

## Refuge Water Supply Program

The Refuge Water Supply Program (RWSP) was created by the 1992 Central Valley Project Improvement Act (CVPIA) to acquire water for 19 wetland habitat areas in the Central Valley. The RWSP's primary objective is to acquire and deliver water to the wetland habitat areas that is of appropriate quantity and quality with timing and flow that will provide the desired benefits. The RWSP also funds infrastructure improvements to achieve this goal.

The RWSP established target water supply levels for each of the wetland habitat areas. Some habitat areas will need investments to improve or develop necessary infrastructure and/or new wheeling agreements, water transfers, exchanges or other water management mechanisms to receive full supplies. Below are the remaining water and funding needs for the habitat areas to achieve CVPIA water supply goals.

	<b>Water Need (af)</b>	<b>Infrastructure Funding Need</b>
<b>Sacramento Valley</b>		
Sacramento National Wildlife Refuge	-	\$ -
Delevan National Wildlife Refuge	-	\$ -
Colusa National Wildlife Refuge	-	\$ -
Sutter National Wildlife Refuge	15,900	\$ *
Gray Lodge Wildlife Area	8,600	\$ -
<b>San Joaquin Valley</b>		
San Luis Unit	-	\$ -
West Bear Creek Unit	3,200	\$ -
East Bear Creek Unit	9,800	\$ *
Kesterson Unit	-	\$ -
Freitas Unit	-	\$ -
Merced National Wildlife Refuge	-	\$ *
Kern National Wildlife Refuge	7,200	\$ -
Pixley National Wildlife Refuge	4,700	\$ 12,000,000
Volta Wildlife Area	2,700	*
Los Banos Wildlife Area	4,600	\$ -
China Island Unit	1,400	\$ -
Salt Slough Unit	1,300	\$ -
Mendota Wildlife Area	1,400	*
Grassland Resource Conservation District	19,700	\$ -
<b>Subtotal</b>	<b>80,500</b>	
<i>Estimated average 15% carriage loss</i>	<i>12,100</i>	
<b>Total</b>	<b>92,600</b>	<b>\$ *</b>

\*Cost estimate needs to be developed

## Assumptions and Questions (•)

### **Sacramento Valley**

Sacramento NWR: Can physically receive full L2 water allocation. IL4 contract quantity is 3,600 AF, which can be supplied from USBR's permanent acquisitions of 12,300 AF unless shortages are imposed.

Delevan NWR: Can physically receive full L2 water allocation. IL4 contract quantity is 9,050 AF, which can be supplied from USBR's permanent acquisitions of 12,300 AF unless shortages are imposed.

Colusa NWR: Can physically receive full L2 water allocation; IL4 contract quantity is zero.

Sutter NWR: Average L2 deliveries (2002-2016) were 60% due to infrastructure limitations. IL4 contract quantity is 6,500 AF and is not delivered. Average full L4 need is 15,930 AF (rounded down in the table). If conveyance infrastructure is achieved, need will drop to 6,500 AF (or less).

- What is the estimated infrastructure cost to achieve conveyance of L2 water through RD 1004?

Gray Lodge WA: Average L2 deliveries (2002-2016) close to 90%, and presumed to be 100% after completion of funded infrastructure improvements. IL4 contract quantity is 8,600 AF and is not delivered.

### **San Joaquin Valley**

San Luis Unit: Can physically receive full L2 water allocation, and IL4 allocation of 5,650 AF is also provided from CVP supplies as "replacement" water under the refuge contract.

West Bear Creek Unit: Can physically receive full L2 water allocation. IL4 contract quantity is 3,603 AF and the average IL4 need is 3,153 AF (rounded up in the table).

East Bear Creek Unit: Average L2 deliveries (2002-2016) were 40% due to lack of conveyance for CVP water and inadequate non-CVP supplies. IL4 contract quantity is 4,432 AF and is not delivered. Average full L4 need is 9,832 AF (rounded down in the table).

- There is a recurring annual budget item for pump station repair and maintenance. What is the estimated infrastructure cost to permanently resolve the pump station problems?

Kesterson Unit: Can physically receive full L2 water allocation, and IL4 allocation of 6,500 AF is also provided from CVP supplies as "replacement" water under the refuge contract.

Freitas Unit: Can physically receive full L2 water allocation, and IL4 allocation of 1,763 AF is also provided from CVP supplies as "replacement" water under the refuge contract.

Merced NWR: Average deliveries (2002-2016) were close to full L4. Merced ID is required to deliver 15,000 AF under a condition in its FERC license, but does not do so, and the recent relicensing EIS/EIR requires development of a plan for full delivery. These delivery deficits, plus water to achieve full L4 deliveries of 16,000 AF, are made up through groundwater pumping.

- There is recent discussion of groundwater well problems at the refuge, plus uncertainty about what infrastructure upgrades are required to allow Merced ID to make full deliveries on schedule. What is the estimated infrastructure cost to resolve these problems?

Kern NWR: Can physically receive full L2 water allocation. IL4 contract quantity is 15,050 AF and the average IL4 need is 7,157 AF (rounded up in the table).

- Are there infrastructure improvements required at this refuge to maximize water deliveries?

Pixley NWR: Average L2 deliveries (2002-2016) were close to 70% (but increased in recent years). IL4 contract quantity is 4,720 AF and is not delivered. Average full L4 need is 4,706 AF (rounded down in the table).

- Pixley is wholly dependent on inadequate groundwater pumping. Is \$12 million an accurate estimate of the infrastructure cost to provide surface water from the Friant Division to this refuge?

Volta WA: Can physically receive full L2 water allocation. IL4 contract quantity is 6,000 AF, half of which is provided from CVP supplies as “replacement” water under the refuge contract. The average IL4 need is 2,721 AF (rounded down in the table).

- There appears to be a discrepancy in the spreadsheet: Volta’s replacement water is calculated as an IL4 need, but the rest (e.g. Mendota) are not. If Volta’s 3,000 AF of replacement water is *not* provided from the CVP, the average need rises to 5,721 AF.
- Are there infrastructure needs on this refuge?

Los Banos WA: Can physically receive full L2 water allocation. IL4 contract quantity is 8,330 AF and the average IL4 need is 4,596 AF (rounded up in the table).

China Island Unit: Can physically receive full L2 water allocation. IL4 contract quantity is 3,483 AF and the average IL4 need is 1,441 AF (rounded down in the table).

Salt Slough Unit: Can physically receive full L2 water allocation. IL4 contract quantity is 3,340 AF and the average IL4 need is 1,306 AF (rounded down in the table).

Mendota WA: Can physically receive full L2 water allocation. IL4 contract quantity is 11,150 AF, of which 9,094 AF is provided from CVP supplies as “replacement” water under the refuge contract. The average IL4 need is 1,438 AF (rounded down in the table).

- What is the estimate for infrastructure requirements on this refuge?

Grassland RCD: Can physically receive full L2 water allocation. IL4 contract quantity is 55,000 AF and the average IL4 need is 19,659 AF (rounded up in the table).

L2 – Level 2 refuge water supply – signifies the minimum amount of water necessary to maintain wetlands and wildlife habitat benefits based upon water average water deliveries occurring prior to 1992. This amount totals 422,251 acre-feet per year.

IL4 – Incremental Level 4 refuge water supply -- is the additional quantity of water each habitat area needs for optimal wetland habitat development. Some habitat areas will need investments to improve or develop infrastructure necessary to receive full Level 4 supplies.