

Presentation Outline

- Overview of Technical tools and Schedule
- Phase 5.3.2 Landuse
 - Scale
 - Overview
 - Getting into the details
 - Refining the urban sectors
- Next Set of Handouts - Example

Overview of Technical Tools and Schedule

Definitions

- **Watershed Model** – Used to estimate nitrogen, phosphorus and sediment loads from the land that are delivered to the Bay
- **Phase 5.3.2** – The revised watershed model used for the Phase II WIP
- **Scenario Builder** – Pre-processor for the Phase 5.3.2 watershed model
- **MAST** – Maryland Assessment and Scenario Tool. Consistent with P5.3.2 and Scenario Builder

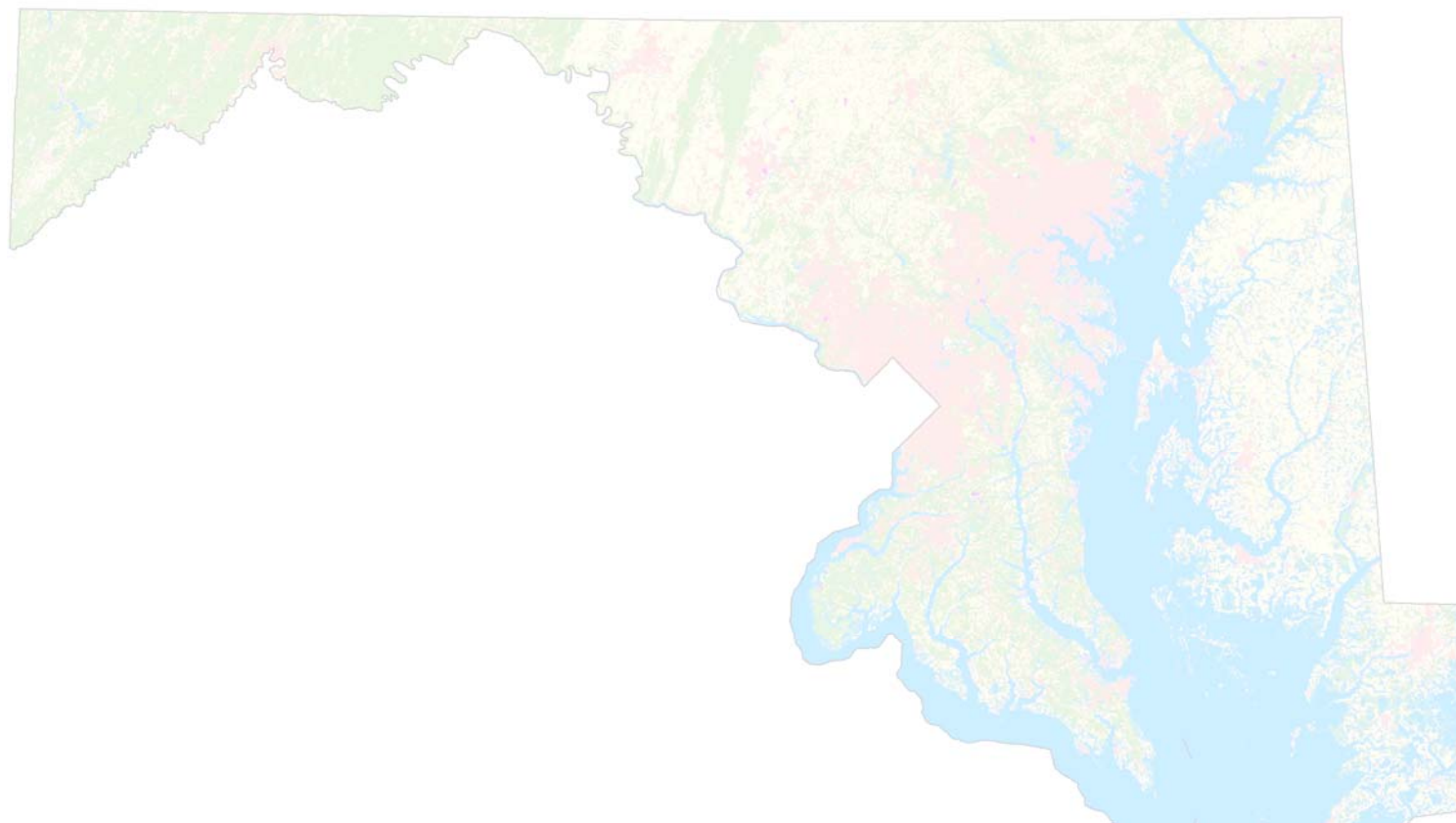
Schedule

Description	Date
<i>Webinar</i> , Intro to MAST	April 13, 2011
<i>Webinar</i> , EPA Bay watershed landuse in MAST	May 16, 2011
MD provides watershed model landuse, in MAST format, to teams	Late May, 2011
<i>Webinar</i> , 2010 progress BMPs in MAST	June, 2011
MD provides current progress BMPs, in MAST format, to teams	Late June, 2011
EPA Release 5.3.2 w/ scenarios	June 30, 2011
MAST Release	June 30, 2011
MAST training sessions	July 2011
Revised State allocation from EPA	July 15, 2011
Revised County targets from MD	August 15, 2011
Draft WIP from County	November 1, 2011
Draft WIP to EPA	December 1, 2011
Public comment begins (30 days) - Tentative	January 15, 2012
EPA provides comments	January 31, 2012
Public comment ends	February 15, 2012
Final WIP to EPA	March 30, 2012

Using MAST

- Reasons to Use MAST
 - MAST is designed to be consistent with the EPA CBP P5.3.2 watershed model which is being used to "grade" the Phase II WIP and milestone progress
 - MAST is the required input format for the MD Phase II WIP
 - MAST exports scenario information for direct input into EPA models (integrated)
 - Maryland has dedicated resources to provide necessary training and support
 - EPA will likely adopt MAST to work at the Bay watershed scale (continued use and consistency)

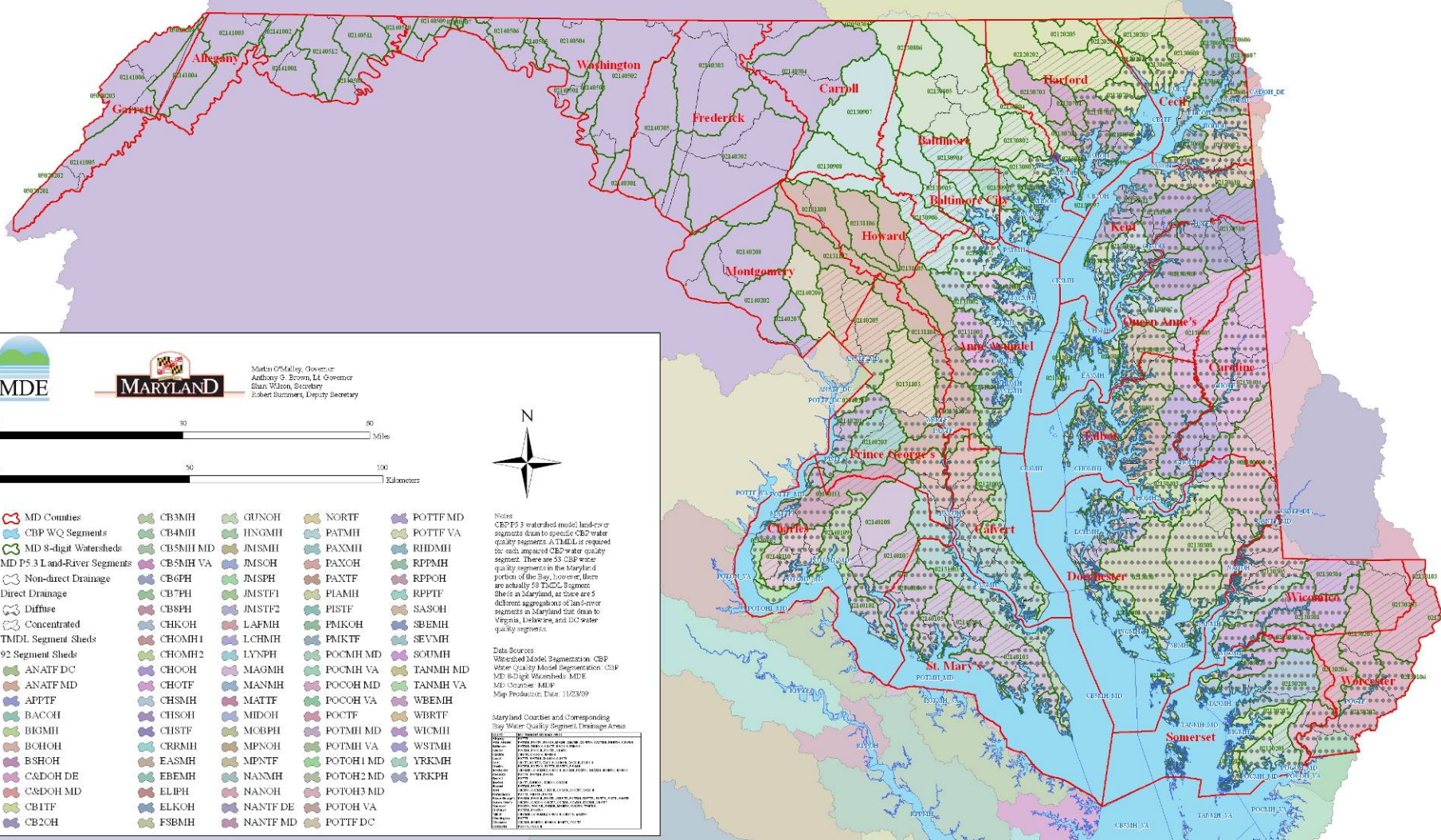
CBP P5.3.2 LANDUSE



Spatial Scales

- **Land-River Segment** – Smallest segment in the watershed model (approx 560 in MD)
- **County Segment** – County geographic boundary. Includes all source sectors within boundary (24 county segments in MD)
- **TMDL Segment** – Watersheds that drain to the 92 Bay Segments (58 in Maryland)

Three Segment Scales



- Tabular data derived from multiple sources
- 31 Classifications
 - 2 Forest
 - *17 Agricultural*
 - *6 Urban*
 - 2 Construction
 - 3 Extractive
 - 1 Water

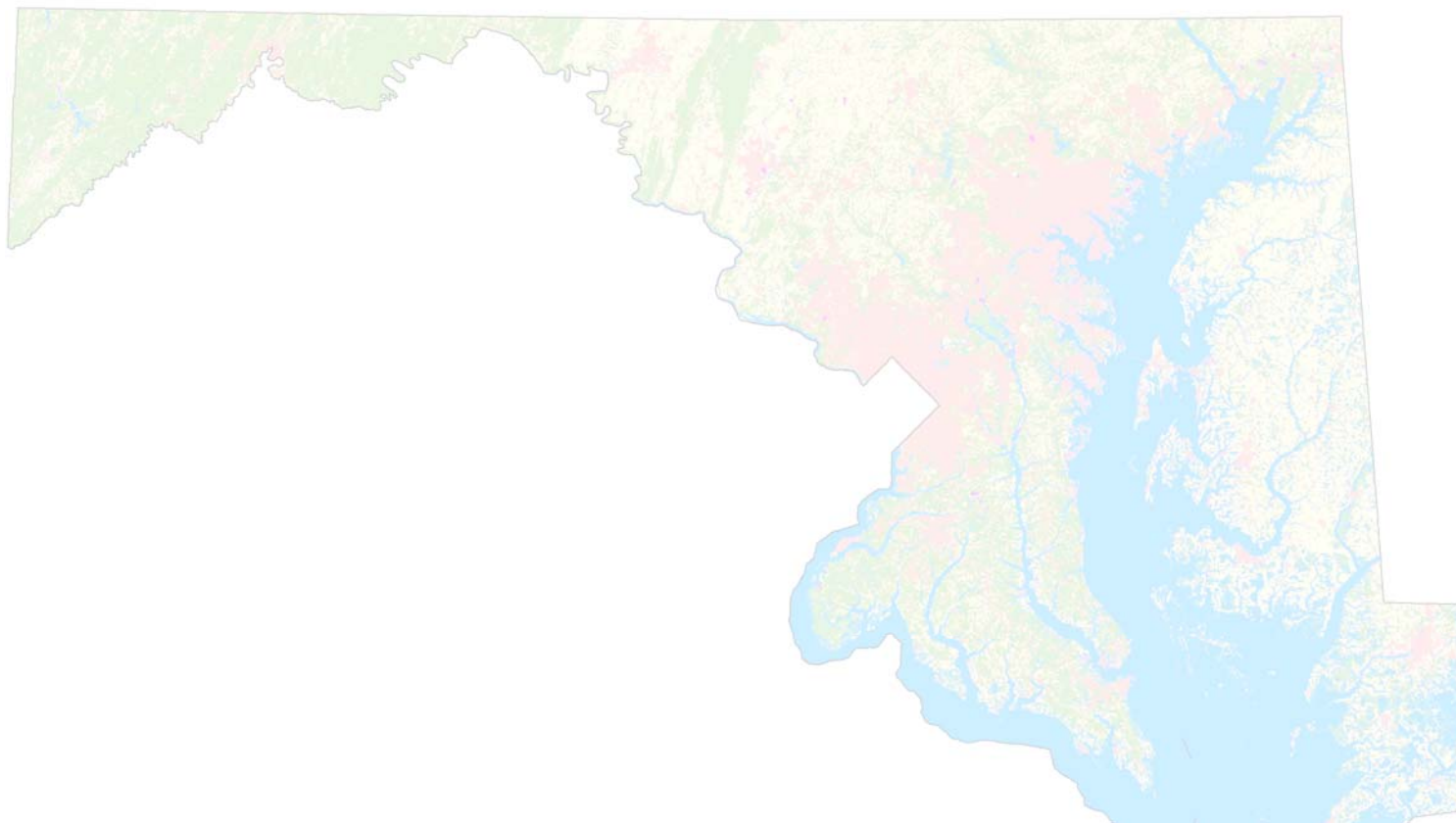
CBP Agriculture

- Final tabular land use classifications
 - Crop (11)
 - Nutrient management high till – w/o manure
 - Nutrient management high till – w/ manure
 - Nutrient management low till
 - High till w/o manure
 - High till w/ manure
 - Low till w/ manure
 - Alfalfa
 - Nutrient management alfalfa
 - Hay w/o nutrients
 - Hay w/ nutrients
 - Nutrient management hay
 - Pasture (3)
 - Pasture
 - Nutrient management pasture
 - Trampled pasture
 - Nursery (1)
 - AFO and CAFO (2)

CBP Urban

- NPDES Regulated (MD Expanded to 14)
 - Impervious
 - Pervious
 - Non-regulated
 - Impervious
 - Pervious
 - CSS
 - Impervious
 - Pervious
- Note: all pervious urban assumed to be turf grass

...The details



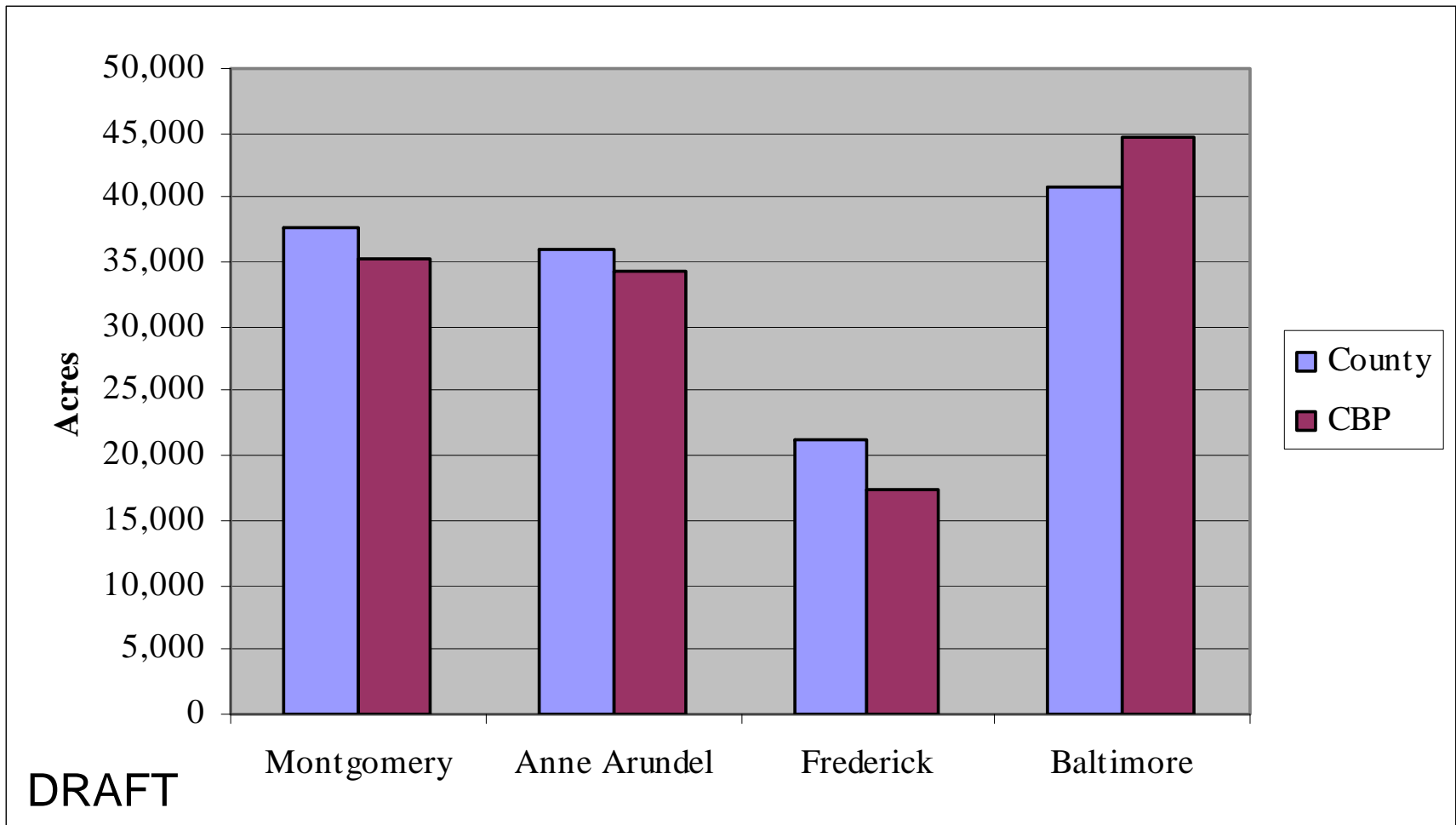
- Tabular land use development
 - Data Sources
 - USDA Agricultural Census data
 - 1982, 1987, 1992, 1997, 2002, and 2007
 - County scale
 - Distributed to land-river segments based on satellite data
 - » 2006 Landsat satellite imagery

Estimating Urban Land

- Source Data
 - Satellite data - 2006 Landsat imagery
 - Roads - NAVTEQ
 - Road widths
 - Single detached housing units - US Census Bureau
 - Rural lot sizes (acres) - MDP Propertyview
 - Impervious coefficients
 - RESAC impervious grid
 - Residential lot analysis
 - Turf grass coefficients
 - Land cover proportions within buffered rural roads

Local Urban Data Comparison

P5.3.2 Impervious land use comparison to current county planimetric data



Estimating Other Land Uses

- Extractive
 - State mining permit data
 - GIS layer
- Construction
 - State permit data
 - County scale
- Water
 - Satellite data
- Forest
 - Satellite data

Summary

- Revised CBP P5.3.2 land use greatly improves both total urban and urban impervious estimates
- Revised CBP P5.3.2 land use compares well to local county data

...Expanding the urban sector categories



Expanded Urban Source Sectors

- Completed by MDE
- Further Refinement
 - NPDES Regulated (Impervious/Pervious)
 - County Phase I MS4s
 - County Phase II MS4s
 - Municipal Phase II MS4s
 - SHA Phase I and II MS4
 - State Phase II MS4
 - Federal Phase II MS4
 - Industrial
 - Non-regulated (Impervious/Pervious)
 - Low density (large lot) residential development
 - No stormwater conveyance systems
 - Stormwater conveyance systems not owned or operated by the county or municipality
 - State owned development in non-MS4 counties
 - Federally owned development in non-MS4 counties
 - SHA owned roads in non-MS4 counties

Refining Urban Sectors

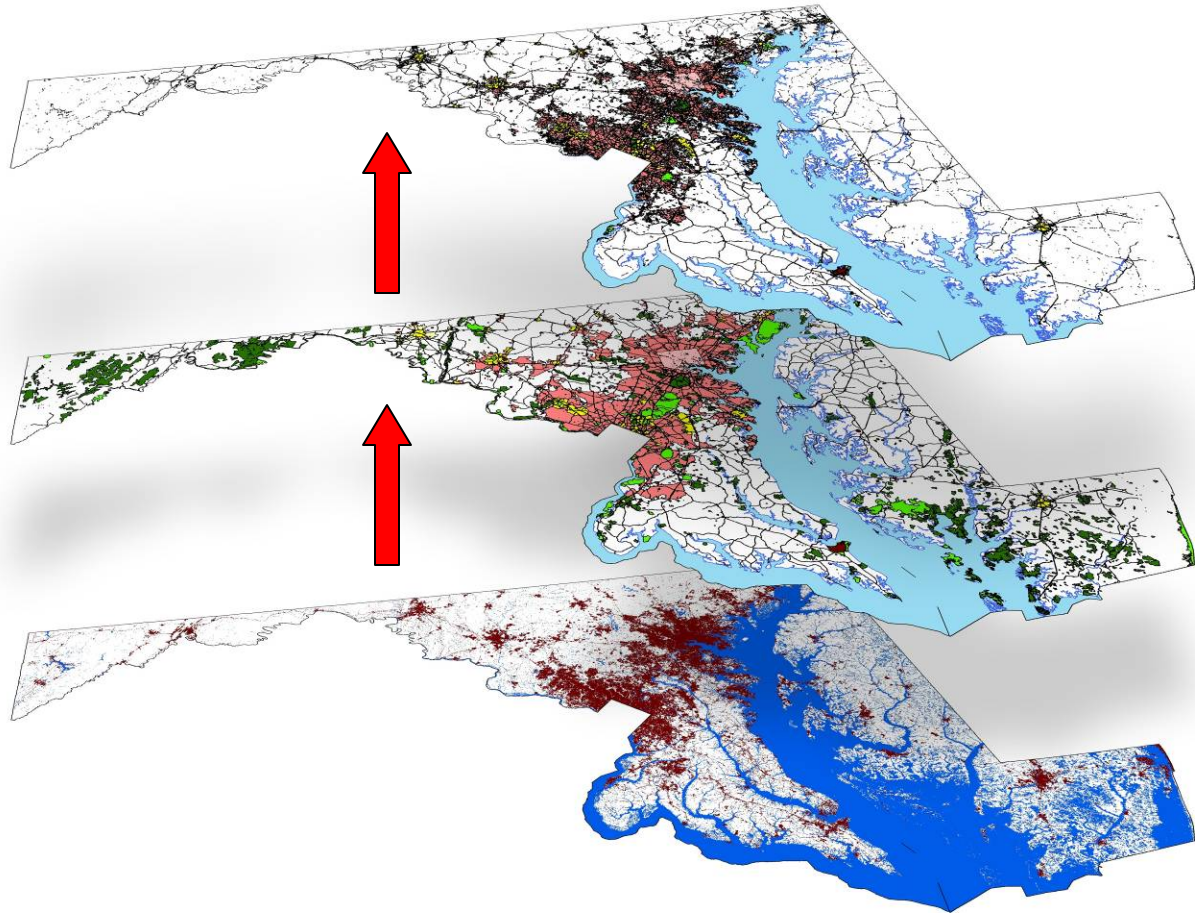
Expanded Urban

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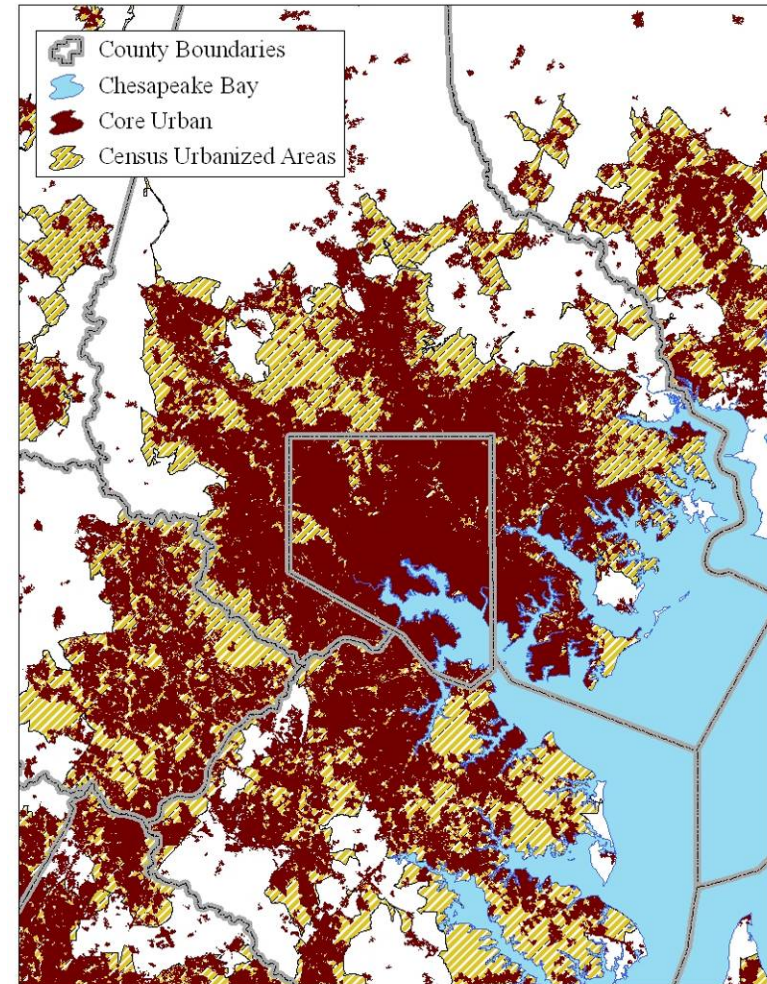
Overlay

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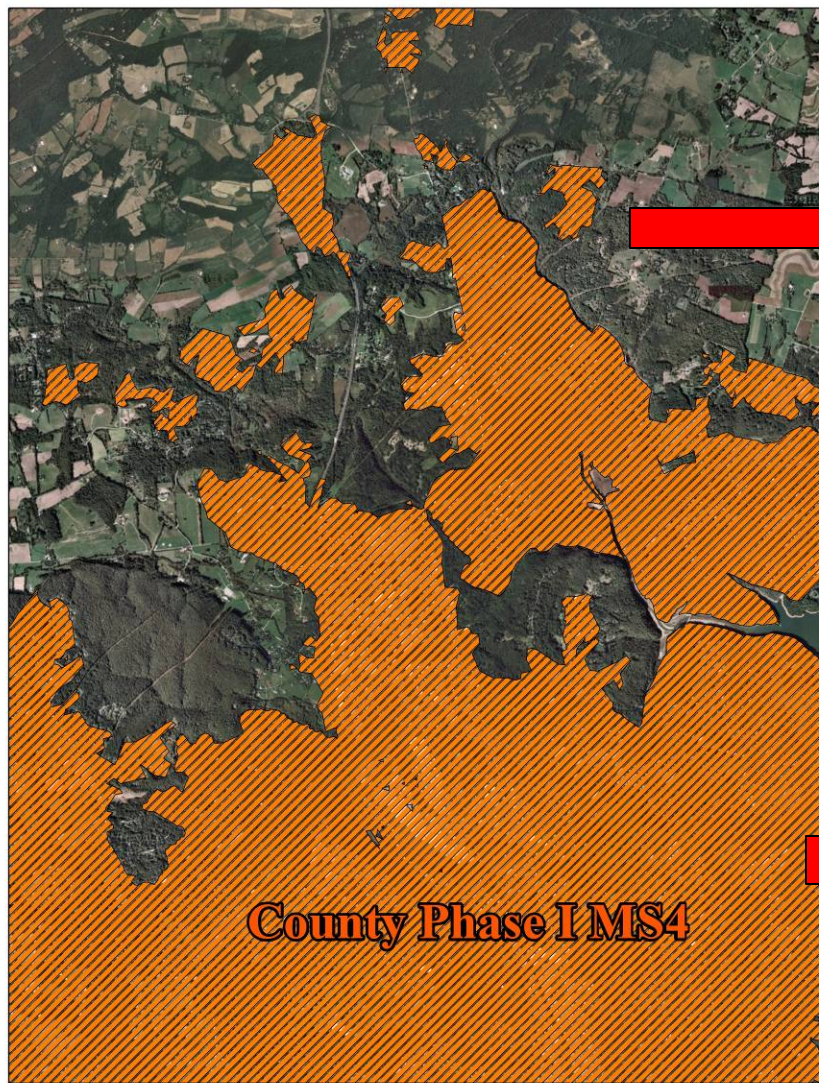
CBP Urban



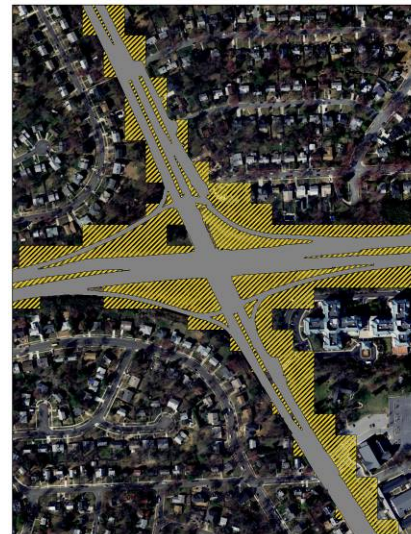
- Jurisdictional boundaries
 - County
 - P5.3.2 land segments
 - Municipal
 - MDP Propertyview Data
- NPDES regulated portion
 - “Core Urban”
 - Census Urbanized Areas



Phase I/II Example



- SHA
 - Phase I MS4
 - SHA Phase I MS4 impervious cover delineation
 - Right-of-way estimate
 - RESAC transportation
 - Phase II MS4 and Non-regulated
 - MDP Propertyview - road data
 - Impervious area estimate
 - » Interstates and state roads
 - » Assumed number of lanes
 - » Lane widths (SHA design manual)
 - Right-of-way estimate
 - » RESAC transportation

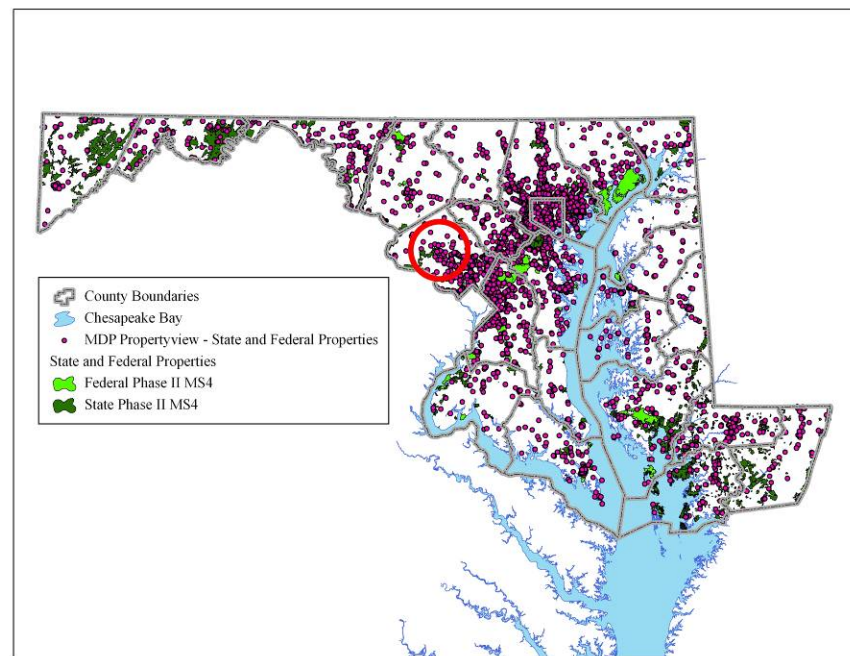


State and Federal

- State Phase II MS4
 - DNR Public Properties data layer
 - MDP Propertyview
 - Extract state owned exempt properties

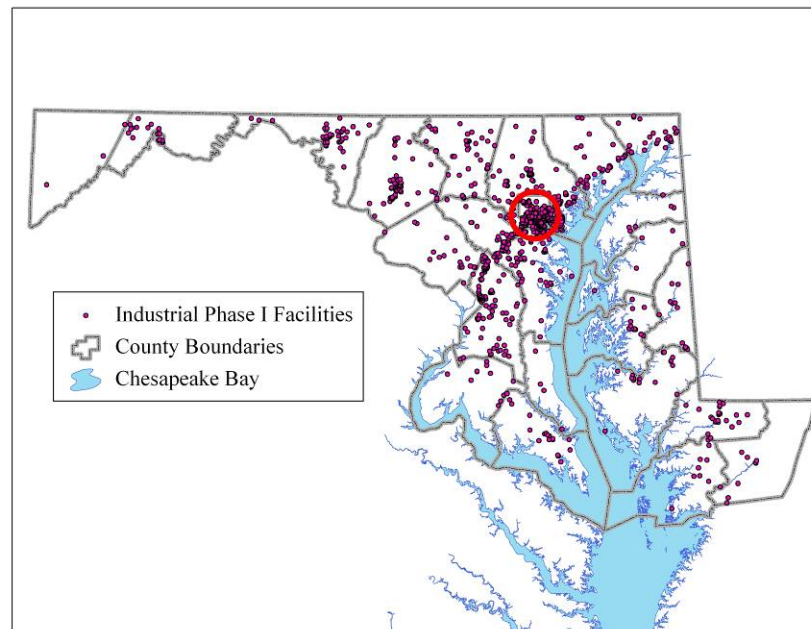
- Federal Phase II MS4
 - CBP P5.3.2 federal land-river segments
 - DNR Public Properties data layer
 - Extract federally owned lands
 - MDP Propertyview
 - Extract federally owned exempt properties

- Non-regulated state and federal
 - Within non-MS4 counties
 - Same methods

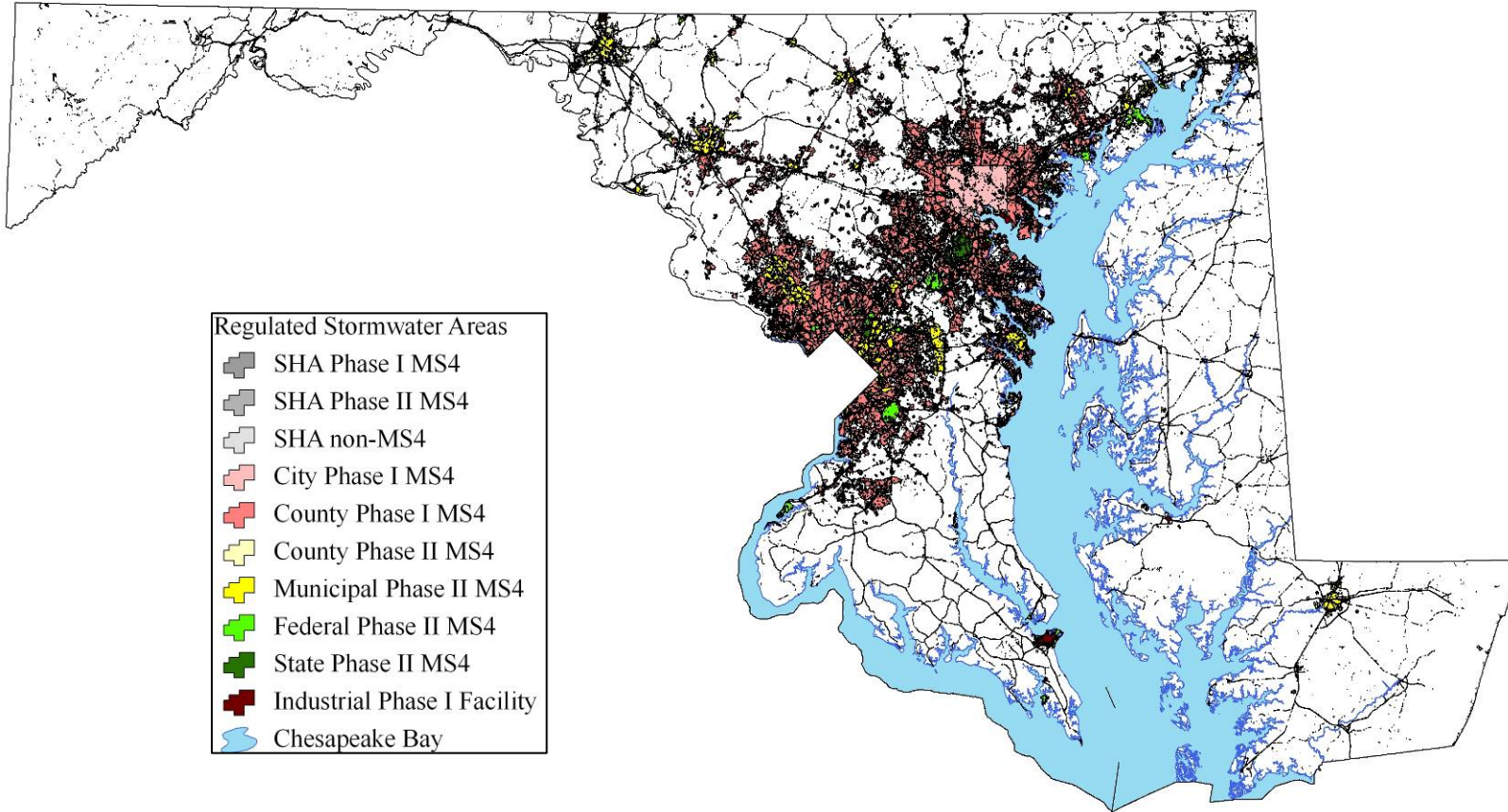


Industrial Stormwater

- General industrial stormwater permits
- Process water permits with stormwater requirements
 - MDE permit applications
 - Geographic coordinates



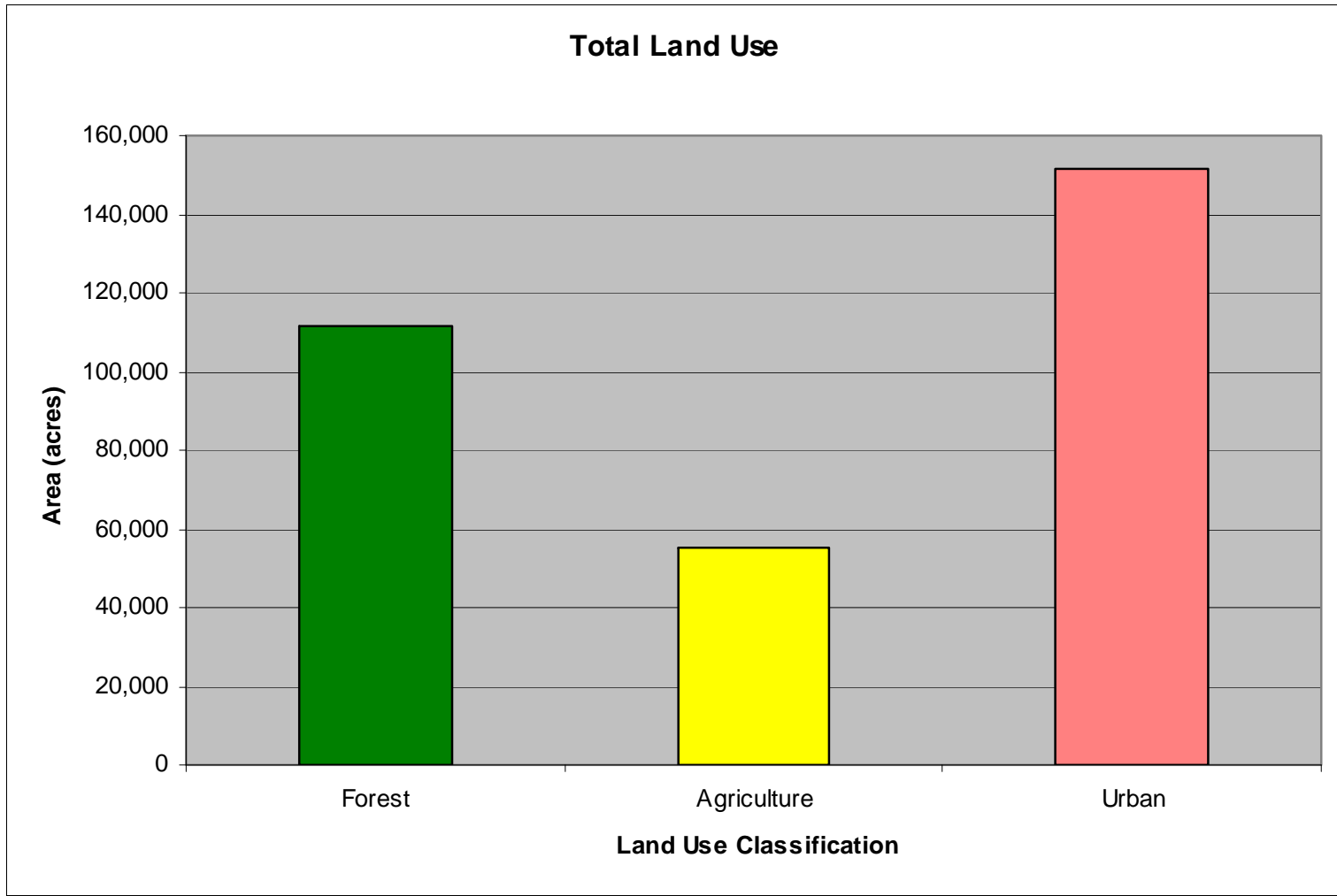
Expanded Urban Sectors



...Land Use

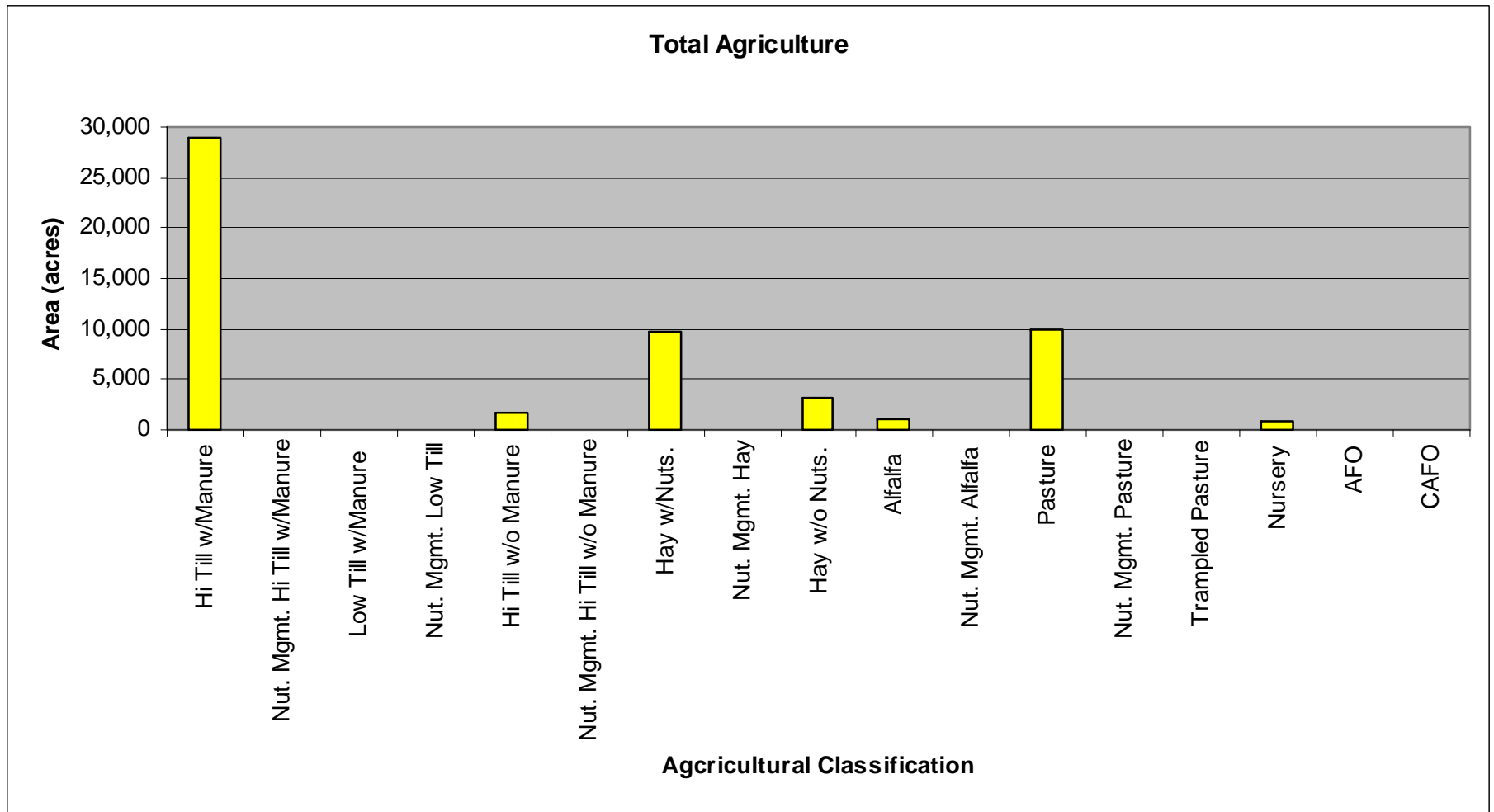
Final 2010 pre-BMP Land Use

MO County – Total Land Use



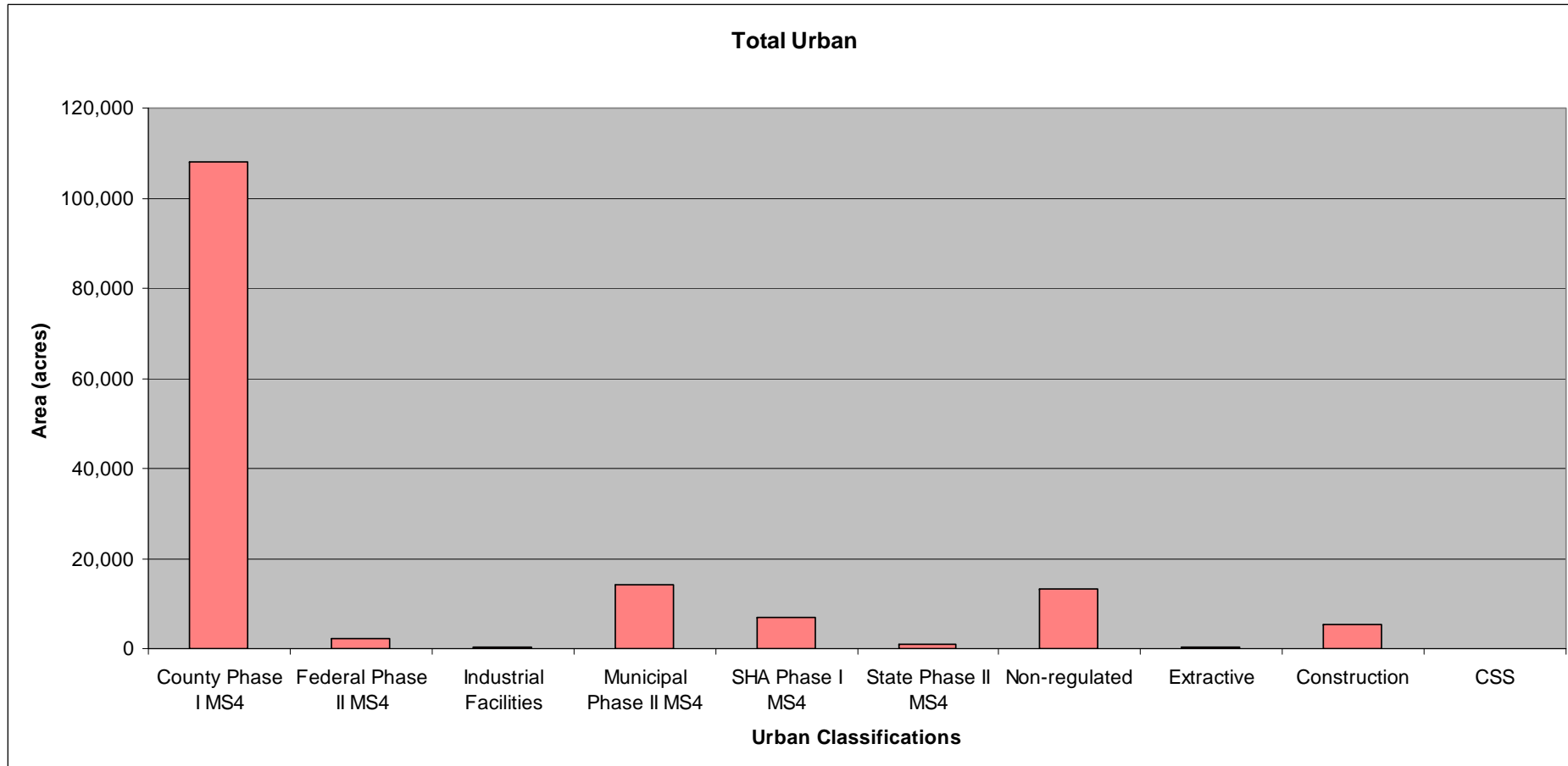
Final 2010 pre-BMP Land Use

MO County – Agriculture



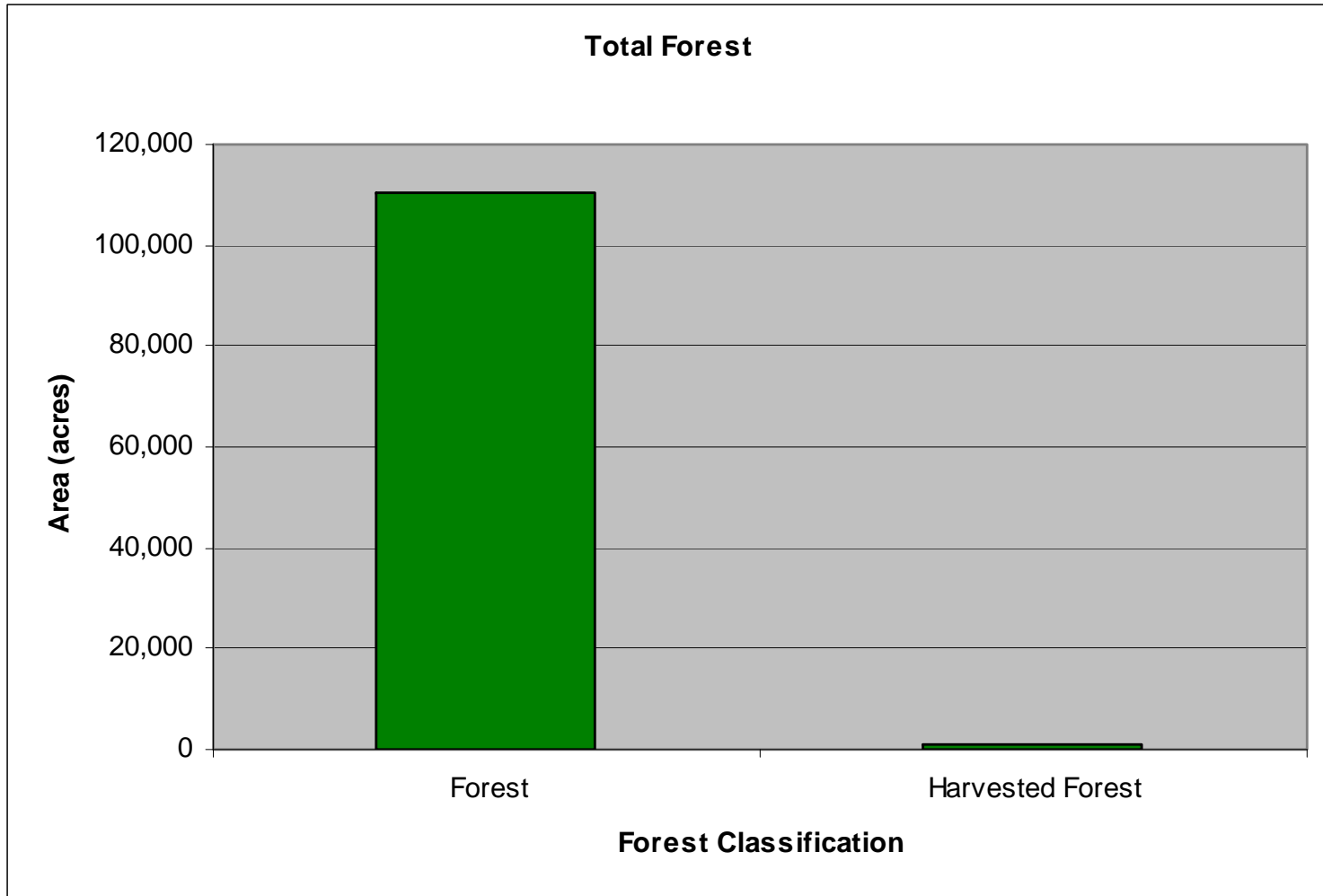
Final 2010 pre-BMP Land Use

MO County – Urban



Final 2010 pre-BMP Land Use

MO County – Forest



Final 2010 pre-BMP Land Use

Next Steps

- Revise expanded urban land use disaggregation once 2010 post-BMP land use (i.e., 2010 progress scenario land use) is finalized
- Provide land use summaries to counties by end of May
- BMP information in late June