## How has land cover changed in my watershed?

Information in the WHAF can help you view land cover change over time. This example focuses on the North Fork Crow River Watershed in central Minnesota, on the northwest edge of the Twin Cities.

The Historic Landscape

To understand land cover change, it helps to look back as far as possible. Fortunately for Minnesota, we have the 'Marschner Map', named for the cartographer that created a map from the notes and drawings of the land surveyors of the 1890's. There are two ways to access this historic information in the WHAF. You can add the Marschner Map data layer and view it in the WHAF Map:
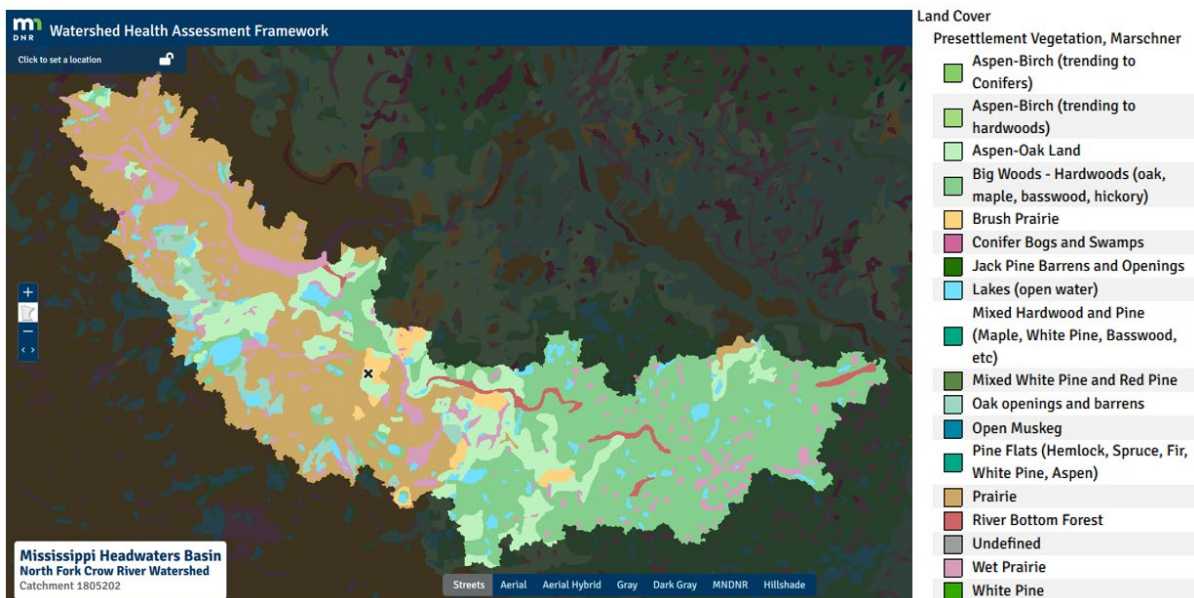
You can open the Watershed Context Report, page 12 for a breakdown of the historic land cover:

Percent of Watershed By Marschner Land Class:

Big Woods - Hardwoods (oak, maple, basswood, hickory): 34.7%

Prairie: 31.4%

Aspen-Oak Land: 13.3%

Wet Prairie: 9.2%

Lakes (open water): 4.3%

Oak openings and barrens: 3.7%

Brush Prairie: 1.9%

River Bottom Forest: 1.4%

Conifer Bogs and Swamps: 0.0%

Undefined: 0.0%

Historic Landscape Description:

In the 1890's this landscape was predominantly Big Woods in the eastern half and prairie in the western half. Interspersed in wooded areas you would find aspen, oak, oak openings and barrens; and in wetter areas a mosaic of prairie, wet prairie and open water.

Today's Landscape (2016)

The land cover in this watershed has experienced a tremendous shift in response to human activity. By adding the National Land Cover Data to the map, it is easy to see the primary land uses of today.
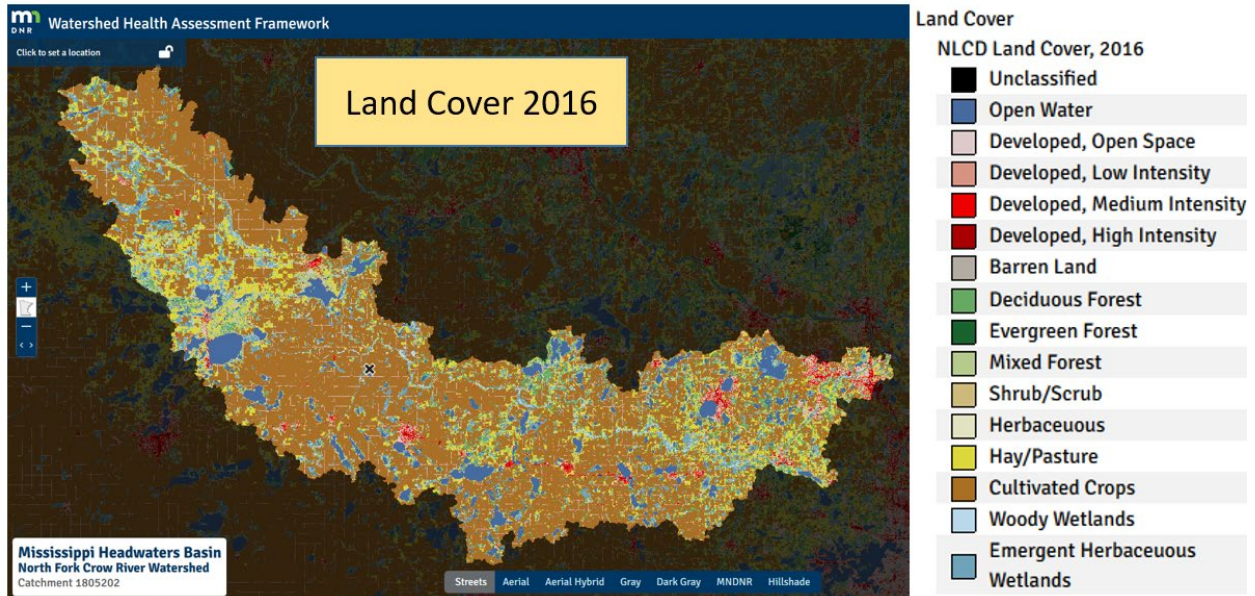

Current Landscape Description:

The eastern landscape of former Big Woods is now an area of mixed use. Agriculture dominates the open areas and urban infrastructure serves the growing small towns and roads connecting to the Twin Cities.

The western landscape of former dry and wet prairie is now an area of intense agricultural use. Some remnants of historic natural land cover remain, for example in the area near Green Lake in the northwest part of the watershed. *Check out the Map*

Land Cover Charts

The WHAF has added a Land Cover application to help you further visualize the land area for each cover type in the National Land Cover Data (NLCD). The tables and charts give the values as percent of total area and square miles. For example, cultivated lands cover 56% of the total watershed, or 826 sq. miles. Click this link to open the *North Fork Crow Land Cover Charts*
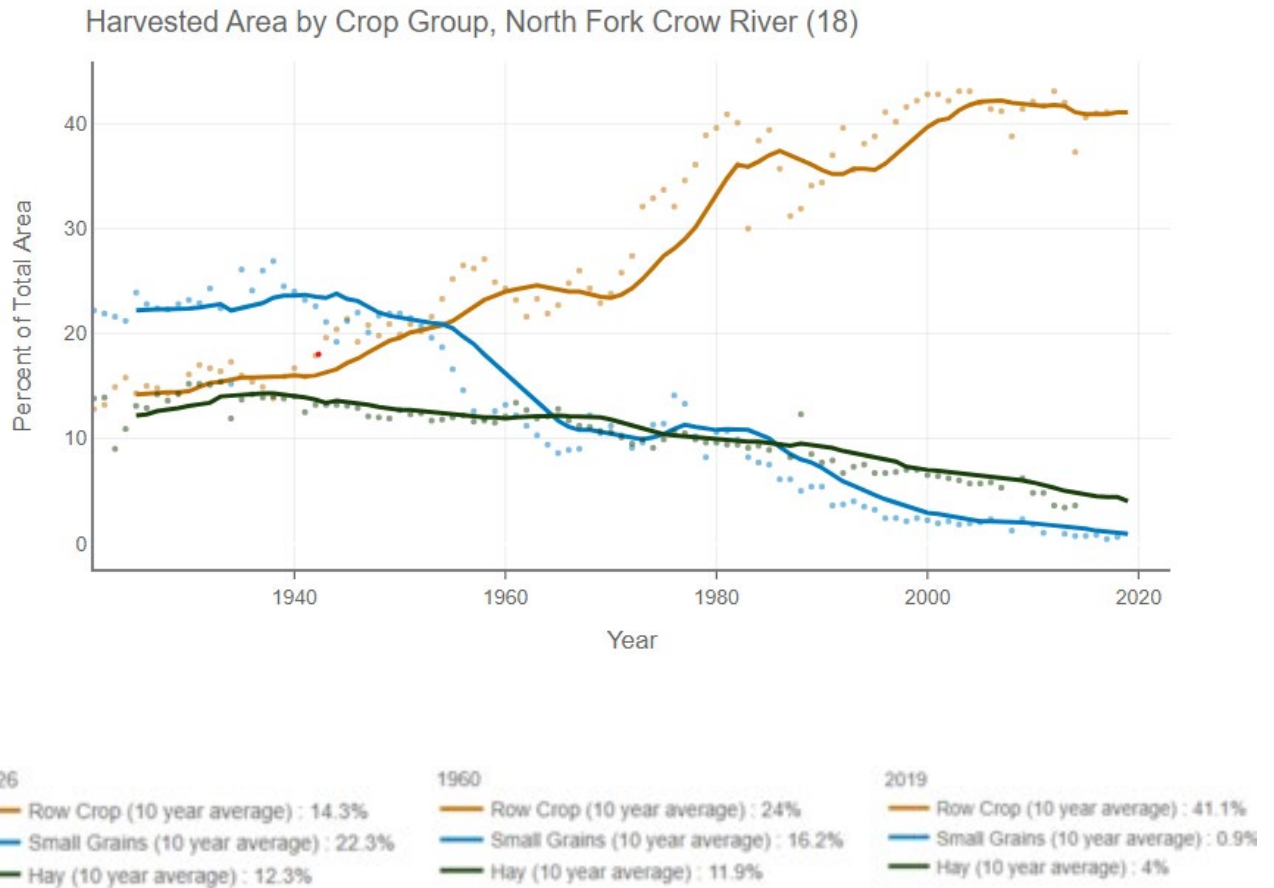
NLCD Land Cover, 2016 - North Fork Crow River (18)
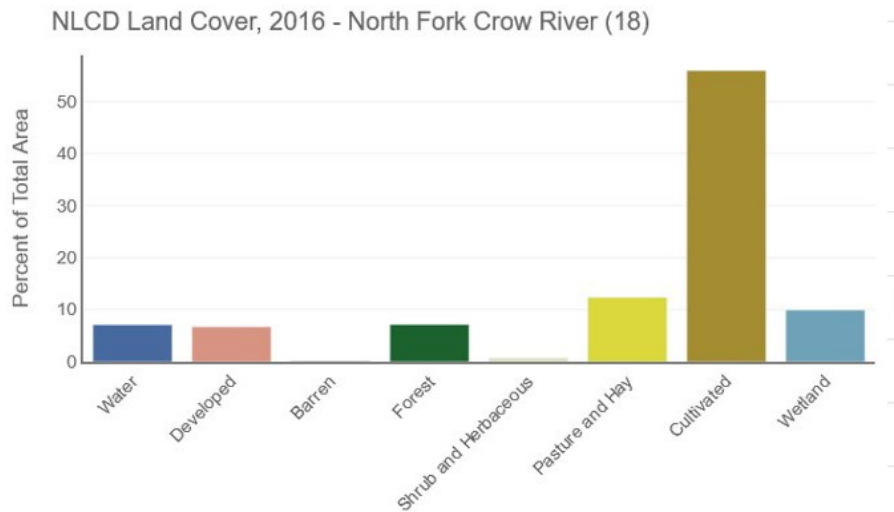
Land Cover Class	Percent of Total Area	Cover Class Area, square miles
Water	7.1%	104.69
Developed	6.7%	98.90
Barren	0.2%	2.18
Forest	7.2%	105.66
Shrub and Herbaceous	0.7%	10.46
Pasture and Hay	12.4%	182.31
Cultivated	56.0%	826.02
Wetland	9.9%	146.13

While the NLCD data shows the current amount of cultivated land, you can open the tab at the top of the Land Cover App for the detailed **Crop History.** This reveals a more nuanced view of the agricultural story in the North Fork Crow River watershed.

Crop History - 1920's to Present

Open the Crop History Charts on the next page. Hover over the chart to display the yearly details as shown below the chart.

Harvested Area by Crop Group, North Fork Crow River (18)

1926
- Row Crop (10 year average) : 14.3%
- Small Grains (10 year average) : 22.3%
- Hay (10 year average) : 12.3%

1960
- Row Crop (10 year average) : 24%
- Small Grains (10 year average) : 16.2%
- Hay (10 year average) : 11.9%

2019
- Row Crop (10 year average) : 41.1%
- Small Grains (10 year average) : 0.9%
- Hay (10 year average) : 4%

Crop History Description:

In the 1920's the cultivated lands were more diverse, with small grains, row crops and hay. By 1960, the shift was underway toward a row crop dominated agriculture. By 2019 the land area dedicated to small grains (0.9%) and hay (4%) was a very small percent of the total landscape. Row crops are now the predominate crop type and have expanded to cover more than 40% of the total land area in this major watershed. (The historic crop data values are generalized to the major watershed from the county scale.)

This century-long trend in agricultural land cover connects the historic landscape to today's resource management challenges. The loss of small grains and hay reduces the diversity of vegetation across the landscape. Row crops are often associated with expanded infrastructure such as tiling and irrigation. The timing of this land cover shift is reflected in the long-term records of stream flow, further confirming the connections between our land and water resources.