Drainage Area: MS, VPU: 10L - Release Notes

09/06/2016 – EROM Component Updated

The Lower Missouri River did not have the upstream boundary values from the Upper Missouri River (VPU 10U) properly transferred, which resulted in significant under estimation of flows and drainage areas on 570 flowlines on the Lower Missouri River.

05/10/2016 – Updated Components

The improved HUC12 downstream pointers from the February 2016 WBD Version were updated in the NHDPlus WBDSnapshot. When a correspondence between the two versions could be determined for both the HUC12 and the downstream HUC12, the downstream pointer was updated.

01/05/2016 – Updated Components

EROM Mean Annual and Mean Monthly flow estimates have been re-run to correct incremental flows to be the sum of the incremental flows upstream and on the flowline. EROM velocities were updated to provide velocity estimate only for flowing waters. EROM velocities are now set to -9998 (missing value) in all water bodies except swamp/marsh.

07/08/2015 – Updated Components

The WBDSnapshot was revised to correct the values in the Acres field. The NHDSnapshot and NHDPlusAttributes were revised to correct values in FType/FCode in a handful of features.

1/30/2015 – Revised Component

The VPUAttributeExtension has been updated to include accumulated mean annual and mean monthly runoff files.

2/12/2014 – Replacement components

NHDPlusAttributes component was replaced to correct errors in PlusFlowlineVAA.StreamOrder.

1/21/2014 – New Data Release

The EROMExtension was enhanced to include mean monthly flow estimates. See NHDPlusV2 User Guide for additional information.

12/17/2012 – Replacement components

Three NHDPlusV2 components in VPU 10L mistakenly contained data for VPU 10U. This has been corrected with new versions: NHDSnapshot, NHDPlusBurnComponents, and NHDPlusAttributes.

12/07/2012 – Replacement components

Three NHDPlusV2 components are replaced with new versions: NHDSnapshot, NHDPlusBurnComponents, and NHDPlusAttributes. These replacements represent some changes in

NHDFlowline ReachCode values and the inclusion of an NHDReachCrossReference table that tracks ReachCode changes from NHDPlusV1 to NHDPlusV2.

9/21/2012 – Temporary Attribute Cleanup

During NHDPlusV2 processing and subsequent QAQC, some temporary attributes were added. Some of these attributes were not deleted and were inadvertently included in the public release. These extraneous attributes <u>do not</u> affect the usability of the data, but they do violate the official data model and may cause issues with future NHDPlusV2 tools. Users are encouraged to download the new components. In this VPU, the replacement zip files are:

> NHDPlusV21_MS_10L_NHDPlusAttributes_05.7z

9/19/2012 – NHDPlusV21_MS_10L_10b_FDRNull_02.7z

Wrong grid in package replaced with correct grid.

8/22/2012 – Initial Release Notes

Catchment/Burn Settings by the USGS NAWQA program

In VPUs 10U and 10L, the BurnLineEvent Catchment and Burn attributes are set based on feedback from the USGS National Water Quality Assessment (NAWQA) Regional Assessment program. Many of the features set to either no Catchment and/or no Burn are Canal/Ditch features used for irrigation or miscoded as Stream/River in the NHD.

Catchment/Burn Settings by the NHDPlus production team

Aside from the many Catchment and Burn attribute settings requested by the NAWQA program, additional Catchment and Burn attribute settings were made by the NHDPlus production team as follows:

- Along the border of 10L, flowlines that are in conflict with or outside of the 10L boundary as defined by the WBD, were set to "N" (no) for both Catchment and Burn attributes.
- Thirty Pipeline NHDFlowline features were set to "N" for the Catchment attribute. Eleven Pipeline features have both Catchment and Burn attributes set to "N".

BurnAddLine

There are several lines in BurnAddLine that represent NHDFlowline features in the downstream VPU 07. These NHDFlowline features were added to BurnAddLine to constrain the catchment delineations at the inter-VPU connection point with between 10L and 07.   These BurnAddLine features also ensure proper drainage enforcement of the HydroDEM. The GridCode values for these lines are not the official values because VPU 10L was processed prior to VPU 07.

Points of Addition and Removal

There are several points of water additions and removals in the PlusARPointEvent table. The PlusFlowAR table provides the water quantity in cubic feet per second (cfs) and flow relationships

between NHDFlowline features and/or other PlusARPointEvent locations. This information was collected by staff from the USGS NAWQA Regional Assessment program for the Missouri River Basin.

Enhanced Unit Runoff Method (EROM)

See Appendix A of the "NHDPlus V2 User Guide" for a detailed explanation of the EROM parameters.

EROM Flow and Velocity estimates are for Mean Annual values.

The time period for these estimates is 1971 to 2000; the runoff, temperature and precipitation grids are for this time period.

For gage adjustment and Reference Gage Regression, gages must meet the following criteria:
1. A minimum of 20 of the 30 years (1971 to 2000) of complete flow records.
2. NWIS reported drainage area versus NHDPlus drainage area, for the gage, must be within 0.2 (+/- 20%)

Upstream gage drainage area proportion is 0.5 (50%)

Excess Evapotranspiration default coefficients are 0.3 and 0.5.

Gage sequestration proportion is 0.2 (20%)

Reference gages (those gages determined to have minimal impact from human activities) are generally found on smaller streams with lower mean annual flow. Currently, the Reference Gage Regression step adjusts all flows in a VPU regardless of mean annual stream flow. In several VPUs, the Reference Gage Regression step (step 3) will "over-adjust" larger mean annual flows. In these cases, the resulting Reference Gage Regression flow estimates will be worse than the Runoff/Excesses ET flow estimates (step 2). Note that this issue exists on the larger rivers, which are most likely to have flow gages on them. Consequently, Gage Adjustment step (step 5) will "re-adjust" the flow estimates to better match the expected mean annual flow conditions. Below is a list of the VPUs that appear to be affected by an over adjustment during the Reference Gage Regression and an <u>approximate</u> flow value above which this issue applies:

03N: > 2,000 cfs
03S: > 4,000 cfs
03W: > 15,000 cfs
07: > 3,000 cfs
10L: > 10,000 cfs
11: > 5,000 cfs
12: > 3,000 cfs
16: > 1,000 cfs
17: > 10,000 cfs