

# Phase 7 Land Use

**Sarah M. McDonald**

**USGS, Lower Mississippi Gulf Water Science Center**

Water Quality GIT

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# Land Use Products

There are three primary land use products used within the Chesapeake Bay Program:

1. Chesapeake Assessment Scenario Tool (CAST) Land Use
2. High-resolution Land Use/Land Cover (LULC)
3. Phase 7 Land Use Aggregation

The goals of today's presentation are to:

1. Define the three land use products
2. Describe how the products are related
3. Provide an update on the land use decisions occurring at the sector workgroups

# What is CAST Land Use (aka Load Source)?

A table of acres per load source (or land use) by land-river segment (counties x watersheds x orographic regions) in which BMPs are applied and loads are calculated.

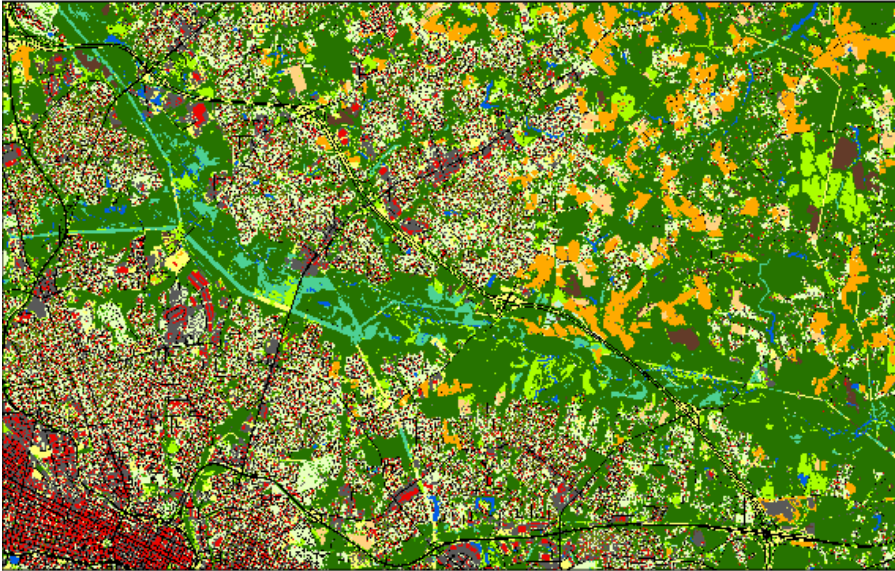
**CAST Land Use**  
49 classes (or load sources)

County	LRSEG	Land Use	Acres
ABC	1	Grass	100
ABC	1	CSS Roads	200
ABC	3	Pasture	50
DEF	4	Septic	35
DEF	4	True Forest	500

LRSEG = Land River Segment  
CAST = Chesapeake Assessment Scenario Tool  
BMP = Best Management Practice.

# What is High-Resolution Land Use/Land Cover (LULC)?

High-resolution LULC  
56 classes

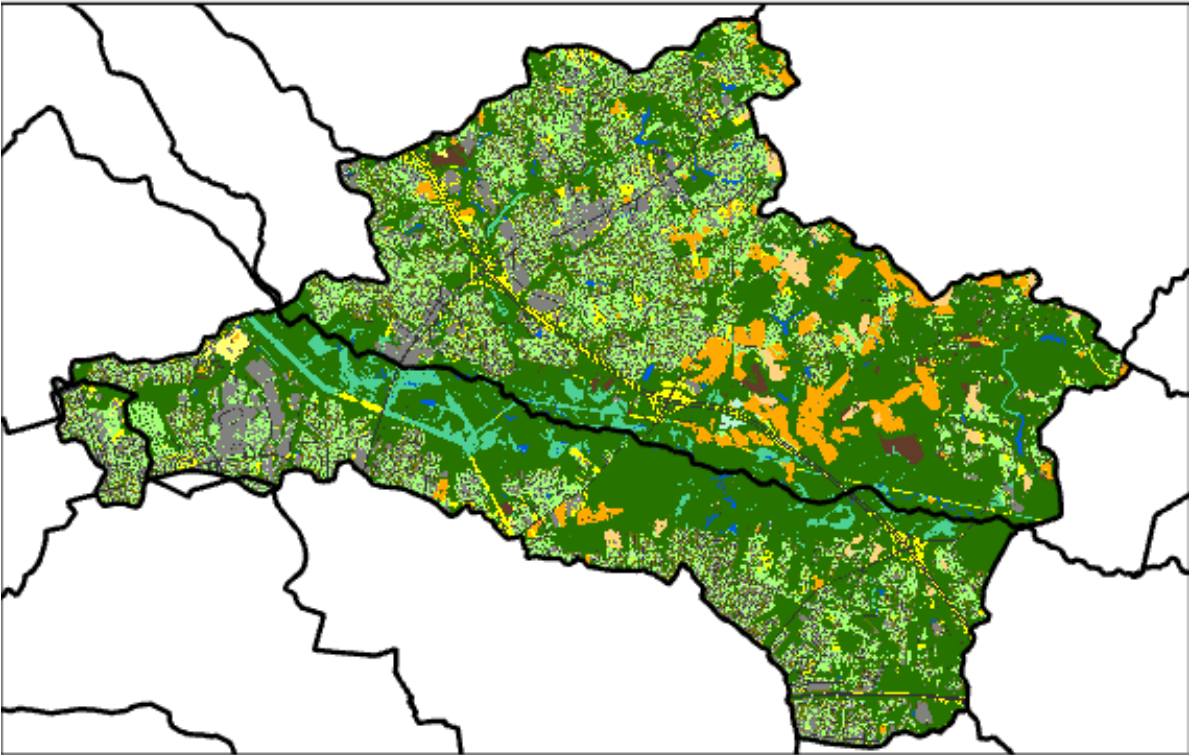


Mapped data with high spatial (1-meter) and categorical (56-class) resolutions that can be aggregated (or rolled-up) to different schemas and summarized by any overlay geography to meet the needs of a variety of projects

# What is the Phase 7 Aggregate Land Use?

## Phase 7 Aggregate Land Use

16 classes



The aggregated LULC schema that is summarized as acres by LRSEG and delivered to CAST to assess water quality

# Proposed Aggregation of High-Res LULC for Phase 7

## 1. Impervious, Roads

Roads

## 2. Impervious, Non-Roads

Structures

Other Impervious (Parking lots, driveways)

Extractive Impervious

## 3. Tree Canopy Over Impervious

TC over Roads

TC over Structures

TC over Other Impervious

## 4. Turf Grass

Turf Grass

## 5. Tree Canopy over Turf Grass

Tree Canopy over Turf Grass

## 6. Solar Infrastructure

Solar Field Panel Arrays

## 7. Solar Pervious

Solar Field Herbaceous

Solar Field Shrubland

## 8. Compacted Pervious

Extractive Barren

Suspended Succession Barren

Suspended Succession Herbaceous

Suspended Succession Shrubland

Natural Succession Barren (urban)

Natural Succession Herbaceous (urban areas)

## 9. Construction

All Barren Lands (except extractive barren and bare shore) that became developed in the next 3-5 years

Reported Data from States

## 10. Forest

Forest

Forested, Other

Natural Succession Herbaceous (rural areas)

Natural Succession Shrubland

Riverine Wetlands Tree Canopy

Riverine Wetlands Forest

Terrene Wetlands Tree Canopy

Terrene Wetlands Forest

## 11. Harvested Forest

Harvested Forest Barren

Harvested Forest Herbaceous

Natural Succession Barren (Rural areas)

Reported Data from States

## 12. Wetlands, Riverine Non-forested

Riverine Wetlands Barren

Riverine Wetlands Herbaceous

Riverine Wetlands Shrubland

Riverine Wetlands Harvested Forest

## 13. Wetlands, Terrene Non-forested

Terrene Wetlands Barren

Terrene Wetlands Herbaceous

Terrene Wetlands Shrubland

Terrene Wetlands Harvested Forest

## 14. Cropland

Cropland Barren

Cropland Herbaceous

Orchards and Vineyards Barren

Orchards and Vineyards Herbaceous

Orchards and Vineyards Shrubland

## 15. Pasture and Hay

Pasture and Hay Barren

Pasture and Hay Herbaceous

## 16. Water

Lakes and Reservoirs

Riverine Ponds

Terrene Ponds

Streams and Rivers

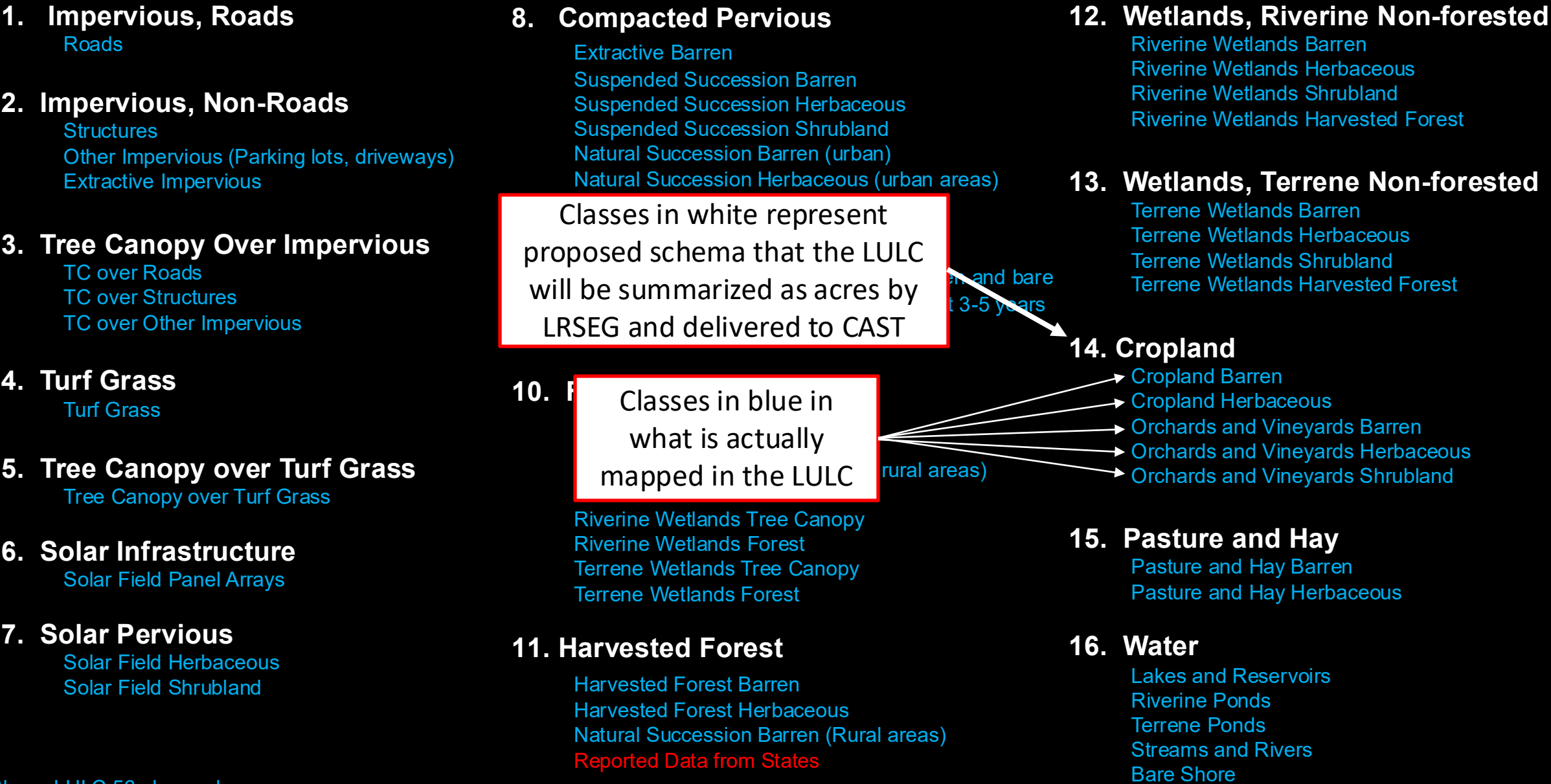
Bare Shore

Blue = LULC 56-class schema

White = Phase 7 Rollup schema



Proposed Aggregation of High-Res LULC for Phase 7



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# Why is the Phase 7 Aggregation Important?

## Loading Implications

- Each land use has unique sediment, Nitrogen, and Phosphorus loading rates
  - Moving acres from one class to another results in a change in loads

### Simplified Example

Changing the roll-up changes loads

#### Phase 6 Roll-Up

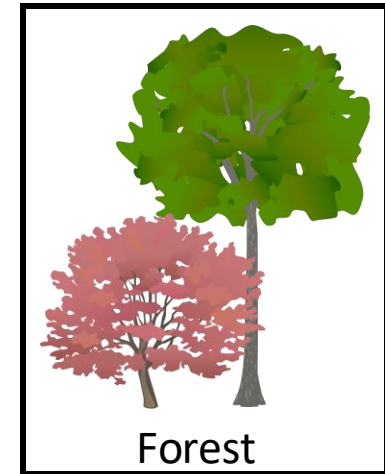


#### LULC (56-class)



100-acres

#### Phase 7 Roll-Up



#### Nitrogen (N) and Phosphorus (P) Loads

N: 2.45 lbs/acre/year \* 100-acres = 245 lbs/year

P: 0.43 lbs/acre/year \* 100-acres = 43 lbs/year

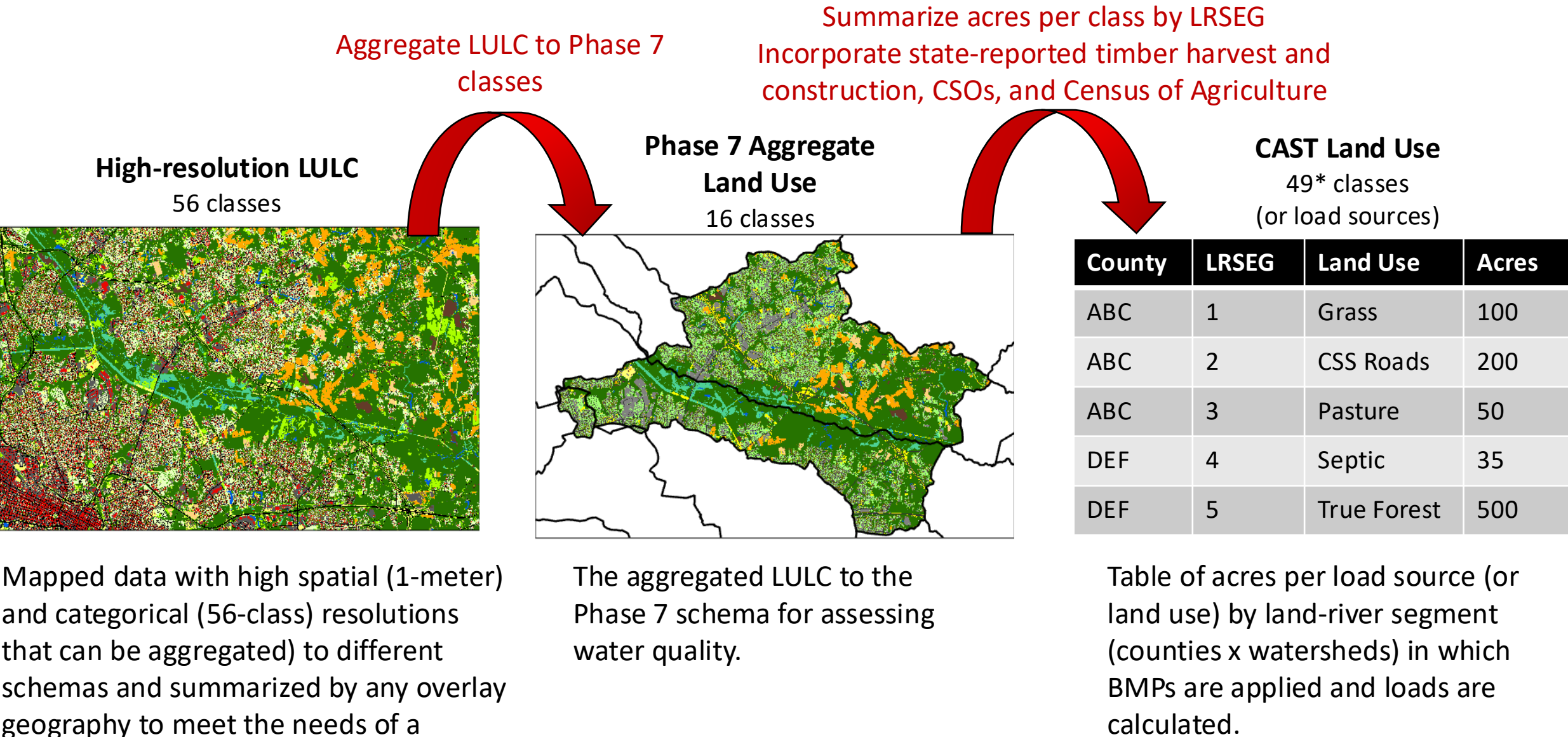
#### Nitrogen (N) and Phosphorus (P) Loads

N: 1.68 lbs/acre/year \* 100-acres = 168 lbs/year

P: 0.08 lbs/acre/year \* 100-acres = 8 lbs/year



# Summary: How are the Land Use Products Related?



CSO = Combined Sewer Overflows  
Final classification schema for Phase 7 has not yet been approved.

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Orchards and Vineyards Herbaceous

Orchards and Vineyards Shrubland

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Pasture and Hay Barren

Pasture and Hay Herbaceous

## 16. Water

Lakes and Reservoirs

Riverine Ponds

Terrene Ponds

Streams and Rivers

Bare Shore

Blue = LULC 56-class schema

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# Summary of Phase 7 Aggregation Decisions

Recommendation	Phase 6 Class	Workgroup Lead	Approval Date
“The USWG recommends that the Solar Impervious relative land use loading rate be set equal to the relative loading rate of the Buildings and Other land use category. The USWG recommends that the Solar Pervious relative land use loading rate be set equal to the relative loading rate of the Turfgrass land use category. ...”	Mixed Open and Impervious, Non-Roads	Urban Stormwater	December 2024
“All patches of barren land uses (except bare shore and extractive barren) that became at least 20% developed within 3-5 years represent ‘Regulated Construction’ ...”	Mixed Open	Watershed Technical	August 2025
“The FWG agreed that the natural succession classes should roll up to Forest for Phase 7 of the watershed model in the rural context...”	Mixed Open	Forestry	December 2024
“Natural Succession Barren rolls up to Construction in urban contexts and Harvested Forest in rural contexts. Natural Succession Herbaceous rolls up to Compacted Pervious (previously Mixed Open) in urban contexts and to Forest in rural contexts.”	Mixed Open	Forestry	February 2025
“The FWG approved the proposed construction mapping rules for Phase 7 which would change areas previously labeled as "harvested forest" that were later developed to be mapped as "construction". This change will only affect 0.8% of mapped “harvested forest” and will override the existing timber harvest mapping rules.”	Mixed Open	Forestry	August 2025
Rename Mixed Open to Compacted Pervious	Mixed Open	Land Use	December 2024
“...all bare shore (tidal and non-tidal) that is not classified as construction to the Phase 7 water class...”	Mixed Open	Land Use	September 2025
Approved the aggregation of the mapped LULC to the 16 Phase 7 classes		Land Use	September 2025

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Other Impervious  
Extractive Impervious

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TC over Roads  
TC over Structures  
TC over Other Impervious

4. Turf Grass  
Turf Grass

5. Tree Canopy over Turf Grass  
Tree Canopy over Turf Grass

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Solar Field Panel Arrays

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Solar Field Shrubland

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Natural Succession Herbaceous (urban areas)

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Reported Data from States

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Harvested Forest Barren  
Harvested Forest Herbaceous  
Natural Succession Barren (Rural areas)  
Reported Data from States

12. Wetlands, Riverine Non-forested  
**What's the Recommendation?**  
All mapped barren land uses (except bare shore and extractive barren) mapped as development 3-5 years later are construction.

13.  
**What was it in Phase 6?**  
Mixed Open

14.  
**Who's leading?**  
Watershed Technical Workgroup (WTWG)

15.  
**What's the recommendation status?**  
Approved at the August 2025 meeting.

16.  
Lakes and Reservoirs  
Riverine Ponds  
Terrene Ponds  
Streams and Rivers  
Bare Shore

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Extractive Barren

### What's the Recommendation?

Two new classes representing solar infrastructure and pervious surrounding field-mounted solar panel arrays.

### What was it in Phase 6?

Pervious was Mixed Open

Infrastructure was Impervious, Non-Roads.

### Who's leading?

Urban Stormwater Workgroup (USWG)

### What's the recommendation status?

USWG approved loading rates for the two new classes at their December 2024.

## 11. Harvested Forest

Harvested Forest Barren

Harvested Forest Herbaceous

Natural Succession Barren (Rural areas)

Reported Data from States

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Herbaceous

Shrubland

Harvested Forest

## Terrene Non-forested

Barren

Herbaceous

Shrubland

Harvested Forest

ous

eyards Barren

eyards Herbaceous

eyards Shrubland

## Hay

Barren

Herbaceous

## 16. Water

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Natural Succession Herbaceous (urban areas)

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11. Harvested Forest  
Harvested Forest Barren  
Harvested Forest Herbaceous  
Natural Succession Barren (Rural areas)  
Reported Data from States

## What's the Recommendation?

Recommendations include moving NATS Shrubland and NATS Herbaceous (rural areas) to Forest, NATS Barren (rural areas) to Harvested Forest, keeping NATS Herbaceous (urban areas) in Compacted Pervious (previously called Mixed Open), and allowing NATS barren to be considered for construction.

## What was it in Phase 6?

Mixed Open

## Who's leading?

Forestry Workgroup (FWG)

## What's the recommendation status?

Decisions approved by FWG at December 2024 meeting, February 2025 meeting, and August 2025

Date Shored

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Suspended Succession Herbaceous  
Suspended Succession Shrubland

**What’s the Recommendation?**  
Name change of Mixed Open to Compacted Pervious.

**Who’s leading?**  
Land Use Workgroup (LUWG)

**What’s the recommendation status?**  
Approved by LUWG at December 2024 meeting.

44 Natural Succession Shrubland  
53 Riverine Wetlands Tree Canopy  
Riverine Wetlands Forest  
Terrene Wetlands Tree Canopy  
Terrene Wetlands Forest

## 11. Harvested Forest (2)

Harvested Forest Barren  
Harvested Forest Herbaceous  
Natural Succession Barren (Rural areas)  
Reported Data from States

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