

# Charted Waters

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Florida National Hydrography Dataset Stewardship Team

The Florida NHD Stewardship Team continues their hard work updating the database.

With about 58,000 edits to the NHD from April 2015 through October 2015, the team focused on reviewing and updating feature names and also comprehensive revision based on aerial imagery.

## Latest Edits

The NHD Stewardship team continues to review and update the NHD using aerial imagery.

More than 58,000 edits were performed between April 2015 and October 2015.

These edits are available in the December statewide release of the NHD on the Florida DEP GIS ftp site, on DataMiner, and in the DEP mapping application, MapDirect.

Edits took place in the following subbasins:



Subbasins with edits  
April—October 2015

**Alafia**  
**Big Cypress Swamp**  
**Blackwater**  
**Crystal-Pithlachascotee**  
**Econfina-Steinhatchee**

**Everglades**  
**Florida Bay-Florida Keys**  
**Lake Okeechobee**  
**Lower Choctawhatchee**  
**Lower Ochlockonee**  
**Lower Suwannee**  
**Pensacola Bay**  
**St. Andrew-St. Joseph Bays**  
**St. Marys**  
**Upper St. Johns**

The USGS downloaded more than 30 subbasins for attribute updates, connectivity checks and updating m-values.

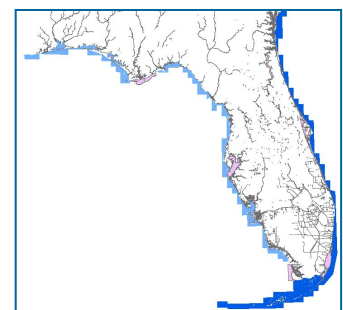
## Adios Atlantic

The Florida NHD has long had both Atlantic Ocean and Gulf of Mexico in the database on the western side of the state.

An inspection of the Board on Geographic Names database concluded that the western counties are not listed as part of the extent of the Atlantic.

That information and the observation that the other states bordering the Gulf don't include the Atlantic in their databases led to the decision to remove those Atlantic Ocean polygons.

Thousands of vertices had been bulking up the database and causing editing headaches,



Atlantic Ocean Removed  
from Gulf side of Florida

particularly when an editor had to match coastline, swamp, sea/ocean and bay geometries together.

The underlying Gulf of Mexico polygons still maintain FTypes of sea/ocean and the symbology will not change.

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## Did you know?

The NHD contains three types of reaches: transport, coastline and area.

**Transport Reaches** are assigned to all NHD Flowline features such as streams and canals. They represent the pathway for the movement of water through a drainage network. They provide a basis on which locations of observations can be geocoded and linked to the drainage network.

A **Coastline Reach** represents a section of coastline along the Atlantic or the Gulf of Mexico. These reaches provide a basis for geocoding locations of observations along the coastline.

An **Area Reach** provides a means of geocoding observations to one or more waterbody features. Lakes, Reservoirs and Estuaries must be assigned an area reach.

Find more information about NHD reaches at:

[http://usgs-mrs.cr.usgs.gov/NHDHelp/WebHelp/NHD\\_Help/Introduction\\_to\\_the\\_NHD/Reaches\\_and\\_Reach\\_Codes/Reaches\\_and\\_Reachcodes.htm](http://usgs-mrs.cr.usgs.gov/NHDHelp/WebHelp/NHD_Help/Introduction_to_the_NHD/Reaches_and_Reach_Codes/Reaches_and_Reachcodes.htm)

## Featured Feature — Relationship Classes

This edition's Featured Feature goes behind the scenes of the NHD to showcase some powerful mechanisms built into the database. While not actual features, relationship classes provide a number of enhancements and opportunities to work with the data.

### Metadata

You can look at the NHD metadata and it will tell you that which you are familiar with regarding metadata: When was the data published and by whom? What were the process steps? What's the purpose of the data? etc. However... there's more. The NHD has what is called "Feature Level" metadata. There is a metadata table and a source citation table within the database. There is also a Feature to Metadata table. These three tables are all related using primary keys and by creating the proper relationship classes, you are able use the identify tool on a feature and then drill down to see the history of edits to that feature through the associated tables.

### NHD Flowline WBAreaPermanent\_Identifier

Each feature in the NHD has a unique identifier. The NHD Flowline feature class has an additional attribute field called WBAreaPermanent\_Identifier that houses the unique identifier of the waterbody or area that the flowline is running through. By creating a relationship class between NHD Flowline and NHD Area, and then another between NHD Flowline and NHD Waterbody, utilizing the two fields, you can track a path through selected network features. Then, you can open up the related NHD Waterbody table and the related NHD Area table to see which of the features found in those feature classes touch the selected flowline network. An example of where this would be useful would be to set up Utility Network Analyst to trace upstream accumulation between two points and then determine all immediate Areas and Waterbodies affiliated with the network. Note: a swamp adjacent to a stream or canal doesn't get picked up in this scenario. The relationship is between Artificial Paths and the polygons they are located in. If having features other than artificial paths participate in this relationship would be of interest, please contact [NHDSteward@dep.state.fl.us](mailto:NHDSteward@dep.state.fl.us).

### GNIS – Variant Names

The Board on Geographic Names documents variant names for named features. The NHD stores the primary name and GNIS ID. Part of the processing of the latest Florida NHD for SDE (DataMiner) and FTP download includes downloading the GNIS variant names and creating a geodatabase table of the variant names for Florida hydrographic features. Then, a relationship class is created associating the variant names to the named NHD features. When you identify a named feature in the FL NHD, a plus sign under the feature name in the identify window appears if there is a variant name for that feature. Clicking on the plus sign expands the section and lists any names for which the feature may be known.

Relationship classes allow you to perform quick analyses and generate a lot of information without the hassle of performing multiple selects or other spatial queries. When you download the data from the FDEP FTP site or add the data directly to your ArcMap document from DataMiner, this advanced functionality of the database is ready to go to work for you.

## Estuaries – To be, or not to be?

Over the course of the last several months, in-house discussions were held regarding the addition of estuaries to the Florida NHD.

Estuaries don't have static, finite boundaries, therefore, representing them on a map can be problematic. However, knowing their general location with the understanding of the limitations of the boundaries can still be very useful.

Questions arose such as: Are there already boundaries that can be added? Can we use existing sampling data to generate boundaries?

Ultimately, some estuary boundaries were found as part of a pre-existing NOAA project (see [fishhabitat.org](http://fishhabitat.org)).

The project's estuary boundaries were built upon estuary boundaries originally determined by the former NOAA Coastal Aquatic Framework.

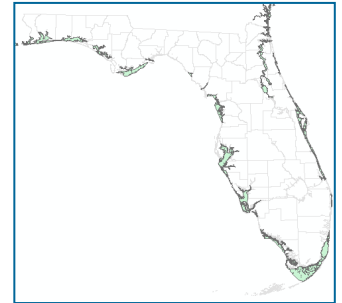
The next decision to make was whether to add the estuaries to the NHD or use them as supplemental data to the NHD. While the NHD already has a feature type ready to go for estuaries, the data would require a lot of manipulation to fit the feature to feature rules of the NHD.

For now, we settled on providing this data as a supplement. Once finalized, the data will be added as a separate group within the NHD data if accessed through FDEP DataMiner. It will also be available as a

standalone dataset in DataMiner. While the shapefile will not be distributed with the NHD data from the FDEP FTP download site, it is available at: [fishhabitat.org](http://fishhabitat.org).

There are 220 estuary polygons in the shapefile, though based on the metadata, it appears to be a subset of a larger dataset of over 600 polygons that includes additional habitat zones.

The Florida stewardship team is coordinating with NOAA to try to make the entire dataset available.



Estuaries from the NOAA shapefile

**“The next decision to make was whether to add the estuaries to the NHD or use them as supplemental data to the NHD.”**

## Getting the most out of the NHD

### Symbology – scaled labels

ArcMap provides an incredible amount of customization when it comes to displaying data and labels.

In effort to make displaying labels more map-friendly, changes were made to the symbology layer found in FDEP DataMiner.

These customizations are easily modified in the layer properties by the end user if the values need to be changed to suit specific needs.

Scale dependent labels based on feature size simply means that when looking at a small scale map, labels from smaller named features don't appear. This should help give maps a cleaner look while still providing names of the more prominent features at a given scale.

**Note:** ArcMap documents with the NHD data layer already existing in the table of contents will need to be removed and re-added from DataMiner for the changes to take effect.



1:<500,000



1:<150,000



1:<75,000

## NHD Word Search

Find the following NHD related words:

- AREA
- CANALDITCH
- FLOWLINE
- GNIS
- HYDROGRAPHY
- REACHCODE
- RESERVOIR
- SEAOCEAN
- STREAMRIVER
- SUBBASIN
- WATERBODY
- WBD

H	I	I	K	C	O	V	S	V	C	K	K	S	S	X
G	Y	X	M	J	B	E	V	A	X	T	G	T	K	C
Y	V	D	L	S	Q	E	N	A	Q	C	B	R	U	G
U	D	Q	R	H	O	A	Y	I	X	U	A	E	U	A
O	Z	O	L	O	L	E	D	O	C	H	C	A	E	R
Y	G	M	B	D	G	I	I	E	H	B	U	M	R	E
P	L	S	I	R	Y	R	N	J	L	L	L	R	I	A
L	Q	T	U	V	E	I	A	P	I	J	X	I	O	A
I	C	T	A	B	L	T	H	P	C	T	A	V	V	H
H	L	H	E	W	B	V	A	Y	H	K	A	E	R	V
S	E	A	O	C	E	A	N	W	G	Y	K	R	E	Z
U	I	L	Y	O	S	Z	S	N	X	H	A	U	S	N
L	F	U	C	F	W	G	I	I	D	B	W	R	E	W
X	I	G	Q	G	M	S	G	Q	N	R	N	Q	R	D
E	A	G	D	C	W	D	R	D	W	H	C	N	X	Q

### Looking Forward

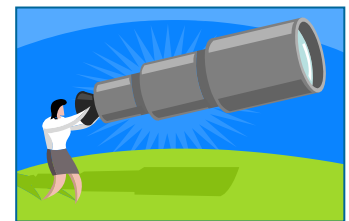
The Florida NHD Stewardship team has long been recognized by the USGS as one of the most active in the nation.

Few stewardship programs have staff and resources dedicated full time to maintaining and updating the NHD. We dedicated these resources because we use the NHD as an essential information resource for the state’s surface water modeling, mapping and water

quality assessments.

Full subbasin editing, using aerial imagery, will continue to be the focus of the editing team as well as isolated updates based on feedback from the end users of the NHD.

GNIS names issues collected during the editing process will continue to be addressed and submitted as applicable to the USGS Board on Geographic Names.



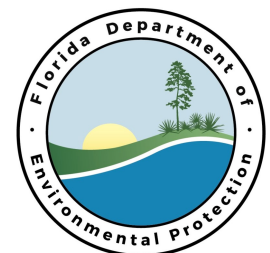
### The Florida NHD Stewardship Team

The Florida NHD Stewardship team currently consists of Jeneane Carter, Maria Rivera, Param Maharaj and Edwin Abbey. These talented GIS professionals work collectively to update the 24K High Resolution National Hydrography Dataset.

Using aerial imagery, elevation and other digital resources, the team reviews portions of the database and updates it based on the best information we have available.

Development, natural and manmade changes have greatly altered the original documented hydrography of the state.

Maintaining the database serves a multitude of users; whether it be for having accurate cartographic representation or having proper delineation and network connections for environmental analysis and decision making.



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