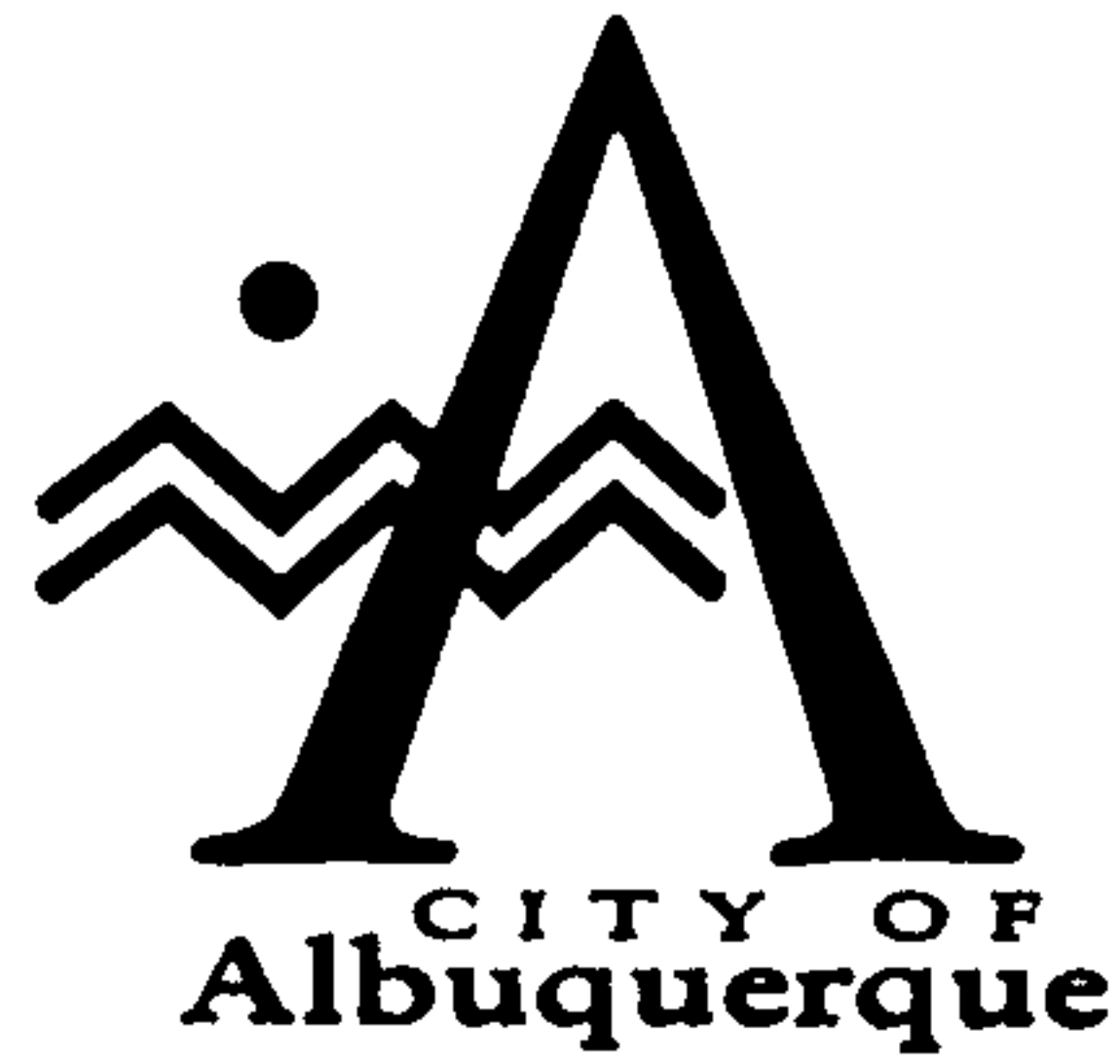




June 5, 1998

Diane Hoelzer PE
D. Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: REVISED DRAINAGE PLAN FOR GARDENS ON THE RIO GRANDE (J12-D17)
REVISION DATED 5/19/98

Dear Ms. Hoelzer:

Based on the information provided on your May 22, 1998 resubmittal, the above referenced site is approved for Preliminary Plat & Site Development Plan for Subdivision.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia

 File

Sincerely



Bernie J. Montoya CE
Associate Engineer

Good for You, Albuquerque!





D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

May 20, 1998

Bernie Montoya, CE
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87103

Re: **Gardens on the Rio Grande Subdivision (DRB 96-450 and 97-97)** J12/D17

Dear Mr. Montoya:

I am going back to DRB for an amended infrastructure list, amended preliminary plat, amended site plan and amended Grading and Drainage Plan. The drainage report remains unchanged. The changes that I have reflected on this revised G & D plan include street name changes, minor movement of right-of-way lines near the entrance on Mountain Road and property lines on lot 29. Open space areas were adjusted to reflect these minor changes.

If you have any questions, please call me.

Sincerely,

MARK GOODWIN & ASSOCIATES, P.A.

Diane Hoelzer, PE

DLH/dh

b:\gardens\amendu1.ltr

RECEIVED
MAY 22 1998
HYDROLOGY SECTION

DRAINAGE INFORMATION SHEET

PROJECT TITLE: The Gardens @ Rio Grande Unit I and III ZONE ATLAS/DRNG, FILE#: J-12/DI7
DRB #: 96-450 and 97-97 EPC #: _____ WORK ORDER #: 572591 and 572592
LEGAL DESCRIPTION: **MRGCD Map 38; Lots 324B1, 324B2, 325B1, 325B2A, 325B2B, 326A2B, 326B1, and portions of 326A1B, 326A2A, 326B2 Town of Atrisco Grant. Land of Lola Hedges, Tract A, B1 and B2 Manhattan Place, Tract A; Tract 322B1A; Town of Albuquerque Grant.**
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Diane Hoelzer PE
ADDRESS: PO Box 90606 PHONE: 828-2200
OWNER: The Gardens Inc. CONTACT: Bill Caniglia
ADDRESS: PO Box 2164 PHONE: 247-3113
ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

____ DRAINAGE REPORT
X DRAINAGE PLAN (revised)
____ CONCEPTUAL GRADING & DRAINAGE PLAN
X GRADING PLAN (revised)
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER

____ SKETCH PLAT APPROVAL
X PRELIMINARY PLAT APPROVAL *revised*
X S. DEV. PLAN FOR SUB'D APPROVAL *revised*
____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATION OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER amended Unit I Prel. Plat and site plan only

PRE-DESIGN MEETING:

____ YES
____ NO
____ COPY PROVIDED

DATE SUBMITTED: 5-20-98

BY: Diane Hoelzer
Diane Hoelzer PE

RECEIVED
MAY 22 1998
HYDROLOGY SECTION

Recd 5/22/98
By Richard Douke

facsimile

TRANSMITTAL

to: BERNIE MONTOYA
fax #: 924-3864
re: GARDENS ON THE RIO GRANDE - MRGCD LICENSE
date: May 11, 1998
pages: 11, including this cover sheet.

From the desk of...

Diane Hoelzer
Civil Engineer
D.Mark Goodwin & Associates, PA
P.O.BOX 90606
Albuquerque, NM 87199

(505) 828-2200
Fax: 797-9539



March 2, 1998

Mr. Richard Gonzales
PO Box 2164
Albuquerque NM 87103

REF: LICENSE AGREEMENT
LICENSE NO. 2-020-98

Dear Mr. Gonzales,

Enclosed for your files is an executed License Agreement with THE GARDENS INC. TO INSTALL AND MAINTAIN A 57" X 38" X 60' ARCHED (EQUIVALENT 48"Ø) CMP CULVERT CROSSING ACROSS THE DURANES DITCH RIGHT-OF-WAY, STATION 156+84±.

Thank you for your cooperation in this matter. Should you have any questions or require further assistance, please contact Mr. Ray Gomez of our Engineering Department at (505) 247-0234 during regular office hours.

Sincerely,

Subhas K. Shah
Chief Executive Officer

SKS:kr
Encls

P.O. Box 681

87103-0581

1931 Second St. SW

Albuquerque, NM

87102-4515

505-247-0234

Fax # 505-243-7308

M.R.G.C.D. CONTRACT NO. 2-020-98
M.R.G.C.D. MAP NO. 38
LEGAL DESCRIPTION THE GARDENS AT
AT RIO GRANDE
SEC. 13, T. 10 N., R. 2 E.
DURANES DITCH
STATION 156+84±

**MIDDLE RIO GRANDE CONSERVANCY DISTRICT
LICENSE AGREEMENT**

**LICENSE WITH THE GARDENS INC. TO INSTALL AND MAINTAIN A 57" X 38" X 60'
ARCHED (EQUIVALENT 48" Ø) CMP CULVERT CROSSING ACROSS THE DURANES
DITCH RIGHT-OF-WAY**

This License Agreement is made and entered into this 5th day of MARCH, 1998, by and between the Middle Rio Grande Conservancy District, ("the District"), and THE GARDENS INC. ("the Licensee").

WHEREAS, the District holds an easement interest for the DURANES DITCH, ("the property"), and the District operates and maintains the property as an integral part of the Districts works and property; and

WHEREAS, the Licensee has requested permission from the District, to the extent of the Districts property interest, to utilize the property in a manner more particularly specified herein for a period of fifty (50) years beginning on the date of execution of this agreement; and

WHEREAS, the District is willing to agree to use of the property and encroachment upon the property pursuant to the conditions more particularly specified herein; and

NOW THEREFORE, the District agrees to use of, and encroachment upon the property by the Licensee only to the extent and for the purpose set forth below:

1. Licensee shall install and maintain a 57" X 38" X 60' ARCHED (EQUIVALENT 48" Ø) CMP CULVERT CROSSING ACROSS THE DURANES DITCH RIGHT-OF-WAY, hereafter referred to as "the installation", across the property which will serve THE GARDENS AT RIO GRANDE SUBDIVISION, MRGCD Map 38, Station 156+84±. The District agrees to the installation set forth in this paragraph only pursuant to the guidelines shown on Drawing No.(s) 163-518-4944 attached hereto, and any and all other attached drawings and/or specifications which by this reference are made a part of this License Agreement.

2. This License shall be null and void if the installation and/or construction of the work set forth in paragraph 1 and the attached drawings and specifications is not completed within one (1) year from the date of execution of this Agreement.

3. The Licensee shall, at its own expense, locate, install, construct, maintain and/or repair any structures, accessories, or any installation permitted by this License and shall, at its own expense, bear all

costs incurred by reason of the exercise of the privilege conferred by this License. Maintenance responsibilities include, but are not limited to, cleaning of debris, silt, weeds and other obstructions within and around the inlet and outlet ends of culvert pipe crossings or under bridge crossings.

4. The privilege granted by this License shall not be exercised, nor shall any structure, accessory, or installation be constructed or maintained so as to obstruct in any manner the flow of water into or through the District's works, or to interfere in any manner whatsoever with the construction, operation, maintenance and functions of the District. Should the installation permitted under this License become damaged or require removal, relocation, or protection as a result of District operation and maintenance of the property, the Licensee shall, at its own expense, repair, remove, relocate, or protect the installation.

5. The Licensee shall be liable for any and all bodily injuries and or damages, to the property of the District or the property of the Licensee or any third party or parties arising from or by reason of the existence, construction, maintenance, repair, condition or use of any structures, accessories or encroachments authorized by this License or by the exercise of the privilege conferred by this License. In addition, the Licensee agrees to indemnify and hold harmless the District, their agents and employees from any and all claims, demands, actions, or suits of any nature by any third party that may arise as a result of this License.

6. Where the property that is the subject of this License is held by the District other than as a fee simple estate, the Licensee shall be solely responsible for ascertaining whether the installation will encroach upon property belonging to entities or persons other than the District and for obtaining any additional permission or licenses that may be required from property owners other than the District. The Licensee shall obtain the requisite permission prior to the use of or encroachment upon the property.

7. By this License, the District does not warrant its easement interest. This License serves solely to define the conditions pursuant to which the District will permit encroachment upon its property as evidenced by existing records and as defined by this License.

8. This License shall be revocable by the District, upon thirty (30) days written notice to the Licensee if the District determines that the continuation of this License is detrimental to the interest of the District. Upon such revocation, all structures, accessories, and installations shall be removed by the Licensee without delay at the expense of the Licensee. Any rights that the Licensee may have under this License shall terminate immediately upon receipt of written notice of revocation. Revocation shall not release the Licensee from any liability or obligation, whether of indemnity or otherwise, that may have attached, accrued, or was accruing at the time of such revocation. Notice of revocation shall be sufficient if mailed to Licensee at: THE GARDENS INC., P.O. BOX 2164, ALBUQUERQUE, NM 87103

9. If, at any time, the Licensee shall, in the judgment of the District, fail to properly perform any of the terms, obligations or covenants under this agreement, the District may, at their option, perform or have performed such work as it deems necessary for the safe operation of the works of the District, or to protect the property of the District or any third party, or the public. In such event, Licensee agrees to pay any and all costs incurred by the District in the performance of such work, including costs related to the supervision of the work. Payment shall be made by the Licensee within thirty (30) days after a bill is rendered.

10. If the District is required to bring suit in any court for the purposes of enforcing this Agreement or any provision or portions thereof, the Licensee shall be liable for all costs and reasonable attorney's fees incurred by the District in connection with such suit.

11. The Licensee upon completion of the installation licensed by this Agreement, shall notify the District and the District shall inspect the construction, and if the construction complies with all terms of this Agreement, the District shall sign the "Final Construction Inspected". If the construction fails to comply with all terms of this Agreement, the Licensee shall correct all problems specified by the District.

12. The Licensee shall comply with all applicable laws, ordinances, rules, and regulations enacted or promulgated by any federal, state, or local government body having jurisdiction over the real property for which the License is granted.

13. The provisions of this agreement shall inure to the benefit of and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of the parties hereto; provided, however, that no such heir, executor, administrator, personal representative, successor or assign of the Licensee shall have the right to use, alter, or modify the installation / encroachment in a manner which will increase the burden of the installation / encroachment on the property. This License shall not be assignable by the Licensee without prior written approval from the District.

14. All work to be done within the property must be approved by the District prior to commencing work, and shall be closely coordinated with the District's Engineering Department and appropriate field offices, Phone: (505) 247-0234.

15. Licensee shall not perform work on the property or upon structures belonging to, or operated by the District between March 1 and October 31 inclusive. However, work may be permitted by the District if the Licensee demonstrates to the District, prior to commencing work, that the work will not interfere with the District operations and maintenance of the property.

16. The Licensee, its employees, agents, contractors or subcontractors shall not store equipment, materials or debris on the property which may interfere with operations and maintenance of the property and shall not service vehicles or equipment on the property.

17. Seeding of disturbed areas within the right-of-way is required per District seeding specifications and must meet the satisfaction of the District staff.

IN WITNESS WHEREOF, the parties hereto have executed this agreement the day and year first above written.

APPROVED:

MIDDLE RIO GRANDE CONSERVANCY DISTRICT

[Signature] DATE: 3-5-98
Chief Executive Officer

LICENSEE The Baylors Inc.
by William T. Camplin DATE: 2/24/98
V President

ACKNOWLEDGMENT OF THE LICENSEE

State of)
)ss.
County of)

On the 24 day of February, 1998, the above noted personally appeared before me, known to me to be the individual described in and who executed the within and foregoing instrument, and acknowledged that he / she signed the within and foregoing instrument as his / her free and voluntary act and did for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

[Signature]

Notary Public in and for the
State of nm

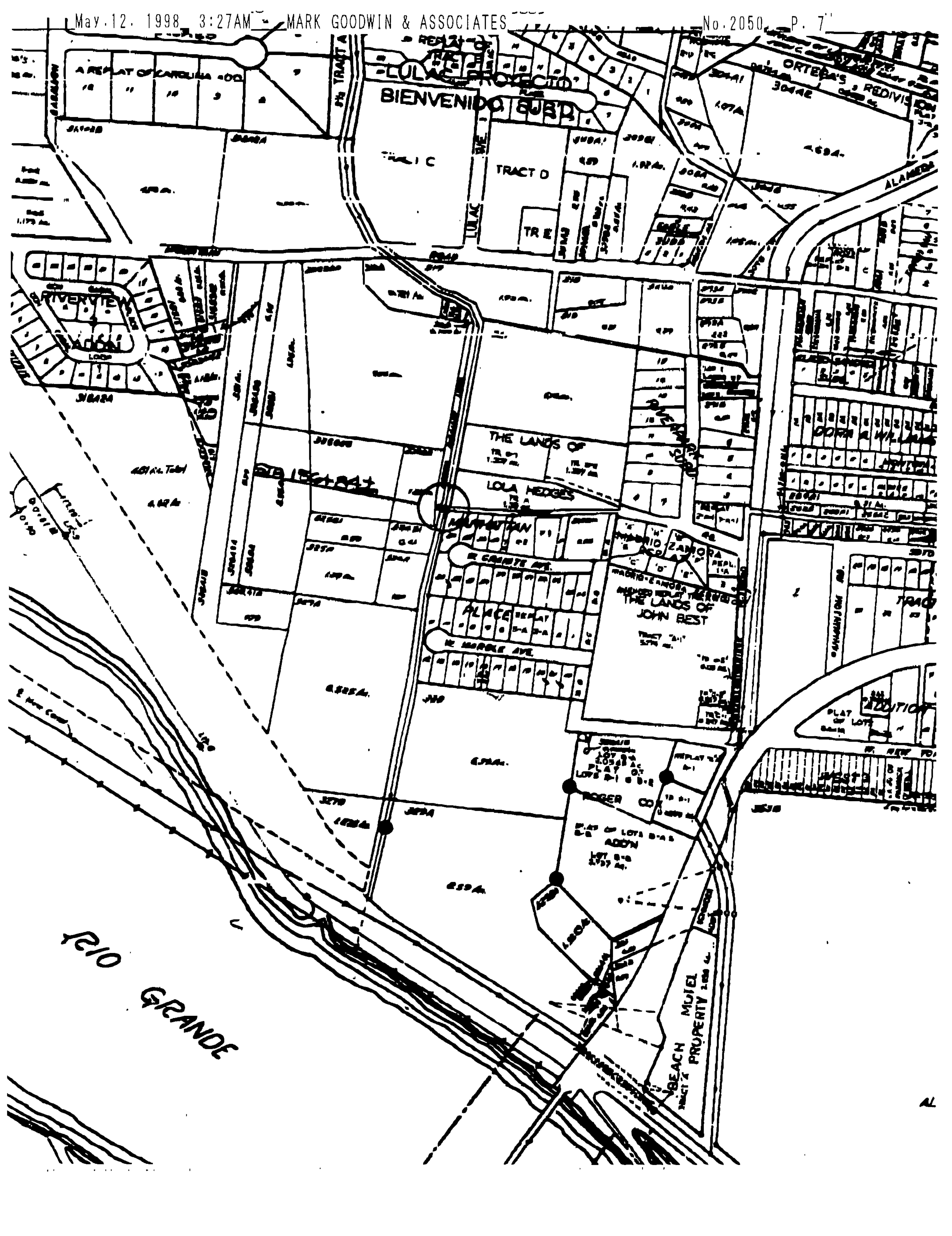
Residing at

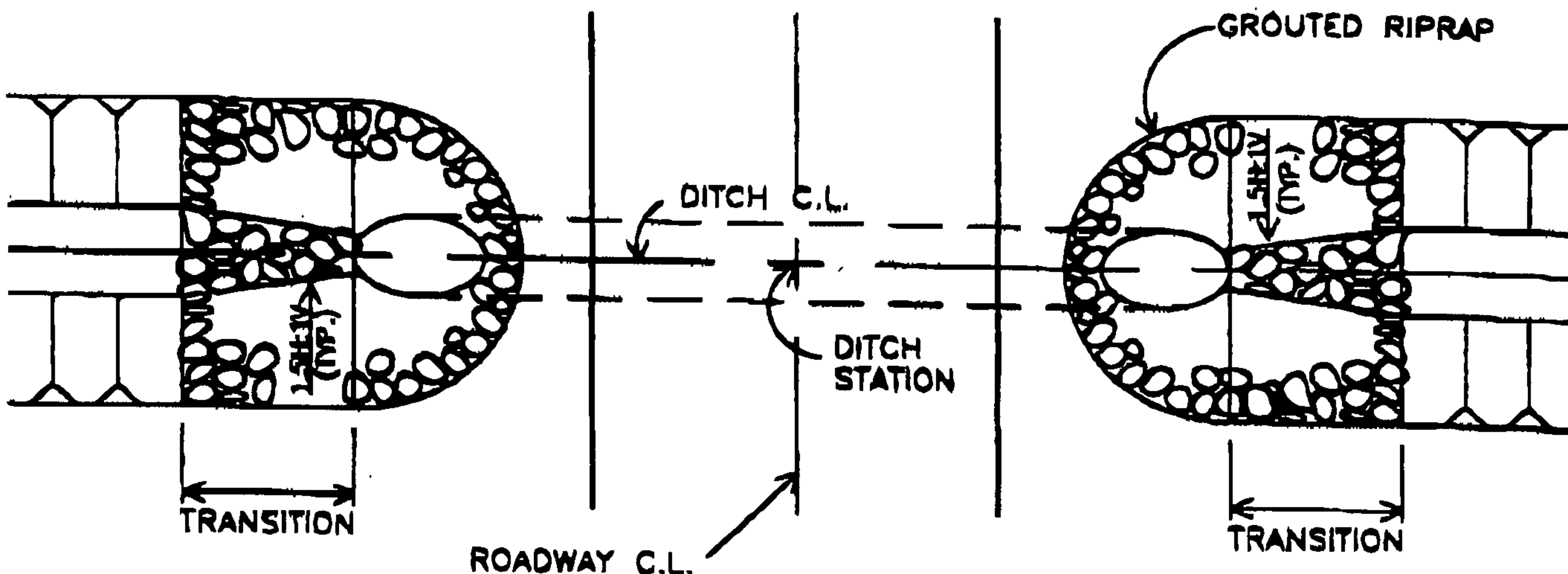
My commission expires: 3/15/99

FINAL CONSTRUCTION INSPECTED:

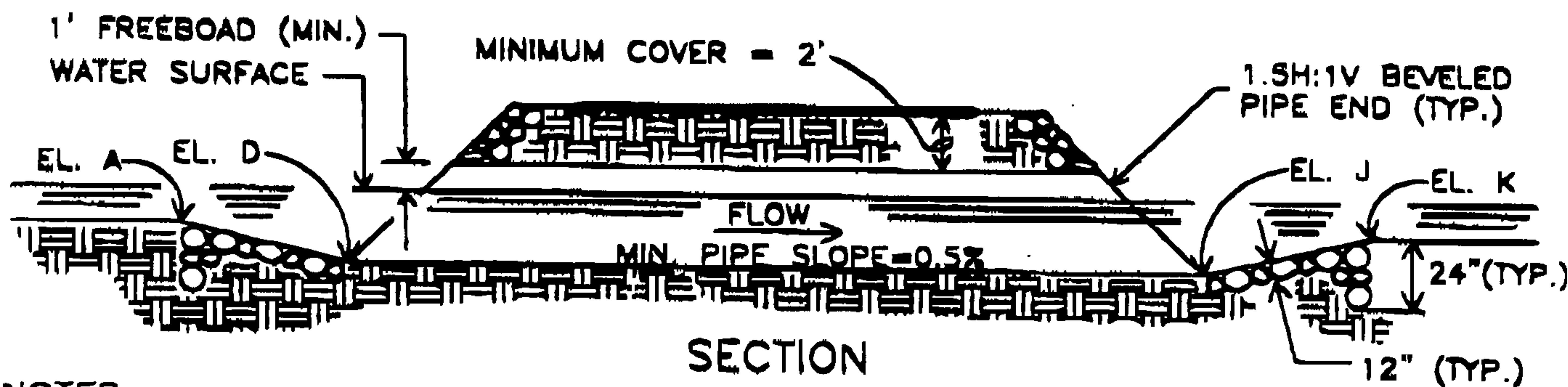
MIDDLE RIO GRANDE CONSERVANCY DISTRICT

DATE: _____





PLAN



NOTES:

1. REINFORCED CONCRETE PIPE CULVERT SHALL CONFORM TO A.S.T.M. DESIGNATION 076-72, CLASS III, WALL B, USING "O" RING GASKETED JOINTS.
2. CORRUGATED METAL PIPE CULVERT SHALL CONFORM TO INTERIM FEDERAL SPECIFICATION WW-P-00405. CLASS I AND II, SHAPES 1, 2 AND 3.
3. CULVERT CROSSINGS SHALL BE SET AT AN ELEVATION PROVIDING A MAXIMUM BACK WATER EFFECT OF NOT MORE THAN 0.25' AS DETERMINED BY HYDRAULIC COMPUTATIONS.
4. TRANSITIONS SHALL BE PROVIDED AT BOTH INLET AND OUTLET OF THE PIPE AS SHOWN ON THE DRAWING ABOVE. TRANSITIONS MAY BE CONSTRUCTED OF CONCRETE OR GROUTED RIPRAP.
5. GROUTED RIPRAP PROTECTION SHALL BE USED ADJACENT TO STRUCTURES IN EARTH-SURFACED WATERWAYS WHERE EROSION MAY OCCUR. RIPRAP SHALL BE HARD, DENSE AND DURABLE.
6. ALL BACKFILL SHALL BE COMPACTED TO 90% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE A.S.T.M. PROCTOR TEST.
7. NO CULVERT INSTALLATIONS ARE PERMITTED DURING IRRIGATION SEASON (MARCH 1 TO NOVEMBER 1).
8. THE LICENSEE SHALL CLEAN AND REMOVE ALL SILT AND DEBRIS WITHIN THE CULVERT CROSSING ON A ANNUAL BASIS PRIOR TO MARCH 1st AND THEREAFTER.
9. THE LICENSEE SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE CULVERT CROSSING AND ALL ACCESORIES ON THE CULVERT CROSSING.
10. THE LICENSEE SHALL BE RESPONSIBLE FOR THE CONTROL OF VEGETATION ON AND AROUND THE CULVERT CROSSING.

PIPE CULVERT INFORMATION

EL O A- 4953.69

EL 00-4953-33

EL O J- 4953.03

EL O K- 4953 CA

WS O A- 4955.69

WS O K- 4953.64

PIPE LENGTH = 60'

PIPE DIA = 57" x 38" A201D CMT

TRANSITION DIM. = 12'

NOTE: PIPE CULVERT INFORMATION WILL BE DETERMINED BY THE DISTRICT SHOULD THE CULVERT PIPE BE REPLACED.

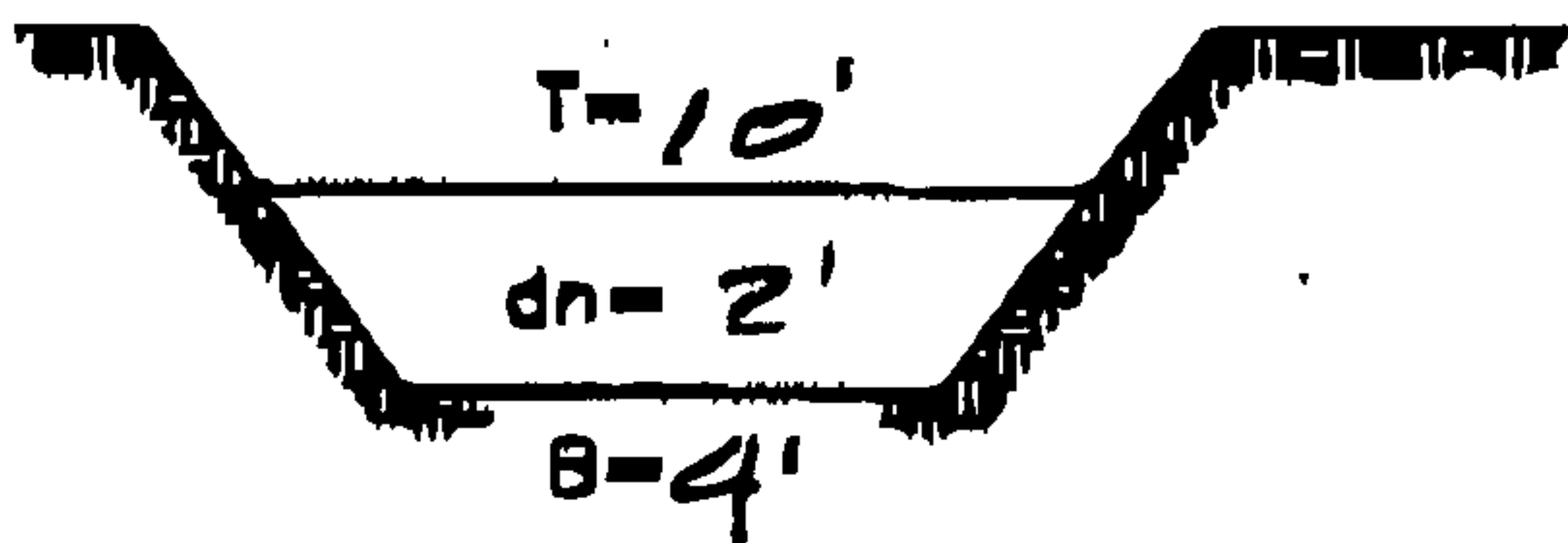
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MINIMUM CONSTRUCTION STANDARDS
PIPE CULVERT CROSSING
LATERALS AND ACEQUIAS

B.O.R. APPROVAL _____
M.R.G.C.D. APPROVAL _____
DRAWN _____

DRAWING NO. 163-518-4944

PROJECT DEHA GARDENS (PRIVATE ROAD)WATERWAY DURANES DITCHSTATION 156+84 ± SHEET _____ OF _____CALCULATED BY R. Gomez DATE _____

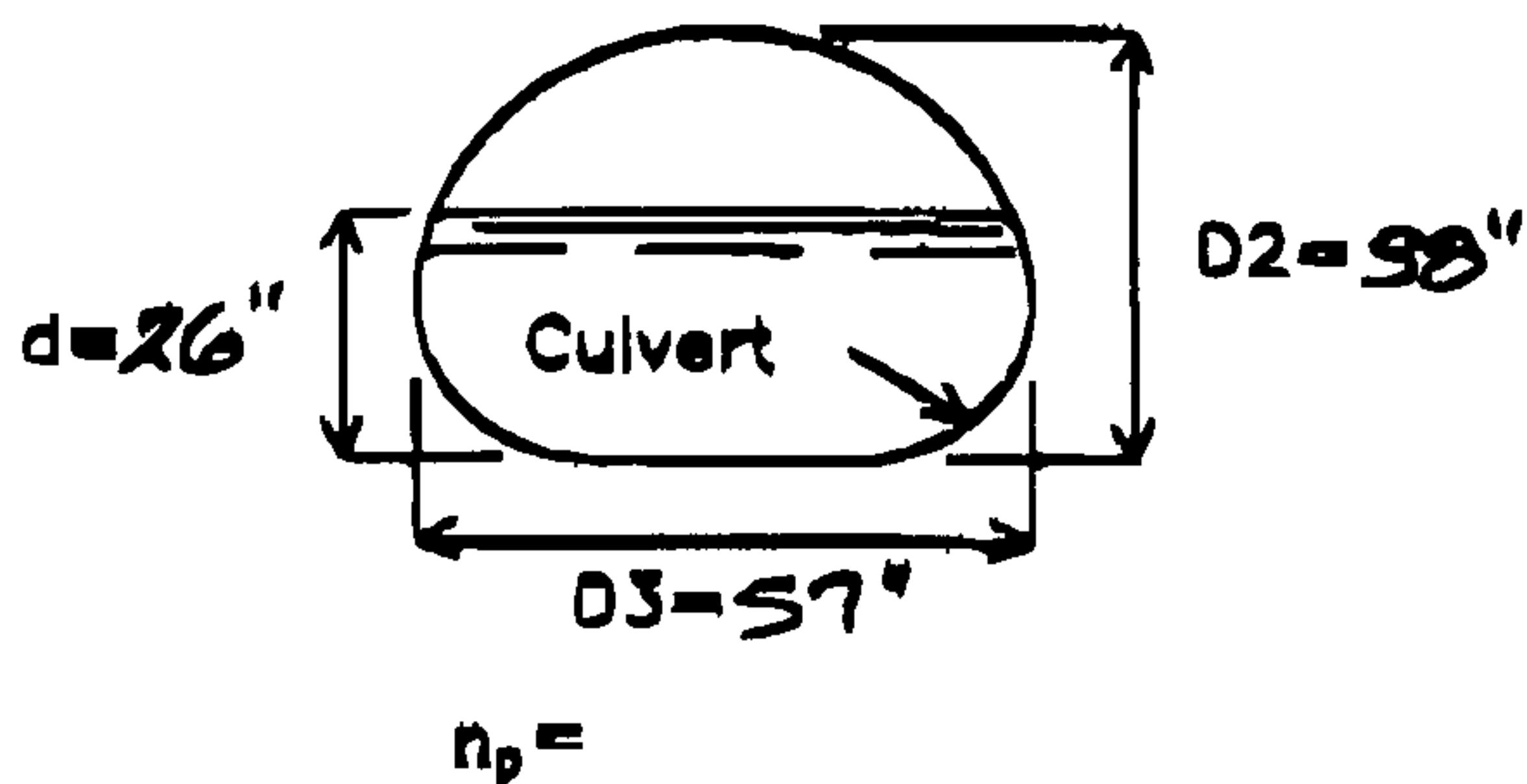
SURVEYED CHANNEL CROSS-SECTION



$$S_c = 0.0006 \text{ 'FT}$$

$$n_c = 0.0225$$

PIPE HYDRAULICS



$$d/D_2 = 0.68$$

$$A_p = A \text{ (Proportional Value)} = (11.6)(0.78) = 9.05 \text{ sf}$$

$$R_p = R_1 \text{ (Proportional Value)} = (0.924)(1.19) = 1.10'$$

$$V_p = Q_c / A_p = 2.91 \text{ fps}$$

$$h_{vp} = V_p^2 / 2g = 0.13'$$

NOTE:

Computations are based on applications of Mannings and Scobey's formulas.

CHANNEL HYDRAULICS

$$A_c = \left[\frac{T+B}{2} \right] d_n = 14.00 \text{ sf}$$

$$WP_c = 2 \left[\left[\frac{T-B}{2} \right]^2 + d_n^2 \right]^{1/2} + B = 11.21'$$

$$R_c = A_c / WP_c = 1.25'$$

$$V_c = \frac{(1.486 \times S^{1/2} \times R^{2/3})}{n_c} = 1.88 \text{ fps}$$

$$Q_c = V_c \times A_c = 26.32 \text{ cfs}$$

$$h_{vc} = V_c^2 / 2g = 0.05'$$

AREA OF PIPE NEEDED

$$Q_c / V_m =$$

LOSSES THRU PIPE

$$h_i = k_i (h_{vp} - h_{vc}) = 0.04'$$

$$h_o = k_o (h_{vp} - h_{vc}) = 0.08'$$

$$h_f = L \frac{V_p^2 \times n_p^2}{2.2 \times R_p^{4/3}} = 0.10'$$

$$\text{TOTAL LOSSES (H)} = 0.22'$$

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MINIMUM CONSTRUCTION STANDARDS
HYDRAULIC COMPUTATION
FORM

B.O.R. APPROVAL _____
M.R.G.C.D. APPROVAL _____
DRAWN _____

4. HYDRAULICS

199

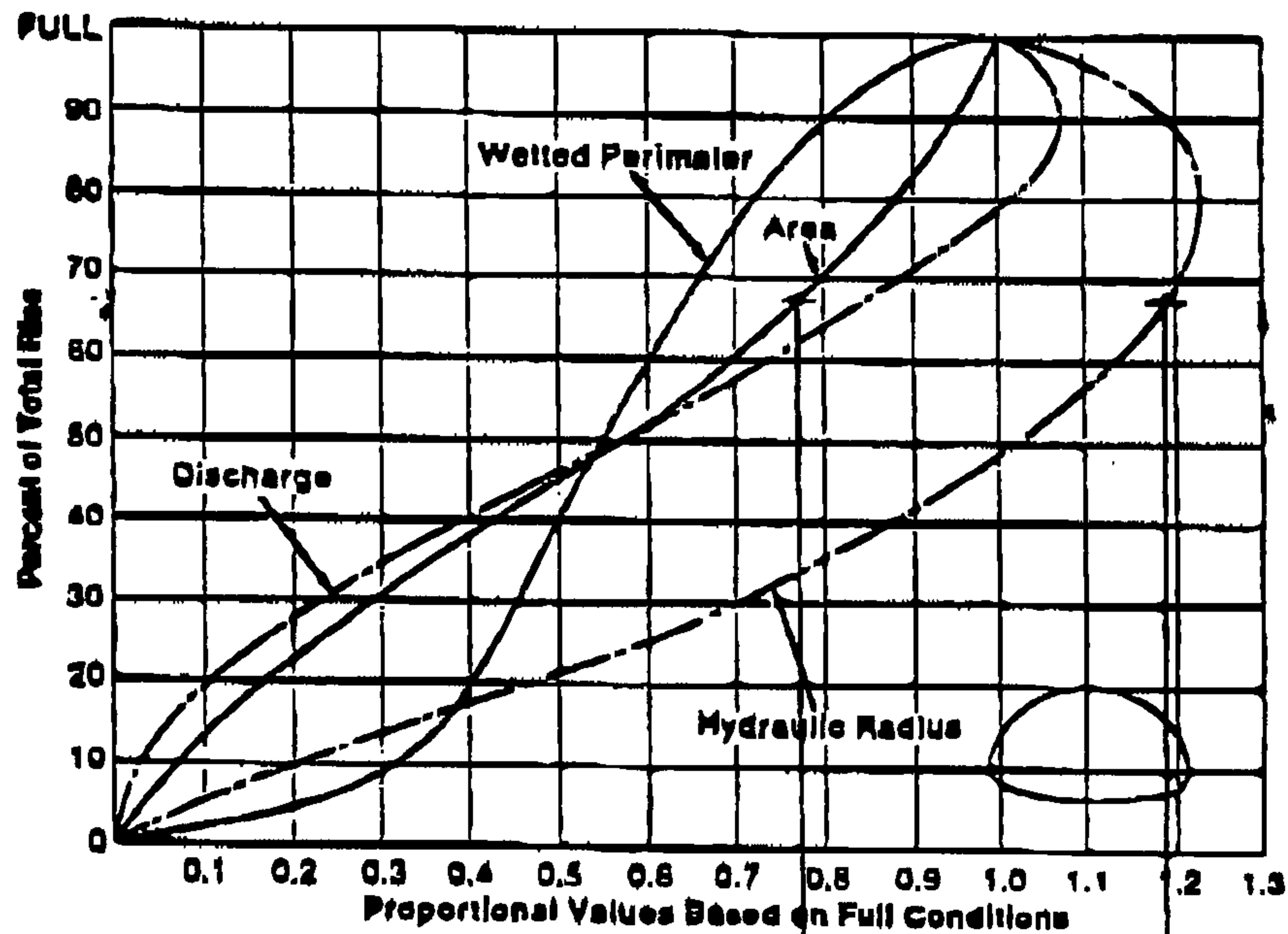


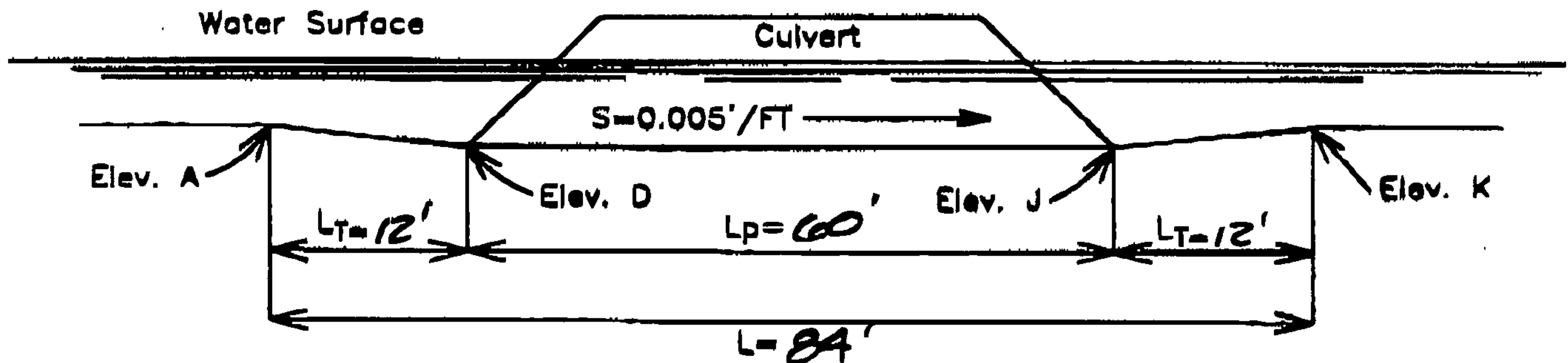
Figure 4-38 Hydraulic properties of corrugated steel and structural plate pipe-arches.

0.78

1.19

Table 4-15 Full-Flow Data for Corrugated Steel Pipe Arches

Corrugations 2 1/4 x 1/2 in.					Corrugations 3 x 1 in. and 5 x 1 in.			
Dimensions, in.			Waterway Area, ft ²	Hydraulic Radius A/πD, ft	Diameter, in.	Equiv. Size, in.	Waterway Area, ft ²	Hydraulic Radius A/πD, ft
Pipe Diameter	Span	Rise						
15	17	13	1.1	0.280	54	60 x 46	15.6	1.104
18	21	15	1.6	0.340	60	66 x 51	19.3	1.230
21	24	18	2.2	0.400	68	73 x 55	23.2	1.343
24	28	20	2.9	0.462	72	81 x 59	27.4	1.454
30	35	24	4.5	0.573	78	87 x 63	32.1	1.573
36	42	29	6.5	0.69	84	95 x 67	37.0	1.683
42	49	33	8.9	0.81	90	103 x 71	42.4	1.80
48	57	38	11.6	0.924	96	112 x 75	48.0	1.911
54	64	43	14.7	1.04	102	117 x 79	54.2	2.031
60	71	47	18.1	1.153	108	128 x 83	60.5	2.141
66	77	52	21.9	1.268	114	137 x 87	67.4	2.259
72	83	57	26.0	1.38	120	142 x 91	74.5	2.373

PROJECT OSHA GARDENS (PRIVATE ROAD)WATERWAY DRAINAGE DITCHSTATION 156+84.2 SHEET OF CALCULATED BY R. Gomez DATE 

$$\text{Elev. A} \dots\dots\dots = 4953.69$$

$$\text{W.S. Elev. @ Elev. A} = \text{Elev. A} + d_h \dots\dots\dots = 4955.69$$

$$\text{W.S. Elev. @ Elev. K} = \text{W.S. @ Elev. A} - L(S) \dots\dots\dots = 4953.64$$

$$h_a = \text{W.S. Elev @ Elev. A} - \text{W.S. Elev. K} \dots\dots\dots = 0.05'$$

$$\text{Elev. D} = \text{W.S. @ A} - [d + 1.5(h_a)] \dots\dots\dots = 4953.33$$

$$\text{Elev. J} = \text{Elev. D} - [0.005(L_p)] \dots\dots\dots = 4953.03$$

$$\text{Elev. K} = \text{Elev. A} - h_a \dots\dots\dots = 4953.64$$

$$\text{BACKED WATER AT ELEV. A} = H - h_a \dots\dots\dots = 0.17'$$

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MINIMUM CONSTRUCTION STANDARDS
HYDRAULIC COMPUTATION
FORM

B.O.R. APPROVAL _____
M.R.C.D. APPROVAL _____
DRAWN _____

*** RX REPORT ***

RECEPTION OK

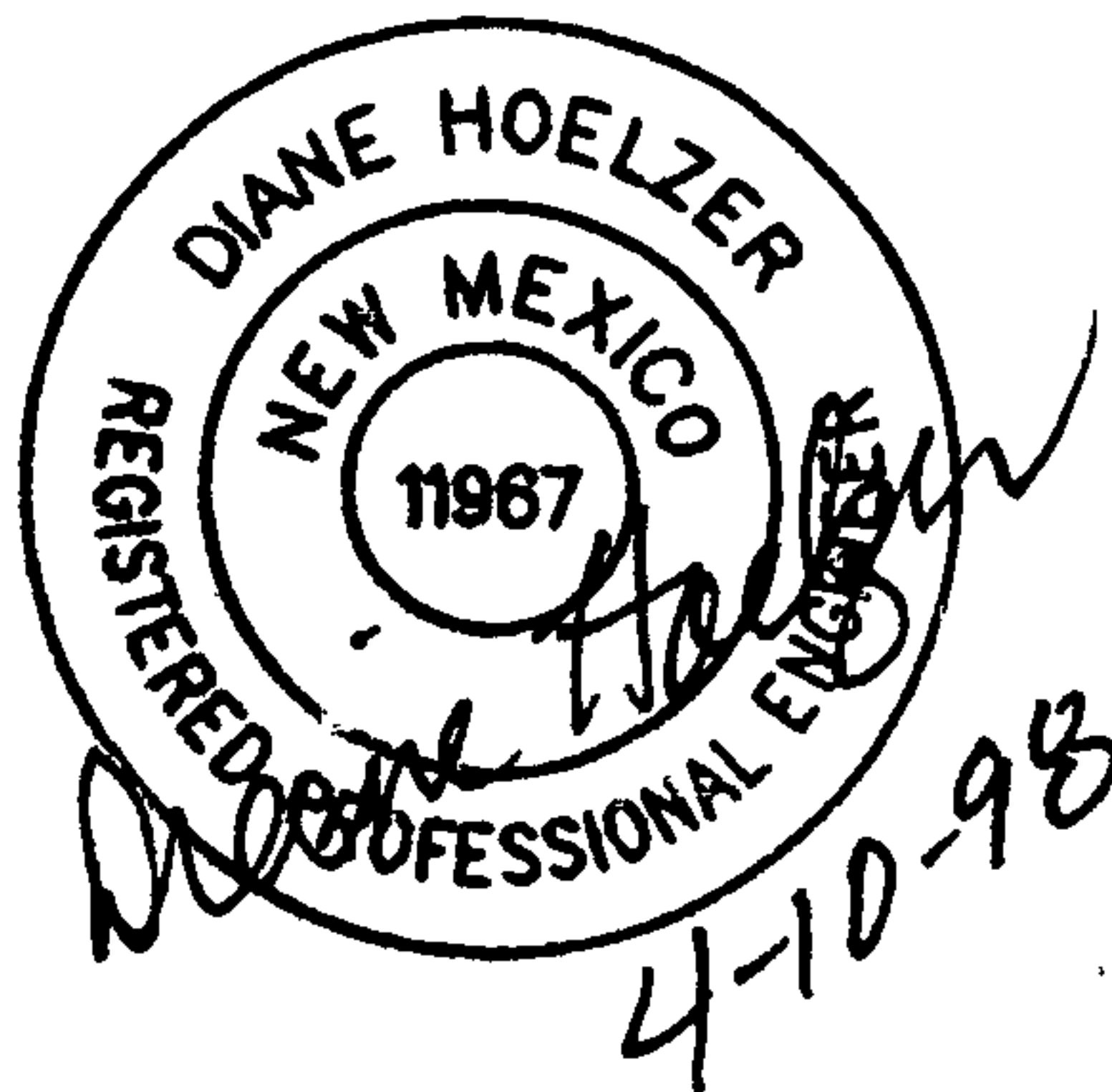
TX/RX NO	8005
CONNECTION TEL	
SUBADDRESS	
CONNECTION ID	
ST. TIME	05/11 15:25
USAGE T	03'15
PGS.	11
RESULT	OK

MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

dmg

DRAINAGE REPORT
for
THE GARDENS AT THE RIO GRANDE



APRIL 1998

TABLE OF CONTENTS

- I. LOCATION AND DESCRIPTION
- II. DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS
- III. EXISTING DRAINAGE CONDITIONS
- IV. PROPOSED DRAINAGE CONDITIONS
 - A. ONSITE FLOWS
 - B. OFFSITE FLOWS

FIGURE 1: VICINITY MAP

FIGURE 2: FEMA LOCATION MAP

APPENDIX A - HYDROLOGY

LAND TREATMENT VALUE CALCULATIONS

RETENTION VOLUME CALCULATIONS

PONDING DEPTH CALCULATIONS

EXISTING AND DEVELOPED CONDITIONS - AHYMO SUMMARY OUTPUT

EXISTING AND DEVELOPED CONDITIONS - AHYMO DETAILED OUTPUT

- POCKET 1: THE GARDENS AT THE RIO GRANDE GRADING AND DRAINAGE PLAN - UNIT I
THE GARDENS AT THE RIO GRANDE GRADING AND DRAINAGE PLAN - UNIT III

LOCATION AND DESCRIPTION

The proposed Gardens at the Rio Grande is comprised of approximately 22.66 acres and is located adjacent to the southside of Mountain Road and north of Central Avenue where it crosses over the Rio Grande. Unit 1 is comprised of 18.00 acres and Unit 3 is comprised of 4.66 acres. The Duranes Ditch is located along the east boundary of Unit 1 and the west boundary of Unit 3. The existing Manhattan Place road will be extended north and west into Unit 3 and then cross over the Duranes Ditch and into Unit 1. The topography of the project site is basically flat with a gentle slope in the southwest direction of approximately 0.2%.

The FEMA map indicates that the site is not within a 100-year floodplain.

DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The AHYMO model was used to analyze the 100-year 6-hour storm event for developed conditions using a Type 1 Rainfall Distribution in order to determine the required onsite retention volume. The required onsite retention volume was determined for the 100-year 10-day storm event using Equation a-9 from the DPM Hydrology Section.

The percent of Land Treatment D was determined for impervious areas for roads, sidewalk, home pads and driveways from the total site area. The remaining pervious areas were split equally between Land Treatment B and C.

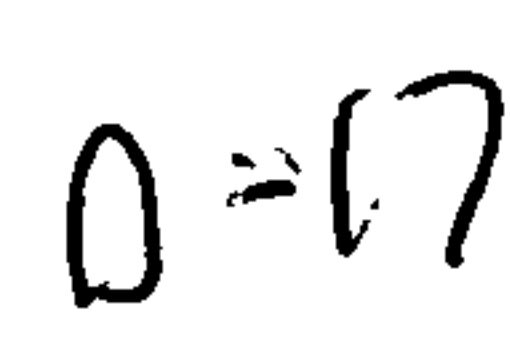
The following precipitation depths were used: P₆₀=1.90", P₃₆₀=2.25" and P₁₄₄₀= 2.64". A minimum time of concentration of 12 minutes was assumed for all sub-basins with a resulting 8 minute time to peak used in the AHYMO analysis.

A flat grading scheme will be used for this subdivision in accordance with section 22.5.2 of the DPM - Hydrology as follows:

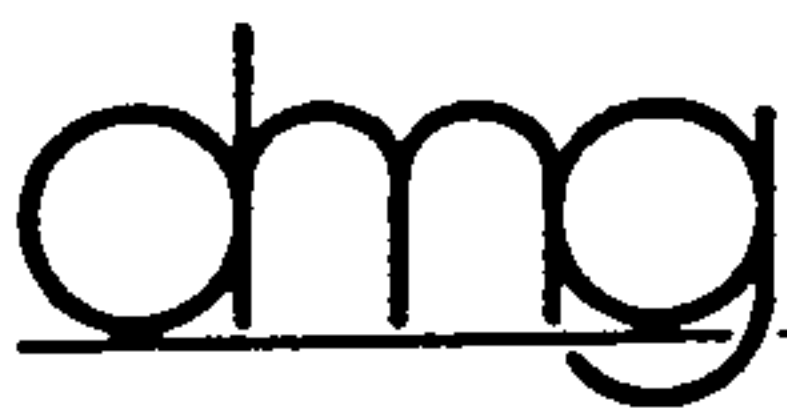
- 1. The site will be flat and will be graded accordingly.*
- 2. No offsite flows will be allowed to enter the site.*
- 3. No onsite flows will be allowed to exit the site.*
- 3. The maximum pad size will not be greater than 45% of the lot size.*
- 4. Pad elevations will be at least 1.0 foot above the 100-year 10-day WSEL.*
- 5. Sidewalks will be at least above the 10-year WSEL.*
- 6. The flow between the front and back yards will not be obstructed. The storm water will be allowed to equalize between the front and back yards.*
- 7. A perimeter wall will be built to contain the 100-year developed flows.*
- 8. The high point of the street will be 4" to 6" above the 100-year 10-day WSEL.*

EXISTING DRAINAGE CONDITIONS

Under existing drainage conditions, much of the runoff reaching the site will pond. When the depression areas fill runoff appears to flow in a general southwesterly direction toward the Rio Grande River.

$$a = 17$$
$$a = 17$$
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LETTER OF TRANSMITTAL



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

DATE 4-13-98	JOB NO.
ATTENTION Hydrology	
RE: Gardens @ Rio Grande	

TO **One Stop**
Hydrology Dept.

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	4-10		Drainage Report
1	4-10		G + D Plan

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 **This site was previously approved but I don't have copy of letter and don't remember the file number.**

This site layout has changed, Unit II is being sold, so there is now only Unit I & Unit III that is being developed into a residential subdivision

Please call if you have any questions.

COPY TO **HYDROLOGY SECTION** SIGNED: **Deane Huelzer**

Figure 12

EXHIBIT "A"
 To Subdivision Improvements Agreement
 DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
 for The Gardens on the Rio Grande Subdivision - Unit III

(PLAT)

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
PRIVATE STREET IMPROVEMENTS				
32' FF	Res Pvmr C & G	Osha Gardens	W. Property line	Manhattan Place
4'	Conc Sdwk(both sides)			
32' FF	Res Pvmr C & G	Manhattan Pl.	Osha Gardens	Granite Ave.
4'	Conc Sdwk (W side)			
8"	Gravity SAS	Osha Gardens	W. Property line	Manhattan Place
6"	PVC Waterline	Osha Gardens	W. Property line	Manhattan Place
✓	<i>Public street improvements to terminate Thompson Rd.</i>			
✓	To include removal of all existing public water and sewer lines presently serving on-site dwellings.			
✓	Water infrastructure to include valves, fittings, and fire hydrants.			
✓	Sewer infrastructure to include air release valves, clean outs, etc., as necessary.			
✓	Engineer's Certification for Grading and Drainage per DPM identified on approved Grading and Drainage Plan prior to release of Financial Guaranty. Executed private drainage covenant required before final plat sign-off.			

Prepared By: John M. MacKenzie : 10-22-97Print Name: John M. MacKenzie, PEFirm: Mark Goodwin & Associates, PAPage 1 of 1

 Development Review Board Member Approvals

[Signature] 10-28-97
 Transportation Dev. Date

[Signature] 10-28-97
 Design and Development, C.I.P. Date

[Signature] 10/20/97
 DRB Chair Date

[Signature] 10/28/97
 Utility Dev. Date

[Signature] 10-28-97
 Engineer/AMAFCA Date

D.R.B. Case No. 98-450
 D.R.C. Project No. _____
 Date Submitted 5/29/97
 Prelim. Plat Approved 6-3-97
 Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
 for The Gardens on the Rio Grande Subdivision - Unit 1 (Site Plan/Plat)

Size	Type Improvement	Location	From	To
8"	Gravity SAS	Osha Gardens	Rio de Jardin	<u>Granite Ave</u> Manhattan Place
8"	Gravity SAS	Estrella del Mar	Osha Gardens	Lot 9, Blk 2
8"	Gravity SAS	Rio de Jardin	Lot 8, Blk 1	Mountain Road
6"	PVC Waterline	Osha Gardens	Rio de Jardin	<u>Granite Ave</u> Manhattan Place
6"	PVC Wazerline	Estrella del Mar	Osha Gardens	Lot 9, Blk 2
6"	PVC Waterline	Rio de Jardin	Lot 8, Blk 1	Mountain Road

* Internal sidewalks to be deferred.

- ✓ Water infrastructure to include valves, fittings, and fire hydrants.
- ✓ Sewer infrastructure to include manholes and services.
- ✓ Engineer's Certification for Grading and Drainage per DPM identified on approved Grading and Drainage Plan prior to release of Financial Guaranty.

Prepared By: John M. MacKenzie 6-3-97
5-29-97

Print Name: John M. MacKenzie, PE

Firm: Mark Goodwin & Associates, PA

Page 2 of 2

 Development Review Board Member Approvals

<u>[Signature]</u>	<u>6-03-97</u>	<u>John M. MacKenzie II</u>	<u>6-3-97</u>
Transportation Dev.	Date	Utility Dev.	Date
<u>Edward A. Stoney</u>	<u>6-3-97</u>	<u>Frank J. Cogan</u>	<u>6-3-97</u>
Parks & General Services	Date	Engineer/AMAFCA	Date
<u>[Signature]</u>	<u>6-3-97</u>		
DRB Chairman	Date	NMUI	Date

D.R.B. Case No. 96-450
 D.R.C. Project No. _____
 Date Submitted 5/29/97
 Prelim. Plat Approved 6.3.97
 Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
 To Subdivision Improvements Agreement
 DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
 for The Gardens on the Rio Grande Subdivision - Unit I (Site Plan / Plat)

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
24' FF	Res Pvmnt C & G (both sides)	Osha Gardens	Rio de Jardin	E. Property line
4' *	Sidewalk (S. side)	Osha Gardens	Rio de Jardin	Estrella del Mar
4' *	Sidewalk <i>(Both Sides)</i>	Osha Gardens	Estrella del Mar	E. Propertyline
22' FF	Res Pvmnt C & G (both sides)	Estrella del Mar	Osha Gardens	Cul-de-sac
4' *	Sidewalk (E&N. sides)			
22' FF	Res Pvmnt C & G (both sides) Sidewalk (E. side)	Rio de Jardin	Osha Gardens	Mountain Road
24' FF	Res Pvmnt C & G (both sides) Sidewalk (E. side)	Rio de Jardin	Lot 8, Blk 1	Osha Gardens
32' FF	Res Pvmnt C & G (both sides)	Osha Gardens	E. Property line	Manhattan Place
32' FF	Res Pvmnt. C & G (both sides)	Manhattan Place	Osha Gardens	Granite Ave.
Entrance as detailed on site plan				

facsimile
TRANSMITTAL

to: BERNIE MONTOYA
fax #: 924-3864
re: GARDENS ON THE RIO GRANDE
date: May 6, 1998
pages: 4, including this cover sheet.

BERNIE,

I WILL SEND YOU THE M.R.G.C.D. CROSSING AGREEMENT AS SOON AS I GET IT FROM THE CLIENTS.

From the desk of...

Diane Hoelzer
Civil Engineer
D.Mark Goodwin & Associates, PA
P.O. BOX 90606
Albuquerque, NM 87199

(505) 828-2200
Fax: 797-8539

*** RX REPORT ***

RECEPTION OK

TX/RX NO	7971
CONNECTION TEL	
SUBADDRESS	
CONNECTION ID	
ST. TIME	05/06 09:18
USAGE T	01'12
PGS.	4
RESULT	OK



Martin J. Chávez, Mayor

Robert E. Gurulé, Director

April 29, 1997

Diane Hoelzer PE
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, New Mexico 87199

RE: DRAINAGE PLAN FOR THE GARDENS @ RIO GRANDE (J12-D17) ENGINEER'S
STAMP DATED 4/8/97

Dear Ms. Hoelzer:

Based on the information provided on your April 9, 1997 submittal, listed are some concerns that will need to be addressed prior to approval:

1. Finish pad elevations will need to be show to full mean sea level designation.
2. Detail of proposed water blocks at both entrances. Indicate the flowline and top of water block elevation.
3. Are you proposing on continuing with San Ricardo NW across the Duranes Ditch?
If so, you will need to obtain approval from MRGCD and include your crossing design.
4. Detail of the side-yard wall that will function in allowing the flat grading concept to be utilized.
5. Identify the TBM on site permanently marked.

If I can be of further assistance, please feel free to contact me 924-3986.

C: Andrew Garcia
cFile

Sincerely
Bernie J. Montoya
Bernie J. Montoya CE
Associate Engineer

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



PROPOSED DRAINAGE CONDITIONS

ON-SITE FLOWS

The drainage management plan for this project site is to retain 100% of the runoff volume generated onsite for at least the 100-year 10-day storm event which commonly known as a "flat grading scheme". The computed runoff volume will be ponded in the open space areas and the individual lot backyards, side yards and front yards. A maximum 4:1 slope will be allowed from the back yard property line to the pond bottom and from the lot pad and driveways to the pond bottom. A maximum slope of 5:1 will be allowed from the front yard sidewalk or curb to the pond bottom. Flow across side yard property lines will not be restricted. Any block walls constructed along the side yard property lines must have openings at grade to allow runoff to flow freely between lots to allow a shared and equalized peak water surface elevation among the lots.

For required retention volume calculations four separate retention basins were established, two in Unit 1 and two in Unit 3. The Duranes Ditch divides the basins between Unit 1 and Unit 3 and the internal roads divide the Basins within each Unit. The retention volume was determined for each of the four basins. An initial estimate of the required retention depth was determined by dividing the required retention volume by the total pervious area for each Basin. These estimates resulted in Basin 1 requiring the highest depth with an initial estimate of 3.85 inches. A more detailed calculation determined that 5.25 inches of retention depth was required in Basin 1 in order to retain the 100-year 10-day storm event. The initial estimates for; Basin 2, 3, and 4 was 3.3", 2.15" and 1.83", respectively. The worst case calculation for the required retention depth for Basin 1 of 5.25" was used to establish the 6.0" design ponding depth. Detailed calculations can be found in Appendix A.

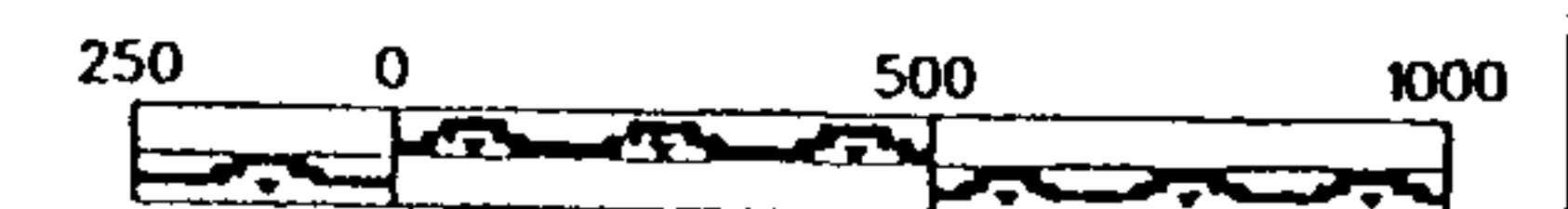
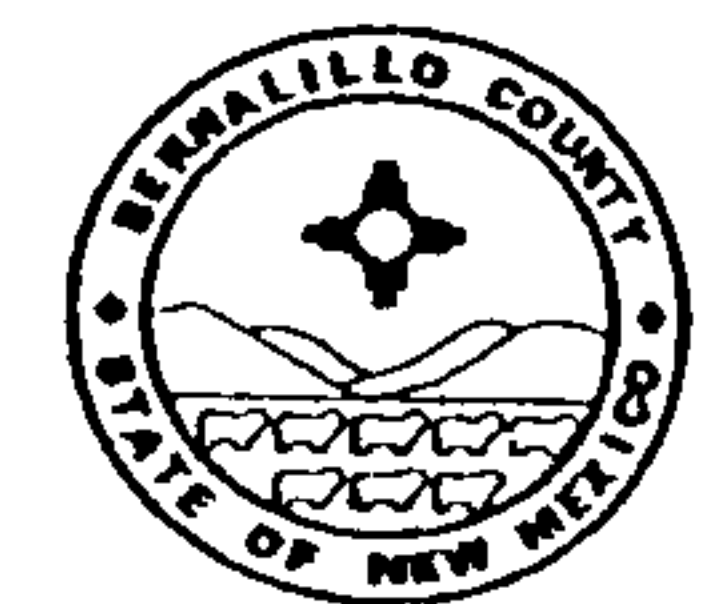
Each of the lot pads will be graded to an elevation of 4954.75 feet, MSL for Unit I and 54.30 feet, MSL for Unit III. These elevations will be at least 1.0 foot above the 100-year 10-day ponded water surface elevation. Using a design ponding depth of 6 inches, the pond bottom elevation will be at 4953.25' for Unit I and 4952.80' for Unit III. Refer to Appendix A for AHYMO printouts and hydrologic calculations.

OFF-SITE FLOWS

Offsite flows will be prevented from entering the project site by constructing a concrete block wall around the perimeter of the subdivision to separate on-site and off-site flows. The Duranes Ditch along the east property line creates a natural separation barrier between the on-site and off-site flows and between Unit 1 and Unit 3.

[illegible]

SCALE IN FEET


$$1'' = 500'$$


LEGAL DESCRIPTION

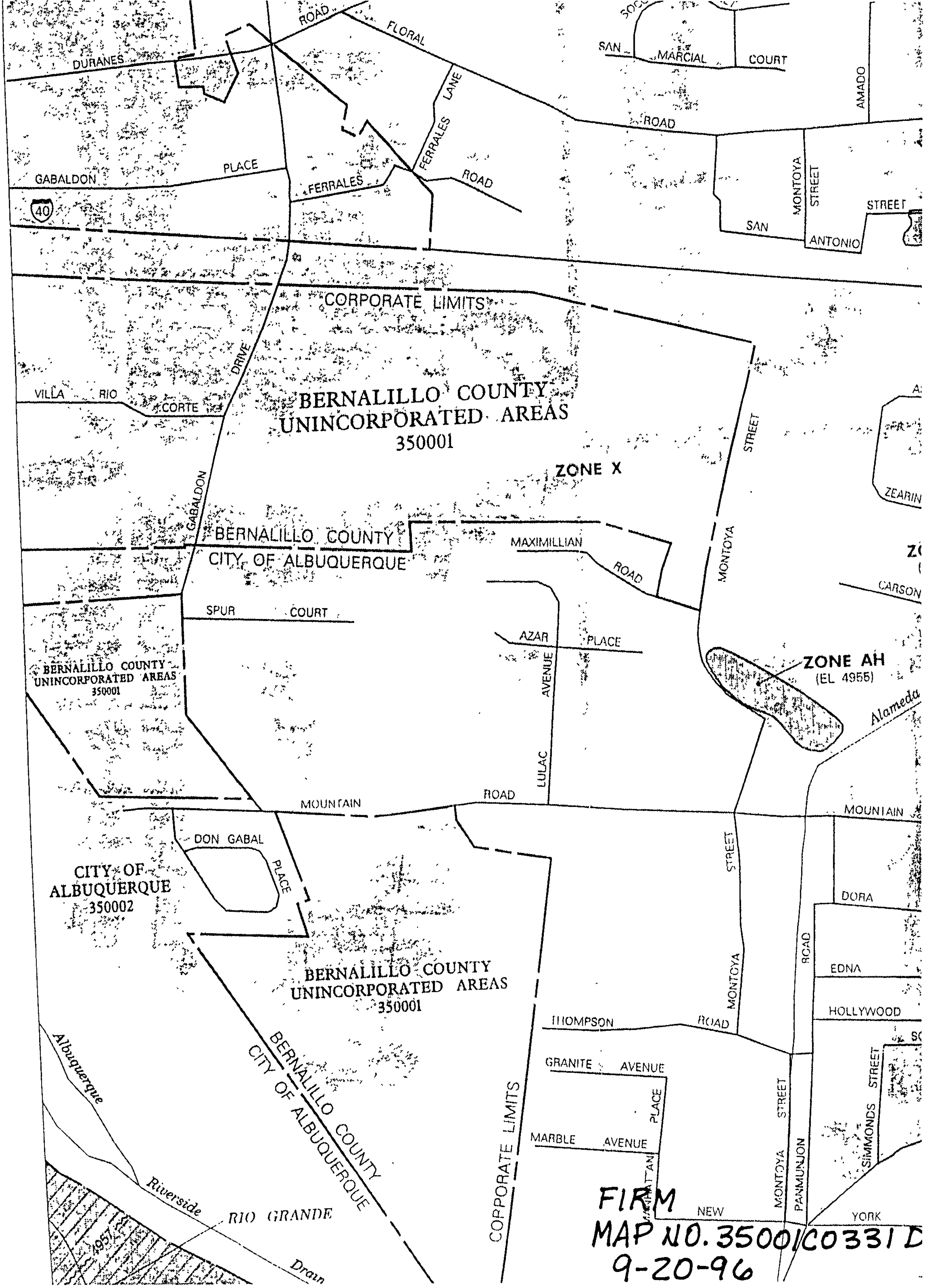
TION
FILE
SEC 13

UNIFORM PROPERTY CODE
1-012-068

J-12-Z

Bernalillo County

Map Amended by AGIS through May 05, 1995



FIRM
MAP NO. 35001C0331D
9-20-96

APPENDIX A

Existing and Developed Conditions



BASIN 1 Total Area = 2.4543 Ac = .0038349 sq. mi

Impervious Areas = 50459.7 SF = 1.1584 Ac.

Pads $(40 \times 55)11 + (40 \times 40) = 25800$

Paving $1800 + 13199.7 = 14999.7$

Sidewalk $790 \times 4 = 3160.0$

Driveways $(25 \times 20)9 = 4500.$

$(30 \times 20)2 = 1200.$

$(40 \times 20) = 800.$

Tr. B 26.4

Tr C 26.4

Tr D 47.2

BASIN 2 Total Area = 2.4678 Ac. = .0038560

Impervious Areas = 45,587.70 SF = 1.0466

Pads $(40 \times 55)11 = 24,200$

Paving 13199.7 = 13199.7

Sidewalk $610(4) = 2440$

Driveways $(25 \times 20)10 = 5,000.$

$(37.5 \times 20) = 750.$

Tr. B 28.8

Tr. C 28.8

Tr D 42.4



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Gardens Unit 1
SUBJECT Land Treatment Calcs
BY DLH DATE 4/6/98
CHECKED _____ DATE _____
SHEET 2 OF 5

BASIN 3 Total Area = 11.6201 Ac. = .01814 sq.mi.

Impervious Areas = 141,617.55 SF = 3.2511 Ac

Pads = (3200 SF) 26 = 83200

Paving = 37257.55 = 37257.55

Sidewalk = (790+750) 4 = 6160

Driveways (25x20) 21 = 10500

(45x20) 5 = 4500

TR. B = 36.0

Tr. C = 36.0

TR. D = 28.0

BASIN 4 Total Area = 6.2592 Ac = .00978

Impervious Areas = 61,587.2 SF = 1.4138 Ac

Pads 3200SF (10) = 32000SF

Paving 23047.24 = 23047.24

Sidewalk 760(4) = 3040SF

Driveways (25x20) 7 = 3500SF

TR B = 38.7

Tr C = 38.7

Tr D = 22.6



Pad Elevations are to be 1.0 foot above 100 yr - 10 day

WSEL: $P_{10DAY} = 10 - (24.9/2.64^{1.4})$

$$P_{10DAY} = 3.60''$$

$$P_{360} = 2.25''$$

$$V_{10DAY} = V_{360} + A_D \times (P_{10D} - P_{360}) / 12$$

BASIN 1 $V_{360} = .286 \text{ AF}$

$$A_D = 1.1584 \text{ AC.}$$

$$V_{10D} = .286 + 1.1584 \left(\frac{3.60 - 2.25}{12} \right)$$

$$\underline{V_{10D} = .4163 \text{ AF}}$$

BASIN 2 $V_{360} = .276 \text{ AF}$

$$A_D = 1.0466 \text{ AC.}$$

$$V_{10D} = .276 + 1.0466 \left(\frac{3.6 - 2.25}{12} \right)$$

$$\underline{V_{10DAY} = .3937 \text{ AF}}$$

BASIN 3 $V_{360} = 1.136 \text{ AF}$

$$A_D = 3.2511 \text{ AC.}$$

$$V_{10D} = 1.136 \text{ AF} + 3.2511 \left(\frac{3.6 - 2.25}{12} \right)$$

$$\underline{V_{10DAY} = 1.5017 \text{ AF}}$$

BASIN 4 $V_{360} = .579 \text{ AF}$

$$A_D = 1.4138 \text{ AC}$$

$$V_{10D} = .579 + 1.4138 \left(\frac{3.6 - 2.25}{12} \right)$$

$$\underline{V_{10DAY} = .7380 \text{ AF}}$$



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Gardens Unit I+III
SUBJECT Ponding Depth Calcs
BY DLH DATE 4-10-98
CHECKED _____ DATE _____
SHEET 4 OF 5

Initial Ponding Depth Calculations

Basin 1 Pervious Area = $2.4543 - 1.1584 = 1.2959$ acres

$$\text{Estimated Ponding Depth} = \frac{.4163 \text{ AF}}{1.2959 \text{ A}} = .3212 \text{ Ft} = 3.85''$$

Basin 2 Pervious Area = $2.4678 - 1.0466 = 1.4212$ acres

$$\text{Estimated Ponding Depth} = \frac{.3937 \text{ AF}}{1.4212 \text{ A}} = .2770 \text{ Ft} = 3.32''$$

Basin 3 Pervious Area = $11.6201 - 3.2511 = 8.3690$ acres

$$\text{Estimated Ponding Depth} = \frac{1.5017 \text{ AF}}{8.3690 \text{ A}} = .1794 \text{ Ft.} = 2.15''$$

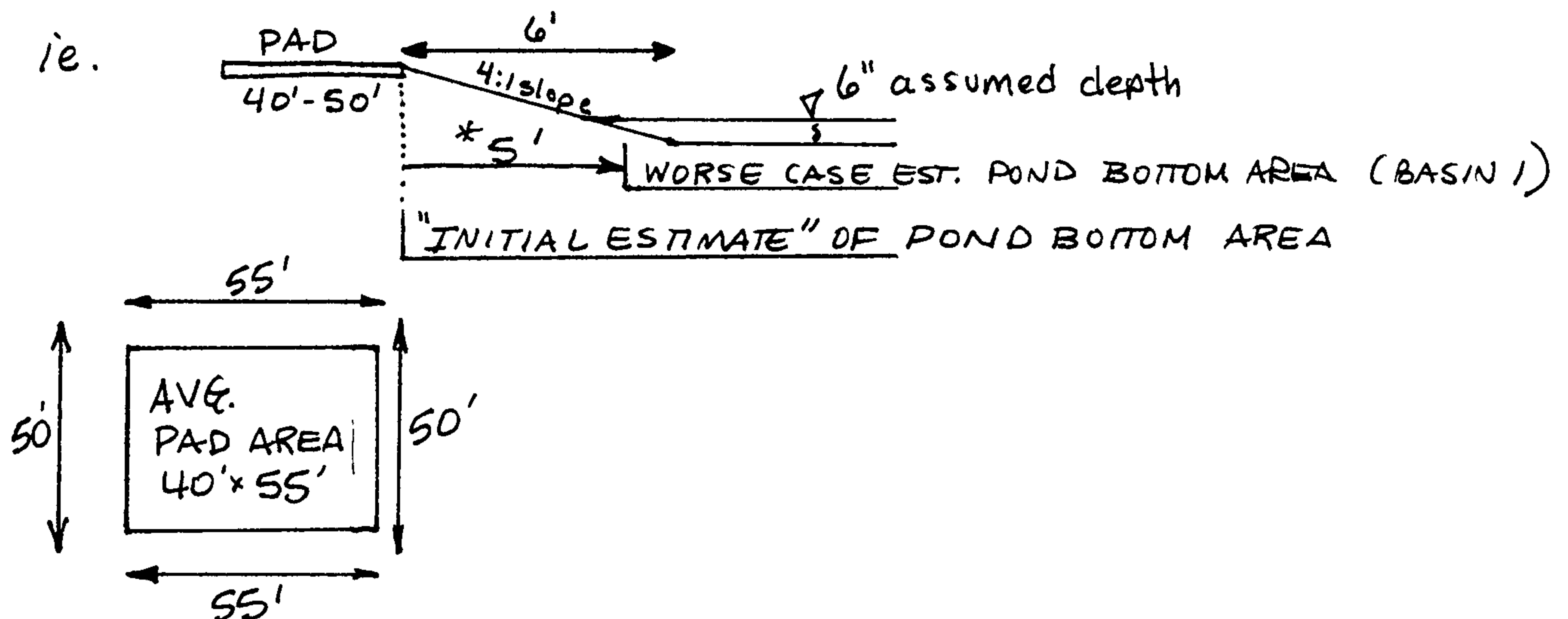
Basin 4 Pervious Area = $6.2592 - 1.4138 = 4.8454$

$$\text{Estimated Ponding Depth} = \frac{.7380 \text{ AF}}{4.8454 \text{ A}} = .1523 \text{ Ft.} = 1.83''$$



Take the worse case Basin with the greatest calculated required ponding depth and subtract out partial loss in Retention Volume due to side slopes from pads, driveways, roads + boundaries and re-calculate required retention depth.

Basin 1 had the highest initial estimated depth of 3.85"
Recalculate actual (estimated) Pond Area Bottom:



Calculate Retention Volume loss due to pads:

$$(50' + 50' + 55' + 55')(*5')(12 \text{ lots}) = 12,600 \text{ SF}$$

$$2 \text{ SIDES}(20')(12 \text{ lots}) = 480(*5') = 2400 \text{ SF} \quad \text{driveways:}$$

$$\text{TOTAL LOSS POND BOTTOM AREA} = 15,000 \text{ SF} = .3443 \text{ Ac.}$$

$$\text{TOTAL PERVIOUS AREA} = 1.2959 \text{ AC.}$$

$$\text{Revised Pond Area} = 1.2959 - .3443 = .9516 \text{ Acres}$$

Revised Required Pond Depth (Basin 1):

$$\frac{\text{Req'd Volume}}{\text{Pond Area}} = \frac{.4163 \text{ AF}}{.9516 \text{ A}} = .4374 \text{ Ft} = 5.25''$$

*** USE 6" PONDING DEPTH FOR ALL BASINS (DESIGN)**

```

RUN DATE (MON/DAY/YR) =04/06/1998
USER NO.= M_GOODWN.I01

```

		FROM	TO		PEAK	RUNOFF		TIME TO	CFS	PAGE =	1
HYDROGRAPH		ID	ID	AREA	DISCHARGE	VOLUME	RUNOFF	PEAK	PER		
COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE	NOTATION	
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.250
COMPUTE NM HYD	101.00	-	1	.00383	8.32	.286	1.39865	1.500	3.390	PER IMP=	47.20
COMPUTE NM HYD	102.00	-	1	.00386	8.14	.276	1.34245	1.500	3.299	PER IMP=	42.40
COMPUTE NM HYD	103.00	-	1	.01814	35.13	1.136	1.17384	1.500	3.026	PER IMP=	28.00
COMPUTE NM HYD	104.00	-	1	.00978	18.31	.579	1.11061	1.500	2.926	PER IMP=	22.60
FINISH											

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 04/06/1998
START TIME (HR:MIN:SEC) = 14:46:27 USER NO. = M_GOODWN.I01
INPUT FILE = GARDENS.DAT

START TIME=0.0
***** GARDENS AT RIO GRANDE UNIT I AND III
***** 100-YEAR 6-HOUR STORM EVENT
***** FILE: GARDENS.DAT APRIL 1998 BY:DLH
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.25 IN
RAIN DAY=2.64 IN DT=0.05 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .050000 HOURS END TIME = 6.000000 HOURS

.0000	.0027	.0055	.0084	.0114	.0145	.0177
.0210	.0245	.0281	.0319	.0358	.0399	.0443
.0489	.0537	.0589	.0644	.0703	.0767	.0836
.0916	.1005	.1261	.1867	.2909	.4520	.6840
1.0013	1.2516	1.3646	1.4590	1.5417	1.6156	1.6826
1.7437	1.7997	1.8513	1.8989	1.9429	1.9836	1.9929
2.0015	2.0095	2.0169	2.0240	2.0307	2.0370	2.0430
2.0488	2.0543	2.0597	2.0648	2.0697	2.0745	2.0791
2.0836	2.0880	2.0922	2.0963	2.1003	2.1042	2.1080
2.1117	2.1154	2.1189	2.1224	2.1258	2.1291	2.1324
2.1356	2.1388	2.1418	2.1449	2.1479	2.1508	2.1537
2.1565	2.1593	2.1620	2.1648	2.1674	2.1700	2.1726
2.1752	2.1777	2.1802	2.1826	2.1851	2.1875	2.1898
2.1921	2.1944	2.1967	2.1990	2.2012	2.2034	2.2056
2.2077	2.2098	2.2119	2.2140	2.2161	2.2181	2.2201
2.2221	2.2241	2.2261	2.2280	2.2299	2.2318	2.2337
2.2356	2.2375	2.2393	2.2411	2.2429	2.2447	2.2465
2.2483	2.2500					

***** UNIT III BASIN 1

COMPUTE NM HYD ID=1 HYD NO=101.0 AREA=0.0038349 SQ MI
PER A=0 PER B=26.4 PER C=26.4 PER D=47.2
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.1463 CFS UNIT VOLUME = .9975 B = 526.28 P60 = 1.9000
AREA = .001810 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 5.3854 CFS UNIT VOLUME = .9987 B = 354.54 P60 = 1.9000
AREA = .002025 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.39865 INCHES = .2861 ACRE-FEET
PEAK DISCHARGE RATE = 8.32 CFS AT 1.500 HOURS BASIN AREA = .0038 SQ. MI.

***** UNIT III BASIN 2

COMPUTE NM HYD ID=1 HYD NO=102.0 AREA=0.003856 SQ MI
PER A=0 PER B=28.8 PER C=28.8 PER D=42.4
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.4548 CFS UNIT VOLUME = .9975 B = 526.28 P60 = 1.9000
AREA = .001635 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 5.9074 CFS UNIT VOLUME = .9991 B = 354.54 P60 = 1.9000
AREA = .002221 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.34245 INCHES = .2761 ACRE-FEET
PEAK DISCHARGE RATE = 8.14 CFS AT 1.500 HOURS BASIN AREA = .0039 SQ. MI.

***** UNIT I AREA 3

COMPUTE NM HYD ID=1 HYD NO=103.0 AREA=0.01814 SQ MI
PER A=0 PER B=36.0 PER C=36.0 PER D=28.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 20.053 CFS UNIT VOLUME = .9986 B = 526.28 P60 = 1.9000
AREA = .005079 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 34.738 CFS UNIT VOLUME = 1.001 B = 354.54 P60 = 1.9000
AREA = .013061 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.17384 INCHES = 1.1356 ACRE-FEET
PEAK DISCHARGE RATE = 35.13 CFS AT 1.500 HOURS BASIN AREA = .0181 SQ. MI.

***** UNIT 1 AREA 4

COMPUTE NM HYD ID=1 HYD NO=104.0 AREA=0.00978 SQ MI
PER A=0 PER B=38.7 PER C=38.7 PER D=22.6
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 8.7263 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 1.9000
AREA = .002210 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 20.133 CFS UNIT VOLUME = 1.001 B = 354.54 P60 = 1.9000
AREA = .007570 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

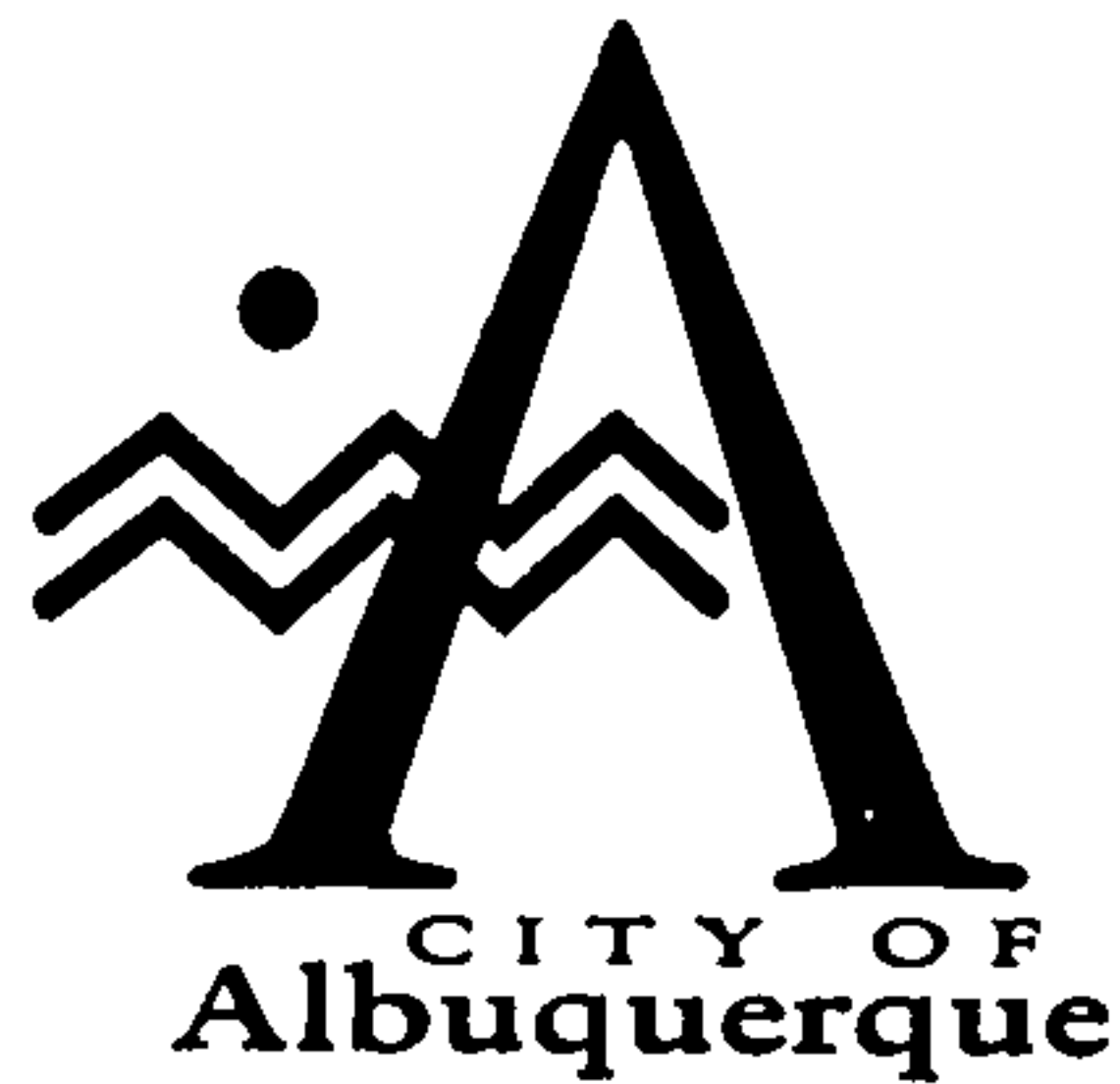
PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.11061 INCHES = .5793 ACRE-FEET
PEAK DISCHARGE RATE = 18.31 CFS AT 1.500 HOURS BASIN AREA = .0098 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:46:32



May 6, 1998

Diane Hoelzer PE
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: REVISED DRAINAGE PLAN FOR UNIT I & UNIT III OF THE GARDENS @ RIO
GRANDE (J12-D17) REVISION DATED 4/10/98

Dear Ms. Hoelzer:

Based on the information provided on your April 13, 1998 resubmittal, the above referenced site is approved for Preliminary Plat and Grading permit.

Please be advised that you will be required to go through DRB again because of the change in grading. Also, prior to Work Order and Building Permit release, the License Agreement from the MRGCD will be required.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Associate Engineer





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 22, 1999

Diane Hoelzer, P.E.
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

***RE: Grading and Drainage Certification for The Gardens at Rio Grande, Unit I and III,
(J12/D17), Engineer's Certification Stamp Dated 3/19/99.***

Dear Ms. Hoelzer:

The above referenced Engineer's Certification for The Gardens at Rio Grande, Units I and III is adequate to satisfy the Grading and Drainage certification requirement for the release of the Subdivision Improvements Agreement for both of these Units. This requirement is per the Infrastructure List for Unit I dated June 2, 1998, and the Infrastructure List for Unit III dated October 10, 1997. Both of these Lists were last revised on March 30, 1999.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Terri Martin, City Project # 572581
[File]

DRAINAGE INFORMATION SHEET

PROJECT TITLE: The Gardens @ Rio Grande Unit I and III ZONE ATLAS/DRNG, FILE#: J12/D17

DRB #: 96-450 and 97-97 EPC #: WORK ORDER #: 572591

LEGAL DESCRIPTION: ~~Tract C and Unit III, The Gardens on the Rio Grande~~

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Diane Hoelzer PE

ADDRESS: PO Box 90606 PHONE: 828-2200

OWNER: The Gardens Inc. CONTACT: Bill Caniglia

ADDRESS: PO Box 2164 PHONE: 247-3113

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: Walker Surveying CONTACT: Steve Walker

ADDRESS: 424 Shirk Lane SW 87105 PHONE: 266-6209

CONTRACTOR: Condore Construction Co. (Universal Constructors Inc.) CONTACT: Bill Lindell

ADDRESS: 6320 2 st NW PHONE: 344-3104

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

DRAINAGE REPORT

 DRAINAGE PLAN

CONCEPTUAL GRADING & DRAINAGE PLAN

X GRADING PLAN

EROSION CONTROL PLAN

____ ENGINEER'S CERTIFICATION

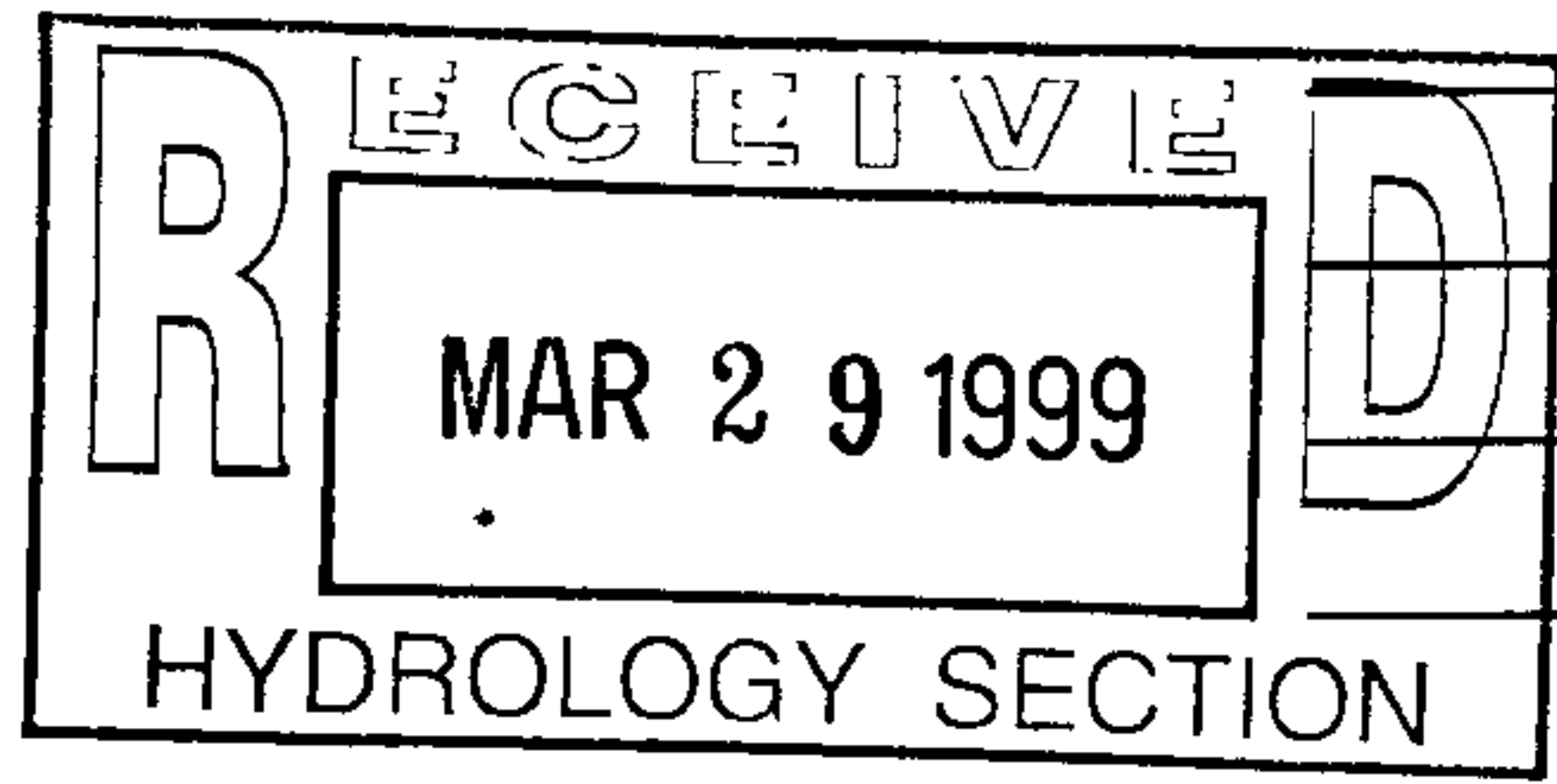
 OTHER

PRE-DESIGN MEETING:

 YES

NO

 COPY PROVIDED



____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

_____ S. DEV. PLAN FOR SUB'D APPROVAL

_____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL

____ SECTOR PLAN APPROVAL

_____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

BUILDING PERMIT APPROVAL

CERTIFICATION OF OCCUPANCY APPROVAL

GRADING PERMIT APPROVAL

PAVING PERMIT APPROVAL

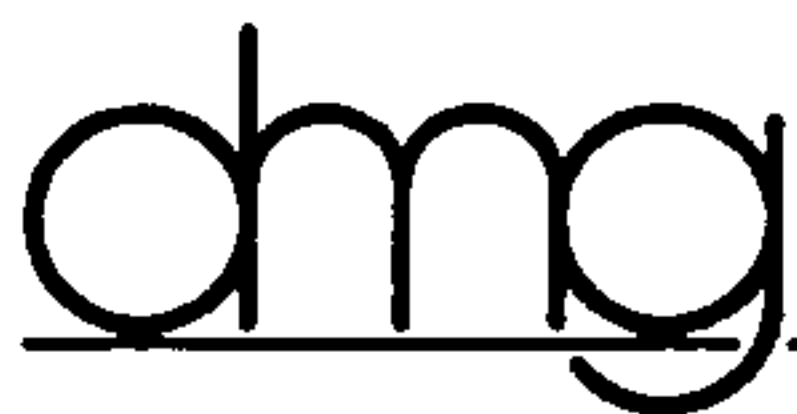
S.A.D. DRAINAGE REPORT

ON DRAINAGE REQUIREMENTS

 X OTHER (release of financial guaranty)

DATE SUBMITTED: MARCH 29, 1999

BY: Diane Hoelzer
Diane Hoelzer PE



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200

June 13, 1997

*Mr. Carlos Montoya
Hydrology Section
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103*

Re: *Drainage Report for Gardens at Rio Grande Subdivision (J12-D17).*

Dear Mr. Montoya:

On behalf of Diane Hoelzer, PE, I am resubmitting the grading and drainage plan for Unit III of the referenced project.

As discussed with you on the phone yesterday, the overall grading and drainage plan for this entire subdivision has been approved, subject to minor building permit related comments.

Because we are soon to be heard by DRB for Unit III preliminary plat approval, we are resubmitting a plan for only Unit III which identifies Units I and II as not being a part of the submittal. This would allow for independent approval of preliminary plat approval of Unit III at DRB, by referencing today's stamp date on the plan.

If I can be of assistance please call me.

Sincerely,

MARK GOODWIN & ASSOCIATES, P.A.

A handwritten signature in cursive script that reads 'John M. MacKenzie'.

John M. MacKenzie, PE

JMM/sb

b.\gardens\resubmit.gd

LETTER OF TRANSMITTAL



D. Mark Goodwin & Associates, P.A.
Consulting Engineers & Surveyors

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) ~~345-2010~~ 828-2200

TO Hydrology Section
COA One Stop

DATE	5-30-96	JOB NO.	
ATTENTION	Fred Aguirre		
RE:	DRB-96-450		
	Item No. 8		

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

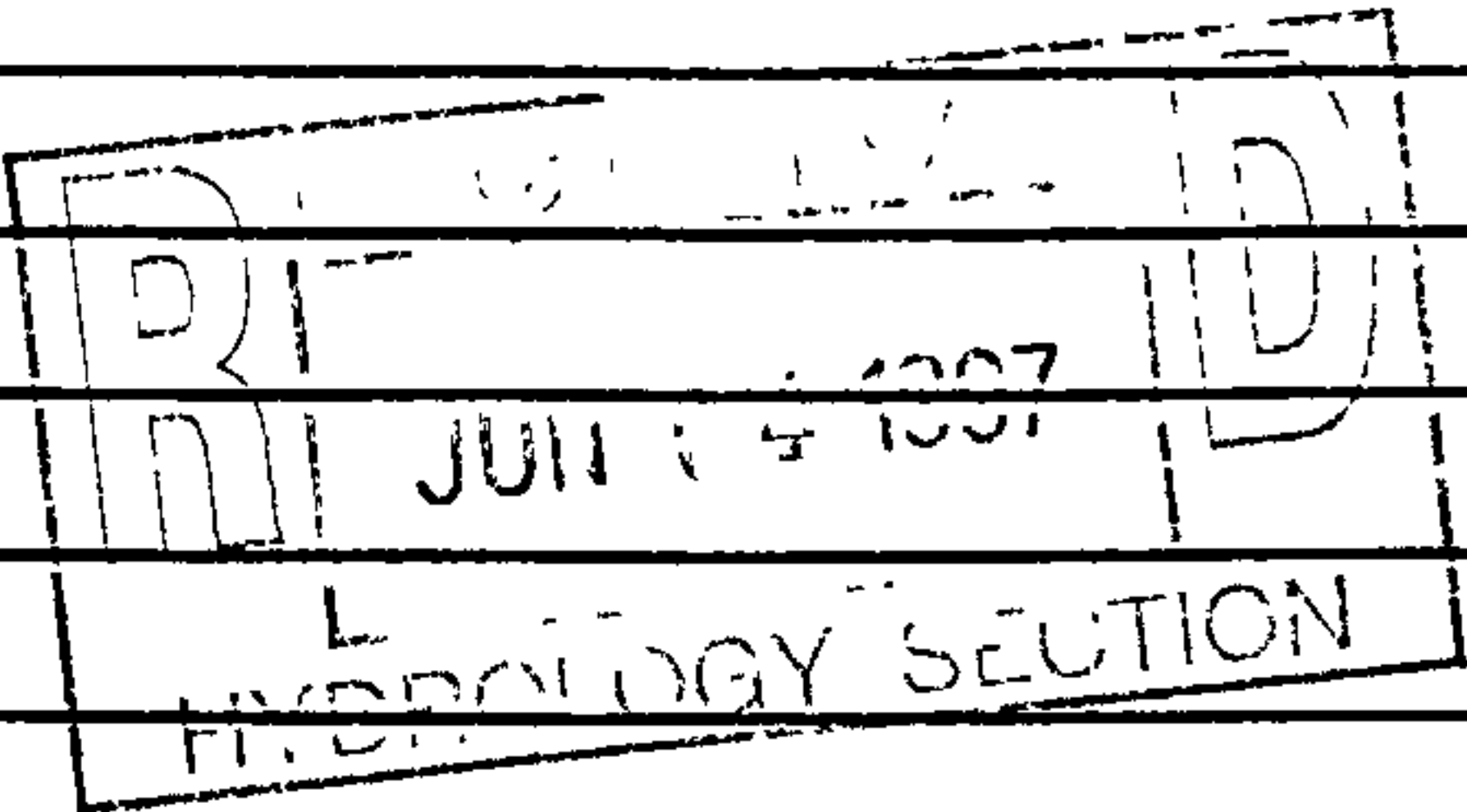
- | | | | | |
|---|---------------------------------------|--------------------------------|----------------------------------|---|
| ☐ Shop drawings | ☐ Prints | ☐ Plans | ☐ Samples | ☐ Specifications |
| ☐ Copy of letter | ☐ Change order | ☐ | | |

COPIES	DATE	NO.	DESCRIPTION
1			Revised Infrastructure List
1	5/28/97		Revised G & D Plan
1			Revised Site Plan for Unit I and Unit II
1			Revised Plat

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 The grading and drainage plan has been amended to
show the eastern part of the development as not
being a part of the sought-after approval.



COPY TO _____

SIGNED: John McVey

D.R.B. Case No. 96-450
D.R.C. Project No.
Date Submitted 5/29/97
Prelim. Plat Approved
Prelim. Plat Expires

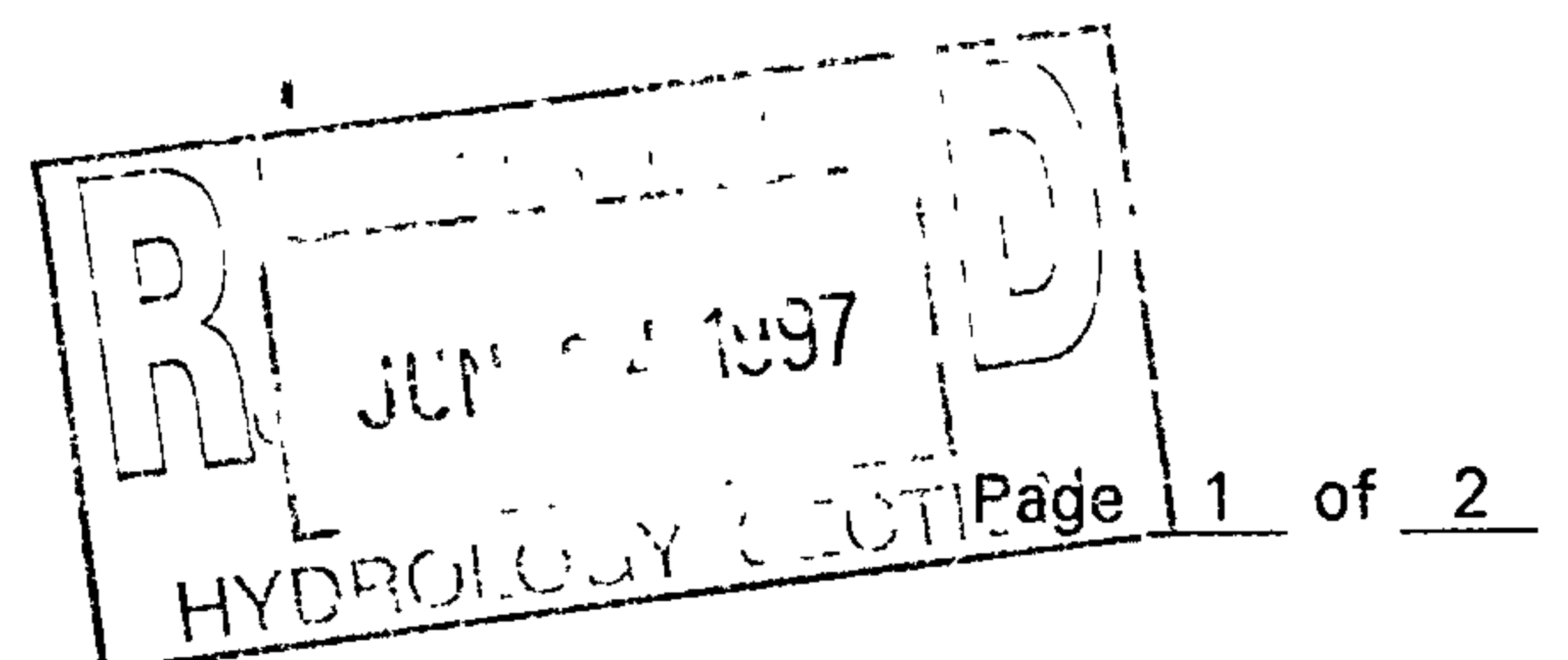
Figure 12

E X H I B I T "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision — Unit I (Site Plan / Plat)

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24' FF	Res Pvmt C & G (both sides)	Osha Gardens	Rio de Jardin	E. Property line
4' *	Sidewalk (S. side)	Osha Gardens	Rio de Jardin	Estrella del Mar
4' *	Sidewalk <i>(Both Sides)</i>	Osha Gardens	Estrella del Mar	E. Propertyline
22' FF	Res Pvmt C & G (both sides)	Estrella del Mar	Osha Gardens	Cul-de-sac
4' *	Sidewalk (E&N. sides)			
22' FF	Res Pvmt C & G (both sides) Sidewalk (E. side)	Rio de Jardin	Osha Gardens	Mountain Road
24' FF	Res Pvmt C & G (both sides) Sidewalk (E. side)	Rio de Jardin	Lot 8, Blk 1	Osha Gardens
32' FF	Res Pvmt C & G (both sides)	Osha Gardens	E. Property line	Manhattan Place
32' FF	Res Pvmt C & G (both sides)	Manhattan Place	Osha Gardens	Granite Ave.

Entrance as detailed on site plan



D.R.B. Case No. 96-450
D.R.C. Project No. _____
Date Submitted 5/29/97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision — Unit 1 (Site Plan/Plat)

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
8"	Gravity SAS	Osha Gardens	Rio de Jardin	Manhattan Place
8"	Gravity SAS	Estrella del Mar	Osha Gardens	Lot 9, Blk 2
8"	Gravity SAS	Rio de Jardin	Lot 8, Blk 1	Mountain Road
6"	PVC Waterline	Osha Gardens	Rio de Jardin	Manhattan Place
6"	PVC Waterline	Estrella del Mar	Osha Gardens	Lot 9, Blk 2
6"	PVC Waterline	Rio de Jardin	Lot 8, Blk 1	Mountain Road

* Internal sidewalks to be deferred.

- ✓ Water infrastructure to include valves, fittings, and fire hydrants.
- ✓ Sewer infrastructure to include manholes and services.
- ✓ Engineer's Certification for Grading and Drainage per DPM identified on approved Grading and Drainage Plan prior to release of Financial Guaranty.

Prepared By: John M. MacKenzie 5-30-97

Print Name: John M. MacKenzie, PE

Firm: Mark Goodwin & Associates, PA

Page 2 of 2

Development Review Board Member Approvals

Transportation Dev.	Date	Utility Dev.	Date
Parks & General Services	Date	Engineer/AMAFCA	Date
DRB Chairman	Date	NMUI	Date

D.R.B. Case No.	96-450
D.R.C. Project No.	
Date Submitted	5/29/97
Prelim. Plat Approved	
Prelim. Plat Expires	

Figure 12

E X H I B I T "A"
 To Subdivision Improvements Agreement
 DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
 for The Gardens on the Rio Grande Subdivision — Unit II (Site Plan/Plat)

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
22' FF 4' *	Res Pvmt C & G Sidewalk (E. side)	Botanic Gardens	Lot 24	Lot 16
22' FF 4' *	Res Pvmt C & G Sidewalk (W. side)	Garden Pointe	Botanic Gardens	Lot 38
24' FF 4' *	Res Pvmt C & G Sidewalk (E. side)	Rio de Jardin	Garden Pointe	Lot 48
2"	Low-pressure SAS	Botanic Gardens	Lot 24	Lot 16
2"	Low-pressure SAS	Garden Pointe	Botanic Gardens	Lot 38
2 1/2"	Low-pressure SAS	Rio de Jardin	Garden Pointe	Lot 48
6"	PVC Waterline	Botanic Gardens	Lot 24	Lot 16
6"	PVC Waterline	Garden Pointe	Botanic Gardens	Lot 38
6"	PVC Waterline	Rio de Jardin	Garden Pointe	Lot 9, Blk 2
6"	PVC Waterline	WL Easement - lot 24	Botanic Gardens	Exist 10" in 20' Waterline easment

* Internal sidewalks to be deferred.

- ✓ Water infrastructure to include vavles, fittings, and fire hydrants.
- ✓ Sewer infrastructure to include air release valves, clean outs, etc., as necessary.
- ✓ Engineer's Certification for Grading and Drainage per DPM identified on approved Grading and Drainage Plan prior to release of Financial Guaranty.

D.R.B. Case No. 96-450
D.R.C. Project No. _____
Date Submitted 5/29/97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

E X H I B I T "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision – Unit II (Site Plan/Plat)

Prepared By: John M. MacKenzie

Print Name: John M. MacKenzie, PE

Firm: Mark Goodwin & Associates, PA

Page 2 of 2

Development Review Board Member Approvals

Transportation Dev.	Date	Utility Dev.	Date
Parks & General Services	Date	Engineer/AMAFCA	Date
DRB Chairman	Date	NMUI	Date



Martin J. Chávez, Mayor

Robert E. Gurulé, Director

July 7, 1997

John MacKenzie
Mark Goodwin and associates
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: REVISED DRAINAGE PLAN FOR THE GARDENS AT RIO GRANDE (J12-D17)
ENGINEER'S STAMP DATED 6/13/97

Dear Mr. MacKenzie:

Based on the information provided on your June 13, 1997 resubmittal, the above referenced site is approved for Preliminary Plat.

Please be advised that prior to Work Order release, the Licence Agreement from the MRGCD must be executed.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia

File

Sincerely

Bernie J. Montoya
Bernie J. Montoya CE
Associate Engineer

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103





Martin J. Chávez, Mayor

June 6, 1997

Robert E. Gurulé, Director

Diane Hoelzer
Mark Goodwin and Associates, PA
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: Drainage Report for Gardens at Rio Grande (J12-D17) Received June 4, 1997

Dear Ms. Hoelzer:

The above drainage plan stamp dated May 28, 1997 is approved for Preliminary Plat approval.

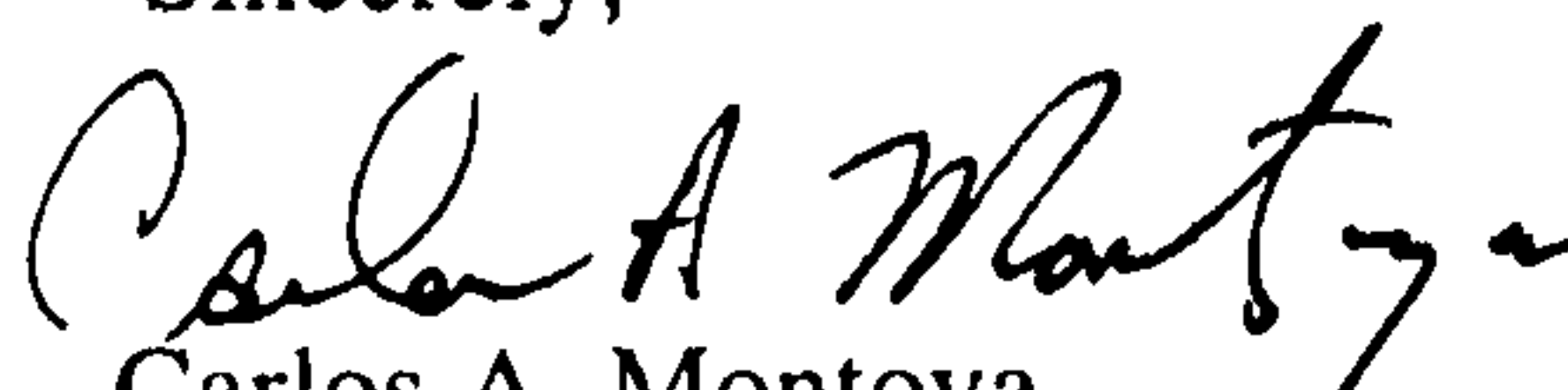
We have combined your May 15 and June 4 1997 submittals and used the latest version for our review.

It is my assumption that you are wanting only Preliminary Plat for Unit I. If this is the case then Unit I is subdivided correctly, but Unit II should only be one tract of land. The City's drainage approval is for both Unit I and Unit II.

If you decide in the future to subdivide the parcel that is east of the Duranes Acequia then a drainage plan needs to be submitted to Hydrology for review and approval.

If you have any questions please call me at 924-3984.

Sincerely,


Carlos A. Montoya
Project Manager

c: Andrew Garcia
File

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



DRAINAGE INFORMATION SHEET

PROJECT TITLE: The Gardens @ Rio Grande (Unit III) ZONE ATLAS/DRNG, FILE#: (J-12/D17)
DRB #: 97-97 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: Tracts A, B1 & B2 Land of Lola Hedges

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Diane Hoelzer PE

ADDRESS: PO Box 90606 PHONE: 345-2010

OWNER: C & G Development CONTACT: Bill Caniglia

ADDRESS: PO Box 2164 PHONE: 247-3113

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

- ☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

- ☐ YES
☐ NO
☐ COPY PROVIDED

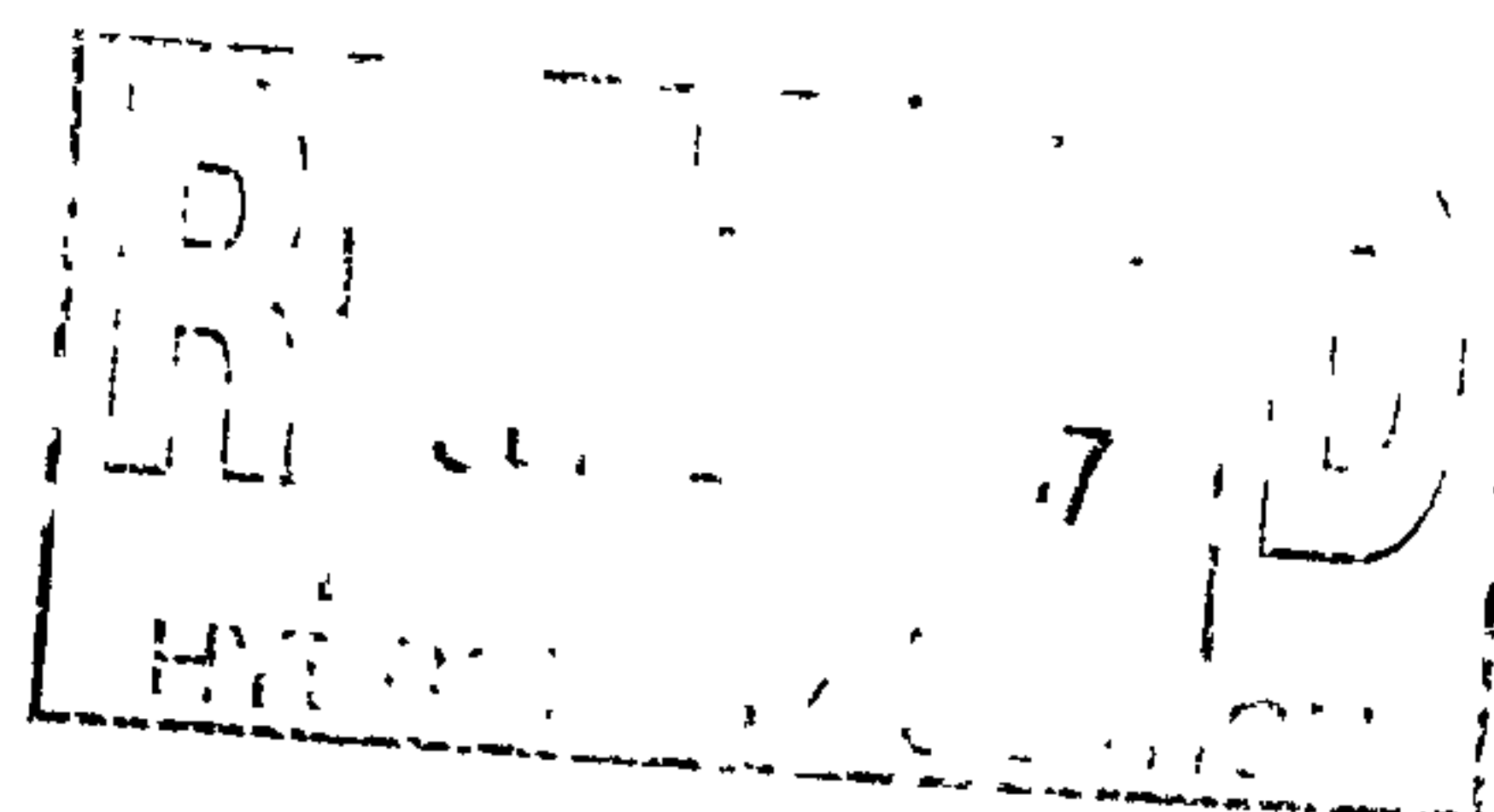
- ☒ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (Specify)

DATE SUBMITTED: 6/13/97

BY: John M. Mackenzie

~~Diane Hoelzer PE~~

John M. Mackenzie



DRAINAGE INFORMATION SHEET

PROJECT TITLE: The Gardens @ Rio Grande ZONE ATLAS/DRNG, FILE#: J-12/D-17

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: MRGCD Map 38; Lots 315A2, 315B3A1C3, 324A, 324B1, 324B2, 325A, 325B1, 325B2A, 325B2B, 326A1A, 326A1B, 326A2A, 326A2B, 326B1, 326B2 AND 327; approximately 35 acres.

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Diane Hoelzer PE

ADDRESS: PO Box 90606 PHONE: 345-2010

OWNER: C & G Development CONTACT: Bill Caniglia

ADDRESS: PO Box 2164 PHONE: 247-3113

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

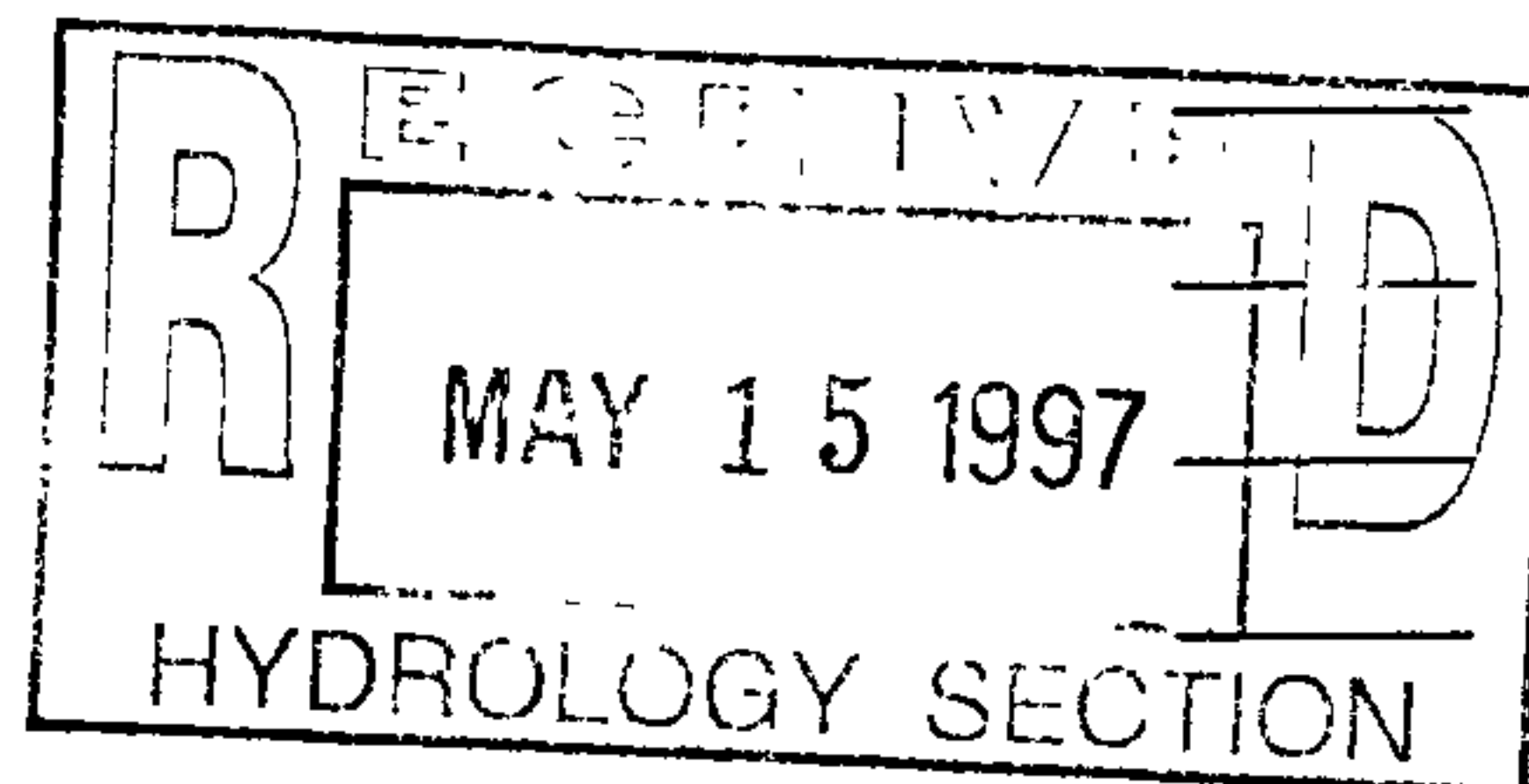
CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

☒ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (Specify)

PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED



DATE SUBMITTED: 4-9-97

BY: Diane Hoelzer
Diane Hoelzer PE

D.R.B. Case No. 96-450
D.R.C. Project No. _____
Date Submitted 5/29/97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

E X H I B I T "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision — Unit I (Site Plan / Plat)

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24' FF	Res Pvmnt C & G (both sides)	Osha Gardens	Rio de Jardin	E. Property line
4' *	Sidewalk (S. side)	Osha Gardens	Rio de Jardin	Estrella del Mar
4' *	Sidewalk <i>(Both Sides)</i>	Osha Gardens	Estrella del Mar	E. Propertyline
22' FF	Res Pvmnt C & G (both sides)	Estrella del Mar	Osha Gardens	Cul-de-sac
4' *	Sidewalk (E&N. sides)			
22' FF	Res Pvmnt C & G (both sides) Sidewalk (E. side)	Rio de Jardin	Osha Gardens	Mountain Road
24' FF	Res Pvmnt C & G (both sides) Sidewalk (E. side)	Rio de Jardin	Lot 8, Blk 1	Osha Gardens
32' FF	Res Pvmnt C & G (both sides)	Osha Gardens	E. Property line	Manhattan Place
32' FF	Res Pvmnt C & G (both sides)	Manhattan Place	Osha Gardens	Granite Ave.

Entrance as detailed on site plan

D.R.B. Case No. 96-450
D.R.C. Project No. _____
Date Submitted 5/29/97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision — Unit 1 (Site Plan/Plat)

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
8"	Gravity SAS	Osha Gardens	Rio de Jardin	Manhattan Place
8"	Gravity SAS	Estrella del Mar	Osha Gardens	Lot 9, Blk 2
8"	Gravity SAS	Rio de Jardin	Lot 8, Blk 1	Mountain Road
6"	PVC Waterline	Osha Gardens	Rio de Jardin	Manhattan Place
6"	PVC Waterline	Estrella del Mar	Osha Gardens	Lot 9, Blk 2
6"	PVC Waterline	Rio de Jardin	Lot 8, Blk 1	Mountain Road

* Internal sidewalks to be deferred.

- ✓ Water infrastructure to include valves, fittings, and fire hydrants.
- ✓ Sewer infrastructure to include manholes and services.
- ✓ Engineer's Certification for Grading and Drainage per DPM identified on approved Grading and Drainage Plan prior to release of Financial Guaranty.

Prepared By: John M. MacKenzie 5-30-97

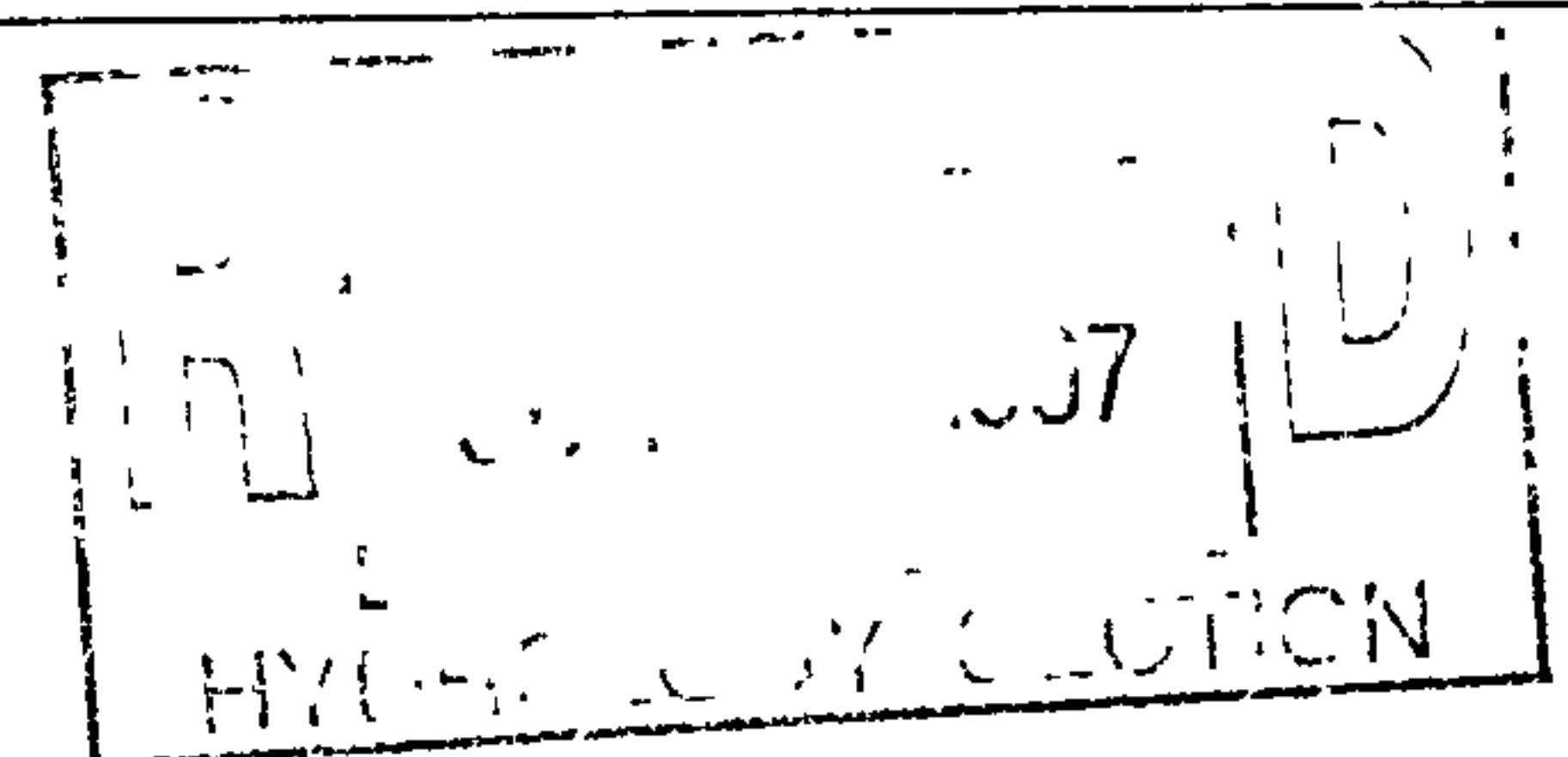
Print Name: John M. MacKenzie, PE

Firm: Mark Goodwin & Associates, PA

Page 2 of 2

Development Review Board Member Approvals

Transportation Dev.	Date	Utility Dev.	Date
Parks & General Services	Date	Engineer/AMAFCA	Date
DRB Chairman	Date	NMUI	Date



D.R.B. Case No.	<u>96-450</u>
D.R.C. Project No.	<u> </u>
Date Submitted	<u>5/29/97</u>
Prelim. Plat Approved	<u> </u>
Prelim. Plat Expires	<u> </u>

Figure 12

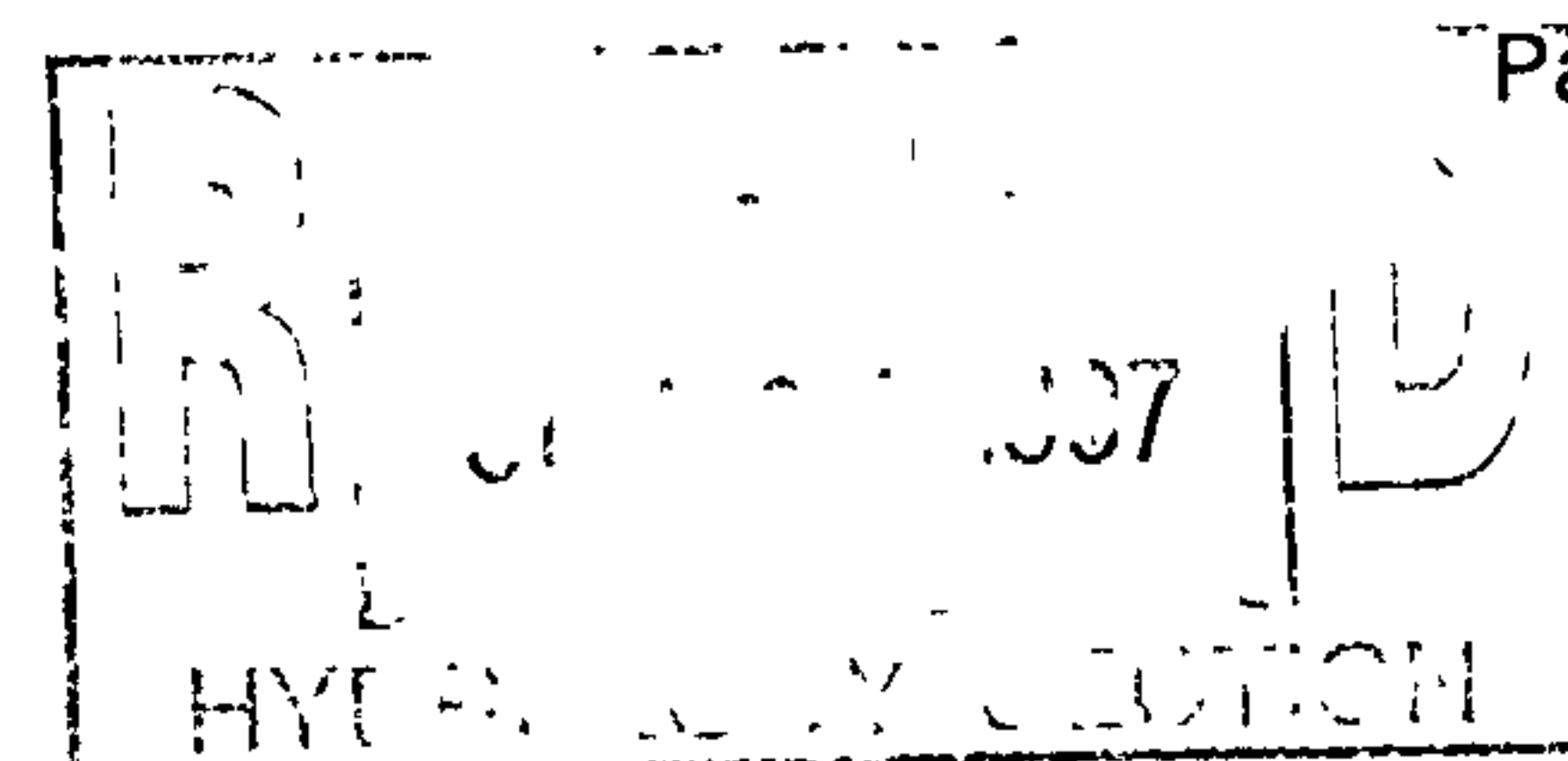
EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision — Unit II (Site Plan/Plat)

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
22' FF	Res Pvmnt	Botanic Gardens	Lot 24	Lot 16
4' "	C & G			
	Sidewalk (E. side)			
22' FF	Res Pvmnt	Garden Pointe	Botanic Gardens	Lot 38
4' "	C & G			
	Sidewalk (W. side)			
24' FF	Res Pvmnt	Rio de Jardin	Garden Pointe	Lot 48
4' "	C & G			
	Sidewalk (E. side)			
2"	Low-pressure SAS	Botanic Gardens	Lot 24	Lot 16
2"	Low-pressure SAS	Garden Pointe	Botanic Gardens	Lot 38
2 1/2"	Low-pressure SAS	Rio de Jardin	Garden Pointe	Lot 48
6"	PVC Waterline	Botanic Gardens	Lot 24	Lot 16
6"	PVC Waterline	Garden Pointe	Botanic Gardens	Lot 38
6"	PVC Waterline	Rio de Jardin	Garden Pointe	Lot 9, Blk 2
6"	PVC Waterline	WL Easement - lot 24	Botantic Gardens	Exist 10" in 20'
				Waterline easment

* Internal sidewalks to be deferred.

- ✓ Water infrastructure to include vavles, fittings, and fire hydrants.
- ✓ Sewer infrastructure to include air release valves, clean outs, etc., as necessary.
- ✓ Engineer's Certification for Grading and Drainage per DPM identified on approved Grading and Drainage Plan prior to release of Financial Guaranty.



D.R.B. Case No. 96-450
D.R.C. Project No. _____
Date Submitted 5/29/97
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for The Gardens on the Rio Grande Subdivision — Unit II (Site Plan/Plat)

Prepared By: John M. MacKenzie

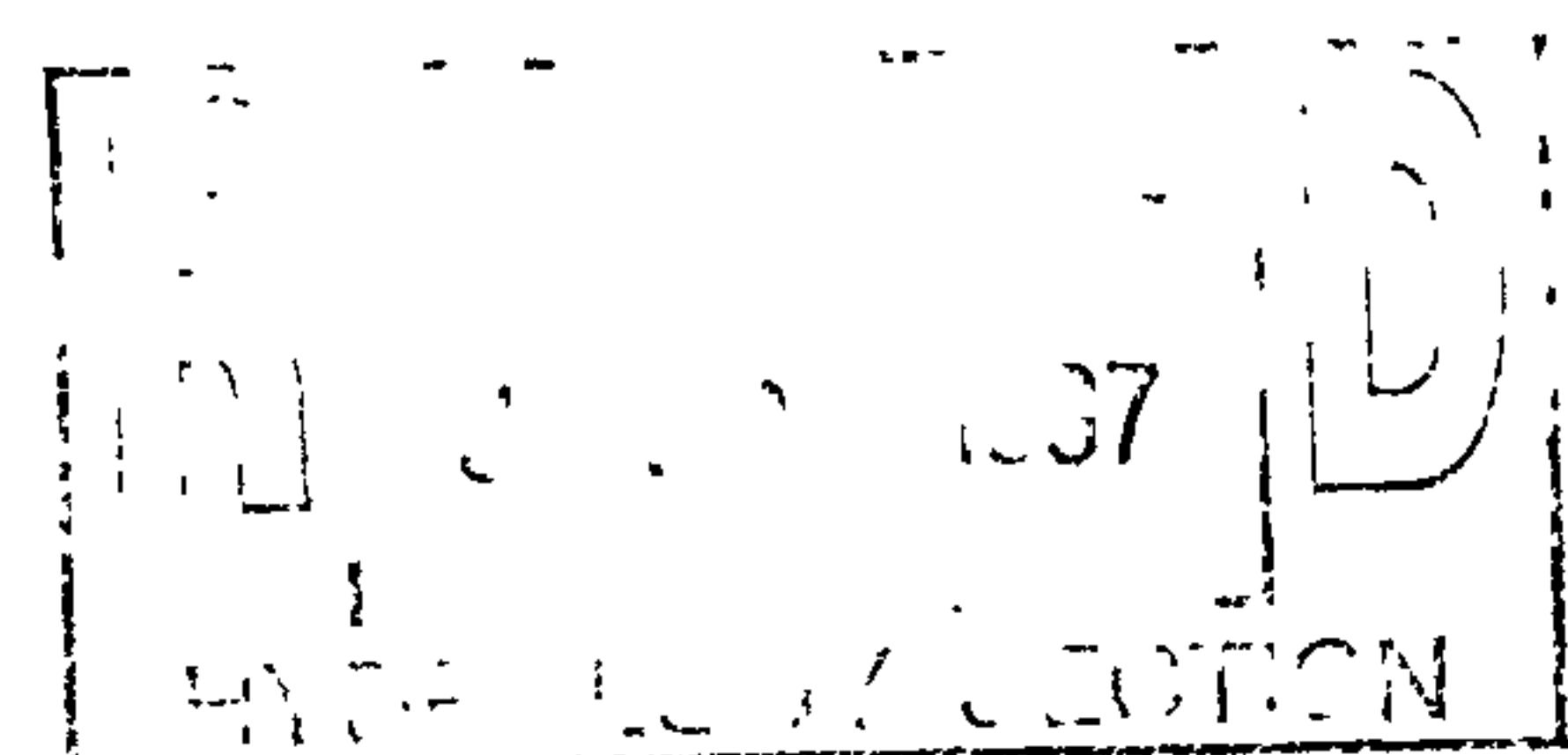
Print Name: John M. MacKenzie, PE

Firm: Mark Goodwin & Associates, PA

Page 2 of 2

Development Review Board Member Approvals

Transportation Dev. _____	Date _____	Utility Dev. _____	Date _____
Parks & General Services _____	Date _____	Engineer/AMAFCA _____	Date _____
DRB Chairman _____	Date _____	NMUI _____	Date _____



LETTER OF TRANSMITTAL



D. Mark Goodwin & Associates, P.A.
Consulting Engineers & Surveyors

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 345-2010

TO Hydrology

DATE	5-15-97	JOB NO.
ATTENTION	Bernie	
RE:	Gardens Subel.	
	DRB-96-450	
	J-12/D-17	

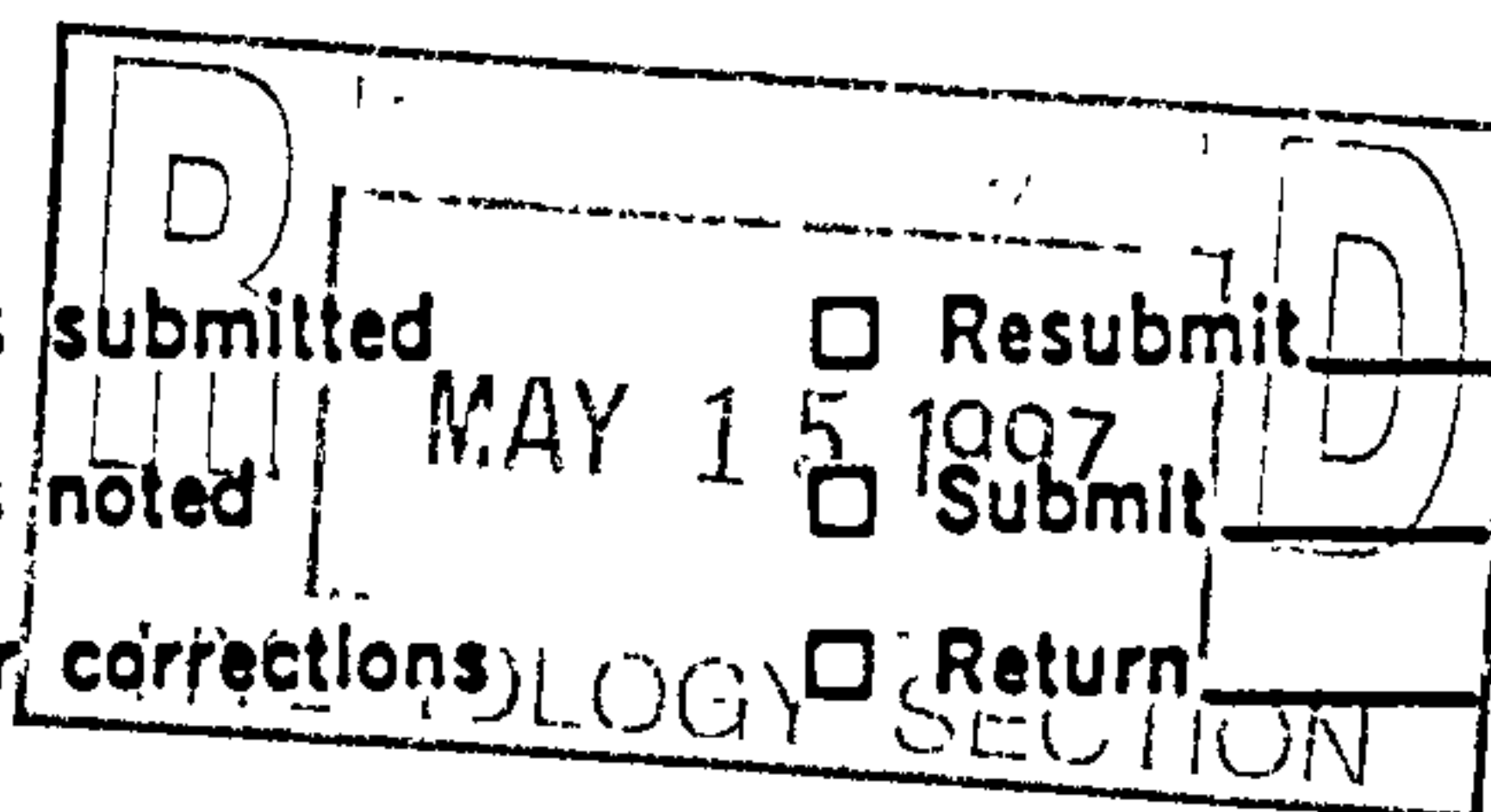
WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

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

COPIES	DATE	NO.	DESCRIPTION
1	5-15-97		Revised Plan

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 _____

To this plan (on sheet 2) has been added the crossing detail for the MRGCD Duranes Ditch. At this stage we are seeking only preliminary plat approval.

COPY TO _____

SIGNED: _____

J MacKenzie

DRAINAGE INFORMATION SHEET

PROJECT TITLE: The Gardens @ Rio Grande ZONE ATLAS/DRNG, FILE#: J-12 /D17

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: MRGCD Map 38; Lots 315A2, 315B3A1C3, 324A, 324B1, 324B2, 325A, 325B1, 325B2A, 325B2B, 326A1A, 326A1B, 326A2A, 326A2B, 326B1, 326B2 AND 327; approximately 35 acres.

CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Diane Hoelzer PE

ADDRESS: PO Box 90606 PHONE: 345-2010

OWNER: C & G Development CONTACT: Bill Caniglia

ADDRESS: PO Box 2164 PHONE: 247-3113

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

- ☒ DRAINAGE REPORT
- ☒ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☐ OTHER

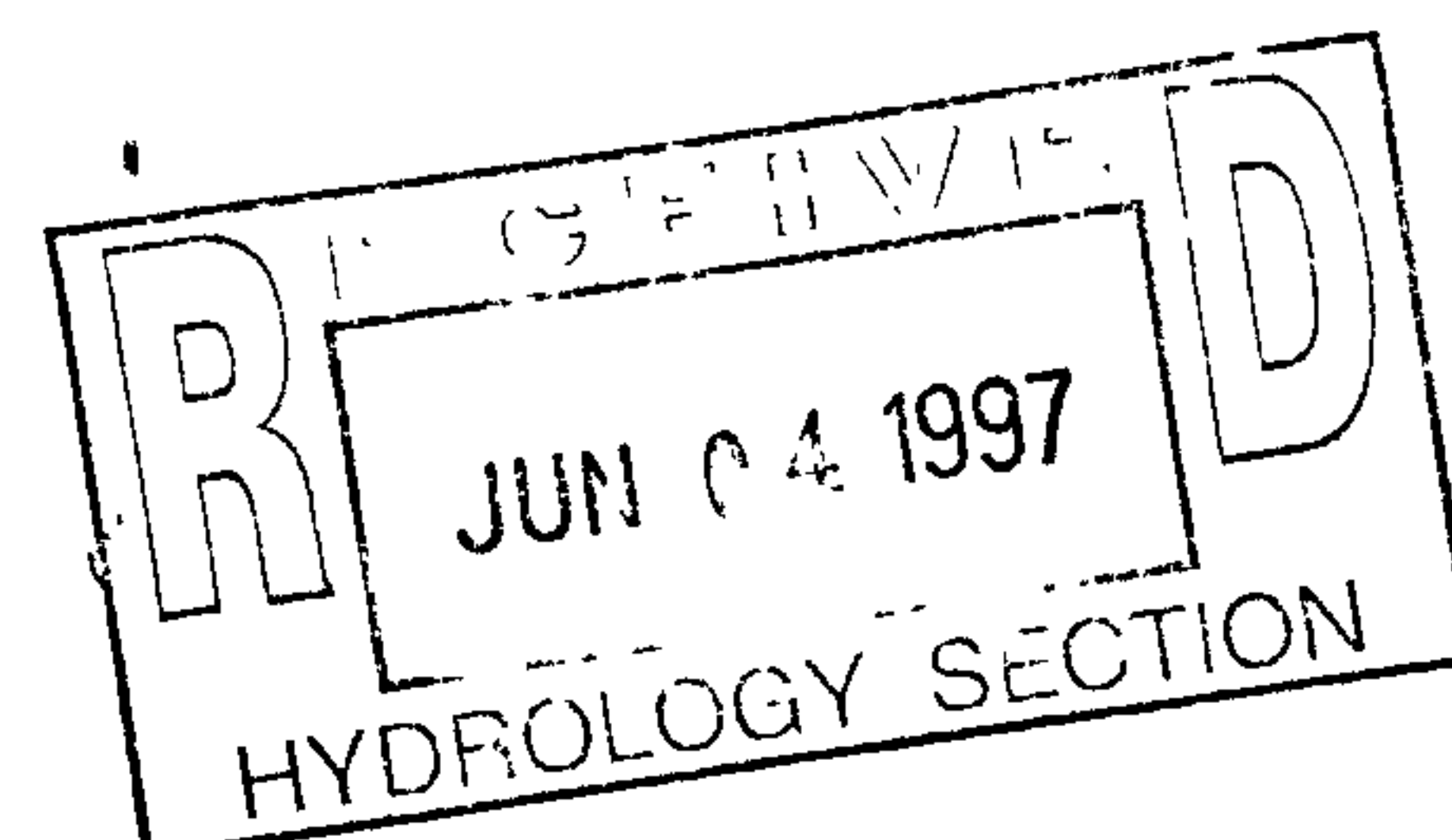
PRE-DESIGN MEETING:

- ☐ YES
- ☐ NO
- ☐ COPY PROVIDED

- ☒ SKETCH PLAT APPROVAL
- ☒ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D APPROVAL
- ☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ CERTIFICATION OF OCCUPANCY APPROVAL
- ☒ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ S.A.D. DRAINAGE REPORT
- ☐ DRAINAGE REQUIREMENTS
- ☐ OTHER _____ (Specify)

DATE SUBMITTED: 4-9-97

BY: Diane Hoelzer
Diane Hoelzer PE



dmg

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200

TO

Hydrology

One Step

DATE	JOB NO.
6-3-97	
ATTENTION	
Andrew Gaudin The Gardens (J 12-D17)	
RE:	

☐ Shop drawings

☐ Prints

Plans

☐ Samples

❑ Specifications

☐ Copy of letter

☐ Change order

COPIES	DATE	NO.	DESCRIPTION
1			Site Plan Units I & II
1			Plot Unit I & II
1	5-28-97		Grading and Drainage Plan (Units I & II)
1			Infrastructure List
1			Drainage Info sheet

☐ 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

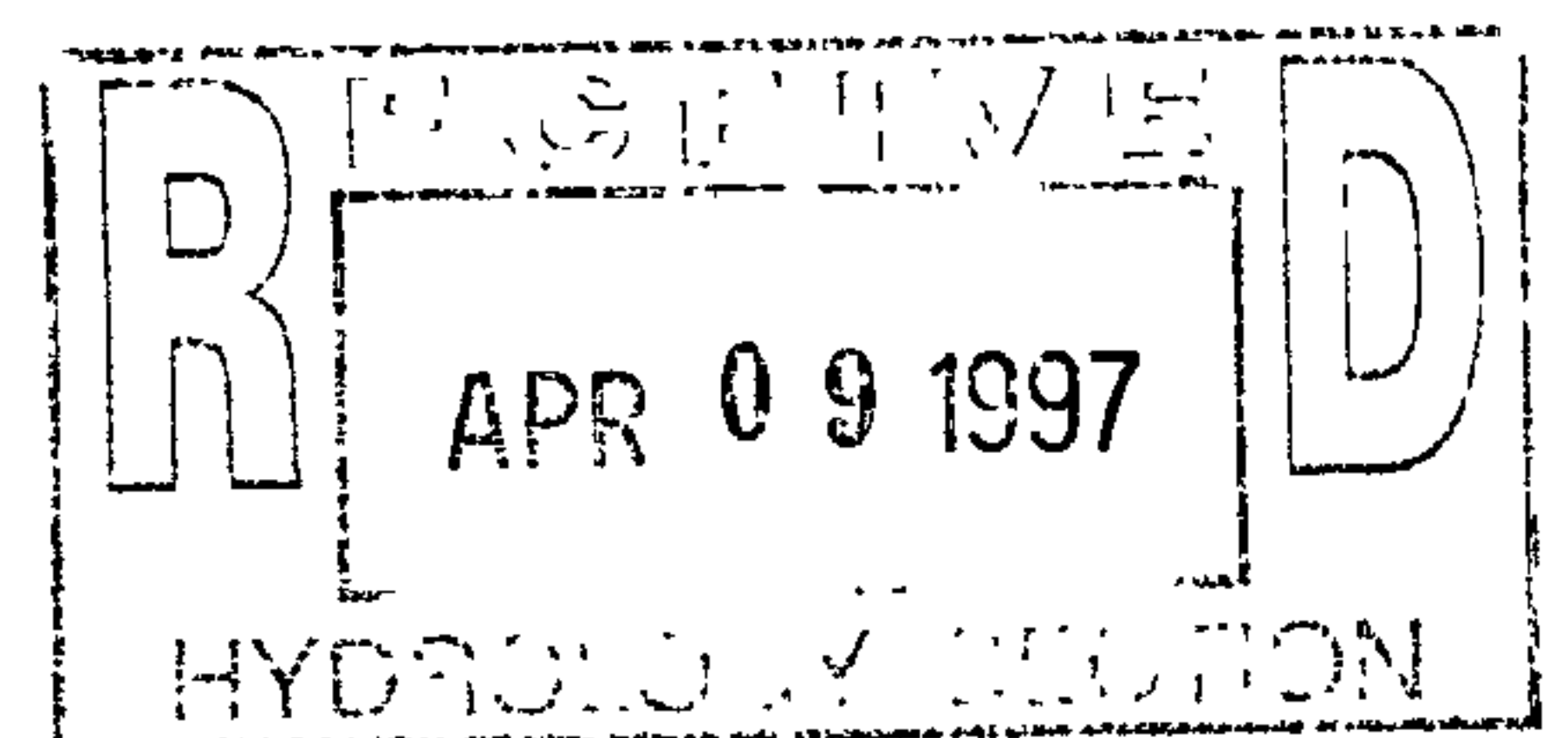
REMARKS

HYDROLYTIC SLOTTION

COPY TO

SIGNED:

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

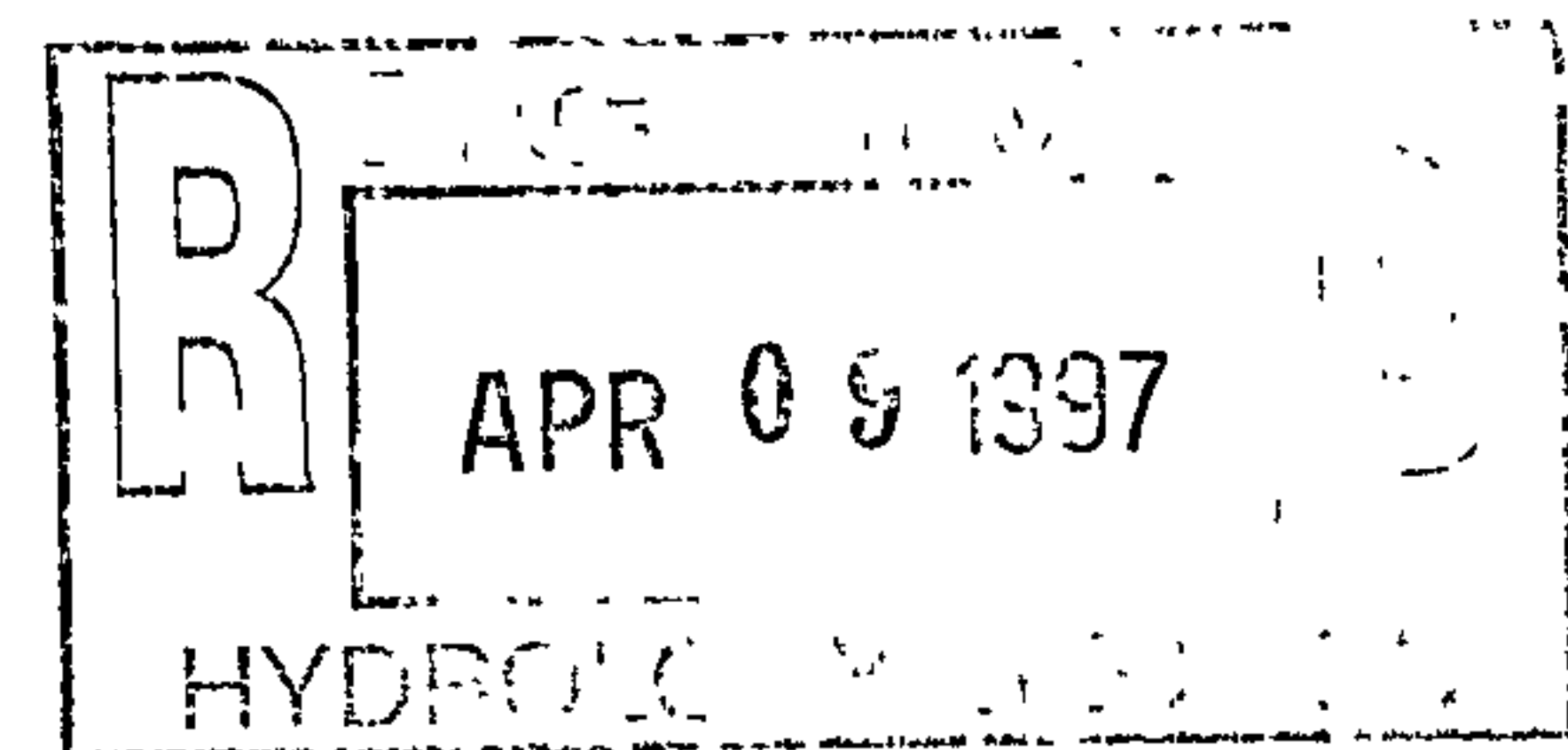


MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

dmg

DRAINAGE REPORT
for
THE GARDENS AT THE RIO GRANDE



APRIL 1997

TABLE OF CONTENTS

- I. LOCATION AND DESCRIPTION
- II. DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS
- III. EXISTING DRAINAGE CONDITIONS
- IV. PROPOSED DRAINAGE CONDITIONS
 - A. ON-SITE FLOWS
 - B. OFF-SITE FLOWS

FIGURE 1: VICINITY MAP

FIGURE 2: FEMA LOCATION MAP

APPENDIX A - HYDROLOGY

CALCULATIONS

EXISTING AND DEVELOPED CONDITIONS - SUMMARY OUTPUT

EXISTING AND DEVELOPED CONDITIONS - DETAILED OUTPUT

POCKET 1: THE GARDENS AT THE RIO GRANDE GRADING AND DRAINAGE PLAN

LOCATION AND DESCRIPTION

The proposed Gardens at the Rio Grande is comprised of approximately 40.5 acres and is located south of Mountain Road and west of Rio Grande Blvd. in the North Valley. Unit 1 and 2 is bounded by the San Gabriel Park along the Rio Grande River to the southwest and Mountain Road and the Riverview subdivision to the north. The Duranes Ditch is roughly the east boundary. Unit 3 is an extension of the existing Manhattan Place Road north and west into Units 1 and 2 across the Duranes Ditch. The topography of the project site is basically flat with a gentle slope in the southwest direction of approximately 0.2%.

The FEMA map indicates that the site is not within a 100-year floodplain.

DRAINAGE DESIGN CRITERIA AND ASSUMPTIONS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The AHYMO model was used to analyze the 100-year 6-hour storm event for developed conditions using a Type 1 Rainfall Distribution and the 100-year 24-hour storm event for developed conditions using a Type 2 Rainfall Distribution in order to determine the required on site retention volume. The required retention volume was determined for the 100-year 10-day storm according to equation a-9 from the DPM.

The percent of Land Treatment D was determined for impervious areas for roads, sidewalk, home pads and driveways from the total site area. The remaining pervious areas were split equally between Land Treatment B and C.

The following precipitation depths were used: P₆₀=1.88", P₃₆₀=2.24" and P₁₄₄₀= 2.75". A minimum time of concentration of 12 minutes was assumed for all sub-basins with a resulting 8 minute time to peak used in the AHYMO analysis.

A flat grading scheme will be used for this subdivision in accordance with section 22.5.2 of the DPM - Hydrology as follows:

- 1. The site will be flat and will be graded accordingly.*
- 2. No offsite flows will enter the site.*
- 3. The maximum pad size will not be greater than 45% of the lot size.*
- 4. Pad elevations will be 1.0 foot above the 100-year 10-day WSEL.*
- 5. Sidewalks will be above the 10-year WSEL.*
- 6. The flow between the front and back yards will not be obstructed. The storm water will be allowed to equalize between the front and back yards.*
- 7. A perimeter wall will be built to contain the 100-year developed flows.*
- 8. The high point of the street should be 4"-6" above the 100-year 10-day WSEL.*

EXISTING DRAINAGE CONDITIONS

Under existing drainage conditions, much of the runoff reaching the site will pond. When the depression areas fill runoff will flow in a southwest direction toward the Rio Grande River.

PROPOSED DRAINAGE CONDITIONS

ON-SITE FLOWS

The drainage management plan for this project site is to retain 100% of the runoff volume generated on site for the 100-year 10-day storm event. The volume will be ponded in the open space areas and the individual lot backyards, side yards and front yards. A maximum 4:1 slope will be allowed from the back yard property line to the pond bottom and from the lot pad and driveways to the pond bottom. A maximum slope of 5:1 will be allowed from the front yard sidewalk or curb to the pond bottom. There will be no pond retainage slopes between adjacent property owner side yards and flow across side yard property line will not be restricted. Block walls constructed along the side yard property line will be with openings at grade to allow runoff to flow freely between lots to allow a shared and mutual peak water surface elevation among the lots.

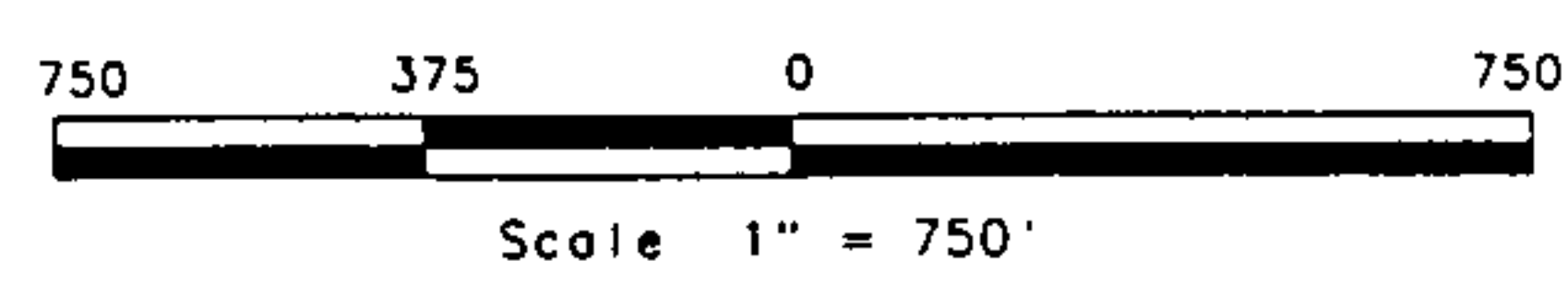
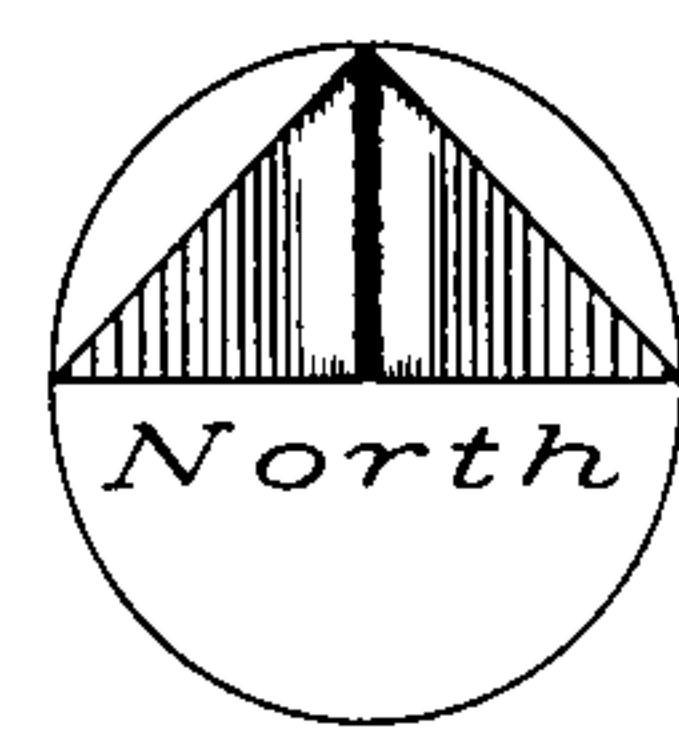
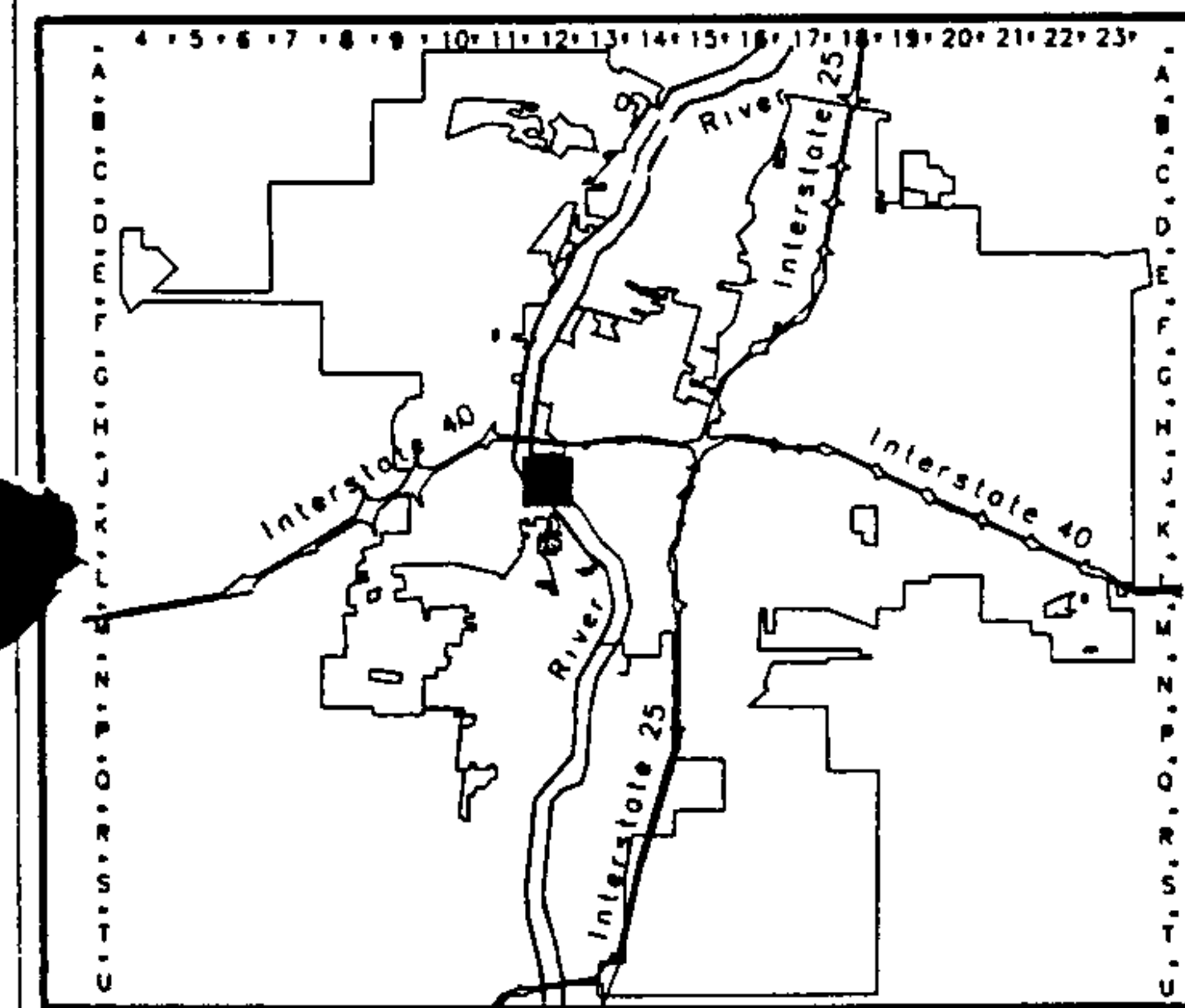
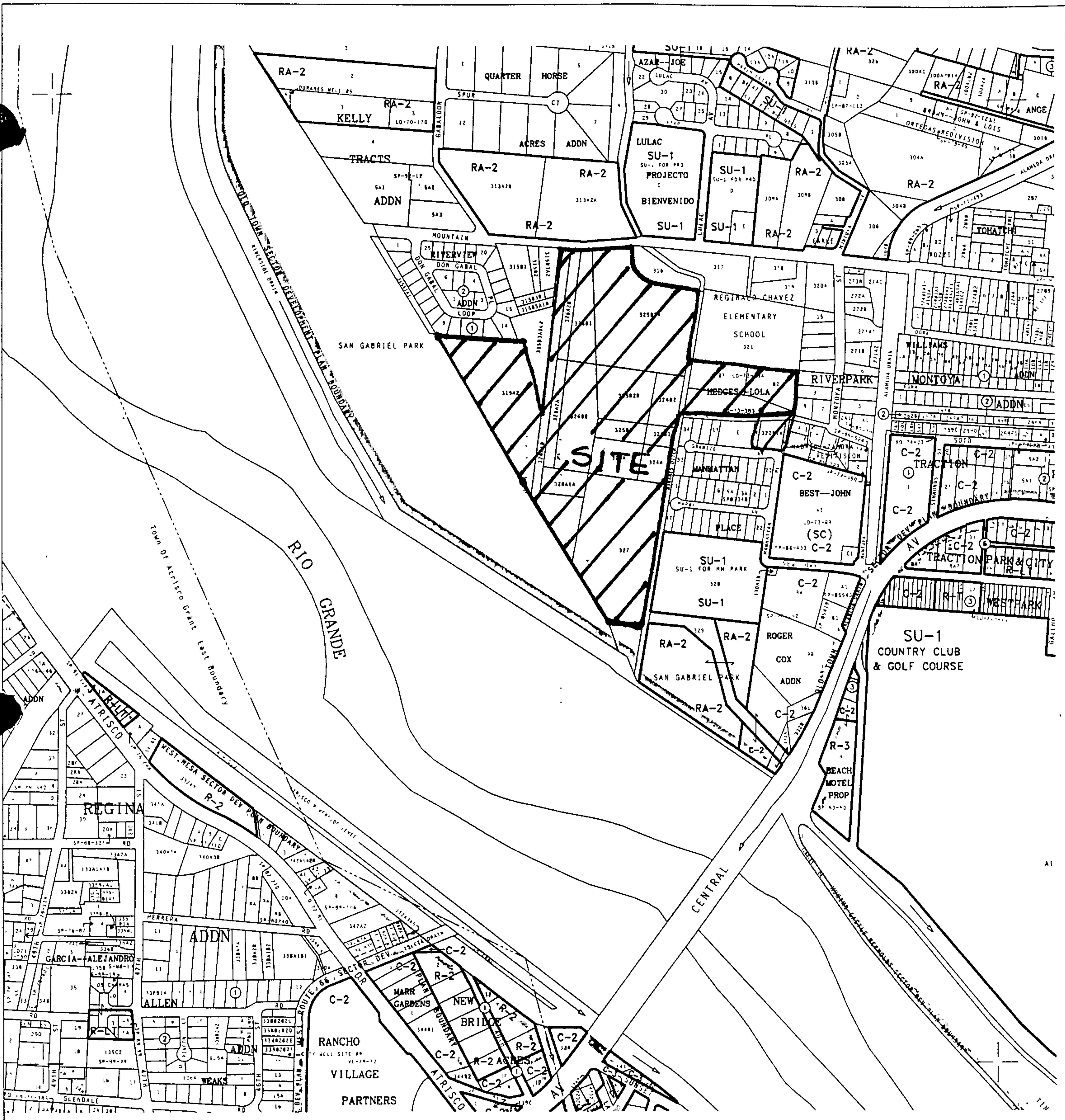
The required 100-year 10-day retainage volume for Sub-Basin 1 (Units 1 & 2) was calculated to be 5.472 acre-feet. The total available on site ponding area for Sub-Basin 1 is approximately 18.674 acres which results in a required ponding depth of 0.29 feet (3.51"). The design ponding depth used is 6.0 inches.

The required 100-year 10-day retainage volume for Sub-Basin 2 (Unit 3) was calculated to be 0.821 acre-feet. The total available on site ponding area for Sub-Basin 2 is approximately 1.666 acres which results in a required ponding depth of 0.49 feet (5.90"). The design ponding depth used is 6.0 inches.

Each of the lot pads will be graded to an elevation of 4953.50 feet, MSL. This elevation will be 1.0 foot above the 100-year 10-day maximum ponded water surface elevation of 4952.50 feet. With a 6.0" ponding depth, the pond bottom elevation will be at 4952.00 feet. Refer to Appendix A for AHYMO printouts and hydrologic calculations.

OFF-SITE FLOWS

Offsite flows will be prevented from entering the project site by constructing an 8" high concrete block wall at existing grade around the subdivision to separate on-site and off-site flows. A water block will be created at both entrance roads to separate flows. The Duranes Ditch along the east property line creates a natural separation barrier between the on-site and off-site flows and Units 1 & 2 and Unit 3.



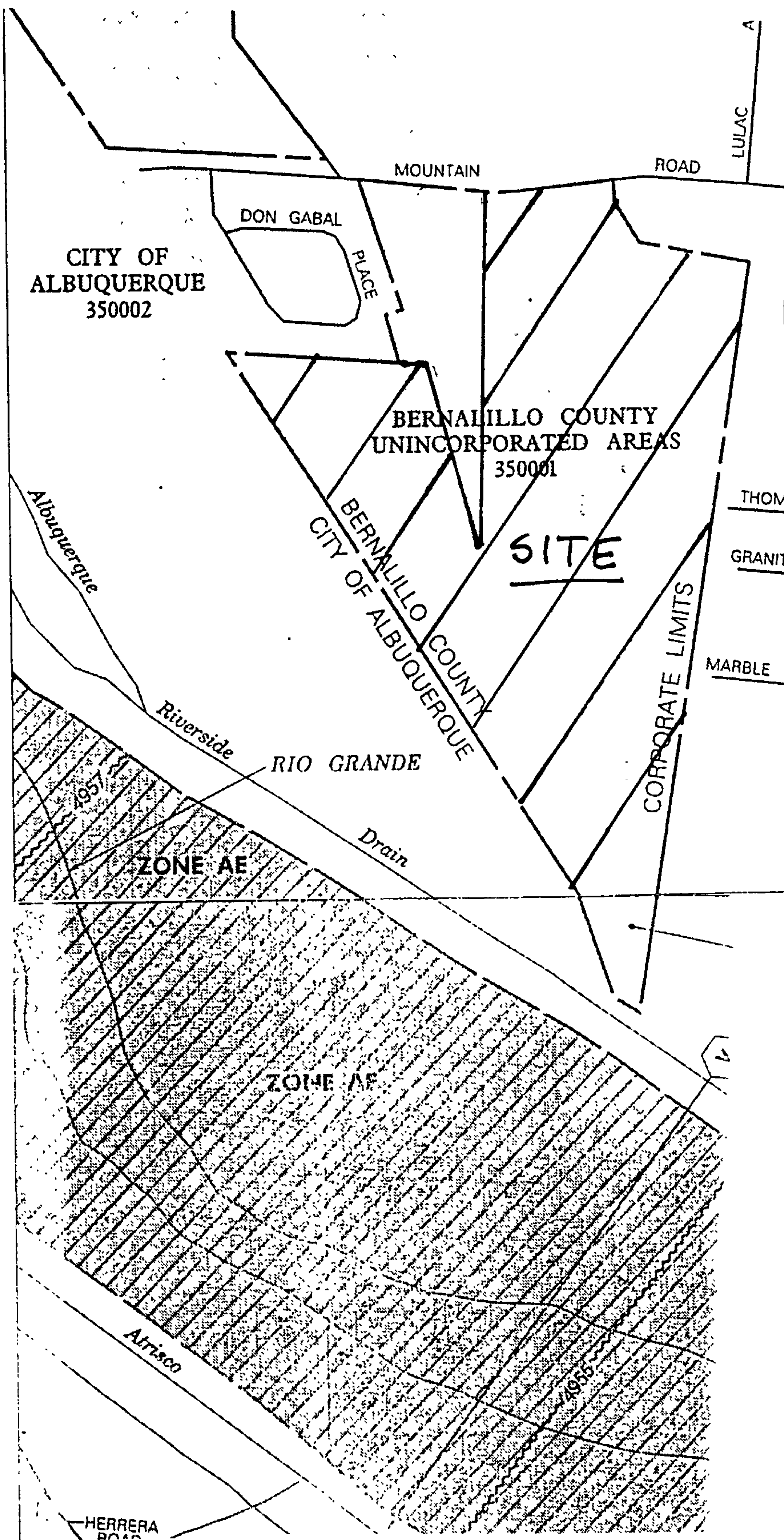
Abuquerque **G**eographic **I**nformation **S**ystem
City of Albuquerque

© Planning Department July 06, 1993

LEGAL DESCRIPTION
T10N
R2E
SEC 13

UNIFORM PROPERTY CODE
1-012-058

J-12-Z



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

**BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS**

PANEL 331 OF 825

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0331	D
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0331	D

**MAP NUMBER
35001C0331 D**

**EFFECTIVE DATE:
SEPTEMBER 20, 1996**



Federal Emergency Management Agency

APPENDIX A

Existing Conditions



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Gardens at Rio Grande
SUBJECT Pond Depth Calc
BY DLH DATE 4-7-97
CHECKED _____ DATE _____
SHEET _____ OF _____

Required Pond Retention Volume :

$$V_{10} = V_{360} + A_D \left(\frac{P_{10} - P_{360}}{12} \right)$$

V_{10} = 10 day volume (AF)

A_D = Impervious Area (Acres)

P = precipitation (inches)

$$P_{10} = 10. - (24.9 / (P_{1440})^{1.4}) = 10. - (24.9 / 2.75^{1.4}) = 3.96''$$

SUB-BASIN 1

Required Volume = 5.472 AF = 238,360 CF

$$V_{10} = 3.697 + 12.384 \left(\frac{3.96 - 2.24}{12} \right) = 5.472 \text{ AF}$$

Actual Pond Area = 813,442 SF

Required Pond Depth = 3.51''

$$\frac{238,360 \text{ CF}}{813,442 \text{ SF}} = 3.51''$$

Design Pond Depth = 6.0''

SUB-BASIN 2

Required Volume = 0.821 AF = 35,763 CF

$$V_{10} = 0.525 + 2.0649 \left(\frac{3.96 - 2.24}{12} \right) = 0.821 \text{ AF}$$

Actual Pond Area = 72,572 SF

Required Pond Depth = 5.9''

$$\frac{35,763 \text{ CF}}{72,572 \text{ SF}} = 5.9''$$

Design Pond Depth = 6.0''



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Gardens @ Rio Grande
SUBJECT Hydrology
BY DLH DATE 4/4/97
CHECKED _____ DATE _____
SHEET _____ OF _____

SUB-BASIN 1

TOTAL AREA = 1,560,794 SF

Pavement Area = 117,311 SF

Sidewalk = 16240.4 SF

Pads (5000 SF) = 345,000 SF

Driveways = 60,900 SF

Imperv. = 539,451.4

Pervious = 1,021,342.6

Land Treatment

B = 32.7 %

C = 32.7 %

D = 34.6 %

Area = 35.83 acres

= 0.05599 sq. ft.

Area (Imper.) = 12.3841 acres.

SUB-BASIN 2

TOTAL AREA = 202,671 SF

Pavement = 26205 SF

PADS (2000 SF) = 49600 SF

Driveways = 14140 SF

Imperv. = 89,945 SF

Pervious = 112,726 SF

Land Treatment

B = 27.8 %

C = 27.8 %

D = 44.4 %

Area = 4.65

= 0.00727 sq. ft.

Area (Imper.) = 2.0649

RUN DATE (MON/DAY/YR) =04/04/1997

USER NO.= M_GOODWN.101

		FROM	TO		PEAK	RUNOFF		TIME TO	CFS	PAGE = 1
HYDROGRAPH		ID	ID	AREA	DISCHARGE	VOLUME	RUNOFF	PEAK	PER	
COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE	NOTATION
START									TIME=	.00
RAINFALL TYPE= 1									RAIN6=	2.240
COMPUTE NM HYD	100.00	-	1	.05599	48.06	1.358	.45467	1.532	1.341 PER IMP=	.00
COMPUTE NM HYD	200.00	-	1	.00727	6.25	.176	.45467	1.532	1.342 PER IMP=	.00
COMPUTE NM HYD	100.00	-	1	.05599	112.59	3.597	1.23822	1.499	3.142 PER IMP=	34.60
COMPUTE NM HYD	200.00	-	1	.00727	15.51	.525	1.35237	1.499	3.333 PER IMP=	44.40
FINISH										

```

START          TIME=0.0
***** GARDENS AT THE RIO GRANDE (J-12)
***** EXISTING AND DEVELOPED CONDITIONS
***** 100-YEAR 6-HOUR STORM EVENT
***** APRIL 1997

RAINFALL       TYPE=1 RAIN QUARTER=0.0 IN
               RAIN ONE=1.88 IN RAIN SIX=2.24 IN
               RAIN DAY=2.75 IN DT=0.0333 HR
*****
*****EXISTING CONDITIONS*****
*****
***** SUB BASIN 1  EXISTING CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=100.0 AREA=0.05599 SQ MI
               PER A=100 PER B=0 PER C=0 PER D=0
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
***** SUB BASIN 2  EXISTING CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=200.0 AREA=0.00727 SQ MI
               PER A=100 PER B=0 PER C=0 PER D=0
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
*****
*****DEVELOPED CONDITIONS*****
*****
***** SUB BASIN 1  DEVELOPED CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=100.0 AREA=0.05599 SQ MI
               PER A=0 PER B=32.7 PER C=32.7 PER D=34.6
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
***** SUB BASIN 2  DEVELOPED CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=200.0 AREA=0.00727 SQ MI
               PER A=0 PER B=27.8 PER C=27.8 PER D=44.4
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
FINISH

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RUN DATE (MON/DAY/YR) =04/04/1997

USER NO.= M_GOODWN.I01

TIME= .00

RAIN24= 2.750

COMPUTE NM HYD	100.00	-	1	.05599	48.06	1.358	.45467	1.532	1.341 PER IMP=	.00
----------------	--------	---	---	--------	-------	-------	--------	-------	----------------	-----

COMPUTE NH HYD	200.00	-	1	.00727	6.25	:	.176	.45467	1.532	1.342 PER IMP=	.00
----------------	--------	---	---	--------	------	---	------	--------	-------	----------------	-----

COMPUTE NM HYD	100.00	-	1	.05599	112.59	4.132	1.38367	1.499	3.142 PER IMP=	34.60
----------------	--------	---	---	--------	--------	-------	---------	-------	----------------	-------

COMPUTE NM HYD	200.00	-	1	.00727	15.51	.597	1.53953	1.499	3.333 PER IMP= 44.40
----------------	--------	---	---	--------	-------	------	---------	-------	----------------------

FINISH

```

START          TIME=0.0
***** GARDENS AT THE RIO GRANDE (J-12)
***** EXISTING AND DEVELOPED CONDITIONS
***** 100-YEAR 24-HOUR STORM EVENT
***** APRIL 1997

RAINFALL       TYPE=2 RAIN QUARTER=0.0 IN
               RAIN ONE=1.88 IN RAIN SIX=2.24 IN
               RAIN DAY=2.75 IN DT=0.0333 HR

*****
*****EXISTING CONDITIONS*****
*****
***** SUB BASIN 1  EXISTING CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=100.0 AREA=0.05599 SQ MI
               PER A=100 PER B=0 PER C=0 PER D=0
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
***** SUB BASIN 2  EXISTING CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=200.0 AREA=0.00727 SQ MI
               PER A=100 PER B=0 PER C=0 PER D=0
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
*****
*****DEVELOPED CONDITIONS*****
*****
***** SUB BASIN 1  DEVELOPED CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=100.0 AREA=0.05599 SQ MI
               PER A=0 PER B=32.7 PER C=32.7 PER D=34.6
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
***** SUB BASIN 2  DEVELOPED CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=200.0 AREA=0.00727 SQ MI
               PER A=0 PER B=27.3 PER C=27.8 PER D=44.4
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
FINISH

```



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT Gardens @ Rio Grande

SUBJECT Sidewalk Calcs

BY DLH DATE 4/7/97

CHECKED _____ DATE _____

SHEET _____ OF _____

SUB-BASIN 1

10-year 6-hour Volume = 1.932 AF = 84,158 CF

Pond Area = 813,442 SF

Depth = $\frac{84,158}{813,442} = 0.10' = 1.24"$ $52.00 + 0.10 = 52.10'$

10-yr 6hr WSEL = 52.10' o.k.

SUB-BASIN 2

10-year 6hr. Volume = 0.286 AF = 12,458 CF

Pond Area = 72,572 SF

Depth = $\frac{12,458}{72,572} = 0.17' = 2.06"$ $52.00 + 0.17 = 52.17'$

10-yr 6hr WSEL = 52.17' o.k.

Minimum Sidewalk elevation = 52.60'

RUN DATE (MON/DAY/YR) =04/07/1997

USER NO.= M_GOODWN.101

TIME= .00

RAIN6= 1.490

COMPUTE NM HYD	100.00	-	1	.05559	9.44	.264	.08854	1.532	.263 PER IMP=	.00
----------------	--------	---	---	--------	------	------	--------	-------	---------------	-----

COMPUTE NW HYD	200.00	-	1	.00727	1.23	.034	.08854	1.532	.264 PER IMP=	.00
----------------	--------	---	---	--------	------	------	--------	-------	---------------	-----

COMPUTE NM HYD	100.00	-	1	.05599	61.72	1.932	.64714	1.499	1.722 PER IMP=	34.60
----------------	--------	---	---	--------	-------	-------	--------	-------	----------------	-------

COMPUTE NM HYD	200.00	-	1	.00727	8.84	.286	.73860	1.499	1.900 PER IMP=	44.40
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FINISA

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START          TIME=0.0
***** GARDENS AT THE RIO GRANDE (J-12)
***** EXISTING AND DEVELOPED CONDITIONS
***** 10-YEAR 6-HOUR STORM EVENT
***** APRIL 1997

RAINFALL       TYPE=1 RAIN QUARTER=0.0 IN
               RAIN ONE=1.25 IN RAIN SIX=1.49 IN
               RAIN DAY=1.83 IN DT=0.0333 HR

*****
*****EXISTING CONDITIONS*****
*****
***** SUB BASIN 1  EXISTING CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=100.0 AREA=0.05599 SQ MI
               PER A=100 PER B=0 PER C=0 PER D=0
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
***** SUB BASIN 2  EXISTING CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=200.0 AREA=0.00727 SQ MI
               PER A=100 PER B=0 PER C=0 PER D=0
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
*****
*****DEVELOPED CONDITIONS*****
*****
***** SUB BASIN 1  DEVELOPED CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=100.0 AREA=0.05599 SQ MI
               PER A=0 PER B=32.7 PER C=32.7 PER D=34.6
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
***** SUB BASIN 2  DEVELOPED CONDITIONS
COMPUTE NM HYD  ID=1 HYD NO=200.0 AREA=0.00727 SQ MI
               PER A=0 PER B=27.8 PER C=27.8 PER D=44.4
               TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD      ID=1 CODE=1
FINISH

```

DRAINAGE INFORMATION SHEET

PROJECT TITLE: The Gardens @ Rio Grande ZONE ATLAS/DRNG, FILE#: J-12/D17
DRB #: 96-450 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: MRGCD Map 38; Lots 315A2, 315B3A1C3, 324A, 324B1, 324B2, 325A, 325B1, 325B2A, 325B2B, 326A1A, 326A1B, 326A2A, 326A2B, 326B1, 326B2 AND 327; approximately 35 acres.
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Diane Hoelzer PE
ADDRESS: PO Box 90606 PHONE: 345-2010 828-2200
OWNER: C & G Development CONTACT: Bill Caniglia
ADDRESS: PO Box 2164 PHONE: 247-3113
ARCHITECT: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____
CONTRACTOR: _____ CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL *DMH*
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☒ FINAL PLAT APPROVAL *DMH*
☐ FOUNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL *DMH*
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (Specify)

PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED

DATE SUBMITTED: 4-9-97
BY: Diane Hoelzer
Diane Hoelzer PE

