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

October 21, 2003

Ronald Bohannan, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Symphony Subdivision (formerly Luna Vista), SIA/Financial Guarantee Release

Engineer's Stamp dated 10-19-01 (H13/D41)

Certification dated 10-20-03

Dear Mr. Bohannan,

Based upon the information provided in your submittal received 10-16-03, the above referenced certification is approved for release of SIA and Financial Guarantee.

If you have any questions, you can contact me at 924-3981.

Sincerely,

Kristal D. Metro
Engineering Associate, Planning Dept.
Development and Building Services

C: Arlene Portillo, COA# (1000361)
file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Symphony (Luna Vista) ZONE MAP/DRG. FILE #: H13/D41

DRB 1000361 EPC #: WORK ORDER #: 6636.81

LEGAL DESCRIPTION: A,223-B1, 223-B2, 223-B3

CITY ADDRESS: Albuquerque, NM

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	RONALD R. BOHANNAN OR SARA LAVY
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	Centex	CONTACT:	Norm Gregory
ADDRESS:	6700 Jefferson, NE	PHONE:	761-9606
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	Cummunity Sciences Corporation	CONTACT:	Tomas Patrick
ADDRESS:	4481 Corrales, Rd.	PHONE:	897-0000
CITY, STATE:	Corrales, NM	ZIP CODE:	87048
CONTRACTOR:	CCM	CONTACT:	Scott Davis
ADDRESS:	8019 Edith, NE	PHONE:	898-7777
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113

CHECK TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEERS CERTIFICATION (TCL)
- ____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- X SIA / FINANACIAL GUARANTEE RELEASE
- ____ 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
- ____ CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED
OCT 20 2003
HYDROLOGY SECTION

DATE SUBMITTED: 10/20/2003 BY: Ronald Wright (259-5635)

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of sumbittal may be required based on the following:

1. **Conceptual Grading and Drainage Plans**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

twllc@tierrawestllc.com
1-800-245-3102

November 6, 2001

Mr. Brad Bingham PE
Senior Engineer Hydrology
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

RECEIVED
OCT 16 2003
HYDROLOGY SECTION

RE: DRB-1000361
Luna Vista Subdivision
Grading Plan Revision

Dear Brad:

We submitted a request to amend the preliminary plat for Luna Vista. The changes to the preliminary plat are a result of Centex purchasing the property and their decision to change the site to a gated community. The entrance to the proposed subdivision was modified to support a gated entrance. Two previously proposed lots were deleted and a short, 100-foot stub street was added. The remainder of the site is unchanged from the original approved preliminary grading plan (engineer's stamp dated 10/23/00). The modification to the site does not significantly affect the previously approved drainage plan as outlined in the report dated 10/23/00. We attached a copy of the revised grading plan with a copy of the revised infrastructure list, for your review.

Should you have any questions or if you need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Vincent Carrica

Enclosures

cc: Norm Gregory, Centex

JN 21036
vc/db

vince\myfiles\21036:2136bb110601

FOR REFERENCE

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Symphony (Luna Vista) ZONE MAP/DRG. FILE #: H13/D41

DRB 1000361 EPC #: WORK ORDER #: 6636.81

LEGAL DESCRIPTION: A,223-B1, 223-B2, 223-B3

CITY ADDRESS: Albuquerque, NM

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	RONALD R. BOHANNAN OR SARA LAVY
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	Centex	CONTACT:	Norm Gregory
ADDRESS:	6700 Jefferson, NE	PHONE:	761-9606
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	Cummunity Sciences Corporation	CONTACT:	Tomas Patrick
ADDRESS:	4481 Corrales, Rd.	PHONE:	897-0000
CITY, STATE:	Corrales, NM	ZIP CODE:	87048
CONTRACTOR:	CCM	CONTACT:	Scott Davis
ADDRESS:	8019 Edith, NE	PHONE:	898-7777
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113

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- ____ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEERS CERTIFICATION (TCL)
- ____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- X SIA / FINANACIAL GUARANTEE RELEASE
- ____ 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
- ____ CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED
OCT 16 2003
HYDROLOGY SECTION

DATE SUBMITTED: 10/15/2003 BY: Ronald Wright (259-5635)

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1. **Conceptual Grading and Drainage Plans**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
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3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

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

November 13, 2001

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Luna Vista Subdivision Amended Grading Plan
Engineer's Stamp dated 10-19-01 (H13/D41)

Dear Mr. Bohannan,

Based upon the information provided in your submittal dated 10-24-00, the above referenced plan is approved for Amended Preliminary Plat action by the DRB.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET
(REV. 11/01/2001)

H-13/D41

PROJECT TITLE: LUNA VISTA ZONE MAP/DRG. FILE #: ~~H-13-Z~~
DRB #: 1000361 EPC#: WORK ORDER#:

LEGAL DESCRIPTION: A, 223-B1, 223-B2, 223-B3
CITY ADDRESS: ALBUQUERQUE, NM

ENGINEERING FIRM: TIERRA WEST, LLC CONTACT: VINCE CARRICA
ADDRESS: 8509 JEFFERSON NE PHONE: 858-3100
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87113

OWNER: CENTEX CONTACT: NORM GREGORY
ADDRESS: 6700 JEFFERSON NE PHONE: 761-9606
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87109

ARCHITECT: CONTACT:
ADDRESS: N/A PHONE: N/A
CITY, STATE: ZIP CODE:

SURVEYOR: PRECISION SURVEY CONTACT: LARRY MEDRANO
ADDRESS 8414-D JEFFERSON NE PHONE: 856-5700
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87113

CONTRACTOR: NOT YET SELECTED CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:
- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEERS CERTIFICATION (TCL)
- ____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:
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- ____ PRELIMINARY PLAT APPROVAL
- ✓ S. DEV. PLAN FOR SUB'D. APPROVAL
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- ____ CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ✓ OTHER (SPECIFY) PRELIMINARY PLAT AMENDMENT

RECEIVED
NOV 06 2001
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- ____ YES
- X NO
- ____ COPY PROVIDED

DATE SUBMITTED: 11-6-01 BY: VINCENT CARRICA

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

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3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or

TIERRA WEST, LLC

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(505) 858-3100
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twllc@tierrawestllc.com
1-800-245-3102

November 6, 2001

RECEIVED
NOV 06 2001
HYDROLOGY SECTION

Mr. Brad Bingham PE
Senior Engineer Hydrology
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

RE: DRB-1000361
Luna Vista Subdivision
Grading Plan Revision

Dear Brad:

We submitted a request to amend the preliminary plat for Luna Vista. The changes to the preliminary plat are a result of Centex purchasing the property and their decision to change the site to a gated community. The entrance to the proposed subdivision was modified to support a gated entrance. Two previously proposed lots were deleted and a short, 100-foot stub street was added. The remainder of the site is unchanged from the original approved preliminary grading plan (engineer's stamp dated 10/23/00). The modification to the site does not significantly affect the previously approved drainage plan as outlined in the report dated 10/23/00. We attached a copy of the revised grading plan with a copy of the revised infrastructure list, for your review.

Should you have any questions or if you need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Vincent Carrica

Enclosures

cc: Norm Gregory, Centex

JN 21036
vc/db

vince\myfiles\21036.2136bb110601

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

July 12, 2001

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Luna Vista Subdivision Revised Grading Plan
Engineer's Stamp dated 6-21-01 (H13/D41)

Dear Mr. Bohannan,

Based upon the information provided in your submittal dated 6-21-01, the above referenced plan is approved as Amended. This plan shall be the official plan to be certified.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

SIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

e-mail: twdms@aol.com
1-800-245-3102

June 21, 2001

Mr. Brad Bingham PE
Senior Engineer Hydrology
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

H-13/D41

RE: DRB-1000361
Luna Vista Subdivision
Grading & Drainage Plan Revision

Dear Brad:

A meeting was held last week at your office in which the Middle Rio Grande Conservancy District (MRGCD) expressed concerns about the planned construction of a depressed emergency spill way across the east bank of the Alameda Drain. The outcome of the meeting was that the depressed emergency spillway from the on-site detention pond to the Alameda drain would be eliminated. The east bank of the drain would remain at its existing grade. At your direction, we have calculated the maximum water surface elevation at a second 100-year storm event. This maximum water surface elevation is shown graphically on the attached revised grading and drainage plan sheets. Several finish floor elevations were adjusted to be above the calculated maximum water surface elevation. The adjustments were minor and were well below 18 inches.

Once the plans are approved by your office we will make the necessary corrections to the DRC plan set and obtain MRGCD's signature as required by the committee.

Should you have any questions or if you need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, PE

RECEIVED
JUN 21 2001
HYDROLOGY SECTION

Enclosures

JN 990021
RRB/vc/db

2000misc#4 9921rd080200

File:

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

Phone: 505-858-3100
Fax: 505-858-1118

FACSIMILE TRANSMITTAL

To: BRAD BINGHAM **FAX:** 924-3864

TOTAL OF (7) PAGE/S

From: VINCE CARRICA

Subject: LUNA VISTA **JN:** 990021

Date: 10/11/00 H-13/D41

BRAD,

THIS SIGNED AGREEMENT W/ NEIGHBORS ON THE IRRIGATION DITCH EASEMENT. WE ARE UP BEFORE DRB ON WEDNESDAY OF NEXT WEEK. PLEASE LET US KNOW THAT THE DRAINAGE HAS BEEN APPROVED PRIOR TO THE MEETING. I WILL FORWARD THE LICENSE AGREEMENT FOR THE POND OUTFALL AS SOON AS IT BECOMES AVAILABLE. THANKS!

IF YOU DO NOT RECEIVE ALL PAGES OF THIS TRANSMITTAL OR IF MATERIAL IS NOT LEGIBLE, PLEASE

Y40021

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

Phone: 505-858-3100
Fax: 505-858-1118

MEMO

TO: Ray Gomez

FROM: Vince Carrica

SUBJECT: Luna Vista – Irrigation Easement JN: 990021

DATE: 10/11/00

Last night Jim Shull and the residents reached an agreement on the irrigation ditch on the subject project. The agreement was reached at a facilitated meeting held by Mediation Works, Inc. They prepared a hand written agreement outlining what the parties had agreed to. All those present signed the agreement. A copy is attached for your review. The facilitator will prepare a more formalized copy. With the agreement reach the DRB is prepared to approve the preliminary plat with your approval of the required license agreements. If possible we would like to have the license agreements for the City's review on Friday of this week. Thank you for your patience in this matter. Give me a call if you have any questions.

Post-it® Fax Note 7671	Date 10/12/00	# of pages ▶ 6
To RAY GOMEZ	From VINCE	
Co./Dept. MRGCD	Co. TIERRA WEST	
Phone #	Phone #	
Fax # 243-7308	Fax #	

The undersigned parties agree to the following:

1. The 1st reach called the Northern Reach adjacent to Tracts 224-A-C will have installed a ten foot wide acequia easement consisting of a cross section of five feet from a new wall built by the developer installing a new three foot wide acequia with a two foot dirt section to the property line.

2. The walk path on the section described by #1 will be adjacent to the new wall.

3. Reach B is a new 8 foot wide acequia easement adjacent to the west property lines 224-C and 224-D1. The developer will install a new wall on the west easement line with a three foot walking path adjacent to the wall with a new three foot gunite-lined irrigation ditch and a tow foot dirt section to the property line. A 24 inch minimum irrigation pipe to the City of Albuquerque standard will be installed under the emergency access road, Luna Rosa.

4. Reach C: an 8 foot grant of use between the property owner of 223-C2 for the benefit of property owner 223-C1 is granted. A new five foot wide chain link pedestrian gate will be installed by the developer between these two affected properties. The gate will be installed at the same height and elevation of the existing fence between the two properties.

5. The head gate on the Campbell ditch will be relocated or aligned to allow walking access on the north side of the new acequia easement. The elevation currently established on the acequia at the Campbell ditch and on tract 223-C2 will be maintained. Positive drainage will be maintained between these two points. The head gate at the Campbell ditch will be operated on the west side of the Campbell ditch.

6. Maintenance of the new acequia ditch and easement will be the sole responsibility of the beneficiaries.

7. On the west side of tract 224-C a new turnout will be installed at the current turnout location, permitting the irrigation of tract 224-C.

8. The undersigned parties agree that this writing will serve as an official agreement.

Signed this 10th day of October 2000.

Vincent Carrica
Darlene Anaya
Ronald R. Bohannan
Jim Shull, Jr.
Patricia A Allen

Facilitator: Paul Splett

Mediation Works, Inc.
10412 Bellamah Ave. NE. Albuquerque, NM. 87112
(505) 298-3544

Contract for Facilitation Services

The undersigned parties hereby agree to:

a) procure the facilitating services of facilitator Paul Splett on October 9, 2000 beginning at 7:00 pm;

b) timely compensate said facilitator at the rate of $75.00 per hour of actual facilitating services;

c) timely compensate said facilitator at the rate of $45.00 per hour for any services pertaining to the drafting and mailing of any subsequent report resulting from the above-mentioned facilitation;

d) ~~decide equitably among themselves which involved parties shall be responsible for payment of said facilitation and for what amount those parties are responsible; and~~ to divide payment of said facilitation equally; and

e) submit payment in the form of a check made out to: Mediation Works, Inc. at 10412 Bellamah Ave. NE. Albuquerque, NM. 87112.

Signed this 10TH day of October, 2000.

Ronald R. Bohagran

Patricia Allen

10/10/2002

The undersigned parties agree to the following:

1. The 1st reach called the Northern Reach adjacent to tracts 224-A-C will have installed a ten foot wide acequia easement consisting of a cross section of ~~five~~ five feet from a new wall built by the developer installing a new three foot wide acequia with a two foot dirt section to the property line

2. The walk path on the section described by #1 will be adjacent to the new wall.

3. Reach B is a new 8 foot wide acequia easement adjacent to the West property lines 224-C and 224-D1. The developer will install a new wall on the west easement line with a three foot walking path adjacent to the wall with a new three foot granite-lined irrigation ditch and a two foot dirt section to the property line. A 24 inch minimum irrigation pipe to the City of Albuquerque standard will be installed under the emergency access road, Luna Rosa.

4. Reach C: An 8 foot grant of use between the property owner of 223-C2 for the benefit of property owner 223-C1 is granted. A new five foot wide chain link pedestrian gate will be installed by the developer between these two affected properties. The gate will be installed at the same height and elevation of the existing fence between the two properties.

5. The head gate on the Campbell ditch will be relocated or aligned to allow walking access on the north side of the new acequia easement. The elevations currently established on the acequia at the Campbell ditch and on tract 223-C2 will be maintained. Positive drainage ~~between these two points~~ will be maintained between these two points. The head gate at the Campbell ditch will be operated on the west side of the Campbell ditch.

6. Maintenance of the new acequia ditch and easement will be the sole responsibility of the beneficiaries

7. On the west side of tract 224-C a new turnout will be installed ~~permitting the irrigation of tract 224~~ at the current ~~the~~ turnout location, permitting the irrigation of tract 224-C.

8. The undersigned parties agree that this writing will serve as an official agreement.

Signed this 10th day of October, 2000.

Facilitator:

Current DRC
Project Number:_____

FIGURE 12

Date Submitted:_____
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No.:_____
DRB Application No.:_____

INFRASTRUCTURE LIST

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Luna Vista Subdivision
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tracts 222-B, 246-A1, 223-B1, 223-B2, 223-B3 MRGCD Map 35
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		30' F-F	Residential Paving, Curb and Gutter, *4' Sidewalks (Both Sides)	Luna Vista Drive	Luna Llena Avenue	Luan Rosa Court	/	/	/
		30' F-F	Residential Paving, Curb and Gutter, *4' Sidewalks (Both Sides)	Luna Rosa Court	Luna Vista Drive	East Property Line	/	/	/
		46' F-F	Residential Paving, Curb and Gutter, *4' Sidewalks (Both Sides)	Luna Vista	Luna Llena	Indian School Road	/	/	/
		30' F-F	Residential Paving, Curb and Gutter, *4' Sidewalks (Both Sides)	Luna Nueva Court	Luna Llena Avenue	End of Cul-de-Sac	/	/	/
		30' F-F	Residential Paving, Curb and Gutter, *4' Sidewalks (Both Sides)	Luna Llena Avenue	West Property Line	Luan Media Court	/	/	/
		30' F-E	Residential Paving, Curb and Gutter, *4' Sidewalks (South Side Only)	Luna Media Court	Luna Llena Avenue	End of Cul-de-Sac	/	/	/
			Sidewalk Widening 2' (South Side) -2' sidewalk to be added to the south edge of the existing 4' sidewalk for a resulting 6' total sidewalk width.	Indian School Road	West Property Line	East Property Line	/	/	/
		NOTE: * Internal Sidewalks Deferred.					/	/	/

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		6"	Water PVC Line	Luna Vista	Indian School Road	Luna Rosa Court	/	/	/
		6"	Water PVC Line	Luna Rosa Court	Luna Vista Drive	Existing 6"	/	/	/
		6"	Water PVC Line	Luna Llena Avenue	West Property Line	Luna Median Court	/	/	/
		6"	Water PVC Line	Luna Media Court	Luna Llena Avenue	End of Cul-de-Sac	/	/	/
		6"	Water PVC Line	Utility Easement	Luna Media Court	MRGCD Access Road	/	/	/
		4"	Water PVC Line	Luna Nueva Court	Luna Llena Avenue	End of Cul-de-Sac	/	/	/
		12"	Water PVC Line	MRGCD Access Road	Indian School Road	South Property Line	/	/	/
		8"	SAS Gravity Line	Luna Vista Drive	Luna Llena Avenue	Luna Rosa Court	/	/	/
		8"	SAS Gravity Line	Luna Rosa Court	Luna Vista Drive	East Property Line	/	/	/
		6"	SAS Gravity Line	Luna Llena Avenue	West Property Line	Luna Media Court	/	/	/
		8"	SAS Gravity Line	Luna Media Court	Luna Llena Avenue	End of Cul-de-Sac	/	/	/
		8"	SAS Gravity Line	Luna Nueva Court	Luna Llena Avenue	End of Cul-de-Sac	/	/	/
		8"	SAS Gravity Line	Utility Easement	Luna Vista Drive	Lilac Street	/	/	/
							/	/	/

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		12'	Concrete Rundown	Drainage Easement	Detention Pond	Luna Vista Drive	/	/	/
		6"	PVC Storm Sewer	Drainage Easement	Detention Pond	Alameda Drain	/	/	/
			Removal of existing 12" Waterline	Old Campbell Ditch Alignment	Indian School Road	South Property Line	/	/	/
		**	Earthen Irrigation Ditch as per facilitated agreement	Irrigation Easement	Campbell Ditch	Common Corner of Lots 28,29 & 45	/	/	/
		**	Shot-crete Irrigation Ditch as per facilitated agreement	Irrigation Easement	Common Corner of Lots 28, 29 & 45.	South Property Line	/	/	/
		Water Infrastructure to include Valves, Fittings, Valve Boxes and Fire Hydrants as required.					/	/	/
		Sanitary Sewer to include Manholes and Service Connections as required.					/	/	/
		Catch Basins and RCP connections included with Storm Sewer					/	/	/
		Permanent Detention Pond with Agreement & Covenant					/	/	/
		Residential Street Lights per DPM.					/	/	/
		Certified Grading and Drainage with Private Walls and Private Drainage (Non- work order item) Required for SIA/Financial Guarantee Release.					/	/	/

NOTES

1

2

3

AGENT / OWNER	DEVELOPMENT REVIEW BOARD MEMBER APPROVALS	
Ronald R. Bohannan NAME (print)	DRB CHAIR - date	PARKS & GENERAL SERVICES - date
Tierra West LLC FIRM	TRANSPORTATION DEVELOPMENT - date	AMAFCA - date
10/19/21 SIGNATURE - date	UTILITY DEVELOPMENT - date	_____ - date
MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB EXTENSION: _____	CITY ENGINEER - date	_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *Luna Vista Subdivision* **ZONE ATLAS/DRNG. FILE #:** *H-13-Z* /041

DRB #: *1000361* **EPC #:** **WORK ORDER #:**

LEGAL DESCRIPTION: *Tracts 246-A1, 222-B, 223-B1, 223-B2, 223-B3 MRGCD Map No. 35*

CITY ADDRESS: *On Indian School Road - Between The Alameda Drain And The Valley Apartments*

ENGINEERING FIRM: *TIERRA WEST, LLC* **CONTACT:** *Vincent Carrica*

ADDRESS: *8509 Jefferson NE Albuqueque, NM 87113* **PHONE:** *(505) 858-3100*

OWNER: *Charles Williams & Jim Shull, Jr.* **CONTACT:**

ADDRESS: *2444 Louisianna NE, #225 Albuquerque, NM 87110* **PHONE:**

ARCHITECT: **CONTACT:**

ADDRESS: **PHONE:**

SURVEYOR: *Precision Surveys* **CONTACT:** *Larry Madrano*

ADDRESS: *8414-D Jefferson Street, NE* **PHONE:** *(505)856-5700*

CONTRACTOR: **CONTACT:**

ADDRESS: **PHONE:**

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION
- ___ OTHER

PRE-DESIGN MEETING:

- ___ YES
- X NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAN APPROVAL
- X 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
- ___ CERTIFICATE OF OCCUPANCY APPROVAL
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S. A. D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ *OTHER*

RECEIVED
AUG 14 2000
HYDROLOGY SECTION

DATE SUBMITTED: 6/22/00 *Revised 8/8/00*

BY: *Vincent Carrica*

DRAINAGE REPORT

For

Luna Vista Subdivision

Prepared by

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for

Charles Williams and Jim Shull, Jr.
5445 Edith Blvd. NE Unit F
Albuquerque, New Mexico 87107

Revised August 8, 2000

Ronald R. Bohannan P.E. No. 7868

TABLE OF CONTENTS

Zone Atlas Map Z-13 1

Location 2

Drainage Basin Designation 2

Existing Undeveloped Basin Map 3

Existing Drainage Conditions 4

FIRM Map and Soil Conditions 5

On-Site Drainage Management Plan 5

FEMA Map 350002 6

Developed Basin Map 7

On-Site Basin Map with Developed Flows 9

Future Developed Conditions 10

Criteria 10

Summary 10

Runoff Calculations 12

Pond Calculations 13

AHYMO Input & Output 14

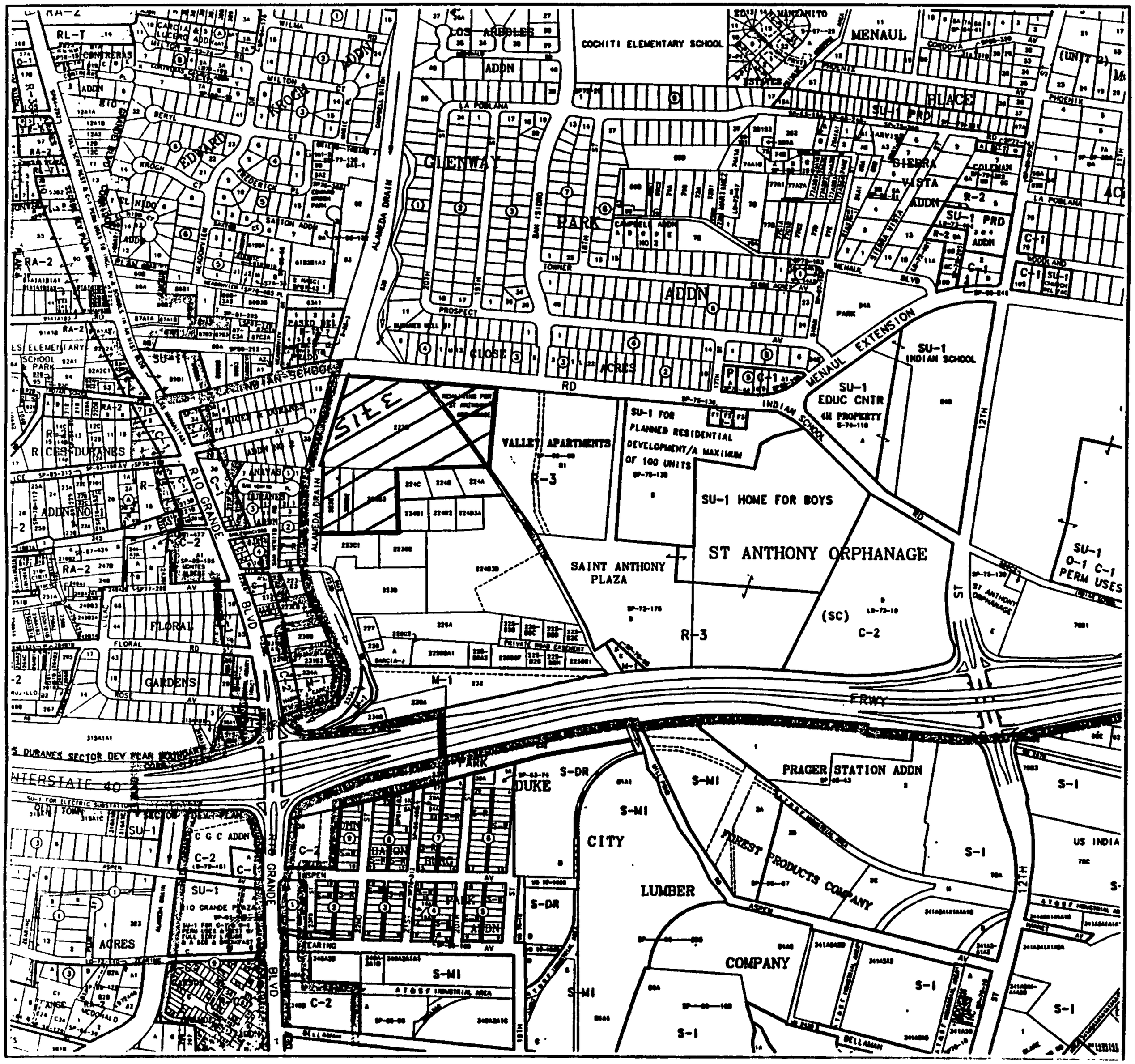
Street Capacity Calculations 23

Emergency Overflow Calculations 27

Sidewalk Exhibit 28

Rundown Calculation 29

Infrastructure List 30



CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

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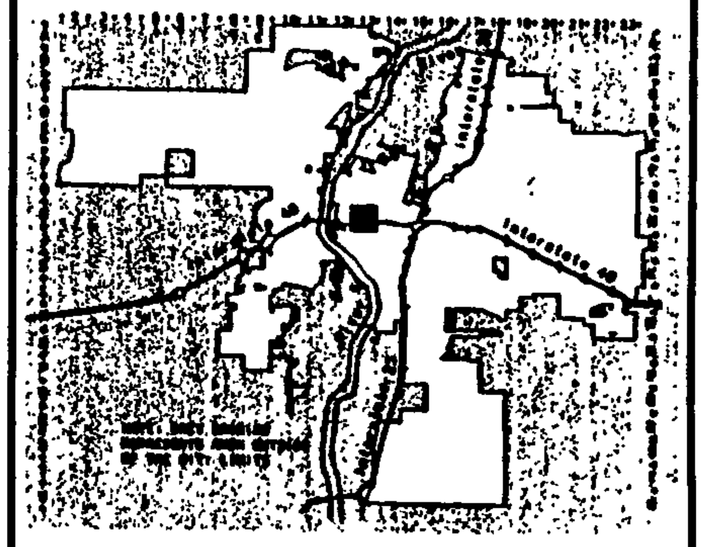
N W E S

GRAPHIC SCALE IN FEET

250 0 500 1000



Zone Atlas Page

H-13-Z

Map Amended through June 26, 1998

LOCATION:

Luna Vista is a proposed sixty-four (64) lot, single-family subdivision. The 11.61-acre site is located in central Albuquerque off Indian School Road, one block east of Rio Grande Boulevard. The site is bordered on the east by the Valley Apartments, on the north by Indian School Road and on the west by the Alameda Drain. The site borders existing single-family housing to the south. The Campbell irrigation ditch previously bisected the site. The ditch was recently realigned to run along the proposed subdivision's north and east boundaries. The portion of the site east of the old Campbell ditch is zoned R-3. The area west of the old ditch is zoned R-1. The purpose of this report is to provide the drainage analysis and management plan for the subdivision.

DRAINAGE BASINS DESIGNATIONS:

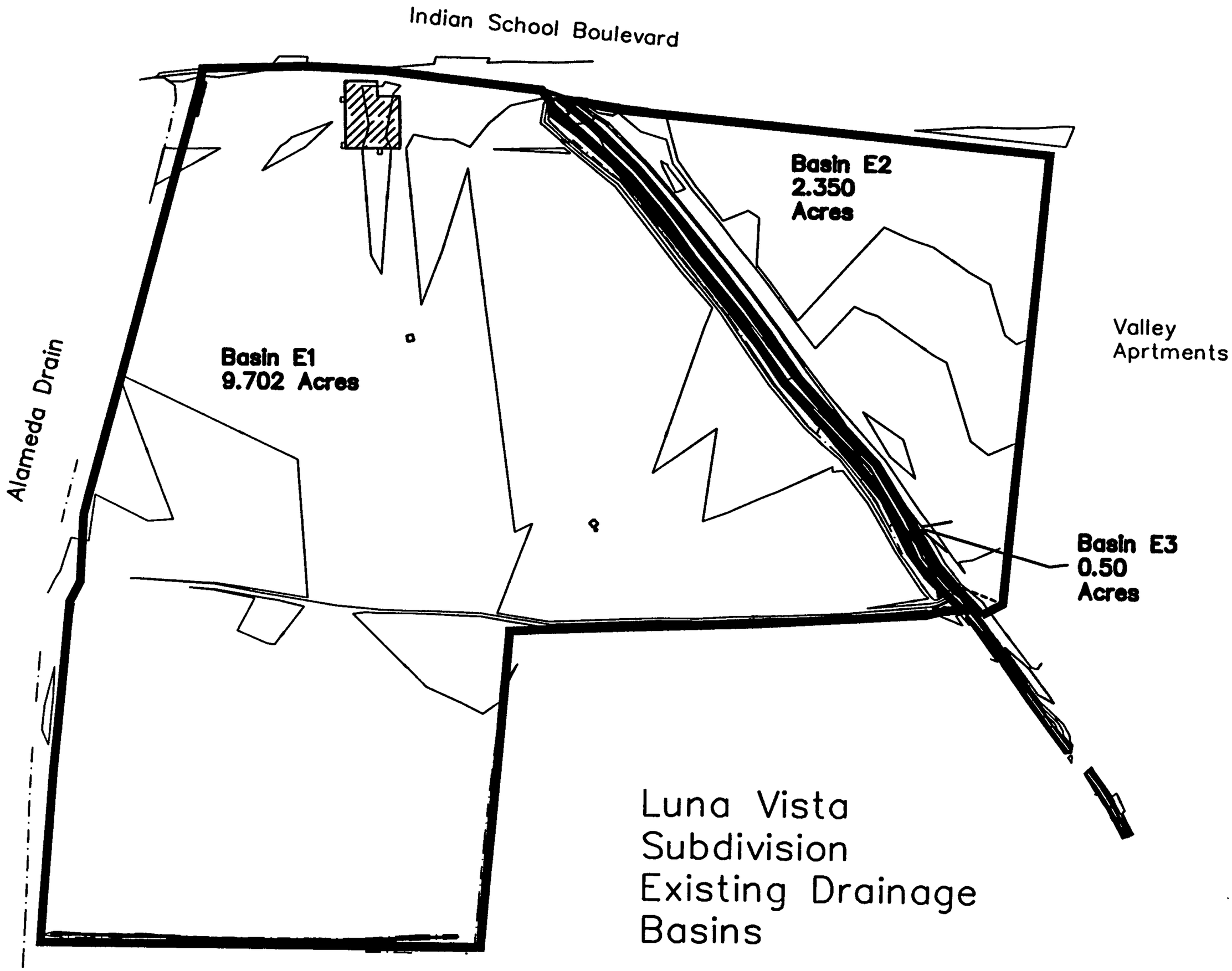
For the purpose of this report the existing and developed drainage basins were designated as follows.

Existing Undeveloped Basins:

Basin E1	Portion of site located west of the old Campbell ditch alignment
Basin E2	Portion of site located east of the old Campbell ditch alignment
Basin E3	The old Campbell ditch

Developed Conditions:

Basins A1–A6	Developed lots and on-site streets
Basin A6	Detention Pond
Basin B1	Subdivision entrance
Basin B2	Access road along east boundary
Basin B3	New Campbell ditch along new alignment



Luna Vista
Subdivision
Existing Drainage
Basins

EXISTING DRAINAGE CONDITIONS:

The site is currently undeveloped. In previous years, a portion of the site served as the location for a radio station and several associated radio towers. The building that housed the radio station and the radio towers have since been demolished and the site lies vacant.

The portion of the site located west of the old Campbell ditch alignment is designated as Basin E1. Basin E1 primarily drains from northeast to southwest. The slope of the existing grade is slight and contains shallow ponding areas. Runoff from this site was via sheet flows that entered the Alameda drain along the western boundary of the proposed subdivision. The peak flow rate of runoff generated within basin E1 was calculated to be 22.31 cfs in a 100-year, 6-hour storm event, under existing conditions. This is a conservative estimate of the runoff that would be generated due to the fact that land treatment category B was used where category C would have been more appropriate and would have resulted in a larger peak runoff rate.

The portion of the site east of the old Campbell ditch, designated as Basin E2, contains a very slight grade. Drainage is via sheet flows to the northeast corner of the proposed subdivision. Runoff exists the site at this location to Indian School Road where it enters an existing storm drain. The Indian School storm drain conveys the flows to an outfall to the Alameda Drain. The calculated runoff from this basin for a 100-year, 6-hour storm event under existing conditions is 5.36 cfs. Again, this is a conservative estimate based on land treatments in category B. No off-site flows enter the existing basins E1 or E2.

Basin E3 consists of the old Campbell ditch. The ditch originates north of Indian School Road. It crosses Indian School in an existing siphon and enters the site. All flows within this basin were contained within the old ditch and were conveyed down stream.

FIRM MAP AND SOIL CONDITIONS:

The site is located on FIRM Map 350002, Panel Number 0022 as shown on the attached excerpt. The map shows that the site does not lie within any 100-year flood plains. It does lie adjacent to the Alameda Drain which is shown on the attached applicable section of panel 22 of 50 of the National Flood Insurance Rate Maps, City of Albuquerque, New Mexico, Bernalillo County, dated October 14, 1983. The proposed subdivision is separated from the Alameda Drain by an approximately 15-foot wide maintenance road.

The site contains three soil types as designated by the Soil Conservation Service Soil Survey of Bernalillo County. The three soils are Agua Loam, Agua Silty Clay Loam and Gila Clay Loam. Both the Agua series and the Gila series consist of deep well drained soils formed in recent alluvium on the flood plain along the Rio Grande. Slopes range from zero to two percent. Permeability is moderate to a depth of twenty-four inches and rapid below this level. Runoff is very slow and the hazard of erosion is slight.

ONSITE DRAINAGE MANAGEMENT PLAN:

The on-site developed basins A1 through A5 consist of residential lots and associated streets and right of ways. The lots will drain to the streets to which they front. The resulting flows are conveyed in the streets to a point indicated on the basin map as AP-1. At this point the flows are channeled through a twenty-foot drainage easement and into a permanent detention pond. The detention pond is designated as basin A6.

The peak runoff from the contributing developed basins was calculated to be 39.20 cfs for a 100-year, 6-hour storm event under developed conditions. The pond will be constructed with a primary outfall to the Alameda Drain. The outfall will be a 6" PVC pipe. An emergency overflow will be constructed at the west edge of the pond and will also drain to the Alameda Drain. The 6" principal

NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY

FLOOD BOUNDARY AND FLOODWAY MAP

CITY OF

ALBUQUERQUE, NEW MEXICO

BERNALILLO COUNTY

PANEL 22 OF 50

COMMUNITY-PANEL NUMBER

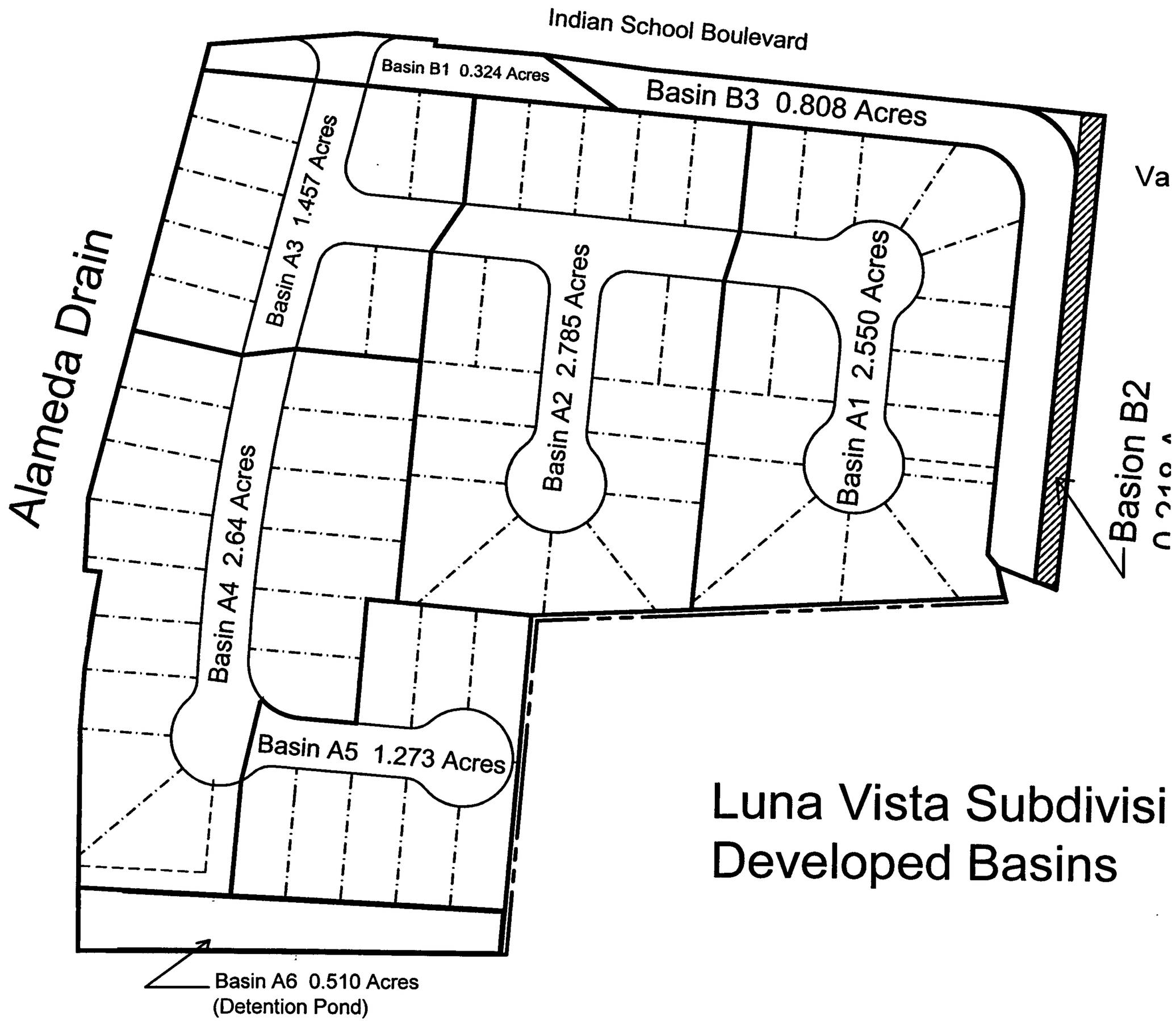
350002 0022

EFFECTIVE DATE:

OCTOBER 14, 1983

Federal Emergency Management Agency

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM 36	4968.09	A square, ☒ , chiseled on top of the concrete curb at the south-southwest curb return, located at the intersection of Candelaria Road and Rio Grande Blvd., NW in the southwest quadrant of the intersection.
RM 37	4959.70	A square, ☒ , chiseled on top of the concrete curb at the north-northeast curb return, located at the intersection of Rio



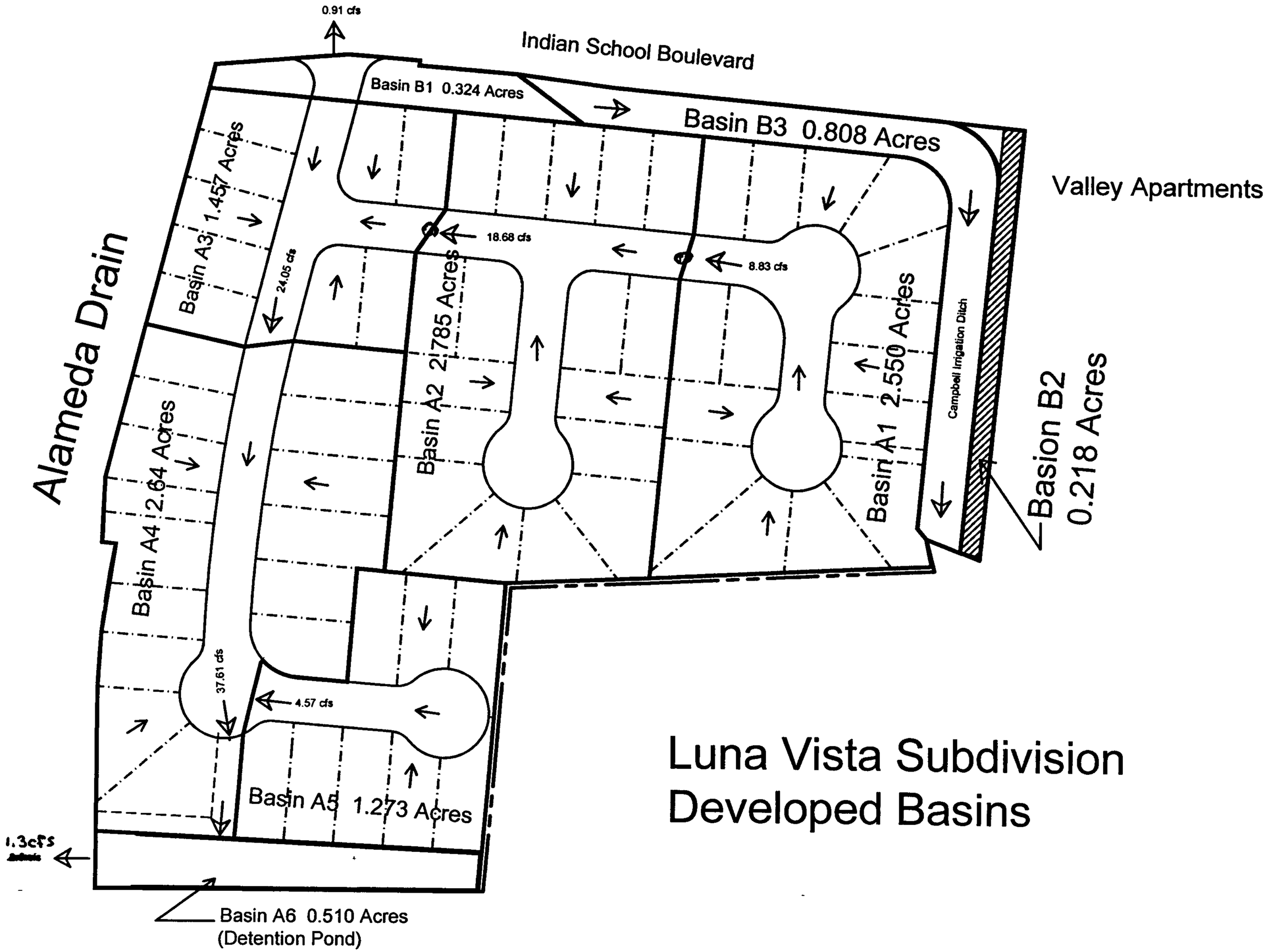
Luna Vista Subdivisi
Developed Basins

spillway will throttle the peak release rate of runoff from the detention pond to the Alameda Drain to 1.3 cfs. The Middle Rio Grande Conservancy District (MRGCD) based on the existing 6" outfall to the Alameda Drain stipulated a maximum peak release rate of 2 cfs. The 2.5 cfs is far less than the conservatively calculated historic flows entering the drain from the site of 22.31 cfs. The pond will be constructed with a one half-foot desilting bed to remove material transported by the runoff before entering the Alameda Drain. A neighborhood association will be established to provide maintenance for the detention pond, the 25-foot drainage easement from the street to the pond and for the principle and emergency outlets from the pond to the Alameda Drain.

Basin B1 is located at the entrance to the proposed subdivision. This area will remain as open space to provide for adequate site distance for motorist exiting the subdivision. The area will be landscaped and a one-foot water block will be constructed to prevent flows from Indian School Road from entering the site. Flows from this basin, which is approximately a third of an acre, will drain to Indian School Road and be intercepted by the existing storm sewer. The storm sewer outfalls to the Alameda Drain just west of the site.

Basin B2 consists of the access road located between the new Campbell ditch alignment and the Valley Apartments. The road is located on the Middle Rio Grande Conservancy District's (MRGCD) property and provides access to six lots located south of the proposed subdivision. The road is graded to drain to a small desilting pond at the northwest corner of the basin. Flows from Basin B2 enter Indian School Road where they are intercepted by an existing storm drain. The storm drain outfalls to the Alameda Drain.

Basin B3 is approximately 0.8 acres and consists of the Campbell ditch on its new alignment. The runoff generated in this basin is conveyed in the irrigation ditch in a southerly direction.



Luna Vista Subdivision
Developed Basins

FUTURE DEVELOPED CONDITIONS:

This proposed subdivision is an infill project. As stated previously, no off-site flows enter the subdivision. The existing storm drain in Indian School Road intercepts the flows from the north. The Campbell ditch prevents flows generated to the east from entering the proposed subdivision. The Alameda Drain intercepts flows from the west. The only remaining undeveloped adjacent lots are located to the south. The existing terrain to the south slopes away from the site. Future development of lots adjacent to the site's southern border must provide for positive drainage away from the site.

CRITERIA:

The site was analyzed using the procedures outlined in the Development Process Manual Volume 2, Chapter 22. The Weighted-E method was used in estimating volumes and flow rates of runoff from off-site basins. The AHYMO computer program was used to analyze on site basins and the pond. The existing and developed conditions for both on site and off-site basins were analyzed for a 100-year, 6-hour rainfall event.

SUMMARY:

Luna Vista is a proposed 64-lot subdivision located off Indian School Road between the Alameda Drain and the Valley Apartments. Upland flows are intercepted before they reach the site. Existing flows either enter the Indian School storm drain and are conveyed to the Alameda Drain, or they flow directly into the drain from the site. The onsite flows are handled under a developed management plan. All onsite flows will be conveyed to a proposed detention pond. The pond is to be constructed with CMU retaining walls and its capacity is estimated to be 1.2 acre-feet. The pond's outflow will be to the Alameda Drain at a controlled rate to ensure that the peak discharge during a

100-year, 6-hour storm event is less than calculated historical flows. The peak discharge from the pond was calculated to be 1.3 cfs. This complies with the Conservancy District's requirements and is far less than the historical flows of 22.31 cfs. An event greater than the 100-year storm will pass through the proposed subdivision and exit the pond via the emergency overflow structure to the Alameda Drain. A neighborhood association will be established to be responsible for the maintenance of the pond and the associated drainage easement.

LUNA VISTA
Indian School / Alameda Drain

Weighted E Method

Zone 2

Existing Basins

Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year Weighted E (ac-ft)	100-Year Volume (ac-ft)	100-Year Flow cfs	10-Year Weighted E (ac-ft)	10-Year Volume (ac-ft)	10-Year Flow cfs
E1	422628.00	9.702	0%	0	99%	9.625	0%	0	1%	0.078	0.791	0.639	22.31	0.288	0.233	9.39
E2	102362.00	2.350	0%	0	100%	2.350	0%	0	0%	0.000	0.780	0.153	5.36	0.280	0.055	2.23
E3	21783.00	0.500	0%	0	0%	0.000	100%	0.500069	0%	0.000	1.130	0.047	1.57	0.520	0.022	0.86
Totals	546773.00	12.55										0.839	29.24		0.310	12.47

Developed Basins

Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year Weighted E (ac-ft)	100-Year Volume (ac-ft)	100-Year Flow cfs	10-Year Weighted E (ac-ft)	10-Year Volume (ac-ft)	10-Year Flow cfs
A1	111071.00	2.550	0%	0	51%	1.303	0%	0	49%	1.247	1.435	0.305	8.83	0.798	0.170	5.15
A2	121317.00	2.785	0%	0	48%	1.338	0%	0	52%	1.447	1.476	0.343	9.85	0.831	0.193	5.82
A3	63476.00	1.457	0%	0	42%	0.610	0%	0	58%	0.848	1.559	0.189	5.37	0.896	0.109	3.24
A4	115202.00	2.645	0%	0	54%	1.423	0%	0	46%	1.222	1.399	0.308	8.99	0.770	0.170	5.19
A5	55452.00	1.273	0%	0	46%	0.586	0%	0	54%	0.687	1.503	0.159	4.57	0.852	0.090	2.71
A6	22216.00	0.510	0%	0	0%	0.000	97%	0.493434	3%	0.017	1.162	0.049	1.63	0.547	0.023	0.90
Subtotal	488734.00	11.220										1.35	39.24		0.75	23.01
B1	14109.00	0.324	0%	0	78%	0.253	0%	0	22%	0.071	1.072	0.029	0.91	0.511	0.014	0.46
B2	9490.00	0.218	0%	0	3%	0.007	0%	0	97%	0.211	2.077	0.038	1.01	1.306	0.024	0.67
B3	35213.00	0.808	0%	0	0%	0.000	100%	0.808379	0%	0.000	1.130	0.076	2.54	0.520	0.035	1.38
Subtotal	58812.00	1.350										0.143	4.45		0.073	2.51
Total	547546.00	12.57										1.50	43.69		0.83	25.52

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

VOLUME CALCULATIONS

POND 1

Luna Vista Subdivision

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	20,055.00
At =	20,415.00
Dt =	6.00
C =	60.00
B Elev. =	4953

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4952.50	-0.5	0.0000	
4953.00	0	0.2000	0.000
4954.00	1.00	0.6611	0.819
4955.00	2.00	1.1236	1.251
4956.00	3.00	1.5874	1.568

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in	6
Area (ft^2)=	0.19634954
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*************************************************************
*                          LUNA VISTA                       *
*                 INDIAN SCHOOL & ALAMEDA DRAIN             *
*************************************************************
*       100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*************************************************************
*
START                TIME=0.0
*
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                     RAIN DAY=2.75 IN DT=0.03333 HR
*
* BASIN A1
*
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00398412SQ MI
                     PER A=0.00 PER B=51.00 PER C=0.0 PER D=49.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*


* BASIN A2
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00447280 SQ MI
                     PER A=0.00 PER B=48.00 PER C=0.00 PER D=52.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
*
*
* BASIN A3
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.00234028 SQ MI
                     PER A=0.00 PER B=42.00 PER C=0.00 PER D=58.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*


* BASIN A4
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.004132303 SQ MI
                     PER A=0.00 PER B=54.00 PER C=0.00 PER D=46.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1
*

* BASIN A5
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.002078168 SQ MI
                     PER A=0.00 PER B=46.00 PER C=0.00 PER D=54.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=5 CODE=1
*
* BASIN A6
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.000680061 SQ MI
                     PER A=0.00 PER B=0.00 PER C=97.00 PER D=3.00
                     TP=-0.1333 HR MASS RAINFALL=-1
```

```
PRINT HYD            ID=6 CODE=1
*
*

*

*

*
*ADD BASINS A1THROUGH A6
ADD HYD              ID=10 HYD NO=102.2 ID=1 ID=2
ADD HYD              ID=10 HYD NO=102.3 ID=10 ID=3
ADD HYD              ID=10 HYD NO=102.4 ID=10 ID=4
ADD HYD              ID=10 HYD NO=102.5 ID=10 ID=5
ADD HYD              ID=10 HYD NO=102.6 ID=10 ID=6
PRINT HYD            ID=10  CODE=1

*POND
ROUTE RESERVOIR      ID=11 HYD NO=200.2 INFLOW ID=10 CODE=24
                     OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                     0                 0                 52.50
                     0.01              .20               53.00
                     0.819             .6611             54.00
                     1.251            1.1236             55.00
                     1.568            1.5874             56.00
*
*
PRINT HYD            ID=11 CODE=1
FINISH
```

```
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     RUN DATE (MON/DAY/YR) = 08/11/2000
     START TIME (HR:MIN:SEC) = 08:45:52     USER NO.= R_BOHANN.I01
     INPUT FILE = c:\my files\990021\shull2.txt

**************************************************************
*                          LUNA VISTA                        *

*                          INDIAN SCHOOL & ALAMEDA DRAIN                    *

**************************************************************
*       100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS)       *
**************************************************************
*
START                TIME=0.0
*
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                     RAIN DAY=2.75 IN DT=0.03333 HR

                COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK
AT 1.40 HR.
                DT =     .033330 HOURS        END TIME =     19.964670 HOURS
                   .0000    .0016    .0033    .0049    .0066    .0084    .0102
                   .0120    .0139    .0158    .0178    .0199    .0219    .0241
                   .0263    .0286    .0309    .0333    .0358    .0384    .0411
                   .0439    .0467    .0497    .0529    .0561    .0596    .0631
                   .0669    .0709    .0751    .0807    .0866    .0930    .1066
                   .1371    .1840    .2514    .3434    .4644    .6186    .8106
                  1.0449   1.2624   1.3533   1.4300   1.4982   1.5602   1.6174
                  1.6704   1.7200   1.7664   1.8102   1.8514   1.8904   1.9273
                  1.9622   1.9953   2.0268   2.0566   2.0850   2.0915   2.0976
                  2.1033   2.1088   2.1140   2.1191   2.1239   2.1285   2.1329
                  2.1373   2.1414   2.1454   2.1494   2.1531   2.1568   2.1604
                  2.1639   2.1673   2.1706   2.1739   2.1771   2.1802   2.1832
                  2.1862   2.1891   2.1919   2.1947   2.1975   2.2002   2.2028
                  2.2054   2.2080   2.2105   2.2130   2.2154   2.2178   2.2202
                  2.2225   2.2248   2.2270   2.2293   2.2315   2.2336   2.2358
                  2.2379   2.2399   2.2420   2.2440   2.2460   2.2480   2.2500
                  2.2519   2.2538   2.2557   2.2576   2.2594   2.2612   2.2631
                  2.2648   2.2666   2.2684   2.2701   2.2718   2.2735   2.2752
                  2.2769   2.2785   2.2802   2.2818   2.2834   2.2850   2.2866
                  2.2881   2.2897   2.2912   2.2928   2.2943   2.2958   2.2973
                  2.2987   2.3002   2.3017   2.3031   2.3045   2.3060   2.3074
                  2.3088   2.3102   2.3115   2.3129   2.3143   2.3156   2.3169
                  2.3183   2.3196   2.3209   2.3222   2.3235   2.3248   2.3261
                  2.3273   2.3286   2.3298   2.3311   2.3323   2.3335   2.3348
                  2.3360   2.3372   2.3384   2.3396   2.3408   2.3419   2.3431
                  2.3443   2.3454   2.3466   2.3477   2.3488   2.3500   2.3511
                  2.3523   2.3534   2.3546   2.3557   2.3568   2.3580   2.3591
                  2.3602   2.3613   2.3625   2.3636   2.3647   2.3658   2.3669
                  2.3680   2.3691   2.3702   2.3713   2.3724   2.3735   2.3746
                  2.3757   2.3768   2.3779   2.3790   2.3801   2.3811   2.3822
                  2.3833   2.3844   2.3854   2.3865   2.3876   2.3886   2.3897
                  2.3907   2.3918   2.3928   2.3939   2.3949   2.3960   2.3970
                  2.3981   2.3991   2.4001   2.4012   2.4022   2.4032   2.4043
                  2.4053   2.4063   2.4073   2.4083   2.4094   2.4104   2.4114
```

2.4124	2.4134	2.4144	2.4154	2.4164	2.4174	2.4184
2.4194	2.4204	2.4214	2.4224	2.4233	2.4243	2.4253
2.4263	2.4273	2.4282	2.4292	2.4302	2.4312	2.4321
2.4331	2.4341	2.4350	2.4360	2.4369	2.4379	2.4388
2.4398	2.4408	2.4417	2.4426	2.4436	2.4445	2.4455
2.4464	2.4474	2.4483	2.4492	2.4502	2.4511	2.4520
2.4529	2.4539	2.4548	2.4557	2.4566	2.4575	2.4585
2.4594	2.4603	2.4612	2.4621	2.4630	2.4639	2.4648
2.4657	2.4666	2.4675	2.4684	2.4693	2.4702	2.4711
2.4720	2.4729	2.4738	2.4747	2.4756	2.4764	2.4773
2.4782	2.4791	2.4799	2.4808	2.4817	2.4826	2.4834
2.4843	2.4852	2.4860	2.4869	2.4878	2.4886	2.4895
2.4903	2.4912	2.4921	2.4929	2.4938	2.4946	2.4955
2.4963	2.4971	2.4980	2.4988	2.4997	2.5005	2.5014
2.5022	2.5030	2.5039	2.5047	2.5055	2.5064	2.5072
2.5080	2.5088	2.5097	2.5105	2.5113	2.5121	2.5129
2.5138	2.5146	2.5154	2.5162	2.5170	2.5178	2.5186
2.5194	2.5203	2.5211	2.5219	2.5227	2.5235	2.5243
2.5251	2.5259	2.5267	2.5274	2.5282	2.5290	2.5298
2.5306	2.5314	2.5322	2.5330	2.5338	2.5345	2.5353
2.5361	2.5369	2.5377	2.5384	2.5392	2.5400	2.5408
2.5415	2.5423	2.5431	2.5438	2.5446	2.5454	2.5461
2.5469	2.5477	2.5484	2.5492	2.5500	2.5507	2.5515
2.5522	2.5530	2.5537	2.5545	2.5552	2.5560	2.5567
2.5575	2.5582	2.5590	2.5597	2.5605	2.5612	2.5619
2.5627	2.5634	2.5642	2.5649	2.5656	2.5664	2.5671
2.5678	2.5686	2.5693	2.5700	2.5707	2.5715	2.5722
2.5729	2.5736	2.5744	2.5751	2.5758	2.5765	2.5773
2.5780	2.5787	2.5794	2.5801	2.5808	2.5815	2.5823
2.5830	2.5837	2.5844	2.5851	2.5858	2.5865	2.5872
2.5879	2.5886	2.5893	2.5900	2.5907	2.5914	2.5921
2.5928	2.5935	2.5942	2.5949	2.5956	2.5963	2.5970
2.5976	2.5983	2.5990	2.5997	2.6004	2.6011	2.6018
2.6024	2.6031	2.6038	2.6045	2.6052	2.6058	2.6065
2.6072	2.6079	2.6085	2.6092	2.6099	2.6106	2.6112
2.6119	2.6126	2.6132	2.6139	2.6146	2.6152	2.6159
2.6166	2.6172	2.6179	2.6186	2.6192	2.6199	2.6205
2.6212	2.6219	2.6225	2.6232	2.6238	2.6245	2.6251
2.6258	2.6264	2.6271	2.6277	2.6284	2.6290	2.6297
2.6303	2.6310	2.6316	2.6322	2.6329	2.6335	2.6342
2.6348	2.6355	2.6361	2.6367	2.6374	2.6380	2.6386
2.6393	2.6399	2.6405	2.6412	2.6418	2.6424	2.6431
2.6437	2.6443	2.6449	2.6456	2.6462	2.6468	2.6474
2.6481	2.6487	2.6493	2.6499	2.6506	2.6512	2.6518
2.6524	2.6530	2.6536	2.6543	2.6549	2.6555	2.6561
2.6567	2.6573	2.6579	2.6586	2.6592	2.6598	2.6604
2.6610	2.6616	2.6622	2.6628	2.6634	2.6640	2.6646
2.6652	2.6658	2.6664	2.6670	2.6676	2.6682	2.6688
2.6694	2.6700	2.6706	2.6712	2.6718	2.6724	2.6730
2.6736	2.6742	2.6748	2.6754	2.6760	2.6765	2.6771
2.6777	2.6783	2.6789	2.6795	2.6801	2.6807	2.6812
2.6818	2.6824	2.6830	2.6836	2.6841		

```
*
* BASIN A1
*
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00398412SQ MI
                     PER A=0.00 PER B=51.00 PER C=0.0 PER D=49.00
                     TP=-0.1333 HR MASS RAINFALL=-1
```

```
        K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTAN
T, N =  7.106420
        UNIT PEAK =    7.7075     CFS    UNIT VOLUME =     .9978        B =    526.28       P6
0 = 2.0100
        AREA =       .001952 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033
330


        K =    .132088HR     TP =    .133300HR     K/TP RATIO =    .990905      SHAPE CONSTAN
T, N =  3.563124
        UNIT PEAK =    4.9526     CFS    UNIT VOLUME =     .9976        B =    324.91       P6
0 = 2.0100
        AREA =       .002032 SQ MI     IA =     .50000 INCHES     INF =    1.25000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033
330

     PRINT HYD            ID=1 CODE=1

                                          PARTIAL HYDROGRAPH   100.10


        RUNOFF VOLUME =      1.59547 INCHES      =          .3390 ACRE-FEET
        PEAK DISCHARGE RATE =        8.85 CFS  AT   1.500 HOURS   BASIN AREA =    .0040 S
Q. MI.



     *


     * BASIN A2
     *
     COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00447280 SQ MI
                          PER A=0.00 PER B=48.00 PER C=0.00 PER D=52.00
                          TP=-0.1333 HR MASS RAINFALL=-1

        K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTAN
T, N =  7.106420
        UNIT PEAK =    9.1826     CFS    UNIT VOLUME =     .9981        B =    526.28       P6
0 = 2.0100
        AREA =       .002326 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033
330


        K =    .132088HR     TP =    .133300HR     K/TP RATIO =    .990905      SHAPE CONSTAN
T, N =  3.563124
        UNIT PEAK =    5.2330     CFS    UNIT VOLUME =     .9976        B =    324.91       P6
0 = 2.0100
        AREA =       .002147 SQ MI     IA =     .50000 INCHES     INF =    1.25000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033
330

     PRINT HYD            ID=2 CODE=1
```

```
                                        PARTIAL HYDROGRAPH   100.20

        RUNOFF VOLUME =     1.64550 INCHES     =         .3925 ACRE-FEET
        PEAK DISCHARGE RATE =      10.14 CFS  AT   1.500 HOURS   BASIN AREA =   .0045 S
Q. MI.


     *
     *
     * BASIN A3
     *
     COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.00234028 SQ MI
                          PER A=0.00 PER B=42.00 PER C=0.00 PER D=58.00
                          TP=-0.1333 HR MASS RAINFALL=-1

        K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTAN
T, N =  7.106420
        UNIT PEAK =   5.3589    CFS   UNIT VOLUME =    .9973       B =   526.28      P6
0 = 2.0100
        AREA =      .001357 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330


        K =   .132088HR    TP =   .133300HR    K/TP RATIO =   .990905     SHAPE CONSTAN
T, N =  3.563124
        UNIT PEAK =   2.3958    CFS   UNIT VOLUME =    .9946       B =   324.91      P6
0 = 2.0100
        AREA =      .000983 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330

    PRINT HYD            ID=3 CODE=1

                                        PARTIAL HYDROGRAPH   100.30

        RUNOFF VOLUME =     1.74558 INCHES     =         .2179 ACRE-FEET
        PEAK DISCHARGE RATE =       5.53 CFS  AT   1.500 HOURS   BASIN AREA =   .0023 S
Q. MI.


     *


     * BASIN A4
     *
     COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.004132303 SQ MI
                          PER A=0.00 PER B=54.00 PER C=0.00 PER D=46.00
                          TP=-0.1333 HR MASS RAINFALL=-1

        K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTAN
T, N =  7.106420
        UNIT PEAK =   7.5047    CFS   UNIT VOLUME =    .9978       B =   526.28      P6
0 = 2.0100
```

```
        AREA =       .001901 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330


        K =   .132088HR    TP =   .133300HR    K/TP RATIO =   .990905     SHAPE CONSTAN
T, N =  3.563124
        UNIT PEAK =   5.4390    CFS   UNIT VOLUME =    .9979       B =   324.91      P6
0 = 2.0100
        AREA =       .002231 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330

     PRINT HYD            ID=4 CODE=1

                                   PARTIAL HYDROGRAPH   100.40


        RUNOFF VOLUME =     1.54543 INCHES     =         .3406 ACRE-FEET
        PEAK DISCHARGE RATE =       8.98 CFS  AT   1.500 HOURS   BASIN AREA =   .0041 S
Q. MI.


     *

     * BASIN A5
     *
     COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.002078168 SQ MI
                          PER A=0.00 PER B=46.00 PER C=0.00 PER D=54.00
                          TP=-0.1333 HR MASS RAINFALL=-1

        K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTAN
T, N =  7.106420
        UNIT PEAK =   4.4305    CFS   UNIT VOLUME =    .9969       B =   526.28      P6
0 = 2.0100
        AREA =       .001122 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330


        K =   .132088HR    TP =   .133300HR    K/TP RATIO =   .990905     SHAPE CONSTAN
T, N =  3.563124
        UNIT PEAK =   2.3301    CFS   UNIT VOLUME =    .9946       B =   324.91      P6
0 = 2.0100
        AREA =       .000956 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PE
R HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330

     PRINT HYD            ID=5 CODE=1

                                   PARTIAL HYDROGRAPH   100.50


        RUNOFF VOLUME =     1.67887 INCHES     =         .1861 ACRE-FEET
        PEAK DISCHARGE RATE =       4.78 CFS  AT   1.500 HOURS   BASIN AREA =   .0021 S
```

```
Q. MI.


     *
     * BASIN A6
     *
     COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.000680061 SQ MI
                          PER A=0.00 PER B=0.00 PER C=97.00 PER D=3.00
                          TP=-0.1333 HR MASS RAINFALL=-1

         K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTAN
T, N =  7.106420
         UNIT PEAK =   .80548E-01CFS   UNIT VOLUME =    .8874       B =   526.28      P6
0 = 2.0100
         AREA =      .000020 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PE
R HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330


         K =   .107446HR    TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTAN
T, N =  4.440701
         UNIT PEAK =   1.8980    CFS   UNIT VOLUME =    .9937       B =   383.55      P6
0 = 2.0100
         AREA =      .000660 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PE
R HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033
330

     PRINT HYD            ID=6 CODE=1

                                          PARTIAL HYDROGRAPH   100.60


         RUNOFF VOLUME =     1.16747 INCHES     =        .0423 ACRE-FEET
         PEAK DISCHARGE RATE =       1.40 CFS  AT   1.500 HOURS   BASIN AREA =   .0007 S
Q. MI.


     *
     *
     *
     *
     *
     *
     *ADD BASINS A1THROUGH A6
     ADD HYD                  ID=10 HYD NO=102.2 ID=1 ID=2
     ADD HYD                  ID=10 HYD NO=102.3 ID=10 ID=3
     ADD HYD                         ID=10 HYD NO=102.4 ID=10 ID=4

     ADD HYD                          ID=10 HYD NO=102.5 ID=10 ID=5
     ADD HYD                         ID=10 HYD NO=102.6 ID=10 ID=6

     PRINT HYD            ID=10  CODE=1

                                          PARTIAL HYDROGRAPH   102.60
```

RUNOFF VOLUME = 1.60915 INCHES = 1.5180 ACRE-FEET
PEAK DISCHARGE RATE = 39.69 CFS AT 1.500 HOURS BASIN AREA = .0177 S
Q. MI.

*POND
ROUTE RESERVOIR ID=11 HYD NO=200.2 INFLOW ID=10 CODE=24

OUTFLOW (CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0	0	52.50
0.01	.20	53.00
0.819	.6611	54.00
1.251	1.1236	55.00
1.568	1.5874	56.00

* * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	52.50	.000	.00
.80	.00	52.50	.000	.00
1.60	28.73	54.01	.664	.82
2.40	1.55	55.16	1.196	1.30
3.20	.27	55.07	1.155	1.27
4.00	.15	54.92	1.085	1.21
4.80	.15	54.77	1.017	1.15
5.60	.17	54.63	.953	1.09
6.40	.19	54.50	.894	1.04
7.20	.18	54.39	.840	.99
8.00	.17	54.27	.788	.94
8.80	.16	54.17	.738	.89
9.60	.15	54.07	.691	.85
10.40	.15	53.97	.647	.79
11.20	.14	53.88	.606	.72
12.00	.14	53.80	.570	.66
12.80	.13	53.73	.537	.60
13.60	.13	53.67	.507	.55
14.40	.12	53.61	.481	.50
15.20	.12	53.56	.457	.46
16.00	.11	53.51	.435	.42
16.80	.11	53.47	.416	.39
17.60	.11	53.43	.398	.36
18.40	.10	53.40	.383	.33
19.20	.10	53.37	.368	.31

PEAK DISCHARGE = 1.301 CFS - PEAK OCCURS AT HOUR 2.47
MAXIMUM WATER SURFACE ELEVATION = 55.157
MAXIMUM STORAGE = 1.1965 AC-FT INCREMENTAL TIME= .033330HRS

*
*
PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 200.20

RUNOFF VOLUME = 1.23207 INCHES = 1.1623 ACRE-FEET
PEAK DISCHARGE RATE = 1.30 CFS AT 2.466 HOURS BASIN AREA = .0177 S
Q. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 08:45:52

Street Capacity Summary

Basin	Street	Street Slope (%)	Street Width (ft)	Curb Height (inches)	Basins Contributing to Street	Flow (cfs)	Capacity (cfs)
A1	Luna Media Court	0.60	28	6	A1	8.83	35.58
A2	Luna Llena Ave	0.60	28	6	A1	18.68	35.58
A2	Luna Nueva Ct.	0.60	28	6	A2	9.85	35.58
A3	Luna Vista Drive	0.60	28	6	A1,A2	24.05	35.58
A4	Luna Vista Drive	0.60	28	8	A1,A2,A3,A5	37.61	48.21
A5	Luna Rosa Ct.	2.00	28	8	A5	4.57	48.21
AP-1	Luna Vista Drive	0.60	28	8	A1,A2,A3,A5	37.61	52.26
AP-2	Luna Vista Drive	0.60	28	8	A1,A2,A3,A5	37.61	158.70
AP-3	Luna Vista Drive	0.60	28	8	A1,A2,A3,A5	37.61	140.20
AP-4	Luna Rosa Ct.	2.00	28	8	A5	4.57	66.48

* NOTE: -AP-1, AP-2, AP-3 & AP-4 are superelevated sections.

Street Capacity Calculations

Luna Lena Ave., Luna Nueva Ct., Luna Media Ct.

28' F-F Street Section with 6" Curb and 2% Cross Slope

Street Slope = 0.006

For water depths less than 0.125 feet (Gutter Capacity)

Y=Water Depth
A=Area=8*Y^2
n=Manning's Roughness Coefficie 0.017
P=Wetter Perimeter =SQRT(257*Y^2)+Y

R=Hydraulic Radius =Area/Wetted Perimeter
Q=Flow Rate =1.49/n*A*R^(2/3)*S^(1/2)
V=Velocity =Q/A

Fr=Froud Number =V/SQRT(32.2*Y)
D2=Water depth after hydraulic jump =D1/2(sqrt(1+8Fr^2)-1)

****Q=1/2 Street Capacity****

Y (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	V (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0008	0.17	0.00	0.000	0.19	0.00	0.33	0.001885
0.025	0.005	0.43	0.01	0.002	0.35	0.01	0.39	0.006108
0.04	0.0128	0.68	0.02	0.006	0.48	0.02	0.42	0.011128
0.055	0.0242	0.94	0.03	0.014	0.59	0.03	0.44	0.016685
0.07	0.0392	1.19	0.03	0.027	0.69	0.05	0.46	0.02266
0.085	0.0578	1.45	0.04	0.046	0.79	0.07	0.48	0.028979
0.1	0.08	1.70	0.05	0.071	0.88	0.09	0.49	0.035592
0.125	0.125	2.13	0.06	0.128	1.02	0.13	0.51	0.047178

For water depths greater than 0.125 ft but less than 0.50 ft (1/2 street capacity to top of crown)

Y1= Y-0.125
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Y1 (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.126	0.127	2.18	0.06	0.13	1.02	0.13	0.51	0.046883
0.18	0.311	4.93	0.06	0.33	1.07	0.19	0.45	0.05469
0.235	0.648	7.74	0.08	0.84	1.30	0.30	0.47	0.078176
0.29	1.136	10.55	0.11	1.74	1.53	0.44	0.50	0.106659
0.333	1.623	12.74	0.13	2.78	1.71	0.57	0.52	0.130974
0.3801	2.262	15.14	0.15	4.31	1.91	0.72	0.54	0.159118
0.4966	4.320	21.08	0.20	10.17	2.35	1.17	0.59	0.233861
0.5	4.391	21.26	0.21	10.39	2.37	1.18	0.59	0.236134

For water depths greater than 0.50 ft but less than 0.605 ft (1/2 street capacity to top of gutter)

Y3= Y - 0.50
A4= A3 + 20.75 * Y3 + 50 * Y3^2
P4= P3 +2 * SQRT(2501 * Y3^2)

Y2 (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.51	4.603	22.26	0.21	10.90	2.37	1.21	0.58	0.237577
0.525	4.941	23.76	0.21	11.74	2.38	1.25	0.58	0.24058
0.5392	5.281	25.18	0.21	12.62	2.39	1.29	0.57	0.244223
0.575	6.228	28.76	0.22	15.21	2.44	1.40	0.57	0.25618
0.605	7.121	31.76	0.22	17.79	2.50	1.51	0.57	0.268595

For water depths greater than 0.605 ft but less than 0.68 ft (1/2 R.O.W. capacity)

Y3= Y - 0.605
A4= A3 + 31.25 * Y3 + 33 * Y3^2
P4= P3 + SQRT(2501 * Y3^2) + SQRT(257 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.606	7.152	31.83	0.22	17.90	2.50	1.52	0.57	0.269332
0.62	7.597	32.75	0.23	19.42	2.56	1.58	0.57	0.279677
0.64	8.255	34.07	0.24	21.72	2.63	1.68	0.58	0.294538
0.66	8.939	35.39	0.25	24.18	2.71	1.79	0.59	0.309496
0.68	9.650	36.71	0.26	26.81	2.78	1.89	0.59	0.32455

Street Capacity Calculations

LUNA VISTA & LUNA ROSA CT.

28' F-F Street Section with 8" curb

Slope= 0.006

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.19	0.00	0.33	0.0018848
0.02	0.00	0.34	0.01	0.00	0.00	0.30	0.01	0.38	0.0045908
0.04	0.01	0.68	0.02	0.01	0.01	0.48	0.02	0.42	0.0111278
0.06	0.03	1.02	0.03	0.02	0.04	0.63	0.04	0.45	0.0186349
0.08	0.05	1.36	0.04	0.04	0.08	0.76	0.06	0.47	0.0268376
0.1	0.08	1.70	0.05	0.07	0.14	0.88	0.09	0.49	0.0355923
0.12	0.12	2.04	0.06	0.11	0.23	1.00	0.12	0.51	0.0448091
0.125	0.13	2.13	0.06	0.13	0.26	1.02	0.13	0.51	0.0471777

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.14	0.27	1.00	0.13	0.49	0.0460163
0.16	0.23	3.91	0.06	0.23	0.46	1.01	0.16	0.45	0.0486259
0.2	0.42	5.95	0.07	0.48	0.95	1.15	0.23	0.45	0.0623776
0.24	0.69	8.00	0.09	0.90	1.81	1.32	0.32	0.47	0.0806096
0.2846	1.08	10.27	0.11	1.63	3.26	1.51	0.43	0.50	0.1037171
0.32	1.47	12.08	0.12	2.43	4.87	1.66	0.53	0.52	0.1234692
0.3551	1.91	13.87	0.14	3.45	6.89	1.81	0.64	0.53	0.1440036
0.365	2.05	14.37	0.14	3.77	7.55	1.85	0.67	0.54	0.1499436

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	3.99	7.98	1.89	0.70	0.55	0.1556607
0.4556	3.31	14.46	0.23	8.40	16.80	2.54	1.16	0.66	0.2556985
0.4956	3.87	14.50	0.27	10.88	21.75	2.81	1.39	0.70	0.3036992
0.5	3.94	14.51	0.27	11.16	22.33	2.84	1.42	0.71	0.3090234
0.54	4.50	14.55	0.31	13.91	27.82	3.09	1.67	0.74	0.357805
0.5584	4.75	14.56	0.33	15.25	30.50	3.21	1.79	0.76	0.3804643
0.63	5.76	14.64	0.39	20.91	41.83	3.63	2.29	0.81	0.4698487
0.667	6.27	14.67	0.43	24.10	48.21	3.84	2.56	0.83	0.5167338

For water depths greater than 0.667 ft but less than 0.847 ft

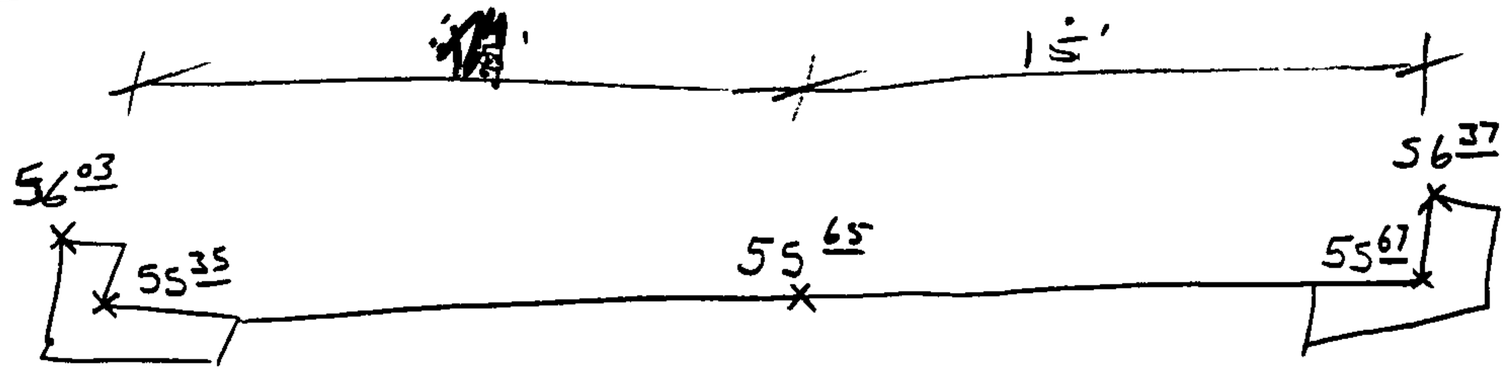
Y3= Y - 0.667

A4= A3 + 14 * Y3 + 25 * Y3^2

P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.76	16.32	0.41	25.44	50.89	3.76	2.63	0.79	0.5090958
0.72	7.09	17.32	0.41	26.43	52.87	3.73	2.69	0.77	0.5071856
0.74	7.43	18.32	0.41	27.55	55.10	3.71	2.74	0.76	0.5069788
0.76	7.79	19.32	0.40	28.79	57.58	3.70	2.81	0.75	0.508251
0.78	8.17	20.32	0.40	30.16	60.31	3.69	2.88	0.74	0.5108175
0.8	8.58	21.32	0.40	31.64	63.29	3.69	2.95	0.73	0.5145251
0.847	9.60	23.68	0.41	35.63	71.26	3.71	3.14	0.71	0.5270333

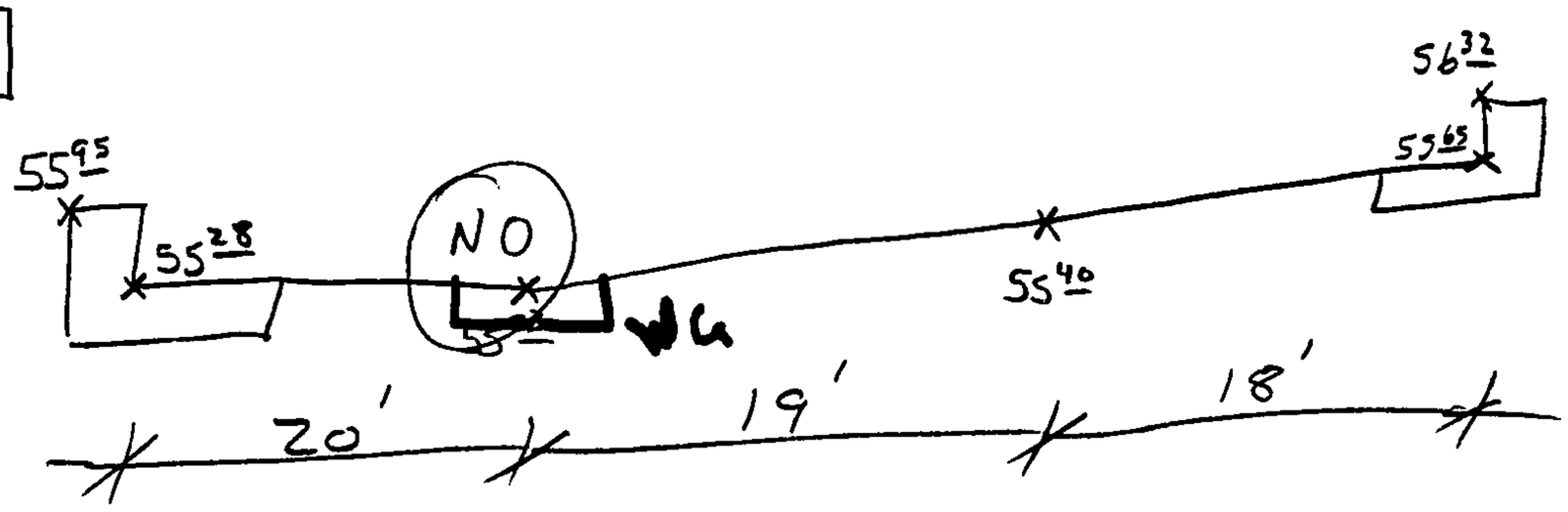
AP-1



$A = 13.5 ft^2$
$P = 31.36 ft$
$R = 0.4305$
$S = 0.006$

$\Rightarrow Q = \frac{1.49}{n} A (r)^{2/3} S^{1/2} = 52.26 cfs = Q$

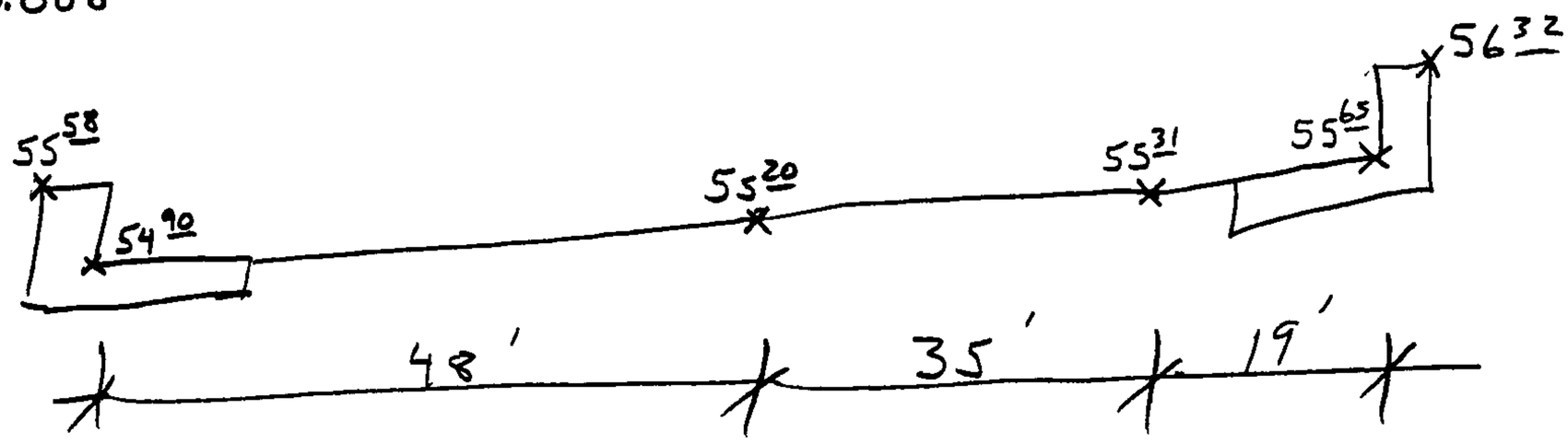
AP-2



$A = 33.62 ft^2$
$P = 57.97 ft^2$
$R = 0.58$
$S = 0.006$

$\Rightarrow Q = 158.7 cfs$

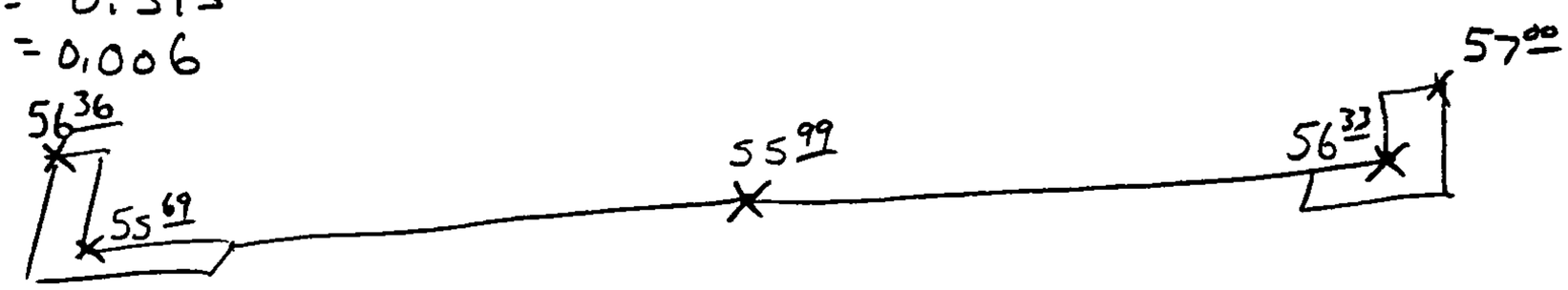
AP-3



$A = 38.50 ft^2$
$P = 97.97 ft$
$R = 0.393$
$S = 0.006$

$\Rightarrow Q = 140.2 cfs$

AP-4



$A = 10.8 ft^2$
$P = 30.7 ft$
$R = 0.35$
$S = 0.020$

$\Rightarrow Q = 66.48 cfs$

DRAINAGE REPORT

For

Luna Vista Subdivision

Prepared by

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for

Charles Williams and Jim Shull, Jr.
5445 Edith Blvd. NE Unit F
Albuquerque, New Mexico 87107

RECEIVED
OCT 24 2000
HYDROLOGY SECTION

Revised October 23, 2000

RONALD RAY BOHANNAN
NEW MEXICO
7868
REGISTERED
PROFESSIONAL ENGINEER

Ronald R. Bohannan P.E. No. 7868

TW

Tierra West, LLC.

(505) 858-3100

8509 Jefferson NE, Albuquerque, NM 87113

LETTER OF TRANSMITTAL

DATE: 10/23/00	JOB NO: 990021
ATTENTION: Brad Bingham	
RE: Luna Vista	

TO City of Albuquerque
Hydrology Section

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

☐ Shop drawings ☐ Prints ☒ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐

COPIES	DATED	NO.	DESCRIPTION
1	10/23/00		Revised Grading and drainage plan and pond detail sheet

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ **FOR SIGNATURE(S)**

☐ For your use ☐ Approved as noted ☐

☐ As requested ☐ Returned for corrections

☐ For review and comments ☐

☐ FOR BIDS DUE _____ 20 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

RECEIVED
OCT 24 2000
HYDROLOGY SECTION

REMARKS Revised plans with changes we discussed this morning.

COPY TO

RECEIVED BY SIGNED Vincent Carrica

FAX (505) 858-1118 If enclosures are not as noted, kindly notify us at once Email: twllc@tierrawestllc.com

Emergency Overflow Calculations:

Broad Crested Weir: Q = C L (H)^3/2

For Q = 39.320 cfs

L = 30 Ft

C = 2.70

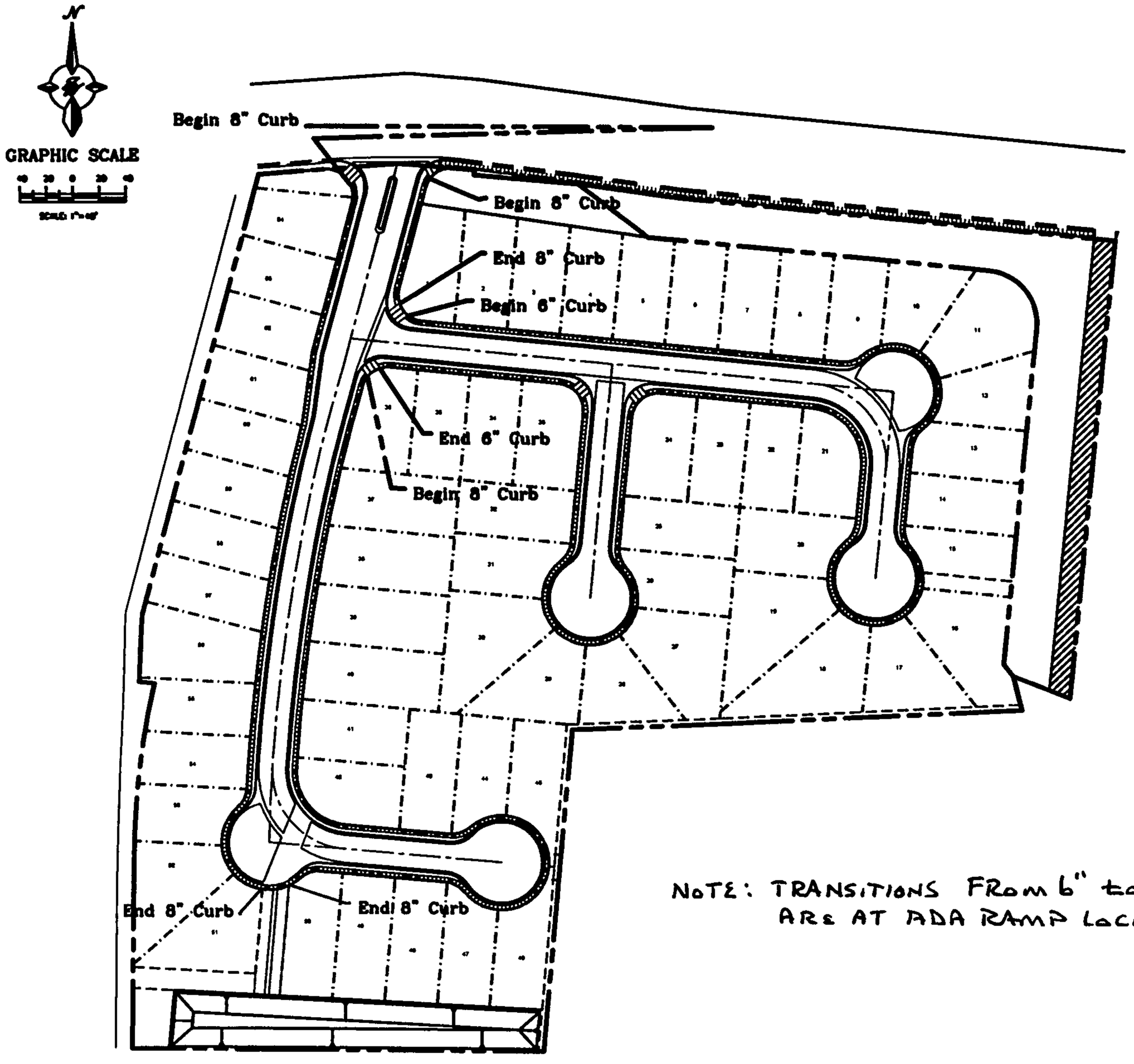
H = 0.62 Ft

Weir Crest Elevation = 4956.00

Water Surface Elevation at 100-Year Peak Flow Rate = 4956.62 55.16 from HYMO

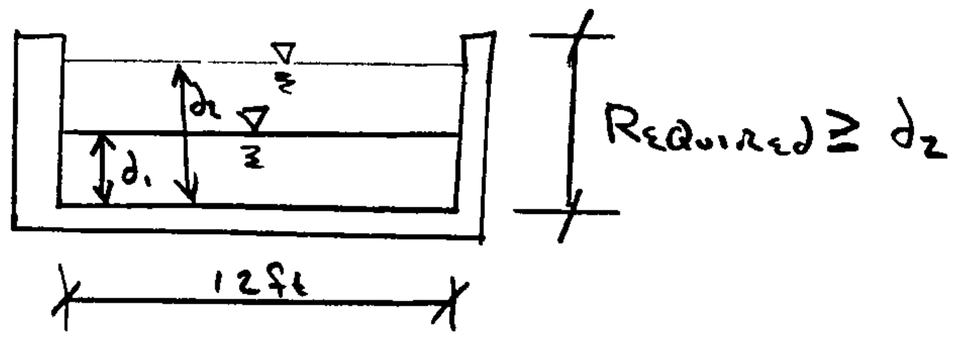
Lowest Finish Floor Elevation = 4957.86

Maximum Water Surface Elevation < Lowest Finish Floor Elevation



NOTE: TRANSITIONS FROM 6" to 8" CURB ARE AT ADA RAMP LOCATIONS.

ENGINEER'S SEAL	INDIAN SCHOOL AND ALAMEDA DRAIN	DRAWN BY MCLU
	LUNA VISTA	DATE 6-20-00
	TIERRA WEST, LLC	SHEET #
		JOB #



$Q_{max} = 37.81 cfs$ $\quad S = 6.77\%$

$A = 12d$ $\quad R = \frac{12d}{12+2d}$ $\quad Q = \frac{1.49}{.013}(12d)\left(\frac{12d}{12+2d}\right)^{2/3}(.0677)^{1/2}$

$P = 12+2d$

@ $Q = 37.81 cfs \Rightarrow d_1 = 0.264 ft$

$V = \frac{Q}{A} = \frac{37.81}{12(.264)} = 11.93 ft/sec$

$FR = \frac{V}{\sqrt{g d_1}} = \frac{11.93}{\sqrt{32.2(.264)}} = 4.09$

DEPTH AFTER HYDRAULIC JUMP $\quad d_2 = \frac{d_1}{2}\left[\sqrt{1+8FR^2} - 1\right]$

$= \frac{.264}{2}\left[\sqrt{1+8(4.09)^2} - 1\right]$

$d_2 = 1.08 ft.$

USE DEPTH of RUNDOWN = 18 INCHES MINIMUM

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
(LEGAL DESCRIPTION OF SUBDIVISION)
Luna Vista
(NAME and UNIT OF SUBDIVISION)

DRB Case No: 1000361
DRC Project Number:
Prelim. Plat Approved:
Prelim. Plat Expires:
Site Plan Approved:

Date Submitted:

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This listing is not neces a complete listing. During the SIA processs and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair detemines that appurtenant or non essential items can be deleted from the listing, those items may be deleted as well as the related porti of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and the agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

Size	Type Improvement	Location	From	To
30' F-F	Residential Paving	Luna Vista Drive	Luna Llena Avenue	Luna Rosa Court
	Curb & Gutter,			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Rosa Court	Luna Vista Drive	East Property Line
	Curb & Gutter,			
	*Sidewalks 4' (Both Sides)			
46' F-F	Residential Paving	Luna Vista Drive	Luna Llena Avenue	Indian School Road
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Nueva Court	Luna Llena Avenue	End of Cul-De-Sac
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Llena Avenue	Luna Vista Drive	Luna Media Court
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Media Court	Luna Llena Avenue	End of Cul-De-Sac
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
	Sidewalk Widening 2' (South Side)	Indian School Road	West Property Line	East Property Line
6"	Water PVC Line	Luna Vista Drive	Indian School Road	Luna Rosa Court
6"	Water PVC Line	Luna Rosa Court	Luna Vista Drive	Existing 6"
6"	Water PVC Line	Luna Llena Avenue	Luna Vista Drive	Luna Media Court
6"	Water PVC Line	Luna Media Court	Luna Llena Avenue	End of Cul-De-Sac
6"	Water PVC Line	Utility Easement	Luna Media Court	MRGCD Access Road
4"	Water PVC Line	Luna Nueva Court	Luna Llena Avenue	End of Cul-De-Sac
12"	Water PVC Line	MRGCD Access Road	Indian School Road	South Property Line
8"	SAS Gravity Line	Luna Vista Drive	Indian School Road	Luna Rosa Court
8"	SAS Gravity Line	Luna Rosa Court	Luna Vista Drive	East Property Line
8"	SAS Gravity Line	Luna Llena Avenue	Luna Vista Drive	Luna Media Court
8"	SAS Gravity Line	Luna Media Court	Luna Llena Avenue	End of Cul-De-Sac
8"	SAS Gravity Line	Luna Nueva Court	Luna Llena Avenue	End of Cul-De-Sac
8"	SAS Gravity Line	Utility Easement	Luna Vista Drive	Lilac Street
18"	RCP Storm Sewer	Luna Vista Drive	375' South of Luna Llena Avenue	Detention Pond

24"	RCP Storm Sewer	Drainage Easement	Detention Pond	Alameda Drain
	Grading and drainage certification is required prior to release of financial guarantees.			
	Catch basins and RCP included with Storm Sewer			
	Water Infrastructure to include Valves, Fittings, Valve Boxes, and Fire Hydrants as required.			
	Sanitary Sewer to include Manholes and Service Connections as required.			
	Residential Street Lights per DPM.			
	* Internal Sidewalks deferred.			
	Certified Grading & Drainage with Private Walls & Private Drainage (Non-work order item) Required for SIA/Financial Release			

Agent/Owner Name:

Agent/Owner Name: Ronald R. Bohannan, P.E.

Firm: Tierra West LLC

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

Transportation Dev. Date

Utility Dev. Date

Parks & GS. Date

City Engineer Date

AMAFCA Date

DRB Chairman D

DRC REVISIONS

Revisions	Date	DRC Chair	User Department	Agent/Owner

APPLICANT'S NAME LUNA VISTA SUB'D ZONE ATLAS/DRNG FILE # H-13/D041

DRB # _____ EPC # _____ WORK ORDER # _____

LEGAL DESCRIPTION _____

CITY ADDRESS: _____

ENGINEERING FIRM: TIERRA WEST CONTACT: _____

ADDRESS: _____ PHONE: _____

OWNER: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION
- ___ OTHER _____

PRE-DESIGN MEETING:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ 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
- ___ CERTIFICATE OF OCCUPANCY APPROVAL
- ✓ GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ S.A.D. DRAINAGE REPORT
- ___ DRAINAGE REQUIREMENTS
- ___ SUBDIVISION CERTIFICATION
- ___ OTHER _____(SPECIFY)

DATE SUBMITTED: _____

BY _____

RECEIVED
SEP 26 2000
HYDROLOGY SECTION

Revised 02/98

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

July 27, 2000

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Luna Vista Subdivision Drainage Report
Engineer's Stamp dated 6-23-00 (H13/D41)

Dear Mr. Bohannan,

Based upon the information provided in your submittal dated 6-30-00, the above referenced plan is not approved for Preliminary Plat or Grading Permit until the following comments are addressed:

- Please show the grades of the MRGCD ditch and access road. Also include enough detail to show how you are transitioning back to existing. I will need to see how the proposed retention pond works with the adjoining property to the east.

- You will need to better describe the grading necessary in the Alameda Drain ROW. Please provide this office with written permission for this work as well as the license agreement necessary for the outfall pipe from the detention pond.

- In order to show that your perimeter wall is retaining 18" or less, existing grades will need to be shown on the other side of the wall. The existing spots of your survey are too small to read easily.

- Where is section A-A for the pond? Also, please provide both inverts of the outfall pipe and inlet pipe. It appears that you propose to have a rundown into this pond. Please provide calculations and details about this rundown.

- Lot 1 is approximately 5.5' above flow line. I think this a typo. Also please label all streets. Show location of water block. Luna Rosa Ct. calculates to be 2% but is labeled as 2.46%. By your calculations, the capacity of Luna Rosa is 8.71 cfs not 15.94 cfs (the 100 yr. depth must be contained within the curb and the energy grade contained within the ROW). By the same token, on streets with 0.6% slope

and 4" curb, the maximum flow that can be contained within the curb is 4.77 cfs and on an 8" curb it is 24.10 cfs. However, these calculations are for a normal crown section. Please provide capacity calculations for your proposed superelevated section, bearing in mind that the depth of flow must be contained in the curb.

- The grading plan shows a 24" RCP pipe with a 22" orifice plate but the calculations are for a 24" orifice opening. Please clarify this.

- Please denote where mountable curb and standard curb is and provide location of transition from mountable curb to standard curb. I think you ought to place inlets at property lines to avoid the driveway of the lot.

- The land treatment for Basin E-3 totals to more than 100%.

- Basins A1, A2 and A3 contribute 24.05 cfs but your inlet calculation is for 18.91 cfs. Please correct this.

If you have any questions about my comments, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Hydrology Review Engineer

C: file

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

October 25, 2000

Ron Bohannan, PE
Tierra West LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Luna Vista Subdivision Drainage Report
Engineer's Stamp dated 10-23-00 (H13/D41)

Dear Mr. Bohannan,

Based upon the information provided in your submittal dated 10-24-00, the above referenced plan is approved for Preliminary Plat action by the DRB. Prior to Work Order or Final Plat, all paperwork previously requested will be required.

If you have any questions about my comments, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

SIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

(505) 858-3100
fax (505) 858-1118

e-mail: twdms@aol.com
1-800-245-3102

H-13/D041

August 3, 2000

RECEIVED
AUG 14 2000
HYDROLOGY SECTION

Mr. Bradley L. Bingham, PE
Hydrology Review Engineer
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

RE: Drainage Report and Grading and Drainage Plan for Luna Vista Subdivision
00460-00000-00357, Project #: 1000361

Dear Brad:

We are in receipt of your comments regarding grading and drainage for the referenced project. The comments are addressed in the order they appear in your letter of June 13.

1. Please show the grades of the MRGCD ditch and access road. Also include enough detail to show how you are transitioning back to existing. I will need to see how the proposed retention pond works with the adjoining property to the east.

The plan sheets prepared for the relocation of the Campbell Ditch and access road are attached for your review and records. The 20-foot access road was graded to drain to the desilting pond adjacent to Indian School Road. It has a cross slope from east to west to prevent runoff from entering the adjoining property to the east. Runoff in excess of the pond capacity will enter Indian School Road and storm drain, as it has in the past. The tie in of the new ditch alignment to the existing ditch at the south property line is shown in the ditch cross sections. A portion of the tract east of the old Campbell Ditch historically drained to the adjacent Valley Apartment Complex. The relocated ditch and the new access road are graded so that the majority of this runoff that crossed the property line is eliminated.

2. You will need to better describe the grading necessary in the Alameda Drain ROW. Please provide this office with written permission for this work as well as the license agreement necessary for the pond outfall pipe from the detention pond.

Minor grading is required in the MRGCD ROW for a short distance along the west property line. The east bank of the Alameda Drain is 3' to 4' higher than the west bank in the vicinity of the proposed subdivision. Regrading the high spot in the east bank will not affect the integrity of the drain. Existing and proposed grades are shown on the revised grading and drainage plan sheet. This grading work was discussed with the Middle Rio Grande Conservancy District (MRGCD). A letter of their concurrence is forth coming.

3. In order to show that your perimeter wall is retaining 18" or less, existing grades will need to be shown on the other side of the wall. The existing spots of your survey are too small to read easily.

The grading and drainage plan sheet was revised to show the existing spot

elevations adjacent to the perimeter wall. In areas where the grade differs by more than one and a half feet, the plan calls for a retaining wall.

4. Where is Section A-A for the pond? Also, please provide both inverts of the outfall pipe and inlet pipe. It appears that you propose to have a rundown into this pond. Please provide calculations and details about this rundown.

Cross sections for the pond are attached. The invert elevations at the inlet and outlet of the discharge pipe to the Alameda Drain are 4953.0 and 4952.9, respectively. These inverts are noted on the revised plan sheet. The size and type of curb to be placed throughout the proposed subdivision was revised as discussed in the next section (5.). The street capacity calculations were revised to comply with your comments. The resulting street sections and their capacities proved to be sufficient to carry the flows generated on site. This negated the need for a drop inlet and a storm drain, which was initially planned to carry additional flows. The drop inlet and storm drain were removed from the drainage plan. A detail and calculations for the required rundown at the pond is provided.

5. Lot 1 is approximately 5.5' above flow line. I think this is a typo. Also please label all streets. Show locations of water block. Luna Rosa Ct. calculates to be 2% but is labeled as 2.46%. By your calculations, the capacity of Luna Rosa is 8.71 cfs not 15.94cfs (the 100 yr. Depth must be contained within the curb and the energy grade contained within the ROW). By the same token, on streets with 0.6% slope and 4" curb, the maximum flow that can be contained within the curb is 4.77 cfs and on an 8" curb it is 24.10 cfs. However, these calculations are for a normal crown section. Please provide capacity calculations for your proposed super elevated section, bearing in mid that the depth of flow must be contained in the curb.

The grades for Lot 1 were corrected. A retaining wall was added to make the grades in the lot more manageable. All streets were labeled and the water block location is shown on the revised plan. The slope for Luna Rosa Court was relabeled at 2%. The street capacity calculations were rerun to include changes made to the curb and heights and revised sheets are attached. The flows on the previous sheets and the revised sheets under the column heading Q (cfs) are the capacity of one half of the street. The total capacity of a street with a normal crown section is twice the value listed. A tabulation of street capacities for areas with super elevated cross-sections is attached. The points analyzed are labeled on the revised grading and drainage plan as AP-1 through AP-5. All resulting street capacities listed in the summary table were calculated with the depth of flow being contained in the curb as per your comments.

6. The grading plan shows a 24" RCP pipe with a 22" orifice plate but the calculations are for a 24" orifice opening. Please clarify.

The retention pond and its outfall to the Alameda drain were modified to comply with restrictions placed on the outfall by the MRGCD. The MRGCD has limited the size of the outfall to be equal to the outfall pipe that currently exists at this location. The pond size was increased to accommodate the decreased outfall capacity. A letter from the MRGCD allowing the discharge to the Alameda Drain is forthcoming.

7. Please denote where mountable curb and standard curb is and provide locations of transition from mountable curb to standard curb. I think you ought to place inlets at property lines to avoid the driveway of the lot.

An exhibit is provided with this resubmittal outlining where mountable and standard curb are to be provided. Transitions from mountable curb to standard curb are shown on the exhibit. Resizing the curb face and recalculating the street capacities reveals that a storm drain is not required thereby eliminating the previously listed drop inlets. The new grading and drainage plan reflects this change.

8. The land treatment for Basin E3 totals more than 100

The percentages for Basin E3 were corrected. The previous error does not affect the runoff calculations, as Basin E3 was the site of the old Campbell Ditch in which all runoff was conveyed downstream.

9. Basin A1, A2 and A3 contribute 24.05 cfs but your inlet calculation is for 18.91 cfs. Please correct this.

As previously mentioned, the drop inlet and storm drain are no longer required.

A revised drainage report, as well as a revised grading and drainage plan is attached for your review and records. Should you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, PE

JN 990021
RRB/vpc/db

1999misc#3(2):9921bb080300

DRAINAGE INFORMATION SHEET

PROJECT TITLE: *Luna Vista Subdivision* **ZONE ATLAS/DRNG. FILE #:** *H-13-Z D041*

DRB #: *1000361* **EPC #:** **WORK ORDER #:**

LEGAL DESCRIPTION: *Tracts 246-A1, 222-B, 223-B1, 223-B2, 223-B3 MRGCD Map No. 35*

CITY ADDRESS: *On Indian School Road - Between The Alameda Drain And The Valley Apartments*

ENGINEERING FIRM: *TIERRA WEST, LLC* **CONTACT:** *Vincent Carrica*

ADDRESS: *8509 Jefferson NE Albuqueque, NM 87113* **PHONE:** *(505) 858-3100*

OWNER: *Charles Williams & Jim Shull, Jr.* **CONTACT:**

ADDRESS: *2444 Louisianna NE, #225 Albuquerque, NM 87110* **PHONE:**

ARCHITECT: **CONTACT:**

ADDRESS: **PHONE:**

SURVEYOR: *Precision Surveys* **CONTACT:** *Larry Madrano*

ADDRESS: *8414-D Jefferson Street, NE* **PHONE:** *(505)856-5700*

CONTRACTOR: **CONTACT:**

ADDRESS: **PHONE:**

TYPE OF SUBMITTAL:

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

PRE-DESIGN MEETING:

- YES
- X NO
- COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- SKETCH PLAN APPROVAL
- X 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
- CERTIFICATE OF OCCUPANCY APPROVAL
- X GRADING PERMIT APPROVAL
- PAVING PERMIT APPROVAL
- S. A. D. DRAINAGE REPORT
- DRAINAGE REQUIREMENTS
- *OTHER*

RECEIVED
JUN 3 0 2000
PWD/DESIGN REVIEW

DATE SUBMITTED: *06/22/00*

BY: *Vincent Carrica*

DRAINAGE REPORT

For

Luna Vista Subdivision

Prepared by

Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for

Charles Williams and Jim Shull, Jr.
5445 Edith Blvd. NE Unit F
Albuquerque, New Mexico 87107

June 16, 2000

Ronald R. Bohannan P.E. No. 7868

RONALD RAY BOHANNAN
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER
6/22/2000

RECEIVED
JUN 3 0 2000
PWD/DESIGN REVIEW

TABLE OF CONTENTS

Zone Atlas Map Z-13 1

Location 2

Drainage Basin Designation 2

Existing Undeveloped Basin Map 3

Existing Drainage Conditions 4

FIRM Map and Soil Conditions 5

On-Site Drainage Management Plan 5

FEMA Map 350002 6

Developed Basin Map 7

On-Site Basin Map with Developed Flows 9

Future Developed Conditions 10

Criteria 10

Summary 10

Runoff Calculations 12

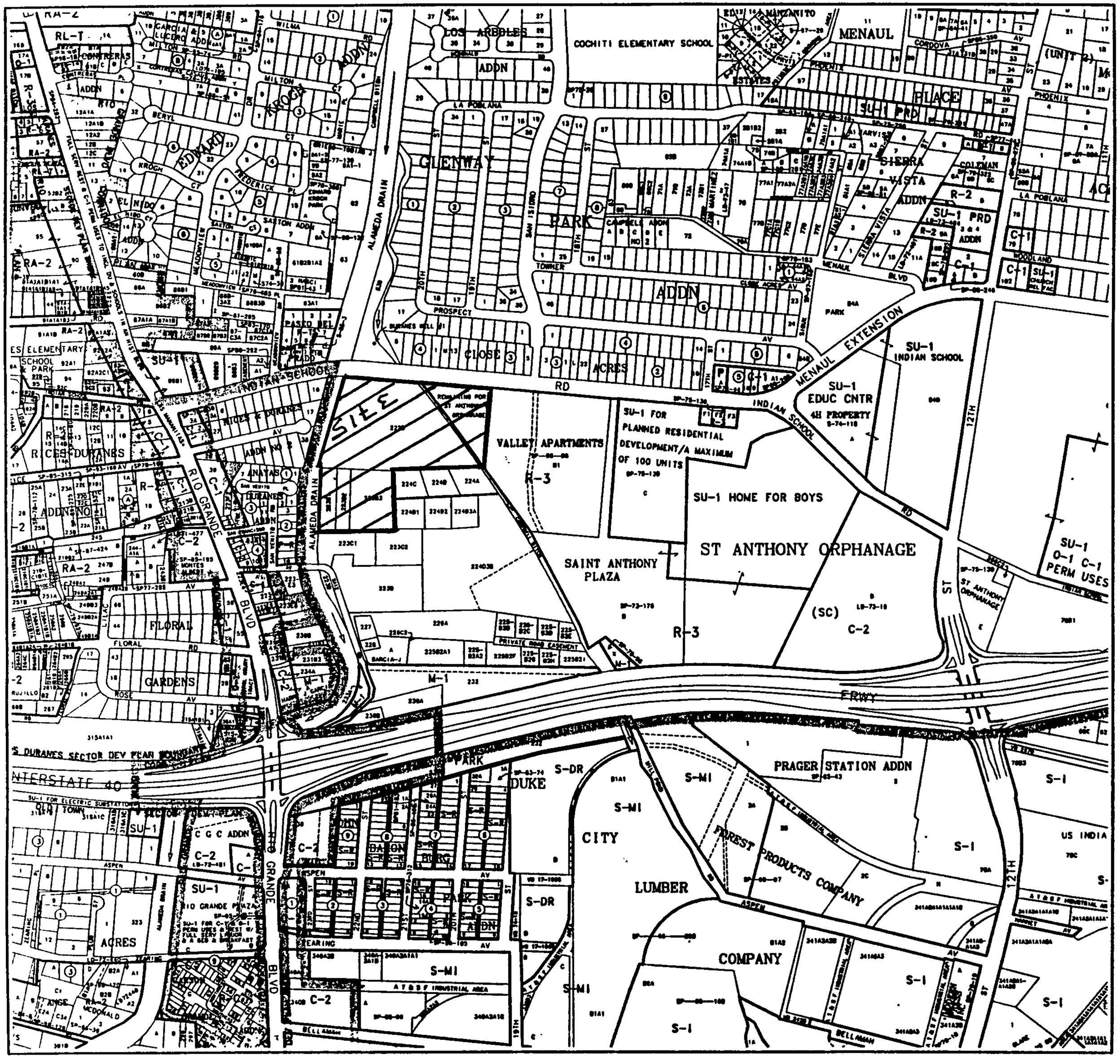
Pond Calculations 13

AHYMO Input & Output 14

Street Capacity Calculations 19

Emergency Overflow Calculations 22

Infrastructure List 23



CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

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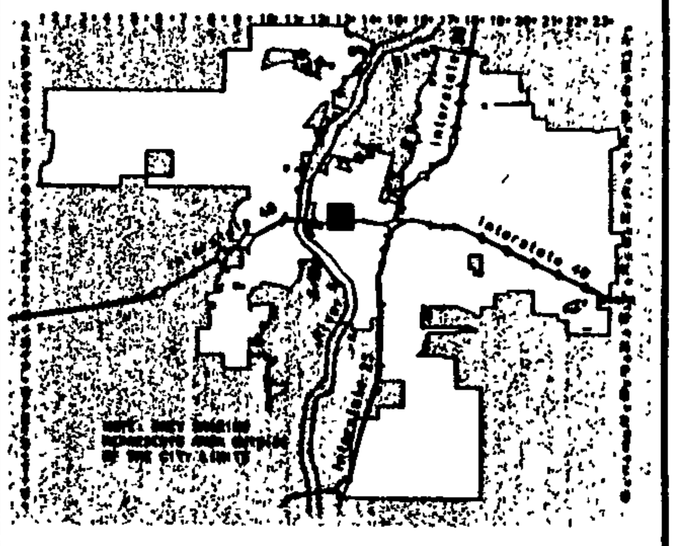
N W E S

GRAPHIC SCALE IN FEET

250 0 500 1000



Zone Atlas Page
H-13-Z

Map Amended through
June 26, 1998

LOCATION:

Luna Vista is a proposed sixty-four (64) lot, single-family subdivision. The 11.61-acre site is located in central Albuquerque off Indian School Road, one block east of Rio Grande Boulevard. The site is bordered on the east by the Valley Apartments, on the north by Indian School Road and on the west by the Alameda Drain. The site borders existing single-family housing to the south. The Campbell irrigation ditch previously bisected the site. The ditch was recently realigned to run along the proposed subdivision's north and east boundaries. The portion of the site east of the old Campbell ditch is zoned R-3. The area west of the old ditch is zoned R-1. The purpose of this report is to provide the drainage analysis and management plan for the subdivision.

DRAINAGE BASINS DESIGNATIONS:

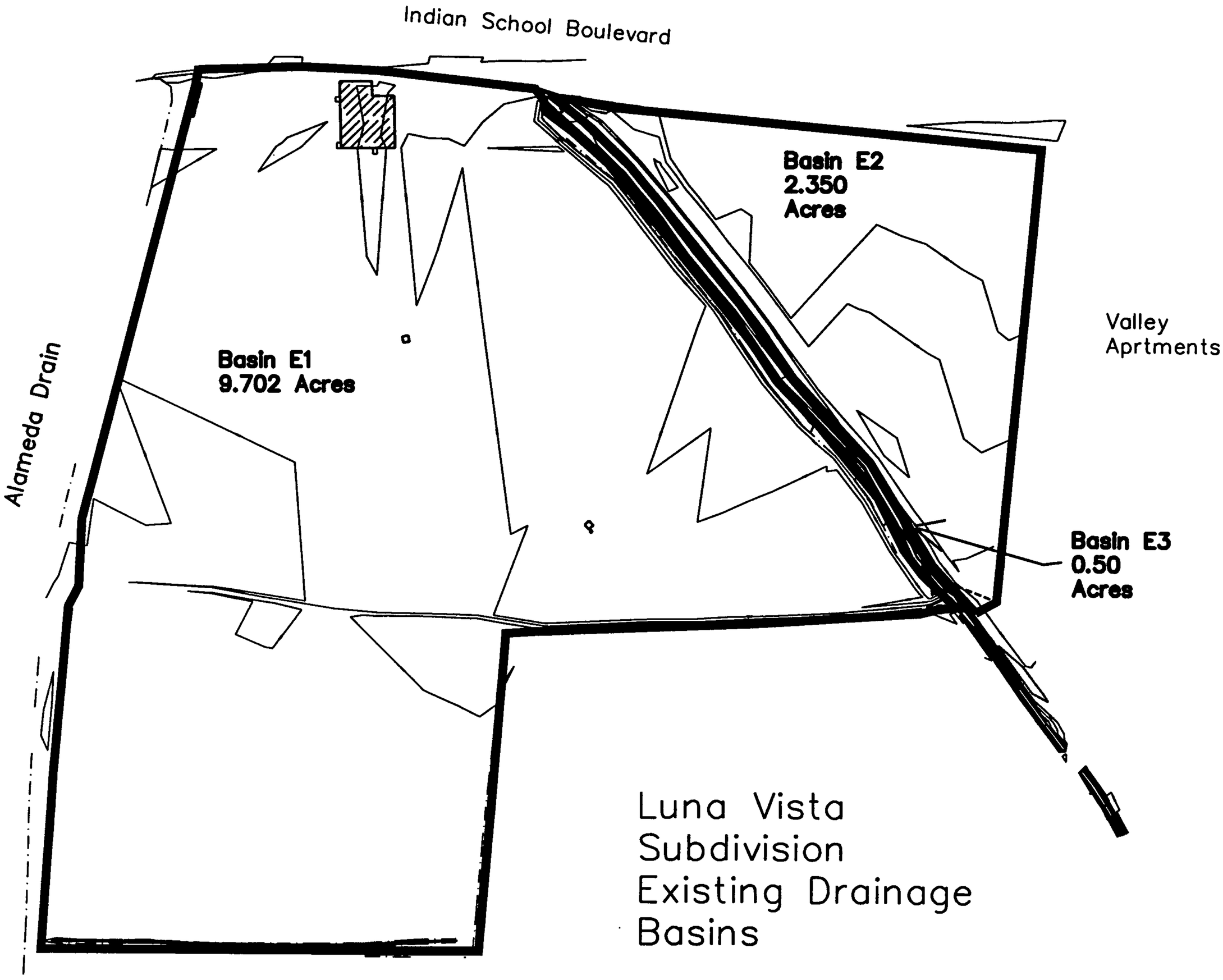
For the purpose of this report the existing and developed drainage basins were designated as follows.

Existing Undeveloped Basins:

Basin E1	Portion of site located west of the old Campbell ditch alignment
Basin E2	Portion of site located east of the old Campbell ditch alignment
Basin E3	The old Campbell ditch

Developed Conditions:

Basins A1–A6	Developed lots and on-site streets
Basin A6	Detention Pond
Basin B1	Subdivision entrance
Basin B2	Access road along east boundary
Basin B3	New Campbell ditch along new alignment



Luna Vista
Subdivision
Existing Drainage
Basins

EXISTING DRAINAGE CONDITIONS:

The site is currently undeveloped. In previous years, a portion of the site served as the location for a radio station and several associated radio towers. The building that housed the radio station and the radio towers have since been demolished and the site lies vacant.

The portion of the site located west of the old Campbell ditch alignment is designated as Basin E1. Basin E1 primarily drains from northeast to southwest. The slope of the existing grade is slight and contains shallow ponding areas. Runoff from this site was via sheet flows that entered the Alameda drain along the western boundary of the proposed subdivision. The peak flow rate of runoff generated within basin E1 was calculated to be 22.31 cfs in a 100-year, 6-hour storm event, under existing conditions. This is a conservative estimate of the runoff that would be generated due to the fact that land treatment category B was used where category C would have been more appropriate and would have resulted in a larger peak runoff rate. Why would C be more appropriate

The portion of the site east of the old Campbell ditch, designated as Basin E2, contains a very slight grade. Drainage is via sheet flows to the northeast corner of the proposed subdivision. Runoff exits the site at this location to Indian School Road where it enters an existing storm drain. The Indian School storm drain conveys the flows to an outfall to the Alameda Drain. The calculated runoff from this basin for a 100-year, 6-hour storm event under existing conditions is 5.36 cfs. Again, this is a conservative estimate based on land treatments in category B. No off-site flows enter the existing basins E1 or E2.

Basin E3 consists of the old Campbell ditch. The ditch originates north of Indian School Road. It crosses Indian School in an existing siphon and enters the site. All flows within this basin were contained within the old ditch and were conveyed down stream.

FIRM MAP AND SOIL CONDITIONS:

The site is located on FIRM Map 350002, Panel Number 0022 as shown on the attached excerpt. The map shows that the site does not lie within any 100-year flood plains. It does lie adjacent to the Alameda Drain which is shown on the attached applicable section of panel 22 of 50 of the National Flood Insurance Rate Maps, City of Albuquerque, New Mexico, Bernalillo County, dated October 14, 1983. The proposed subdivision is separated from the Alameda Drain by an approximately 15-foot wide maintenance road.

The site contains three soil types as designated by the Soil Conservation Service Soil Survey of Bernalillo County. The three soils are Agua Loam, Agua Silty Clay Loam and Gila Clay Loam. Both the Agua series and the Gila series consist of deep well drained soils formed in recent alluvium on the flood plain along the Rio Grande. Slopes range from zero to two percent. Permeability is moderate to a depth of twenty-four inches and rapid below this level. Runoff is very slow and the hazard of erosion is slight.

ONSITE DRAINAGE MANAGEMENT PLAN:

The on-site developed basins A1 through A5 consist of residential lots and associated streets and right of ways. The lots will drain to the streets to which they front. The resulting flows are conveyed in the streets to a point indicated on the basin map as AP-1. At this point the flows are channeled through a twenty-foot drainage easement and into a permanent detention pond. The detention pond is designated as basin A6. A single drop inlet will be constructed in basin A5 to handle flows in excess of the street capacity for Luna Vista Drive. The drop inlet location will be at the point where the normal crowned section of the roadway will begin transitioning to a super elevated section. An 18" storm drain will convey flows intercepted by the drop inlet to the detention pond.

NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY

FLOOD BOUNDARY AND FLOODWAY MAP

CITY OF

ALBUQUERQUE

NEW MEXICO

BERNALILLO COUNTY

PANEL 22 OF 50

COMMUNITY-PANEL NUMBER

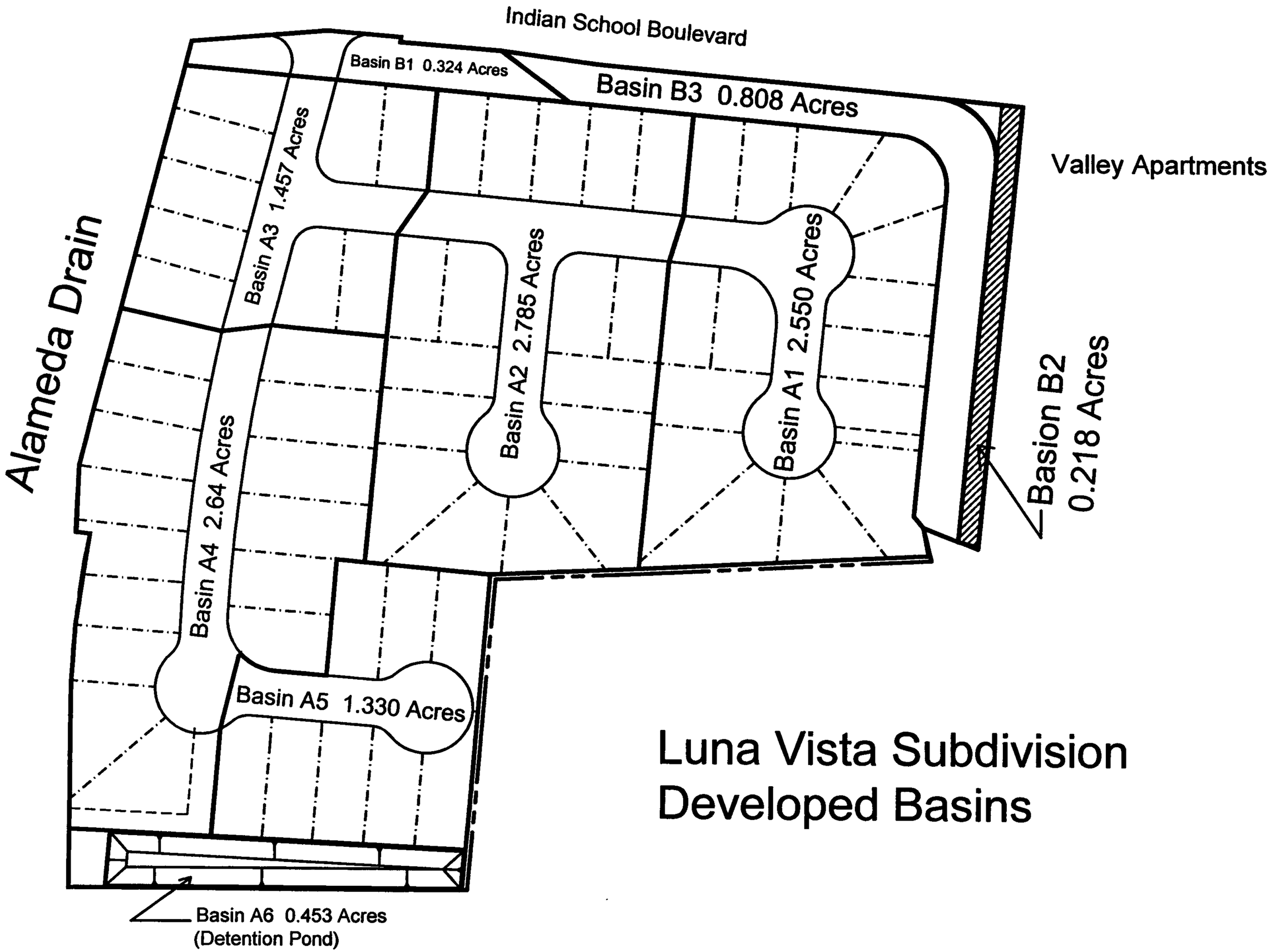
350002 0022

EFFECTIVE DATE:

OCTOBER 14, 1983

Federal Emergency Management Agency

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM 36	4968.09	A square, ☐ , chiseled on top of the concrete curb at the south-southwest curb return, located at the intersection of Candelaria Road and Rio Grande Blvd., NW in the southwest quadrant of the intersection.
RM 37	4959.70	A square, ☐ , chiseled on top of the concrete curb at the north-northeast curb return, located at the intersection of Rio Grande



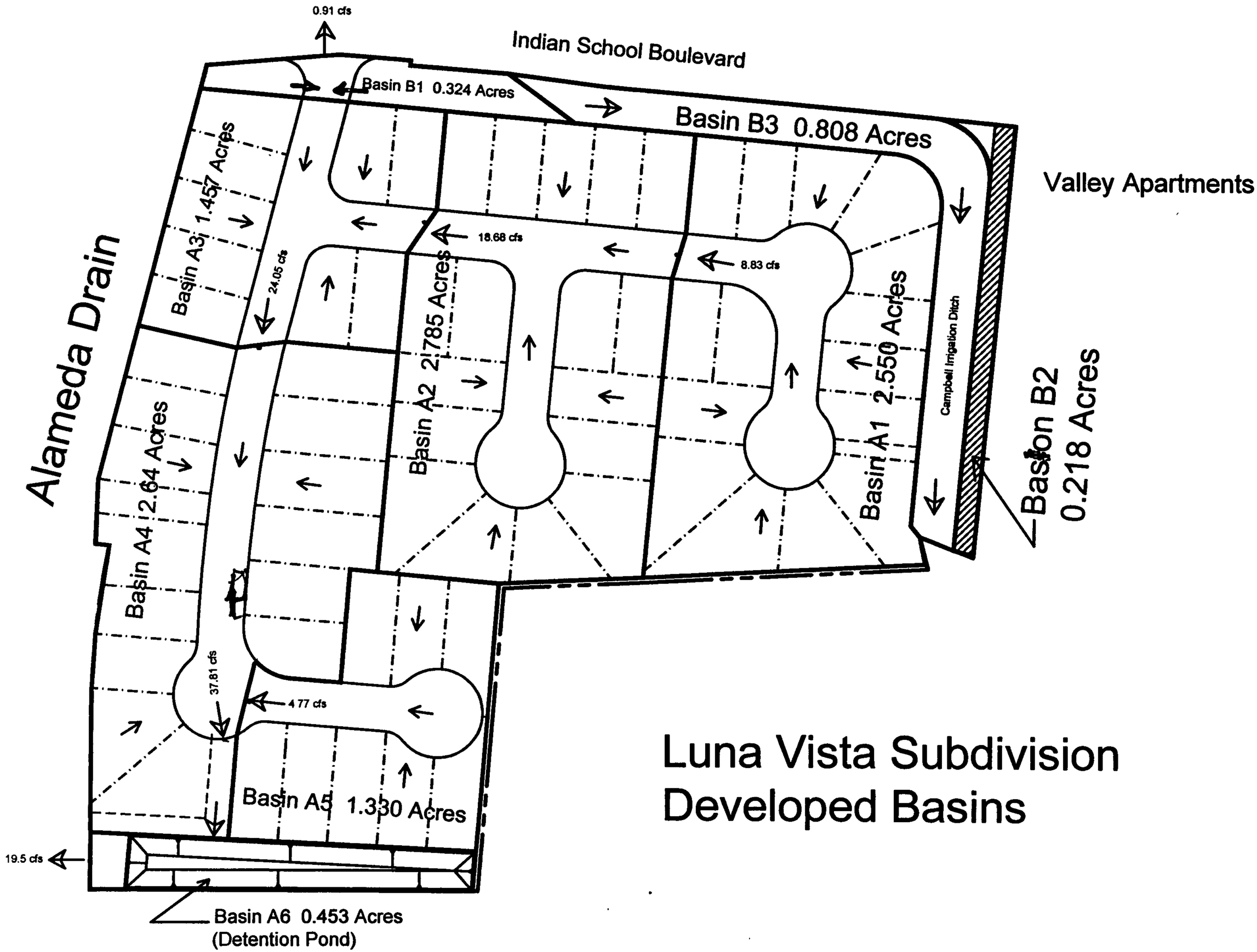
Luna Vista Subdivision
Developed Basins

The peak runoff from the contributing developed basins was calculated to be 39.20 cfs for a 100-year, 6-hour storm event under developed conditions. The pond will be constructed with a primary outfall to the Alameda Drain. The outfall will be a 24" RCP pipe. An emergency overflow will be constructed at the west edge of the pond and will also drain to the Alameda Drain. The 24" principal spillway will throttle the peak release rate of runoff from the detention pond to the Alameda Drain to 18.18 cfs. This peak release rate is less than the conservatively calculated historic flows entering the drain from the site of 22.31 cfs. A neighborhood association will be established to provide maintenance for the detention pond, the twenty-foot drainage easement from the street to the pond and for the principle and emergency outlets from the pond to the Alameda Drain.

Basin B1 is located at the entrance to the proposed subdivision. This area will remain as open space to provide for adequate site distance for motorist exiting the subdivision. The area will be landscaped and a one-foot water block will be constructed to prevent flows from Indian School Road from entering the site. Flows from this basin, which is approximately a third of an acre, will drain to Indian School Road and be intercepted by the existing storm sewer. The storm sewer outfalls to the Alameda Drain just west of the site.

Basin B2 consists of the access road located between the new Campbell ditch alignment and the Valley Apartments. The road is located on the Middle Rio Grande Conservancy District's (MRGCD) property and provides access to six lots located south of the proposed subdivision. The road is graded to drain to a small retention pond at the northwest corner of the basin. A one-foot water block was provided to prevent flows from Indian School Road from entering the basin.

Basin B3 is approximately 0.8 acres and consists of the Campbell ditch on its new alignment. The runoff generated in this basin is conveyed in the irrigation ditch in a southerly direction.



Luna Vista Subdivision
Developed Basins

FUTURE DEVELOPED CONDITIONS:

This proposed subdivision is an infill project. As stated previously, no off-site flows enter the subdivision. The existing storm drain in Indian School Road intercepts the flows from the north. The Campbell ditch prevents flows generated to the east from entering the proposed subdivision. The Alameda Drain intercepts flows from the west. The only remaining undeveloped adjacent lots are located to the south. The existing terrain to the south slopes away from the site. Future development of lots adjacent to the site's southern border must provide for positive drainage away from the site.

CRITERIA:

The site was analyzed using the procedures outlined in the Development Process Manual Volume 2, Chapter 22. The Weighted-E method was used in estimating volumes and flow rates of runoff from off-site basins. The AHYMO computer program was used to analyze on site basins and the pond. The existing and developed conditions for both on site and off-site basins were analyzed for a 100-year, 6-hour rainfall event.

SUMMARY:

Luna Vista is a proposed 54-lot subdivision located off Indian School Road between the Alameda Drain and the Valley Apartments. Upland flows are intercepted before they reach the site. Existing flows either enter the Indian School storm drain and are conveyed to the Alameda Drain, or they flow directly into the drain from the site. The onsite flows are handled under a developed management plan. All onsite flows will be conveyed to a proposed detention pond. The pond is to be constructed with 3:1 side slopes and its capacity is estimated to be 0.472 acre-feet. The pond's outflow will be to the Alameda Drain at a controlled rate to ensure that the peak discharge during a 100-year, 6-hour storm event is less than calculated historical flows. The peak discharge from the

pond was calculated to be 20.97 cfs. This is less than the historical flows of 22.31 cfs. An event greater than the 100-year storm will pass through the proposed subdivision and exit the pond via the emergency overflow structure to the Alameda Drain. A neighborhood association will be established to be responsible for the maintenance of the pond and the associated drainage easement.

LUNA VISTA
Indian School / Alameda Drain

Weighted E Method

Zone 2

Existing Basins

											100-Year			10-Year		
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
E1	422628.00	9.702	0%	0	99%	9.625	0%	0	1%	0.078	0.791	0.639	22.31	0.288	0.233	9.39
E2	102362.00	2.350	0%	0	100%	2.350	0%	0	0%	0.000	0.780	0.153	5.36	0.280	0.055	2.23
E3	21783.00	0.500	0%	0	10%	0.050	100%	0.500069	0%	0.000	1.208	0.050	1.68	0.548	0.023	0.90
Totals	546773.00	12.55										0.842	29.35		0.311	12.52

more than 100%

Developed Basins

											100-Year			10-Year		
Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
A1	111071.00	2.550	0%	0	51%	1.303	0%	0	49%	1.247	1.435	0.305	8.83	0.798	0.170	5.15
A2	121317.00	2.785	0%	0	48%	1.338	0%	0	52%	1.447	1.476	0.343	9.85	0.831	0.193	5.82
A3	63476.00	1.457	0%	0	42%	0.610	0%	0	58%	0.848	1.559	0.189	5.37	0.896	0.109	3.24
A4	115202.00	2.645	0%	0	54%	1.423	0%	0	46%	1.222	1.399	0.308	8.99	0.770	0.170	5.19
A5	57936.00	1.330	0%	0	46%	0.612	0%	0	54%	0.718	1.503	0.167	4.77	0.852	0.094	2.84
A6	18959.00	0.435	0%	0	0%	0.000	97%	0.421093	3%	0.014	1.162	0.042	1.39	0.547	0.020	0.76
Subtotal	487961.00	11.202										1.35	39.20		0.76	23.00
B1	14109.00	0.324	0%	0	78%	0.253	0%	0	22%	0.071	1.072	0.029	0.91	0.511	0.014	0.46
B2	9490.00	0.218	0%	0	3%	0.007	0%	0	97%	0.211	2.077	0.038	1.01	1.306	0.024	0.67
B3	35213.00	0.808	0%	0	0%	0.000	100%	0.808379	0%	0.000	1.130	0.076	2.54	0.520	0.035	1.38
Subtotal	58812.00	1.350										0.143	4.45		0.073	2.51
Total	546773.00	12.55										1.50	43.66		0.83	25.51

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

VOLUME CALCULATIONS

POND 1

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	3,410.00
At =	11,220.00
Dt =	3.40
C =	2297.06
B Elev. =	4952

Pond	W	L
Bottom	11	310
Top	33	340

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4952.00	0	0.0000	0.000
4953.00	1.00	0.1046	0.309
4954.00	2.00	0.2620	15.117
4955.00	3.00	0.4721	21.377
4956.00	4.00	0.7350	26.180

<u>Orifice Equation</u>
Q = CA SQRT(2gH)

C =	0.6
Diameter (in	23.99
Area (ft^2)=	3.13897521
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*****************************************************************
*                          LUNA VISTA                           *
*                 INDIAN SCHOOL & ALAMEDA DRAIN                 *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                     RAIN DAY=2.75 IN DT=0.03333 HR
*
* BASIN A1
*
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00398412SQ MI
                     PER A=0.00 PER B=51.00 PER C=0.0 PER D=49.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*


* BASIN A2
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00447280 SQ MI
                     PER A=0.00 PER B=48.00 PER C=0.00 PER D=52.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
*
*
* BASIN A3
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.00234028 SQ MI
                     PER A=0.00 PER B=42.00 PER C=0.00 PER D=58.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*


* BASIN A4
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.004132303 SQ MI
                     PER A=0.00 PER B=54.00 PER C=0.00 PER D=46.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1
*

* BASIN A5
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.002078168 SQ MI
                     PER A=0.00 PER B=46.00 PER C=0.00 PER D=54.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=5 CODE=1
*
* BASIN A6
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.000680061 SQ MI
                     PER A=0.00 PER B=0.00 PER C=97.00 PER D=3.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=6 CODE=1
*
*
*
*

*

*
*ADD BASINS A1THROUGH A6
ADD HYD              ID=10 HYD NO=102.2 ID=1 ID=2
ADD HYD              ID=10 HYD NO=102.3 ID=10 ID=3
ADD HYD              ID=10 HYD NO=102.4 ID=10 ID=4
ADD HYD              ID=10 HYD NO=102.5 ID=10 ID=5
ADD HYD              ID=10 HYD NO=102.6 ID=10 ID=6
PRINT HYD            ID=10  CODE=1

*POND
ROUTE RESERVOIR      ID=11 HYD NO=200.2 INFLOW ID=10 CODE=24
                     OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                     0              .0000              52.00
                     0.309          .1046              53.00
                     15.117         .2620              54.00
                     21.377         .4721              55.00
                     26.180         .7350              56.00
*
*
PRINT HYD            ID=11 CODE=1
FINISH
```

```
    AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
         RUN DATE (MON/DAY/YR) = 06/13/2000
         START TIME (HR:MIN:SEC) = 11:36:28     USER NO.= R_BOHANN.I01
         INPUT FILE = c:\my files\990021\shull.txt

*****************************************************************
*                            LUNA VISTA                         *
*                             INDIAN SCHOOL & ALAMEDA DRAIN                 *
*****************************************************************
*       100-YEAR, 6-HR STORM  (UNDER PROPOSED CONDITIONS)       *
*****************************************************************
*
START                TIME=0.0
*
*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                     RAIN DAY=2.75 IN DT=0.03333 HR

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                   .0000   .0016   .0033   .0049   .0066   .0084   .0102
                   .0120   .0139   .0158   .0178   .0199   .0219   .0241
                   .0263   .0286   .0309   .0333   .0358   .0384   .0411
                   .0439   .0467   .0497   .0529   .0561   .0596   .0631
                   .0669   .0709   .0751   .0807   .0866   .0930   .1066
                   .1371   .1840   .2514   .3434   .4644   .6186   .8106
                  1.0449  1.2624  1.3533  1.4300  1.4982  1.5602  1.6174
                  1.6704  1.7200  1.7664  1.8102  1.8514  1.8904  1.9273
                  1.9622  1.9953  2.0268  2.0566  2.0850  2.0915  2.0976
                  2.1033  2.1088  2.1140  2.1191  2.1239  2.1285  2.1329
                  2.1373  2.1414  2.1454  2.1494  2.1531  2.1568  2.1604
                  2.1639  2.1673  2.1706  2.1739  2.1771  2.1802  2.1832
                  2.1862  2.1891  2.1919  2.1947  2.1975  2.2002  2.2028
                  2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                  2.2225  2.2248  2.2270  2.2293  2.2315  2.2336  2.2358
                  2.2379  2.2399  2.2420  2.2440  2.2460  2.2480  2.2500
                  2.2519  2.2538  2.2557  2.2576  2.2594  2.2612  2.2631
                  2.2648  2.2666  2.2684  2.2701  2.2718  2.2735  2.2752
                  2.2769  2.2785  2.2802  2.2818  2.2834  2.2850  2.2866
                  2.2881  2.2897  2.2912  2.2928  2.2943  2.2958  2.2973
                  2.2987  2.3002  2.3017  2.3031  2.3045  2.3060  2.3074
                  2.3088  2.3102  2.3115  2.3129  2.3143  2.3156  2.3169
                  2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
                  2.3273  2.3286  2.3298  2.3311  2.3323  2.3335  2.3348
                  2.3360  2.3372  2.3384  2.3396  2.3408  2.3419  2.3431
                  2.3443  2.3454  2.3466  2.3477  2.3488  2.3500

*
* BASIN A1
*
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00398412SQ MI
                     PER A=0.00 PER B=51.00 PER C=0.0 PER D=49.00
                     TP=-0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   7.7075    CFS   UNIT VOLUME =    .9978       B =   526.28      P60 = 2.0100
    AREA =       .001952 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


    K =    .132088HR    TP =    .133300HR    K/TP RATIO =    .990905     SHAPE CONSTANT, N =  3.563124
    UNIT PEAK =   4.9526    CFS   UNIT VOLUME =    .9976       B =   324.91      P60 = 2.0100
    AREA =       .002032 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=1 CODE=1

                                   PARTIAL HYDROGRAPH   100.10

    RUNOFF VOLUME =     1.43341 INCHES     =        .3046 ACRE-FEET
    PEAK DISCHARGE RATE =       8.85 CFS  AT   1.500 HOURS   BASIN AREA =    .0040 SQ. MI.


*


* BASIN A2
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00447280 SQ MI
                     PER A=0.00 PER B=48.00 PER C=0.00 PER D=52.00
                     TP=-0.1333 HR MASS RAINFALL=-1

    K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   9.1826    CFS   UNIT VOLUME =    .9981       B =   526.28      P60 = 2.0100
    AREA =       .002326 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330
```

```
    K =    .132088HR     TP =    .133300HR     K/TP RATIO =    .990905      SHAPE CONSTANT, N =  3.563124
    UNIT PEAK =    5.2330     CFS    UNIT VOLUME =     .9976        B =    324.91       P60 = 2.0100
    AREA =       .002147 SQ MI     IA =     .50000 INCHES     INF =    1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=2 CODE=1

                                    PARTIAL HYDROGRAPH   100.20

    RUNOFF VOLUME =      1.47353 INCHES      =         .3515 ACRE-FEET
    PEAK DISCHARGE RATE =       10.14 CFS  AT   1.500 HOURS   BASIN AREA =    .0045 SQ. MI.

*
*
* BASIN A3
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.00234028 SQ MI
                     PER A=0.00 PER B=42.00 PER C=0.00 PER D=58.00
                     TP=-0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    5.3589     CFS    UNIT VOLUME =     .9973        B =    526.28       P60 = 2.0100
    AREA =       .001357 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

    K =    .132088HR     TP =    .133300HR     K/TP RATIO =    .990905      SHAPE CONSTANT, N =  3.563124
    UNIT PEAK =    2.3958     CFS    UNIT VOLUME =     .9946        B =    324.91       P60 = 2.0100
    AREA =       .000983 SQ MI     IA =     .50000 INCHES     INF =    1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=3 CODE=1

                                    PARTIAL HYDROGRAPH   100.30

    RUNOFF VOLUME =      1.55376 INCHES      =         .1939 ACRE-FEET
    PEAK DISCHARGE RATE =        5.53 CFS  AT   1.500 HOURS   BASIN AREA =    .0023 SQ. MI.

*

* BASIN A4
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.004132303 SQ MI
                     PER A=0.00 PER B=54.00 PER C=0.00 PER D=46.00
                     TP=-0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    7.5047     CFS    UNIT VOLUME =     .9978        B =    526.28       P60 = 2.0100
    AREA =       .001901 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

    K =    .132088HR     TP =    .133300HR     K/TP RATIO =    .990905      SHAPE CONSTANT, N =  3.563124
    UNIT PEAK =    5.4390     CFS    UNIT VOLUME =     .9979        B =    324.91       P60 = 2.0100
    AREA =       .002231 SQ MI     IA =     .50000 INCHES     INF =    1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD            ID=4 CODE=1

                                    PARTIAL HYDROGRAPH   100.40

    RUNOFF VOLUME =      1.39330 INCHES      =         .3071 ACRE-FEET
    PEAK DISCHARGE RATE =        8.98 CFS  AT   1.500 HOURS   BASIN AREA =    .0041 SQ. MI.

*

* BASIN A5
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.002078168 SQ MI
                     PER A=0.00 PER B=46.00 PER C=0.00 PER D=54.00
                     TP=-0.1333 HR MASS RAINFALL=-1

    K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =    4.4305     CFS    UNIT VOLUME =     .9969        B =    526.28       P60 = 2.0100
    AREA =       .001122 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330
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```
    K =   .132088HR    TP =   .133300HR    K/TP RATIO =   .990905     SHAPE CONSTANT, N =  3.563124
    UNIT PEAK =   2.3301    CFS   UNIT VOLUME =    .9946       B =   324.91      P60 = 2.0100
    AREA =      .000956 SQ MI    IA =    .50000 INCHES    INF =   1.25000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=5 CODE=1

                                  PARTIAL HYDROGRAPH   100.50

    RUNOFF VOLUME =     1.50027 INCHES     =        .1663 ACRE-FEET
    PEAK DISCHARGE RATE =       4.78 CFS  AT   1.500 HOURS   BASIN AREA =   .0021 SQ. MI.


*
* BASIN A6
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.000680061 SQ MI
                    PER A=0.00 PER B=0.00 PER C=97.00 PER D=3.00
                    TP=-0.1333 HR MASS RAINFALL=-1

    K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
    UNIT PEAK =   .80548E-01CFS   UNIT VOLUME =    .8874       B =   526.28      P60 = 2.0100
    AREA =      .000020 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

    K =   .107446HR    TP =   .133300HR    K/TP RATIO =   .806046     SHAPE CONSTANT, N =  4.440701
    UNIT PEAK =   1.8980    CFS   UNIT VOLUME =    .9937       B =   383.55      P60 = 2.0100
    AREA =      .000660 SQ MI    IA =    .35000 INCHES    INF =    .83000 INCHES PER HOUR
    RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD           ID=6 CODE=1

                                  PARTIAL HYDROGRAPH   100.60

    RUNOFF VOLUME =     1.15753 INCHES     =        .0420 ACRE-FEET
    PEAK DISCHARGE RATE =       1.40 CFS  AT   1.500 HOURS   BASIN AREA =   .0007 SQ. MI.


*
*

*

*

*
*ADD BASINS A1THROUGH A6
ADD HYD                 ID=10 HYD NO=102.2 ID=1 ID=2
ADD HYD                 ID=10 HYD NO=102.3 ID=10 ID=3
ADD HYD                       ID=10 HYD NO=102.4 ID=10 ID=4
ADD HYD                        ID=10 HYD NO=102.5 ID=10 ID=5
ADD HYD                       ID=10 HYD NO=102.6 ID=10 ID=6
PRINT HYD           ID=10  CODE=1

                                  PARTIAL HYDROGRAPH   102.60

    RUNOFF VOLUME =     1.44717 INCHES     =       1.3652 ACRE-FEET
    PEAK DISCHARGE RATE =      39.69 CFS  AT   1.500 HOURS   BASIN AREA =   .0177 SQ. MI.


*POND
ROUTE RESERVOIR     ID=11 HYD NO=200.2 INFLOW ID=10 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                              0              .0000              52.00
                              0.309          .1046              53.00
                              15.117         .2620              54.00
                              21.377         .4721              55.00
                              26.180         .7350              56.00

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

    TIME       INFLOW     ELEV       VOLUME     OUTFLOW
    (HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

     .00        .00       52.00       .000        .00
     .80        .00       52.00       .000        .00
    1.60      28.73       54.83       .437      20.34
    2.40       1.55       53.19       .135       3.17
    3.20        .27       53.00       .105        .35
    4.00        .15       52.93       .098        .29
    4.80        .15       52.85       .089        .26
    5.60        .17       52.79       .083        .24
```

```
     6.40        .01     52.72       .076       .22
     7.20        .00     52.60       .062       .18
     8.00        .00     52.49       .051       .15
     8.80        .00     52.40       .042       .12
     9.60        .00     52.33       .035       .10
    10.40        .00     52.27       .029       .08
    11.20        .00     52.22       .023       .07
    12.00        .00     52.18       .019       .06
    12.80        .00     52.15       .016       .05
    13.60        .00     52.12       .013       .04
    14.40        .00     52.10       .011       .03
    15.20        .00     52.08       .009       .03
    16.00        .00     52.07       .007       .02
    16.80        .00     52.06       .006       .02
    17.60        .00     52.05       .005       .01
    18.40        .00     52.04       .004       .01
    19.20        .00     52.03       .003       .01
 PEAK DISCHARGE =       20.974 CFS - PEAK OCCURS AT HOUR    1.67
 MAXIMUM WATER SURFACE ELEVATION =       54.936
 MAXIMUM STORAGE =         .4586 AC-FT      INCREMENTAL TIME=     .033330HRS

*
*
PRINT HYD                ID=11 CODE=1

                                    PARTIAL HYDROGRAPH   200.20

    RUNOFF VOLUME =     1.44426 INCHES      =       1.3624 ACRE-FEET
    PEAK DISCHARGE RATE =      20.97 CFS  AT   1.667 HOURS   BASIN AREA =   .0177 SQ. MI.


FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 11:36:28
```

Street Capacity Summary

	Basin	Street	Street Slope (%)	Street Width (ft)	Curb Height (inches)	Basins Contributing to Street	Flow (cfs)	Capacity (cfs)
	A1	Luna Media Court	0.60	28	4	A1	8.83	30.07
	A2	Luna Llena Ave	0.60	28	4	A1	18.68	30.07
	A2	Luna Nueva Ct.	0.60	28	4	A2	9.85	30.07
	A3	Luna Vista Drive	0.60	28	4	A1,A2	24.05	30.07
*	A4	Luna Vista Drive	0.60	28	8	A1,A2,A3,A5	37.81	** 35.63
*	A5	Luna Rosa Ct.	~~2.00~~	28	4	A5	4.77	15.94

8.71

* NOTE - Superelevated cross-section.

Street Capacity Calculations

Luna Rosa Ct.

28' F-F Street Section with 4" curb

Slope= 0.02

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.35	0.00	0.62	0.00514
0.02	0.0064	0.66	0.01	0.00	0.01	0.56	0.01	0.70	0.01219
0.025	0.01	0.83	0.01	0.01	0.01	0.65	0.02	0.73	0.01608
0.035	0.0196	1.16	0.02	0.02	0.03	0.82	0.03	0.77	0.02438
0.045	0.0324	1.49	0.02	0.03	0.06	0.96	0.04	0.80	0.03326
0.052	0.043264	1.72	0.03	0.05	0.09	1.06	0.06	0.82	0.03975
0.06	0.0576	1.98	0.03	0.07	0.13	1.17	0.07	0.84	0.04741
0.0625	0.0625	2.06	0.03	0.08	0.15	1.20	0.08	0.85	0.04985

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 + 2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.08	0.15	1.20	0.08	0.85	0.05014
0.1	0.172656	3.98	0.04	0.26	0.53	1.53	0.15	0.85	0.08033
0.13	0.311406	5.51	0.06	0.57	1.13	1.82	0.24	0.89	0.11109
0.16	0.495156	7.04	0.07	1.04	2.09	2.11	0.34	0.93	0.14476
0.2	0.810156	9.08	0.09	2.00	4.00	2.47	0.49	0.97	0.19277
0.207	0.873506	9.43	0.09	2.21	4.42	2.53	0.52	0.98	0.20147
0.2284	1.08237	10.53	0.10	2.94	5.87	2.71	0.62	1.00	0.22855
0.2969	1.904884	14.02	0.14	6.22	12.45	3.27	0.97	1.06	0.31939

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.911884	14.02	0.14	6.26	12.52	3.28	0.99	1.05	0.32264
0.3039	1.924484	14.02	0.14	6.33	12.66	3.29	1.00	1.05	0.32482
0.3062	1.956684	14.02	0.14	6.51	13.01	3.33	1.02	1.06	0.33039
0.31	2.009884	14.03	0.14	6.80	13.61	3.38	1.05	1.07	0.3396
0.3125	2.044884	14.03	0.15	7.00	14.00	3.42	1.07	1.08	0.34567
0.32	2.149884	14.04	0.15	7.61	15.22	3.54	1.13	1.10	0.36391
0.3317	2.313684	14.05	0.16	8.59	17.19	3.71	1.23	1.14	0.39245
0.333	2.331884	14.05	0.17	8.71	17.41	3.73	1.24	1.14	0.39563

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.359984	14.15	0.17	8.84	17.68	3.75	1.25	1.14	0.39814
0.3727	2.927086	16.04	0.18	11.64	23.29	3.98	1.48	1.15	0.4469
0.38	3.045109	16.40	0.19	12.25	24.50	4.02	1.53	1.15	0.45663
0.4196	**3.731773**	**18.38**	**0.20**	**15.94**	**31.87**	**4.27**	**1.79**	**1.16**	**0.51078**
0.4603	4.519216	20.42	0.22	20.44	40.88	4.52	2.08	1.17	0.56857
0.504	5.456909	22.60	0.24	26.16	52.31	4.79	2.42	1.19	0.63269
0.513	5.661884	23.05	0.25	27.45	54.90	4.85	2.49	1.19	0.64613

Street Capacity Calculations

Luna Llena, Luna Media, Luna Nueva

28' F-F Street Section with 4" curb

Slope= 0.006

For water depths less than 0.0625 feet

Y= Water depth
Area = 16*Y^2
P= SQRT(1025*Y^2) + Y
n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.0016	0.33	0.00	0.00	0.00	0.19	0.00	0.34	0.00195
0.02	0.0064	0.66	0.01	0.00	0.00	0.31	0.01	0.38	0.00475
0.025	0.01	0.83	0.01	0.00	0.01	0.36	0.01	0.40	0.00632
0.035	0.0196	1.16	0.02	0.01	0.02	0.45	0.02	0.42	0.00971
0.045	0.0324	1.49	0.02	0.02	0.03	0.53	0.02	0.44	0.01337
0.052	0.043264	1.72	0.03	0.03	0.05	0.58	0.03	0.45	0.01607
0.06	0.0576	1.98	0.03	0.04	0.07	0.64	0.04	0.46	0.01927
0.0625	0.0625	2.06	0.03	0.04	0.08	0.66	0.04	0.46	0.02029

For water depths greater than 0.0625 ft but less than 0.3025 ft

Y1= Y-0.0625
A2= A1 +·2*Y1 + 25*Y1^2
P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.063506	2.09	0.03	0.04	0.08	0.66	0.04	0.46	0.02041
0.1	0.172656	3.98	0.04	0.14	0.29	0.84	0.08	0.47	0.03274
0.13	0.311406	5.51	0.06	0.31	0.62	1.00	0.13	0.49	0.04573
0.16	0.495156	7.04	0.07	0.57	1.14	1.15	0.18	0.51	0.06013
0.2	0.810156	9.08	0.09	1.10	2.19	1.35	0.27	0.53	0.08087
0.207	0.873506	9.43	0.09	1.21	2.42	1.39	0.29	0.54	0.08465
0.2284	1.08237	10.53	0.10	1.61	3.22	1.49	0.34	0.55	0.09645
0.2969	1.904884	14.02	0.14	3.41	6.82	1.79	0.53	0.58	0.13631

For water depths greater than 0.3025 ft but less than 0.333 ft

Y2= Y - 0.3025
A3= A2 + Y2*14
P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.911884	14.02	0.14	3.43	6.86	1.79	0.54	0.57	0.13748
0.3039	1.924484	14.02	0.14	3.47	6.93	1.80	0.55	0.58	0.13849
0.3062	1.956684	14.02	0.14	3.56	7.13	1.82	0.56	0.58	0.14107
0.31	2.009884	14.03	0.14	3.73	7.45	1.85	0.57	0.59	0.14534
0.3125	2.044884	14.03	0.15	3.83	7.67	1.88	0.59	0.59	0.14816
0.32	2.149884	14.04	0.15	4.17	8.33	1.94	0.62	0.60	0.15664
0.3317	2.313684	14.05	0.16	4.71	9.41	2.03	0.67	0.62	0.16995
0.333	2.331884	14.05	0.17	4.77	9.54	2.04	0.68	0.62	0.17144

For water depths greater than 0.333 ft but less than 0.513 ft

Y3= Y - 0.333
A4= A3 + 14 * Y3 + 25 * Y3^2
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.359984	14.15	0.17	4.84	9.68	2.05	0.69	0.62	0.17254
0.3727	2.927086	16.04	0.18	6.38	12.75	2.18	0.81	0.63	0.19393
0.38	3.045109	16.40	0.19	6.71	13.42	2.20	0.84	0.63	0.19821
0.4196	**3.731773**	**18.38**	**0.20**	**8.73**	**17.46**	**2.34**	**0.98**	**0.64**	**0.22215**
0.4603	4.519216	20.42	0.22	11.20	22.39	2.48	1.14	0.64	0.24783
0.504	5.456909	22.60	0.24	14.33	28.65	2.63	1.32	0.65	0.27645
0.513	5.661884	23.05	0.25	15.03	30.07	2.66	1.36	0.65	0.28246

Street Capacity Calculations

LUNA VISTA DRIVE

28' F-F Street Section with 8" curb

Slope= 0.006

For water depths less than 0.125 feet

Y= Water depth

Area = 8*Y^2

P= SQRT(257*Y^2) + Y

n= 0.017

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.19	0.00	0.33	0.0018848
0.02	0.00	0.34	0.01	0.00	0.00	0.30	0.01	0.38	0.0045908
0.04	0.01	0.68	0.02	0.01	0.01	0.48	0.02	0.42	0.0111278
0.06	0.03	1.02	0.03	0.02	0.04	0.63	0.04	0.45	0.0186349
0.08	0.05	1.36	0.04	0.04	0.08	0.76	0.06	0.47	0.0268376
0.1	0.08	1.70	0.05	0.07	0.14	0.88	0.09	0.49	0.0355923
0.12	0.12	2.04	0.06	0.11	0.23	1.00	0.12	0.51	0.0448091
0.125	0.13	2.13	0.06	0.13	0.26	1.02	0.13	0.51	0.0471777

For water depths greater than 0.125 ft but less than 0.365 ft

Y1= Y-0.125

A2= A1 + 2*Y1 + 25*Y1^2

P2= P1 + SQRT(2501*Y1^2)+Y1

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.14	0.27	1.00	0.13	0.49	0.0460163
0.16	0.23	3.91	0.06	0.23	0.46	1.01	0.16	0.45	0.0486259
0.2	0.42	5.95	0.07	0.48	0.95	1.15	0.23	0.45	0.0623776
0.24	0.69	8.00	0.09	0.90	1.81	1.32	0.32	0.47	0.0806096
0.2846	1.08	10.27	0.11	1.63	3.26	1.51	0.43	0.50	0.1037171
0.32	1.47	12.08	0.12	2.43	4.87	1.66	0.53	0.52	0.1234692
0.3551	1.91	13.87	0.14	3.45	6.89	1.81	0.64	0.53	0.1440036
0.365	2.05	14.37	0.14	3.77	7.55	1.85	0.67	0.54	0.1499436

For water depths greater than 0.365 ft but less than 0.667 ft

Y2= Y - 0.365

A3= A2 + Y2*14

P3= P2 + Y2

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	3.99	7.98	1.89	0.70	0.55	0.1556607
0.4556	3.31	14.46	0.23	8.40	16.80	2.54	1.16	0.66	0.2556985
0.4956	3.87	14.50	0.27	10.88	21.75	2.81	1.39	0.70	0.3036992
0.5	3.94	14.51	0.27	11.16	22.33	2.84	1.42	0.71	0.3090234
0.54	4.50	14.55	0.31	13.91	27.82	3.09	1.67	0.74	0.357805
0.5584	4.75	14.56	0.33	15.25	30.50	3.21	1.79	0.76	0.3804643
0.63	5.76	14.64	0.39	20.91	41.83	3.63	2.29	0.81	0.4698487
0.667	6.27	14.67	0.43	24.10	48.21	3.84	2.56	0.83	0.5167338

For water depths greater than 0.667 ft but less than 0.847 ft

Y3= Y - 0.667

A4= A3 + 14 * Y3 + 25 * Y3^2

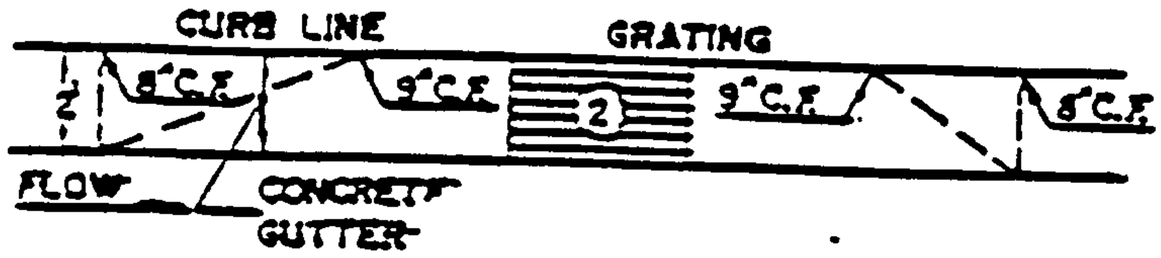
P4= P3 + SQRT(2501 * Y3^2)

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.7	6.76	16.32	0.41	25.44	50.89	3.76	2.63	0.79	0.5090958
0.72	7.09	17.32	0.41	26.43	52.87	3.73	2.69	0.77	0.5071856
0.74	7.43	18.32	0.41	27.55	55.10	3.71	2.74	0.76	0.5069788
0.76	7.79	19.32	0.40	28.79	57.58	3.70	2.81	0.75	0.508251
0.78	8.17	20.32	0.40	30.16	60.31	3.69	2.88	0.74	0.5108175
0.8	8.58	21.32	0.40	31.64	63.29	3.69	2.95	0.73	0.5145251
0.847	**9.60**	**23.68**	**0.41**	**35.63**	**71.26**	**3.71**	**3.14**	**0.71**	**0.5270333**

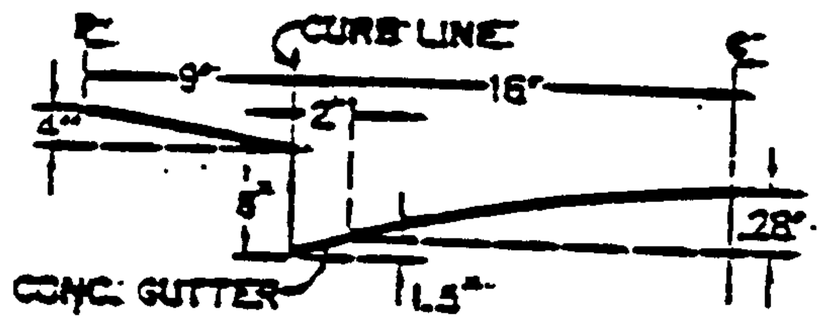
LUNA VISTA DRIVE @ TYPE "A" INLET

22.3

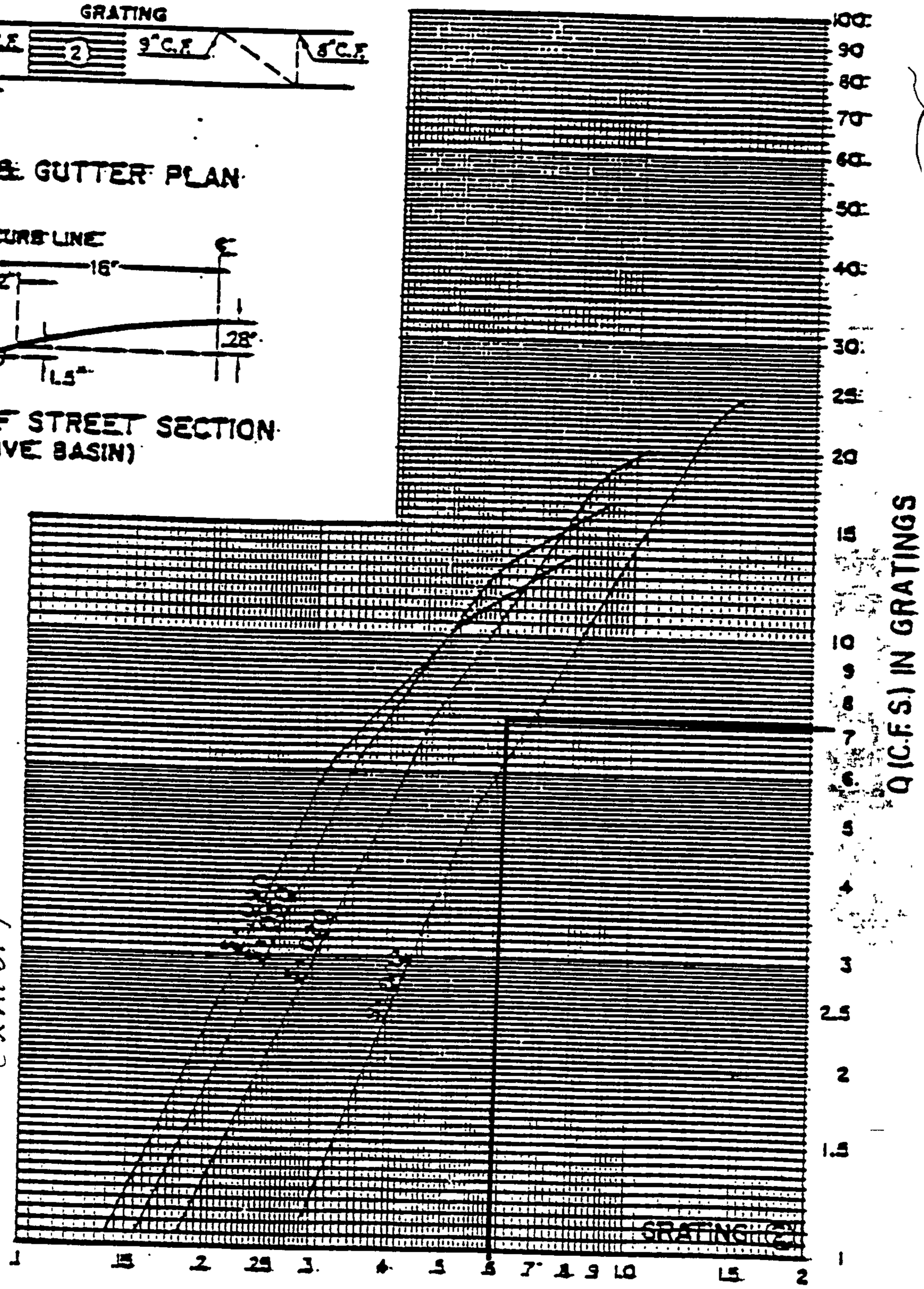
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Does not match exhibit

Q_{PEAK} = 18.91 cfs

d = 0.59 ft

S = 0.6 %

Q = 7.3 cfs (INLET)

Q_{LEFT} = 11.61 cfs

Luna Vista Subdivision

Storm Drain Pipe Capacity for Developed Conditions

Pipe	Location	D	Slope	Area	R	Q Provided	Q Required	Velocity
		(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
RCP	Luna Vista Drive	18	0.6	1.77	0.375	8.16	2.18	1.23

<u>Manning's Equation:</u>

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

Emergency Overflow Calculations:

Broad Crested Weir: Q = C L (H)^3/2

For Q = 39.320 cfs

L = 30 Ft

C = 2.70

H = 0.62 Ft

Weir Crest Elevation = 4957.00

Water Surface Elevation at 100-Year Peak Flow Rate = 4957.62

Lowest Finish Floor Elevation = 4957.86

Maximum Water Surface Elevation < Lowest Finish Floor Elevation

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENT AGREEMENT
DEVELOPMENT REVIEW BOARD
REQUIRED INFRASTRUCTURE LISTING
(LEGAL DESCRIPTION OF SUBDIVISION)
Luna Vista
(NAME and UNIT OF SUBDIVISION)

DRB Case No: 1000361
DRC Project Number:
Prelim. Plat Approved:
Prelim. Plat Expires:
Site Plan Approved:

Date Submitted:

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development This listing is not neces a complete listing. During the SIA processs and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair detemines that appurtenant or non essential items can be deleted from the listing, those items may be deleted as well as the related porti of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and the agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

Size	Type Improvement	Location	From	To
30' F-F	Residential Paving	Luna Vista Drive	Luna Llena Avenue	Luna Rosa Court
	Curb & Gutter,			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Rosa Court	Luna Vista Drive	East Property Line
	Curb & Gutter,			
	*Sidewalks 4' (Both Sides)			
46' F-F	Residential Paving	Luna Vista Drive	Luna Llena Avenue	Indian School Road
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Nueva Court	Luna Llena Avenue	End of Cul-De-Sac
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Llena Avenue	Luna Vista Drive	Luna Media Court
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
30' F-F	Residential Paving	Luna Media Court	Luna Llena Avenue	End of Cul-De-Sac
	Curb & Gutter, Sidewalks 4'			
	*Sidewalks 4' (Both Sides)			
73' F-F	Sidewalk Widening 2' (South Side)	Indian School Road	West Property Line	East Property Line
6"	Water PVC Line	Luna Vista Drive	Indian School Road	Luna Rosa Court
6"	Water PVC Line	Luna Rosa Court	Luna Vista Drive	East Property Line
6"	Water PVC Line	Luna Llena Avenue	Luna Vista Drive	Luna Media Court
6"	Water PVC Line	Luna Media Court	Luna Llena Avenue	End of Cul-De-Sac
6"	Water PVC Line	Utility Easement	Luna Media Court	MRGCD Access Road
4"	Water PVC Line	Luna Nueva Court	Luna Llena Avenue	End of Cul-De-Sac
12"	Water PVC Line	MRGCD Access Road	Indian School Road	South Property Line
8"	SAS Gravity Line	Luna Vista Drive	Indian School Road	Luna Rosa Court
8"	SAS Gravity Line	Luna Rosa Court	Luna Vista Drive	East Property Line
8"	SAS Gravity Line	Luna Llena Avenue	Luna Vista Drive	Luna Media Court
8"	SAS Gravity Line	Luna Media Court	Luna Llena Avenue	End of Cul-De-Sac
8"	SAS Gravity Line	Luna Nueva Court	Luna Llena Avenue	End of Cul-De-Sac
8"	SAS Gravity Line	Utility Easement	Luna Vista Drive	Lilac Street
18"	RCP Storm Sewer	Luna Vista Drive	375' South of Luna Llena Avenue	Detention Pond

24"	RCP Storm Sewer	Drainage Easement	Detention Pond	Alameda Drain
	Grading and drainage certification is required prior to release of financial guarantees.			
	Catch basins and RCP included with Storm Sewer			
	Water Infrastructure to include Valves, Fittings, Valve Boxes, and Fire Hydrants as required.			
	Sanitary Sewer to include Manholes and Service Connections as required.			
	Residential Street Lights per DPM.			
	* Internal Sidewalks deferred.			
	Certified Grading & Drainage with Private Walls & Private Drainage (Non-work order item) Required for SIA/Financial Release			

Agent/Owner Name: _____

Agent/Owner Name: Ronald R. Bohannan, P.E.

Firm: Tierra West LLC

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

Transportation Dev. Date

Utility Dev. Date

Parks & GS. Date

City Engineer Date

AMAFCA Date

DRB Chairman D

DRC REVISIONS

Revisions	Date	DRC Chair	User Department	Agent/Owner

scanned to DMD

17.00

66368

#4
(NOT DEVELOPER OWNED PROPERTY)
H13/D041

PRIVATE FACILITY
DRAINAGE COVENANT AND
RESERVATION OF PRIVATE DRAINAGE EASEMENT
2/28/2002

This Drainage Covenant ("Covenant"), between [state the name of the present real property owner exactly as shown on the real estate document conveying title to the present owner and state the legal status of the owner, for example, "single person," "husband and wife," "corporation of the State of _____," "partnership":]SYMPHONY HOMEOWNER'S ASSOCIATION, INC., A New Mexico Nonprofit Corporation ("Owner"), whose address is 6700 Jefferson NE, Bldg. B., Albuquerque, NM 87109; [state the name of the developer or subdivider required to construct the drainage facility and state the legal status of the developer, for example, "single person," "husband and wife," "corporation of the State of N/A," "partnership":] Centex Homes, a Nevada general partnership,
("Developer"), whose address is 6700 Jefferson NE, Bldg. B., Albuquerque, NM 87109, and the City of Albuquerque, a New Mexico municipal corporation ("City") whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner and Developer sign this Covenant.

1. Recital. The Developer is the current owner of the following described real property; Tract A (the "Property") as shown on Plat of Symphony Subdivision (the "Subdivision") in Bernalillo County, New Mexico filed for record 3/12/2002 in Book 2002C at Page 84 as Document #2002032806 Bernalillo County, New Mexico.

Pursuant to City ordinances, regulations and other applicable laws, the Developer is required to construct and maintain certain drainage facilities as a condition to the approval of the Subdivision and the Owner will maintain the Drainage Facility when the Property has been conveyed to Owner, and the parties wish to enter into this Covenant to establish the obligations and responsibilities of the parties.

The Developer has granted a perpetual easement ("Easement") over and across the Property for the benefit of Lots 1-62 of the Symphony Subdivision for the purpose of permitting the flow, conveyance and discharge of storm water runoff and for the purpose of permitting ingress and egress for the construction, maintenance and repair of the Drainage Facility.

Mary Herrera Bern. Co. EASE R 17.00
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Page: 1 of 6
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2. Description and Construction of Drainage Facility. Until the Property is conveyed to the Owner, the Developer shall construct and maintain the following "Drainage Facility" within the Property at the Developer's sole expense in accordance with the standards, plans and specifications approved by the City:

The Drainage Facility is more particularly described in Exhibit A attached hereto and made a part hereof.

3. Maintenance of Drainage Facility. The Owner shall maintain the Drainage Facility upon conveyance of the Drainage Facility from the Developer to the Owner at Owner's sole cost and expense in accordance with the approved Drainage Report and plans.

4. Benefit to Property. The Developer and Owner acknowledge and understand that the Drainage Facility required herein to be constructed is for the private benefit and protection of Lots 1-62 as shown on the Plat of the Subdivision and that failure fo maintain such facility could result in damage or loss to the Subdivision and to the Property.

5. Inspection of Drainage Facility. The City shall have no duty or obligation whatsoever to perform any inspection, maintenance or repair of the Drainage Facility, it being the duty of the Developer and Owner, its heirs, successors and assigns to construct and maintain the facility in accordance with approved plans and specifications.

6. Liability of City. The Developer and Owner understand and agree that the City shall not be liable to the Developer or the Owner, or their respective heirs, successors or assigns, or to any third parties for any damages resulting from the Developer's or Owner's failure to construct, maintain or repair the Drainage Facility.

7. Indemnification. The Developer and Owner own and control the Drainage Facility and shall not permit the Drainage Facility to constitute a hazard to the health or safety of the general public. The Developer and Owner agree to indemnify, defend and hold harmless the City, its officials, agents and employees, its heirs, successors and assigns from any claims, actions, suits or other proceedings arising from or out of the negligent acts or omissions of the Developer or Owner, its agents, representatives, contractors or subcontractors or arising from the failure of the Developer or Owner, its agents, representatives, contractors or subcontractors to perform any act or duty required of the Developer or Owner herein; provided, however, to the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expense, including attorney's fees, arising out of (1) the

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Page: 2 of 6
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Mary Herrera Bern. Co. EASE R 17.00

preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the respective indemnitee, or the agents or employees of the respective indemnitee; or (2) the giving of or the failure to give direction or instructions by the respective indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

8. Assessment. Nothing in this Easement and Covenant shall be construed to relieve the Owner or Developer, or their respective heirs, assigns and successors from an assessment against the Owner's or Developer's property for improvements under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

9. Binding on Owner's Property. The Easement, covenants and obligations of the Owner and Developer set forth herein shall be binding on the Owner and Developer, and their respective heirs, assigns and successors and constitute covenants running with the Property and the Subdivision until released by the City's Chief Administrative Officer as approved by the City Engineer.

10. Entire Covenant. This Covenant contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

11. Changes to Covenant. Changes to this Covenant are not binding unless made in writing, signed by all parties.

12. Effective Date of Covenant. This Covenant shall be effective as of the date of signature of the Owner and Developer.

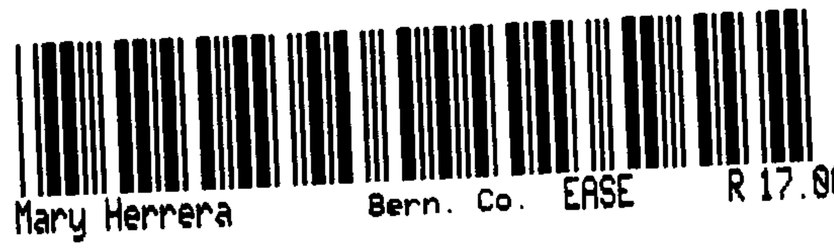
DEVELOPER: CENTEX HOMES

By: RICHARD MALLETT
Title: VICE PRESIDENT
Dated: 2/26/02

OWNER: SYMPHONY HOMEOWNERS ASSN.

By: JASON HODGE
Title: PRESIDENT
Dated: 2/26/02

CITY OF ALBUQUERQUE
ACCEPTED:



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Page: 4 of 6
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Director, Public Works Dept.

Dated: 2-28-02

DEVELOPER'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument as acknowledged before me on 26 day of February, 2002 by (name of person) Richard Mallett, (title or capacity, for instance, "President" or "Owner") Vice President of (Developer) Centex Homes

Notary Public

My Commission Expires:
11/10/2005

OFFICIAL SEAL
NORMAN A. GREGORY
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 11/10/05

OWNERS ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on 26 day of February, 2002 by Jason Hodge, President, Symphony Homeowners Association, a New Mexico non-profit corporation, on behalf of said corporation.

Notary Public

My Commission Expires:
11/10/2005

OFFICIAL SEAL
NORMAN A. GREGORY
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 11/10/05

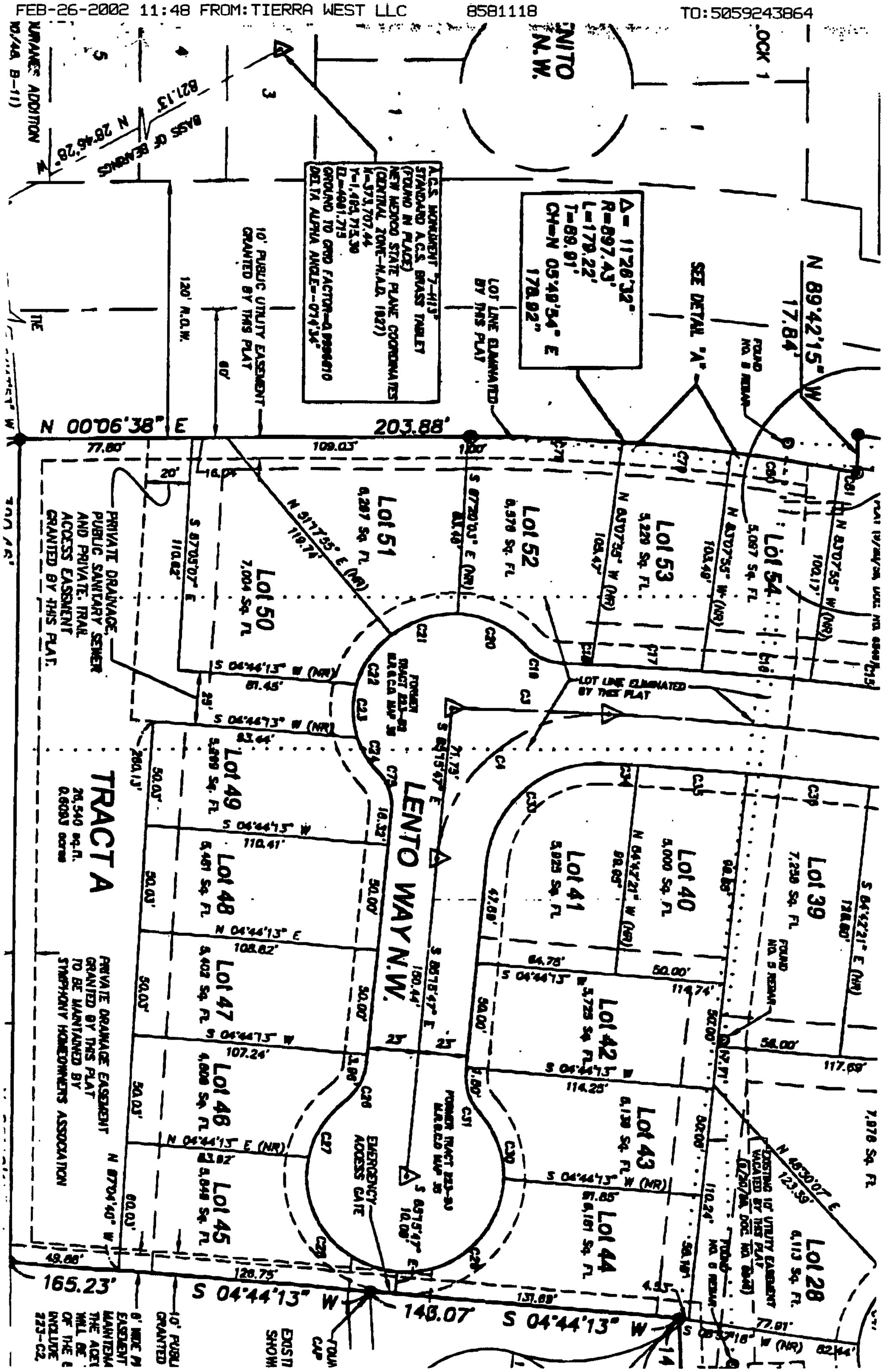

EXHIBIT A
B182

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Page: 5 of 6
04/04/2002 11:43A
Bk-A34 Pg-4287

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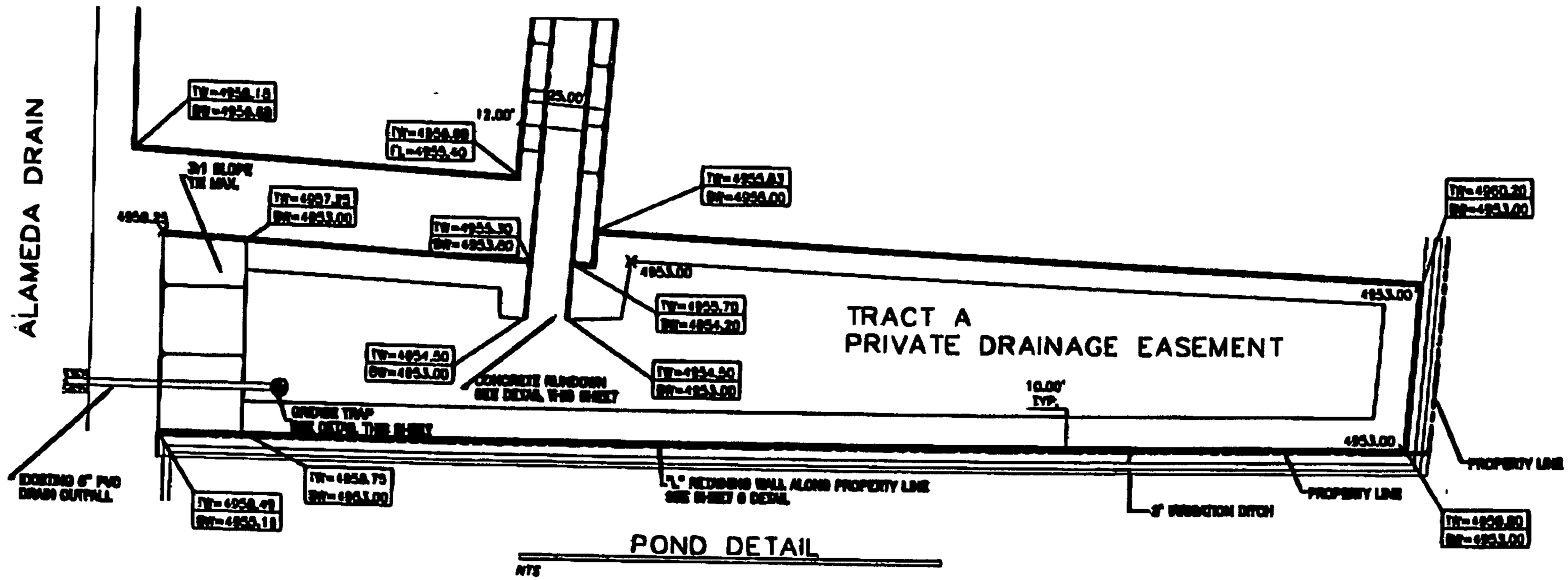
Page: 6 of 6
04/04/2002 11:43A
Bk-A34 Pg-4287



POND DETAIL

EXHIBIT "A" Pg. 2 of 2
POND DETAIL
SYMPHONY SUBDIVISION

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Project # 663681
CCN# 200200369

Contact Person KATHY JARAMILLO
Phone No. 924-3996

~~Item~~ or Ext. #

Type of Agreement: private facility drainage covenant

Description/Project Name: Symphony Subd.
Public Works Dept./Div.: DESIGN REVIEW
Developer: Centex Homes/Symphony Home Owner Assoc.
Contract Amount $ -0- SIA Contract Period: 2/28/02 - 12/31/2022
Contract Amount $ SIA Contract Period: -
Contract Amount $ S/W Contract Period: -

DRAFT CONTRACT:
Rec'd by Legal: Rejected/Returned to Dept.: /
Returned to Legal: / Appproved: Initials:

FINANCIAL GUARANTY:
Letter of Credit No.: Date: Attached: Yes___ No.___ Initial
Other: Type Date: Attached: Yes___ No.___ Initial

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date
Utilitiy Div				
Hydrology Div	2/27/02	2/27/02	BZB	2/27/02
Transportation Div				
DRC Chairman	2/27/02	2/27/02		2/27/02
Legal Dept	2/27/02	2/27/02		2/27/02
City Engineer	2/27/02	2/28/02	FA	2/28/02
PWD Director				
Finance				
City Clerk				
CAO				

DISTRIBUTION:

	Date:	By:
User Department.	4/4/02	
Vendor		
City Clerk	4/5/02	
Treasury		
Other:		

ADDENDUM TO COVER PAGE

2/27/02
(Date)

TO: Kevin Curran, Assistant City Attorney, Legal Department

FROM: Project Administrator, Project Review Sec., PWD

SUBJECT: PROJECT TITLE: Symphony Subd PROJECT # 663681

The attached documents have been review, approved, initialed and/or signed by the DRC Chairman and are submitted for your action as noted.

ITEM	ACTION: Review & Approval	Reference	Comments
Procedure "A"	☐☐☐	☐☐	
Procedure "B"	☐☐☐	☐☐	
Procedure "B" Modified Non Work Order	☐☐☐	☐☐	
Procedure "C"	☐☐☐	☐☐	
Procedure "C" Modified	☐☐☐	☐☐	
Special Agreement	☐☐☐	☐☐	
Sidewalk Deferral Agreement	☐☐☐	☐☐	
Amendment	☐☐☐	☐☐	
Assignment	☐☐☐	☐☐	
Financial Guarantee	☐☐☐	☐☐	
Construction Paperwork:			
Contractors Proposal	☐☐☐	☐☐	
Performance/Warranty Bonds	☐☐☐	☐☐	
Labor/Material Bonds	☐☐☐	☐☐	
Certificate of Insurance	☐☐☐	☐☐	
Engineers Cost Estimate	☐☐☐	☐☐	
Extension	☐☐☐	☐☐	
Release/Agreement	☐☐☐	☐☐	
Release/Financial Guarantee	☐☐☐	☐☐	
Calling Notice	☐☐☐	☐☐	
Letter of Commitment	☐☐☐	☐☐	
Reduction Letter	☐☐☐	☐☐	
License Agreement	☐☐☐	☐☐	
Monitoring Well Permit	☐☐☐	☐☐	
Agreement & Covenant	☐☐☐	☐☐	
Drainage Covenant	☑☐☐	☐☐	
Revocable Permit	☐☐☐	☐☐	
Encroachment	☐☐☐	☐☐	
Permanent Easement	☐☐☐	☐☐	
Temporary Easement	☐☐☐	☐☐	

Other:

Please Call Kathy at 3996 if you have any questions regarding the above or when the documents are ready to be picked up.

No. of Attachments (1)

6636681

H13/D041

AGREEMENT AND COVENANT

This Agreement and Covenant (Agreement), between the City of Albuquerque, New Mexico ("City") and Luna Vista ~~Las Golondrinas~~ Homeowners Association ("User") and ~~David, Rebecca, Manuel and Mary Gonzales~~ Jim W Shull, Jr ("~~Developer~~") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

1. Recital. The User is the owner of certain real property ("User's Property") located at ~~Las Golondrinas Subdivision~~ Luna Vista (the "Subdivision)", in Albuquerque, New Mexico and more particularly described as:

   Luna Vista Subdivision
   ~~Tracts A and B, Las Golondrinas Subdivision~~

The City is the owner of certain real property, easement or public right-of-way (City's Property') in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

Tract A, Luna Vista Subdivision
~~An Open Space and Landscape Easement on Tracts A & B, Las Golondrinas Subdivision~~

a portion of tracts 223 B2 & 223 B3 MRGCD

The User wishes to construct upon, improve, or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

Detention Pond
~~Landscape and Wall Structures~~

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by the User.
3. Developer's Responsibility for Improvement. The Developer will be initially responsible for constructing, maintaining, repairing and, if required, removing the Improvement, all in accordance with standards required by the City and attached as Exhibit B. The Developer will be responsible for paying all related costs. The Developer will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The Developer will conform with all applicable laws, ordinances and regulations. After the Developer assigns Developer's interest in Tracts A and B to User, the foregoing obligations will be assumed by User.
4. Dissolution. In the event User dissolves and there is no successor organization, or if User is insolvent or in bankruptcy, and the City incurs any expenditures to perform User's maintenance obligations under this Agreement then the individual lot owners of all the property within the subdivision shall pay the reasonable costs incurred by the City and this Agreement shall constitute a mortgage lien upon all of the land within Subdivision to secure payment of the amount due the City and such lien may be enforced and foreclosed by equitable proceedings as provided by law.
5. Maintenance Fund. The User shall establish and maintain during the term of the Agreement a cash Maintenance Fund (the "Maintenance Fund") in the amount of not less than five thousand dollars ($5000.00) for the exclusive purpose of maintaining the Improvements. The Maintenance Fund shall

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Page: 1 of 7
07/21/1998 09:34A
Judy D Woodward

be for the exclusive use and benefit of the City and shall not be available to any other party except the City and may not be used by the City for any other purpose whatsoever. In the event the City determines in its sole discretion that User is in default under User's obligation to maintain the Improvement, User shall upon written request by the City, make the Maintenance Fund available to the City within three (3) days. The City may then expend any sums necessary from the Maintenance Fund to cure the default. The User shall promptly restore the Maintenance Fund to the original amount of five thousand dollars ($5000.00).

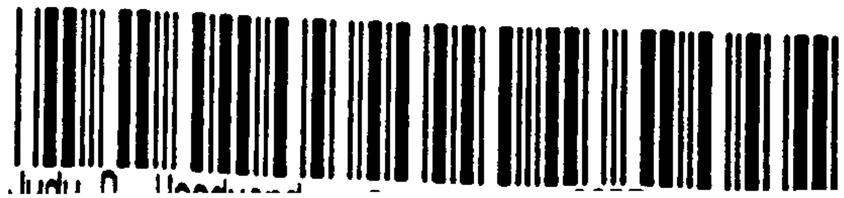
6. Use of the Improvement. If the City's Property is a public right-of way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods on construction, maintenance or repair.
7. Demand for Repair, Modification, or Removal. The city may send written notice ("Notice") to the User requiring the User to repair, modify, or remove the Improvement within 90 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.
8. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User, or make demand on the Maintenance Fund, for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City any impose a lien against all of the Property within the Subdivision for the total resulting amount.
9. Cancellation of Agreement and Release of Convenant. This Agreement may be cancelled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernaillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County clerk.
10. Condemnation. If any part of the User's property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.
11. Assessment. Nothing in this Agreement shall be construed to relieve the User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Improvement will not reduce the amount assessed by the City.
12. Notice. For purposes of giving formal written notice to the User and Developer, User and Developer's address is :

~~David Gonzales~~ Luna Vista Homeowners Assoc
~~5925 Edith NE~~
~~Albuquerque, NM 87107~~

Notice may be given to the User and/or Developer either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received within 3 days after the notice is mailed if there is no actual evidence of receipt. The User and or Developer may change the address for notice by giving written of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 81703.

13. Insurance.

A. General Conditions. The User shall procure and maintain in full force and effect during the term of this Agreement such insurance as is required herein. The City shall be named as an additional insured on the policies of insurance. Policies of insurance shall be written by companies authorized to write such insurance in New Mexico, and they shall be in a form



satisfactory to City and properly filed and approved by the Superintendent of Insurance, State of New Mexico. The insurance may be written in one or more policies. The User shall:

(1) Include any and all contractors and subcontractors in its insurance policies; or
(2) Require the contractors and subcontractors to secure insurance to protect itself against all hazards enumerated herein that are not covered by the User's policies.
(3) All certificates of insurance (or policies) shall provide that thirty (30) days written notice is given to the Director of Risk Management, City of Albuquerque, P.O. Box 1293, Albuquerque, New Mexico, 87103, before a policy is cancelled, materially changed, or not renewed. A certificate or policy that states that failure to give such notice imposes no obligation on the Insurance Company is unacceptable to the City.
(4) The User shall not violate the terms or prohibitions of insurance policies required to be furnished by the User. The User shall promptly notify the City of any claim or loss exceeding the amount of the deductible under such insurance policies, and certify that proper notice has been given the appropriate insurance carrier.

B. Approval of Insurance. Even though a Notice to Proceed may have been given, the User shall not permit any contractor or subcontractor to begin any work under this Agreement until the required insurance has been obtained and the proper certificates (or policies) filed with City. Neither approval nor failure to disapprove certificates, policies or the insurance by City shall relieve the User or any contractor or subcontractor of full responsibility to maintain the required insurance in full force and effect.

C. Commercial General Liability insurance. The User shall procure and maintain during the term of this Agreement a comprehensive general liability insurance policy with liability limits in amounts not less than $1,000,000 combined single limit of liability for bodily injury, including death, and property damage in any one occurrence. Said policies of insurance must include coverage for collapse ©, explosion (X) and underground (U) liability, and contractual liability coverage which shall specifically insure the indemnification provisions of this Agreement.

D. Owners and Contractors Protective Liability Insurance. The User shall procure and maintain during the life of any construction, an Owners and Contractors protective liability insurance policy with liability limits in amounts not less than $500,000 combined single limit of liability bodily injury, including death and, ~~and~~ property damage in any one occurrence. The policy will be written with City as the named insured and will provide for City's officers and employees while acting within the scope of their duties against all claims arising out of or in connection with the work to be performed.

14. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents, and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawing, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee, or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

15. Term. This Agreement shall continue until revoked by the City pursuant to Section 9 above.

16. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs, assigns and successors and on the Subdivision and on User's Property and shall constitute covenants running with the Subdivision and User's property until released by the City. Developer hereby expresses his intent to assign his interest in the Subdivision, subject to the covenants herein.

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Page: 3 of 7
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17. Entire Agreement. This Agreement contains the entire agreement of the parties and supercedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

18. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

19. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonable capable of completion.

20. Captions. The captions to the sections or paragraph of this Agreement are not part of this Agreement and will not affect the meaning or constructions of any of its provisions.

CITY OF ALBUQUERQUE
Approved By:

By: _____
Its: Chief Administrative Officer

DEVELOPER:

David, Rebecca, Manuel and Mary Gonzales

_____ 6/11/98
David Gonzales Dated

Rebecca Gonzales 6-12-98
Rebecca Gonzales Dated

_____ 6/11/98
Manuel Gonzales Dated

Mary Gonzales 6-12-98
Mary Gonzales Dated

USER:

LAS GOLONDRINAS
HOMEOWNERS ASSOCIATION

_____

Its: President
Dated: 6-11-98

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Page: 4 of 7
07/21/1998 09:34
Bk-9812 Pg-8955
Judy D. Woodward Bern. Co. AGRE R 19.00

CITY'S NOTARY

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me this 16th day of July, 1998 by Lawrence Rael, (title) Chief Administrative Officer of the City of Albuquerque, a municipal corporation, on behalf of said corporation.

My commission Expires: 11/18/2000

_____
Notary Public in and for said County and State

OFFICIAL SEAL
Jennifer Parada
NOTARY PUBLIC
STATE OF NEW MEXICO

USER'S NOTARY

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

OFFICIAL SEAL
LISA M. LANE
Notary Public
State of New Mexico
My Commission Expires 1-21-99

This instrument was acknowledged before me on this 11 day of June, 19 98 by David Gonzales, (title) President of Las Golondrinas Homeowners Association, a New Mexico corporation, on behalf of said corporation.

My commission Expires:

1-21-99

Notary Public in and for said County and State

DEVELOPER'S NOTARY

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

OFFICIAL SEAL
LISA M. LANE
1-21-99

This instrument was acknowledged before me on this 12 day of June, 19 98 by David Gonzales.

My commission Expires:

1-21-99

Notary Public in and for said County and State.

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

OFFICIAL SEAL
LISA M. LANE
Notary Public
State of New Mexico
My Commission Expires 1-21-99

This instrument was acknowledged before me on this 12 day of June, 19 98 by Rebecca Gonzales

My commission Expires:

1-21-99

Notary Public in and for said County and State

OFFICIAL SEAL
LISA M. RANE
Notary Public
State of New Mexico
My Commission Expires 1-21-99

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on this 12 day of June 1998 by Alarwil Gonzales

My commission Expires:

1-21-99

Notary Public in and for said County and State

OFFICIAL SEAL
LISA M. RANE
Notary Public
State of New Mexico
My Commission Expires 1-21-99

STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on this 12 day of June 1998 by Alarwil Gonzales

My commission Expires:

1-21-99

Notary Public in and for said County and State

Judy D. Woodward Bern. Co. AGRE R 19.00

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Page: 6 of 7
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Bk-9812 Pg-8955

Original

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Project # 663681
CCN#
(New) or Ext. #

Contact Person KATHY JARAMILLO
Phone No. 924 - 3996

Type of Agreement: agreement & covenant

Description/Project Name: Luna Vista Subd.
Public Works Dept./Div.: DESIGN REVIEW
Developer: Jim W. Shull, Jr & Charles Williams
Contract Amount $ -0-
Contract Amount $
Contract Amount $

~~SIA C~~Contract Period: - 12/31/2021
SIA Contract Period: -
S/W Contract Period: -

DRAFT CONTRACT:
Rec'd by Legal:
Returned to Legal: 8/30/01 KJ
Rejected/Returned to Dept.: /
Appproved: Initials:

FINANCIAL GUARANTY:
Letter of Credit No.: Date: Attached: Yes___ No.___ Initial
Other: Type Date: Attached: Yes___ No.___ Initial

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date
Utilitiy Div				
Hydrology Div	8/21/01 KJ	8/22/01	BLB	8/22/01
Transportation Div				
DRC Chairman	8/22/01 KJ	8/23/01		8/23/01
Legal Dept	8/23/01 KJ	8/30/01		8/30/01
City Engineer	8/30/01 KJ			
PWD Director				
Finance				
City Clerk				
CAO				

DISTRIBUTION:

	Date:	By:
User Department.		
Vendor		
City Clerk		
Treasury		
Other:		

ADDENDUM TO COVER PAGE

8/21/01
(Date)

TO: Kevin Curran, Assistant City Attorney, Legal Department

FROM: Project Administrator, Project Review Sec., PWD

SUBJECT: PROJECT TITLE: Luna Vista Subd. PROJECT # 663681

The attached documents have been review, approved, initialed and/or signed by the DRC Chairman and are submitted for your action as noted.

ITEM	ACTION: Review & Approval	ACTION: Reference	Comments (8/23/01)
Procedure "A"	☐☐☐	☐☐	
Procedure "B"	☐☐☐	☐☐	
Procedure "B" Modified Non Work Order	☐☐☐	☐☐	
Procedure "C"	☐☐☐	☐☐	
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Special Agreement	☐☐☐	☐☐	
Sidewalk Deferral Agreement	☐☐☐	☐☐	
Amendment	☐☐☐	☐☐	
Assignment	☐☐☐	☐☐	
Financial Guarantee	☐☐☐	☐☐	
Construction Paperwork:			
Contractors Proposal	☐☐☐	☐☐	
Performance/Warranty Bonds	☐☐☐	☐☐	
Labor/Material Bonds	☐☐☐	☐☐	
Certificate of Insurance	☐☐☐	☐☐	
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Agreement & Covenant	☑☐☐	☐☐	
Drainage Covenant	☐☐☐	☐☐	
Revocable Permit	☐☐☐	☐☐	
Encroachment	☐☐☐	☐☐	
Permanent Easement	☐☐☐	☐☐	
Temporary Easement	☐☐☐	☐☐	

Other:

Please Call Kathy at 3996 if you have any questions regarding the above or when the documents are ready to be picked up.

No. of Attachments (1)

2|00

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M.R.G.C.D. CONTRACT NO. 2-085-2001
M.R.G.C.D. MAP NO. 35
TRACT NO. LUNA VISTA SUBDIVISION
SEC. 7, T. 10 N., R. 3 E.
ALAMEDA DRAIN
STATION 77+50±

H13/D041

MIDDLE RIO GRANDE CONSERVANCY DISTRICT
LICENSE AGREEMENT

LICENSE WITH JIM W. SHULL JR. TO DISCHARGE STORM WATER FROM THE LUNA VISTA SUBDIVISION VIA AN EXISTING 6" Ø DRAIN OUTFALL TO THE ALAMEDA DRAIN RIGHT-OF-WAY

This License Agreement is made and entered into this 25th day of JULY, 2001, by and between the Middle Rio Grande Conservancy District, ("the District"), and JIM W. SHULL JR. ("the Licensee").

WHEREAS, the District holds an easement interest for the ALAMEDA DRAIN, ("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 DISCHARGE STORM WATER FROM THE LUNA VISTA SUBDIVISION VIA AN EXISTING 6" Ø DRAIN OUTFALL TO THE ALAMEDA DRAIN RIGHT-OF-WAY, hereafter referred to as "the installation", across the property which will serve THE LUNA VISTA SUBDIVISION, MRGCD Map 35, Station 77+50±. The District agrees to the installation set forth in this paragraph only pursuant to the guidelines shown on Drawing No.(s) 163-518-4955 attached hereto, AND THE APPROVED CONSTRUCTION DRAWINGS FOR THE LUNA VISTA SUBDIVISION and any and all other attached drawings and/or specifications which by this reference are made a part of this License Agreement. UNDER NO CIRCUMSTANCE WILL THE LICENSEE DISCHARGE OR ALLOW A DISCHARGE RATE OF GREATER THAN 2 CFS TO THE ALAMEDA DRAIN.

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.

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Page: 1 of 8
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Mary Herrera Bern. Co. AGRE R 21.00

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 Districts 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, subject to paragraphs 6 and 7, 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. The Licensee shall defend, indemnify and hold harmless the District, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said 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, provided, however, to the extent, if at all, NMSA 1978, Section 56-7-1 is applicable to this License, this agreement to indemnify shall not extend to liability, claims, damages, losses or expenses, including attorneys' fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the District, or their agents or employees of the District; or (2) the giving of or the failure to give direction or instructions by the District or the agents or employees of the District, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

6. This License is not intended by any of the provisions of any part of the License to create in the public, or any member thereof, a third-party beneficiary or to authorize anyone not a party to the License to maintain a suite for wrongful death, bodily and/or personal injury to person, damage to property and/or any other claim(s) whatsoever pursuant to the provisions of the License.

7. By entering into this License Agreement, each party shall be responsible for liability arising from personal injury or damage to person and property occasioned by its own agents or employees in the performance of this License Agreement, subject in all cases to the immunities and limitations of the New Mexico Tort Claims Act (NMSA 1978, Section 41-4-1, et seq.) and any amendments thereto. This paragraph is intended only to define the liabilities as governed by common law or the New Mexico Tort Claims Act. The District and its "public employees" as defined in the New Mexico Tort Claims Act, do not waive sovereign immunity, do not waive and defense and/or do not waive any limitations of liability pursuant to law. No provision in this License modifies and/or waives any provision of the New Mexico Tort Claims Act.

8. 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

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Page: 2 of 8
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Mary Herrera Bern. Co. AGRE R 21.00 Bk-A24 Pg-5304

shall obtain the requisite permission prior to the use of or encroachment upon the property.

9. 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.

10. 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: JIM W. SHULL JR., 5445 EDITH NE, SUITE F, ALBUQUERQUE, NM 87107

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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.

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Page: 3 of 8
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17. 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.

18. 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.

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

20. Licensee is responsible, at the expense of the Licensee, to comply with all N.E.P.A. specifications and requirements.

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

APPROVED:
MIDDLE RIO GRANDE CONSERVANCY DISTRICT

_____ DATE: 7/25/01
Chief Executive Officer

LICENSEE

_____ DATE: 7/12/01

ACKNOWLEDGMENT OF THE LICENSEE

State of New Mexico)
)ss.
County of Bernalillo)

On the 12th day of July, 2001, the above noted Licensee 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.

Judy H. Simonton

Notary Public in and for the
State of New Mexico
Residing at Bernalillo County
My commission expires: 3-13-02

FINAL CONSTRUCTION INSPECTED:
MIDDLE RIO GRANDE CONSERVANCY DISTRICT

_____ DATE: _____

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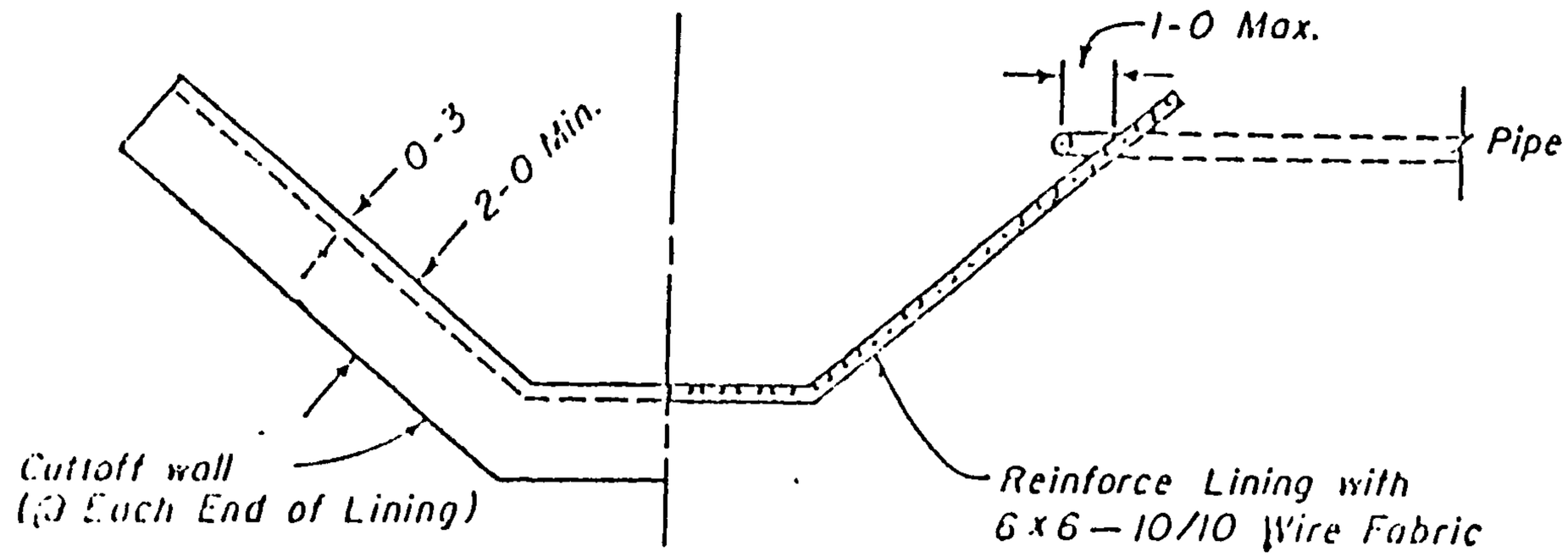
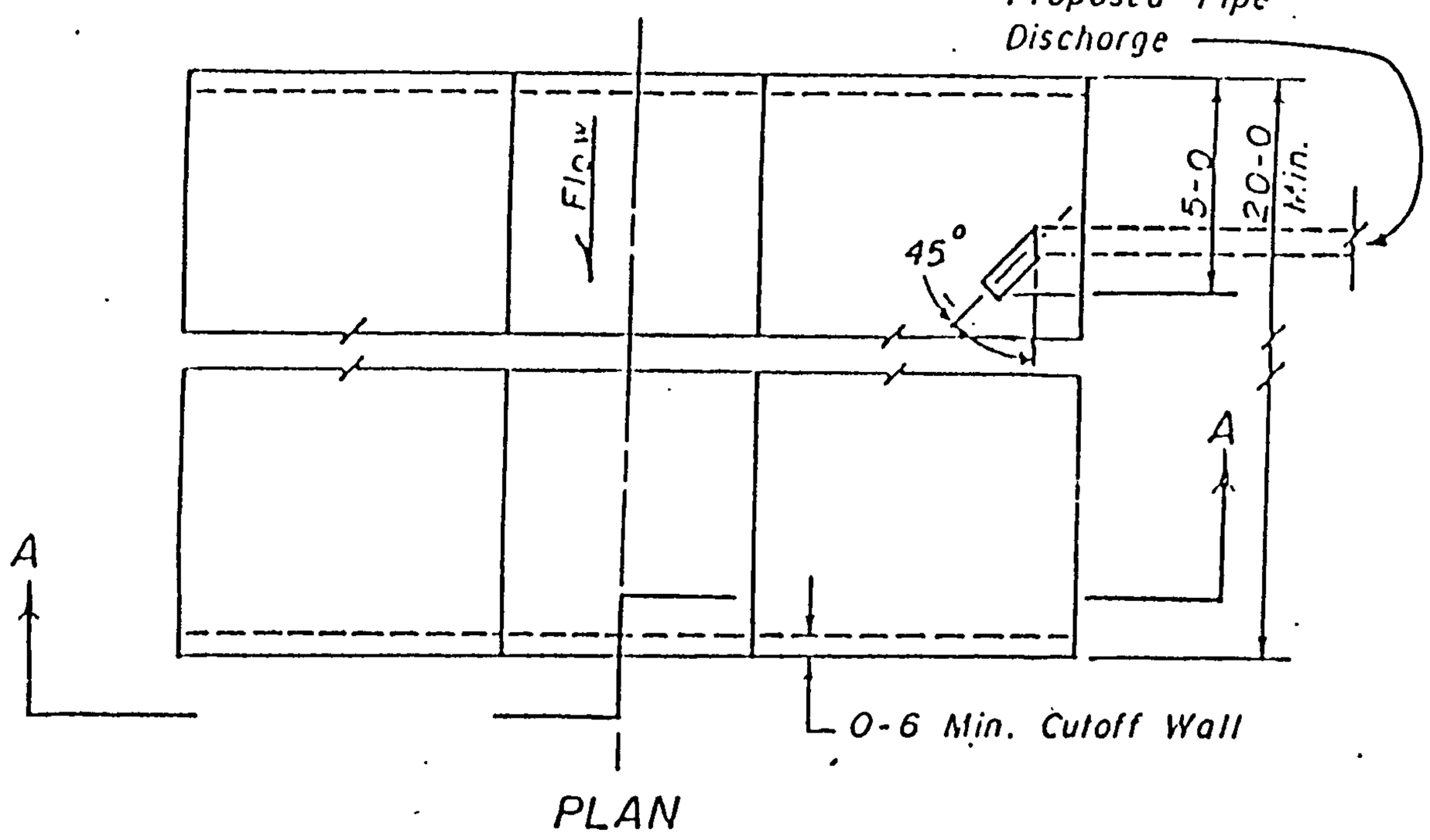
Bureau of Reclamation



SECTION A-A



PLAN

NOTES

Discharge structure shall conform to the minimum standards of paragraph 5.0, Design Criteria.

Bottom width to match design channel.

Side slopes to match design slope.

Invert to be at design grade or existing bottom, whichever is lower.

3000 psi concrete to be used.

Top of lining to be a minimum of 12" above high water but not less 12" above top of discharge pipe.

Pipe shall not extend more than 12" beyond face of lining.

ALWAYS THINK SAFETY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
MINIMUM STANDARDS

STORM SEWER DISCHARGE STRUCTURE

DRAINS

DESIGNED _____ FIELD APPROVAL _____
DRAWN EH & GRE TECHNICAL APPROVAL _____
CHECKED _____ APPROVED _____

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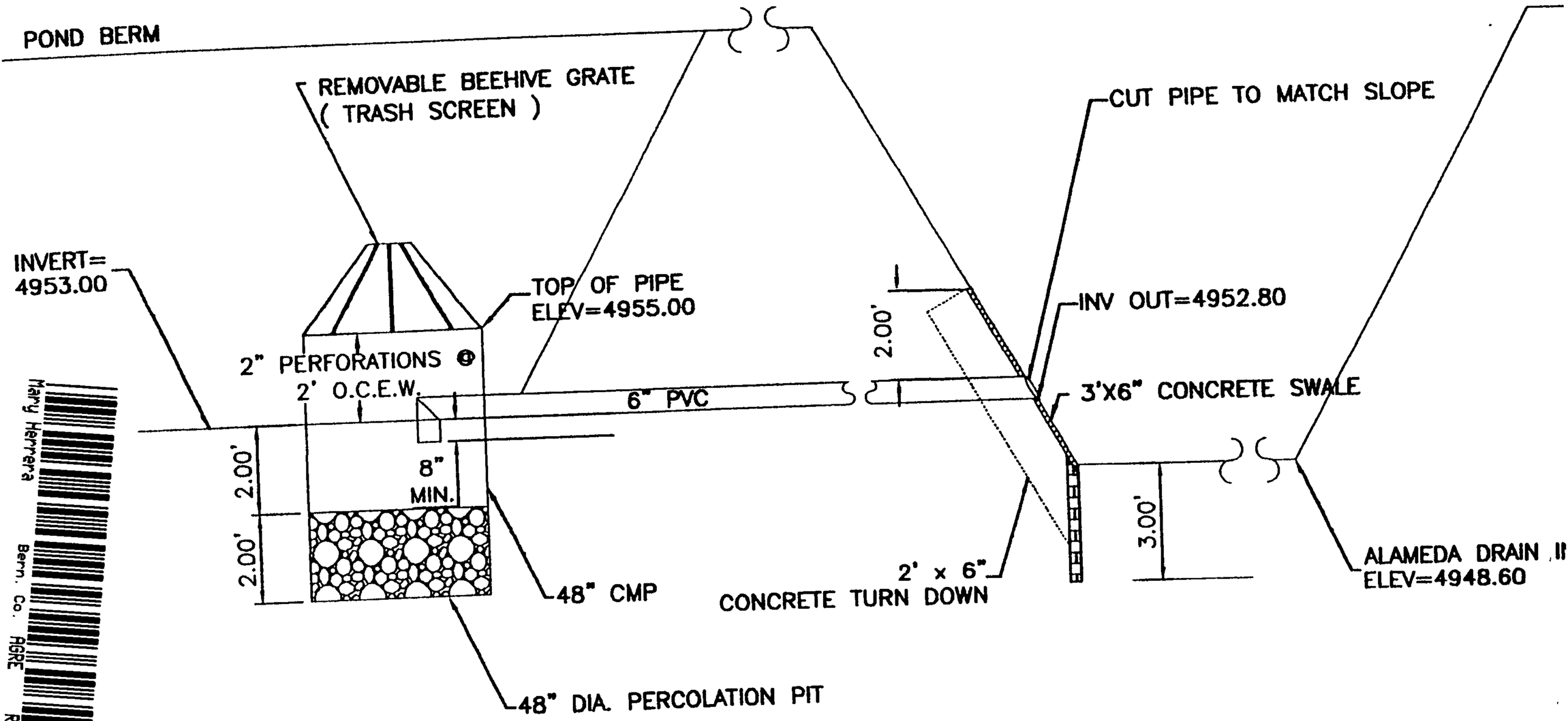

GREASE TRAP DETAIL

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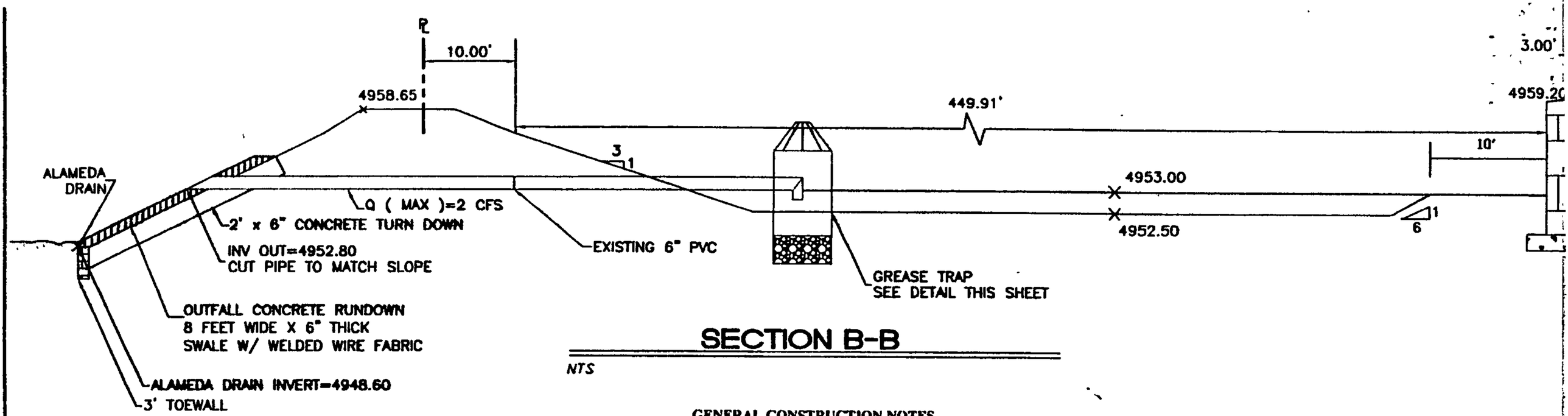

SECTION B-B

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GENERAL CONSTRUCTION NOTES

1. Any work to be performed within the Middle Rio Grande Conservancy District (M.R.G.C.D.) Right-of-Way shall be closely coordinated with the M.R.G.C.D. Engineering Department and appropriate field office. Phone: (505) 247-0234.

2. No work is to be done on facilities or structures belonging to, or operated by, the M.R.G.C.D. between March 1 and October 31 inclusive. However, work may be permitted by the M.R.G.C.D. if it can be shown that the work will not interfere with operations of the M.R.G.C.D. facility. All Work to be done within the M.R.G.C.D. facilities must be approved by the M.R.G.C.D. Engineer prior to commencing work.

3. The Contractor shall not store equipment, new materials or debris within District right-of-way which may interfere with operations and maintenance of the M.R G.C.D. facility.

4. The Contractor shall not service vehicles or equipment within M.R.G.C.D. right-of-way.

5. Seeding of disturbed areas within M.R.G.C.D. Right-of-Ways is required per the M.R.G.C.D seeding specifications.

6. The Contractor must maintain a minimum cover of 3' over all culvert crossings used for access to the project site.

7. The Contractor is responsible for repairing and or replacement of any structures removed and or damaged due to the Contractors activities within the Districts right-of-way. Should any turnouts, culvert pipes and or structures require replacement due to leakage and or damage by the Contractor, new turnouts, and new culvert pipes and or new structures shall replace the damaged item. Repairs and or replacements within the Districts right-of-way must comply with the Districts specifications.

8. All damaged culvert crossings and culvert crossings removed and or disturbed must be restored and/or replaced to the satisfaction of the M.R.G.C.D. and comply with M.R.G.C.D. specifications.

9. All salvageable culverts, irrigation gates, etc. must be returned to the M.R.G.C.D..

10. The Contractor is responsible for executing a "Special Use License Agreement" with the M.R.G.C.D. prior to construction.

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