**Chicago Metropolitan Agency for Planning**

**CMAP**

# Regional Scale Implementation of the Chicago Wilderness Green Infrastructure Vision

## Environment and Natural Resources Committee
## November 7, 2007

# Contents

- Overview of Green Infrastructure Vision
- Local implementation projects
- Regional scale implementation

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# GIV Project Purpose

1.  Develop a tangible, green infrastructure vision that reflects the goals and recommendations of the Biodiversity Recovery Plan
2.  Identify on-the-ground, regional scale opportunities for biodiversity protection
3.  Identify specific protection techniques for "resource protection areas."
4.  Provide simple guidelines for conservation development that inevitably will occur in or adjacent to resource protection areas.

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

# Definition: Green Infrastructure

- Interconnected network of land and water that supports biodiversity and provides habitat for diverse communities of native flora and fauna at a regional scale.

- Includes large complexes of remnant woodlands, savannas, prairies, wetlands, lakes, stream corridors and related natural communities.

- May also include areas adjacent to and connecting these remnant natural communities that provide both buffers and opportunities for restoration.

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

3

# Alternate definition

- Naturalized alternatives to certain kinds of grey infrastructure for stormwater management: swales, wetland detention, infiltration techniques, etc.

# Methods

- Workshops in various parts of region
- At tables with maps showing natural resource layers, participants asked to:
  - ID places with "significant biodiversity components"
  - ID protection, expansion, restoration, and connection areas
  - Recommend development controls
  - Recommend conservation measures
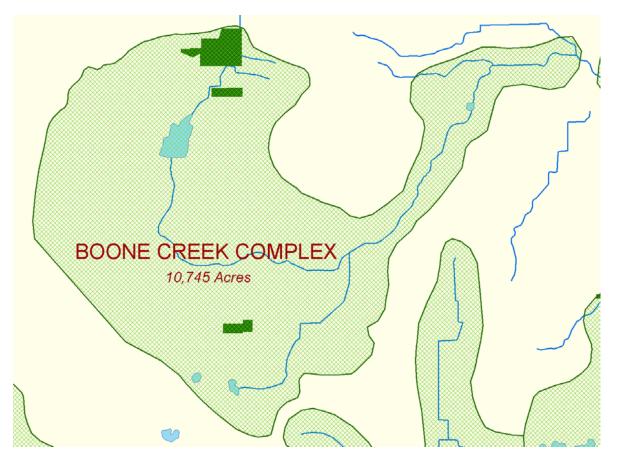- Staff took workshop results and converted to final GIS layer (although still incomplete)

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

5

# Limitations

- Carefully describing what this product is and is not:
    - It *IS* a first draft, regional-scale map ("action plan") for the Biodiversity Recovery Plan
    - It *IS NOT* a detailed acquisition or conservation design plan for the region

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

# Boone Creek: An Example Protection Area

**From the Final Maps and the Recommended Resource Protection Areas GIS Shapefile:**

**From the Final Report:**



BOONE CREEK COMPLEX

10,745 Acres

- Large woodlands; high quality fens; high quality, cold-water stream with silt intolerant fish. Large restorable wetlands on hydric soils.

- Target: 800 ac fee simple and easements. Protect and restore headwater streams. Identify and protect ground water recharge zones for fen wetlands.

- Development Strategies: No industrial development; small scale, low-intensity conservation residential only. Etc.
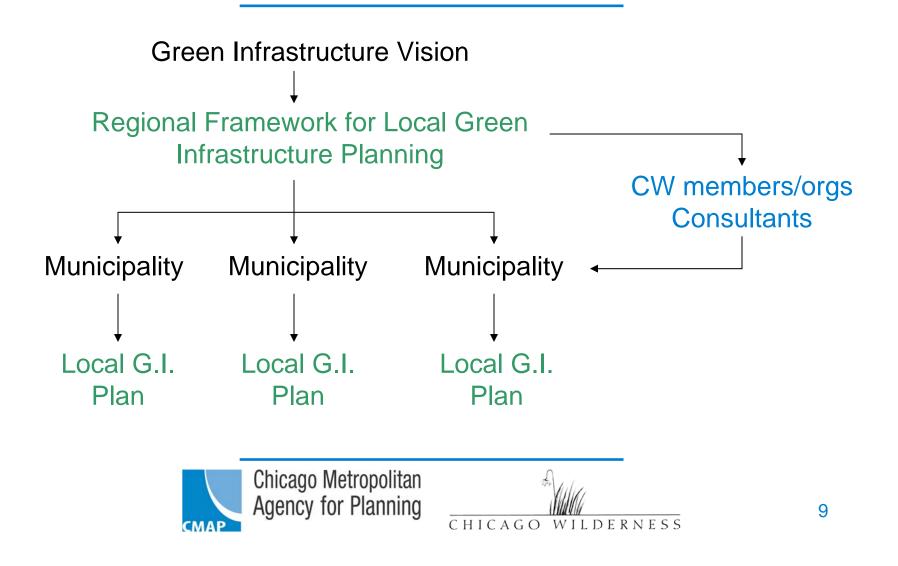
Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Local Implementation

- Define the product – the Local Green Infrastructure Plan

- Market it to local governments

- Establish a cost share mechanism to assist municipal efforts

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

8

# Process

Green Infrastructure Vision

↓

Regional Framework for Local Green
Infrastructure Planning

CW members/orgs
Consultants

Municipality          Municipality          Municipality

↓                     ↓                     ↓

Local G.I.            Local G.I.            Local G.I.
Plan                  Plan                  Plan

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Using the GIV in scenario planning

- Interpretation / operationalization
- Measurement
- Determining what effects implementing the GIV would have on other planning considerations

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

# Regional Challenges and Opportunities

- **Interconnected** network of land and water that supports biodiversity and provides habitat for diverse communities of native flora and fauna at a regional scale.

- Includes large complexes of remnant woodlands, savannas, prairies, wetlands, lakes, stream corridors and related natural communities.

- May also include areas adjacent to and connecting these remnant natural communities that provide both buffers and opportunities for restoration.

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

11

# GIV Project Purpose

1. Develop a tangible, green infrastructure vision that reflects the goals and recommendations of the Biodiversity Recovery Plan
2. Identify on-the-ground, regional scale opportunities for biodiversity protection
3. Identify specific protection techniques for "resource protection areas."
4. Provide simple guidelines for conservation development that inevitably will occur in or adjacent to resource protection areas.

Chicago Metropolitan Agency for Planning
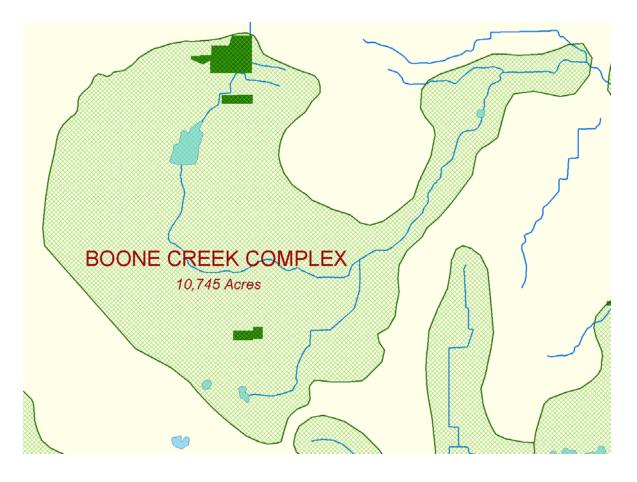CMAP

CHICAGO WILDERNESS

# Question 1

- What are we protecting in a Resource Protection Area?
  - Comparison of the Green Infrastructure Vision with land cover data shows that:
    - The Green Infrastructure Vision includes much that is *not* green infrastructure even on the most liberal definition
    - Note: may include "areas adjacent to and connecting these remnant natural communities that provide both buffers and opportunities for restoration."

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Boone Creek: An Example Protection Area

**From the Final Maps and the Recommended
Resource Protection Areas GIS Shapefile:**



BOONE CREEK COMPLEX
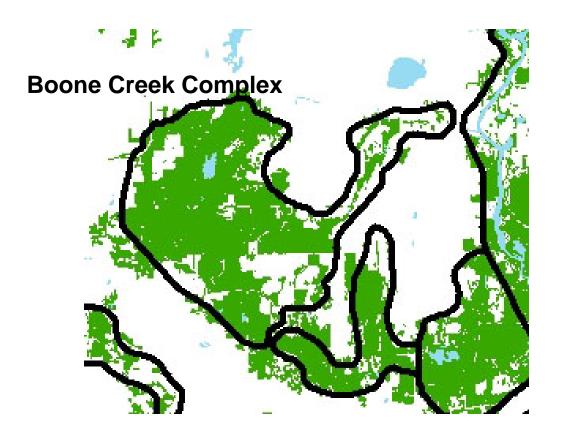10,745 Acres

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Land Cover Crosswalk

| NLCD Class Name | Green Infrastructure Status |
|---|---|
| 11. Open Water | No |
| 22. Developed, Low Intensity | No |
| 23. Developed, Medium Intensity | No |
| 24. Developed, High Intensity | No |
| 31. Barren Land (Rock/Sand/Clay) | No |
| 82. Cultivated Crops | No |
| 21. Developed, Open Space | Yes/No |
| 81. Pasture/Hay | Yes/No |
| 41. Deciduous Forest | Yes |
| 42. Evergreen Forest | Yes |
| 43. Mixed Forest | Yes |
| 52. Shrub/Scrub | Yes |
| 71. Grassland/Herbaceous | Yes |
| 90. Woody Wetlands | Yes |
| 95. Palustrine Emergent Wetland | Yes |

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Actual Green Infrastructure
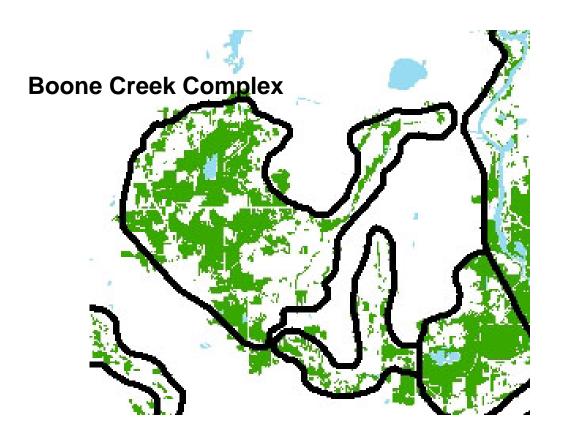
**Boone Creek Complex**

**Note: developed open space (turf) and pasture/hay included**

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Actual Green Infrastructure

**Boone Creek Complex**

**Note: developed open space (turf) and pasture/hay excluded**

# Summary Results

| | Percent Actual Green Infrastructure | |
|---|---|---|
| | – turf – pasture | + turf + pasture |
| Max | 75% | 94% |
| 75th | 40% | 61% |
| Median | 25% | 46% |
| 25th | 12% | 32% |
| Min | 0.32% | 4% |
| Mean | 27% | 46% |

Chicago Metropolitan Agency for Planning
CMAP

CHICAGO WILDERNESS

# Question 2

- Does the Green Infrastructure Vision do a good job of capturing what *is* "actual" green infrastructure?
  - Most of the "actual" green infrastructure in the region is contained in the Vision:
    - 72% (developed open space and pasture excluded)
    - 59% (developed open space and pasture included)

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

# Question 3

- Is increasing natural area connectivity (as a means to protect biodiversity) the primary object of the Green Infrastructure Vision?
  - "Identify on-the-ground, regional scale opportunities for biodiversity protection"
- The GIV contains areas that disrupt connectivity, so should we develop a finer-scale indicator of connectivity within each Recommended Resource Protection Area?

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

# Connectivity

- "As a mechanism that lowers habitat connectivity, and thus territory- and mate-finding success rates, fragmentation can cause species' declines in excess of what would be predicted based strictly on estimates of habitat loss."

- "Though habitat connectivity can be thought of as inverse to habitat fragmentation, the term has no agreed-upon definition."
  - N. Schumaker, *Ecology*, Vol. 77, No. 4. (Jun., 1996), pp. 1210-1225.
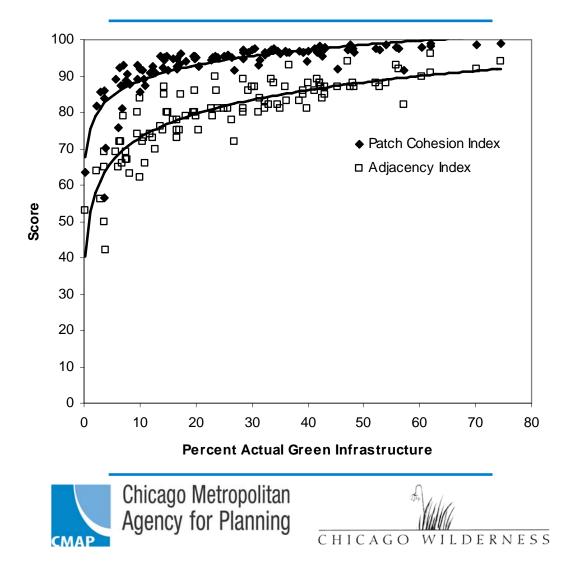
Chicago Metropolitan
Agency for Planning
CMAP

CHICAGO WILDERNESS

# Connectivity graphically



Woodlots — Fragmentation

Campsites — Perforation

Trails — Internal Fragmentation

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS

# Potential Indicators

# Question 4

- Should the Green Infrastructure Vision be seen as a means of *prioritizing* protection and "greenfill"?
  - And therefore ignore non-GIV areas?
  - Requires proposing that areas classed as non-green infrastructure be "re-created" as green infrastructure.

Chicago Metropolitan
Agency for Planning
CMAP

CHICAGO WILDERNESS

# Question 5

- What are other potential ways of including the Green Infrastructure Vision in scenario planning by CMAP?

    – Model impacts of applying specific protection techniques for "resource protection areas"

    – Limit density in accordance with recommendations: greenbelt strategy

Chicago Metropolitan Agency for Planning

CMAP

CHICAGO WILDERNESS