



ENVIRONMENTAL MONITORING AT EDWARDS AFB

Environmental Management

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The Natural Edwards AFB



Types of Monitoring

- Compliance: Has the contract for restoration work been completed as agreed?
- Efficacy: Has the work produced the intended change in particular conditions?
- Validation: Has restoration achieved the overarching goals of reversing the decline in DT numbers/increasing DT abundance?

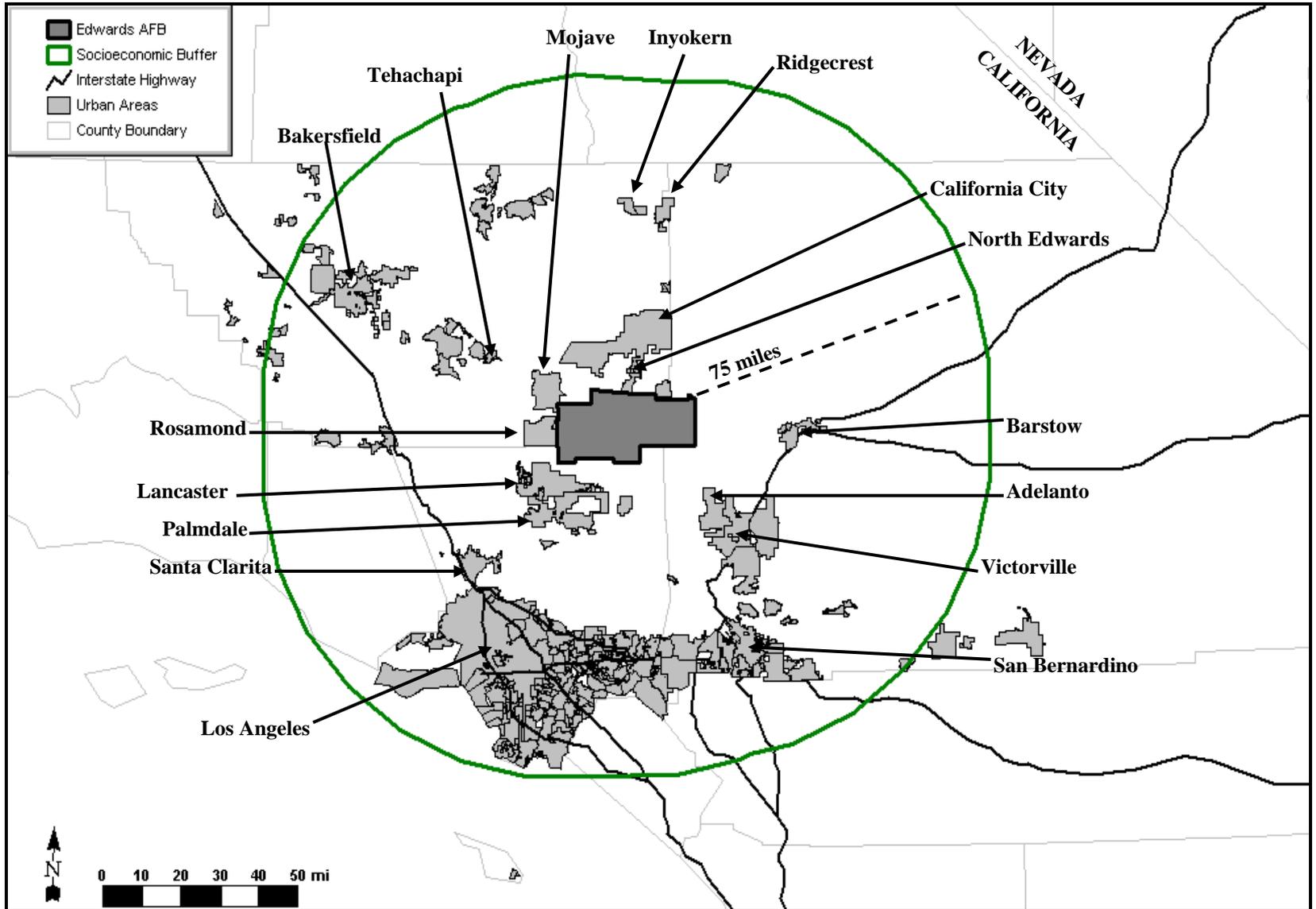
Monitoring - Not Just an Academic Exercise

- Helps us learn which management practices work and which do not
- Will provide evidence of the benefits of restoration work
- Will provide information reflecting increase, decrease, or no change
- Insures compliance with BOs
- Is an essential aspect of adaptive management

True Monitoring Requires A Sound Scientific Base

- Monitoring is not the same as mere data collection
- Must be based on scientifically valid methodologies
- Must serve objectives of sound quantitative plan

Area of Influence Map



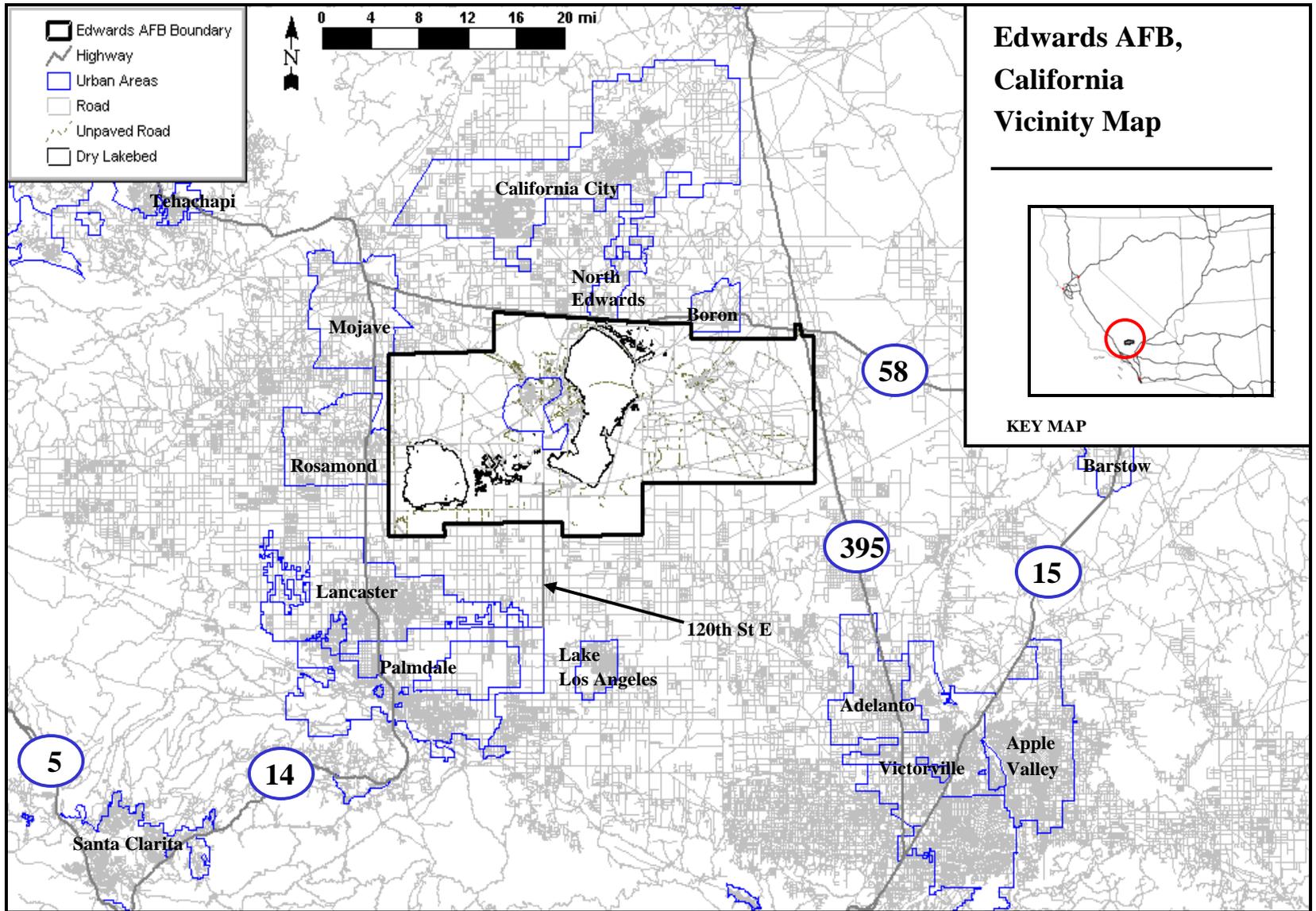


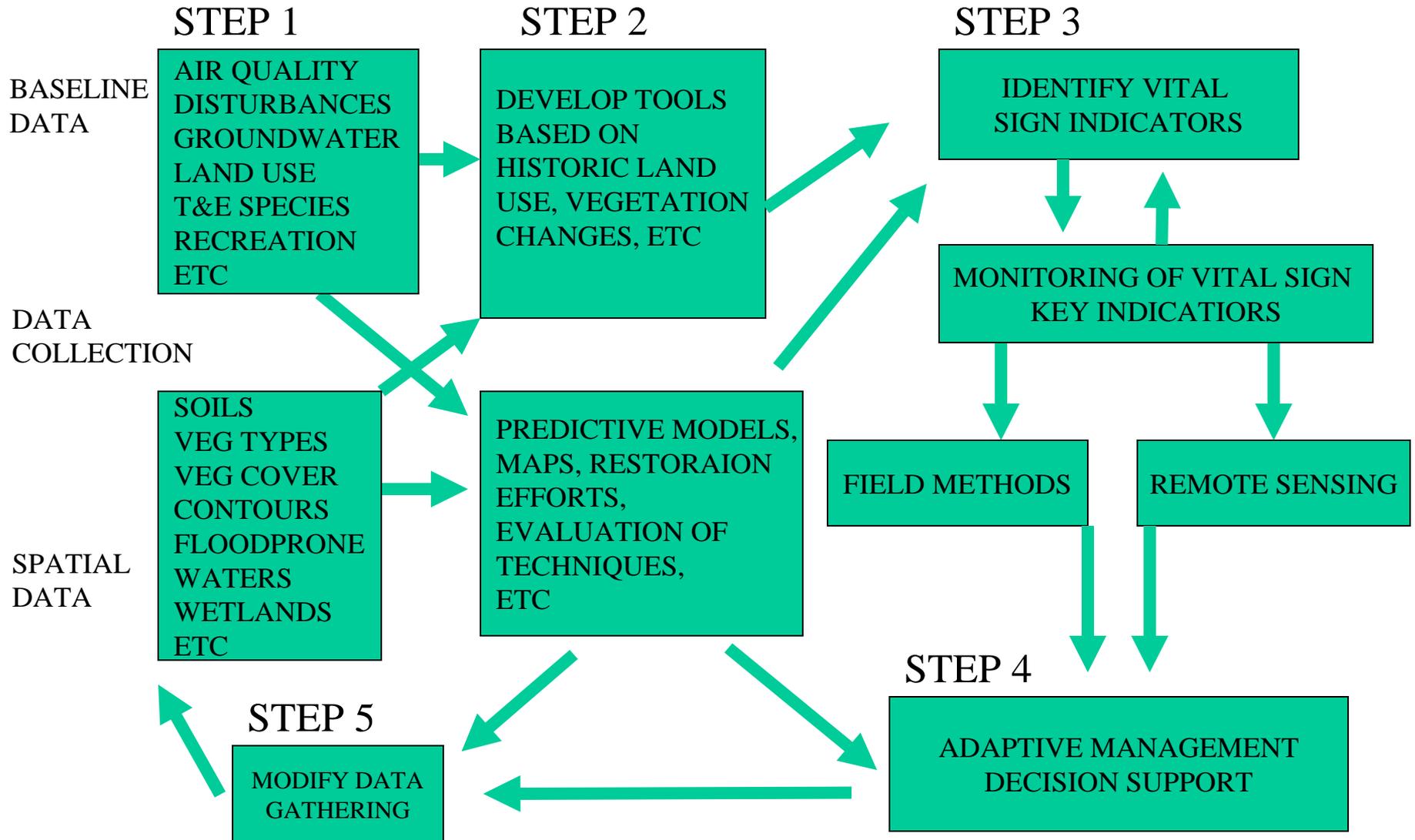
Figure 2-1

Even in the Desert!



Edwards AFB Approach

Monitoring Data – Adaptive Management Info



Edwards AFB Approach

Monitoring Data – Adaptive Management Info

STEP 1

BASELINE
DATA

AIR QUALITY
DISTURBANCES
GROUNDWATER
LAND USE
T&E SPECIES
RECREATION
ETC

DATA
COLLECTION

SPATIAL
DATA

SOILS
VEGETATION TYPES
VEGETATION COVER
CONTOURS
FLOODPRONE
WATERS
WETLANDS
ETC

ITAM - GIS Core Layers By Type

General

Installation Boundary
Political Boundary
County Boundary
City Boundary
Zoning Boundary
Recreation Areas
Roads
Roads by Type
Roads with bridge class
Culverts with classification
Railroads
Number of Rail Spurs
Number of Cars per Spur
Firebreaks
Firebreaks surface Type
Firebreak widths
Firebreak Maintenance
Aerial Photography
Horizontal Control Points
Grid Scale
UTM Grid
Contours
Digital Elevation Model

Environmental

Ag-Leasing
Soils
Surface Hydrology
Surface Streams/Rivers
Surface Lakes
Surface Wetlands
Vegetation Cover
Endangered Species Sites
Endangered Species Type
Erosion Control Structures
LRAM Projects
LRAM Type
Archeological Sites
Cultural Sites
Cemeteries
LCTA Plot Sites
LCTA Plot Type
LCTA Monitoring Plots

ITAM - GIS Core Layers By Type

Training Examples

Range/Training Facilities
Facility Category Group (FCG) Description
Category Code
Category Code Description
Number of Lanes
Left/Right Firing Limits
Safety Fans/SDZ
Artillery/Mortar Positions
FP Munitions Acceptable
FP Survey Points
Training Area Boundaries
Land Navigation Courses
Hardened Training Sites
Prepared Field POL Sites
Dudded Impact Areas
Non-Dudded Impact Areas
Non-Dudded Buffer Zones
Stream Crossings (STC) /Fords
STC Unimproved

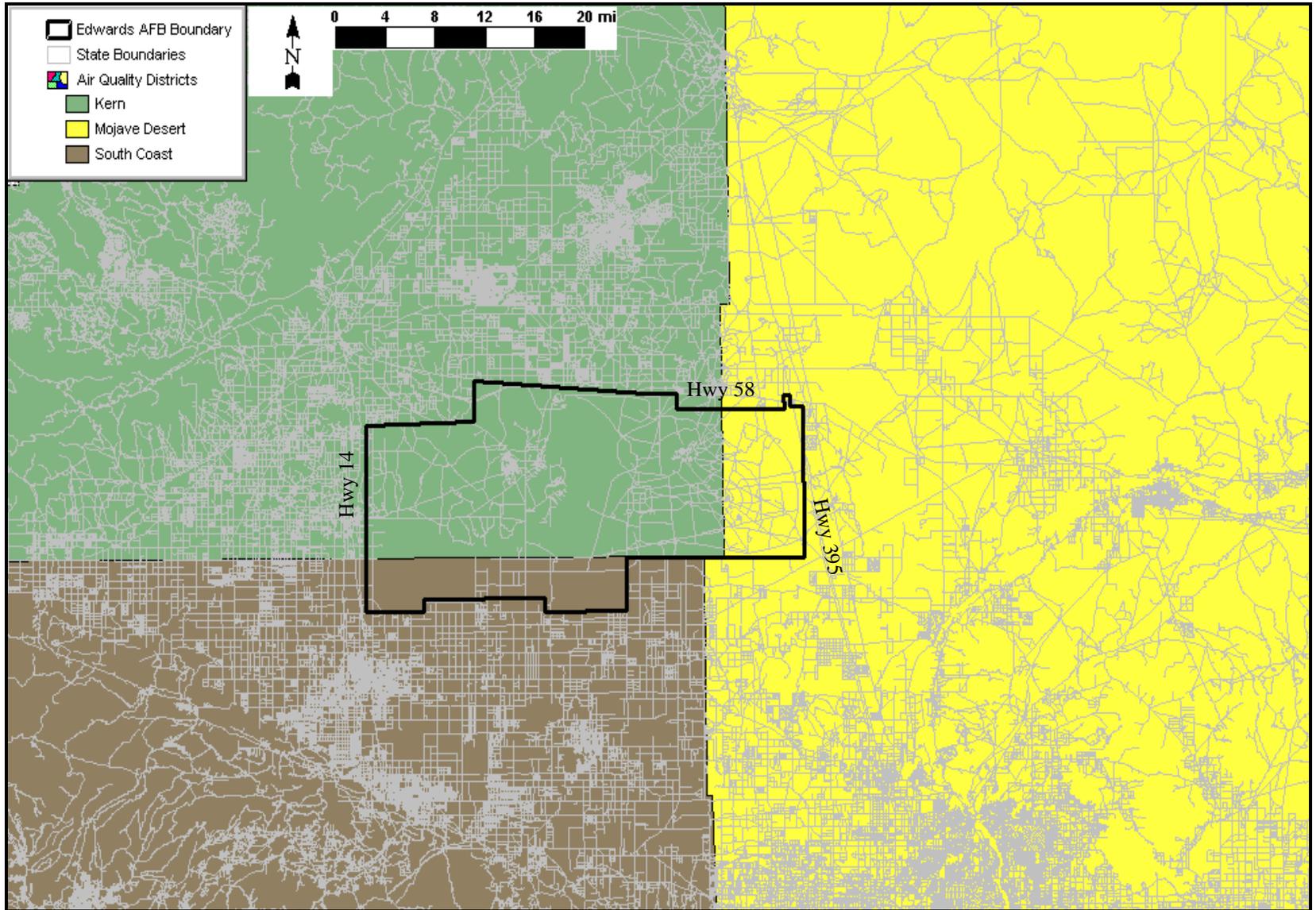
STC Improved
DZ/LZ/PZ
OP Lines of Visibility
OP Linked to Fire Points
Air Corridors
No Overflight Areas
MOAs

Public Works

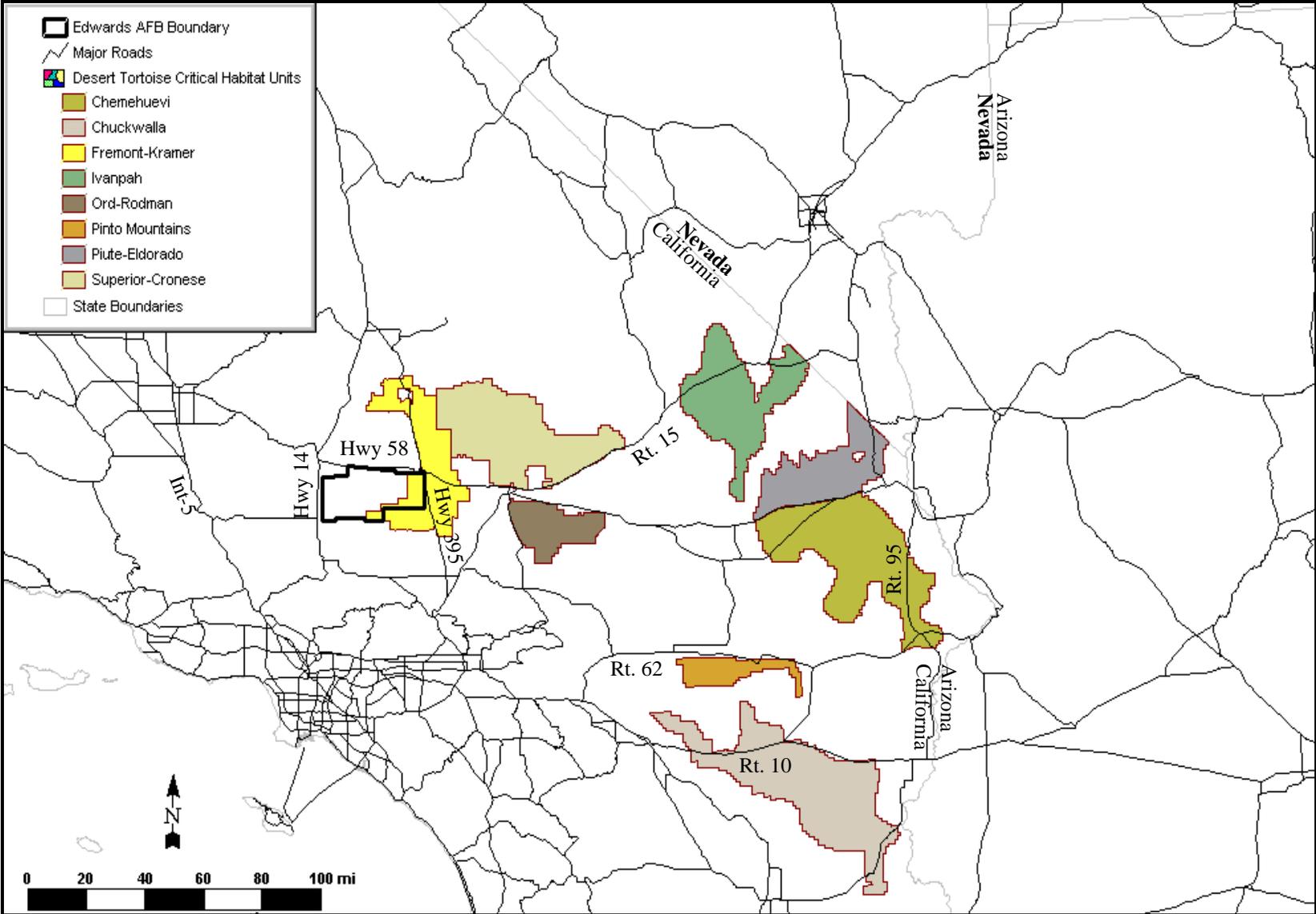
Towers/Antennas
Towers/Antennas Heights
Utility/Powerlines
Utility/Powerline Heights
Utility/Powerline Depth

EXAMPLES -FOLLOW

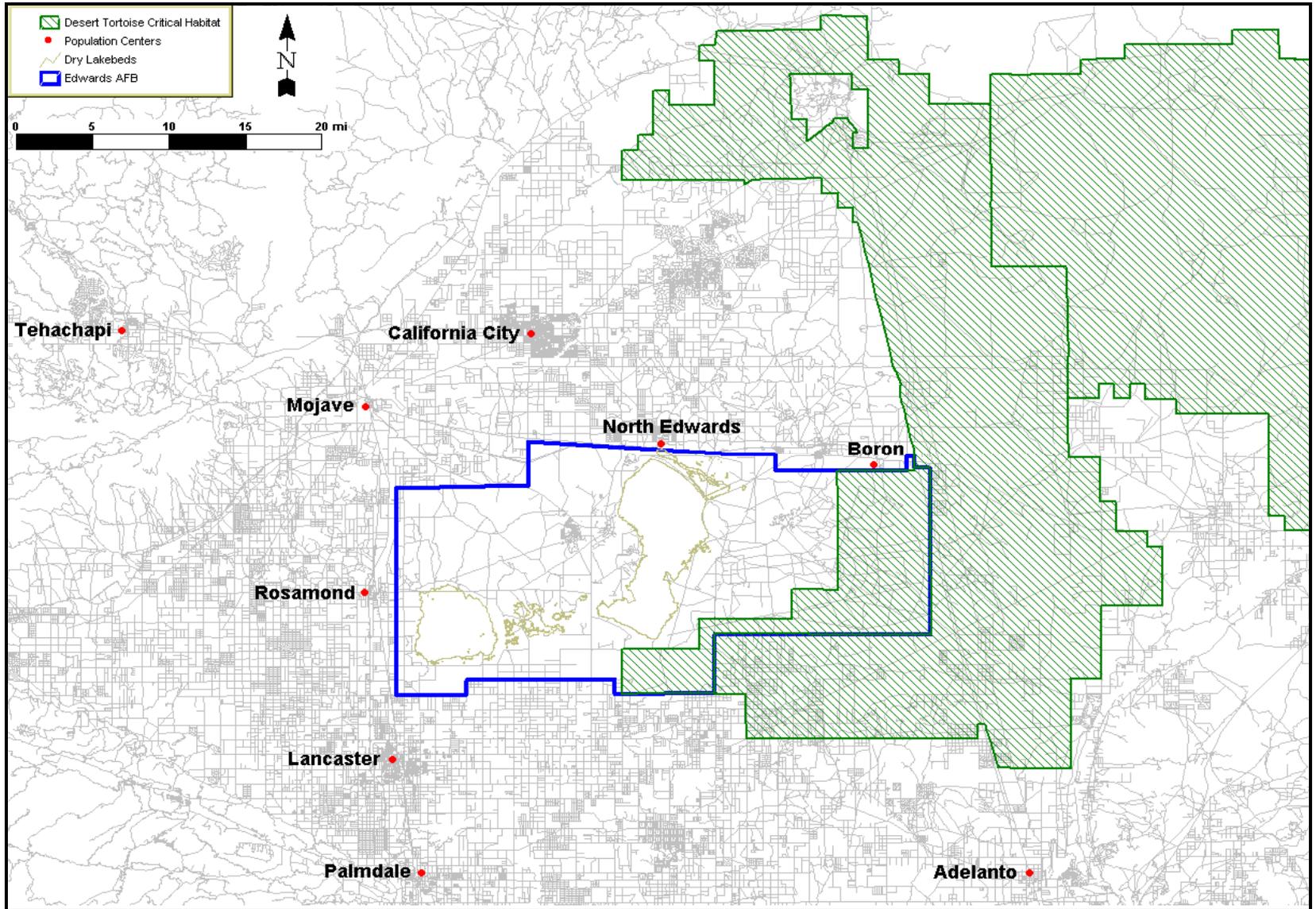
Air Quality Districts



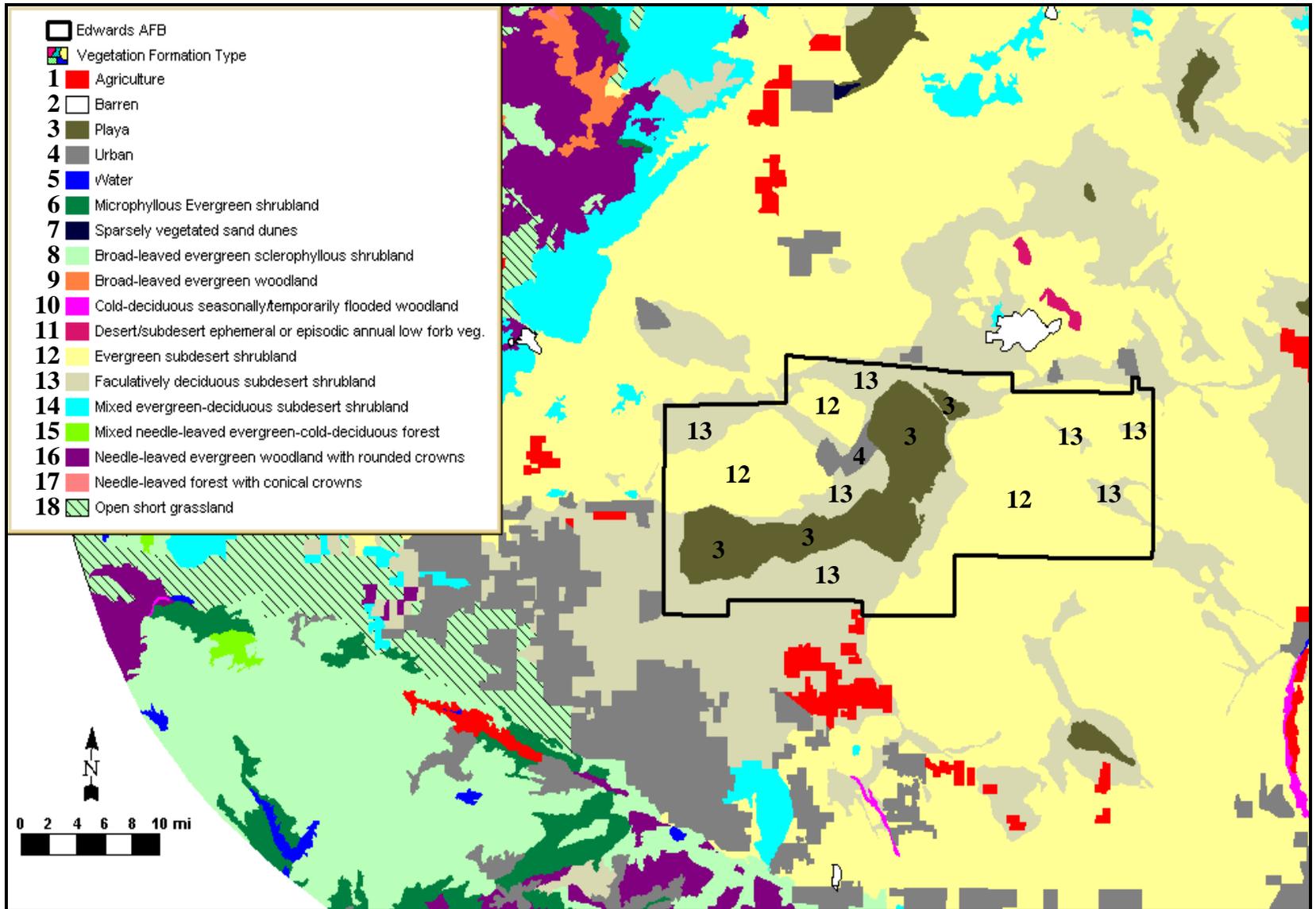
Desert Tortoise Critical Habitat



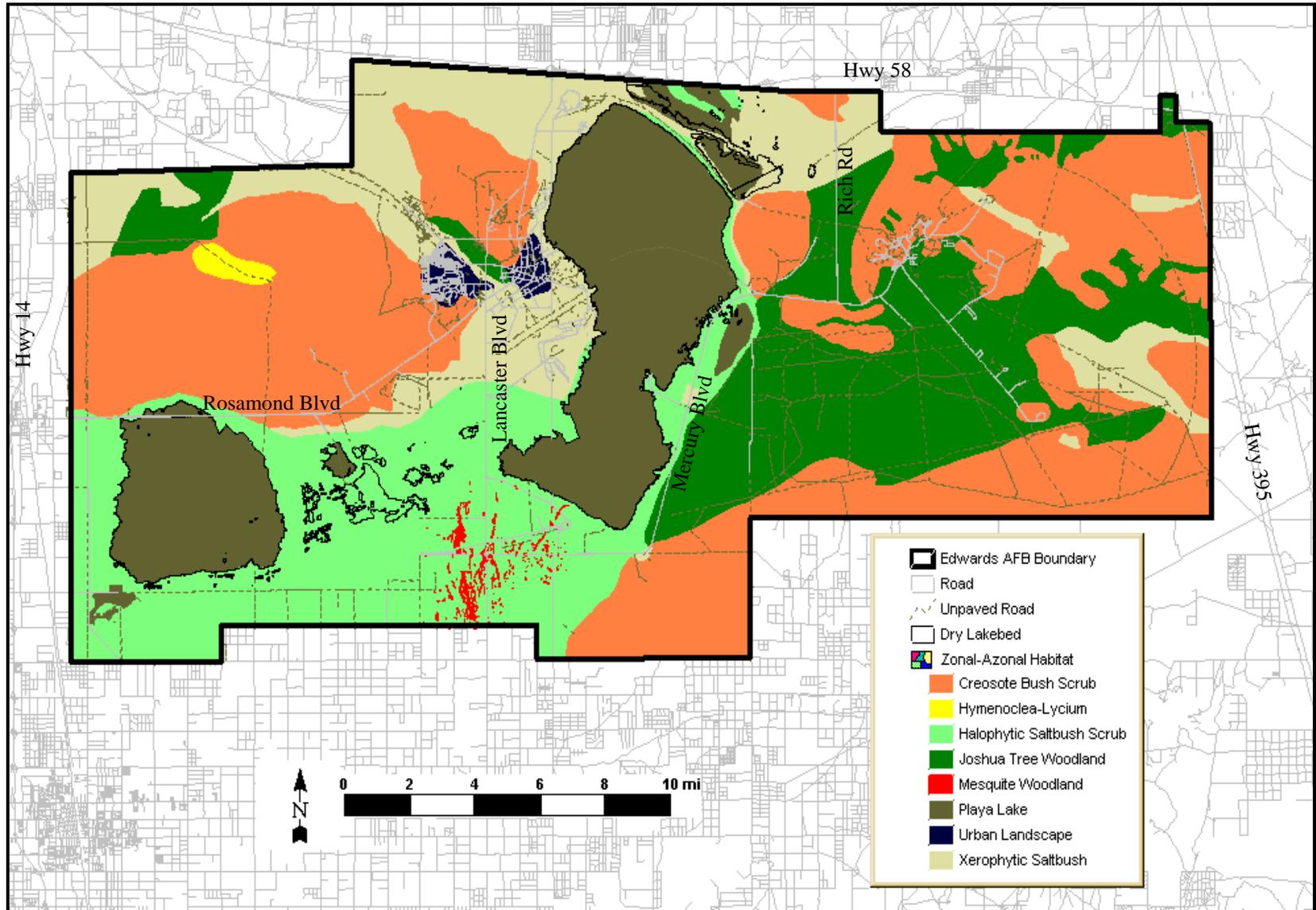
Regional Desert Tortoise Critical Habitat



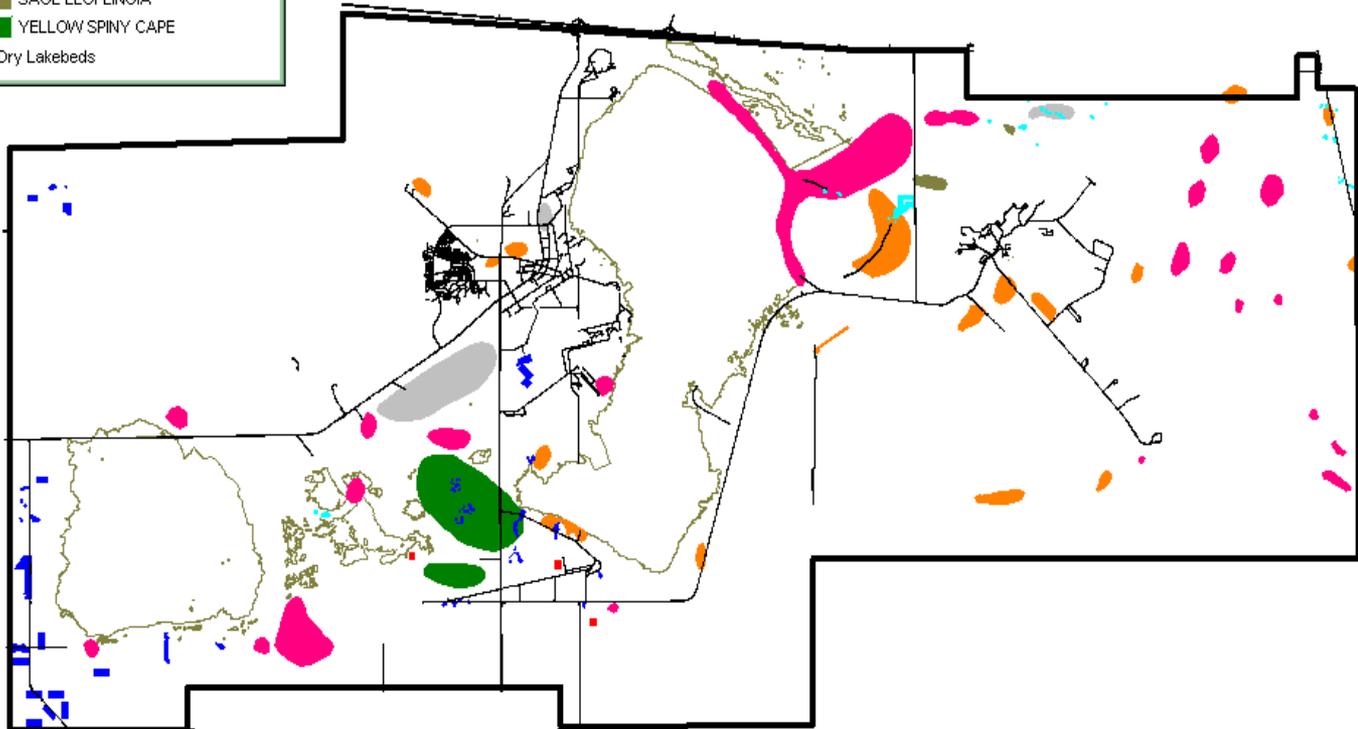
Regional Vegetation Types



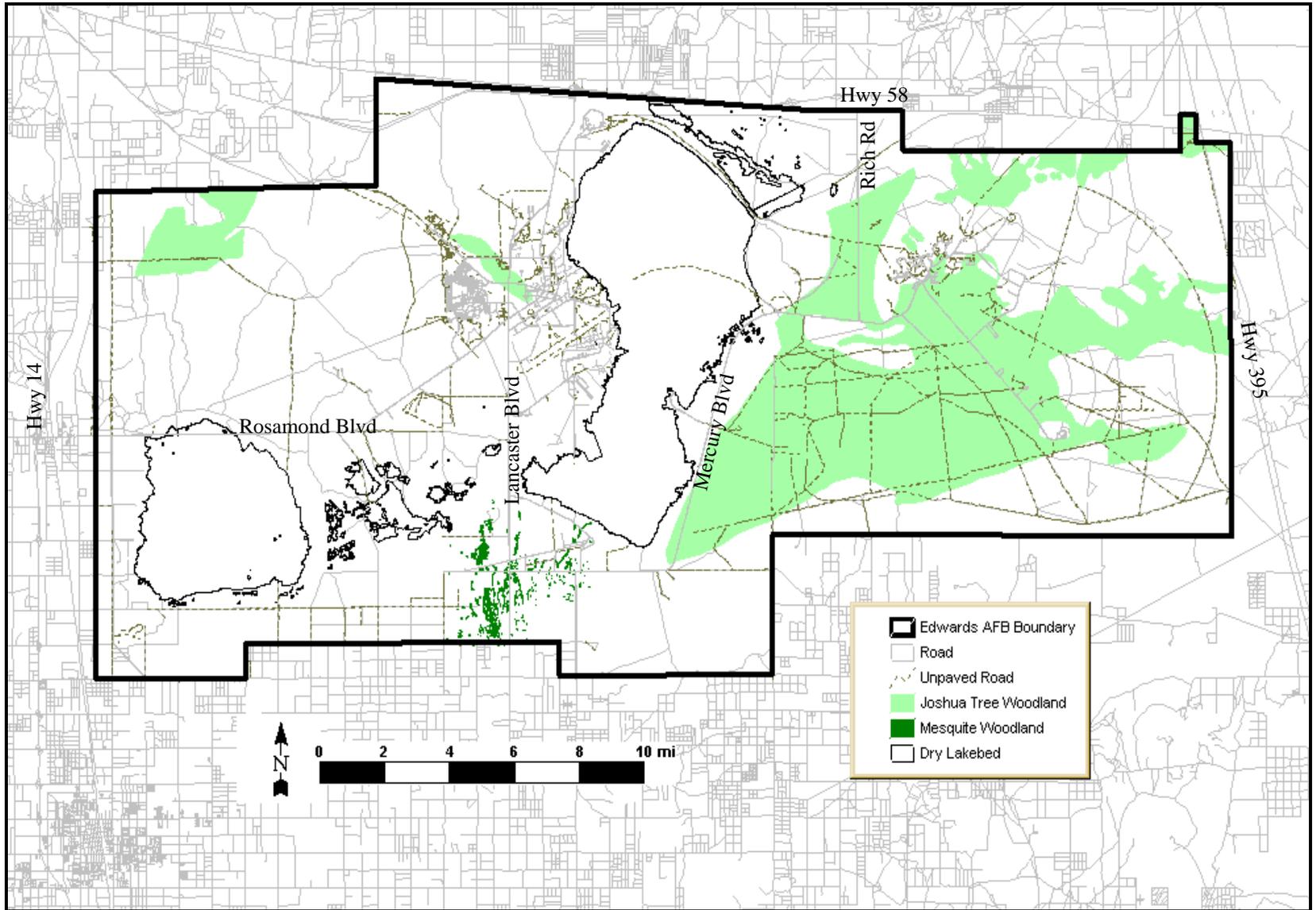
Edwards AFB Detailed Vegetation Map



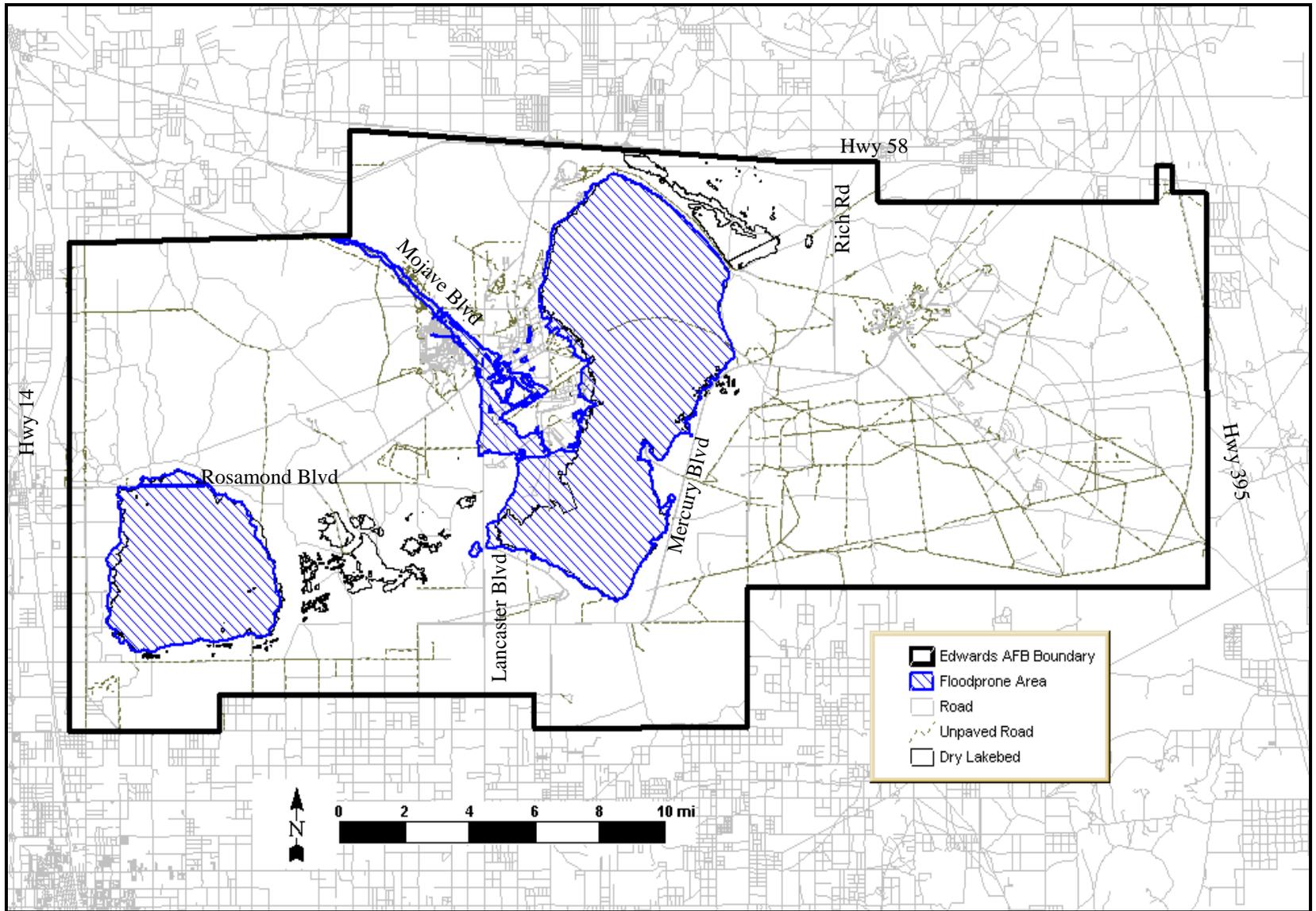
Plant Species of Concern



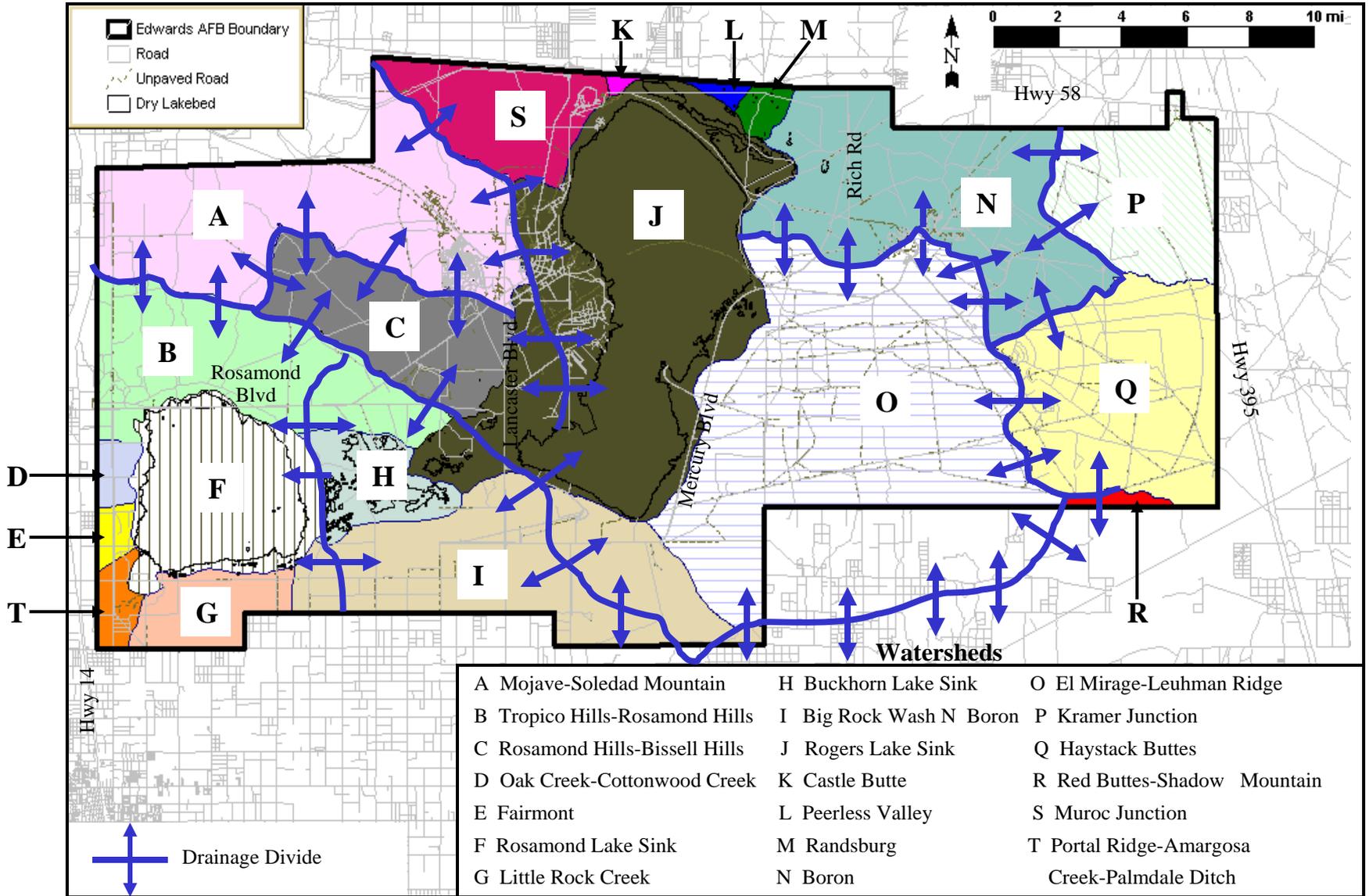
Rare and Sensitive Habitats



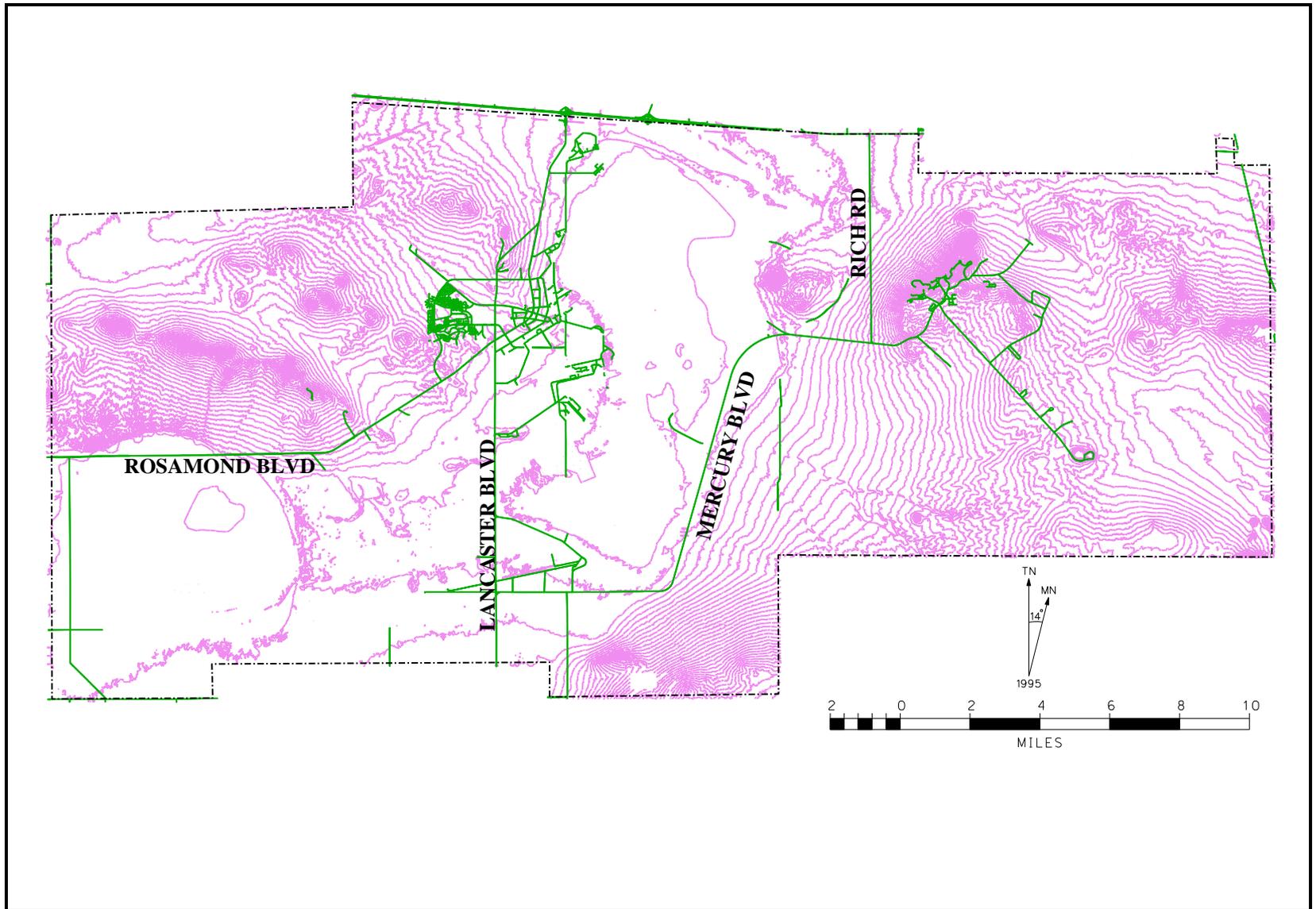
Floodprone Areas



Surface Water Drainage Basins (Watersheds)



20-foot Contour Interval



Edwards AFB Approach

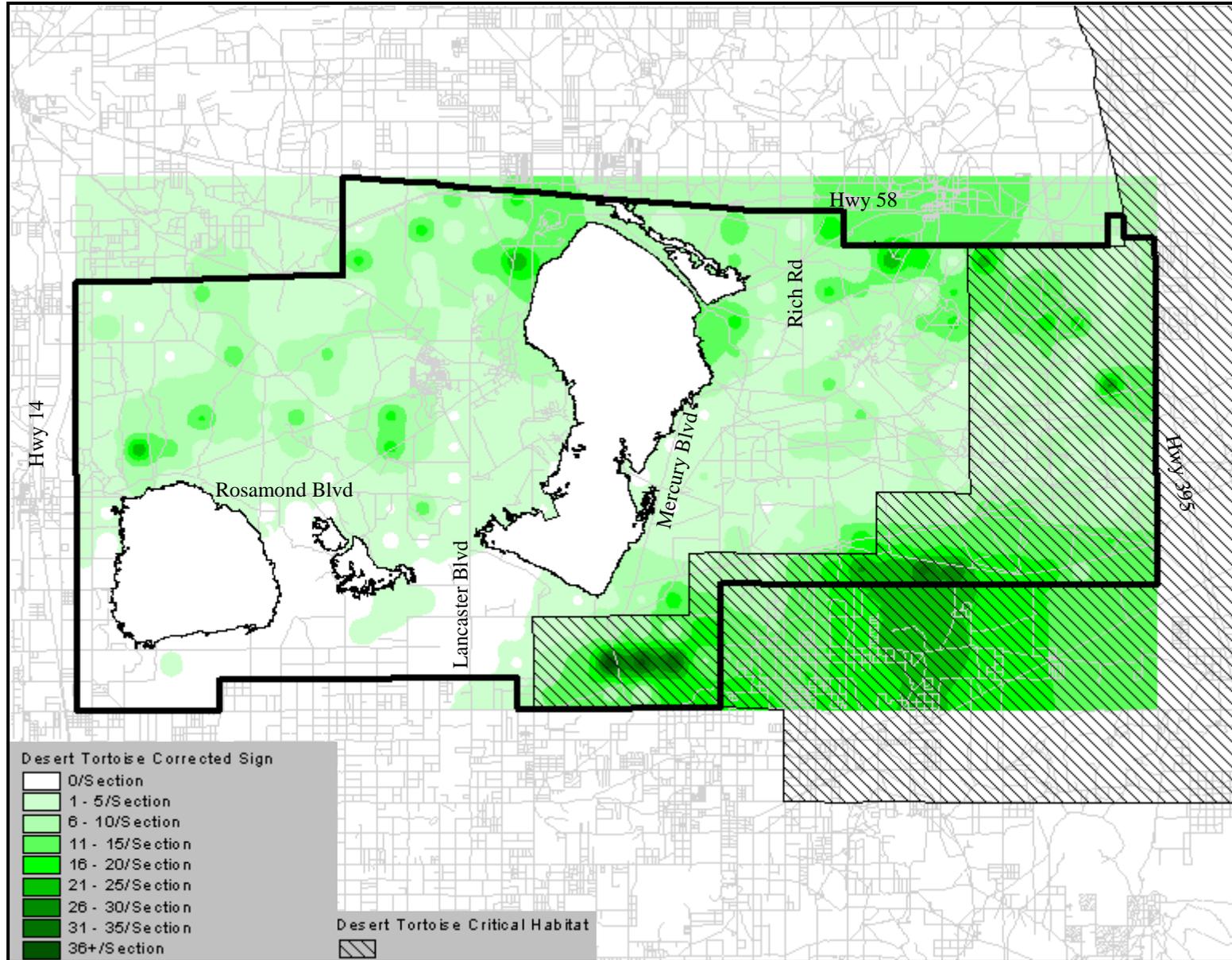
Monitoring Data – Adaptive Management Info

STEP 2

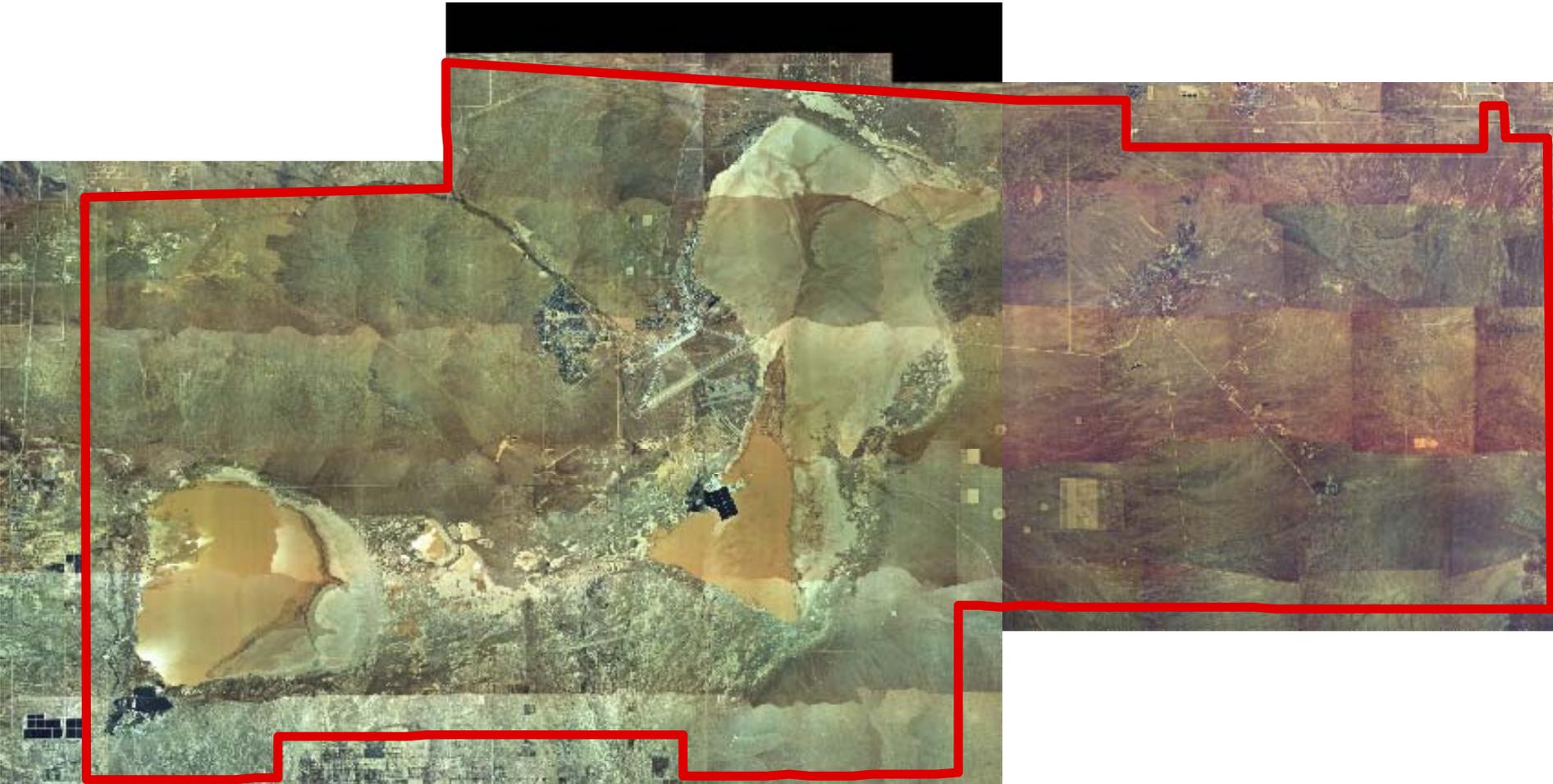
DEVELOP TOOLS
BASED ON
HISTORIC LAND
USE, VEGETATION
CHANGES, ETC

PREDICTIVE MODELS,
MAPS, RESTORAION
EFFORTS,
EVALUATION OF
TECHNIQUES,
ETC

Desert Tortoise Corrected Sign Density



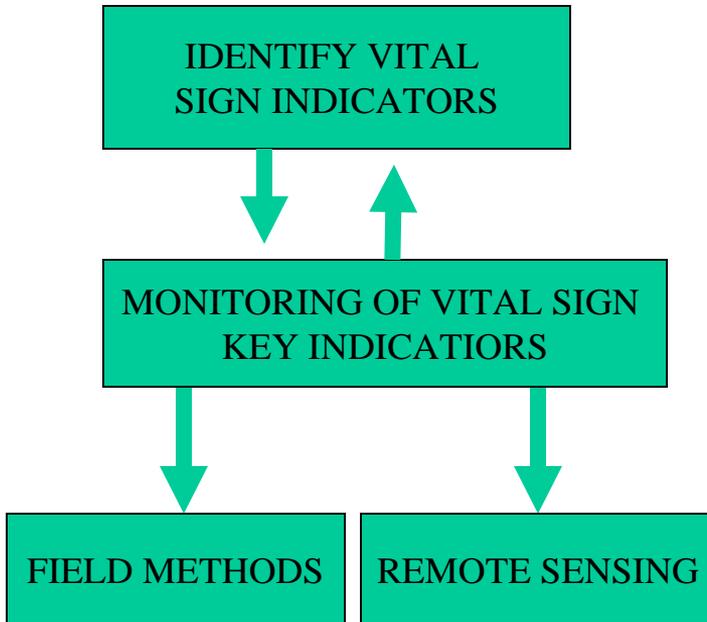
Aerial Photographs of Edwards AFB



Edwards AFB Approach

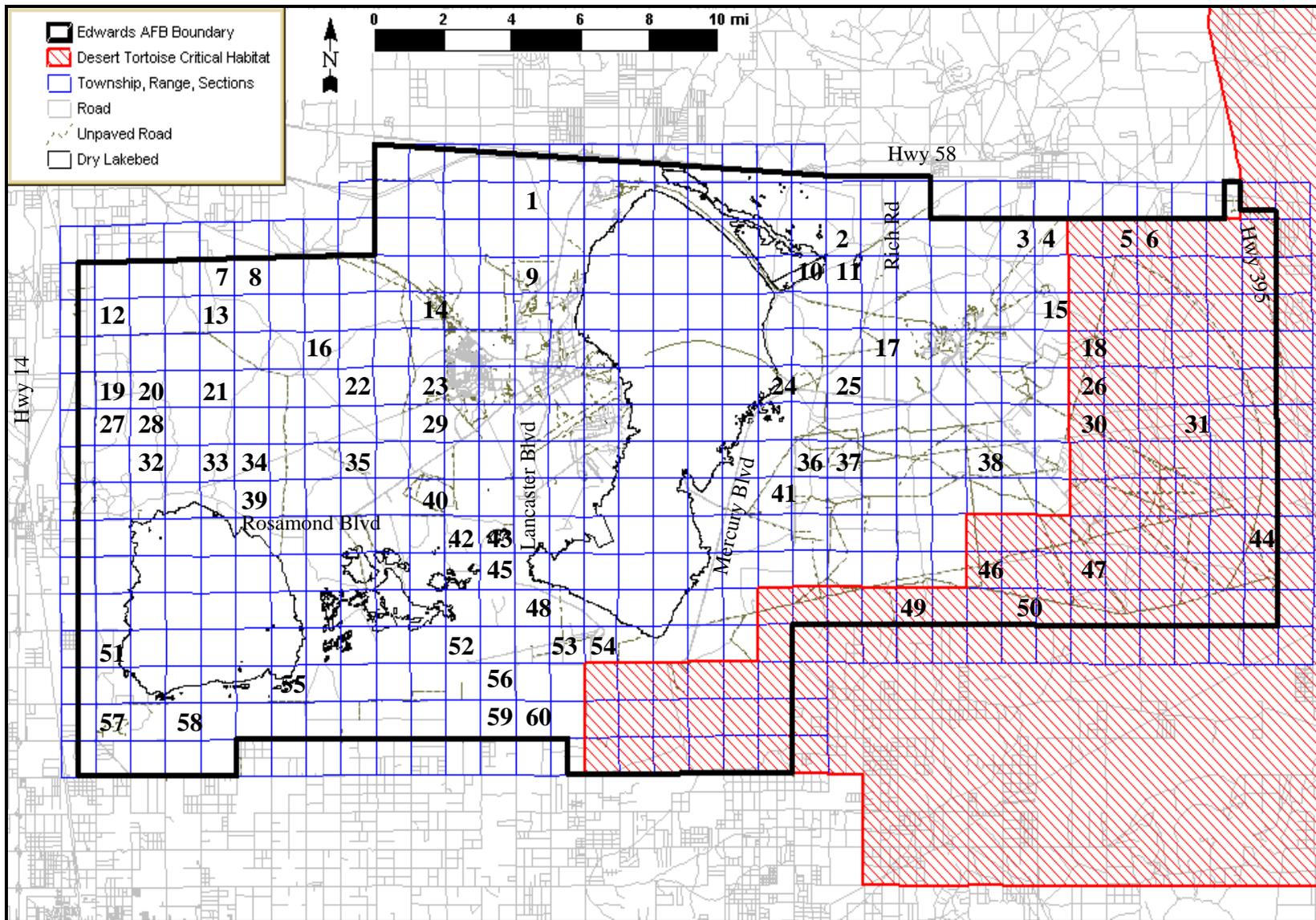
Monitoring Data – Adaptive Management Info

STEP 3



- Extensive use of GIS
- Many inventories and surveys
- Lots of raw data
- Analysis – actively working

Long-term Monitoring Plots (60)



Edwards AFB Approach

Monitoring Data – Adaptive Management Info

STEP 4

ADAPTIVE MANAGEMENT
DECISION SUPPORT

- Changing where and what we look at
- Provides rational basis for decisions
- Helps support funding requests
- Helps define projects

Slop Analysis

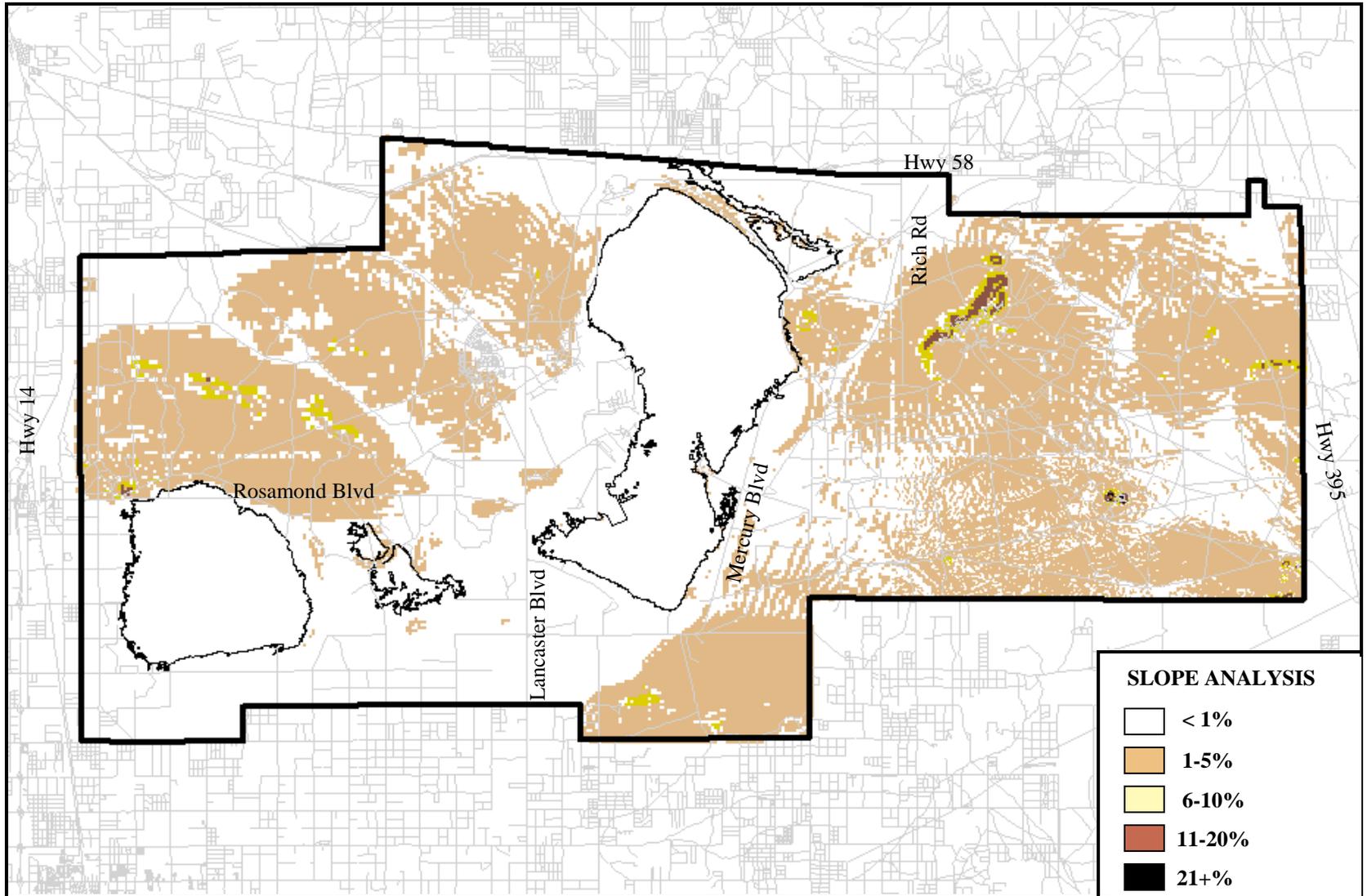


Figure 4-1. Slop Analysis for Edwards AFB showing the broad flat to gently sloping plains with few sharply raising features.

Viable Population Areas

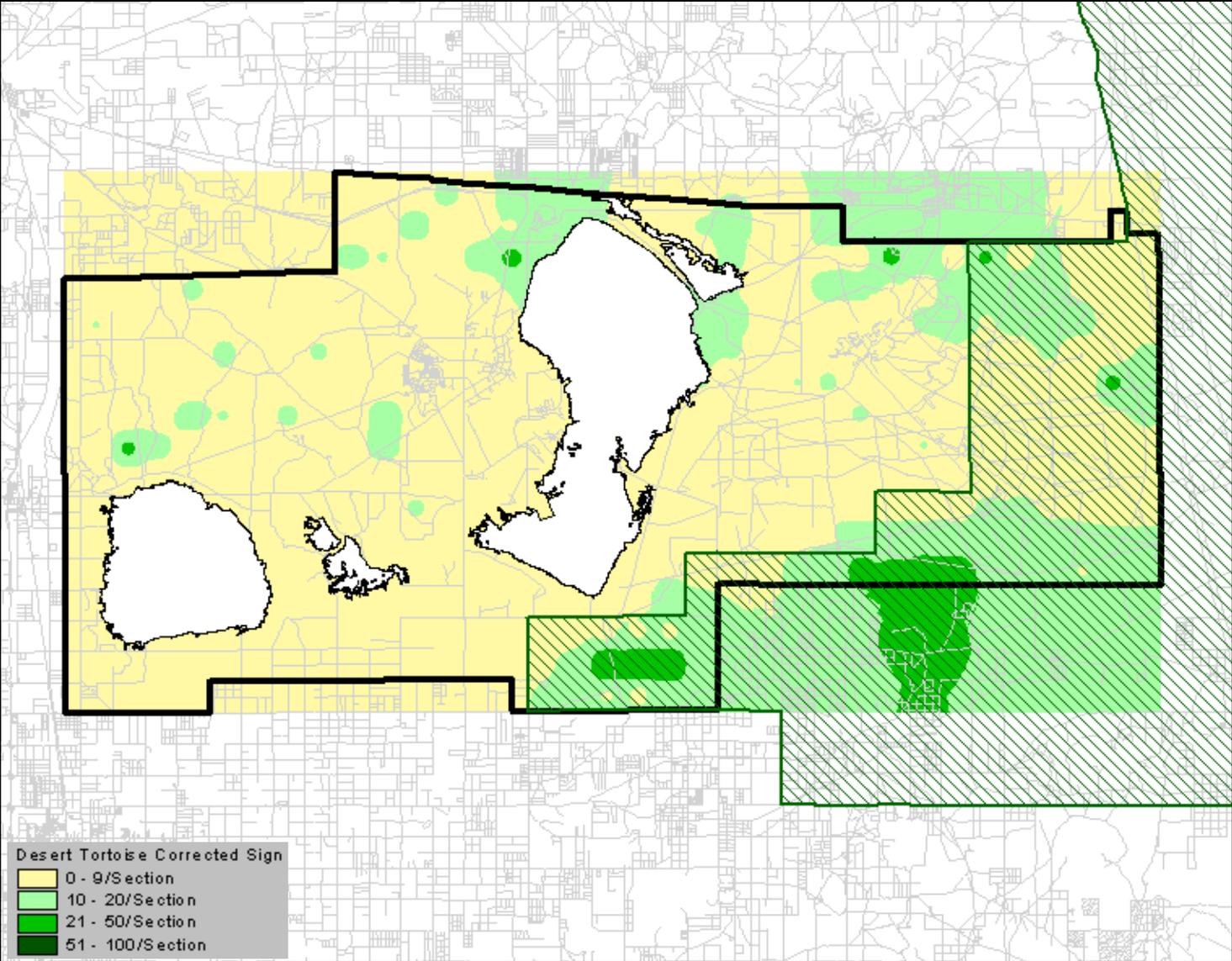


Figure 3-10. Extrapolated Desert Tortoise Total Corrected Sign Showing Viable Populations

Management Areas

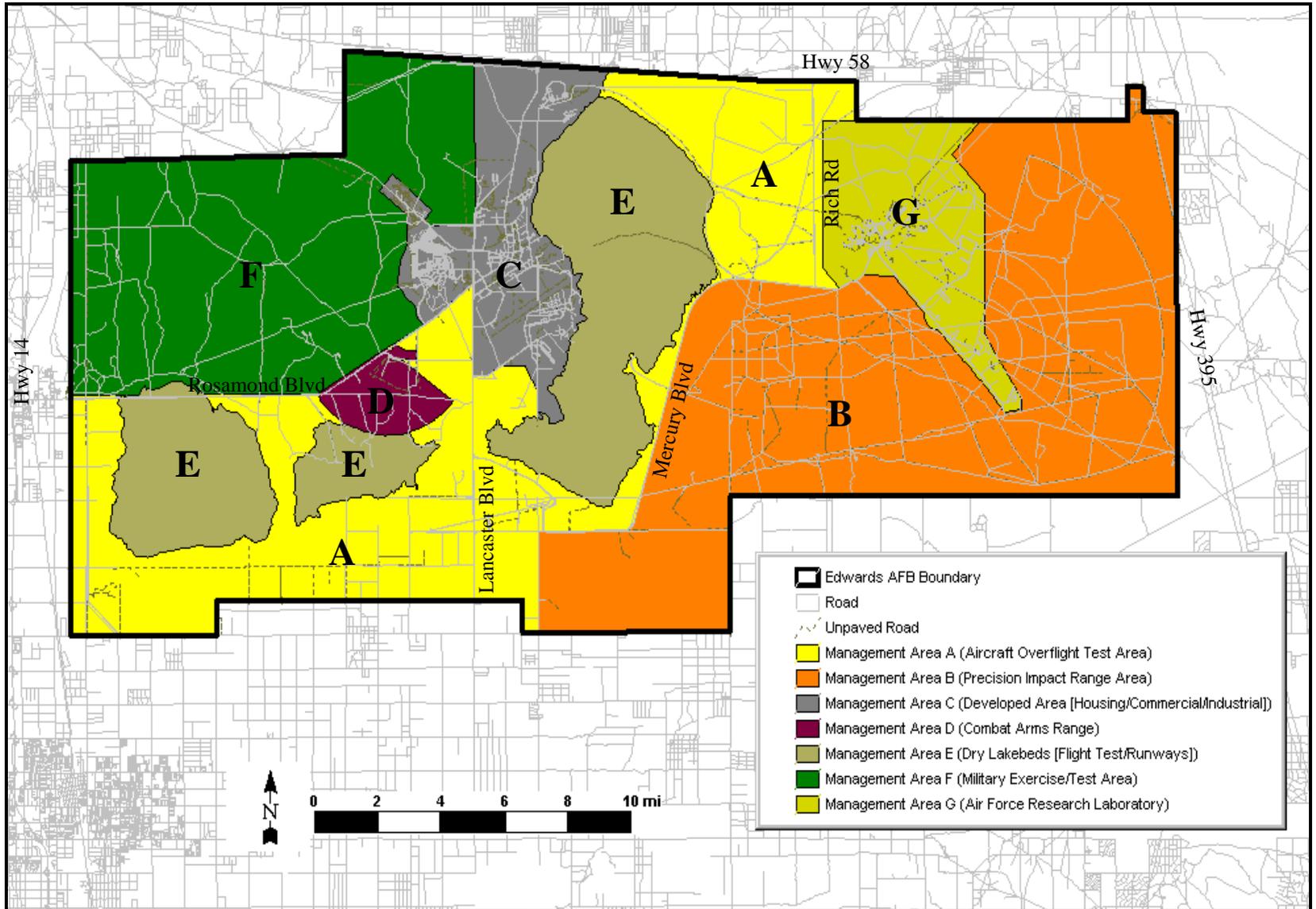
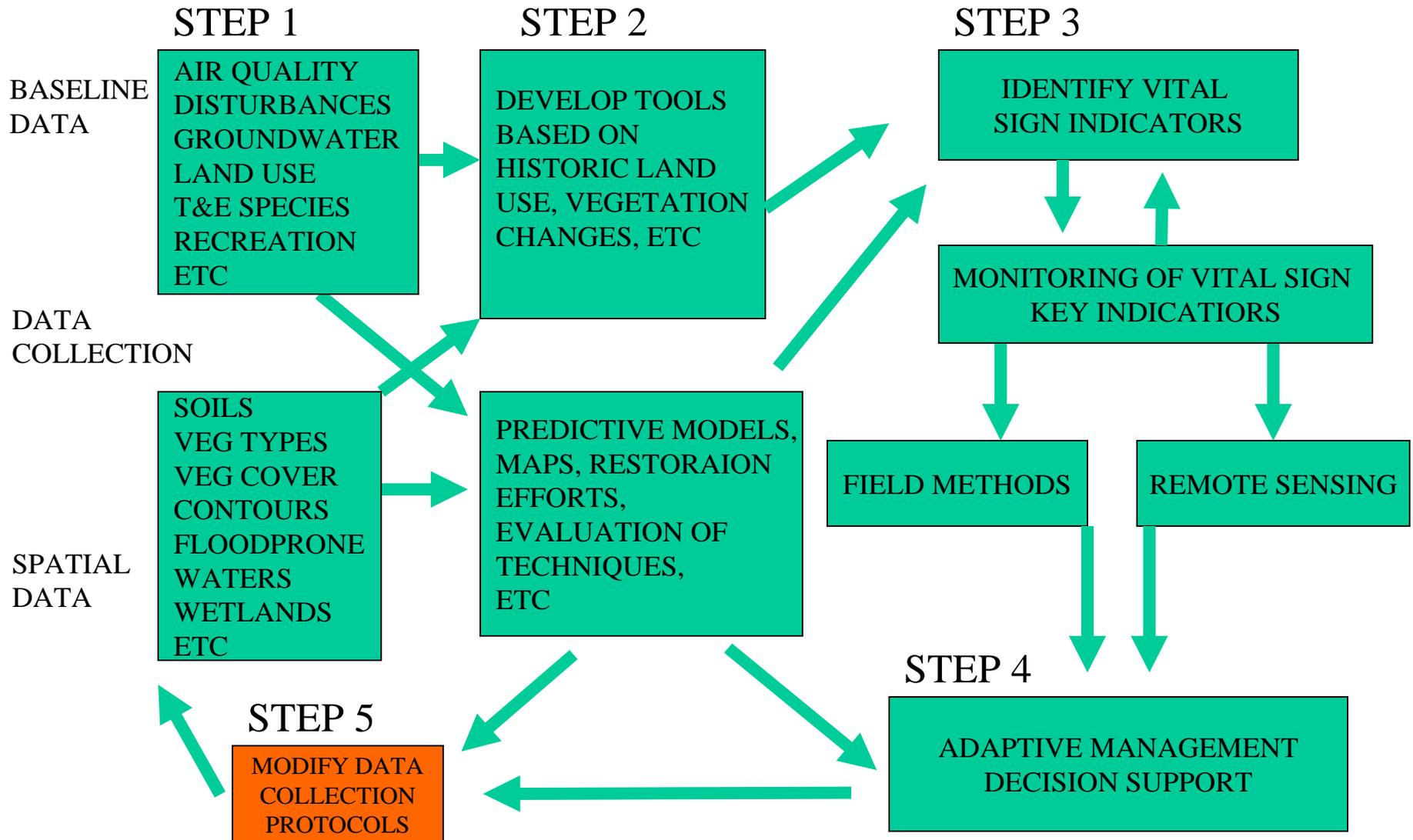


Figure 12-1. Management Areas Delineated on Edwards AFB.

Edwards AFB Approach

Monitoring Data – Adaptive Management Info



Army ITAM Program - Edwards AFB counterpart

- **Land Condition Trend Analysis (LCTA)** - Long-term plots (60)
- **Training Requirements Integration (TRI)** - Project driven monitoring
- **Land Rehabilitation & Maintenance (LRAM)** - Restoration/exotic species removal program
- **Environmental Awareness (EA)** - Newcomers/contractor briefing required for all