

National Hydrography Dataset Data Dictionary

Data Model version 2.0

Hydrography Feature Classes: NHDPoint, NHDLine, NHDFlowline, NHDWaterbody, NHDArea

Field Name	Definition	Applies to	Comments
ComID	Integer value that uniquely identifies the occurrence of each feature in the NHD.	All feature classes	Original national database key assigned by USGS when data was loaded.
Permanent_Identifier	40-char GUID value that uniquely identifies the occurrence of each feature in <i>The National Map</i> .	All feature classes	Locally assigned during new data creation
FDate	Date of last feature modification.	All feature classes	
Resolution	Source resolution.	All feature classes	Domain of values: 1= Local >1:12,000 2= High 1:24,000/12,000 3= Medium 1:100,000
GNIS_ID	Unique identifier assigned by GNIS, 10-char value. <i>leading zeros may be missing on some features</i>	All feature classes	GNIS_ID = "null" if no name associated with the feature
GNIS_Name	Proper name, specific term, or expression by which a particular geographic entity is known.	All feature classes	GNIS_Name = "null" if no name is associated with the feature
LengthKM	Length of linear feature based on Albers Equal Area,	NHDFlowline NHDLine	Computed
AreaSqKm	Area of areal feature based on Albers Equal Area,	NHDArea NHDWaterbody	Computed
Elevation	The vertical distance from a given datum, in meters.	NHDArea NHDWaterbody	Stage of the water elevation is encoded in the FCode.
ReachCode	Unique identifier for a 'reach'. The first eight numbers are the WBD_HUC8. The next six numbers are randomly assigned, sequential numbers that are unique within a HUC8, 14-char value.	NHDFlowline NHDWaterbody NHDPoint	Required for NHDFlowlines. NHDWaterbody and NHDPoint feature classes allow reach codes, but they are not required for all features.
FlowDir	Direction of flow relative to coordinate order.	NHDFlowline	Domain of values: 1 = With digitized 0 = Uninitialized
WBAreaComID	The ComID of the waterbody through which the flowline flows.	NHDFlowline	Applies only to Artificial Path FType; "null" or '0' for all other FTypes.
WBArea_Permanent_ID	Permanent_Identifier of the waterbody through which the flowline flows	NHDFlowline	Applies only to Artificial Path FType; "null" or '0' for all other FTypes.
FType	Three-digit integer value; unique identifier of a feature type.	All feature classes	
FCode	Five-digit integer value; comprised of the feature type and combinations of characteristics and values.	All feature classes	Only some features have attributes; last two digits are "00" if no additional values are encoded.

Hydrography Event Feature Classes: NHDPointEvent, NHDLineEvent, NHDAreaEvent

Field Name	Definition	Applies to	Comments
ComID	Integer value that uniquely identifies the occurrence of each event in the NHD.	All feature classes	
Permanent_Identifier	40-char GUID value that uniquely identifies the occurrence of each event in <i>The National Map</i> .	All feature classes	
EventDate	Date an event was created.	All feature classes	
ReachCode	Reach Code on which the event is located.	All feature classes	
ReachSMDate	Reach Version Date	All feature classes	
ReachResolution	Source resolution.	All feature classes	
FeatureComID	ComID of NHD feature that is referenced as an event.	All feature classes	
Feature_Permanent_Identifier	Permanent_Identifier of NHD feature that is referenced as an event.		
FeatureClassRef	NHD feature class that holds FeatureComID	All feature classes	
Source_Originator	Originator of the event	All feature classes	
Source_DataDesc	Description of the entity	All feature classes	
Source_FeatureID	Identifier of the entity used in the source data.	All feature classes	
FeatureDetailURL	URL where detailed event entity data can be found	All feature classes	
Measure	Measure along the reach, in percent from downstream end, where a point event is located.	Point Event feature class	
FMeasure	Measure along the reach, in percent from downstream end, where a linear event begins (from).	Line Event feature class	
TMeasure	Measure along the reach, in percent from downstream end, where a linear event ends (to).	Line Event feature class	
EventType	Type of entity in an event	All feature classes	
Offset	Distance from the network to be used to display event	Point and Line Event feature classes	Negative offsets display the event to the left of the network and positive offsets display the event to the right of the line. Offsets are useful for displaying overlapping events.

WBD Feature Classes: HU2, HU4, HU6, HU8, HU10, HU12, HU14, HU16

Field Name	Definition	Applies to	Comments
Gaz_ID	Unique identifier assigned by GNIS, length 10.	All feature classes	
Area_Acres		All feature classes	
Area_SqKm		All feature classes	
States		All feature classes	
LoadDate		All feature classes	
HUC_X	Numeric identifier for each level (2,4,6,8,10, and 12) of hydrologic units	All feature classes	
HU_X_Name	Name assigned to each level (2,4,6,8,10, and 12) of hydrologic units	All feature classes	
HU_X_Type	Geomorphic and other considerations used to develop the hydrologic unit.	HU10, HU12, HU14, HU16	See ftp://ftp-fc.sc.egov.usda.gov/NCGC/products/watershed/hu-standards.pdf for domain of values
HU_X_Mod	A two-character, uppercase abbreviation(s) for either (1) the type of modification to natural overland flow that alters the location of a Watershed boundary or (2) the special conditions GF-ground-water flow, GL-glacier, IF-ice field, OF-overbank flow, KA-karst, NC-noncontributing area, and IT-interbasin transfer.	HU10, HU12, HU14, HU16	See ftp://ftp-fc.sc.egov.usda.gov/NCGC/products/watershed/hu-standards.pdf for domain of values
NContrib_Acres	Area that does not flow toward the outlet of a hydrologic unit.	HU12, HU14, HU16	
NContrib_SqKm	Area that does not flow toward the outlet of a hydrologic unit.	HU12, HU14, HU16	
HU_2s are not included with the data HU_14 and HU_16 are included only where created by local stewards.			

Attribute Tables

NHDFCode

Field Name	Definition	Applies to	Comments
FCode	Five-digit integer value; comprised of the feature type and combinations of characteristics and values.	All feature types	Only some features have attributes; last two digits are “00” if no additional values are encoded.
Description	Character string that contains all the characteristics and values associated with a feature code.	All feature types	Only some features have attributes; only feature type is used if no additional values are encoded.
<p>In addition to the full description, there is a text field for each characteristic associated with a feature code. The name of each field is the name of the characteristic. By default, the attribute tables for the feature classes display the text string for the FType and Fcode. This was done to make the data more user friendly. Users may toggle between the text string and the code.</p>			
CanalDitchType	Function or purpose	Canal/Ditch	
ConstructionMaterial	Predominant material used	Dam/Weir and Reservoir	
HydrographicCategory	Portion of the year the feature contains water	Stream/River, Lake/Pond, Reservoir and Swamp/Marsh	
InundationControlStatus	Existence of functional control structures	Inundation Area	
OperationalStatus	State or condition	Special Use Zone	
PipelineType	Function or purpose	Pipeline	
PositionalAccuracy	The accuracy within which a feature may be confidently positioned	Sounding Datum Line and Underground Conduit	
RelationshipToSurface	Vertical location relative to the surface	Pipeline and Rock	
ReservoirType	Function or purpose	Reservoir	
Stage	Height of water surface	Inundation Area and Lake/Pond	
SpecialUseZoneType	Function or purpose	Special Use Zone	

NHDVerticalRelationship

Used for features (i.e. streams and canals) which cross but do not exchange flow

Field Name	Definition	Applies to	Comments
ComID	Unique identifier for the relationship	Vertical Relationship	
AboveComID	ComID of feature above the vertical offset	Flowline that is part of vertical relationship	
BelowComID	ComID of feature below the vertical offset	Flowline that is part of vertical relationship	
Permanent_Identifier	Permananet identifier for the relationship	Vertical Relationship	
Above_Permanent_Identifier	Permanent_Identifier of feature above the vertical offset	Flowline that is part of vertical relationship	
Below_Permanent_Identifier	Permanent_Identifier of feature below the vertical offset	Flowline that is part of vertical relationship	

NHDFlow

Flow table values are derived from the topologic connectivity of the geometric network and values of FlowDir attribute of NHDFlowline features. This table is not populated in pre-processed subregions

Field Name	Definition	Applies to	Comments
FromComID	ComID of the flowline from which feature flows		Value = "0" if flowline is a network start
ToComID	ComID of the flowline to which feature flows		
DeltaLevel	Numerical difference between stream level for From feature and stream level for To feature		Only populated if stream level has been calculated
Direction	Text or Code to describe direction of flow		In - 709 Network start - 712 Network end - 713 Non-flowing -714
From_Permanent_Identifier	Permanent_Identifier of feature from which the feature flows		
To_Permanent_Identifier	Permanent_Identifier of feature to which the feature flows		

NHDReachCode_ComID

Field Name	Definition	Applies to	Comments
ComID	Unique value for for the collection of features that share a reach code, <i>i.e.</i> a “reach”.		
Permanent_Identifier	40-char GUID value for the collection of features that share a reach code, <i>i.e.</i> a “reach”.		
ReachCode	Unique identifier for a ‘reach’. The first eight numbers are the WBD_HUC8. The next six numbers are randomly assigned, sequential numbers that are unique within a HUC8, 14-char value.		
ReachSMDate	Reach Version Date		The version date tracks the last time that the reach represented by ReachCode experienced a change in geometry.
Resolution	Source resolution.		
GNIS_ID	Unique identifier assigned by GNIS, length 10.		
GNIS_Name	Proper name, specific term, or expression by which a particular geographic entity is known, length 65.		

NHDReachCrossReference
Information that tracks changes, over time, to reach codes.

Field Name	Definition	Applies to	Comments
OldReachCode	Reach code prior to change		
OldReachDate	Date when old reach code was originally assigned (yyymmdd)		
NewReachCode	Reach code after the change		
NewReachDate	Date when new reach code was assigned (yyymmdd)		
OldUPMI	Not used		
NewUPMI	Not used		
ChangeCode	Type of change to the reached feature (A) Add new reach (D) Delete old reach (11) Old reach to new reach (generally used when an existing reach codes was assigned a new reach code in a new subbasin – reach migration) (P1) Part of old reach to new reach (split) (1P) Old reach to part of new reach (merge)		
Process	Name of the process that created the reach code change		Many processes to create the NHD were done on the National Database and these have standard codes.
ReachFileVersion	Reach File Version in which the change became effective		
OldHUCode	HUC8 of the flowline prior to migration		Used if the flowline was originally assigned a reach code based on an incorrect subbasin assignment
NewHUCode	HUC8 of the flowline prior to migration		Used if the flowline was originally assigned a reach code based on an incorrect subbasin assignment

ExternalIDCrosswalk

Contains associations of Permanent_ Identifiers to external source Identifiers.

Field Name	Definition	Applies to	Comments
Permanent_Identifier	40-char GUID value that uniquely identifies the occurrence of each feature in <i>The National Map</i> .		
ExternalID	ID that identifies the feature in the source dataset		
ExternalIDName	Field name in the external source dataset that contains the unique IDs.		
ExternalIDOriginator	Name of the organization or individual who developed the external dataset/features		
ExternalEntryDate	Load date of the ExternalID record.		

NHDStatus

NHDStatus is used to track data changes for transaction uploads to the central repository. This table is only populated during editing.

Field Name	Definition	Applies to	Comments
ID	Temporary ID assigned to track feature edits.	Edited features	The temporary ID is replaced with the official ComID when loaded
Permanent_Identifier	40-char GUID value that uniquely identifies the occurrence of each feature in <i>The National Map</i> .		
Status	Type of edit	Edited features	

NHDProcessingParameters

This table lists the schema and the version of the master NHD database that was used to generate extracted NHD data.

This table is most useful to USGS to verify the version used by data stewards for updates.

Field Name	Definition	Applies to	Comments
ParameterName			Parameters include Version, Resolution, Processing_Organization, and SchemaVersion
ParameterValue			

NHDMetadata

This table contains FGDC compliant Data Quality information

Field Name	Definition	Applies to	Comments
DuuID	Unique identifier for the Digital Update Unit.		
Meta_ProcessID	40-char GUID value that uniquely identifies a metadata process description in <i>The National Map</i> .		
ProcessDescription	Explanation of the event and related parameters or tolerances		
ProcessDate	Date when the event was completed.		
AttributeAccuracyreport	Explanation of entities and assignments of values in dataset		
LogicalConsistencyReport	Explanation of fidelity of relationships in dataset and tests used.		
CompletenessReport	Information about omissions, criteria, definitions used to derive dataset.		
HorizPositionalAccuracyReport	Horizontal coordinate measurements and description of tests used.		
VertPositionalAccuracyReport	Vertical coordinate measurements and description of tests used.		
MetadataStandardName	Name of the metadata standard used to document the dataset.		
MetadataStandardVersion	Identification of the version of the metadata standard used to document the dataset.		
MetadataDate	Date the metadata was last created or updated.		
DataSetCredit	Recognition of those who contributed to the dataset.		
ContactOrganization	Name or organization to which type of contact applies.		
AddressType	Information provided by the address.		
Address	Address line for the address.		
City	City of the address		
StateOrProvince	State or province of the address		
PostalCode	ZIP or other postal code of the address		
ContactVoiceTelephone	Telephone number to reach Organization or individual.		
ContactInstructions	Supplemental instructions to contact Organization or individual		
ContactEmailAddress	E-mail address to reach contact organization or individual.		

NHDFeatureToMetadata

This table links every feature in the NHD to one or many metadata records.

Field Name	Definition	Applies to	Comments
ComID	Integer value that uniquely identifies the occurrence of each feature in the NHD.		
DuuID	Unique identifier for the Digital Update Unit.		A Duu is a collection of features that were created or updated using a similar process. The DuuID links to the NHDMetadata table.
Permanent_Identifier	40-char GUID value that uniquely identifies the occurrence of each feature in <i>The National Map</i> .		
Meta_ProcessID	40-char GUID value that uniquely identifies each metadata process description.		Features are associated to specific process descriptions. The Meta_processID links to the NHDMetadata table.

NHDSourceCitation

**This table links to process description information found in the NHDMetadata table. Not all process descriptions have a source citation.
Content is based on FGDC Metadata requirements.**

Field Name	Definition	Applies to	Comments
Source_DatasetID			
Title	Name by which the dataset is known.		
SourceCitationAbbreviation	Short form alias for source citation.		
Originator	Name of an organization or individual that developed the dataset.		
PublicationDate	Date the dataset is published or made available for release.		
BeginningDate	First year of the event (if Range_of_Dates applies).		<Null> if CalendarDate is used
EndingDate	Last year for the event (if Range_of_Dates applies).		<Null> if CalendarDate is used
SourceContribution	Brief statement identifying information contributed by source to dataset		
SourceScaleDenominator	Denomination of representative fraction on a map.		
TypeofSourceMedia	The medium of the source dataset.		
CalendarDate	The year (if Single Date applies).		<Null> if BeginningDate and EndingDate are used
SourceCurrentnessReference	Source time period of content information of source dataset is determined.		
DuuID	Unique identifier for the Digital Update Unit.		Link to the NHDMetadata table
Meta_ProcessID	40-char GUID value that uniquely identifies each metadata process description.		Link to the NHDMetadata table

Relationship Classes

Explicit relationship classes are created to help users discover the feature-based metadata records.

Name	Type
Hydrography	File Geodatabase Feature Dataset
WBD	File Geodatabase Feature Dataset
NHDAreaEventFCToMeta	File Geodatabase Relationship Class
NHDAreaToMeta	File Geodatabase Relationship Class
NHDFlowlineToMeta	File Geodatabase Relationship Class
NHDLineEventFCToMeta	File Geodatabase Relationship Class
NHDLineToMeta	File Geodatabase Relationship Class
NHDMetadataHasSourceCitation	File Geodatabase Relationship Class
NHDMetaToFeature	File Geodatabase Relationship Class
NHDPointEventFCToMeta	File Geodatabase Relationship Class
NHDPointToMeta	File Geodatabase Relationship Class
NHDWaterbodyToMeta	File Geodatabase Relationship Class
ExternalIDCrosswalk	File Geodatabase Table
HYDRO_NET_BUILDERR	File Geodatabase Table
NHDFCode	File Geodatabase Table
NHDFeatureToMetadata	File Geodatabase Table
NHDFlow	File Geodatabase Table
NHDFlowlineVAA	File Geodatabase Table
NHDMetadata	File Geodatabase Table
NHDProcessingParameters	File Geodatabase Table
NHDReachCode_ComID	File Geodatabase Table
NHDReachCrossReference	File Geodatabase Table
NHDSourceCitation	File Geodatabase Table
NHDStatus	File Geodatabase Table
NHDVerticalRelationship	File Geodatabase Table

NHDMetaToFeature relationship class relates the DuuID and(or) Meta_ProcessID in the NHDMetadata table to the NHDFeatureToMetadata.

The **NHDfeature classToMeta** relationship classes relate the ComID and(or) Permanent_Identifier in the NHDFeatureToMetadata table to the appropriate NHD Feature class table (Area, Flowline, Line, Point, or eventFC.)

NHDMetadataHas SourceCitation relationship class associates the DuuID and(or) Meta_ProcessID in NHDMetadata table to the NHDSourceCitation table.