



Report on Studies in the Cache Slough Region

- Delta Conservancy Grant
- Land Evaluation and Site Assessment (LESA)

Presented to Board of Supervisors
on August 8, 2017
Department of Resource Management



Report on Studies in Cache Slough

■ Delta Conservancy grant to Solano County

- \$228,000 in funds to develop agriculture and land use data, maps
- Phase 1 completed
- Provided important key data and study results
- County Studies inform broader regional Conservancy process

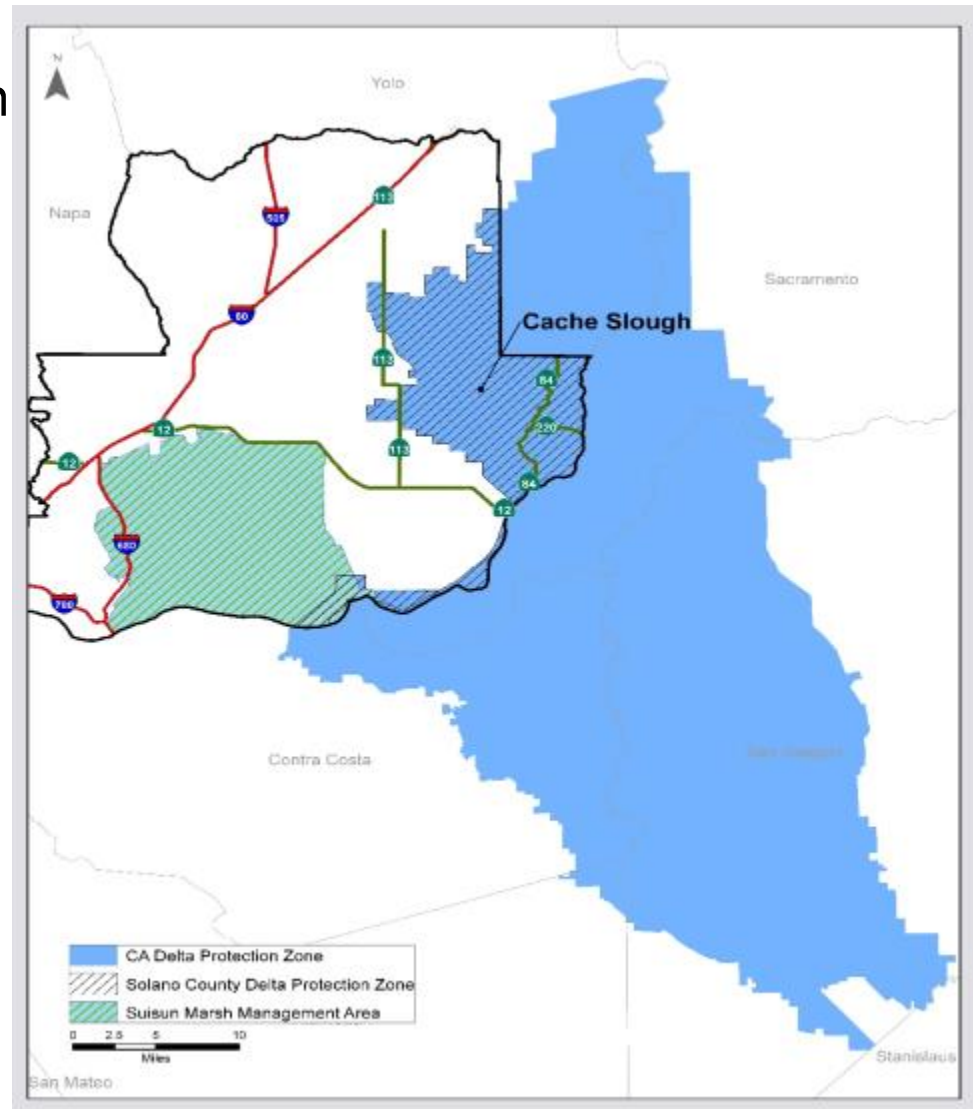
■ Cache Slough Region

- ~65,000 acre area in southeastern Solano County
- Agricultural land with some recreation land uses
- State (DWR, DFW, Conservancy) interest in conversion of ag land to aquatic and upland habitat (and flood risk reduction)



Report on Studies in Cache Slough

- Map Cache Slough and County boundaries





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- Map of Cache Slough (and Suisun Marsh) Restoration Opportunity Areas (ROA's)

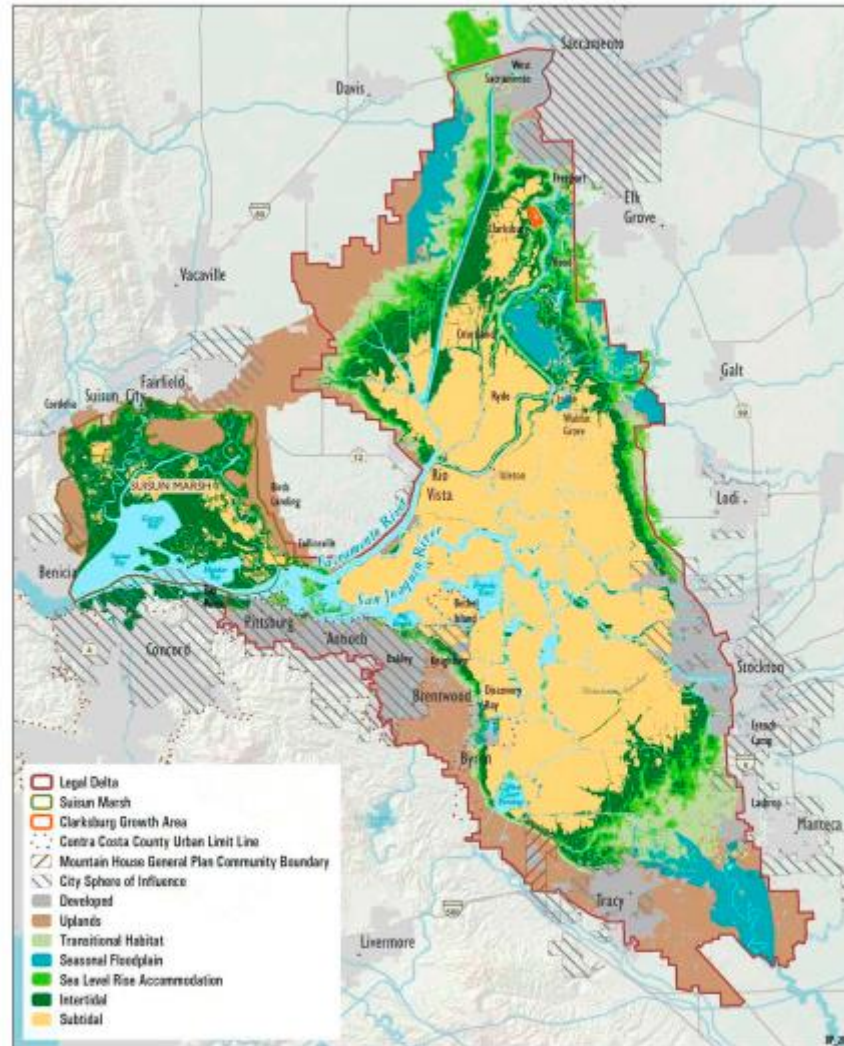


Figure 4-5
Habitat Types Based on Elevation, Shown with Developed Areas in the Delta and Suisun Marsh
Source: Adapted from DFG 2011



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- **State agencies: Interest in Aquatic and Terrestrial Habitat**
 - Mitigation for State & Federal Water Project Operations
 - BDCP/WaterFix Habitat Mitigation (aquatic species)
 - Other restoration programs
 - EcoRestore (30,000 acres)
 - Conservation Frameworks
 - Adaptive Management
 - Undeveloped lands at desirable elevations for tidal, upland habitat
 - State issued RFP for proposals to create needed habitat
 - Piecemeal acquisition of land in area problematic for agriculture, water infrastructure and cumulative impact assessment/ mitigation



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■ **County Studies: Review**

- Data gathering and map series for County
- Landowner Outreach
- Land Evaluation and Site Assessment Study (LESA)
- Economic Effects of Solano County Agriculture and Cache Slough Case Study (Jim Allan, Ag Commissioner)



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- **Why are studies and data collection important?**
 - Better information base helps quantify impacts to region
 - Assists in identification of impacts to specific land uses
 - Insight into cumulative impacts on region and County
 - Information brings better understanding of agriculture/infrastructure protection with ecosystem and flood plans for region
 - Assists in dialogue with the state (education and negotiation)
 - Aids in development of appropriate mitigation of site-specific and regional impacts



Report on Studies in Cache Slough

- **Focus today: Presentation**
 - Land Evaluation & Site Assessment Study (LESA)
 - Wendy Rash, Natural Resources Conservation Service
 - Genevieve Taylor, Ag Innovations
 - Anna Constantino, FlowWest



LESA RESULTS IN CACHE SLOUGH COMPLEX

August 8, 2017



United States Department of Agriculture
Natural Resources Conservation Service



SACRAMENTO - SAN JOAQUIN
DELTA CONSERVANCY
A California State Agency

LESA Contributors & Advisors

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*Funded with Proposition 1
Funding by the Delta
Conservancy*

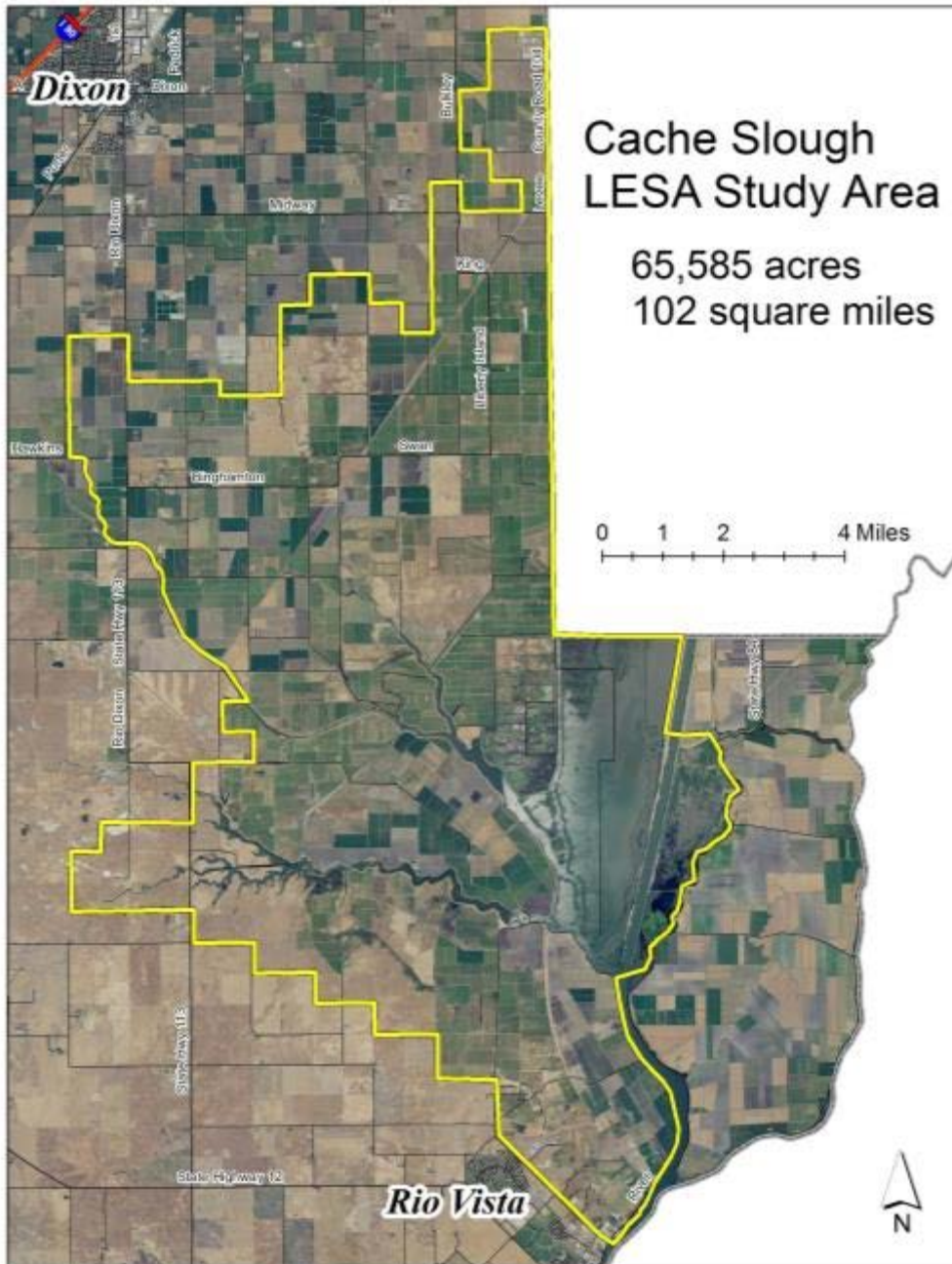
Steering Committee

- Tracy Ellison, Solano Land Trust
- Nedzlene Ferrario, County of Solano Planning Division
- Mike Hardesty, Reclamation District 2068
- Jared Lewis, Solano Land Trust and San Francisco Bay National Estuarine Research Reserve (SF Bay NERR)
- Chris Rose, Solano Resource Conservation District

LESA IN CACHE SLOUGH

PURPOSE OF LESA:

- To quantify, communicate, and analyze the agricultural productivity and/or potential of parcels in the Cache Slough region
- Based on soil-based (Land Evaluation - LE) and non-soil based (Site Assessment - SA)
- Factors grounded in the local agricultural environment



WHAT DOES LESA DO - AND NOT DO?

LESA DOES...

- Answer the question - what is significant about agriculture in Cache Slough?
- Produce objective scores that allow comparison of projects
- Guide planning & conservation efforts

LESA DOES *NOT*...

- give a monetary or appraisal value of an agricultural parcel
- depict and capture impacts of land use change on neighboring agricultural parcels or on Cache Slough as a whole



OVERVIEW OF LESA PROCESS

The Effort

- 26 stakeholders
- 30 hours
- 8 meetings
- Consensus decision-making process
- 6 steering committee members
- 25+ hours each

A Streamlined Process



FINAL LESA MODEL



LESA TOOL

PURPOSE

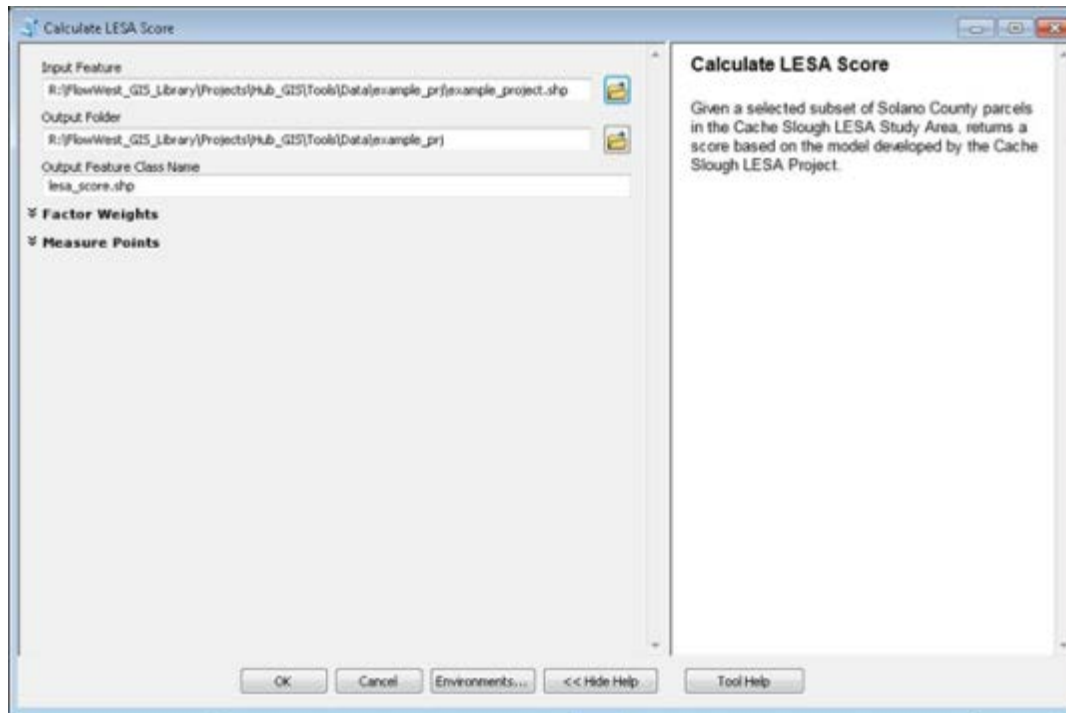
Project by project analysis using an ArcMap toolbox

USES

5 LESA Factors with over 20 measures developed by stakeholders

GENERATES

1. Factor analysis with finer resolution
2. Could be used in generating good neighbor strategies
3. Impact of conversion on infrastructure and how to mitigate
4. Makes trade offs in land use clear



LESA SCORE CALCULATION PROCESS

1

A project is a collection of parcels selected from the master input dataset. Measure results are given for each parcel.

Parcel	Measure Result 1	Measure Result 2	Measure Result 3	Acres
A	0	0	25	50
B	1	0	25	50

2

Three methods are used to calculate the project measure results from the parcel results, based on what is appropriate per measure.



3

Project measure results are then multiplied by the points assigned to them, and summed per factor.

Project	
Measure Result 1	1
Measure Result 2	0
Measure Result 3	0.5



Points
80
15
5



SUM



Measure Points
80
0
2.5

Factor 1 Score = 82.5

4

Each factor score is multiplied by the assigned factor weight and then summed to get the total LESA score for the project.

$$\text{Project LESA Score} = \left(\text{Factor 1 Weight} * \text{Factor 1 Score} \right) + \left(\text{Factor 2 Weight} * \text{Factor 2 Score} \right) + \left(\text{Factor 3 Weight} * \text{Factor 3 Score} \right)$$

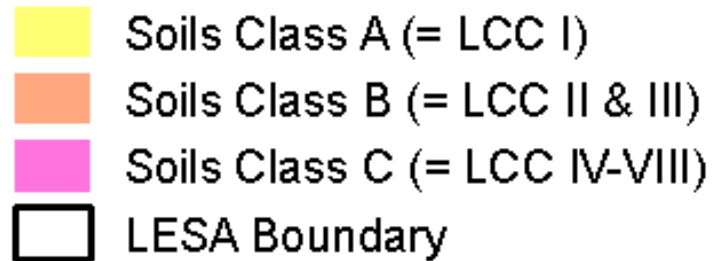
FACTORS	SUMMARY OF MEASURES	WEIGHT
1- Soils, Agricultural Productivity, and Climate	Class A = 100 pts to LCC I project area Class B = 95 points to LCC II-III project area Class C = 80 points to LCC IV-VIII project area	14%
2- Agricultural System	Project size = up to 50 points depending on LCC class Rural location = 15 points Williamson Act = 35 points	14%
3- Water Rights	NDWA Water Rights = 80 pts Riparian Water Rights = 15 pts Appropriative Water Rights = 5 pts	50%
4- Water Infrastructure for Agriculture	Water Delivery Infrastructure = 25 or 50 points Type of levees = 25 or 15 points	14%
5- Compatible Value-Added Activities	One or more Conservation Elements = 25 points Licensed Hunting Club = 25 points Energy Production = 25 points Flood Protection = 25 points	8%

= 100%

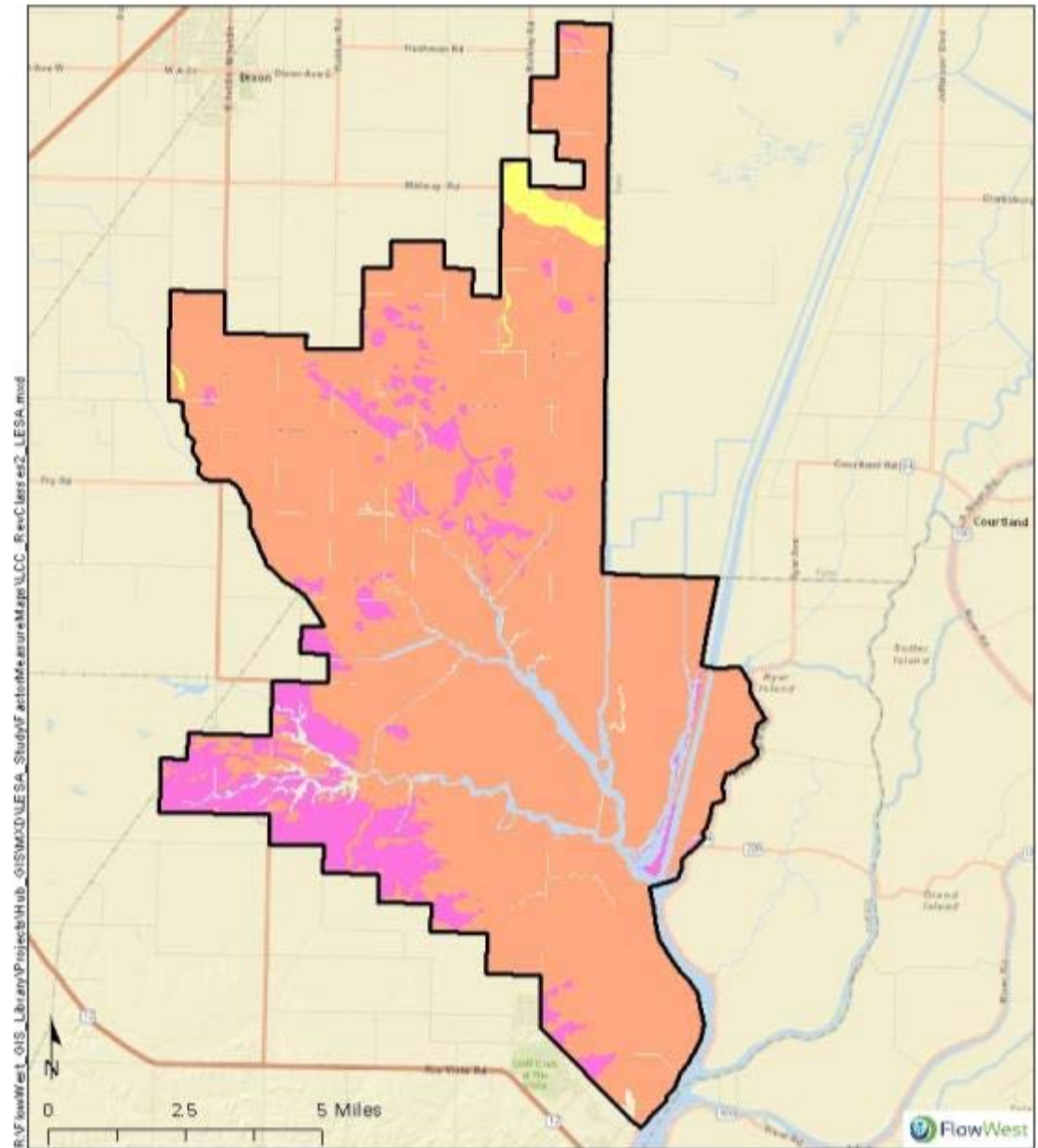
A HYPOTHETICAL PROJECT

FACTOR	SUMMARY OF MEASURES	RESULT	WEIGHT	SCORE
1- Soils, Agricultural Productivity, and Climate	Class A = 100 pts to LCC I project area Class B = 95 points to LCC II-III project area Class C = 80 points to LCC IV-VIII project area	95	14%	13.3
2- Agricultural System	Project size = up to 50 points Rural location = 15 points Williamson Act = 35 points	95	14%	13.3
3- Water Rights	NDWA Water Rights = 80 pts Riparian Water Rights = 15 pts Appropriative Water Rights = 5 pts	85	50%	42.5
4- Water Infrastructure for Agriculture	Water Delivery Infrastructure = 50 points Water Drainage Infrastructure = 25 points Type of levees = 25 points	98	14%	13.7
5- Compatible Value-Added Activities	One or more Conservation Elements = 25 points Licensed Hunting Club = 25 points Energy Production = 25 points Flood Protection = 25 points	50	8%	4
				= 86.8

FACTOR 1: SOILS, PRODUCTIVITY & CLIMATE

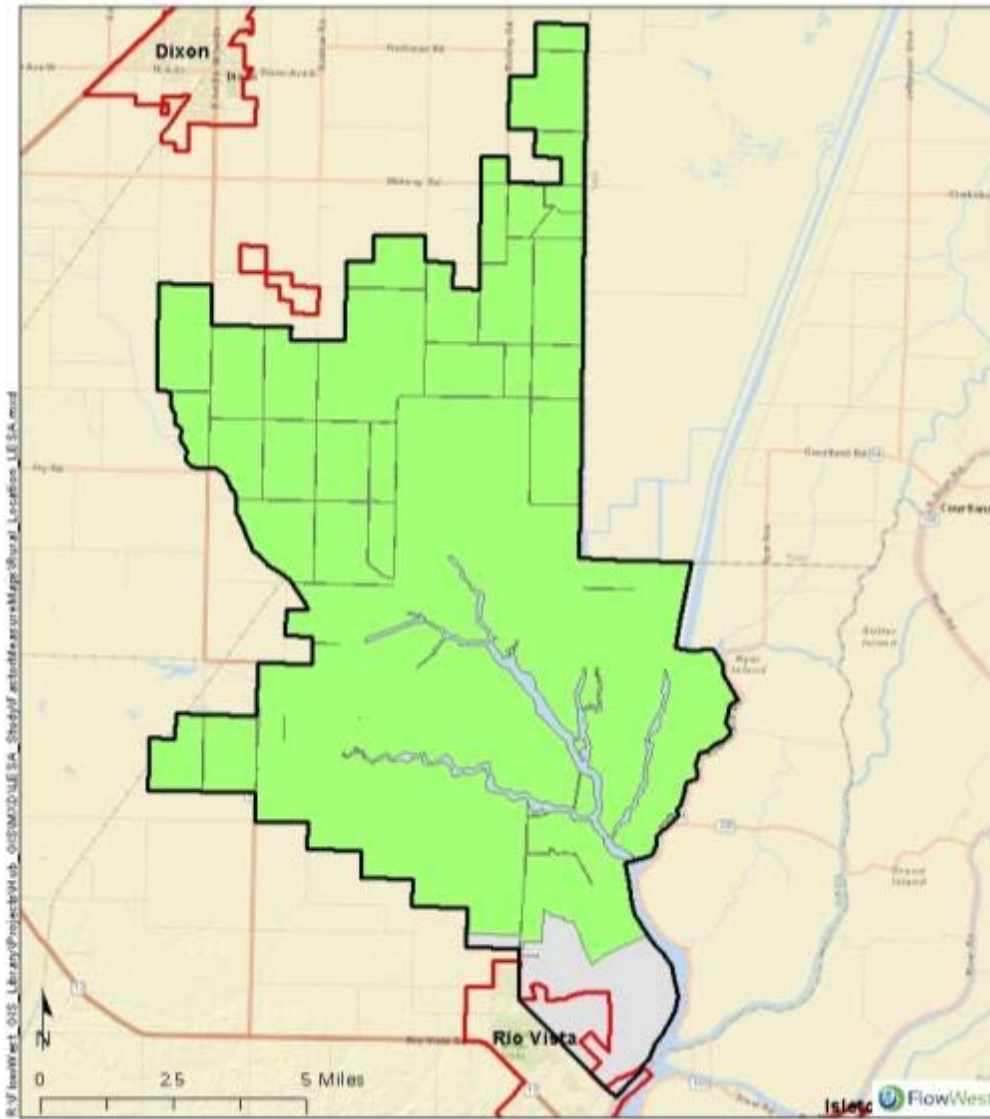




*Learnings:
Most of this is in
Class B, some in
Class C, and its very
useful for ag*



FACTOR 2: RURAL LOCATION MAP

Learnings: Cache Slough's rural location is unique



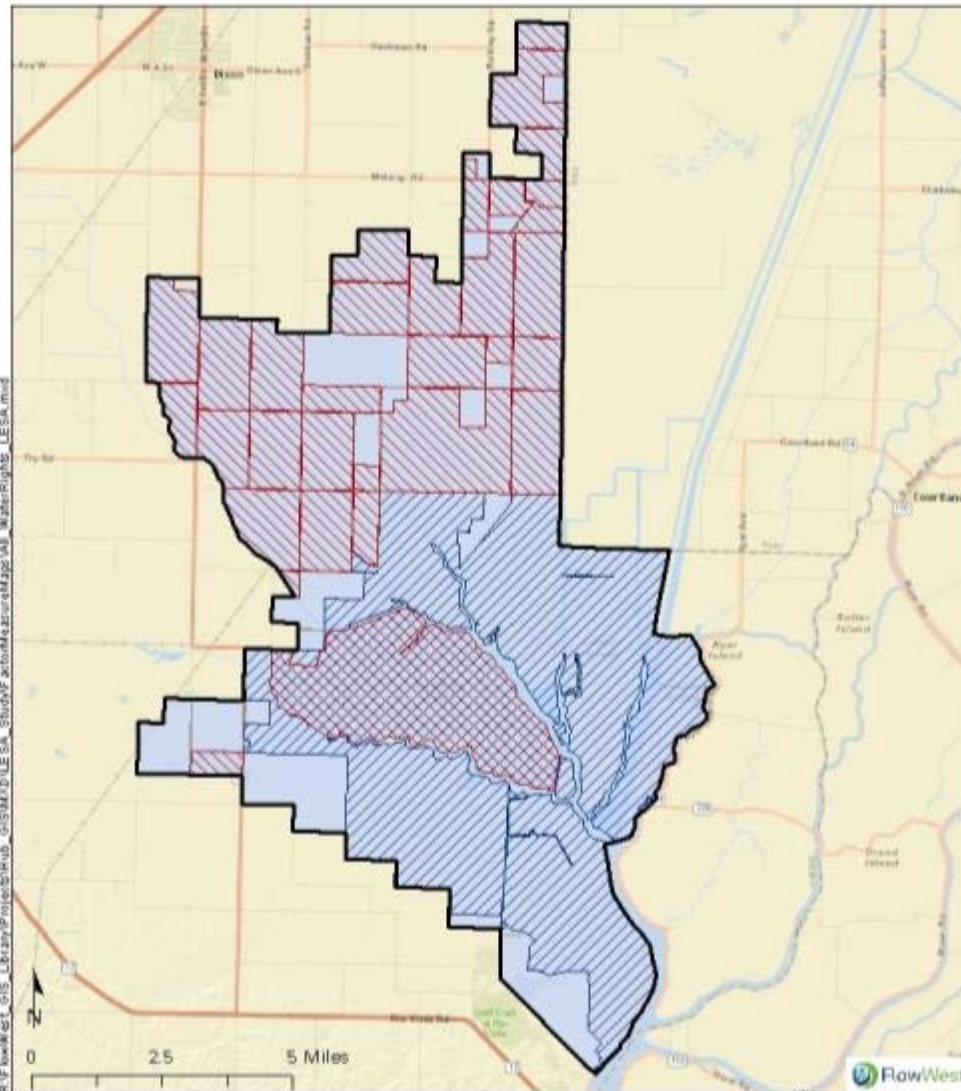
 LESA Boundary
 Incorporated Areas (2014)

Rural Location

Lands symbolized with a "1" are **beyond** a 1-mile buffer of incorporated areas and are defined by the stakeholder group as rural.

FACTOR 3: WATER RIGHTS MAPS

Learnings: Cache Slough is not replicable



□ LESA Boundary

North Delta Water Agency Water Rights

□ 0

□ 1

Riparian Water Rights

□ 0

▨ 1

Appropriative Water Rights

□ 0

▨ 1

Lands symbolized with a "1" for each category have respective water rights as identified in the NDWA Assessor's Roll.

FACTOR 4: WATER INFRASTRUCTURE USING IRRIGATED LANDS MAP

*Learnings: Data
refinement needed!*

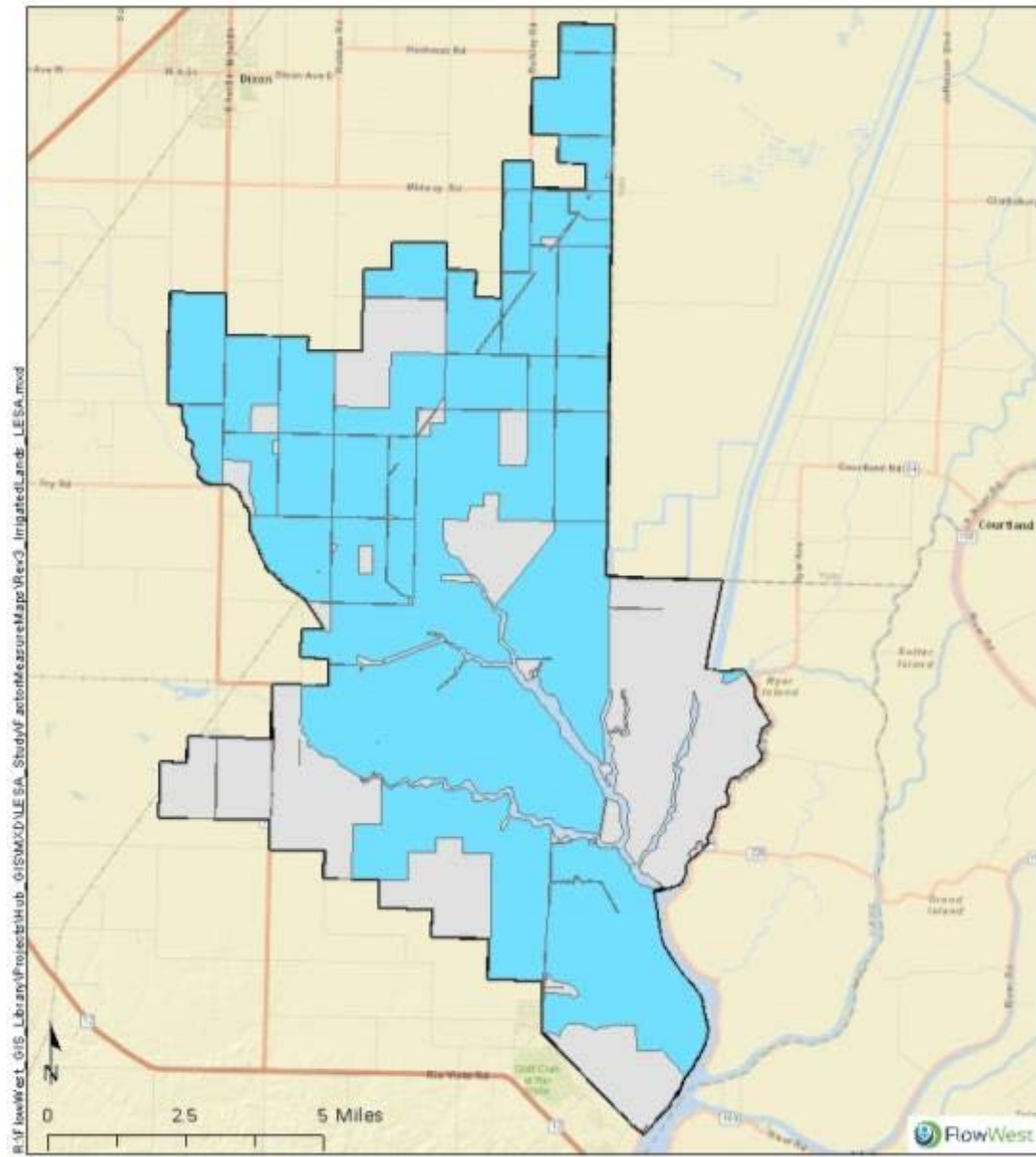
 LESA Boundary

Irrigated Lands

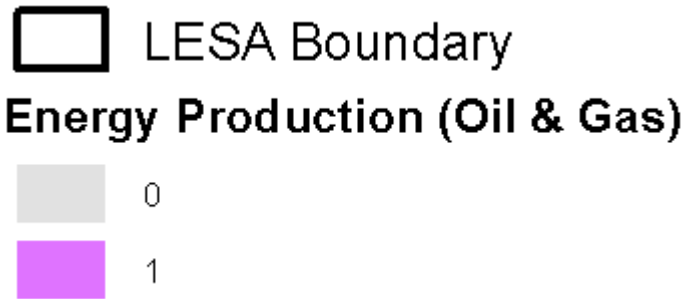
 0

 1

Lands symbolized with a "1" are irrigated or can be, and are therefore assumed to have appropriate infrastructure in place for water delivery and drainage.

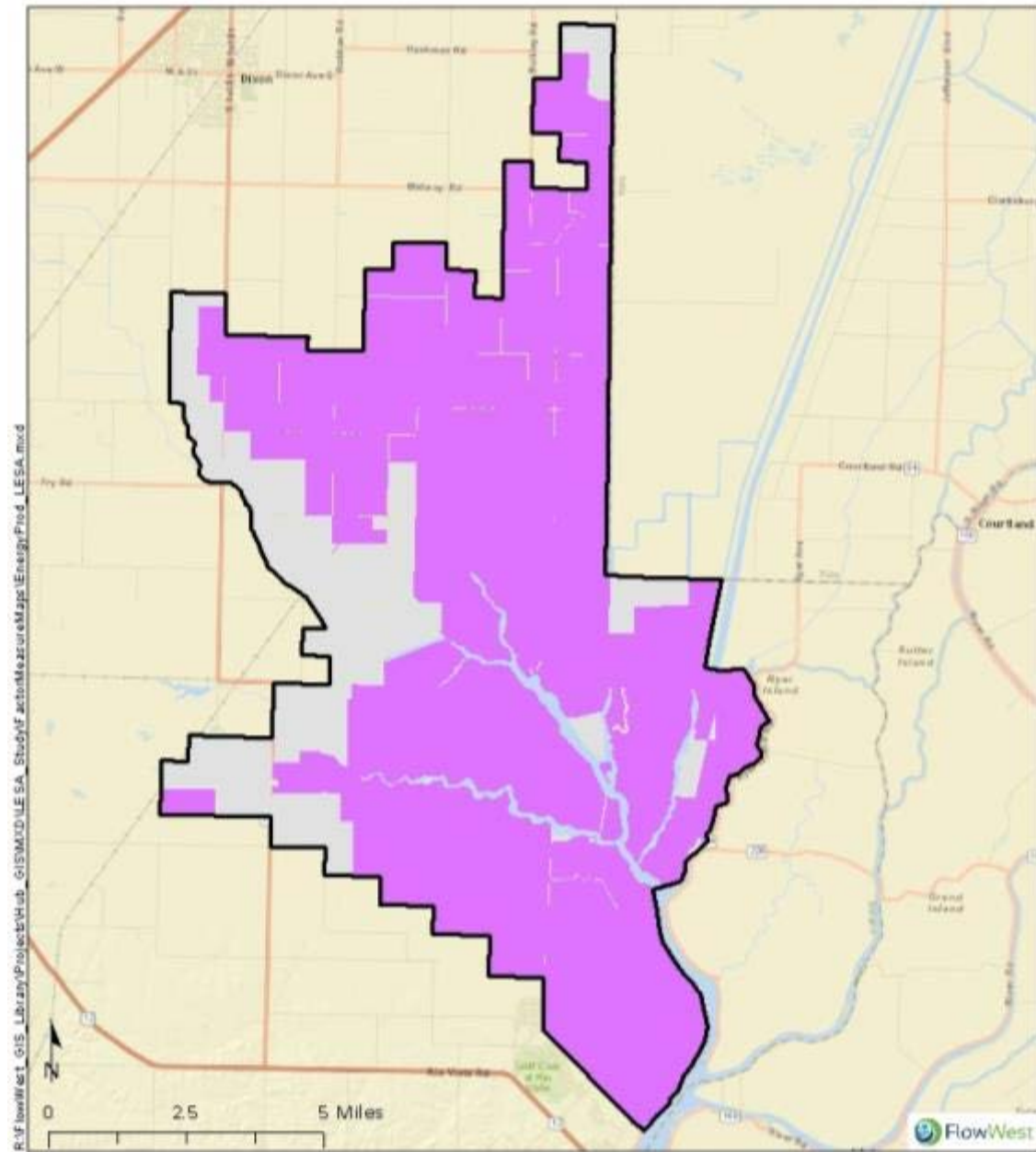


FACTOR 5: ENERGY PRODUCTION MAP



Lands symbolized with a "1" have least one gas or oil well and/or included a portion of a gas field.

Learnings: a lot of stakeholder interest in this compatible value-added activity.

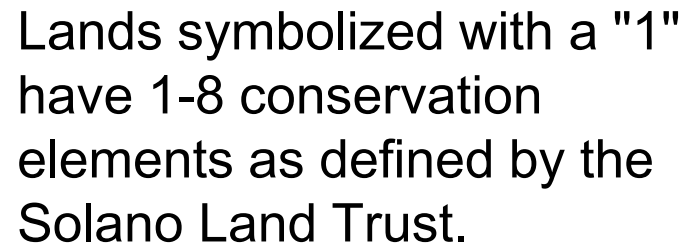


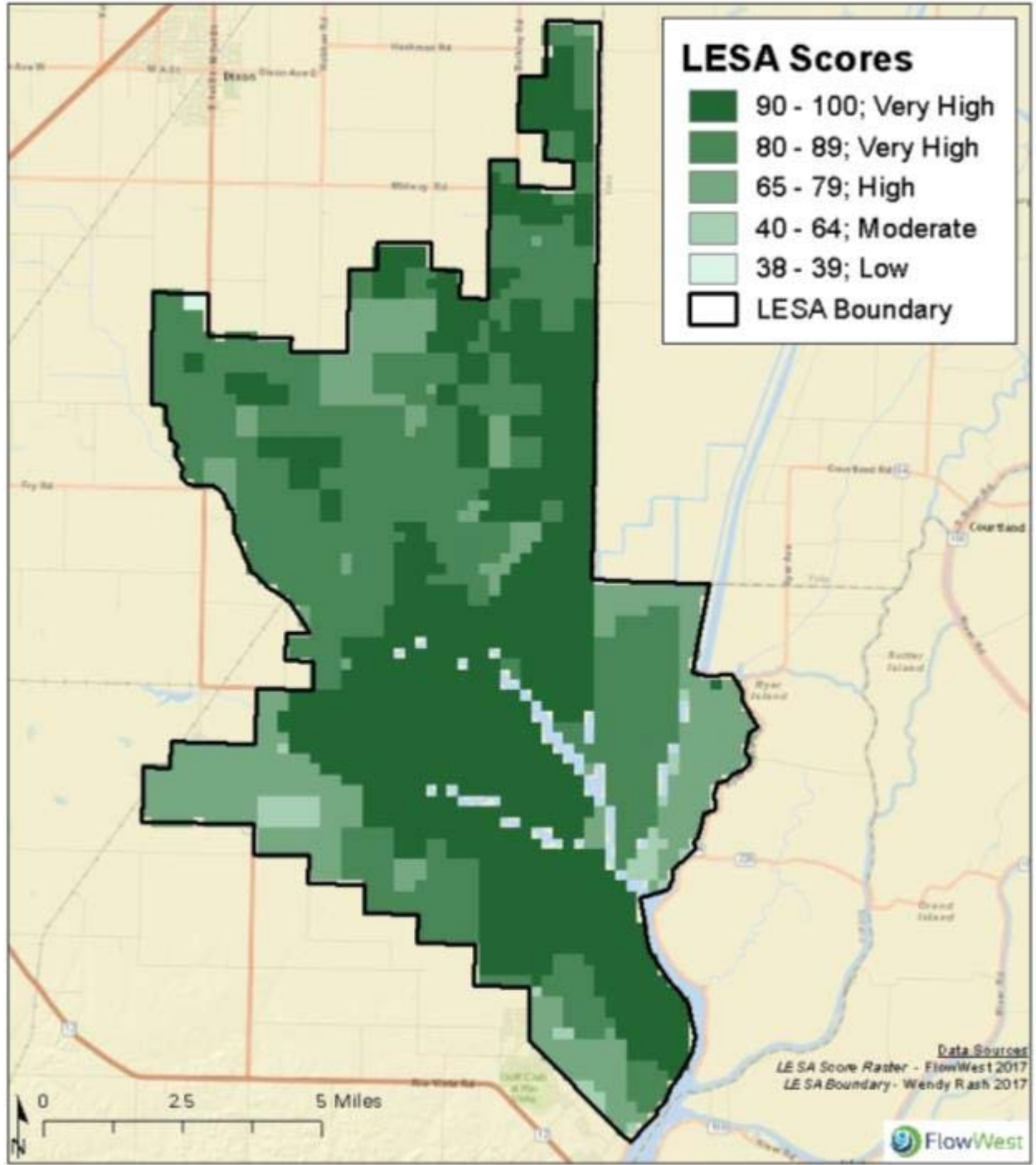
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 LESA Boundary

**Wildlife Habitat Compatible
with Agricultural Lands**

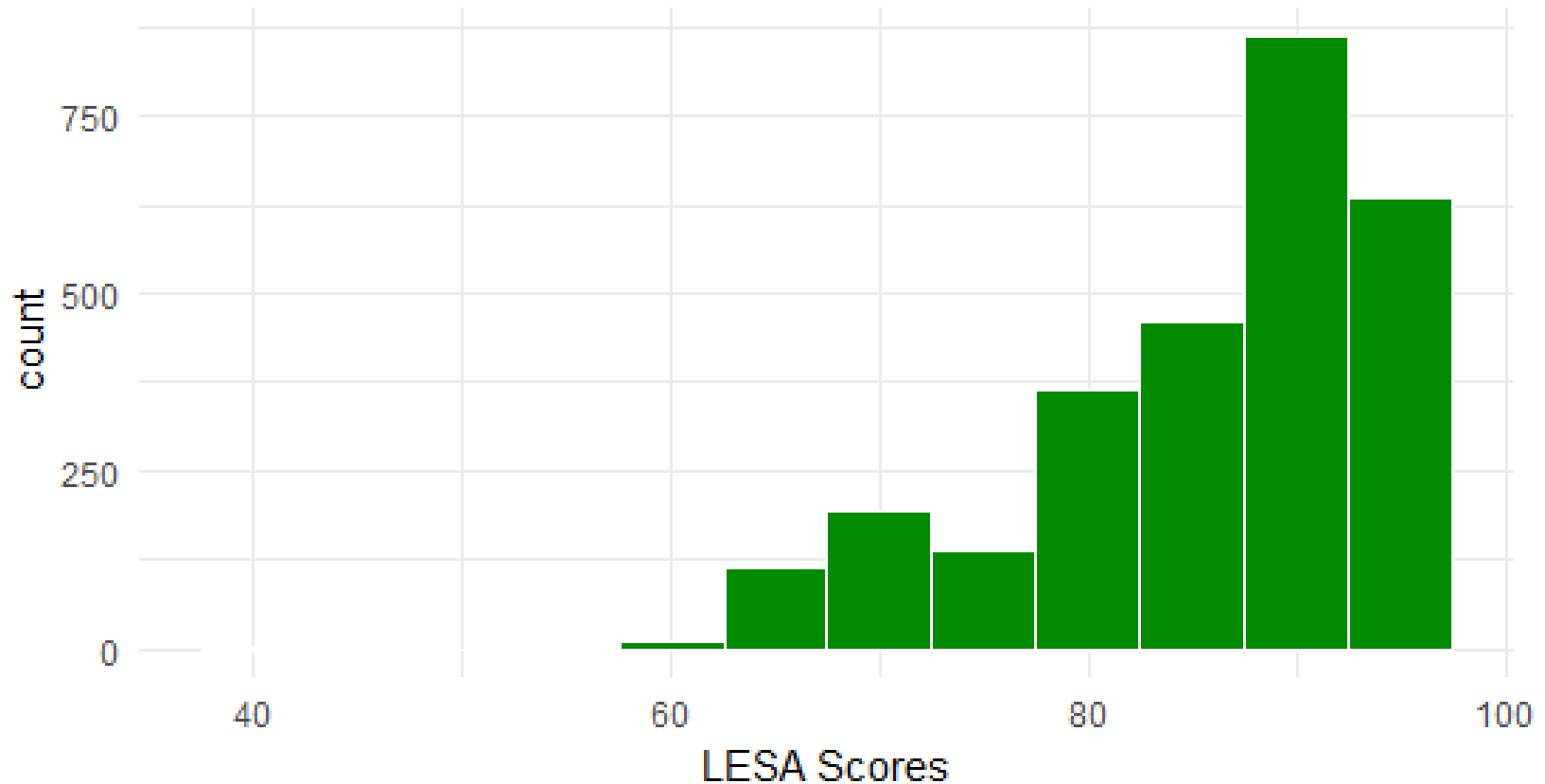




CACHE SLOUGH LESA SCORES

DISTRIBUTION OF CACHE SLOUGH LESA SCORES

Histogram of 1000-ft pixel LESA Scores



Minimum: 38.4	Mean: 85.7	Third quartile: 92.3
First quartile: 80.8	Median: 88.3	Maximum: 97.3

LESSONS LEARNED FROM STAKEHOLDERS

1. Cache Slough stands out due to water rights and other features, and is impossible to replicate.
2. Changes in land use degrade agricultural system, affect production and impact flood protection systems.
3. Fragmentation affects local agricultural operations, communities, and economy.
4. Ecosystem restoration can affect agricultural viability. Compatible practices needed for land-uses to co-exist.
5. Reduced tax base reduces County revenue and potentially affects services.

LESSONS LEARNED FROM THE LESA TEAM

- Data is the wave of the future.
- Invest time and resources to engage stakeholders, including local agencies and landowners.
- Investing time and resources was worthwhile
- Cache Slough LESA *cannot*
 - analyze regional impacts of land use change.
 - provide scores outside Cache Slough
- Cache Slough LESA *can* help identify
 - factor values that are likely similar across the County.
 - good mitigation strategies for land conversion.



A serene landscape photograph capturing a sunset. The sun is a bright, glowing orb positioned centrally in the upper half of the frame, just above a range of low, hazy mountains. The sky is a gradient of warm colors, from deep orange near the horizon to a lighter, hazy pink and purple at the top. In the foreground, a calm body of water reflects the sun's light, creating a shimmering path of light. To the left and right of the water, there are silhouettes of trees and a utility pole. A dark, winding road or path runs horizontally across the middle ground, separating the water from the background. The overall mood is peaceful and contemplative.

THANK YOU



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■ Questions?