

Maryland's *Draft* Wetlands Delineation Methodology

(GIS Processing Methods – 2012 conditions)

Overview

Maryland developed both spatial and tabular estimates of wetlands for Chesapeake Bay Program (CBP) Phase 6 watershed model land-river segments for 2012 conditions. These methods were developed by Maryland Department of the Environment (MDE) and CBP. National Wetlands Inventory (NWI) data are the primary data source used for mapping wetlands in Maryland. Maryland Department of Natural Resources (MD DNR) wetlands mapping data is also applied. Open water areas from the National Hydrography Dataset (NHD) are used to delineate open water areas that should not be classified as wetlands, and Federal Emergency Management Administration (FEMA) floodplain data is used to differentiate between wetlands that are inside and outside of a floodplain. This document functions as technical documentation of the Geographical Information System (GIS) methods followed to standardize methods and ensure quality. This was not intended as a broad overview of the wetlands methodology.

Process

The following presents the individual steps that were used to delineate both spatial and tabular estimates of wetlands for the CBP Phase 6 watershed model land-river segments:

1. Download MD DNR wetland data from <http://dnrweb.dnr.state.md.us/gis/data/>
 - o **Merge** individual DNR wetland shapefiles (only polygon) together.
 - o If not projected in NAD 1983 Maryland State-Plane meters, **Project** to this coordinate system.
 - o Extract applicable wetland codes from MD DNR data and create new file (**export**). These codes include:
 - Estuarine Codes - E2EM, E2SS, E2FO
 - Riverine Codes - R1EM, R2EM, R3EM, R4EM, and R5EM
 - Lacustrine - L2EM
 - Palustrine - PEM, PSS, and PFO

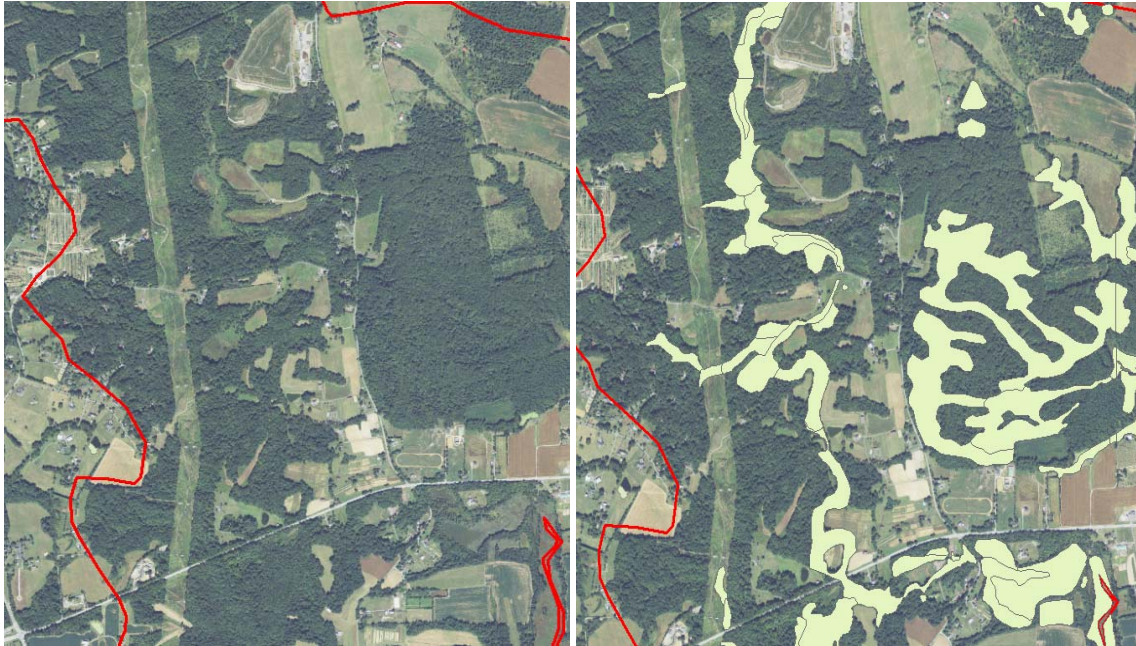


Figure 1: MD DNR data with emergent vegetation extracted based on applicable wetland codes

2. Download NWI wetland data from <http://www.fws.gov/wetlands/Data/Data-Download.html>
 - If not projected in NAD 1983 Maryland State-Plane meters, **Project** to this coordinate system
3. Add Phase 6 watershed model segmentation to map project
 - Select county model segments by FIPS code or county name and create new file (**export**)
 - **Clip** NWI wetland data to county model segments
 - Extract applicable codes from NWI data and create new file (**export**)
 - Same as DNR codes

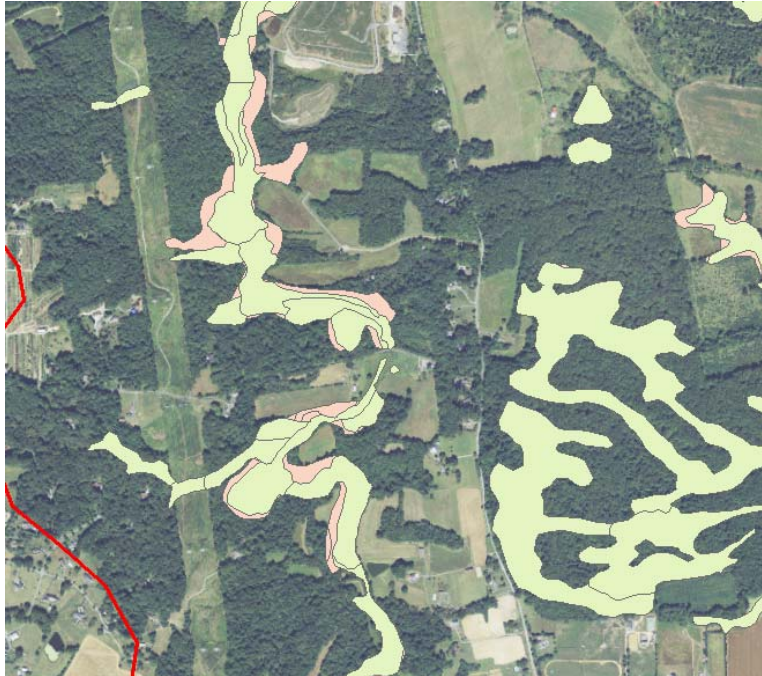


Figure 2: NWI data with emergent vegetation extracted based on applicable codes overlay with MD DNR wetlands data

4. **Union** NWI and DNR data
 - Add a field called "CBP" (Text, 50 characters)
 - Select all estuarine codes (Code = "E"): ATTRIBUTE (NWI) and CLASS (DNR) fields
 - Use field calculator, and set *CBP* field = "Tidal".
 - Clear selected feature
5. Run **intersect** between union wetland file and county model segments
6. Run **dissolve** by land-river segment code and *CBP* field in wetland data
7. Download NHD waterbody file: <http://nhd.usgs.gov/>
 - Extract estuaries, lakes/ponds, and reservoirs and create new file (**export**)
 - FTYPE = "Estuary", "Lake/Pond", or "Reservoir"
8. Use new estuary, lake/pond, and reservoir file to **erase** underlying wetland areas

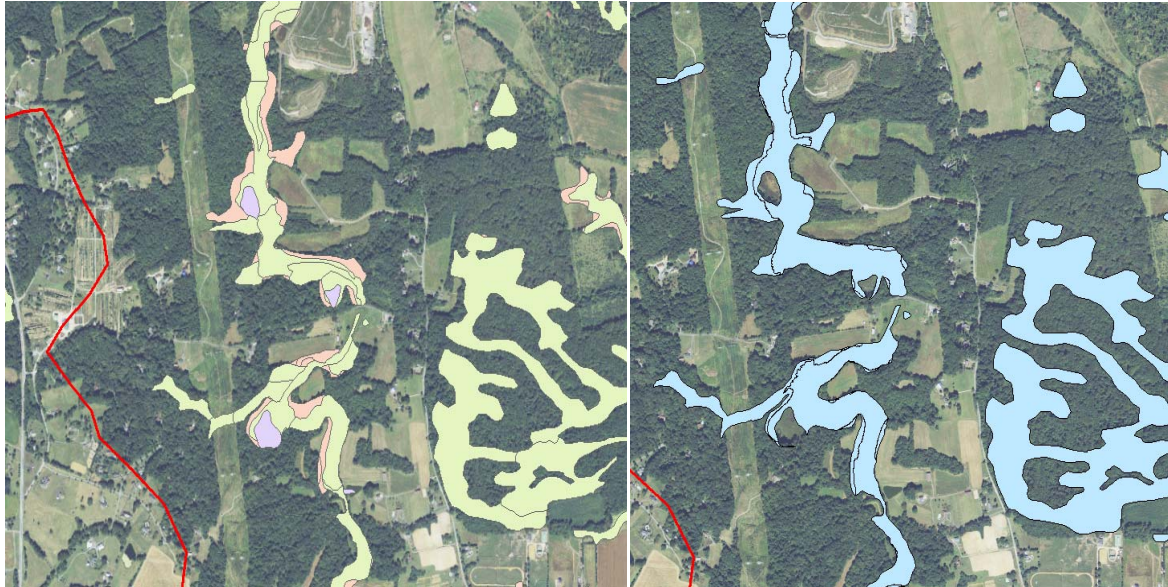


Figure 3: Union NWI and DNR Wetland data, then use extracted NHD waterbody file to erase open water areas in the wetlands file

9. Download FEMA floodplain data

- Effective:
http://data.imap.maryland.gov/datasets/fc7172e8f3324ddb94986c52ac249d22_1
- Preliminary:
http://data.imap.maryland.gov/datasets/fc7172e8f3324ddb94986c52ac249d22_0
- If not projected in NAD 1983 Maryland State-Plane meters, **Project** to this coordinate system
- Extract 100 yr floodplain areas and create new file (**export**)
 - FLD_Zone Codes: "A", "AE", "AO", and "VE"
- **Clip** to county model segments from Step 3

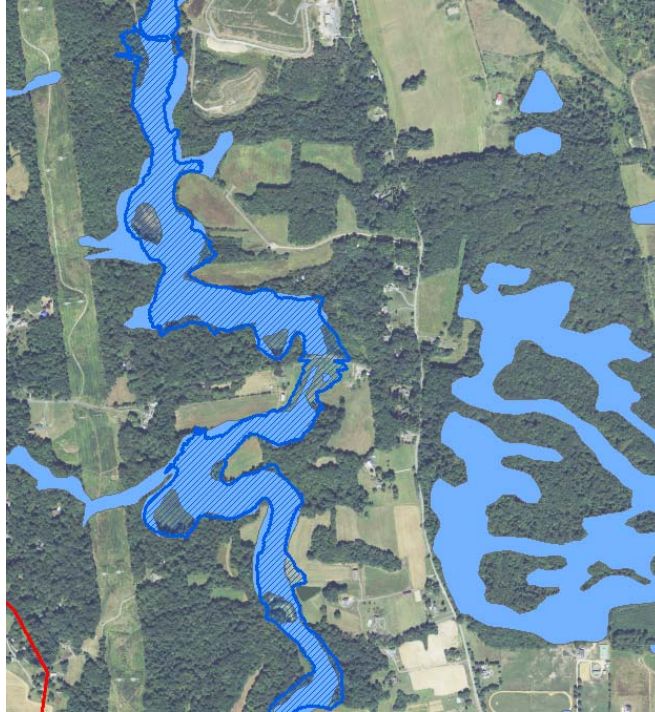


Figure 4: 100-Year Floodplain data was super-imposed to differentiate Floodplain and Headwater areas.

10. **Union** extracted floodplain file with erased wetland file
 - Delete all records that are only floodplains and not wetlands
 - Delete all Land-River Segment fields that are null
 - Select all records that are floodplains (FLD_Zone is not “null”) and CBP is not “Tidal”, and classify in CBP as “Floodplain”, i.e., CBP = “Floodplain”
 - Select all remaining records where CBP is null, and set CBP = “headwater”
11. **Dissolve** by “CBP” field and land-river segment field
 - Add field for acres
 - Calculate geometry
 - Run **summary statistics**