EPA Region IV/DOD Conference

Land Use Evolution

Ft. Benning

Georgia

June 2002

Topics

- Installation background
- Internal encroachment
  - Natural
  - Land use
- External encroachment
- Management strategy

Fort Benning

"The Home of the Infantry"

Location

North Carolina
Tennessee
Mississippi
South Carolina
Atlanta
Georgia
Alabama
Columbus
Fort Benning
Florida

Background

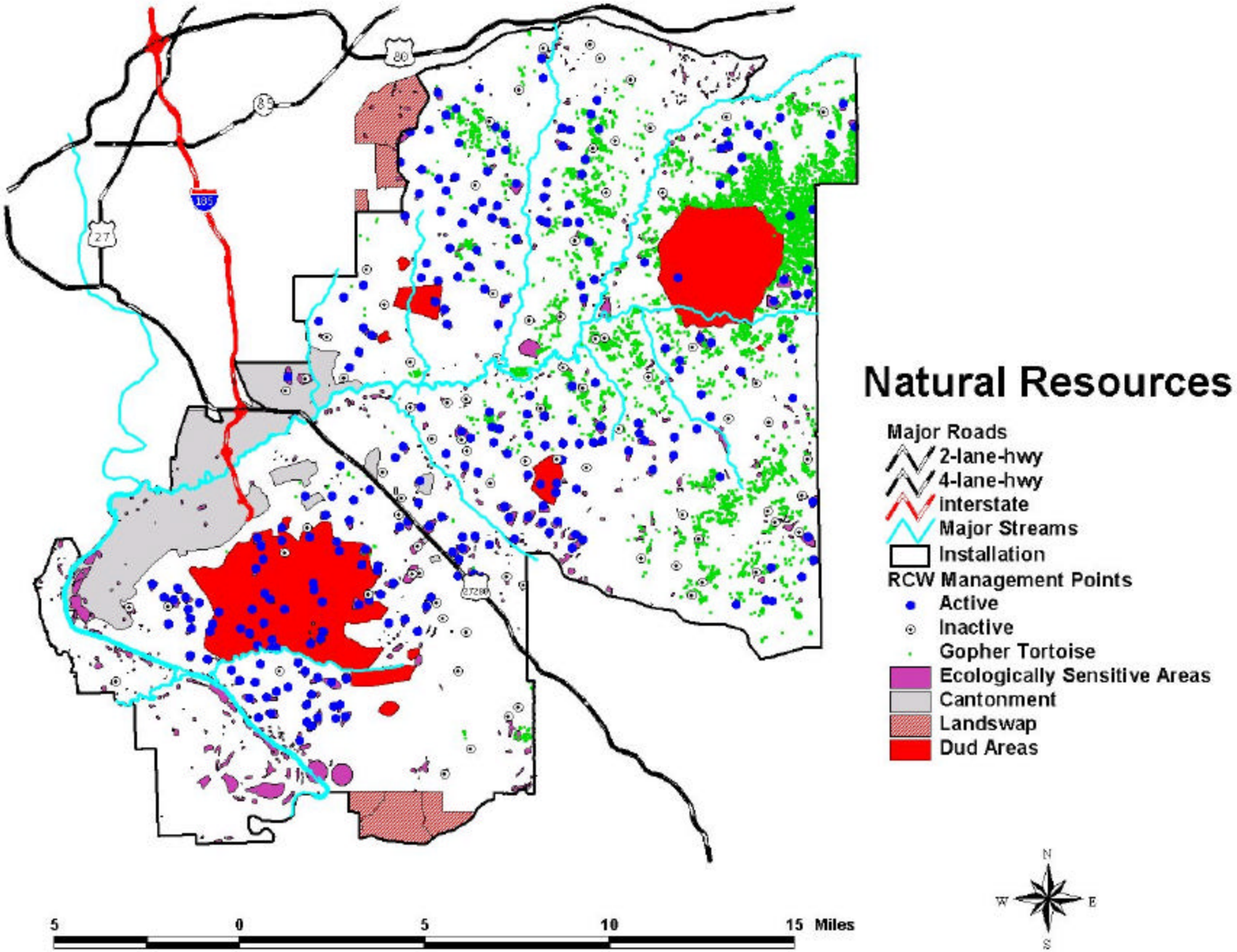
- **Approximately 110,000**
  - Military
  - Civilians
  - Family
- Infantry units
- Mechanized
- 69 Ranges

U.S.

Installation Sustainability Challenges

- Maintain mission capability
- Accommodate changing land-use requirements
  - Force transformation
    - Training area requirements
    - New weapons and tactics
- Constraints
  - Accommodate mission in a smaller area
    - Competing land uses
    - Environmental compliance
    - Natural resource protection
    - Degrading landscape

Internal Encroachment
Natural


Natural Resources
Major Roads
2-lane-hwy
4-lane-hwy
Interstate
Major Streams
Installation
RCW Management Points
Active
Inactive
Gopher Tortoise
Ecologically Sensitive Areas
Cantonment
Landswap
Dud Areas
80
85
185
27
272
5
0
5
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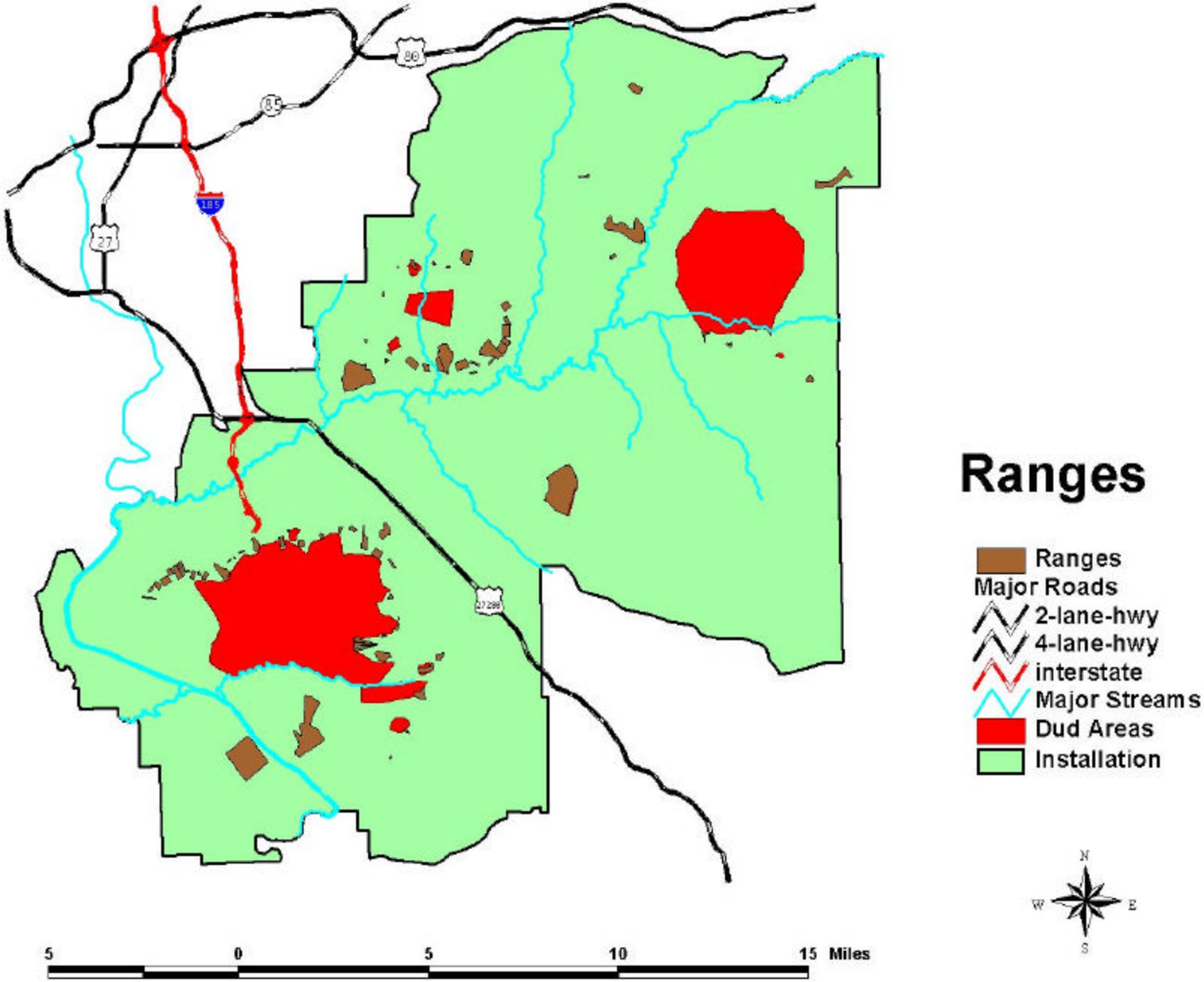
15 Miles
N
W
E
S

Internal Encroachment
Land Use


Ranges
Ranges
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Major Streams
Dud Areas
Installation
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15 Miles
85
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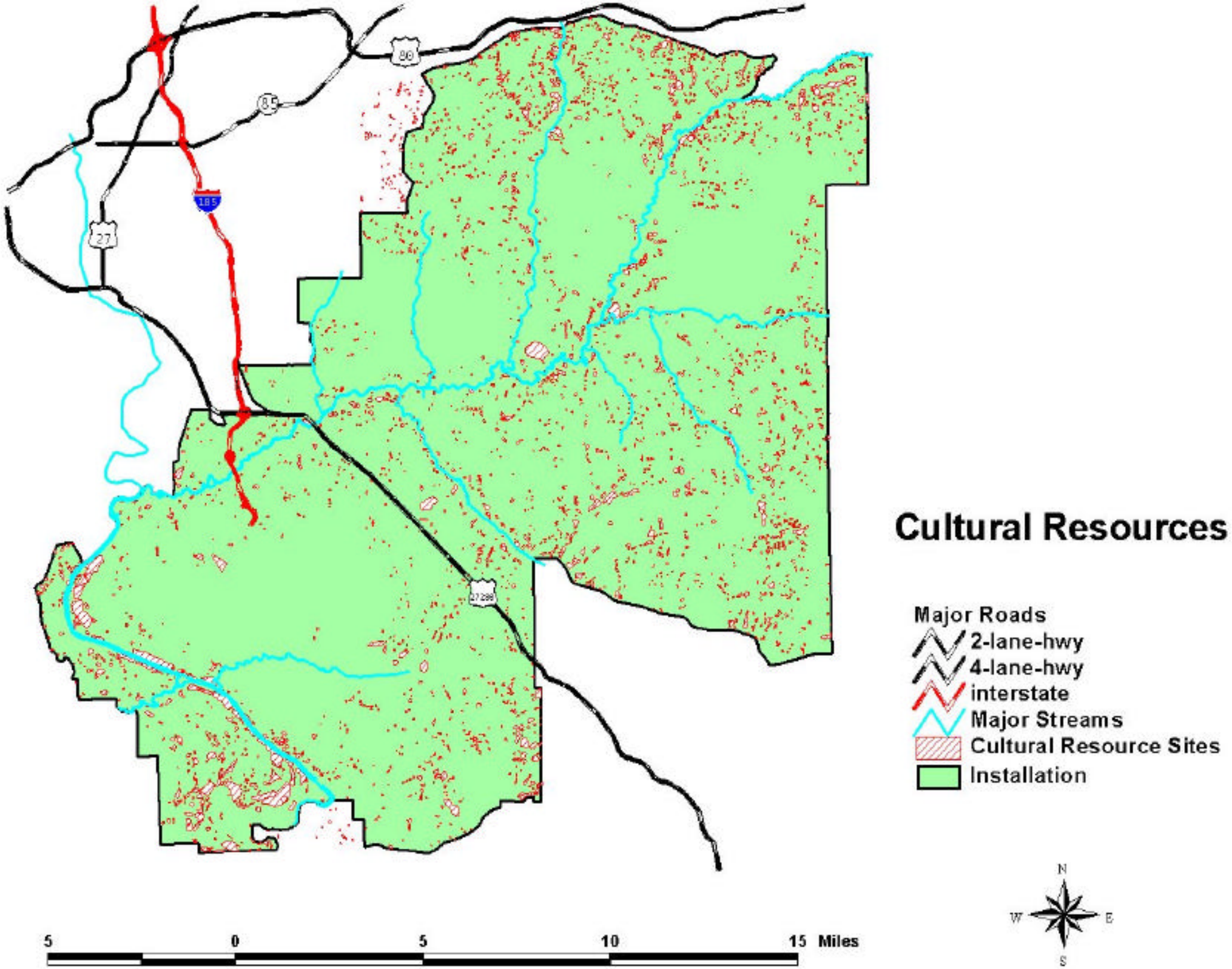
Cultural Resources
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Major Streams
Cultural Resource Sites
Installation
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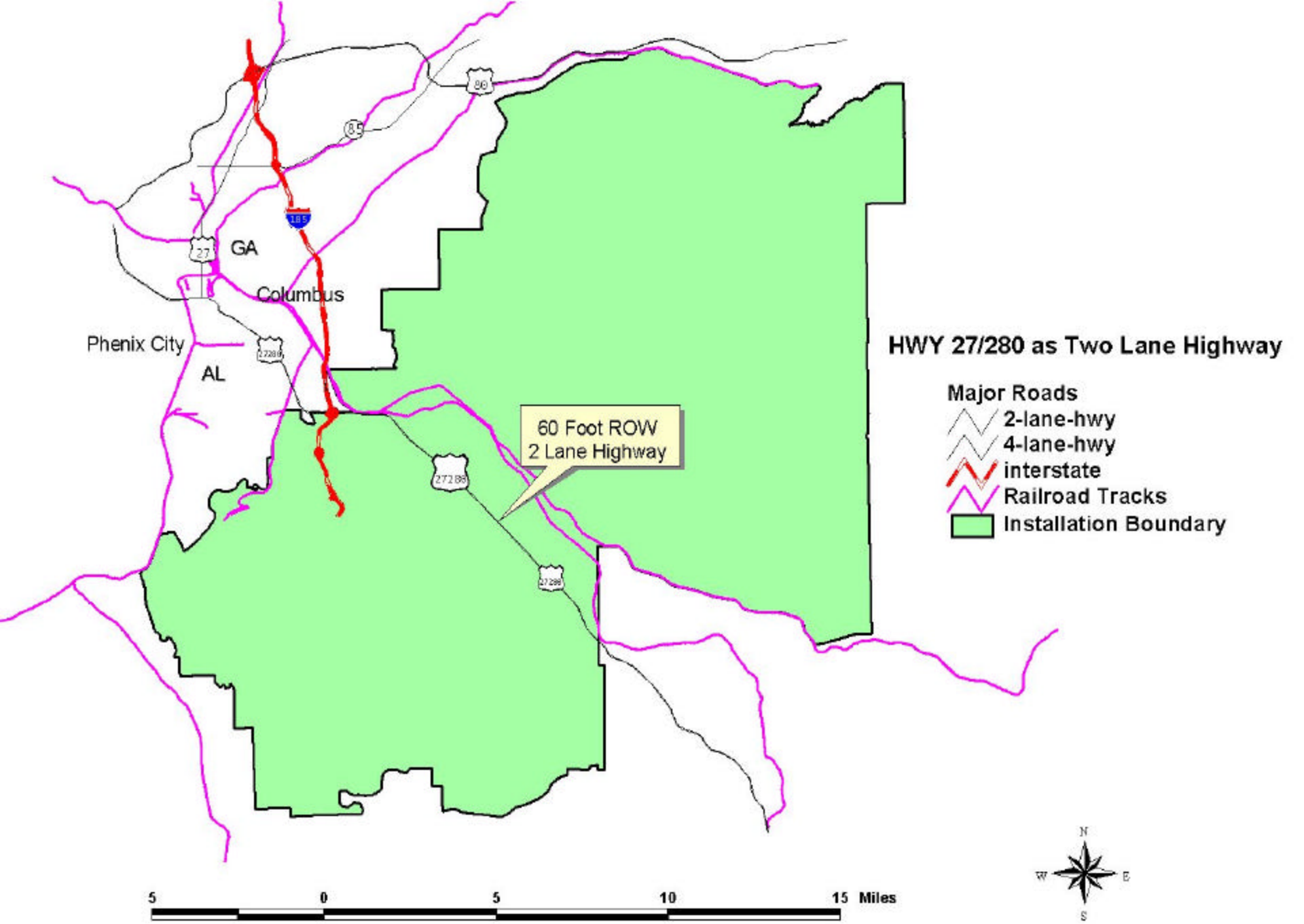
HWY 27/280 as Two Lane Highway
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Railroad Tracks
Installation Boundary
60 Foot ROW
2 Lane Highway
GA
AL
Columbus
Phenix City
185
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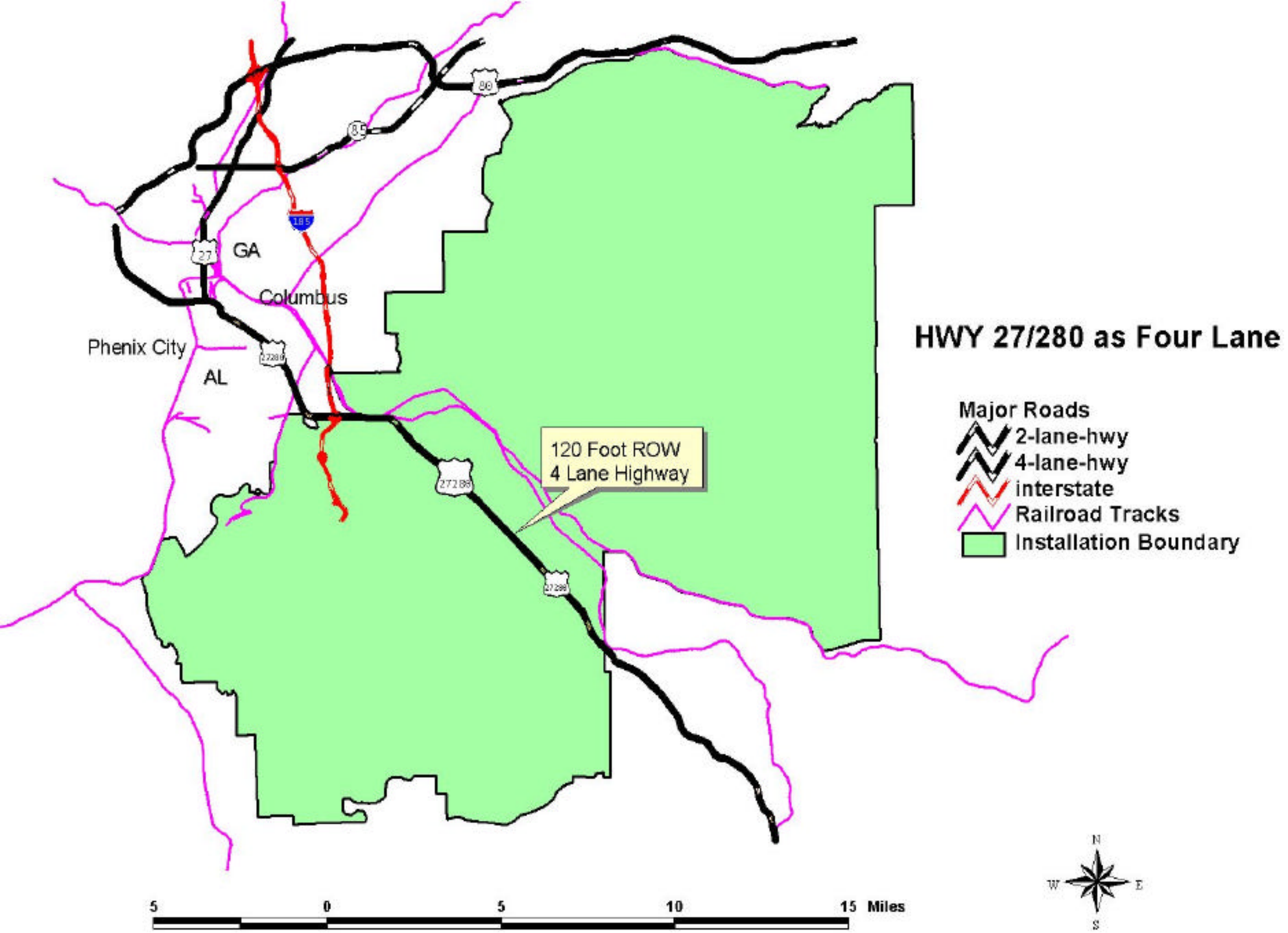
HWY 27/280 as Four Lane
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Railroad Tracks
Installation Boundary
120 Foot ROW
4 Lane Highway
GA
Columbus
Phenix City
AL
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27
280
85
5 0 5 10 15 Miles
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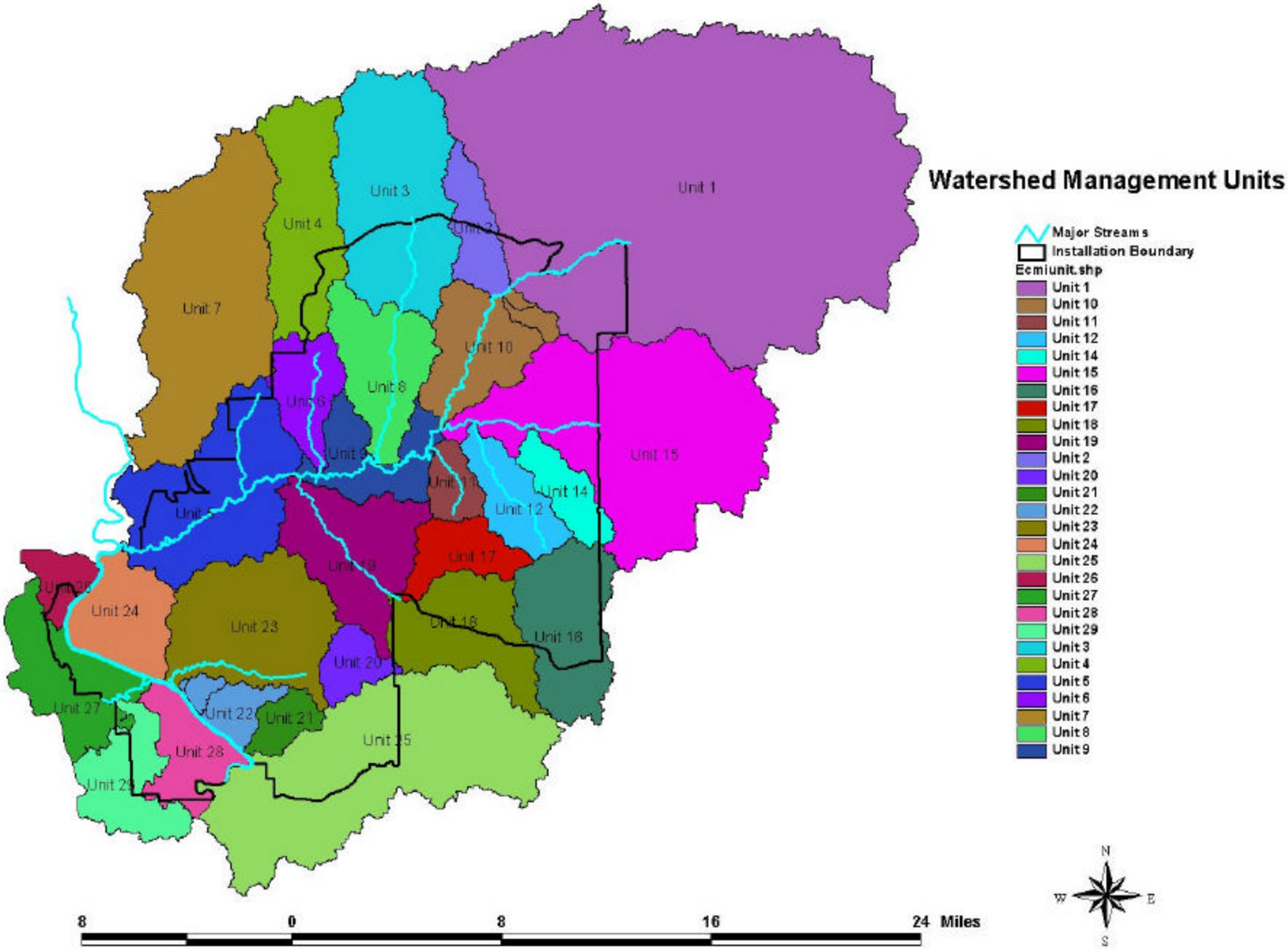
External Encroachment


Watershed Management Units
Major Streams
Installation Boundary
Ecmiunit.shp
Unit 1
Unit 10
Unit 11
Unit 12
Unit 14
Unit 15
Unit 16
Unit 17
Unit 18
Unit 19
Unit 2
Unit 20
Unit 21
Unit 22
Unit 23
Unit 24
Unit 25
Unit 26
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Unit 28
Unit 29
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Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
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24 Miles
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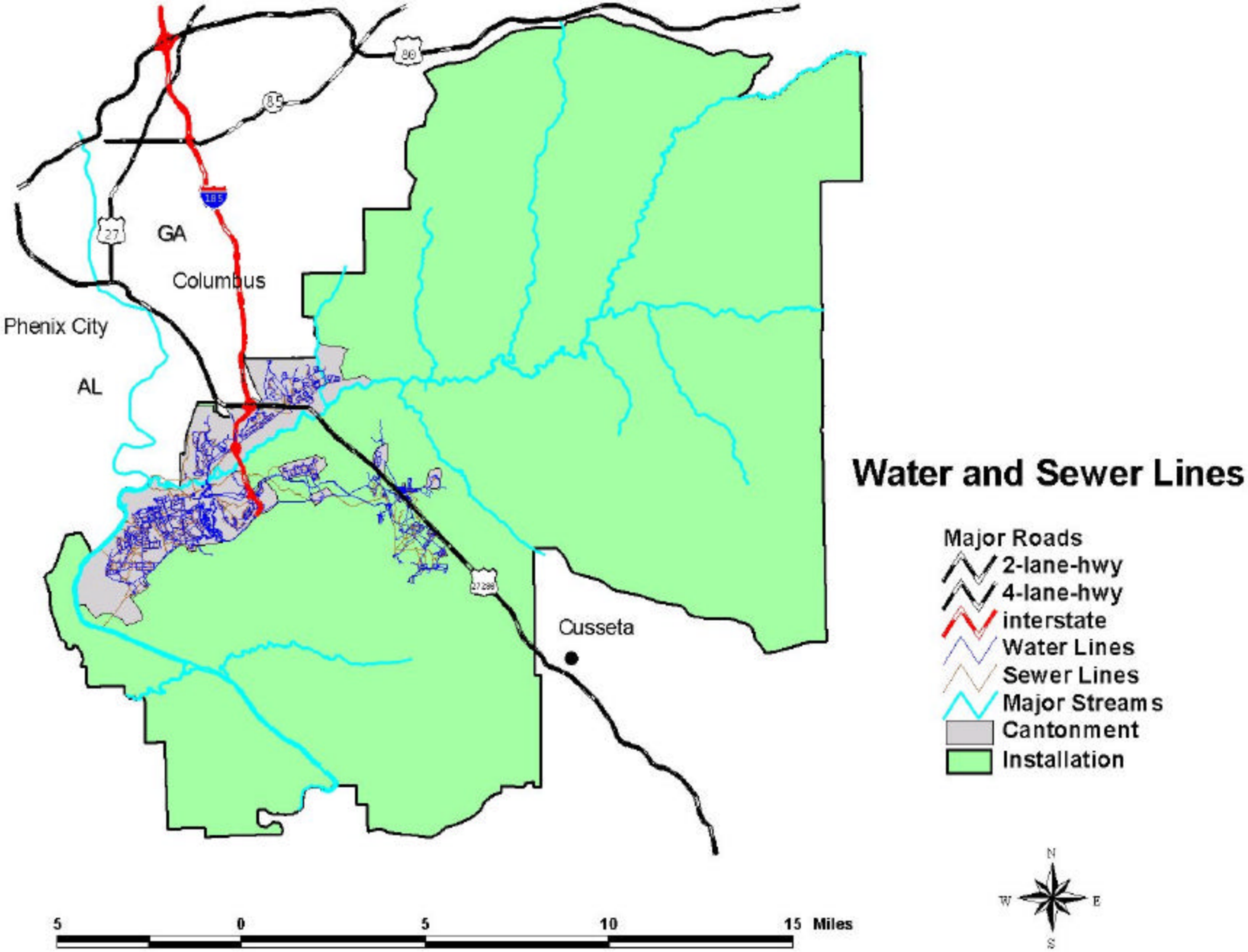
Water and Sewer Lines
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Water Lines
Sewer Lines
Major Streams
Cantonment
Installation
GA
Columbus
Phenix City
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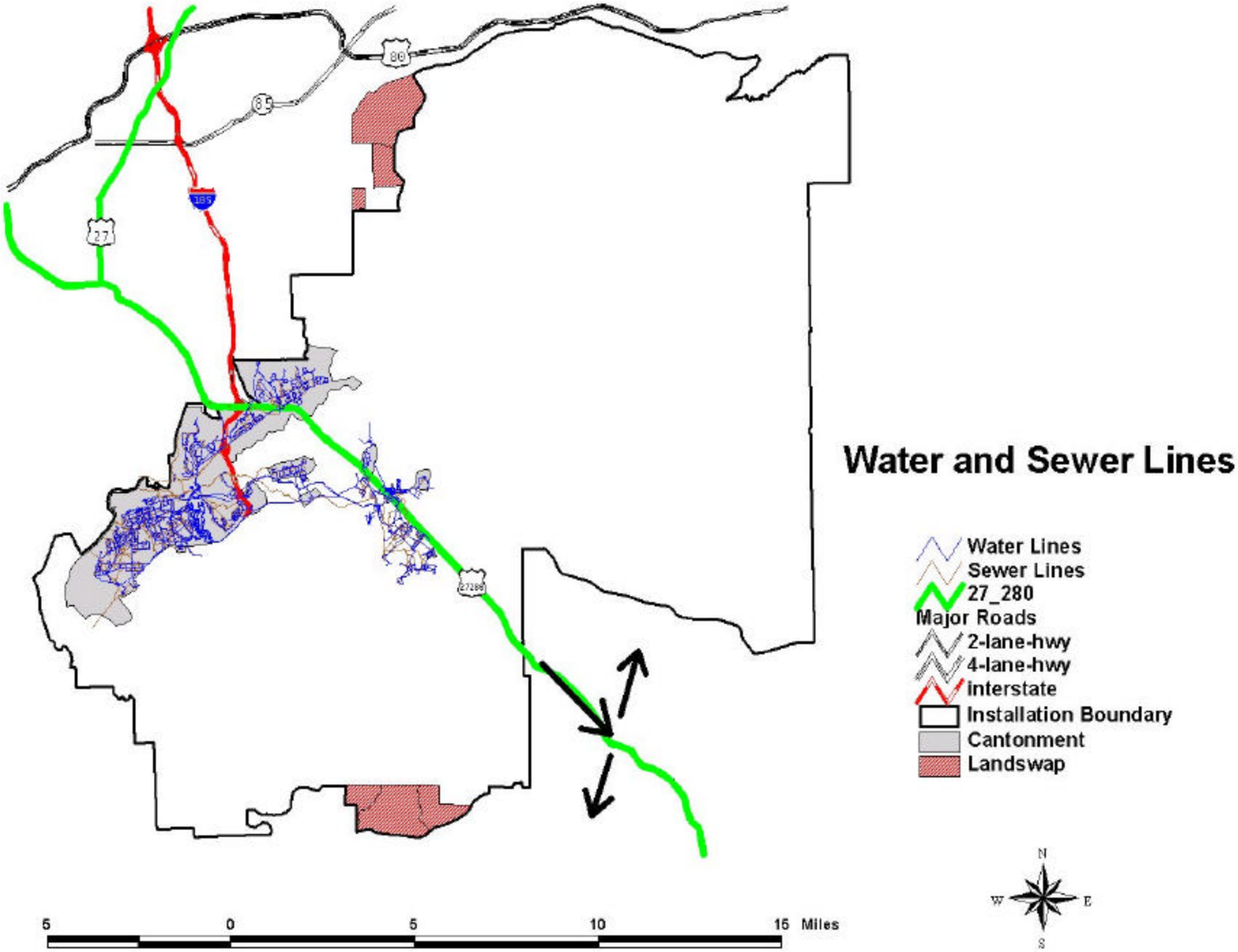
Water and Sewer Lines
Water Lines
Sewer Lines
27_280
Major Roads
2-lane-hwy
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interstate
Installation Boundary
Cantonment
Landswap
5
0
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15 Miles
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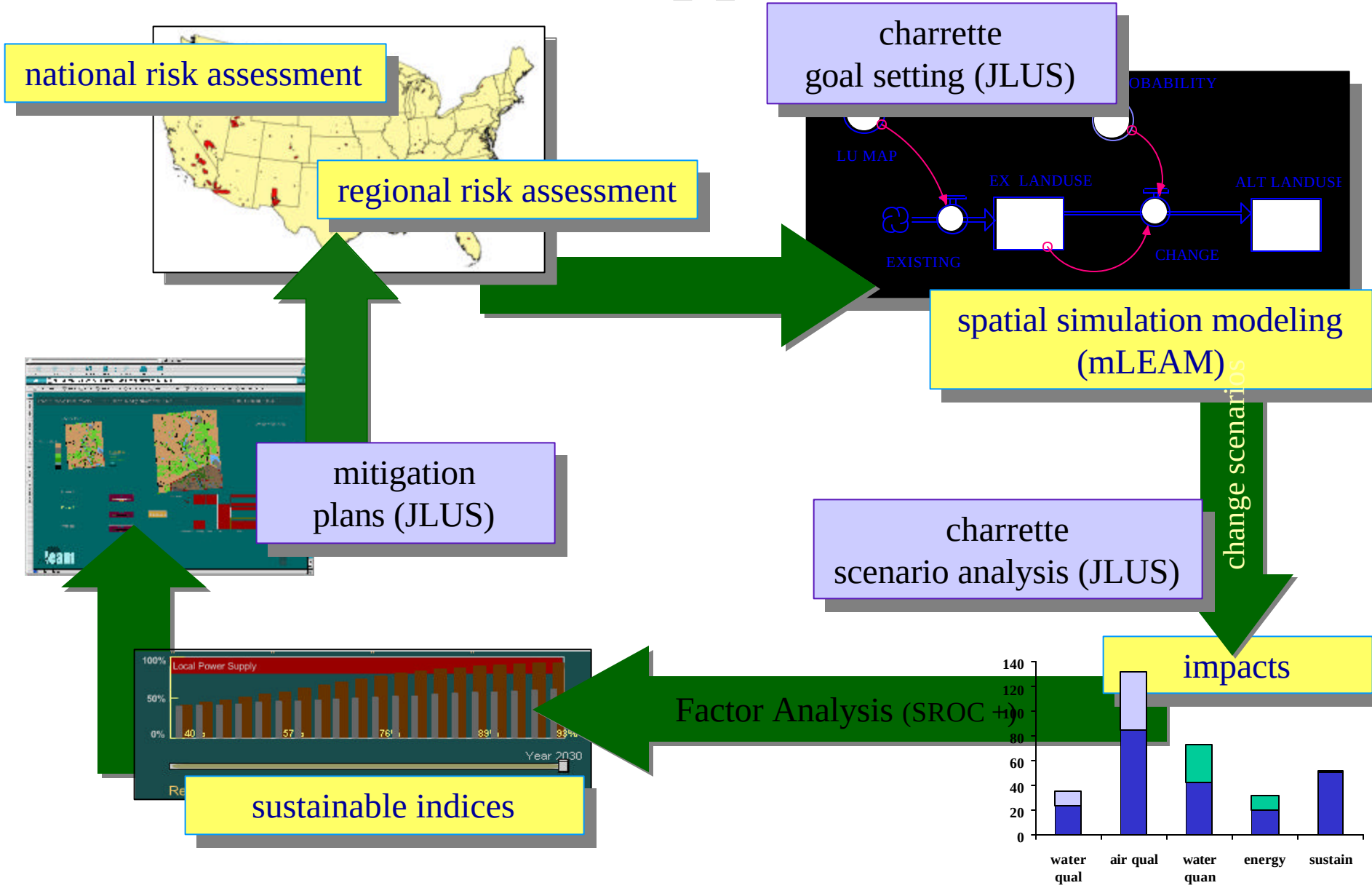
Management Strategies

- Data
- Information
- Tools
- Partnering

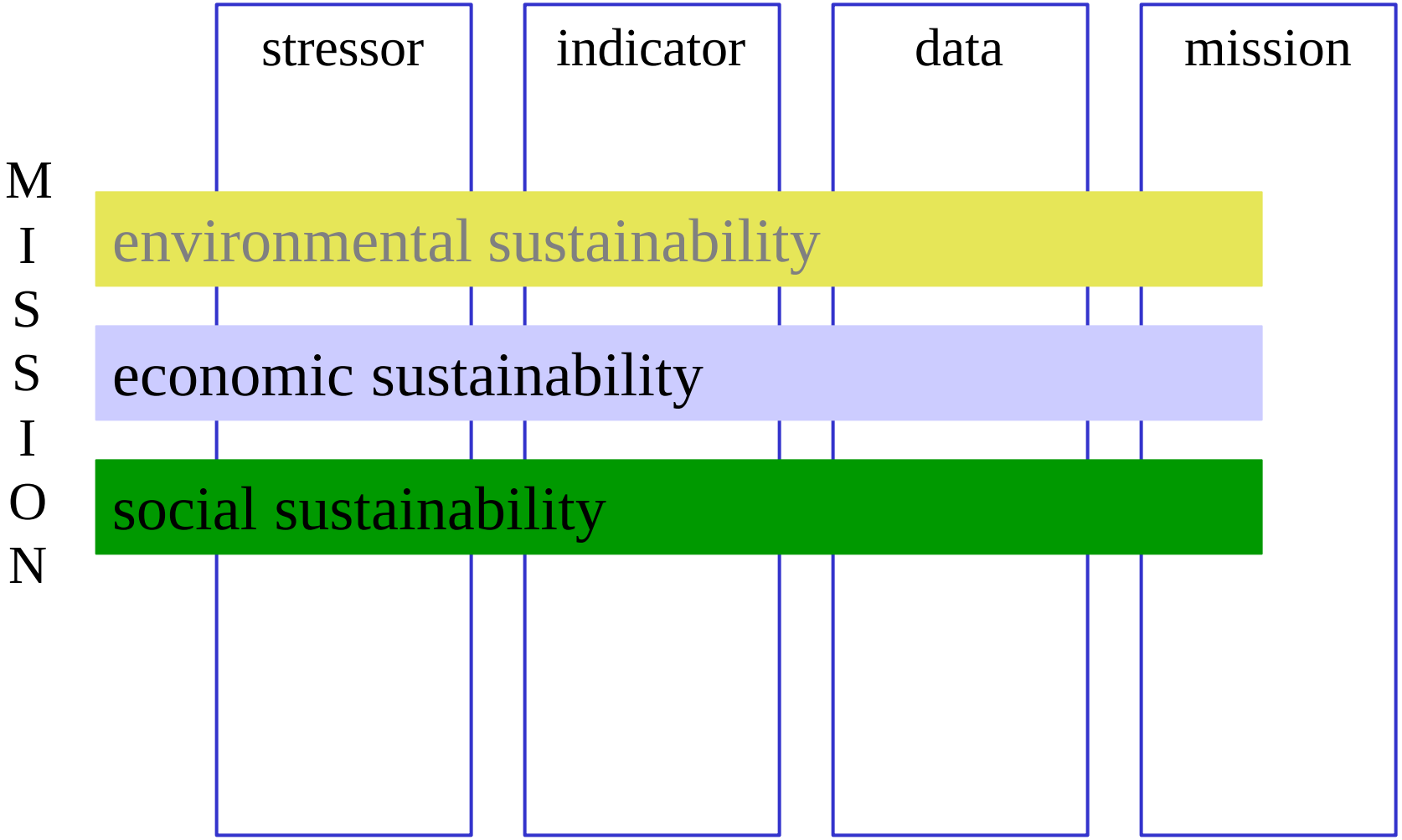
SERM Approach



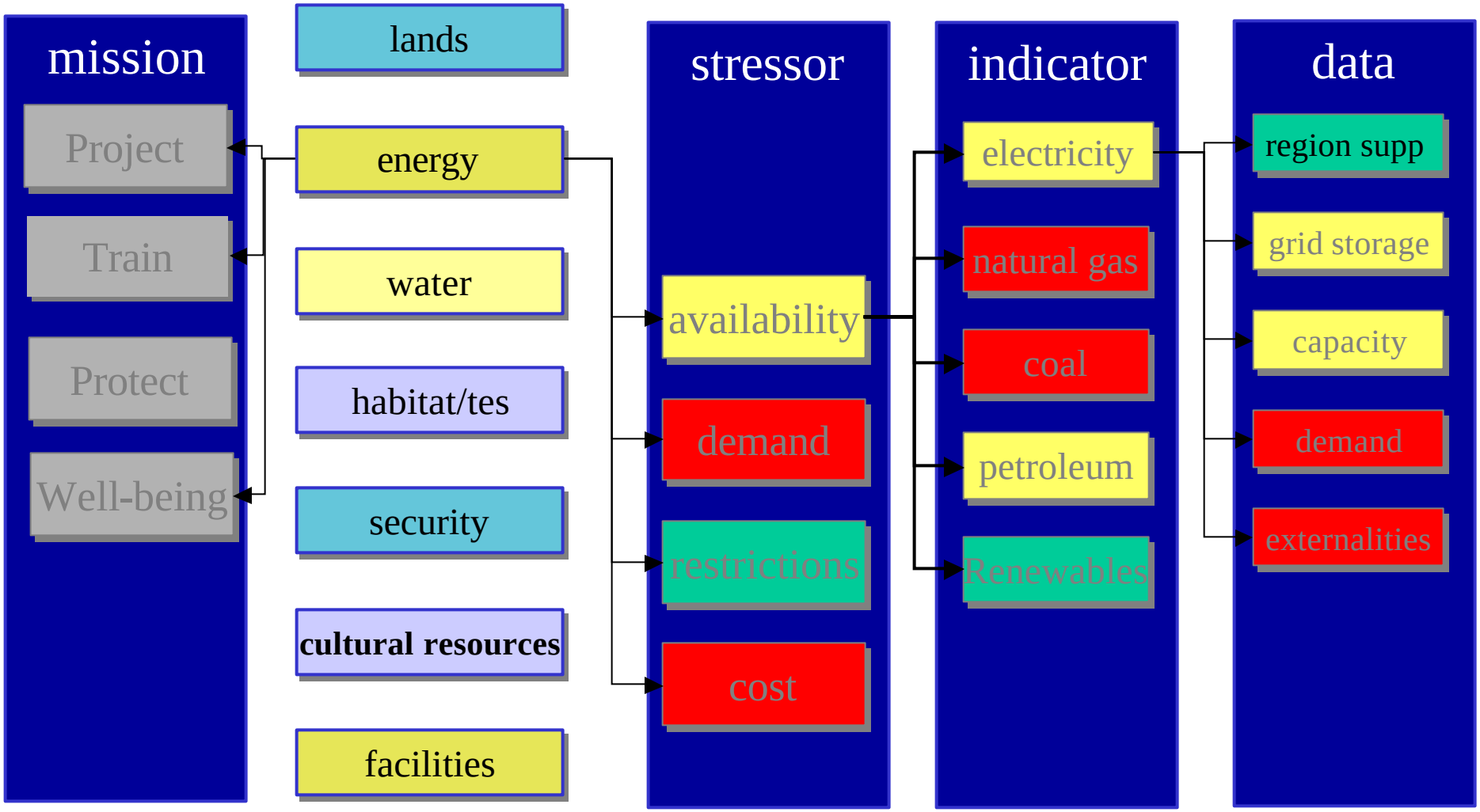
I R A S

installation risk assessment system

compares installation risk across spatial and domain scales



Environmental Risk Issues



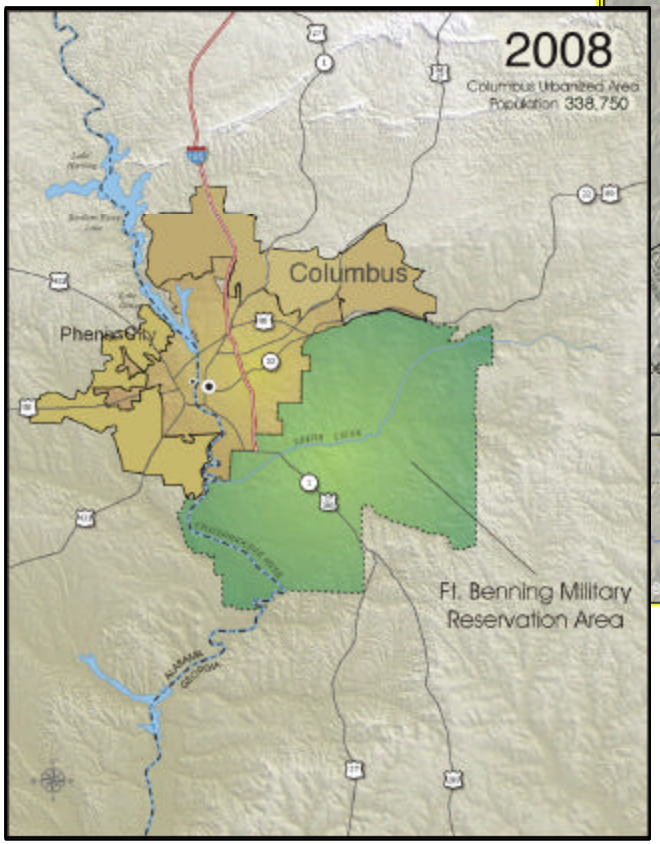
Encroachment Risk Assessment

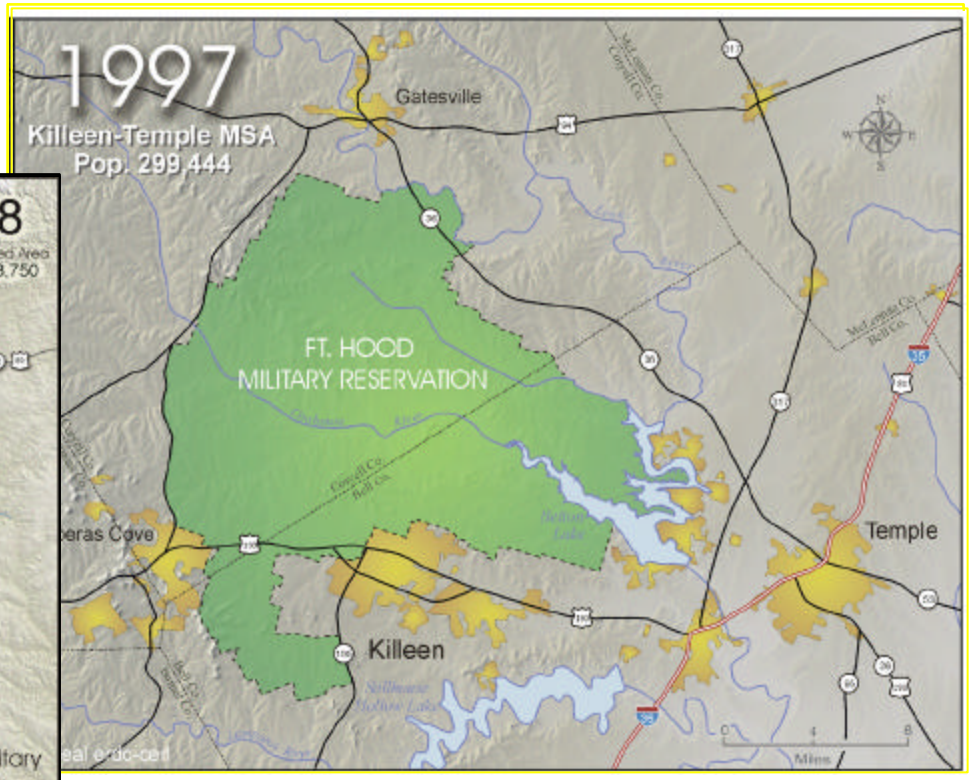
Comparison Test for 3 Sites

Stressors	Indicators	Fort Carson		Fort Benning		Fort Riley	
		Value	Risk	Value	Risk	Value	Risk
Issue: Air Quality							
Emission Status	Non-attainment area	N	0	N	0	N	0
Issue: Urban Development							
Community Size	State Degree of Population Urbanization	84%	0	69%	2	56%	2
	State Degree MSA Land	18%	0	22%	2	7%	0
	Regional Population Density	313	4	149	2	43	0
	Regional Degree of Land Urbanization	5.60%	4	2.10%	2	1.10%	0
Community Economic Strength	Regional Population Growth	20.80%	4	4.40%	2	-17%	0
	Earnings Per Capita Growth	40%	4	37%	4	34%	2
	Increasing Regional Population Growth Rate	Y	2	Y	2	N	0
	Urban Development Growth	19%	0	57%	4	11%	0
Community Proximity	Contiguous Metro Area	500k	4	272k	2	65k	0
Issue: Social and Economic							
DoD Impact	Military Employment Change	-5172	2	-4590	2	-6960	2
	Military Employment Ratio	9.41%	2	20.60%	0	40.55%	0
	Gov't Employee Density	0.18	0	0.11	0	0.1	0
Issue: Natural and Cultural Resources							
Natural Resource Context	Integrated Natural Resrouces Management Plan (INRMP)	Y	0	Y	0	Y	0
	Endangered Species Managemer Plan (ESMP)	N	0	Y	4	N	0
	Jeopardy Biological Opinions	N	0	N	0	N	0
	Training Land Restrictions	Y	4	N	0	N	0
	Regional T&E Issues	Y	4	Y	4	Y	2
Cultural Resource Context	Integrated Cultural Resources Management Plan (ICRMP)	Y	0	N	2	N	2
	Planning Level Surveys	Y	0	Y	0	Y	0
Issue: Water							
Watershed Withdrawals	Regional Water Fresh Water Consumption Growth	19%	2	38%	4	-4%	0
	Regional Ground Water Percent o Total Withdrawals	13%	2	10%	0	28%	4
	Domestic Water Percent of Total Withdrawals	7%	4	26%	2	42%	0
Watershed Health	Index of Watershed Indicators	1	0	3	2	5	4
	Impaired Waters	N	0	Y	2	Y	2
Issue: Noise							
External Impact	Noise Impact Factor	1.5	4	5	0	1.5	4
RISK TOTAL			**46**		**44**		**24**

Geographic Time Series Analysis

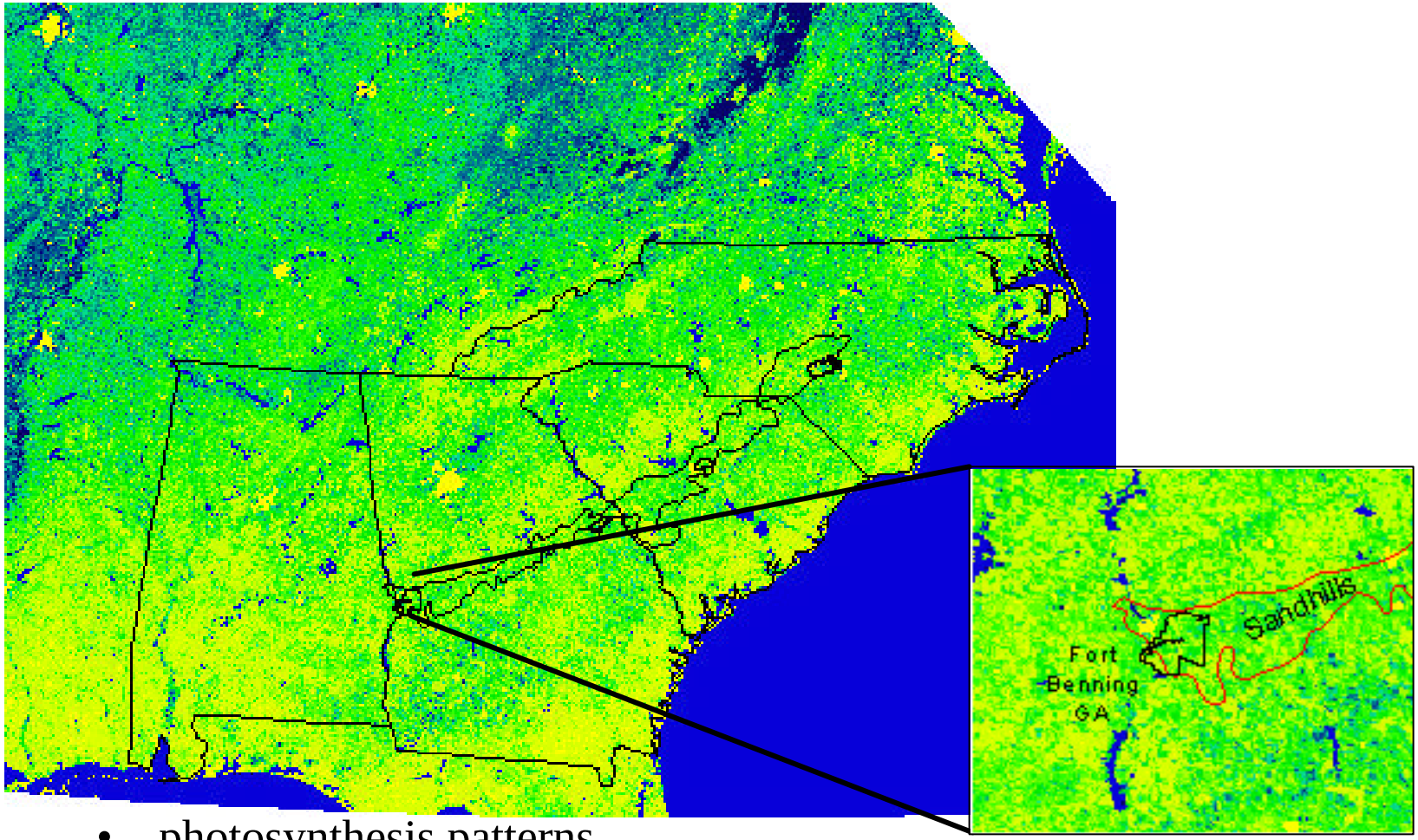
- Historic Mapping





Eco-Regional Risks

remote sensing and regional indices

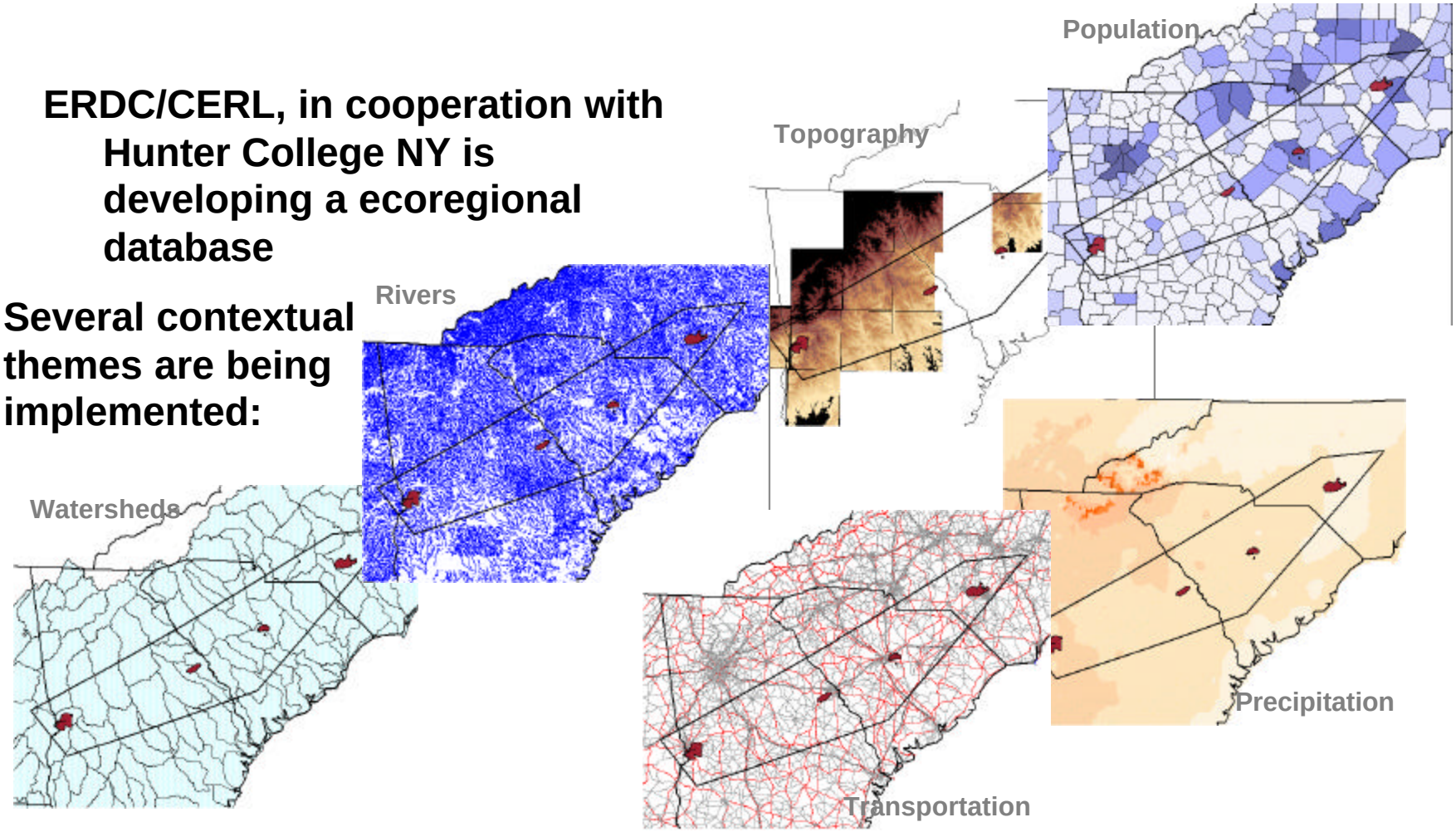


- photosynthesis patterns
  - MODIS satellite imagery

Sandhills Eco-Region Data

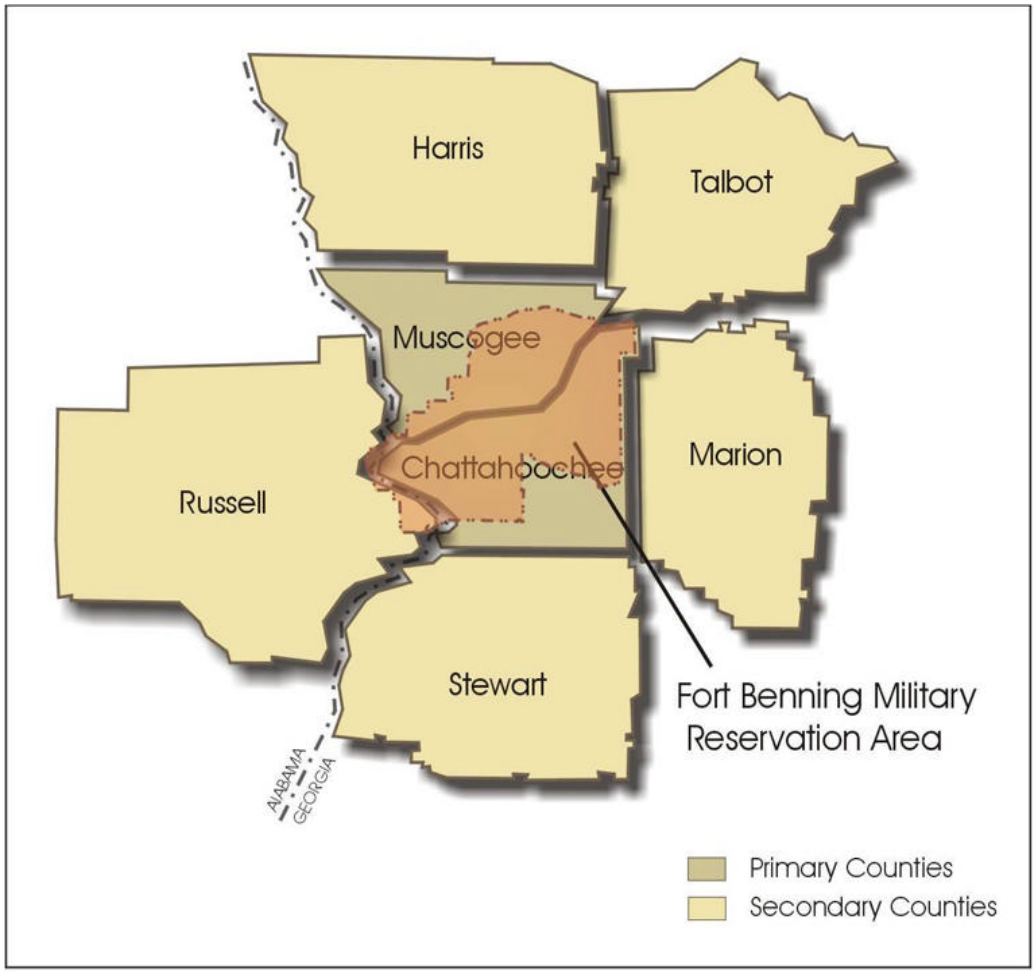
ERDC/CERL, in cooperation with Hunter College NY is developing a ecoregional database

Several contextual themes are being implemented:

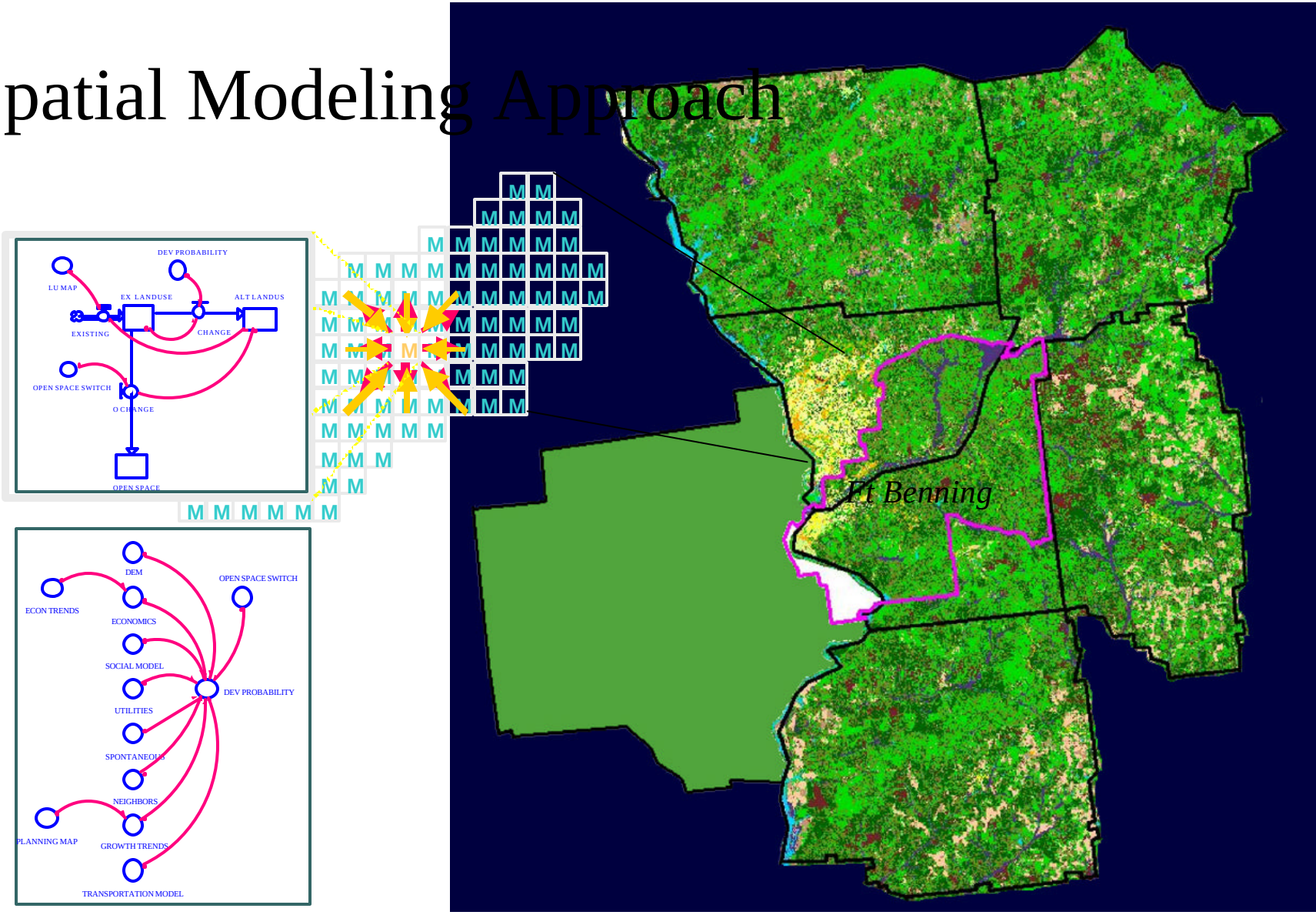


Ft Benning Planning Region

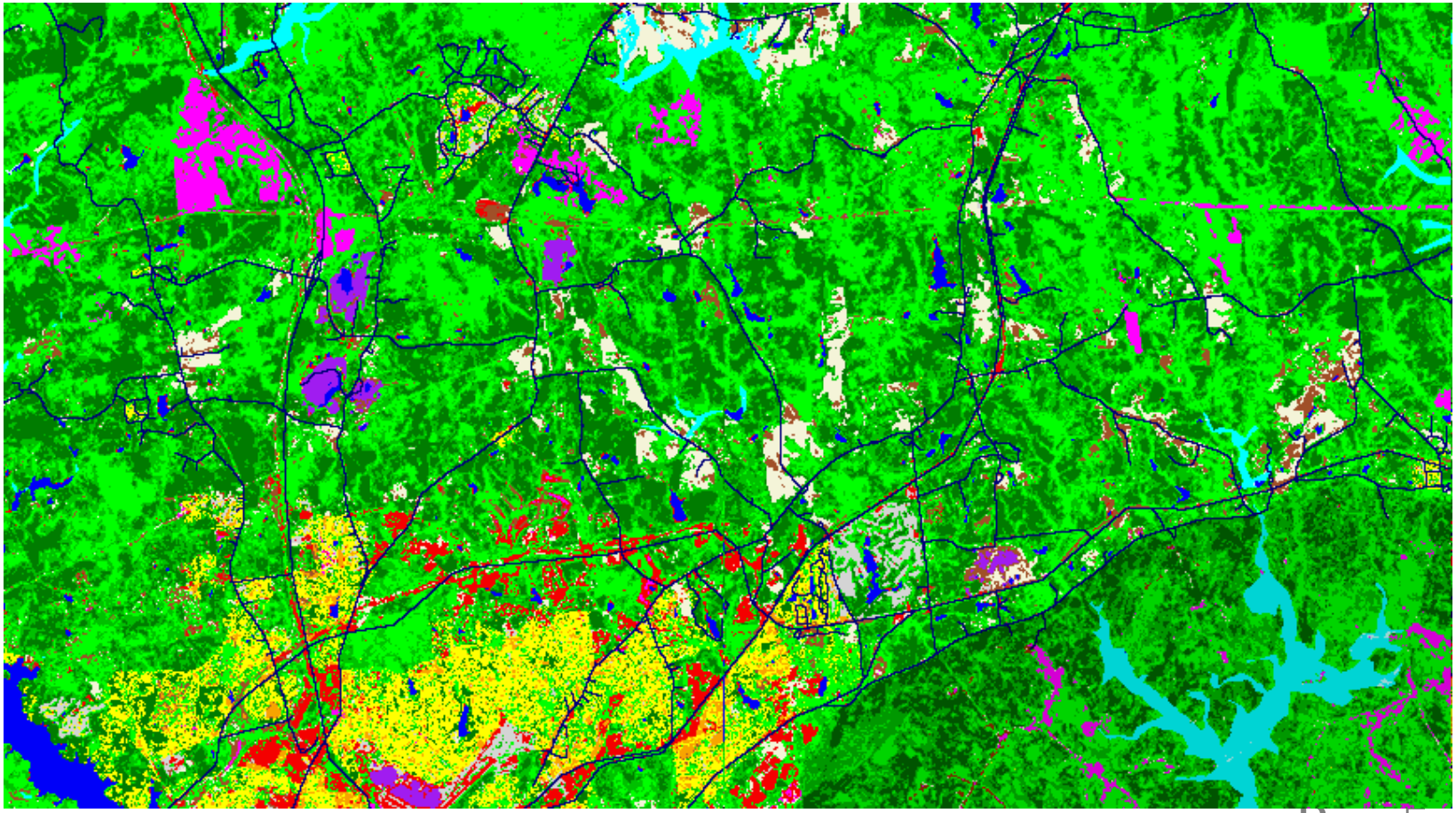
- Seven counties
- Primary
  - Military influence
    - Chattahoochee
    - Muscogee
- Secondary
  - Lesser military presence
    - Georgia
      - Harris
      - Talbot
      - Marion
      - Stewart
    - Alabama
      - Russell



Spatial Modeling Approach

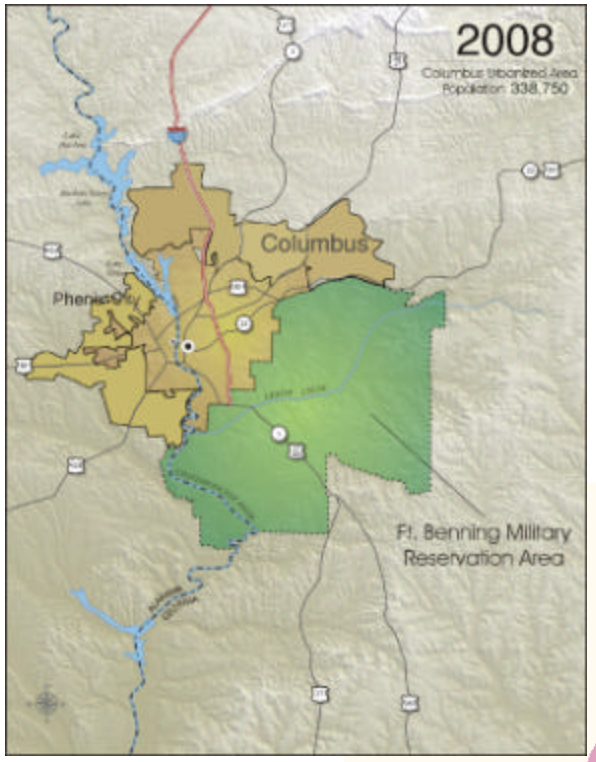


Ft Benning Simulation Results

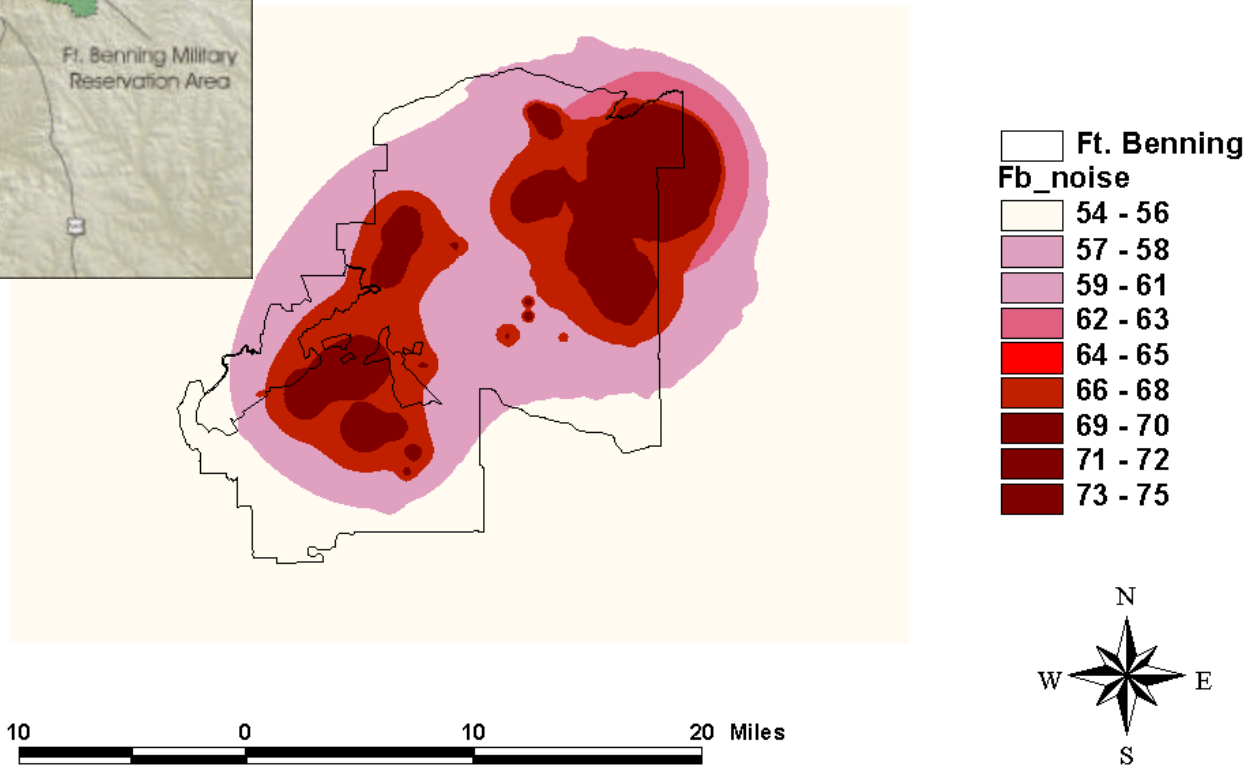


Run 5

Planned Multi-Purpose Noise Complex, Ft. Benning, GA

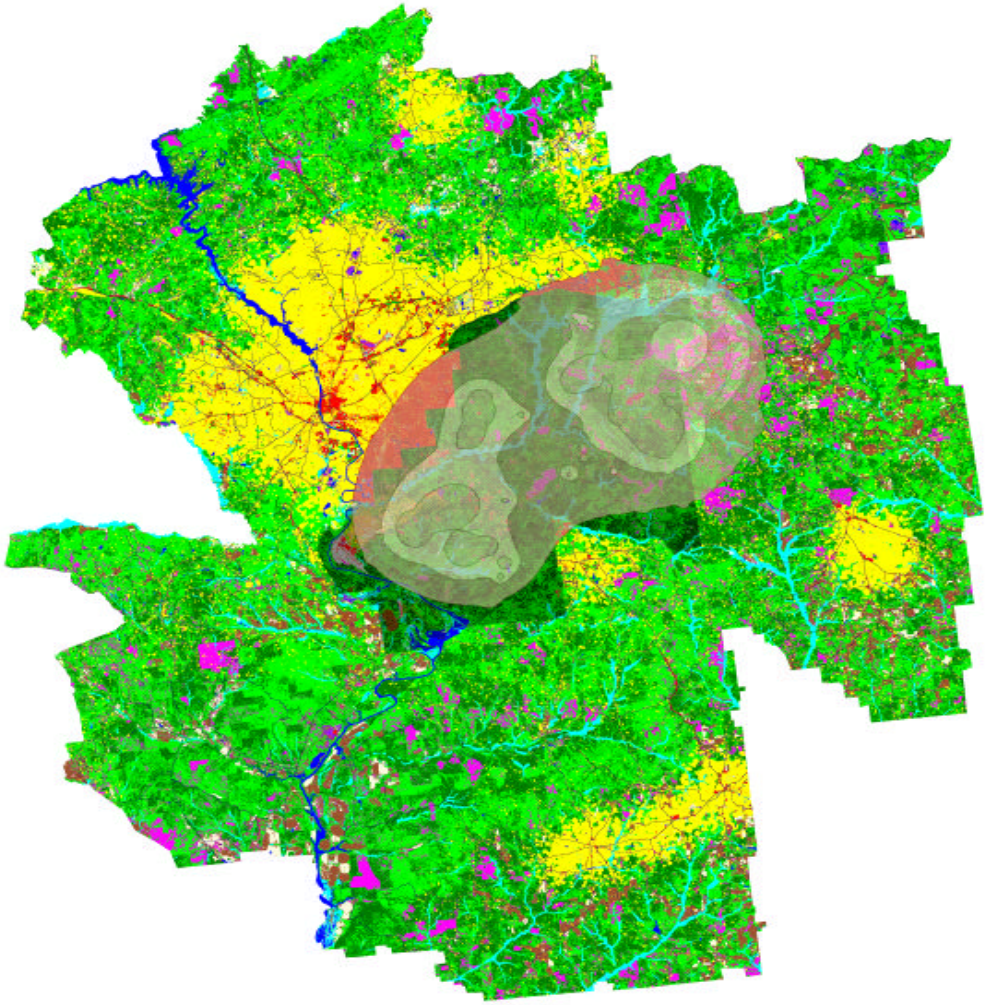


Noise



Ft Benning

Multi-Purpose Range
Complex Noise
Contours
Compared to
Community Growth

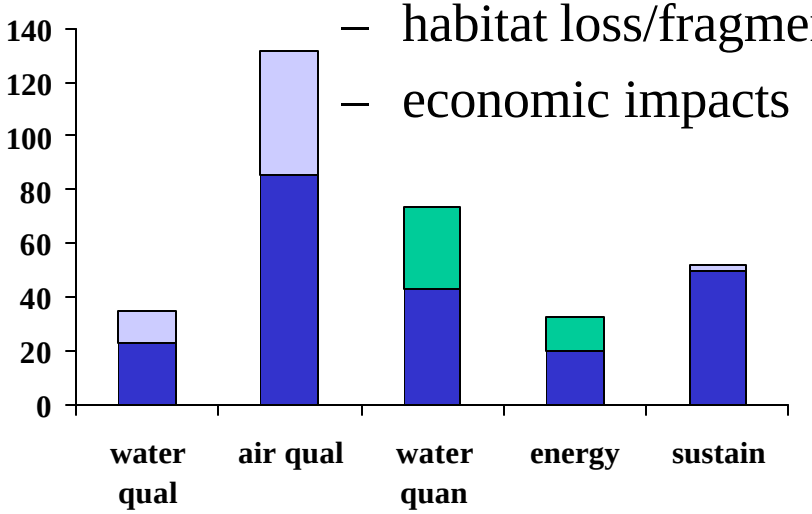


1993-2035

Impact Assessment

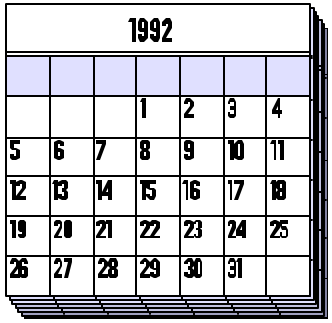
- mLEAM
  - Factor analysis
  - SROC encroachment concerns
    - Habitat (TES)
    - Urbanization
    - Frequency
    - Air space
    - Underwater noise
    - UXO
    - Air quality
    - Noise
    - Community interaction
  - Changes within installations
    - Force re-alignments
    - Training regimes
    - New ranges

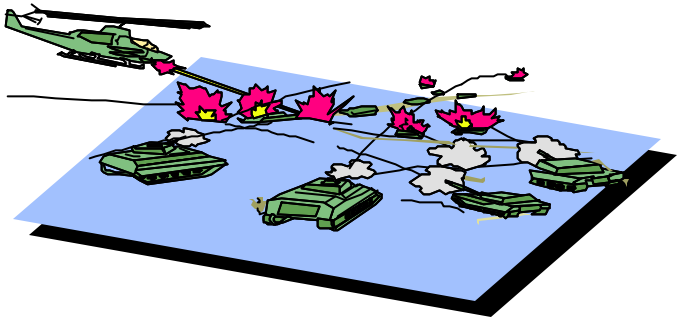
- LEAM (to be adapted)
  - biodiversity
  - water quality
    - surface/subsurface hydrology
  - energy
    - associated externalities
  - air quality
  - habitat loss/fragmentation
  - economic impacts



Integration of Existing Models

- “Connect” the mLEAM environment to tools within LMS (such as BNOISE, CAS2D, SARNUM, ARAMS, and GMS) and the Corps of Engineers common IT framework

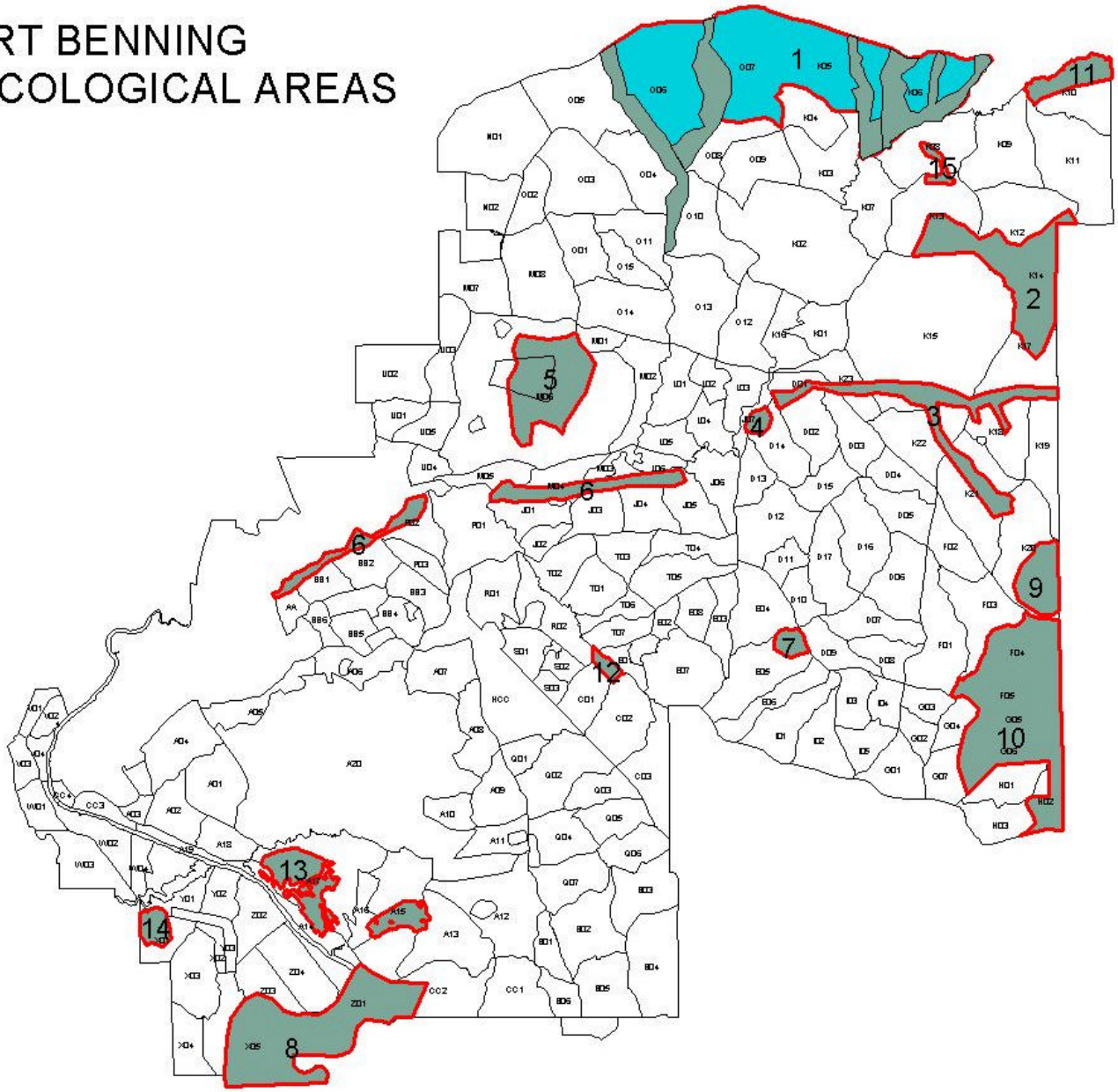




Management Strategies

- Data
- Information
- Tools
- Partnering

FORT BENNING
UNIQUE ECOLOGICAL AREAS



Management Strategies

- Data
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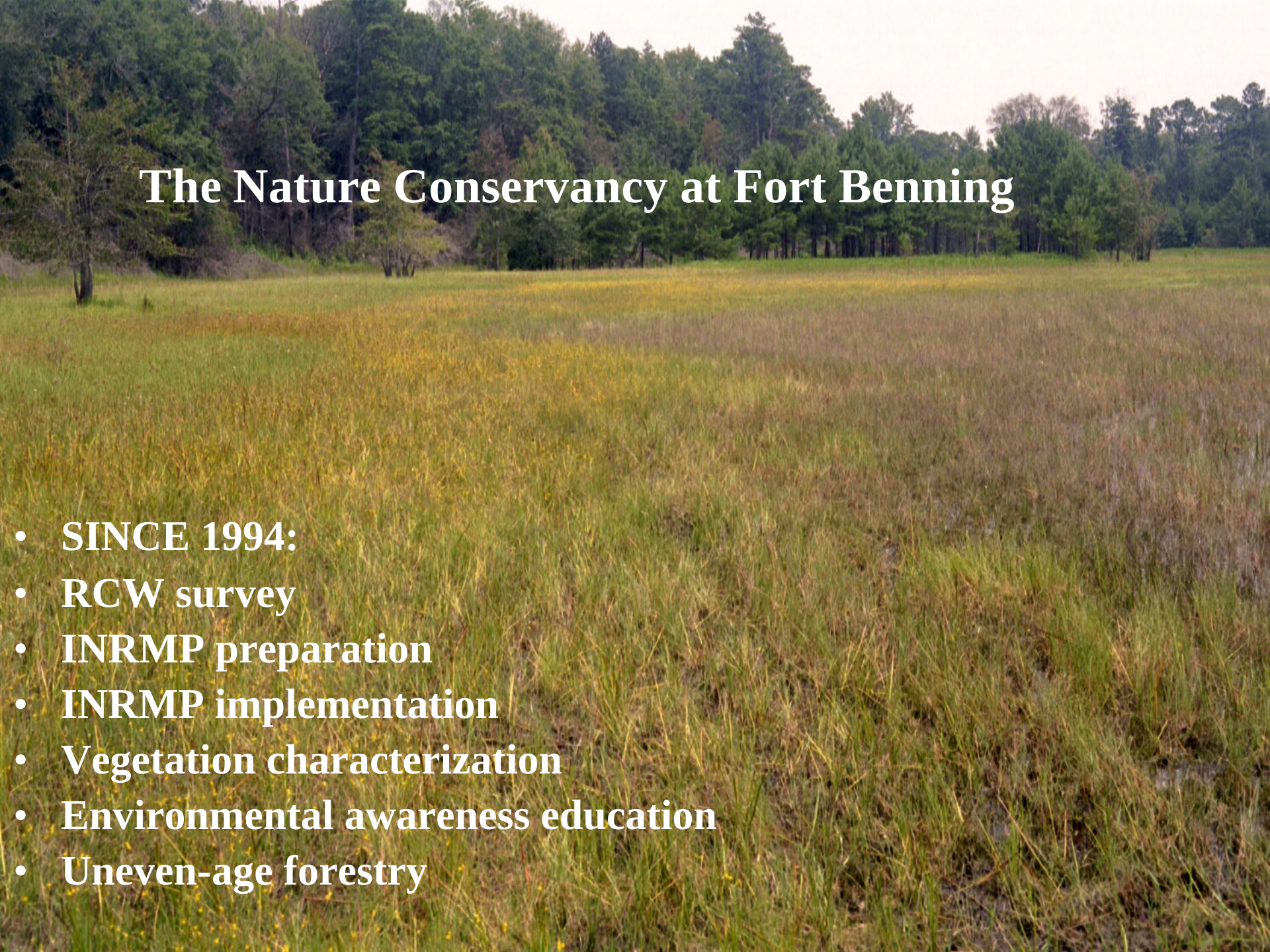


The Nature Conservancy at Fort Benning

- SINCE 1994:
- RCW survey
- INRMP preparation
- INRMP implementation
- Vegetation characterization
- Environmental awareness education
- Uneven-age forestry

TNC Activities

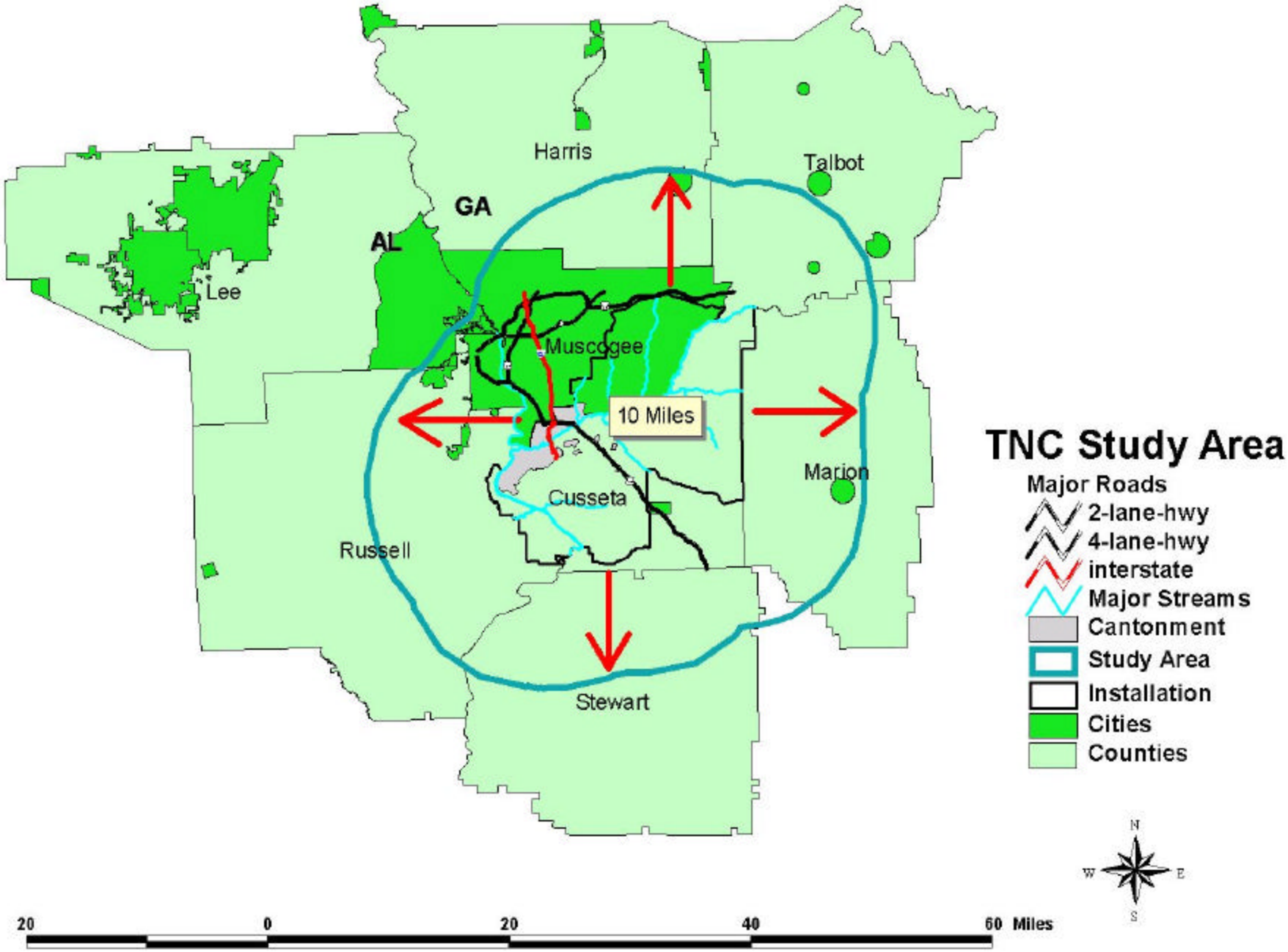
- Two phases
- First--address immediate encroachment concerns around fort Benning
- Second--address long-term "biological island" concerns

PHASE 1 Next Steps:

- Feasibility study: partnership with GA tech privately funded through TNC
  - Compile available GIS data for buffer zone
  - Collect parcel-level data from public sources
  - Create GIS parcel-level database
  - Overlay and data analysis

PHASE 1 Next Steps, Continued:

- Conservation action:
  - Identify conservation opportunities
  - Prioritize conservation opportunities
  - Landowner contact
  - Pursue land protection with willing partners


Harris
Talbot
GA
AL
Lee
Muscogee
10 Miles
Marion
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TNC Study Area
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Major Streams
Cantonment
Study Area
Installation
Cities
Counties
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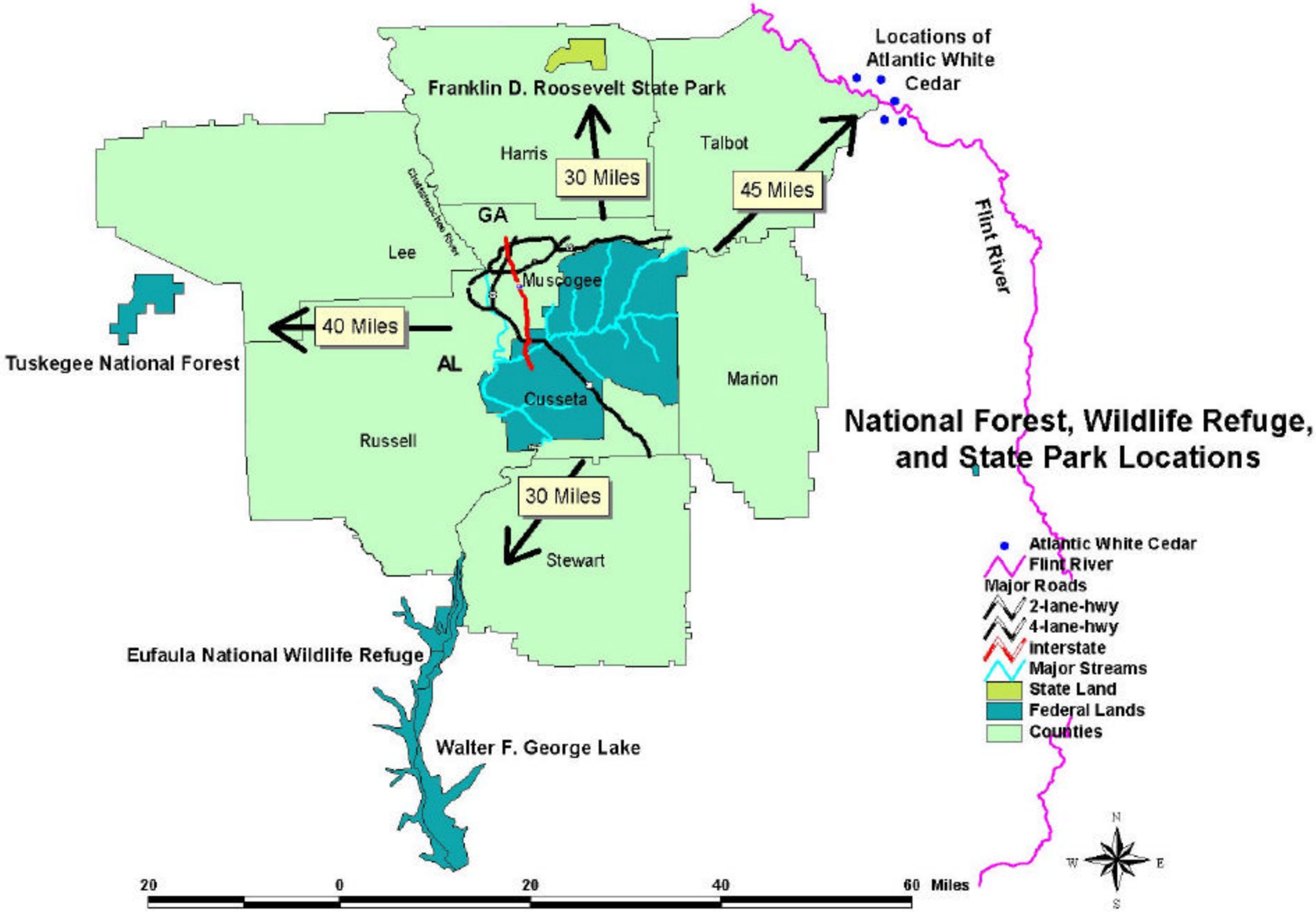
20
40
60 Miles


National Forest, Wildlife Refuge, and State Park Locations
Franklin D. Roosevelt State Park
Locations of Atlantic White Cedar
Harris
Talbot
30 Miles
45 Miles
GA
Lee
Muscogee
Flint River
Chattahoochee River
40 Miles
AL
Tuskegee National Forest
Marion
Cusseta
Russell
30 Miles
Stewart
Eufaula National Wildlife Refuge
Walter F. George Lake
Atlantic White Cedar
Flint River
Major Roads
2-lane-hwy
4-lane-hwy
Interstate
Major Streams
State Land
Federal Lands
Counties
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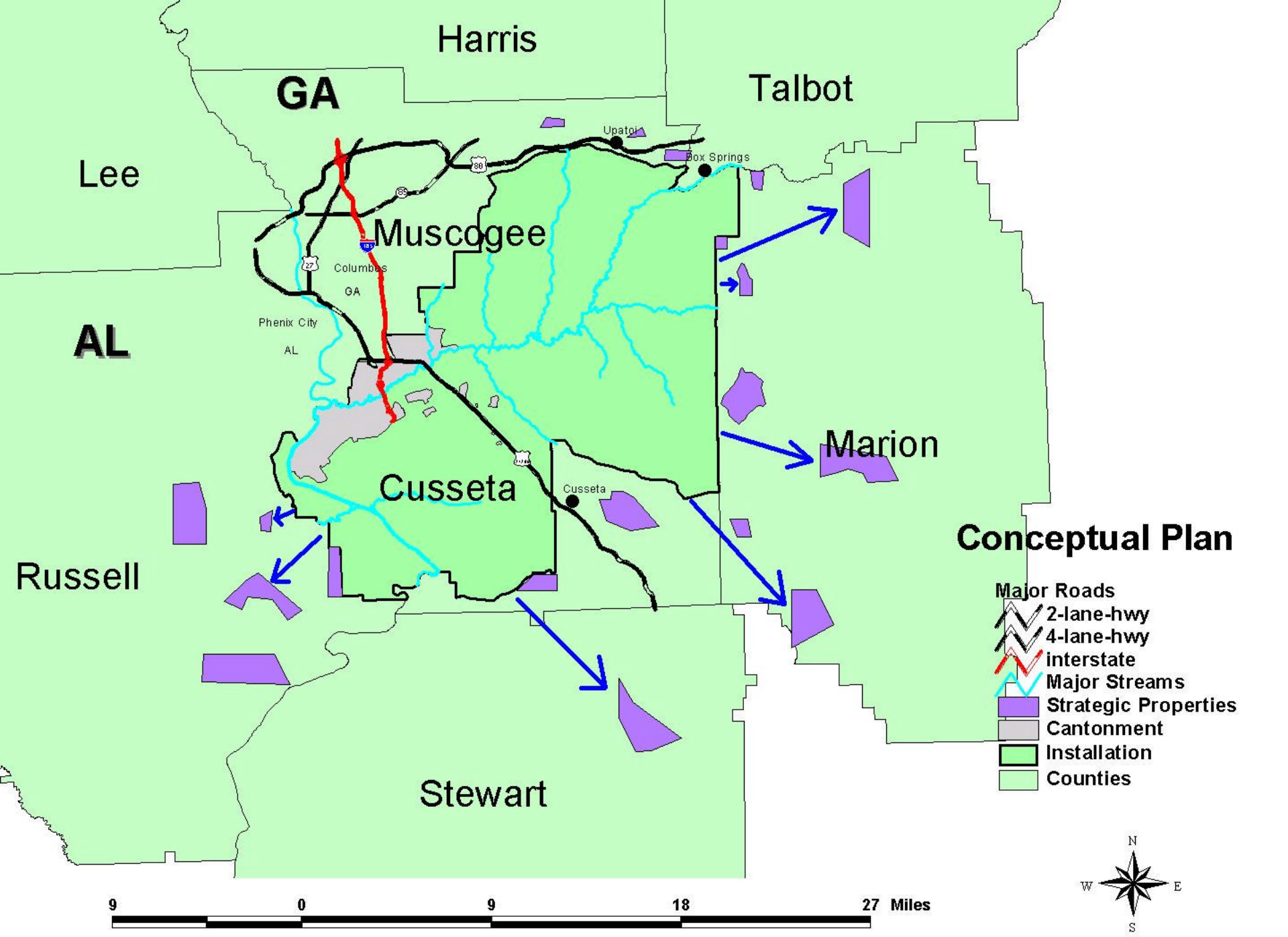
Harris
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Talbot
Lee
Upatoi
Box Springs
Muscogee
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Cusseta
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Stewart
Conceptual Plan
Major Roads
2-lane-hwy
4-lane-hwy
interstate
Major Streams
Strategic Properties
Cantonment
Installation
Counties
9
0
9
18
27 Miles
N
W
E
S

Protection Options

- Conservation easements
- Fee ownership
- USFWS programs
  - Partners for fish and wildlife
  - Management agreements
- Landowner alliances

Bottom Line

- Prediction and planning a critical strategic component for sustainability.
- Everyone has their own interest that often result in conflicts and/or restrictions.
- Ignoring conditions outside the “fence-line” will result in land use conflicts.
- Installation land management must occur in cooperation with neighbors, political and local interest groups.