RIM CWF-LSOHC Buffer Program – Ecological Ranking Web Map Guidance

This document provides instructions for the use and applicability of the Ecological Ranking web map for the RIM CWF-LSOHC Buffer Program application process. The Ecological Ranking score accounts for 15 of the total 100 possible points for the clean water portion of the application.

About the Data

The score is based on a subset of data used for BWSRs ecological ranking tools that were developed through a project funded by the Environment and Natural Resources Trust Fund by LCCMR recommendation. (To learn more about those data visit BWSRs Ecological Ranking Tool web page.) Three inputs were used to calculate a final ecological ranking score (hereafter referred to as the EcoRank Score).

- Soil Erodibility
  - Calculated using NRCS SSURGO soils data and the R, K and LS factors of the RUSLE equation.
  - Management factors such as vegetative cover and cropping practices were not considered, so soil erodibility should be viewed as an upper limit, or worst case scenario.
- Stream Power Index (SPI)
  - Stream Power Index is a secondary terrain attribute calculated using terrain analysis techniques.
  - This SPI was calculated using 30 meter USGS digital elevation models (DEM)
  - Stream Power Index is a function of slope and direct contributing area (specific catchment area)
    - Each 900 square meter grid cell (area on the landscape) is given an SPI value by taking the natural logarithm of the product of slope and direct contributing area (ln(slope X flow accumulation).
  - SPI values were stratified by Minnesota physiographic regions to minimize slope bias throughout the state.
- Riparian Cropped Area
  - Derived from the USDA 2010 Cropland Data Layer.
  - The area of cropped land within the riparian zone of any public water was calculated given that it doesn't fall within a floodplain area.

Normalized values of 0-100 were calculated for Soil Erodibility and SPI and then added together so that any given 900 square meter portion of the public water riparian area possessed a possible score of 0 – 200. An average value was then calculated for each DNR catchment within the state. The catchment data are watershed delineations that were created by the DNR that are of a slightly finer

scale, and more hydrologically correct than the DNR minor watersheds. DNR catchments were digitized for every Minnesota lake 100 acres or greater.

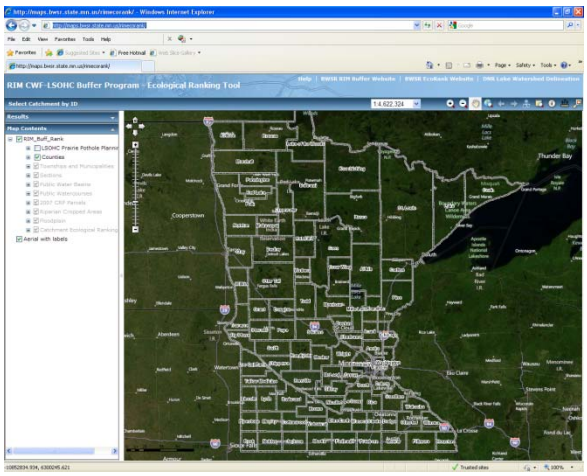
The total riparian cropped area was calculated for each DNR catchment. The natural log of this value was then calculated to smooth the data. This value was then multiplied by the above 0-200 combined soil erodibility and SPI score to create a final ecological ranking score. These values were then normalized to a scale of 0-15 for use in the RIM Buffer application process. In summary, this score effectively ranks DNR catchments by the overall erodibility of the soil, the overall potential for overland erosional features to form that may deliver sediment to surface water, and the overall amount of cropped riparian area within each catchment.

How to Use the Tool

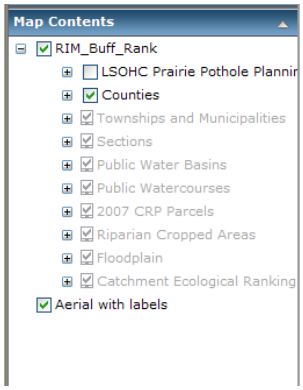
The Ecological Ranking web map for the RIM CWF-LSOHC Buffer Program can be used to identify catchments and their corresponding EcoRank Scores within a given district or area. The Ecological Ranking score accounts for 15 of the total 100 possible points for the clean water portion of the application.

Begin by opening the web map: http://maps.bwsr.state.mn.us/rimecorank/

A map of the state displaying county boundaries should appear:



Notice the table of contents in the left pane of the web map:



This shows you what layers are available within the map. Layers that are grayed out do not display at the current zoom level of the map. You will notice as you zoom closer into the map that other layers will become available for display. You can turn layers on and off by checking or un-checking the box to the left of the layer name. To see the symbology of a given layer, expand it by clicking the + sign to the left of the check box.

Next, navigate to your area of interest using the zoom and pan tools located in the upper right toolbar:

You can also zoom in and out of the map using your mouse scroll wheel. When you zoom in close enough you will see the catchment data display. It will be displayed using a color ramp ranging from light yellow to dark brown. Darker colors represent higher EcoRank Scores and lighter colors represent lower scores.

At this point you can zoom in and pan around the map until you have found a potential project area. You can use the township and section layers as reference for navigation. Also, the base map contains many labeled features such as roads, cities and water bodies for reference. Notice that public waters are depicted as well. You may turn on the Riparian Cropped Areas layer to get a sense of cropped riparian areas exist within a catchment.

In order to determine if you may be eligible for additional wildlife points in the application you can turn on the LSOHC Prairie Pothole Planning layer to see if your project area is within the eligible portion of the state. If the map is overlain with an opaque gray layer then you are within the LSOHC prairie pothole planning region.

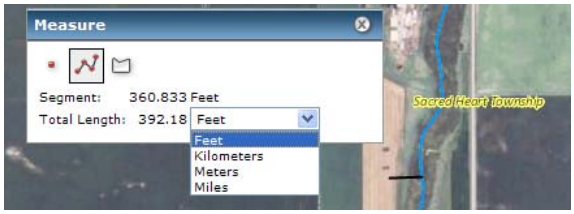
A project area boundary is defined by the boundary of a single catchment. Recall that to see the underlying aerial imagery more clearly you need to temporarily turn off the Catchment Ecological Ranking layer that is overlaying it. Floodplain areas were excluded from the analysis and are not eligible for the RIM Buffer program. You can view the floodplain areas by checking on the Floodplain layer. Also

Notice that you can view 2007 CRP parcels. Note that the CRP data depicted here is from 2007 and many parcels may have since expired or been re-enrolled into the CRP program.

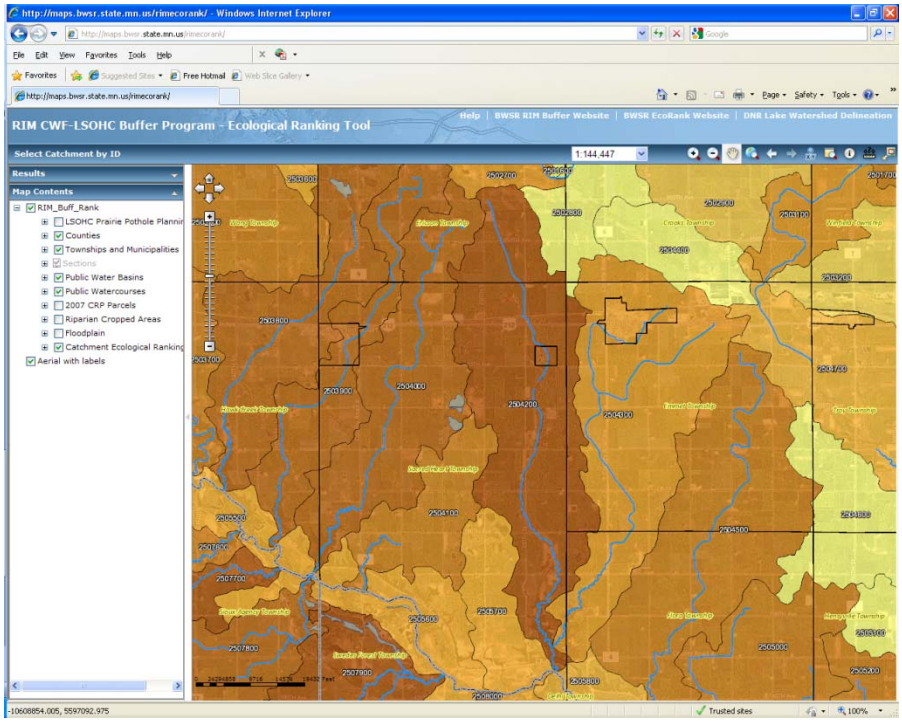
If you would like to determine whether a potential project is within a 100 foot distance from a given water body for eligibility purposes, or to measure any other feature or distance, use the measure tool located in the upper right toolbar:

Measure Tool:

Click the measure icon and you will see a pop up window containing measure tools. Notice that you can determine the x,y coordinate of a point, or measure a line or polygon feature using one of the three tools. Also note that once a measurement is made you may change the measurement units to your preference:



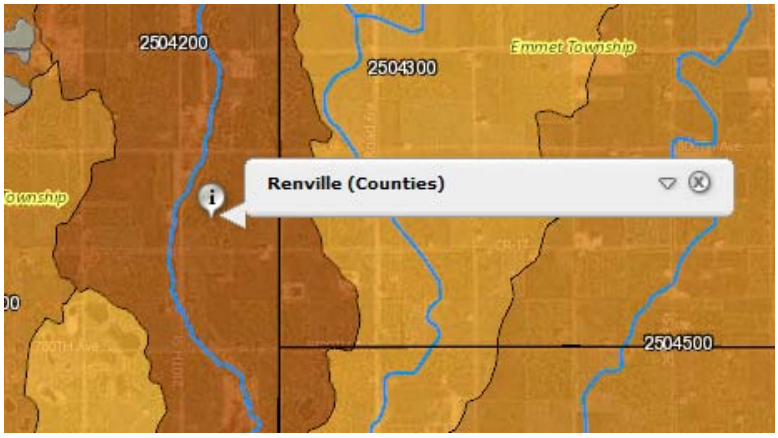
In this example we have zoomed to the extent of a specific catchment that looks to have a high EcoRank Score. Focus on the catchment in the center with the darkest color:



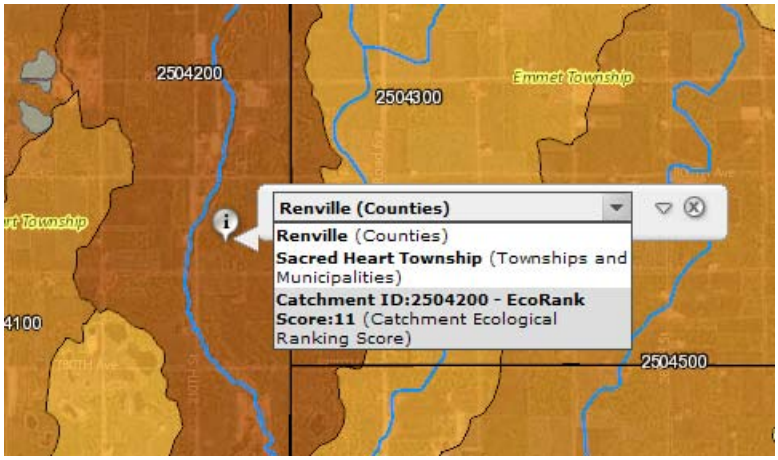
Notice that the catchment ID numbers are labeled within each catchment. To determine the EcoRank Score for a catchment of interest, select the Identify Tool located in the upper right toolbar:

<u>Identify Tool:</u>

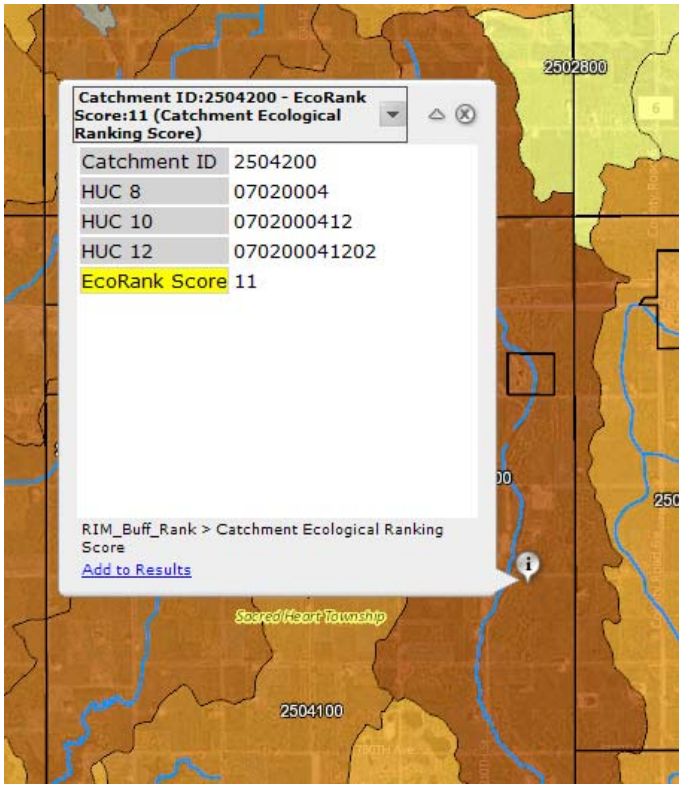
Next, click inside the catchment of interest. You will see a window pop up containing information about the point on the map you have clicked:



Next, hover the mouse over the current text being displayed in the window, in this case “Renville (Counties)”. Click the down arrow that appears to the right of the text:



Here you will see listed the layers you can get information about for the specific point you clicked on the map. Note that for simplicity some layers will contain no available information as it is irrelevant to this application process. To view the EcoRank Score for that catchment, select the layer “Catchment Ecological Ranking Score” at the bottom of the list. A window will pop up displaying the catchment ID, HUC 8, 10 and 12 codes, and the EcoRank Score. In this example the EcoRank Score for this catchment is 11:



Important: Be sure to record the catchment ID and EcoRank Score for submittal of the RFP Application. At this point you should have the information needed to submit your application. Details on how to submit the application can be found at http://www.bwsr.state.mn.us/easements/buffers/

If there are questions regarding this procedure, please contact BWSR for support.

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