**Louisiana NHD Maintenance Training**

**Monday, 14 June - Wednesday, 16 June 2010**

**DAY 1 – Monday, 14 June 2010**

**Introductions:**

Introduction – Bill Smith, 20 years with USGS.

 Ask others to introduce themselves.

 Who are they with?

 Why they are interested in NHD?

 How will they be using NHD?

**Housekeeping:**

Class - :0800 to :1600 hrs CDT.

Breaks – 15 minutes each, please attempt to come back on time!

Break room?

 Vending Machines?

Restrooms?

Lunch – 1 hour.

 Where?

 Time? :1130 - :1230?

**Description of Maintenance Training Class:**

This class will discuss the NHD Maintenance process from beginning to end, and all NHD Maintenance tools, including the NHD GeoEdit Tool version 3.3.2 using model 1.06 data. This class will review the full maintenance process starting with a flow diagram detailing the process. Once the process has been highlighted, we will enter ArcMap and complete hands-on each step in the maintenance process.

**NHD Maintenance Flow Diagram:**

Have class open NHDFlowDiagram.pptx.

(NHDFlowDiagram.pptx can be found in PowerPoints\_Introduction directory)

 Review entire flow diagram, answer all questions.

 Do not move forward until all understand!

**NHD Maintenance Check List:**

Have class open NHD High Resolution Maintenance Checklist HTML Document.

 (Maintenance Checklist can be found in ArcGIS\_9.3 directory)

 Explain digital version with hot links to PowerPoints.

 Discuss entire process briefly, indicate the document will continuously change!

 Review each step in production process!

 Review entire document, discuss ‘why’, not ‘how’!

 Let students know NOT ALL functions shown must be completed!

**NHD Editing Using the NHD GeoEdit Tools:**

Open ArcMap session, add NHD Task Manager, add NHD GeoEdit Tools through Task Manager.

 Walk through list of Tools.

 Discuss how tools are very similar in approach for each function.

 Discuss the ‘Apply Rules’ function.

 Discuss required Metadata.

 Discuss ‘Import’ function. ‘Import’ function is available for all feature classes.

Open NHDinGeo\_table\_edits\_2\_21\_2007.xls.

(NHDinGeo\_table\_edits\_2\_21\_2007.xls can be found in Documents\_Concepts directory)

 Discuss how each record in all tables that must be modified with every step is listed.

Load NHD data into ArcMap.

 Discuss Features Classes and Features.

 Symbolize data.

 Discuss manual symbolization and Layer files.

 Discuss tables, in particular completely discuss the ‘Status’ table and why it is critical!

Open NHD High Resolution Maintenance Checklist HTML Document.

Start Maintenance process.

 **Step 1: Project Setup**

 Discuss importance of developing a particular naming convention and directory structure.

 Discuss the pre-staged directory structure found in New\_Project\_Name directory.

 **Step 2: Reproject Geographic to Albers**

 Open ArcCatalog.

 Discuss reproject process. Why are we reprojecting from Geographic to Albers?

 Discuss all versions of reproject templates, personal and file geodatabase.

 Discuss verifying the reproject worked properly.

 **Step 3: Create New Feature Class**

 ArcCatalog.

 Discuss why we create these extra feature classes, for importing new data into the NHD.

 **Step 4: Build Topology**

 ArcCatalog.

 Discuss why we are still running these checks. DO NOT VALIDATE in ArcCatalog!

 **Step 5: Load Geodatabase Data into ArcMap**

 Discuss required Toolbars.

 Discuss ‘Options’.

 Set ‘Display Measurements using’ to ‘9’ or ‘12’ places after decimal point.

 Set ‘Snap Tips’ to ‘On’.

 Set ‘Sticky Move Tolerance’ to ‘50’.

 Discuss ‘Setup NHD Edit Database’.

 If ‘Task Assistant’ is not opened, open ‘Task Assistant’.

 Load NHDGeoEdit Tool, show location of tool using Windows Explorer.

 Create Metadata, discuss why this is required.

 **Step 6: Resolve Topology Errors**

 Discuss ‘Validate Topology’ using ArcMap.

 Discuss changing location of topo layers in TOC.

 **Step 7: Remove Topology Layers**

 ArcCatalog.

 Removing these topology layers is for good housekeeping.

**DAY 2 – Tuesday, 15 June 2010**

Continue with NHD Maintenance process.

 **Step 8: Locate and Resolve all Gapped and Branched Reaches and GNIS Names**

 What is a gapped or branched ReachCode?

 Why is a gap or branch a problem?

 Also run gapped and branched on GNIS names.

 Why?

 **Step 9: Verify Artificial Paths are NOT Present Outside of NHDAreas/NHDWaterbodies**

 Find and fix all NHDFlowlines errors greater than 1 meter.

 **Step 10: Verify StreamRivers are NOT Present Inside of NHDAreas/NHDWaterbodies**

 Find and fix all NHDFlowline errors greater than 1 meter.

 **Step 11: Resolve all Waterbody Area ComID Issues**

 Find and fix all NHDflowline features missing the correct Waterbody/Area ComID.

 **Step 12: NHDFlowCheck**

 Make copy of \*\_alb.mdb, rename, and run FlowCheck

Generate new network.

Run Check OrigAZ and OrigFD for Null or 999 values. If 999 found, check for zero length.

 **Step 13: Extract Transactional Updates**

 Run XMLExtract to find all records in ‘Status’ table and convert to XML formatted file.

 This will find any errors created in the above processes.

 **Step 14: Complete any Required Corrections from XMLExtract**

 Correct all errors noted from the XMLExtract process in the \*\_alb.mdb file.

 **Step 15: Updates and Revision**

 Use GeoEdit Tools to add, delete, modify geometry, modify attributes, or any other edit you

wish to make in the dataset.

 Perform all edits on the \*\_alb.mdb file.

 **Step 16: Extract Transactional Updates**

 Run XMLExtract to find all records in ‘Status’ table and convert to XML formatted file.

 This will find any errors created in the Update and Revision processes.

 **Step 17:** **Complete any Required Corrections from XMLExtract**

 Correct all errors noted from the XMLExtract process in the \*\_alb.mdb file.

 **Step 18: Reproject Data from Albers to Geographic**

 Why are we reprojecting back to Geographic?

 **Step 19: Extract Transactional Updates**

 Run XMLExtract to find all records in ‘Status’ table and convert to XML formatted file.

 **Step 20: Load Transactional Updates**

 Loads all edits found in the ‘Status’ table and converted to the XML formatted file into a copy of

original data extracted from the Stewardship homepage.

 This process simulates the upload process to the national geodatabase.

**DAY 3 – Wednesday, 16 June 2010**

Continue with NHD Maintenance process.

 **Step 21: Quality Control Checks**

 These are QC checks made by the editor to verify work is completed correctly.

 This will make the upload process to the national geodatabase easier and quicker.

 In all cases, errors are found in the \*\_qc.mdb and resolved in the \*\_alb.mdb dataset!

1. Build and Run Topology Checks.
2. Locate and Resolve all Gapped or Branched ReachCodes and GNIS Names issues.
3. Verify Artificial Paths are NOT Present Outside of NHDAreas/NHDWaterbodies.
4. Verify Artificial Paths are NOT Present Inside of NHDAreas/NHDWaterbodies.
5. Verify all NHDFlowline have correct NHDArea/NHDWaterbody ComIDs.
6. Run Network Checks.
7. Verify Records in all Feature Class tables are properly populated.
8. Verify ComIDs are valid in all appropriate tables.

 **Step 22: Reproject Corrected (QC) data from Albers to Geographic**

 Why are we reprojecting to Geographic a second time?

 **Step 23: Final Extract Transactional Updates**

 Run XMLExtract to find all records in ‘Status’ table and convert to XML formatted file.

 This is being done on the edited, QCed, and corrected data.

 **Step 24: Final Load Transactional Updates**

 This takes all edits from the entire process and loads the updates into a NEW copy of the original

 data extracted from the Stewardship homepage.

 **Step 25: Move Final Copy to Geo Load Folder**

 You will copy/paste a copy of the final Geographic (\*\_geo.mdb) to the Geo Load folder and

 rename the file from \*\_geo.mdb to \*\_Geo\_Load.mdb.

 **Step 26: Build Flow Table for Final Submittal**

 This step currently is optional. You do not have to do this at this time!

 **Step 27: Add Stream Levels**

 This step currently is optional. You do not have to do this at this time!

 **Step 28: Remove Geometric Network**

 Delete the Hydro\_Net and Hydro\_Net\_Junctions feature classes using ArcCatalog.

 **Step 29: Compact Database**

 Use ArcCatalog to compact the geodatabase.

 **Step 30: Submittal for Load**

 Zip certain files and place zip file in USGS FTP site.

 ftp://rockyftp.cr.usgs.gov/ngtoc/hydro/load

 Make sure to email someone to let them know to look for submitted file.

 USGS will review your edits and verify edited database is ready for loading into the national

 geodatabase.

Question and Answer period for NHD Maintenance process and NHD GeoEdit Tools.

 This is your chance to ask any questions you may have on the Maintenance process or the NHDGeoEdit

 tool.