

Land Use in Phase 7

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CBP Modeling Workgroup Quarterly Meeting
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Completed LULC Products for a 99,000 mi² Region

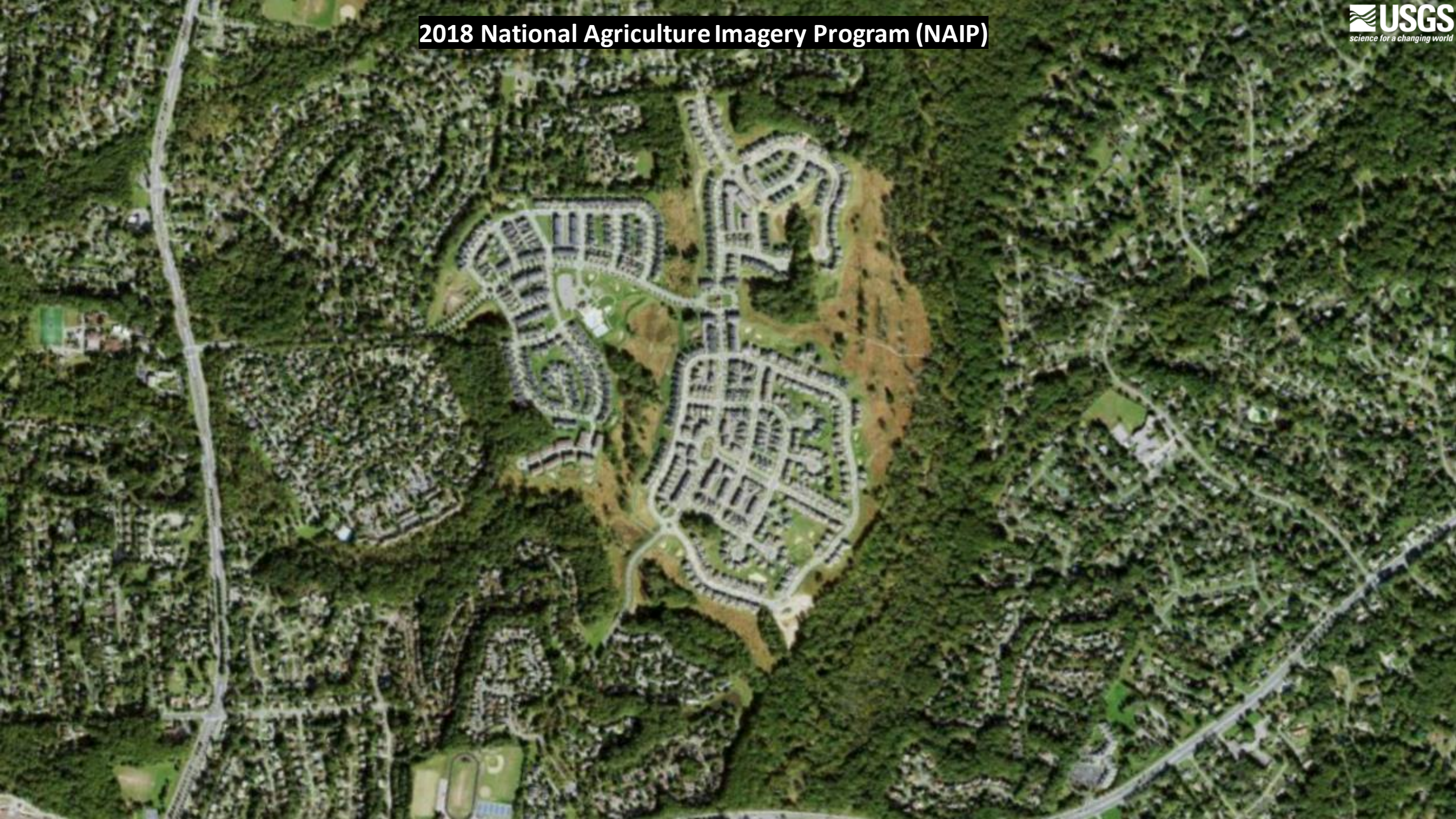
Land Use and Land Use Change (62-classes, 1-meter):
2013/14 and 2017/18 and 2021/22

Land Use and Land Use Change (18-classes, 10-meter)

- Tabular summaries by county, NHD+ catchment (accumulated), 24K NHD catchment (accumulated)



2018 National Agriculture Imagery Program (NAIP)



2018 Land Use



2013 Land Use



2018 Land Use



Chesapeake Bay 1-meter Land Use/Cover Classification (62 classes)

Water and Water Margins (6)

10 Tidal Waters

Lentic

11 Lakes & Reservoirs

12 Riverine Ponds

13 Terrene Ponds

Lotic

14 Streams and Rivers (visible water)

15 Bare Shore

Development (18)

Impervious

20 Roads

21 Structures

22 Other Impervious (Parking lots, driveways)

23 TC over Roads

24 TC over Structures

25 TC over Other Impervious

31 Extractive Impervious

32 Solar Field Panel Arrays

Pervious

26 Tree Canopy over Turf Grass

27 Turf Grass

28 Bare Developed

30 Extractive Barren

33 Solar Field Barren

34 Solar Field Herbaceous

35 Solar Field Shrubland

36 Suspended Succession Barren

37 Suspended Succession Herbaceous

38 Suspended Succession Shrubland

Natural Lands (25)

Tree Canopy

40 Forest

41 Tree Canopy, Other

Open Space

42 Natural Succession Barren

43 Natural Succession Herbaceous

44 Natural Succession Shrubland

45 Harvested Forest Barren

46 Harvested Forest Herbaceous

Riverine Wetlands

50 Riverine Wetlands Barren

51 Riverine Wetlands Herbaceous

52 Riverine Wetlands Shrubland

53 Riverine Wetlands Tree Canopy

54 Riverine Wetlands Forest

55 Riverine Wetlands Harvested Forest

Terrene Wetlands (isolated)

60 Terrene Wetlands Barren

61 Terrene Wetlands Herbaceous

62 Terrene Wetlands Shrubland

63 Terrene Wetlands Tree Canopy

64 Terrene Wetlands Forest

65 Terrene Wetlands Harvested Forest

Tidal Wetlands

70 Tidal Wetlands Barren

71 Tidal Wetlands Herbaceous

72 Tidal Wetlands Shrubland

73 Tidal Wetlands Tree Canopy

74 Tidal Wetlands Forest

75 Tidal Wetlands Harvested Forest

Agriculture (13)

Productive Lands

80 Cropland Barren

81 Cropland Herbaceous

82 Orchards and Vineyards Barren

83 Orchards and Vineyards Herbaceous

84 Orchards and Vineyards Shrubland

85 Pasture/Hay Barren

86 Pasture/Hay Herbaceous

Agricultural Facilities

90 Agricultural Structures

91 Animal Operation Impervious

92 Animal Operation Barren

93 Animal Operation Herbaceous

94 TC over Agricultural Structure

95 TC over Animal Operation Impervious

Phase 6 Roll-up of High-Res Land Use Classes

1. Impervious, Roads (1)

20 Roads

2. Impervious, Non-Roads (6)

21 Structures

22 Other Impervious (Parking lots, driveways)

31 Extractive Impervious

32 Solar Field Panel Arrays (?)

90 Agricultural Structures

91 Animal Operation Impervious

3. Tree Canopy Over Impervious (5)

23 TC over Roads

24 TC over Structures

25 TC over Other Impervious

94 TC over Agricultural Structure

95 TC over Animal Operation Impervious

4. Turf Grass (1)

27 Turf Grass

5. Tree Canopy over Turf Grass (1)

26 Tree Canopy over Turf Grass

6. Forest (6)

40 Forest

41 Tree Canopy, Other

53 Riverine Wetlands Tree Canopy

54 Riverine Wetlands Forest

63 Terrene Wetlands Tree Canopy

64 Terrene Wetlands Forest

7. Mixed Open (14)

15 Bare Shore

28 Bare Developed (reconciliation required)

30 Extractive Barren

33 Solar Field Barren

34 Solar Field Herbaceous

35 Solar Field Shrubland

36 Suspended Succession Barren

37 Suspended Succession Herbaceous

38 Suspended Succession Shrubland

42 Natural Succession Barren

43 Natural Succession Herbaceous

44 Natural Succession Shrubland

45 Harvested Forest Barren (not reported)

46 Harvested Forest Herbaceous (not reported)

8. Wetlands, Riverine Non-forested (4)

50 Riverine Wetlands Barren

51 Riverine Wetlands Herbaceous

52 Riverine Wetlands Shrubland

55 Riverine Wetlands Harvested Forest

9. Wetlands, Terrene Non-forested (4)

60 Terrene Wetlands Barren

61 Terrene Wetlands Herbaceous

62 Terrene Wetlands Shrubland

65 Terrene Wetlands Harvested Forest

10. Cropland (5)

80 Cropland Barren

81 Cropland Herbaceous

82 Orchards and Vineyards Barren

83 Orchards and Vineyards Herbaceous

84 Orchards and Vineyards Shrubland

11. Pasture / Hay (4)

85 Pasture/Hay Barren

86 Pasture/Hay Herbaceous

92 Animal Operation Barren

93 Animal Operation Herbaceous

12. Water (4)

11 Lakes & Reservoirs

12 Riverine Ponds

13 Terrene Ponds

14 Streams and Rivers (visible water)

Water Quality Model Classes (7)

10 Tidal Waters

70 Tidal Wetlands Barren

71 Tidal Wetlands Herbaceous

72 Tidal Wetlands Shrubland

73 Tidal Wetlands Tree Canopy

74 Tidal Wetlands Forest

75 Tidal Wetlands Harvested Forest

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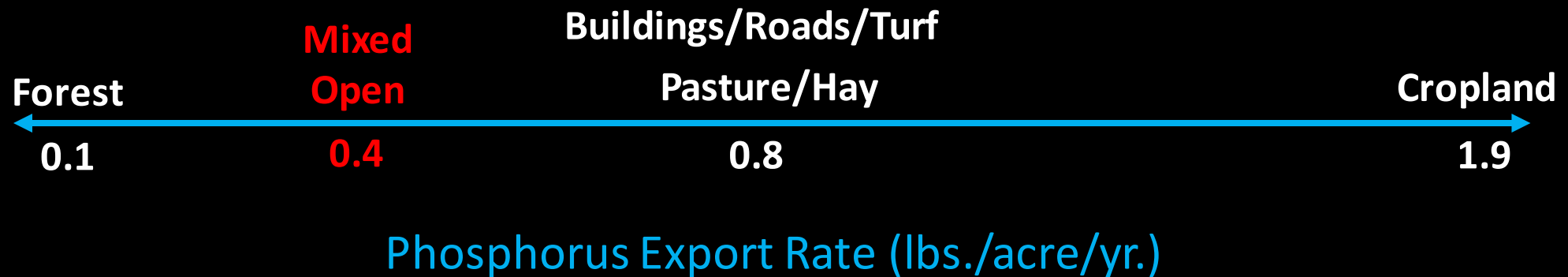
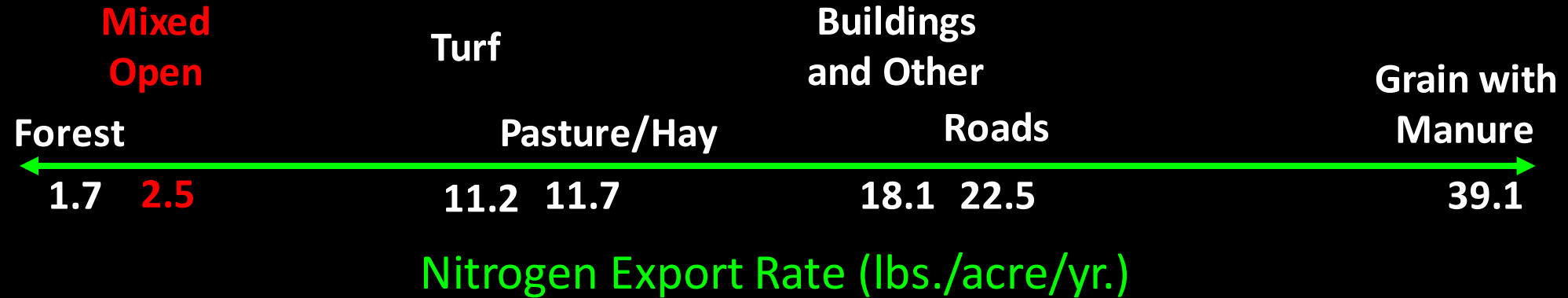
74 Tidal Wetlands Forest

75 Tidal Wetlands Harvested Forest

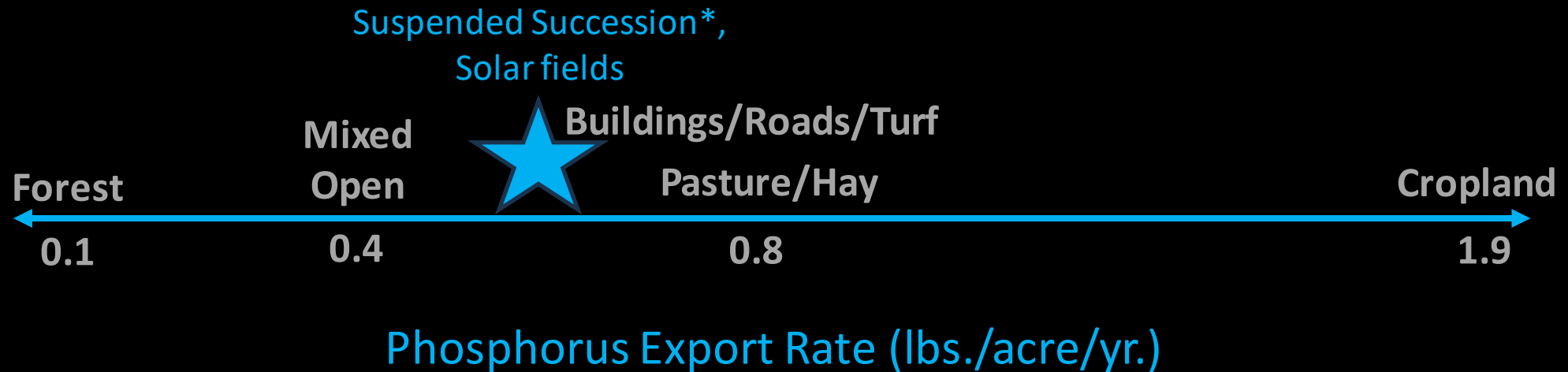
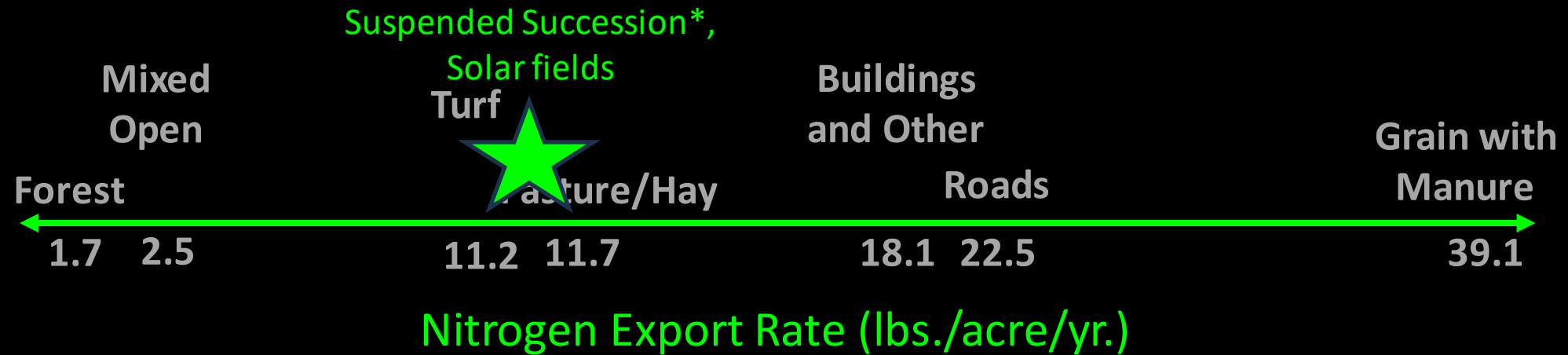
** Represents assumed composition of "mixed open" based on assigned loading rates*

**May require reconciliation with reported acreages*

Average P6 Land Use Nutrient Export Rates



Average P6 Land Use Nutrient Export Rates



*Suspended succession = road rights-of-way, landfills, reclaimed surface mines, utility transmission lines

Potential New Mapped LULC Classes for Phase 7

- Roads
- Structures and other impervious
- Animal Operations / Feeding Space (AMT, AGWG)
- Extractive* (LUWG)
- Developed Open Space (LUWG)
 - Suspended Succession** and Solar Pervious
- Orchards / Vineyards (AMT, AGWG)
- Ponds

* Active surface mines and quarries

** Road rights-of-way, landfills, reclaimed surface mines, utility transmission lines

Potential New NHD variables

- Effective Impervious Surfaces (USWG)
 - Modifying land-to-water factors (for structures and other impervious cover)
- Channel/ditch density per NHD catchment
- Road density/connectivity per NHD catchment
- Pond density per NHD catchment

* Active surface mines and quarries

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Additional Phase 7 LULC-related Activities

- Reconcile mapped and backcast construction and harvested forest with reported acreages. (USWG and FWG)
 - Develop overestimate rulesets
- Reconcile of mapped agriculture with Ag Census (AMT, AGWG)
 - Develop overestimate rulesets
- Reconcile of mapped ponds with reported stormwater ponds (2nd tier priority) - land to water factor
- Reconcile of mapped animal operations with calculated feeding space (AMT, AGWG)
- Backcast of generalized land uses from 2013 to 1985 NHD scale (e.g., impervious, pervious developed, agriculture, forests, natural vegetation, and water). (LUWG)
- Forecast generalized land uses from 2021 to 2075. (LUWG)

Additional Phase 7 LULC-related Activities

- Update RUSLE
- Update septic methodology
- Update MS4 and Federal Facility coverages (USWG, FFWG)
 - Revisit policy decision to exclude agriculture from federal lands
- Attribute tidal shoreline (marsh/water and land interface) bank height (FACET)
- Create segmentation (NHD + Shoreline)
 - Connections to MBM and Multiple Tributary Model grids
 - Intersect with Counties, Federal Facilities, CSOs, and MS4s
- Attribute MBM grid with tidal marsh extent
- Compute channel geomorphic properties by NHD stream



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