

**APPENDIX H.**

**RESERVOIR OPERATIONS SUBCOMMITTEE REPORT**

**BILL WILLIAMS RIVER CORRIDOR TECHNICAL COMMITTEE**

**RESERVOIR OPERATIONS SUBCOMMITTEE**

**ALAMO DAM AND LAKE  
SUMMARY OF PRESENT OPERATING CONDITIONS  
AND  
OPERATING CONSTRAINTS**

**APRIL 1994**

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## INTRODUCTION

Alamo Dam was authorized by the Flood Control Act of 22 December 1944 (Public Law 534, 78th Congress, 2nd Session) and construction was completed by the Corps of Engineers in 1968. The project had been recommended for approval by the Chief of Engineers in his report dated 11 April 1944, published as a part of the project document (House Document No. 625, 78th Congress, 2nd Session). The act approved construction of Alamo Dam (see figure 1) as a multiple purpose project as recommended in House Document No. 625.

The recommended project purposes were flood control for the lower Colorado River, as an initial objective, and ultimate project development to include water conservation, hydropower and recreation. In order to assess the water conservation and hydropower benefits, the Corps entered into an agreement with the U.S. Bureau of Reclamation (USBR) to evaluate the potential of these purposes. The USBR concluded that, through coordinated operation of Alamo Dam with USBR dams on the Colorado River, a net average annual increase in water supply for the Colorado river system of 4,500 acre-feet would be realized. However, the USBR concluded that hydropower benefits were negligible.

Subsequent to initial authorization, Alamo Dam became subject to the stipulations of the Fish and Wildlife Coordination Act of 1958 (Public Law 85-624), the Federal Water Project Recreation Act -- Uniform Policies (P.L. 89-72), the National Environmental Policy Act of 1969 (P.L. 91-190), the Clean Water Act of 1977

(P.L. 95-217), and the Endangered Species Act of 1973 (Public Law 93-205). Alamo Dam is therefore operated to conform with objectives and specific provisions of the authorizing legislation, as well as with all subsequent Congressional acts that are applicable.

#### RESERVOIR STORAGE ALLOCATIONS AND OPERATING PLAN

The reservoir storage allocations, critical elevations, and release schedules for Alamo Dam and Reservoir are presented in figure 2. Alamo Dam is currently operated for the authorized purposes of recreation, water conservation, and flood control. The current storage versus elevation relationship is detailed in figure 3.

The authorized top of recreation pool is 1070 feet. Releases below this elevation are made to satisfy existing water rights. Based on examination of low flow records from 1891-1962, the State of Arizona has decreed that matching outflow to inflow up to a 10 cfs maximum would satisfy these water rights. In the absence of releases for other purposes, matching of inflow up to the 10 cfs release schedule for water rights requirements will be made from the recreation, water conservation, and flood control pools.

Water conservation releases from the existing water conservation pool (between reservoir elevations 1070 and 1171.3 feet) are coordinated with operation of the U.S. Bureau of Reclamation's (USBR) Hoover, Davis, and Parker Dams on the lower Colorado River. Coordination of operation is essential to achieve maximum flood

control, water supply, and hydropower benefits along the lower Colorado River. The current reservoir regulation plan limits the magnitude of water conservation releases to a maximum of 2,000 cfs.

Since there are presently no contracts for water stored in the conservation pool, there is no established conservation release. Current reservoir operation when in the water conservation pool is to completely evacuate the conservation pool before the flood control season, provided Alamo Dam releases can be used to meet consumptive use demands on the Colorado River. The available capacity on the Colorado River is governed by the USBR's ability to integrate Alamo Dam releases to fulfill water use requirements. If Alamo Dam releases from the water conservation pool cannot be fully utilized, then releases are curtailed, even though water is carried over into the flood season. The waters of the Bill Williams River are State of Arizona waters until they reach the Colorado River, at which time they become subject to the laws and agreements governing the distribution and use of Colorado River waters.

The maximum authorized flood control release from Alamo Dam is 7,000 cfs, as specified in the Alamo Dam General Design Memorandum, dated April 1964, and in the Reservoir Regulation Manual. In a joint resolution by the United States Government and the State of Arizona, dated 15 March 1963, the State of Arizona gave assurances to the United States that the floodplain below Alamo Dam would be maintained free of encroachment for discharges up to 7,000 cfs. An excerpt from that resolution states that the State of Arizona will "Limit man-made encroachment on the existing hydraulic capacity of

the Bill Williams River channel downstream from Alamo Dam to permit maximum releases of 7,000 cubic feet per second from the reservoir." Within the flood control pool, releases of 7,000 cfs will be made as a first priority. However, these releases may be reduced in magnitude to achieve system flood control objectives on the Colorado River. For example, if Colorado River dams are making large flood control releases, it may be appropriate to reduce or stop temporarily flood control releases from Alamo Dam in the interest of minimizing flood damages. As shown in figure 2, the reservoir flood control space is between elevations 1171.3 and 1235 feet (spillway crest). If in a flood event the reservoir water surface were to rise above elevation 1235 feet, the outlet gates are gradually closed, until elevation 1244.5 feet is reached. At that elevation, the outlet gates are completely closed and the spillway is discharging 7,000 cfs. If the reservoir water surface rises above elevation 1244.5 feet, the outlet gates are opened as rapidly as necessary to prevent further increase in reservoir water surface elevation. During falling stages in the reservoir water surface elevation, the outlet gate operation is followed in reverse order.

#### SUMMARY OF CURRENT OPERATING CONSTRAINTS

The following sections describe the current constraints surrounding the operation of Alamo Dam and Reservoir.

#### Constraints Resulting from the Endangered Species Act.

Since 1982, pairs of Southern Bald Eagles, an endangered

species, have been nesting in the vicinity of Alamo Lake. As a result of a U.S. Fish and Wildlife Service letter to the Corps, dated 25 March 1988, Alamo Lake is not drawn down below elevation 1100 feet. This letter points out that elevation 1100 feet provides the minimum pool area necessary to provide sufficient foraging area for the nesting eagles. Although the eagle nesting season is from December through mid-June, it is necessary to keep the elevation above 1100 feet throughout the year. This is due to the relatively high probability of a low runoff season that would not return the elevation to 1100 feet. The ability to maintain the lake elevation at 1100 feet depends on sufficient inflow to offset reservoir evaporation, plus water rights release requirements of 10 cfs or inflow, whichever is less.

#### Outlet Works Capabilities and Limitations

Description. The outlet works consist of three pairs of 5.5-foot wide by 8.5-foot high slide gates. Each pair of gates consist of a service gate and an emergency gate set, which is upstream from the service gate. The service gate is used for discharge regulation; the emergency gate is used to shut off flow in case the service gate malfunctions or requires maintenance. In addition, the outlet works includes a butterfly valve for discharging low flows. The butterfly valve has a computed discharge rate at maximum opening of 88-105 cfs, depending on reservoir pool elevation.

Maximum Gate Setting. Operational criteria for the outlet gates restrict the maximum gate setting to 80 per cent of the 8.5-



foot vertical dimension of the gates, which is 6.8 feet. Limiting the maximum gate setting to 80 per cent of its full opening ensures that, hydraulically, the control of the rate of flow through the outlet is always at the gate itself. At larger settings, it is possible for the control point to actually shift downstream, or even oscillate between the gate and a downstream location (slug flow condition). As a result of this criteria, the minimum elevation within the water conservation pool at which 7,000 cfs can be released (due to hydraulic head requirements) is 1148.4 feet (refer to figure 4).

Minimum Gate Setting. Pursuant to an inspection and subsequent rehabilitation of the outlet gates in 1990, criteria have been established which limit the gates from being set to less than 0.5 foot opening. The inspection determined that at settings of less than 0.5 foot, high flow velocities would result in cavitation damage to the gate lip and the tunnel invert seal. In addition, the flows would, most likely, contain sediment particles that would further abrade the gate lip and invert seal. The minimum release using one service gate open to 0.5 feet is about 147 cfs at elevation 1070, and 173 cfs at elevation 1100 feet (refer to figure 5)

Rate of Release Change. The three 5.5-foot wide by 8.5-foot high service gates can be raised, one at a time, at the rate of 0.5 feet per minute. Since only one gate can be operated at a time, the minimum time necessary to make a 1.0-foot gate change for all three gates is 6 minutes. Normally, when any significant release

changes are to be made, a 24-hour advance notification is made to downstream individuals and agencies, and the schedule of making these release changes are coordinated with these entities. In the interest of public safety, changes in the reservoir release rate are made gradually over a number of hours, so as to minimize any sudden changes in flow rate, water velocity, and depth at downstream locations.

#### Periodic Inspection and Maintenance of Outlet Works

Inspection and maintenance of the emergency gates and the outlet tunnel upstream from the emergency gates necessitates de-watering the outlet tunnel. De-watering is accomplished by first closing all six gates and the butterfly valve, then putting a steel bulkhead gate in place over the outlet tunnel inlet. Installation of the bulkhead gate is accomplished by using an A-frame and cable winch to lower the bulkhead gate into place. Divers are necessary to remove pins securing the bulkhead gate when not in use, and also to clean the steel guides along which the bulkhead gate slides. Once the bulkhead gate is in place, the tunnel is de-watered by opening one pair of emergency and service gates the minimum 0.5-foot setting.

The bulkhead gate was designed to withstand the hydrostatic force as exerted by a reservoir water surface up to elevation 1110 feet. Exceeding this elevation could cause the bulkhead gate to collapse and/or the intake structure concrete supporting the bulkhead gate to fail.

Since no reservoir releases can be made with the bulkhead gate

in place, sufficient storage space must be available in the reservoir prior to bulkhead gate installation to contain any inflows without the lake elevation exceeding 1110 feet. It has been determined that the reservoir needs to be drawn down to elevation 1100 feet to provide the required storage space during maintenance periods. The storage space between elevations 1100 and 1110 feet (28,288 acre-feet) is the minimum space required to provide sufficient time to remove the bulkhead gate in an emergency. It takes 1-2 days to remove and secure the bulkhead gate. Records of historical flood events show that reservoir inflow can raise the reservoir water surface elevation from 1100 feet to 1110 feet in less than 1 day.

De-watering of the outlet tunnel for inspection normally occurs every five years. If the inspection reveals that maintenance needs to be performed on the emergency gates and/or outlet tunnel, the tunnel will have to be de-watered.

Inasmuch as possible, the Corps will attempt to minimize impacts upon the various project purposes due to bulkhead gate installation through appropriate scheduling of inspection and/or maintenance. However, should an unforeseen emergency arise that necessitates an inspection and/or possible maintenance, the Corps has the authority, without prior scheduling, to evacuate the reservoir down to elevation 1100 feet and install the bulkhead gate.

## AREA-CAPACITY TABLE

An updated area-capacity table for Alamo Lake was prepared in June 1993 (figure 3). The updated table supersedes all previous tables and should be used immediately and until further notice.

The June 1993 table incorporates results from the October 1985 bathymetric survey, plus estimates on sediment accumulation over the 1968-1993 period. It was necessary to incorporate estimates of sediment accumulation, since the bathymetric survey encompassed only those reservoir elevations from the invert (elevation 990 ft.) through elevation 1120 feet. However, sediment was assumed to have accumulated up to elevation 1207 feet, the highest historic reservoir elevation.

Since the authorizing legislation stipulated 608,000 acre-feet of reservoir storage be allocated for flood control, the revised area-capacity table has changed the bottom of flood control pool elevation from 1174 to 1171.3 feet, in order to insure that the 608,000 acre-feet of flood control space is available.

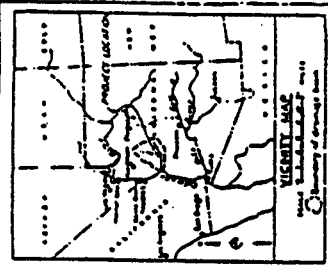
## HISTORIC ALAMO DAM OPERATION

Figures 6-1 through 6-25 present annual water year summaries of reservoir inflow, outflow and reservoir water surface elevation for the historic operation of Alamo Dam from October 1968 through April 1993. Figures 7 through 9 show the same information (inflow, outflow, reservoir stage) consolidated for the entire period (1968-1993) on three separate graphs.

APPENDIX A  
(FIGURES)

U.S. ARMY (LONGEST DISTANCE)  
1911

CORPS OF ENGINEERS



**LEGEND**

- Boundary of drainage area
- Existing water-control measures
- Proposed to be completed, and existing flood-control measures
- Existing structure dam

NOTE:  
This map is based upon the topographic map of a section of U.S.G.S. and  
is subject to change in light of changes.

Scale 1:50,000

**OFFICE OF THE DISTRICT ENGINEER**  
**ALAMO RESERVOIR**  
San Antonio, Texas

**PROJECT LOCATION**

DATE	1911
SCALE	1:50,000
PROJECT NO.	
SECTION NO.	
DATE OF REVISION	
BY	
FOR	
APPROVED	

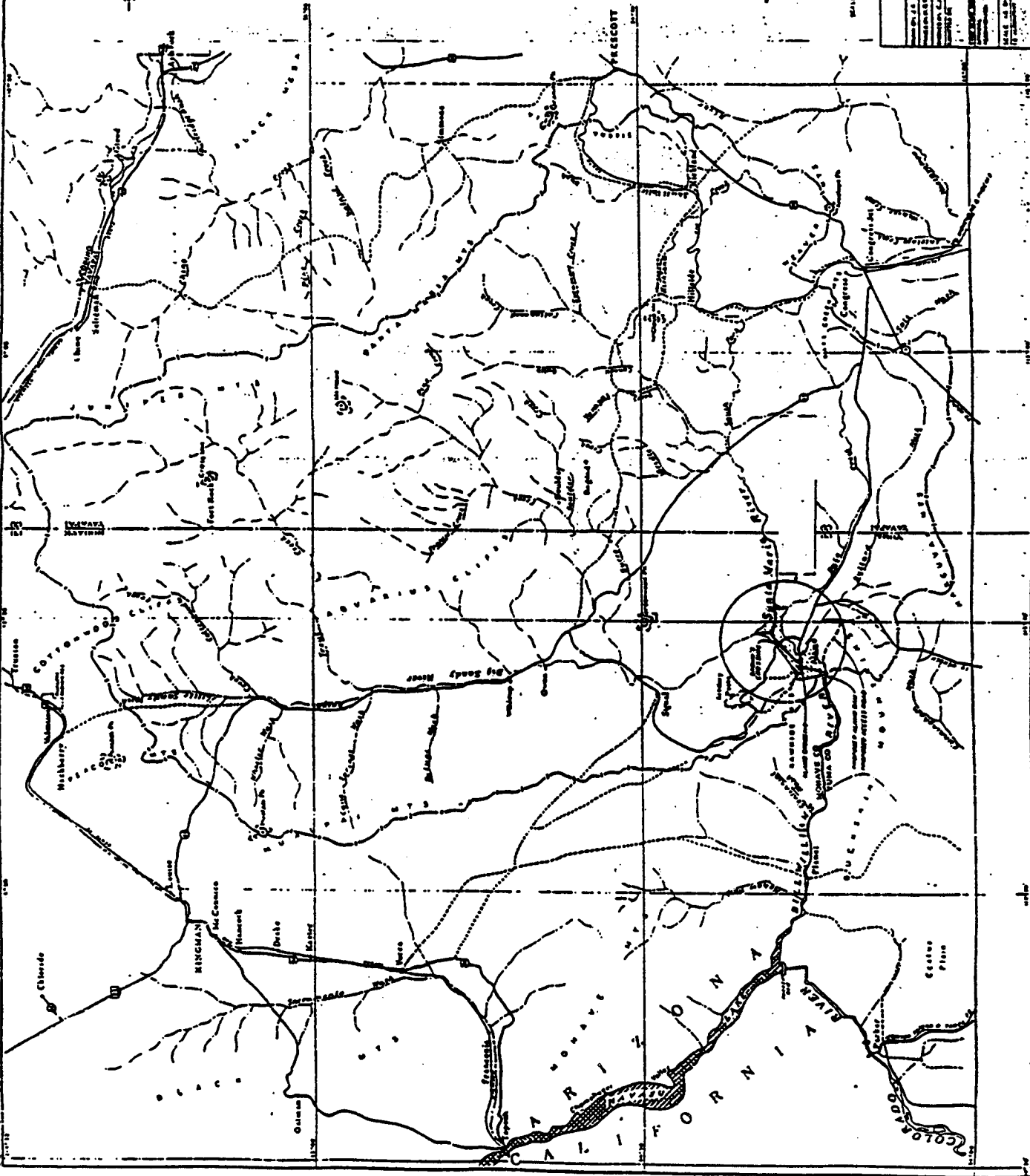
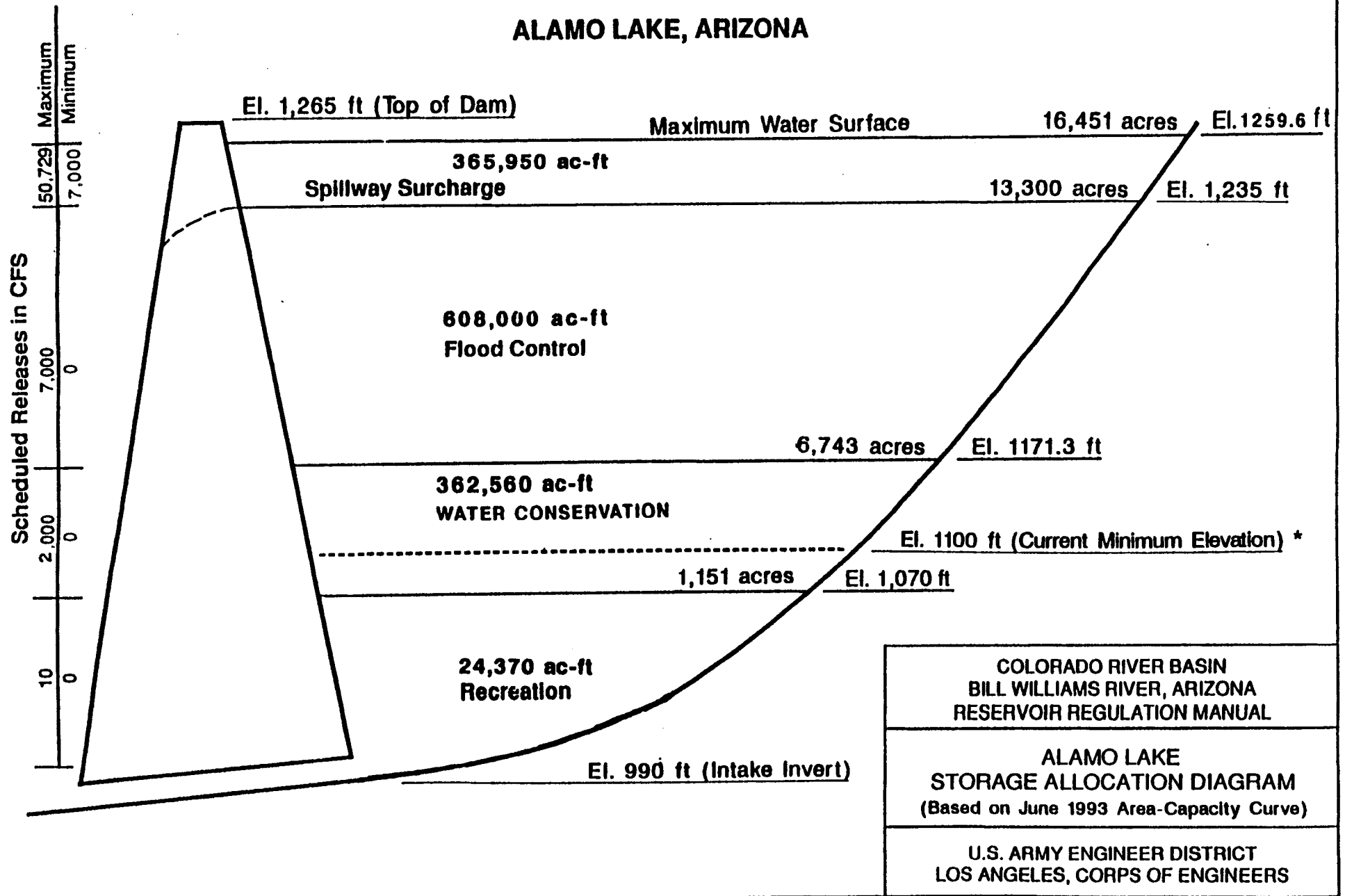


FIGURE 1

# ALAMO LAKE, ARIZONA



COLORADO RIVER BASIN  
 BILL WILLIAMS RIVER, ARIZONA  
 RESERVOIR REGULATION MANUAL

ALAMO LAKE  
 STORAGE ALLOCATION DIAGRAM  
 (Based on June 1993 Area-Capacity Curve)

U.S. ARMY ENGINEER DISTRICT  
 LOS ANGELES, CORPS OF ENGINEERS

Storage values rounded.

\* Required for endangered species.

FIGURE 2

ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
 SURVEYED: MAR. 1963 - MAY 1968; OCT. 1985 (ELEVATION 990-1120 FEET)  
 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
990.0	0	0	0	0	0	0	0	0	0	0
991.0	0	0	0	0	0	0	0	0	0	0
992.0	0	0	0	0	0	0	0	0	0	0
993.0	0	0	0	0	0	0	0	0	0	0
994.0	0	0	0	0	0	0	0	0	0	0
995.0	0	0	0	0	0	0	0	0	0	0
996.0	0	0	0	0	0	0	0	0	0	0
997.0	0	0	0	0	0	0	0	0	0	0
998.0	0	0	0	0	0	0	0	0	0	0
999.0	0	0	0	0	0	0	0	0	0	0
1000.0	0	0	0	0	0	0	0	0	0	0
1001.0	0	0	0	0	0	0	0	0	0	0
1002.0	0	0	0	0	0	0	0	0	0	0
1003.0	0	0	0	0	0	0	0	0	0	0
1004.0	0	0	0	0	0	0	0	0	0	0
1005.0	0	0	0	0	0	0	0	0	0	0
1006.0	0	0	0	0	0	0	0	0	0	0
1007.0	0	0	0	0	0	0	0	0	0	0
1008.0	0	0	0	0	0	0	0	0	0	0
1009.0	0	0	0	0	0	0	0	0	0	0

**Notes:**

1. Numbers at the top of each column (.0-.9) are tenths of a foot.
2. Each whole number elevation has an associated capacity row and area row. The capacity row is on the same line as the whole number elevation; the area row is directly beneath



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1010.0	0 0	0 0	0 0	0 0	0 0	0 0	1 1	1 1	1 1	1 1
1011.0	1 1	1 1	1 1	1 1	2 1	2 1	2 1	2 2	2 2	3 2
1012.0	3 2	3 2	3 2	4 2	4 2	4 2	4 2	5 2	5 2	5 2
1013.0	5 2	6 3	6 3	6 3	7 3	7 3	7 3	8 3	8 3	8 3
1014.0	9 3	9 3	10 3	10 3	10 3	11 4	11 4	12 4	12 4	12 4
1015.0	13 4	13 4	14 4	14 4	15 4	15 4	16 4	16 4	17 4	17 5
1016.0	18 5	18 5	19 5	19 6	20 6	20 6	21 7	22 7	23 7	23 8
1017.0	24 8	25 8	26 9	27 9	28 10	29 10	30 10	31 11	32 11	34 12
1018.0	35 12	36 13	38 14	39 15	41 16	42 16	44 17	46 18	48 19	50 20
1019.0	52 21	54 22	56 23	59 24	61 25	64 26	67 27	69 28	72 30	75 31
1020.0	79 32	82 34	85 35	89 37	93 39	97 40	101 42	105 44	110 46	115 48
1021.0	120 49	125 51	130 53	135 55	141 57	147 60	153 62	159 64	166 66	173 68
1022.0	180 71	187 73	194 75	202 78	210 80	218 82	227 85	235 87	244 90	253 92
1023.0	263 95	272 98	282 100	293 103	303 106	314 109	325 111	336 114	348 117	360 120
1024.0	372 123	384 124	397 125	410 126	422 127	435 129	448 130	461 131	474 132	488 133
1025.0	501 134	515 135	528 136	542 138	556 139	570 140	584 141	598 142	613 143	627 145
1026.0	642 146	656 146	671 147	686 148	701 149	716 149	731 150	746 151	761 152	776 153
1027.0	792 153	807 154	822 155	838 156	854 156	869 157	885 158	901 159	917 160	933 160
1028.0	949 161	965 162	982 162	998 162	1014 163	1031 163	1047 164	1063 164	1080 165	1097 165
1029.0	1113 166	1130 166	1146 167	1163 167	1180 168	1197 168	1214 169	1231 169	1248 169	1265 170

Notes:

1. Numbers at the top of each column (.0-.9) are tenths of a foot.
2. Each whole number elevation has an associated capacity row and area row. The capacity row is on the same line as the whole number elevation; the area row is directly beneath

ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
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1030.0	1282 170	1299 171	1316 172	1333 173	1351 174	1368 175	1386 175	1403 176	1421 177	1439 178
1031.0	1457 179	1475 180	1493 181	1511 181	1529 182	1547 183	1566 184	1584 185	1603 186	1622 187
1032.0	1640 187	1659 188	1678 189	1697 190	1716 191	1735 192	1755 193	1774 194	1794 195	1813 196
1033.0	1833 197	1853 198	1872 199	1892 199	1912 200	1933 201	1953 202	1973 203	1994 204	2014 205
1034.0	2035 206	2055 208	2076 210	2097 211	2119 213	2140 215	2162 217	2184 218	2206 220	2228 222
1035.0	2250 224	2273 225	2295 227	2318 229	2341 231	2364 233	2388 235	2411 236	2435 238	2459 240
1036.0	2483 242	2508 244	2532 247	2557 249	2582 251	2607 254	2633 256	2659 259	2685 261	2711 263
1037.0	2738 266	2764 268	2791 271	2819 273	2846 276	2874 278	2902 281	2930 283	2958 286	2987 288
1038.0	3016 291	3045 293	3075 296	3105 298	3135 301	3165 304	3195 306	3226 309	3257 311	3289 314
1039.0	3320 317	3352 319	3384 322	3417 325	3449 327	3482 330	3515 333	3549 336	3583 338	3617 341
1040.0	3651 344	3685 346	3720 347	3755 349	3790 351	3825 353	3861 355	3896 357	3932 358	3968 360
1041.0	4004 362	4041 364	4077 366	4114 368	4151 369	4188 371	4225 373	4263 375	4300 377	4338 379
1042.0	4376 381	4414 383	4453 386	4492 388	4531 391	4570 393	4610 396	4649 399	4689 401	4730 404
1043.0	4770 406	4811 409	4852 412	4894 414	4935 417	4977 420	5019 422	5062 425	5104 428	5147 430
1044.0	5190 433	5234 435	5278 438	5322 440	5366 443	5410 445	5455 447	5500 450	5545 452	5590 455
1045.0	5636 457	5682 460	5728 462	5774 464	5821 467	5868 469	5915 472	5962 474	6010 477	6058 479
1046.0	6106 482	6154 484	6203 485	6251 487	6300 489	6349 491	6399 493	6448 494	6498 496	6547 498
1047.0	6597 500	6647 502	6698 504	6748 506	6799 507	6850 509	6901 511	6952 513	7004 515	7055 517
1048.0	7107 519	7159 520	7211 521	7263 522	7316 523	7368 524	7420 525	7473 527	7526 528	7579 529
1049.0	7632 530	7685 531	7738 532	7791 534	7845 535	7899 536	7952 537	8006 538	8060 539	8114 541

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1050.0	8168 542	8223 543	8277 545	8332 547	8386 548	8441 550	8496 551	8552 553	8607 555	8663 556
1051.0	8719 558	8774 560	8830 561	8887 563	8943 564	9000 566	9056 568	9113 569	9170 571	9228 573
1052.0	9285 574	9343 576	9400 579	9459 581	9517 583	9575 586	9634 588	9693 590	9752 593	9812 595
1053.0	9871 597	9931 600	9991 602	10052 604	10112 607	10173 609	10234 611	10295 614	10357 616	10419 618
1054.0	10481 621	10543 623	10605 626	10668 629	10731 632	10795 634	10858 637	10922 640	10986 643	11051 645
1055.0	11115 648	11180 651	11246 654	11311 656	11377 659	11443 662	11510 665	11576 668	11643 670	11710 673
1056.0	11778 676	11846 678	11914 681	11982 683	12050 686	12119 688	12188 690	12257 693	12327 695	12397 698
1057.0	12466 700	12537 703	12607 705	12678 707	12749 710	12820 712	12891 715	12963 717	13035 720	13107 722
1058.0	13179 725	13252 728	13325 732	13398 735	13472 739	13546 743	13621 746	13696 750	13771 754	13847 757
1059.0	13922 761	13999 765	14075 768	14153 772	14230 776	14308 779	14386 783	14464 787	14543 791	14623 794
1060.0	14702 798	14782 801	14863 804	14943 807	15024 810	15105 813	15187 816	15269 819	15351 822	15433 825
1061.0	15516 829	15599 832	15683 835	15766 838	15850 841	15935 844	16019 847	16104 850	16189 853	16275 856
1062.0	16361 860	16447 863	16533 867	16620 870	16708 874	16795 877	16883 881	16971 885	17060 888	17149 892
1063.0	17239 896	17328 899	17419 903	17509 906	17600 910	17691 914	17783 917	17875 921	17967 925	18060 929
1064.0	18153 932	18246 935	18340 938	18434 942	18529 945	18623 948	18718 951	18814 954	18909 957	19005 961
1065.0	19101 964	19198 967	19295 970	19392 973	19490 977	19588 980	19686 983	19784 986	19883 990	19982 993
1066.0	20082 996	20182 1000	20282 1003	20383 1007	20483 1011	20585 1015	20686 1018	20788 1022	20891 1026	20994 1029
1067.0	21097 1033	21200 1037	21304 1041	21409 1045	21513 1048	21618 1052	21724 1056	21830 1060	21936 1063	22043 1067
1068.0	22150 1071	22257 1075	22365 1079	22473 1083	22581 1087	22690 1091	22800 1095	22909 1099	23019 1103	23130 1107
1069.0	23241 1111	23352 1115	23464 1119	23576 1123	23688 1127	23801 1131	23915 1135	24028 1139	24143 1143	24257 1147

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1070.0	24372 1151	24487 1155	24603 1159	24719 1164	24836 1168	24953 1172	25070 1176	25188 1181	25307 1185	25426 1189
1071.0	25545 1194	25664 1198	25784 1202	25905 1207	26026 1211	26147 1215	26269 1220	26391 1224	26514 1228	26637 1233
1072.0	26761 1237	26884 1241	27009 1246	27134 1250	27259 1254	27385 1259	27511 1263	27637 1268	27765 1272	27892 1276
1073.0	28020 1281	28148 1285	28277 1289	28406 1294	28536 1298	28666 1303	28796 1307	28927 1312	29059 1316	29191 1321
1074.0	29323 1325	29456 1329	29589 1333	29723 1337	29857 1341	29991 1346	30126 1350	30261 1354	30397 1358	30533 1362
1075.0	30669 1366	30806 1370	30943 1375	31081 1379	31219 1383	31358 1387	31497 1391	31636 1396	31776 1400	31916 1404
1076.0	32057 1408	32198 1413	32339 1417	32482 1421	32624 1426	32767 1430	32910 1435	33054 1439	33198 1444	33343 1448
1077.0	33488 1453	33633 1457	33779 1462	33926 1466	34073 1470	34220 1475	34368 1479	34516 1484	34665 1489	34814 1493
1078.0	34963 1498	35113 1502	35264 1507	35415 1512	35566 1517	35718 1522	35871 1527	36024 1532	36177 1537	36331 1542
1079.0	36486 1547	36641 1551	36796 1556	36952 1561	37109 1566	37265 1571	37423 1576	37581 1581	37739 1586	37898 1591
1080.0	38058 1596	38217 1601	38378 1606	38539 1611	38700 1615	38862 1620	39024 1625	39187 1630	39350 1635	39514 1640
1081.0	39678 1645	39843 1650	40008 1654	40174 1659	40340 1664	40507 1669	40674 1674	40842 1679	41010 1684	41179 1689
1082.0	41348 1694	41518 1699	41688 1703	41859 1708	42030 1713	42201 1718	42373 1723	42546 1728	42719 1733	42893 1737
1083.0	43066 1742	43241 1747	43416 1752	43592 1757	43768 1762	43944 1767	44121 1772	44298 1777	44476 1782	44655 1786
1084.0	44834 1791	45013 1797	45193 1803	45374 1809	45555 1814	45737 1820	45919 1826	46102 1832	46286 1837	46470 1843
1085.0	46654 1849	46840 1855	47025 1861	47212 1866	47399 1872	47586 1878	47774 1884	47963 1890	48153 1896	48342 1901
1086.0	48533 1907	48724 1913	48915 1918	49108 1924	49300 1930	49494 1935	49687 1941	49882 1946	50077 1952	50272 1958
1087.0	50469 1963	50665 1969	50862 1974	51060 1980	51259 1986	51457 1991	51657 1997	51857 2003	52058 2008	52259 2014
1088.0	52460 2020	52663 2026	52866 2032	53069 2037	53273 2043	53478 2049	53683 2055	53889 2061	54096 2067	54303 2073
1089.0	54510 2079	54718 2085	54927 2091	55137 2097	55347 2103	55557 2109	55768 2115	55980 2121	56193 2127	56406 2133

Notes:

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ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
 SURVEYED: MAR. 1963 - MAY 1968; OCT. 1985 (ELEVATION 990-1120 FEET)  
 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1090.0	56619 2139	56833 2144	57048 2149	57263 2154	57479 2160	57695 2165	57912 2170	58129 2176	58348 2181	58566 2186
1091.0	58785 2192	59004 2197	59224 2202	59445 2208	59666 2213	59888 2218	60110 2224	60332 2229	60556 2235	60779 2240
1092.0	61004 2245	61228 2250	61454 2254	61680 2259	61906 2263	62132 2268	62359 2272	62587 2277	62815 2281	63043 2286
1093.0	63272 2291	63501 2295	63731 2300	63962 2304	64192 2309	64423 2313	64655 2318	64887 2322	65120 2327	65353 2332
1094.0	65586 2336	65820 2341	66054 2345	66289 2350	66524 2355	66760 2359	66996 2364	67233 2369	67470 2373	67708 2378
1095.0	67946 2382	68184 2387	68423 2392	68663 2396	68903 2401	69143 2406	69384 2410	69625 2415	69867 2420	70109 2424
1096.0	70352 2429	70595 2433	70839 2438	71083 2442	71327 2446	71572 2450	71817 2455	72063 2459	72309 2463	72556 2467
1097.0	72803 2472	73050 2476	73298 2480	73546 2484	73795 2489	74044 2493	74294 2497	74544 2502	74794 2506	75045 2510
1098.0	75296 2515	75548 2519	75800 2523	76053 2527	76306 2531	76559 2536	76813 2540	77067 2544	77322 2548	77577 2553
1099.0	77832 2557	78088 2561	78345 2566	78602 2570	78859 2574	79117 2578	79375 2583	79633 2587	79892 2591	80152 2596
1100.0	80411 2600	80672 2604	80932 2608	81194 2613	81455 2617	81717 2622	81979 2626	82242 2630	82506 2635	82769 2639
1101.0	83033 2643	83298 2648	83563 2652	83829 2657	84095 2661	84361 2665	84628 2670	84895 2674	85163 2678	85431 2683
1102.0	85699 2687	85968 2692	86237 2696	86508 2700	86778 2705	87049 2709	87320 2713	87591 2718	87863 2722	88136 2727
1103.0	88409 2731	88682 2735	88956 2740	89230 2744	89505 2748	89780 2753	90055 2757	90331 2762	90608 2766	90885 2770
1104.0	91162 2775	91440 2779	91718 2784	91997 2789	92276 2793	92556 2798	92836 2803	93116 2807	93397 2812	93679 2817
1105.0	93961 2821	94243 2826	94526 2831	94809 2835	95093 2840	95377 2845	95662 2849	95947 2854	96233 2859	96519 2863
1106.0	96806 2868	97093 2873	97380 2878	97669 2883	97957 2888	98246 2893	98536 2898	98826 2903	99117 2908	99408 2913
1107.0	99699 2918	99991 2923	100284 2928	100577 2933	100871 2939	101165 2944	101460 2949	101755 2954	102051 2959	102347 2964
1108.0	102644 2969	102941 2975	103238 2981	103537 2986	103836 2992	104136 2998	104436 3004	104736 3010	105038 3015	105340 3021
1109.0	105642 3027	105945 3033	106249 3039	106553 3045	106858 3051	107163 3056	107469 3062	107776 3068	108083 3074	108391 3080

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ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
 SURVEYED: MAR. 1963 - MAY 1968; OCT. 1985 (ELEVATION 990-1120 FEET)  
 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1110.0	108699 3086	109008 3091	109317 3097	109628 3102	109938 3108	110249 3113	110561 3119	110873 3124	111186 3130	111499 3135
1111.0	111813 3141	112127 3146	112442 3152	112758 3157	113074 3163	113390 3168	113707 3174	114025 3179	114344 3185	114662 3191
1112.0	114982 3196	115302 3202	115622 3207	115943 3213	116265 3219	116587 3224	116910 3230	117233 3235	117557 3241	117881 3247
1113.0	118206 3252	118532 3258	118858 3264	119185 3269	119512 3275	119840 3281	120168 3286	120497 3292	120827 3298	121157 3303
1114.0	121488 3309	121819 3314	122150 3319	122483 3324	122815 3329	123148 3334	123482 3338	123816 3343	124151 3348	124486 3353
1115.0	124822 3358	125158 3363	125494 3368	125832 3373	126169 3378	126507 3383	126846 3388	127184 3392	127524 3397	127864 3402
1116.0	128205 3407	128546 3412	128887 3417	129229 3421	129572 3426	129915 3431	130258 3436	130602 3440	130946 3445	131291 3450
1117.0	131636 3455	131982 3459	132328 3464	132675 3469	133022 3474	133370 3478	133718 3483	134066 3488	134416 3493	134765 3497
1118.0	135115 3502	135465 3507	135816 3512	136168 3518	136520 3523	136873 3528	137226 3533	137579 3538	137934 3544	138288 3549
1119.0	138643 3554	138999 3559	139355 3564	139712 3570	140070 3575	140427 3580	140785 3585	141144 3591	141504 3596	141864 3601
1120.0	142224 3606	142585 3611	142946 3616	143308 3621	143670 3626	144033 3631	144397 3636	144760 3641	145125 3646	145490 3651
1121.0	145855 3656	146221 3660	146587 3665	146954 3670	147322 3675	147689 3680	148058 3685	148426 3690	148796 3695	149166 3700
1122.0	149536 3705	149907 3710	150278 3715	150650 3720	151022 3725	151395 3730	151768 3735	152142 3740	152516 3745	152891 3750
1123.0	153266 3755	153642 3760	154018 3765	154395 3770	154773 3775	155150 3780	155529 3785	155907 3790	156287 3795	156667 3800
1124.0	157047 3805	157428 3810	157809 3815	158191 3820	158573 3825	158956 3830	159339 3835	159723 3840	160108 3846	160327 3851
1125.0	160546 3856	160765 3860	160984 3864	161371 3869	161758 3873	162145 3877	162533 3882	162922 3886	163311 3890	163700 3895
1126.0	164090 3899	164480 3903	164870 3908	165262 3912	165653 3917	166045 3921	166437 3925	166830 3930	167223 3934	167617 3938
1127.0	168011 3943	168405 3947	168800 3951	169196 3956	169592 3960	169988 3965	170385 3969	170782 3973	171180 3978	171578 3982
1128.0	171976 3987	172375 3991	172774 3995	173174 4000	173575 4004	173975 4009	174376 4013	174778 4017	175180 4022	175583 4026
1129.0	175985 4031	176389 4035	176792 4040	177197 4044	177601 4048	178006 4053	178412 4057	178818 4062	179225 4066	179478 4071

Notes:

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ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
 SURVEYED: MAR. 1963 - MAY 1968; OCT. 1985 (ELEVATION 990-1120 FEET)  
 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1130.0	179730 4075	179983 4080	180235 4084	180644 4089	181053 4093	181462 4098	181872 4102	182283 4107	182694 4111	183105 4116
1131.0	183517 4120	183929 4125	184342 4130	184756 4134	185169 4139	185583 4143	185998 4148	186413 4152	186829 4157	187244 4161
1132.0	187661 4166	188078 4171	188495 4175	188913 4180	189331 4184	189750 4189	190169 4194	190588 4198	191009 4203	191429 4207
1133.0	191850 4212	192272 4217	192693 4221	193116 4226	193539 4230	193962 4235	194386 4240	194810 4244	195235 4249	195660 4253
1134.0	196086 4258	196512 4263	196938 4267	197366 4272	197793 4277	198221 4281	198649 4286	199078 4290	199508 4295	199773 4300
1135.0	200038 4304	200303 4310	200568 4315	201000 4320	201432 4326	201865 4331	202298 4336	202732 4342	203167 4347	203602 4352
1136.0	204037 4358	204473 4363	204910 4368	205347 4374	205785 4379	206223 4384	206662 4390	207101 4395	207541 4400	207981 4406
1137.0	208422 4411	208863 4417	209305 4422	209748 4427	210191 4433	210635 4438	211079 4443	211523 4449	211969 4454	212414 4460
1138.0	212861 4465	213307 4470	213755 4476	214203 4481	214651 4487	215100 4492	215550 4498	216000 4503	216451 4508	216902 4514
1139.0	217353 4519	217805 4525	218258 4530	218712 4536	219166 4541	219620 4546	220075 4552	220530 4557	220987 4563	221220 4568
1140.0	221453 4574	221686 4579	221919 4585	222378 4590	222838 4596	223297 4601	223758 4607	224219 4612	224681 4618	225143 4623
1141.0	225605 4629	226068 4635	226532 4640	226997 4646	227462 4651	227927 4657	228393 4662	228859 4668	229327 4673	229794 4679
1142.0	230263 4685	230731 4690	231200 4696	231671 4701	232141 4707	232612 4712	233083 4718	233556 4724	234029 4729	234502 4735
1143.0	234976 4740	235450 4746	235925 4752	236401 4757	236876 4763	237353 4769	237830 4774	238308 4780	238786 4785	239265 4791
1144.0	239745 4797	240224 4802	240705 4808	241186 4814	241668 4819	242150 4825	242633 4831	243116 4836	243600 4842	243744 4848
1145.0	244059 4853	244373 4859	244687 4865	245001 4872	245488 4878	245976 4884	246465 4890	246954 4896	247445 4902	247935 4908
1146.0	248426 4914	248918 4920	249410 4927	249904 4933	250397 4939	250891 4945	251386 4951	251881 4957	252378 4963	252874 4970
1147.0	253372 4976	253869 4982	254368 4988	254868 4994	255367 5001	255868 5007	256368 5013	256870 5019	257373 5025	257876 5031
1148.0	258379 5038	258883 5044	259388 5050	259893 5056	260399 5063	260906 5069	261413 5075	261921 5081	262430 5087	262939 5094
1149.0	263448 5100	263958 5106	264469 5112	264981 5119	265493 5125	266006 5131	266520 5137	267034 5144	267347 5150	267660 5156

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ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
 SURVEYED: MAR. 1963 - MAY 1968; OCT. 1985 (ELEVATION 990-1120 FEET)  
 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1150.0	267973 5163	268286 5169	268599 5176	268912 5182	269431 5189	269950 5195	270470 5202	270990 5208	271512 5215	272033 5221
1151.0	272556 5228	273079 5234	273602 5241	274127 5247	274652 5254	275178 5260	275704 5267	276231 5273	276759 5280	277288 5287
1152.0	277817 5293	278346 5300	278876 5306	279408 5313	279939 5319	280472 5326	281004 5333	281538 5339	282073 5346	282608 5352
1153.0	283143 5359	283679 5366	284216 5372	284754 5379	285292 5385	285831 5392	286371 5399	286911 5405	287452 5412	287994 5419
1154.0	288536 5425	289078 5432	289622 5439	290167 5445	290712 5452	291257 5459	291803 5465	292350 5472	292667 5479	292984 5485
1155.0	293300 5492	293617 5499	293934 5506	294251 5513	294803 5520	295355 5527	295908 5535	296462 5542	297017 5549	297572 5556
1156.0	298128 5563	298684 5570	299242 5577	299800 5584	300359 5591	300918 5599	301479 5606	302039 5613	302602 5620	303164 5627
1157.0	303727 5634	304291 5642	304855 5649	305421 5656	305987 5663	306553 5670	307121 5677	307689 5685	308258 5692	308827 5699
1158.0	309398 5706	309969 5713	310540 5721	311113 5728	311686 5735	312260 5742	312835 5750	313410 5757	313986 5764	314563 5771
1159.0	315140 5779	315719 5786	316297 5793	316878 5800	317458 5808	318039 5815	318621 5822	319203 5829	319524 5837	319845 5844
1160.0	320165 5851	320486 5859	320807 5866	321128 5874	321716 5881	322304 5889	322893 5896	323483 5904	324074 5911	324666 5919
1161.0	325258 5926	325851 5934	326444 5941	327040 5949	327635 5956	328231 5964	328827 5971	329425 5979	330024 5987	330623 5994
1162.0	331222 6002	331823 6009	332424 6017	333027 6024	333629 6032	334233 6040	334837 6047	335442 6055	336049 6062	336655 6070
1163.0	337262 6078	337870 6085	338479 6093	339089 6100	339700 6108	340311 6116	340923 6123	341535 6131	342149 6139	342764 6146
1164.0	343378 6154	343994 6162	344611 6169	345229 6177	345846 6185	346465 6192	347085 6200	347705 6208	348044 6215	348384 6223
1165.0	348723 6231	349062 6239	349402 6246	349741 6254	350367 6262	350994 6270	351621 6278	352249 6286	352879 6294	353508 6302
1166.0	354139 6310	354770 6318	355402 6325	356036 6333	356669 6341	357304 6349	357939 6357	358575 6365	359212 6373	359850 6381
1167.0	360488 6389	361128 6397	361768 6405	362409 6413	363051 6421	363693 6429	364336 6437	364980 6445	365626 6453	366271 6461
1168.0	366918 6469	367565 6477	368213 6485	368863 6493	369512 6501	370163 6509	370814 6517	371466 6525	372119 6533	372773 6541
1169.0	373427 6549	374083 6557	374739 6565	375396 6573	376054 6582	376712 6590	377372 6598	378032 6606	378399 6614	378765 6622

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ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1170.0	379132 6630	379498 6639	379865 6647	380231 6656	380897 6665	381563 6673	382231 6682	382900 6691	383570 6699	384240 6708
1171.0	384911 6717	385583 6726	386256 6734	386931 6743	387605 6752	388281 6760	388957 6769	389634 6778	390313 6787	390992 6795
1172.0	391672 6804	392353 6813	393035 6822	393718 6830	394401 6839	395086 6848	395771 6857	396457 6866	397144 6874	397832 6883
1173.0	398521 6892	399210 6901	399901 6910	400593 6919	401285 6927	401978 6936	402672 6945	403367 6954	404063 6963	404760 6972
1174.0	405458 6980	406156 6989	406855 6998	407556 7007	408257 7016	408959 7025	409662 7034	410366 7043	410737 7052	411109 7061
1175.0	411480 7070	411851 7078	412223 7087	412594 7096	413303 7105	414014 7114	414726 7123	415439 7132	416153 7140	416867 7149
1176.0	417583 7158	418299 7167	419016 7176	419735 7185	420453 7194	421173 7203	421894 7212	422615 7221	423338 7230	424062 7239
1177.0	424786 7248	425511 7257	426237 7266	426965 7275	427692 7283	428421 7292	429151 7301	429881 7310	430613 7319	431346 7328
1178.0	432079 7337	432813 7346	433548 7356	434285 7365	435021 7374	435759 7383	436498 7392	437237 7401	437979 7410	438720 7419
1179.0	439462 7428	440205 7437	440949 7446	441695 7455	442441 7464	443188 7473	443935 7482	444684 7492	445078 7501	445472 7510
1180.0	445866 7519	446260 7528	446654 7538	447048 7547	447803 7557	448559 7566	449316 7576	450074 7585	450834 7595	451594 7604
1181.0	452355 7614	453116 7623	453879 7633	454643 7642	455408 7652	456173 7661	456940 7671	457707 7680	458477 7690	459246 7699
1182.0	460016 7709	460787 7718	461560 7728	462334 7738	463108 7747	463883 7757	464659 7766	465436 7776	466215 7785	466994 7795
1183.0	467773 7805	468554 7814	469336 7824	470120 7834	470903 7843	471688 7853	472474 7862	473260 7872	474049 7882	474837 7891
1184.0	475627 7901	476417 7911	477209 7921	478002 7930	478795 7940	479590 7950	480385 7959	481181 7969	481588 7979	481995 7988
1185.0	482403 7998	482810 8008	483217 8017	483624 8027	484427 8037	485231 8046	486036 8056	486842 8066	487649 8076	488457 8085
1186.0	489266 8095	490076 8105	490887 8114	491700 8124	492512 8134	493326 8143	494141 8153	494956 8163	495774 8173	496592 8182
1187.0	497410 8192	498230 8202	499050 8212	499873 8222	500695 8231	501519 8241	502343 8251	503169 8261	503996 8270	504823 8280
1188.0	505652 8290	506481 8300	507312 8310	508144 8320	508976 8329	509809 8339	510644 8349	511479 8359	512316 8369	513153 8379
1189.0	513992 8389	514831 8398	515671 8408	516513 8418	517355 8428	518198 8438	519043 8448	519888 8458	520315 8468	520743 8478

Notes:

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ALAMO RESERVOIR (CORPS OF ENGINEERS) -- AREA-CAPACITY TABLE  
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 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1190.0	521170 8488	521597 8497	522025 8506	522452 8515	523304 8524	524157 8533	525010 8542	525865 8551	526721 8560	527578 8569
1191.0	528435 8579	529293 8588	530152 8597	531013 8606	531874 8615	532736 8624	533598 8633	534462 8642	535328 8652	536193 8661
1192.0	537059 8670	537927 8679	538795 8688	539665 8697	540535 8707	541406 8716	542278 8725	543151 8734	544026 8743	544900 8753
1193.0	545776 8762	546652 8771	547530 8780	548409 8789	549288 8799	550168 8808	551050 8817	551932 8826	552816 8836	553699 8845
1194.0	554584 8854	555470 8863	556356 8873	557245 8882	558134 8891	559023 8901	559913 8910	560805 8919	561308 8928	561810 8938
1195.0	562313 8947	562815 8957	563318 8966	563820 8976	564718 8986	565617 8995	566517 9005	567418 9015	568321 9024	569223 9034
1196.0	570127 9044	571032 9054	571937 9063	572845 9073	573753 9083	574661 9092	575571 9102	576481 9112	577394 9122	578307 9131
1197.0	579220 9141	580134 9151	581050 9161	581967 9171	582885 9180	583803 9190	584722 9200	585643 9210	586565 9219	587487 9229
1198.0	588411 9239	589335 9249	590260 9259	591187 9269	592114 9278	593043 9288	593972 9298	594902 9308	595834 9318	596766 9328
1199.0	597699 9337	598633 9347	599568 9357	600506 9367	601443 9377	602381 9387	603320 9397	604260 9407	604765 9417	605270 9426
1200.0	605774 9436	606279 9445	606784 9455	607289 9464	608235 9473	609183 9482	610131 9491	611081 9500	612032 9509	612983 9518
1201.0	613935 9527	614888 9537	615842 9546	616798 9555	617754 9564	618711 9573	619668 9582	620627 9591	621587 9600	622548 9610
1202.0	623509 9619	624471 9628	625434 9637	626399 9646	627364 9656	628330 9665	629297 9674	630265 9683	631234 9692	632204 9701
1203.0	633174 9711	634146 9720	635118 9729	636092 9738	637066 9748	638041 9757	639017 9766	639994 9775	640973 9784	641952 9794
1204.0	642931 9803	643912 9812	644894 9821	645877 9831	646861 9840	647845 9849	648830 9859	649816 9868	650381 9877	650946 9886
1205.0	651212 9896	652077 9905	652642 9915	653207 9925	654200 9935	655194 9945	656189 9954	657185 9964	658182 9974	659180 9984
1206.0	660179 9994	661178 10003	662179 10013	663182 10023	664184 10033	665188 10043	666193 10052	667198 10062	668206 10072	669213 10082
1207.0	669440 10030	670442 10041	671447 10053	672454 10065	673461 10077	674469 10089	675478 10101	676489 10113	677502 10125	678515 10137
1208.0	680364 10191	681383 10200	682403 10210	683426 10220	684448 10230	685471 10240	686496 10250	687521 10260	688549 10270	689576 10280
1209.0	690604 10290	691633 10300	692664 10310	693696 10320	694728 10330	695762 10340	696796 10350	697831 10360	698869 10370	699906 10380

Notes:

1. Numbers at the top of each column (.0-.9) are tenths of a foot.
2. Each whole number elevation has an associated capacity row and area row. The capacity row is on the same line as the whole number elevation; the area row is directly beneath.

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 COMPUTED JUNE 1993 (SUPERSEDES ALL PREVIOUS TABLES)

ELEV FEET	CAP AREA .0	CAP AREA .1	CAP AREA .2	CAP AREA .3	CAP AREA .4	CAP AREA .5	CAP AREA .6	CAP AREA .7	CAP AREA .8	CAP AREA .9
1210.0	700080 10390	701119 10400	702160 10410	703202 10421	704245 10431	705288 10442	706333 10452	707378 10463	708426 10473	709474 10484
1211.0	710523 10494	711572 10505	712623 10515	713676 10526	714729 10537	715783 10547	716838 10558	717894 10568	718953 10579	720011 10589
1212.0	721070 10600	722131 10610	723192 10621	724256 10632	725319 10642	726384 10653	727449 10663	728516 10674	729585 10685	730654 10695
1213.0	731724 10706	732794 10717	733866 10727	734941 10738	736015 10748	737090 10759	738166 10770	739244 10780	740323 10791	741403 10802
1214.0	742483 10812	743565 10823	744647 10834	745732 10845	746817 10855	747903 10866	748990 10877	750078 10887	751168 10898	752258 10909
1215.0	753190 10920	754283 10931	755376 10943	756472 10955	757568 10967	758665 10979	759763 10991	760863 11003	761965 11014	763066 11026
1216.0	764169 11038	765274 11050	766379 11062	767487 11074	768595 11086	769704 11098	770814 11110	771925 11122	773039 11134	774153 11146
1217.0	775268 11158	776384 11170	777501 11182	778621 11194	779741 11206	780862 11218	781984 11230	783107 11242	784233 11254	785359 11266
1218.0	786486 11278	787614 11290	788743 11302	789875 11314	791007 11326	792140 11338	793274 11350	794409 11362	795547 11374	796685 11386
1219.0	797824 11398	798964 11410	800106 11422	801250 11435	802394 11447	803539 11459	804685 11471	805832 11483	806983 11495	808132 11507
1220.0	809220 11520	810371 11532	811525 11544	812681 11557	813837 11569	814994 11582	816153 11594	817313 11607	818475 11619	819637 11632
1221.0	820801 11644	821966 11657	823132 11669	824301 11682	825469 11694	826639 11707	827810 11719	828982 11732	830157 11744	831332 11757
1222.0	832508 11769	833686 11782	834864 11795	836045 11807	837227 11820	838409 11832	839593 11845	840778 11858	841965 11870	843153 11883
1223.0	844341 11895	845531 11908	846722 11921	847916 11933	849110 11946	850305 11959	851501 11971	852699 11984	853899 11997	855099 12009
1224.0	856300 12022	857503 12035	858707 12048	859914 12060	861120 12073	862328 12086	863537 12098	864747 12111	865960 12124	867173 12137
1225.0	868387 12150	869602 12161	870818 12173	872038 12185	873256 12196	874476 12208	875697 12220	876920 12231	878145 12243	879369 12255
1226.0	880595 12266	881822 12278	883050 12290	884281 12302	885512 12313	886743 12325	887976 12337	889210 12349	890447 12360	891683 12372
1227.0	892921 12384	894159 12396	895399 12407	896642 12419	897884 12431	899128 12443	900372 12455	901618 12466	902866 12478	904115 12490
1228.0	905364 12502	906614 12514	907866 12525	909121 12537	910375 12549	911630 12561	912886 12573	914144 12585	915404 12597	916664 12609
1229.0	917925 12620	919188 12632	920451 12644	921718 12656	922984 12668	924251 12680	925519 12692	926789 12704	928061 12716	929333 12728

Notes:

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1230.0	930210 12740	931483 12751	932759 12762	934037 12773	935314 12784	936593 12795	937873 12806	939154 12817	940437 12828	941720 12839
1231.0	943004 12851	944290 12862	945576 12873	946865 12884	948154 12895	949444 12906	950735 12917	952027 12929	953322 12940	954616 12951
1232.0	955911 12962	957208 12973	958505 12984	959806 12996	961105 13007	962406 13018	963709 13029	965012 13040	966318 13052	967623 13063
1233.0	968930 13074	970237 13085	971546 13097	972858 13108	974169 13119	975481 13130	976794 13141	978109 13153	979426 13164	980743 13175
1234.0	982060 13187	983379 13198	984699 13209	986022 13220	987345 13232	988668 13243	989993 13254	991318 13266	992647 13277	993975 13288
1235.0	995300 13300	996634 13313	997966 13327	999301 13341	1000635 13355	1001971 13369	1003308 13383	1004647 13396	1005989 13410	1007330 13424
1236.0	1008673 13438	1010017 13452	1011363 13466	1012712 13480	1014060 13494	1015410 13508	1016761 13522	1018114 13535	1019469 13549	1020825 13563
1237.0	1022181 13577	1023539 13591	1024899 13605	1026262 13619	1027624 13633	1028988 13647	1030353 13661	1031719 13675	1033089 13689	1034458 13703
1238.0	1035829 13717	1037201 13731	1038575 13745	1039951 13759	1041328 13774	1042706 13788	1044085 13802	1045465 13816	1046849 13830	1048232 13844
1239.0	1049617 13858	1051003 13872	1052391 13886	1053782 13900	1055172 13915	1056564 13929	1057957 13943	1059352 13957	1060750 13971	1062147 13985
1240.0	1063500 14000	1064900 14010	1066301 14021	1067705 14032	1069108 14043	1070513 14054	1071919 14065	1073325 14076	1074735 14087	1076144 14098
1241.0	1077554 14109	1078965 14120	1080377 14131	1081792 14141	1083207 14152	1084622 14163	1086039 14174	1087456 14185	1088877 14196	1090297 14207
1242.0	1091718 14218	1093140 14229	1094563 14240	1095989 14251	1097414 14262	1098841 14273	1100268 14284	1101697 14295	1103129 14306	1104559 14317
1243.0	1105991 14328	1107425 14339	1108859 14350	1110296 14361	1111732 14372	1113170 14383	1114608 14394	1116048 14405	1117490 14417	1118932 14428
1244.0	1120375 14439	1121819 14450	1123265 14461	1124713 14472	1126160 14483	1127609 14494	1129058 14505	1130509 14516	1131963 14527	1133416 14538
1245.0	1134870 14550	1136325 14562	1137782 14575	1139241 14588	1140701 14601	1142161 14614	1143623 14627	1145086 14640	1146552 14653	1148017 14665
1246.0	1149484 14678	1150953 14691	1152422 14704	1153894 14717	1155367 14730	1156840 14743	1158315 14756	1159791 14769	1161270 14782	1162748 14795
1247.0	1164228 14808	1165709 14821	1167191 14834	1168677 14847	1170162 14860	1171648 14873	1173136 14886	1174625 14899	1176117 14912	1177608 14925
1248.0	1179101 14938	1180595 14951	1182091 14964	1183589 14977	1185087 14990	1186587 15003	1188087 15016	1189589 15029	1191094 15042	1192599 15055
1249.0	1194105 15068	1195612 15081	1197120 15095	1198632 15108	1200143 15121	1201655 15134	1203169 15147	1204684 15160	1206202 15173	1207720 15186

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1250.0	1209100 15200	1210619 15213	1212141 15227	1213665 15241	1215190 15255	1216716 15269	1218243 15283	1219772 15297	1221304 15310	1222835 15324
1251.0	1224368 15338	1225902 15352	1227438 15366	1228976 15380	1230515 15394	1232055 15408	1233596 15422	1235138 15436	1236684 15450	1238229 15464
1252.0	1239776 15478	1241324 15492	1242874 15506	1244427 15520	1245979 15534	1247533 15548	1249088 15562	1250644 15576	1252204 15590	1253763 15604
1253.0	1255324 15618	1256886 15632	1258450 15646	1260017 15660	1261583 15674	1263151 15688	1264720 15702	1266291 15716	1267864 15730	1269438 15744
1254.0	1271013 15758	1272589 15772	1274166 15786	1275747 15801	1277328 15815	1278910 15829	1280493 15843	1282077 15857	1283666 15871	1285253 15885
1255.0	1286842 15900	1288432 15911	1290024 15923	1291618 15935	1293212 15947	1294807 15959	1296403 15971	1298000 15983	1299601 15995	1301201 16007
1256.0	1302801 16019	1304404 16031	1306007 16042	1307613 16054	1309219 16066	1310826 16078	1312434 16090	1314043 16102	1315656 16114	1317267 16126
1257.0	1318880 16138	1320494 16150	1322110 16162	1323728 16174	1325346 16186	1326965 16198	1328585 16210	1330206 16222	1331830 16234	1333454 16246
1258.0	1335079 16258	1336705 16270	1338332 16282	1339963 16294	1341592 16306	1343223 16318	1344855 16330	1346489 16342	1348125 16354	1349761 16367
1259.0	1351398 16379	1353036 16391	1354675 16403	1356318 16415	1357959 16427	1359602 16439	1361247 16451	1362892 16463	1364541 16475	1366188 16487
1260.0	1367400 16500	1369050 16511	1370702 16523	1372356 16535	1374010 16547	1375665 16559	1377321 16571	1378978 16583	1380639 16595	1382299 16607
1261.0	1383960 16619	1385622 16631	1387285 16643	1388951 16654	1390617 16666	1392284 16678	1393952 16690	1395621 16702	1397294 16714	1398966 16726
1262.0	1400638 16738	1402313 16750	1403988 16762	1405666 16774	1407344 16786	1409023 16798	1410703 16810	1412384 16822	1414069 16834	1415752 16846
1263.0	1417437 16858	1419123 16870	1420810 16882	1422501 16894	1424191 16906	1425882 16918	1427574 16930	1429267 16942	1430963 16955	1432659 16967
1264.0	1434356 16979	1436054 16991	1437753 17003	1439456 17015	1441158 17027	1442861 17039	1444565 17051	1446270 17063	1447979 17075	1449687 17087
1265.0	1451300 17100									

Notes:

1. Numbers at the top of each column (.0-.9) are tenths of a foot.
2. Each whole number elevation has an associated capacity row and area row. The capacity row is on the same line as the whole number elevation; the area row is directly beneath.

# Alamo Dam

Three Gates Set at 6.8 Feet

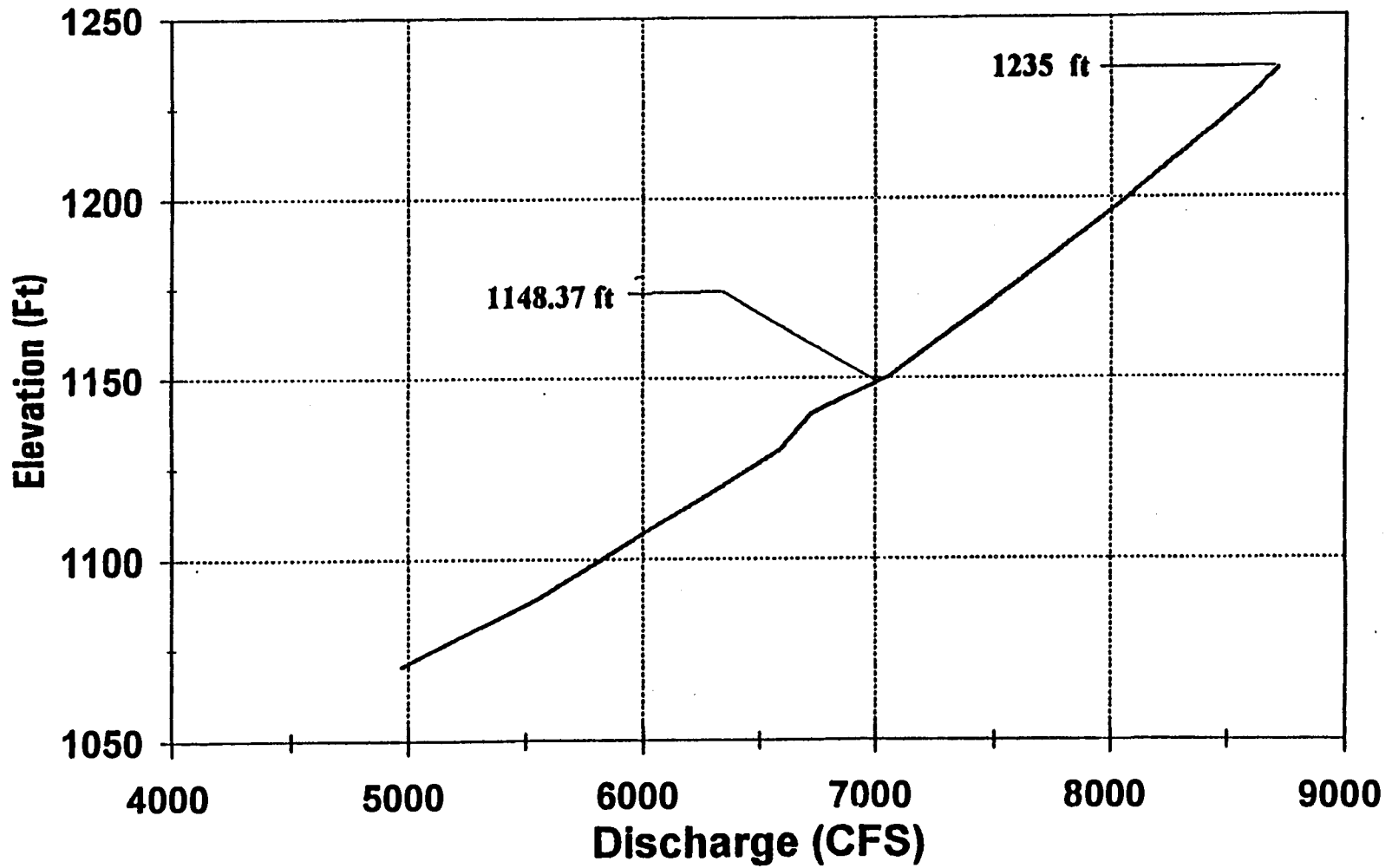


FIGURE 4

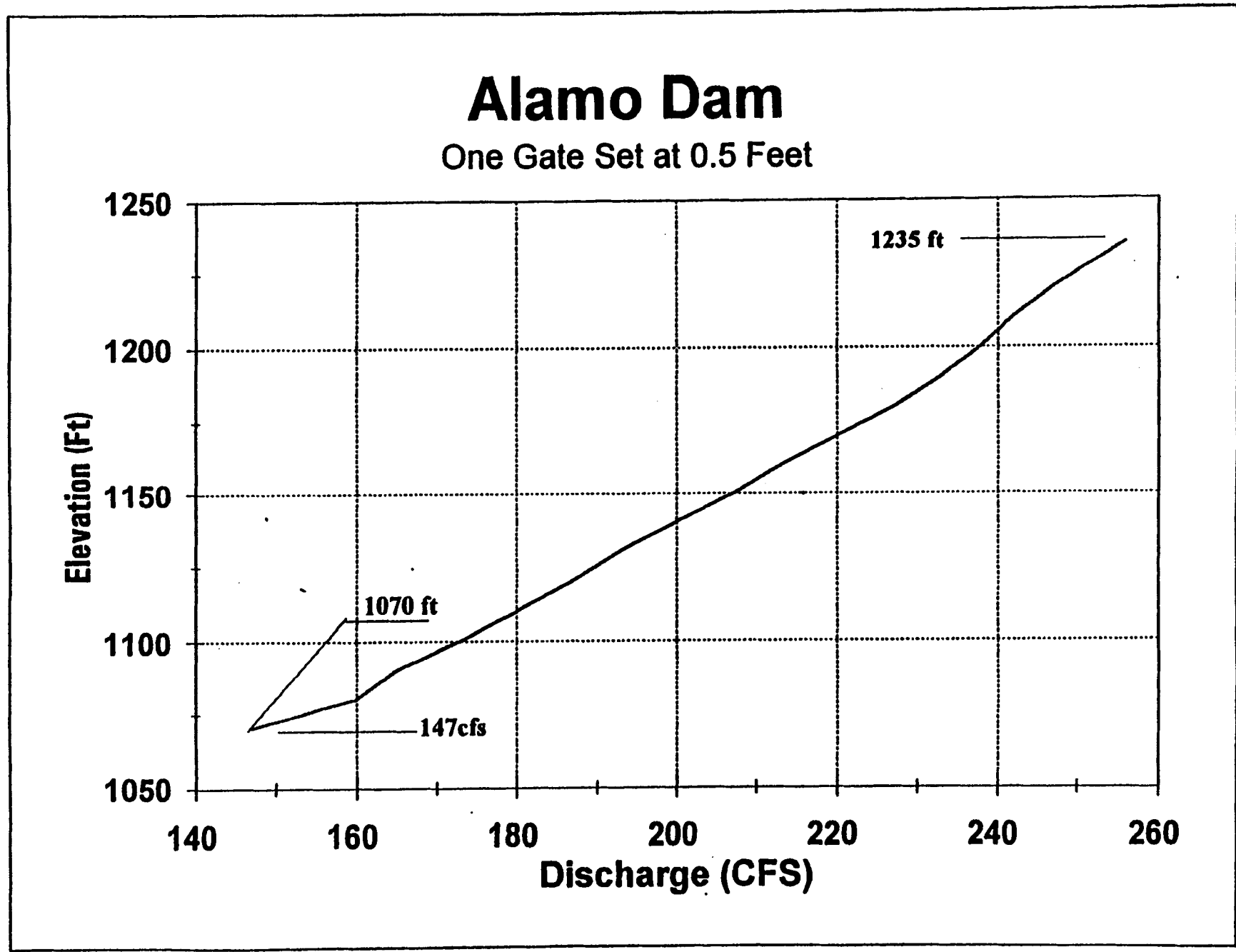


FIGURE 5

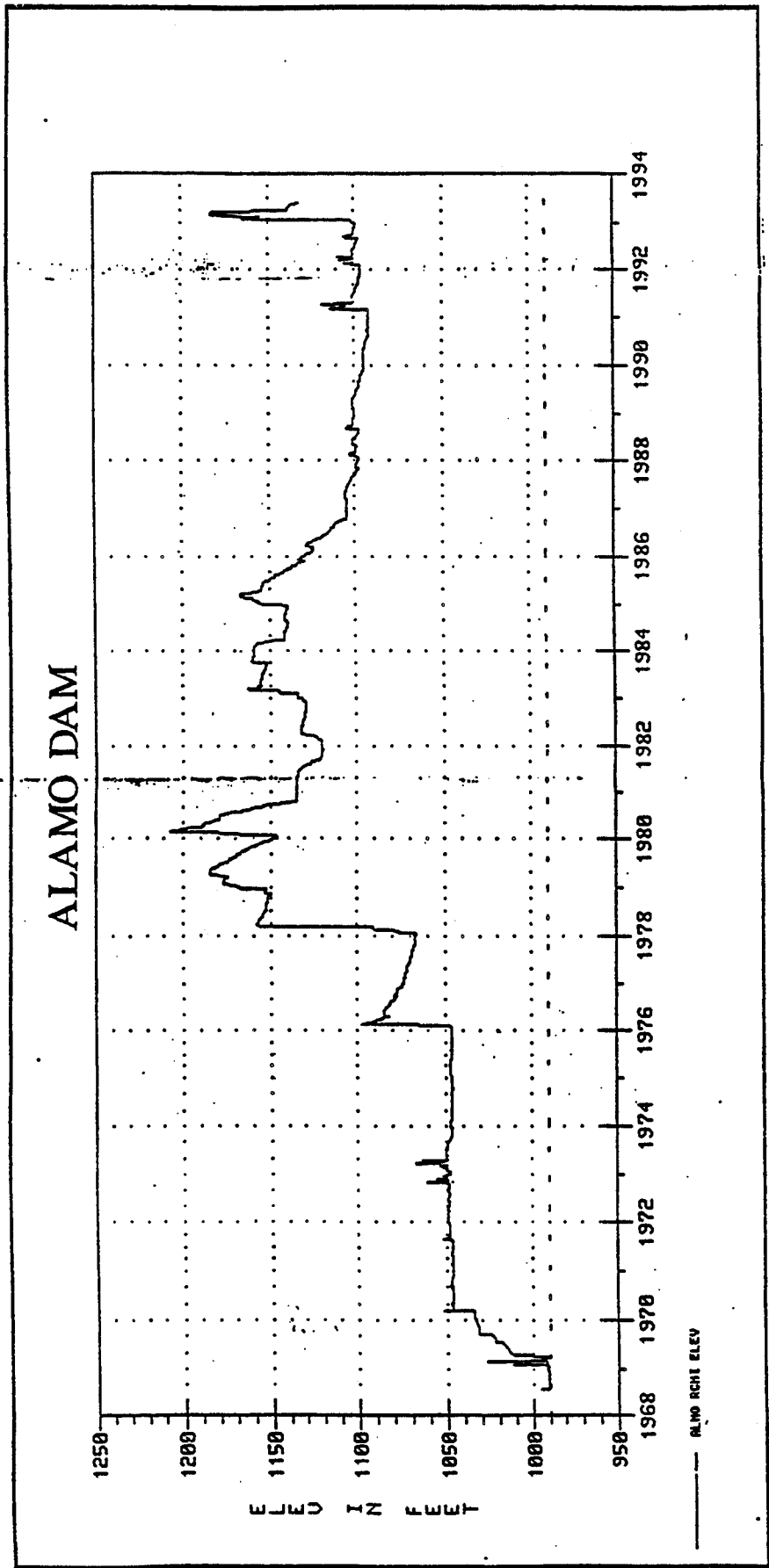


FIGURE 7



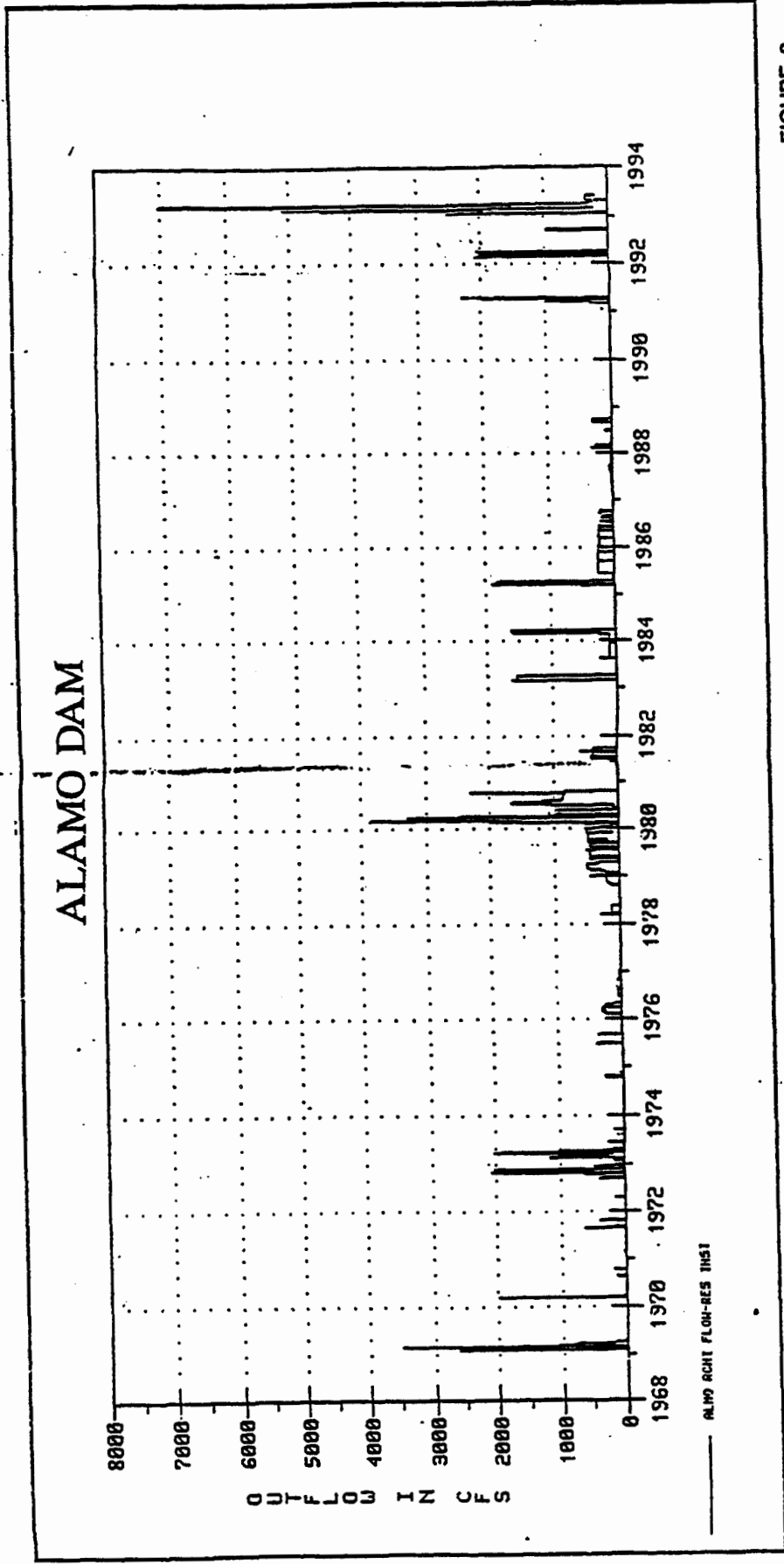


FIGURE 8

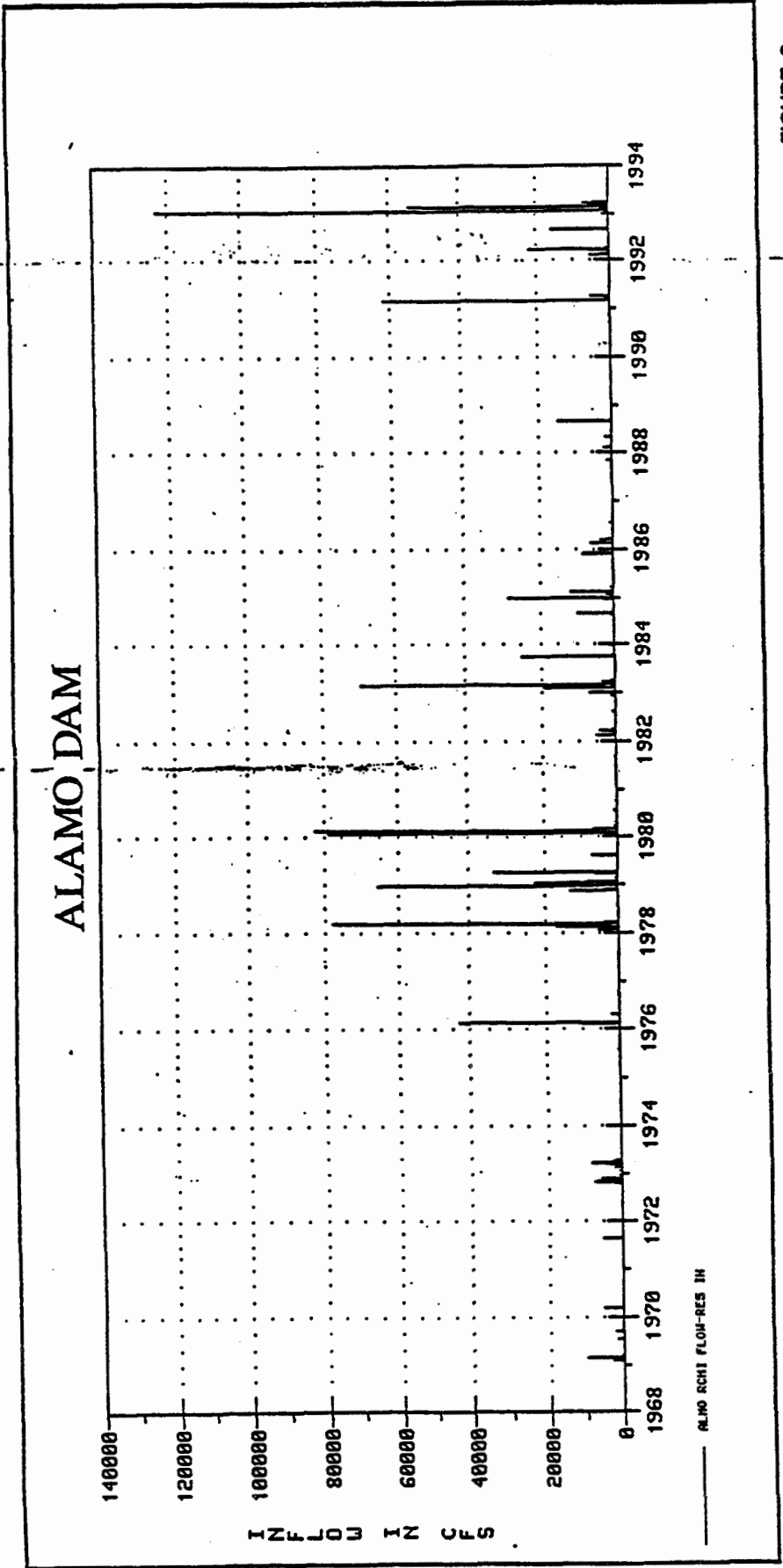


FIGURE 9

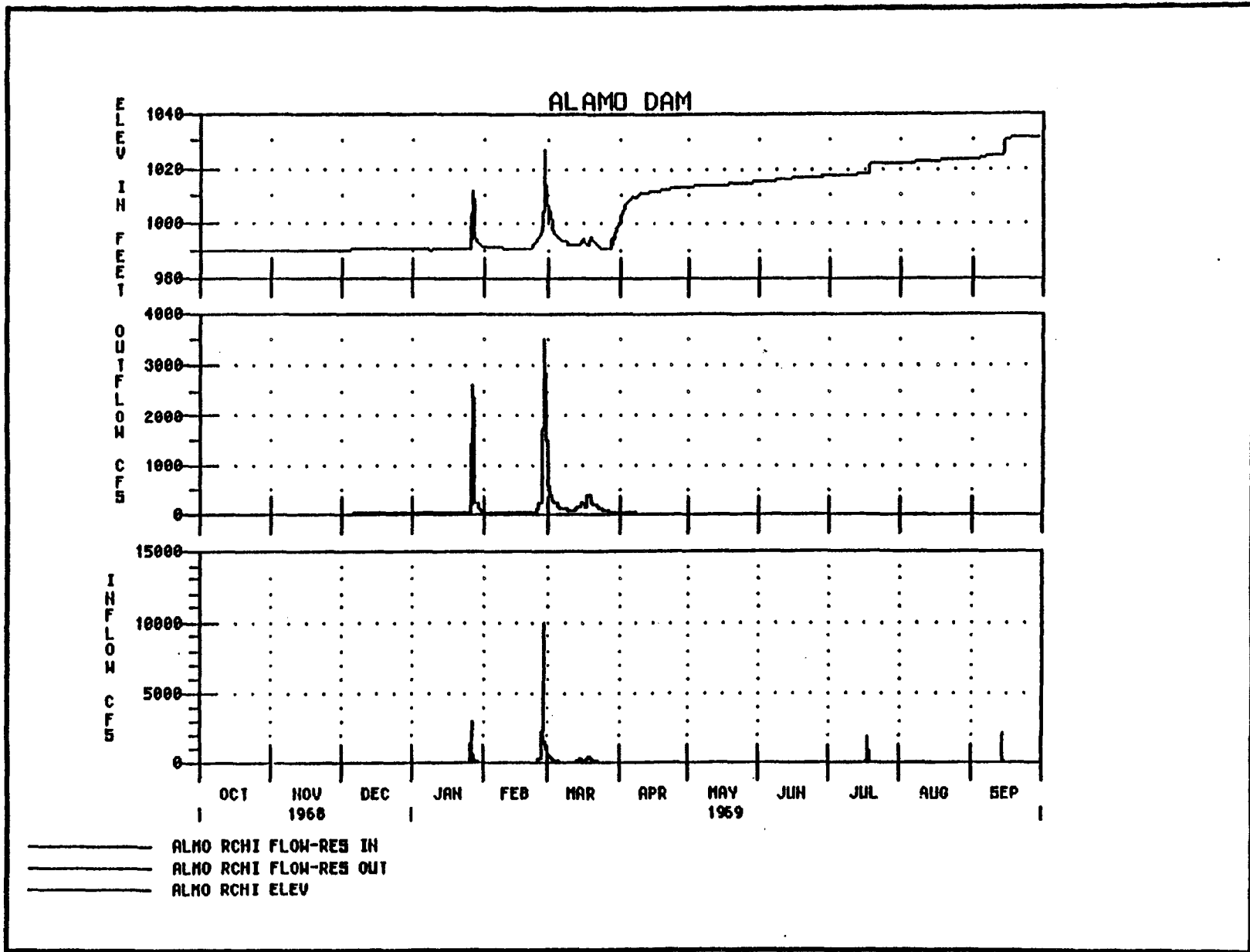


FIGURE 6-1

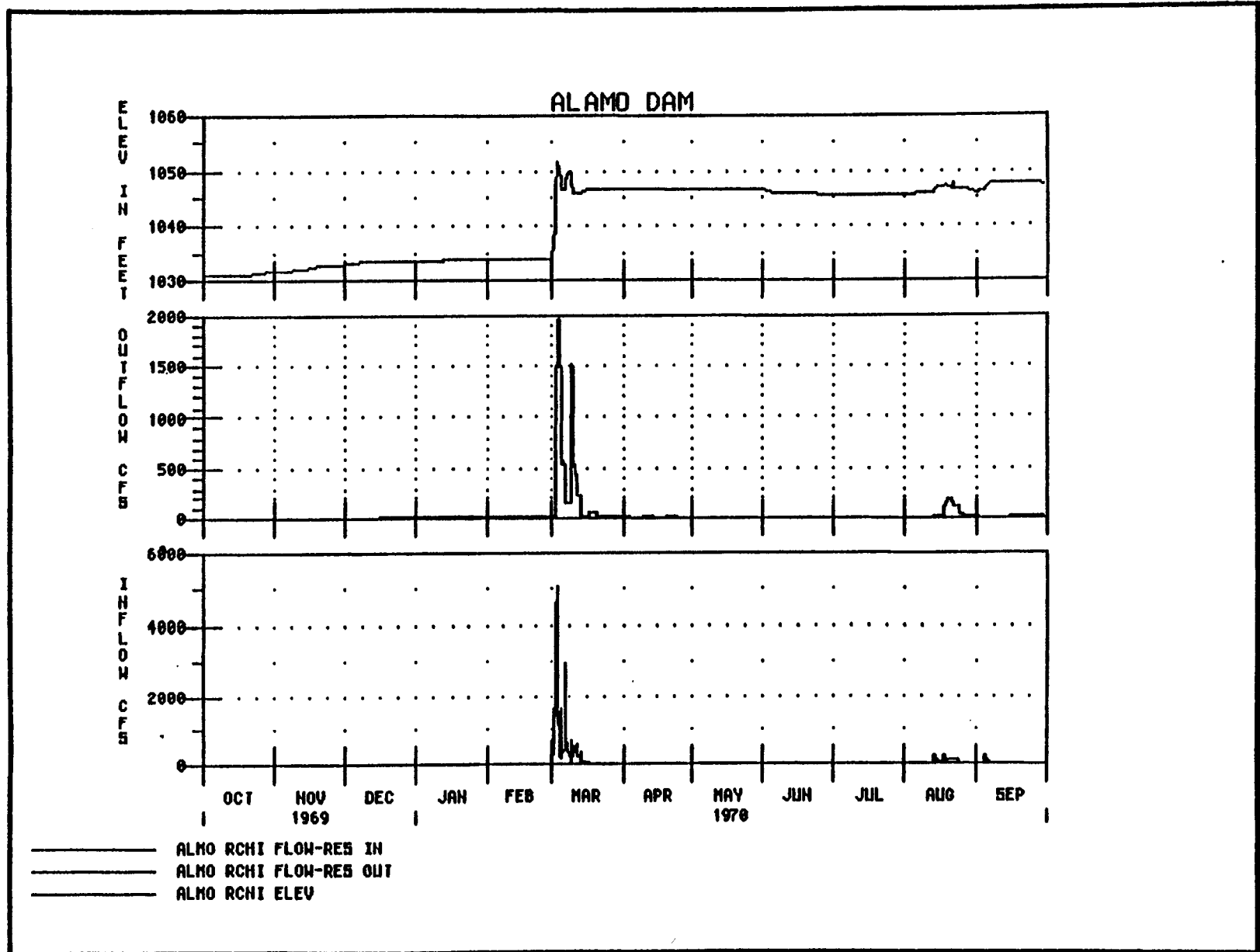


FIGURE 6-2

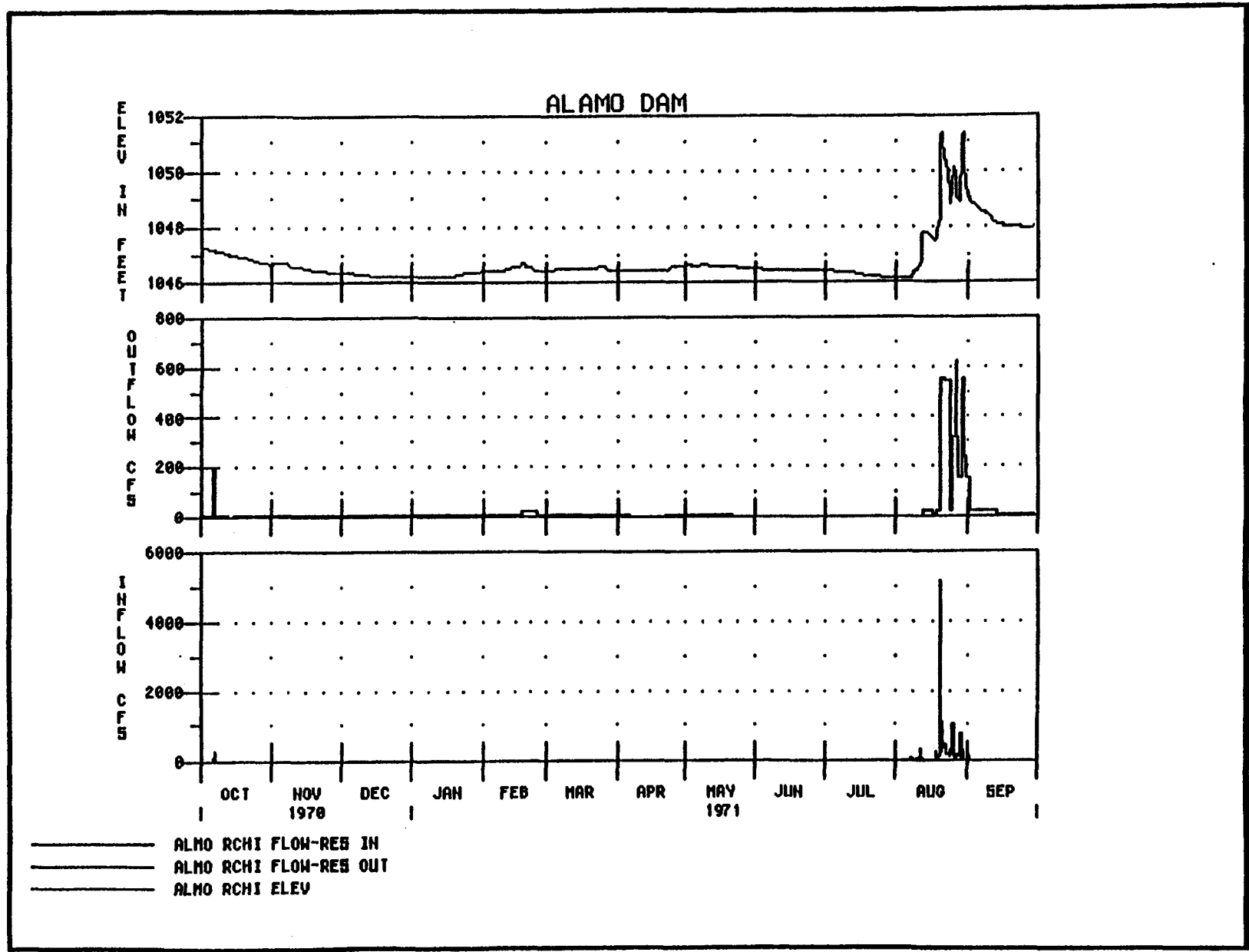


FIGURE 6-3

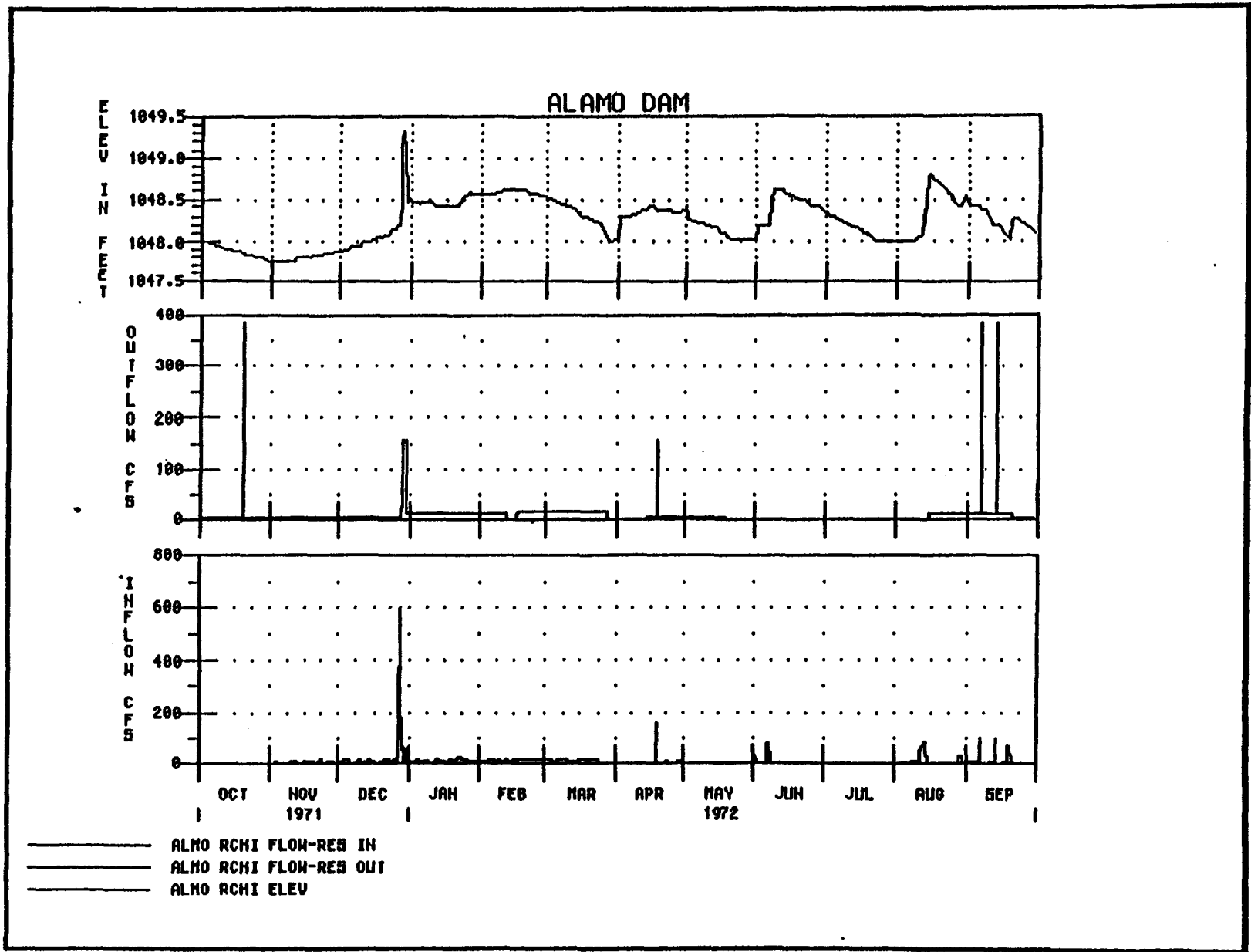


FIGURE 6-4

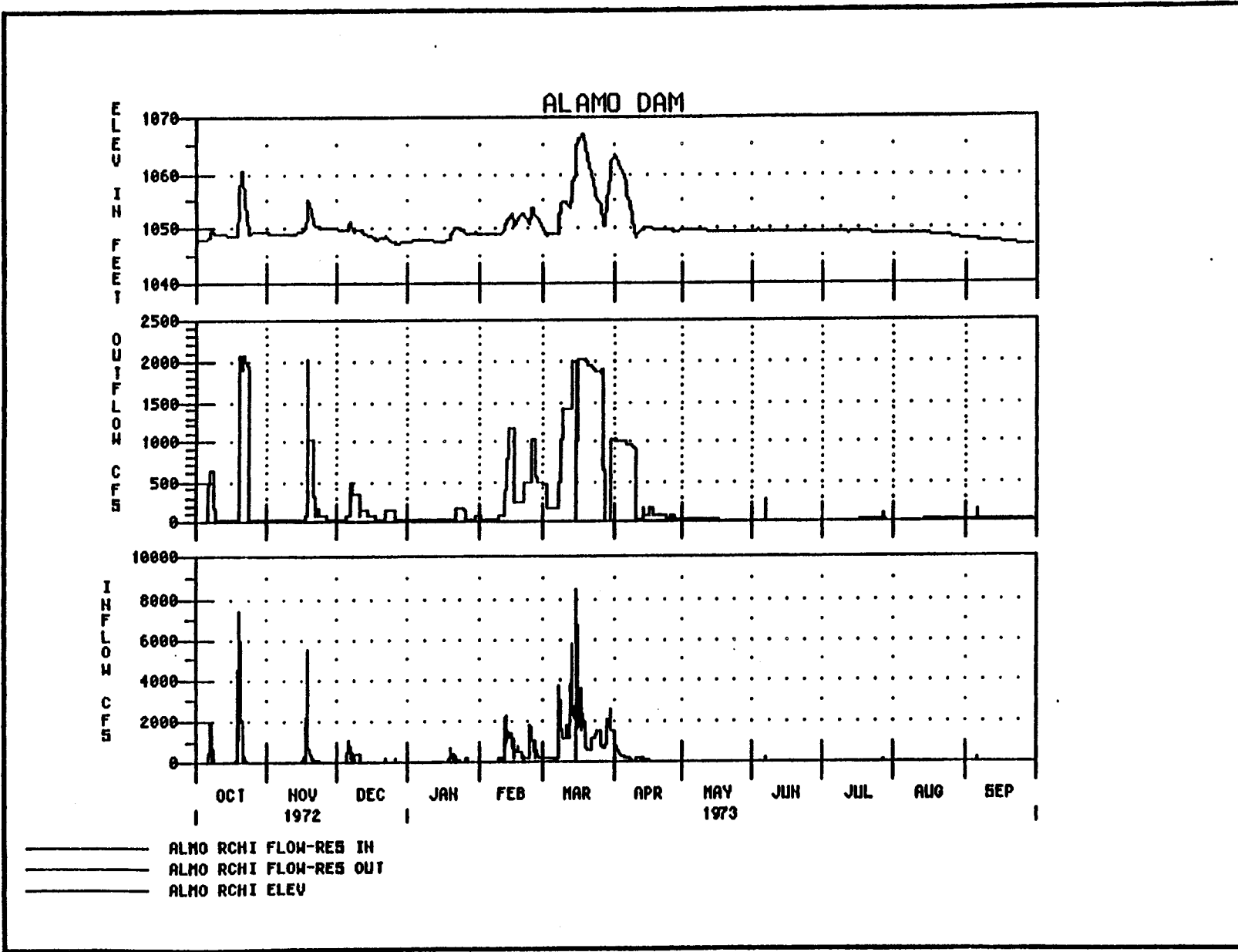


FIGURE 6-5

RECEIVED  
FEDERAL BUREAU OF INVESTIGATION  
U.S. DEPARTMENT OF JUSTICE  
WASHINGTON, D.C. 20535

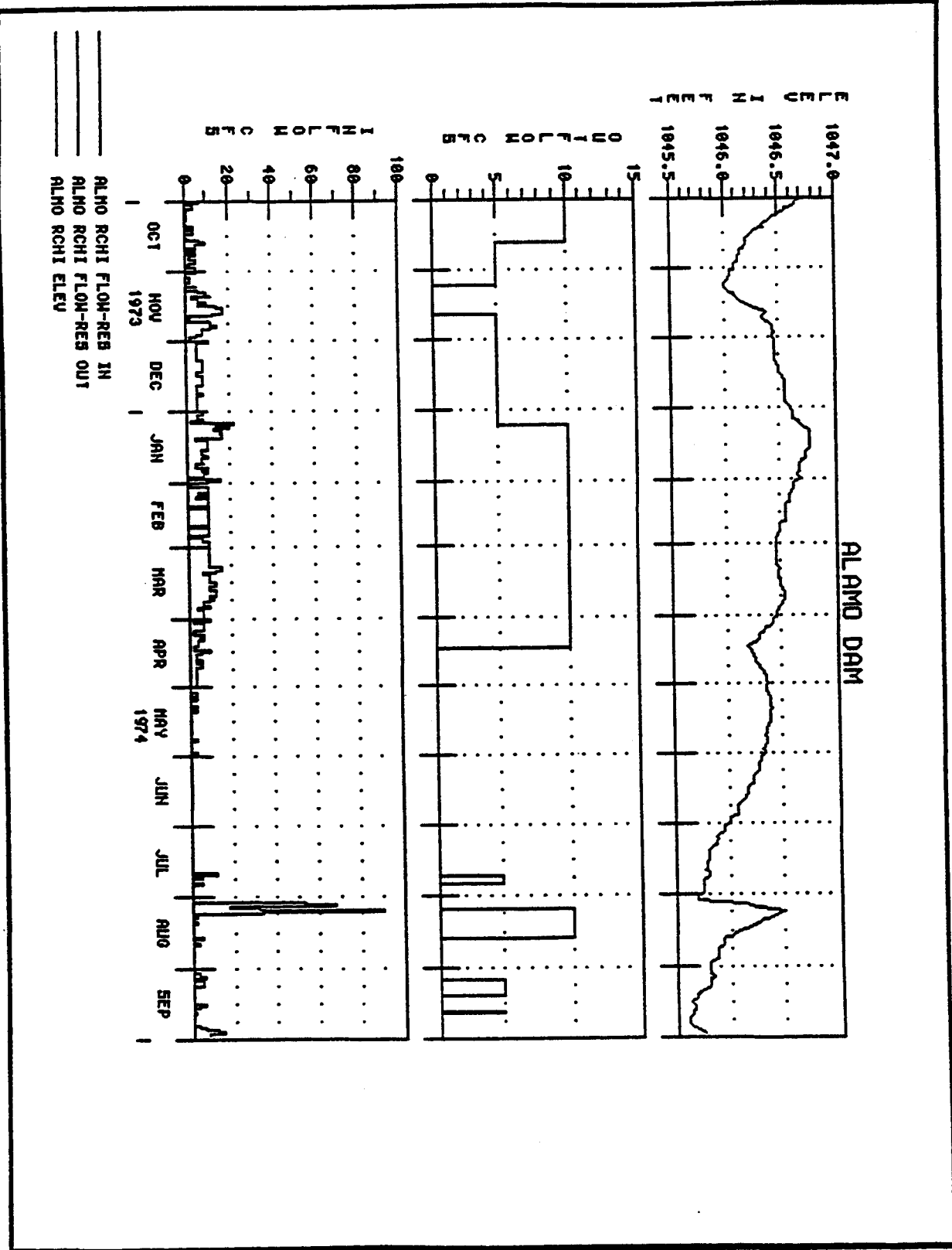


FIGURE 6-6



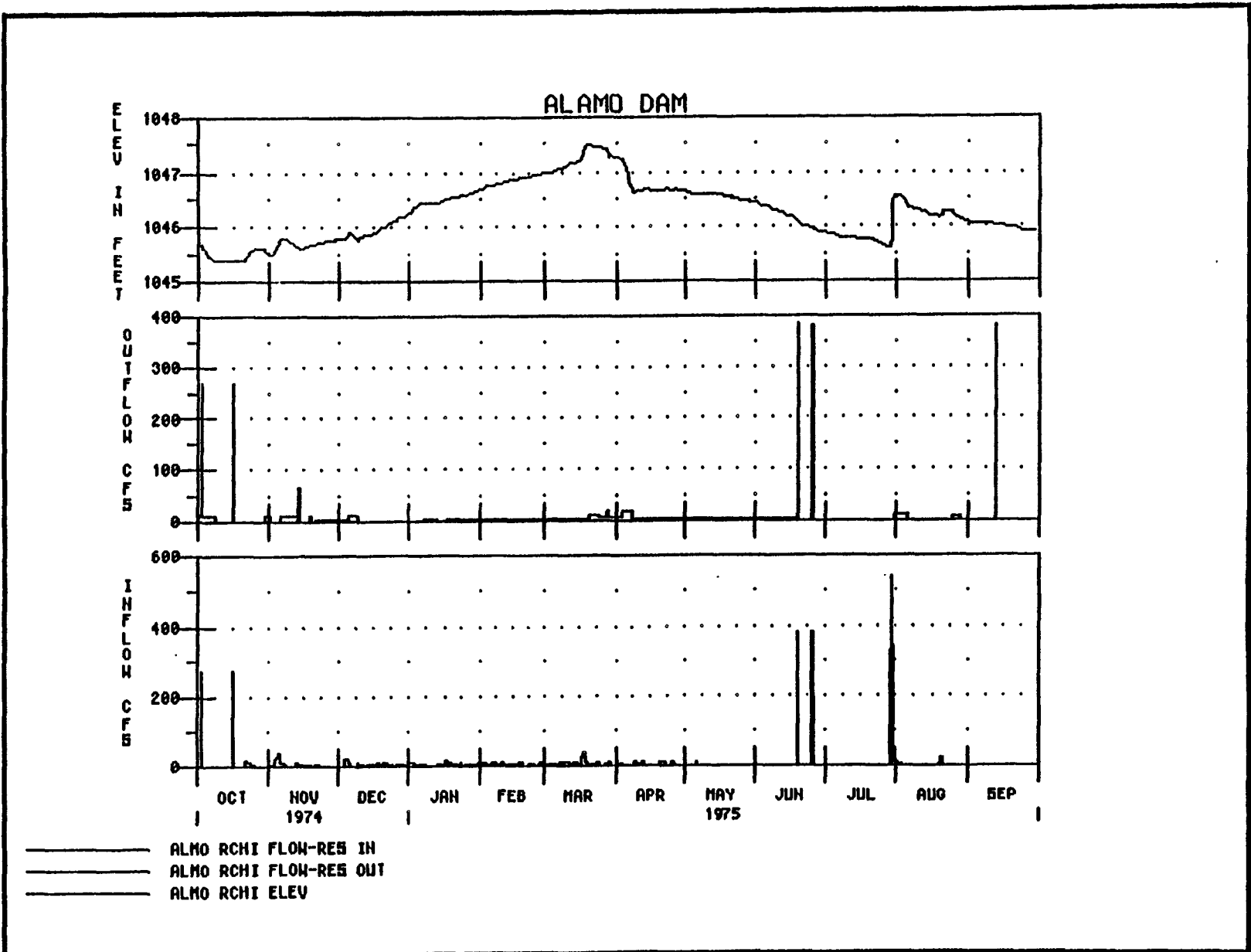


FIGURE 6-7

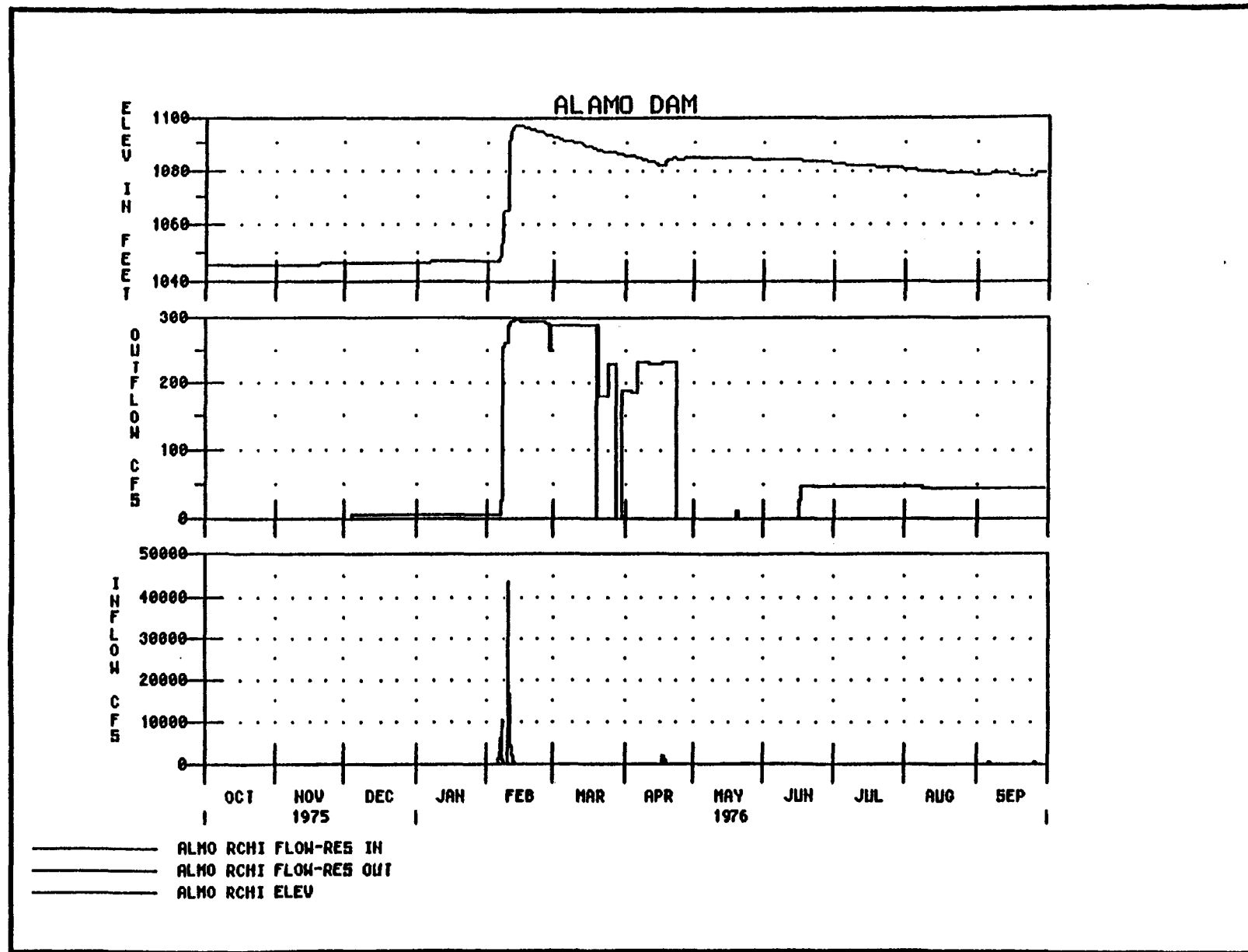


FIGURE 6-8

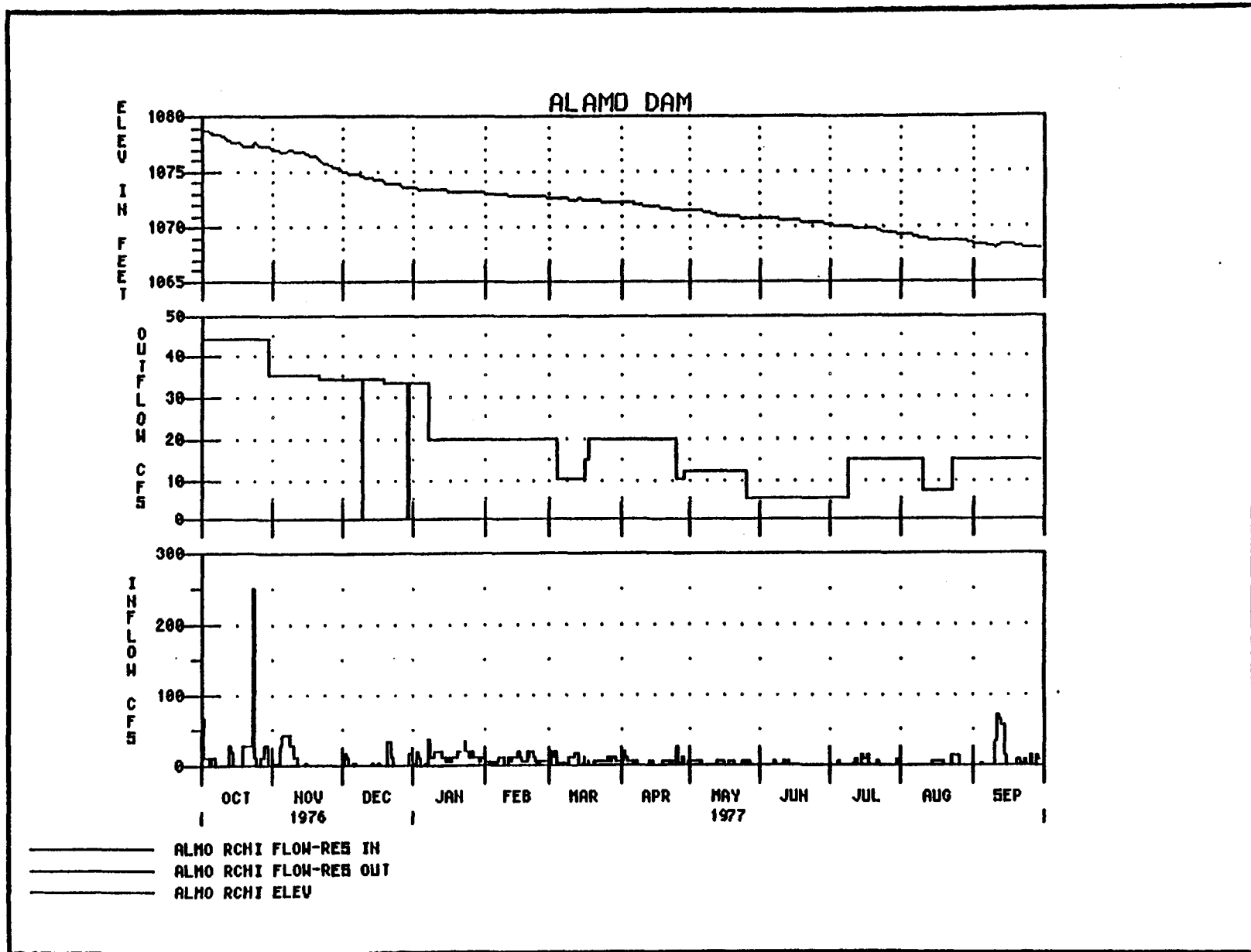


FIGURE 6-9

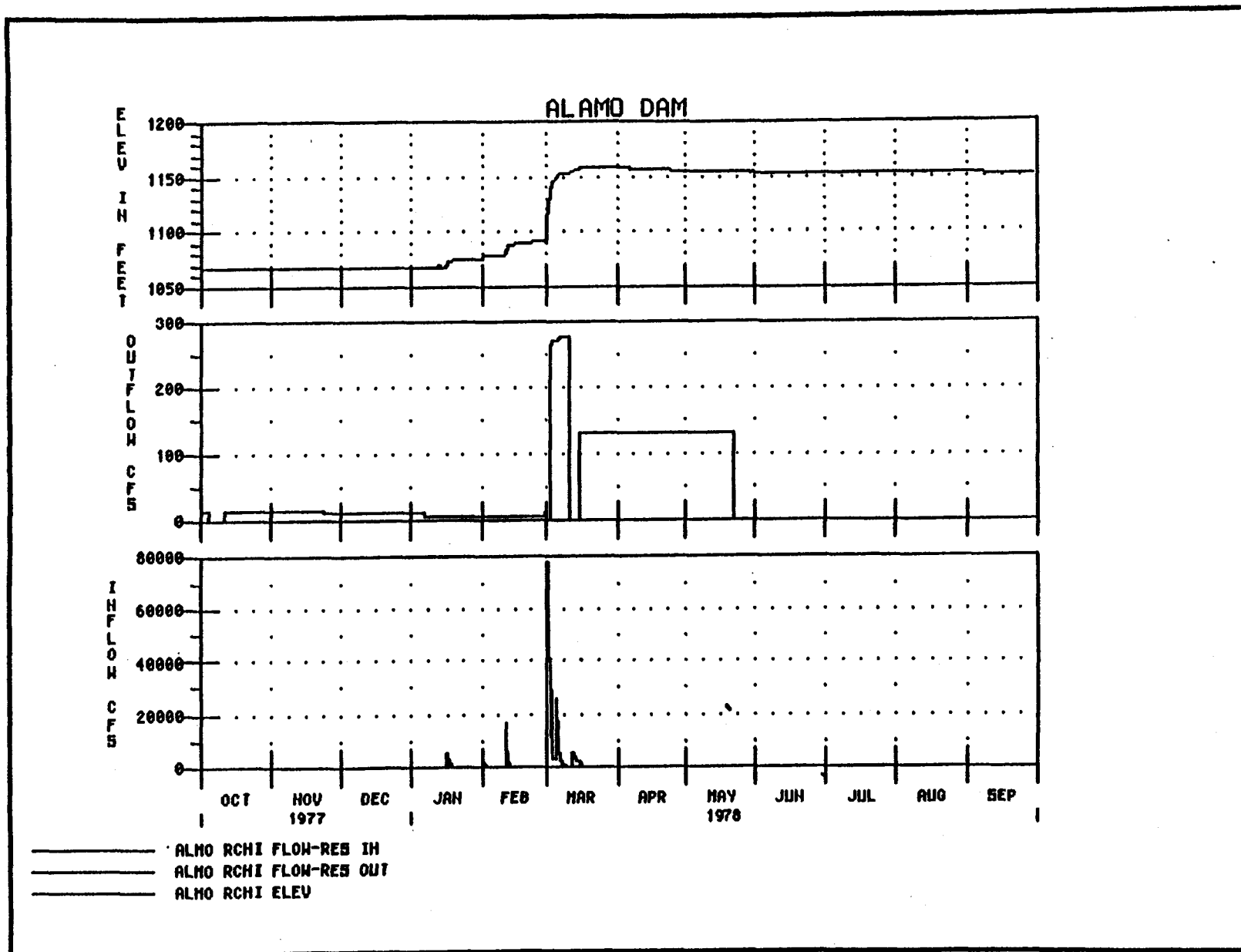


FIGURE 6-10

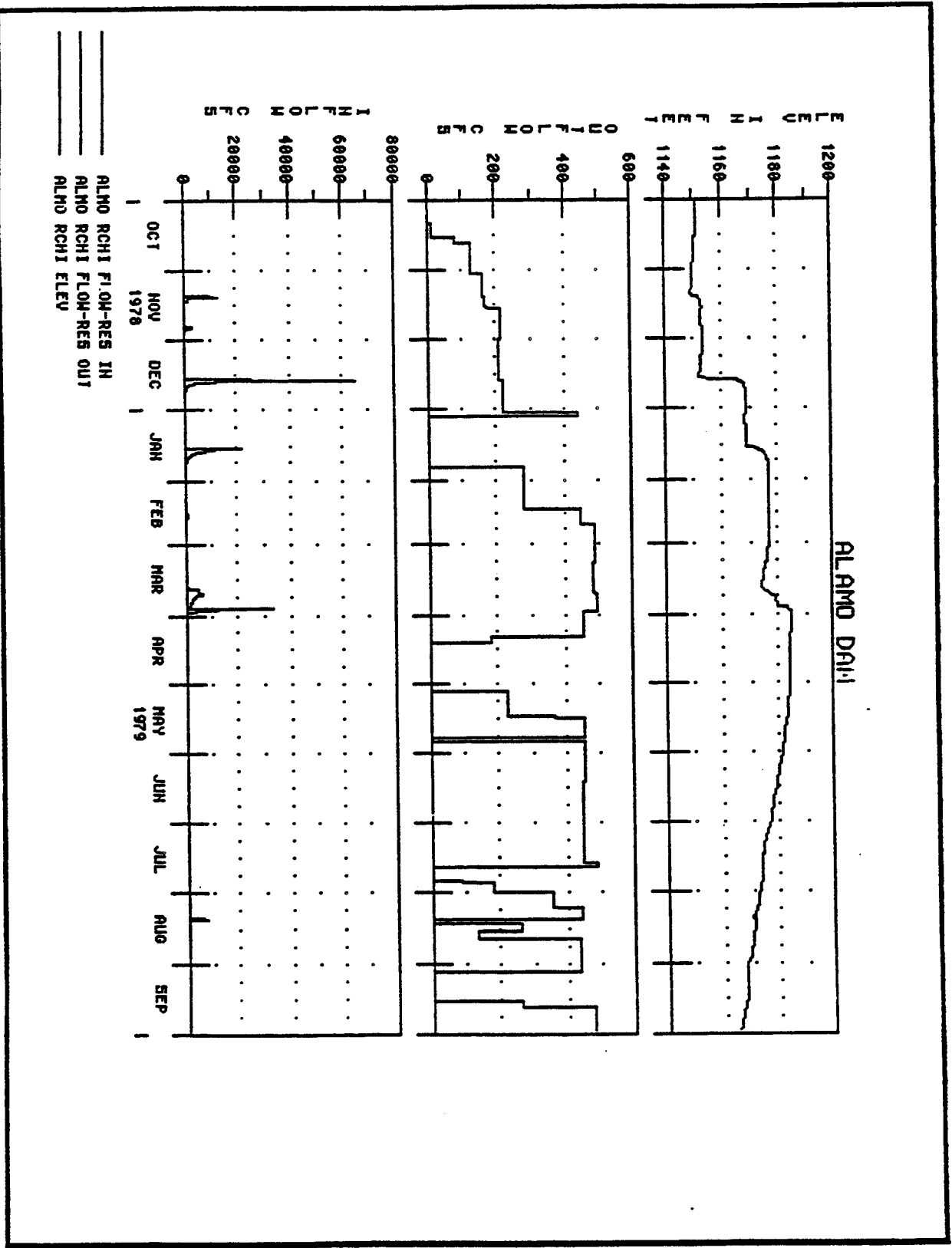


FIGURE 6-11

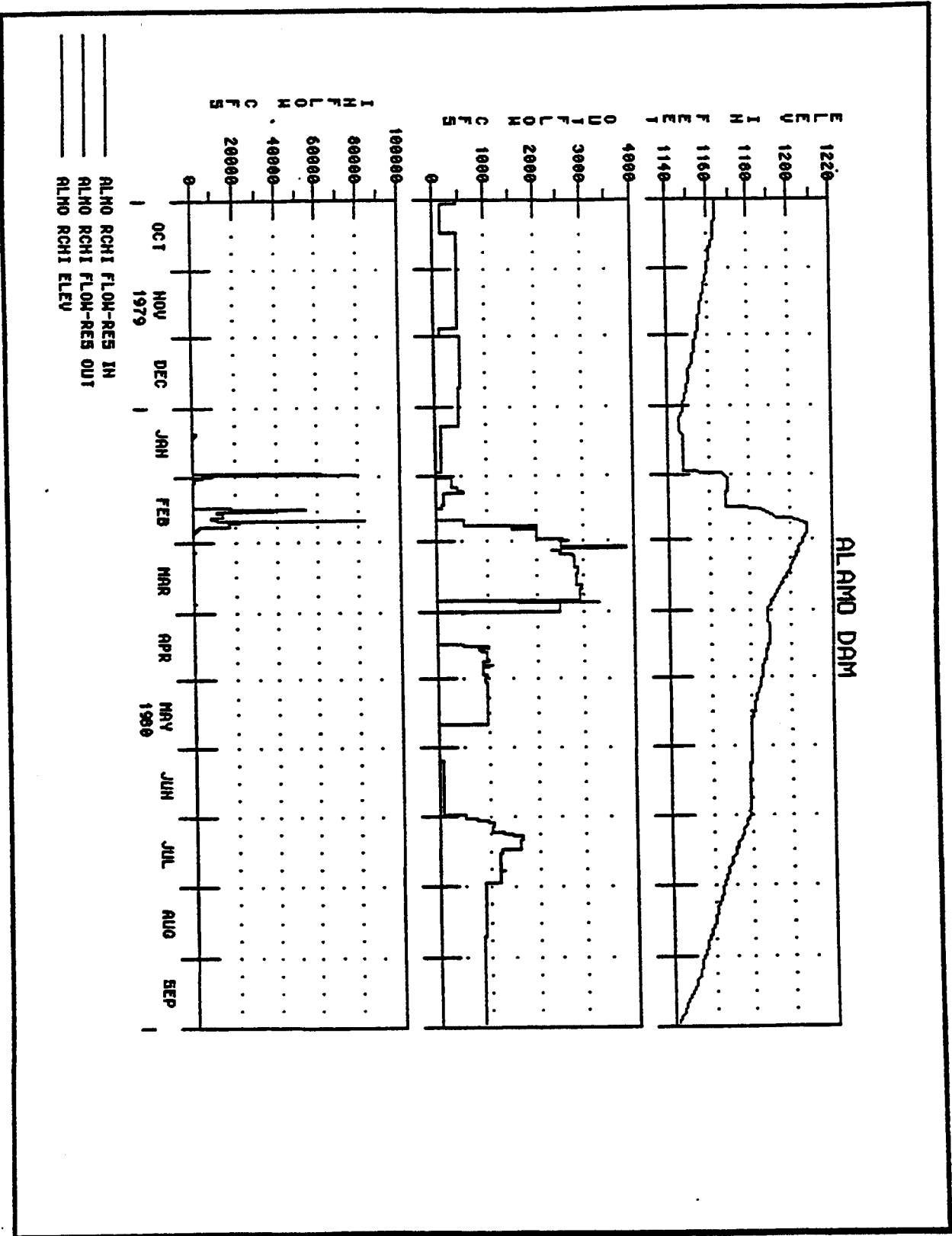


FIGURE 6-12

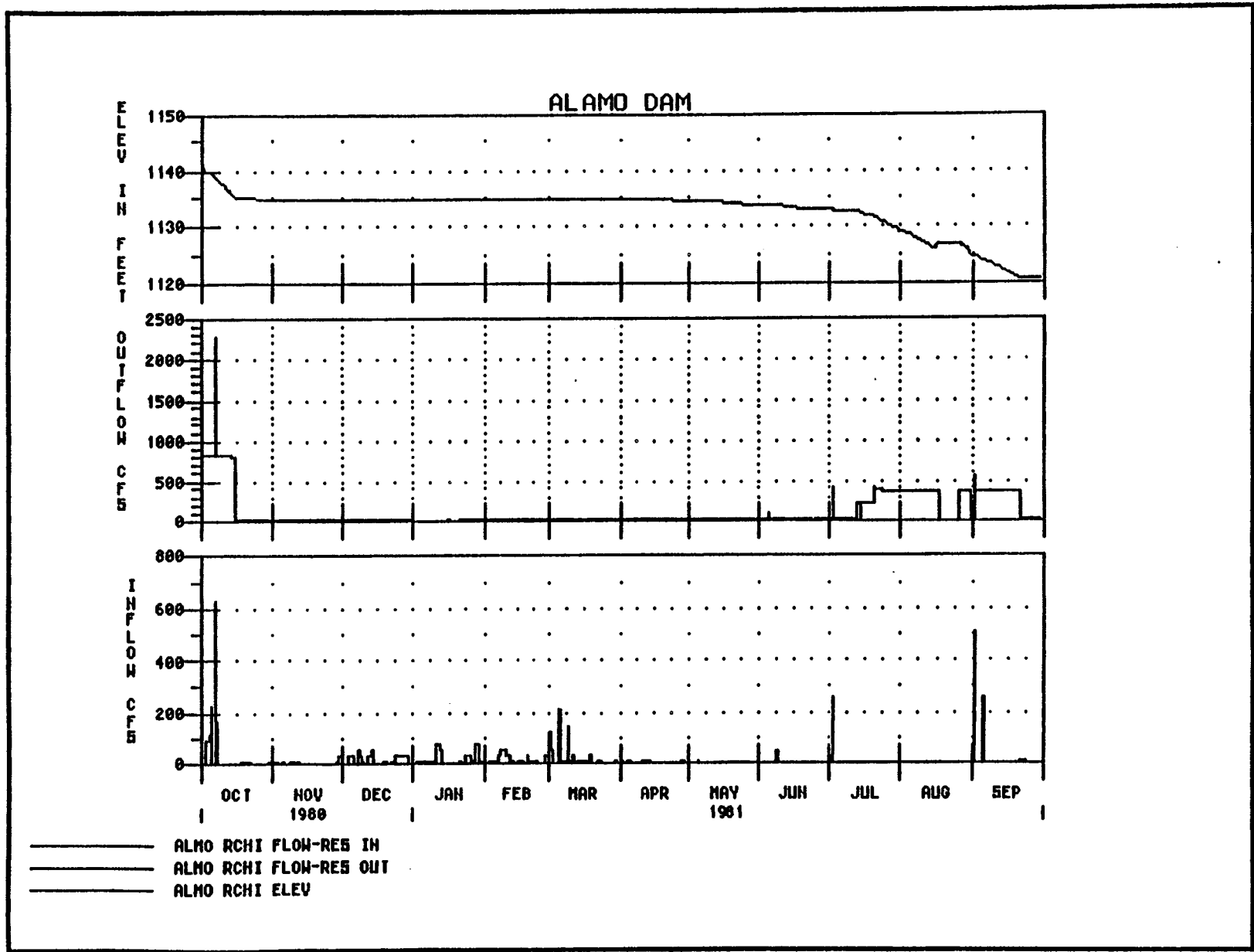


FIGURE 6-13

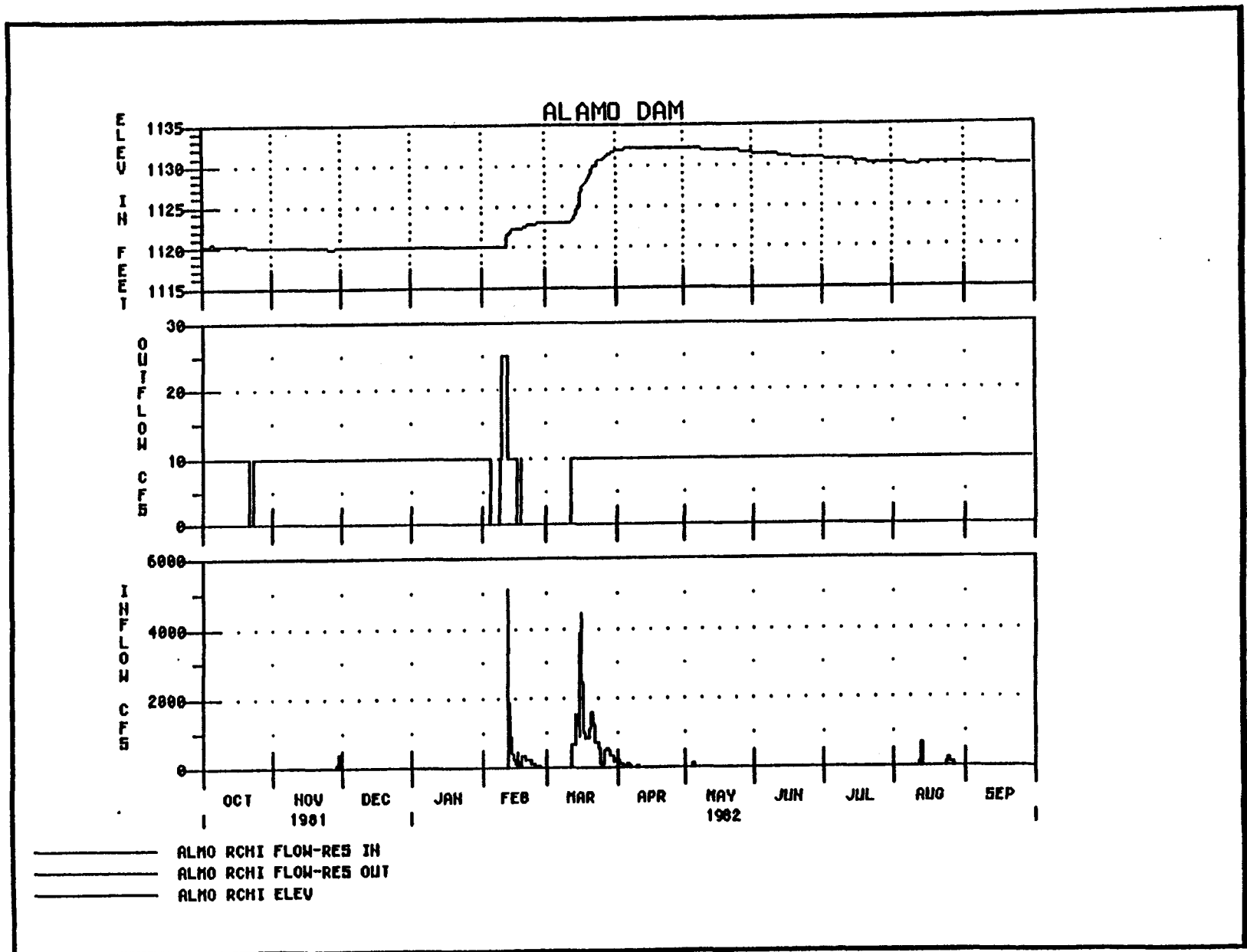


FIGURE 6-14



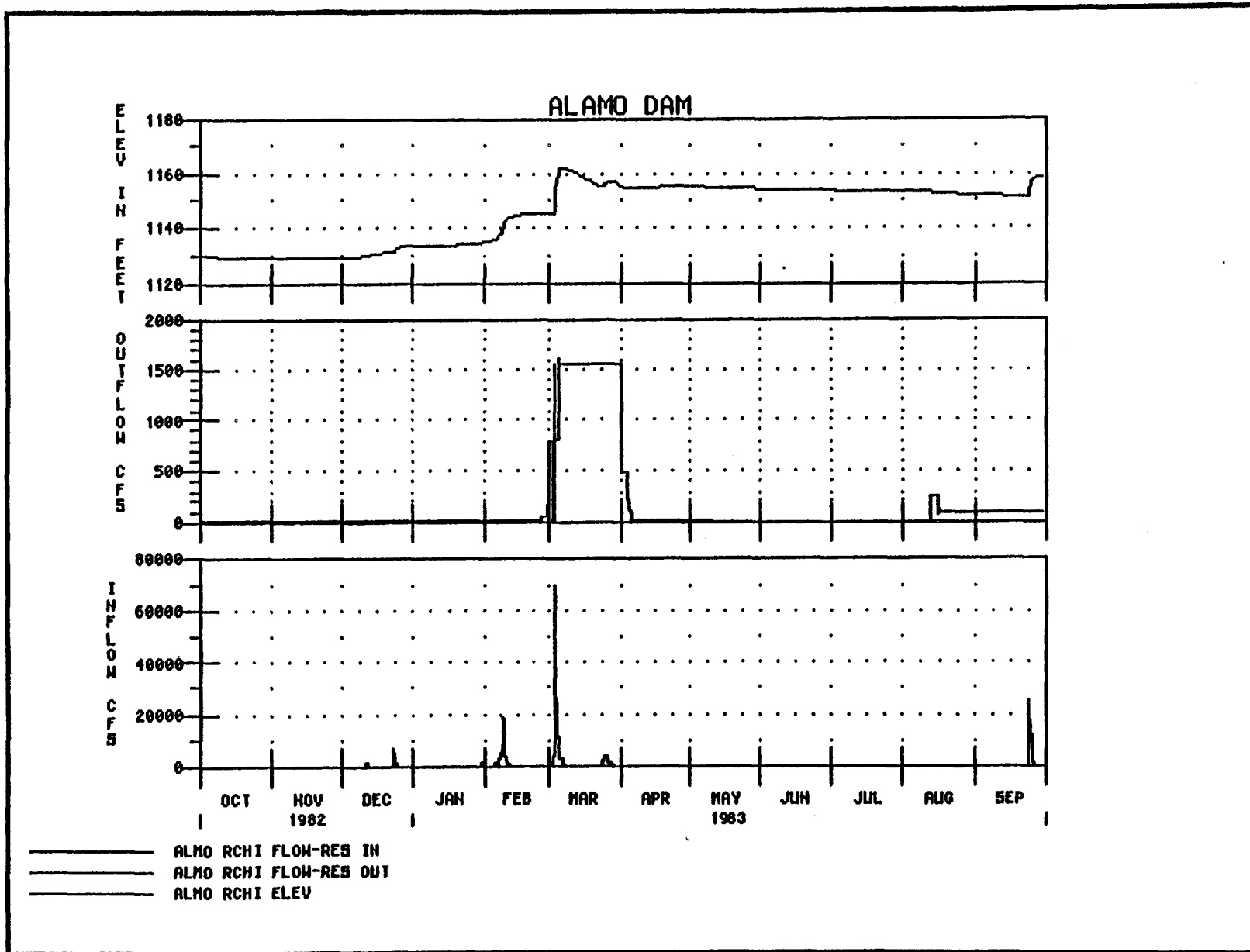


FIGURE 6-15

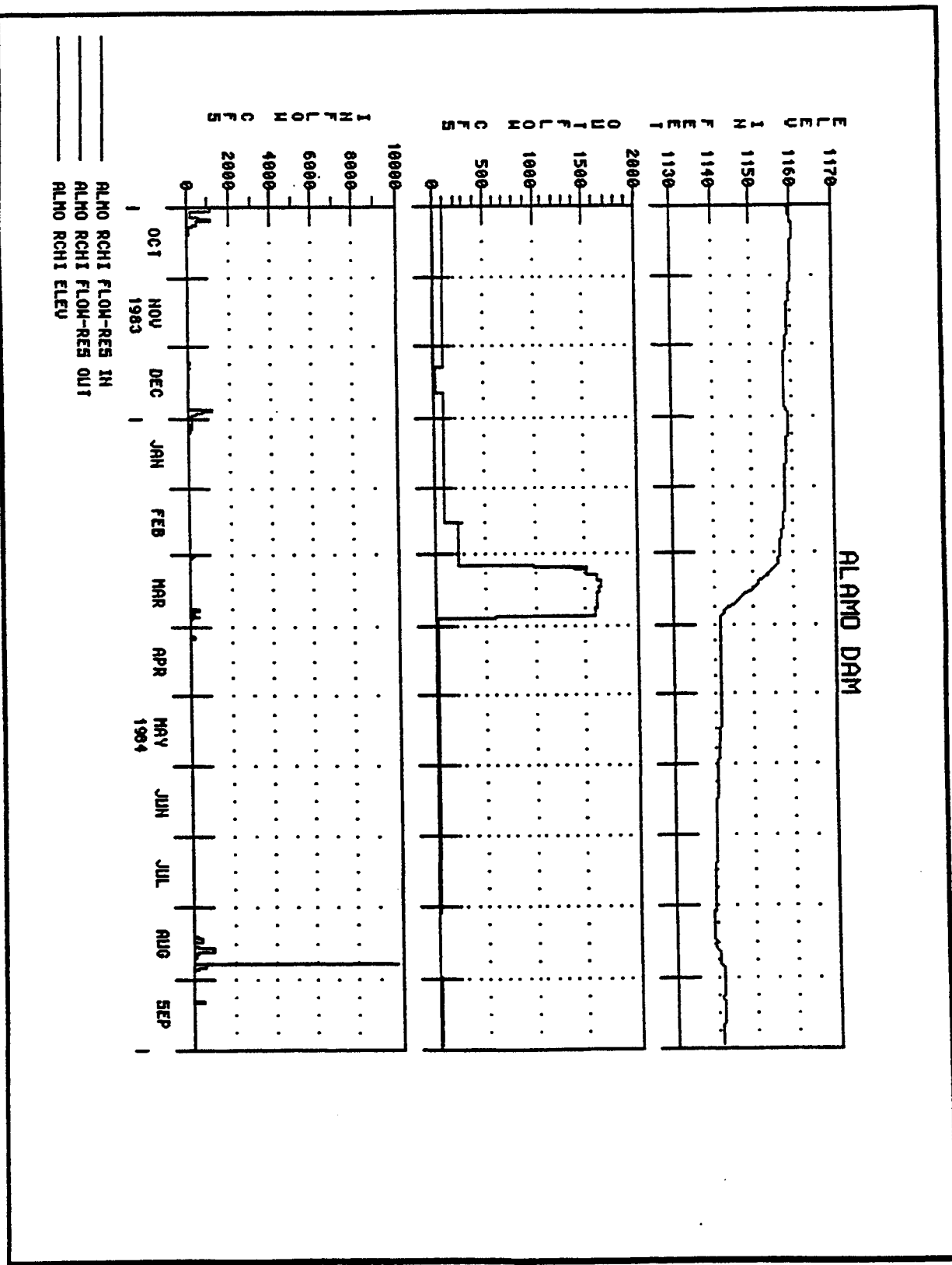


FIGURE 6-16

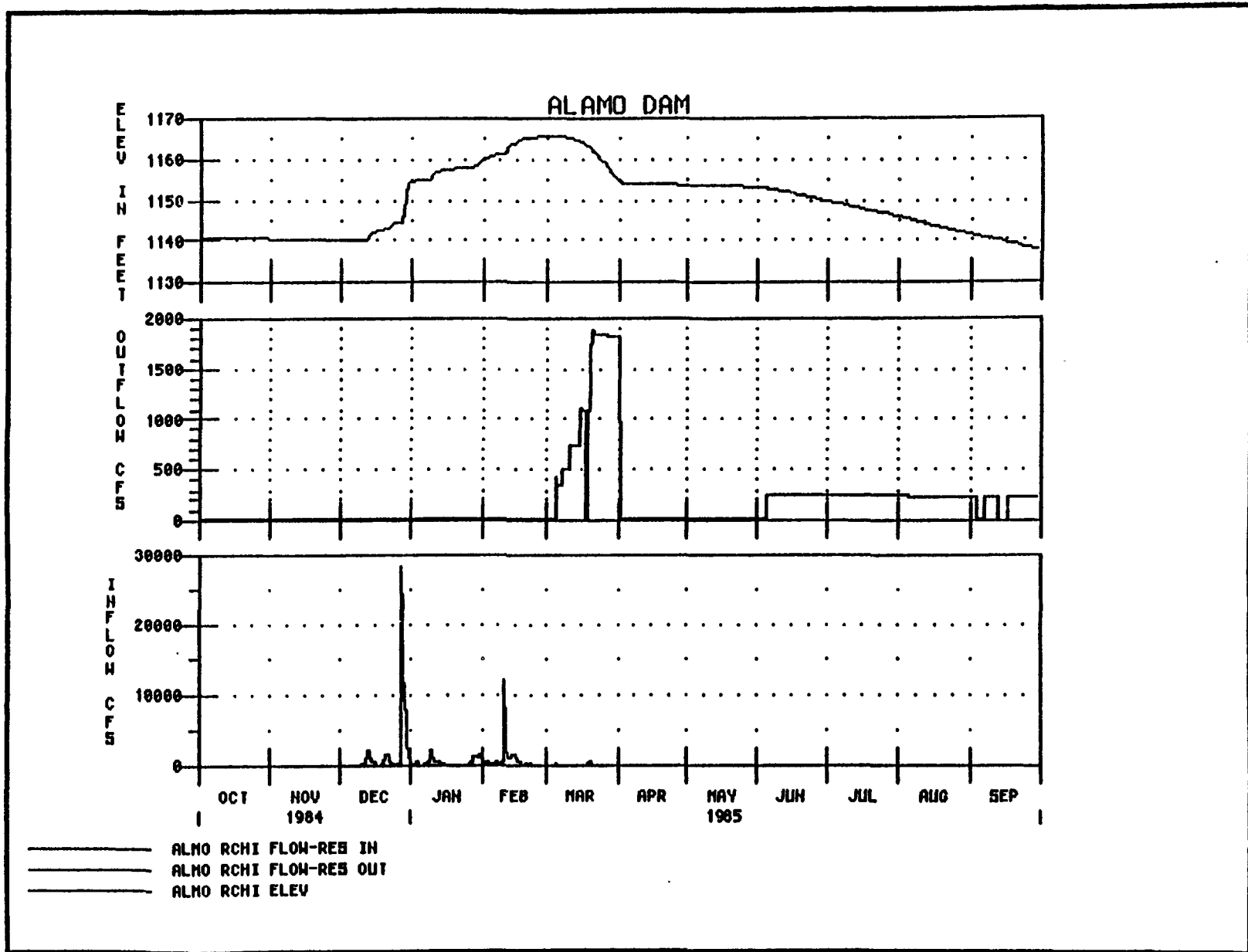


FIGURE 6-17

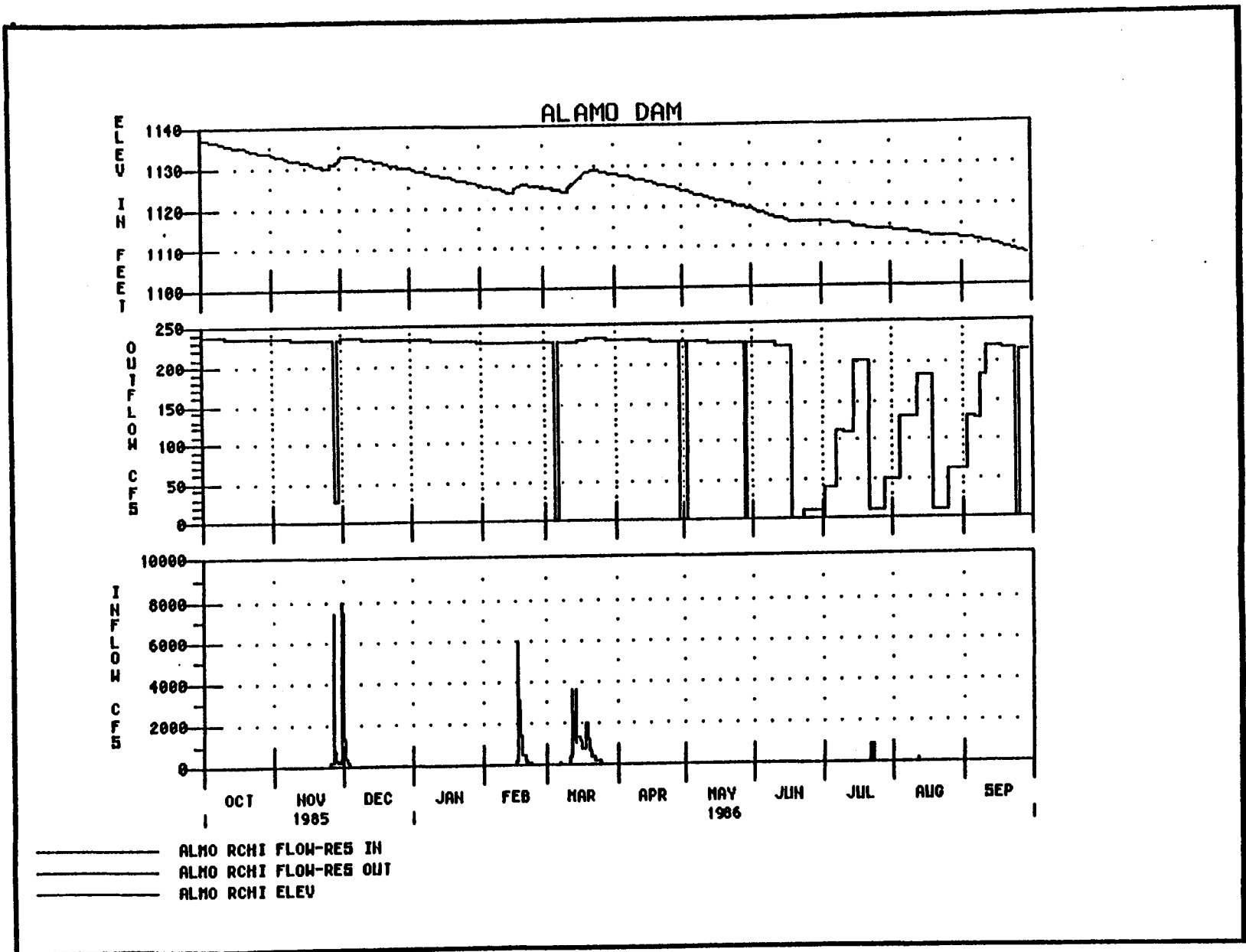


FIGURE 6-18

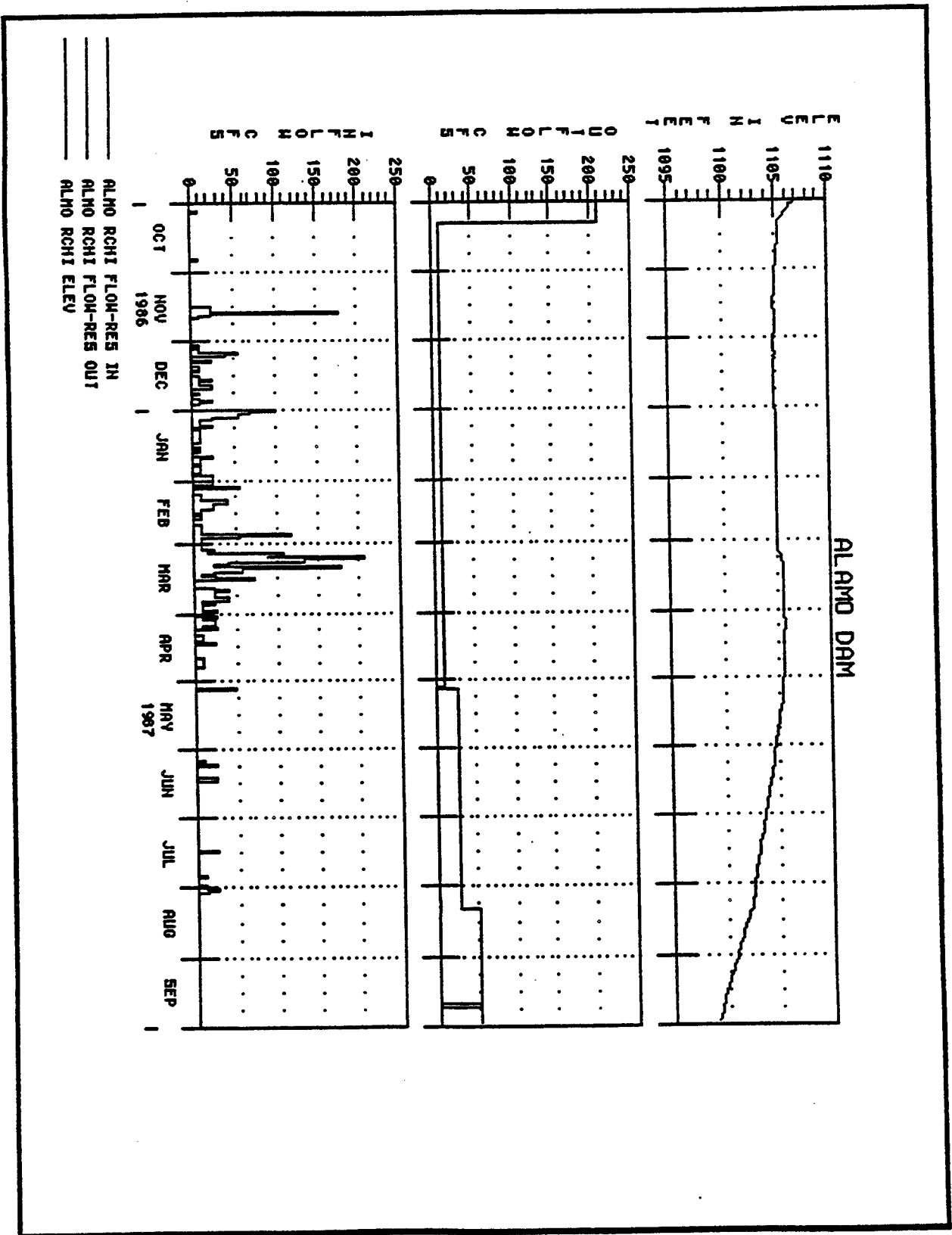


FIGURE 6-19

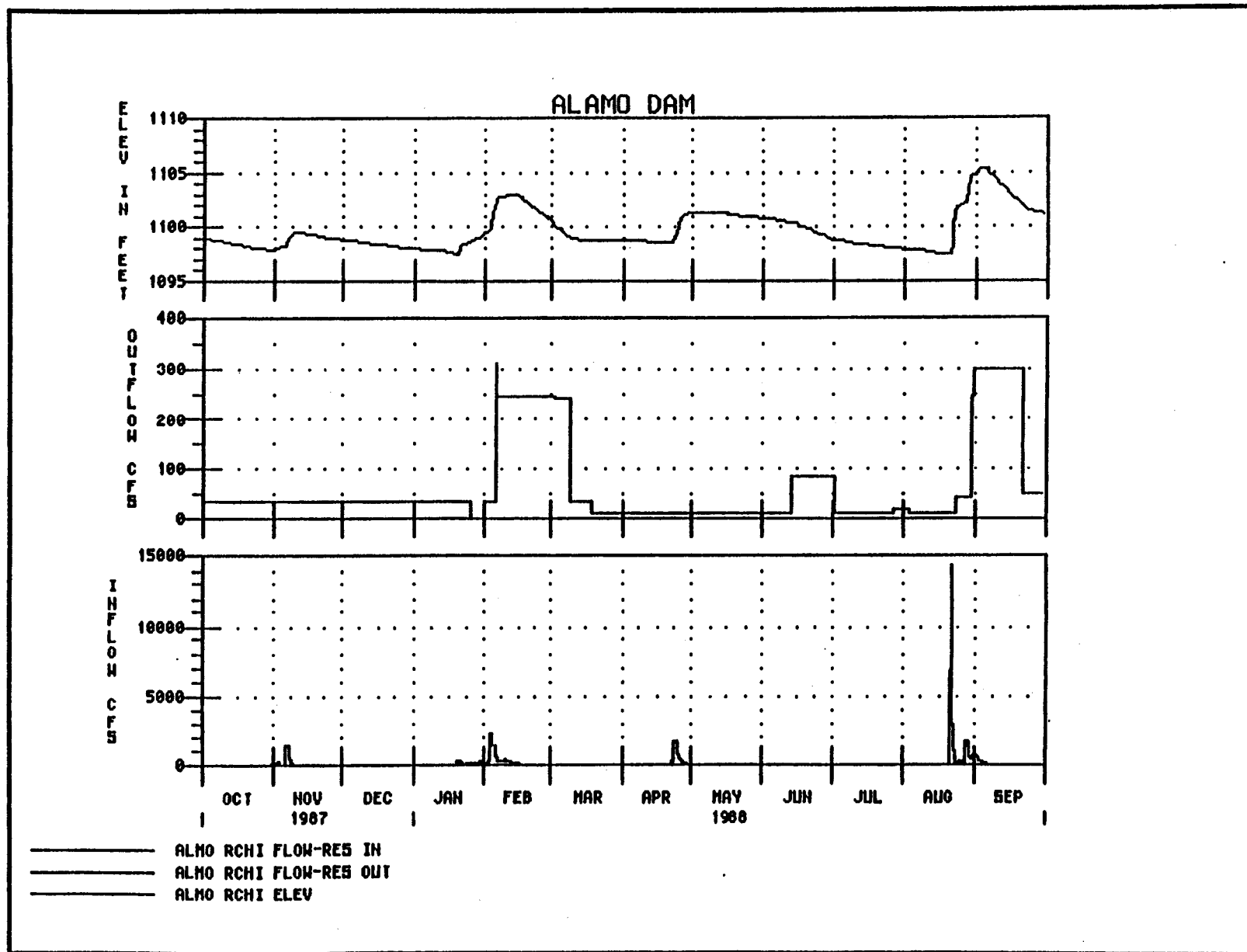


FIGURE 6-20

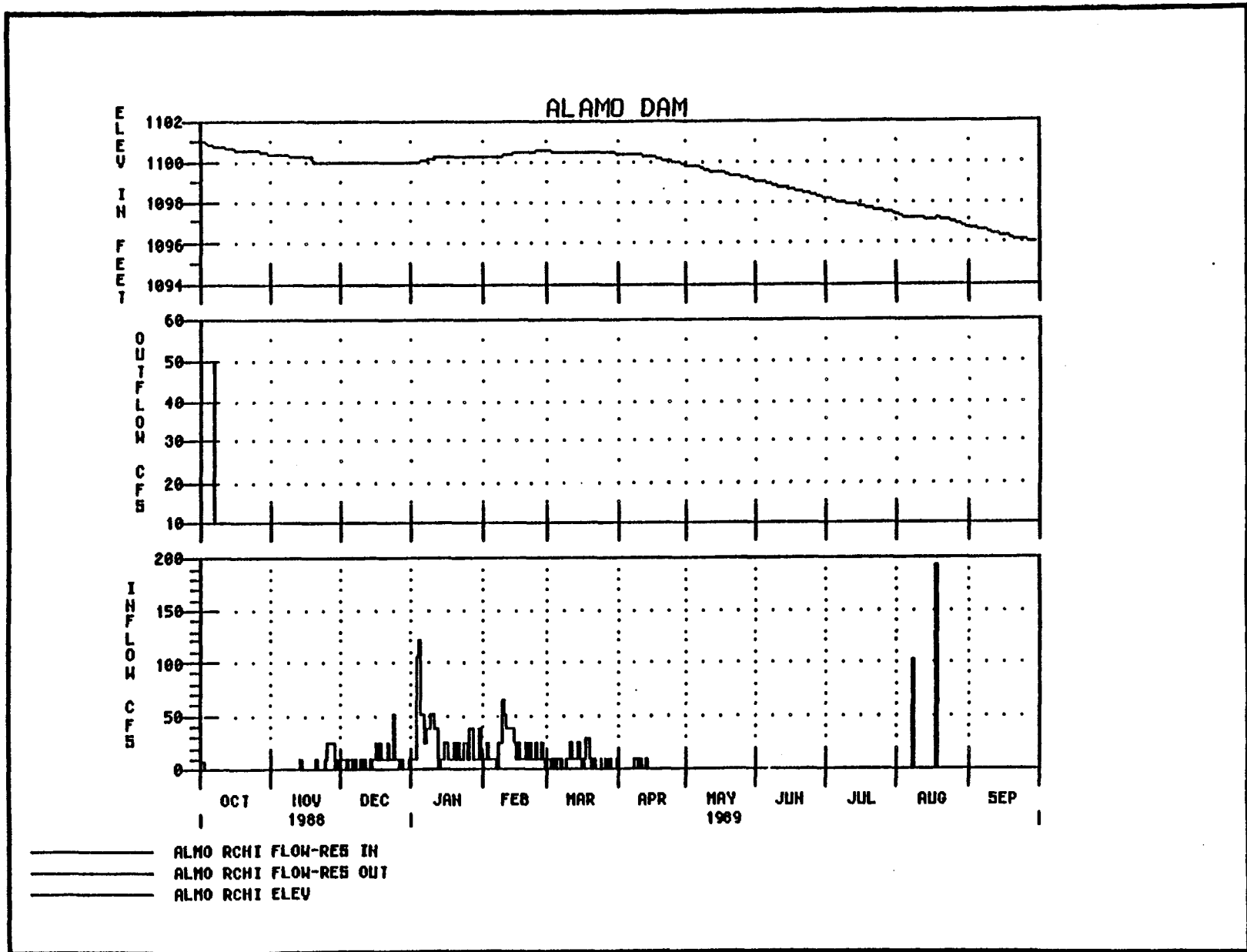


FIGURE 6-21

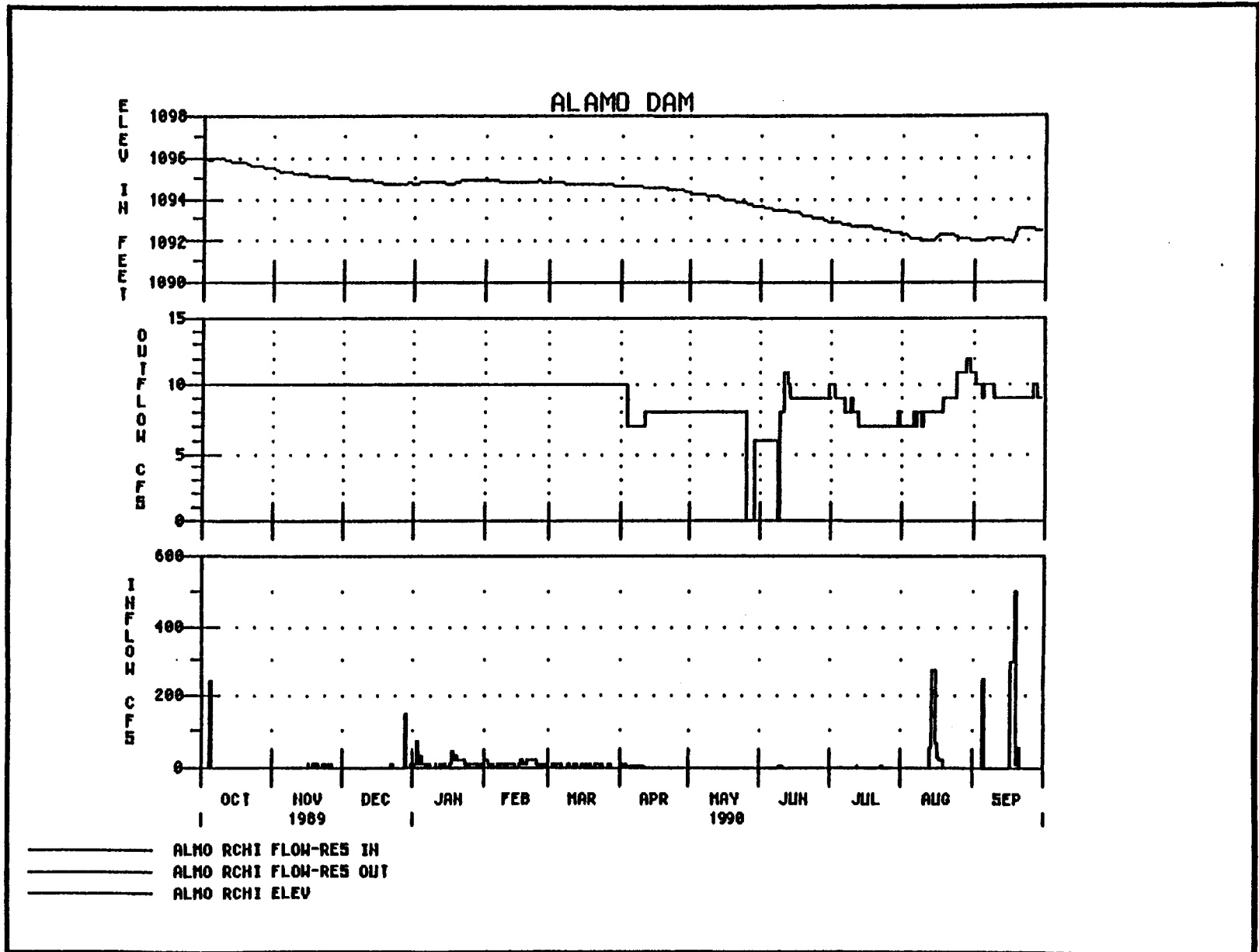


FIGURE 6-22



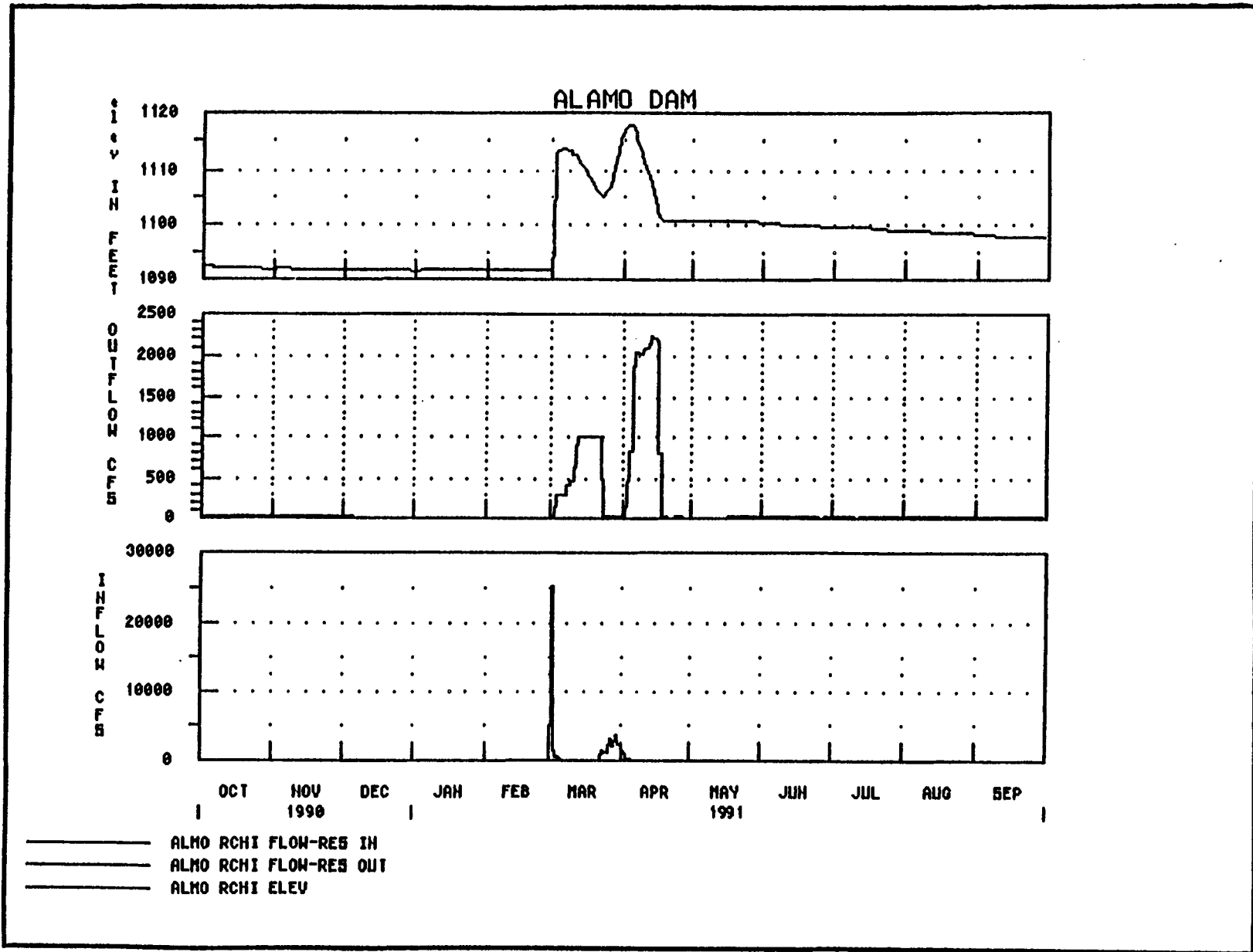


FIGURE 6-23

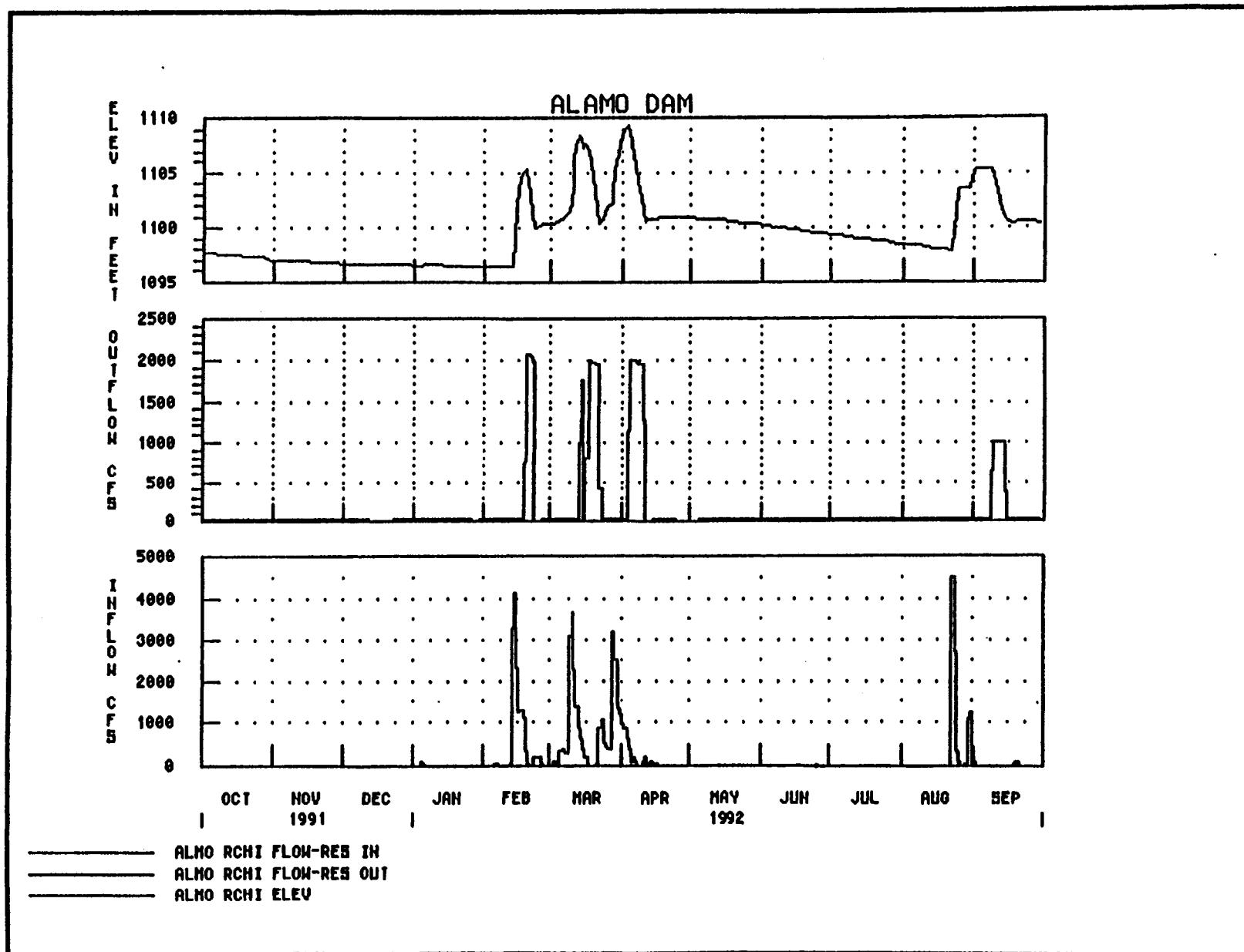


FIGURE 6-24

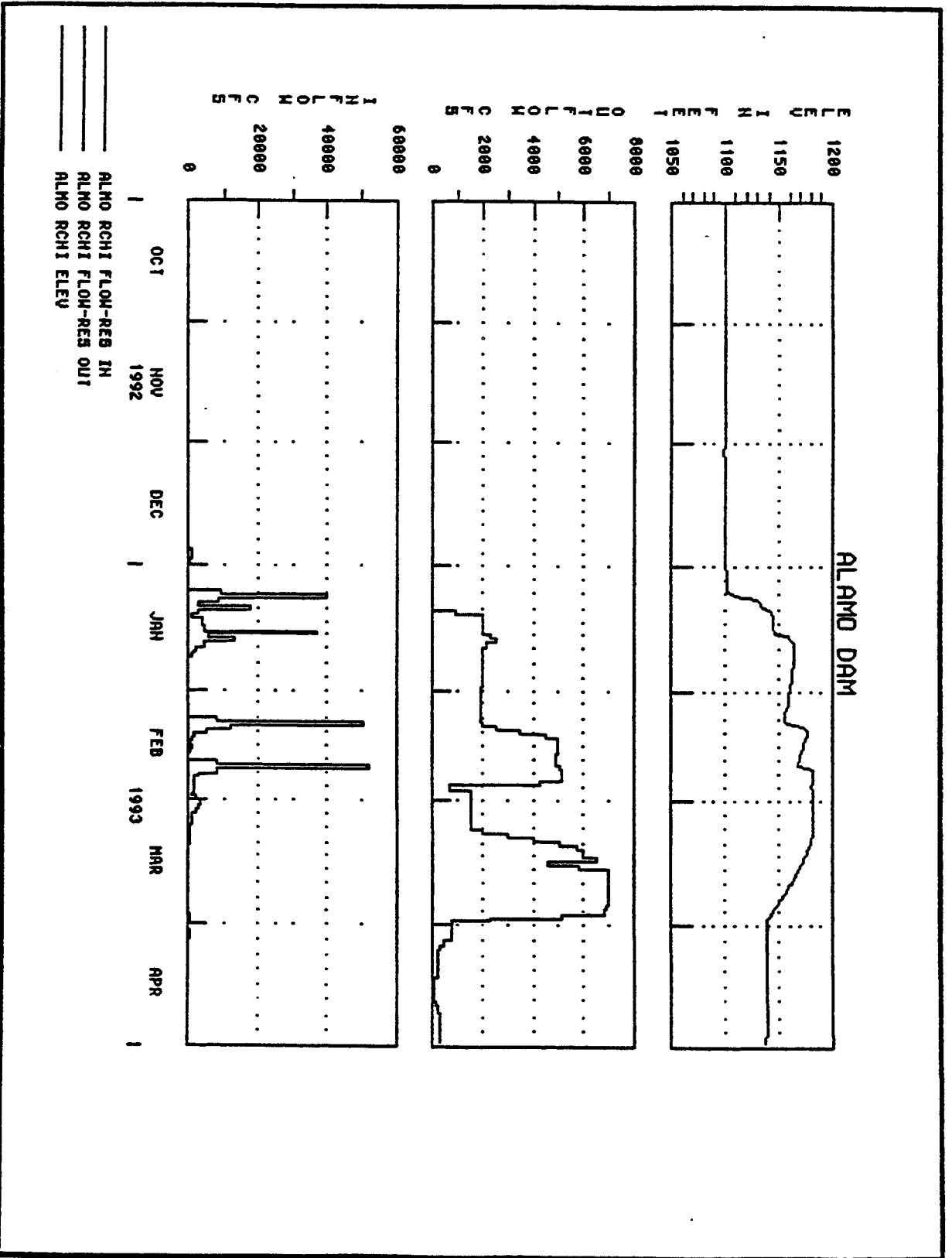


FIGURE 6-25