# SAN LUIS UNIT

# DRAFT ENVIRONMENTAL IMPACT STATEMENT LONG-TERM CONTRACT RENEWAL

Appendix B Major San Luis Unit Facilities and Operations

September 2005

# APPENDIX B – MAJOR SAN LUIS UNIT FACILITIES AND OPERATIONS

### **Delta Cross Channel**

The Delta Cross Channel is a 1.2-mile-long, controlled diversion channel between the Sacramento and Mokelumne Rivers. At the north end of the Delta, the Delta Cross Channel combines with several natural channels to carry water approximately 50 miles to the Tracy Pumping Plant. Reclamation believes that the Delta Cross Channel and the training works in the San Joaquin River are necessary to prevent lesser quality water in the San Joaquin River from reaching the Tracy Pumping Plant.

To combat saltwater intrusion in the Delta and to dilute local pollution, the Delta Cross Channel draws fresh water from the Sacramento River to the Mokelumne River. The diversion also provides an adequate supply of water to the Delta-Mendota and San Luis Canals and improves irrigation supplies in the Delta. During high water, Reclamation closes the control gates of the channel to prevent flood stages in the San Joaquin River section of the Delta. After the flood danger passes, the gates are reopened to allow Sacramento River water through to the Tracy Pumping Plant. The Delta Cross Channel is also operated to improve conditions for out-migrating chinook salmon and steelhead trout. The Operations Criteria and Plan (OCAP) as updated will address important operating criteria affecting the operation of the Delta Cross Channel.

# **Tracy Pumping Plant**

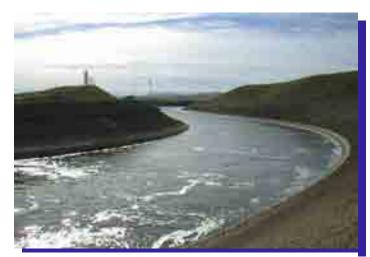
Construction of the Tracy Pumping Plant, which consists of an inlet channel, pumping plant, and discharge pipes, was completed in 1951. Water received from the Delta is lifted 197 feet, pumped through discharge pipes, and carried approximately one mile up an inclined grade to the Delta-Mendota Canal and California Aqueduct. The power to run the pumps is supplied by CVP power plants.



Tracy Pumping Plant Source: San Luis & Delta-Mendota Water Authority

## Delta-Mendota Canal

The Delta-Mendota Canal, the second largest of the CVP waterways, was completed in 1951. It includes both concretelined and earth-lined sections and is about 117 miles in length. It carries water to be used as irrigation supply in the Delta-Mendota Canal and San Luis Unit southeasterly from the Tracy Pumping Plant along the west side of the San Joaquin Valley. It also provides the San Joaquin River Exchange Contractors Water



Delta-Mendota Canal at Mile 4.0 Source: San Luis & Delta-Mendota Water Authority

Authority<sup>1</sup> with water to replace San Joaquin River water stored by the Friant Dam and used in the Friant-Kern and Madera Canals. The canal transports water from the Tracy Pumping Plant to the Mendota Pool, which is controlled by a concrete storage dam constructed in 1919. The Mendota Pool is located at the confluence of the San Joaquin River and the north fork of the Kings River, approximately 30 miles west of Fresno. The Mendota Pool, a non-federal facility, has been owned, operated, and maintained by the

Central California Irrigation District since 1919.

### B. F. Sisk (San Luis) Dam and Reservoir

Completed in 1967, B. F. Sisk Dam is located on San Luis Creek near the City of Los Banos. It is the second largest earthfill dam in the United States and is 382 feet high with a crest length of 18,600 feet. The dam's crest is 30 feet thick and the maximum base width is 2,420 feet.

San Luis Reservoir (also known as the B. F. Sisk Reservoir) is located adjacent to O'Neill Forebay and has a capacity of 2,041,000 acre-feet. The offstream reservoir acts as a major storage reservoir



San Luis Reservoir Source: San Luis & Delta-Mendota Water Authority

for surplus Delta flows. Releases are made through the William R. Gianelli Pumping-

<sup>&</sup>lt;sup>1</sup> The San Joaquin River Exchange Contractors Water Authority includes the Central California Irrigation District, the San Luis Canal Company, the Columbia Canal Company, and the Firebaugh Canal Water District.

Draft Environmental Impact Statement

Generating Plant, utilizing its generating capacity to generate power. The reservoir filled for the first time on May 31, 1969. A hydraulic junction point for both federal and state waters, the reservoir also serves as a forebay for the William R. Gianelli Pumping-Generating Plant. The dam's spillway functions as a safety device to release any excess storage.

### **O'Neill Dam and Forebay**

O'Neill Dam and Forebay are located on San Luis Creek, 2.5 miles downstream from San Luis Dam. Completed in 1967, the dam is a zoned earthfill structure with a height of 87 feet and a crest length of 14,300 feet. The forebay has a capacity of approximately 56,400 acre-feet, of which the 20,000 acre-feet of the forebay act as re-regulator storage necessary to permit off-peak pumping and on-peak generation by the William R. Gianelli Pumping-Generating Plant.

The 2,200-foot-long O'Neill Forebay Inlet Channel conveys water from the Delta-Mendota Canal to the O'Neill Forebay. O'Neill Forebay acts as an equalizing basin for the upper stage dual-purpose pumping-generating plant. Six pumping units of the O'Neill Pumping-Generating Plant lift water 45 to 53 feet into the forebay. When not pumping, these units generate electric power by reversing flow through the turbines. The forebay is used as a hydraulic junction point for federal and state waters.

# **O'Neill Pumping-Generating Plant and Intake Canal**

The O'Neill Pumping-Generating Plant consists of an intake channel leading off the Delta-Mendota Canal and six pumping-generating units. These units operate as pumps to lift water from 45 to 53 feet into the O'Neill Forebay. When water is released from the forebay to the Delta-Mendota Canal, these units operate as generators. When operating as pumps and motors, each unit can discharge 700 cubic feet per second (cfs) and has a rating of 6,000 horsepower. When operating as turbines and generators, each unit has a generating capacity of about 4,200 kilowatts.

# William R. Gianelli Pumping-Generating Plant

The William R. Gianelli Pumping-Generating Plant, located flush against San Luis Dam, operates as both a pumping station and a generating plant. The plant lifts water by pump-turbines from O'Neill Forebay into San Luis Reservoir. During the irrigation season, water is released from San Luis Reservoir through the pump-turbines to the forebay, and energy is reclaimed. Each of the eight



William R. Gianelli Pumping-Generating Plant Source: DWR

pumping-generating units uses 63,000 horsepower when pumping or will develop

53,000 kilowatts when generating. This plant became California's largest hydroelectric plant at its completion in 1967.

# San Luis Canal

The San Luis Canal is a joint-use facility owned and operated with the Department of Water Resources (DWR). The concrete-lined canal has a conveyance capacity ranging from 8,350 to 13,100 cfs and is the biggest earth-moving project in Reclamation history. The San Luis Canal is the federally-built and operated section of the California Aqueduct. It extends 102.5 miles from O'Neill Forebay in a southeasterly direction to its terminus at Kettleman City.



San Luis Canal Source: DWR

# **Dos Amigos Pumping Plant**

The Dos Amigos Pumping Plant is located 17 miles south of O'Neill Forebay and is a relift plant in the San Luis Canal. The plant contains six pumping units, each capable of delivering 2,200 cfs of water.

# **Pleasant Valley Pumping Plant**

The Pleasant Valley Pumping Plant pumps water into the Coalinga Canal. The Westlands Water District operates and maintains this pumping plant. This facility lifts water 180 feet from an intake channel leading from the San Luis Canal at mile 74. Nine units are used to deliver 1,135 cfs of water into the Coalinga Canal and 50 cfs of water to a distribution lateral serving adjacent lands north of the pumping plant.

# **Coalinga Canal**

Formerly called the Pleasant Valley Canal, the Coalinga Canal carries water from the turnout structure on the San Luis Canal to the Coalinga area in Fresno County. The system includes a 1.6-mile intake channel to the Pleasant Valley Pumping Plant and 11.6 miles of canal. The initial capacity of the canal is 1,100 cfs, decreasing to 425 cfs at the terminus. The Westlands Water District operates sections of the Coalinga Canal. The City of Coalinga is served from this facility.

# Los Banos and Little Panoche Detention Dams and Reservoirs

The Los Banos and Little Panoche Detention Dams are located southwest of the city of Los Banos on Los Banos and Little Panoche Creeks. Both are zoned earthfill detention dams. These dams are required to protect the San Luis Canal by controlling flows of streams crossing the canal.

Completed in 1965, Los Banos Detention Dam is 167 feet high with a 1,370-foot-long crest. It provides 34,500 acre-feet of flood control capacity with a maximum controlled release of 1,000 cfs. Los Banos Reservoir has a capacity of 34,600 acre-feet and protects the city of Los Banos and adjacent areas from damaging floods.

Completed in 1966, Little Panoche Detention Dam contains a little more than a million yards of earthfill in its 151-foot-high embankment. The dam's crest is 1,440 feet long and 30 feet wide. With a capacity of 5,580 acre-feet, Little Panoche Reservoir detains floodwater collected over 81.3 square miles of mountainous drainage area.

### San Luis Drain and Kesterson Reservoir

The San Luis Drain was designed and partially constructed as a means to dispose of subsurface irrigation return flows from the San Luis Unit service area. The drain was designed to collect subsurface drainage from the San Luis Unit service area and transport the water for disposal in the west Delta. Construction began in April 1968; however, the project was never completed as originally planned. Of the planned length of 188 miles, only 85 miles were ever completed. The concrete-lined canal ran from the town of Five Points in Fresno County to the former Kesterson Reservoir.

The first stage of Kesterson Reservoir was constructed as a series of 12 shallow ponds outside the town of Gustine in Merced County. The reservoir was designed to be a regulating reservoir, but for several years, water was ponded, regulated, and allowed to evaporate, pending the approval and construction of an outlet for the San Luis Drain. The reservoir was closed in 1985.

# SAN LUIS UNIT DRAFT ENVIRONMENTAL IMPACT STATEMENT LONG-TERM CONTRACT RENEWAL

Appendix C Water Needs Assessment Summaries for the Seven San Luis Unit Contractors

September 2005

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Tinatrana S	Crup Webs Boy Growert (acro-lost) Si	Bistrict Krig Elfictury CO M	Eilacthu Precip (acto-bach) 17	Estactive Estactive Pracip Cacro-fit M		USBB Not Drop Water Aug (scro-fost) 28	Average Brightet Jarves (acres) 21	Ratoronce Invigation Azros (portea) 22	Celosisted FSA W/acres 73	10086 / 108   016 / 102 vi   24		Total Ag Dampind Lacro-Inai D 20
1989	126,994	75	9,289	13,385	159,807	129,389	\$4,784	44,517	3,57	2.90	442	150,049
1998	104,656	75	33,107		85,399		47,924		1,99	<u> </u>	f,906	87,305
2025	112,843	65	13,060	13,050	117,450	117,450	43,500	43,500	2.70	2.70	1,906	119,356
					Contractor	s M&I Wat	er Demand	lr				
		علدتا انتصا	- Second	- <b></b>	recipient de	r Cagand						
		Per Sec	iin la		Corro	•	lianer /Distr	Rel Graes Per Casto	i Calo Lintes i Per Casta	Torial MEC) Decemb	istai Ag: BCi Deci	itenet. Separat
li Interneti I	Popela Rec	incer igned	ni Jean G tarra-ta	ell laze-fe	eti terre-ter	li facto feel	(acre-lect)			facre-facti		0000 AND 30
<b>Hantrace</b> 1 1969		incer 1	ni Jean G tarra-ta	ell laze-fe	et) terre (er			ited (get)	Send Lopcoli		lacra-feed	line and
<u> </u>		incer igned	ni Jean G tarra-ta	ell laze-fe	eti terre-fer	ti tacre-feet 31	(acro-fast) 34	ited (get)	Send Lopcoli	lacre-fael) 37	lacra-fasti 58	1000 AND 39

Hitte: Historic transfers out includes M&I deliveries. Drainage water of 3,785 for 1989 and 2,621 for 1996 not included.

#### \* Represents Maximum Contract Account

Weiser mopping and designal information is for a normal hydrologic year. They Weiter Begelenment includes insching ray, and output i water tot net trajectory billionary.

Anality cautoral charak; intermediate is either colorizated by UDDR shall, or bran references.

#### Division: West San Joaquin

Water Needs Assessment

Agricultural and M&I Water Supply

WESTLANDS WD Contractor's Water Supply Sources and Quantities (acte-feet)

		CQ1		nd Sab			103 9441	5-1661)				
			Service Re	iter hant:						int.		
	1. Serence	- CODE Tatal				Train/Etra	inder/			110		
Theory	Ballyary	Date/Max	497	in se	Local Secures	/Lonycia to		<b>Detrict</b>	<b>Figste</b>	Tell	Rectarge	Total Supply
	2	3	4	6	8	1	8	· 8	. 10	1	Ť2	13
1985	7,062,509	1,130,463	. 0	0		32,865	5,420	0	175,000		0	1,332,908
2025	1,160,000	1,150,000 *	0	o		0	4,938	0	175,000		0	1,320,062

Contractor's Agricoltural Water Demands

Maximum ProductiveAcres= 545,268

Terrativanas f	Crup Water Regiment (acro-fast)	•	Ellectra	Procip Lacro-113	Histi Group Winter Boq Lincre-TootD	Crop Wister Bay (acro-fuet)	imiyakai Jara		faiculatad RCB DE/acrub	CERLINE (A%ars)	late Late (azys-late)	lotzi Ag Bernend Laore-1960
	•		v	12		20	21	2	<b>Z</b>	28	16	25
1989	N7 1,650,449	75	65,249		1,446,933	<b>70</b> 1,401,663	ZI 515,000	519,216	2,81	2.70	75 - 319	25 1,447,252

Contractor's M&I Water Demends

	Luddestini Witter Justati			Here wat with its are Decard			122					
		For Capita	Total		Control/	<b>[6]</b>	臣	En lintes	Luic Uritati	i et si i i i i	TOTA	Unmet
		DECERC	A particular	ini siris		<b>Descent</b>	/Butr	Per Capita	Per Capita		AG+ MISI Drad	Demand
Time Stream	Peristin	(incell	Lagra-Fact)	lacro-feet)	(acre-bac)	Locate (page)	Lagra-feet)	and (const)	fine local	Com-fett)	(scre-leat)	
1	24	29	30	ភ	12	83	54	85	38	11	38	89
1989						0	D			0	1,447,252	114,344
2025						0	0	[·· ——		0	1,394,349	74,287
												-

Billist In order to limit this to an assessment of agricultural water needs. M&I water in the amount of 5,420 AF in 1989 and 4,638 AF in 2025 are shown as transfere out.

\* Bapresetta Hacketts Contract Amount

Water stoppy and deservations in for a normal hydrologic year. Grop Water Recolversed, includes insching very and collocal water and invitation officiancy.

📺 lialargia tiau invit contractor's water management plan or date accedited for historical years. USBs references information har future years

Quality control check; information is either calculated by SISK etail, or force reference.