
# High-resolution Wetland Classification and Mapping Updates

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# Disclaimer

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# Overview

- Ponds mapping methodology in version one (v1)
- Tidal wetlands methodology in v1
- Non-tidal wetlands methodology in v1
- Challenges in mapping headwater wetlands

# Mapping Ponds

# Ponds in 2017/18 Land Use

- Differentiate open water in land cover as flowing water versus lakes, ponds, reservoirs etc.,
- Authoritative datasets:
  - National Hydrography Dataset (NHD)
  - National Wetland Inventory (NWI)

# Issues with NHD and NWI ponds

- Vintage / hand digitized
- Often do not conform to topography or imagery and generally don’t align with DEMs
- Crude and exaggerated geometries

# Ponds Count by County

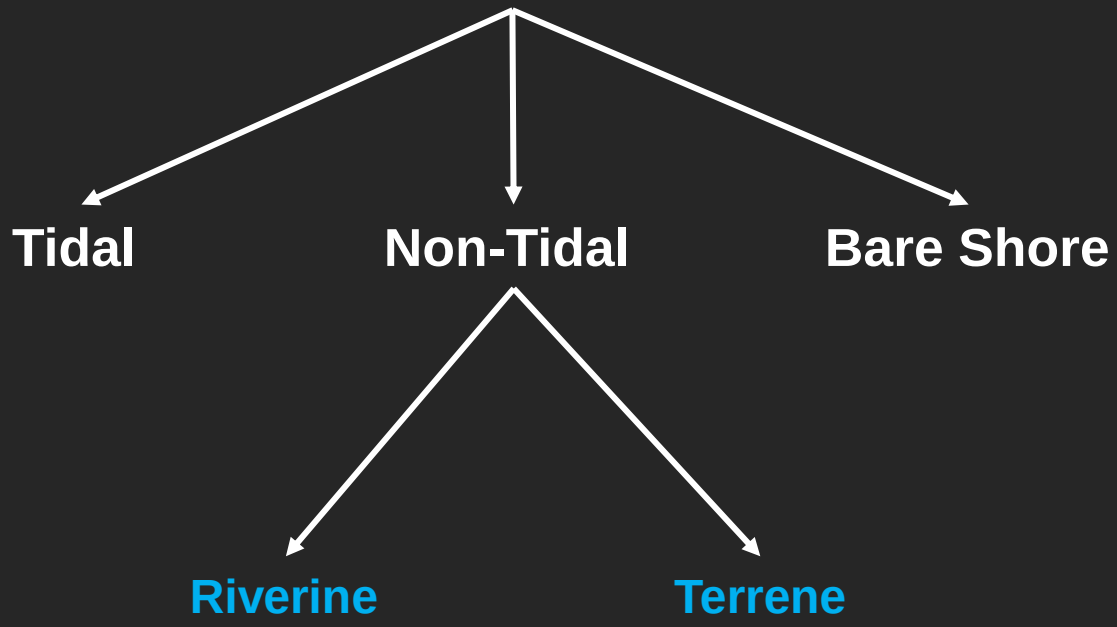
| FIPS | County (State) | LU (2017/18) | NHD | NWI |
|---|---|---|---|---|
| 10005 | Sussex (DE) | 4328 | 1850 | 3667 |
| 24005 | Baltimore (MD) | 1506 | 979 | 2031 |
| 24035 | Queen Annes (MD) | 1235 | 425 | 1420 |
| 24045 | Wicomico (MD) | 2224 | 483 | 868 |
| 36017 | Chenango (NY) | 4825 | 667 | 3146 |
| 42015 | Bradford (PA) | 4587 | 2350 | 2785 |
| 42033 | Clearfield (PA) | 3896 | 2173 | 2779 |
| 42041 | Cumberland (PA) | 1173 | 949 | 674 |
| 42071 | Lancaster (PA) | 2835 | 2030 | 2110 |
| 51015 | Augusta (VA) | 842 | 2531 | 2559 |
| 51073 | Gloucester (VA) | 711 | 193 | 366 |
| 51107 | Loudoun (VA) | 1003 | 2275 | 1618 |
| 854003 | Berkeley (WV) | 1822 | 918 | 952 |
| 54031 | Hardy (WV) | 1358 | 611 | 965 |

# Median pond size by county

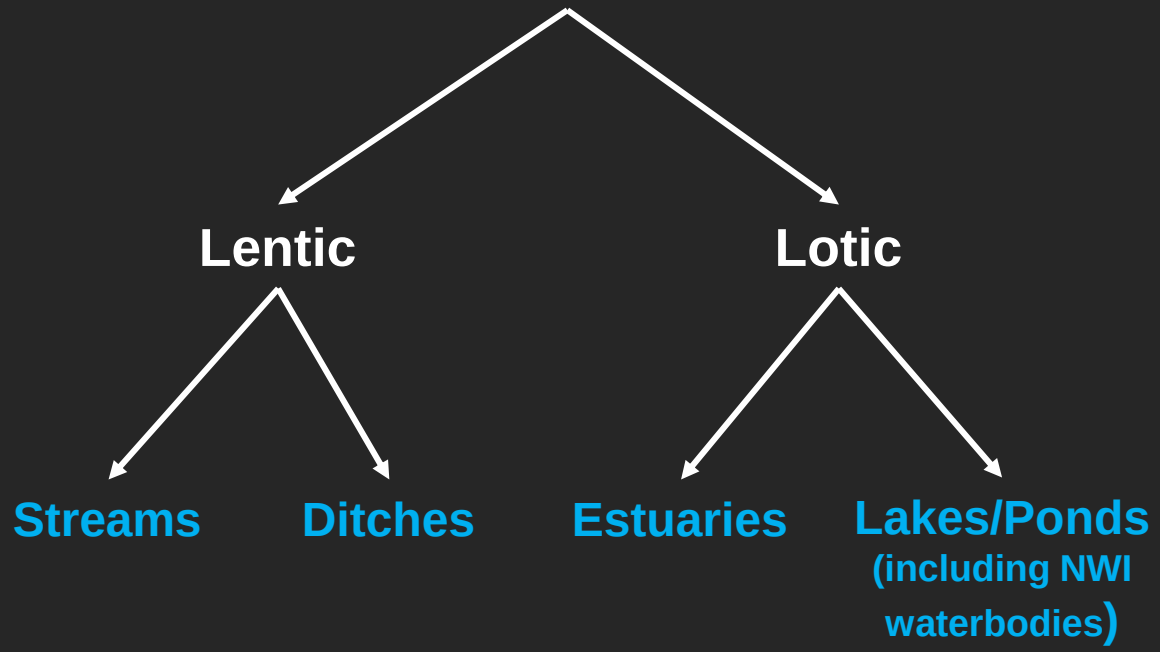
| FIPS | County (State) | LU (2017/18) | NHD | NWI |
|---|---|---|---|---|
| 10005 | Sussex (DE) | 1108 | 1842 | 1420 |
| 24005 | Baltimore (MD) | 1107 | 1306 | 1337 |
| 24035 | Queen Annes (MD) | 1093 | 1868 | 1650 |
| 24045 | Wicomico (MD) | 446 | 1327 | 1577 |
| 36017 | Chenango (NY) | 775 | 1835 | 768 |
| 42015 | Bradford (PA) | 1342 | 1268 | 1224 |
| 42033 | Clearfield (PA) | 757 | 1088 | 1000 |
| 42041 | Cumberland (PA) | 1082 | 1015 | 2001 |
| 42071 | Lancaster (PA) | 1129 | 1251 | 1469 |
| 51015 | Augusta (VA) | 1584 | 658 | 1017 |
| 51073 | Gloucester (VA) | 590 | 3570 | 2767 |
| 51107 | Loudoun (VA) | 4336 | 1719 | 1987 |
| 854003 | Berkeley (WV) | 1099 | 778 | 1320 |
| 54031 | Hardy (WV) | 1344 | 653 | 836 |

# Mapping Wetlands: Tidal & Non-Tidal

# Wetlands and Water Margins




# Water

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# Tidal wetlands

Emergent vegetation within 1-ft of adjacent tidal waters and connected lands including some forests categorized as tidal wetlands in the National Wetlands Inventory (NWI), e.g., ‘Estuarine and Marine Wetland”, “Estuarine and Marine Deepwater”, “Freshwater Emergent Wetlands”.

# Tidal wetlands


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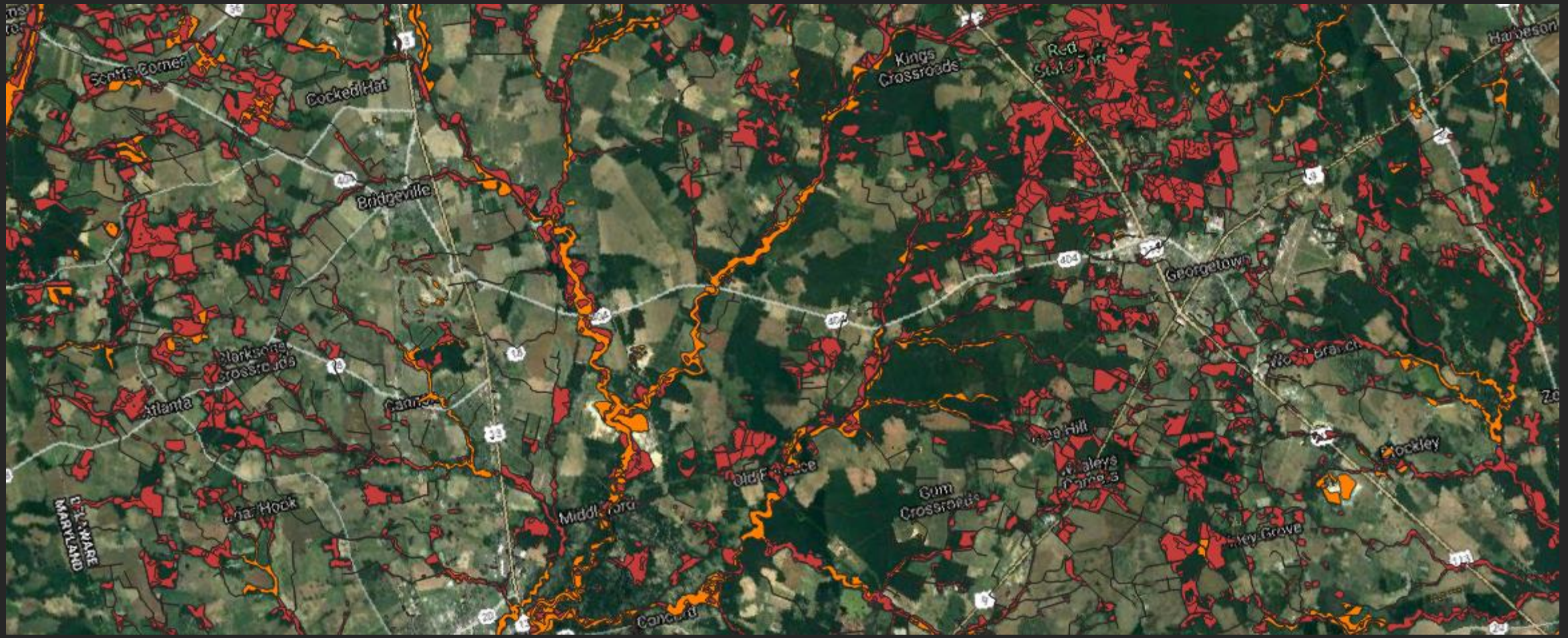
# Non-tidal wetlands

Riverine Wetlands: NWI and topographically potential wetlands partially or completely associated with riverine systems. Riverine systems were mapped using a combination of topographically derived flow paths, SSURGO's frequently flooded and hydric soils, and FEMA's 100-year floodplain.

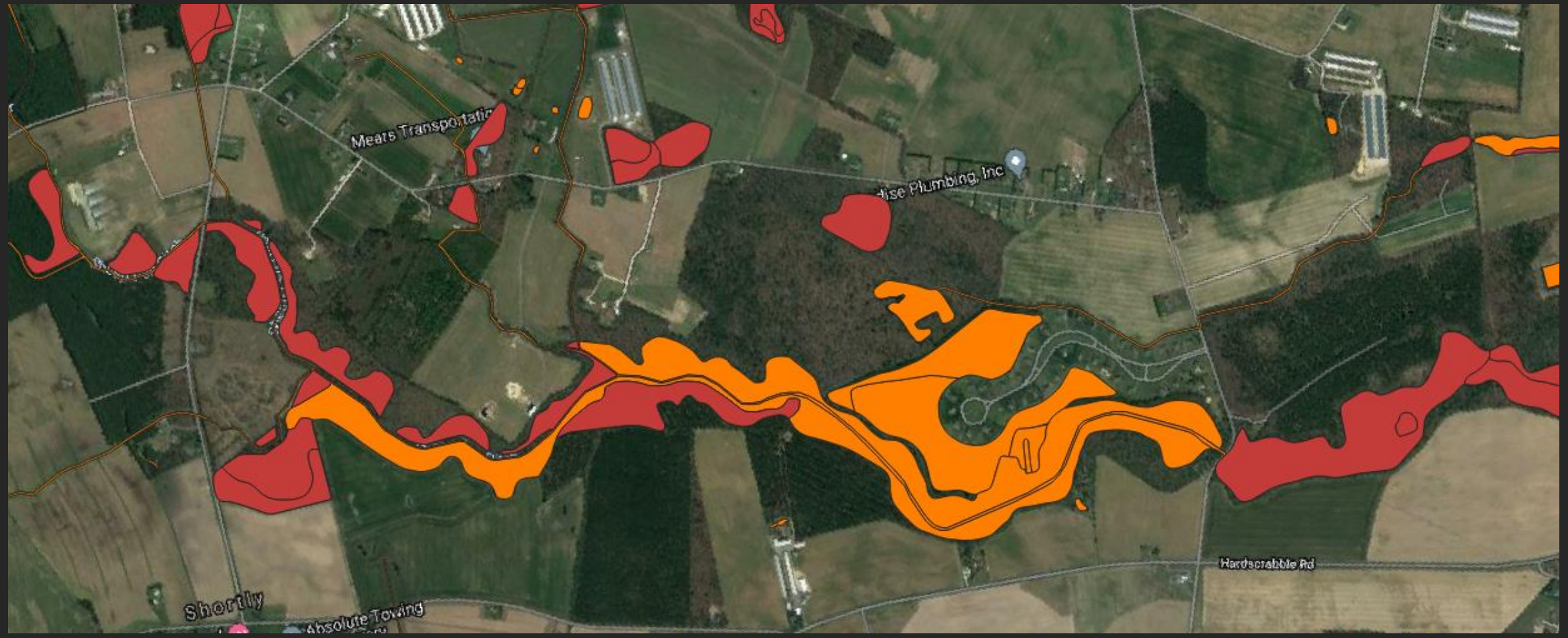
Terrene/Isolated Wetlands: NWI and topographically potential wetlands not associated with tidal waters or riverine systems.

# Non-Tidal Wetlands

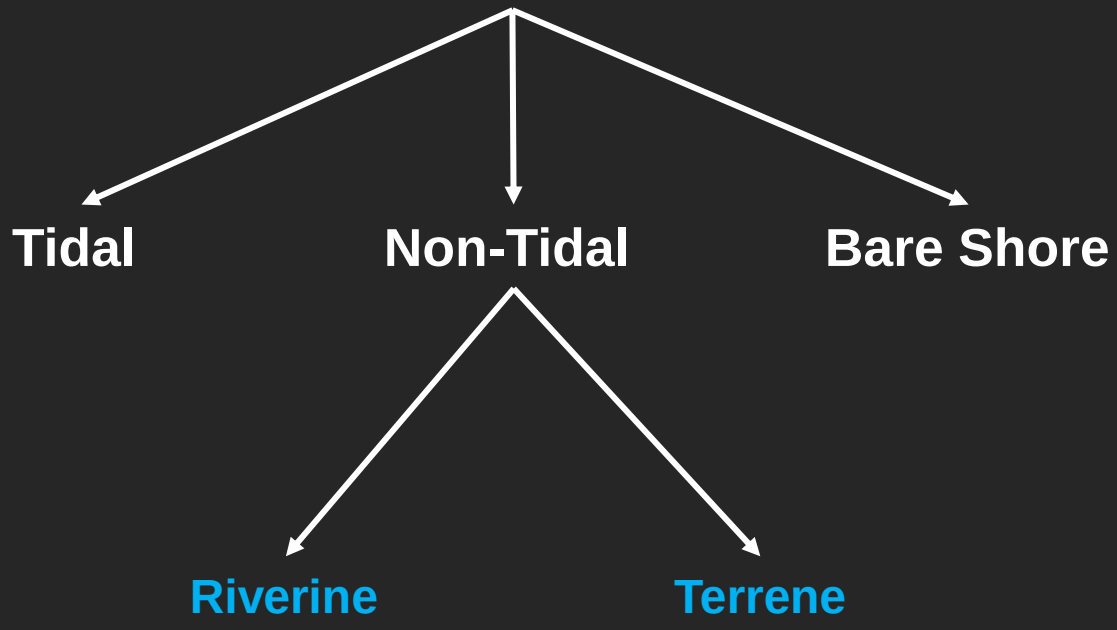
# NHD supplemented NWI

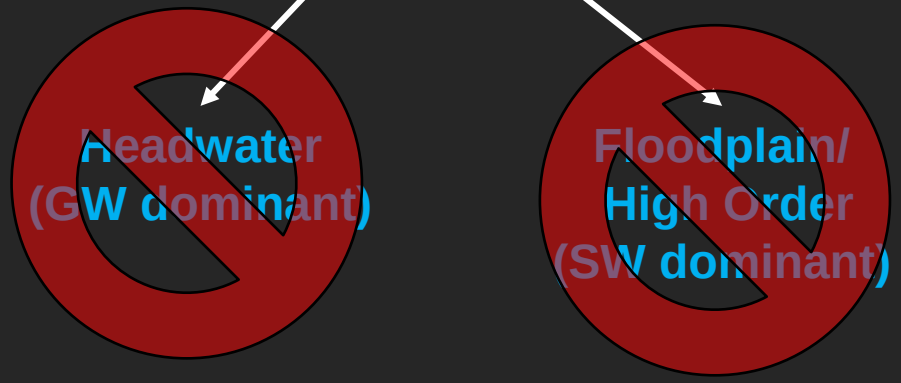


# NHD supplemented NWI




## Wetlands and Water Margins

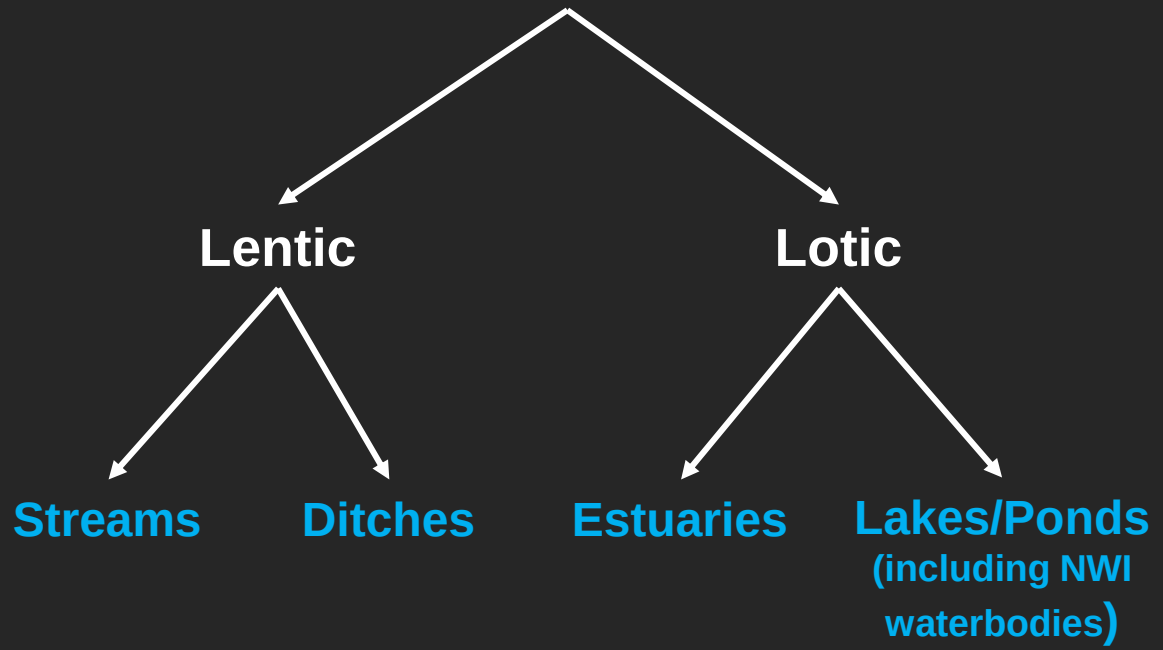






## Water




Discriminating headwater vs floodplain wetlands requires a detailed functional assessment involving topographic position, flow routing, flow permeance and soil characteristics at fine-scale

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# Differentiate Headwater vs Floodplain Wetlands

*“Headwater Wetlands are the source of streams or located along first and second order perennial streams plus upstream intermittent watercourses”*

Source: https://www.fws.gov/northeast/ecologicalservices/pdf/presentations/GeographicallyIsolatedandHeadwaterWetlandsInNewEngland.pdf

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# Challenges with headwater wetlands

- Scale: NHD 1:24k versus hyper res. data
- First and second order streams are tricky
- Missing fine-scale information e.g. flow permanence

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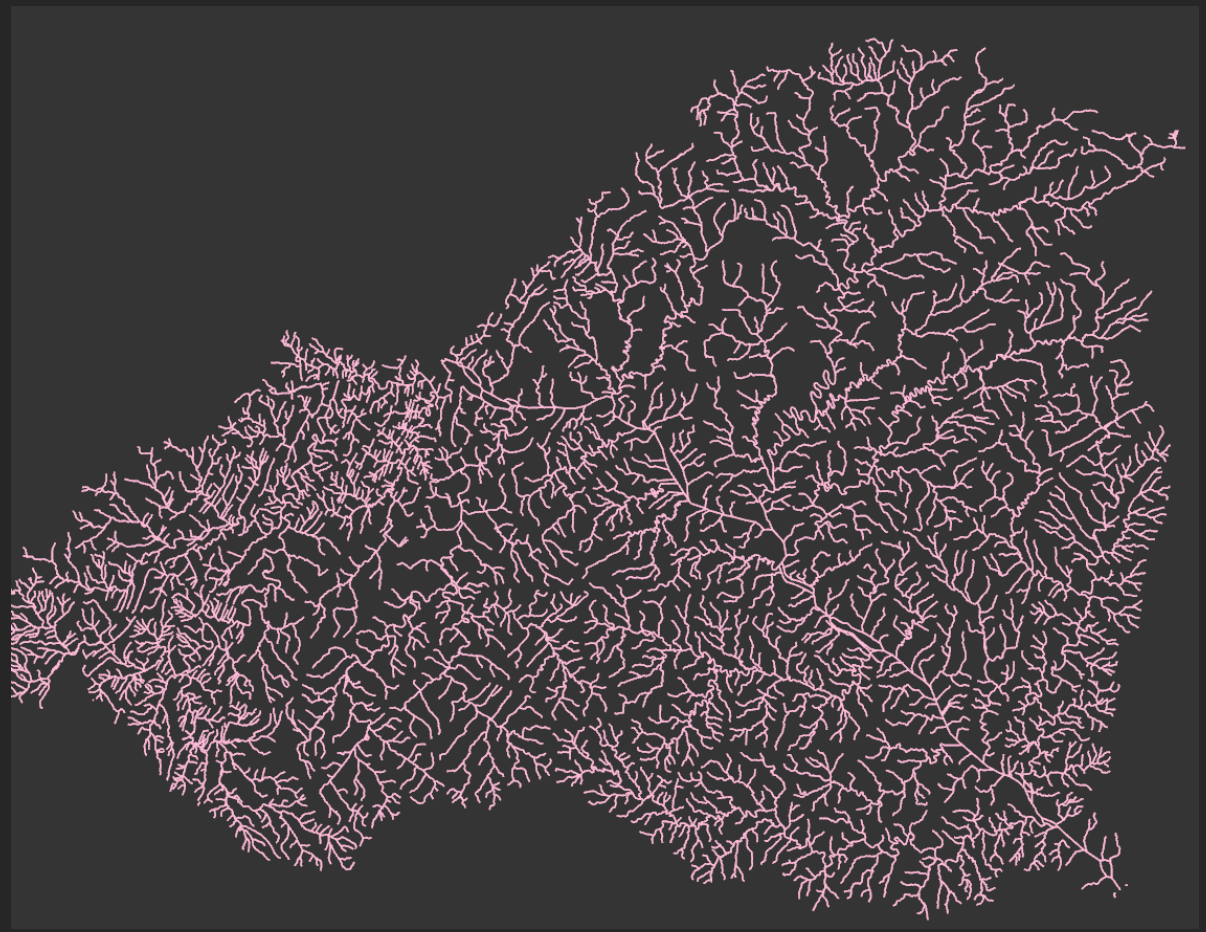
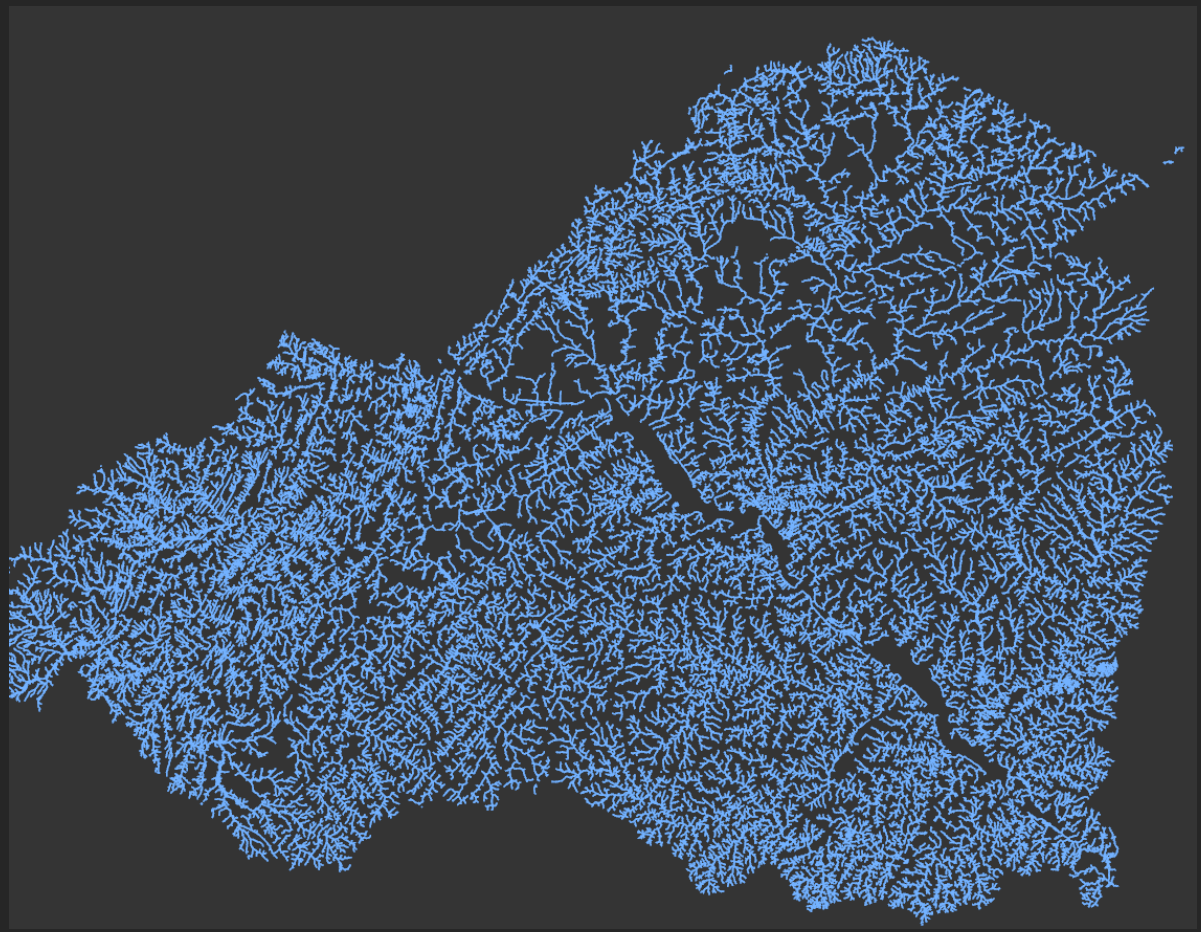
# Alternative Stream Resolutions

## Lower Susquehanna Example

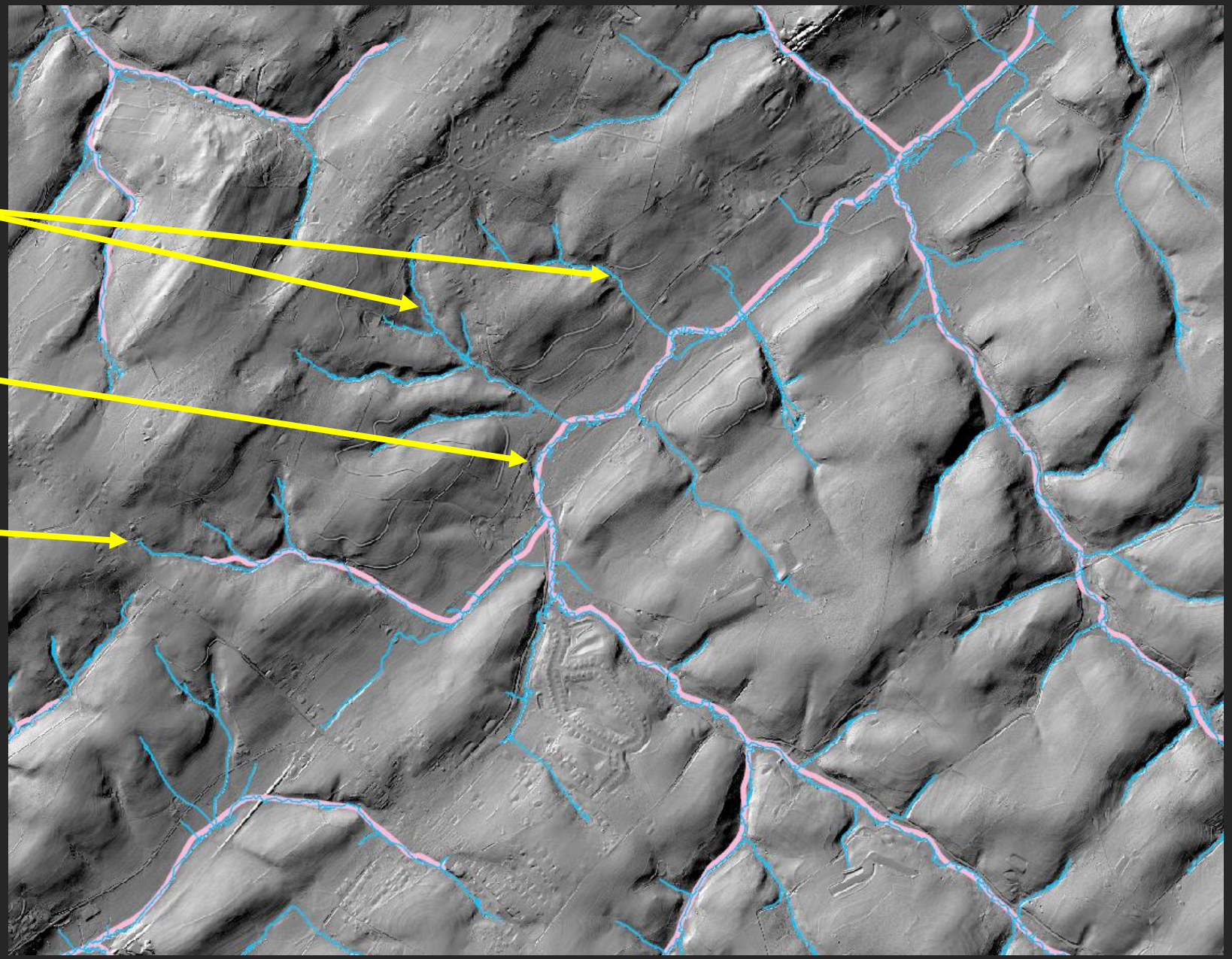
National Hydrography Dataset, 1:24,000
6,923.6 km



CBP Hyper-Resolution Streams, 1:2000
16,784.6 km



# Why the 2x difference in stream length?



# Questions for the workgroup

- Is any group and/or agency already pursuing watershed level functional assessment?
- Given the challenges, does the workgroup still want us to pursue mapping headwater vs floodplain wetlands?
- Work towards wetland functional assessment for Phase 7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