Land Use Classification Proposed Rules 1/8/21

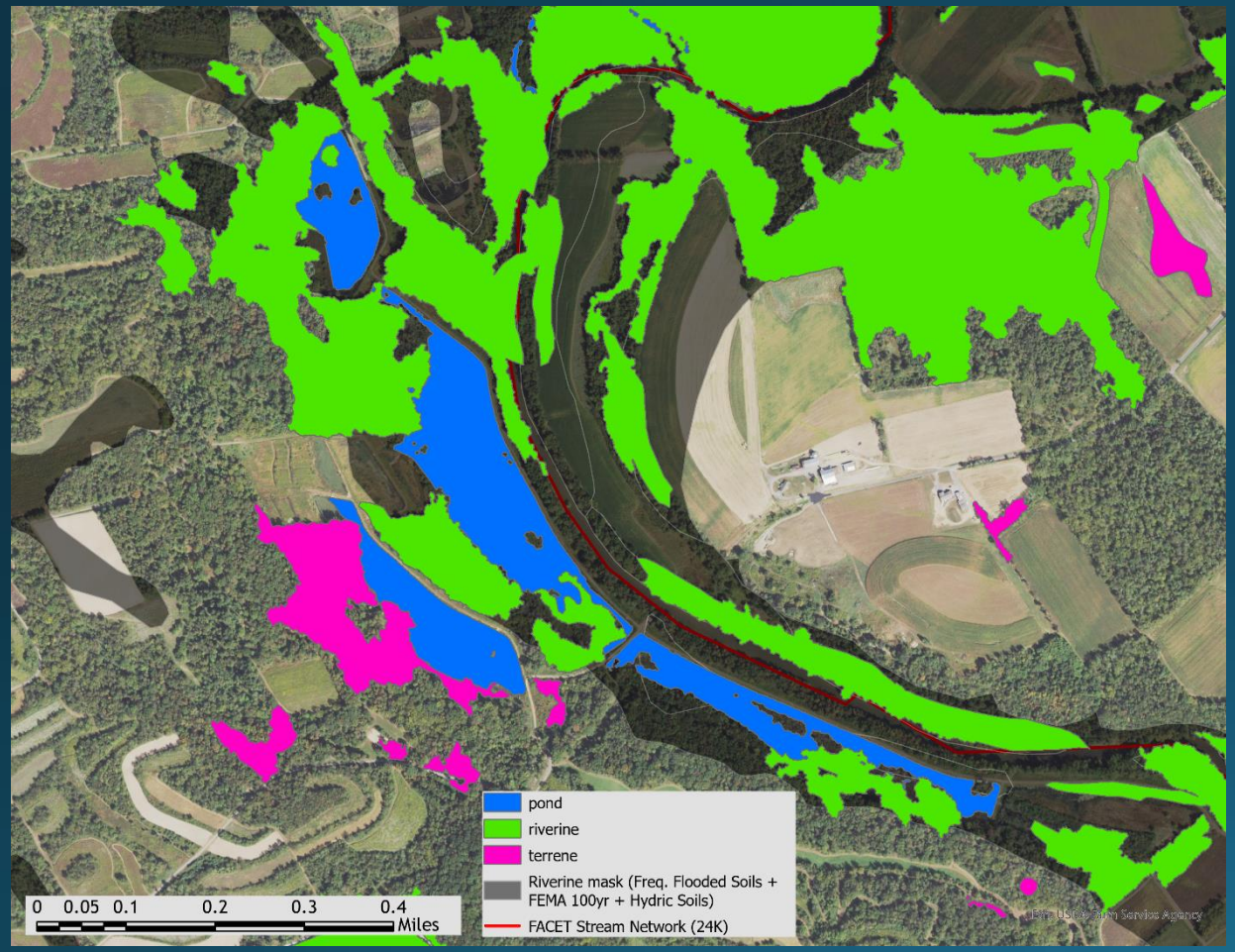
Images

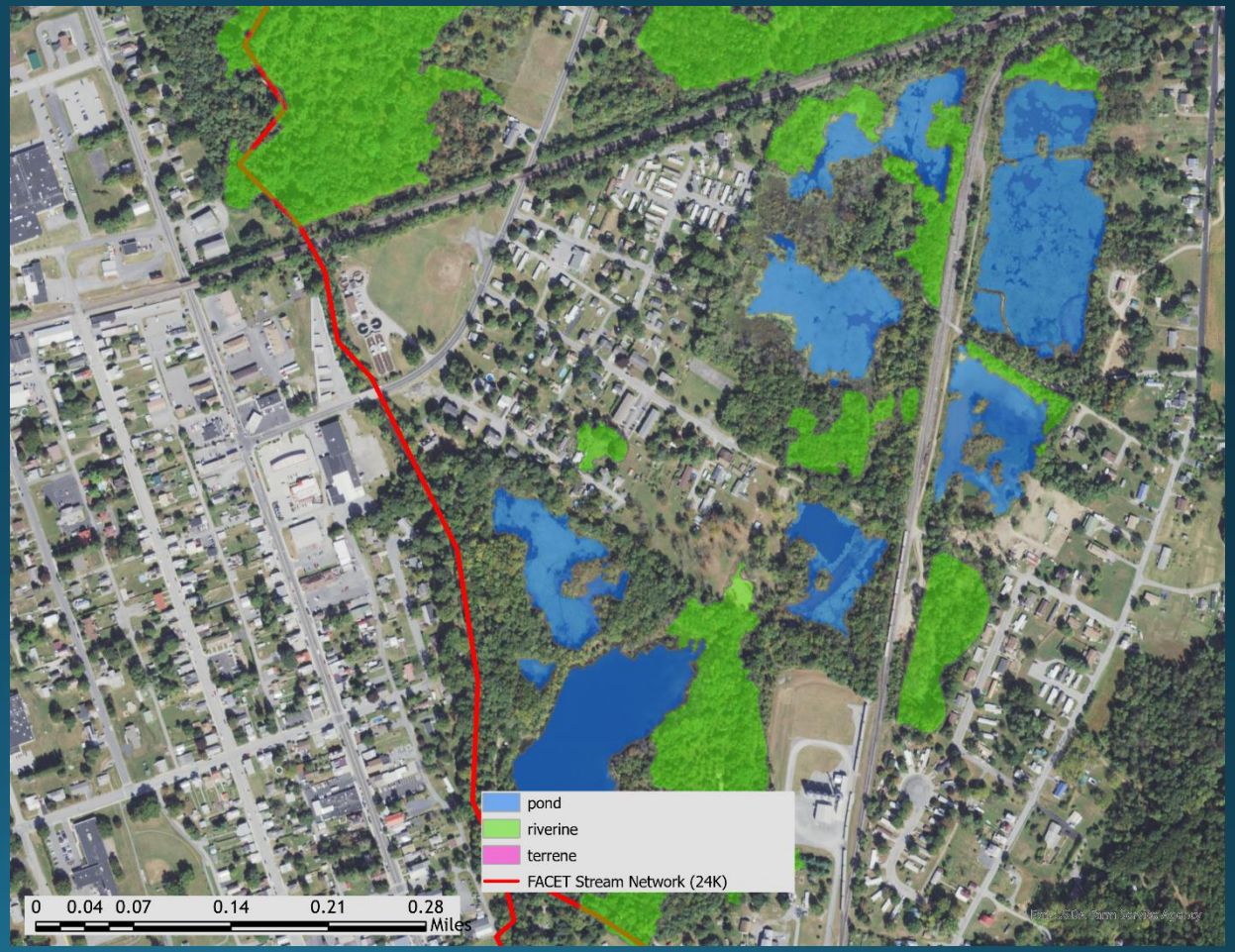
Water Classes

Lakes and Ponds:

I. Rasterize “Water” segment from land cover, and region group.
II. Calculate Perimeter-Area Ratio (PAR) and Polsby-Popper test (PPT)
III. Generate variable channel width buffer using channel width attribute in FACET stream network and select all water polygons that intersect with stream buffer (water_inside_channel). Save the inverse as (water_outside_channel).
IV. Perform two queries where PPT < 0.1 and then PAR > 0.17 on water_inside_channel. The goal is to eliminate any elongated features (ONLY inside stream buffer) that may look like fragmented channels. Save as ponds_inside_channel.
V. Merge water_outside_channel and ponds_inside_channel. Assume all water bodies outside the stream channel network are pond/lake like features.

Lakes and Ponds Images





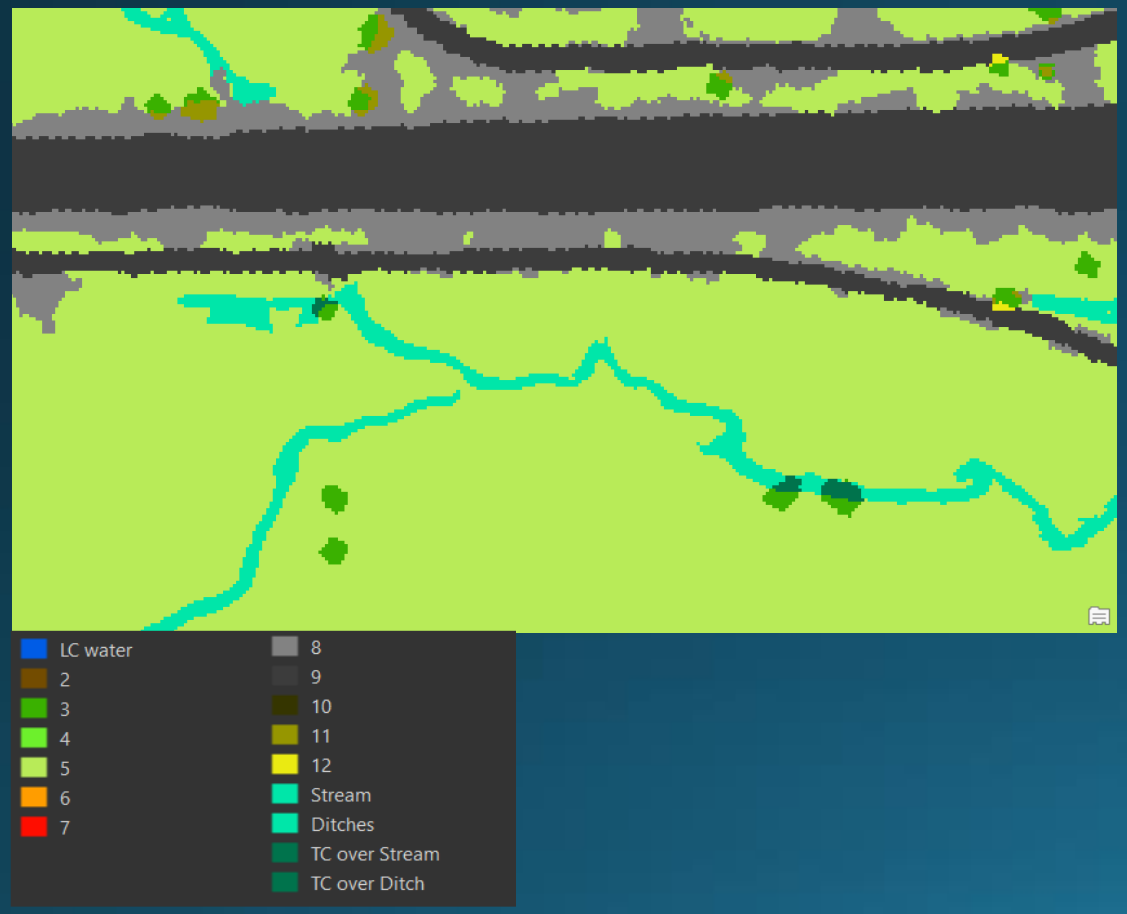
Water Classes

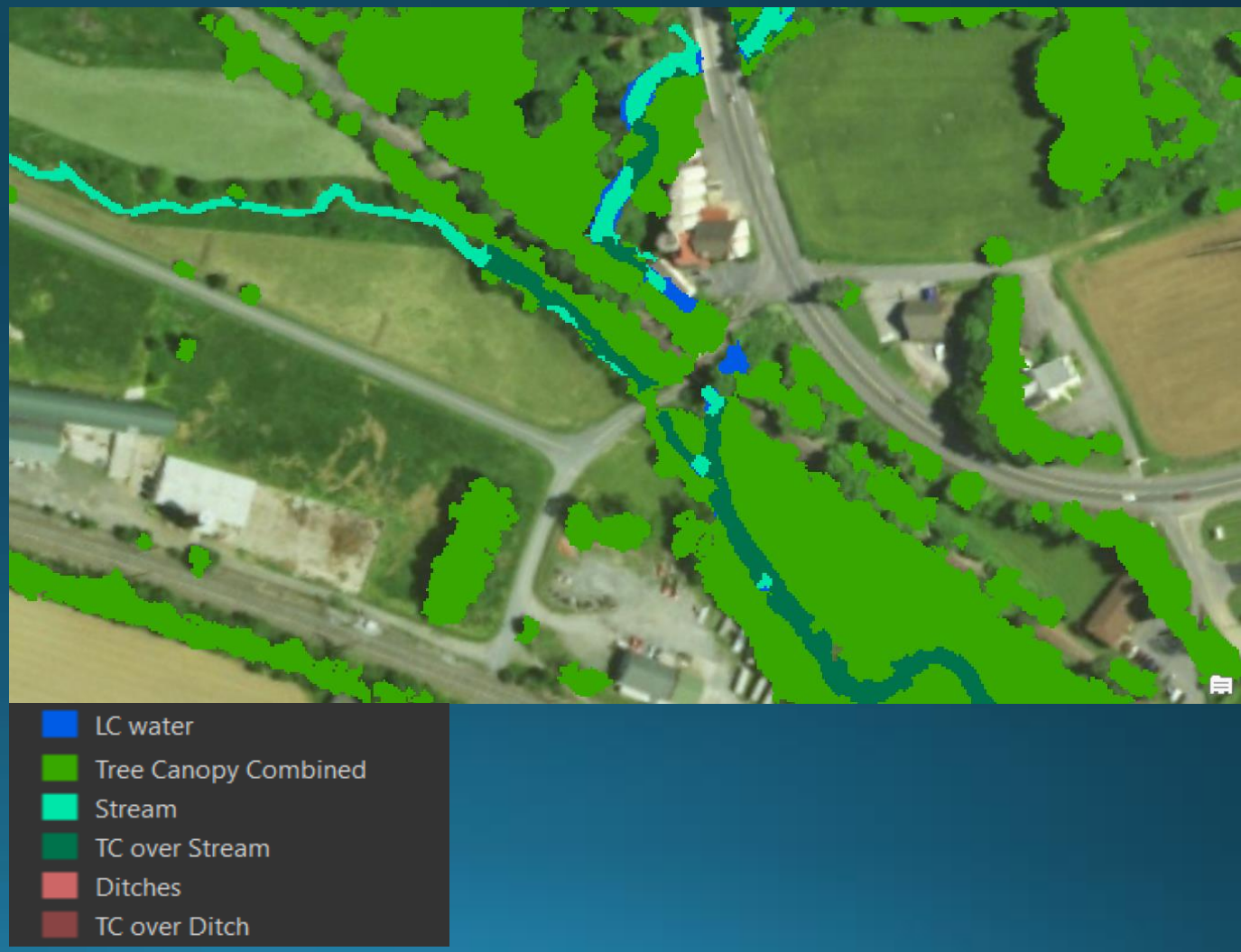
Streams and Ditches:

I. When a “Water”, “Wetland”, “Herbaceous Vegetation”, “Scrub-Shrub”, or “Barren” pixel intersect with the Objective 1 hydrography “stream” or “ditch” class, classify as “Stream” or “Ditch”, respectively.

II. When “Tree Canopy” pixels intersect with Objective 2 hydrography “stream” or “ditch” class, classify as “Tree Canopy over Stream or “Tree Canopy over Ditch”, respectively.

Streams and Ditches Images



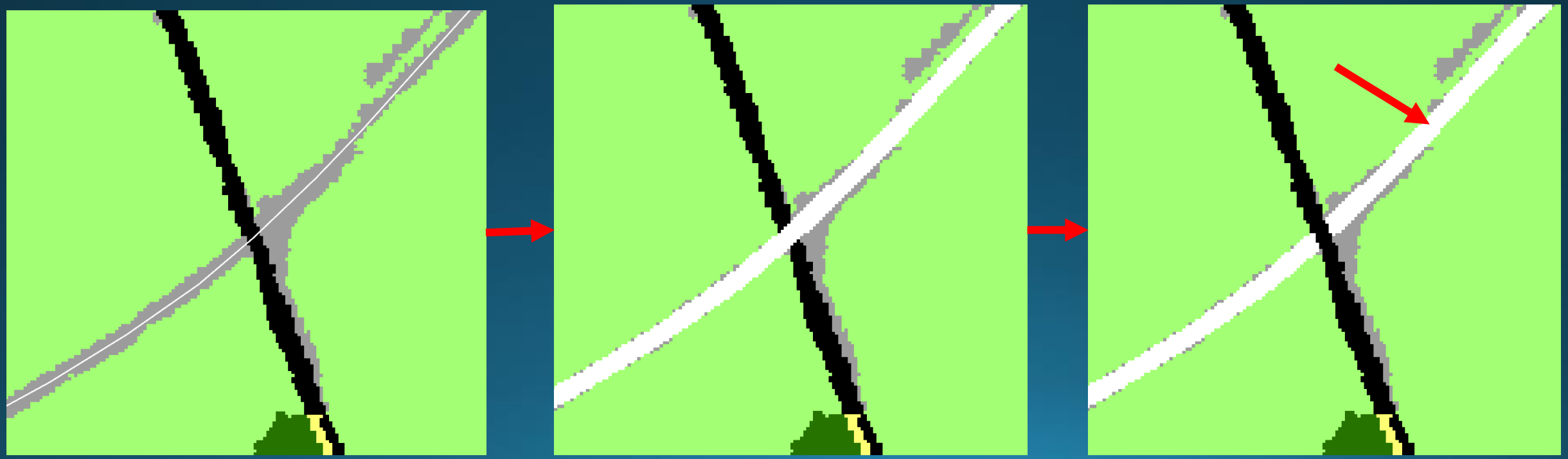


Developed Classes

- Structures: Same as LC
- Impervious Roads: Same as LC
- Tree Canopy over Structures: Same as LC
- Tree Canopy over Impervious Roads: Same as LC

Developed Classes

- Other Impervious: Same as LC. Buffer all rail lines from Open Street Map by 3 meters and reclassify “Herbaceous Vegetation”, “Barren”, “Scrub-Shrub”, and “Wetlands” as “Other Impervious”.
- Tree Canopy over Other Impervious: same as LC. Buffer all rail lines from Open Street Map by 3 meters and reclassify “Tree Canopy” as “Tree Canopy over Other Impervious”.



Developed Classes

Turf Grass:

I. Subset HERE data (LandUseA and LandUseB layers) to include only the following classes: 'AIRCRAFT ROADS', 'AIRPORT', 'AMUSEMENT PARK', 'CEMETERY', 'GOLF COURSE', 'HOSPITAL', 'PARKING LOT', 'SEAPORT/HARBOUR', 'SHOPPING CENTRE', 'SPORTS COMPLEX'

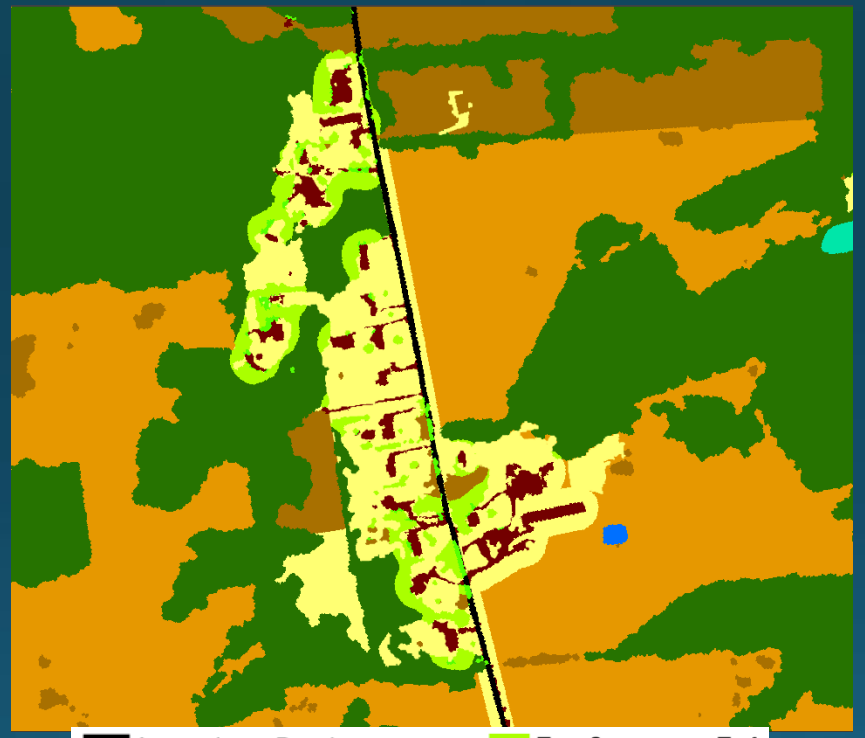
II. If a parcel is less than or equal to 1 acre, and has greater than or equal to 93 square meters of impervious surface, classify all “Herbaceous Vegetation” as “Turf Grass.”

III. If the center of an “Herbaceous Vegetation” segment falls within subset HERE data from step I., classify as “Turf Grass.”

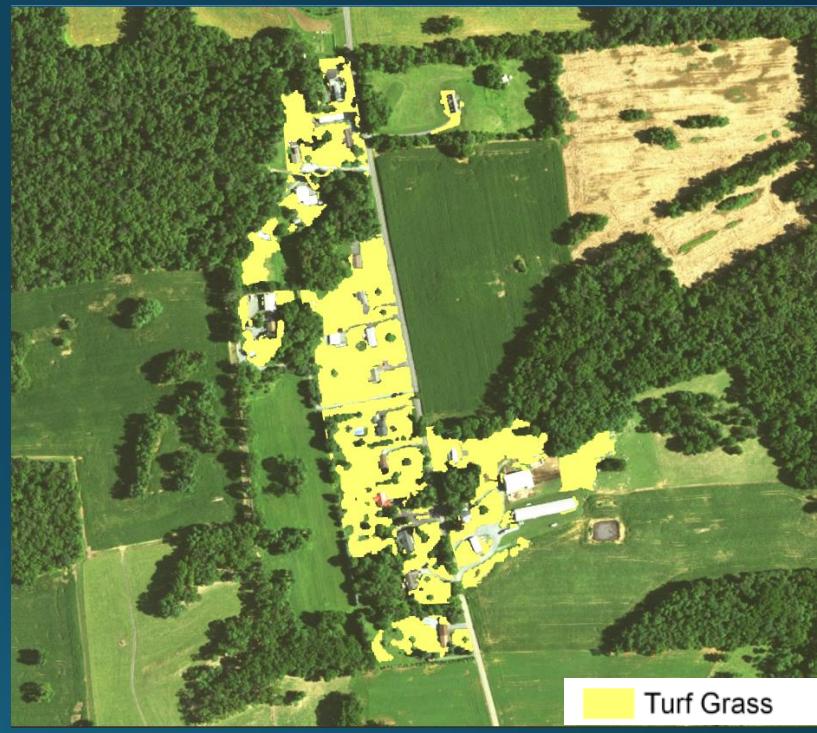
Developed Classes: Turf Grass Images

2017 NAIP

2013 LU: Old Methods



2017 LU: New Methods



Developed Classes

Suspended Succession:

I. “Herbaceous Vegetation”, “Scrub-Shrub”, and “Barren” image segments that intersect with digitized landfill dataset, classify as “Suspended Succession.”

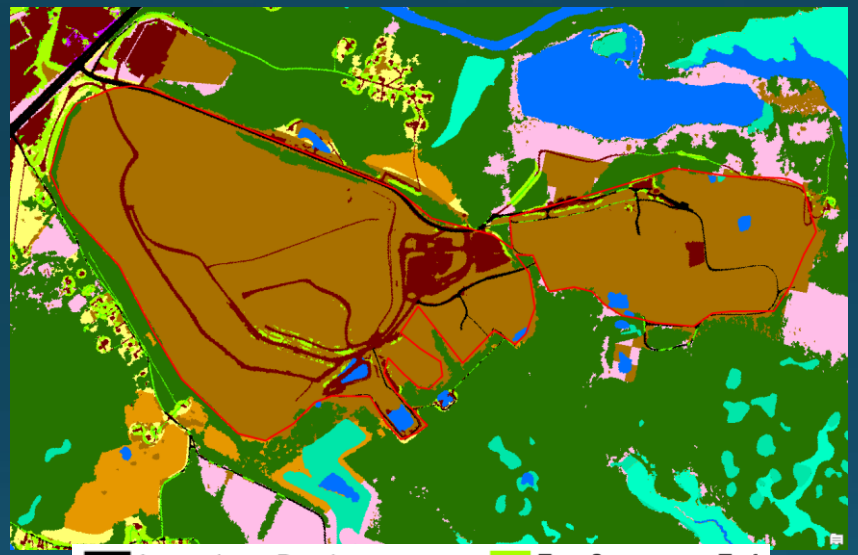
II. “Herbaceous Vegetation”, “Scrub-Shrub”, and “Barren” image segments that are less than or equal to 50 square meters and touch “Impervious Road”, classify as “Suspended Succession.”

III. Buffer transmission line dataset from Homeland Infrastructure Foundation by 25 meters. If “Herbaceous Vegetation”, “Scrub-Shrub”, and “Barren” segments intersect the buffered transmission line dataset and are less than or equal to 1,000 square meters, classify as “Suspended Succession.”

Developed Classes: Suspended Succession Images

2018 NAIP

2013 LU: Old Methods



2018 LU: New Methods

- Impervious, Road
- Impervious, Non-Road
- Tree Canopy over Impervious
- Water
- Tidal Wetlands
- Floodplain Wetlands
- Other Wetlands
- Forest
- Tree Canopy over Turf
- Mixed Open
- Fractional Turf (small)
- Fractional Turf (med)
- Fractional Turf (large)
- Fractional Impervious
- Turf Grass
- Cropland
- Pasture

Developed Classes: Suspended Succession Images

2017 NAIP

2013 LU: Old Methods

2017 LU: New Methods

- Impervious, Road
- Impervious, Non-Road
- Tree Canopy over Impervious
- Water
- Tidal Wetlands
- Floodplain Wetlands
- Other Wetlands
- Forest
- Tree Canopy over Turf
- Mixed Open
- Fractional Turf (small)
- Fractional Turf (med)
- Fractional Turf (large)
- Fractional Impervious
- Turf Grass
- Cropland
- Pasture

Developed Classes: Suspended Succession Images

2017 NAIP

2013 LU: Old Methods

2017 LU: New Methods

Developed Classes

Tree Canopy Over Turf Grass (Pending Decision):

I. "Turf Grass" and "Agriculture" methods applied first.

II. Densely Developed areas, defined by:
   I. Census Urban Area Clusters;
   II. Parcels where Impervious Coverage is greater than 25%, structure size is greater than 1070 square meters, has no railroads and parcel area is less than 1 million square meters;
   III. Region grouped parcels where the majority of area is made up of:
      I. Parcels where Impervious Coverage is greater than 25%, structure size is greater than 1070 square meters, has no railroads and parcel area is less than 1 million square meters;
      II. Parcels where Impervious Coverage is greater than 25%, parcel density is greater than 10, has no railroads and parcel area is less than 1 million square meters.

III. Forested parcels, defined by:
   I. "Tree Canopy" coverage greater than or equal to 25% of the parcel;
   II. "Structure" is present in the parcel;
   III. No "Agriculture" classes are present in the parcel.

IV. Less Densely Developed areas, defined by:
   I. Areas remaining after Densely Develop and Forested parcels are assigned.

V. In Densely Developed areas:
   I. Buffer "Structure" and "Other Impervious" segments that share the boundary of "Structures" and "Turf Grass" segments by 20 meters. Classify any "Tree Canopy" within buffer as "Tree Canopy over Turf Grass".

VI. In Forested parcels:
   I. Buffer "Structures" and "Other Impervious" sharing boundary of "Structure" and "Turf Grass" segments by 10 meters. Buffer must only apply within same parcel. Reclassify any "Tree Canopy" within buffer as "Tree Canopy over Turf Grass".

VII. In Less Densely Developed areas:
   I. Buffer "Structures" and "Other Impervious" sharing boundary of "Structure" and "Turf Grass" segments by 10 meters. Buffer must only apply within the same parcel. Reclassify any "Tree Canopy" within buffer as "Tree Canopy over Turf Grass".
   II. Assess size of remaining tree canopy patches within parcel boundaries. Class patches less than 1 acre as "Tree Canopy over Turf Grass".

Tree Canopy over Turf Grass Images

- Densely Developed:

Purple: TC over TG
Blue: Forest

Tree Canopy over Turf Grass Images

- Less Densely Developed:

Purple: TC over TG
Blue: Forest

Tree Canopy over Turf Grass Images

- Forested parcels:

Purple: TC over TG
Blue: Forest

Developed Classes

Bare Developed:

I. All other land use methods that analyze barren lands are applied first. This includes: “Suspended Succession”, “Natural Succession”, all “Agriculture” classes, “Timber Harvest”, “Solar Fields”, “Extractive”, all “Wetland” classes, and “Bare Shore”.

II. Remaining “Barren” segments are classified as “Bare Developed”.

Forest Classes

Fragmented Forest (Pending Decision):

I. Classify “Tree Canopy over Turf Grass” first.

II. Use “Tree Canopy over Turf Grass” definition of Densely Developed and Less Densely Developed areas.

III. In Densely Developed areas:

   I. Assess the size of remaining “Tree Canopy” patches irrespective of parcel boundaries. Class patches less than 1 acre as “Fragmented Forest”.

IV. In Less Densely Developed areas:

   I. Assess the size of remaining “Tree Canopy” patches within parcel boundaries. Class patches less than 1 acre adjacent to “Agriculture” classes as “Fragmented Forest”. Adjacency is confined to the parcel.

Forest Classes

Forest (Pending Decision):

I. Classify “Tree Canopy over Turf Grass” and “Fragmented Forest” first.

II. All remaining “Tree Canopy” is classified as “Forest”.

Forest Images

- Densely Developed:

Purple: TC over TG
Blue: Forest

Forest Images

- Less Densely Developed:

Purple: TC over TG
Blue: Forest

Forest Images

- Forested parcels:

Purple: TC over TG
Blue: Forest

Forest Classes

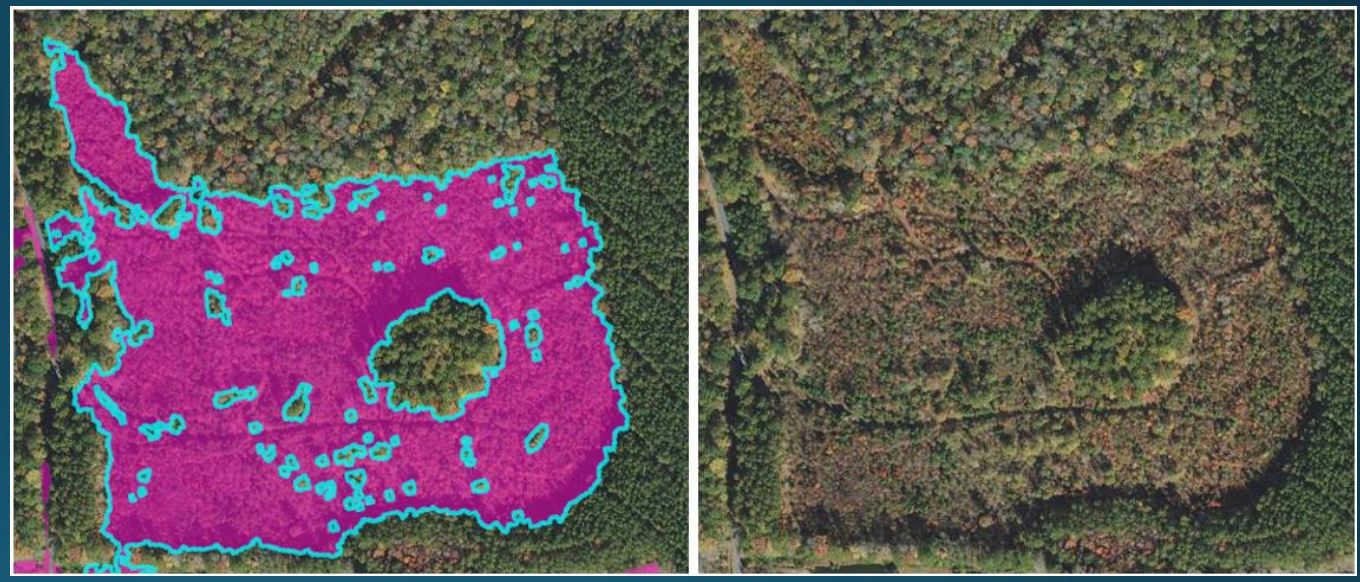
Natural Succession:

I. “Turf Grass”, “Agriculture”, and “Suspended Succession” methods applied first.

II. If an “Herbaceous Vegetation” or “Barren” segment intersects with ancillary abandoned mines dataset, classify as “Natural Succession.”

III. If greater than or equal to 10% of “Herbaceous Vegetation” or “Barren” segment is timber harvest according to data mined LCMAP, classify as “Natural Succession.”

Forest Classes: Natural Succession Images



Production Classes

Cropland (Pending Decision):

I. Reclassify CDL into non-agricultural, cropland, pasture, idle/fallow, and orchards/vineyards.

II. If “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments have an area greater than or equal 1 hectare and include 20% or greater coverage of the reclassified CDL cropland pixels, classify as “Cropland.”

III. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-cropland classes have been assigned in previous passes. If the segment is touching cropland and no other segments with confusable classes, classify as “Cropland.”

    I. Repeat

IV. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-cropland classes have been assigned in previous passes.

Production Classes

Pasture (Pending Decision):

I. If “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments have an area greater than or equal 1 hectare and include 20% or greater coverage of the reclassified CDL pasture pixels, classify as “Pasture.”

II. If “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments have an area greater than or equal 1 hectare and include 20% or greater coverage of pasture NLCD class, classify as “Pasture.”

III. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-pasture classes have been assigned in previous passes. If the segment is touching pasture and no other segments with confusable classes, classify as “Pasture.”

    I. Repeat

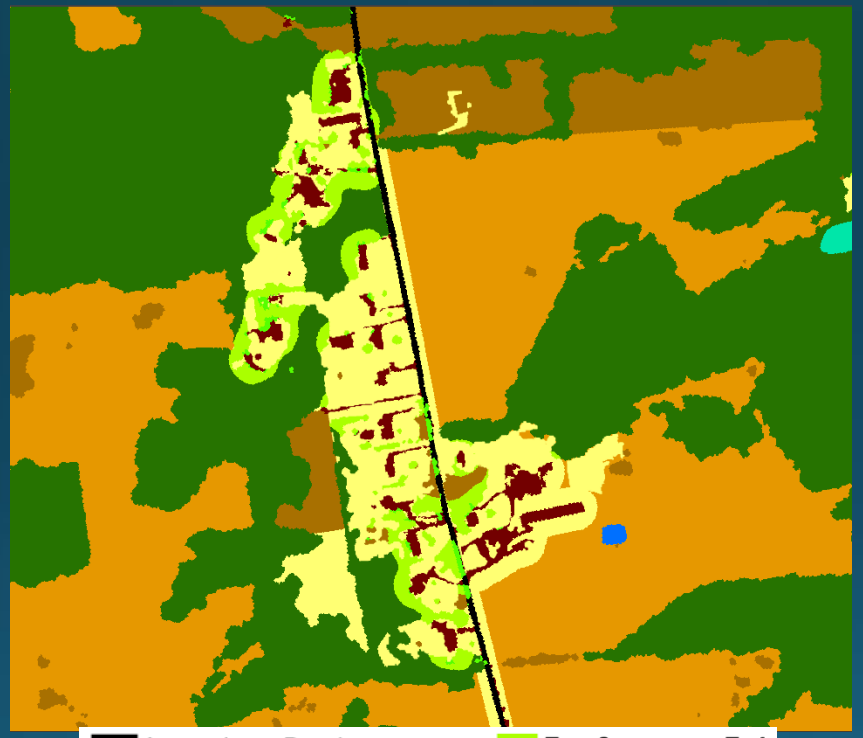
IV. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-pasture classes have been assigned in previous passes.

Production Classes: Cropland and Pasture Images

CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

2017 NAIP

2013 LU: Old Methods



2017 LU: New Methods

Production Classes

Idle/Fallow (Pending Decision):

I. If “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments have an area greater than or equal 1 hectare and include 20% or greater coverage of the reclassified CDL idle/fallow pixels, classify as “Idle/Fallow.”

II. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non- idle/fallow classes have been assigned in previous passes. If the segment is touching idle/fallow and no other segments with confusable classes, classify as “Idle/Fallow.”

    I. Repeat

III. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non- idle/fallow classes have been assigned in previous passes.

No examples of idle/fallow in Cumberland County, PA

Production Classes

Orchards/Vineyards (Pending Decision):

I. If “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments have an area greater than or equal 1 hectare and include 20% or greater coverage of the reclassified CDL orchards/vineyards pixels, classify as “Orchards/Vineyards.”

II. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-orchards/vineyards classes have been assigned in previous passes. If the segment is touching orchards/vineyards and no other segments with confusable classes, classify as “Orchards/Vineyards”.

    I. Repeat

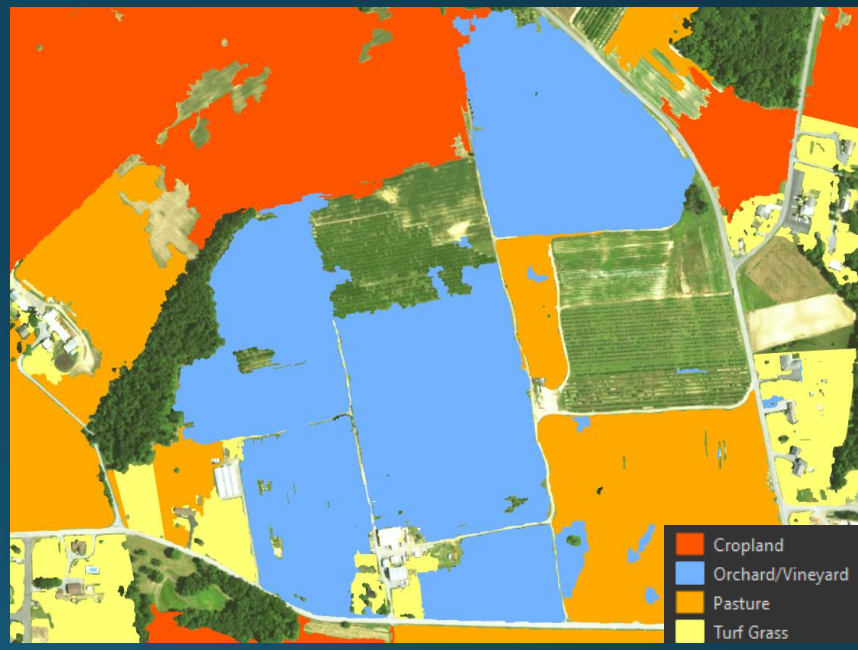
III. Identify adjacent “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-orchards/vineyards classes have been assigned in previous passes.

Production Classes: Orchards/Vineyards Images

2017 NAIP

2013 LU: Old Methods

2017 LU: New Methods



- Impervious, Road
- Impervious, Non-Road
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- Floodplain Wetlands
- Other Wetlands
- Forest
- Tree Canopy over Turf
- Mixed Open
- Fractional Turf (small)
- Fractional Turf (med)
- Fractional Turf (large)
- Fractional Impervious
- Turf Grass
- Cropland
- Pasture

Production Classes

Solar Fields:

I. Identify “Herbaceous Vegetation”, “Barren”, or “Scrub-Shrub” segments after “Turf Grass”, successional and other non-solar field classes have been assigned in previous passes. Intersect segments where their centroid falls within digitized solar field boundaries or AI solar field outputs and classify as “Solar Fields”

2017 NAIP

2013 LU: Old Methods

2017 LU: New Methods

Production Classes

Timber Harvests:

I. “Herbaceous Vegetation” or “Barren” segment contains greater than or equal to 10% of LCMAP detected timber harvest + deforestation, and the clearing occurred between 2015 and 2017, classify as “Timber Harvest.”

Production Classes

Extractive:

I. “Barren” or “Other Impervious” segments that intersect with ancillary active “mines” dataset, classify as “Extractive.”

2017 NAIP

2013 LU: Old Methods

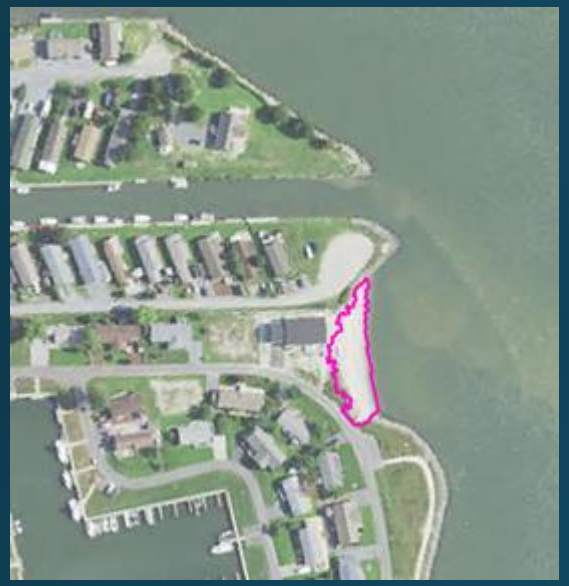
2017 LU: New Methods

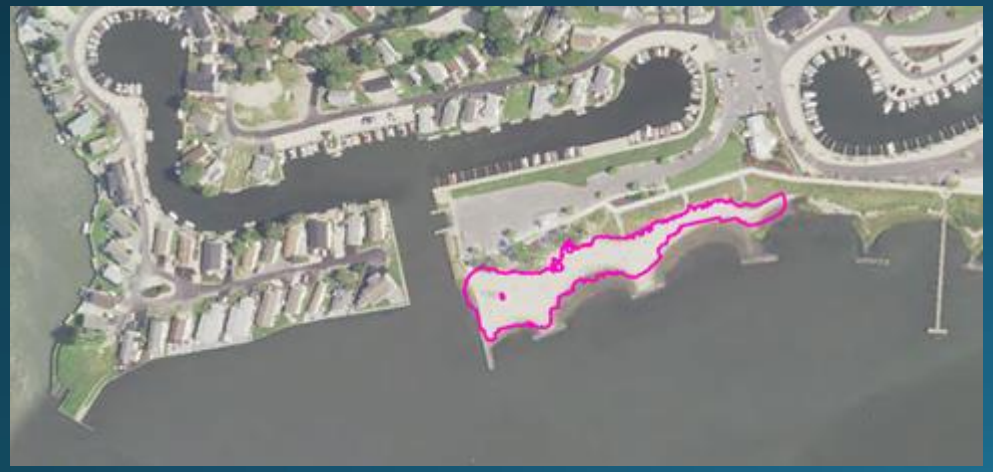
Wetland and Water Margin Classes

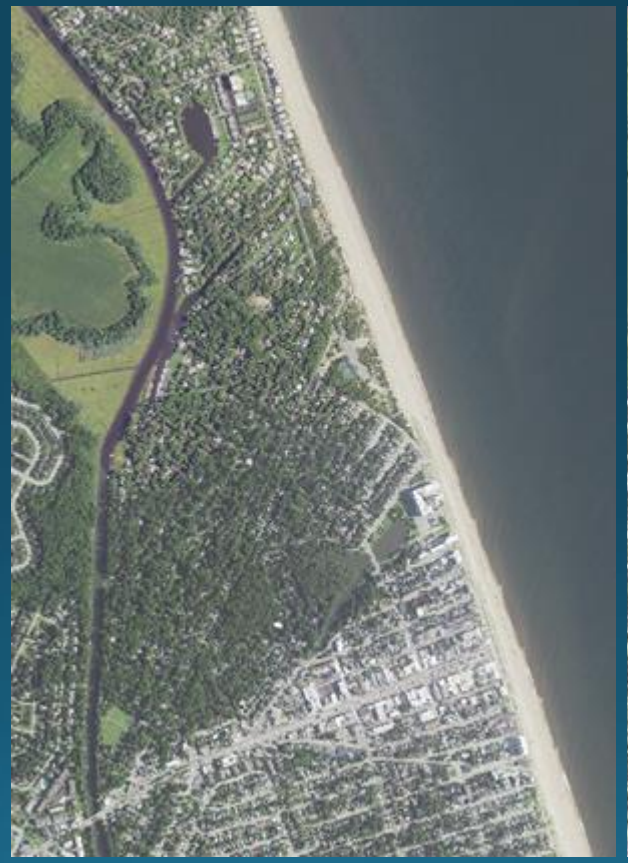
Bare Shore:

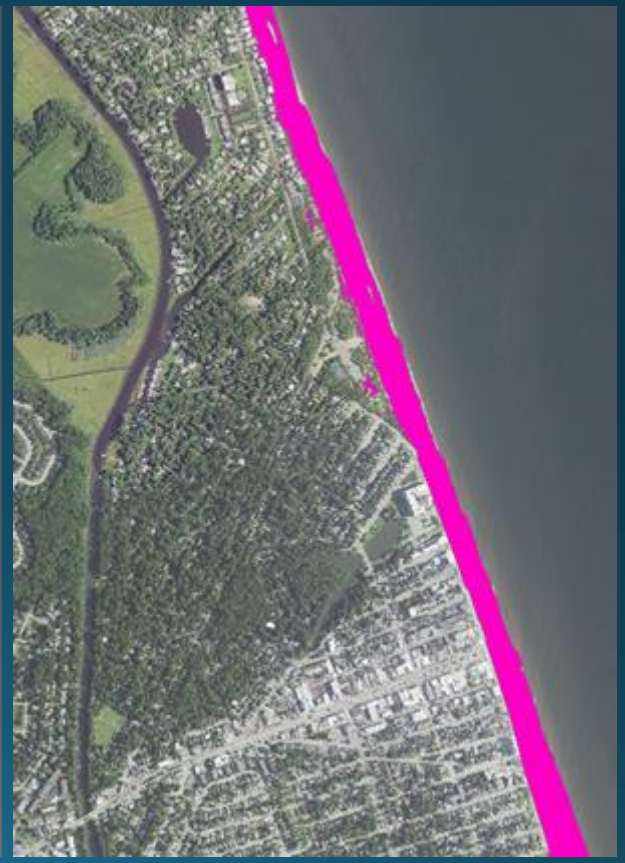
I. “Barren” segment is within 3 meters of water and is less than or equal to 15 square meters
II. Exclude “Barren” segments that are less than or equal to 100,000 square meters and intersect “Wetland” segments greater than or equal to 15 square meters
III. Exclude “Barren” segments that intersect with: mines, landfills, and local land use classes (suspended succession, extractive, agriculture, wetlands)
IV. Classify those barren segments as “Bare Shore.”

Wetland and Water Margin Classes: Bare Shore Images









Water Classes

Non-Tidal Wetlands:

I. SSURGO frequently flooded soils: flodfreqdcd == "Frequent" (Flooding Frequency - Dominant Condition)
II. SSURGO hydric soils: hydclprs >= 1 (Hydric Classification - Presence)
III. FEMA 100 year floodplain.
IV. Create riverine mask: Select all hydric and FEMA polygons if they intersect with streams, and merge hydric soils, FEMA, freq. flooded soils, streams as riverine_mask.
V. Riverine:
    I. Create temporary layer from UVM wetlands without water and NWI wetlands without Freshwater ponds and Lakes. Call them uvm_wetlands_tmp and nwi_wetlands_tmp.
    II. Spatial overlay: REMOVE all ponds that intersect with nwi_wetlands_tmp. call it nwi_wetlands_tmp_wo_ponds.
    III. Merge uvm_wetlands_tmp + nwi_wetlands_tmp_wo_ponds as wetlands_tmp.
    IV. Spatial overlay: classify all ponds that intersect with riverine mask as riverine_ponds and inverse as terrene_ponds.
    V. Reclassify wetlands_tmp polygons as "riverine", if they spatially intersect the riverine mask or if their boundary touches riverine_ponds.
VI. Terrine:
    I. Reclassify wetlands_tmp polygons as "terrene" if they spatially DO NOT intersect the riverine mask or if their boundary touches terrene_ponds.

Non-Tidal Wetland Images