



Verifying Contract Compliance in the Northern Everglades Payment for Environmental Services Program

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The Northern Everglades Landscape

Open range

Ranching as a businesses

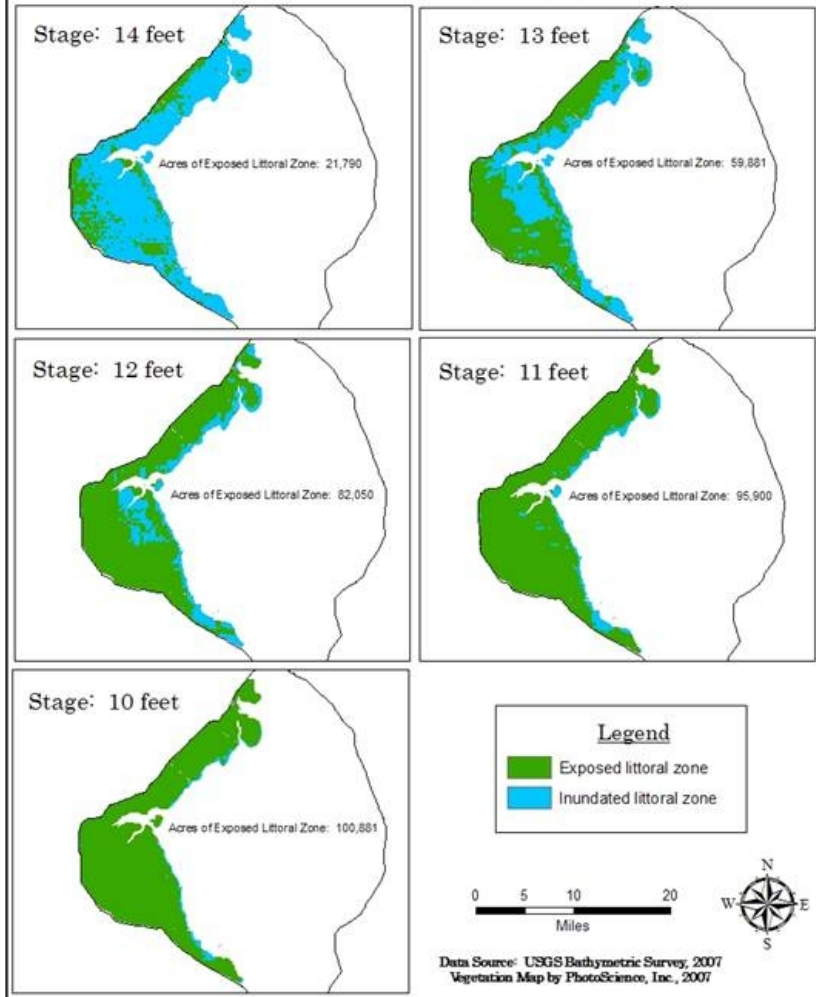
Multiple income sources



The NE Environmental Challenge



Lake Okeechobee Exposed Vegetation by Water Stage:
Stage Contours in Feet (NGVD 29)



Water on Ranchlands in NE

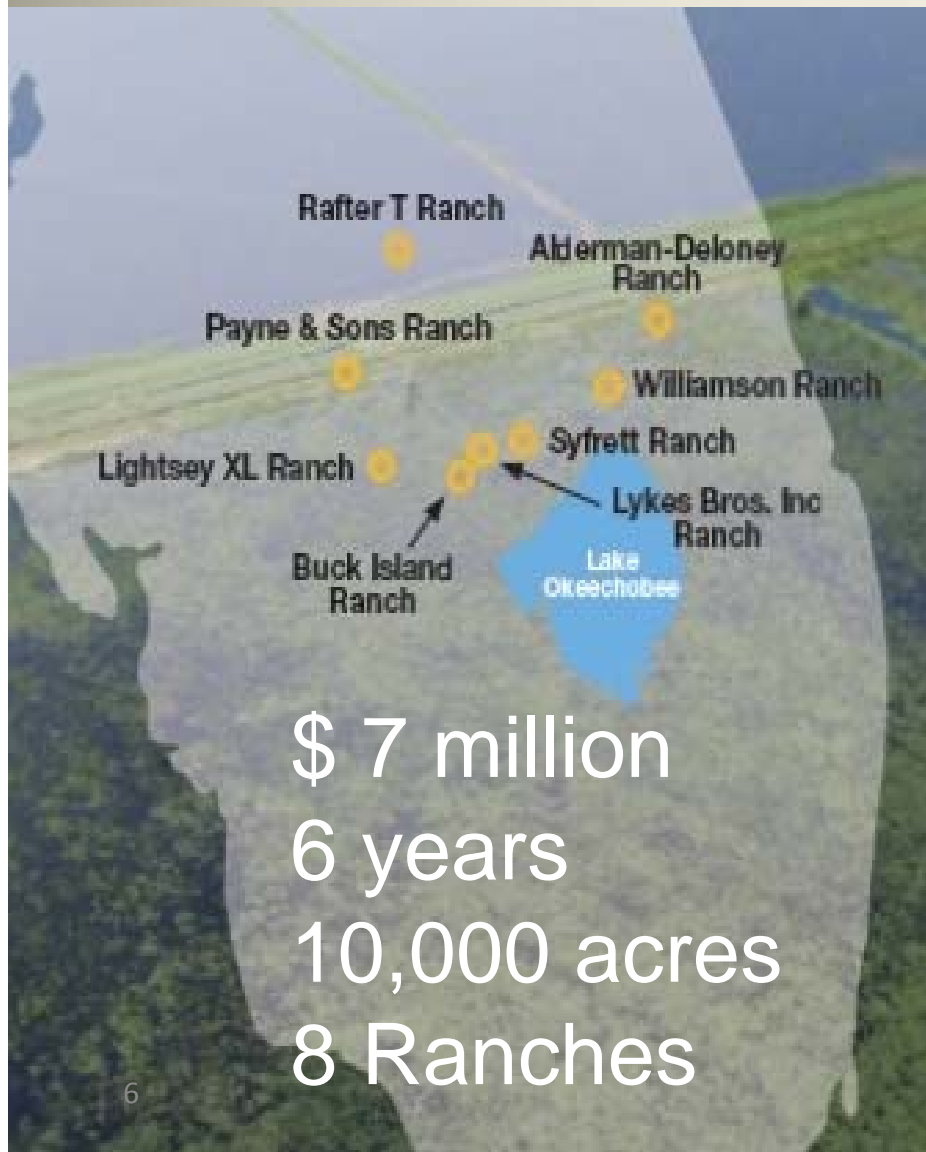
- Ranchers deal with water all the time
- Switch from “drainers” to “retainers”



The Service Defined: Water Retention

- *Defined:* Water held back for a period of time in wetlands, ditches and in the soil profile, with the release of water in a different volume, phase and pathway (seepage) than would be the case without the actions to offer the service.
- *Measured:* The *acre feet* that do NOT flow in the drainage network of the WMA site in a water year with the WMA, as compared with the water that would have flowed without the WMA.

FRESP: Piloting the PES Design

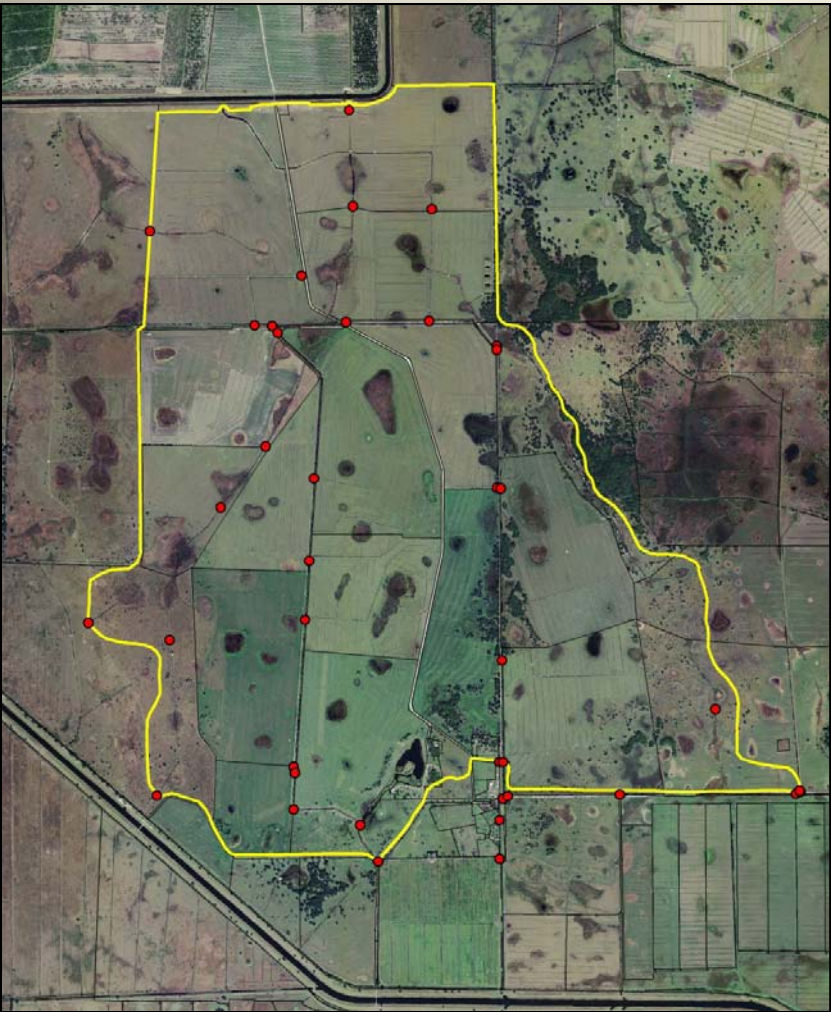


- PES program Essentials
 - Define buyer
 - Contract design
 - Price making
 - Regulatory compliance
 - **Contract verification**

NE Payment for Environmental Services Program: Design Principles

Extensive *working ranch landscapes*, relying on *modification to existing water management structures and strategies*, will enter into *fixed term contracts* to provide *verified water retention* services, *above and beyond regulatory requirements* creating a new *profit center* for ranch enterprises.

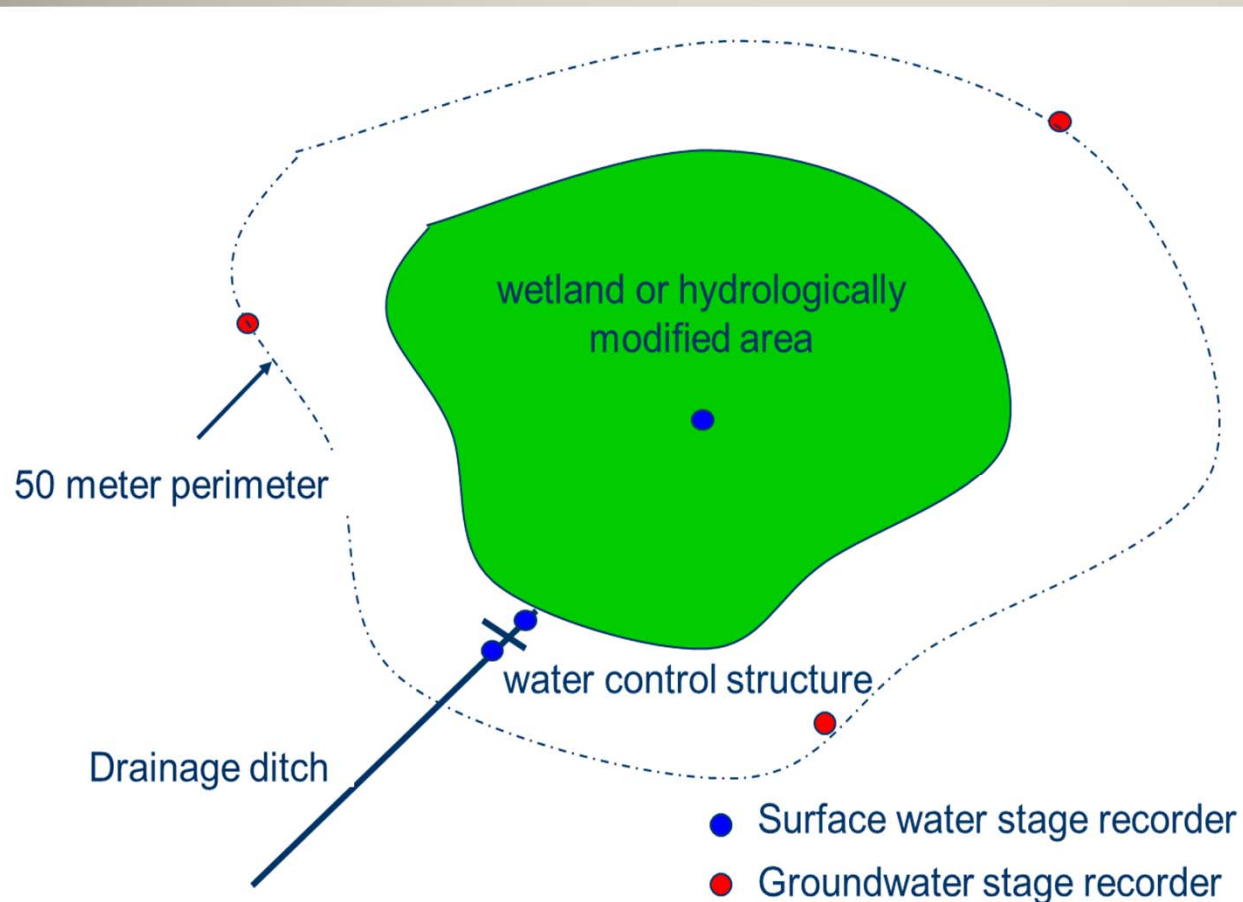
The Service Demonstrated



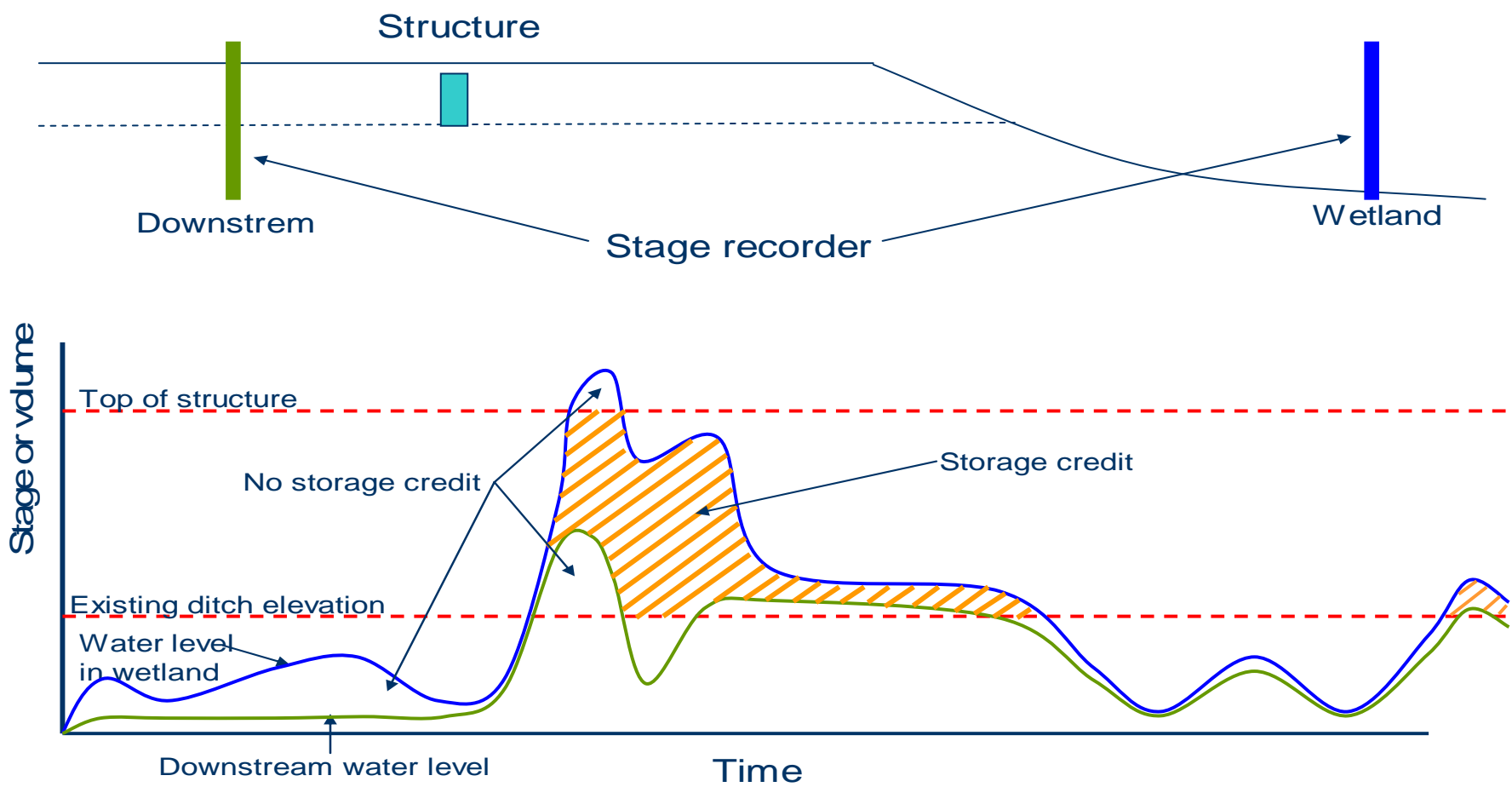
Initial Concept

Measure Water Retention in Real Time

Pay for service provided at end of contract specified accounting period (ex. quarterly)



Conceptual Hydrograph for Crediting Water Retained



(b)

Mid-course correction

- Program Requires Payment Certainty
 - For investment planning, a rancher needs a guaranteed minimum annual payment over the contract lifetime regardless of rainfall
 - For budget planning, an agency needs to accurately predict future budget outlays and be able to commit funds to future payments
- Assure payment certainty while still making payment contingent on actual service provision
- The Fix: Contract is for an option, recognizing that service provision is contingent on rainfall

Contract Terms

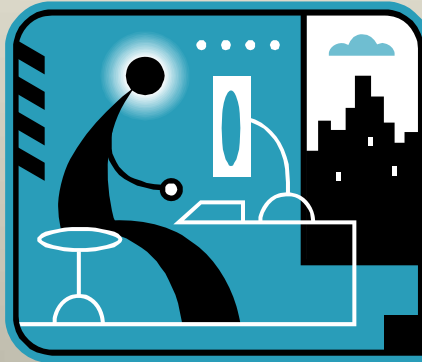
- Agency-Buyer is acquiring ***an option***
 - rancher-seller will retain water not to exceed XXX (specified in contract), and not to be less than pre contract stage.
- Agency-buyer agrees to pay rancher-seller a fixed amount per year for the option to retain water.
- Payment in contract is based on estimated average annual water retention offered by the rancher seller

Estimation of Average Annual Service: Basis for contract

Historical rainfall records



Simulation of stage and volume



Site characteristics



Contract life

95% confident

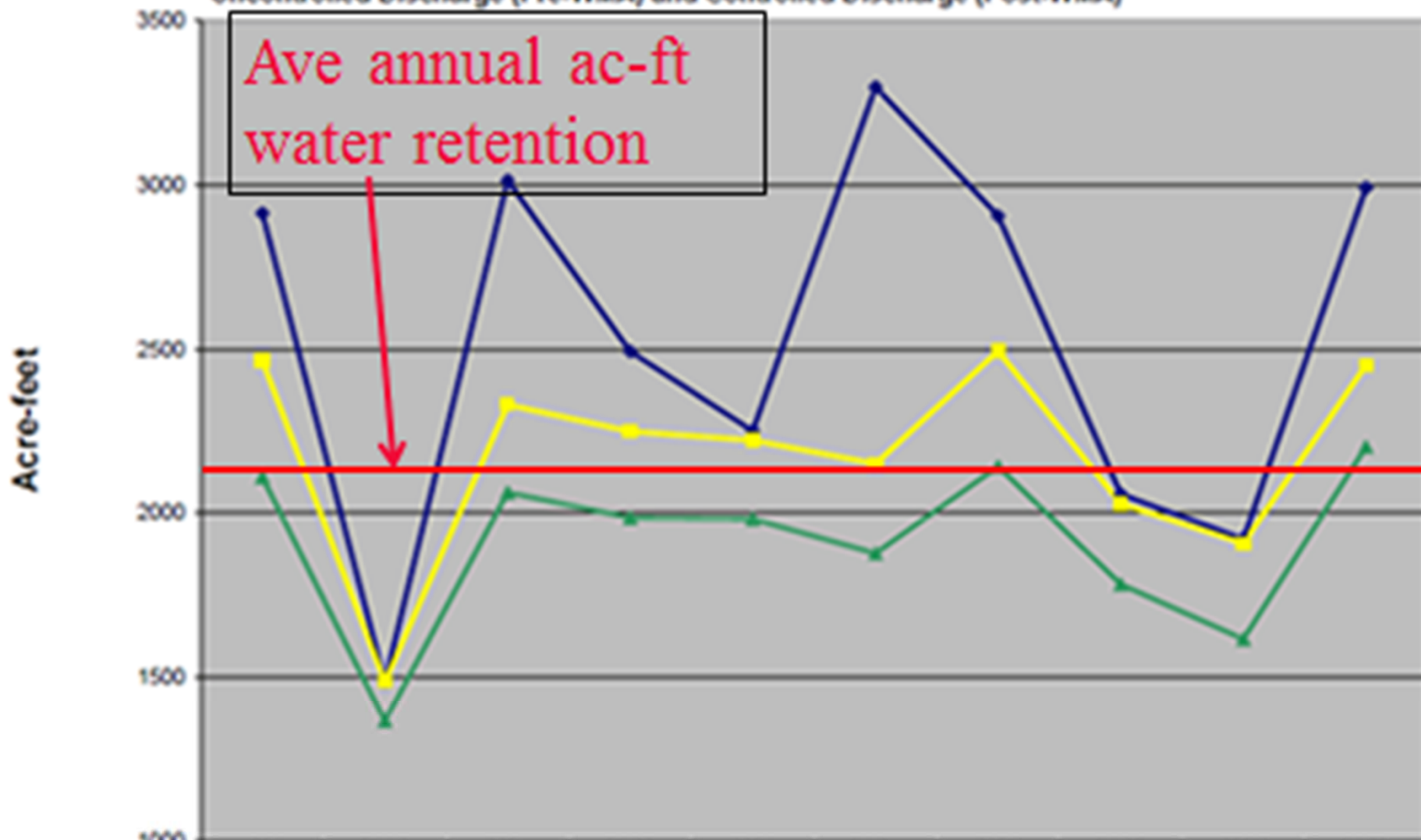


Predicted Water Retained, for a water year.

POTENTIAL WATER RETENTION MODEL
 Williamson Cattle Company - Basin 1
 Annual Retention

Average Annual Retention
 (Post - Pre) = 266 ac-ft
 Average Annual Discharge (ac-ft)
 Pre = 621
 Post = 355

Uncontrolled Discharge (Pre-WMA) and Controlled Discharge (Post-WMA)



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
■ Rainfall	2,914	1,487	3,014	2,493	2,250	3,299	2,907	2,058	1,922	2,992
■ Retention - Uncontrolled	2,110	1,365	2,063	1,966	1,983	1,878	2,142	1,783	1,616	2,202
■ Retention - Controlled	2,465	1,487	2,331	2,249	2,222	2,151	2,494	2,028	1,908	2,451

Contract Compliance Process



THB Service Level Spreadsheet

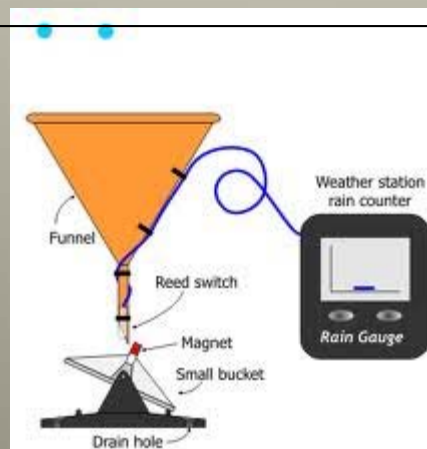
Address	Total Units	Landlord	... Total THB	... Record ID
Units 30, 35, 36 Beach Drive AB1 2CD	3	Anywhere HA	20.00	21
Units 1-10 Beach Drive AB1 2CD	10	Anywhere HA	24.00	22
Units 1-10 & 8190 Coast Road EF1 2GH	20	Somewhere HA	16.00	20
Units 1125 Coast Road EF1 2GH	15	Somewhere HA	10.80	19
..

1 For Record ID 21, a query using postcode has multiple hits

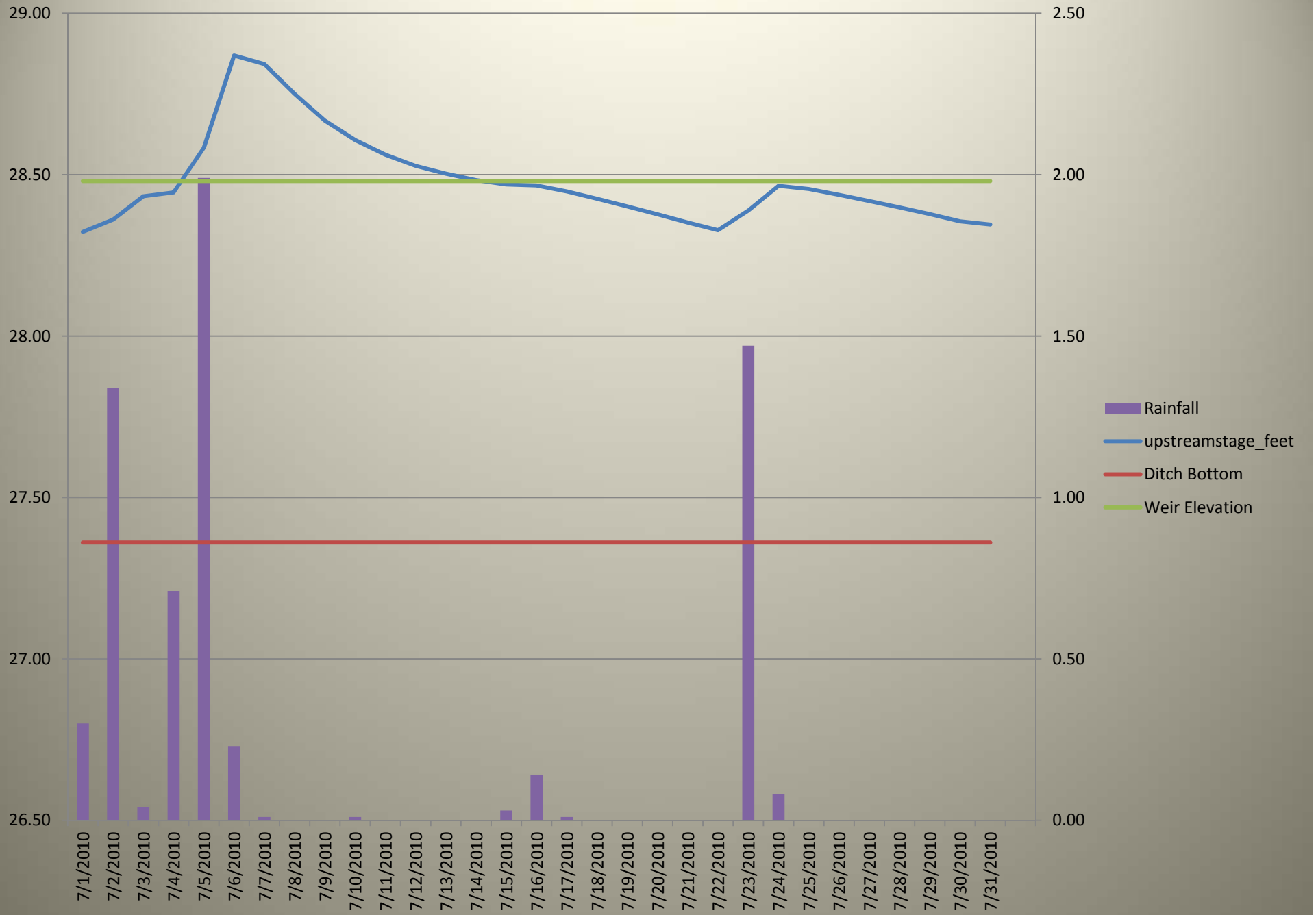
2 Upon inspection of the entire address, three records are assigned the Record ID 21

Transitional Service User Means Schedule

User Surname	User Forename	Address Line 1	Address Line 2	Postcode	NINO	Service Id	Total THB	HB Award	...
Brown	Thomas	Unit 35	Beach Drive	AB1 2CD	NY333333C	21	20.00	14.00	...
Jones	Richard	Unit 1	Beach Drive	AB1 2CD	NY555555E	21	24.00	28.00	...
Newton	Sally	Unit 4	Beach Drive	AB1 2CD	NY888888H	21	24.00	23.50	...
Sinclair	Frank	Unit 36	Beach Drive	AB1 2CD	NY222222B	21	20.00	6.00	...
Watkins	Anne	Unit 30	Beach Drive	AB1 2CD	NY111111A	21	20.00	60.00	...
..

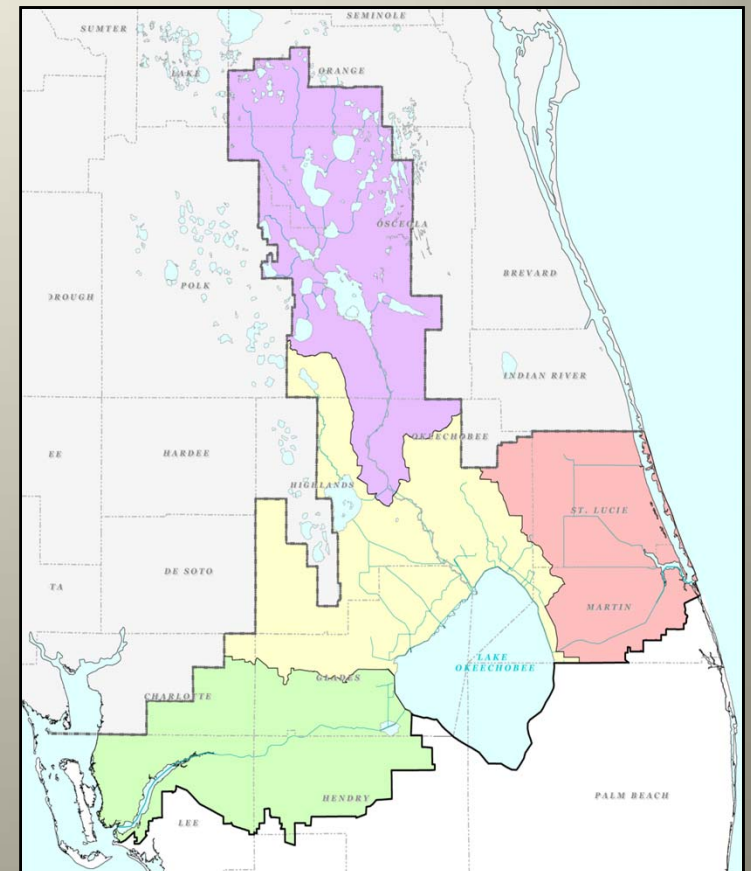


Monthly Report



Northern Everglades PES Program

- First Solicitation Jan 2011
 - 14 proposals/8 projects selected
 - Contract obligation of \$7 mil over 10 yr life of contract
- Preparing for 2nd solicitation – April 2012



Program Growth and the Verification Challenge

- Assume
 - 2.0 af/ ac of retention
 - Target: 300,000 af; implies 150,000 acres under contract.
 - Average contract is for 3000 acre parcel.
 - 500 contracts in place at any time
- Challenge : Assurance of compliance with multiple contracts
 - Verification with rapid enforcement
 - Cost of data QA/QC and enforcement

Addressing the Verification Challenge

- Continue to simplify what is required for verification
- Use of emerging technology for
 - instrumentation and data transmission
 - QA/ QC and data management
- Increase staffing for compliance review and enforcement



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