

Document #:	DOWSOP09019
Revision #:	03
Date:	18 June 2009
Pages:	Page 1 of 6

# Standard Operating Procedure

## River Miles GIS Layer: Usage and Error Reporting

### Guidelines

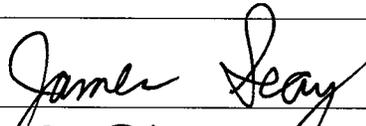
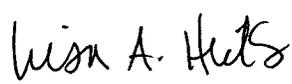
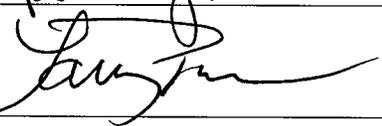
Commonwealth of Kentucky  
 Energy and Environment Cabinet  
 Department for Environmental Protection  
 Division of Water

Effective Date: 11 June 2009

Revision Date: 18 June 2009

Revision No. 03

Document Control No. DOWSOP09019

Action By:	Signature	Date
James Seay Prepared, SOP Author		10 Aug 2009
Jo Blanset Reviewed, Project Manager/Supervisor		08-10-2009
Paulette Akers Approved, Watershed Management Branch Manager		8/12/09
Lisa Hicks Approved, Quality Assurance Officer, Division of Water		8/13/09
Peter Goodmann Approved, Assistant Director Division of Water		8/20/2009
Larry Taylor Approved, Quality Assurance Manager, Department for Env. Protection		8/13/09





Document #:	DOWSOP09019
Revision #:	03
Date:	18 June 2009
Pages:	Page 3

**Purpose:**

The River Miles data layer is intended to replace the three sets of paper USGS topographic maps. These are currently used by several regulatory programs within the Kentucky Division of Water to determine river miles. The electronic data layer was developed and made available to standardize the use of river miles across DOW planning and operations, including regularity and monitoring programs. This SOP is a guide to GIS users and managers for utilizing the NHD River Miles data layer in planning, permitting and monitoring activities.

**Scope:**

The river miles layer covers the entire state of Kentucky (all rivers and streams which bear a valid Geographic Names Information System identification number), including the boundary of the Ohio River. All organizations that intend on using DOW data should also use this layer for river mile determination. See note on the Army Corp of Engineers navigable waters mile determination in section *Standards Applied to the River Miles Layer*.

**Summary:**

The river miles layer should be used in cases where a regulatory program, a model used by a regulatory program, etc. require the use of river miles. The river miles layer can also be used as a 'base layer' in maps (when overlaid on top on the NHD, or other GIS data layers available through the EEC GIS Portal, or the Kentucky GeoNet).

**Definitions:** Define and/or explain terms and acronyms

NHD – National Hydrography Dataset

GIS – Geographic Information Systems

USACE – US Army Corps of Engineers

GNIS – Geographic Names Information System

BGN – Bureau of Geographic Names (Agency which maintains the GNIS)

DOW – Kentucky Division of Water

**Personnel Qualifications/Responsibilities:**

The DOW employee designated to be the Maintainer of the River Miles data layer must be proficient in the use of ArcGIS, and have access to either:

1. The GIS Portal (terminal server)



Document #:	DOWSOP09019
Revision #:	03
Date:	18 June 2009
Pages:	Page 4

2. A 'local installation' of ArcGIS on their workstation. Local installations are currently limited to EEC employees who require GIS software capabilities which are beyond the scope of what is offered through the Terminal Server.

These qualifications also apply to the DOW QA Officer assigned to QA this data.

### **Tools used to build the River Mile Layer:**

1. ArcGIS (Available through the GIS Portal)
2. Hawth's Tools (ArcGIS extension). Available through the GIS Portal. It is also downloadable [here](#).
3. EasyCalculate 5.0. This is a collection of Visual Basic scripts which can be used in the ArcGIS Field Calculator. This package can be obtained from the ESRI [Arcscripts](#) site, or from the author's [website](#).

### **Standards Applied to River Mile Layer**

1. The River Miles data layer is derived from the High Resolution (1:24000 scale) [National Hydrography Dataset](#) Flowline data.
2. River miles are generated only for flowlines which have a valid GNIS ID, a unique identifier assigned by the [Bureau of Geographic Names](#).
3. With the exception of the Ohio River, river miles begin at the mouth of a river/stream (aka RM 0), and proceed to the source.
  - a. In the case of the Ohio River, the river miles follow the [US Army Corps of Engineers](#) guidelines (MP 0 is the confluence of the Alleghany and Monongahela Rivers, in Pittsburgh, PA).
  - b. Please note the USACE provide river miles for rivers the agency deems 'navigable'. USACE river miles follow the navigation channel as depicted in USACE navigation charts, and as such, will not match the river miles in this data set.
4. River miles are generated at increments of one tenth of a mile.
5. River miles have been indexed to the High Resolution NHD, to allow data set to be linked to the NHD as 'Value Added Attributes'.



Document #:	DOWSOP09019
Revision #:	03
Date:	18 June 2009
Pages:	Page 5

## Records Management

### Error Reporting:

The below listed items are the most common issues a user may encounter, as well as a list of information the Maintainer will need to locate, verify and correct the issue.

1. Streams which have not been assigned mile points (ex. A river/stream has a name on a topographic map, but is unnamed in the NHD).
  - a. Name of the river/stream as depicted on the topographic map
  - b. Latitude/longitude where the problem may be found
2. Mile points are backwards
  - a. GNIS Name of the affected stream (this can be obtained from the data table).
  - b. GNIS ID of the affected stream (this can be obtained from the data table).
3. Mile points proceed up the wrong fork
  - a. GNIS Name of the affected stream
  - b. GNIS ID of the affected stream
  - c. Latitude/longitude where the issue occur
  - d. Supporting documentation (ex. Topographic map layer)
4. Mile points which do not match NHD Flowline layer (ex. NHD Flowline layer is edited due to rechanneled stream, but mile points do not follow rechanneled segment)
  - a. GNIS Name of the affected stream
  - b. GNIS ID of the affected stream
  - c. Latitude/longitude where the issue occurs
  - d. Supporting documentation (ex. Topographic map layer)
  - e. (optional) The reach code(s) from the affected mile points.  
These can be found in the data table.
5. Mile points which are out of place (ex. Mile points which do not follow an NHD Flowline, run in a straight line, and topographic map shows these to cross a ridgeline)
  - a. GNIS Name of the affected stream
  - b. GNIS ID of the affected stream
  - c. Latitude/longitude where the issue occurs
  - d. Supporting documentation (ex. Topographic map layer)

Document #:	DOWSOP09019
Revision #:	03
Date:	18 June 2009
Pages:	Page 6

## Quality Assurance and Quality Control

### Resolving Issues Involving GNIS:

1. Any river mile issues involving stream name must first be checked on the BGN database, either with the agency's online search engine (<http://geonames.usgs.gov/pls/qnispublic>) or by checking against the most recent GNIS names list for Kentucky (can be downloaded at [http://geonames.usgs.gov/domestic/download\\_data.htm](http://geonames.usgs.gov/domestic/download_data.htm)).
2. If the error report is corroborated by the GNIS database, the Maintainer must make the necessary corrections to the River Miles layer. In addition, the Maintainer must either:
  - a. Make the necessary corrections to the NHD Flowline data.
  - b. Notify the NHD Data Steward of the needed corrections (in the event the Maintainer is not authorized to edit the NHD data).
3. If the error report is not corroborated by the GNIS database, the Maintainer must:
  - a. Fill out and email the '[Propose or Change a Domestic Geographic Name](#)' form on the BGN website.
  - b. If the BGN reviews agree to the proposed change/correction, the Maintainer will make the necessary edits to the River Miles and NHD Flowline data.
4. In the event a DOW employee other than the designated Maintainer of this data set fills out and submits the BGN form, the Maintainer must be notified of this immediately. Said employee must provide the Maintainer a copy of the following:
  - a. A copy of the filled out form as sent to the BGN.
  - b. A copy of the BGN response.

### Reference Section

This layer may be found in the water resources folder on the GIS Portal server (currently [\\205.204.201.84\data\\$\layerfiles\waterresources](http://205.204.201.84/data$/layerfiles/waterresources)). In addition, it can be downloaded from the [Kentucky GeoNet](#) (search keyword 'River Mile'). Any problems with the river miles data layer must be reported to the Maintainer, as detailed in this document. Additional details regarding how the river miles data layer was built may be found in the SOP *River Miles GIS Layer: Guidelines for Building and Maintaining*.

