

Green Infrastructure and Transportation Planning to Improve Environmental Outcomes



July 24, 2012
1:30 - 3:00 p.m. Eastern

Presenters

- **Jesse Elam,**
Chicago Metropolitan Agency for Planning
- **Linda Giltz,**
Land-of-Sky Regional Council – Western North Carolina
- **Ralph Spagnolo,**
Environmental Protection Agency

Moderated by **Mike Ruth,**
FHWA Office of Project Development and
Environmental Review



Green Infrastructure

Green infrastructure (GI) is a strategic approach to planning and managing networks of land that conserve natural ecosystems for long-range transportation planning.

- ☐ Considers the benefits of both wildlife and human populations
- ☐ Exists at the statewide, regional, community, neighborhood, and site-based scale
- ☐ Requires collaboration among many agencies and organizations

GI Focus

❑ GI focuses on several elements:

- Preserving habitat
- Maintaining the connectivity of ecosystems
- Minimizing the impacts of infrastructure on the ecosystem



- ❑ Identifies high-priority land areas and opportunities for ecosystem connectivity
- ❑ Incorporates GIS information, tools, and methodologies to collect information that will be helpful for future planners



Chicago Metropolitan
Agency for Planning

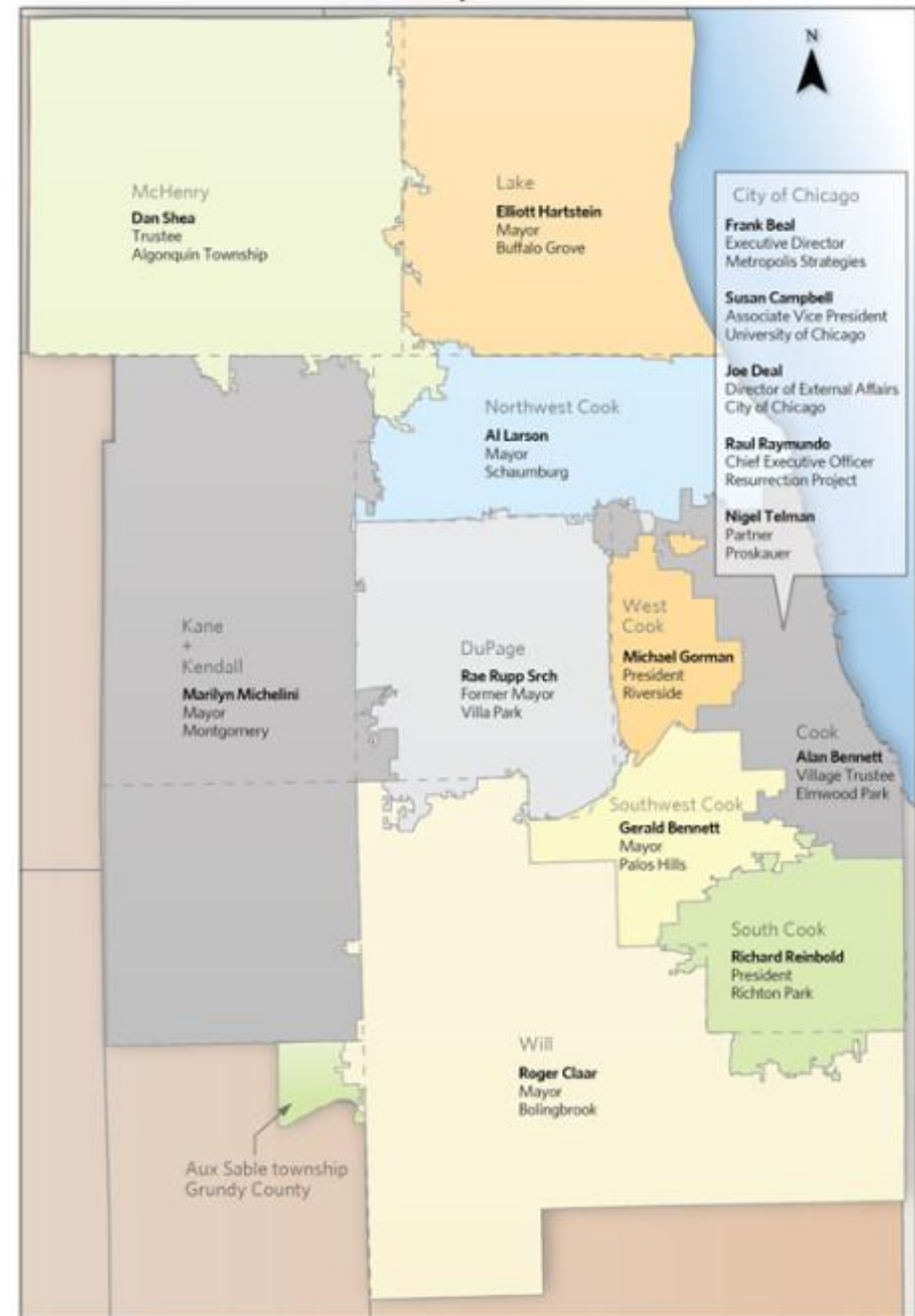
Regional Green Infrastructure in the Chicago Area

Jesse A. Elam, AICP

July 24, 2012

Who we are

- Established in 2005 by state legislation with support from the region's mayors.
- Central purpose is to better integrate planning for land use and transportation.
- Merged the Northeastern Illinois Planning Commission (NIPC) and Chicago Area Transportation Study (CATS).



CMAP



GO TO

20

40

GO TO 2040: Key Recommendations

Livable Communities

1. Land Use and Housing
2. Water and Energy Conservation
3. Parks and Open Space
4. Local Food

Human Capital

5. Education and Workforce Development
6. Economic Innovation

Efficient Governance

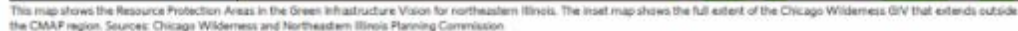
7. Tax Policy
8. Access to Information
9. Coordinated Investments

Regional Mobility

10. Transportation Investments
 - major capital projects
11. Public Transit
12. Freight



7/24/2012



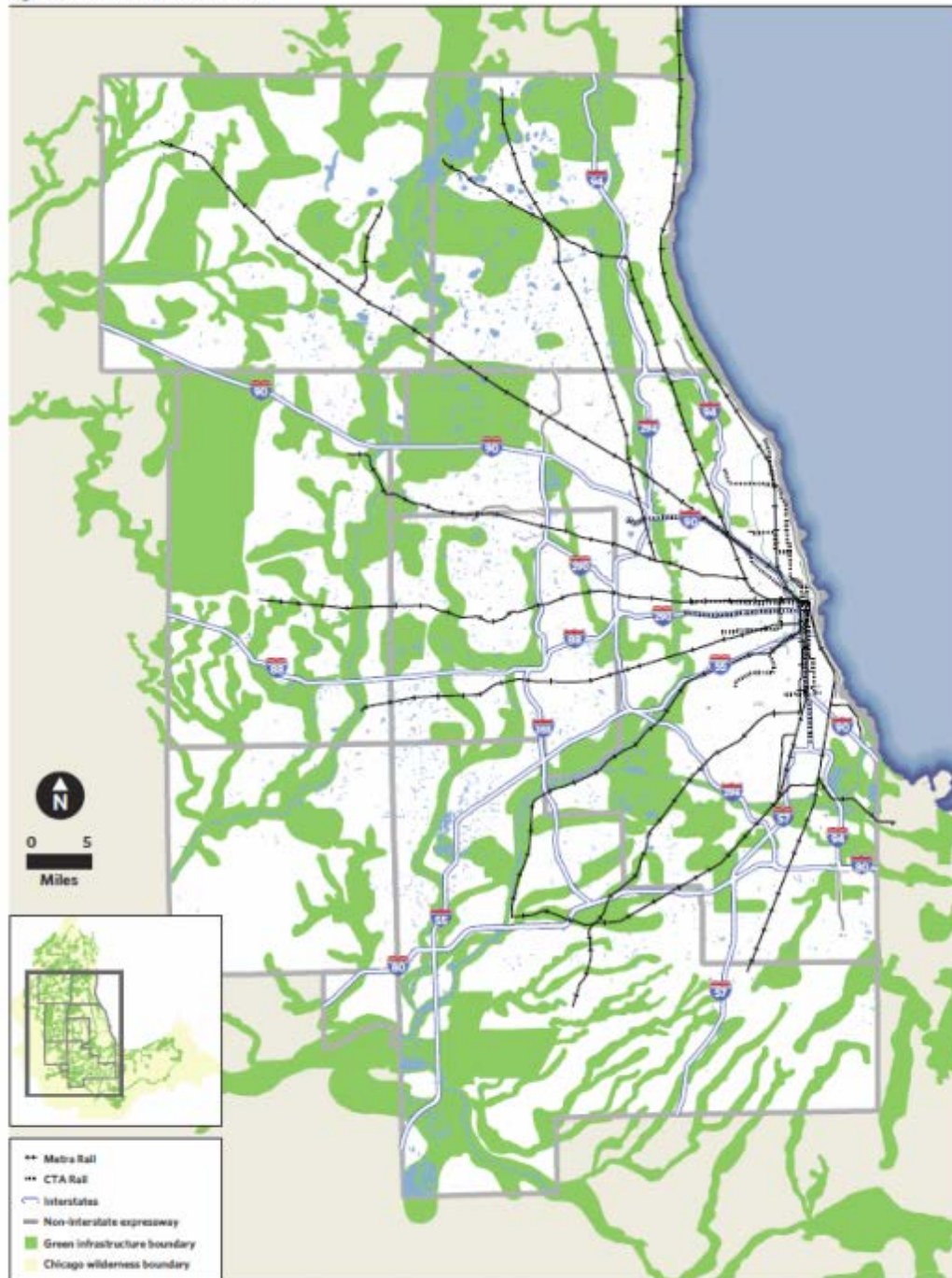
Chicago Wilderness

- Consortium of organizations interested in conservation, currently 262 members
- Organized to understand and help protect unique natural communities (biodiversity) around southern Lake Michigan
 - Biodiversity Recovery Plan
- Very diverse membership, from federal agencies to neighborhood groups

Chicago Wilderness Green Infrastructure Vision

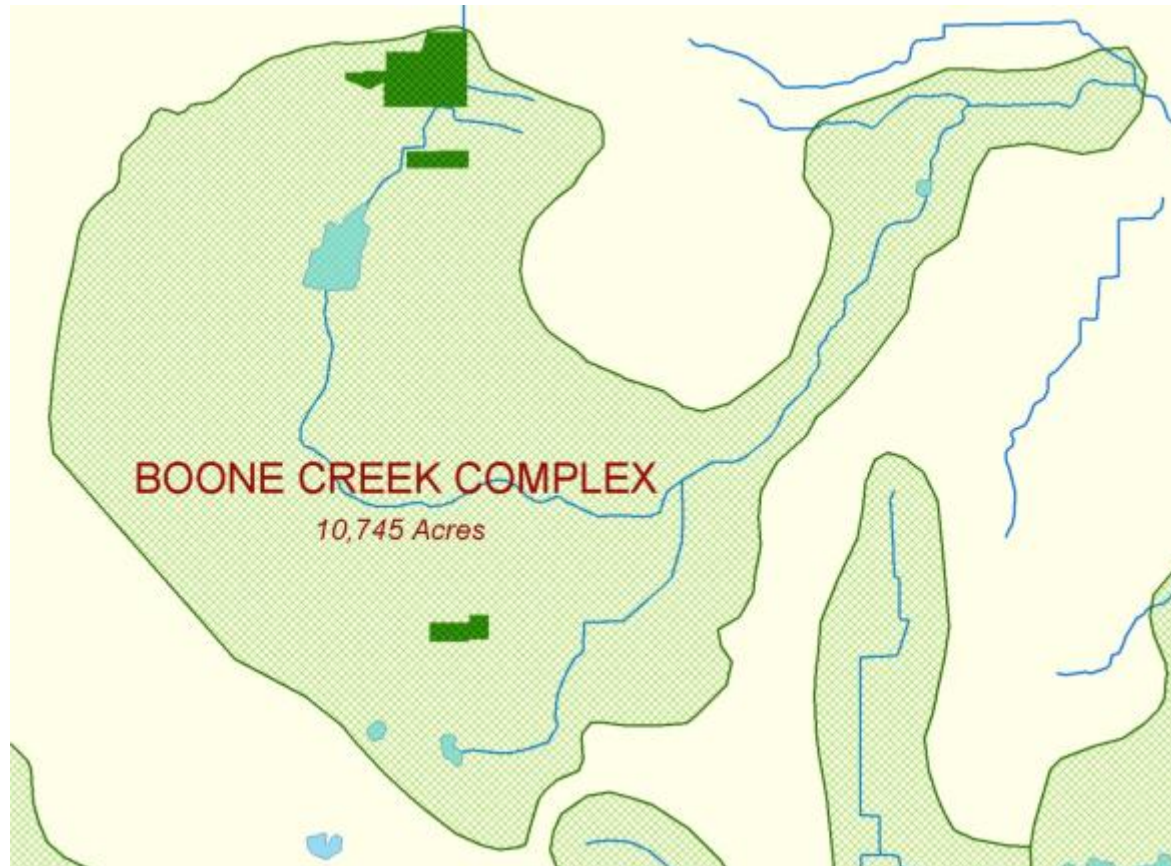
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Figure 33. Green Infrastructure Vision



This map shows the Resource Protection Areas in the Green Infrastructure Vision for northeastern Illinois. The inset map shows the full extent of the Chicago Wilderness GIV that extends outside the CMAA region. Sources: Chicago Wilderness and Northeastern Illinois Planning Commission

Example Resource Protection Area



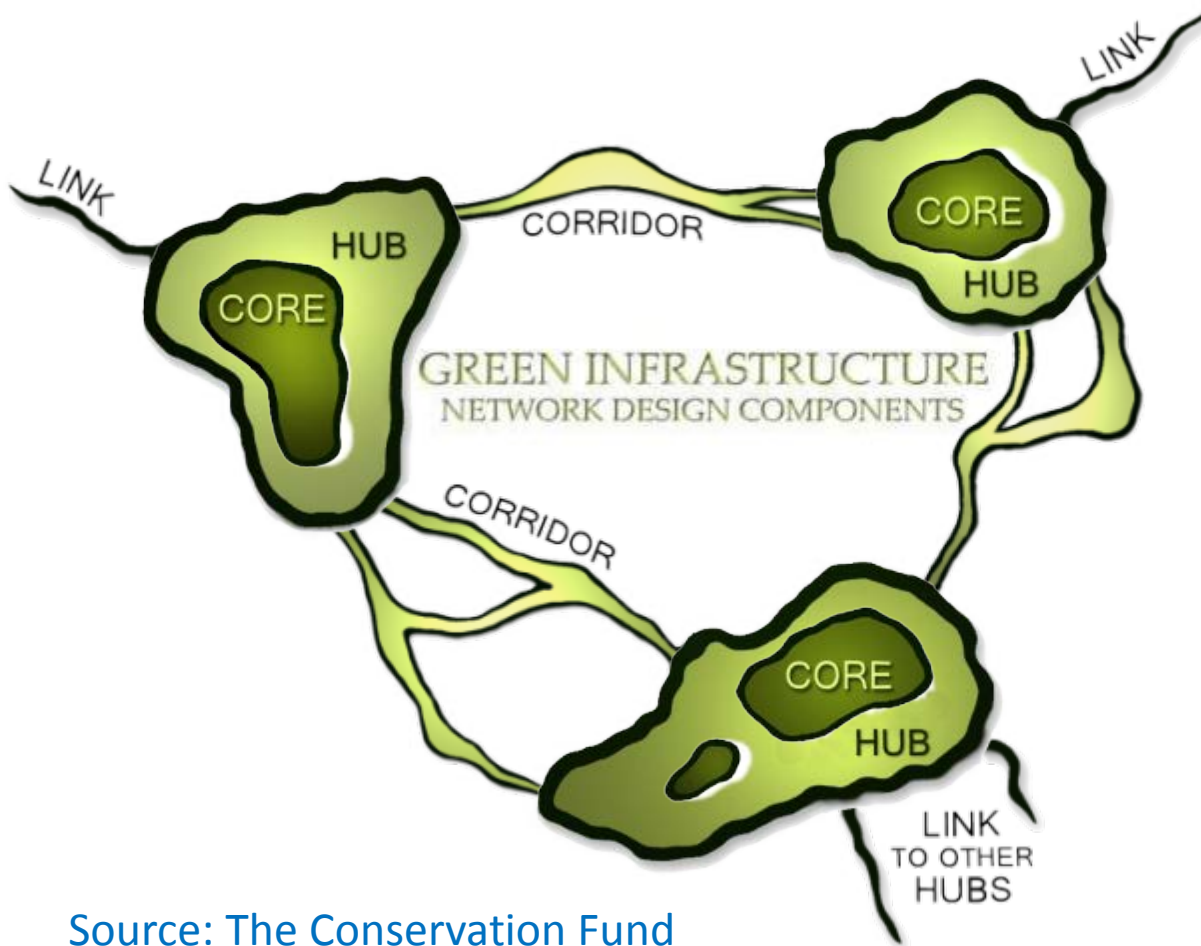
From the Final Report:

- **Conservation value:** 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:** Limit industrial development; Focus on small scale, low-intensity conservation residential. Etc.

Why refine the GIV?

- Update with new information
 - Provide more detail
 - Strengthen analytical basis
 - Promote consistency between sub-areas
 - Concentrate on extending and improving existing planning work – make part of ongoing work program rather than ad hoc study
 - Make sure GIV reflects a “common game plan” for conservation efforts by many organizations
-

Hub and corridor design



Source: The Conservation Fund

Core Areas:

- Contain fully functional natural ecosystems
- Provide high-quality habitat for native plants and animals

Hubs:

- Slightly fragmented aggregations of core areas, plus contiguous natural cover

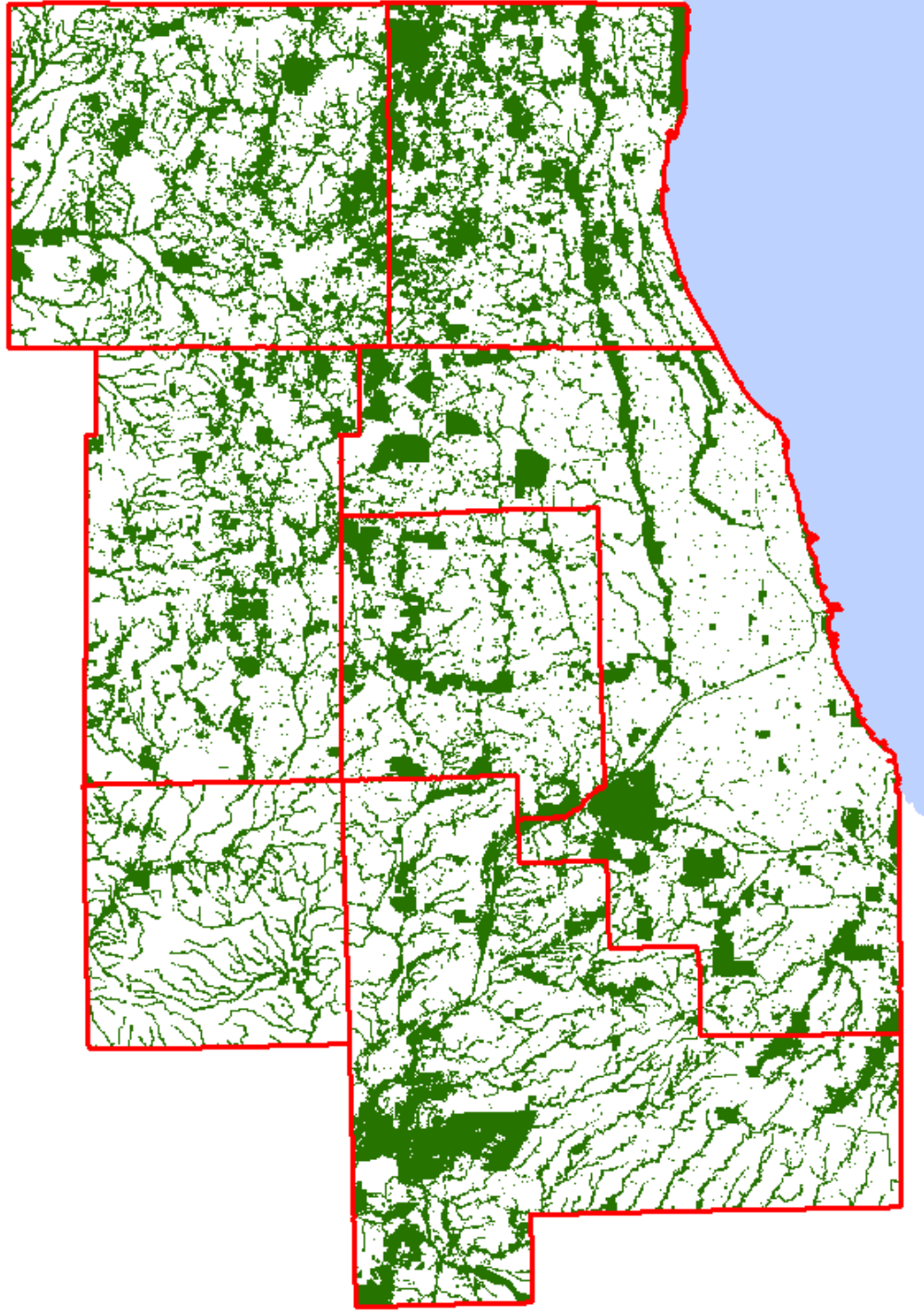
Corridors:

- Link core areas together
- Allow animal movement and seed and pollen transfer between core areas



Chicago Wilderness Green Infrastructure Vision, v. 2.0

7/24/2012



Source: The Conservation Fund

Potential applications

1. Guide conservation investments
 2. Shape growth patterns
- Land conservation
 - Municipal comprehensive plans
 - Transportation project development

Potential applications

- Land conservation
 - Open space protection is undertaken by many entities with different funding and different priorities.
- Recommendation:
 - Encourage those involved in land protection to use the GI data to guide land conservation
 - Land trusts
 - DNR (direct and grant funded)
 - Local conservation agencies

Potential applications

- Municipal comprehensive plans
 - Municipalities are now undertaking GI mapping projects; often become mired in questions about data availability, definitions, etc.
- Recommendation:
 - Treat the green infrastructure data as a minimum network of green infrastructure, supplement with local information
 - Comprehensive plans undertaken with CMAP assistance should use the GIV data.

Potential applications

- Transportation project development
 - Transportation projects can work against the preservation of the green infrastructure network
- Recommendation:
 - Consider effects on the green infrastructure network as part of normal environmental review.
 - Use to help indicate priority areas for compensatory mitigation

Example: Spring Creek Greenway and I-355 S extension

- 160 acre site owned by Tollway & Forest Preserve
- Forest Preserve, Tollway and O'Hare funds
- 6 miles of multi-use trail incorporated
- 40 acres of mitigation credit



Example: Fox River bridges, Kane County DOT

- 7 miles of multi-use trails built
- 216 acres of open space protected
- >100 acres of restoration
- Conveyance to forest preserve



Questions?

Jesse Elam

jelam@cmap.illinois.gov

312.386.8688

Linking Lands and Communities in the Land-of-Sky Region

Eco-Logical Webinar –

*“Green Infrastructure and Transportation Planning
to Improve Environmental Outcomes”*

July 24, 2012

www.linkinglands.org

Linda Giltz, AICP, Senior Planner

828-251-6622 lindag@landofsky.org

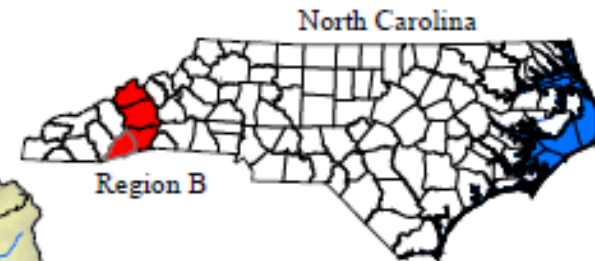
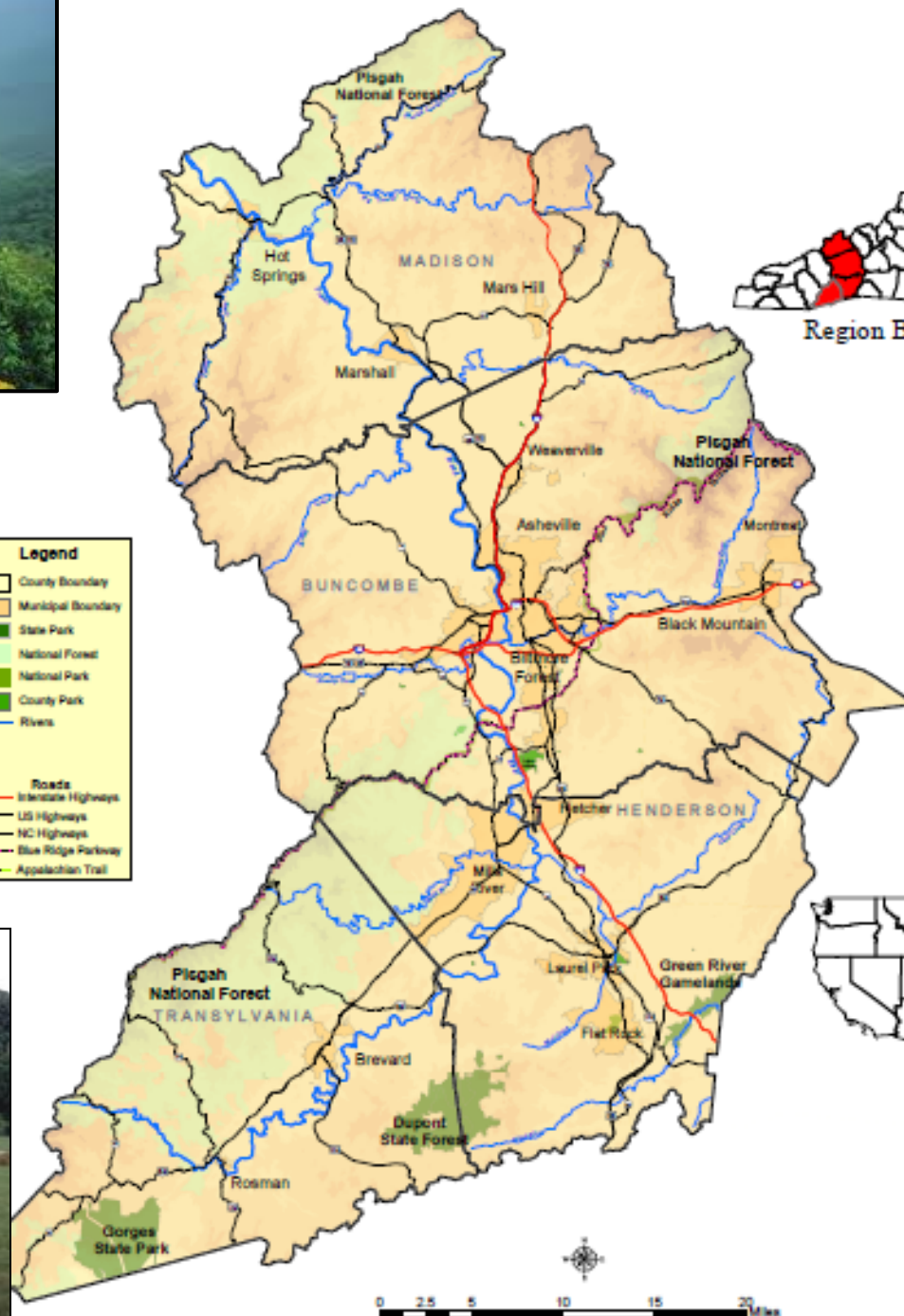




Land-of-Sky Region

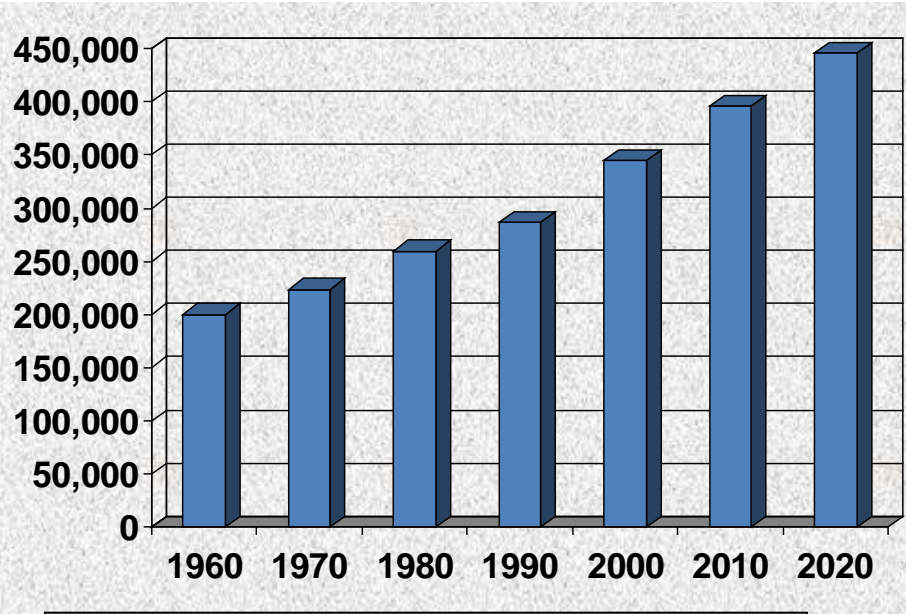


Western North Carolina



Challenges Related to Growth/Development

Land-of-Sky Region Population



- Fragmentation of large parcels and habitat – affecting farms, forests, business/industrial sites
- Loss of scenic quality
- Sedimentation; water quality issues



Linking Lands and Communities – *Project Goals*

- Bring together a diverse group of people to explore common values and identify opportunities to work together to maintain our valued resources;
- Identify where the most valuable natural resources are located and how they might be interconnected;
- Produce a set of tools and resources for a variety of users, to make more informed land use and development decisions.



Project Partners

Appalachian Sustainable Agriculture Project (ASAP)

Appalachian Trail Conservancy

Friends of DuPont State Forest

NC Wildlife Federation

Open Space Institute

RiverLink

Southern Appalachian Forest Coalition

Southern Environmental Law Center

Sustainable Big Ivy

WNC Green Building Council

Western North Carolina Alliance

Asheville Convention and Visitors Bureau

The Biltmore Estate

Mountain Council for Accountable Development

Self Help Credit Union/Self Help Ventures Fund

Sustainability Strategies, LLC

NC Cooperative Extension – County Offices

NC Department of Agriculture

NC Department of Environment and Natural Resources

NC Division of Community Assistance

NC Division of Forest Resources

NC Farm Bureau

NCSU Mountain Horticultural Crops Research & Ext Center

NC Wildlife Resources Commission

Buncombe County

**Buncombe County Greenways and
Trails Commission**

**Buncombe County Soil & Water
Conservation District**

City of Asheville

City of Hendersonville

Transylvania County

Blue Ridge Forever

Carolina Mountain Land Conservancy

Southern Appalachian Highlands Conservancy

Blue Ridge National Heritage Area

Blue Ridge Parkway

Natural Resources Conservation Service

**U.S.D.A. Forest Service Southern Research
Station**

U.S. Fish & Wildlife Service

Mars Hill College

RENCI @ UNC Asheville

UNC Asheville

Warren Wilson College



Funding Partners

The Community Foundation of Western North Carolina
Blue Ridge National Heritage Area
Federal Highway Administration
RENCI at UNC Asheville
Z. Smith Reynolds Foundation
Lyndhurst Foundation
Wildlife Conservation Society
National Association of Regional Councils (NARC)

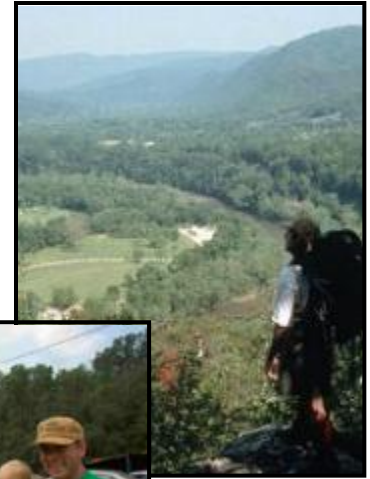
Green Infrastructure Planning Approach

- *Nationally recognized collaborative method for land use planning*
- *Community- and science-based approach*
- *Focus on systems and networks*
- *Need for planning, design, investment, maintenance, management*



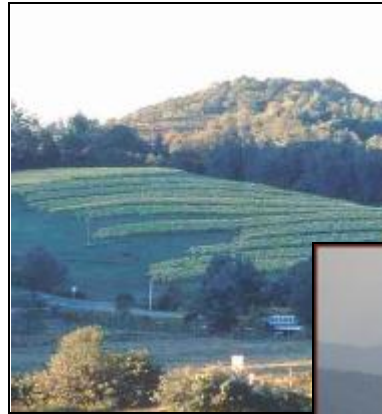
Our Economy needs Healthy Natural Systems

- Sustain lands for forestry & agriculture
- Provide scenic views, trails, parks, and cultural areas that attract residents and visitors
- Offer natural and restored green settings for growth and development
- Attract and retain businesses and jobs, provide entrepreneurial opportunities



What are the most important natural and land-based resources in the region?

- Water and water quality
- Farming and forestry
- Cultural heritage
- Scenic views
- Recreation
- Wildlife habitat and biodiversity



Resource Assessments

Purpose: To identify lands in the of-Sky (LOS) region valued for their contribution to:

- Water quality
- Agriculture
- Wildlife habitat & biodiversity

Developed by: Working groups of partners from around the region and facilitated by LOS staff.

- Raster based modeling (30-meter pixels)
- Most current data available
- Region-wide data





High Value Indicators:

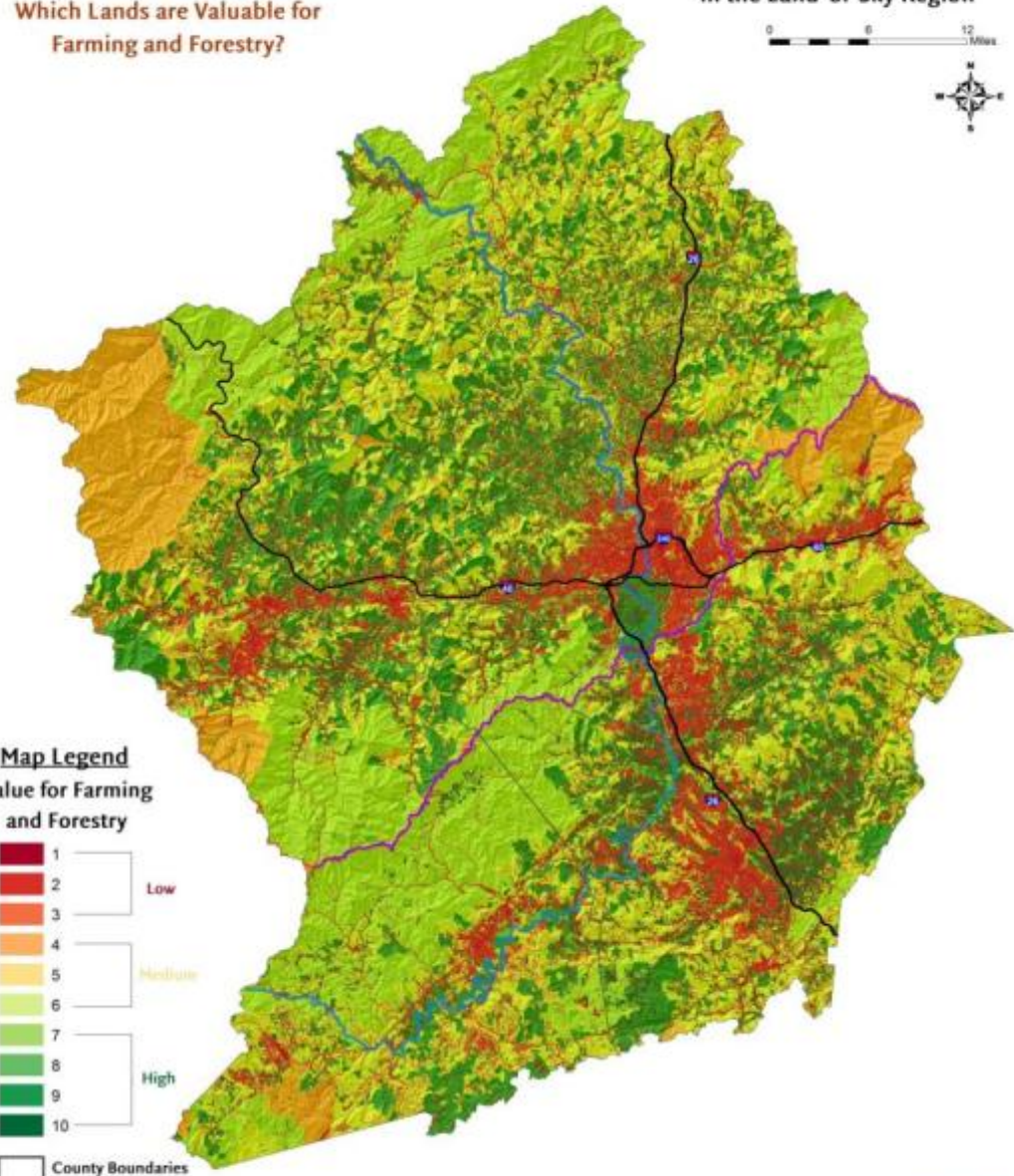
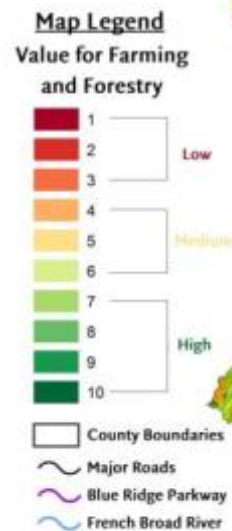
- Land Cover – Vegetation Type
- Most productive soils
- Presence of an existing farm/forest operation

Highest ranking lands (10) have productive soils AND forest or cropland vegetation

Agriculture Assessment Map

Which Lands are Valuable for Farming and Forestry?

Linking Lands and Communities in the Land-of-Sky Region



Important Information for Users of this Map:
This map contains modeled data created as part of Land-of-Sky Regional Council's Linking Lands and Communities project. Information on how this map was created, including data sources and input data layers, ranking scheme, and other considerations, is available on the project website: www.linklandandsky.org. Renci, Renci and A Carroll GIS consider all of this information to be an integral part of this map, and essential to understanding what this map represents and how to interpret it properly.

The region was divided into 3,525 sub-watersheds; each assessed on:

- Land use / land cover
- Stream quality
- Elevation
- Level of protection



Water Quality Assessment Map

Which Lands are Valuable for Producing Clean Water?

Linking Lands and Communities in the Land-of-Sky Region



Map Legend

Value for Producing Clean Water



- County Boundaries
- Major Roads
- Blue Ridge Parkway
- French Broad River

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A Carroll GIS
Renci
at the University of North Carolina

Land-of-Sky Regional Council
Map Date: February 28, 2012

Wildlife habitat patches

- Large core area; compact and tightly clustered patches

Priority habitat types:

- > 4,000 feet
- Floodplain Forests, Riverine and Aquatic Communities

Biodiversity Sites:

- Significant Natural Heritage Areas (aquatic and terrestrial)
- Native Brook Trout streams; Outstanding Resource Waters
- Streams with Excellent bioclass ratings

Wildlife Habitat & Biodiversity Assessment Map

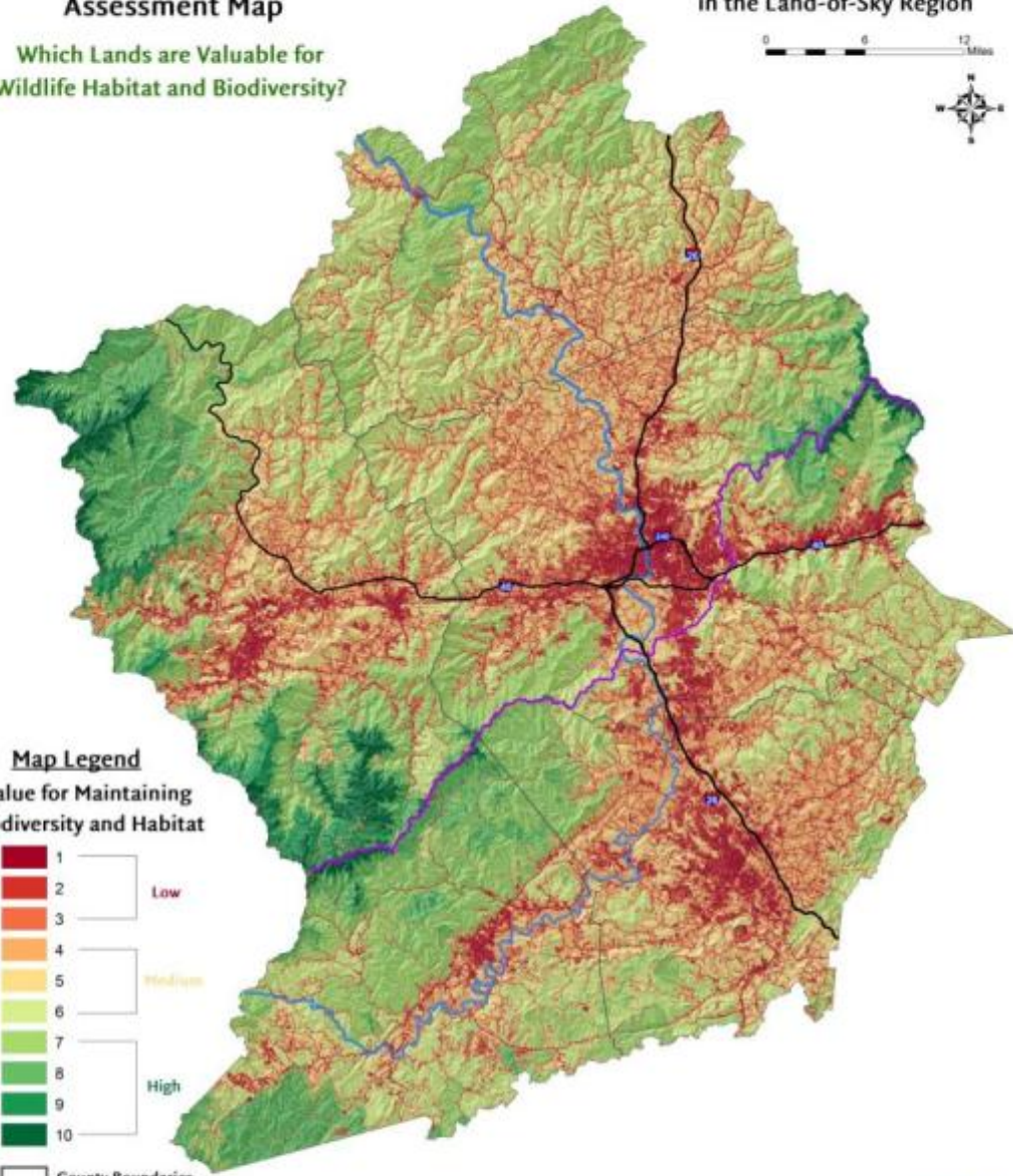
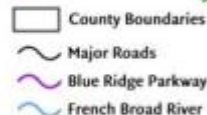
Which Lands are Valuable for Wildlife Habitat and Biodiversity?

Linking Lands and Communities in the Land-of-Sky Region



Map Legend

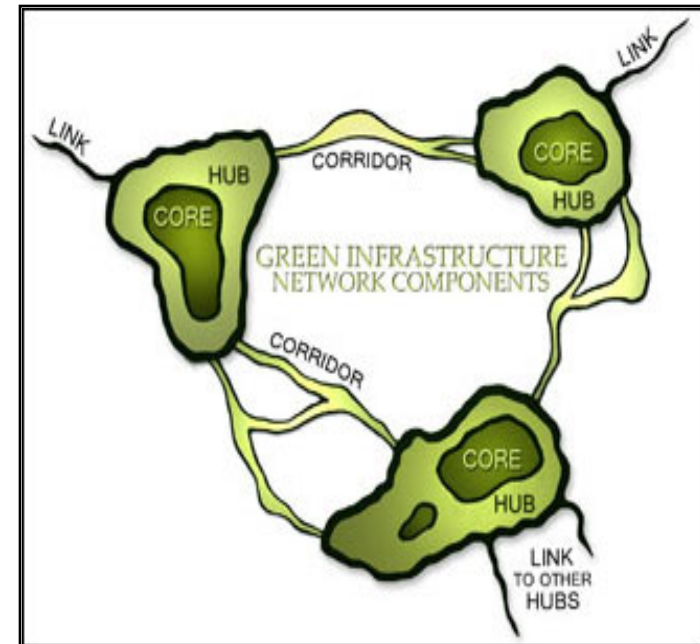
Value for Maintaining Biodiversity and Habitat



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Developing the Regional Green Infrastructure Network

- **Identifying the hubs** – highest valued lands from each assessment
- **Combining the assessments**
- **Identifying the corridors** – connect ecosystems and habitats to enable plants, animals, and ecological processes to move between hubs



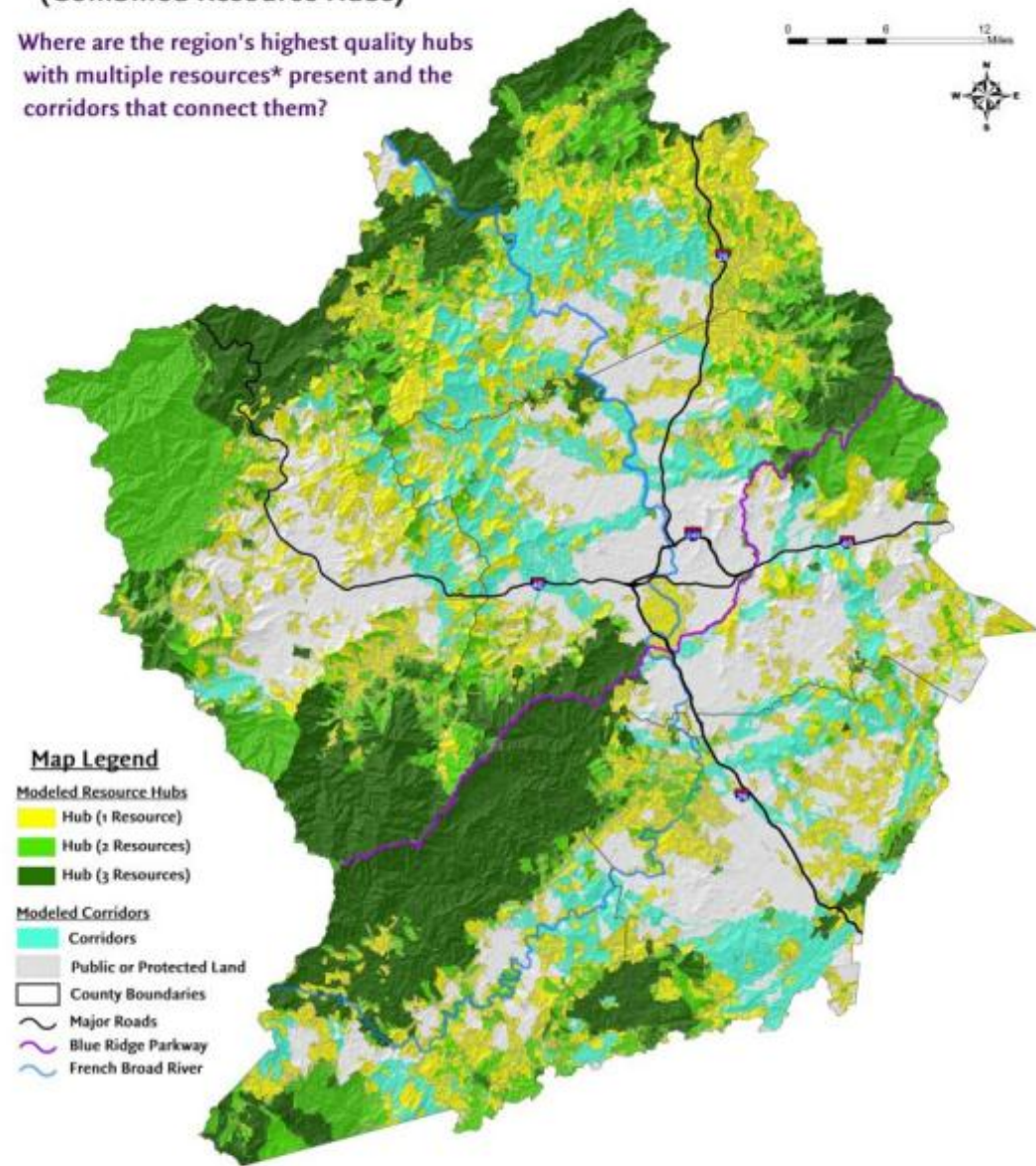
Final Green Infrastructure Network

Combined
Resource Hubs
+
Wildlife Habitat
& Biodiversity
Corridors

Green Infrastructure Network (Combined Resource Hubs)

Linking Lands and Communities in the Land-of-Sky Region

Where are the region's highest quality hubs with multiple resources* present and the corridors that connect them?



*Resources include wildlife habitat & biodiversity, water quality, farming & forestry

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A Carroll GIS

Renci
at UNC Asheville

Map Date: February 28, 2013

Outcomes from the Linking Lands Project



- **Maps** that identify lands that most contribute to important ecosystem services
- **A new set of tools and resources** that can inform land use planning at multiple scales
- **Relationships** amongst a diverse group of regional leaders
- **Increased awareness** of the link between healthy communities and healthy ecosystems

Project website: www.linkinglands.org

Webpage Screenshot

Assessments

Maps

Documentation

Linking Lands and Communities
in the Land-of-Sky Region

Creating a framework for conservation and development that respects community values and natural systems

News and Events
Project Overview
Project Partners
About LOSRC
Why a Regional Network?
Green Infrastructure Planning
Ecological Assessments
Data and Maps
Project Documentation
Public Review and Comment
Get Involved
Implementation

Project Information Fact Sheet

Land-of-Sky Regional Council (LOSRC) is working with leaders from across our four-county region to develop a strategic plan for conservation and development. The project will bring together data from public, private, and non-profit sources, resulting in a series of maps and other tools that can be used to help guide land use decisions across the landscape.

How does the Linking Lands Project differ from other land use planning efforts?

The Linking Lands Project aims to understand how our natural systems function across the entire four-county region. While many groups and municipalities focus their land use-related efforts on smaller subsets of the region, the Linking Lands Project uses a landscape perspective to understand the region as a whole. Natural systems don't stop at county boundaries, or at the edges of a land trusts focus area. This regional approach provides a broader context that can help to knit together these disparate efforts and provide opportunities for leverage and partnership to implement conservation and growth management priorities.

Project Methodology

Using the **green infrastructure planning** approach, the Linking Lands project will identify a physical network comprised of region's most valuable natural systems - including lands that provide water resources, agricultural lands (farms and forests), wildlife habitat and large functioning ecosystems, recreation lands and cultural resources.

This science-based approach incorporates the most current data from local and state agencies and the land trust community and the "on the ground" knowledge.

The project is organized into 5 distinct steps:

1. **Develop broad-based partnerships** and recruit community leaders to participate in the following four steps of the project.
2. **Gather data, conduct ecological assessments and develop maps** for key elements of our region's natural systems (i.e., green infrastructure), including water resources, agricultural lands, wildlife habitat, recreation and conservation lands, and cultural resources.
3. **Develop a science-based green**

<http://www.linkinglands.org/>

On-line, easy-to use tool - <http://gis.buncombecounty.org/LinkingLands/>

Many Uses for Many People

- **Land Owners and Developers**
 - Site planning and design
 - Land stewardship
- **Land Trusts and other Non-profits**
 - Prioritizing conservation projects
 - Farmland Preservation
- **Students**
 - Place-based learning
 - Hands-on projects



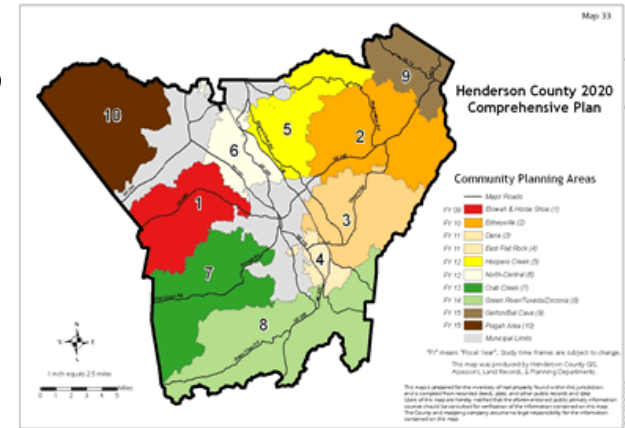
Governmental Uses of Tools

- **Local Governments**

- Development review and site design
- Enhance/support city/county planning
- Identify opportunities for parks, greenways

- **State and Federal Agencies**

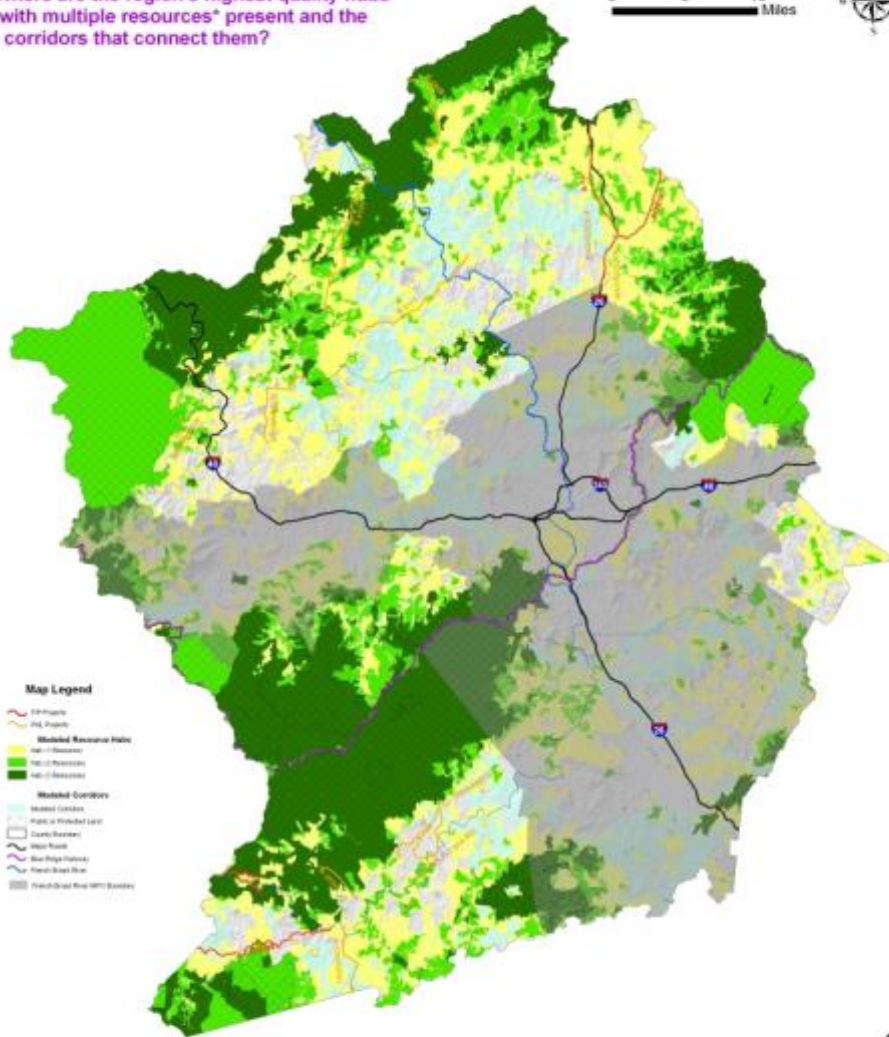
- Transportation planning and mitigation
- Justify funding for conservation or management
- Identifying areas for conservation and assisting with community planning along the Blue Ridge Parkway
- Connecting state and national parks to other lands with valuable natural resources



Green Infrastructure Network (Combined Resource Hubs)

Where are the region's highest quality hubs
with multiple resources* present and the
corridors that connect them?

Linking Lands and Communities in the Land-of-Sky Region



Priority Transportation Projects with Green Infrastructure Network – for Land-of-Sky RPO



*Resources include wildlife habitat & biodiversity, water, quality, farming & forestry.

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This topographic map depicts the Weaverville, North Carolina area. The map features a variety of terrain types, with green indicating forested areas and brown/tan representing cleared land or urban areas. A network of roads is shown, including major routes like SR 1727 (US 25) and SR 1725. Other labeled roads include SR 1732, SR 1731, SR 1723, SR 1721, SR 1722, SR 1796, SR 1849, SR 1820, SR 1819, SR 2219, SR 2133, SR 2130, SR 2122, SR 2121, SR 2125, SR 2124, SR 2126, SR 2127, SR 2128, SR 2205, SR 2103, SR 2106, SR 2105, SR 2104, SR 2103, SR 2102, SR 2101, SR 2100, SR 2099, SR 2098, SR 2097, SR 2096, SR 2095, SR 2094, SR 2093, SR 2092, SR 2091, SR 2090, SR 2089, SR 2088, SR 2087, SR 2086, SR 2085, SR 2084, SR 2083, SR 2082, SR 2081, SR 2080, SR 2079, SR 2078, SR 2077, SR 2076, SR 2075, SR 2074, SR 2073, SR 2072, SR 2071, SR 2070, SR 2069, SR 2068, SR 2067, SR 2066, SR 2065, SR 2064, SR 2063, SR 2062, SR 2061, SR 2060, SR 2059, SR 2058, SR 2057, SR 2056, SR 2055, SR 2054, SR 2053, SR 2052, SR 2051, SR 2050, SR 2049, SR 2048, SR 2047, SR 2046, SR 2045, SR 2044, SR 2043, SR 2042, SR 2041, SR 2040, SR 2039, SR 2038, SR 2037, SR 2036, SR 2035, SR 2034, SR 2033, SR 2032, SR 2031, SR 2030, SR 2029, SR 2028, SR 2027, SR 2026, SR 2025, SR 2024, SR 2023, SR 2022, SR 2021, SR 2020, 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SR 1575, SR 1574, SR 1573, SR 1572, SR 1571, SR 1570, SR 1569, SR 1568, SR 1567, SR 1566, SR 1565, SR 1564, SR

Green Infrastructure corridors around Weaverville

Other Uses and Future Plans

- Data and maps being used in current project that is looking at and planning for growth and development – GroWNC (www.gro-wnc.org)



- Sharing methodology with adjacent regions to hopefully expand GI network
- Continue to share information and benefits – locally, regionally and nationally – APA, NADO-sponsored webinar, NARC conference



Linking Lands and Communities in the Land-of-Sky Region

Project website: www.linkinglands.org

Online map tool: gis.buncombecounty.org/LinkingLands/

Land-of-Sky website: www.landofsky.org

The Watershed Resources Registry (WRR)

A National Pilot To Integrate Land-use Planning,
Regulatory, and Non-regulatory Decision Making Using
the Watershed Approach



History

A pilot Registry grew out of the **Green Highways Partnership** and the Maryland State Highway The initial Project Coordination Meeting took place in March 2009 and was attended by the partner agencies

A follow-up Managers Meeting was held at the Engineers Club of Baltimore in October 2009



What is the WRR?

- It is a comprehensive replicable framework and GIS-based targeting tool that:
 - Integrates and streamlines regulatory programs
 - Guides resource planners
 - Saves time and \$, and increases program efficiencies
 - Screens for preferred actions and maximizes watershed benefits
 - Is transparent, predictable and reliable
 - Facilitates multiagency input and coordination

Why is the WRR unique?

Unlike many mapping and targeting tools...

- There is agency collaboration and program integration between:
 - CWA 319, 401, 402, 404, 303(d)
 - Watershed planning, permit review, mitigation assessments
 - TMDL and WIP applications
 - Stormwater management
 - Resource conservation/
environmental resource planning
 - Green Print and Rural Legacy priorities
 - Section 7 (Threatened and Endangered Species)
 - Transportation and land use planning
 - NEPA review

... and more!

The Formation Process

- A Technical Advisory Committee (TAC) was formed, consisting of stakeholders from local, state and federal agencies, to ensure that the end-products would have comprehensive programmatic coverage and integration
- The TAC assembled a wide variety of information and geospatial data sets, and identified and addressed data gaps, to meet the needs of programs and watersheds
- Datasets and factors were agreed upon in a systematic process in order to develop eight Suitability Analysis (SA)

The Suitability Analyses (SA)

- Upland Preservation
- Upland Restoration
- Wetland Preservation
- Wetland Restoration
- Riparian Zone Preservation
- Riparian Zone Restoration
- Preserving Natural Hydrology for Stormwater
- Restoring Natural Hydrology for Stormwater

The Factors: An Example

Restore Wetlands

Map and score areas that are not currently wetlands but which have site conditions that would support wetland creation. Restore the site to a healthy wetland.

Required factors

The area cannot be:

- a wetland
- forested (land cover)

The area must be:

- On a poorly drained soil (somewhat, poorly or very poorly)

Enhancing factors*

1. Is near (200 feet) but not in a stream or waterbody (1 pt)
2. Is in a 100-year (1 pt) or 500-year ($\frac{1}{2}$ pt) floodplain
3. Is within a 303-D listed stream watershed (1pt)
4. Is within 200 feet (1pt) or 600 feet ($\frac{1}{2}$ pt) of an area that drains to a Stream Classification Use II, III or IV
5. Is in a Biological Restoration Initiative watershed (1 pt)
6. Is in a Blue Infrastructure priority watershed (1 pt)
7. Is in a Stronghold Watershed, “1” (1 pt) or “2” ($\frac{1}{2}$ pt)
8. Is in a Tier II “watershed” (1 pt)
9. Is within a High Priority (1 pt) or Medium Priority ($\frac{1}{2}$) Trust Fund Watershed
10. Is in Chesapeake Bay Commission Critical Area (LDA or RCA only) (1 pt)
11. Is in or near (200 feet) a Green Infrastructure hub or corridor (1 pt)
12. Is in a Green Infrastructure gap (1 pt)
13. Is near (200 feet) but not in a Sensitive Species Project Review Area (1 pt)
14. Is near (200 feet) but not in a Wetland of Special State Concern (1 pt)
15. Is near (200 feet) but not in protected lands (including any GreenPrint Targeted Ecologic Areas) (1 pt)
16. Is near or in (200 feet) a Targeted Ecologic Area (GreenPrint) (whether protected or not) (1 pt)

*A combination of scientific indicators and socio-political factors.

SHA's Mission
Statement:

“Efficiently provide mobility for our customers through a safe, well-maintained and attractive highway system that enhances Maryland’s communities, economy and environment.”

Current and Ongoing Initiatives

- ❖ Capital Program
- ❖ Roadway Maintenance
- ❖ Bay TMDL

Capital Program

	Costs	Time	Cost Savings w/WRR	Time Savings w/WRR
Site Search	\$50,000	4 months	\$37,500	3 months
Design	\$210,000	18 months	\$70,000	6 months
Agency Coordination/MDE Consultant Review	\$10,000	12 months	\$2,500	3 months
Total	\$365,000	2.5 years	<u>\$110,000</u>	<u>1 year</u>

SHA Treatment Strategy – Land Use Changes



Tree Plantings (Grass to Forest)

Impervious to Grass/Meadow

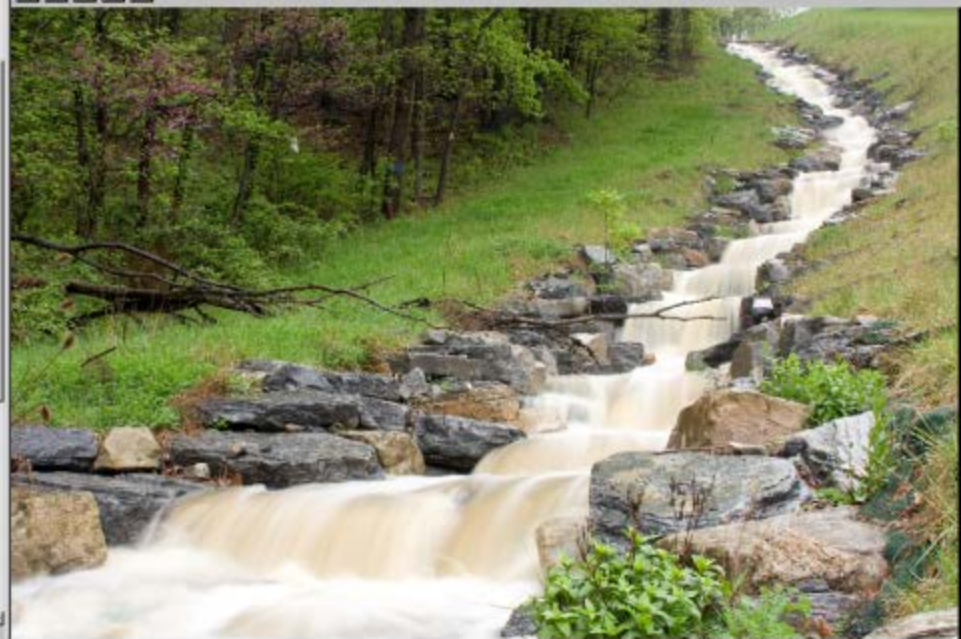
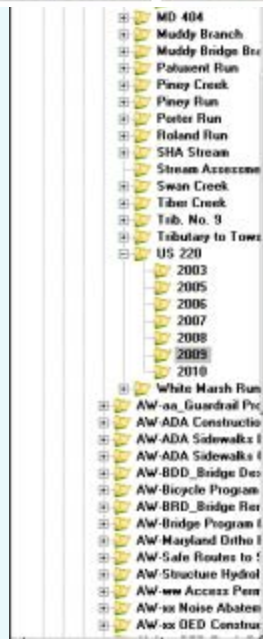
SHA Treatment Strategy – Stream Bank & Channel Stabilization



SHA\DCMS01\Documents\Area-wide Proj...

Description	File Size	State	Status	Out to	Folder
img0023	1,473 KB	Preliminary	Checked In		2429
SHA_050409 011_edited-1	9,772 KB	Preliminary	Checked In		2429
SHA_050409 012_edited-1	8,467 KB	Preliminary	Checked In		2429
SHA_050409 013_edited-1	8,636 KB	Preliminary	Checked In		2429
SHA_050409 015_edited-1	7,371 KB	Preliminary	Checked In		2429
SHA_050409 017_edited-1	8,875 KB	Preliminary	Checked In		2429
SHA_050409 020_edited-1	8,842 KB	Preliminary	Checked In		2429
SHA_050409 023_edited-1	9,277 KB	Preliminary	Checked In		2429

on Preview



SHA Treatment Strategy – Stream Bank & Channel Stabilization



pages - Road and Water.pdf - Adobe Reader

File Edit View Window Help

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Comment Share

Sullivan Branch Stream Restoration

Erosion Control Employed on Maryland Highway Project

After - numerous erosion control measures were used to stabilize stream banks. Inset Before - shows upstream raw bank.

The Chesapeake Bay is the largest estuary in the United States and is home to nearly 16.6 million people. The bay is the source of many of the major causes of the degradation of the bay, choking out bay grasses, oysters, and fish. In developed areas it is common to find outfall structures that are undermined occur without adequate stormwater controls.

Slide 38 of 42

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Using the Watershed Resource Registry (WRR) to Evaluate Proposed Wetland and Waterway Impacts and Mitigation



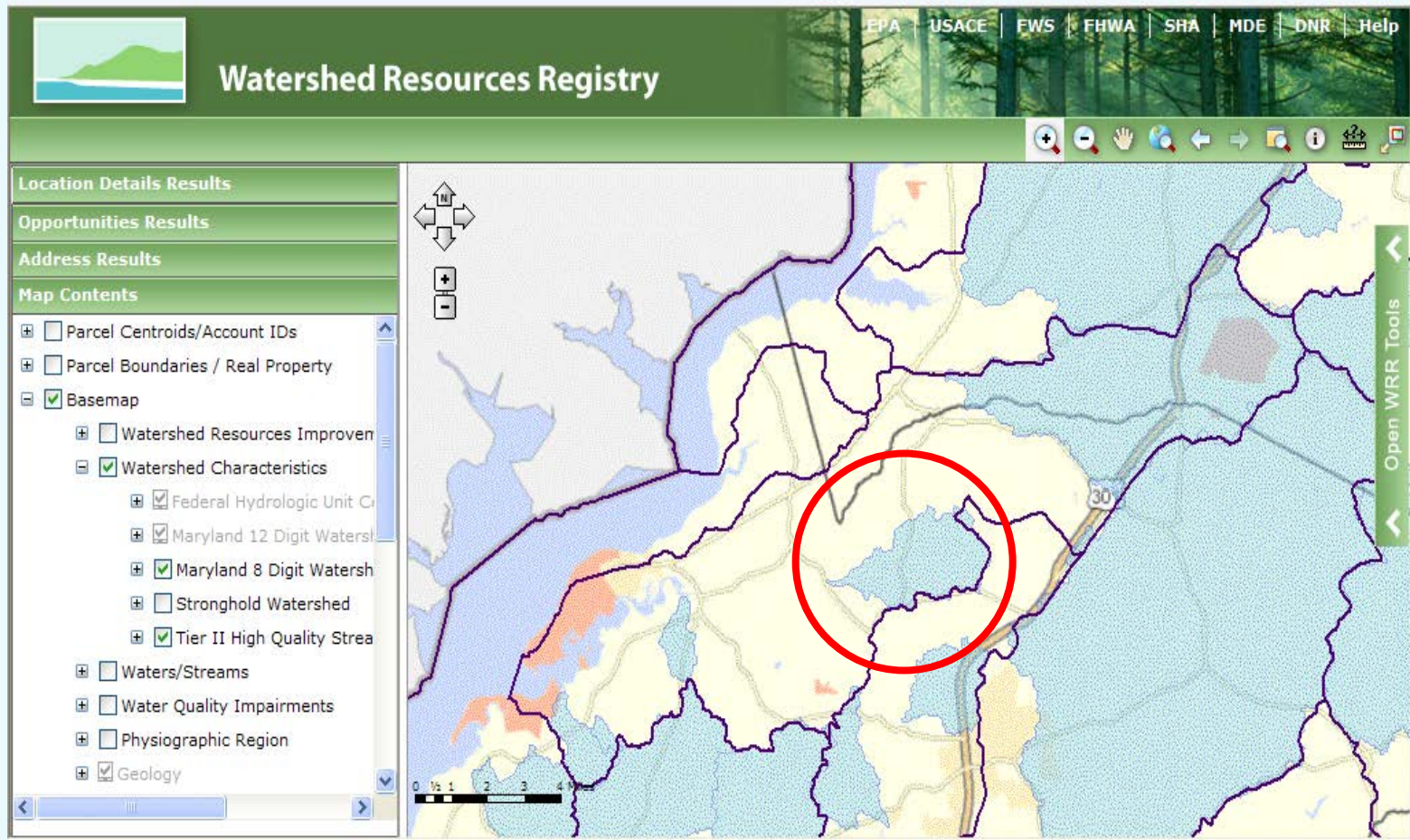
The WRR can be used by regulatory agencies and applicants to evaluate mitigation . . .

- Assist in finding a mitigation site
- Evaluate ecological benefits of a proposed mitigation site (permittee, bank, or ILF)
- Compare different proposed mitigation sites

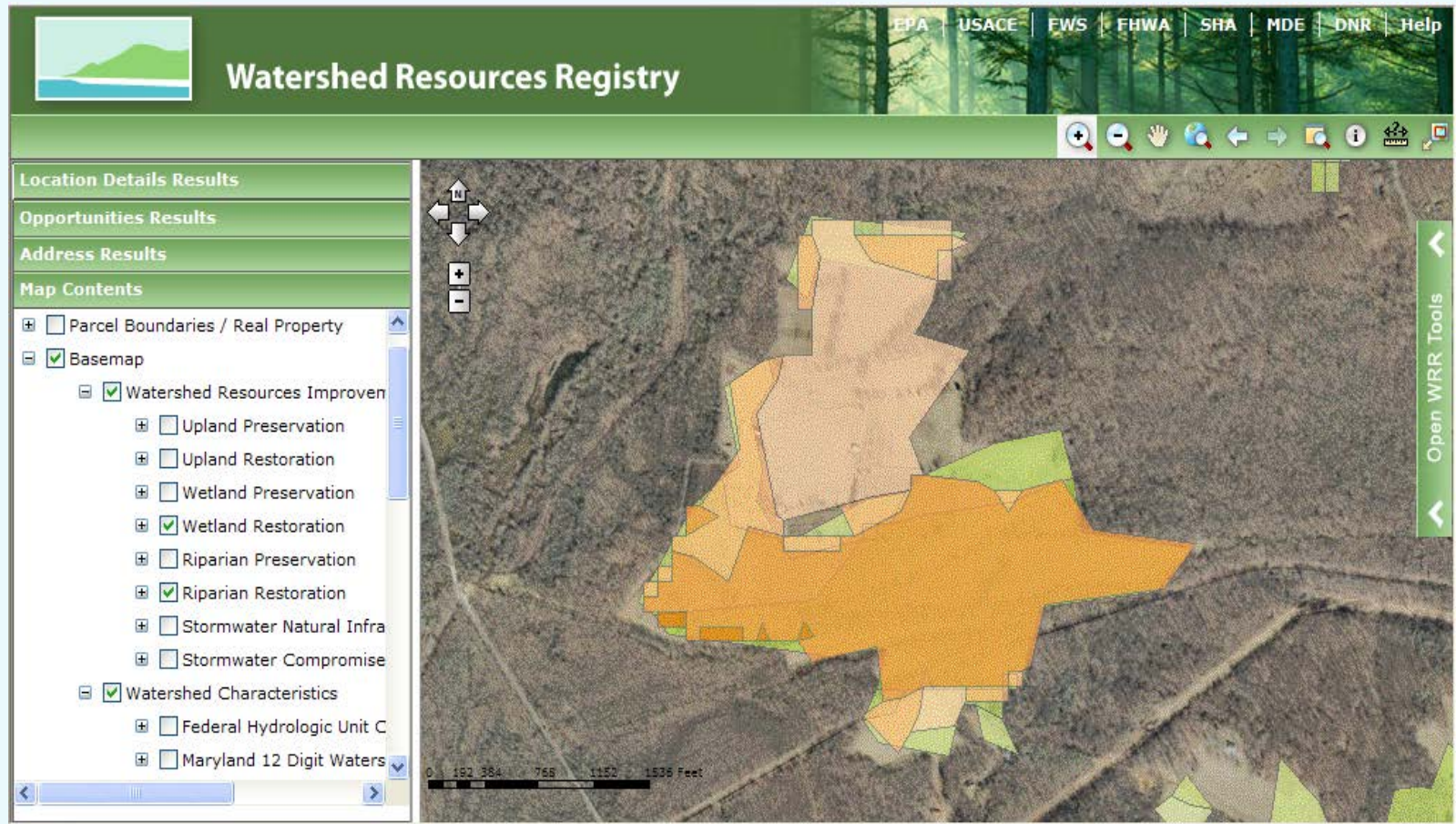
Mitigation Example

- Linear project with large impacts
- Large portion of impacts (76 acres) within Mattawoman wetland
- Tier II watershed
- Difficult to find enough wetland mitigation

Search for . . . Tier II watersheds within Mattawoman watershed



Largest potential wetland restoration in this Tier II watershed



Location Details shows important surrounding resources

The screenshot displays the Watershed Resources Registry (WRR) interface. The top navigation bar includes links for EPA, USACE, FWS, FHWA, SHA, MDE, DNR, and Help. The main header reads "Watershed Resources Registry".

Location Details Results

Watershed Resources Improvement Opportunities

- [Upland Preservation](#): 4
- [Upland Restoration](#): 4
- [Wetland Preservation](#): Not Suitable
- [Wetland Restoration](#): 4
- [Riparian Preservation](#): 3
- [Riparian Restoration](#): 5
- [Stormwater Natural Infrastructure Preservation](#): 1
- [Stormwater Compromised Infrastructure Restoration](#): 2

Watershed Characteristics:

- [View Watershed Profile](#)
- HUC: 020700110101
- HUC Name: Piney Branch-Mattawoman Creek
- Maryland 8 Digit Watershed: 02140111
- Maryland 12 Digit Watershed: 021401110784
- Tier II High Quality Stream Catchment: Old Womans Run 1

Opportunities Results

Address Results

Map Contents

The central map area shows a satellite view of a watershed boundary, highlighted in orange. A green dot indicates the selected location. A scale bar at the bottom left shows distances from 0 to 1552 feet.

Find Opportunities

- [Location Details](#) (selected)
- [XY Location](#)
- [Zoom to County](#)
- [Zoom to Watershed](#)
- [Address Locator](#)
- [Print Map/Results](#)

Location Details

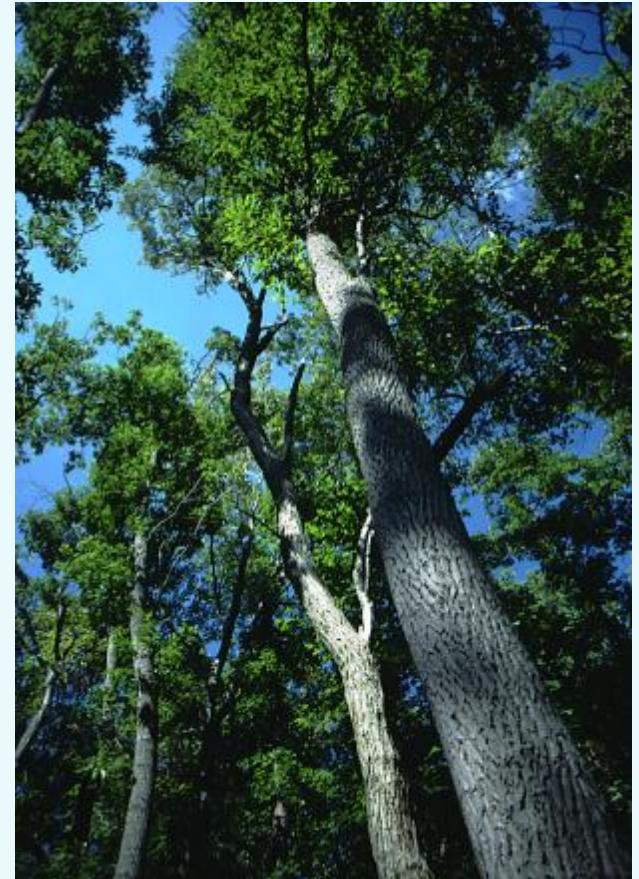
Latitude/Longitude: 38.59543, -77.04478

Watershed Resources Improvement Opportunities

- [Upland Preservation](#): 4
- [Upland Restoration](#): 4

Identifying WRR Opportunities on Private Land

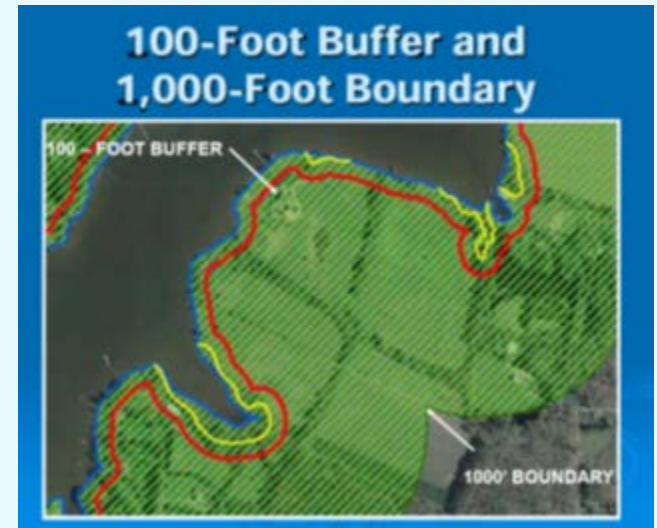
- Maryland's Forest Conservation Act
 - Requires forest restoration and retention for development projects
 - Counties administer program
 - WRR could assist in identification, review and approval of FCA mitigation sites and banks



Identifying WRR Opportunities on Private Land

- Maryland's Critical Area Program

- Regulates development in MD's critical area
 - all land within 1,000 feet of Maryland's tidal waters and tidal wetlands.
- Requires mitigation for
 - forest loss,
 - FIDS habitat loss,
 - forest buffer loss and
 - stormwater impacts
- Counties administer programs with State oversight
- WRR could assist in identification, review and approval of CAC mitigation sites and banks



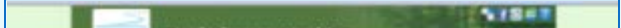
Manager's Meeting

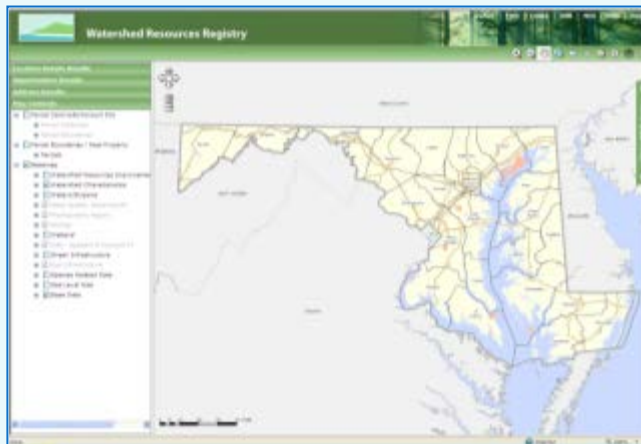
- On June 12, 2012, the interagency WRR TAC briefed managers from the US Fish and Wildlife Service, MD Department of Natural Resources, MD State Highway Administration, MD Department of the Environment, US Army Corps of Engineers, and the Federal Highway Administration on:
 - the current status of the WRR, relative to the needs and goals identified and established during the previous interagency Managers' Meeting in October 2009

Next Steps

- Release website
- Agency testing
- Training and outreach – workshops, webinars, & handbooks
- Establish a user feedback loop regarding sites and data
- Develop a registration process for sites used
- Monitor registry projects
- Data lifecycle – update data on an agreed upon schedule

WRR Application

- GIS Application:
 - <http://watershedresourcesregistry.org> (.com & .net)
 - Outreach Website (Work Ongoing):
 - <http://watershedresourcesregistry.com/outreach/outreach/home.html>
- 





Thank You

Ralph Spagnolo

(215) 814-2718

Spagnolo.Ralph@epa.gov

Questions?



Exciting Changes Ahead for the Eco-Logical Webinar Series!

- Special focus on each step in the Eco-Logical framework
- Streamlined hour-long format
- Featured partners providing multiple perspectives on joint projects
- More Q&A opportunities

Eco-Logical Webinar Series:

http://www.environment.fhwa.dot.gov/ecological/eco_webinar_series.asp