Agriculture and Ecosystem Services: A Case Study in Localism

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Ag and Ecosystem Services

Agriculture (including planted forests) conventionally supplies food, fiber, and fuel—"provisioning services" in [ecosystem services] parlance. Farmers also help maintain the natural "supporting" [ecosystem services] that make agriculture productive, such as pollination, biological pest regulation, and soil nutrient renewal. In theory, the same managed ecosystems that provide these marketed products could produce other types of [ecosystem services] if suitable incentives existed. The broad class of "regulation [ecosystem services]" covers climate regulation, water purity, surface water flows, groundwater levels, and waste absorption and breakdown. All of these offer benefits that are poorly captured by current markets, yet which managed agricultural and forest ecosystems could potentially provide.

Scott M. Swinton et al., *Ecosystem Services from Agriculture: Looking Beyond the Usual Suspects*, 88 Amer. J. Agric. Econ. 1160 (2006).

Incentives for Services

Agriculture occupies the high ground of comparative advantage in supplying socially demanded, low-cost ecosystem services. Agriculture is accustomed to publicly funded incentives, and private markets signals to supply value sought by society whether corn, soybeans, or wildlife habitat. The level and composition of the demand side is increasingly evident, though in flux as well….The prospect of broad-scale compensation of agricultural producers for supplying ecosystem services is real.

Robert M. Wolcott, *Prospects for Ecosystem Services in the Future Agricultural Economy: Reflections of a Policy Hand*, 88 Amer. J. Agric. Econ. 1181, 1182-3 (2006).

Rural Land Stewardship Act
Fla. Stat. § 163.3177(11)(d)

1. The department, in cooperation with the Department of Agriculture and Consumer Services, the Department of Environmental Protection, water management districts, and regional planning councils, shall provide assistance to local governments in the implementation of this paragraph….Implementation of those provisions shall include a process by which the department may authorize local governments to designate all or portions of lands classified in the future land use element as predominantly agricultural, rural, open, open-rural, or a substantively equivalent land use, as a rural land stewardship area within which planning and economic incentives are applied to encourage the implementation of innovative and flexible planning and development strategies and creative land use planning techniques, including those contained herein….

Purposes

2. The department shall encourage participation by local governments of different sizes and rural characteristics in establishing and implementing rural land stewardship areas. It is the intent of the Legislature that rural land stewardship areas be used to further the following broad principles of rural sustainability: **restoration and maintenance of the economic value of rural land**; control of urban sprawl; **identification and protection of ecosystems, habitats, and natural resources**; **promotion of rural economic activity**; **maintenance of the viability of Florida's agricultural economy**; and **protection of the character of rural areas of Florida**. Rural land stewardship areas may be multicounty in order to encourage coordinated regional stewardship planning.

TDRs

6. Upon the adoption of a plan amendment creating a rural land stewardship area, the local government shall, by ordinance, establish the methodology for the creation, conveyance, and use of transferable rural land use credits, otherwise referred to as stewardship credits, the application of which shall not constitute a right to develop land, nor increase density of land, except as provided by this section. The total amount of transferable rural land use credits within the rural land stewardship area must enable the realization of the long-term vision and goals for the 25-year or greater projected population of the rural land stewardship area, which may take into consideration the anticipated effect of the proposed receiving areas.

TDR Valuation

j. Transferable rural land use credits may be assigned at different ratios of credits per acre according to the natural resource or other beneficial use characteristics of the land and according to the land use remaining following the transfer of credits, with the highest number of credits per acre assigned to the most environmentally valuable land or, in locations where the retention of open space and agricultural land is a priority, to such lands.

Stewardship Agreements

7. Owners of land within rural land stewardship areas should be provided incentives to enter into rural land stewardship agreements, pursuant to existing law and rules adopted thereto, with state agencies, water management districts, and local governments to achieve mutually agreed upon conservation objectives. Such incentives may include, but not be limited to, the following:

a. Opportunity to accumulate transferable mitigation credits.

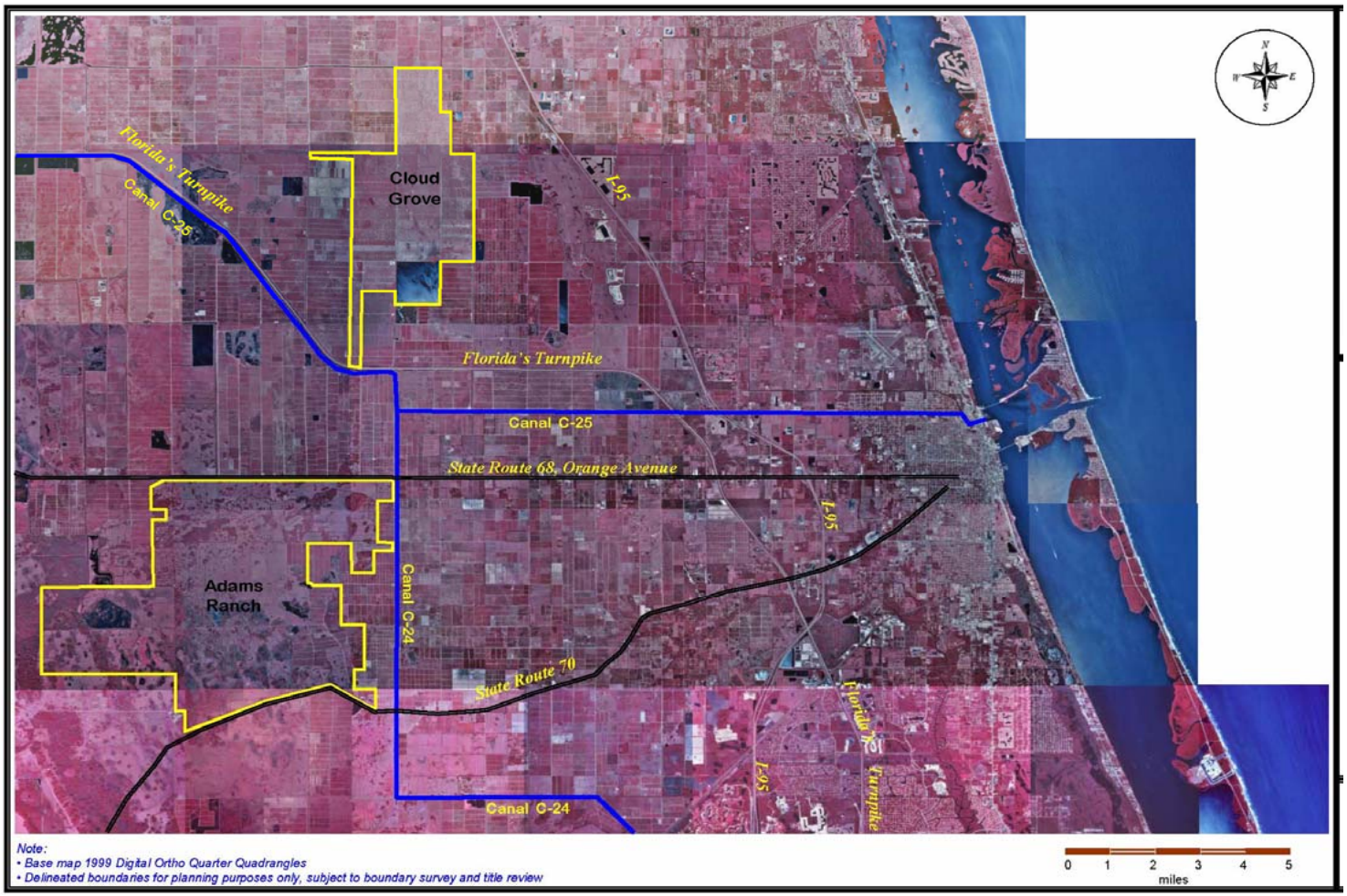
b. Extended permit agreements.

c. Opportunities for recreational leases and ecotourism.

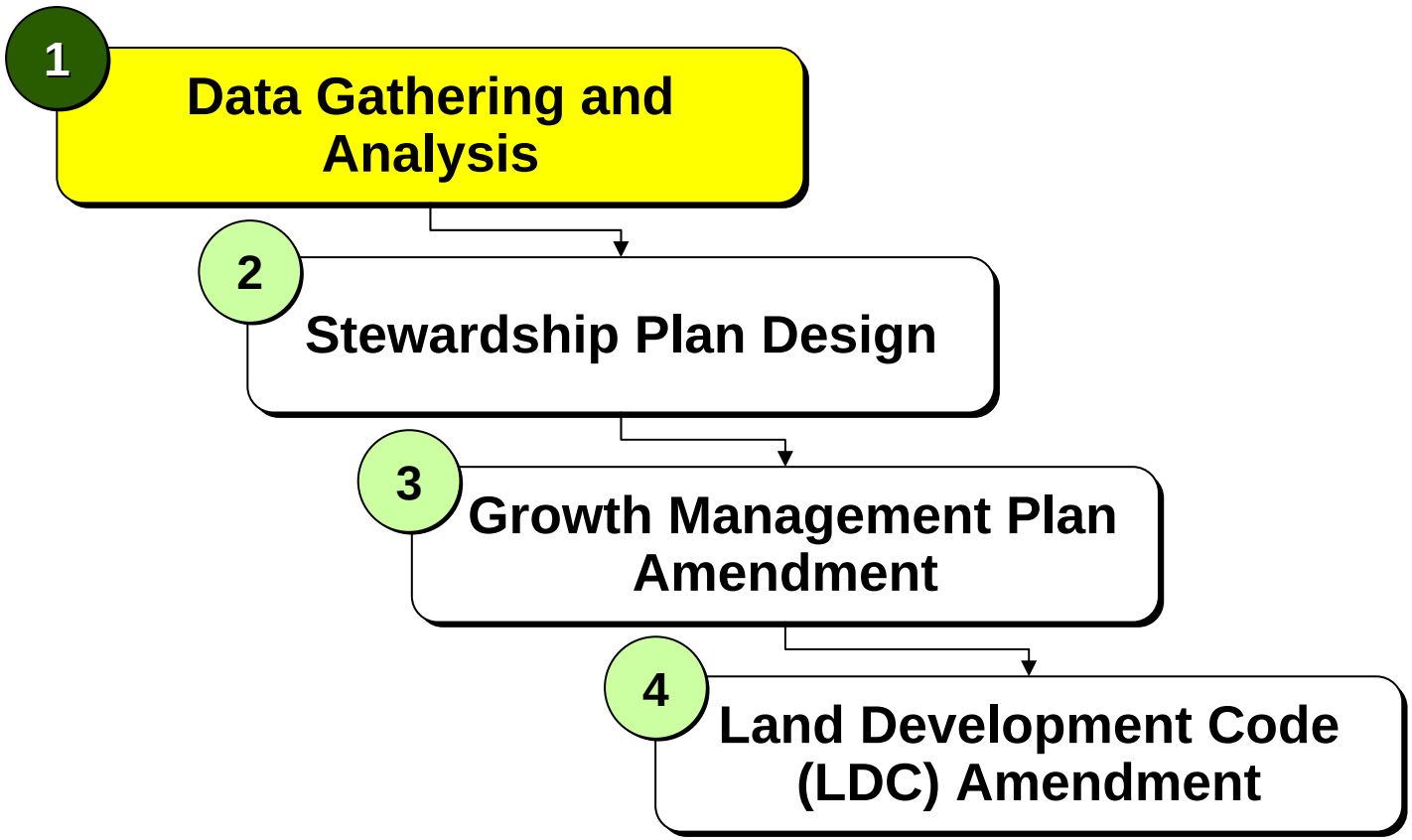
d. Payment for specified land management services on publicly owned land, or property under covenant or restricted easement in favor of a public entity.

e. Option agreements for sale to public entities or private land conservation entities, in either fee or easement, upon achievement of conservation objectives.

The Adams Ranch "Pilot Program" Location



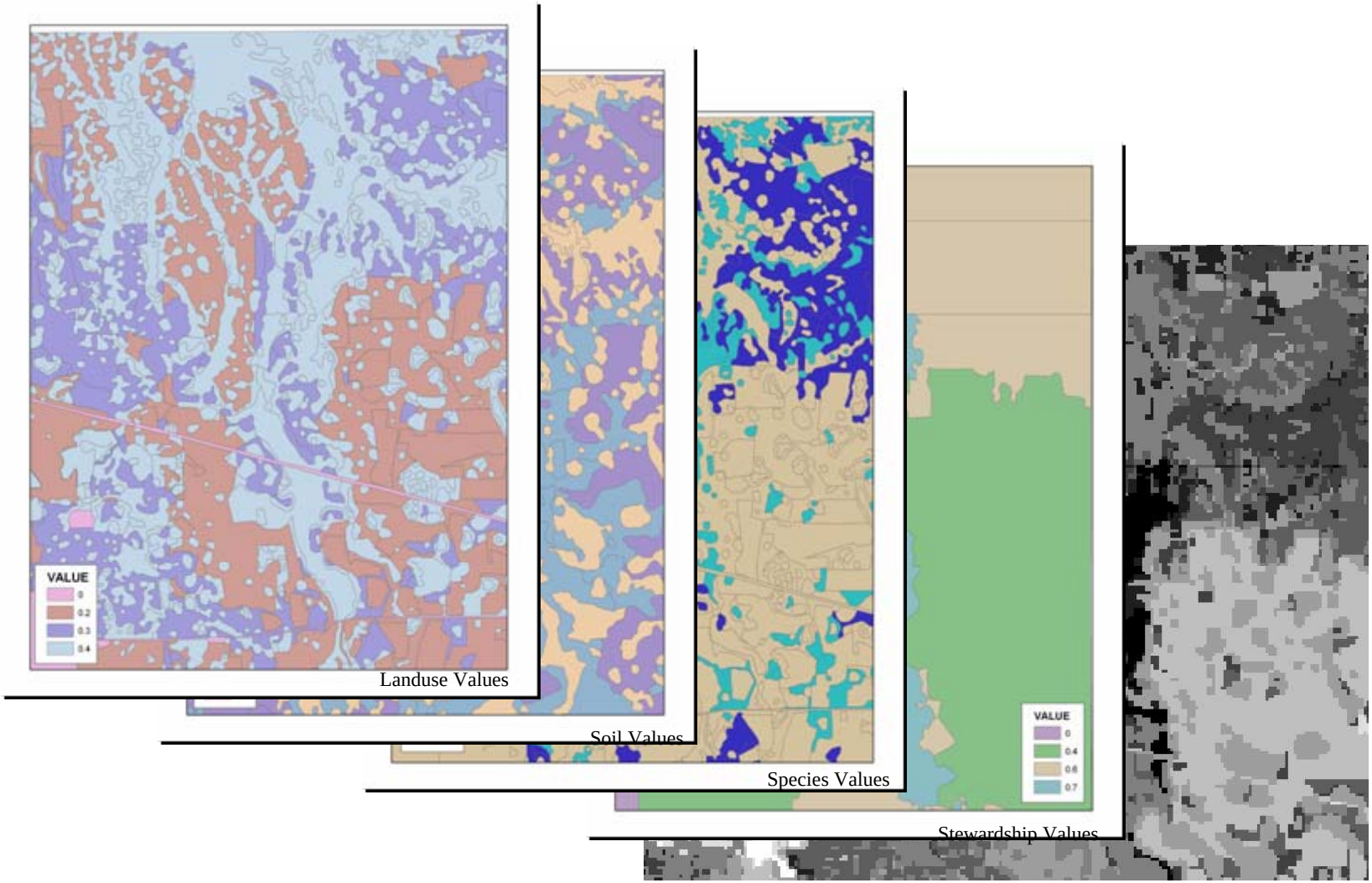
RLSA Process



1 Data Gathering and Analysis

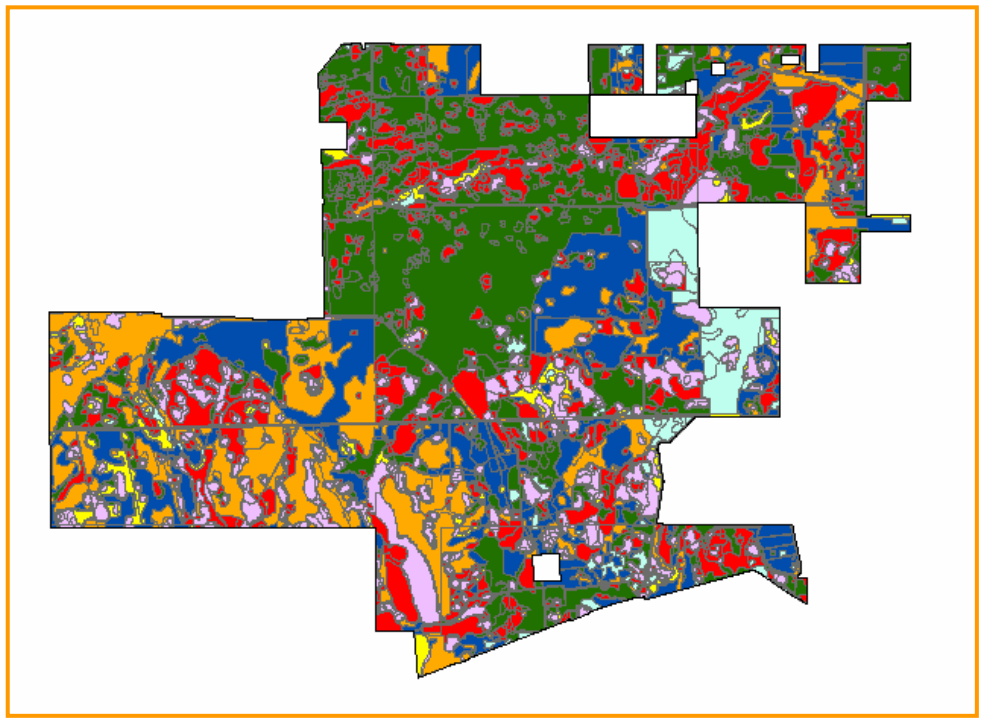
- Comprehensive field work and research
  - Existing land cover
  - Land use
  - Natural resources
  - Listed species
  - Water resources
  - Soils
- Data assimilated into GIS system

Scored Input Data Layers



Model Results

- All land has a scored value
- Value based on Natural Resources Indices
- Highest scoring areas correspond to Stewardship Overlay classifications



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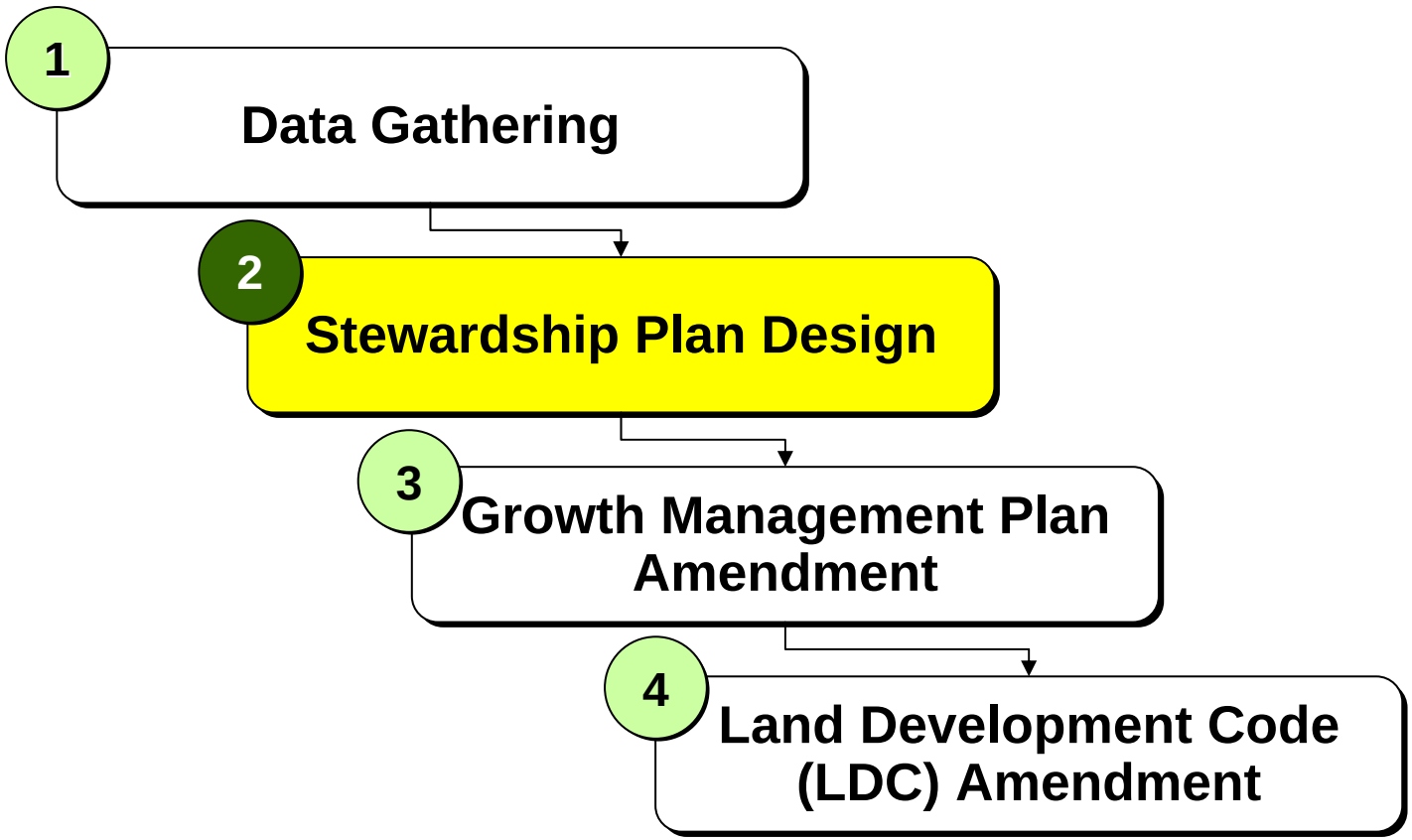

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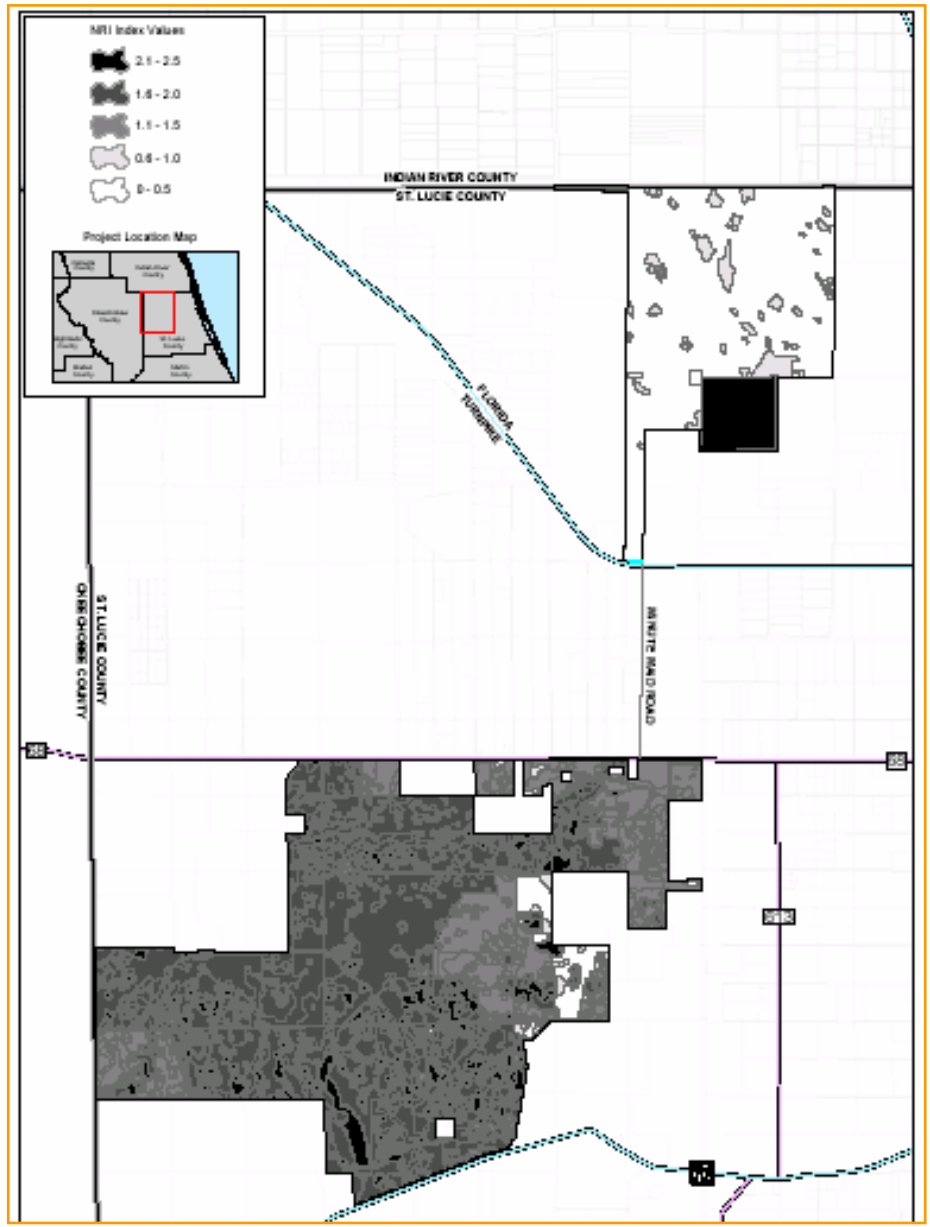
Stewardship Plan Design

- Index Map
- Overlay Map
- Credit System
- Comprehensive Plan Goal, Objective and Policies for Overlay
- Land Development Code for Overlay

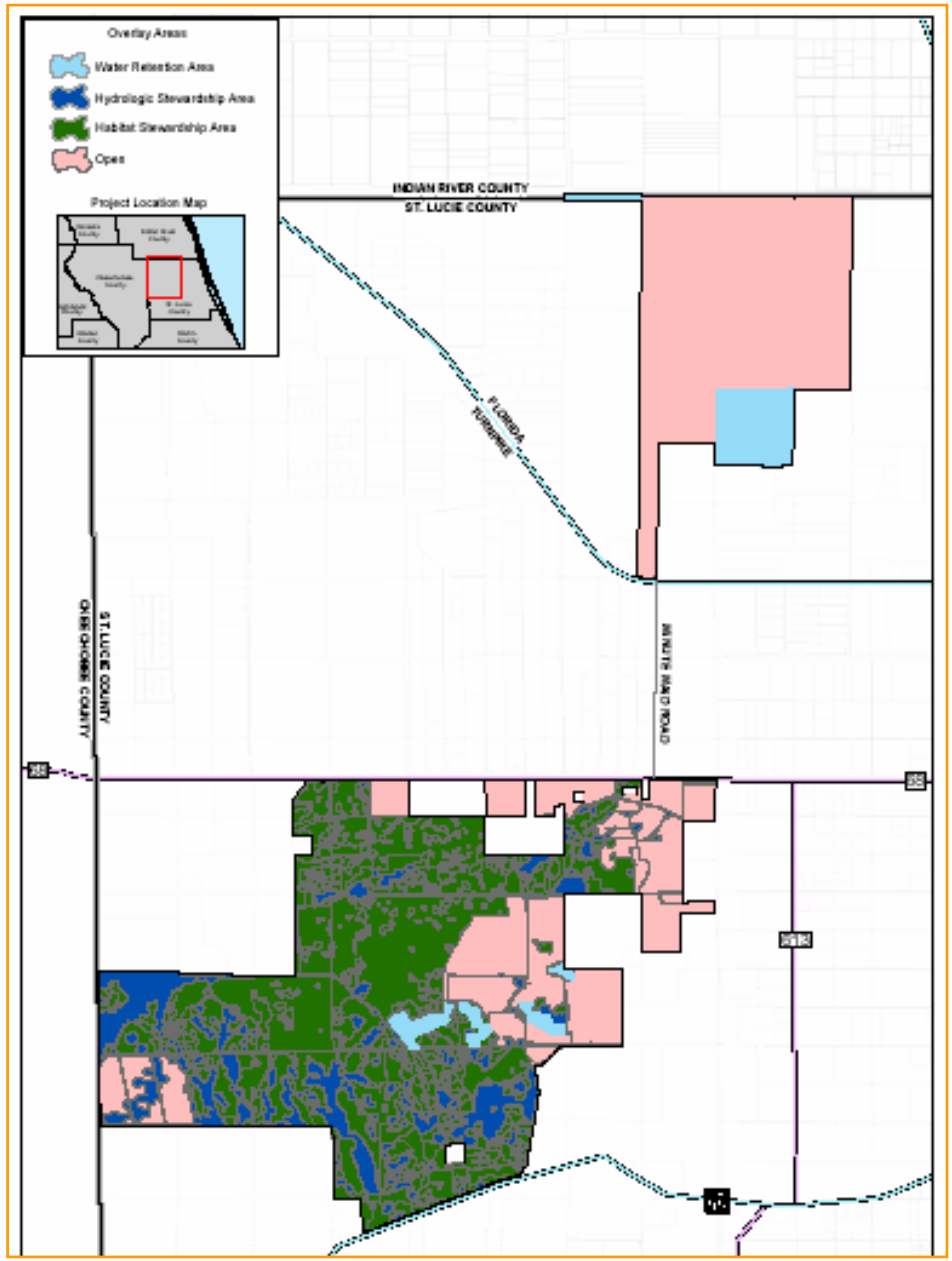
Stewardship Index Map

- Illustrates the data assimilated, and natural resource index values attributed
- Used to determine Overlay classifications
- Adopted as part of the Comprehensive Plan Amendment



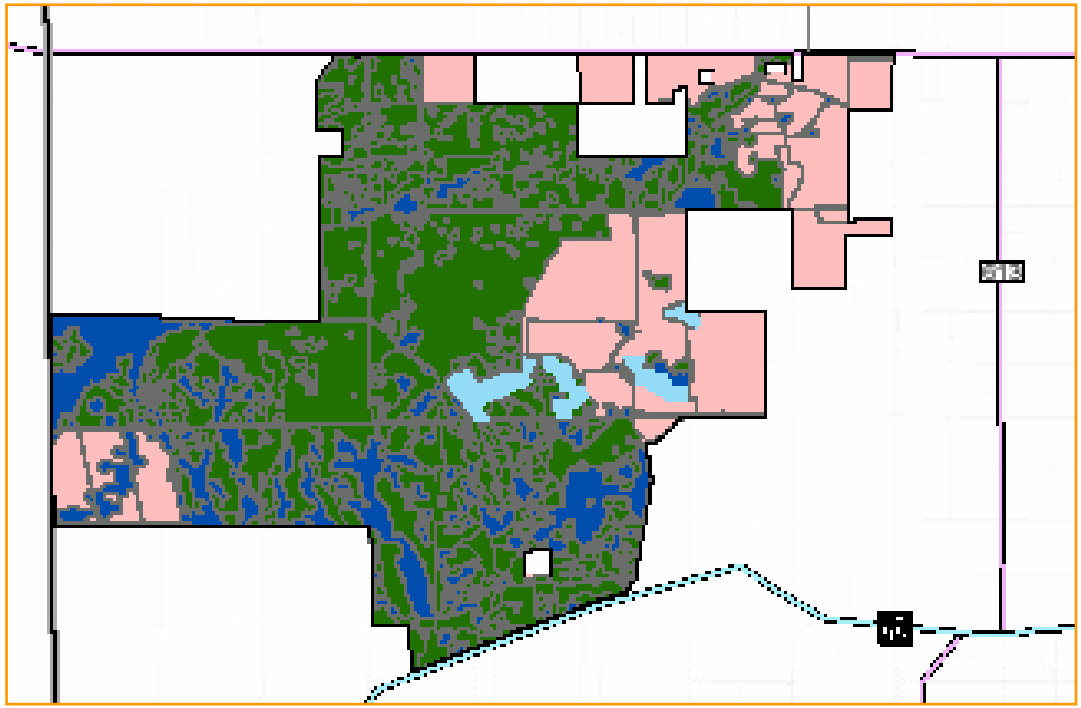
Stewardship Overlay Map

- Classification areas
  - Hydrologic Stewardship Areas
  - Habitat Stewardship Areas
  - Water Retention Areas
  - Open



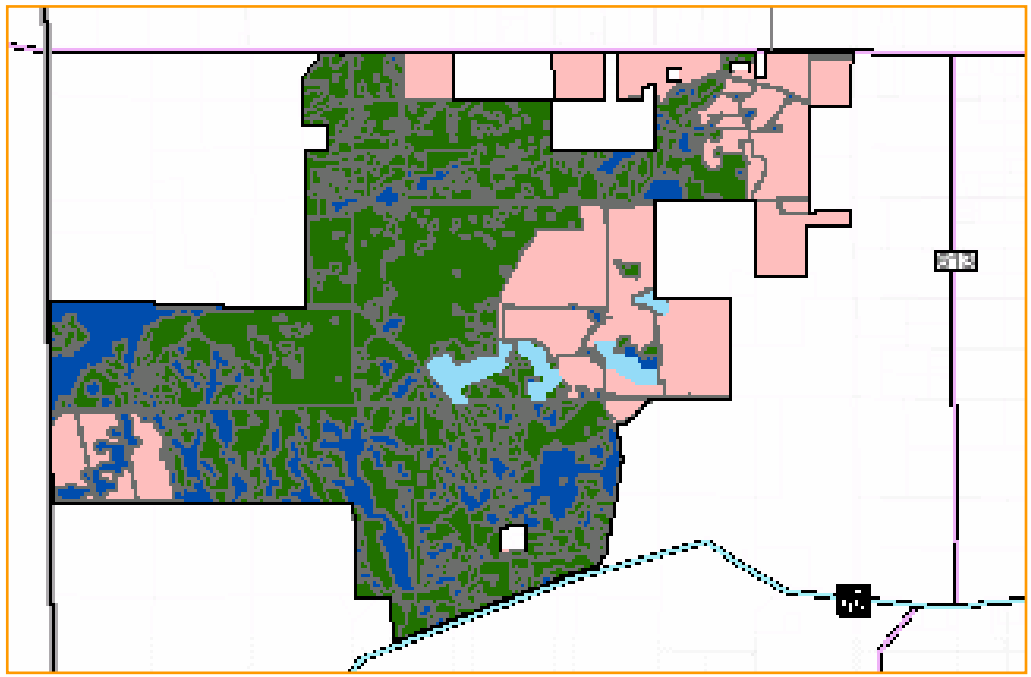
Hydrologic Stewardship Areas

- Areas shown as dark blue are Hydrologic Stewardship Area
- Includes wetlands, sloughs, and connecting water sources



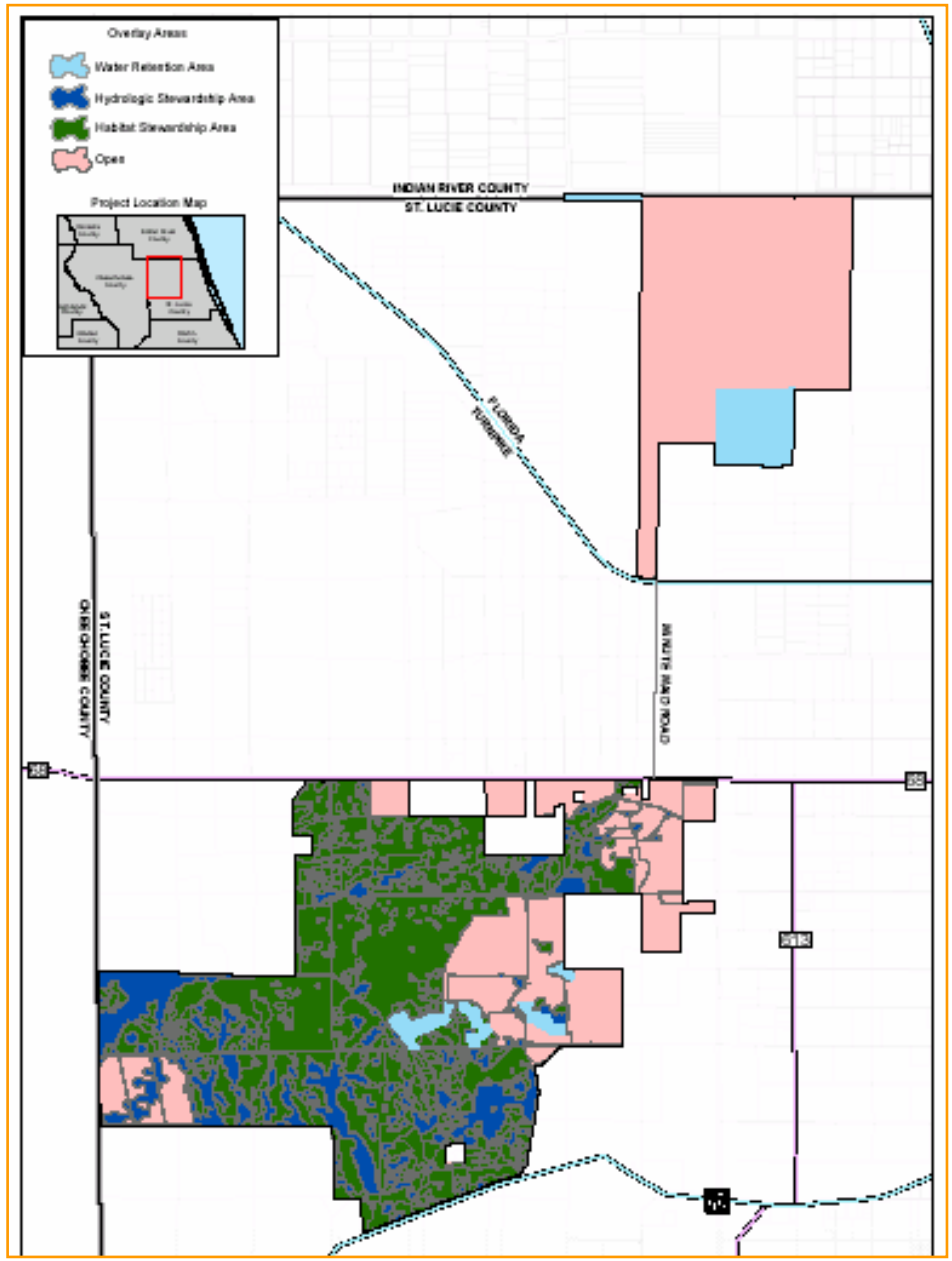
Habitat Stewardship Areas

- Areas shown as green are Habitat Stewardship Areas.
- Includes native uplands and wetlands, and pastures with native vegetation



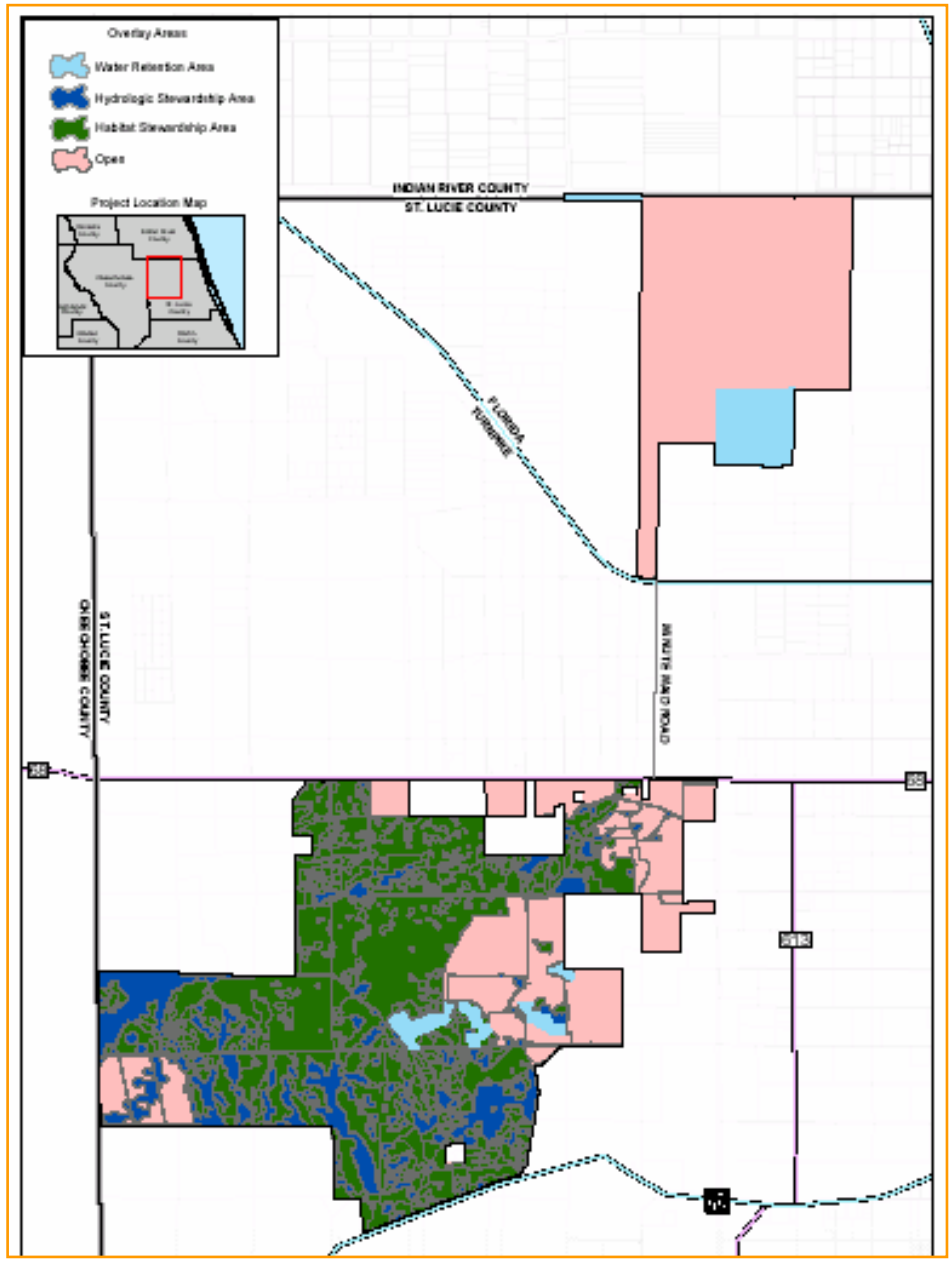
Water Retention Areas

- Areas shown as light blue are Water Retention Areas
- Includes water retention, treatment, conveyance and habitat functions



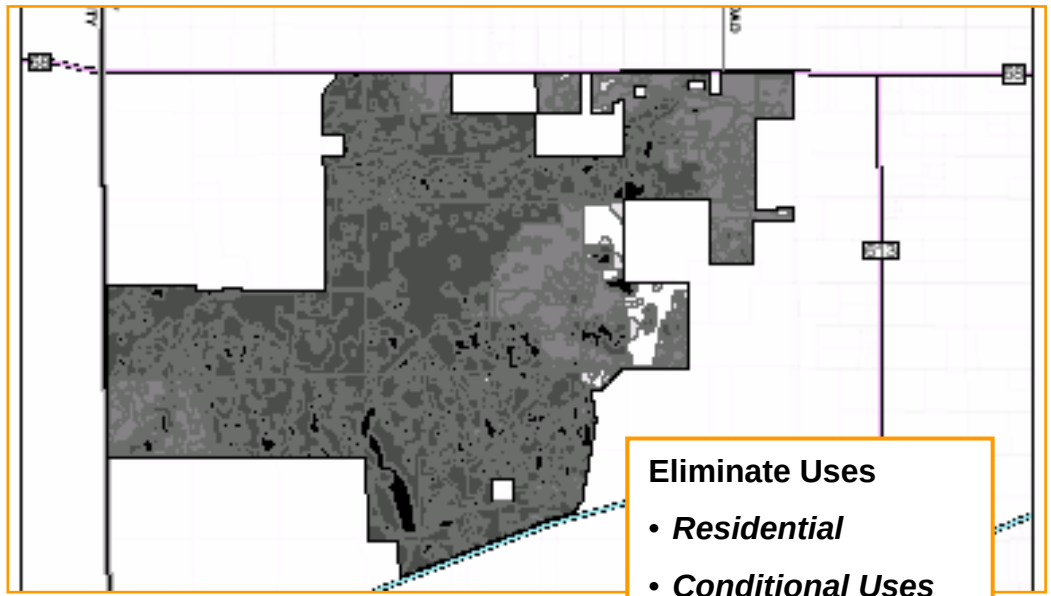
Stewardship Sending Area (SSA) Designation

- Property owner initiates SSA designation
- SSAs are perpetually protected by a Stewardship Sending Area Easement
- SSA Designation Application procedures and process are defined in Land Development Code Amendment
- SSA Designations are approved by the Board of County Commissioners



SSAs Generate Stewardship Credits

- Stewardship Credits are the “currency” of the RLSA
- The more environmentally valuable (darker grey), and the more uses eliminated, the greater the number of Credits generated.
- Credits are used to entitle sustainable communities as Stewardship Receiving Areas.



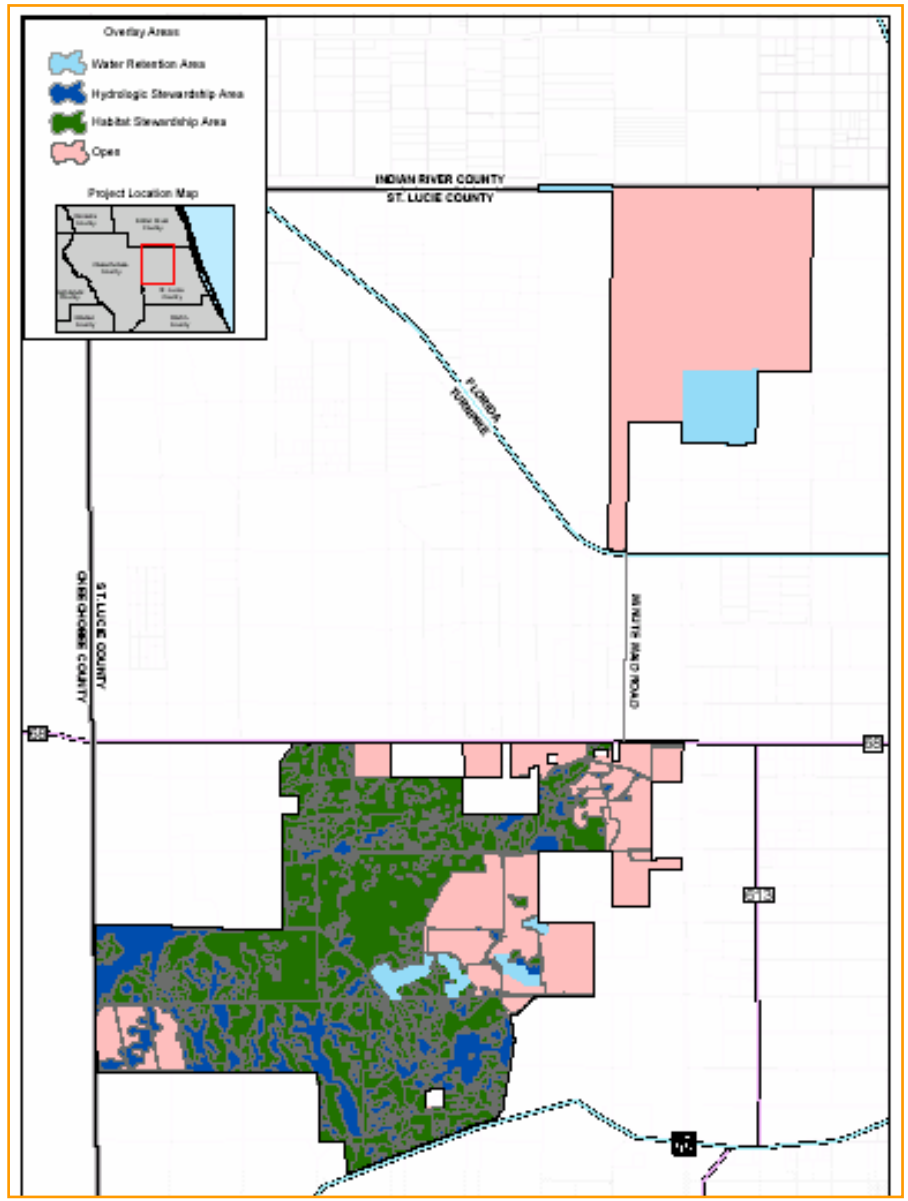
Eliminate Uses

- ***Residential***
- ***Conditional Uses***
- ***Earth Mining***
- ***Ag Group 1***
- ***Ag Group 2***
- ***Natural Resources***

Stewardship Receiving Areas (SRA)

- Stewardship Credits generated from SSA may be used to entitle SRA.
- Market forces guide location.
- SRA Designation Application approved by Board of County Commissioners.

The value of development entitlements drives the market value of Stewardship Credits and therefore drives the protection of natural resources, agriculture and heritage.



DCA Evaluation of RLSA

The Laboratory's final report thus identifies "captur[ing] the value of environmental services" as one of the "core principles" of successful agriculture TDR programs:

Successful programs are those that account not only for the aesthetic aspects of agricultural land but also for environmental services agricultural lands provide. These would include the provisioning of non-land resources, like water, and the land's participation in environmental regulation processes (like water purification) that would have to be otherwise acquired in the marketplace.

Tim Chapin and Harrison Higgins, Rural Land Stewardship Areas (RLSA) Program Evaluation Framework (Aug. 2007).

Performance Indicators

Indicator 1.3. Environmental service values delivered by rural lands in sending areas are reflected in the RLSA system.

- Metric 1.3.1. Stewardship credits reflect the value of conserved environmental services that are bought and sold outside of the RLS program.
- Metric 1.3.2. The stewardship credit system provides market incentives to maintain and enhance capacity of rural lands in sending areas to provide environmental services and to monitor the provision of those services.
- Metric 1.3.3. Economic values of rural lands in sending areas are enhanced by the use of environmental service values in RLSA system.

- What is an appropriate methodology for generating “land use credits” from sending areas? What attributes of rural land and natural resources will be measured? How will whatever is measured be used to calculate the number of credits a landowner in a sending area receives? What conservation actions must the landowner take to generate the credits? Are credits available only for conservation actions that go beyond the minimum that would have been required by applicable regulations (such as the Endangered Species Act and Section 404 of the Clean Water Act)?
- What is the appropriate methodology for identifying and designing development in receiving areas? What is it that land use credits are “buying” in the way of number of units, density of development, mixed uses, and so on? What is the “conversion rate” from credits for conservation of natural resources and rural lands in sending areas into development rights in receiving areas? How many square feet of development is an acre of wetlands worth?

- How will the program calibrate the number of credits being generated in sending areas with the number of credits demanded in receiving areas? Will there be a cap on credits? Will they be auctioned off? Will they be traded in markets? Can credits be created through restoration, or only through conservation of existing resources?
- As the size of a RLSA grows larger, say upwards of 50,000 acres, may landowners in sending and receiving phase in conservation and development over time, or must they commit to a conservation and development plan that covers the entire RLSA and is fixed in place?
- What is it about rural lands that is being preserved? How is rural land preservation valued? Who benefits from it? Why is this an important land use policy? How do we know it is better than the alternative? What is the alternative?
- How will receiving area governments deal with the increased development units and density made possible by the transfer of RLSA land use credits? Who will finance the additional schools and other public services that are generated by development carried out with RLSA land use credits?