

## Surface Water Flow - NHDPlus Version 2



### Tags

River Coding Systems, Reach, Hydrologic modeling, Tennessee, Illinois, Utah, Catchment, National Hydrography Dataset, Hydrography, South Dakota, Indiana, Swamp / Marsh, West Virginia, Land Surface, Virginia, Missouri, Georgia, Lake / Pond, District of Columbia, Texas, Stream / River, California, Wyoming, Arizona, USGS, North Carolina, Colorado, National Elevation Dataset, Florida, EARTH SCIENCE, New Mexico, Oregon, NHDPlus, Idaho, Spatially Referenced Regressions on Watershed Attributes, Connecticut, Wisconsin, Spring / Seep, NED, Water-quality, Iowa, Nevada, Alabama, SPARROW, Delaware, United States, North Dakota, Washington, Vermont, Mississippi, New York, inlandWaters, South Carolina, GEODATA, Ohio, Rhode Island, Montana, Artificial Path, Reservoir, Kentucky, New Jersey, Massachusetts, Watershed, NHD, EPA, Minnesota, Oklahoma, Nebraska, Elevation, New Hampshire, Maryland, Topography, Kansas, Stream flow, StreamStats, GIS, Michigan, United States of America, Louisiana, Pennsylvania, Maine, USA, Canal / Ditch, Stream velocity, Arkansas, Cartography

### Summary

This data is a representation of stream and river water bodies derived from the National Hydrography Dataset (NHD) and is symbolized by flow rate from gauge adjusted values from the USGS Extended Unit Runoff Method (EROM) table. The EROM table contains other mean annual flow/velocity statistics for the NHDFlowline features such as Flow from runoff or Velocity from runoff. Subject matter experts on this data agreed that for the purposes of finding flow discharge rates of cooling water for power plants, the gauge adjusted values were the ideal empirical values for this study. It should also be noted that the flow rates were originally in Cubic feet per second (cfs) but converted to Gallons per minute (gpm).

The geospatial data sets included in NHDPlusV2 are intended to support a variety of water-related applications. They already have been used in an application to develop estimates of mean annual streamflow and velocity for each NHDFlowline feature in the conterminous United States. The results of these analyses are included with the NHDPlusV2 data. A water-quality model developed by the U.S. Geological Survey (USGS) called SPARROW (Spatially Referenced Regressions on Watershed Attributes), can utilize the NHDPlusV2 network functionality to track the downstream transport of nutrients, sediments, or other substances. NHDPlusV2 water bodies and estimates of streamflow and velocity are used in SPARROW to identify reservoir retention and in-stream loss factors. NHDPlusV2 climatic and land surface attributes can be used in SPARROW to identify potential factors in the delivery of nutrients from the land surface to streams. NHDPlusV2 data is also being used in select areas for a USGS Web-based application, called StreamStats. StreamStats provides tools to interactively select any point in the implemented areas, delineate watersheds, and to obtain streamflow and watershed characteristics for the selected point. NHDPlusV2 has been designed to accommodate many users' needs for future applications. NHDPlusV2 provides the framework and tools necessary to customize the behavior of the network relationships as well as building upon the attribute database, for which the user can assign their own data to the network.

### Description

This high-level metadata data document will be supplemented with detailed regional metadata

at a later date. The NHDPlusV2 is an integrated suite of application-ready geospatial data sets that incorporate many of the best features of the National Hydrography Dataset (NHD) and the National Elevation Dataset (NED). Interest in estimating stream flow volume and velocity to support pollutant fate-and-transport modeling was the driver behind the joint USEPA and USGS effort to develop the initial NHDPlus, referenced in this document as NHDPlusV1. NHDPlusV1 has been used in a wide variety of applications since its initial release in the fall of 2006. This widespread positive response prompted the multi-agency NHDPlus team to develop NHDPlus Version 2 (NHDPlusV2). The NHDPlusV2 includes a stream network (based on the 1:100,000-scale NHD), improved networking, naming, and "value-added attributes" (VAA's). NHDPlusV2 also includes elevation-derived catchments (drainage areas) produced using a drainage enforcement technique first broadly applied in New England, and thus dubbed "The New-England Method". This technique involves "burning-in" the 1:100,000-scale NHD and building "walls" using the national Watershed Boundary Dataset (WBD). The hydro-enforced digital elevation model (DEM) is used to produce hydrologic derivatives that agree with the NHD and WBD. An interdisciplinary team from the USGS, USEPA and contractors, has found this method to produce the best quality NHD catchments using an automated process. The VAAs include greatly enhanced capabilities for upstream and downstream navigation, analysis and modeling. Examples include: retrieve all flowlines (predominantly confluence-to-confluence stream segments) and catchments upstream of a given flowline using queries rather than by slower flowline-by-flowline navigation; retrieve flowlines by stream order; select a stream level path sorted in hydrologic order for stream profile mapping, analysis and plotting; and, calculate cumulative catchment attributes using streamlined VAA hydrologic sequencing routing attributes. The VAAs include results from the use of these cumulative routing techniques, including cumulative drainage areas, precipitation, temperature, and runoff distributions. Several of these cumulative attributes are used to estimate mean annual flow and velocity as part of the VAAs. NHDPlusV2 contains a snapshot (2012) of the 1:100,000-scale NHD that has been extensively improved over the snapshot used in NHDPlusV1. While these updates will eventually be stored in the central NHD repository at USGS, this will not be accomplished prior to distribution of NHDPlusV2. NHDPlusV2 users may not make updates to the NHD portions of NHDPlusV2 with the intent of sending these updates back to the USGS. Updates to the 1:100,000-scale NHD snapshot in NHDPlusV2 should be sent to the USEPA as the primary steward. Purpose: The geospatial data sets included in NHDPlusV2 are intended to support a variety of water-related applications. They already have been used in an application to develop estimates of mean annual streamflow and velocity for each NHDFlowline feature in the conterminous United States. The results of these analyses are included with the NHDPlusV2 data. NHDPlusV2 serves as the sample frame for the stream and lake surveys conducted by the USEPA under the National Aquatic Resources Surveys program. A water-quality model developed by the U.S. Geological Survey (USGS) called SPARROW (Spatially Referenced Regressions on Watershed Attributes), can utilize the NHDPlusV2 network functionality to track the downstream transport of nutrients, sediments, or other substances. NHDPlusV2 water bodies and estimates of streamflow and velocity are used in SPARROW to identify reservoir retention and in-stream loss factors. NHDPlusV2 climatic and land surface attributes can be used in SPARROW to identify potential factors in the delivery of nutrients from the land surface to streams. NHDPlusV2 data is also being used in select areas for a USGS Web-based application, called StreamStats. StreamStats provides tools to interactively select any point in the implemented areas, delineate watersheds, and to obtain streamflow and watershed characteristics for the selected point. NHDPlusV2 has been designed to accommodate many users' needs for future applications. NHDPlusV2 provides the framework and tools necessary to customize the behavior of the network relationships as well as building upon the attribute database, for which the user can assign their own data to the network.

## Credits

Acknowledgement of the originating agencies (USEPA and USGS) would be appreciated in products derived from these data.

## Use limitations

There are no access and use limitations for this item.

## Extent

**West** -124.707777    **East** -67.058240  
**North** 49.376613    **South** 25.190876

## Scale Range

**Maximum (zoomed in)** 1:24,000  
**Minimum (zoomed out)** 1:100,000

## ArcGIS Metadata

### Topics and Keywords

**THEMES OR CATEGORIES OF THE RESOURCE** elevation, inlandWaters

**\* CONTENT TYPE** Downloadable Data

**EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION** No

**PLACE KEYWORDS** Tennessee, Illinois, Utah, South Dakota, Indiana, West Virginia, Virginia, Missouri, Georgia, District of Columbia, Texas, California, Wyoming, Arizona, North Carolina, Colorado, Florida, New Mexico, Oregon, Idaho, Connecticut, Wisconsin, Iowa, Nevada, Alabama, Delaware, United States, North Dakota, Washington, Vermont, Mississippi, New York, South Carolina, Ohio, Rhode Island, Montana, Kentucky, New Jersey, Massachusetts, Minnesota, Oklahoma, Nebraska, New Hampshire, Maryland, Kansas, Michigan, United States of America, Louisiana, Pennsylvania, Maine, USA, Arkansas

**THEME KEYWORDS** inlandWaters

**THESAURUS** ►

**TITLE** ISO 19115 Topic Category

**THEME KEYWORDS** River Coding Systems, Reach, Hydrologic modeling, Catchment, National Hydrography Dataset, Hydrography, Swamp / Marsh, Land Surface, Lake / Pond, Stream / River, USGS, National Elevation Dataset, EARTH SCIENCE, NHDPlus, Spatially Referenced Regressions on Watershed Attributes, Spring / Seep, NED, Water-quality, SPARROW, GEODATA, Artificial Path, Reservoir, Watershed, NHD, EPA, Elevation, Topography, Stream flow, StreamStats, GIS, Canal / Ditch, Stream velocity, Cartography

### Citation ►

**TITLE** Surface Water Flow - NHDPlus Version 2

**PUBLICATION DATE** 2012-01-01

**EDITION** 2.10

**PRESENTATION FORMATS** \* digital map

**FGDC GEOSPATIAL PRESENTATION FORMAT** vector digital data, raster digital data, tabular digital data

### Citation Contacts ►

#### RESPONSIBLE PARTY

ORGANIZATION'S NAME U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

CONTACT'S ROLE originator

## Resource Details ►

DATASET LANGUAGES English (UNITED STATES)

STATUS completed

SPATIAL REPRESENTATION TYPE \* vector

#### SUPPLEMENTAL INFORMATION

For more information, refer to the NHDPlusV2 Users Guide.

\* PROCESSING ENVIRONMENT Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.3.0.4322

#### CREDITS

Acknowledgement of the originating agencies (USEPA and USGS) would be appreciated in products derived from these data.

#### ARCGIS ITEM PROPERTIES

\* NAME surface\_water\_flow\_nhdplus\_v2\_erom\_eispc\_v2

## Extents ►

#### EXTENT

##### GEOGRAPHIC EXTENT

##### BOUNDING RECTANGLE

WEST LONGITUDE -125

EAST LONGITUDE -66.5

SOUTH LATITUDE 24.5

NORTH LATITUDE 49.5

##### VERTICAL EXTENT

\* MINIMUM VALUE 0.000000

\* MAXIMUM VALUE 0.000000

#### EXTENT

##### DESCRIPTION

publication date

##### TEMPORAL EXTENT

DATE AND TIME 2012-01-01

##### VERTICAL EXTENT

\* MINIMUM VALUE 0.000000

\* MAXIMUM VALUE 0.000000

#### EXTENT

#### GEOGRAPHIC EXTENT

##### BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching

\* WEST LONGITUDE -124.707777

\* EAST LONGITUDE -67.058240

\* NORTH LATITUDE 49.376613

\* SOUTH LATITUDE 25.190876

\* EXTENT CONTAINS THE RESOURCE Yes

#### EXTENT IN THE ITEM'S COORDINATE SYSTEM

\* WEST LONGITUDE -13882406.268875

\* EAST LONGITUDE -7464889.108736

\* SOUTH LATITUDE 2899207.675209

\* NORTH LATITUDE 6339008.054435

\* EXTENT CONTAINS THE RESOURCE Yes

## Resource Points of Contact ►

#### POINT OF CONTACT

ORGANIZATION'S NAME U.S. Environmental Protection Agency

CONTACT'S ROLE point of contact

#### CONTACT INFORMATION ►

##### PHONE

VOICE see email address

##### ADDRESS

TYPE postal

DELIVERY POINT see email address

CITY Washington

ADMINISTRATIVE AREA D.C.

POSTAL CODE 20460

E-MAIL ADDRESS waters\_support@epa.gov

## Resource Maintenance ►

#### RESOURCE MAINTENANCE

UPDATE FREQUENCY irregular

## Resource Constraints ►

#### LEGAL CONSTRAINTS

##### LIMITATIONS OF USE

Although this data set has been used by the U.S. Government, no warranty expressed or implied is made by the U.S. Government as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the U.S. Government in the use of this data, software, or related materials. Any use of trade, product, or firm names is for descriptive purposes only

and does not imply endorsement by the U.S. Government.

## Spatial Reference ►

### ARCGIS COORDINATE SYSTEM

- \* TYPE Projected
- \* GEOGRAPHIC COORDINATE REFERENCE GCS\_WGS\_1984
- \* PROJECTION WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere
- \* COORDINATE REFERENCE DETAILS
  - PROJECTED COORDINATE SYSTEM
    - WELL-KNOWN IDENTIFIER 102100
    - X ORIGIN -22041545.367140558
    - Y ORIGIN -33272760.666300893
    - XY SCALE 135368852.55357128
    - Z ORIGIN -100000
    - Z SCALE 10000
    - M ORIGIN -100000
    - M SCALE 10000
    - XY TOLERANCE 0.001
    - Z TOLERANCE 0.001
    - M TOLERANCE 0.001
    - HIGH PRECISION true
  - LATEST WELL-KNOWN IDENTIFIER 3857
  - WELL-KNOWN TEXT PROJCS["WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere",GEOGCS["GCS\_WGS\_1984",DATUM["D\_WGS\_1984",SPHEROID["WGS\_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Mercator\_Auxiliary\_Sphere"],PARAMETER["False\_Easting",0.0],PARAMETER["False\_Northing",0.0],PARAMETER["Central\_Meridian",0.0],PARAMETER["Standard\_Parallel\_1",0.0],PARAMETER["Auxiliary\_Sphere\_Type",0.0],UNIT["Meter",1.0],AUTHORITY["EPSG",3857]]

### REFERENCE SYSTEM IDENTIFIER

- \* VALUE 3857
- \* CODESPACE EPSG
- \* VERSION 8.2.6

## Spatial Data Properties ►

### VECTOR ►

- \* LEVEL OF TOPOLOGY FOR THIS DATASET geometry only

### GEOMETRIC OBJECTS

FEATURE CLASS NAME surface\_water\_flow\_nhdplus\_v2\_erom\_eispc\_v2

- \* OBJECT TYPE composite
- \* OBJECT COUNT 346016

### ARCGIS FEATURE CLASS PROPERTIES ►

FEATURE CLASS NAME surface\_water\_flow\_nhdplus\_v2\_erom\_eispc\_v2

- \* FEATURE TYPE Simple
- \* GEOMETRY TYPE Polyline
- \* HAS TOPOLOGY FALSE

- \* FEATURE COUNT 346016
- \* SPATIAL INDEX TRUE
- \* LINEAR REFERENCING TRUE

## Data Quality

### SCOPE OF QUALITY INFORMATION

RESOURCE LEVEL dataset

### DATA QUALITY REPORT - TOPOLOGICAL CONSISTENCY

#### EVALUATION METHOD

Data were processed with ArcGIS 9.3.1, and should not contain any topological errors.

### DATA QUALITY REPORT - CONCEPTUAL CONSISTENCY

#### MEASURE DESCRIPTION

Data were processed with ArcGIS 9.3.1, and should not contain any topological errors.

### DATA QUALITY REPORT - COMPLETENESS OMISSION

#### MEASURE DESCRIPTION

Data are complete for the conterminous United States. See release notes by Vector Processing Unit (VPU) for additional information.

## Lineage

### PROCESS STEP

WHEN THE PROCESS OCCURRED 2012-11-06 00:00:00

#### DESCRIPTION

A new field was added called Q\_GPM to calculate Gallons Per Minute (GPM) ( $Q0001E \times 448.8 = \text{GPM}$ )

### PROCESS CONTACT

INDIVIDUAL'S NAME Scott Schlueter

ORGANIZATION'S NAME Argonne National Laboratory

CONTACT'S POSITION GIS Analyst

CONTACT'S ROLE point of contact

#### CONTACT INFORMATION

##### PHONE

VOICE 1-630-252-2302

##### ADDRESS

TYPE both

DELIVERY POINT 9700 South Cass Avenue, EVS/Bldg 240

CITY Argonne

ADMINISTRATIVE AREA IL

POSTAL CODE 60439 COUNTRY

US

E-MAIL ADDRESS [sschlueter@anl.gov](mailto:sschlueter@anl.gov)

### SOURCE DATA ►

#### DESCRIPTION

The 4,446 updates were applied to the NHDPlusV2 Gageloc feature class. The Gageloc feature class was used for the QAQC of the estimates of mean annual stream flow and also in a gage flow adjustment process applied to the final mean annual stream flow estimates.

SOURCE MEDIUM NAME online link

RESOLUTION OF THE SOURCE DATA

SCALE DENOMINATOR 24000

SOURCE CITATION ►

TITLE Written communication: 4,446 Updated or Additional Records for Source Titled "USGS Streamgages Linked to the Medium Resolution NHD"

ALTERNATE TITLES Stewart, 2011, written communication

PUBLICATION DATE 2011-02-01

PRESENTATION FORMATS digital map

FGDC GEOSPATIAL PRESENTATION FORMAT vector digital data

RESPONSIBLE PARTY

ORGANIZATION'S NAME David W. Stewart

CONTACT'S ROLE originator

RESOURCE LOCATION ONLINE

LOCATION none

EXTENT OF THE SOURCE DATA

DESCRIPTION

publication date

TEMPORAL EXTENT

DATE AND TIME 2011-02-01

SOURCE DATA ►

DESCRIPTION

A snapshot of the NHD was used as the baseline framework from which enhancements to the network were built upon. Enhancements include feature names, network connectivity and network flow relationships. This enhanced NHD version was then used in conjunction with the NED, and WBD to create a hydro-enforced DEM, for generation of the catchment Grid/shapefile, and flow direction/accumulation Grids. The enhanced NHD was used to compute and assign flowline Value Added Attributes (VAAs) to this network.

SOURCE MEDIUM NAME online link

RESOLUTION OF THE SOURCE DATA

SCALE DENOMINATOR 100000

SOURCE CITATION ►

TITLE National Hydrography Dataset (NHD) Medium Resolution

ALTERNATE TITLES NHD

PUBLICATION DATE 2012-01-01

EDITION none

PRESENTATION FORMATS digital map

FGDC GEOSPATIAL PRESENTATION FORMAT vector digital data

RESPONSIBLE PARTY

ORGANIZATION'S NAME U.S. Geological Survey (USGS) and the U.S. Environmental Protection Agency (USEPA)

CONTACT'S ROLE originator

RESOURCE LOCATION ONLINE

LOCATION <http://nhd.usgs.gov>

EXTENT OF THE SOURCE DATA

DESCRIPTION

The source NHD is a snapshot of the dataset accessed on 4/30/2010 and subsequently updated from 2010 to 2012.

TEMPORAL EXTENT

DATE AND TIME 2012-01-01

## SOURCE DATA

### DESCRIPTION

12-digit Hydrologic Unit (HUC 12) divides from the Watershed Boundary Dataset (WBD) were used as ridgeline enforcement input in a process called "walling" in the production of hydro-enforced DEMs. Closed basin designations, from the HUC 12 polygon data were used to impose "sinks" in the hydro-enforced DEMs. These DEMs are the source data from which NHDPlusV2 Catchments are delineated from. Catchments with corresponding boundaries in

the WBD generally agree with the WBD to within one or two 30-m grid cells. Some larger differences between catchment boundaries and WBD boundaries do exist, however. NHDPlusV2 Flow Direction and Accumulation Grids are hydrologic derivative products of the hydro-enforced DEMs. Dates of WBD snapshots used were as follows: August 31, 2010 - VPU 04 March 10, 2011 - VPUs 05, 06 July 14, 2011 - VPU 17 September 16, 2011 - VPU 10L October 7, 2011 - VPU 10U November 14, 2011 - VPUs 07, 11 December 2, 2011 - VPU 18 December 21, 2011 - VPUs 09, 12 February 1, 2012 - VPUs 01, 02, 03N, 03S, 03W, 08, 13, 14, 15, 16 The February 1, 2012 WBD snapshot used to migrate NHD medium resolution Reachcode assignment to agree with WBD HUC 8 codes.

SOURCE MEDIUM NAME   online link

RESOLUTION OF THE SOURCE DATA

SCALE DENOMINATOR 24000

SOURCE CITATION   ▶

TITLE Watershed Boundary Dataset (WBD)

ALTERNATE TITLES   WBD

PUBLICATION DATE 2012-01-01

PRESENTATION FORMATS   digital map

FGDC GEOSPATIAL PRESENTATION FORMAT   vector digital data

OTHER CITATION DETAILS

Multiple snapshots of the WBD were obtained and used during NHDPlusV2 production. See the snapshot dates for each NHDPlusV2 Vector Processing Unit (VPU) in this Source Citation.

RESPONSIBLE PARTY

ORGANIZATION'S NAME U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) and the U.S. Geological Survey (USGS)

CONTACT'S ROLE   originator

RESOURCE LOCATION ONLINE

LOCATION

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/watersheds/dataset>

EXTENT OF THE SOURCE DATA

DESCRIPTION

publication dates

TEMPORAL EXTENT

DATE AND TIME 2011-09-16

TEMPORAL EXTENT

DATE AND TIME 2012-02-01

TEMPORAL EXTENT

DATE AND TIME 2011-11-14

TEMPORAL EXTENT

DATE AND TIME 2011-07-14

TEMPORAL EXTENT  
DATE AND TIME 2011-10-07

TEMPORAL EXTENT  
DATE AND TIME 2010-08-31

TEMPORAL EXTENT  
DATE AND TIME 2011-12-21

TEMPORAL EXTENT  
DATE AND TIME 2011-12-02

TEMPORAL EXTENT  
DATE AND TIME 2011-03-10

SOURCE DATA ►

DESCRIPTION

NED data used in combination with NHD and WBD to create a hydro-enforced, NHDPlusV2 Catchments, surface flow direction and accumulation Grids. Stream elevations from NED which were used to help derive stream slope and stream velocity. NED snapshot dates used were as follows: August 2010 - VPU04 February 2011 - VPUs 05, 06 June 2011 - VPU 17 August 2011 - VPUs 07, 10L, 10U, 11, 18 December 2011 - VPUs 01, 02, 03N, 03S, 03W, 08, 09, 12, 13, 14, 15, 16

SOURCE MEDIUM NAME hard disk

RESOLUTION OF THE SOURCE DATA  
SCALE DENOMINATOR 24000

SOURCE CITATION ►

TITLE National Elevation Dataset (NED)  
ALTERNATE TITLES NED  
PUBLICATION DATE 2011-01-01

PRESENTATION FORMATS digital map  
FGDC GEOSPATIAL PRESENTATION FORMAT raster digital data

OTHER CITATION DETAILS

Multiple snapshots of the NED were obtained and used during NHDPlusV2 production. See the snapshot dates for each NHDPlusV2 Vector Processing Unit (VPU) in this Source Citation.

RESPONSIBLE PARTY

ORGANIZATION'S NAME U.S. Geological Survey (USGS), Denver  
CONTACT'S ROLE originator

RESPONSIBLE PARTY

ORGANIZATION'S NAME U.S. Geological Survey  
CONTACT'S ROLE publisher

CONTACT INFORMATION ►

ADDRESS  
DELIVERY POINT Sioux Falls, SD

RESOURCE LOCATION ONLINE  
LOCATION <http://ned.usgs.gov/>

EXTENT OF THE SOURCE DATA

DESCRIPTION  
publication dates

TEMPORAL EXTENT  
DATE AND TIME 2011-12-01

TEMPORAL EXTENT  
DATE AND TIME 2011-06-01

TEMPORAL EXTENT  
DATE AND TIME 2011-02-01

TEMPORAL EXTENT  
DATE AND TIME 2010-08-01

TEMPORAL EXTENT  
DATE AND TIME 2011-08-01

SOURCE DATA ▶

DESCRIPTION

The gage locations, which were spatially referenced to the NHDPlusV1 flowlines, were migrated to NHDPlusV2 flowlines and stored in the NHDPlusV2 Gageloc feature class. The Gageloc feature class was used for the QAQC of the estimates of mean annual stream flow and also in a gage flow adjustment process applied to the final mean annual stream flow estimates.

SOURCE MEDIUM NAME online link

RESOLUTION OF THE SOURCE DATA

SCALE DENOMINATOR 24000

SOURCE CITATION ▶

TITLE USGS Streamgages Linked to the Medium Resolution NHD

ALTERNATE TITLES DS195

PUBLICATION DATE 2006-04-01

PRESENTATION FORMATS digital map

FGDC GEOSPATIAL PRESENTATION FORMAT vector digital data

SERIES

NAME Data Series

ISSUE DS-195

RESPONSIBLE PARTY

ORGANIZATION'S NAME U.S. Geological Survey  
CONTACT'S ROLE publisher

CONTACT INFORMATION ►  
ADDRESS  
DELIVERY POINT Reston, Va

RESPONSIBLE PARTY  
ORGANIZATION'S NAME David W. Stewart, Alan Rea and David M. Wolock  
CONTACT'S ROLE originator

RESOURCE LOCATION ONLINE  
LOCATION <http://water.usgs.gov/lookup/getspatial?streamgages>

EXTENT OF THE SOURCE DATA  
DESCRIPTION  
publication date

TEMPORAL EXTENT  
DATE AND TIME 2006-01-01

## Distribution ►

DISTRIBUTOR ►  
CONTACT INFORMATION  
ORGANIZATION'S NAME U.S. Environmental Protection Agency  
CONTACT'S ROLE distributor

CONTACT INFORMATION ►  
PHONE  
VOICE not available, see email address

ADDRESS  
TYPE postal  
DELIVERY POINT not available, see email address  
CITY Washington  
ADMINISTRATIVE AREA D.C.  
POSTAL CODE 20460  
E-MAIL ADDRESS [waters\\_support@epa.gov](mailto:waters_support@epa.gov)

AVAILABLE FORMAT  
NAME ESRI Workspace  
FILE DECOMPRESSION TECHNIQUE .7z

ORDERING PROCESS

TERMS AND FEES none

TRANSFER OPTIONS

ONLINE SOURCE

LOCATION <http://www.epa.gov/waters>

DISTRIBUTION FORMAT

\* NAME File Geodatabase Feature Class

TRANSFER OPTIONS

ONLINE SOURCE

LOCATION <http://www.epa.gov/waters>

## Fields ►

DETAILS FOR OBJECT [surface\\_water\\_flow\\_nhdplus\\_v2\\_erom\\_eispc\\_v2](#) ►

\* TYPE Feature Class

\* ROW COUNT 346016

FIELD [OBJECTID](#) ►

\* ALIAS OBJECTID

\* DATA TYPE OID

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

\* FIELD DESCRIPTION

Internal feature number.

\* DESCRIPTION SOURCE

Esri

\* DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

FIELD [Shape](#) ►

\* ALIAS Shape

\* DATA TYPE Geometry

\* WIDTH 0

\* PRECISION 0

\* SCALE 0

\* FIELD DESCRIPTION

Feature geometry.

\* DESCRIPTION SOURCE

Esri

\* DESCRIPTION OF VALUES

Coordinates defining the features.

FIELD **COMID** ►

- \* **ALIAS** COMID
- \* **DATA TYPE** Integer
- \* **WIDTH** 4
- \* **PRECISION** 0
- \* **SCALE** 0

FIELD **DESCRIPTION**

Common identifier of the NHD feature

DESCRIPTION **SOURCE**

NHD, EPA, USGS

FIELD **FDATE** ►

- \* **ALIAS** FDATE
- \* **DATA TYPE** Date
- \* **WIDTH** 8
- \* **PRECISION** 0
- \* **SCALE** 0

FIELD **DESCRIPTION**

Feature Currency Date

DESCRIPTION **SOURCE**

NHD, EPA, USGS

FIELD **RESOLUTION** ►

- \* **ALIAS** RESOLUTION
- \* **DATA TYPE** String
- \* **WIDTH** 7
- \* **PRECISION** 0
- \* **SCALE** 0

FIELD **DESCRIPTION**

NHD database resolution (i.e. "high", "medium", or "local")

DESCRIPTION **SOURCE**

NHD, EPA, USGS

FIELD **GNIS\_ID** ►

- \* **ALIAS** GNIS\_ID
- \* **DATA TYPE** String
- \* **WIDTH** 10
- \* **PRECISION** 0
- \* **SCALE** 0

FIELD **DESCRIPTION**

Geographic Names Information System ID for the value in GNIS\_Name

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD GNIS\_NAME ►  
\* ALIAS GNIS\_NAME

\* DATA TYPE String

\* WIDTH 65

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Feature Name from the Geographic Names Information System

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD LENGTHKM ►  
\* ALIAS LENGTHKM

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Feature length in kilometers

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD REACHCODE ►  
\* ALIAS REACHCODE

\* DATA TYPE String

\* WIDTH 14

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Reach Code assigned to feature

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD FLOWDIR ►  
\* ALIAS FLOWDIR

\* DATA TYPE String

\* WIDTH 15

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Flow direction is "With Digitized" or "Uninitialized". Only flowlines with Flowdir = "With

Digitized" are used to define the surface water network used in NHDPlus. All other flowlines are ignored by NHDPlus.

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD **WBAREACOMI** ►

- \* ALIAS WBAREACOMI
- \* DATA TYPE Integer
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

ComID of the NHD polygonal water feature through which an NHD "Artificial Path" flowline flows

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD **FTYPE** ►

- \* ALIAS FTYPE
- \* DATA TYPE String
- \* WIDTH 24
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

NHD Feature Type

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD **FCODE** ►

- \* ALIAS FCODE
- \* DATA TYPE Integer
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Numeric codes for various feature attributes in the NHDFCode lookup table

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD **SHAPE\_LEN** ►

- \* ALIAS SHAPE\_LEN
- \* DATA TYPE Double
- \* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Feature length in decimal degrees

DESCRIPTION SOURCE

Esri

FIELD ENABLED ►

\* ALIAS ENABLED

\* DATA TYPE String

\* WIDTH 6

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Always "True"

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD GNIS\_NBR ►

\* ALIAS GNIS\_NBR

\* DATA TYPE Integer

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

FIELD OID\_1 ►

\* ALIAS OID

\* DATA TYPE Integer

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Internal feature number.

DESCRIPTION SOURCE

ESRI

FIELD Comid\_1 ►

\* ALIAS Comid\_1

\* DATA TYPE Integer

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Common identifier of an NHDFlowline feature

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD Q0001A ►

- \* ALIAS Q0001A
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION  
Flow from runoff

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD V0001A ►

- \* ALIAS V0001A
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION  
Velocity for Q0001A

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD Qincr0001A ►

- \* ALIAS Qincr0001A
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION  
Incremental Flow from runoff

DESCRIPTION SOURCE  
NHD, EPA, USGS

FIELD Q0001B ►

- \* ALIAS Q0001B
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

## Flow with Excess ET

DESCRIPTION SOURCE  
NHD, EPA, USGS

### FIELD V0001B ►

- \* ALIAS V0001B
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION  
Velocity for Q0001B

DESCRIPTION SOURCE  
NHD, EPA, USGS

### FIELD Qincr0001B ►

- \* ALIAS Qincr0001B
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION  
Incremental Flow With Excess ET

DESCRIPTION SOURCE  
NHD, EPA, USGS

### FIELD Q0001C ►

- \* ALIAS Q0001C
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION  
Flow with Reference Gage Regression applied to Q0001B

DESCRIPTION SOURCE  
NHD, EPA, USGS

### FIELD V0001C ►

- \* ALIAS V0001C
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Velocity for Q0001C

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Qincr0001C ►

- \* ALIAS Qincr0001C
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Incremental Flow by subtracting the sum of upstream Q<eeee>C flows from the sum of the upstream Q0001C

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Q0001D ►

- \* ALIAS Q0001D
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Flow with PlusFlowAR

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD V0001D ►

- \* ALIAS V0001D
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Velocity for Q0001D

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Qincr0001D ►

- \* ALIAS Qincr0001D
- \* DATA TYPE Double
- \* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Incremental flow with PlusFlowAR

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Q0001E ►

\* ALIAS Q0001E

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Flow from gage adjustment

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD V0001E ►

\* ALIAS V0001E

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Velocity from gage adjustment

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Qincr0001E ►

\* ALIAS Qincr0001E

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Incremental flow from gage adjustment

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Q0001F ►

\* ALIAS Q0001F

\* DATA TYPE Double

- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Flow from gage sequestration step

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Qincr0001F ►

- \* ALIAS Qincr0001F
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Incremental flow from gage sequestration step

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD ARQ0001NAV ►

- \* ALIAS ARQ0001NAV
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

PlusflowAR flow not available on flowline

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD TEMP0001 ►

- \* ALIAS TEMP0001
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Catchment temperature Deg. C

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD PPT0001 ►

- \* ALIAS PPT0001

- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Catchment precipitation mm

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD PET0001 ►

- \* ALIAS PET0001
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Catchment PET mm

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD QLOSS0001 ►

- \* ALIAS QLOSS0001
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Catchment flow loss from Excess ET

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD QG0001ADJ ►

- \* ALIAS QG0001ADJ
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Gage adjustment flow cfs

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD QG0001NAV ►

\* ALIAS QG0001NAV

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Gage adjustment flow not available (cfs)

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD DivDASqKM

\* ALIAS DivDASqKM

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Divergence-routed cumulative area

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD AreaSqKm

\* ALIAS AreaSqKm

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

See Catchment

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD LAT

\* ALIAS LAT

\* DATA TYPE Double

\* WIDTH 8

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Average Latitude of catchment in decimal degrees

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD Gageadj

\* ALIAS Gageadj

\* DATA TYPE String

\* WIDTH 1

\* PRECISION 0

\* SCALE 0

FIELD DESCRIPTION

Flag indicating that Q<eeee>E and Qincr0001E have been adjusted by gage flow. "0" = not adjusted, "2" = adjusted, including the NHDFlowline feature at the gage and the NHDFlowline features upstream.

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD avgqadj

- \* ALIAS avgqadj
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Gage Q adjusted for bottom of an NHDflowline feature

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD SMGageID

- \* ALIAS SMGageID
- \* DATA TYPE String
- \* WIDTH 16
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

The ID of the gage located on NHDFlowline feature

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD SMgageq

- \* ALIAS SMgageq
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Gaged flow measured by the gage on NHDFlowline feature

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD ETFRACT1

- \* ALIAS ETFRACT1
- \* DATA TYPE Single
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Excess ET Fraction 1

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD ETFRACT2

- \* ALIAS ETFRACT2
- \* DATA TYPE Single
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Excess ET Fraction 2

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD a

- \* ALIAS a
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Reference gage regression coefficient "a"

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD b

- \* ALIAS b
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Reference gage regression coefficient "b"

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD BCF

- \* ALIAS BCF
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Reference gage regression Bias Correction Factor

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD r2

- \* ALIAS r2
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Reference gage regression log-log r2

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD SER

- \* ALIAS SER
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Reference gage regression log-log Standard Error of the Regression

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD NRef

- \* ALIAS NRef
- \* DATA TYPE Single
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Number of Reference gages used in the regression

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD **gageseqp**

- \* ALIAS **gageseqp**
- \* DATA TYPE Single
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Proportion of gages to sequester in the gage sequestration step. Values 0 to 1.

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD **gageseq**

- \* ALIAS **gageseq**
- \* DATA TYPE Single
- \* WIDTH 4
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

0 = gage not sequestered, 1= gage sequestered

DESCRIPTION SOURCE

NHD, EPA, USGS

FIELD **Q\_GPM**

- \* ALIAS **Q\_GPM**
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

Gallons Per Minute (GPM) ( $Q0001E \times 448.8 = \text{GPM}$ )

DESCRIPTION SOURCE

Argonne National Laboratory

FIELD **Shape\_Length**

- \* ALIAS **Shape\_Length**
- \* DATA TYPE Double
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0
- \* FIELD DESCRIPTION

Length of feature in internal units.

\* DESCRIPTION SOURCE

Esri

\* DESCRIPTION OF VALUES

Positive real numbers that are automatically generated.

## Metadata Details

METADATA LANGUAGE English (UNITED STATES)

METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset

SCOPE NAME \* dataset

\* LAST UPDATE 2016-08-26

ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0

METADATA STYLE FGDC CSDGM Metadata

STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2016-08-04 15:19:50

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AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes

LAST UPDATE 2016-08-26 14:59:24

## Metadata Contacts

METADATA CONTACT

ORGANIZATION'S NAME U.S. Environmental Protection Agency

CONTACT'S ROLE point of contact

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TYPE postal

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