III - HISTORY OF PROJECT

3-01 Authorization. The Flood Control Act of June 22, 1936 (PL 74-738), authorized the construction of reservoirs and related flood control works for the protection of the metropolitan area of Orange County, California. Section 5 of the Act reads:

> SEC. 5. That pursuant to the policy outlined in sections 1 and 3, the following works of improvement, for the benefit of navigation and the control of destructive flood waters and other purposes, are hereby adopted and authorized to be prosecuted in order of their emergency as may be designated by the President...

The Act reads further:

> SANTA ANA RIVER,CALIFORNIA
>
> Construction of reservoirs and related flood control works for protection of metropolitan area in Orange County, California, in accordance with plans to be approved by the Chief of Engineers on recommendation of the Board of Engineers for Rivers and Harbors, at an estimated construction cost not to exceed $13,000,000; estimated cost of lands and damages, $3,500,000.

On March 12, 1937, the Chief of Engineers approved the report entitled "Definite Project for the Construction of Reservoirs and Related Flood Control Works in Orange County, California" which included Prado Dam. Paragraph 5 of the definite project report gives the following general description of the approved project:

> 5. General: The Prado Retarding Basin is located on the Santa Ana River in Riverside County, California, about two miles north of the Orange County line. Its primary purpose is flood protection for those residents of Orange County whose lands have previously been subject to the destructive action of uncontrolled flood waters. There is also a water conservation feature to be utilized in connection with the automatic release of flood waters. Due to the high absorptive qualities of the material underlying the river bed below the dam, and the large natural underground storage characteristics of the valley, it will be possible through automatic regulation to conserve a large portion of the flood flows heretofore wasted to the ocean.

And paragraph 9 reads further:

> ... The storage capacity of the retarding basin below spillway crest elevation is 180,000 acre-feet. The Orange County Flood Control District has estimated that the practical capacity of the Santa Ana River below Prado Retarding Basin is approximately 6,000 cfs. In order to limit the outflow to this quantity it is necessary to provide the storage capacity of 180,000 acre-feet with the retarding basin operated for flood control and conservation as described below. The Orange County Flood Control District has assumed that the channel downstream from the proposed Prado Dam site will absorb by percolation flows of from 1,000 to 2,000 cfs. It was further assumed that the

retarding basin could safely be operated for conservation to elevation 507.5 (capacity of 54,000 acre-feet). The remaining net storage capacity of 126,000 acre-feet is to be reserved for flood control. It is proposed to secure the conservation operation by omitting the gate on one of the 4 ft. by 8 ft. conduits.

With the authorization found in the Flood Control Act of 1936 and in accordance with the definite project report approved by OCE on March 12, 1937, Prado Dam was constructed in accordance with the May 1938 report entitled "Analysis of Design - Prado Dam". Prado Dam was completed in April 1941 at a cost of about $9,450,000.

3-02 Planning & Design.

a. The Dam. The economic damages from floods prior to 1850 were small due to the sparsely distributed population and lack of development within the Santa Ana River Basin. However, following the historical floods of the late 1800's and early 1900's, considerable urbanization and agricultural development occurred in Orange County along the lower Santa Ana River creating the potential for catastrophic economic losses in the event of flooding.

The largest flood of record occurred on January 22, 1862. The peak flow at Riverside Narrows was about 320,000 cfs, three times greater than the 1938 flood. The small farming community of Agua Mansa, which was located about 2 miles downstream from Colton, was completely destroyed. Only the small church (Capilla San Salvador) and the house of Cornelius Jensen were spared from the flood flows.

Though the potential for destructive floods were well known, it was not until the beginning of the 20th century that the loss to life and the threat to economic stability and growth became unacceptable realities of life along the Santa Ana River. The flood of January 1916 caused severe damage in the Santa Ana River basin as illustrated in Table 3-1. The flood event of February 1927 convinced the citizens of Orange County that a solution to the flooding threat of the Santa Ana River was needed. The Orange County Flood Control District (OCFCD) was formed in 1927 to provide for the control of flood waters in the District and to conserve flood waters for augmenting the local water supply. The District encompassed all of Orange County and had the power of eminent domain over all property within 15 miles of the County line. The Orange County Board of Supervisors was designated to serve as the District's Board of Directors. In 1975 the OCEMA became the "umbrella" organization for the various Orange County public works agencies and therefore assumed the administrative and operational obligations of the OCFCD.

In April 1929 a comprehensive plan for flood control and water conservation in Orange County was presented by the OCFCD to the Orange County Board of Supervisors. The report outlined an ambitious master plan for controlling floods

throughout Orange County and for utilizing flood waters to augment a limited water supply, which was almost entirely dependent on the local groundwater basin. The plan called for the construction of nine reservoirs.

Table 3-1

Estimated Direct and Indirect Flood Damages
(1949 Dollars)

Flood of	Orange County ($)	Riverside & San Bernardino Counties ($)	Deaths
January 1916	2,500,000	5,080,000	6
February 1927	438,000	594,000	1
March 1938	6,826,000	13,460,000	43
January 1943	not appreciable	1,840,000	1

Due to the large estimated cost of construction, Orange County applied for Federal Funding through the Federal Emergency Relief Appropriation Act of 1935. Funds, however, were not available through the Act and the project was disapproved. Congress, now aware of the need for flood control in the Santa Ana River basin, authorized the construction of reservoirs and related flood control works for the protection of the metropolitan area of Orange County in the Flood Control Act of 1936 (PL 74-738).

The U.S. Army Corps of Engineers reviewed the plan proposed by the OCFCD and recommended a modified plan. A definite project report recommending the construction of Reservoirs and Related Flood Control Works on the Santa Ana River was submitted by the Chief of Engineers, U.S. Army in December of 1936. The definite project report called for the Federal Government to prepare detailed designs and construct Prado Dam and associated works. Orange County was to provide, at its own expense, all lands, easements, and right-of-ways associated with the project and to assume responsibility for the maintenance of the downstream channel.

It is unfortunate that Prado Dam was not completed in time for the March 1938 flood. As shown in Table 3-1 damages both upstream and downstream of Prado Dam were large both in terms of economic losses and lives. The less severe flood of January 1943 still caused damages upstream of Prado Dam, but downstream from Prado Dam no appreciable damages occurred.

b. <u>The Ungated Outlets</u>. The original plans prepared by the District Engineer in 1937 included a 4-ft x 8-ft ungated outlet for water conservation. At the time it

was estimated that the recharge capacity of the downstream Santa Ana River was approximately 2,000 cfs. The final approved designs included two ungated 66-in. diameter outlets. The two ungated outlets were designed to release 1,878 cfs at a WSE of 507-ft. The reservoir design flood at the time could be controlled with the flood control storage above 507-ft. Therefore water conservation was permitted below WSE 507-ft.

After the first two years of operation, it became evident to the OCWD that the estimated 2,000 cfs recharge capacity was an overly optimistic value. In March of 1943 the OCWD first considered requesting the closure of either both or at least one of the ungated outlets. The OCWD decided that they would like to have one of the ungated outlets temporarily sealed so that they could study the effect of the closure on their recharge operation.

The City of Corona, Riverside County, and the Riverside Water Company immediately filed formal protests with the District Engineer regarding the possible closure of an ungated outlet. The protests stemmed from concern of possible increased impoundments within Prado Reservoir and water rights issues.

In 1942 the OCWD was adjudicated the rights to flood waters from portions of the upper basin. Case No. Y-36-M was settled in the U.S. District Court between the OCWD and the cities of Riverside, San Bernardino, Colton, and Redlands. Since the settlement did not include the entire upper basin, the upstream protesters contended that if additional water is conserved, this unappropriated water should belong in part to all water users along the entire length of the river on a pro-rata basis.

Meetings were held between the LAD and the OCWD and the protesting agencies. Based on these meetings and review of available data it was believed that vested appropriative and riparian water rights would not be affected and that little, if any, injury would result to the protestants from the proposed change in operation of Prado Dam.

In June of 1945 the OCWD passed a resolution absolving the U.S. Government of any claims due to the closing of an ungated outlet. In October of 1945 the Office of the Chief of Engineers (OCE) approved the temporary closure, with the stipulation that the resolution wording be slightly modified. In November of 1945 the resolution was changed to the satisfaction of OCE. Design plans for the closing were prepared by the OCWD and submitted to the Corps for approval. Final approval was given to the OCWD in September of 1946 and the west ungated outlet was sealed in October of 1946.

Studies on the effect of the closure on water conservation activities downstream of Prado Dam showed that considerable savings resulted from the closure of the west

ungated outlet. Some flood waters, however, were still being wasted to the ocean. Complete control of all flood waters entering Prado Dam would be necessary in order to optimize water conservation activities on the lower Santa Ana River. In May of 1960, meetings were held between the LAD, OCWD, and the OCFCD regarding the possible closure of the remaining east ungated outlet.

The upstream water users were not pleased with the idea of having the remaining ungated outlet sealed. Their position that unappropriated water should be shared among all of the water users of the Santa Ana River Basin was once again voiced. Riverside County filed an application with the LAD to also have the east ungated outlet sealed as well as filling for appropriation of flood water rights with the California State Department of Water Resources (DWR).

The Corps policy regarding water rights issues is to remain neutral and have the disputing agencies settle their differences without Corps intervention. Therefore, the Corps' position regarding the closure of the remaining ungated outlet was to refuse approval until one of the requesting agencies could show that the water rights issue had been settled between the various agencies.

On 18 October 1963 the OCWD filed suit against the upstream water users in the Superior Court of Orange County. The massive suit was settled on 17 April 1969, ending the legal battling which had been occurring between the OCWD and nearly 5,000 upstream water users for the past 18 years. The stipulated judgement to case No. 117628 was reached between the OCWD and the three major water users of the upper basin. All defendants and cross-defendants were dismissed except for the four major public water districts within the Santa Ana River Basin, namely the; 1) San Bernardino Valley Municipal Water District (SBVMWD); 2) Western Municipal Water District (WMWD); 3) Chino Basin Municipal Water District (CBMWD); and 4) OCWD. The judgement substantially settled all of the water rights issues of the Santa Ana River Basin. With regards to the OCWD, the upper basins are responsible for assuring that 42,000 ac-ft of baseflow reach Prado Dam, and the OCWD is entitled to all floodwaters which reach Prado Dam.

With the resolution of the water rights issues, both the OCWD and the OCFCD passed resolutions on 21 May 1969 requesting once again to have the remaining east ungated outlet sealed. LAD approved the closure on 22 May 1969 and the east ungated outlet was sealed on 29 May 1969. On 13 August 1969 OCE approved indefinite closure of the east ungated outlet.

The OCWD victory in the battle for closure of the final ungated outlet was somewhat bitter-sweet in that the revised hydrology for Prado Dam, which was initiated in 1967, required that the debris/water conservation pool be lowered to WSE 490-ft. The 1969 reservoir regulation schedule was therefore adjusted to account for the closure of the east ungated outlet and the revised hydrology.

3-03 Construction. Prado Dam was constructed between October 1938 and April 1941 under the supervision of the U.S. Army Corps of Engineers, LAD. When the dam was completed it had six gated outlets and two ungated outlets. The two ungated outlets were added to maintain a maximum water conservation release of approximately 2,000 cfs. However, after completion it was determined that the estimated 2,000 cfs recharge capacity of the downstream channel had been overestimated. The OCWD in concurrence with the OCFCD requested that the two ungated outlets be sealed so that water conservation activities downstream of Prado Dam could be optimized. With OCE approval; the west ungated outlet was sealed in October 1946 and the east ungated outlet was sealed on 29 May 1969.

3-04 Related Projects.

a. Existing Projects. There are four dams located within the Santa Ana River basin which provide some degree of flood control. They are: 1) Prado Dam, 2) San Antonio Dam, 3) Carbon Canyon Dam, and 4) Villa Park Dam. Prado, San Antonio, and Carbon Canyon Dams are owned and operated by the U.S. Army Corps of Engineers. All of their storage is solely allocated for flood control purposes. Villa Park Dam is owned and operated by the OCEMA. It has storage allocations for both flood control and water supply purposes. Exhibit B contains pertinent data tables for San Antonio, Carbon Canyon, and Villa Park Dams. See the inside cover of this manual for a pertinent data table for Prado Dam. Carbon Canyon Dam is actually located in the San Gabriel River basin, but the OCEMA diverts waters from Carbon Canyon Creek at the Miller Basin Facility to the Santa Ana River via the Carbon Creek Diversion Channel. There are several other reservoirs and lakes (Table 2-1) within the Santa Ana River Basin which affect runoff on the Santa Ana River but do not have allocations of storage space for flood control. Plate 2-10 shows a schematic of the Santa Ana River Basin. See Sections 4-10 and 4-11 for a more detailed description of the above mentioned water resource facilities.

OCEMA maintains the lower Santa Ana River downstream of Weir Canyon Road to the Pacific Ocean and has developed a system of drop structures and grade stabilizers along the channel. There are 11 drop structures and 11 grade stabilizers located along the Santa Ana River as shown on plate 4-22. The drop structures help reduce damage to the channel by controlling scour and streambed degradation. The Survey Division of OCEMA evaluates, on a yearly basis, the scour and degradation of the channel downstream of the dam and OCEMA then performs necessary maintenance to any structures which have been undermined or damaged by flood flows. In addition, the OCEMA has performed a study to determine the channel capacities of various reaches, the most probable breakout locations, and the capacity of the bridges within the study reach. See Section 4-09 for a description of the downstream channel.

OCWD groundwater spreading facilities are located in the lower Santa Ana River basin, downstream of Prado Dam between Imperial Highway and Ball Road. See Section 4-11 for a description of the groundwater spreading facilities.

b. Future Project. The continued urbanization of Orange, Riverside, and San Bernardino Counties has contributed to overtaxing of the existing Santa Ana River flood control system. Increased runoff due to increased urbanization and encroachment onto the existing flood plain have resulted in over two million people and businesses being susceptible to damages from flood flows. The Corps' 1975 Review Report for the Santa Ana River documents the magnitude of the deficiency at Prado Dam.

An ambitious plan for improving the flood protection both upstream and downstream of Prado Dam was described in the Phase I GDM for the Santa Ana River, including Santiago Creek, dated September 1980. The recommended improvements of the Phase I GDM were authorized, in part, by the Water Resources Development Act of 1986 (PL 99-662). The Phase II GDM, dated August 1988, is currently being used as the basis for initiating plans and specifications for the various improvements to the Santa Ana River Mainstem.

The Santa Ana River Mainstem project has been started. To date an exploratory tunnel along the outlet works alignment for Seven Oaks Dam has been excavated. Enhancement of the marshlands at the mouth of the Santa Ana River is scheduled to begin during fiscal year 1990. As improvements to the Santa Ana River flood control system come on-line, re-regulation of Prado Dam will need to be considered, as Prado Dam will remain the primary flood control facility of the Santa Ana River flood control system.

3-05 Modifications to Regulations.

a. 1941 Schedule (Original Schedule). The reservoir regulation schedule was able to control the design inflow hydrograph to the spillway crest elevation of 543.0-ft. The design inflow hydrograph was based on a 100 year frequency rainfall event. The resulting rainfall produced an inflow hydrograph having a duration of seven days and a peak inflow of 193,000 cfs. The total 7 day runoff volume was 275,200 ac-ft.

The design schedule allowed for "automatic" operation of the reservoir in the early stages of a flood event by permitting reservoir inflows to be controlled through the two ungated outlets up to WSE 507.0-ft. This plan "would conserve a large portion of flood flows heretofore wasted into the ocean" (reference 14 May 1938). Local interests had at the time estimated that the downstream groundwater spreading capacity of the Santa Ana River to be about 2,000 cfs.

From WSE 507.0-ft to 507.5-ft, gated discharges were initiated which increased the outflow from 1,878 cfs to 9,200 cfs. From 507.5-ft to spillway crest at WSE 543.0-ft the gates were so adjusted to maintain an average outflow of 9,200 cfs.

b. 1942 Proposed Revision. The report entitled "The Operation of Flood Control and Multi-Purpose Reservoirs in the Los Angeles Engineer District" dated October 1942 proposed a revised water control plan with ungated releases maintained up to WSE 515.0-ft. Above WSE 515.0-ft, gated flood control releases were to be initiated and gradually increased as the reservoir pool rose so that at WSE 518-ft a release rate of 9,750 cfs would be attained. From 518.0-ft to spillway crest only two gate operations would have been made resulting in flows ranging from 9,750 cfs to 11,050 cfs.

Available records indicate that this schedule was never approved by SPD or OCE and hence was never officially adopted for use.

c. 1945 Revision. By 2nd indorsement from OCE dated 18 October 1945, a revised operation schedule was approved which accounted for the closure of the west ungated outlet. The west ungated outlet was closed in October 1946 at the request of OCWD. OCWD requested the closure to enhance its recharge operations and to study the effects of the closure on its downstream groundwater recharge activities.

The revised regulation schedule provided for unregulated flow through one ungated outlet, with the six flood control gates closed, up to WSE 514.0-ft. At 514.0-ft, 64% of the reservoir storage remained available for flood control regulation. The schedule uniformly increased the flow in small increments from 1,240 cfs at WSE 514.0-ft to 9,170 cfs at WSE 518.5-ft. Thereafter the gates would be operated to maintain an average outflow of about 9,200 cfs up to spillway crest, WSE 543.0-ft. At spillway crest the gates were to remain open during uncontrolled spillway flows.

d. 1951 Modification. In 1951 a water control plan was formulated to alleviate the problem of silt accumulation in the forebay of the outlet works.

The revised regulation schedule was essentially identical to the 1945 plan, except that sluicing of water through the gates was scheduled from WSE 460.0-ft to WSE 470.0-ft. This was done to pass silt which had been settling out in the forebay of the outlet works and resulted in increased maintenance costs. From WSE 470.0-ft to 514.0-ft the six flood control gates were once again closed and the regulation paralleled the 1945 schedule.

e. 1968 Revision. By 2nd indorsement from OCE dated 26 February 1969 a revised operation schedule was approved which addressed the revised reservoir design flood for Prado Dam. The newly developed SPF for Prado Dam was much larger than the original reservoir design flood. In fact the SPF could not be

controlled by Prado Dam without major spillway outflow. In an effort to achieve a greater level of flood control protection the reservoir regulation schedule was modified to begin gated flood control releases at WSE 490.0-ft. Before initiating larger gated flood control releases it is necessary to build a pool of water (a debris pool) to submerge the gates to prevent vortices from sucking floating or partially submerged debris into the outlet works. A debris pool elevation of WSE 490.0-ft was determined by routing the SPF through Prado Dam using several different debris pool elevations. The percent of the SPF that could be controlled to spillway crest was plotted against the debris pool elevations. From the plot, it was determined that lowering the debris pool below WSE 490.0-ft produced no significant improvements in controlling the SPF.

The revised regulation plan called for unregulated flow through one ungated outlet, with the six flood control gates closed up to WSE 490.0-ft. At WSE 490.0-ft the unregulated release of 890 cfs would be uniformly increased to 9,120 cfs at WSE 491.4-ft. From WSE 491.4-ft to spillway crest 543.0-ft an average outflow of 9,250 cfs would be maintained. Beginning at spillway crest outflow would be transferred to the spillway so that at WSE 545.0-ft all gates would have been closed.

f. 1969 Revision. By 4th indorsement from OCE dated 13 August 1969, a revised regulation schedule was approved which accounted for the downstream channel deficiency and the closing of the remaining ungated outlet (i.e., the east ungated outlet).

Operational experience gained during the January and February 1969 flood events revealed that the lower Santa Ana River was not capable of safely conveying the 9,250 cfs release called for by the 1968 reservoir regulation schedule. Releases of up to 5,000 cfs during the 1969 flood events had caused severe damage to the downstream channel (see section 4-09h). Also, OCWD's request to seal the last remaining ungated outlet was approved. Both of these factors necessitated the formulation of a revised regulation schedule.

The revised schedule called for the formation of a debris pool to WSE 490-ft from which releases would be coordinated with OCWD in order to minimize the wasting of flood waters to the Pacific Ocean. Above WSE 490.0-ft releases would be uniformly increased to 4,870 cfs at WSE 490.8-ft. From 490.8-ft to spillway crest 543.0-ft the gates would be operated to maintain an average outflow of 5,000 cfs. From spillway crest 543.0-ft, outflow would be transferred to the spillway so that at WSE 544.3-ft all gates would be closed.

g. Water Year 1990 Plan. By 2nd indorsement from SPD dated 15 February 1990 a revised water control plan was approved which accounts for the continuing downstream channel deficiency. Operational experience gained during the floods since 1969 indicate that the downstream channel is not capable of passing extended

flows in excess of 2,500 cfs without sustaining significant damage (See section 4-09h).

The revised plan introduces a "buffer pool" from WSE 490.0-ft to WSE 494.0-ft which enables the water control manager to limit releases from Prado Dam to below 2,500 cfs. The buffer pool enables the water control manager to:

1. Minimize the oscillation in the magnitude of reservoir releases, thereby reducing the potential of streambank erosion in the lower Santa Ana River.
2. Reduce oscillation in the release magnitude for a safer operation with respect to public use of the Santa Ana River Canyon.
3. Facilitate coordination with OCWD operations by providing the ability to temporarily curtail releases so that in-stream L-dikes can be reconstructed.
4. Simplifies the lengthy public notification process when a smoother release pattern with fewer release rate changes is adopted.

The revised schedule calls for the formation of a debris pool to WSE 490.0-ft from which releases are coordinated with OCWD in order to minimize the wasting of flood waters to the ocean. From WSE 490.0-ft to 494.0-ft releases can be gradually increased to a maximum of 2,500 cfs should runoff and weather forecasts so warrant. Under favorable hydrologic and reservoir conditions, releases from the buffer pool are released at rates that facilitate OCWD's groundwater recharge activities. From WSE 494.0-ft to 520.0-ft releases range from a minimum of 2,500 cfs to the maximum release of 5,000 cfs. The water control manager determines the specific release rate based upon the runoff and weather forecast. From WSE 520.0-ft to spillway crest an average outflow of 5,000 cfs is maintained. Above spillway crest at WSE 543.0-ft, gated outflows are gradually reduced so as to maintain a 5,000 cfs outflow from the combination of outlet works and spillway discharges. At WSE 544.3-ft all gates are closed and only uncontrolled spillway flows in excess of 5,000 cfs occur.

Chapter 7 of this water control manual describes in detail the application of this water control plan to actual storm and flood conditions at Prado Dam.

3-06 Principal Regulation Problems. There are several important considerations in determining the operational strategy which will provide the maximum benefits to the public. Items which are considered in the regulation of Prado Dam include:

a. Downstream Channel Capacity. Plate 4-21a-b schematically illustrates the long- and short-term channel capacities downstream of Prado Dam. The most restrictive sections are immediately downstream of the dam. Refer to section 7-02 for specific downstream channel constraints.

The short-term capacities define the design flows of the channel that can occur without overtopping the channel. The channel can handle these large flows which are characteristic of flood runoff from the drainage area downstream of Prado Dam for short periods of time.

The long-term capacities indicate the flows which can be passed through the channel for extended periods of time, although significant channel erosion has occurred at these flows in the past.

b. Reservoir Deficiency. The 1988 Phase II GDM of the Santa Ana River Mainstem Project indicates that under present conditions Prado Dam could control a 70-yr. flood to a peak outflow of 5,000 cfs. Under future conditions (i.e., with increased urbanization at the year 2090) only a 40-yr. event would be controllable to a maximum outflow of 5,000 cfs. Any flood of greater magnitude would result in uncontrolled flow over the spillway.

c. Water Conservation. To the extent that flood control protection is not compromised and environmental constraints are met, Prado Dam is utilized to store flood runoff and release water at a rate that can be recharged to groundwater by OCWD. Section 7-09 describes the operation of Prado Dam with regards to water conservation.

d. Recognized Land uses of Reservoir Lands. There are a number of land users with various types of facilities located within the reservoir. All of these land users fall into one or more of five categories:

1. Leases for public parks and recreational purposes from the Corps of Engineers to Riverside County, San Bernardino County and the City of Corona. These leases allow concession agreements to third parties providing appropriate recreational facilities and services to the public.

2. Land leases for parks and recreation purposes may be leased by the Corps for agricultural purposes until the land is needed for public use.

3. Various leases from the Corps for special purposes such as sewage plants and infiltration ponds.

4. Mineral leases from BLM, which controls subsurface rights of federally owned lands within the reservoir, mainly to oil producers.

5. Lands owned in fee by third parties with whom the Corps has flowage easements.

Since the primary purpose of the reservoir is flood control, all lessees, sublessees, and property owners understand and have agreed in writing that their operation, facility, or land is subject to periodic flooding. Leases, easements, licenses, and permits for facilities and activities on reservoir lands are in a constant state of flux. Table 3-2 presents a "1988 Snap-Shot" of outgrants representing areas greater than one acre. Table 3-3 lists important facilities within the basin ranked according to elevation.

Table 3-2

"1988 Snap-Shot" of Real Estate Outgrants at Prado Reservoir

Grantee	Type (*)	Purpose (**)	Acreage (***)	Term	
				From	To
Abacherli, Louis J.	LEA	AGR	13.6	11-01-84	10-31-89
Bittel, Denise	LEA	AGR	64.2	11-01-85	10-31-90
	LEA	AGR	516.4		
Calif., State of	EAS	ROW	17.2	05-12-58	INDEF
Calif., State of	EAS	ROW	206.0	12-13-49	INDEF
Chino Basin Muni. Water District	EAS	ROW	411.8	05-09-60	05-08-10
	EAS	ROW	2.4	07-01-81	06-30-01
Ciesla, Thomas R.	LEA	AGR	48.1	11-01-84	10-31-89
Circle/Kirk Farms	LEA	AGR	93.8	12-01-85	11-30-90
Corona, City of	LEA	OTH	48.5	05-01-67	04-30-17
Corona, City of	LEA	PPR	1570.0	02-01-67	01-31-17
Corona, City of	LEA	OTH	57.3	08-01-84	07-31-89
Corona, City of	EAS	ROW	32.1	05-01-67	04-30-17
Corona, City of	EAS	ROW	2.4	03-28-74	INDEF
Devjyst, David J.	LEA	AGR	22.3	12-01-85	11-30-90
Evans, Freeland V.	LEA	AGR	77.0	01-01-84	12-31-88
H & R Barthelemy DA	LEA	GRZ	24.5	04-26-81	04-25-92
Jongsma, Harold	LEA	AGR	61.9	11-01-85	10-31-90
Morena, Manuel V.	LEA	AGR	13.4	11-01-85	10-31-90
Navy Dept.	PER	OTH	34.1	03-19-43	INDEF
Orange County FCD	EAS	ROW	4.0	11-19-46	INDEF
Pacific Bell	LIC	OTH	1.8	10-10-80	10-09-90
Richardson, Donald R.	LEA	AGR	95.3	03-01-83	02-28-88
Riverside County	EAS	ROW	4.6	03-17-67	INDEF
Riverside County	LEA	PPR	1714.0	08-20-67	08-19-97
San Bernardino County	EAS	ROW	1.0	05-15-56	INDEF
San Bernardino County	LEA	PPR	2113.7	10-01-65	09-30-15
San Bernardino County	EAS	ROW	4.3	07-25-68	07-24-18
Santa Ana River Dev.	EAS	ROW	3.0	09-01-47	08-31-97
Santa Ana River Dev.	EAS	ROW	2.6	11-30-48	11-29-98
Santa Ana Watershed	EAS	ROW	7.8	10-08-75	10-07-25
Santa Ana Watershed	EAS	ROW	28.3	10-15-81	10-14-31
Saunders, William W.	LEA	PPR	16.9	11-01-65	10-31-90
So. Cal. Gas Co.	EAS	ROW	5.7	12-21-48	INDEF
So. Cal. Edison	EAS	ROW	28.6	03-25-54	03-24-04
	EAS	OTH	13.9	06-09-49	INDEF
	EAS	ROW	3.9	05-14-70	05-13-20
	EAS	ROW	14.5	07-06-70	07-05-20
	LIC	ROW	1.3	3-02-80	3-01-90

* LEA - Lease
EAS - Easement
LIC - License
PER - Permit

** GRZ - Grazing
AGR - Agricultural
ROW - Right of Way
PPR - Park and Rec
OTH - Other

*** The total acreage in this table does not equal the total acreage of the flood control basin since it only lists grants greater than one acre.

Table 3-3

Elevations of Sites/Facilities at Prado Reservoir

Description	Elevation (ft)
OUTLET INVERT	** 460 **
Least Bell's vireo Nesting Habitat	460 - 566
Archeological and Historic Sites	480 - 566
Raahauge's Hunting Club	485 - 525
Club House	611
Splatter S Duck Club	485 520
Club House	520
TOP OF DEBRIS POOL	** 490 **
Prado Recreation, Inc. (Dog Training Facility)	490 - 504
Kennel/Trailer	554
Oil Wells	492 - 508
TOP OF BUFFER POOL	** 494 **
El Prado Golf Course	510 - 567
Club House	554
City of Corona Municipal Airport	514 - 534
Tiro Shooting Range	516 - 518
Prado Regional Park (San Bernardino Co.)	520 - 560
Camping Area	550 - 552
Archery Range	520 - 560
Prado Basin Park (Developed Area) Riverside Co.	525 - 573
Interpretation Center	573
Butterfield Park (City of Corona)	527 - 550
Bandini Adobe	534
Kobe Power Fluid Station	536
Chino Basin Water District (Waste Water Treatment Plant #2)	537 - 546
City of Corona Waste Water Percolation Ponds (Perimeter Levee)	540
SPILLWAY CREST	** 543 **
12 Unauthorized Dwellings	550 - 554
City of Corona Waste Water Treatment Plant (Road Entrance)	556
Oil Treating Facilities	560
California Institution for Women (State Prison)	560 - 572
Yorba Slaughter Adobe	560.2
2 Dwellings within the Corona National Tract	561 - 566
TOP OF DAM	** 566 **