CITY OF ALBUQUERQUE

THREE HUNDRED YEARS 1706 * 2006
ALBUQUERQUE
Making History

April 29, 2005

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

Re: Floral Meadows Subdivision Drainage Report
Engineer Stamp date 1-8-05 (H13/D47) FILE

Dear Mr. Bohannan,

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Based on information provided in your submittal dated 1-12-05, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board approves the plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development - Hydrology section at 768-3654 (Charles Caruso).

Prior to Work Order or Final Plat, a License Agreement with MRGCD will be required. If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept
Development and Building Services

C: file

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

November 15, 2004

Mr. Ray Gomez
Middle Rio Grande Conservancy District (MRGCD)
P.O. Box 581
Albuquerque, NM 87103

RE: Request for License Agreement and Easement
Floral Meadows Subdivision

Dear Mr. Gomez:

Tierra West, LLC on behalf of John Mahoney, requests a License Agreement for the installation of a park-pond and service road as shown on the attached Exhibit A. The site is located north of I-40 and west of Rio Grande Boulevard. We are also proposing to cover the existing irrigation ditch with a conduit to reduce the district maintenance responsibilities and liabilities.

Tierra West also requests a 20' easement adjacent to the park-pond as shown on the attached Exhibit B. The subdivision will be serviced by a 6" waterline, which will connect to an existing 20" line in Rio Grande Boulevard.

Enclosed is a Grading and Drainage Plan showing the proposed improvements. If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, PE

Enclosure/s
cc: Jeff Jesionowski
John Mahoney
Brad Bingham

JN: 230134
RRB/sa

2003 230134 Ray Gomez SA 111504

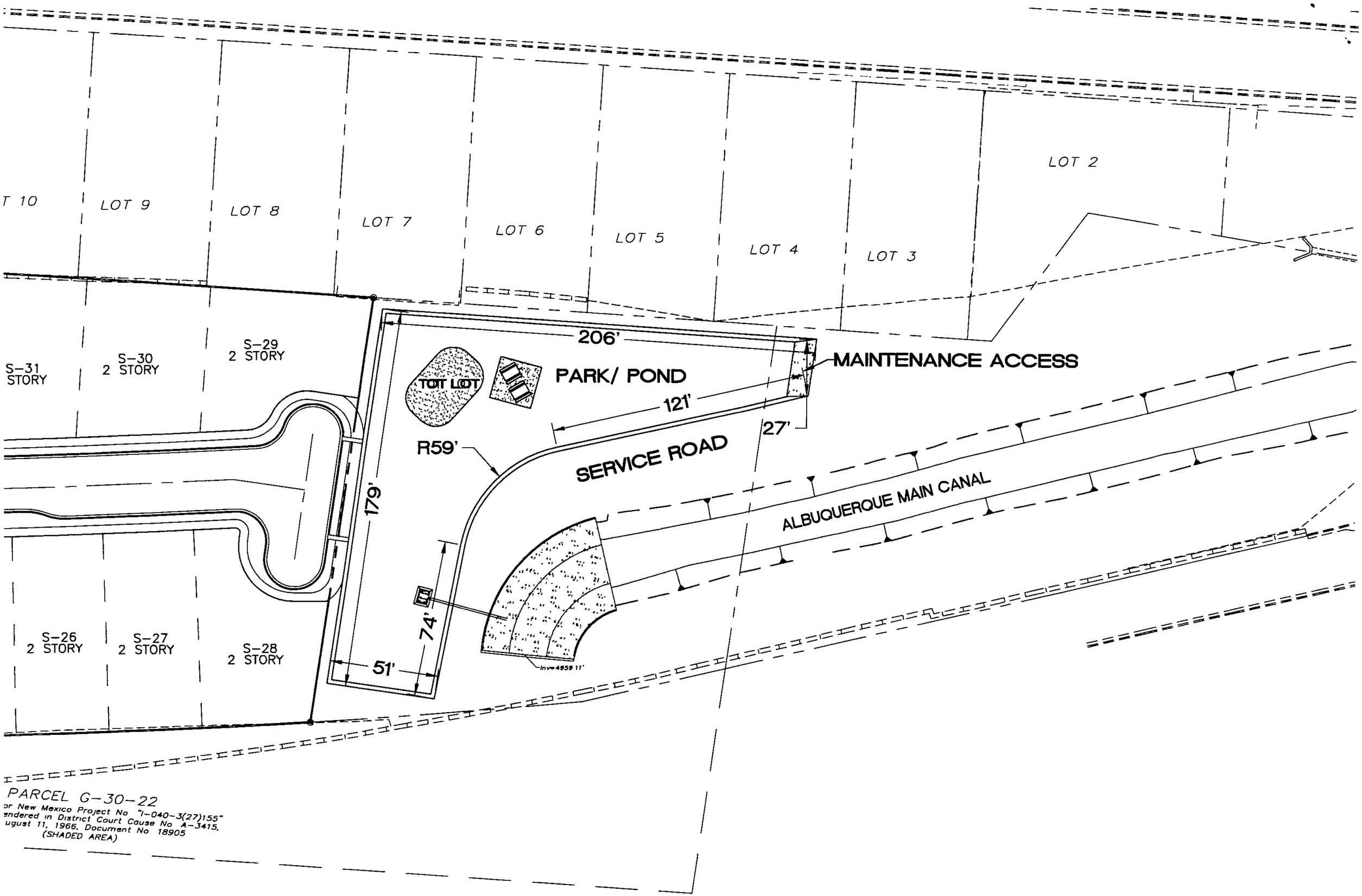
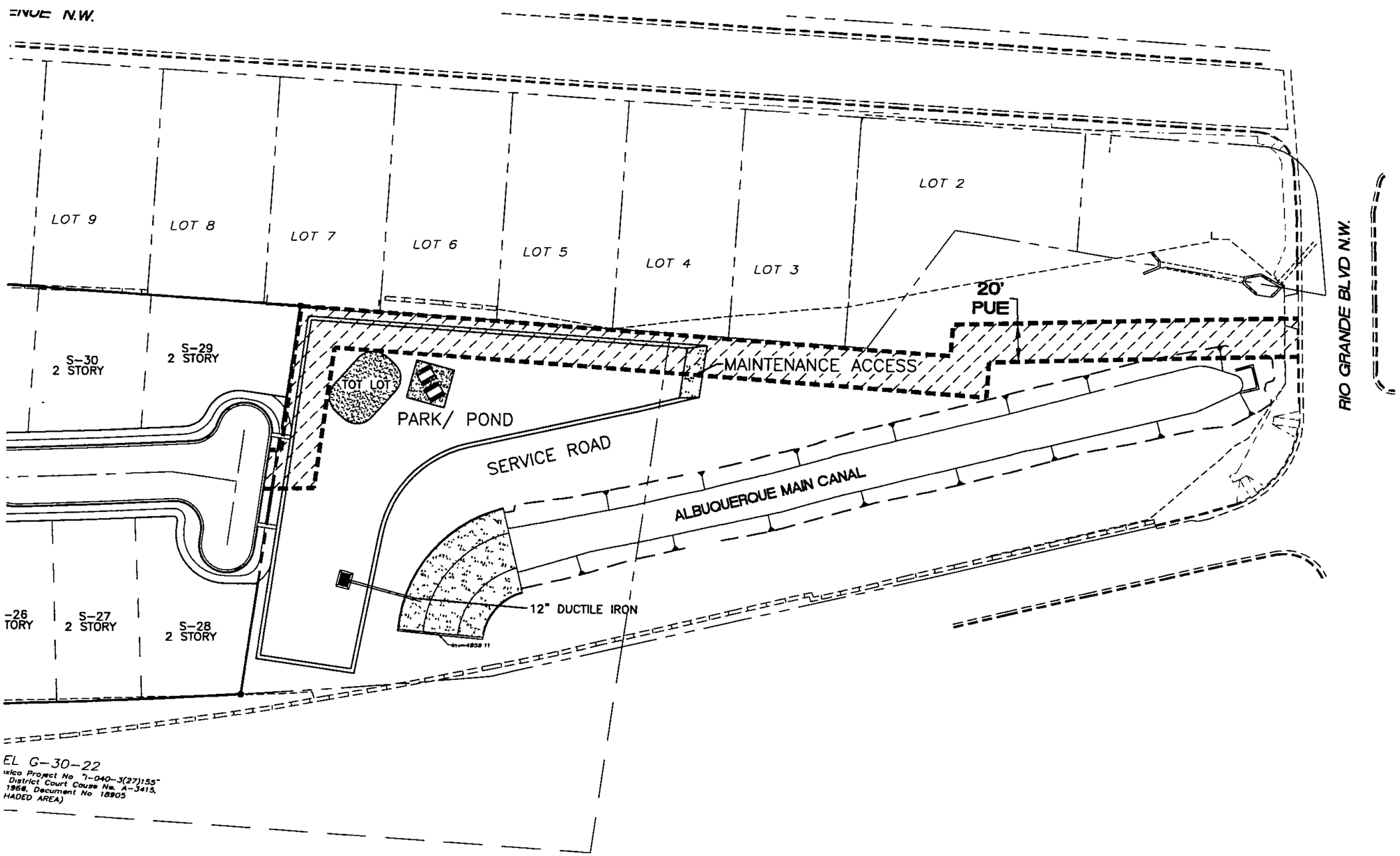

T 10
LOT 9
LOT 8
LOT 7
LOT 6
LOT 5
LOT 4
LOT 3
LOT 2
S-31
STORY
S-30
2 STORY
S-29
2 STORY
206'
TOT LOT
PARK/ POND
MAINTENANCE ACCESS
121'
27'
R59'
SERVICE ROAD
179'
ALBUQUERQUE MAIN CANAL
74'
51'
Inv=4959.11'
S-26
2 STORY
S-27
2 STORY
S-28
2 STORY
PARCEL G-30-22
or New Mexico Project No "I-040-3(27)155"
endered in District Court Cause No A-3415,
ugust 11, 1966, Document No 18905
(SHADED AREA)

EXHIBIT A


N.W.
LOT 9
LOT 8
LOT 7
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LOT 5
LOT 4
LOT 3
LOT 2
20'
PUE
S-30
2 STORY
S-29
2 STORY
TOT LOT
PARK/ POND
MAINTENANCE ACCESS
SERVICE ROAD
ALBUQUERQUE MAIN CANAL
12" DUCTILE IRON
S-27
2 STORY
S-28
2 STORY
RIO GRANDE BLVD N.W.
EL G-30-22
District Court Cause No. A-3415,
1966, Document No 18905
HADED AREA)

EXHIBIT B

CITY OF ALBUQUERQUE

May 24, 2006

Mr. Ronald R. Bohannan, P.E.
TIERRA WEST, LLC
8509 Jefferson Street NE
Albuquerque, NM 87113

Re: FLORAL MEADOWS, (H-13/D47)

Engineers Certification for Release of Financial Guaranty

Engineers Stamp dated 01/08/2005

Engineers Certification dated 05/03/2006

Dear Ron,

Based upon the information provided in your submittal received 05/24/2006, the above referenced certification is approved for release of SIA and Financial Guarantee.

<u>However, prior to release of financial guaranty, the LOMR must be accepted by FEMA.</u>

If you have any questions, you can contact me at 924-3982.

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 759481
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Floral Meadows
ZONE MAP/DRG. FILE #: ~~H-12~~ H-13/D47
DRB #: 1003238 EPC #:
WORK ORDER #: 759481

LEGAL DESCRIPTION: Lots 1 thru 58, Floral Meadows
CITY ADDRESS: North of I-40 & West of Rio Grande

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	Ronald R. Bohannan, PE
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	Evergreen Duranes Ltd.	CONTACT:	Jeff Jesionowski
ADDRESS:	4407 Lomas Boulevard NE	PHONE:	(505) 831-6855
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87110
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	Surv-Tek	CONTACT:	Rusty Hugg
ADDRESS:	9834 Valley View Dr.	PHONE:	505-897-3366
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87114
CONTRACTOR:	Salls Brothers Construction	CONTACT:	Fred Salls
ADDRESS:	7301 Reading Drive SE	PHONE:	(505) 873-8780
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87105

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
- ____ SO-19

RECEIVED
MAY 22 2006
HYDROLOGY SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- ____ NO
- ____ COPY PROVIDED

DATE SUBMITTED: 5/22/2006 BY: Ronald R. Bohannan. PE

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.

find file, give
to Arlene

file
H-13/D47

Brad L. Bingham/PWD/CABQ
09/01/2006 01:59 PM

To Arlene V. Portillo/PWD/CABQ@COA, Marilyn E. Maldonado/PLN/CABQ@COA
cc
bcc
Subject Re: Floral Meadows

I have an approved LOMR from FEMA and it is now OK to release the SIA and financial Guarantees for the Floral Meadows subdivision, CPN 759481
Arlene V. Portillo/PWD/CABQ

Arlene V. Portillo/PWD/CABQ
09/01/2006 12:34 PM

To Bbingham@cabq.gov
cc
Subject Floral Meadows

Hi Brad: If you haven't already done so, don't forget to e-mail Marilyn that it is okay to release Floral Meadows with regard to the LOMR. Thanks!

Arlene V. Portillo, Plan Checker
Planning Department, Hydrology Section
e-mail - aportillo@cabq.gov
Office Phone 505-924-3982; Fax 505-924-3864

CITY OF ALBUQUERQUE

April 29, 2005

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

Re: Floral Meadows Subdivision Drainage Report
Engineer Stamp date 1-8-05 (H13/D47)

Dear Mr. Bohannan,

Based on information provided in your submittal dated 1-12-05, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board approves the plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development - Hydrology section at 768-3654 (Charles Caruso).

Prior to Work Order or Final Plat, a License Agreement with MRGCD will be required. If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept
Development and Building Services

C: file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Floral Meadows — ZONE MAP/DRG. FILE # H13/D47

DRB: 1003238 — EPC #: — WORK ORDER #:

LEGAL DESCRIPTION: TRS. 267, 268-B, 270-A-2, 270-A-1-C, 270-A-1-D, 270-B, & 315-A-A-A-1; & LOTS A, B, & C, MRGCD MAP ; LAND OF ALBERT PEREZ; TRS. B1 & B2, LAND OF MACIEL & TRUJILLO

CITY ADDRESS:

ENGINEERING FIRM:	Tierra West, LLC	CONTACT:	Ron Bohannan
ADDRESS:	8509 Jefferson NE	PHONE:	(505) 858-3100
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
OWNER:	AMC Development Services	CONTACT:	Jeff Jesionowski
ADDRESS:	1015 Tijeras NW STE 200	PHONE:	505-338-2285
CITY, STATE:	ABQ, NM	ZIP CODE:	87102
ARCHITECT:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	Surv-Tek, Inc.	CONTACT:	Rusty Hugg
ADDRESS:	5643 Paradise Boulevard	PHONE:	505-897-3366
CITY, STATE:	ABQ, NM	ZIP CODE:	87114
CONTRACTOR:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	

CHECK TYPE OF SUBMITTAL:

- x DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- x DRAINAGE PLAN RESUBMITTAL
- ___ 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:

- ___ 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.)
- x GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- x NO
- ___ COPY PROVIDED

RECEIVED 1 2 200 HYDROLOGY SECTION

DATE SUBMITTED: 1/10/2005 — BY: Ronald R. Bohannan, P.E.

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

January 11, 2005

Bradley L. Bingham
Principal Engineer, Planning Dept.
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Floral Meadows Subdivision (H13/D47)

Dear Mr. Bingham:

Tierra West LLC, on behalf of AMC Development Services, requests approval of the revised Grading and Drainage Plan for Floral Meadows Subdivision. The approved plan, with Engineer's stamp and dated 11-10-05, was modified to accommodate both the on-site and off-site discharge while reducing the amount of import needed for the site.

With the new proposed Drainage Management Plan the site was divided into six basins to analyze the proposed drainage conditions (see attached drainage report for Basin Map). On-site Basins 1 thru 4 discharge a total of 29.82 cfs. The off-site Basins 5 and 6 discharge a total of 12.91 cfs for a total of 42.73 cfs. Basins 1 and 6 discharge 6.36 cfs to a Single 'C' inlet located on Maciel Drive NW. The flow from these basins will be conveyed to an existing 30" RCP in Floral Road. The discharge from Basins 2, 3, and 5 (32.78 cfs) will be conveyed to the park/pond, via 36" storm drain. The park/drainage pond was increased in volume from 1.46 ac-ft to 2.36 ac-ft. The park/pond is now designed as a retention pond whereas on the approved plan it was a detention pond. Basin 4 (3.58) will also drain to the park/pond via street flow and two 1' sidewalk culverts. A 12" ductile iron pipe will connect the pond to the existing drainage ditch located east of the site, which will act as an overflow device in the event the park/pond was to fill past the desired elevation specified on the grading and drainage plan.

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

Sincerely,

Ronald R. Bohannan, PE

Enclosure/s

cc: Jeff Jesionowski
John Mahoney

JN: 23134
RRB/sa

RECEIVED
1 2 2005
HYDROLOGY SECTION

2003.23134 Brad Bingham 011005

REVISED DRAINAGE REPORT
FOR

FLORAL MEADOWS

Prepared by:

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

Prepared for:
AMC Development Services

November 2004
(Revised January 2005)

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

RAY BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER

1/8/05

Ronald R. Bohannan
PE NO. 7868

Job No 230134

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MAP POCKET
Grading and Drainage Plan

Section I

Report

Prelude

This report is being amended at the request of AMC Development Services, who is developing a new 58 lot single family subdivision, entitled Floral Meadows. The new drainage development is to handle the flows and reduce the amount of import to the site.

Location

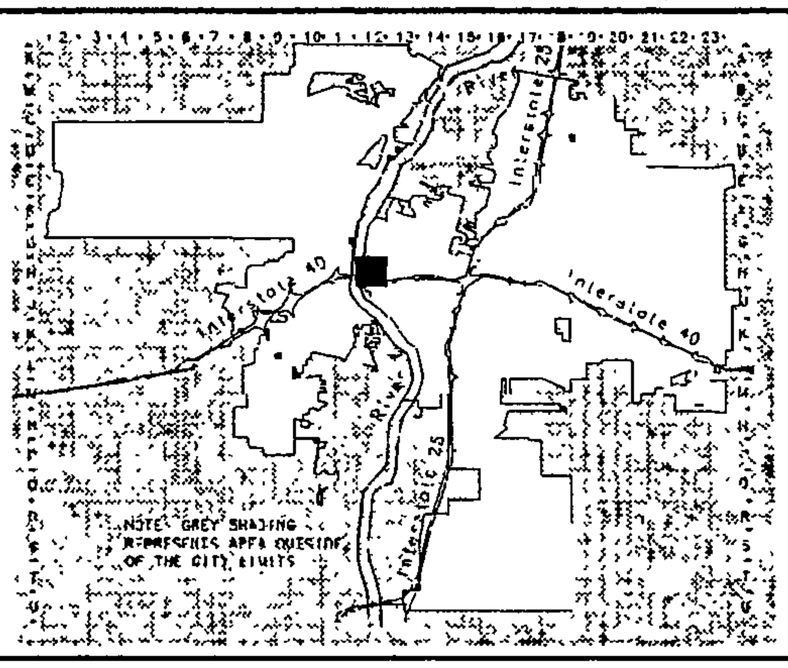
The subject site is located on the west side of Albuquerque. Specifically, the site is located north of Interstate 40 and west of Rio Grande Boulevard. The site is highlighted and shown on the enclosed Zone Atlas page number H-12-Z. The site will be built in one phase and contains 7.62 acres, more or less.

Purpose

The purpose of this drainage report is to present a grading and drainage solution for the proposed subdivision. We are requesting preliminary plat, SIA infrastructure, and grading permit approval at this time.

Existing Drainage Conditions

Most of the site is currently undeveloped. A portion of the discharge drains naturally to irrigate the surrounding lots and some discharge ponds onsite. There are two existing drainage ditches located east of the site. The first is an irrigation ditch providing irrigation water to the surrounding area and the other is the Albuquerque Main Canal or drain which collects irrigation water.



CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

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GRAPHIC SCALE IN FEET

250 0 750 1000

Zone Atlas Page

H-12-Z

Map Amended through August 01, 2003

7.4

Flood Plain

The site is located on FIRM Map 35001C0331 E, as shown on the attached excerpt. The map shows that portions of the site lie within a 100-year flood plain. The elevation of the floodplain is at 4957.33. The floodplain will be concentrated in a new storm sewer to be conveyed offsite and also concentrated in a new pond located on the east side of the project. A portion of this pond will bleed off and a portion will be routed to the Albuquerque Main Canal. A CLOMR and LOMR will be requested during development of the project.

Proposed Drainage Management Plan

The entire site will be graded and all of the surface improvements will be built out in their entirety. The enclosed grading plan (in the map pocket) shows the grades for the entire project. The main difference from the approved plan is to route the flow to the east to place in a retention pond on the east side of the project.

The development was divided into six basins to analyze the proposed conditions. Basins 1 thru 4 are onsite basins for Floral Meadows. Basin 5 and 6 are developed offsite basins that contribute to the volume of water entering the site. The amount of developed discharge for Basins 1 thru 4 was determined using the land treatment type C and B (20%) and type D (60%). Using these land treatment types, Basins 1 thru 4 have a total developed discharge of 29.82 cfs. The amount of discharge for Basins 5 and 6 was determined using the land treatment type B (15%), type C (45%) and type D (40%). The amount of discharge entering the site from offsite Basins 5 and 6 is 12.91 cfs for a total of 42.73 cfs from all basins.

The discharge from Basin 1 (3.71 cfs) and Basin 6 (2.65 cfs) will be conveyed, via street flow, to one Single 'C' drop inlet in Maciel Drive NW. The discharge will then be carried by an 18" RCP to the existing storm drain in Floral Road.

VIZCAYA
PLAZA NW
KROGH
CT NW
FREDERICK
PL NW
EL NIDO
CT NW
SAXTON
CT NW
MEADOWVIEW
PL NW
MEADOWVIEW
CT NW
20TH ST NW
19TH ST NW
SAN ISIDRO ST NW
LOS LUCEROS
RD NW
APPLE LN NW
CHERRY LN NW
RIO GRANDE BLVD NW
ZICKERT RD NW
LEONORA
DR NW
ZICKERT PL NW
INDIAN SCHOOL RD NW
DAMACIO
RD NW
Alameda Drain
RICE AVE NW
SAN VENITO PL NW
ZONE X
Campbell Ditch
JULIET
CT NW
DURANES RD NW
BERNARDINO
RD NW
SAN VENITO
RD NW
SOCORRO
ST NW
SERNA RD NW
SAN MARCIAL
CT NW
AMADO RD NW
LILAC AVE NW
SAIZ RD NW
FLORAL RD NW
ZONE AH
(EL 4960)
Site
NICOLAS
RD NW
SAN ANTONIO
ST NW
MONTOYA
ST NW
FLORAL
PL NW
ROSE AVE NW
ZONE AH
(EL 4960)
MARTIN RD NW
FO00809
ZONE AH
(EL 4961)
Bernalillo County
ASPEN AVE
20TH ST NW

Basins 2, 3, and 5 have a total developed discharge of 32.78 cfs. The flows are conveyed to two Single 'C' drop inlets on Sarita Avenue NW. The discharge then flows via a 36" RCP to the park/drainage pond, which will be developed with the subdivision. Basin 4, which has a discharge of 3.58 cfs, will also drain to the proposed park /pond. The water from Basin 4 will be conveyed via street flow to two, 1' sidewalk culverts into the park/pond. The park/pond acts as a retention pond with a capacity to of 2.36 ac-ft. A 12" ductile iron pipe will be placed from the pond to the existing drainage ditch, located just east of the pond, which is owned and maintained by MRGCD. The pipe will act as an overflow device in the event the pond was to fill past a specified elevation.

Infrastructure List

Shown in Appendix A is the proposed list for the project.

Calculations

The weighted E method from the "City of Albuquerque Development Process Manual Volume 11 – Design Criteria, 1997 Revision" was used to calculate the runoff and volume for the site.

Summary

The site was divided into six basins to analyze the proposed drainage conditions. Onsite Basins 1 thru 4 discharge a total of 29.82 cfs. The offsite Basins 5 and 6 discharge a total of 12.91 cfs for a total of 42.73 cfs. Basins 1 and 6 will discharge to a Single 'C' inlet located on Maciel Drive NW. The flow from these basins will be conveyed to an exiting 30" RCP in Floral

Road. Basins 2, 3, and 5 will be conveyed to the park/pond being developed with the subdivision via 36" storm. Basin 4 will also drain to the park/pond via two 1' sidewalk culverts. A 12" ductile iron pipe will be connect the pond to the existing drainage ditch located east of the site. This 12" pipe will discharge water from the pond to the ditch in the event the pond was to fill past the specified elevation.

Section II

Runoff Calculations

Weighted E Method

Developed On-Site Basins - Phase 1

											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
1	41,437	0.95	0%	0.00	20%	0.19	20%	0.1902525	60%	0.57	1.654	0.131	3.71	0.964	0.076	2.30
2	127,746	2.93	0%	0.00	20%	0.59	20%	0.5865289	60%	1.76	1.654	0.404	11.45	0.964	0.236	7.09
3	123,537	2.84	0%	0.00	20%	0.57	20%	0.5672039	60%	1.70	1.654	0.391	11.07	0.964	0.228	6.85
4	39,980	0.92	0%	0.00	20%	0.18	20%	0.1835629	60%	0.55	1.654	0.127	3.58	0.964	0.074	2.22
Total	332,700	7.64										0.926	29.82		0.540	18.45

											100-Year			10-Year		
Offsite 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
5	122,945	2.82	0%	0.00	15%	0.42	45%	1.270093	40%	1.13	1.474	0.347	10.26	0.812	0.191	6.12
6	31,787	0.73	0%	0.00	15%	0.11	45%	0.3283781	40%	0.29	1.474	0.090	2.65	0.812	0.049	1.58
Total	154,732	3.55										0.347	12.91		0.191	7.70

Equations:

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

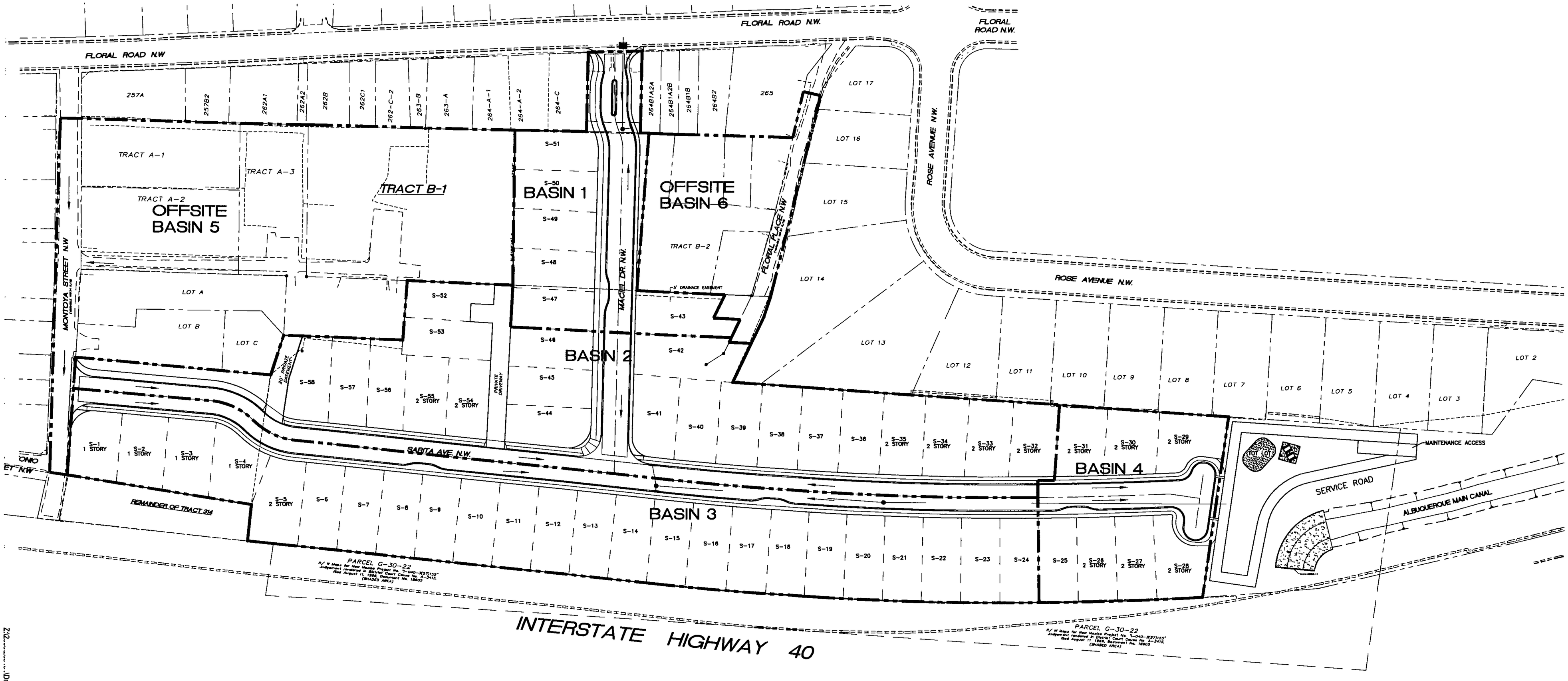
Volume = Weighted D * Total Area

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

Excess Precipitation, E (inches)		
Zone 2	100-Year	10 - Year
E_a	0.53	0.13
E_b	0.78	0.28
E_c	1.13	0.52
E_d	2.12	1.34

Peak Discharge (cfs/acre)		
Zone 2	100-Year	10 - Year
Q_a	1.56	0.38
Q_b	2.28	0.95
Q_c	3.14	1.71
Q_d	4.7	3.14

Zone 2

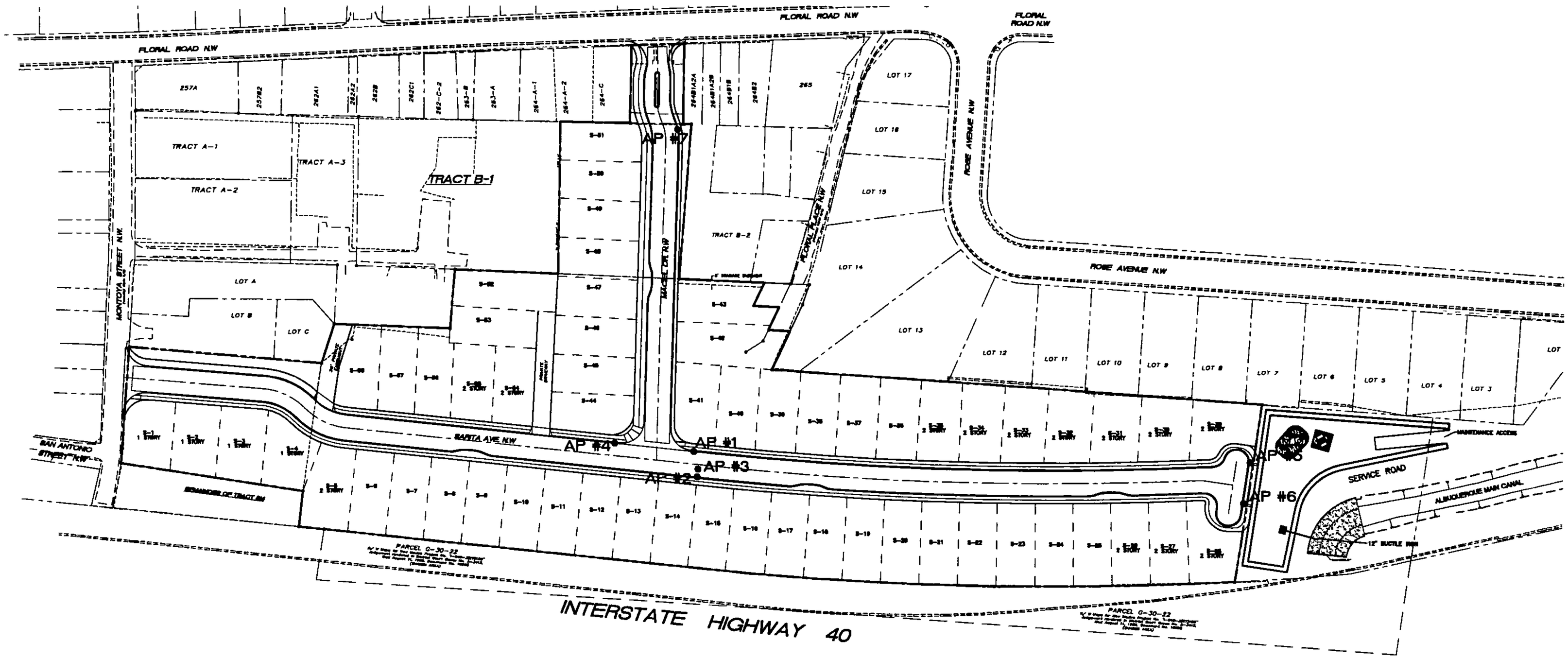

FLORAL ROAD N.W.
FLORAL ROAD N.W.
FLORAL ROAD N.W.
ROSE AVENUE N.W.
ROSE AVENUE N.W.
MONTOYA STREET N.W.
MACEL DR. N.W.
FLORAL PLACE N.W.
SABITA AVE N.W.
PRIVATE DRIVEWAY
20' PRIVATE EASEMENT
5' DRAINAGE EASEMENT
TRACT A-1
TRACT A-2
OFFSITE BASIN 5
TRACT A-3
TRACT B-1
BASIN 1
OFFSITE BASIN 6
TRACT B-2
LOT A
LOT B
LOT C
BASIN 2
BASIN 3
BASIN 4
REMAINDER OF TRACT 314
PARCEL G-30-22
SERVICE ROAD
ALBUQUERQUE MAIN CANAL
MAINTENANCE ACCESS
INTERSTATE HIGHWAY 40

BASIN MAP

Weighted E Method (Park/Pond)

Developed On-Site Basins

											100-Year, 6-Hr			10-Year, 6-Hr			2-Year, 6-Hr			100-Year, 10-Day		
Basin	**Area** (sf)	**Area** (acres)	**Treatment A** %	(acres)	**Treatment B** %	(acres)	**Treatment C** %	(acres)	**Treatment D** %	(acres)	**Weighted E**	**Volume** (ac-ft)	**Flow** cfs	**Weighted E**	**Volume** (ac-ft)	**Flow** cfs	**Weighted E**	**Volume** (ac-ft)	**Flow** cfs	**Weighted E**	**Volume** (ac-ft)	**Flow** cfs
2	127,746	2.93	0%	0	20%	0.59	20%	0.5865289	60%	1.76	1.654	0.404	11.45	0.964	0.236	7.09	0.508	0.124	3.67	1.654	0.620	11.45
3	123,537	2.84	0%	0	20%	0.57	20%	0.5672039	60%	1.70	1.654	0.391	11.07	0.964	0.228	6.85	0.508	0.120	3.55	1.654	0.599	11.07
4	39,980	0.92	0%	0	20%	0.18	20%	0.1835629	60%	0.55	1.654	0.127	3.58	0.964	0.074	2.22	0.508	0.039	1.15	1.654	0.194	3.58
5	122,945	2.82	0%	0	20%	0.56	20%	0.5644858	60%	1.69	1.654	0.389	11.02	0.964	0.227	6.82	0.508	0.119	3.53	1.654	0.596	11.02
Total	414,208	9.51											37.12			22.97			11.91		**2.010**	**37.12**



ANALYSIS POINT MAP

Street Capacity Calculations

Sarita Avenue NW AP# 4

30' F-F Street Section with 4" curb

Slope= 0.004 **Q = 4.96 cfs**

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)
0.0100	0.00	0.33	0.00	0.00	0.00	0.16	0.00	0.28	0.0014
0.0175	0.00	0.58	0.01	0.00	0.00	0.23	0.00	0.31	0.0028
0.0250	0.01	0.83	0.01	0.00	0.01	0.29	0.01	0.33	0.0045
0.0325	0.02	1.07	0.02	0.01	0.01	0.35	0.01	0.34	0.0063
0.0400	0.03	1.32	0.02	0.01	0.02	0.40	0.02	0.35	0.0082
0.0475	0.04	1.57	0.02	0.02	0.03	0.45	0.02	0.36	0.0102
0.0550	0.05	1.82	0.03	0.02	0.05	0.49	0.03	0.37	0.0123
0.0625	0.06	2.06	0.03	0.03	0.07	0.54	0.03	0.38	0.0145

For water depths greater than 0.0625 ft but less than 0.333 ft

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

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.0630	0.06	2.09	0.03	0.03	0.07	0.54	0.03	0.38	0.0146
0.0900	0.14	3.47	0.04	0.09	0.17	0.64	0.06	0.38	0.0207
0.1200	0.26	5.00	0.05	0.20	0.40	0.77	0.09	0.39	0.0296
0.1500	0.43	6.53	0.07	0.39	0.77	0.90	0.14	0.41	0.0398
0.1968	0.78	8.91	0.09	0.85	1.71	1.09	0.21	0.43	0.0573
0.2100	0.90	9.59	0.09	1.03	2.06	1.14	0.24	0.44	0.0625
0.2400	1.21	11.12	0.11	1.51	3.03	1.26	0.30	0.45	0.0748
0.3096	2.08	14.67	0.14	3.13	6.27	1.50	0.47	0.48	0.1050
0.3225	2.27	15.33	0.15	3.52	7.04	1.55	0.50	0.48	0.1109

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

Y2= Y - 0.333
A3= A2 + Y2*15 + 25 Y2^2
P3= P2 + SQRT (2501 Y2^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3230	2.12	15.83	0.13	3.06	6.11	1.45	0.47	0.45	0.0992
0.3750	**2.99**	**17.43**	**0.17**	**5.10**	**10.20**	**1.71**	**0.64**	**0.49**	**0.1334**
0.4050	3.55	18.93	0.19	6.44	12.89	1.81	0.73	0.50	0.1492
0.4200	3.85	19.68	0.20	7.19	14.37	1.86	0.78	0.51	0.1571
0.4600	4.71	21.68	0.22	9.40	18.81	2.00	0.92	0.52	0.1785
0.4850	5.28	22.93	0.23	10.97	21.95	2.08	1.01	0.53	0.1921
0.5100	5.89	24.18	0.24	12.69	25.39	2.16	1.10	0.53	0.2057
0.5130	5.96	24.33	0.25	12.91	25.82	2.17	1.11	0.53	0.2074

SIDEWALK CULVERTS
AP #5 & 6

Orifice Equation:

$$Q = CA\sqrt{2gH}$$

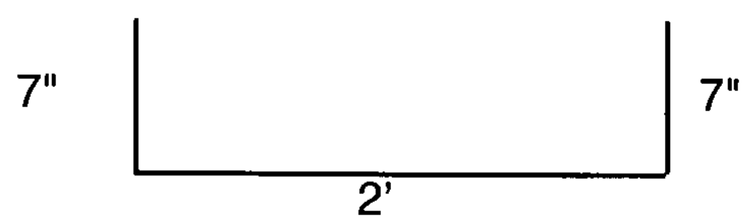
Where:
C = 0.6
A = Area of 2' wide culvert
A = 0.5833*2 = 1.167 ft^2
g = 32.2
H = Height of water measured from center of orifice

Capacity of 2' culvert
Q=0.6*1.167*sqrt(2*32.2*0.2917)
Q=3.034 cfs

Capacity of 1' culvert
Q=0.6*0.5833*sqrt(2*32.2*0.2917)
Q=1.516 cfs

AP #5
Q=1.79 cfs > 3.03 cfs
Use one 2' culvert

AP #6
Q=1.79 cfs > 3.03 cfs
Use one 2' culvert



Single 'C' Drop Inlet
EFFECTIVE AREA

Area at the grate:

L = 38.375" - 7(2@ $_{\text{middle bars}}$)
= 34.875"
= 2.906'

W = 25.5" - 13(2@ $_{\text{middle bars}}$)
= 19"
= 1.583'

Area = 1.583' x 2.906'
= 4.601 ft^2

Effective Area: = 4.601- 4.601 (0.5 $_{\text{clogging factor}}$)
= 2.30 ft^2 at the grate

Orifice Equation
Q = CA sqrt(2gH)
Q = 0.6*4.601*sqrt(2*32.2*0.67)
Q = 18.13 cfs

Area at the throat:

L = 47.375@
= 3.95'

H = 10:@ - 42@
= 63@
= 0.5208'

Area = 3.95' x 0.5208'
= 2.06 ft^2 at the throat

Total Area:

Area = $2.30_{\text{grate}} + 2.06_{\text{throat}}$
= 4.36 ft^2

Weir Equation
Q = CLH^(3/2)
Q = 2.95*3.95*0.67^(3/2)
Q = 6.39 cfs

Total Capacity

Q = 18.13grate + 6.39throat
Q = 24.69 cfs

AP# 1
Flow required = 16.58 cfs < 24.69 cfs; Use Single C inlet

AP# 2
Flow required = 16.20 cfs < 24.69 cfs; Use Single C inlet

AP# 7
Flow required = 6.36 cfs < 24.69 cfs; Use Single C inlet

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
AP #3	36	0.3	7.07	0.750	36.63	32.78	4.64
AP #1	18	2.54	1.77	0.375	16.79	16.58	9.38
AP #2	18	2.1	1.77	0.375	15.26	16.20	9.17
AP #7	18	0.4	1.77	0.375	6.66	6.36	3.60

<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

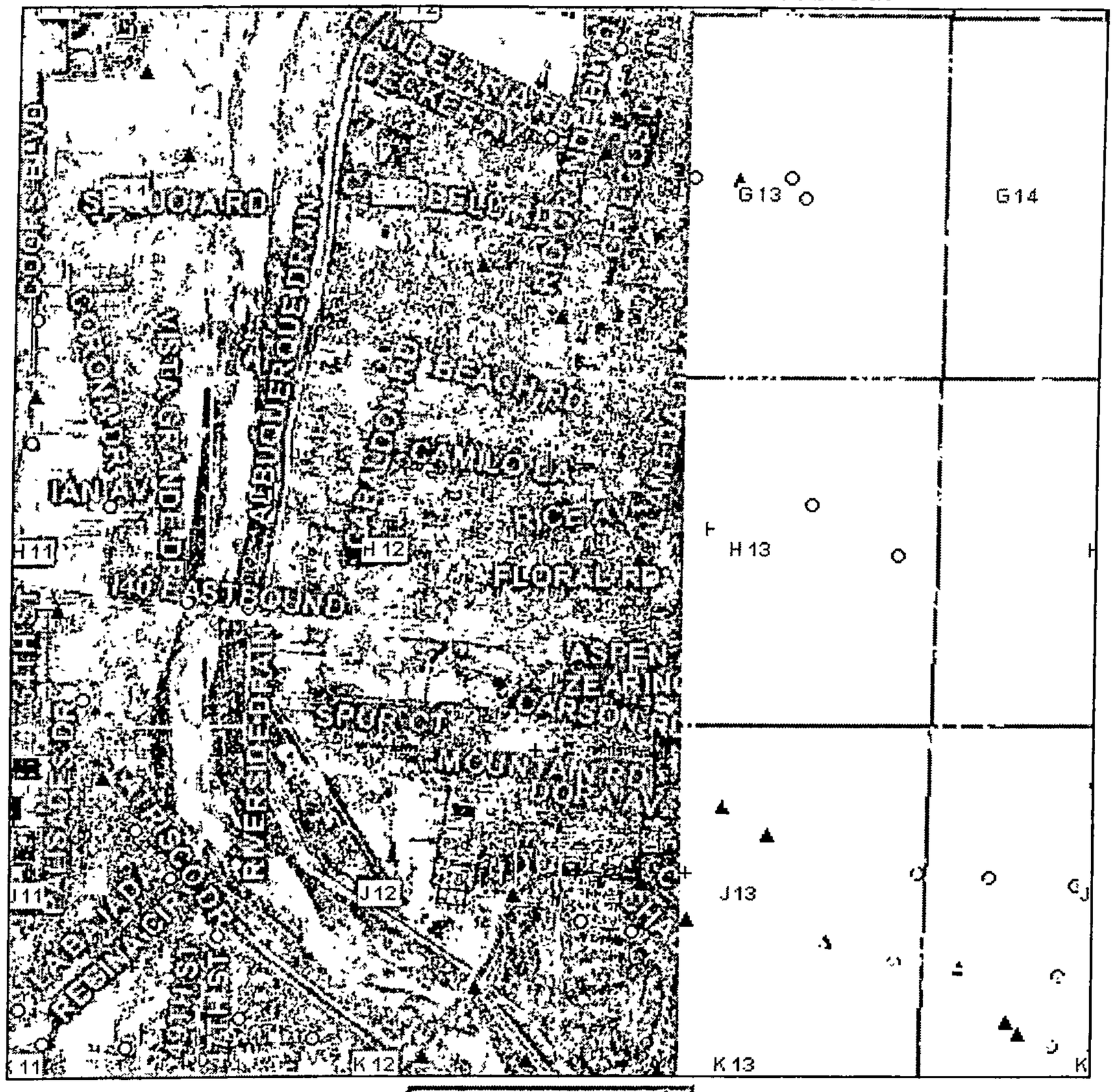
8/25/2004

Input
  Horizontal: NAD 27, New Mexico Central - 3002, U.S. Survey Feet
  Vertical: NGVD 29, U.S. Survey Feet
Output
  Horizontal: NAD 83, New Mexico Central - 3002, U.S. Survey Feet
  Vertical: NAVD 88, U.S. Survey Feet

Name	Input	Output
8-h13	1494995.82000 N	1495058.99068 N
	374102.61000 E	1514348.29255 E
Elevation	4960.53300	4963.22
Convergence	-00 14 31.55640	-00 14 32.76192
Scale Factor	0.999918142	0.999918191
Combined Factor	0.999680940	0.999680861
Grid Shift(US ft)	Delta North = 63.171	
	Delta East = 1140245.683	
Datum Shift(m)	Delta Lat. = 5.061	
	Delta Lon. = 53.032	

Activate By 'Clicking' on the Map

Zoom In Pan Id Station Zoom Out



ReDraw Screen

Geodetic Control Legend

Vertical Control Horizontal Control Horizontal & Vertical Control

Public Land Control Public Land Control (Horiz&Vert)

Public Land Control (Horizontal) Public Land Control (Vertical)

Azimuth Station

Email for More Control Point Info

Station Name: 8-H13
Elevation(NGVD29): 4960.533
NM State Plane X&Y (NAD27): 374102.61 , 1494995.82
Control Code: 3

1999 Digital Ortho Photography

Map Pocket

Grading and Drainage Plan

CITY OF ALBUQUERQUE

THREE HUNDRED YEARS 1706 • 2006
ALBUQUERQUE
Making History

November 19, 2004

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

Re: Floral Meadows Subdivision Drainage Report
Engineer Stamp date 11-10-04 (H13/D47)

Dear Mr. Bohannan,

Based on information provided in your submittal dated 11-12-04, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board approves the plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development - Hydrology section at 768-3654 (Charles Caruso).

Prior to Work Order or Final Plat, a License Agreement with MRGCD will be required. If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Principal Engineer, Planning Dept
Development and Building Services

C: file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

H-13/D47

PROJECT TITLE: Rio Grande & I-40 ZONE MAP/DRG. FILE # H-12 & H-13

DRB : 1003238 EPC #: WORK ORDER #:

LEGAL DESCRIPTION TRS. 267, 268-B, 270-A-2, 270-A-1-C, 270-A-1-D, 270-B, & 315-A-A-A-1; & LOTS A, B, & C, MRGCD MAP : LAND OF ALBERT PEREZ; TRS. B1 & B2, LAND OF MACIEL & TRUJILLO

CITY ADDRESS:

ENGINEERING FIRM: Tierra West, LLC CONTACT: Ron Bohannan
ADDRESS: 8509 Jefferson NE PHONE: (505) 858-3100
CITY, STATE: Albuquerque, NM ZIP CODE: 87113

OWNER: AMC Development Services CONTACT: Jeff Jesionowski
ADDRESS: 1015 Tijeras NW STE 200 PHONE: 505-338-2285
CITY, STATE: ABQ, NM ZIP CODE: 87102

ARCHITECT: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: Surv-Tek, Inc. CONTACT: Rusty Hugg
ADDRESS: 5643 Paradise Boulevard PHONE: 505-897-3366
CITY, STATE: ABQ, NM ZIP CODE: 87114

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

- x DRAINAGE REPORT
- DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- x DRAINAGE PLAN RESUBMITTAL
- 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:

- SIA / FINANACIAL GUARANTEE RELEASE
- 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 (PERM.)
- CERTIFICATE OF OCCUPANCY (TEMP.)
- x GRADING PERMIT APPROVAL
- PAVING PERMIT APPROVAL
- WORK ORDER APPROVAL
- SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- YES
- x NO
- COPY PROVIDED

Rec'd 11/12/04

DATE SUBMITTED: 11/12/2004 BY: Ronald R. Bohannan, P.E.

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.

TW

Tierra West, LLC.

(505) 858-3100

8509 Jefferson NE, Albuquerque, NM 87113

LETTER OF TRANSMITTAL

DATE 11/12/04	JOB NO: 230134
ATTENTION: Brad Bingham	
RE: Floral Meadows	
PHONE:	

TO: Brad Bingham
Plaza del Sol

WE ARE SENDING YOU [X] Attached [ ] Under Separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [ ] Plans [ ] Samples [ ] Specifications

[ ] Copy of letter [ ] Change order [ ] CD

COPIES	DATED	NO.	DESCRIPTION
1		230134	Copy of Revised Drainage Report dated November 2004

THESE ARE TRANSMITTED as checked below:

[X] 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

REMARKS

RECEIVED
NOV 12 2004
HYDROLOGY SECTION

COPY TO

RECEIVED BY

SIGNED Sarah Abeyta

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

REVISED DRAINAGE REPORT
FOR

FLORAL MEADOWS

Prepared by:

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

Prepared for:
AMC Development Services

November 2004

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

RONALD RAY BOHANNAN NEW MEXICO 7868 REGISTERED PROFESSIONAL ENGINEER

11/10/04

Ronald R. Bohannan
PE NO. 7868

Job No 230134

RECEIVED
NOV 12 2004
HYDROLOGY SECTION

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MAP POCKET
Grading and Drainage Plan

Section I

Report

Prelude

This report is being prepared at the request of AMC Development Services, who is developing a new 58 lot single family subdivision, entitled Floral Meadows.

Location

The subject site is located on the east side of Albuquerque. Specifically, the site is located north of Interstate 40 and west of Rio Grande Boulevard. The site is highlighted and shown on the enclosed Zone Atlas page number H-12-Z. The site will be built in one phase and contains 7.62 acres, more or less.

Purpose

The purpose of this drainage report is to present a grading and drainage solution for the proposed subdivision. We are requesting preliminary plat approval, SIA infrastructure, and grading permit approval at this time.

Existing Drainage Conditions

Most of the site is currently undeveloped. A portion of the discharge drains naturally to irrigate the surrounding lots and some ponds onsite. There are two existing drainage ditches located east of the site. The first is an irrigation ditch providing irrigation water to the surrounding area and the other is the Albuquerque Main Canal or drain which collects irrigation water.

Flood Plain

The site is located on FIRM Map 35001C0331 E, as shown on the attached excerpt. The map shows that portions of the site lie within a 100-year flood plain. The elevation of the floodplain is at 4957.33. The floodplain will be removed by the improvements proposed within this drainage report. The floodplain will be concentrated in a new storm sewer to be conveyed off site and also concentrated in a new pond located on the east side of the project. This pond will bleed off to the Albuquerque Main Canal. All house pads will be raised out of the floodplain and a CLOMR and LOMR will be requested during development.

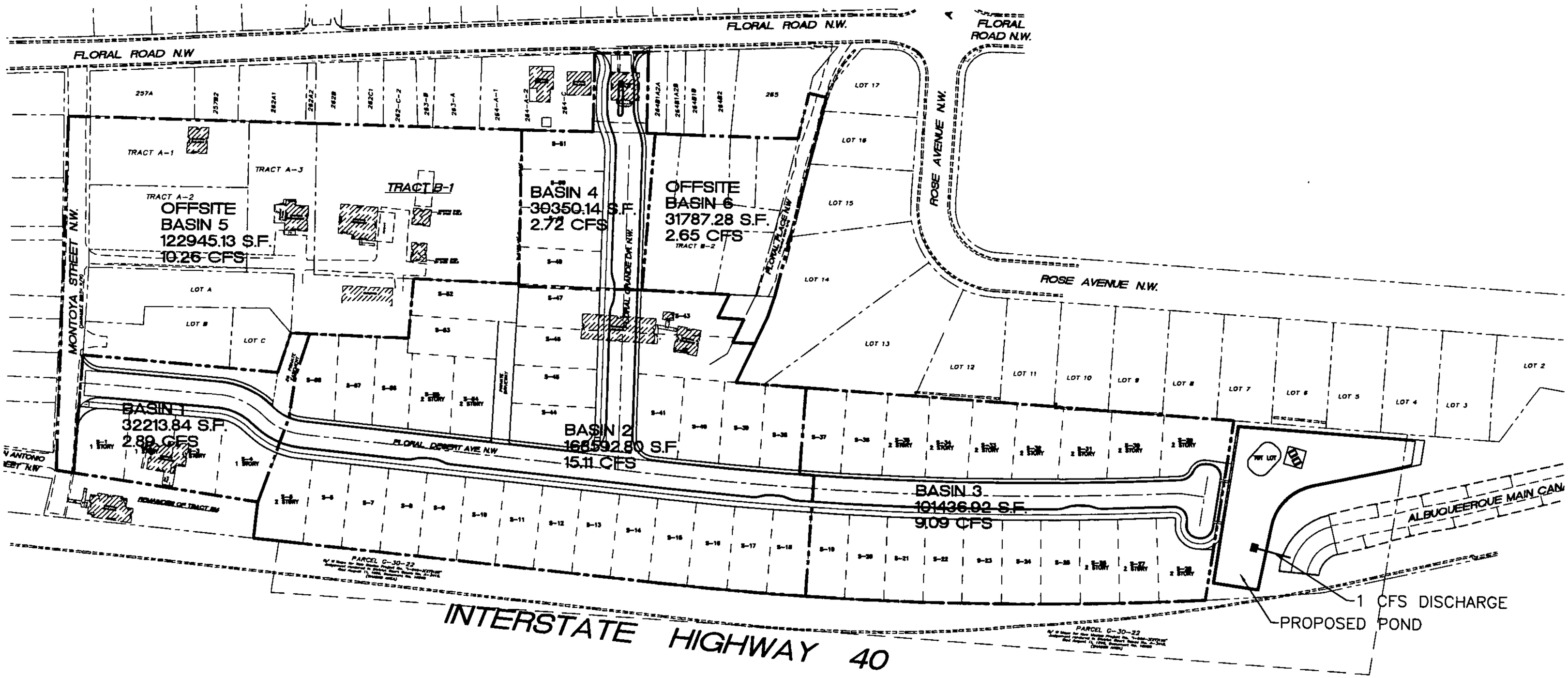
Proposed Drainage Management Plan

The entire site will be graded and all of the surface improvements will be built out in their entirety. The enclosed grading plan (in the map pocket) shows the grades for the entire project.

The development was divided into six basins to analyze the proposed conditions. Basins 1 thru 4 are onsite basins for Floral Meadows. Basin 5 and 6 are developed offsite basins that contribute to the volume of water entering the site. The amount of developed discharge for Basins 1 thru 4 was determined using the land treatment type C and B (20%) and type D (60%). Using these land treatment types, Basins 1 thru 4 have a total developed discharge of 29.81 cfs. The amount of discharge entering the site from offsite Basins 5 and 6 is 12.91 cfs for a total of 42.72 cfs from all basins.

Basin 1, with a developed discharge of 2.89 cfs and basin 5 with a discharge of 10.26 cfs will drain to a Single 'C' drop inlet located on Montoya Street NW. The flow will then be conveyed via storm drain to an exiting 48" RCP located on Floral Road. Basin 2, with a developed flow of 15.11 cfs will be conveyed via 4" curbs to another Single 'C' drop inlet

VIZCAYA
PLAZA NW
KROGH
CT NW
FREDERICK
PL NW
EL NIDO
CT NW
SAXTON
CT NW
MEADOWVIEW
PL NW
MEADOWVIEW
CT NW
20TH ST NW
19TH ST NW
SAN ISIDRO ST NW
LOS LUCEROS
RD NW
APPLE LN NW
CHERRY LN NW
RIO GRANDE BLVD NW
ZICKERT RD NW
LEONORA
DR NW
ZICKERT PL NW
INDIAN SCHOOL RD NW
DAMACIO
RD NW
Alameda Drain
RICE AVE NW
SAN VENITO PL NW
ZONE X
Campbell Ditch
JULIET
CT NW
DURANES RD NW
BERNARDINO
RD NW
SAN VENITO
RD NW
SOCORRO
ST NW
SERNA RD NW
AMADO RD NW
SAN MARCIAL
CT NW
LILAC AVE NW
SAIZ RD NW
FLORAL RD NW
ZONE AH
(EL 4960)
Site
NICOLAS
RD NW
SAN ANTONIO
ST NW
MONTOYA
ST NW
FLORAL
PL NW
ROSE AVE NW
ZONE AH
(EL 4960)
MARTIN RD NW
FO0809
ZONE AH
(EL 4961)
Bernalillo County
ASPEN AVE
20TH ST NW



PROPOSED BASIN MAP

located on Floral Desert Avenue which will be conveyed to an existing 30" RCP located in Floral Road. In the event the drop inlet were to clog the discharge from Basin 2 will flow over the highpoint to Basin 4 and be conveyed to the existing drop inlet on Floral Road.

Basin 3 will drain 9.09 cfs of developed discharge to a park/drainage pond which will be developed with the subdivision. The discharge will flow via 4" curbs to two 2' sidewalk culverts which will convey the water to the pond. From the park/pond the water will enter a grated Single 'D' inlet. The water will be discharged from the inlet to a 12" ductile iron pipe from the park/pond. A water quality manhole with an orifice plate will be constructed at the outlet of the inlet to control the discharge rate of the inlet and pond. The water will discharge at a rate of .99 cfs, which was determined using AHYMO. The discharge will then be conveyed from the 12" ductile iron pipe to a drainage ditch, which is owned and maintained by the MRGCD. In the event the inlet were to clog the water will overflow directly to the irrigation ditch.

The discharge from Basin 4 will be discharge 2.72 cfs via 4" curbs to an existing drop inlet on Floral Road. The existing inlet will be replaced with a grated Single 'D' inlet. The remaining 2.65 cfs from offsite Basin 6 will be conveyed to the proposed storm drain in Floral Desert by a landscape drain located at the end of Floral Place.

Infrastructure List

Shown in Appendix A is the proposed list for the project.

Calculations

The weighted E method from the "City of Albuquerque Development Process Manual

Volume 11 – Design Criteria, 1997 Revision" was used to calculate the runoff and volume for the site.

Summary

The site was divided into six basins to analyze the proposed drainage conditions. Onsite basins 1 thru 4 discharge a total of 29.81 cfs. The offsite basins 5 and 6 discharge a total of 12.91 cfs for a total of 42.72 cfs. Basins 1 and 5 will discharge to a Single 'C' inlet located on Montoya Street that will then be conveyed to an existing 48" RCP on Floral Road. Basin 2 will discharge to a Single 'C' inlet on Floral Desert Avenue via 4" curbs. The discharge will then be conveyed to an existing 30" RCP on Floral Road via storm drain. Basin 3 will discharge 9.09 cfs to a park/pond constructed with the subdivision via 4" curbs. From the pond the water will be conveyed to an existing drainage ditch located east of the site. Basin 4 will discharge 2.72 cfs to an existing drop inlet on Floral Road which will be replaced by a grated Single 'D' inlet. A landscape drain to the proposed storm drain being placed on Floral Grande Drive will convey 2.65 cfs of discharge from Basin 6.

Section II

Runoff Calculations

Weighted E Method

Developed On-Site Basins - Phase 1

											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
1	32,214	0.74	0%	0.00	20%	0.15	20%	0.1479056	60%	0.44	1.654	0.102	2.89	0.964	0.059	1.79
2	168,593	3.87	0%	0.00	20%	0.77	20%	0.7740716	60%	2.32	1.654	0.533	15.11	0.964	0.311	9.35
3	101,437	2.33	0%	0.00	20%	0.47	20%	0.4657343	60%	1.40	1.654	0.321	9.09	0.964	0.187	5.63
4	30,350	0.70	0%	0.00	20%	0.14	20%	0.1393487	60%	0.42	1.654	0.096	2.72	0.964	0.056	1.68
Total	332,594	7.64										0.956	29.81		0.557	18.45

											100-Year			10-Year		
Offsite 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
5	122,945	2.82	0%	0.00	15%	0.42	45%	1.270093	40%	1.13	1.474	0.347	10.26	0.812	0.191	6.12
6	31,787	0.73	0%	0.00	15%	0.11	45%	0.3283781	40%	0.29	1.474	0.090	2.65	0.812	0.049	1.58
Total	122,945	2.82										0.347	12.91		0.191	7.70

Equations:

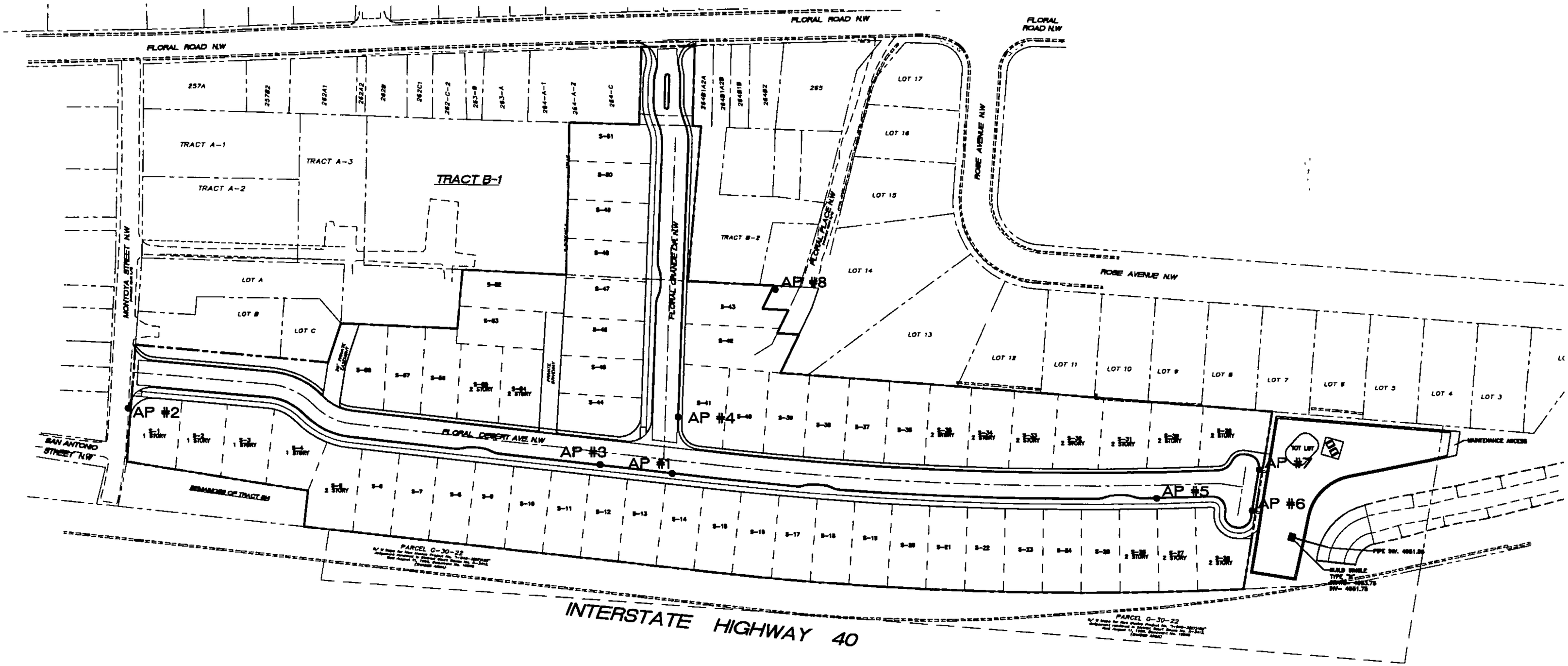
Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

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

Excess Precipitation, E (inches)		
Zone 2	100-Year	10 - Year
E_a	0.53	0.13
E_b	0.78	0.28
E_c	1.13	0.52
E_d	2.12	1.34

Peak Discharge (cfs/acre)		
Zone 2	100-Year	10 - Year
Q_a	1.56	0.38
Q_b	2.28	0.95
Q_c	3.14	1.71
Q_d	4.7	3.14



STREET ANALYSIS POINT MAP

Street Capacity Calculations

Floral Desert Avenue NW AP# 3

30' F-F Street Section with 4" curb

Slope= 0.0045 **Q = 6.66 cfs**

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)
0.0100	0.00	0.33	0.00	0.00	0.00	0.17	0.00	0.30	0.0015
0.0175	0.00	0.58	0.01	0.00	0.00	0.24	0.00	0.32	0.0031
0.0250	0.01	0.83	0.01	0.00	0.01	0.31	0.01	0.34	0.0050
0.0325	0.02	1.07	0.02	0.01	0.01	0.37	0.01	0.36	0.0069
0.0400	0.03	1.32	0.02	0.01	0.02	0.42	0.02	0.37	0.0091
0.0475	0.04	1.57	0.02	0.02	0.03	0.47	0.02	0.38	0.0113
0.0550	0.05	1.82	0.03	0.03	0.05	0.52	0.03	0.39	0.0136
0.0625	0.06	2.06	0.03	0.04	0.07	0.57	0.04	0.40	0.0160

For water depths greater than 0.0625 ft but less than 0.333 ft

Y1= Y-0.0625

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

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

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.0630	0.06	2.09	0.03	0.04	0.07	0.57	0.04	0.40	0.0161
0.0900	0.14	3.47	0.04	0.09	0.19	0.68	0.06	0.40	0.0228
0.1200	0.26	5.00	0.05	0.21	0.43	0.82	0.10	0.42	0.0326
0.1500	0.43	6.53	0.07	0.41	0.82	0.95	0.14	0.43	0.0438
0.1968	0.78	8.91	0.09	0.91	1.81	1.16	0.23	0.46	0.0630
0.2100	0.90	9.59	0.09	1.09	2.19	1.21	0.25	0.47	0.0688
0.2400	1.21	11.12	0.11	1.61	3.21	1.33	0.32	0.48	0.0822
0.3096	2.08	14.67	0.14	3.33	6.65	1.60	0.49	0.51	0.1153
0.3225	2.27	15.33	0.15	3.73	7.47	1.64	0.53	0.51	0.1217

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

Y2= Y - 0.333

A3= A2 + Y2*15 + 25 Y2^2

P3= P2 + SQRT (2501 Y2^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3230	2.12	15.83	0.13	3.24	6.48	1.53	0.50	0.48	0.1091
0.3700	**2.90**	**17.18**	**0.17**	**5.19**	**10.38**	**1.79**	**0.66**	**0.52**	**0.1435**
0.4050	3.55	18.93	0.19	6.83	13.67	1.92	0.78	0.53	0.1636
0.4200	3.85	19.68	0.20	7.62	15.24	1.98	0.83	0.54	0.1723
0.4600	4.71	21.68	0.22	9.97	19.95	2.12	0.97	0.55	0.1956
0.4850	5.28	22.93	0.23	11.64	23.28	2.20	1.07	0.56	0.2104
0.5100	5.89	24.18	0.24	13.46	26.93	2.29	1.17	0.56	0.2253
0.5130	5.96	24.33	0.25	13.69	27.39	2.30	1.18	0.57	0.2271

Street Capacity Calculations

Floral Grande Drive NW AP# 4

30' F-F Street Section with 4" curb

Slope= 0.0045 **Q = 5.42 cfs**

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)
0.0100	0.00	0.33	0.00	0.00	0.00	0.17	0.00	0.30	0.0015
0.0175	0.00	0.58	0.01	0.00	0.00	0.24	0.00	0.32	0.0031
0.0250	0.01	0.83	0.01	0.00	0.01	0.31	0.01	0.34	0.0050
0.0325	0.02	1.07	0.02	0.01	0.01	0.37	0.01	0.36	0.0069
0.0400	0.03	1.32	0.02	0.01	0.02	0.42	0.02	0.37	0.0091
0.0475	0.04	1.57	0.02	0.02	0.03	0.47	0.02	0.38	0.0113
0.0550	0.05	1.82	0.03	0.03	0.05	0.52	0.03	0.39	0.0136
0.0625	0.06	2.06	0.03	0.04	0.07	0.57	0.04	0.40	0.0160

For water depths greater than 0.0625 ft but less than 0.333 ft

Y1= Y-0.0625

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

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

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.0630	0.06	2.09	0.03	0.04	0.07	0.57	0.04	0.40	0.0161
0.0900	0.14	3.47	0.04	0.09	0.19	0.68	0.06	0.40	0.0228
0.1200	0.26	5.00	0.05	0.21	0.43	0.82	0.10	0.42	0.0326
0.1500	0.43	6.53	0.07	0.41	0.82	0.95	0.14	0.43	0.0438
0.1968	0.78	8.91	0.09	0.91	1.81	1.16	0.23	0.46	0.0630
0.2100	0.90	9.59	0.09	1.09	2.19	1.21	0.25	0.47	0.0688
0.2400	1.21	11.12	0.11	1.61	3.21	1.33	0.32	0.48	0.0822
0.3096	2.08	14.67	0.14	3.33	6.65	1.60	0.49	0.51	0.1153
0.3225	2.27	15.33	0.15	3.73	7.47	1.64	0.53	0.51	0.1217

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

Y2= Y - 0.333

A3= A2 + Y2*15 + 25 Y2^2

P3= P2 + SQRT (2501 Y2^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3230	**2.12**	**15.83**	**0.13**	**3.24**	**6.48**	**1.53**	**0.50**	**0.48**	**0.1091**
0.3700	2.90	17.18	0.17	5.19	10.38	1.79	0.66	0.52	0.1435
0.4050	3.55	18.93	0.19	6.83	13.67	1.92	0.78	0.53	0.1636
0.4200	3.85	19.68	0.20	7.62	15.24	1.98	0.83	0.54	0.1723
0.4600	4.71	21.68	0.22	9.97	19.95	2.12	0.97	0.55	0.1956
0.4850	5.28	22.93	0.23	11.64	23.28	2.20	1.07	0.56	0.2104
0.5100	5.89	24.18	0.24	13.46	26.93	2.29	1.17	0.56	0.2253
0.5130	5.96	24.33	0.25	13.69	27.39	2.30	1.18	0.57	0.2271

Street Capacity Calculations

Floral Desert Avenue NW AP# 5

30' F-F Street Section with 4" curb

Slope= 0.0045 **Q = 6.92 cfs**

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)
0.0100	0.00	0.33	0.00	0.00	0.00	0.17	0.00	0.30	0.0015
0.0175	0.00	0.58	0.01	0.00	0.00	0.24	0.00	0.32	0.0031
0.0250	0.01	0.83	0.01	0.00	0.01	0.31	0.01	0.34	0.0050
0.0325	0.02	1.07	0.02	0.01	0.01	0.37	0.01	0.36	0.0069
0.0400	0.03	1.32	0.02	0.01	0.02	0.42	0.02	0.37	0.0091
0.0475	0.04	1.57	0.02	0.02	0.03	0.47	0.02	0.38	0.0113
0.0550	0.05	1.82	0.03	0.03	0.05	0.52	0.03	0.39	0.0136
0.0625	0.06	2.06	0.03	0.04	0.07	0.57	0.04	0.40	0.0160

For water depths greater than 0.0625 ft but less than 0.333 ft

Y1= Y-0.0625

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

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

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.0630	0.06	2.09	0.03	0.04	0.07	0.57	0.04	0.40	0.0161
0.0900	0.14	3.47	0.04	0.09	0.19	0.68	0.06	0.40	0.0228
0.1200	0.26	5.00	0.05	0.21	0.43	0.82	0.10	0.42	0.0326
0.1500	0.43	6.53	0.07	0.41	0.82	0.95	0.14	0.43	0.0438
0.1968	0.78	8.91	0.09	0.91	1.81	1.16	0.23	0.46	0.0630
0.2100	0.90	9.59	0.09	1.09	2.19	1.21	0.25	0.47	0.0688
0.2400	1.21	11.12	0.11	1.61	3.21	1.33	0.32	0.48	0.0822
0.3096	2.08	14.67	0.14	3.33	6.65	1.60	0.49	0.51	0.1153
0.3225	2.27	15.33	0.15	3.73	7.47	1.64	0.53	0.51	0.1217

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

Y2= Y - 0.333

A3= A2 + Y2*15 + 25 Y2^2

P3= P2 + SQRT (2501 Y2^2)

Depth (ft)	Area (ft^2	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.3230	2.12	15.83	0.13	3.24	6.48	1.53	0.50	0.48	0.1091
0.3700	**2.90**	**17.18**	**0.17**	**5.19**	**10.38**	**1.79**	**0.66**	**0.52**	**0.1435**
0.4050	3.55	18.93	0.19	6.83	13.67	1.92	0.78	0.53	0.1636
0.4200	3.85	19.68	0.20	7.62	15.24	1.98	0.83	0.54	0.1723
0.4600	4.71	21.68	0.22	9.97	19.95	2.12	0.97	0.55	0.1956
0.4850	5.28	22.93	0.23	11.64	23.28	2.20	1.07	0.56	0.2104
0.5100	5.89	24.18	0.24	13.46	26.93	2.29	1.17	0.56	0.2253
0.5130	5.96	24.33	0.25	13.69	27.39	2.30	1.18	0.57	0.2271

Single 'C' Drop Inlet
EFFECTIVE AREA

Area at the grate:

L = 38.375" - 7(2@ $_{\text{middle bars}}$)
= 34.875"
= 2.906'

W = 25.5" - 13(2@ $_{\text{middle bars}}$)
= 19"
= 1.583'

Area = 1.583' x 2.906'
= 4.601 ft^2

Effective Area: = 4.601- 4.601 (0.5 $_{\text{clogging factor}}$)
= 2.30 ft^2 at the grate

Orifice Equation
Q = CA sqrt(2gH)
Q = 0.6*4.601*sqrt(2*32.2*0.67)
Q = 18.13 cfs

Area at the throat:

L = 47.375@
= 3.95'

H = 10:@ - 42@
= 63@
= 0.5208'

Area = 3.95' x 0.5208'
= 2.06 ft^2 at the throat

Total Area:

Area = $2.30_{\text{grate}} + 2.06_{\text{throat}}$
= 4.36 ft^2

Weir Equation
Q = CLH^(3/2)
Q = 2.95*3.95*0.67^(3/2)
Q = 6.39 cfs

Total Capacity

Q = 18.13grate + 6.39throat
Q = 24.69 cfs

AP# 1
Flow required = 17.76 cfs < 24.69 cfs; Use Single C inlet

AP# 2
Flow required = 13.15 cfs < 24.69 cfs; Use Single C inlet

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
AP #1	30	0.2	4.91	0.625	18.39	17.76	3.62
AP #2	30	0.2	4.91	0.625	18.39	13.15	2.68
AP #8	12	0.6	0.79	0.250	2.77	2.65	3.37

<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

SIDEWALK CULVERTS
AP #6 & 7

Orifice Equation:

$$Q = CA\sqrt{2gH}$$

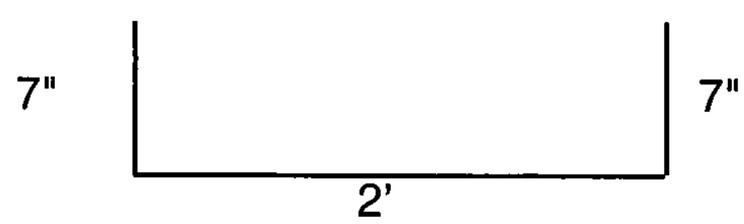
Where:
C = 0.6
A = Area of 2' wide culvert
A = 0.5833*2 = 1.167 ft^2
g = 32.2
H = Height of water measured from center of orifice

Capacity of 2' culvert
Q=0.6*1.167*sqrt(2*32.2*0.2917)
Q=3.034 cfs

Capacity of 1' culvert
Q=0.6*0.5833*sqrt(2*32.2*0.2917)
Q=1.516 cfs

AP #6
Q=3.032 > 3.03 cfs
Use one 2' culvert

AP #7
Q=3.032 > 3.03 cfs
Use one 2' culvert



VOLUME CALCULATIONS
PARK / POND

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	=	16,008.00
At	=	17,640.00
Dt	=	1.00
C	=	1632.00

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4951.80	0	0	0.0000
4954.30	2.50	0.9187	3.7905
4954.55	2.75	1.0118	4.0115
4954.80	3.00	1.1072	4.2210
4955.05	3.25	1.2049	4.4205
4955.30	3.50	1.3050	4.6114

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

C =	0.6
Diameter (in)	10
Area (ft^2)=	0.545
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

```
*****************************************************************
*                                                               *
*                        FLORAL MEADOWS                         *
*                   RIO GRANDE & I-40 (230134)                  *
*            PROPOSED CONDITIONS (100-YEAR, 6-HR STORM)         *
*                                                               *
*****************************************************************
*
START                   TIME=0.0 HR
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 3
*
COMPUTE NM HYD          ID=1 HYD NO=100.1 AREA=0.00363 SQ MI
                        PER A=0 PER B=20.00 PER C=20.00 PER D=60.00
                        TP=0 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1


*

* POND 1
*
ROUTE RESERVOIR         ID=2 HYD NO=301.00 INFLOW ID=1 CODE=25
                        OUTFLOW(CFS)       STORAGE(AC-FT)  ELEVATION(FT)
                            0.0000             0.0000          4951.80
                            3.7905             0.9187          4954.30
                            4.0115             1.0118          4954.55
                            4.2210             1.1072          4954.80
                            4.4205             1.2049          4955.05
                            4.6114             1.3050          4955.30

PRINT HYD               ID=2 CODE=1
*

*
FINISH
```

```
AHYMO PROGRAM (AHYMO_97) -                                  - Version:  1997.02d
     RUN DATE (MON/DAY/YR) = 11/04/2004
     START TIME (HR:MIN:SEC) = 11:23:39     USER NO.=
AHYMO-S-9702d1TierraW-AH
     INPUT FILE = C:\DOCUME~1\New\Desktop\230134~1.TXT

**************************************************************
*                                                            *
*                    FLORAL MEADOWS                          *
*                  RIO GRANDE & I-40 (230134)                *
*            PROPOSED CONDITIONS (100-YEAR, 6-HR STORM)      *
*                                                            *
**************************************************************
*
START                TIME=0.0 HR
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 3

*

COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00363 SQ MI

                     PER A=0 PER B=20.00 PER C=20.00 PER D=60.00

                     TP=0 HR MASS RAINFALL=-1

          *****Warning*****A value for the Time to Peak was not previously computed;
use Tp=0.133333 hrs.

          TIME TO PEAK (hrs)=   .1333

          K =   .072666HR    TP =   .133333HR    K/TP RATIO =   .545000     SHAPE
CONSTANT, N =  7.106420
          UNIT PEAK =   8.5967    CFS   UNIT VOLUME =    .9980       B =   526.28
  P60 = 2.0100
          AREA =      .002178 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033330


          K =   .119796HR    TP =   .133333HR    K/TP RATIO =   .898476     SHAPE
CONSTANT, N =  3.944947
          UNIT PEAK =   3.8277    CFS   UNIT VOLUME =    .9971       B =   351.48
  P60 = 2.0100
          AREA =      .001452 SQ MI    IA =    .42500 INCHES    INF =   1.04000
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 =     1.64387 INCHES     =         .3183 ACRE-FEET
          PEAK DISCHARGE RATE =       9.07 CFS  AT   1.500 HOURS   BASIN AREA =
.0036 SQ. MI.


     *
```

* POND 1

*

ROUTE RESERVOIR ID=2 HYD NO=301.00 INFLOW ID=1 CODE=25

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	4951.80
3.7905	0.9187	4954.30
4.0115	1.0118	4954.55
4.2210	1.1072	4954.80
4.4205	1.2049	4955.05
4.6114	1.3050	4955.30

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4951.80	.000	.00
.80	.00	4951.80	.000	.00
1.60	6.45	4952.20	.149	.61
2.40	.36	4952.43	.231	.95
3.20	.06	4952.30	.185	.76
4.00	.04	4952.19	.143	.59
4.80	.04	4952.10	.111	.46
5.60	.04	4952.04	.087	.36
6.40	.00	4951.98	.068	.28
7.20	.00	4951.94	.052	.21
8.00	.00	4951.91	.039	.16
8.80	.00	4951.88	.030	.12
9.60	.00	4951.86	.023	.09
10.40	.00	4951.85	.017	.07
11.20	.00	4951.84	.013	.05
12.00	.00	4951.83	.010	.04
12.80	.00	4951.82	.008	.03
13.60	.00	4951.82	.006	.02
14.40	.00	4951.81	.004	.02
15.20	.00	4951.81	.003	.01
16.00	.00	4951.81	.003	.01
16.80	.00	4951.81	.002	.01
17.60	.00	4951.80	.001	.01
18.40	.00	4951.80	.001	.00

PEAK DISCHARGE = .989 CFS - PEAK OCCURS AT HOUR 2.17
MAXIMUM WATER SURFACE ELEVATION = 4952.452
MAXIMUM STORAGE = .2396 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 301.00

RUNOFF VOLUME = 1.64038 INCHES = .3176 ACRE-FEET
PEAK DISCHARGE RATE = .99 CFS AT 2.166 HOURS BASIN AREA =
.0036 SQ. MI.

*

*

FINISH

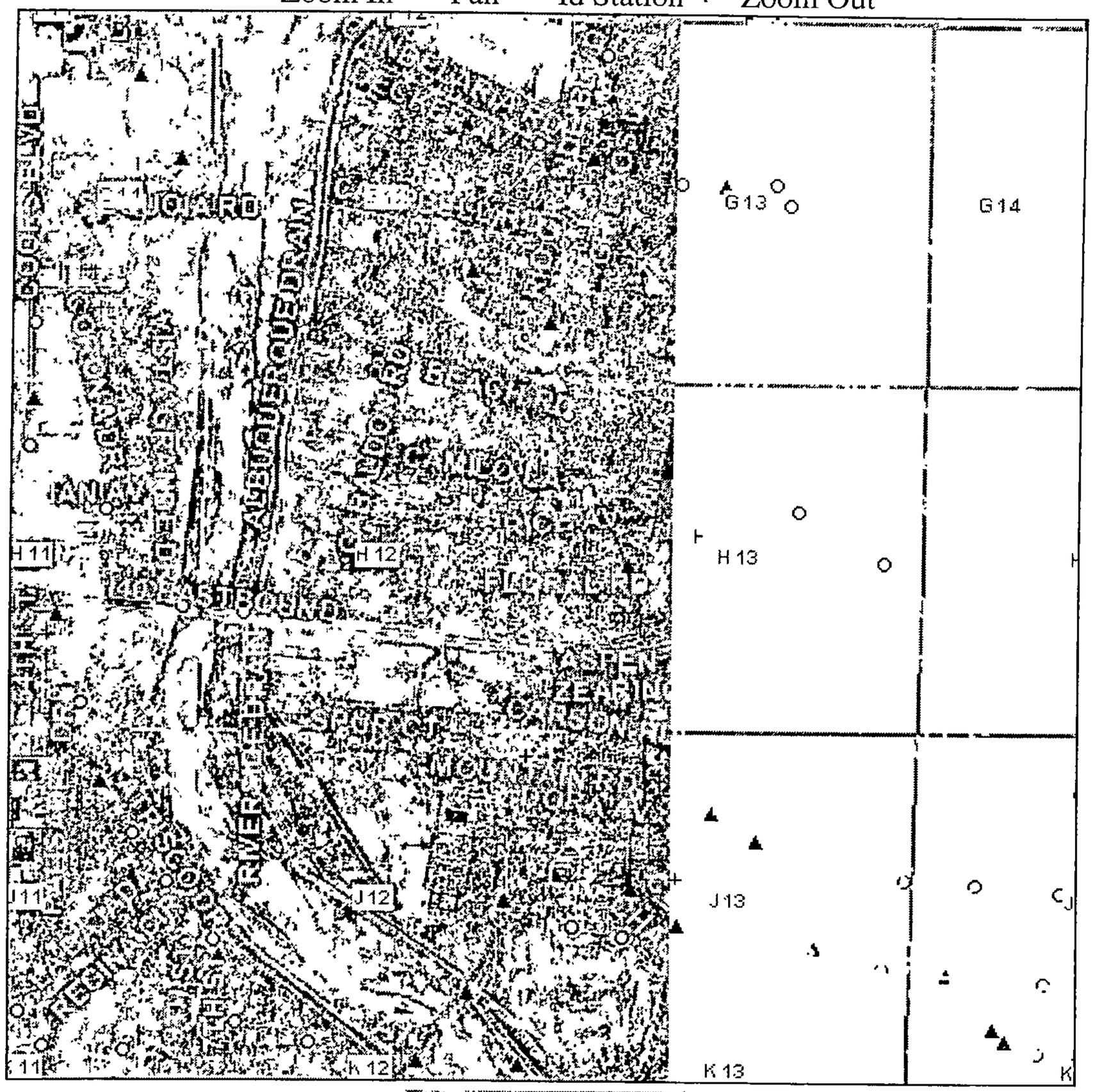
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:23:39

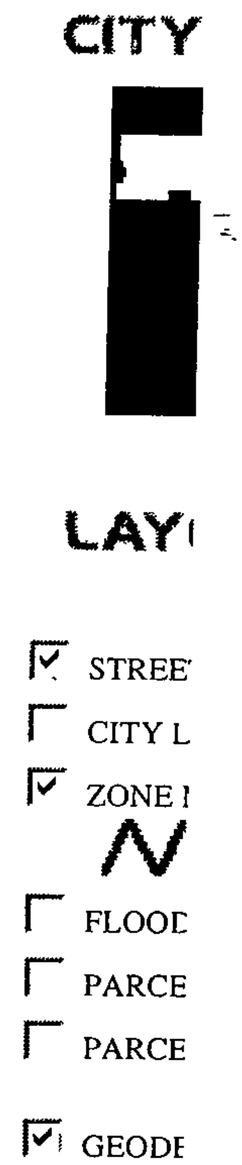
Input
Horizontal: NAD 27, New Mexico Central - 3002, U.S. Survey Feet
Vertical: NGVD 29, U.S. Survey Feet
Output
Horizontal: NAD 83, New Mexico Central - 3002, U.S. Survey Feet
Vertical: NAVD 88, U.S. Survey Feet

Name	Input	Output
8-h13	1494995.82000 N	1495058.99068 N
	374102.61000 E	1514348.29255 E
Elevation	4960.53300	4963.22
Convergence	-00 14 31.55640	-00 14 32.76192
Scale Factor	0.999918142	0.999918191
Combined Factor	0.999680940	0.999680861
Grid Shift(US ft)	Delta North = 63.171	
	Delta East = 1140245.683	
Datum Shift(m)	Delta Lat. = 5.061	
	Delta Lon. = 53.032	

Activate By 'Clicking' on the Map

Zoom In Pan Id Station Zoom Out





ReDraw Screen

Geodetic Control Legend

○ Vertical Control ▲ Horizontal Control ▲ Horizontal & Vertical Control

□ Public Land Control ■ Public Land Control (Horiz&Vert)

◪ Public Land Control (Horizontal) □ Public Land Control (Vertical)

+ Azimuth Station

Email for More Control Point Info

Station Name: 8-H13
Elevation(NGVD29): 4960.533
NM State Plane X&Y (NAD27): 374102.61 , 1494995.82
Control Code: 3

1999 Digital Ortho Photography

Map Pocket

Grading and Drainage Plan

CITY OF ALBUQUERQUE

THREE HUNDRED YEARS
1706 * 2006
ALBUQUERQUE
Making History

September 3, 2004

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

Re: Las Casitas de los Duranes Rough Grading Plan
Engineer Stamp date 8-18-04 (H13/D47)

Dear Mr. Bohannan,

Based on information provided in your submittal dated 8-18-04, the above referenced plan is approved for Rough Grading Permit. Please include this information in your submittal for the subdivision.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development - Hydrology section at 768-3654 (Charles Caruso).

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

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept
Development and Building Services

C: file

10/8/04 Name has been changed to Floral Meadows

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

ATTN: Brad

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Las Casitas De Los Duranes
ZONE MAP/DRG. FILE # ~~H13~~ H13/D047
DRB #: EPC #:
WORK ORDER #:

LEGAL DESCRIPTION: ***Tract B-1 Land os Maciel and Trujillo***
CITY ADDRESS:

ENGINEERING FIRM: Tierra West, LLC
ADDRESS: 8509 Jefferson NE
CITY, STATE: Albuquerque, NM
CONTACT: Ronald R. Bohannan P.E.
PHONE: (505) 858-3100
ZIP CODE: 87113

OWNER: AMC Development Services
ADDRESS: 400 Gold SW, Suite 750
CITY, STATE: ALBUQUERQUE, NM
CONTACT: Jeff Jesionowski
PHONE: 338-2285
ZIP CODE: 87102

ARCHITECT:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

SURVEYOR:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

CONTRACTOR:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

CHECK TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- X ____ 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:

- ____ 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)
- X GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ SO-19
- X Other: Rough Stock Pile Approval

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- ____ NO
- ____ COPY PROVIDED

RECEIVED
AUG 18 2004
HYDROLOGY SECTION

DATE SUBMITTED: 8/18/2004
BY: Ronald R. Bohannan, P.E.

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.