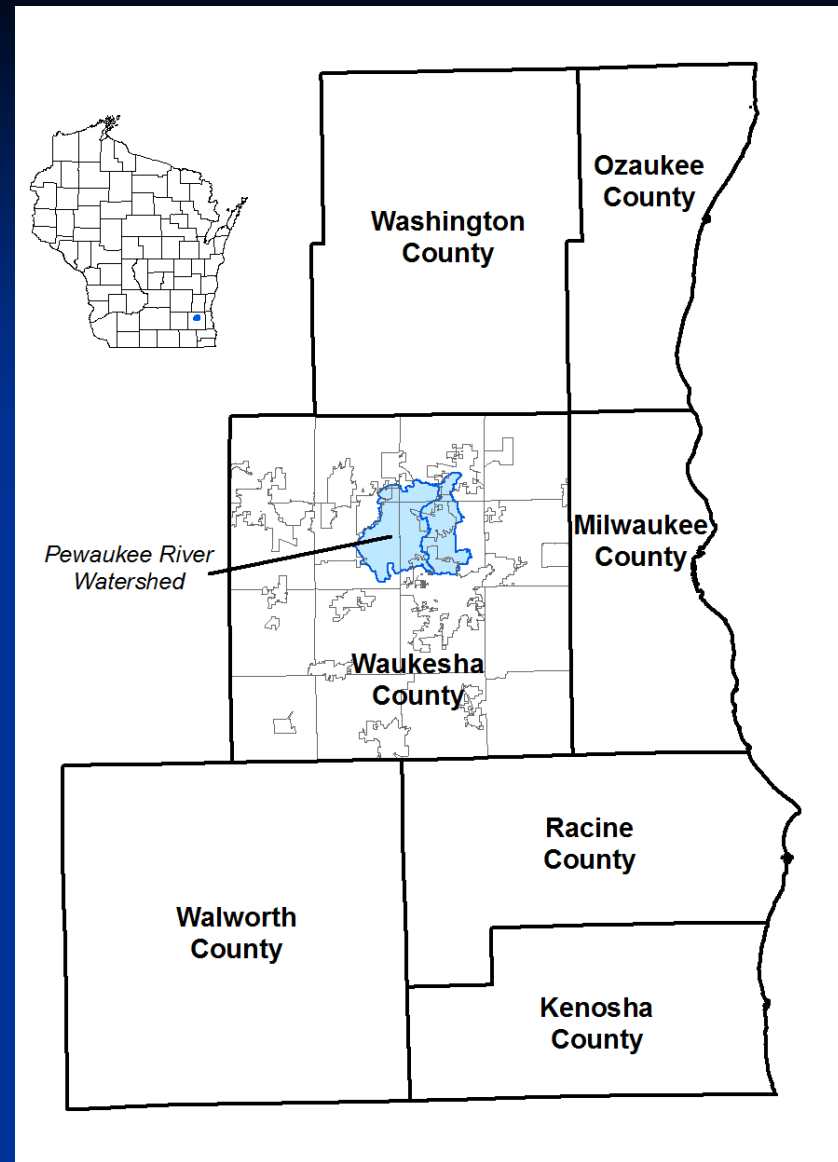


Managing the Water's Edge: Making Natural Connections

Case Study-Pewaukee River Watershed Protection Plan



Riparian Buffer Series:

Managing the Water's Edge Making Natural Connections



Problem Statement:

Despite significant research related to buffers, there remains no consensus as to what constitutes optimal riparian buffer design or proper buffer width for effective pollutant removal, water quality protection, prevention of channel erosion, provision of fish and wildlife habitat, enhancement of environmental corridors, augmentation of stream baseflow, and water temperature moderation.



Our purpose in this document is to help protect and restore water quality, wildlife, recreational opportunities, and scenic beauty.

This material was prepared in part with funding from the U.S. Environmental Protection Agency Great Lakes National Program Office provided through CMAP, the Chicago Metropolitan Agency for Planning.

In preparation

Continuity along Stream Corridors Making Natural Connections



Problem Statement:

"Balancing the needs of community development, economic growth, and transportation systems with equally important environmental and outdoor recreation needs can pose important challenges in stream corridors; fragmentation, or disconnections in the stream environment and associated habitat, degrades quality of life for both people and watershed systems."

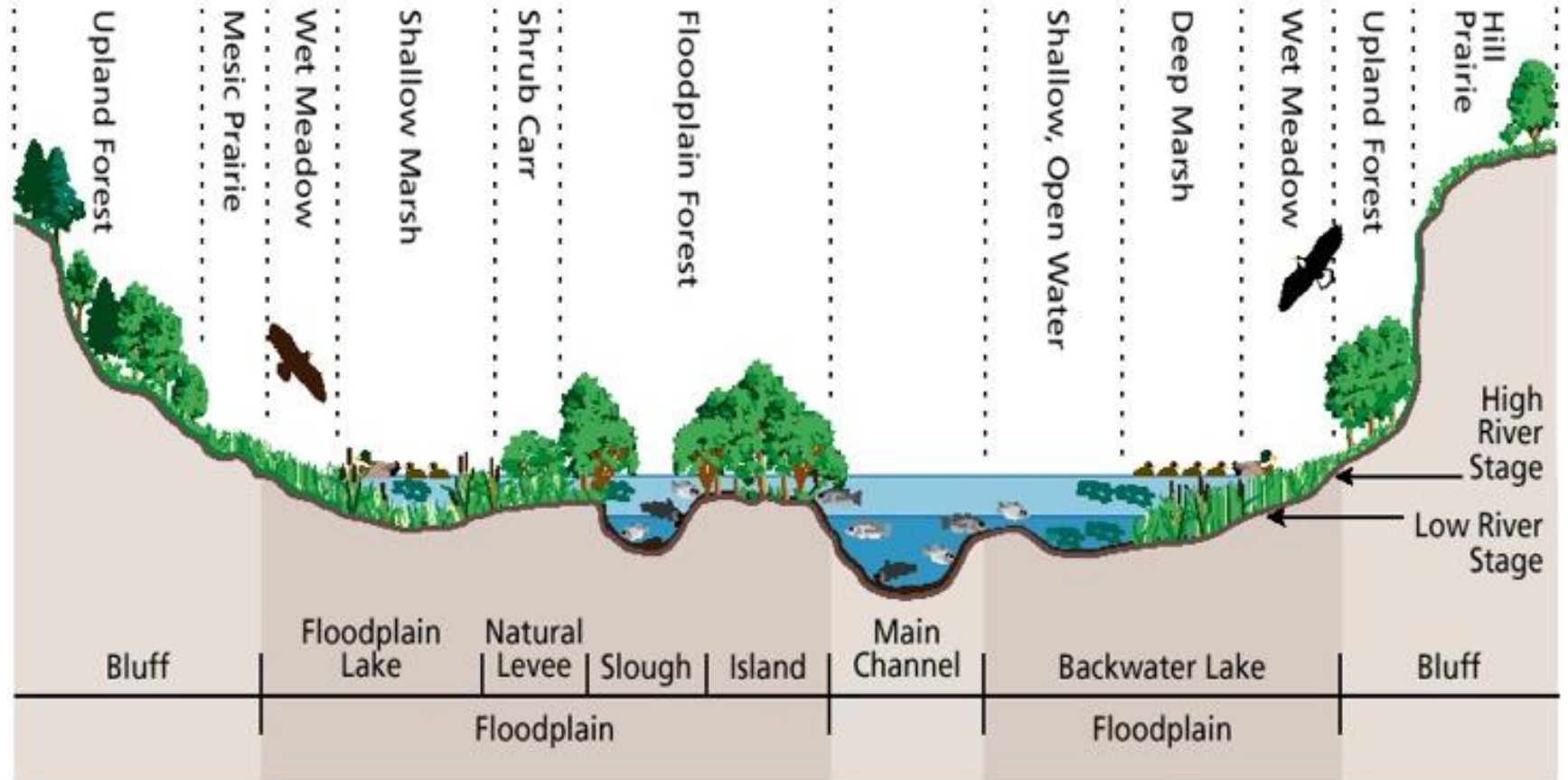


Our purpose in this document is to highlight some concepts to address issues associated with stream crossings and their effects on water quality, water movement, fisheries passage, flooding, and riverside communities.

Preparation of this publication was funded in part by the U.S. Environmental Protection Agency, Great Lakes National Program Office, Lake Michigan Watershed Academy.

<http://www.sewrpc.org/SEWRPCFiles/Environment/RecentPublications/ManagingtheWatersEdge-brochure.pdf>

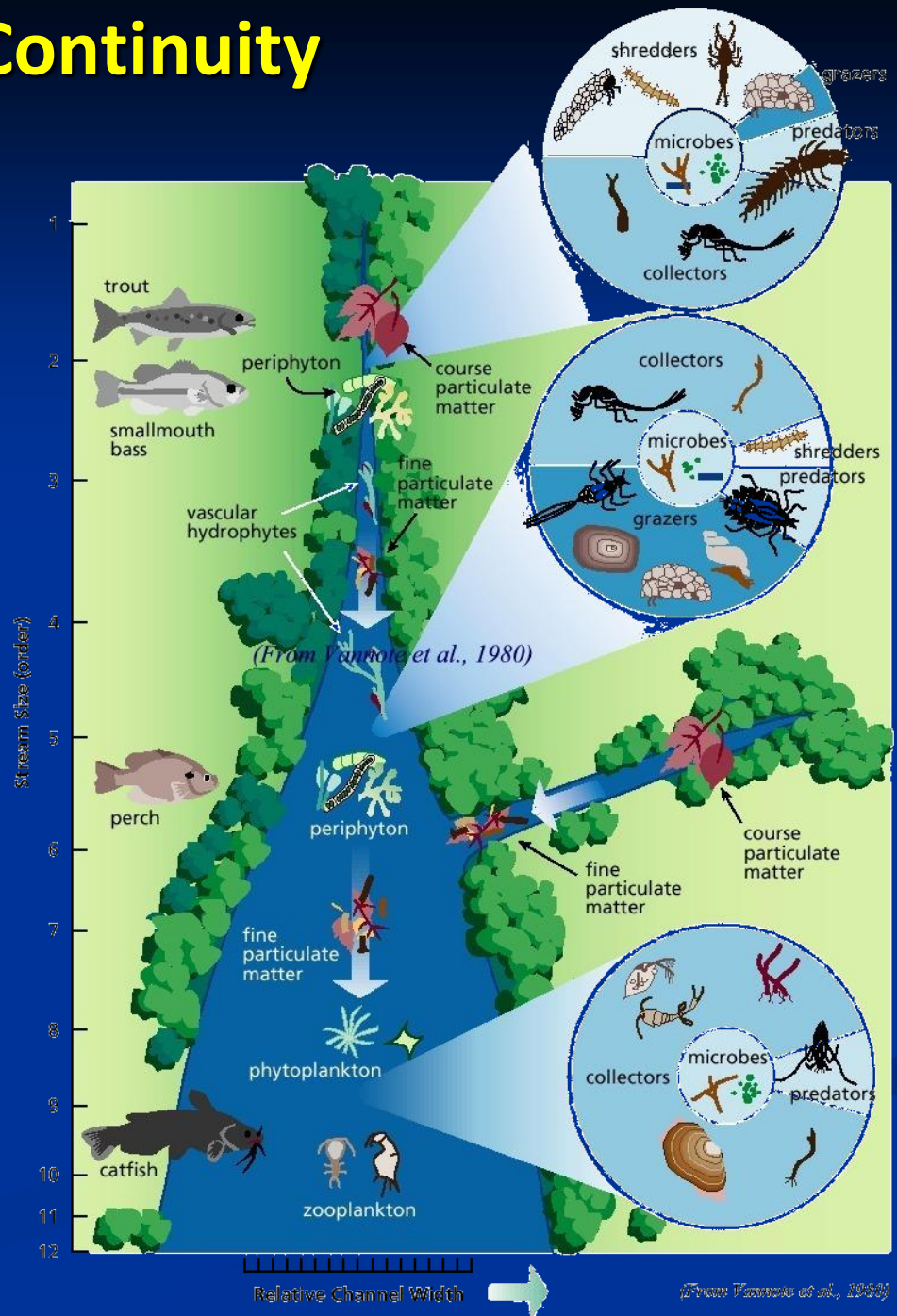
Riparian Buffer Width



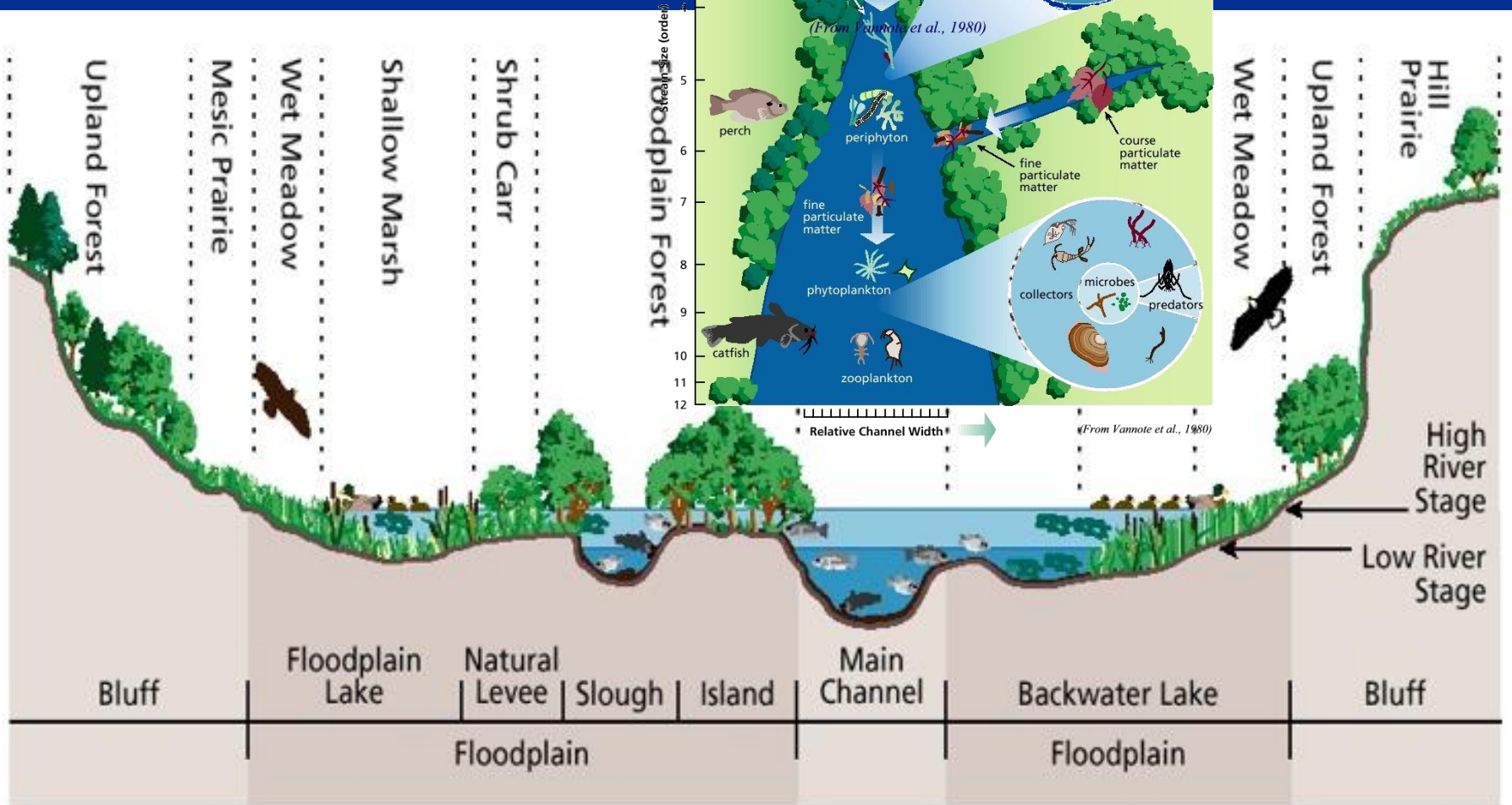
(From Sparks, Bioscience, 1995)

Riparian Buffer Continuity

River Continuum Concept (Vannote et al 1980)



Merging Concepts



How much width do we need?



Pewaukee River Watershed

2010 Land Use

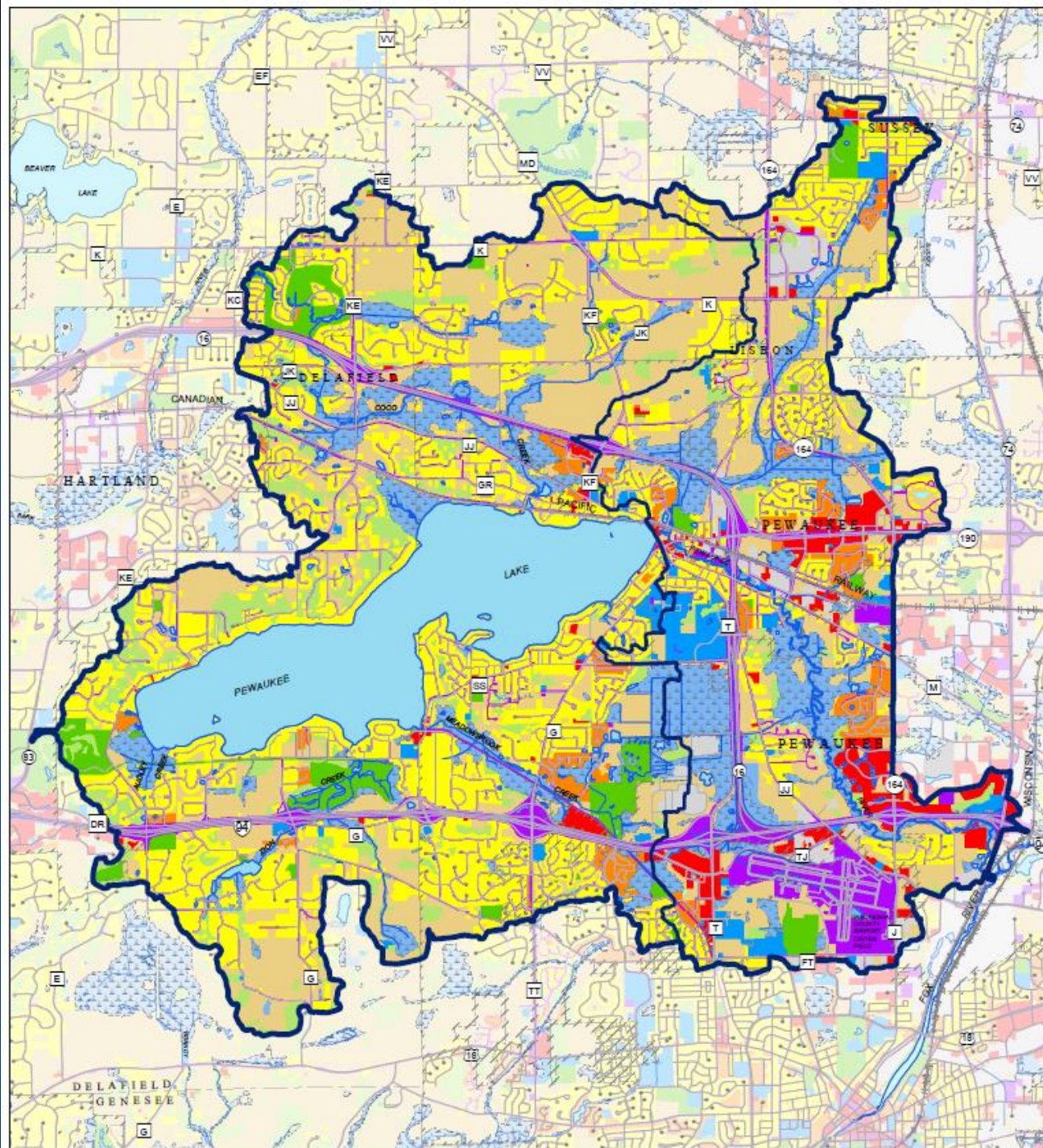
49% Urban

51% Rural

Watershed Size

24,380 acres

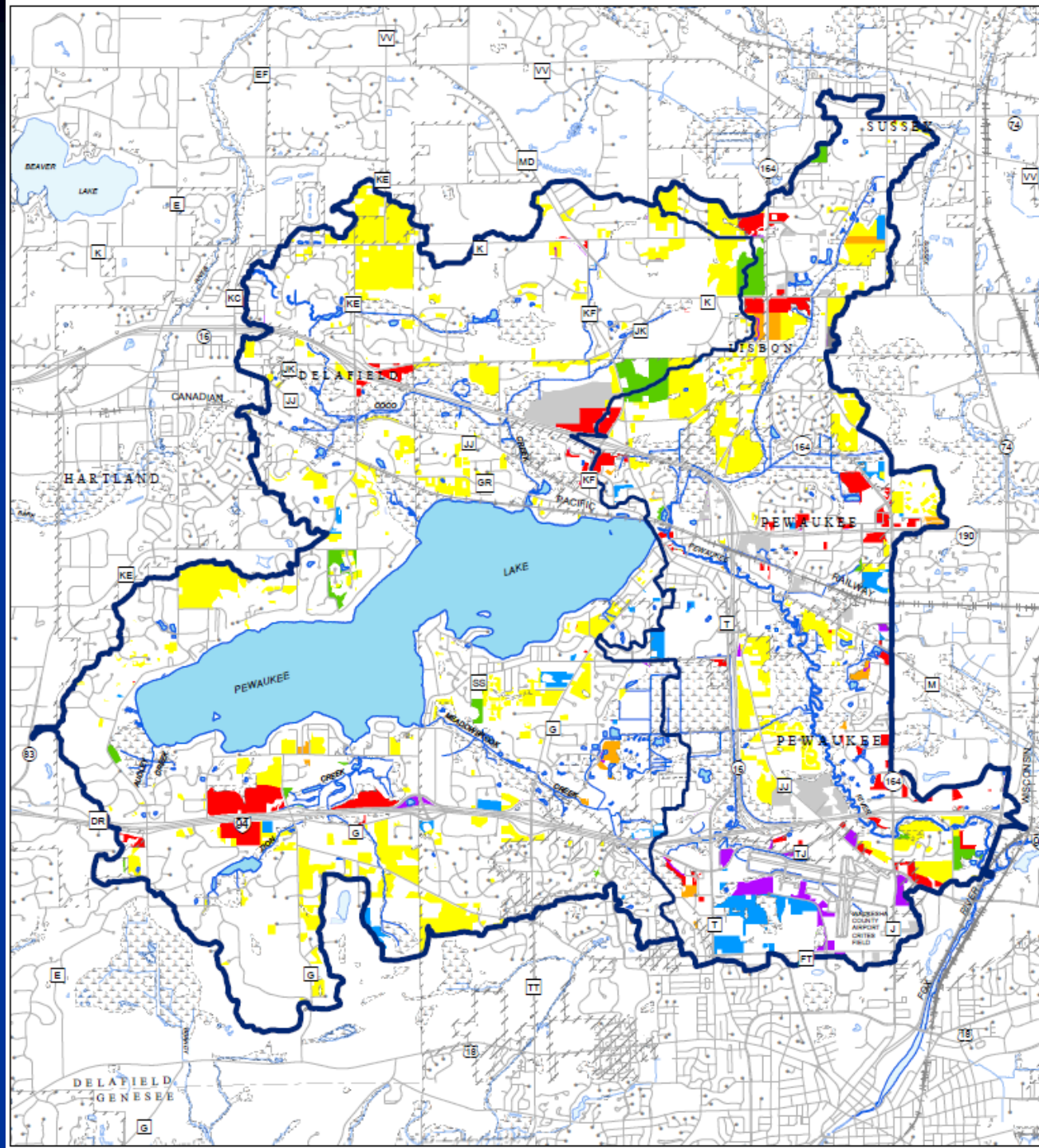
(38 sq miles)



Pewaukee River Watershed

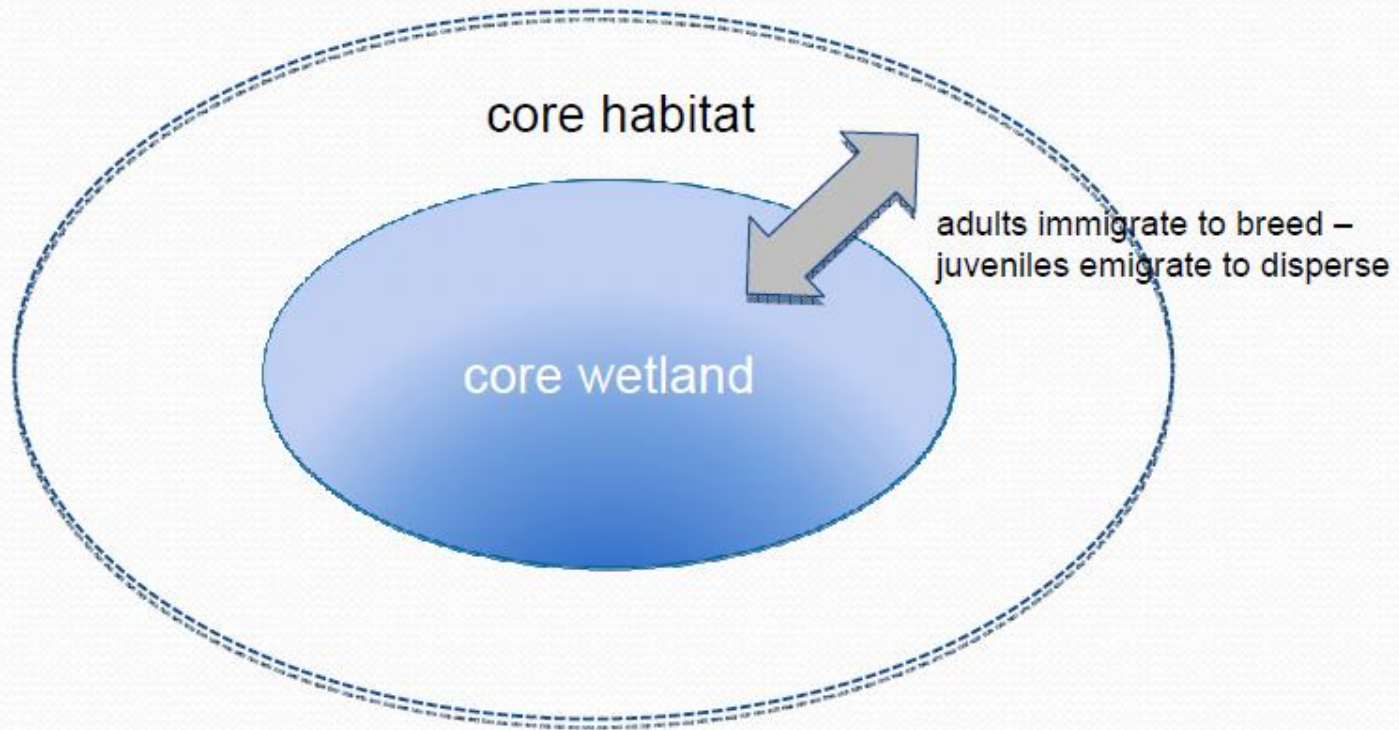
Planned 2035 Land Use

64% Urban
34% Rural



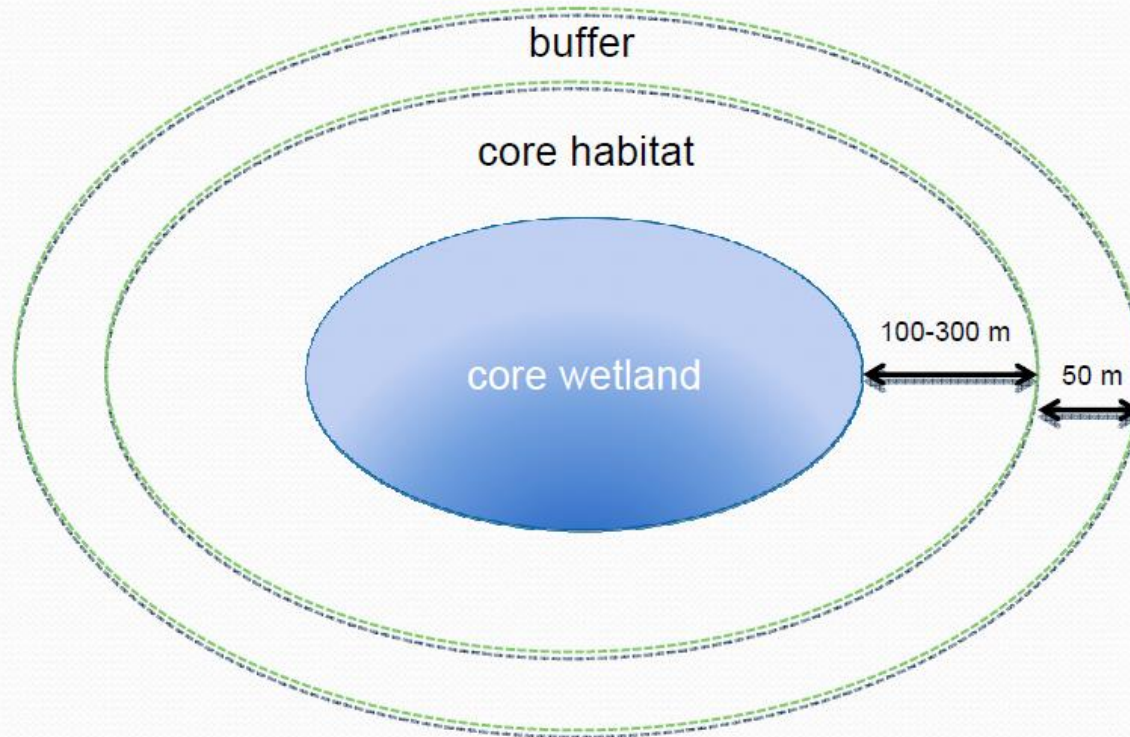
How much width do we need?

Core habitat – a defined area of critical habitat for a species



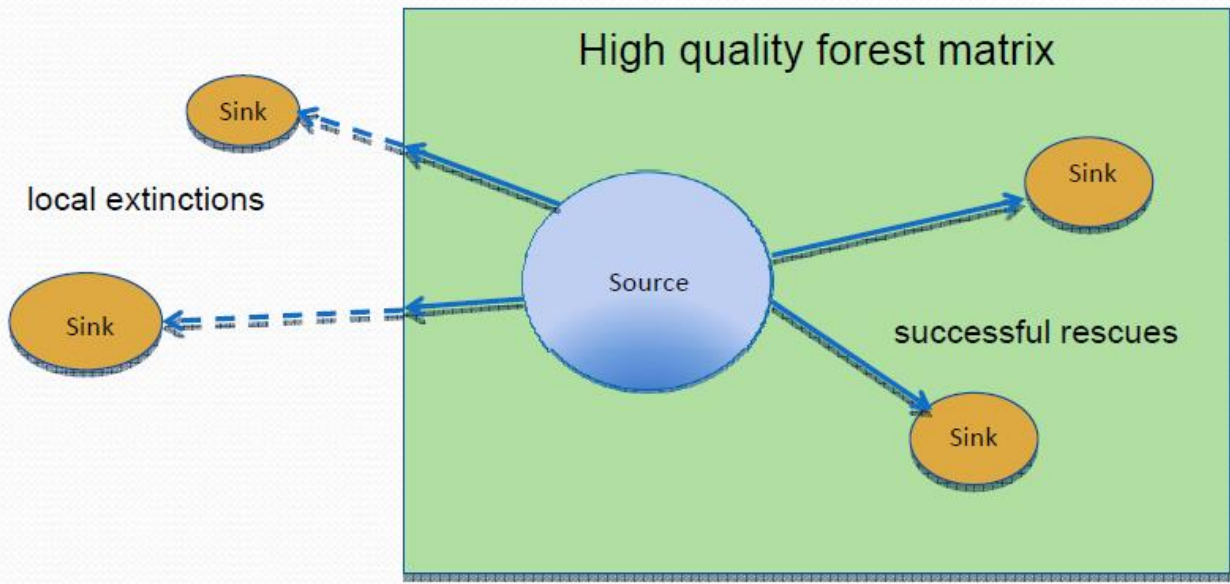
e.g., terrestrial habitat for amphibians surrounding a wetland

Management Criteria
Amphibian Core Habitat = 100 – 300 meters
Buffer = 50 meters



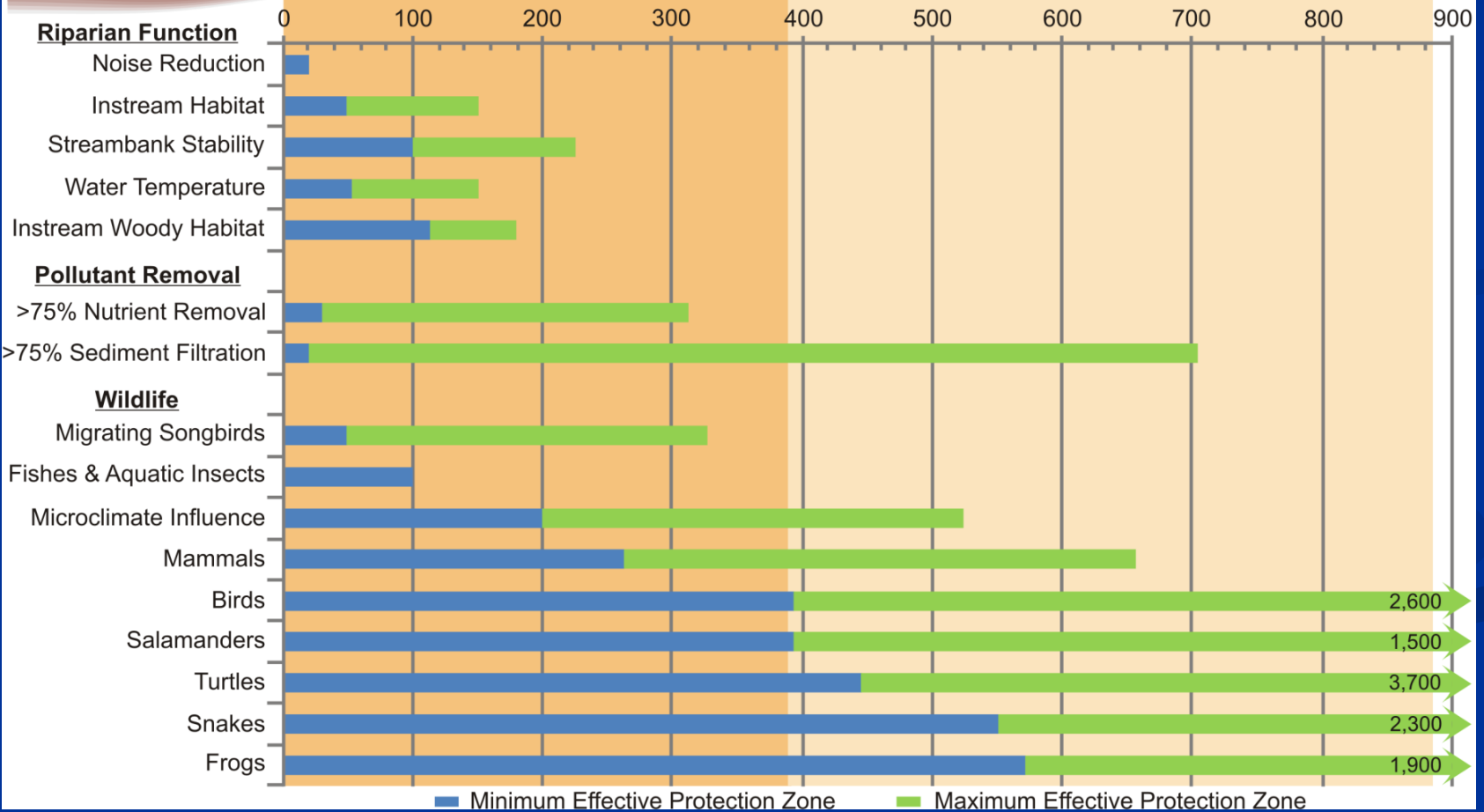
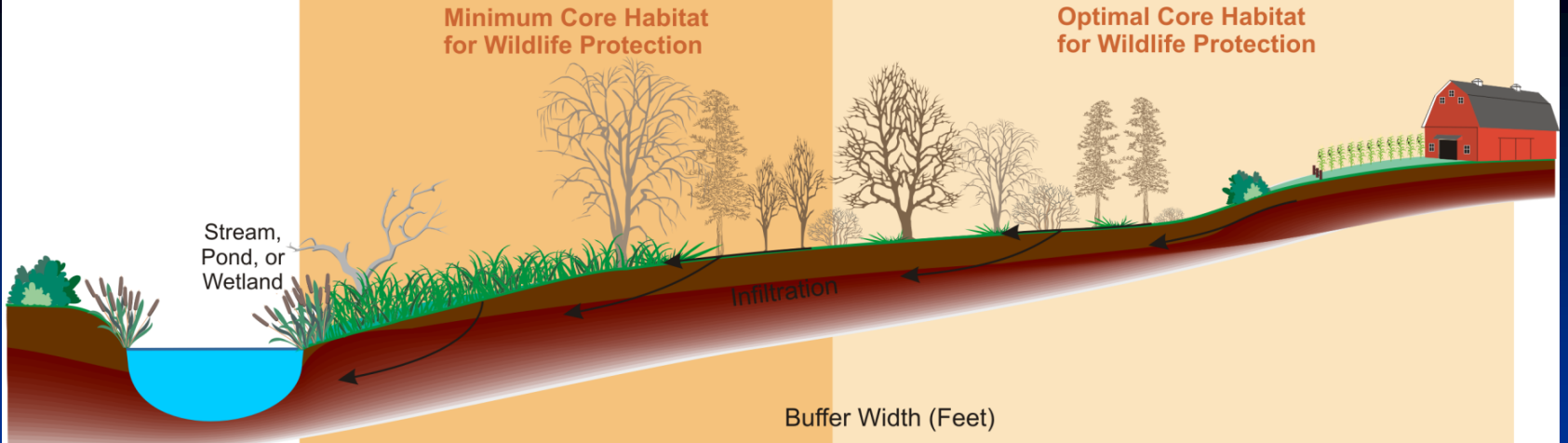
Source: Semlitsch & Bodie, 2003, Biological Criteria for Buffer Zones around Wetlands and Riparian Habitats for Amphibian and Reptiles

Criteria for Terrestrial Core Habitat and Importance of Connectivity for Amphibians

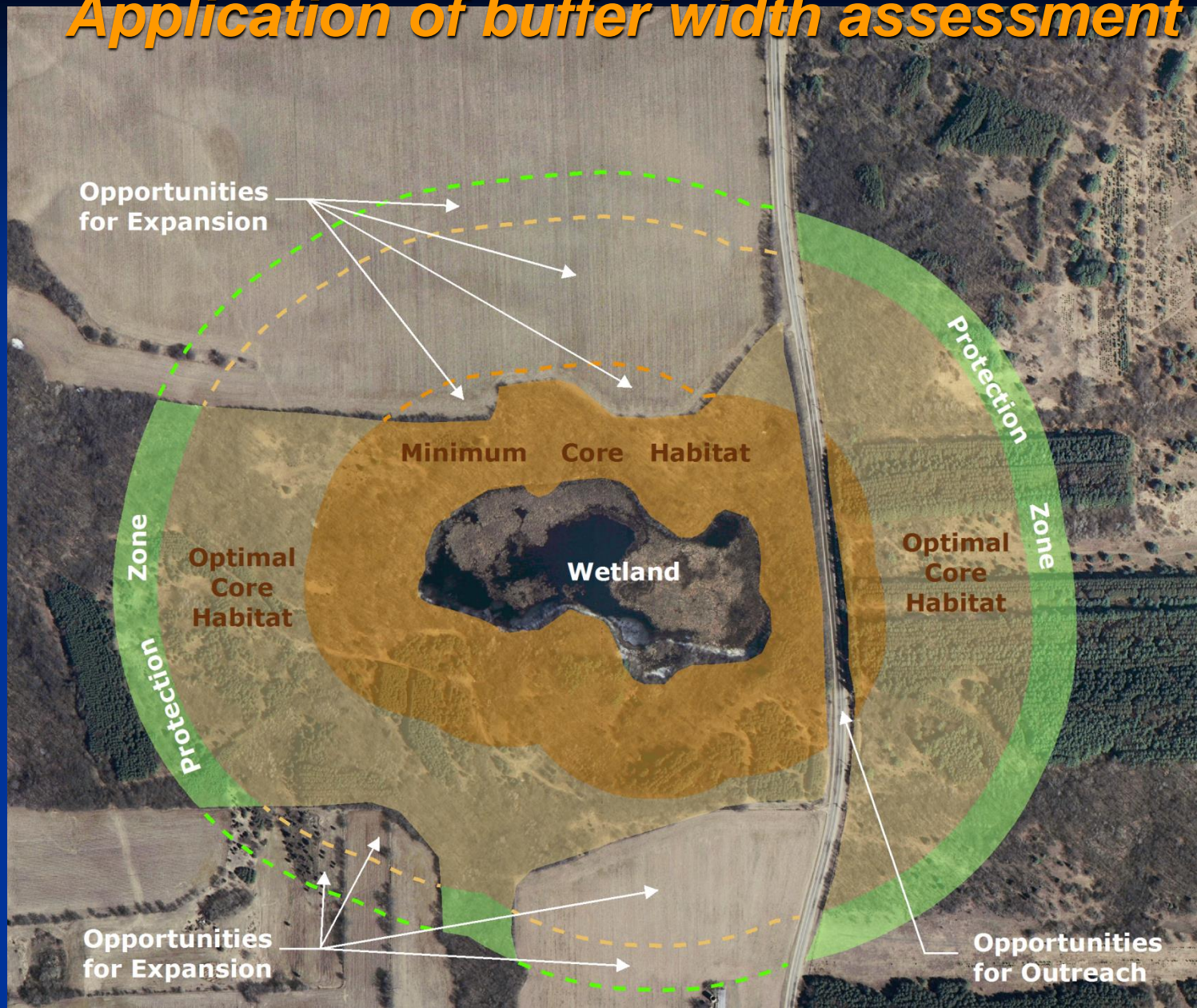


Wood frogs require immigration from source populations!

Raymond D. Semlitsch and Tracy A.G. Rittenhouse
University of Missouri University of Wisconsin



Application of buffer width assessment



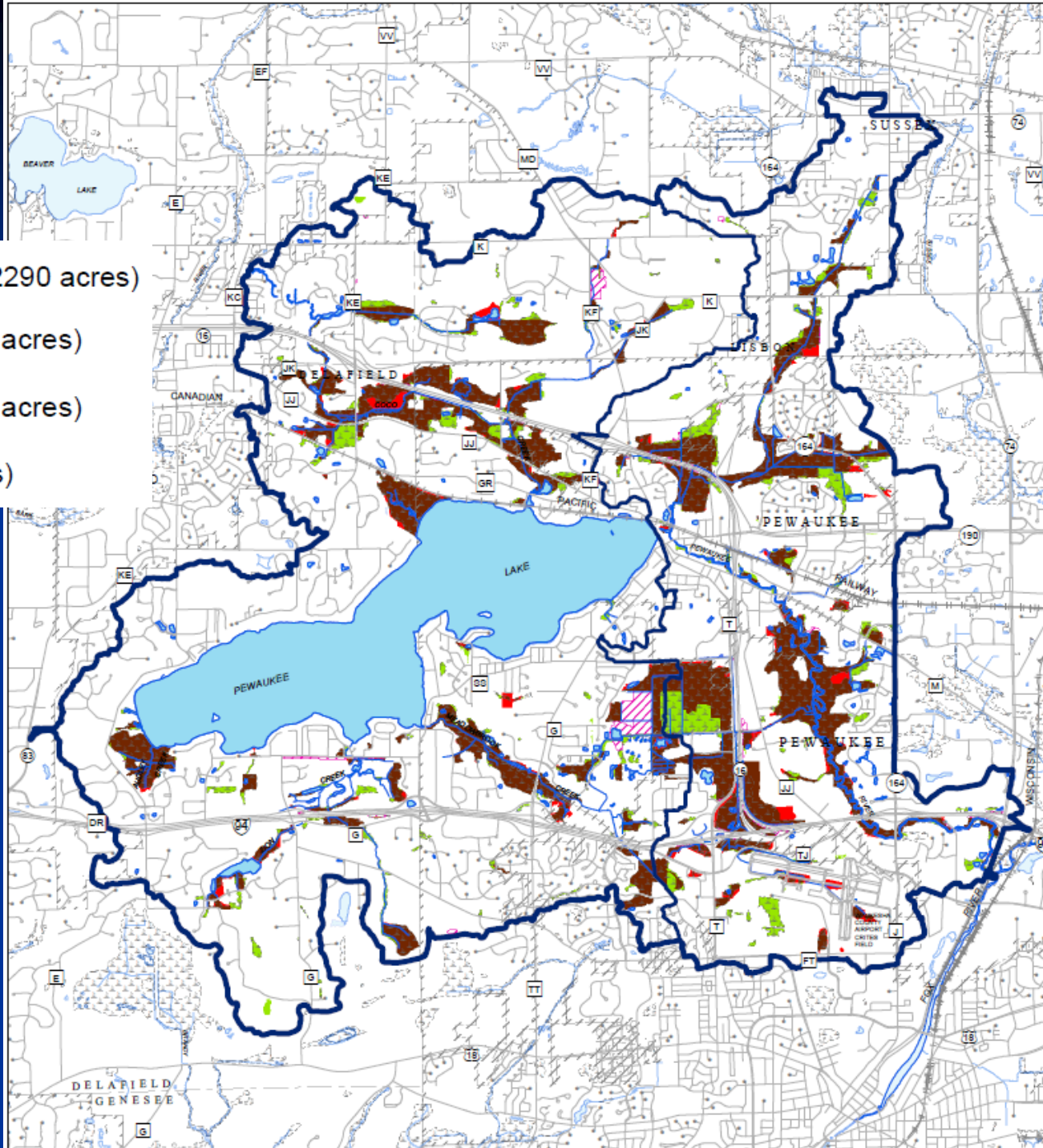
Stream Buffers get complicated








**Poll Question #1:
Revised 2005 WDNR Wetland Inventory**

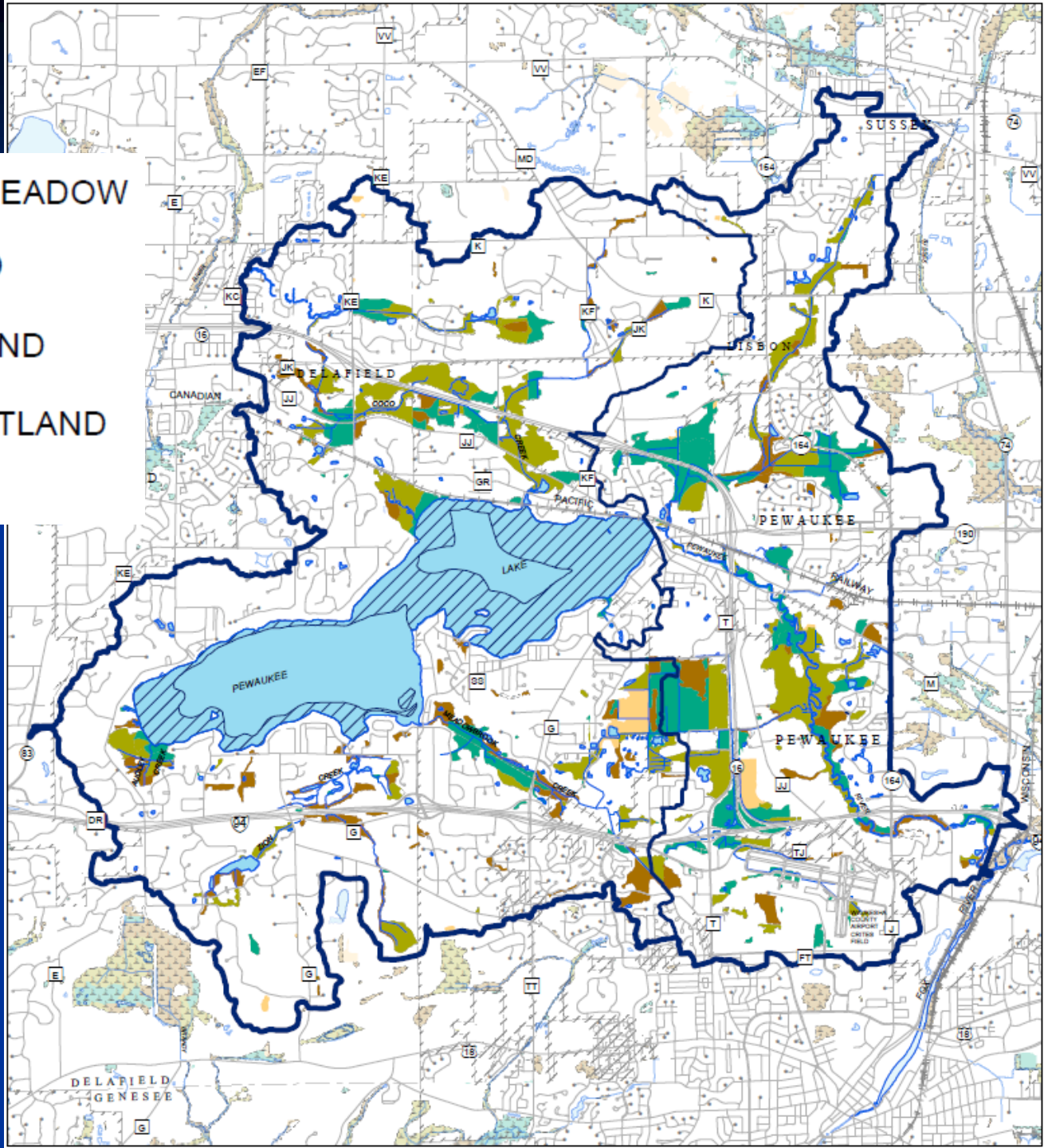
Wetland Losses And Gains: 2000-2010

-  2000 and 2010 Wetlands (2290 acres)
-  2000 Wetlands - Loss (206 acres)
-  2010 Wetlands - Gain (587 acres)
-  Farmed Wetlands (84 acres)









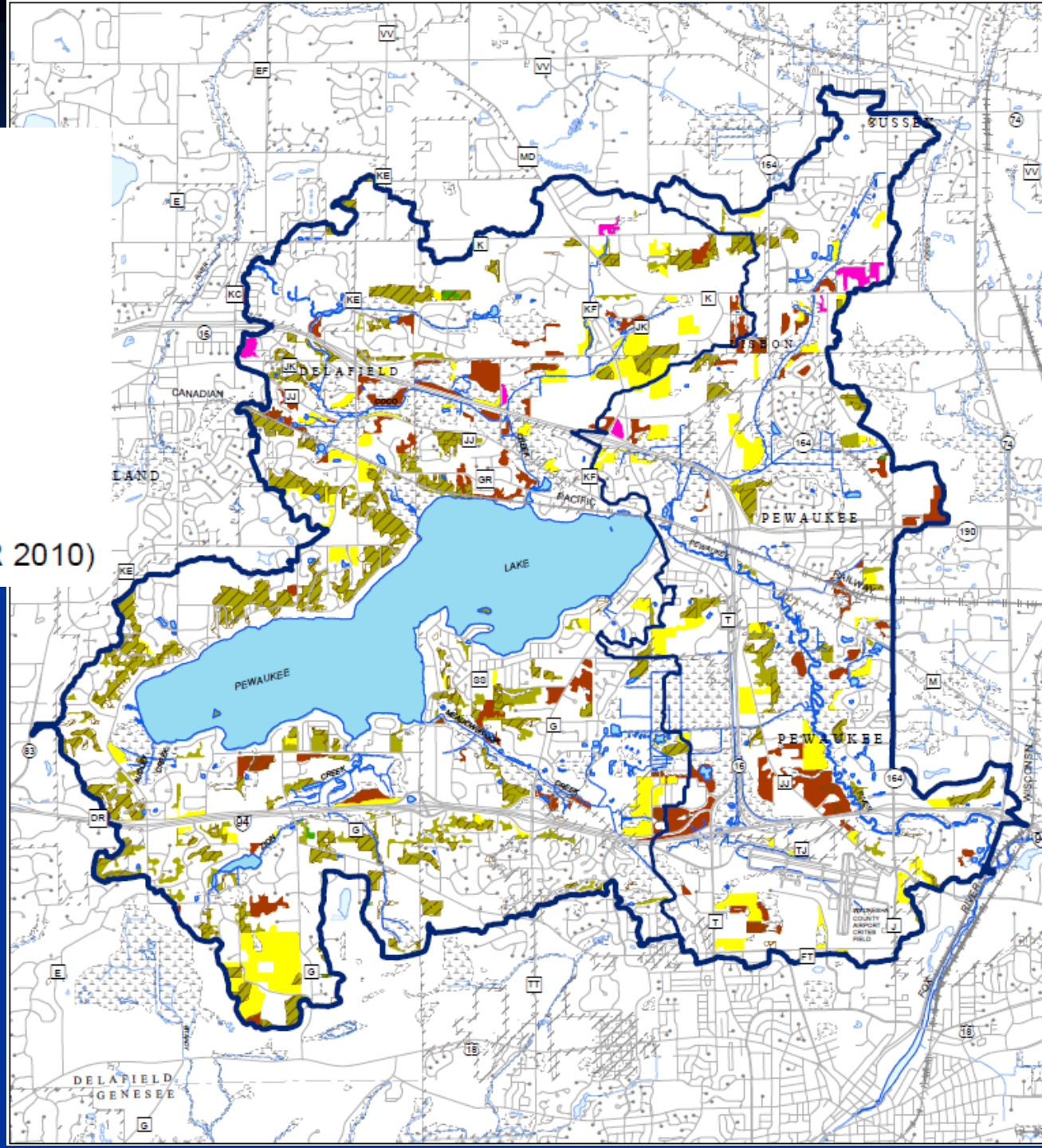
Wetland Types

-  EMERGENT WET MEADOW
-  FARMED WETLAND
-  FORESTED WETLAND
-  SCRUB/SHRUB WETLAND
-  AQUATIC BED



Upland Types

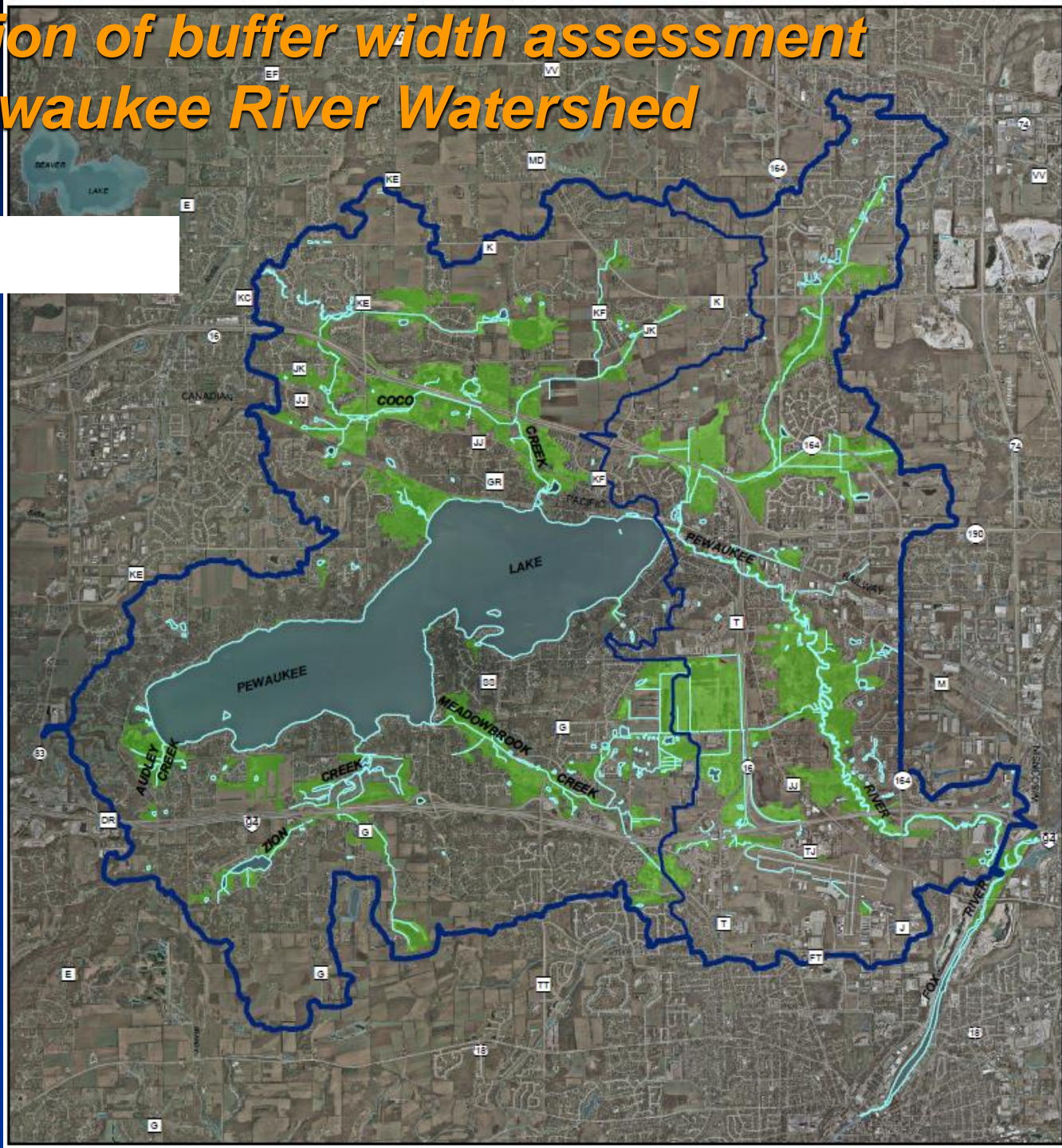
-  BRUSH
-  CONIFER
-  DECIDUOUS
-  GRASSLAND
-  MIXED AREA
-  WOODLANDS (YEAR 2010)

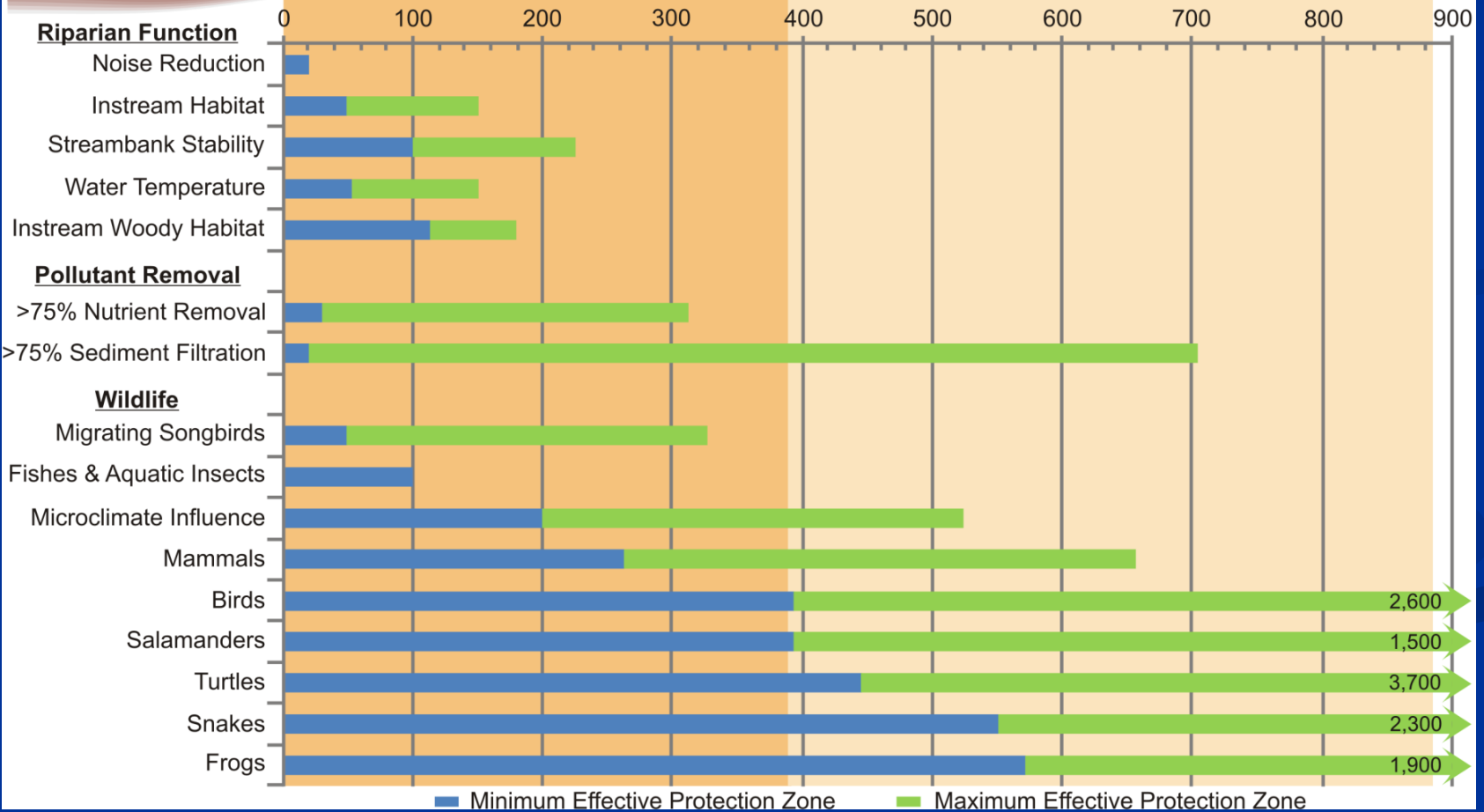
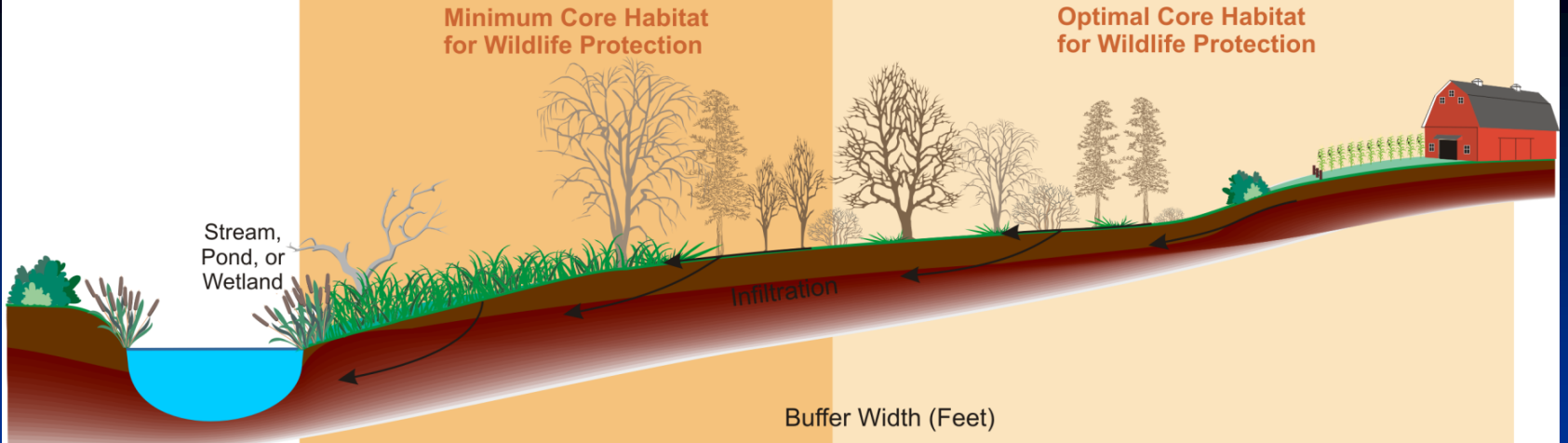


Application of buffer width assessment Pewaukee River Watershed







EXISTING RIPARIAN BUFFER

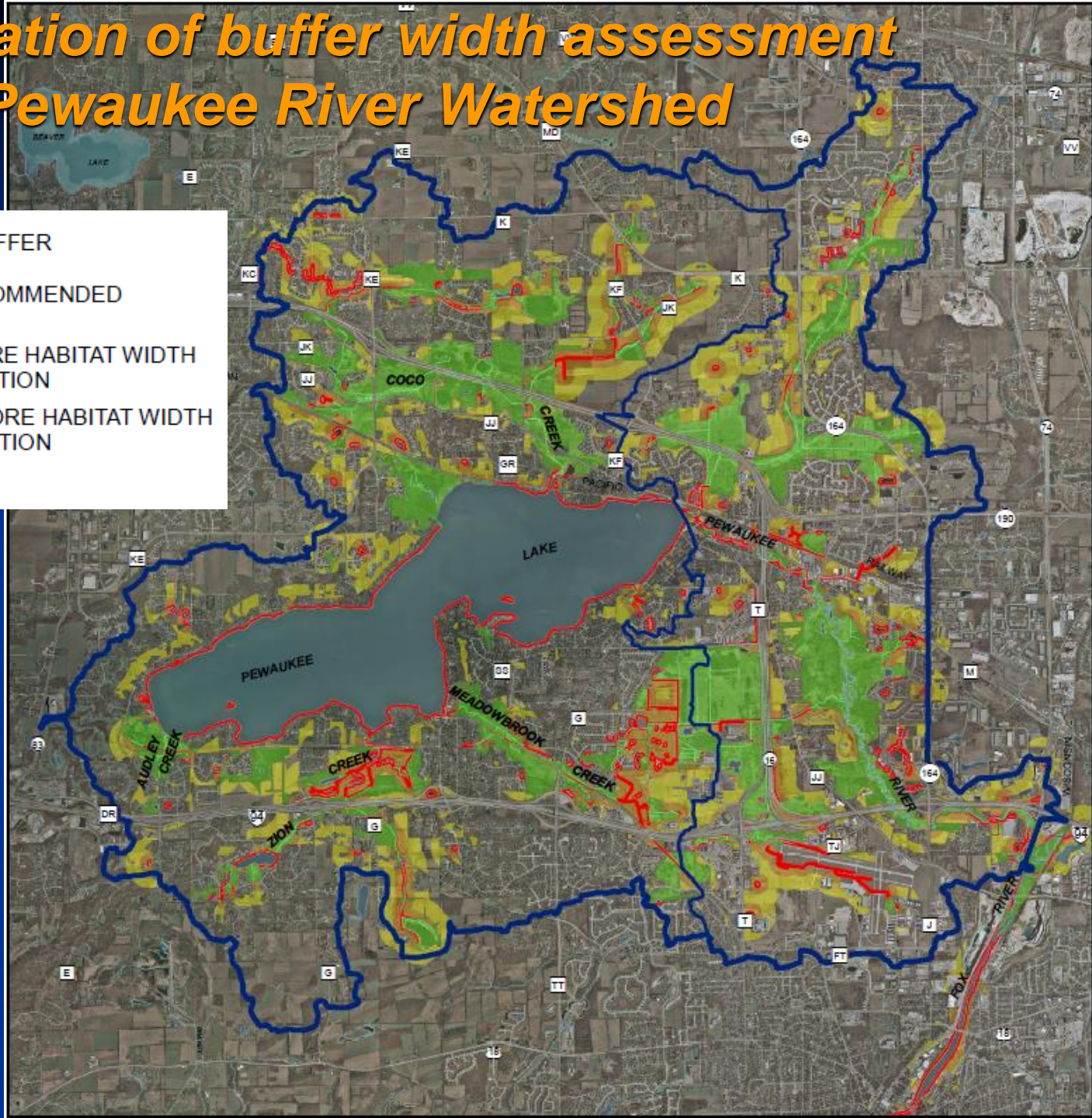


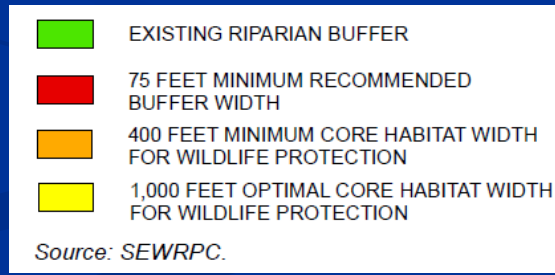
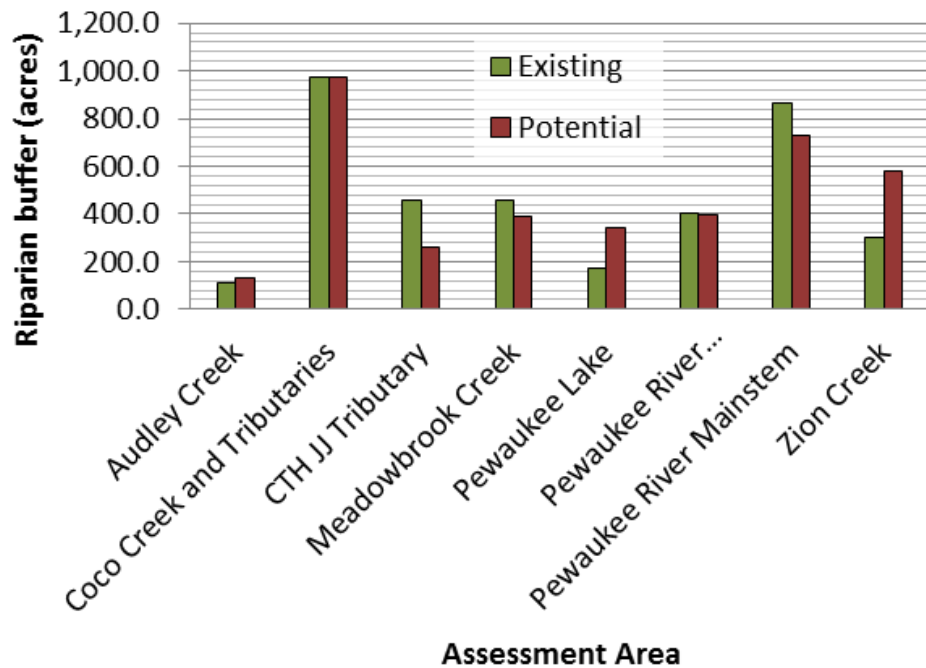
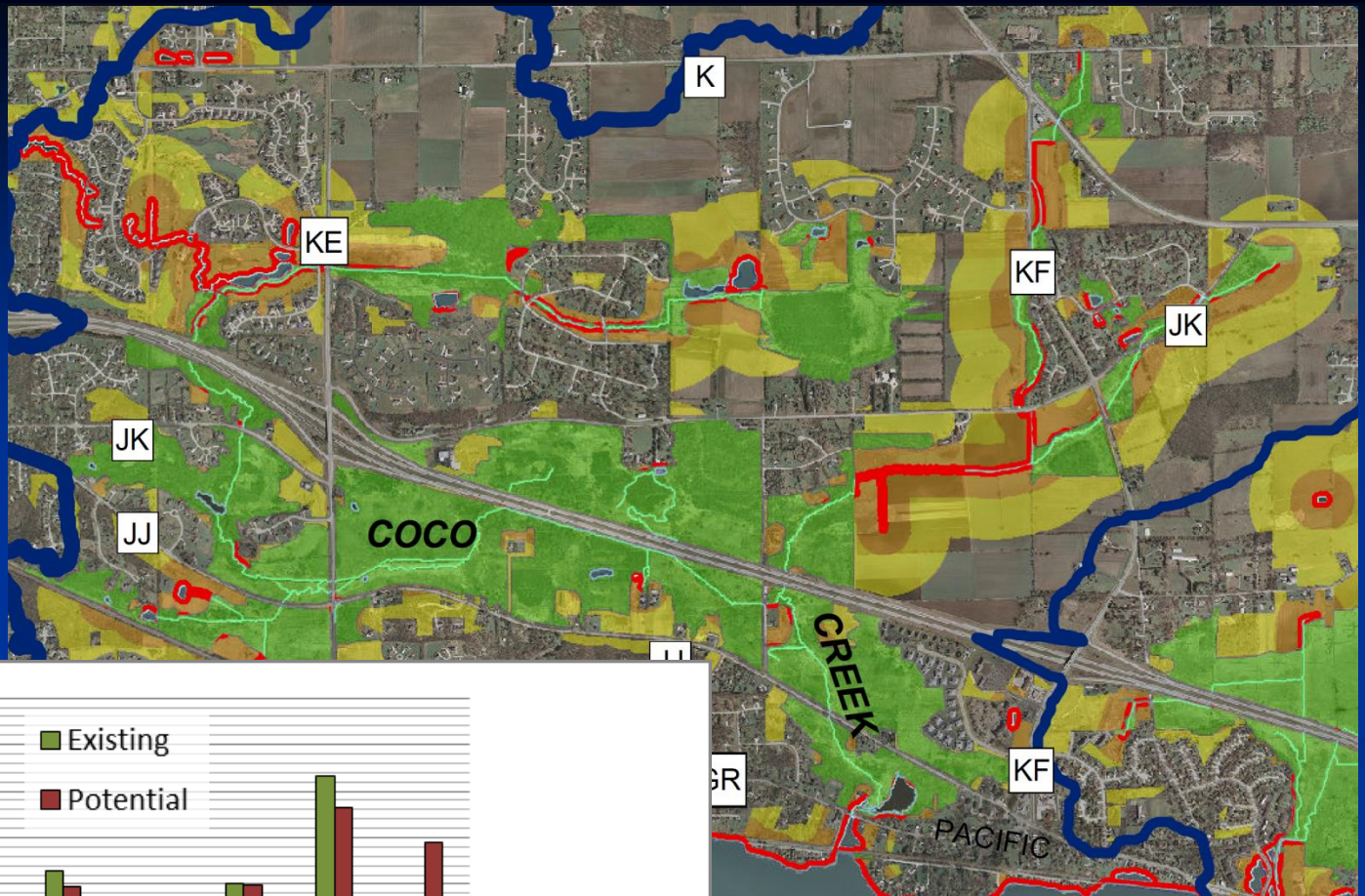


Application of buffer width assessment Pewaukee River Watershed

-  EXISTING RIPARIAN BUFFER
-  75 FEET MINIMUM RECOMMENDED BUFFER WIDTH
-  400 FEET MINIMUM CORE HABITAT WIDTH FOR WILDLIFE PROTECTION
-  1,000 FEET OPTIMAL CORE HABITAT WIDTH FOR WILDLIFE PROTECTION

Source: SEWRPC.





Now what do we do?

**Figure out what's protected
and not protected...**

Floodplain Zones



ONE-PERCENT-ANNUAL-PROBABILITY FLOODPLAINS
ZONE AE FLOODWAY (BASE FLOOD ELEVATION
DETERMINED): FEMA 2008



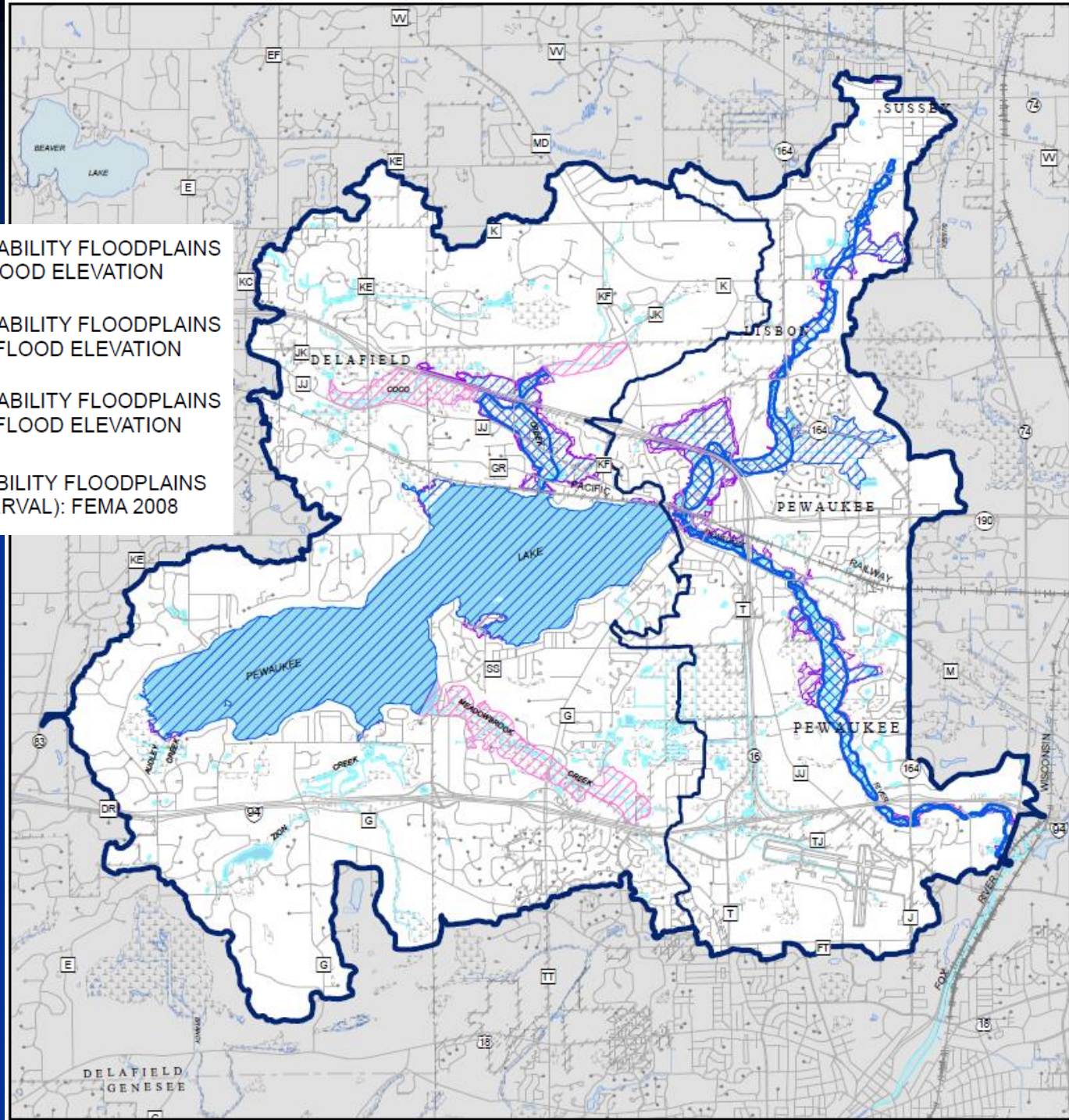
ONE-PERCENT-ANNUAL-PROBABILITY FLOODPLAINS
ZONE A FLOODFRINGE (BASE FLOOD ELEVATION
DETERMINED): FEMA 2008



ONE-PERCENT-ANNUAL-PROBABILITY FLOODPLAINS
ZONE A FLOODFRINGE (BASE FLOOD ELEVATION
UNDETERMINED): FEMA 2008



0.2-PERCENT-ANNUAL-PROBABILITY FLOODPLAINS
(500-YEAR RECURRENCE INTERVAL): FEMA 2008



**Poll Question #2:
2008 Revised Advanced Delineation and
Identification study (ADID) areas**

<http://www.sewrpc.org/SEWRPC/NaturalResources/AdvancedIdentificationofWetlan.htm>

Wetland Types



ADID WETLANDS



ADID NATURAL AREAS



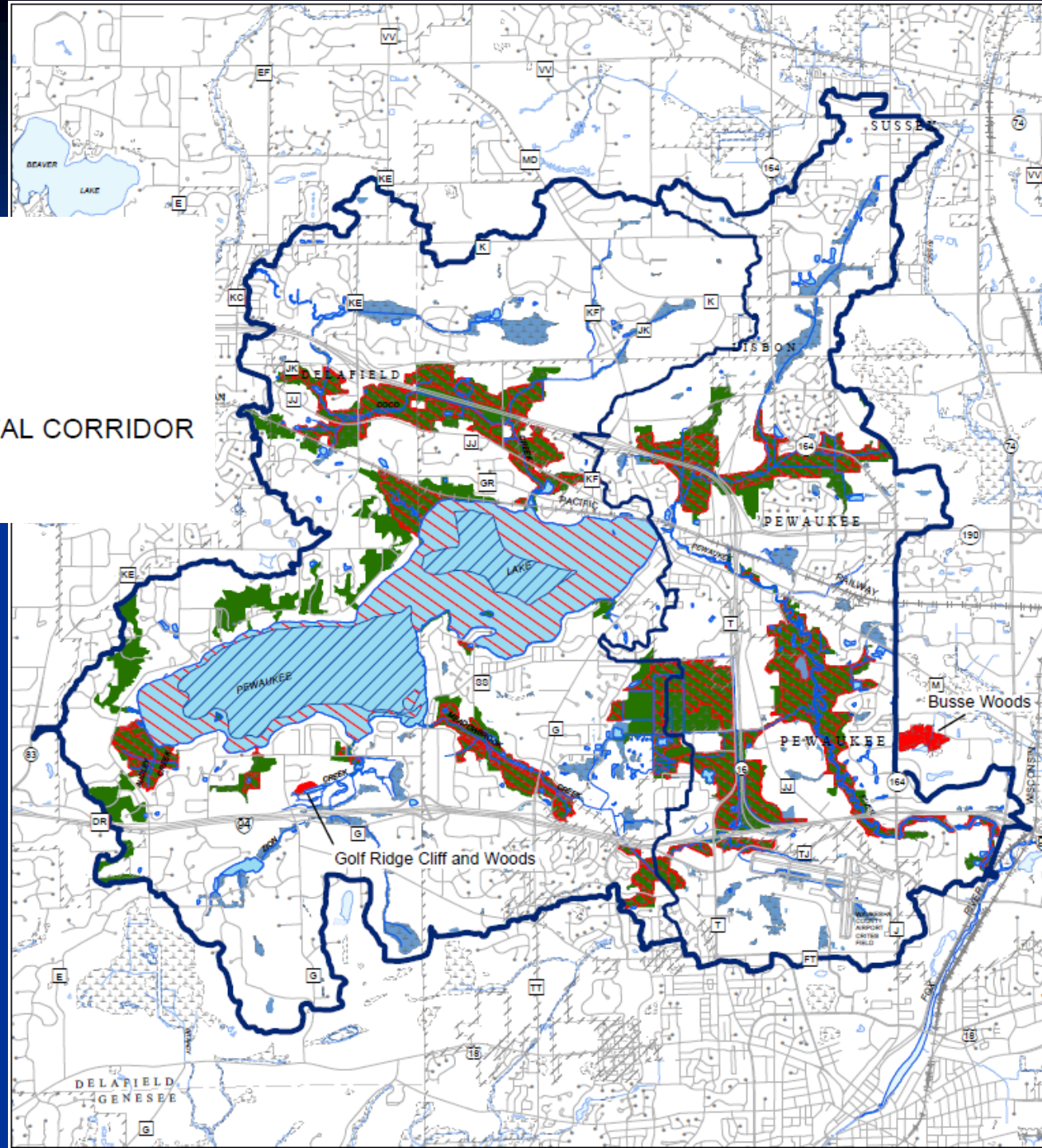
ADID LAKES OR PONDS



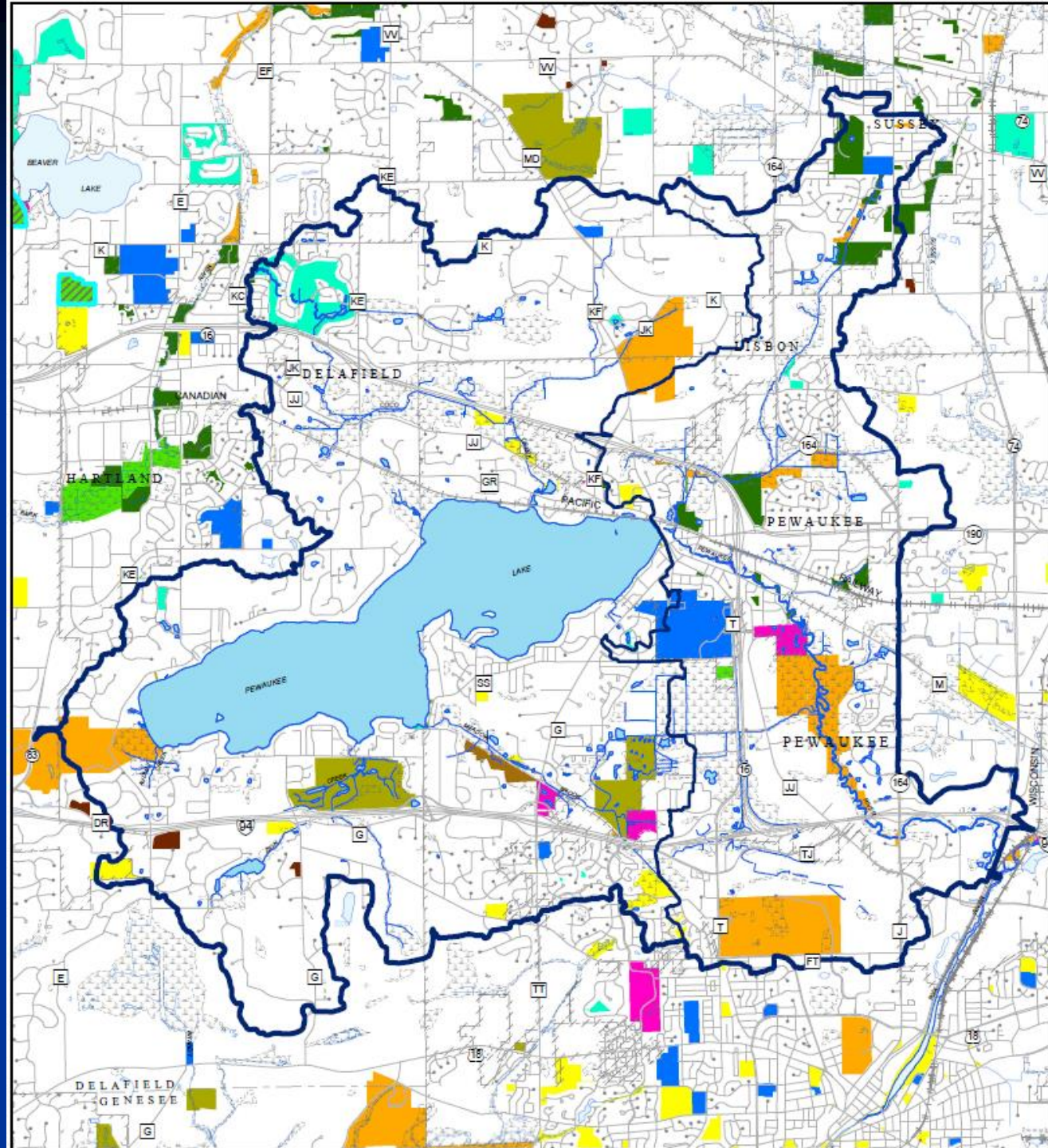
PRIMARY ENVIRONMENTAL CORRIDOR



OTHER WETLANDS

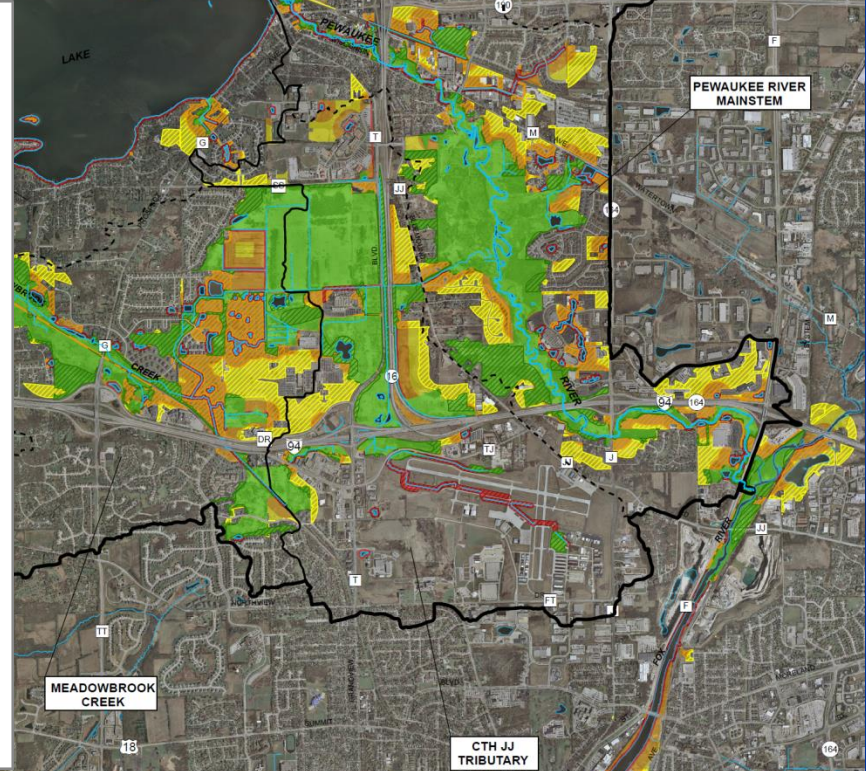
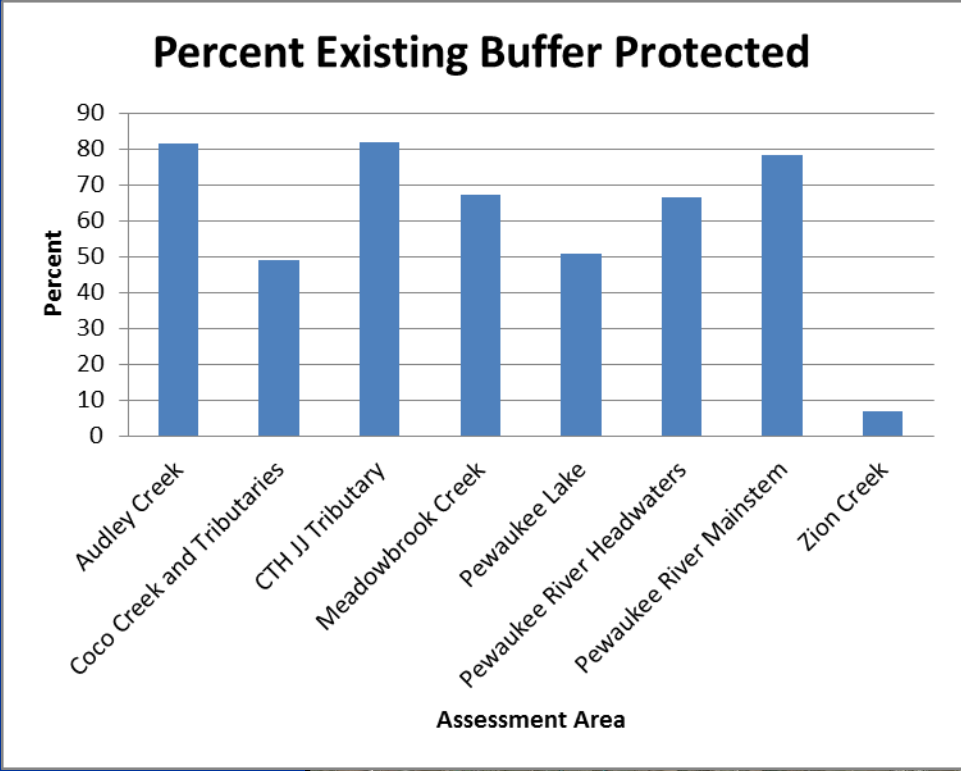
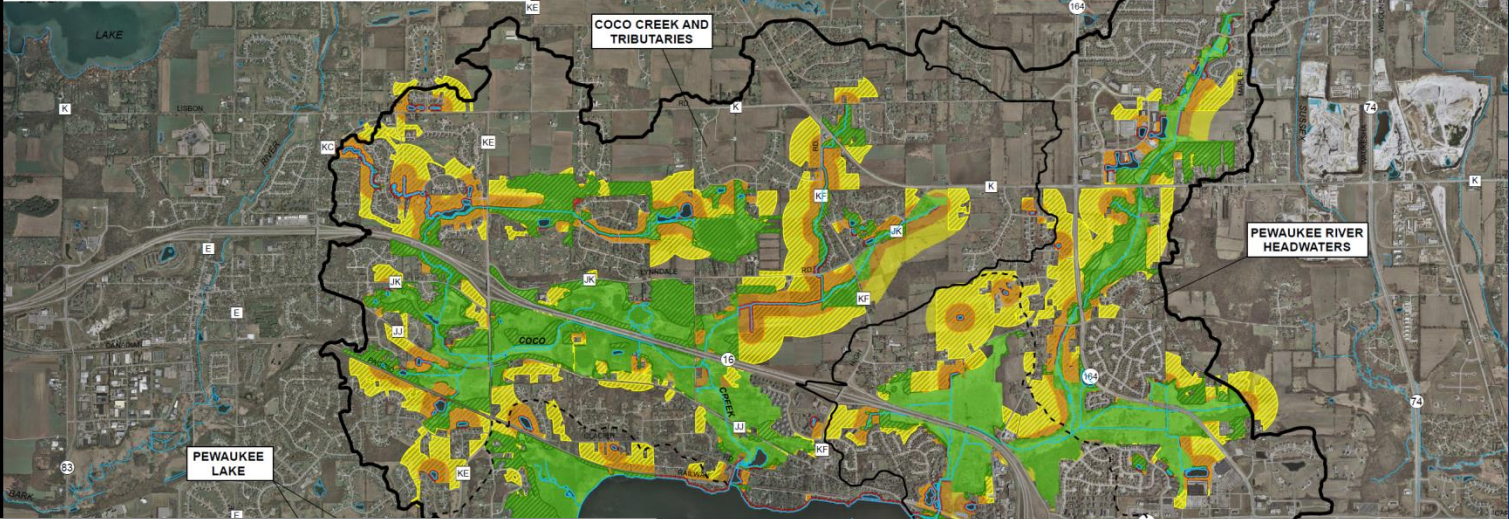


Open space lands in public & private protection

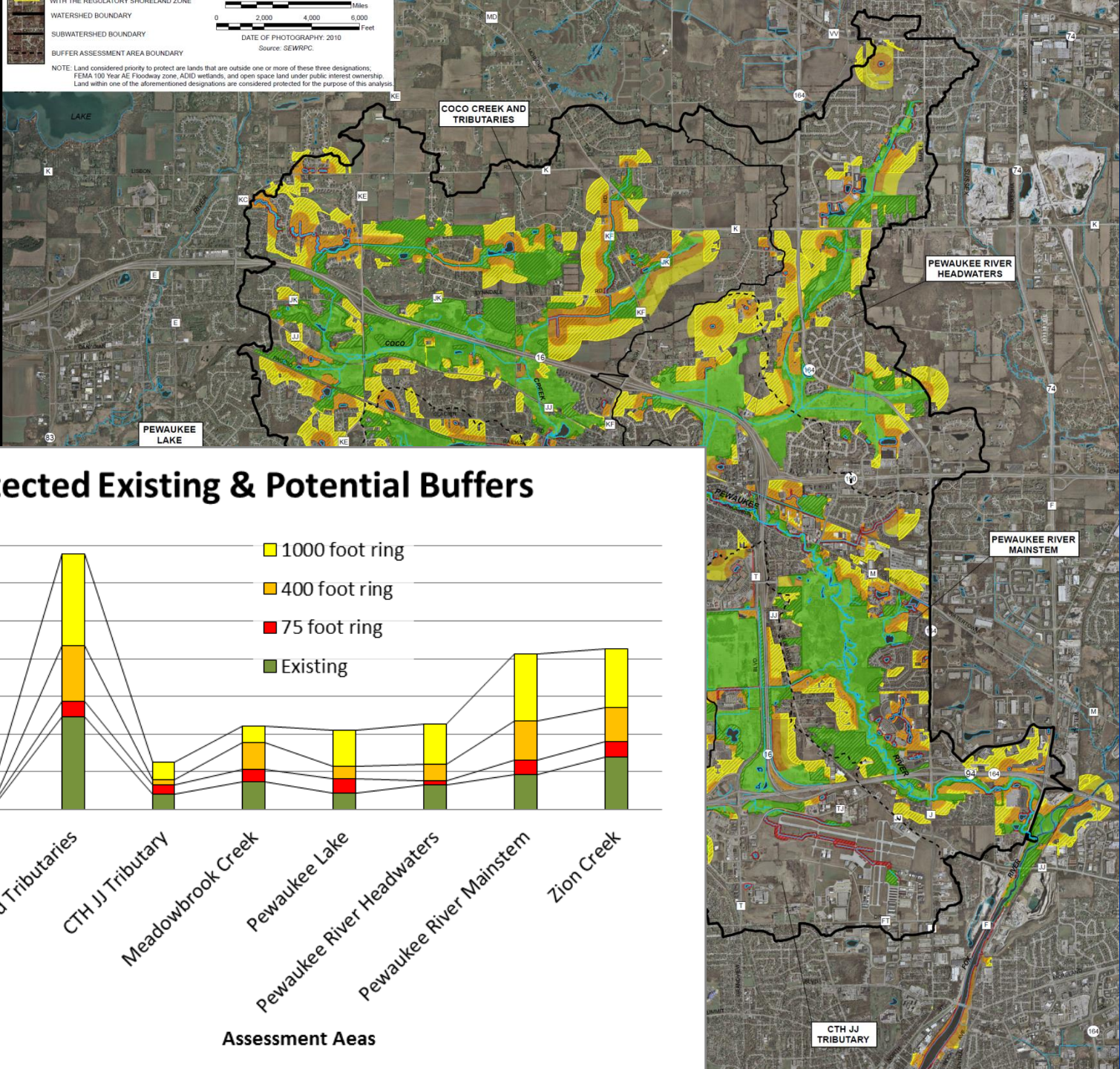


Protected vs Vulnerable

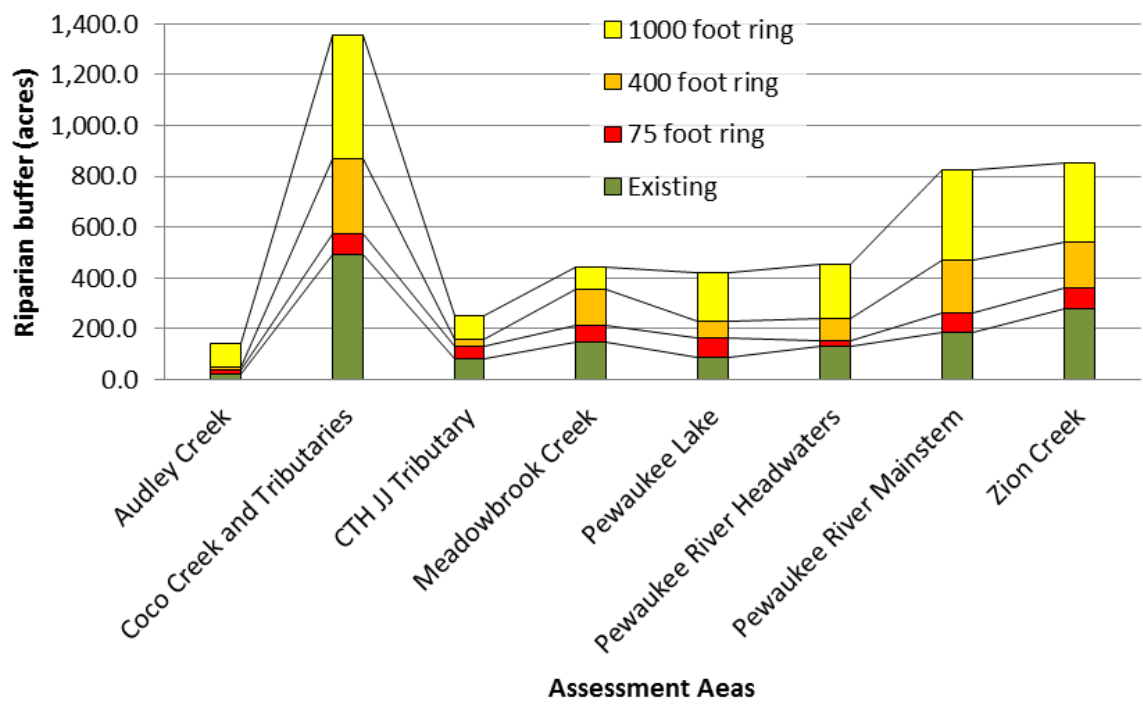
WITH THE REGULATORY SHORELAND ZONE
 WATERSHED BOUNDARY
 SUBWATERSHED BOUNDARY
 BUFFER ASSESSMENT AREA BOUNDARY
 DATE OF PHOTOGRAPHY: 2010
 Source: SEWRPC.



Protected vs Vulnerable



Unprotected Existing & Potential Buffers

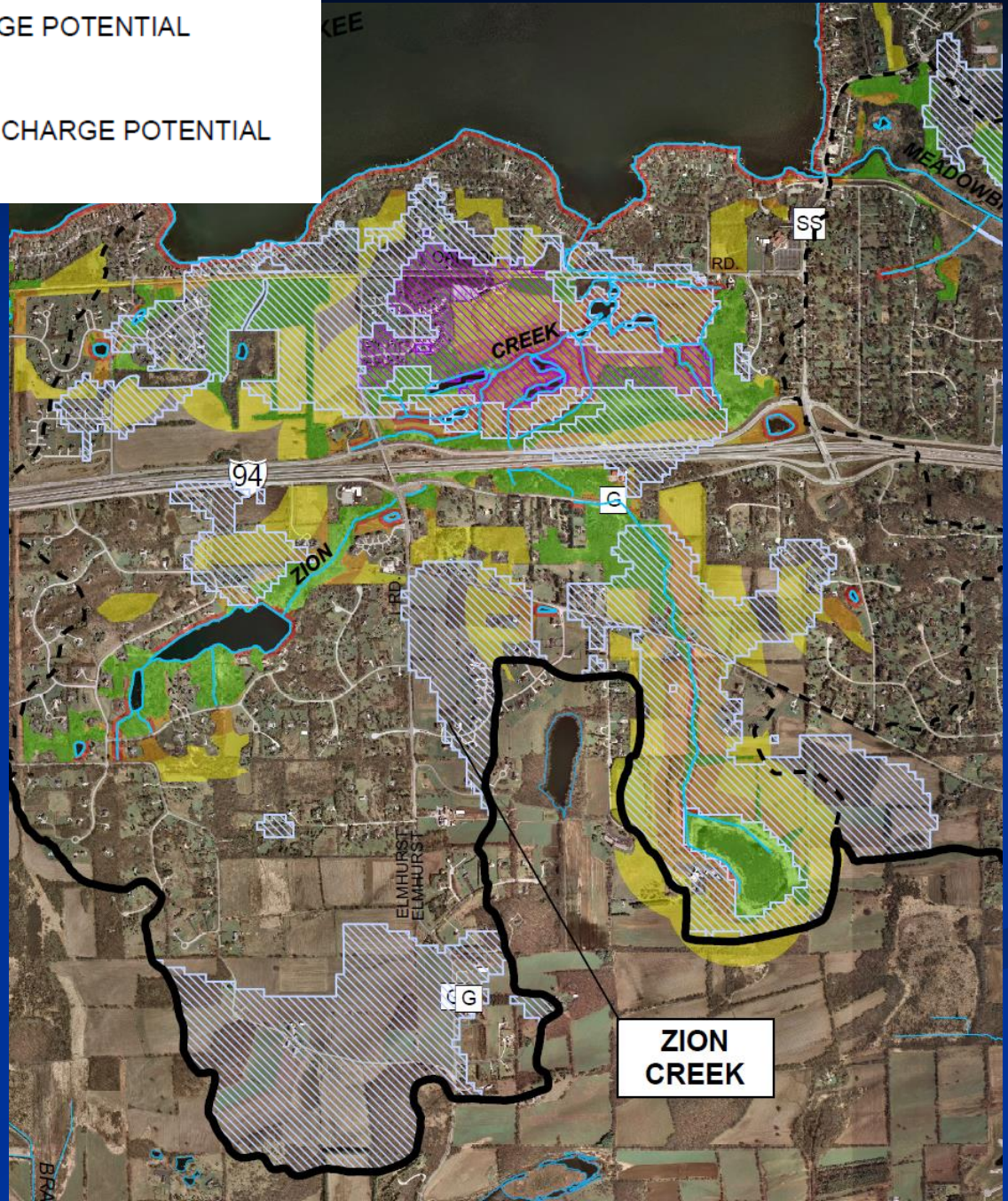





HIGH GROUNDWATER RECHARGE POTENTIAL


VERY HIGH GROUNDWATER RECHARGE POTENTIAL


Prioritize lands for protection by groundwater recharge potential




Additional Opportunities

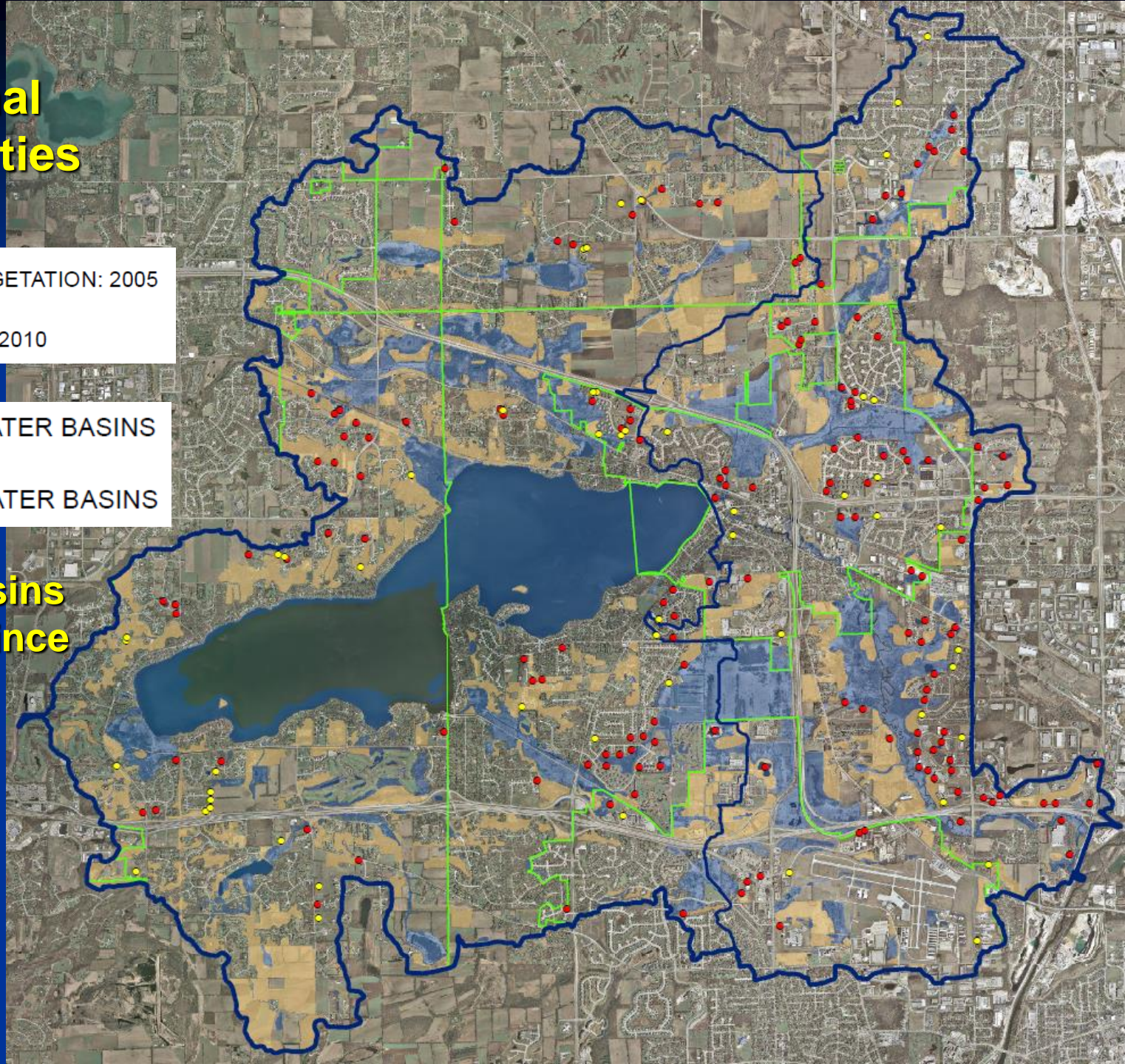
 UPLAND VEGETATION: 2005

 WETLANDS: 2010

 DRY STORM WATER BASINS

 WET STORM WATER BASINS

**Nearly 200 basins
constructed since
1990!**



Additional Opportunities

UPLAND V

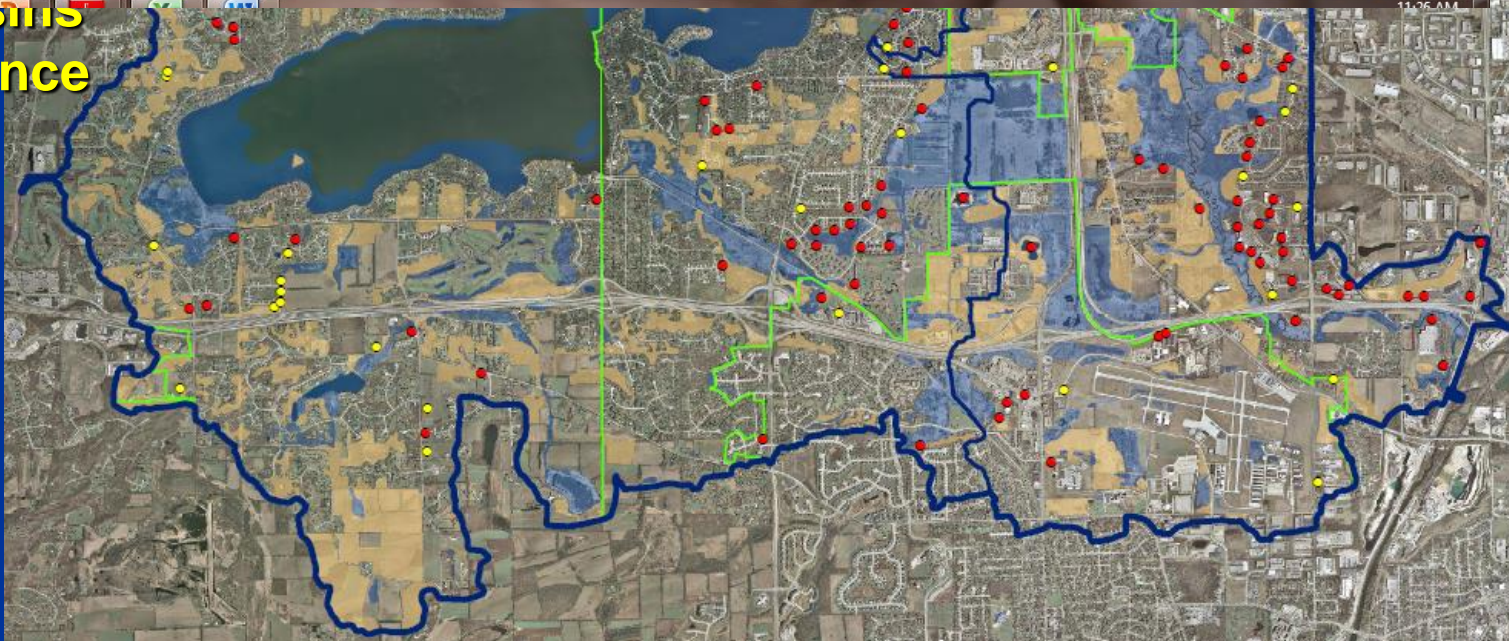
WETLAND

● DRY STORM

● WET STORM



Nearly 200 basins constructed since 1990!



Thank you



**Contact Info:
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Southeastern Wisconsin Regional Planning Commission
262-547-6721
tslawski@sewrpc.org**