US Army Corps
of Engineers®

WATER CONTROL MANUAL

ALAMO DAM AND LAKE
COLORADO RIVER BASIN
BILL WILLIAMS RIVER

ARIZONA

OCTOBER 2003

ALAMO DAM AND LAKE
COLORADO RIVER BASIN, BILL WILLIAMS RIVER, ARIZONA

PERTINENT DATA (English Units)
October 2003

Completion date		July 1968
Stream system		Bill Williams River
Drainage area	sq-mi	4,770
Reservoir		
Elevation (from gross area-capacity table)		
Streambed at Intake Structure	ft., NGVD	990
Recreation Pool	ft., NGVD	1,070
Water Conservation Pool	ft., NGVD	1,160.4
Flood Control Pool (Spillway Crest)	ft., NGVD	1,235
Spillway Design Surcharge Level	ft., NGVD	1,259.6
Top of Dam	ft., NGVD	1,265
Area		
Streambed at Intake Structure	ac	0.00
Recreation Pool	ac	1,151
Water Conservation Pool	ac	5,881
Flood Control Pool (Spillway Crest)	ac	13,300
Spillway Design Surcharge Level	ac	16,550
Top of Dam	ac	17,100
Capacity		
Streambed at Intake Structure	ac-ft	0.0
Recreation Pool	ac-ft	24,372 (0.10*)
Water Conservation Pool	ac-ft	321,716 (1.26*)
Flood Control Pool (Spillway Crest)	ac-ft	995,300 (3.91*)
Spillway Design Surcharge Level	ac-ft	1,361,247 (5.35*)
Top of Dam	ac-ft	1,451,300 (5.70*)
Storage Allocations Below Spillway Crest		
Recreation	ac-ft	5,000 (0.02*)
Water Conservation	ac-ft	230,000 (0.90*)
Flood Control	ac-ft	608,369 (2.39*)
Sedimentation	ac-ft	200,000 (0.79*)
Dam: - Type		Rolled Earthfill
Height Above Original Streambed	ft, NGVD	283
Top Length	ft	975
Top Width	ft	30
Spillway: - Type		Detached, broad-crested
Crest Length	ft	110
Crest Elevation	ft., NGVD	1,235
Design Surcharge Elevation	ft., NGVD	1,259.6
Design Discharge	cfs	41,600
Outlet Works:		
Tunnel Length (including gate chamber and transition sections	ft	1,290
Intake Invert Elevation	ft., NGVD	990
Outlet Invert Elevation	ft., NGVD	980
Gates – Type		tandem slide
Number and Size		
Service (downstream)		three 5'W x 8.5'H
Emergency (upstream)		three 5'W x 8.5'H
Maximum Discharge at Spillway Crest	cfs	8,715
Low-flow Bypass around Service Gate No. 3		
Pipe Size, I. D	in	18
Control Valve – Type		Butterfly
Maximum Discharge Capacity	cfs	112
Water-Surface Elevation to Initiate operation	ft., NGVD	1002.3
Standard Project Flood (revised March 1986):		
Inflow Duration	days	7
Total Volume	ac-ft	613,000 (2.41*)
Inflow Peak	cfs	389,000
Outflow Peak	cfs	7,000
Maximum Reservoir Elevation	ft., NGVD	1,222.14
Probable Maximum Flood (revised March 1986):		
Inflow Duration	days	3
Total Volume	ac-ft	1,390,000 (5.46*)
Inflow Peak	cfs	820,000
Outflow Peak	cfs	282,142
Maximum Pool Elevation	ft., NGVD	1281.3

*Inches of runoff on 4770 sq. mi. watershed

Historic Flood Inflow Peaks of Record
6 - 9 February 1937, inflow peak 106,530 cfs. 13-22 February 1980, inflow peak 82,000 cfs.
27 February -- 4 March 1983, inflow peak 69,070 cfs.
8 January -- 28 February 1993, inflow peak 104,667 cfs.

ALAMO DAM AND LAKE
COLORADO RIVER BASIN, BILL WILLIAMS RIVER, ARIZONA

PERTINENT DATA (SI Units)
October 2003

Completion date		July 1968
Stream system		Bill Williams River
Drainage area	sq-km	12,354
Reservoir		
Elevation (from gross area-capacity table)		
Streambed at Intake Structure	m, NGVD	301.75
Recreation Pool	m, NGVD	326.14
Water Conservation Pool	m, NGVD	353.69
Flood Control Pool (Spillway Crest)	m, NGVD	376.43
Spillway Design Surcharge Level	m, NGVD	383.93
Top of Dam	m, NGVD	385.57
Area		
Streambed at Intake Structure	ha	0.00
Recreation Pool	ha	465.8
Water Conservation Pool	ha	2,380
Flood Control Pool (Spillway Crest)	ha	5,382
Spillway Design Surcharge Level	ha	6,698
Top of Dam	ha	6,920
Capacity		
Streambed at Intake Structure	ha-m	0.0
Recreation Pool	ha-m	3,006 (0.25*)
Water Conservation Pool	ha-m	39,683 (3.20*)
Flood Control Pool (Spillway Crest)	ha-m	122,768 (9.93*)
Spillway Design Surcharge Level	ha-m	167,907 (13.59*)
Top of Dam	ha-m	179,015 (14.48*)
Storage Allocations Below Spillway Crest		
Recreation	ha-m	616.74 (0.051*)
Water Conservation	ha-m	28,370 (2.29*)
Flood Control	ha-m	75,041 (6.07*)
Sedimentation	ha-m	24,669 (2.01*)
Dam: - Type		Rolled Earthfill
Height Above Original Streambed	m, NGVD	86.26
Top Length	m	297.18
Top Width	m	9.14
Spillway: - Type		Detached, broad-crested
Crest Length	m	33.53
Crest Elevation	m., NGVD	376.43
Design Surcharge Elevation	m., NGVD	383.93
Design Discharge	cms	1,178
Outlet Works:		
Tunnel Length (including gate chamber and transition sections	m	393.19
Intake Invert Elevation	m., NGVD	301.75
Outlet Invert Elevation	m., NGVD	298.70
Gates – Type		tandem slide
Number and Size		
Service (downstream)		three 1.5m W x 2.6m H
Emergency (upstream)		three 1.5m W x 2.6m H
Maximum Discharge at Spillway Crest	cfs	246.78
Low-flow Bypass around Service Gate No. 3		
Pipe Size, I.D.	cm	45.7
Control Valve – Type		Butterfly
Maximum Discharge Capacity	cms	3.17
Water-Surface Elevation to Initiate operation	m., NGVD	305.5
Standard Project Flood (revised March 1986):		
Inflow Duration	days	7
Total Volume	ac-ft	75,612 (6.12*)
Inflow Peak	cms	11,015
Outflow Peak	cms	198
Maximum Reservoir Elevation	m, NGVD	372.51
Probable Maximum Flood (revised March 1986):		
Inflow Duration	days	5
Total Volume	ha-m	171,454 (13.87*)
Inflow Peak	cms	23,219
Outflow Peak	cms	7,989
Maximum Pool Elevation	m, NGVD	390.54

*Centimeters (cm) of runoff on 12,354 sq. km. watershed

Historic Flood Inflow Peaks of Record
6 - 9 February 1937, inflow peak 3,017 cms. 13-22 February 1980, inflow peak 2,322 cms.
27 February -- 4 March 1983, inflow peak 1,956 cms.
8 January -- 28 February 1993, inflow peak 2,964 cms.

DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
333 Market Street, Room 923
San Francisco, California 94105-2195

REPLY TO
ATTENTION OF:

CESPD-MT-E

11 DEC 2003

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-ED-HR

SUBJECT: Approval – Alamo Dam Water Control Manual

The South Pacific Division, Water Management Team has completed the policy compliance and quality assurance review of subject document. A final copy, if printed and bounded, should be provided to this office once completed. If you have any questions, please do not hesitate in contacting Ms. Theresa Mendoza of my staff at (415) 977-8106.

FOR THE COMMANDER:

Marda Q Stothers

MARDA Q. STOTHERS
Chief, Engineering & Construction Division

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ARIZONA

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

OCTOBER 2003

Prepared by:

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

Reservoir Regulation Section
CESPL-ED-HR

Aerial Photograph of Alamo Dam and Lake

NOTICE TO USERS OF WATER CONTROL MANUAL

Regulations specify that this Water Control Manual be published in loose-leaf format, and only those sections, or parts thereof, requiring changes will be revised and printed. Therefore, this copy should be preserved in good condition so that inserts can be made to keep the manual current.

EMERGENCY REGULATION ASSISTANCE PROCEDURES

In the event that unusual conditions arise, contact can be made by telephone to the U.S. Army Corps of Engineers, Los Angeles District Office, Reservoir Regulation Section at (213) 452-3527 or (213) 452-3623.