HYDROLOGY E21/D11 THREE PLANS

E21/D11

3 PLANS

CITY OF ALBUQUERQUE, NEW MEXICO
CITY ENGINEER'S OFFICE

MEMORANDUM - January 18, 1979

TO: Charles Volz, Supt. Building & Inspection Div.
FROM: Bruno Conegliano, Assistant City Engineer - Hydrology B.C.
RE: Tanoan Clubhouse Facilities

I am requesting your assistance in obtaining compliance with the following:

Mr. Jim Smith, representative of AMDEC, owner of the referenced project, has agreed to the restrictions outlined herein. The construction plans are conditionally approved for drainage, but the certificate of occupancy will be withheld until the construction plans for the access road, the parking lot development area and the drainage facilities have been reviewed and approved by the City Engineer's Office.

If you have any reservations, please contact me.

BC/fs

cc - Dick Heller
Mr. File

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

May 24, 1979 cc. Tanoan Clubhouse
~~cc Tanoan lands~~ file
cc. Reading file

Mr. Kent Whitman
Community Sciences
P. O. Box 1328
Corrales, New Mexico 87048

Dear Mr. Whitman:

I hereby make reference to the letter dated May 21, 1979 from Mr. Richard Leonard, Executive Engineer, AMAFCA, a copy of which was forwarded to your attention. On the basis of the position of AMAFCA as stated in the referenced letter, the drainage report for the Tanoan Clubhouse Development is hereby approved. Since this approval is granted as a variance from the AMAFCA Resolution 72-2, we are requesting that you submit the plat for signature for this development directly to Mr. Leonard to grant the variance.

Very truly yours,

Richard S. Heller

Richard S. Heller
City Engineer

RSH/fs

cc - Sheilah Sweenhart, AMDEC
Rich Leonard, AMAFCA
~~Bruno~~ Conegliano, Asst. City Engineer-Hydrology
Drainage File

Community Sciences Corporation
P. O. Box 1328
CORRALES, NEW MEXICO 87048

(505) 897-0000

LETTER OF TRANSMITTAL

DATE 8/16/79 JOB NO.
ATTENTION
RE:

RECEIVED
AUG 17 1979
CITY ENGINEER

TO Mr Dick Heller
City Engineer
City of Albuquerque

GENTLEMEN:

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☒ Reports

COPIES	DATE	NO.	DESCRIPTION
2			Drainage Management Plan for Fairway Estates Unit 2 / Presley Homes @ Tanoan

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Dick, I have sent these to you since all our liason has been with you personally on this project. If you have any questions please call Carl Di Puis of our office

COPY TO Sheila Swenhart - Amdec
Kleston Laws - Presley

SIGNED: Kent M. Whitman

If enclosures are not as noted, kindly notify us at once.

FORM 240-3 Available from NEBS Townsend, Mass. 01469

6/6/79

From: City Engineer

To:
- ☐ Public Works Director
- ☐ Asst. Public Works Director
- ☐ Street Maintenance Engineer
- ☐ Contract & Management Division
- ☐ _____
- ☐ _____
- ☐ Asst. City Engineer-Design
- ☐ Asst. City Engineer-Field
- ☐ Asst. City Engineer-Hydrology
- ☐ Chief City Surveyor
- ☐ Office Coordinator
- ☐ Secretary
- ☐ File

Mr. Brown —

Please prepare the necessary letters to accomplish this RSH

Presley Company Of New Mexico

June 4, 1979

RECEIVED
JUN 05 1979
CITY ENGINEER

Mr. Richard S. Heller, City Engineer
Municipal Development Dept.
CITY OF ALBUQUERQUE
P.O.Box 1293
Albuquerque, New Mexico 87103

E21-011

Dear Mr. Heller:

Section 7 of Ordinance 55-1976 passed on August 30, 1976, requires application to amend the flood hazard area shall be made to the City Engineer.

With the removal of the old Pino Dam, the construction of the Pino Tramway Dam and a related diversion, and the modification of the Tanoan Golf Course; the flood hazard area needs to be modified to reflect these changes.

Enclosed are maps of the Pino Arroyo from the old Pino Dam (proposed Layton Blvd.) for about 3000 feet to the west, and the HEC-2 computer outprints which define the new flood hazard area that should be adopted. The topography provided by Thomas R. Mann was mapped at one inch equals 50 feet with one foot contour intervals. The engineering and computer service was provided by Mr. Kent Whitman of Community Sciences Corp.

Please review this information, and request the necessary public hearing discussed in the ordinance.

Very truly yours,

PRESLEY COMPANY OF NEW MEXICO

Kleston H Laws

Kleston H. Laws
Vice President

KHL:jmh
cc: AMAFCA
Albuquerque Academy
Enclosures

1909 Carlisle Blvd., N.E. • Albuquerque, New Mexico 87110 • (505) 265-5811

RICHARD E. LEONARD
EXECUTIVE ENGINEER

B. H. SWINBURNE, CHAIRMAN
WILLIAM V. HEREFORD, VICE-CHAIRMAN
FRANCES McCOY, SECRETARY-TREASURER
VERNON DOAK, DIRECTOR
KLESTON LAWS, DIRECTOR

Albuquerque Metropolitan Arroyo Flood Control Authority
2600 PROSPECT AVE. N.E.
P. O. BOX 25851 · ALBUQUERQUE, N. M. 87125
TELEPHONE 344-3516

RECEIVED
JUL 30 1979
CITY ENGINEER

July 27, 1979

Mr. Richard Heller
City Engineer
Albuquerque, N.M.

E 21-D11

Dear Mr. Heller:

Reference our telephone conversation this morning.

This will confirm that AMAFCA has obtained a satisfactory easement across the Tanoan Golf Course. Accordingly, I hereby remove the hold on drainage plan approval for Village Greens Unit I and Fairway Estates.

Sincerely,

Richard E. Leonard

Richard E. Leonard
Executive Engineer

ic

cc: B. Conegliano ✓
Jim Smith
K. Whitman

COMMUNITY SCIENCES CORPORATION
P. O. Box 1328
CORRALES, NEW MEXICO 87048

(505) 897-0000

LETTER OF TRANSMITTAL

DATE 3-12-84 JOB NO. 78-32-060

ATTENTION FRED AGUIRRE

RE: CLUBHOUSE ESTATES @ TANOAN
DRB-84-187

TO CITY ENGINEER, HYDROLOGY SECTION

E21-D11

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☑ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	JULY 78		PLATE 2, DRAINAGE BASIN MAP, FROM DRAINAGE MANAGEMENT PLAN FOR ACADEMY/TRAMWAY/EUBANK SDP
1	3-7-84		SKETCH PLAT, CLUBHOUSE ESTATES
1	3-7-84		"DRAINAGE CONSIDERATIONS", CLUBHOUSE ESTATES

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☑ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS FRED, THIS WILL HELP YOU PREPARE FOR A PRE-DESIGN CONFERENCE WITH KENT WHITMAN AND ME, SCHEDULED 8:15 FRIDAY, MARCH 16.

THIS CONFERENCE IS IN LIEU OF A "CONCEPTUAL GRADING & DRAINAGE PLAN" FOR THE SKETCH PLAT. THE FIRST DRB DISCUSSION OF THE SKETCH PLAT WILL BE MARCH 20.

WE'LL BRING MORE DATA WITH US — S.A.D. 205, ETC.

MAR 13 1984
HYDROLOGY SECTION

COPY TO CLEVE MATTHEWS, AMPEC

SIGNED: Larry W. Collins
LARRY COLLINS

If enclosures are not as noted, kindly notify us at once.

PRODUCT 240-3 NEBS Inc. Groton, Mass. 01471

community sciences corporation
P.O. Box 1328
Corrales, New Mexico 87048
(505) 897-0000

MEMORANDUM

TO: Members, Development Review Board
City of Albuquerque, New Mexico

FROM: Larry Collins, AICP LWC
Community Sciences Corporation

DATE: March 7, 1984

SUBJECT: Clubhouse Estates at Tanoan, A Residential Subdivision

Attached is a Sketch Plat for approximately 41.634 acres within the Tanoan development. The proposed development is well within the constraints of the Academy/Tramway/Eubank Sector Development Plan as well as prior adopted drainage plans and S.A.D. 205 plans. This letter attempts to address all matters not covered by the plat itself.

Planning and Zoning.

The property is zoned R-D, and the guiding plan is the Academy/Tramway/Eubank Sector Development Plan (copy of SD-78-1 Final Map attached). Although the area is shown as allowing six units per acre (up to 250 dwellings units), the proposal is for a much lower density. On the 40.194 - acre major parcel, there are shown 85 luxury SFD lots and 55 patio home lots. Tract A, near the clubhouse, is reserved for a project of attached units, probably 16-32. Assuming the highest use, 32 units, the total subdivision density would be 4.13 (172 units on 41.634 Acres). Actually, the gross density (including 1/2 Academy Road) is 3.83 du/ac. The density of the portion currently being subdivided into lots is 3.5 (140 units on 40.194 Acres).

Traffic.

The entrance road to Tanoan Clubhouse has been designed to accommodate traffic from the planned neighborhoods east of Eubank Boulevard. A security house and controlled gates similar to those at Tanoan Drive will be installed on the clubhouse road between Academy and the entrance to Clubhouse Estates. This subdivision will have one access to the four-lane clubhouse road. That access road, sized at 36 feet back-to-back, will continue across a portion of the golf course to the east in order to serve additional development parcels. Although some of the large custom lots front onto the street, most of the development fronts onto side streets. This is similar to the existing development in Fairway Estates and Fairways North.

With the exception of one short 24-foot street (back-to-back) in the patio home area, the remaining internal subdivision streets are 28 feet back-to-back. These are short loop streets or cul-de-sacs.

E21-D11

SURVEYING
LAND PLANNING
CIVIL ENGINEERING
DEVELOPMENT CONSULTANTS

DRB-84-187

The private area of large lots adjacent to the golf course has a 36-foot median-divided access, in keeping with its prestigious character. Likewise, the density housing adjacent to the clubhouse is provided with a 36-foot access.

(Please note that the streets on the Sketch Plat do not necessarily scale to the dimensions shown on the plat. There were some changes suggested after the plat had been drafted. We chose not to re-draft a Sketch Plat, which need not be geometrically precise anyway. We have determined that these dimensions can be accommodated, and the Preliminary and Final Plats will include the necessary re-drafting.)

Academy Road is part of S.A.D. 205. It is anticipated that this construction will proceed in tandem with the development of Clubhouse Estates.

Drainage.

In light of the DPM conflict regarding Conceptual Grading and Drainage Plans, and in keeping with the suggestion of the City Engineer, we shall not submit a Conceptual Grading and Drainage Plan with this plat. Instead, we shall schedule, prior to the initial DRB consideration of this plat, a Pre-Design Conference with Fred Aguirre.

We have followed existing adopted drainage plans in the layout of this subdivision.

Water Resources.

A request for a Statement of Availability will be issued within the week. All services are either existing or within the imminent S.A.D. 205 construction. Connections from the subdivision pose no unusual problems.

Parks and Recreation.

At the Sketch Plat stage, it is unclear whether additional open space is required under R-D zoning. Initial rough calculations suggest at least 2400 square feet of excess open space (above 6000 sq. ft.) on each of the large custom lots, and a typical shortage of maybe 2600 square feet each on the patio lots. There are 85 custom lots, thus 204,000 excess square feet. There are 55 patio lots, thus 143,000 shortage. The net is 61,000 square feet of open space above the requirement.

Since these are all custom lots, there is no standard building footprint. At the Preliminary Plat stage, after the average lot size has been precisely calculated, an open space determination can be agreed upon. Also, calculations for Tract A are premature; there is no determination of density and/or building types.

Existing agreements between AMDEC and the City cover the park dedication issue.

Solar Access.

The large custom lots provide setbacks which easily exceed the solar requirements of the Zoning Ordinance. Because of the desire to capture mountain views, most of the lots (custom and patio) are oriented for solar access. The few patio lots which orient east-west will be carefully planned (lot width and house width) so as to comply with the Ordinance.

There are no stock house plans for this subdivision, so compliance will be on a lot-by-lot basis.

General Comments.

This particular subdivision was not designed for absolute minimum construction costs. Instead, there were several goals which influenced the layout:

(1) The "collector" street to additional easterly parcels should allow for smooth traffic flow, yet discourage speeding. The size and alignment of the street accomplish this.

(2) Through traffic should generally bypass the golf course lots, creating a private exclusive area.

(3) Through traffic should bypass the patio lots.

(4) Where possible, lots should be oriented to capture mountain views, even though drainage patterns indicate otherwise.

We have accomplished these goals with a plan which will utilize careful grading to convert the terrain into gently rolling hills.

LWC/bjc

cc: Cleve Matthews, AMDeC

Enclosures: Clubhouse Estates Sketch Plat
SD-78-1 Final Map

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. _____ DATE: 3/16/84

PLANNING DIVISION NO. E21 (DRC 84-187)

CONFERENCE RECAP

SUBJECT: Country Club Estates

ATTENDANCE: WHO	REPRESENTING
Ken Whitman	
Larry Cullins	
Gene Matthews	
Fred J. Aguirre	
Billy Gudlby	

FINDINGS:

1. DRAINAGE REPORT REQUIRED FOR PRELIMINARY PLAT APPROVAL IN ACCORDANCE WITH the DPM
2. COORDINATION WITH SAD 205 REQUIRED TO INSURE THAT THE REQUIRED PUBLIC INFRASTRUCTURES ARE CONSTRUCTED TO PROVIDE THIS DEVELOPMENT. A SUBDIVISION IMPROVEMENTS AGREEMENT MAY BE REQUIRED IF THIS DEVELOPMENT PRECEDES SAD 205
3. SKETCH PLAT APPROVAL GRANTED
4. METHOD OF DISENGAGING INTO ACADEMY Rd MUST BE COORDINATED WITH TRAFFIC ENGINEER.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: [illegible] SIGNED: [illegible]

TITLE: [illegible] TITLE: Design Hydrologist

DATE: 3/16/84 DATE: 3/16/84

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

HYDROLOGY SECTION PROJ. NO. _____ DATE: 3/16/84

PLANNING DIVISION NO. E21 (DRC 84-187)

CONFERENCE RECAP

SUBJECT: Country Club Estates

WHO	REPRESENTING
ATTENDANCE: Ken Whitman	
Larry Collins	
~~[illegible]~~ Cleve Matthews	
Fred J. Raupre	
Billy Goolsby	

FINDINGS:

1. Drainage Report required for preliminary plat approval in accordance with the DPM
2. Coordination with SAD 201 required to insure that required public improvements are constructed to provide this development. A subdivision improvements agreement may be required if this development precedes SAD 201
3. Sketch plat approval granted
4. Method of discharging into Rodeo Rd must be coordinated with traffic engineer.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED: [illegible] SIGNED: [illegible]

TITLE: [illegible] TITLE: Design Hydrologist

DATE: 3/16/84 DATE: 3/16/84

RECEIVED
1/3/79

TANOAN CLUBHOUSE

AND

APPURTENANT DRAINAGE BASINS

Drainage Management Plan

PREPARED FOR: Affiliated Mortgage and Development Company

PREPARED BY: Community Sciences Corporation

DECEMBER, 1978

KENT M. WHITMAN
STATE OF
NO. 6170
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER

Kent M. Whitman

Kent M. Whitman, P.E.

P.O. Box 1328
Corrales, New Mexico 87048
(505) 897-0000

SURVEYING
ENGINEERING
LAND PLANNING

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A) Purpose and Scope

Amdec is currently planning construction of an 18,000 square foot Country Club Structure, Tennis Court Complex, and appurtenant parking and access facilities to supplement the construction of their 27 hole Golf Course currently being developed. In addition several hundred acres of land contiguous to the Country Club facilities will ultimately be developed into residential projects of varying densities. The entire venture is being promoted under the project heading "Tanoan". The purpose of this study is to present a Drainage Management Plan for the Clubhouse Structure and the drainage basin immediately east of this structure which is acceptable to AMAFCA and to the City of Albuquerque.

B) Site Location and Topography

The Tanoan Clubhouse will be located north of Academy Boulevard (with access from same) and approximately 2,000 feet east of Eubank Boulevard (see Plate 1). Natural ground slopes from east to west at an average rate of 5%. A portion of the basin, being located within the limits of the Pino Arroyo, is very rugged with slopes in excess of 10%.

Soils consist largely of alluvial sands and silts, and decomposed granite is the major soil constituent.

C) Design Criteria

1) Engineering Parameters

For calculation of runoff rates and required storage volumes a C of 0.4 has been assumed for undeveloped areas. A composite C of 0.64 was calculated for Basin B in the developed state while a composite C of 0.75 was calculated for Basin A in the developed state. All runoff calculations were performed by computer using a program based on the Soil Conservation Service Triangular Hydrograph Method for Thunderstorms West of 105° longitude. C factors were converted to CN factors through use of the equation "CN = 87 + 29.7 (C - 0.5)".

All runoff hydrographs are based on the 100 year - 1 hour rainfall of 2.3" for the subject area. For considerations of runoff rates this figure is more critical than the 100 year - 6 hour value normally adopted.

2) Flood Control Regulations

The drainage plan presented in this report has been designed to comply with the 1972 AMAFCA Resolution in regard to rate of runoff leaving the site. That Resolution has been interpreted to say that the rate of runoff allowed to leave the site after development shall be no greater than the rate running off prior to development. Volume considerations on major arroyo systems east of the AMAFCA North Diversion Channel are not considered critical.

D) Computational Procedures

Appendix A contains samples of the various types of hydraulic calculations performed. Proposed conveyance swales were sized based on the Manning Equation for Uniform Flow. Times of concentration were estimated based upon the Kirpich nomagraph for overland flow. Outflow structure capacities were calculated based on the Darcy Weisback Equation for Surcharged Pipe Flow and the Broad-crested Weir Formula. The final pond response to the simulated storm hydrograph was verified through use of a reservoir routing analysis shown in Table 1.

E) Drainage Plan

Plates 2, 3, and 4 illustrate the drainage plan proposed. The objective is to limit the rate of runoff from Basins A & B to the natural rate prior to development. This objective will be accomplished by diversion of Basin B flows into a controlled release detention facility located immediately east of the Tennis Court Complex. The water from this detention pond will be released through a "trickle tube" outlet (as illustrated on Plate 4) in conjunction with an overflow spillway. The inflow hydrograph for Basin B entering the pond is shown on Plate 5. The Stage/Storage and Stage/Discharge Curves for the Pond are shown on Plates 6 & 7 respectively. The uncontrolled outflow hydrograph for Basin A (developed) is shown on Plate 8. A small drop inlet and 12" pipe are proposed on Basin A to divert up to 2 cfs from its confluence into the detention pond. This will allow freer use of the service road/cart path while facilitating infiltration of lesser flows. By subtracting 2 cfs from the hydrograph values shown on Plate 8 and then adding these figures to the appropriate outflow values shown in Table 1, the total net outflow hydrograph for Basins A & B can be plotted as shown on Plate 9. Since the peak rate of outflow for both Basins developed is 92.4 cfs while the computed natural peak rate is 113 cfs the objective has been met and the Basins will be in compliance with the Resolution.

TABLE 1

RESERVOIR ROUTING

STEP	Time (min.)	Time (min.)	Inflow (cfm)*	Outflow (cfm)	Sn (cfm)	$\overline{Sn}$ (cfm)	ΔSn (cf÷1000)	Sn(1) (cf÷1000)	el. (ft.)	Sn(2) (cf÷1000)
1	15.0	15.0	360	108	252	126	1.890	1.890	44.00	1.742
				114	246	123	1.845	1.845	44.10	1.845
2	23.0	8.0	1560	510	1060	653	5.224	7.069	46.15	20.9
				270	1290	768	6.144	7.989	45.00	6.534
				300	1260	753	6.024	7.869	45.15	7.840
3	31.0	8.0	2700	900	1800	1530	12.24	20.11	47.00	37.00
				600	2100	1680	13.44	21.30	46.37	24.83
				550	2150	1705	13.64	21.50	46.27	22.65
				500	2200	1730	13.84	21.70	46.12	21.00
4	38.5	7.5	5133	900	4233	3216.5	24.12	45.82	47.00	37.00
				918	4215	3207.5	24.06	45.76	47.30	44.87
				924	4209	3204.5	24.03	45.73	47.32	45.70
5	46.0	7.5	7686	990	6696	5452.5	40.89	86.62	48.55	86.62
6	53.5	7.5	6160	2400	3760	5228.0	39.21	125.89	49.40	125.45
7	61.0	7.5	4753	3600	1153	2456.5	18.42	144.31	49.60	135.90
				3900	853	2306.5	17.30	143.19	49.65	139.39
				4200	553	2156.5	16.17	142.06	49.70	140.70
				4500	253	2006.5	15.05	140.94	49.73	141.57
				4350	403	2081.5	16.61	141.50	49.71	141.13
8	68.5	7.5	2813	4000	-1187	-392	-2.94	138.56	49.67	139.39
				3900	-1087	-342	-2.57	138.94	49.65	139.00

*Inflow values include 120 cfm from Parking Lot Inlet.

PLATE 1

LOCATION MAP

1" = 800' Approx.

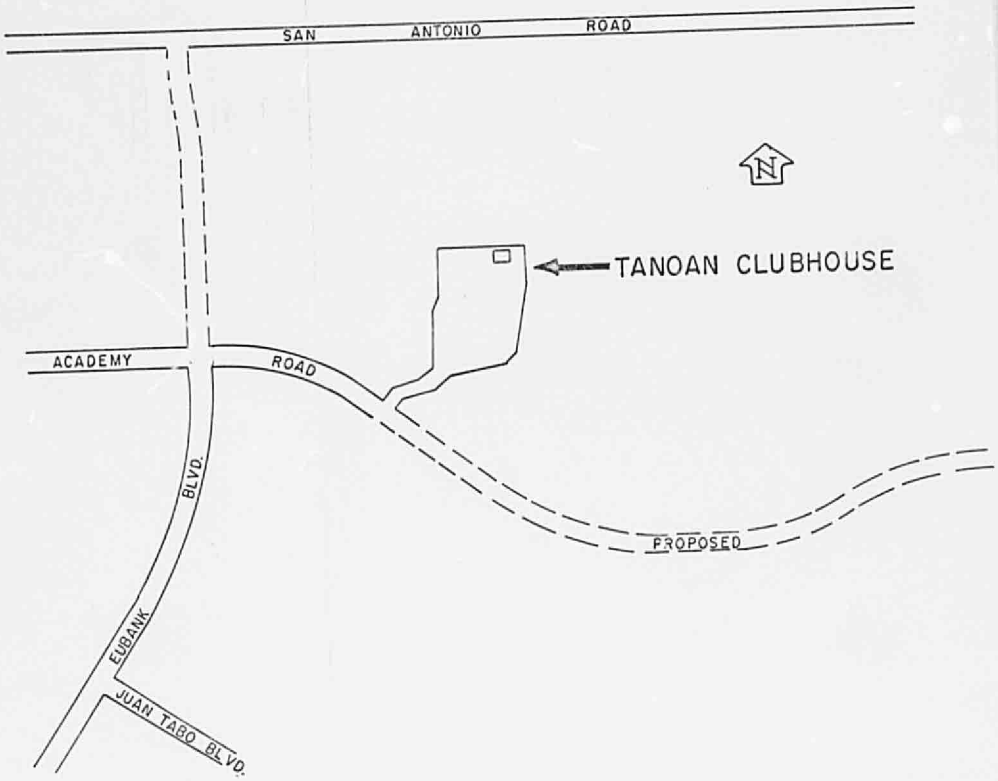


PLATE 3

DETENTION POND PLAN

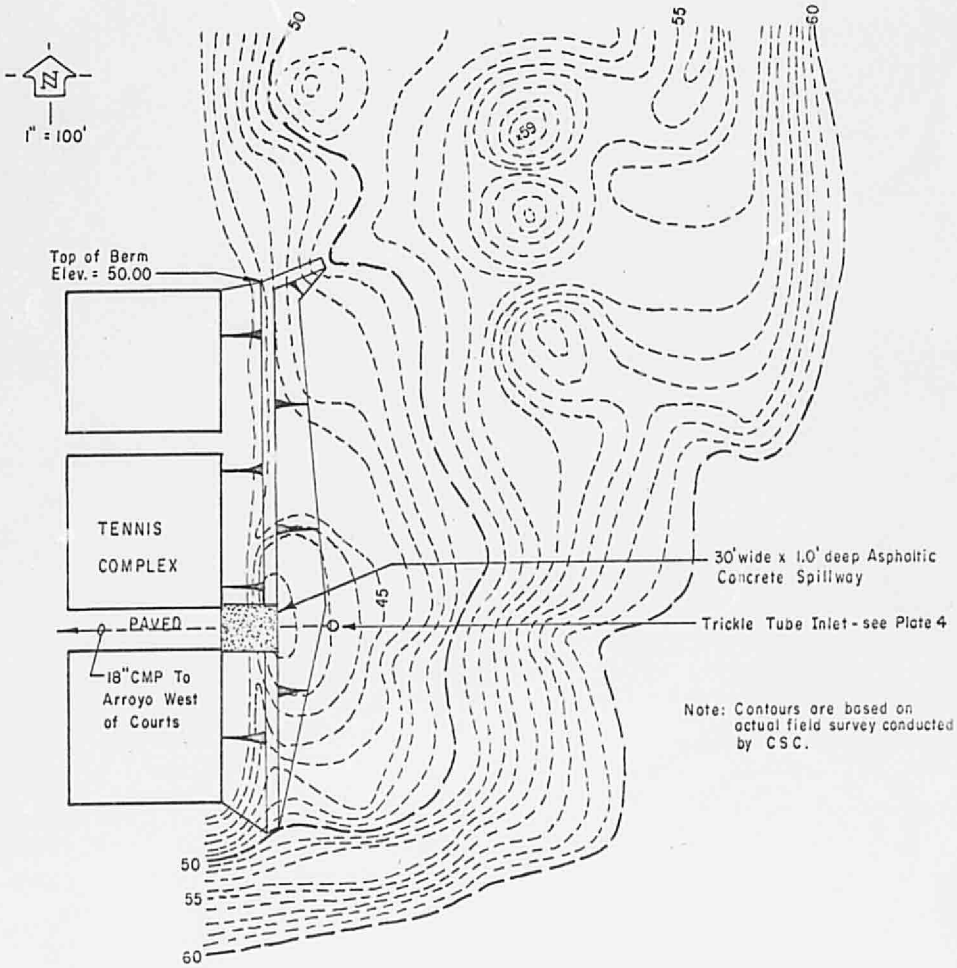


PLATE 4

DAM & TRICKLE TUBE SECTION

N.T.S.

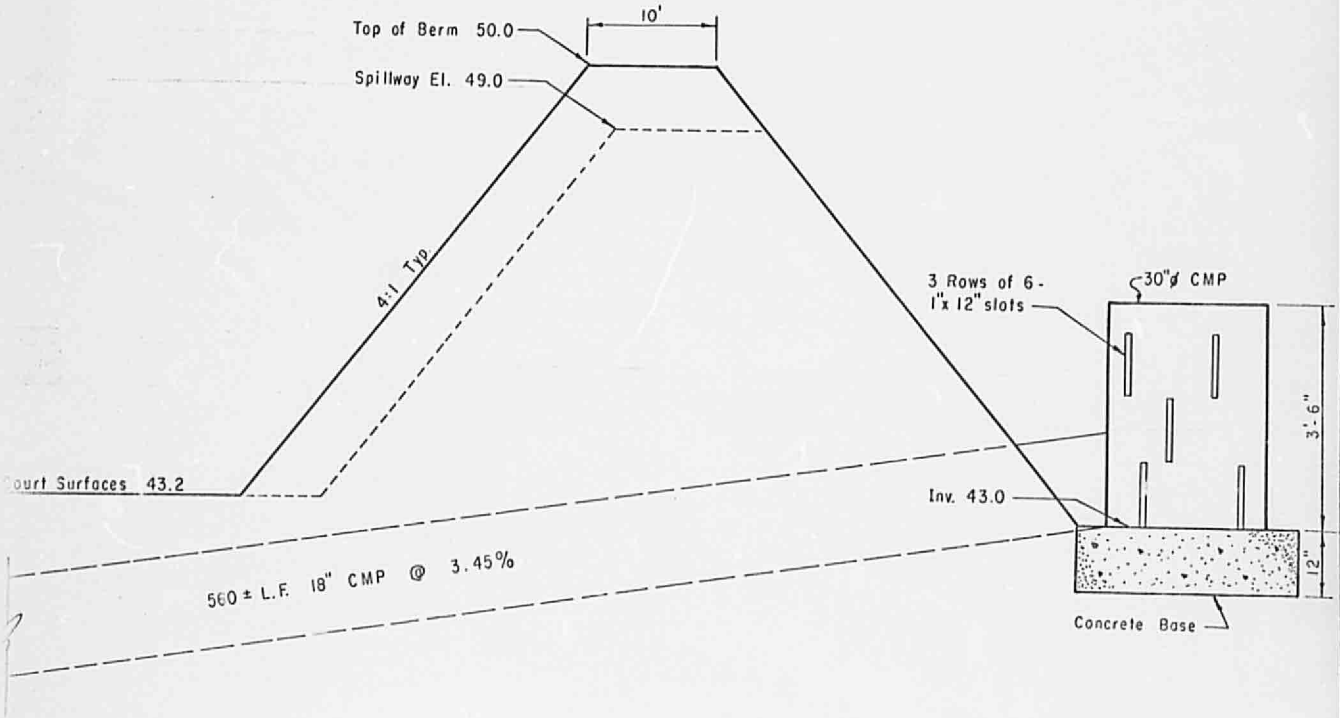


PLATE 5

INFLOW HYDROGRAPH
TANOAN TENNIS COURT POND
BASIN B

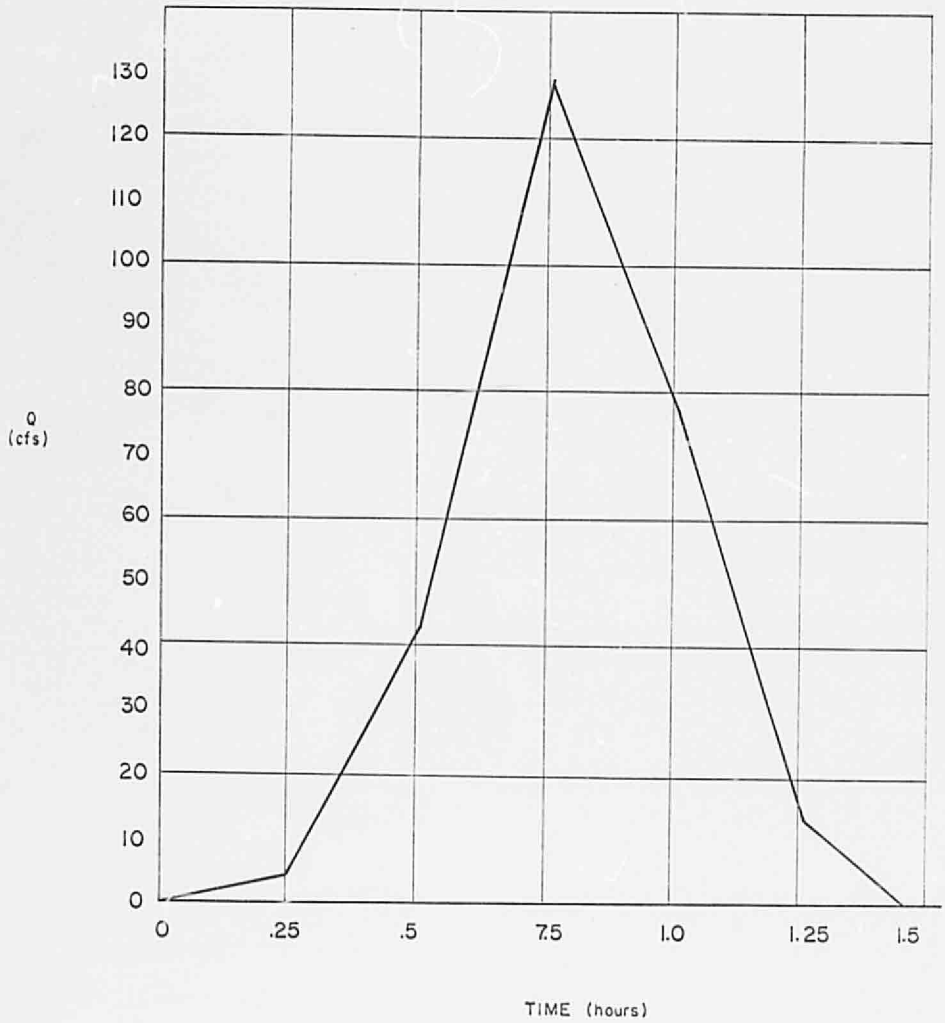


PLATE 6

STAGE / STORAGE

TANOAN TENNIS COURT POND

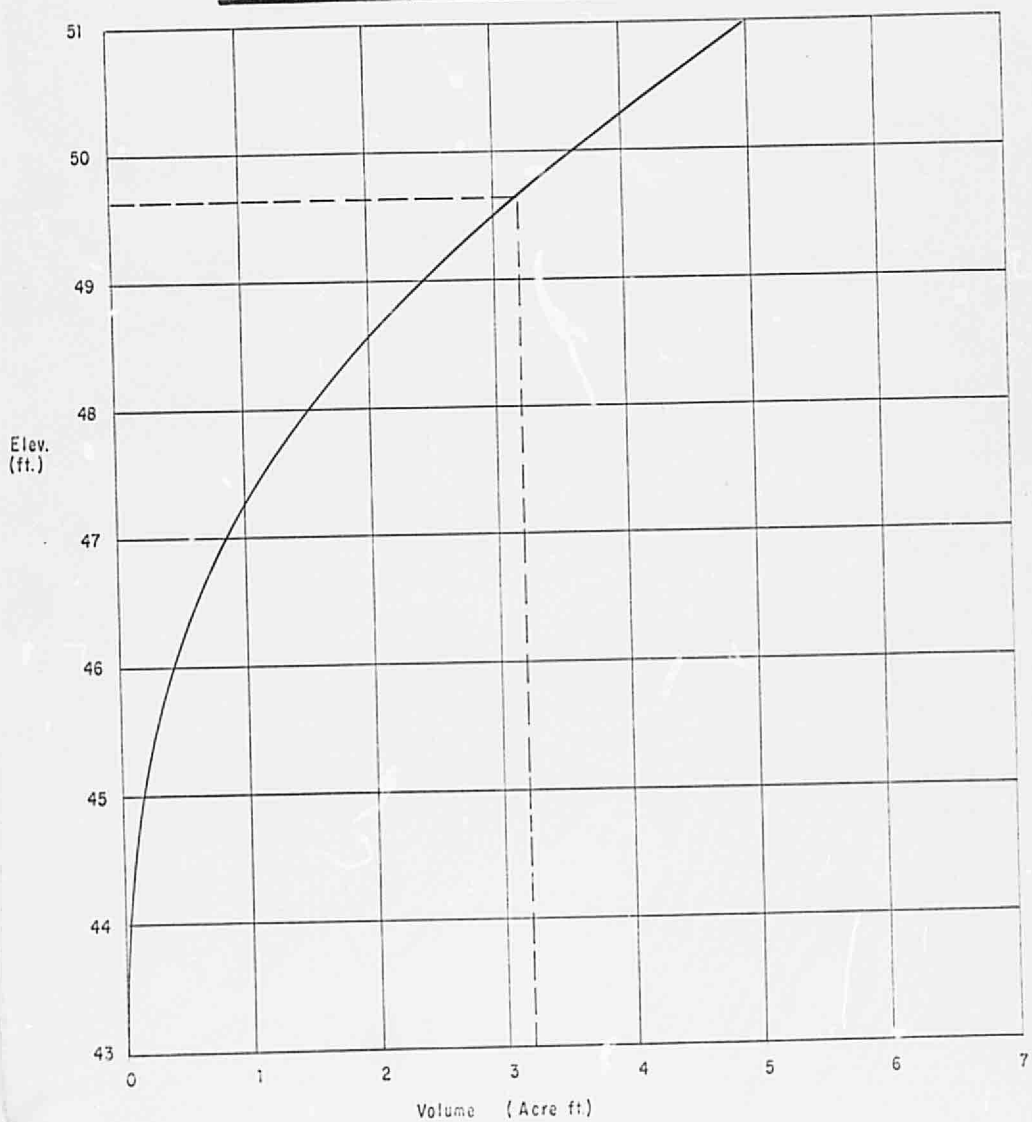


PLATE 7

STAGE / DISCHARGE
TANOAN TENNIS COURT POND

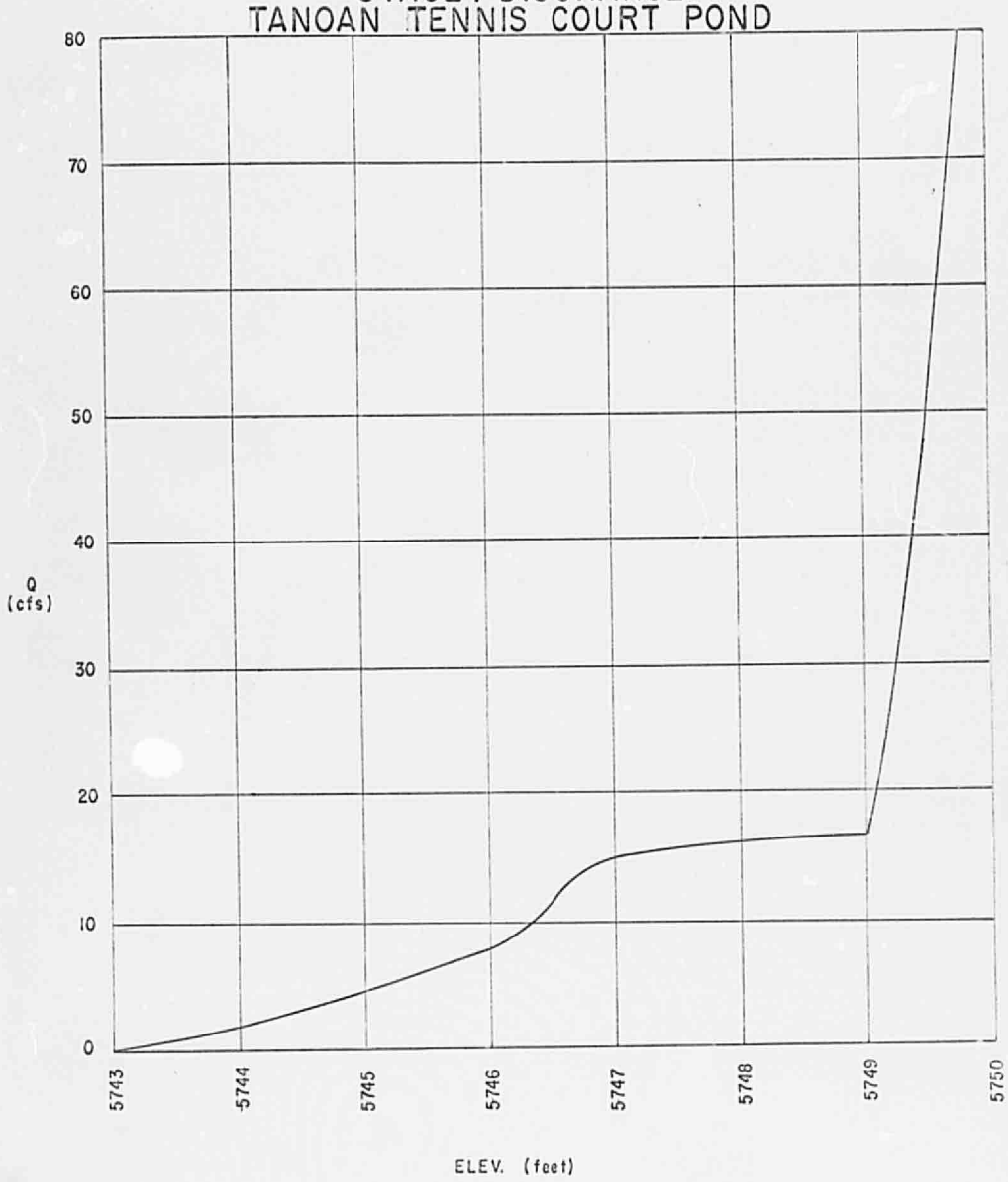


PLATE 8

OUTFLOW HYDROGRAPH

TANOAN TENNIS COURT POND

BASIN A

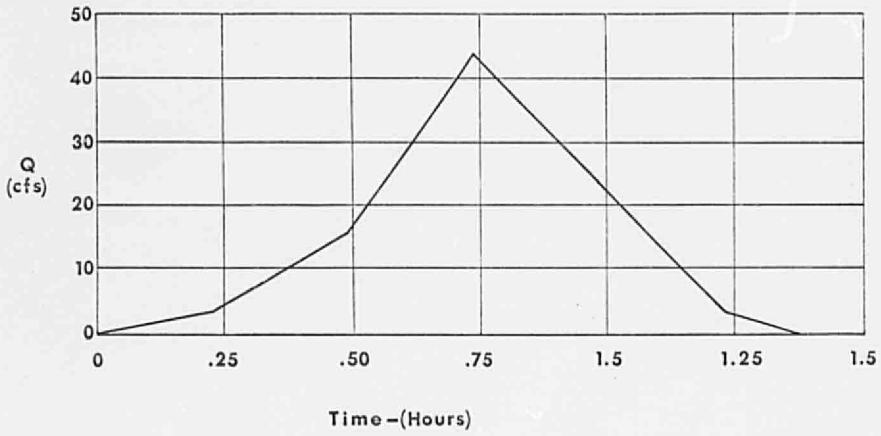
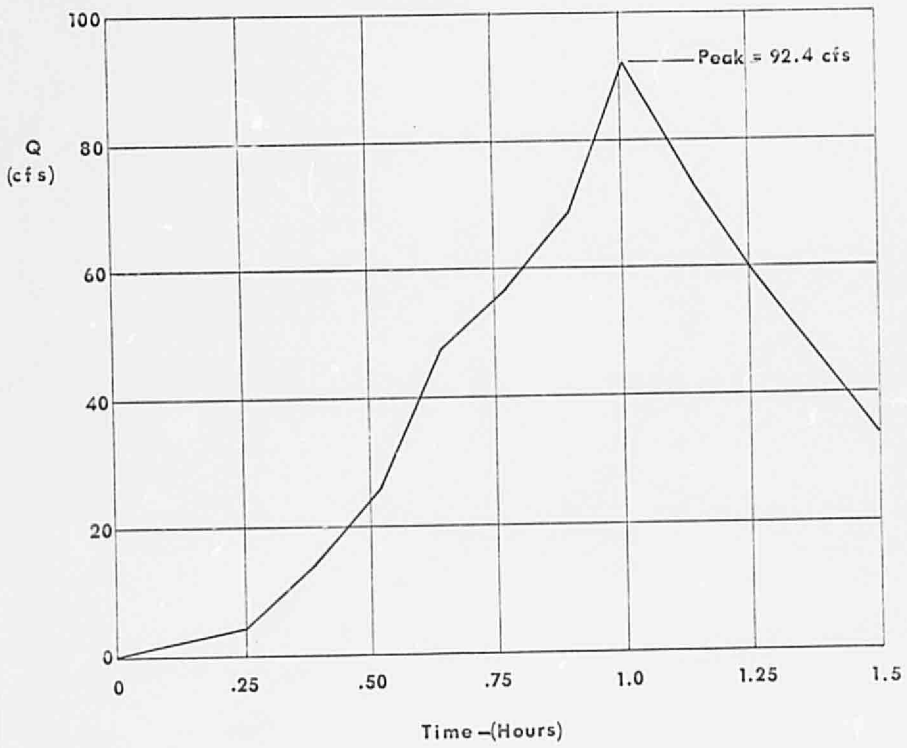


PLATE 9

BASIN OUTFLOW HYDROGRAPH w DETENTION POND

TANOAN PROPERTIES
BASINS A + B



* Basin A Outflow adjusted for 2 cfs diverted into pond

APPENDIX A - CALCULATIONS

1) Composite C

Area in standard R-1 development @ C = 0.67
= 33%

Area in high density development @ C = 0.80
= 41%

Area in fairways, greens, and natural @ C = 0.35
= 26%

C_{COMP} = (.33 x .67) + (.41 x .8) + (.35 x .26)
= 0.64

2) Allowable (natural) Rate of Runoff - Basins A & B

C DEVELOPED = 0.4
Rainfall (100 year - 1 hour) = 2.3"
Tc = 0.23 hours
Area = 0.0873 square miles

Computer Output

Time (hours)	Flow (cfs)
.25	0.02
.26	0.96
.51	24.30
.76	113.06 —— Peak
1.01	74.71
1.26	13.01
1.45	0

3) Flow Capacity - Section A

BW = 12'
SS = 2:1
slope = 0.005 (minimum)
depth = 1'
n = 0.015 (asphalt)

Q = 88 cfs > 44

4) Flow Capacity - Section B

BW = 0
SS = 100:1
slope = 0.005
depth = 0.45
n = 0.015 (asphalt)

Q = 52 > 44

R) Flow Capacity - Section C

BW = 10' (minimum)
SS = 4:1 (minimum)
slope = 0.005 (minimum)
depth = 2' (minimum)
n = 0.03 (grass)

Q = 155 > 128