

The Refuge Water Supply Program



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2013 Annual Work Plan

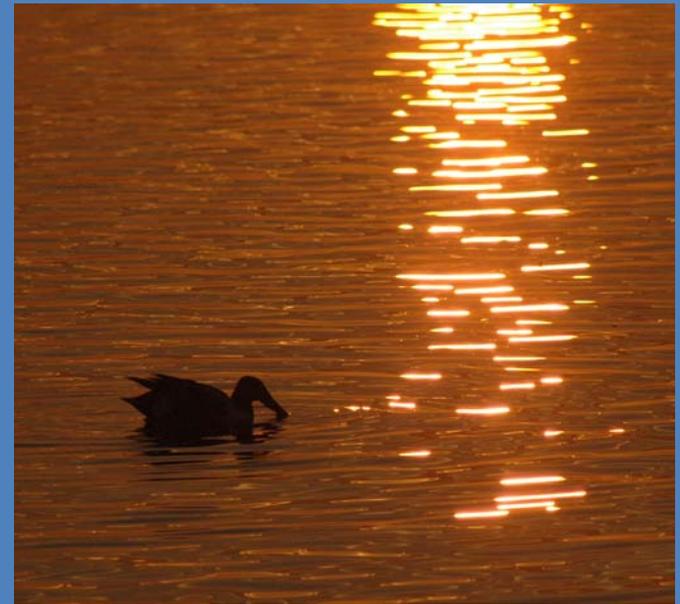
CVPIA 3406 (b)(3) & (d)(1)(2)(5)



Refuge Water Supply Program (RWSP)

GOAL:

Provide firm water supplies of suitable quality to maintain and improve wetland habitat areas on certain Central Valley wildlife refuges.



Refuge Water Supply Program (RWSP)

Three main components:

- Facilities Construction
- Water Acquisition
- Water Conveyance



CVPIA Refuges

19 CVPIA Units

- 12 Federal National Wildlife Refuges/Units
- 6 State Wildlife Areas/Units
- 1 Privately-managed complex within the Grassland Resource Conservation District

14 of 19 CVPIA refuge units already in place prior to passage of the Act

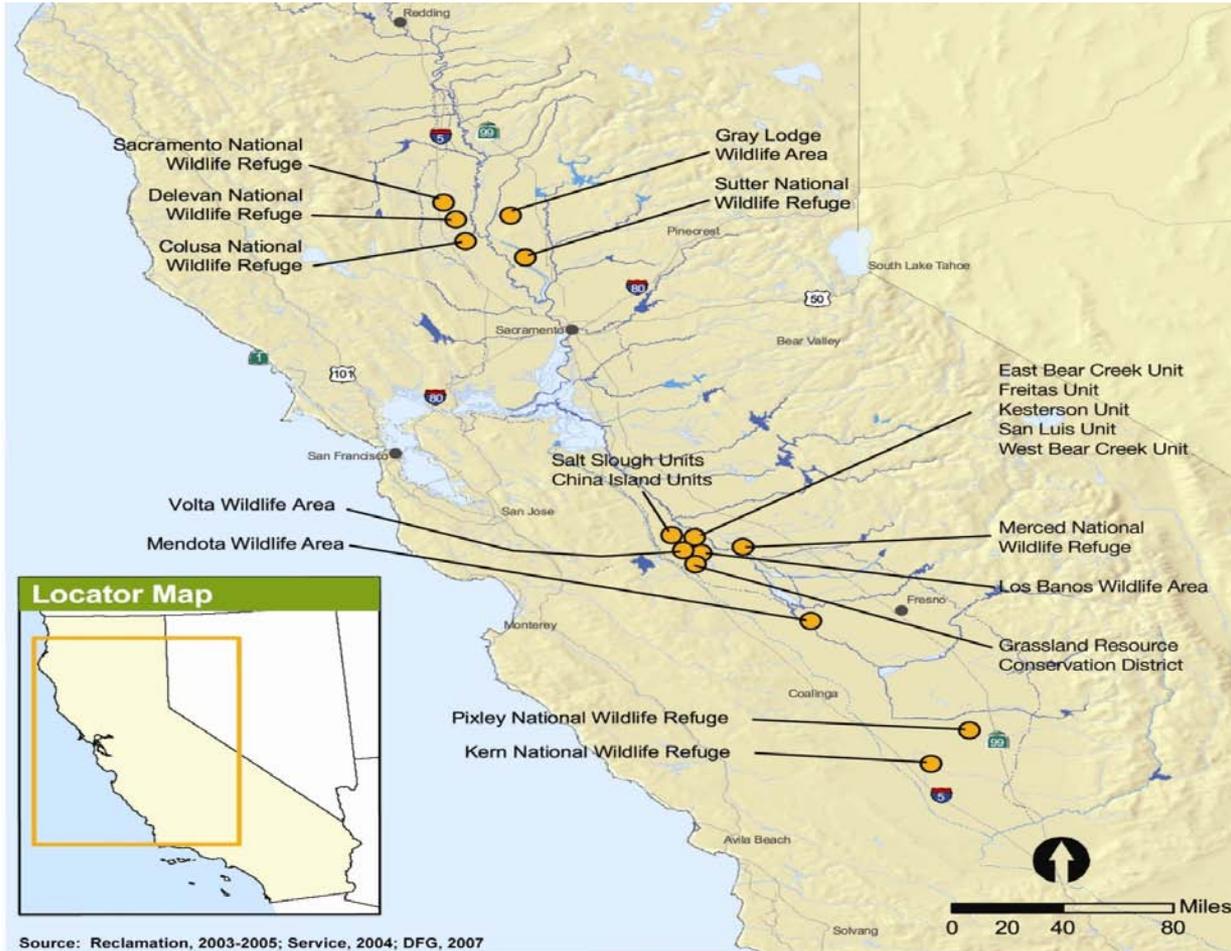
- Five properties acquired, restored and enhanced after 1992

5 CVPIA refuge units in the Sacramento Valley;

14 in the San Joaquin Valley



CVPIA Refuges



Central Valley Refuges

Sacramento National Wildlife Refuge

Delevan National Wildlife Refuge

Colusa National Wildlife Refuge

Gray Lodge Wildlife Area

Sutter National Wildlife Refuge

Pinecrest

South Lake Tahoe

Sacramento

Bear Valley

San Francisco

Salt Slough Units
China Island Units

East Bear Creek Unit
Freitas Unit
Kesterson Unit
San Luis Unit
West Bear Creek Unit

Volta Wildlife Area

San Jose

Mendota Wildlife Area

Merced National Wildlife Refuge

Los Banos Wildlife Area

Grassland Resource Conservation District

Fresno

Monterey

Coalinga

Pixley National Wildlife Refuge

Kern National Wildlife Refuge

Avila Beach

Locator Map



RWSP Partners

Bureau of Reclamation

U.S. Fish & Wildlife Service

California Department of Fish & Game

Grassland Resource Conservation District

Central Valley Joint Venture



RWSP Interagency Management Team

Bureau of Reclamation

Tim Rust
Fish & Wildlife Program Manager

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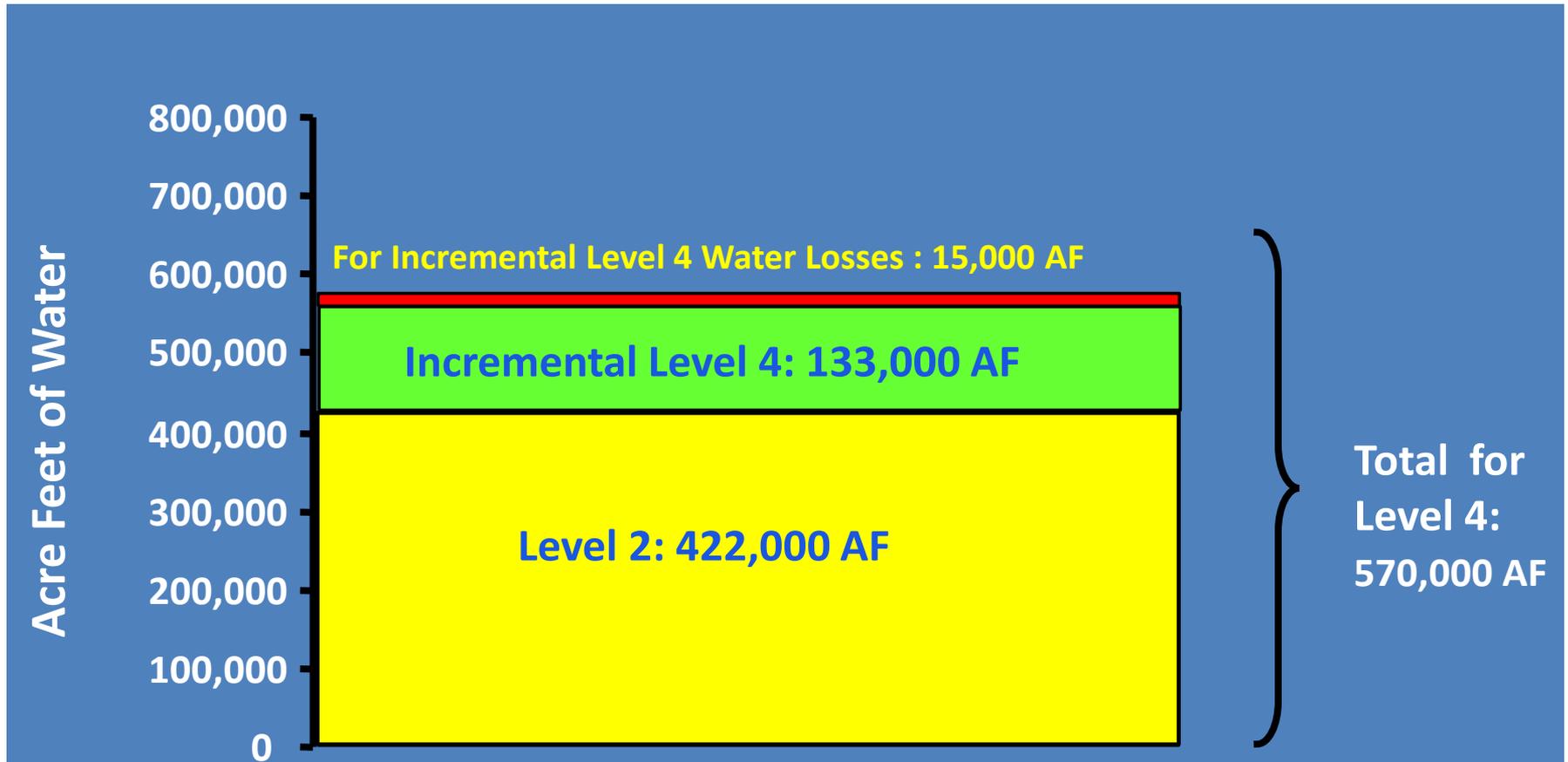
Ricardo Ortega
General Manager

Central Valley Joint Venture

Dan Taylor



Defining Level 2, Incremental Level 4, and Level 4 Refuge Water Supply



RWSP Status

- 15 of 19 refuges are able to receive full level 4/ 32 of 46 construction projects completed
- Biggs-West Gridley Water District design & construction activities
- 9 long-term conveyance agreements
- Annual Incremental Level 4 water purchases
- Development of Technical Committees
 - ✓ Development of a working long term strategy for meeting CVPIA's mandate
 - ✓ Augmentation of existing Level 4 water supplies south of Delta



RWS Status

Refuges Not Able to Receive Full Level 4 Water:

- Gray Lodge WA
- Mendota WA
- Pixley NWR
- Sutter NWR



RWSP FY 2012 Accomplishments

Facilities Construction

- East Bear Creek Pumping Plant/Pipeline
 - Completed the pumping plant platforms installation
 - On-going repairs to pumping plant due to mechanical and electrical control failures
- Volta WA
 - Completed construction of 2 wells
- Gray Lodge WA and Pixley NWR
 - On-going construction for 5 ground water wells (ARRA funding)



RWSP FY 2012 Accomplishments - Incremental Level 4 Water Acquisitions

Contractor	Source	Quantity (AF)
San Joaquin River Exchange Contractors	Surface Water	25,000
Grassland Water District	Ground Water	8,200
Merced Irrigation District	Surface Water	3,923
Santa Clara Valley Water District	Surface Water	10,000
TOTALS \$9,018,455		47,123 Acre-feet



RWSP FY 2012 Accomplishments

Refuge Conveyance

- Delivered 403,462 AF of Level 2 Water
 - 356,193 AF -- Central Valley Project (CVP) Yield:
 - 47,269 AF -- Diverse (Non-CVP) Sources
- Delivered 57,825 AF of Incremental Level 4 Water
- Continued water quality monitoring at Gray Lodge WA and Grasslands Ecological Area
- Continued work on the design for the North Grasslands Water Conservation & Water Quality Control Project
- Completed installation of 4 flow meters in Bear Creek to determine conveyance loss analysis
- Provided funding for temporary pumping, fuel, and labor at Sutter NWR



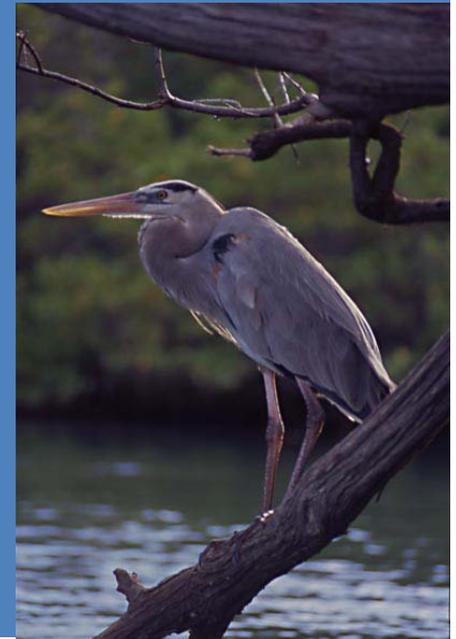
RWSP FY2013 Construction Activities

- East Bear Creek on-going improvement activities
- Gray Lodge WA Wells (ARRA funded)
- Pixley NWR Wells (ARRA funded)
- Volta WA Wells discharge outlet and flowmeter improvement plan



RWSP FY 2013 Water Acquisition Activities- Potential Sources

- San Joaquin River Exchange Contractors
- Grassland Water District
- Panoche Water District
- Merced Irrigation District
- New & Rehabilitated ARRA Wells
- Friant (SJRRP Recaptured water)
- Other Willing Sellers



RWSP FY2013 Conveyance Activities

- Convey new source of Incremental Level 4 from Los Banos WA for south of delta refuges
- Continue funding for temporary pumps at Sutter NWR
- Convey approximately 377,503 AF Level 2
- Convey 34,388 AF of Incremental Level 4, depending on Reclamation's revised water supply allocations for WY2013
- Evaluate flow data at East Bear Creek NWR to determine losses in Bear Creek
- Complete Phase II (design) of North Grasslands Water Conservation & Water Quality Control Project



RWSP Monitoring Projects

- Gray Lodge Wildlife Area
 - Quality of delivered groundwater and surface water
- Grassland Ecological Area (GEA)
 - Real-time water quality
 - Measuring volume and salt load of sources entering and draining the GEA
 - Giant garter snake monitoring



RWSP FY 2013 Budget

- Reclamation and U.S. Fish & Wildlife Service Labor = \$1,378,945
- Refuge Construction = \$453,215
- Water Acquisition = \$7,778,836
- Water Conveyance = \$7,899,004
- Water Monitoring = \$74,000

Total \$17,584,000



A horizontal row of four circular icons on a light tan background. From left to right: a blue silhouette of a fish jumping out of the water; a blue silhouette of a bird standing in water with ripples; three blue wavy lines representing water; and a blue silhouette of a plant with long, thin leaves.

Central Valley Project Improvement Act



Refuge Biological Benefits



Central Valley Wetlands

- Managed Wetlands Require Water of Adequate:
 - Volume
 - Quality
 - Timing



CVPIA Refuge Biological Benefits

- Year-around water supplies
 - Long-term management planning
 - Accurate habitat management evaluations
 - Water for on-refuge restoration projects
 - Increased hunting/birding opportunities
 - Increase in diversity of habitat and wildlife species use



Early Fall Habitat

Benefit to early migrants such as white-fronted geese and northern pintails

May be only quality habitat available in Valley





Early Fall Habitat

Since CVPIA, a dramatic increase in sandhill crane use at Pixley NWR:

- 200 in 1992
- 2,000 in 1993
- 5,100 in 2001
- 6,500 in 2006
- 8,000 in 2011



Early Fall Habitat

- Grasslands

Recognized WHSRN area of international importance to shorebirds





Mid-Winter Maintenance Flows

Improved Water
Quality

Reduction in Avian
Disease

Merced NWR – Ross' Geese
fattening up in March and April
before the long flight north



Late Winter Staging Habitat

Critical to birds
preparing to migrate
north to breeding
grounds

Riparian Habitat

Vital to Neo-tropical birds
and colonial waterbirds





Food Plant Irrigations

Critical source of
carbohydrates for
wintering waterfowl



Spring and Summer Breeding Habitat

Improves waterfowl
breeding habitat and nest
success

Cinnamon Teal Broods, Delevan NWR



A photograph of a White-faced Ibis standing in a shallow, muddy pond. The bird has a long, straight, pinkish-brown bill and a white face. Its body is covered in brown and black feathers. Another ibis is visible in the background, partially obscured. The water is shallow and muddy, with some green grass and reeds growing around the edges.

White-faced
Ibis



Spring and Summer Breeding Habitat

Kern NWR - Tri-colored blackbird habitat and nest success improved greatly by the management of spring and summer water



Spring and
Summer Breeding
Habitat



Year-round Waterfowl Habitat Needs



1986 North American Waterfowl Management Plan:

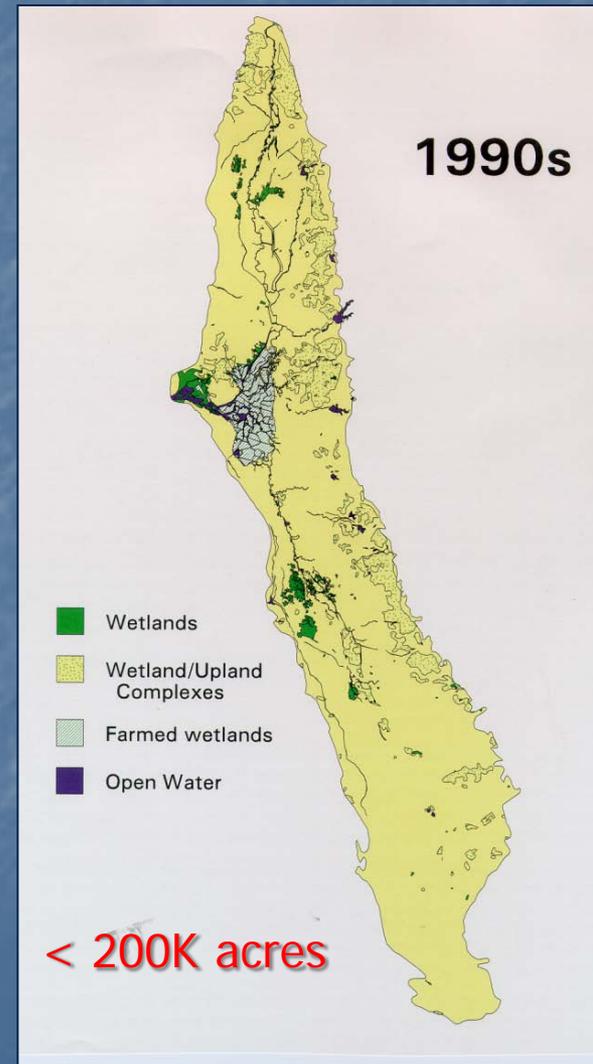
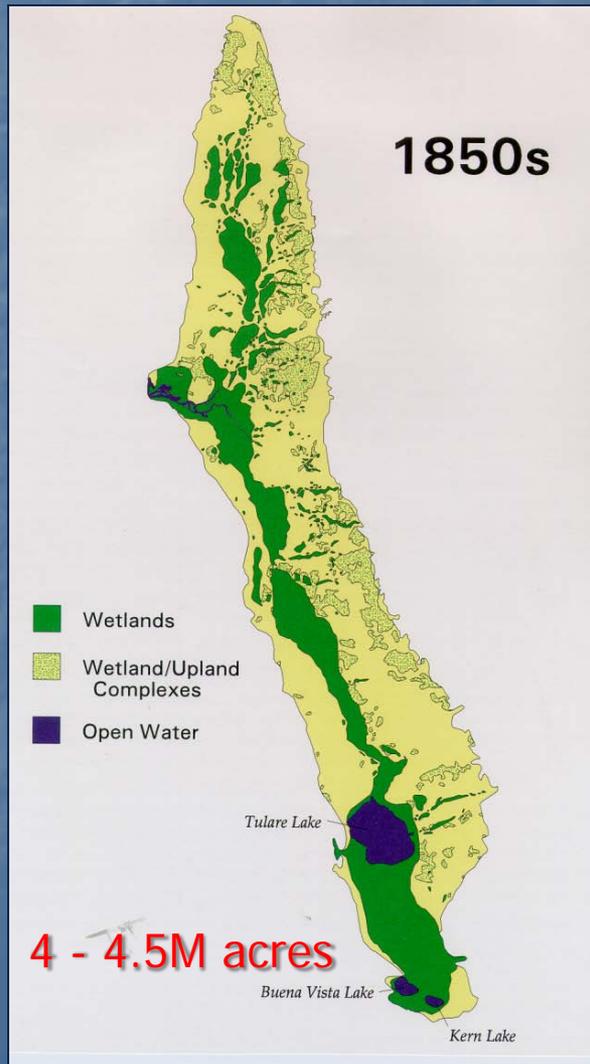
Primary and
Secondary Areas of
Continental
Importance to
Waterfowl

	Primary
	Secondary

Central Valley



Central Valley Wetlands Decline





Central Valley Wetland Acres

1850:	4,000,000
1920:	1,200,000
1935:	600,000
1988:	150,000
2008:	260,000

Less than 5% of the historical wetland acreage remains to support 20% of North America's waterfowl population.



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