table below. See the NHDPlusV2 User Guide for additional information about these NHDPlus attributes.
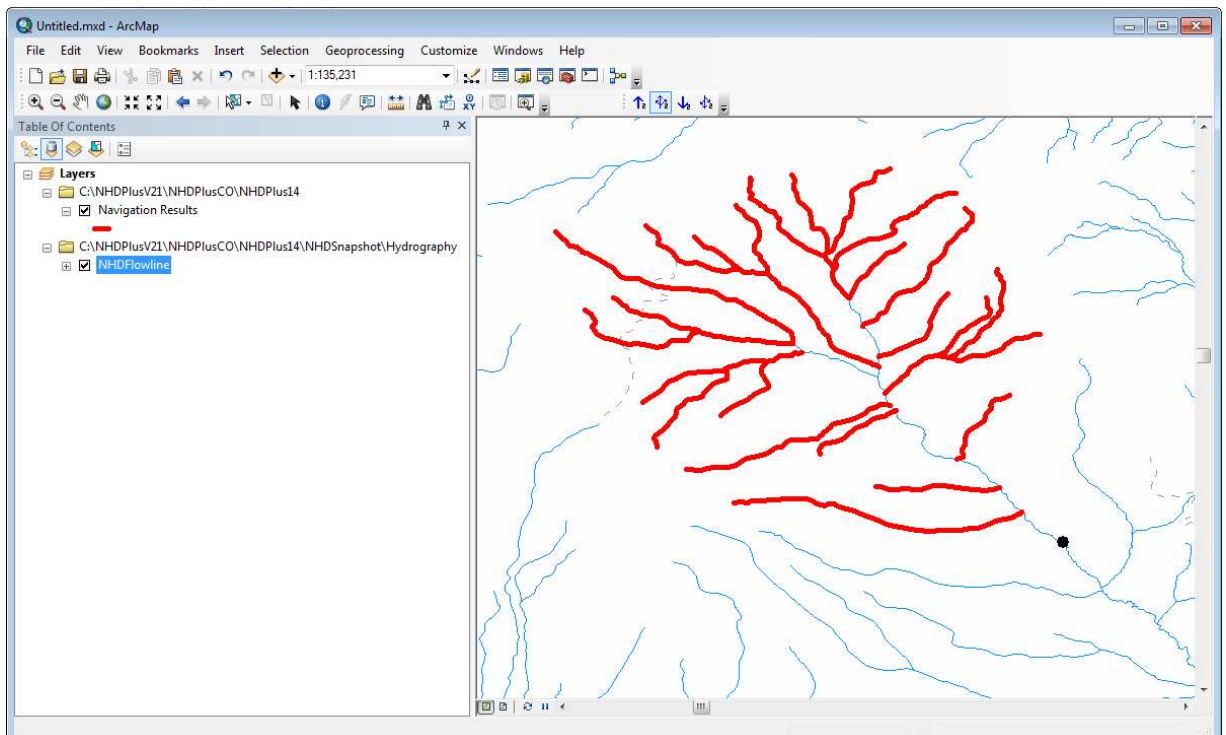
PathLength	Distance to the terminal NHDFlowline feature downstream along the mainpath	Continuous Numeric(13,4)
ArbolateSum	Kilometers of stream upstream of the bottom of the NHDFlowline	Continuous Numeric(13,4)

	feature	
TotDASqKm	Total Upstream Cumulative Drainage Area at the downstream end of the NHDFlowline feature	Continuous Numeric(14,6)
DivDASqKm	Divergence-routed Cumulative Drainage Area at the downstream end of the NHDFlowline feature	Continuous Numeric(14,6)

Select an operator

      <   Less than
      <=   Less than or equal to
      >   Greater than
      >=   Greater than or equal to

The picture below shows a navigation that was filtered for NHDFlowline features that had TotDASqKM <= 20 sqkm.

e. Press the "Navigate" button on the Navigation Options dialog to start the navigation.   Depending on the options and the size of the navigation, the navigator many take a few moments. The Navigator sets the cursor to a "busy"

style, however, there are several parts of the Navigation when ArcMap takes control of the cursor and it may not be displayed as a "busy" style. To ensure that the navigation has enough time to complete, please wait for (1) the "Navigation Results" layer (in red) to display or (2) for a message box to appear that indicates there was an error during navigation.