1-meter vs 10-meter Land Use Datasets

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2013 Chesapeake Bay Watershed Land Cover/Use Data

1m Land Cover

- Water
- Wetlands
- Tree Canopy
- Scrub-shrub
- Low vegetation
- Barren
- Impervious (structures)
- Impervious (other)
- Roads
- Tree Canopy over Structures
- Tree Canopy over Impervious Other
- Tree Canopy over Roads

1m Land Use

- 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
- Agriculture

10m Land Cover/Use

- Impervious Roads
- Impervious Non-Roads
- Tree Canopy Over Impervious
- Tree Canopy Over Turf Grass
- Turf Grass
- Forest
- Wetlands (Floodplain)
- Wetlands (Other)
- Wetlands (Tidal)
- Water
- Mixed Open
- Cropland
- Pasture

PHASE 6 MODEL

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Chesapeake Bay Program Land Use Classification

1. Water (8)
- 1.1 Lentic
  - 1.1.1 Estuary
  - 1.1.2 Lakes & Ponds
- 1.2 Lotic
  - 1.2.1 Streams
    - 1.2.1.1 Daylighted
    - 1.2.1.2 Shaded
    - 1.2.1.3 Culverted/ Buried
  - 1.2.2.Ditches
    - 1.2.2.1 Daylighted
    - 1.2.2.2 Shaded
    - 1.2.2.3 Culverted/ Buried

2. Developed (14)
- 2.1 Infrastructure
  - 2.1.1 Roads
  - 2.1.2 Tree Canopy (TC) over Roads
  - 2.1.3 Structures
  - 2.1.4 TC over Structures
  - 2.1.5 Other Impervious
    - 2.1.5.1 Railroads
    - 2.1.5.2 Parking Lots, Driveways, etc.
  - 2.1.6 TC over Other Impervious
    - 2.1.6.1 TC over Railroads
    - 2.1.6.2 TC over Parking Lots, etc.
  - 2.1.7 Suspended Succession (rights-of-way)
    - 2.1.7.1 Barren
    - 2.1.7.2 Herbaceous
    - 2.1.7.3 Scrub-shrub
- 2.2 Bare Construction
- 2.3 Turf Grass
- 2.4 Tree Canopy over Turf Grass

3. Forest (5)
- 3.1 Contiguous (> 1 acre)
- 3.2 Fragmented (< 1 acre)
- 3.3 Natural Succession (e.g., Fallow)
  - 3.3.1 Barren
  - 3.3.2 Herbaceous
  - 3.3.3 Scrub-shrub

4. Production (14)
- 4.1 Agriculture
  - 4.1.1 Cropland
    - 4.1.1.1 Barren
    - 4.1.1.2 Herbaceous
  - 4.1.2 Pasture
    - 4.1.2.1 Barren
    - 4.1.2.2 Herbaceous
  - 4.1.3 Orchard/vineyard
    - 4.1.3.1 Barren
    - 4.1.3.2 Herbaceous
    - 4.1.3.3 Scrub-shrub
- 4.2 Timber Harvest
  - 4.2.1 Barren
  - 4.2.2 Herbaceous
  - 4.2.3 Scrub-shrub
- 4.3 Extractive
  - 4.3.1 Barren
  - 4.3.2 Herbaceous
  - 4.3.3 Scrub-shrub
- 4.4 Solar fields

5. Wetland (19)
- 5.1 Tidal
  - 5.1.1 Open water
  - 5.1.2 Barren
  - 5.1.3 Herbaceous
  - 5.1.4 Scrub-shrub
  - 5.1.5 Contiguous Forest
  - 5.1.6 Fragmented Forest
- 5.2 Non-tidal
  - 5.2.1 Floodplain/ Headwater
    - 5.2.1.1 Open water
    - 5.2.1.2 Barren
    - 5.2.1.3 Herbaceous
    - 5.2.1.4 Scrub-shrub
    - 5.2.1.5 Contiguous Forest
    - 5.2.1.6 Fragmented Forest
  - 5.2.2 Other
    - 5.2.2.1 Open water
    - 5.2.2.2 Barren
    - 5.2.2.3 Herbaceous
    - 5.2.2.4 Scrub-shrub
    - 5.2.2.5 Contiguous Forest
    - 5.2.2.6 Fragmented Forest
- 5.3 Bare shore

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Land Use Overlays*

Existing

- Federal Lands
- MS4 Areas
- Sewer Service Areas
- FEMA Floodplains (HAZUS)
- Frequently Flooded Soils (gSSURGO)
- National Wetlands Inventory
- State Wetlands Inventories
- Cropland (Cropland Data Layer)
- Pasture (Cropland Data Layer)
- Parcels
- Land Use (County/City/State)
- Surface Mines
- Landfills
- Roads

Proposed (new)

- Deciduous Trees (from land cover)
- Evergreen Trees (from land cover)
- Ground Elevation (1m, LiDAR DEM)
- Ground Elevation (1m, LiDAR DTM)
- Surface Elevation (1m, LiDAR DSM)
- Classified Point Cloud (normalized to the ground)
- Height (normalized DSM to ground elevation)
- Intensity (1m, LiDAR)
- Compound Topographic Index (3m, LiDAR)
- Poultry Houses (USGS polygons- for DelMarVA)
- Solar fields (points from VA-DEQ, other?)
- Center-Pivot Irrigated Fields (DE)
- Historical Land Cover Change (1985 – 2017; USGS-LCMAP)
- Agricultural business addresses (ESRI)
- Transmission Lines (TBD)
- Buildings (Microsoft)
- Tidal zone
- Floodplains

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* Overlays represent ancillary spatial data that are either used or could be used to inform the land use classification.

Proposed New CBP Land Use Classification Scheme 03.19.2020

Phase 6 Land Use Perspective
(16 additional classes):

1. ***Water (WAT; from 1 to 7 classes)***
    1. Lotic
        1. Estuary
        2. Lakes & Ponds
    2. Lentic
        1. Streams
            1. Daylighted
            2. Shaded
            3. Buried
        2. Ditches
            1. Daylighted
            2. Shaded
2. ***Impervious, Roads (IR; no change)***
3. ***Impervious, Non-Roads (INR; 2 to 4 classes)***
    1. Structures
    2. Other Impervious
    3. Solar fields
    4. Railroads
4. ***Tree Canopy over Impervious (TCI; 1 to 2)***
    1. Tree Canopy over Structures
    2. Tree Canopy over Other Impervious
5. ***Turf Grass (TG; no change)***
6. ***Tree Canopy over Turf Grass (TCT; no change)***
7. ***Forest (FORE; change in name only)***
    1. Contiguous (> 1 acre)
8. ***Tidal Wetland (WLT; updated tidal zone overlay)***
9. ***Non-Tidal Floodplain Wetland (WLF; updated floodplain overlay to include headwaters)***
10. ***Non-Tidal Other Wetlands (WLO; no change)***
11. **Mixed Open (1 to 7 classes)**
    1. Natural Succession
    2. Timber Harvest
    3. Utility Rights-of-Ways
    4. Bare Construction
    5. Bare Shore
    6. Extractive
    7. Fragmented Forest (< 1 acre)
12. ***Cropland (CRP; 1 to 2 classes)***
    1. Cropland
    2. Orchard/vineyard
13. ***Pasture (PAS; no change)***

The LUWG has choice and flexibility in how to roll up the 60 land uses to the 13 original Phase 6 land uses.

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Roll-up FACTS

Decisions on how the 60 land use classes roll up to the original 13 Phase 6 land use classes will NOT result in inconsistent representation of land uses and change over time because:

- 2013/14 land cover will be re-translated to land use using the 60-class schema so that it’s comparable and consistent to the 2017/18 and 2021/22 data.

- Only the change in the Phase 6 land uses from 2013/14 to 2017/18 and from 2017/18 to 2021/22 will be used to update the original 2013/14 land use data used to inform the WIPs.

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Example: solar fields

Considerations:

- Solar fields were not a unique Phase 6 class and were classed as “Impervious-NonRoad”.
- Pennsylvania considers solar fields “pervious” for stormwater permitting purposes.
- Maryland considers all but the base of each panel as pervious.
- Virginia requires solar fields to have a stormwater management plan.
- Actual hydrologic functions depend on installation techniques and maintenance.

LUWG Roll-up Options

- Roll up as 100% Impervious-NonRoad
- Roll up as part (x%) Impervious-NonRoad and part (y%) Mixed Open.

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Example: extractive activities

Considerations:

- Extractive areas were not a unique Phase 6 class and were classed as “Impervious-NonRoad” and/or “Mixed Open”.
- Unlike impervious surfaces, quarries and surface mines are frequently designed to contain all runoff.

LUWG Roll-up Options

- Roll up as 100% Impervious-NonRoad
- Roll up as 100% Mixed Open
- Roll up as part (x%) Impervious-NonRoad and part (y%) Mixed Open.

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Example: timber harvests and construction

Considerations:

- Timber harvests acres are either reported annually by jurisdiction based on permit data or estimated as 1.5% of true forest within each county.
- Timber harvest activities are not evenly distributed across each state. They tend to be concentrated in particular counties.
- Construction acres are either reported annually by jurisdiction based on permit data or estimated as 129% of the expected change in impervious cover over the coming year per county.
- Permitted construction and timber harvests may or may not actually occur and the duration of construction activities varies depending on economic factor.

LUWG Roll-up Options

- Roll up as 100% Mixed Open
- Use to replace, adjust, or allocate permit data

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Example: timber harvests and construction

Considerations:

- Extractive areas were not a unique Phase 6 class and were classed as “Impervious-NonRoad” and/or “Mixed Open”.
- Unlike impervious surfaces, quarries and surface mines are frequently designed to contain all runoff.

LUWG Roll-up Options

- Roll up as 100% Impervious-NonRoad
- Roll up as 100% Mixed Open
- Roll up as part (x%) Impervious-NonRoad and part (y%) Mixed Open.

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Next Steps

Provide the LUWG with a decision white paper soliciting feedback on all land use roll-up options.

Circulate to the Urban Stormwater Workgroup, Watershed Technical Workgroup, and Forestry Workgroup for additional input.

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