HEC-EFM Plotter 2.0
May 2018
Release Notes

HEC-EFM Plotter is designed to help users view, navigate, and interpret output generated by HEC-EFM. It is important to note that Plotter does not generate new output; Plotter only displays output from EFM.

Version 2.0 supersedes version 1.1, which was released in January 2013. Version 2.0 is the first version of Plotter software available as both an install package (.exe) or as an archive of files (.zip). Both are easy to use and have the same content. The install package guides the user through the install process and requires computer administrative rights for successful use. Please note that using the install package will replace any previously installed version located in the destination selected by the user during installation of EFM Plotter. Installing with the archive of files does not require administrative rights. Simply extract all contents of the archive to the desired computer location for EFM Plotter. The software will be ready for use after extraction.

Version 2.0 is backward compatible, which means that any project files created with previous versions of Plotter are fine and ready for use.

Version 2.0 includes new features, improved software behaviors, and bug fixes for issues that were not detected prior to release of version 1.1. The EFM Quick Start Guide has also been updated and is currently the most complete and comprehensive source of information about Plotter. Changes incorporated in the new versions follow:

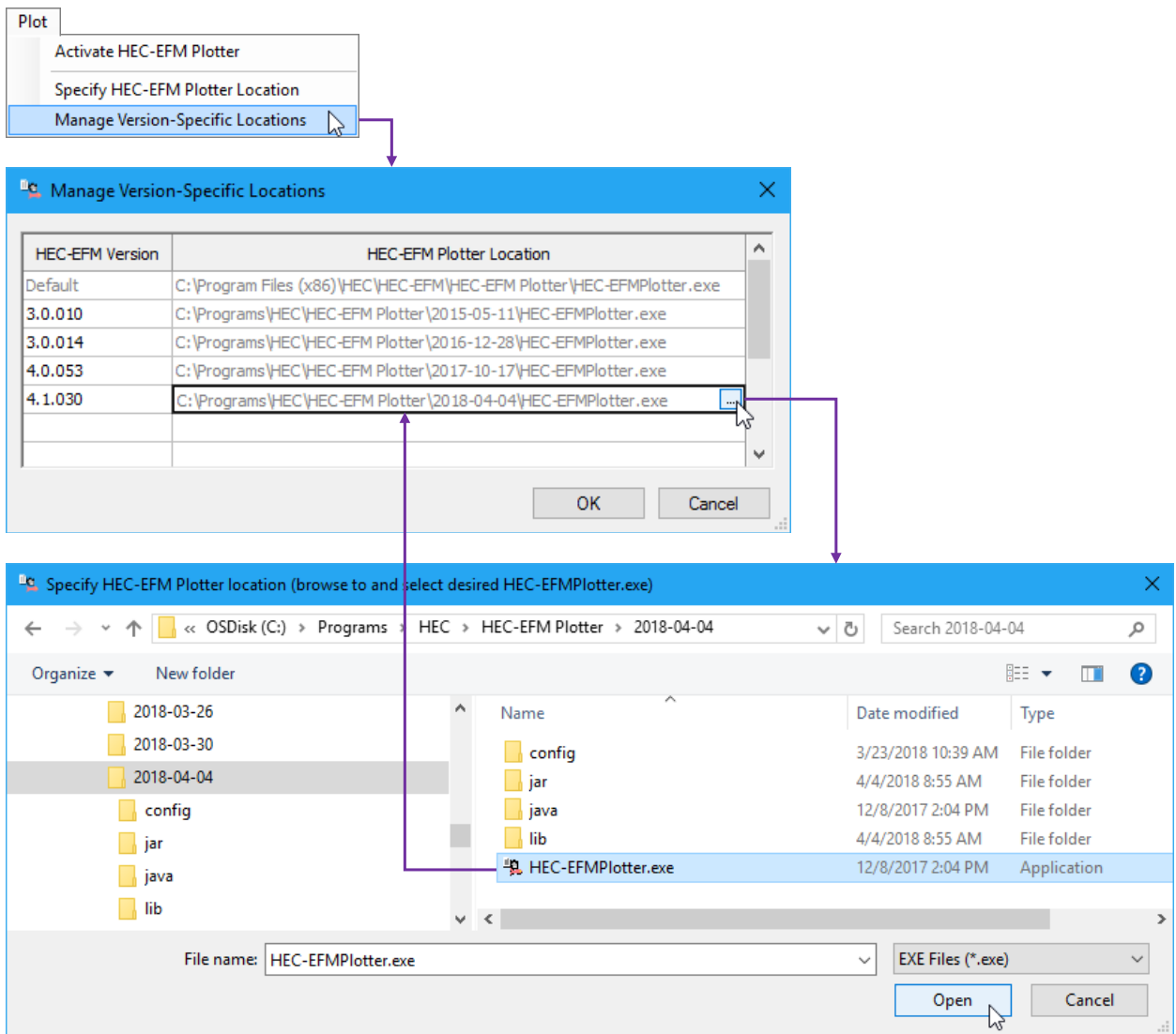**Connections between EFM and EFM Plotter**

Plotter is launched via the EFM "Plot – Activate HEC-EFM Plotter" menu option, which means that EFM needs to know where Plotter is in order to open it successfully.

In past versions of Plotter, the only standard way to install the software was via the install package. Users were encouraged to install Plotter to a consistent install location (default or not). During subsequent installations to the same location, the existing version would be replaced by the new such that only one version of Plotter was available for use on a single computer. EFM would use information in the computer registry to locate Plotter thereby establishing the connection between EFM and Plotter.

Now and especially with the archive of files install option, it is more common to have multiple versions of Plotter available for use on a single computer. This created a different synchronization challenge for EFM and Plotter.
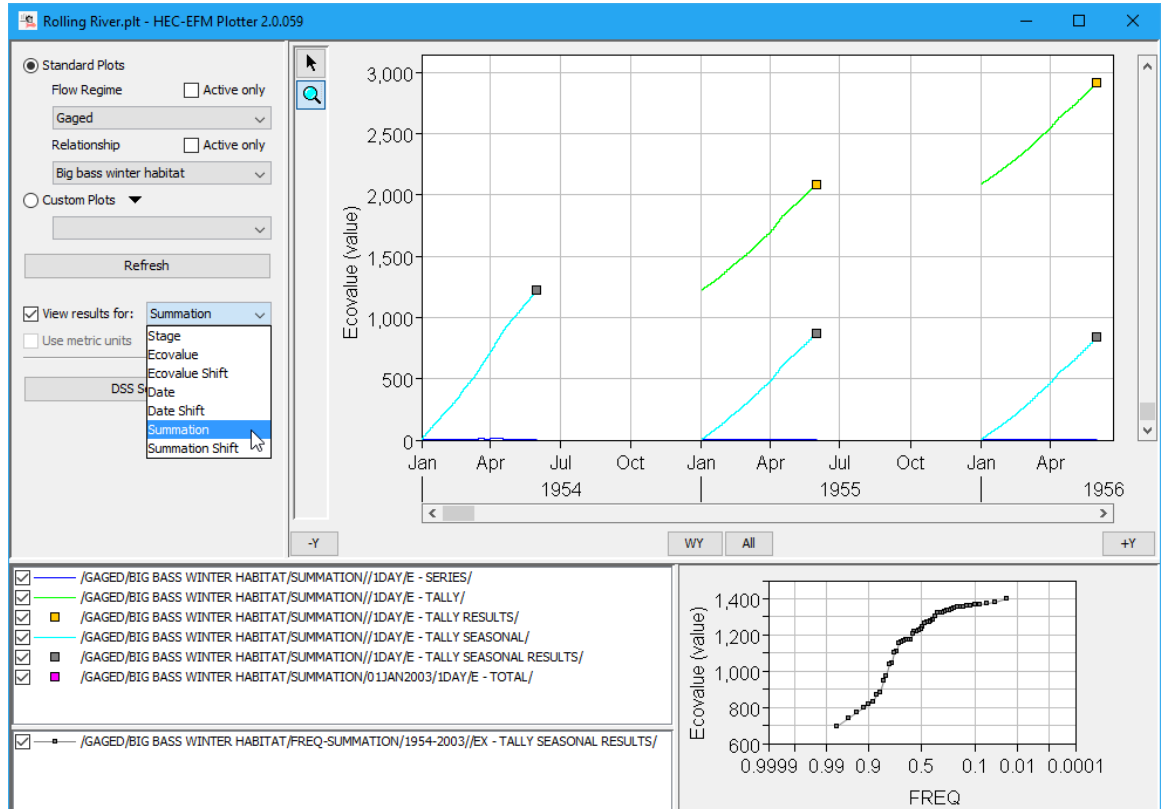
To support multiple versions as well as past EFM and Plotter projects that users may want to continue applying with earlier software, connections between EFM and Plotter have been made available for users to manage. Importantly, this change was made in the

developmental versions of EFM after release of EFM 4.0. EFM 4.0 users are encouraged to continue to install Plotter, whether 2.0 or earlier versions, to a consistent install location using the install package. The images below illustrate how connections between EFM and Plotter are managed in the development versions of EFM. Users select the "Plot – Manage Version-Specific Locations" menu option. An interface will appear that allows the user to type in the EFM version number and open a file browser to identify the associated version of Plotter. If Plotter is launched from an unlisted version of EFM, the default location of Plotter will be used. If Plotter is not available at that location, a message will be returned to inform the user that EFM is unable to locate Plotter and ask the user to verify that Plotter is ready for use and then specify its location.
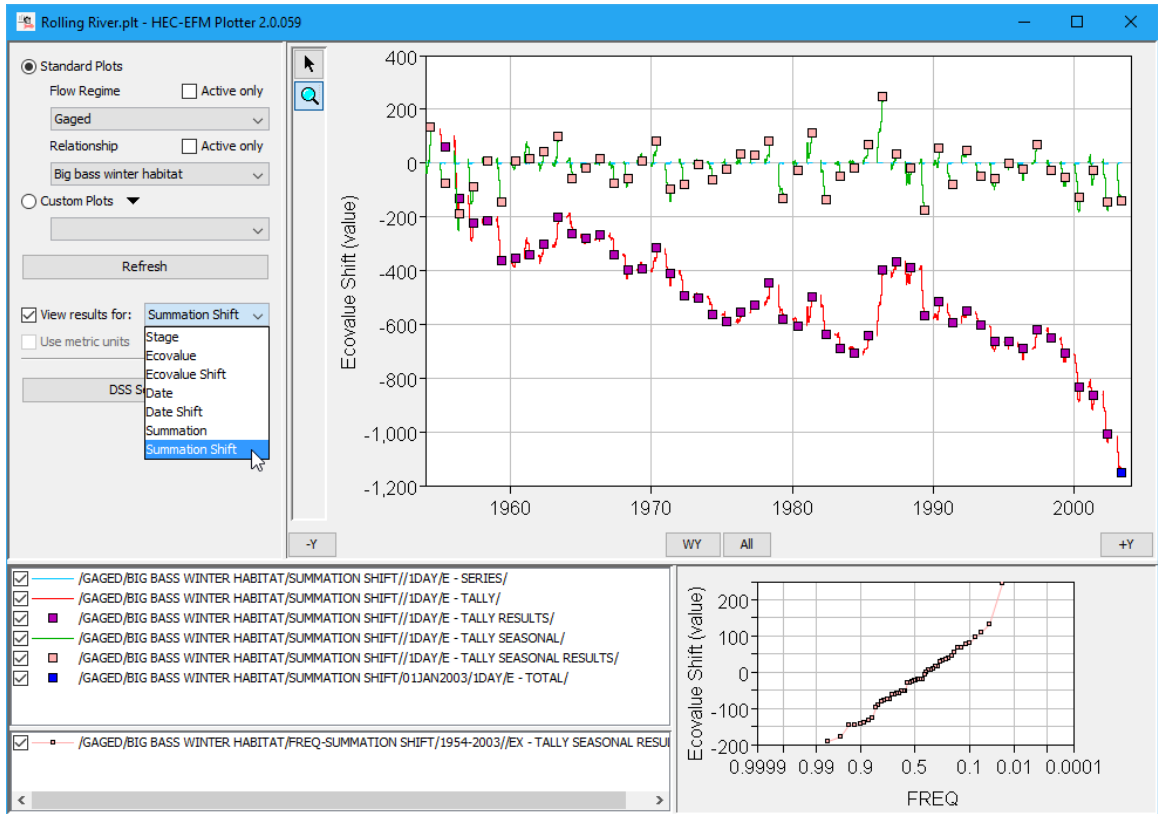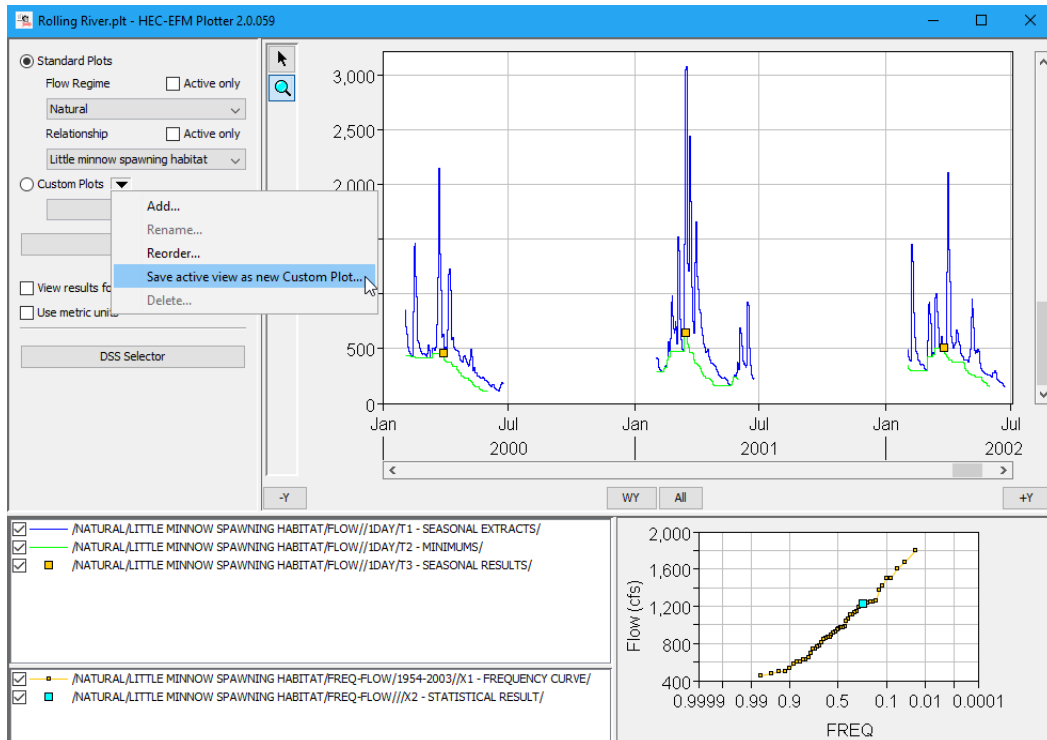
New Features

- Summations. Added displays of new ecovalue "Summation" output generated by EFM 4.0+. Summations tally services provided by entire flow regimes. For example, summations could be used to tally habitat provided or user-days of recreation or water supply shortages. This is quite different from the frequency-based approaches often used in EFM. For more information about summations, please refer to the EFM Quick Start Guide. Figure below shows a summation related to fish habitat.

- Summation shifts. Added displays of new ecovalue "Summation Shift" output generated by EFM 4.0+ and expressed as a difference in ecovalue summation between summations generated by the reference flow regime and each other active flow regime considered. Summation shifts are therefore only available for active non-reference flow regimes, as is also true for ecovalue shifts and date shifts. Figure below shows summation shifts for a non-reference flow regime named "Gaged", which begins with a surplus and then accumulates a net ecovalue deficit over its period of record.

- Color option for custom plots. In Plotter, data are assigned a color at the time of their first viewing. For sake of consistency, assigned colors are used when those data are displayed in different plots within the same Plotter project. An option was included that allows users to display already viewed data with new colors in custom plots. This is a quick and useful way to alter displays while maintaining color synchronization between time series and frequency plots. The "New Colors" option can be used via the "Add...", "Rename...", or "Save active view as new Custom Plot..." options. Assigned colors are not affected.
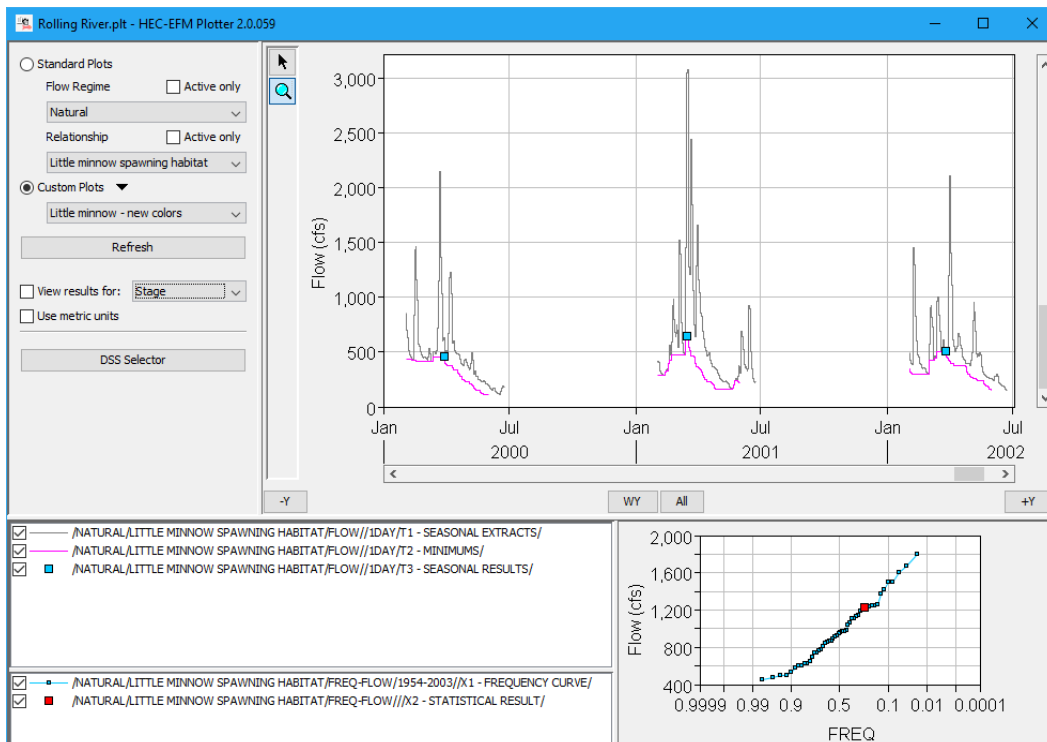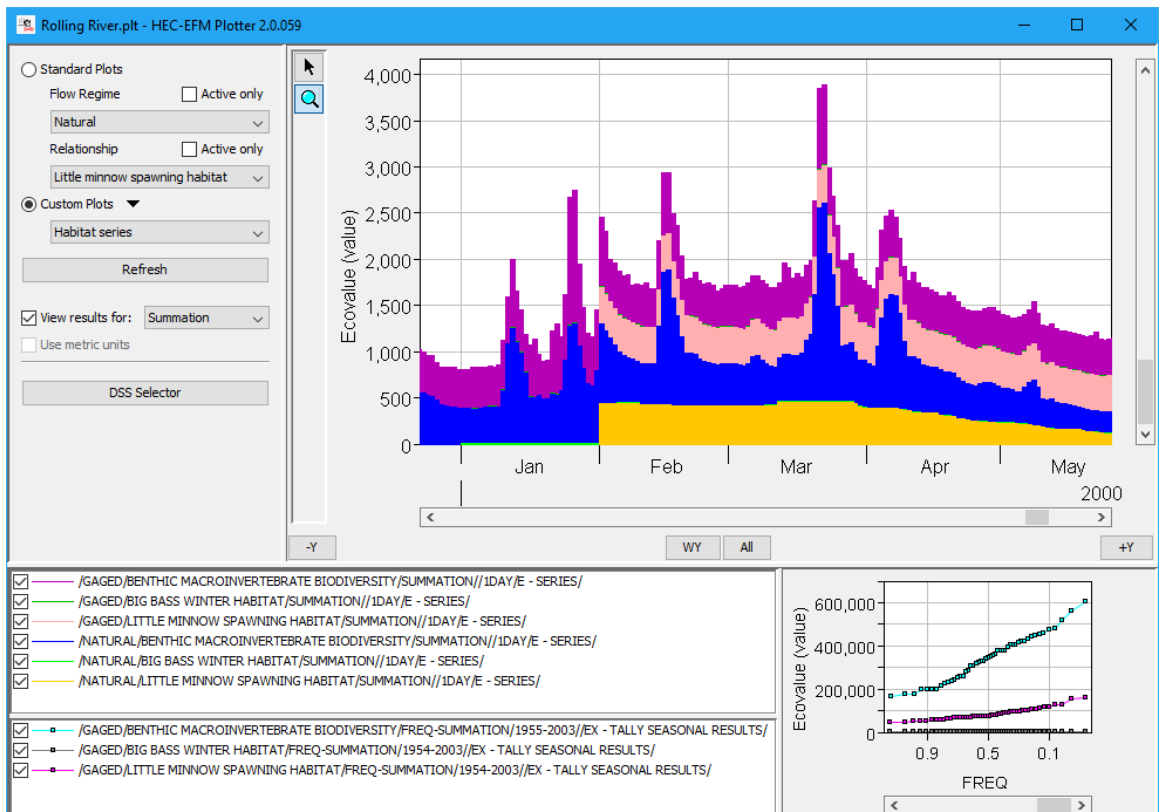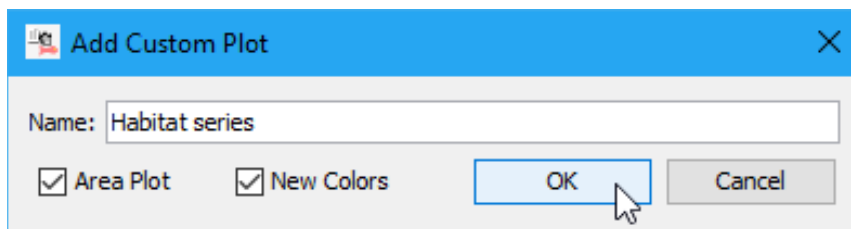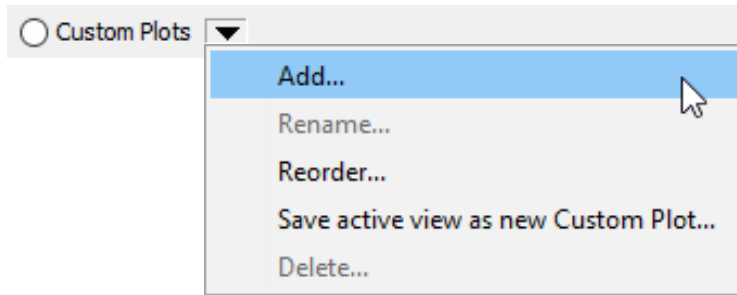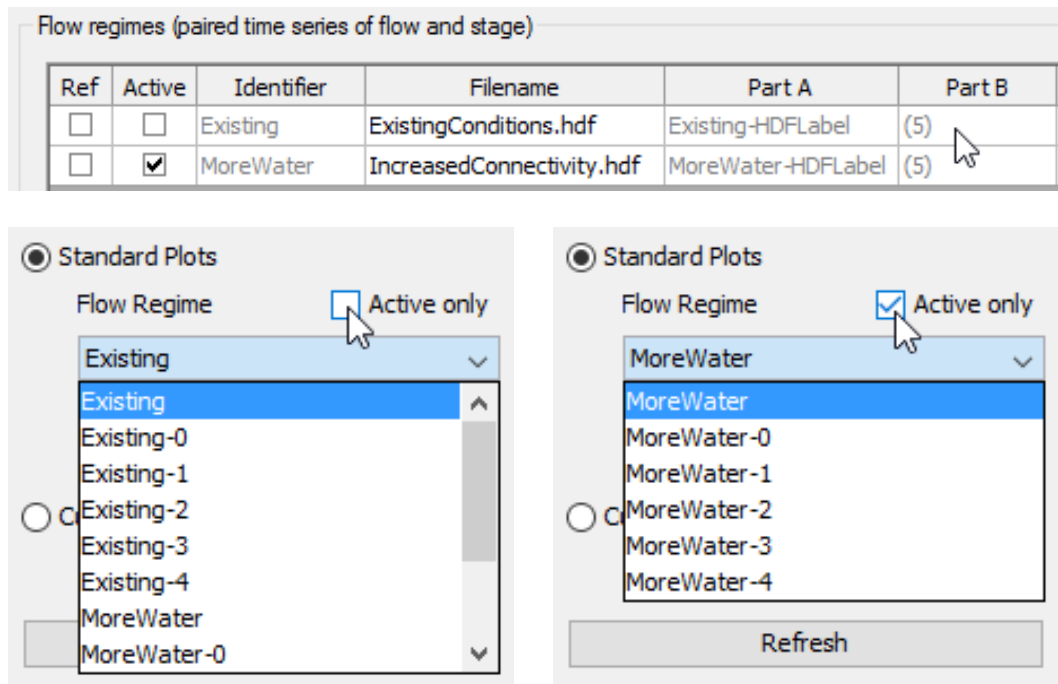
- Custom area plots. Included an option to view time series data as a stacked area plot. Time series are plotted additively such that all positive values are stacked above the x-axis and all negative values are stacked below. Line color settings determine fill color. Users can turn off the area setting without recreating the custom plot via the "Custom Plots – Rename..." menu option.

- Active only. "Active only" checkbox options were added to allow users to limit the lists of flow regimes and relationships to only those that are active in the EFM project. Please note that changes to active settings in EFM must be saved before being refreshed in Plotter. The "Active only" feature is particularly useful when viewing results associated with compound flow regimes in EFM. Compound flow regimes are most commonly used when analyzing ecosystem dynamics associated with 2-dimensional river hydraulics modeling output. In these applications, each compound flow regime is comprised of many parts, perhaps thousands or more, all of which would be listed as flow regimes in Plotter. Listing only active flow regimes helps reduce list lengths thereby making Plotter more efficient to use.

Improved Behaviors

- The basic color process for Plotter was changed to "upon demand" management, which means that colors are assigned to data upon first viewing in Plotter. Previously, colors were assigned to all imported data when Plotter was first opened, which was cumbersome, especially when dealing with compound flow regimes. The color factor used by Plotter was expanded from 9 to 11 colors. Yellow was removed as a color option. Orange is now the lightest color automatically assigned by Plotter. Color synchronization between seasonal results and corresponding frequency curves was maintained and extended to summation and summation shift outputs. Additionally, a color template was applied to the summation and summation shift plots associated with standard plots. Users can choose to stay with template colors or use new colors when viewing summation and summation shift data as part of a custom plot.

- The "Edit Properties" menu option that allows users to adjust symbology for displayed data (via a right click on a plotted dataset) was also made available through the data list (via a right click on the dataset name). This was done to make it easier to access property settings for the desired dataset, which was sometimes difficult when multiple datasets were being viewed in the same plot window.

- Numerous minor enhancements were completed such as corrections to display units, fixes of inconsistencies in label capitalizations, saving of user-assigned point line colors, and updating plot windows with refresh.

Documentation

- The description of EFM Plotter and how it is applied was updated in the HEC-EFM Quick Start Guide - Version 4.0. That document is available for download on HEC's website and is also included as part of the install package for EFM version 4.0.