

P.O. Box 1293, Albuquerque, NM 87103

October 11, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannon, PE
Tierra West Mgmt Ser
4421 McLeod Rd NE, Suite D
Albuquerque, NM 87109

RE: ENGINEER'S CERTIFICATION FOR SAN MIGUEL APARTMENTS (C-13-D12)
LETTER DATED OCTOBER 10, 1996

Dear Mr. Bohannon:

Based on the information in your letter, City Hydrology accepts the Engineer's Certification for Phase 1, dated 9/27/95, the Engineer's Certification for Phase 2, dated 5/7/96, and the Engineer's Certification for Phase 3 Roadway, dated 4-8-96, for Financial Guaranty Release.

Contact Terri Martin to obtain the Financial Guaranty Release for City Project Number 4763.90.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Terri Martin, CPN 4763.90

Good for You, Albuquerque!





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 29, 1995

Ronald Bohannan
Tierra West Dev. Mgmt. Serv.
4421 McLeod Road
Suite D
Albuquerque, NM 87109

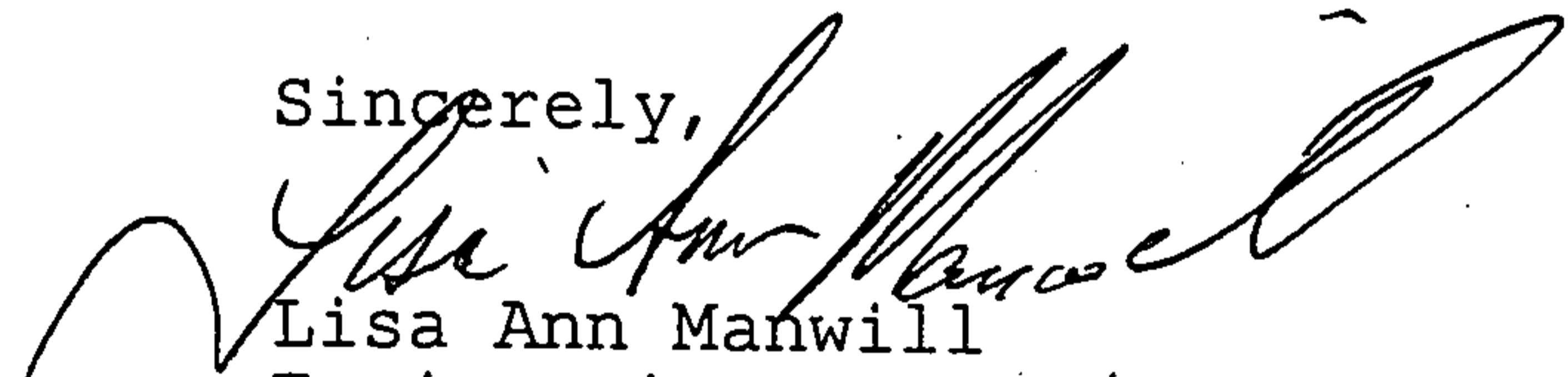
**RE: SAN MIGUEL APARTMENTS PHASE 1 (C13-D12) CERTIFICATE OF
OCCUPANCY FOR PHASE 1. ENGINEER'S CERTIFICATION STAMP DATED
9-27-95.**

Dear Mr. Bohannan:

Based on the information provided on your submittal dated
September 28, 1995, the above referenced project is approved for
Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me
at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 25, 1995

Ronald Bohannan
Tierra West Dev. Mgmt. Serv.
4421 McLeod Road
Suite D
Albuquerque, NM 87109

**RE: SAN MIGUEL APARTMENTS PHASE 1 (C13-D12) 30 DAY TEMPORARY
CERTIFICATE OF OCCUPANCY FOR BUILDINGS 19, 20, 21, 22, AND
23. ENGINEER'S CERTIFICATION STAMP DATED 8-24-95.**

Dear Mr. Bohannan:

Based on the information provided on your submittal dated August 25, 1995, the above referenced project is approved for Temporary Certificate of Occupancy (Buildings 19, 20, 21, 22, and 23 only).

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 31, 1994

J. Martin Lewis
Easterling & Assoc. Inc.
10131 Coors Rd. NW Ste. H-7
Albuquerque, N.M. 87114

RE: GRADING & DRAINAGE PLAN FOR SAN MIGUEL @ RIVER POINT (C13/D12)
RECEIVED JANUARY 26, 1994 FOR BUILDING PERMIT APPROVAL
ENGINEER'S STAMP DATED 1-26-94

Dear Mr. Lewis:

Based on the information included in the submittal referenced above, City Hydrology approves this project for Building Permit.

Include a copy of the Drainage Plan in the set of construction documents that will be submitted to the "one stop" for the Building Permit.

Engineer's Certification of grading & drainage per DPM checklist must be approved before any Certificate of Occupancy will be released. Include a copy of the executed & recorded covenants for the on-site & off-site ponds. Also, provide hydrology for Basin OS-4 (that portion of Tract 4 which drains onto Tract 5). Tract 4 will need an easement from Tract 5 for this runoff.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely

John P. Curtin, P.E.
Civil Engineer/Hydrology

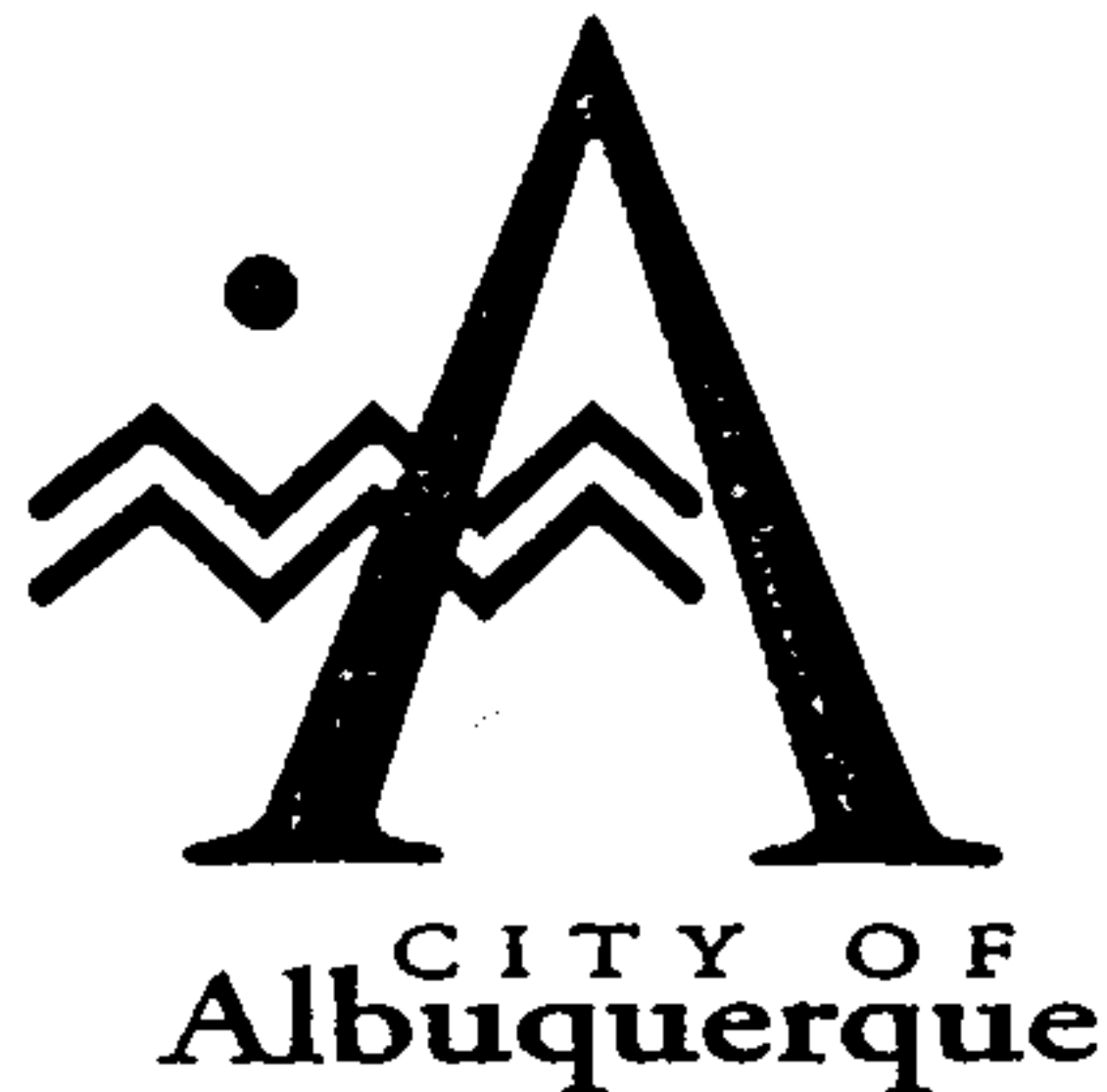
c: INSPECTOR

WPHYD/7591

Signed Covenants received & reviewed. OK to release Building Permit.

JPC 9-1-94

PUBLIC WORKS DEPARTMENT



JN 940049
cc: Stu [unclear]

August 12, 1996

Martin J. Chávez, Mayor

Ronald R. Bohannan
Tierra West Development
4421 McLeod Road NE
Suite D
Albuquerque, NM 87109

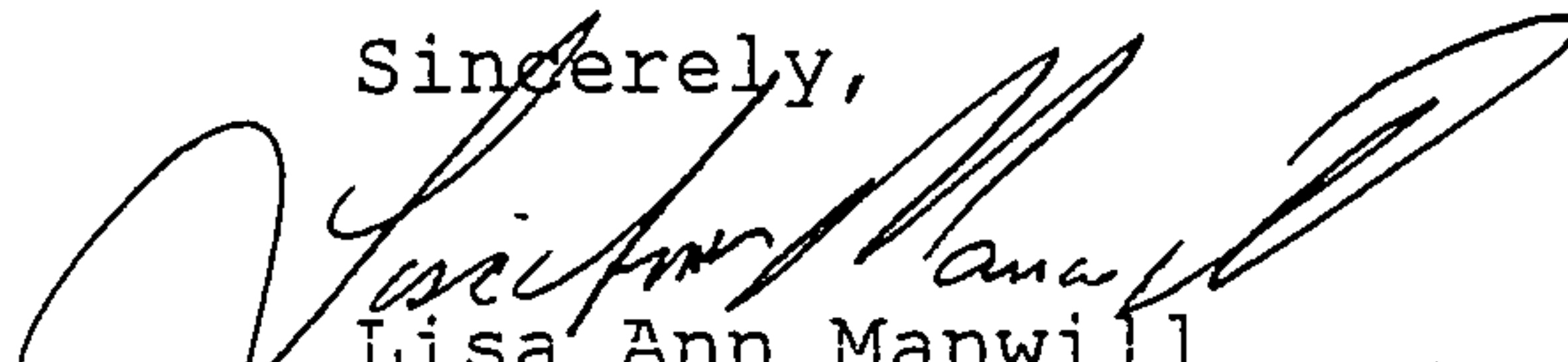
RE: SAN MIGUEL APARTMENTS - PHASE II AND THE ROADWAY PORTION OF PHASE III (C13-D12A). ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S CERTIFICATION DATE IS UNKNOWN. ENGINEER'S STAMP DATED 5-7-99 (PHASE 11) AND 4-8-96 (ROADWAY PORTION OF PHASE III).

Dear Ron:

Based on the information provided on your July 23, 1996 submittal, the above referenced project is approved for Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,



Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

Good for You. Albuquerque!




DRAINAGE REPORT
FOR
SAN MIGUEL APARTMENTS
PHASE 1 AND 2

Prepared for
San Miguel del Bosque Ltd. Co.

Prepared By
Tierra West Development Management Services

April 1995

**I certify that this report was prepared under my supervision,
and I am a registered professional engineer in the
State of New Mexico in good standing.**


Ronald R. Bohannon P.E. #7868

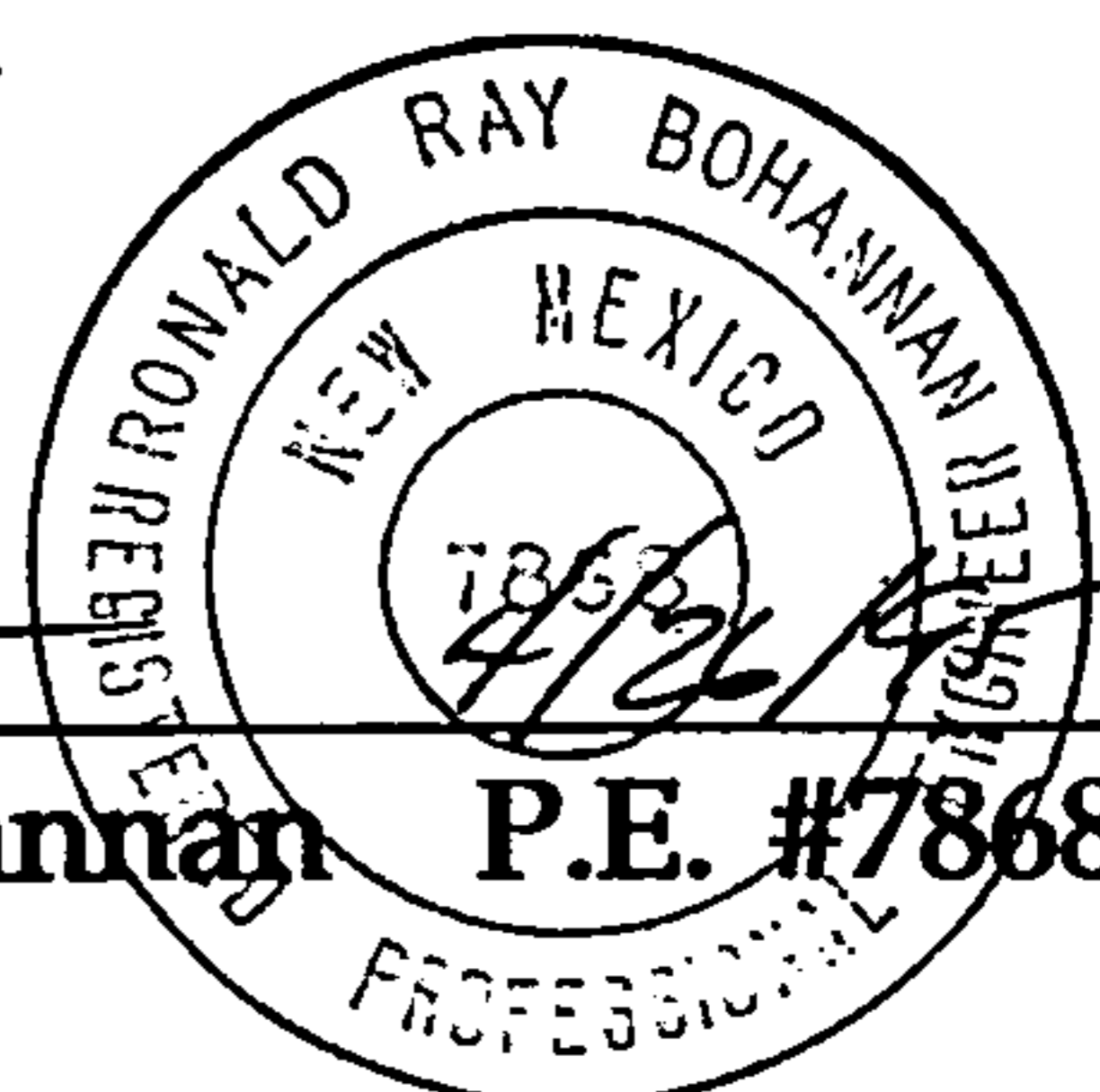


TABLE OF CONTENTS

	Page
<u>SECTION I - REPORT</u>	
Purpose & Statement	1
Location	1
Existing Conditions	1
Flood Plain	2
Proposed Conditions	2
Fema Map	3
State Highway Permit	4
Ponding Volume	5
Discharge Table	5
Drainage Calculations	6
Pond 1 Calculations	7
Pond 2 & 3 Calculations	8
Pond 2 & 3 Table for AHYMO Input File	8
APPENDIX A	AHYMO INPUT, OUTPUT, AND SUMMARY OUTPUT FILES
APPENDIX B	Approval Letters From State Highway Department and Grading and Drainage Approval From The County
<u>MAP POCKET</u>	
Storm Drain Discharge System	
Grading And Drainage Plans	
Approved Grading And Drainage Plan For Dinostor Project (0.75 cfs Drainage Point)	

Purpose & Statement

The purpose of the Drainage Plan is to submit Phase 2 of the San Miguel Apartments at River Point and modify the ponds on Phase 1 of the same project. This report is also to provide the detail to secure an approval for building permit. The original Plan (Phase I) was submitted by Easterling & Associates under City Draiage File C13/D12.

Location

The site is located off of Coors Road, just south of the frontage road, adjacent to Paseo del Norte. The legal description is Tracts 4, 5, and 6 of River Point, recorded in Book 93-C Page 337. The site is being developed in two phases. Phase 1 consists of 8.82 acres and has been previously submitted by Easterling & Associates, under file number C13/D12. Phase 2 consists of Tract 4 and 5, with a combined acreage of 6.6517 acres for combined total of 15.1817.

DRAINAGE PLAN (PHASE 2)

Existing Conditions

The Project Site (Phase 1, River Point) consists of approximately 15.18 acres, which up to the start of Phase 1 was partially developed, consisting of a vacated mobile home park with minimal improvements. Existing on-site drainage characteristics are not well-defined, but the overall drainage pattern is from north to south, with free discharge to the abutting Southwestern Indian Polytechnic Institute campus. The site lies east of the Corrales Main Canal with minimal flow to the clear ditch that parallels the River. The topography suggests that the site is not impacted by off-site flows from the east or south. However, runoff from the eastbound driving lane of the Paseo del Norte Frontage Road appears to discharge to the site.

The site has been expanded since Phase 1 was approved to include what was entitled the Riverside Animal Hospital. This site, which is Tract 4, is being turned into apartments. The flows identified previously as the Riverside Animal Hospital now discharge to the site in Phase 1. Phase 2 consists of approximately 6.6517 acres and was previously a mobile home park and the Riverside Animal Hospital. Both uses are being discontinued and redeveloped as apartments. Again, existing on-site flow patterns are not well defined, but drains from north to south.

Flood Plain

According to Panel 8 of the FEMA Flood Boundary and Floodway Map for Albuquerque, NM, dated October, 1983, the site does not lie within a designated 100-Year Flood Hazard Zone.

Developed Conditions

Tracts 4, 5, and 6 consisting of Phase 1 and 2 are proposed to be developed for multifamily residential use, as San Miguel Apartments. New circulation roads and parking areas are to be constructed from asphalt, with concrete walks connecting building entrances to parking area. Approximately 33% of the site area is to consist of landscaping, with ground cover predominantly comprising turf and native grasses.

The original plan had called for several ponds that retained 100% of the storm drainage. This revision proposes that all the flows be concentrated into Ponds 2 and 3 and pumped to the bar ditch aligning along Paseo del Norte. Pond 1 will retain the 10 day storm storage value for that subbasin. The 100 year 6 hour event was used to calculate the flow to Ponds 2 and 3.

Phase 1 and 2 are proposed to drain to Ponds 2 and 3. Pond 3 will then be drained over a 24 hour period to the State Highway right-of-way at

.75 cfs. From that point it will drain in the Paseo del Norte right-of-way to the clear ditch and into the river. The ability to pump Pond 3 to the Paseo del Norte right-of-way and then to the river will allow us to use the 100 year 6 hour storm to analyze the site.

The discharge of the 0.75 cfs was approved as part of the Garding and Dragine Approval on Dinostor project from the County and State Highway Department. See Appendix B for Grading and Drainge Approval letter from the County and State Highway Departement. Also see the approved Grading Plan on Dinostor project for the 0.75 cfs dishcharge point located in Map Pocket 3.

A pumping system will be placed within Pond 3 that will be activated by low flows and pump to Paseo del Norte. Shown in Sheet 4 is the schematic of the system to be used. The pump housing is proposed for a submersible pump to be within an 8' diameter type "E" manhole. The pumps will operate on a float switch to move all flows from the site to the ditch. The storm sewer pumps have been listed in the Map Pocket 1 for documentation. A ten inch line will discharge the flow to Paseo del North right-of-way.

State Highway Permit

Under the State Highway permit and encroachment, the grading plan has also been approved for discharge into the bar ditch. Under that permit, the additional flows created by San Miguel have been included in this report (See Exhibit B).

The County Public Works Department under PWD-94-281 has approved the drainage discharge into the swale. Shown in Map Pocket 3 is a copy of the approved Grading and Draige Plan for the Dinostor project.

Ponding Volume

The runoff and pond volume were computed using the AHYMO program, revision January 1994 (AHYMO 194). The pond volume was checked for the total storage and was computed to be 2.028 acre feet or 88,340 cubic feet. The storage provided in Pond 2 and 3 is 2.181 acre feet.

Table 1 shows a recap of the basins and the volumes that were computed based upon the stage storage of the pond.

TABLE 1

POND	FLOW IN	FLOW OUT	WATER DEPTH
1	1.80 CFS	0.0 CFS	2.50'
2	36.39 CFS	31.00 CFS	2.37'
3	49.52 CFS	0.75 CFS	10.00'

DRAINAGE CALCULATIONS

The site is @ Zone 1

LAND TREATMENT

D = 60%
C = 20%
B = 20%

DEPTH (INCHES) @ 100-YEAR STORM

P₆₀ = 1.87 inches

P₃₆₀ = 2.20 inches

P₁₄₄₀ = 2.66 inches

DEPTH (INCHES) @ 10-YEAR STORM

P₆₀ = 1.87 x 0.667
= 1.25 inches

P₃₆₀ = 1.47

P₃₆₀ = 1.77

See the following Table

UNDER PROPOSED CONDITIONS

BASIN	Q-100YR CFS	V-100YR AC-FT	Q-10YR CFS	V-10YR AC-FT
1	36.39	1.269	21.93	0.733
2	1.8	0.062	1.09	0.036
3	19.99	0.697	12.05	0.403

UNDER EXISTING CONDITIONS

BASIN	Q-100YR CFS	V-100YR AC-FT	Q-10YR CFS	V-10YR AC-FT
1	20.51	0.562	7.75	0.189
2	1.02	0.028	0.38	0.009
3	11.26	0.309	4.26	0.104

See the summary output from AHYMO calculations.

Pond 1 Calculations:

The site is @ Zone 1

Basin 2 Area = 0.50 Acre

Land Treatment:

D = 60%, C = 20%, B = 20%

Weighted E For The Runoff

$$E = \frac{20(0.67)}{100} + \frac{20(0.99)}{100} + \frac{60(1.97)}{100}$$

E = 1.514 inches.

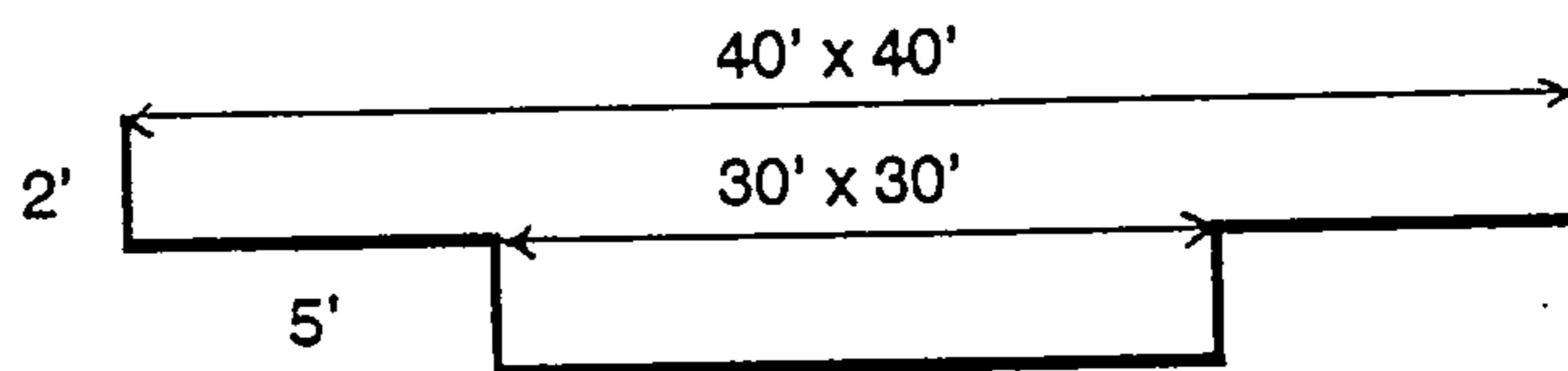
$$V_{360} = 1.514/12 \times .050 = 0.063 \text{ Ac-Ft}$$

$$V_{10 \text{ DAY}} = V_{360} + A_D \cdot \frac{(P_{10} - P_{360})}{12}$$

$$\begin{aligned} V_{10\text{-DAY}} &= 0.063 + 0.3 \times (3.67 - 2.2)/12 \\ &= 0.010 \text{ Ac-Ft} = 4350 \text{ CF} \end{aligned}$$

Volume Provided = $40^2 \times 2 + 30^2 \times 2 = 5000 \text{ CF} > 4350 \text{ CF}$

Pond Section



Pond 2

Pond bottom = 77 x 22 = 2079 SF

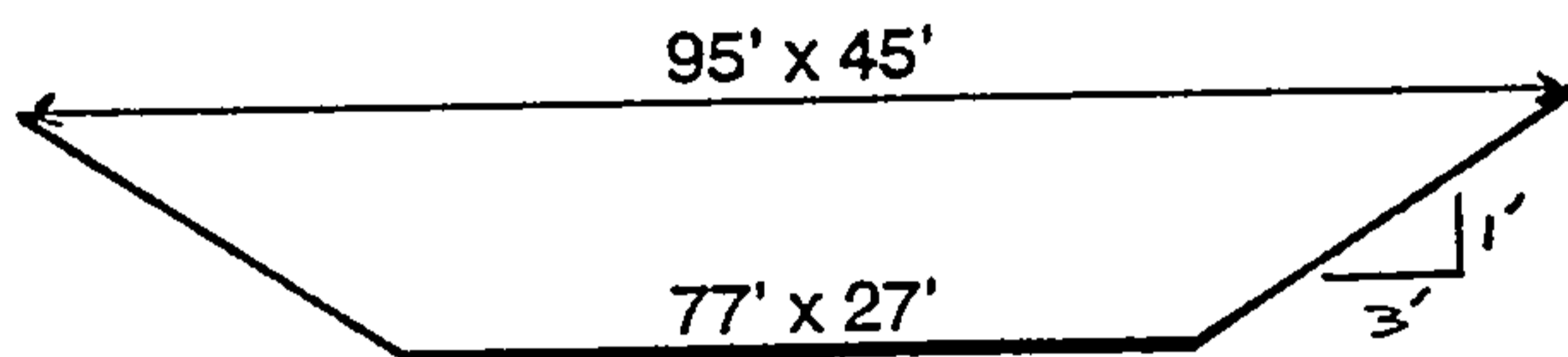
Pond Top = 95 x 45 = 4275 SF

Volume @ a give Depth "D":

$$V = \frac{77 \times 22 + (77 + 2 \times 3 \times D) (27 + 2 \times 3 \times D)}{2} D$$

$$V = 2079 D + 312 D^2 + 18 D^3$$

Pond Section



Pond 3

Volume @ 3' = 60x95x3 = 17,100 CF

Volume @ 6' = 17,100 + 70x105x3 = 39,150 CF

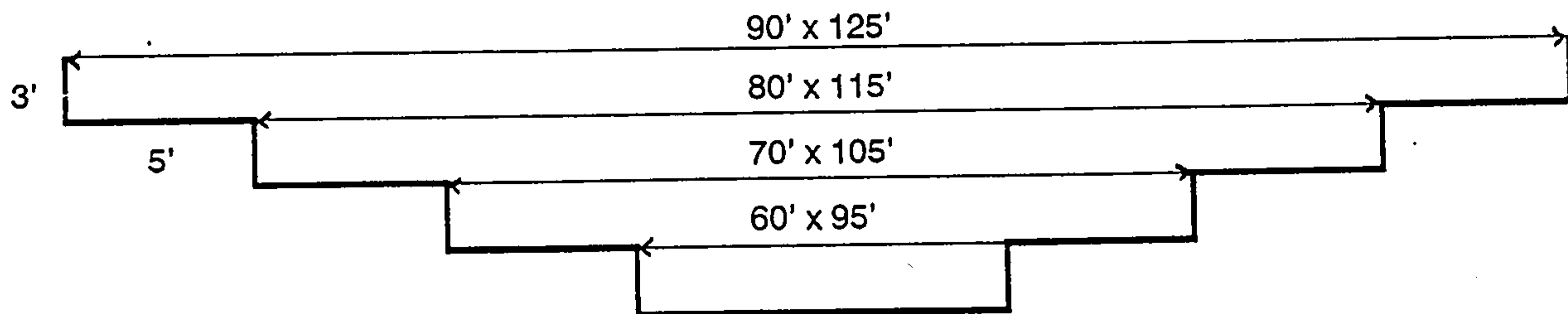
Volume @ 9' = 39,150 + 80x115x3 = 66,750 CF

Volume @ 12' = 66,750 + 90x125x3 = 100,500 CF

Volume @ 13' = 100,500 + 22687.50 = 123,187.50 CF

↑ Volume within the parking lot

Pond Section



See pond 2 & 3 Tables for AHYMO Input Files.

POND 2 TABLE FOR AHYMO INPUT FILE

ELEV (FT)	OUTFLOW 24"-CFS	STO CFT	STO AC-FT
0.00	0.00	0.00	0.00000
0.50	14.26	1131.00	0.02596
1.00	20.17	2445.00	0.05613
1.50	24.70	3942.00	0.09050
2.00	28.52	5622.00	0.12906
2.50	31.89	7485.00	0.17183
3.00	34.93	9531.00	0.21880

$Q = CA \text{ SQRT}(gH)$

WHERE:

$C = 0.8$

$A = \pi r^2, r = 24/24$

$g = 32.2$

$H = \text{WATER DEPTH}$

SEE POND CALCULATIONS AS WELL AS
THE AHYMO OUT PUT RESULTLS

POND 3 TABLE FOR AHYMO INPUT FILE

ELEV (FT)	OUTFLOW PUMP (CFS)	STO CFT	STO AC-FT
0.00	0.00	0.00	0.00000
1.00	0.75	5700	0.13085
2.00	0.75	11400	0.26171
3.00	0.75	17100.00	0.39256
4.00	0.75	24450	0.56129
5.00	0.75	31800	0.73002
6.00	0.75	39150.00	0.89876
7.00	0.75	48350	1.10996
8.00	0.75	57550	1.32116
8.1	0.75	58470	1.34228
8.2	0.75	59390	1.36340
8.3	0.75	60310	1.38452
8.4	0.75	61230	1.40564
8.5	0.75	62150	1.42676
8.6	0.75	63070	1.44788
8.7	0.75	63990	1.46900
8.8	0.75	64910	1.49012
8.9	0.75	65830	1.51124
9.00	0.75	66750.00	1.53236
9.1	0.75	67875	1.55819
9.2	0.75	69000	1.58402
9.3	0.75	70125	1.60984
9.4	0.75	71250	1.63567
9.5	0.75	72375	1.66149
9.6	0.75	73500	1.68732
9.7	0.75	74625	1.71315
9.8	0.75	75750	1.73897
9.9	0.75	76875	1.76480
10.00	0.75	78000	1.79063
10.1	0.75	79125	1.81645
10.2	0.75	80250	1.84228
10.3	0.75	81375	1.86811
10.4	0.75	82500	1.89393
10.5	0.75	83625	1.91976
10.6	0.75	84750	1.94558
10.7	0.75	85875	1.97141
10.8	0.75	87000	1.99724
10.9	0.75	88125	2.02306
11.00	0.75	89250	2.04889
12.00	0.75	100500.00	2.30715
13.00	0.75	123187.50	2.82798