NORTH CAROLINA BOARD OF EXAMINERS
FOR ENGINEERS AND SURVEYORS

POLICY

Title: **Wetlands Mapping Policy**

Policy Number: BP-1005-4 Rev. 2

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Category(s): Surveying Practice

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Wetlands Survey**:** A survey showing the boundaries of an area delineated as "jurisdictional waters of the US." Wetland Boundaries shall be tied by course and distance to either 1) property corners that are properly monumented and verified, or 2) project boundaries that have been properly monumented, or 3) NC State Plane Coordinates System. This shall be done in a manner that permits future surveyors to readily retrace the wetland boundary. The calculated ratio of precision before adjustments or statement of positional accuracy of such ties must be consistent with the land use classification of the parcel being surveyed as described in Board Rule 21-56.1603. Data collection and platting of these types of wetland boundaries must be performed by or under the direct supervision of a ~~surveyor~~PLS. A PLS or PE may only accept wetlands survey data from a PLS for the purpose of showing the information on survey plats, engineering drawings (other than Preliminary Planning drawings), permits or reports. Any location data generated by delineators is only for the use of the PLS in performing a survey of the wetland boundary and should be noted with a disclaimer to that effect. The preliminary wetland map with a disclaimer by the delineators, that the location data is not to be relied upon for accuracy and is only for appropriate use by a PLS or PE, may be used by a PE for Preliminary Planning Purposes. If equipment other than survey grade accuracy equipment is used on the survey, a statement indicating the equipment, procedure, and position tolerances (21-56.1608) used for the work must be clearly stated on the plat or work product. Only surveyed wetlands may be placed on a property plat.

Data provided by a Government Agency can be depicted as long as the source of the information used is disclosed and denoted as lines not surveyed within the plat or report.

The mapping of ~~conservation easements,~~ buffers or other boundaries shall be done by, or under the responsible charge of, a PLS and conform to the same requirements as stated for wetland boundaries.

Environmental Coordination & Permitting Group-Environmental Analysis Unit

GPS/CADD Information-January 2018

TRIMBLE PATHFINDER OFFICE

- To set Pathfinder Office for export in the "PDEA ASCII" format: The Pathfinder Office Export registry key must be replaced with the "GPSexport.reg" file (request via ECAP@ncdot.gov). Carefully delete the Pathfinder Export Folder from the registry then run the GPSexport.reg file.

GPS/CADD STANDARDS

GPS settings:

- Use PDEA Data Dictionary Version 5 (request via ECAP@ncdot.gov).
- Minimum logging interval of 1 second for point features, minimum of 20 positions per point
- Either use:
  - Trimble Smart Settings or;
  - Elevation mask of 15°, SNR mask of 6.0 A **PDOP of 6.0** or less must be used.
- Export to PDEA ASCII English, unless specified otherwise.

GPS data:

- Wetland and/or protected species boundaries are to be recorded with **points**, not lines or areas
- Use 'point generic' feature to GPS wetland/upland data form locations and intermittent/perennial transitions for streams
- For streams, use appropriate stream feature: "JS MIT" or "JS Non-MIT" -(JS = Jurisdictional Stream and MIT = Mitigation). For ponds and tributaries use "JS Non-MIT"

Nomenclature:

- Features should be labeled and provided in the wetland file in the following format:
- *Wetlands* -WA, WB, WC…WAA, WAB, WAC [Points should correspond to wetland ID (WA1, WA2, WA3…)]
- *Streams* -SA, SB, SC… SAA, SAB, SAC [Points should correspond to stream ID (SA1, SA2, SA3…)]
- *Ponds*-PA, PB, PC…PAA, PAB, PAC [Points should correspond to pond ID (PA1, PA2, PA3…)]
- *Tributaries to Waters of the U.S.*-TA, TB, TC…TAA,TAB,TAC [Points should correspond to tributary ID (TA1, TA2, TA3…)]

Note: All jurisdictional streams need to be represented and labeled in the wetland file. Additionally, a feature name should be assigned for representation in NRTR unless the project only crosses one named stream. If this is the case, then stream name should be given only.

Microstation:

- You are to submit: 1) Corrected or real-time GPS file, 2) GIS shape file, 3) Microstation V8i wetland design file
- Appropriate nomenclature for wetland files:
  - TIP_NAT_WET.DGN for USACE verified wetlands
  - TIP_NAT_WEX.DGN for unverified wetland files

- Other that changing WEX to WET, no other file name changes are allowed. If a revision is made to an original file, a copy of the original file should be placed in an archive folder along with a text file explaining what changes were made.

- Set element scale for all projects to 50.

- The swamp/marsh cell should be placed throughout the wetland area but the density should not obscure other information.

- When using the Natural Environment Workspace, the NES toolbox can be used to set scales and assign appropriate levels for features.

- Numbered levels are no longer used or accepted. Usage of the appropriate level will automatically assign the correct line style, weight, and color to a feature.

- Do not use features on a level that are not designated for that level--supplementary features or information will be placed on the "Default" Level. For example, wetland/upland or stream form points are to be placed on the "Default" Level.

- Additional information for nomenclature and setting up Microstation Workspaces can be found at:

  https://connect.ncdot.gov/resources/CADD/Pages

PLS Scope of work for wetland boundaries as contracted through the NCDOT Environmental Analysis Unit

Biologist will provide visible location of wetland boundaries by flag, ribbon, nails, etc., for survey crew/member to locate, unless survey crew/member accompanies biologist to the field. Flags, ribbons, etc. will be numbered in some logical fashion, i.e. concurrent numbers indicating boundary perimeter.

Surveyor will use some type of non-destructive survey equipment such as survey or mapping grade GPS to locate points as designated.

All data will be tied horizontally to the most recent adjustment of NAD 83, NC State Plane Coordinate System unless otherwise specified by NCDOT.

The deliverables from the surveyor to the biologist will be:
1) Two maps, one original and one copy, both on paper. This map shall be a signed and sealed map of the wetland boundary, showing North arrow with datum reference, vicinity map, and wetland boundary, with statement reading:

"I, _____certify that this plat was drawn under my supervision from an actual Class B (or better) LIS/GIS survey made under my supervision on_____(dates of survey); that _____(method of measurement with manufacturer and model number) was used in this survey; that the method of accuracy evaluation was_____; that all wetland boundary lines were surveyed and are clearly indicated; that the horizontal datum for this survey is_____(NAD 83 or other adjustments).

Witness my original signature, registration number and seal this_____day of_____, A.D.,_____. Seal or Stamp

_____
Surveyor Name Registration Number"

This map will not be recorded, and should be marked "Wetland Boundary for NCDOT: Not For Recordation" This map will include a table of coordinates for all surveyed wetland points, with associated numbers from the biologist's field delineation. The map should be of a reasonable size to display the wetland boundary plus all notes, seals, etc.

2) A CAD file that accurately represents the signed and sealed map.

The deliverable from the biologist will be 1) A copy of the signed and sealed survey map 2) An accurate representation of the surveyor's map in .dgn format, as previously defined by the Environmental Analysis Unit (this may be provided by the surveyor).