

TED SCHMIDT 831-3627

500 YRS

It is acceptable for property owner to remove dirt from the 1500. 1115 series
drainage patterns of his lot should not change. Center of lot 3-19-10





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 11, 1999

Rick Beltramo, P.E.
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

***RE: Revised Grading and Drainage Plan for Park Ridge Estates Subdivision (G11/D1),
Submitted for Final Plat and Work Order Approval, Engineer's Stamp Dated 12/11/98.***

Dear Mr. Beltramo:

Based on the information provided, the above referenced revised Grading and Drainage Plan is approved for Final Plat action by the DRB.

Since your design has changed the storm drain pipe sizes and configuration, the Infrastructure List must be revised to reflect these changes.

Prior to final sign-off of the DRC plans, the construction plans must include a copy of this revised grading plan. Also, please add any pressure manholes that may be needed on the construction drawings.

As you are aware, the Grading and Drainage Certification of this approved plan is required prior to release of the Subdivision Improvements Agreement.

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

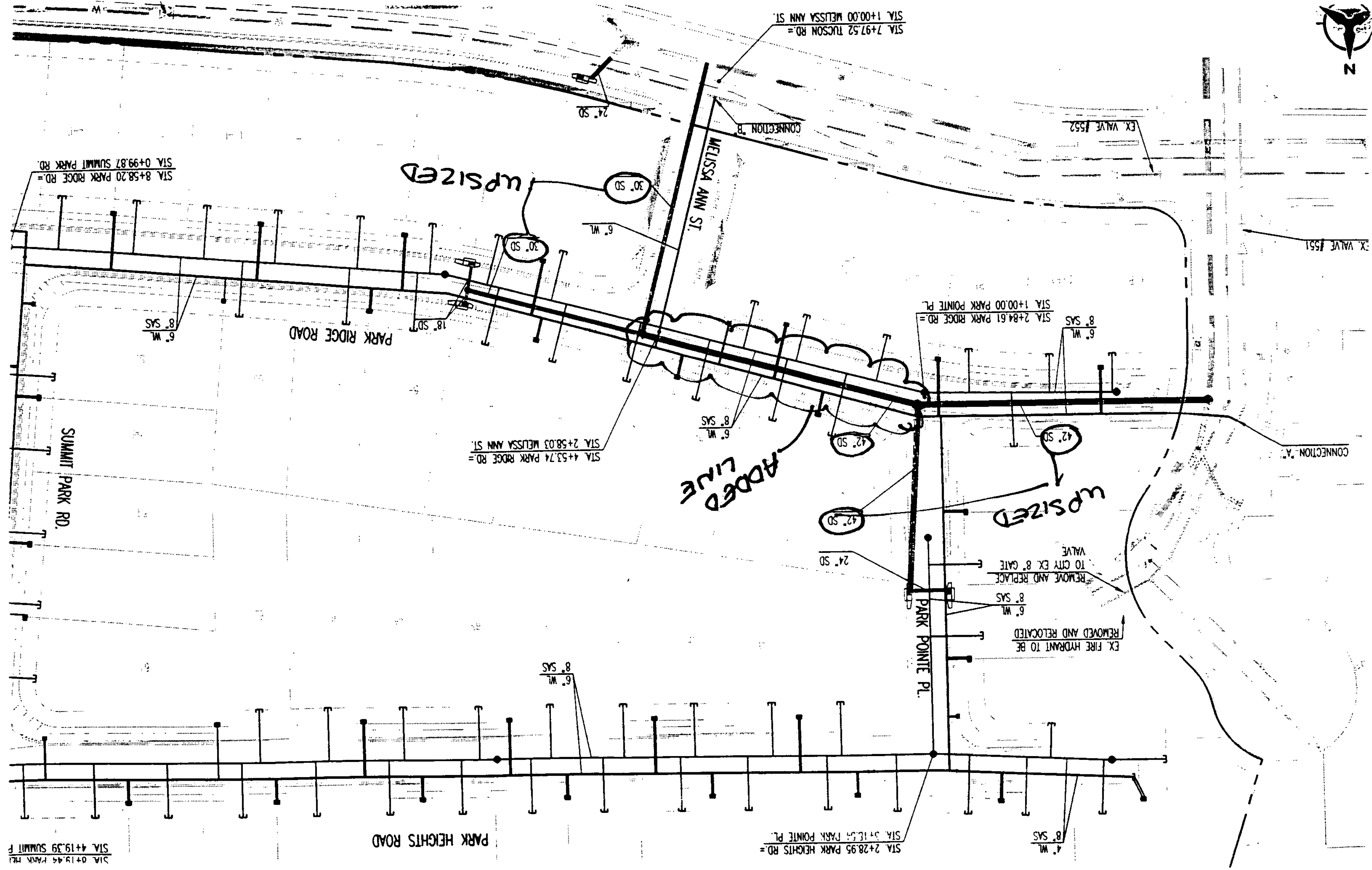
Sincerely,

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

c: Fred Aguirre, DRB 98-18
Billy Goolsby, DRC Chairman
Norm Gregory, Centex Real Estate Corp.

File

RECEIVED
JAN 27 1999
HYDROLOGY SECTION



DRAINAGE INFORMATION SHEET

PROJECT TITLE: PARK RIDGE ESTATES ZONE ATLAS/DRNG. FILE # G-11-Z/D001

DRB #: 9818 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: MESA WEST, LOT 1 AND CORONA DEL SOL LOTS 5-10

CITY ADDRESS: _____

ENGINEERING FIRM: BOHANNAN-HUSTON INC.

ADDRESS: 7500 JEFFERSON NE, ALB. NM 87109

OWNER: CENTEX REAL ESTATE CORPS

ADDRESS: 6700 JEFFERSON NE BUILDING B

ARCHITECT: _____

ADDRESS: _____

SURVEYOR: BOHANNAN-HUSTON INC.

ADDRESS: _____

CONTRACTOR: _____

ADDRESS: _____

CONTACT: RICK BELTRAMO

PHONE: (505) 823-1000

CONTACT: NORM GREGORY

PHONE: 761-9606

CONTACT: _____

PHONE: _____

CONTACT: _____

PHONE: _____

CONTACT: _____

PHONE: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ FINAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN (AMENDED)
☐ EROSION CONTROL PLAN
☐ ENGINEERS CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

- ☐ YES
☒ NO
☐ COPY PROVIDED

DATE SUBMITTED: January 27, 1999

BY: RICK BELTRAMO

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUBD. 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
☐ OTHER _____ (SPECIFY)

RECEIVED
JAN 27 1999
HYDROLOGY SECTION



City of Albuquerque

October 14, 1999

Rick Beltramo, P.E.
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

***RE: Grading and Drainage Certification Plan for Park Ridge Estates Subdivision
(G11/D1), Submitted for Release of Financial Guarantees, Engineer's Certification
Stamp Dated 9/17/99.***

Dear Mr. Beltramo:

The above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List last dated November 10, 1998, and last revised on February 16, 1999, for the release of Financial Guarantees.

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

Sincerely,

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

c: Norm Gregory, Centex Real Estate
Terri Martin, Work Order #602981
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: PARK RIDGE ESTATES ZONE ATLAS/DRNG. FILE # G-11-1001

DRB #: 9818 EPC #: 11-10-98 WORK ORDER #: 2-16-99

LEGAL DESCRIPTION: MESA WEST, LOT 1 AND CORONA DEL SOL LOTS 5-10

CITY ADDRESS: _____

ENGINEERING FIRM: BOHANNAN-HUSTON INC.

ADDRESS: 7500 JEFFERSON NE, ALB. NM 87109

OWNER: CENTEX REAL ESTATE CORPS

ADDRESS: 6700 JEFFERSON NE BUILDING B

ARCHITECT: _____

ADDRESS: _____

SURVEYOR: BOHANNAN-HUSTON INC.

ADDRESS: _____

CONTRACTOR: _____

ADDRESS: _____

CONTACT: RICK BELTRAMO

PHONE: (505) 823-1000

CONTACT: NORM GREGORY

PHONE: 761-9606

CONTACT: _____

PHONE: _____

CONTACT: _____

PHONE: _____

CONTACT: _____

PHONE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN
- ☐ FINAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN (AMENDED)
- ☐ EROSION CONTROL PLAN
- ☒ ENGINEERS CERTIFICATION
- ☐ OTHER

PRE-DESIGN MEETING:

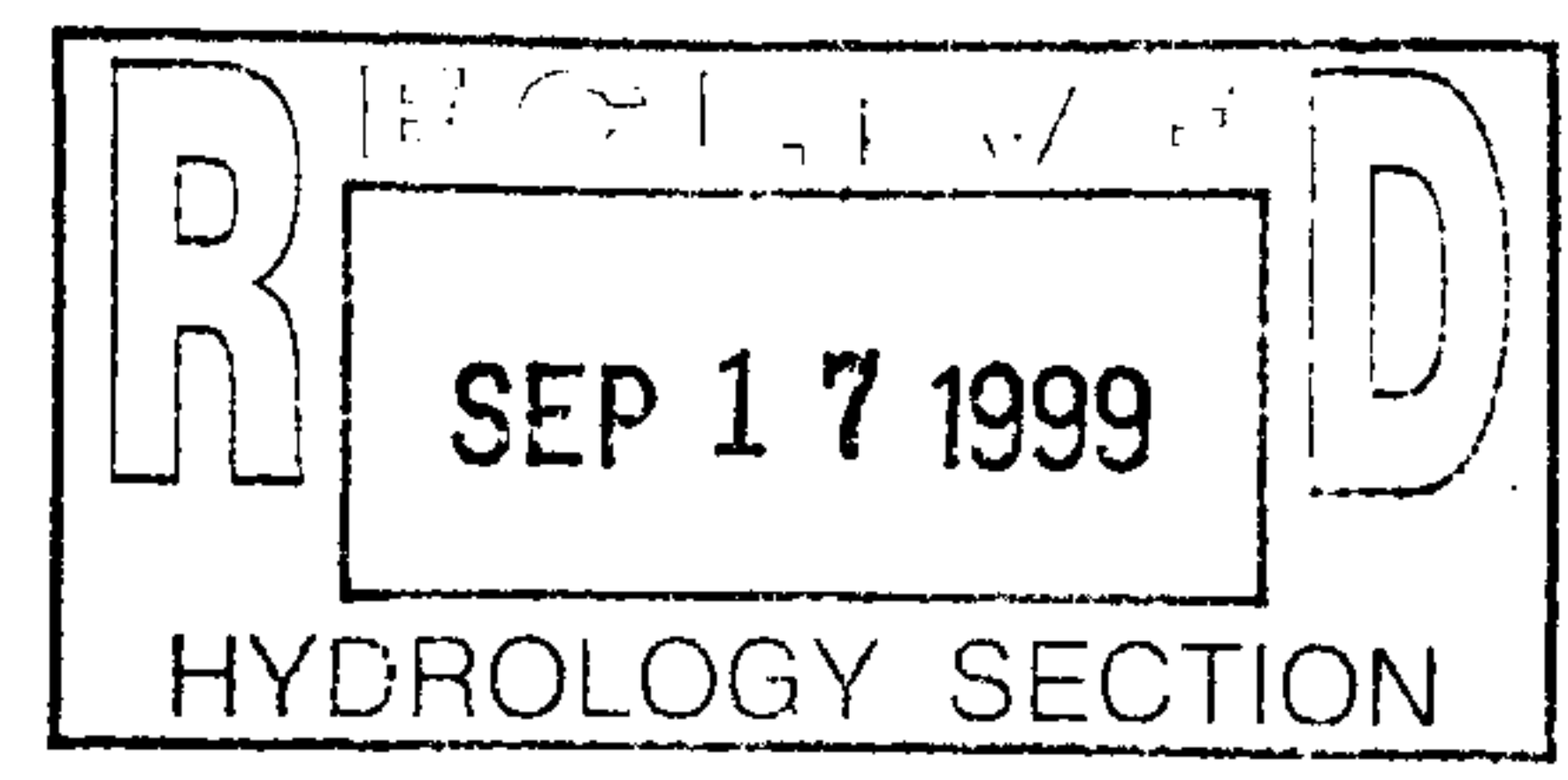
- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

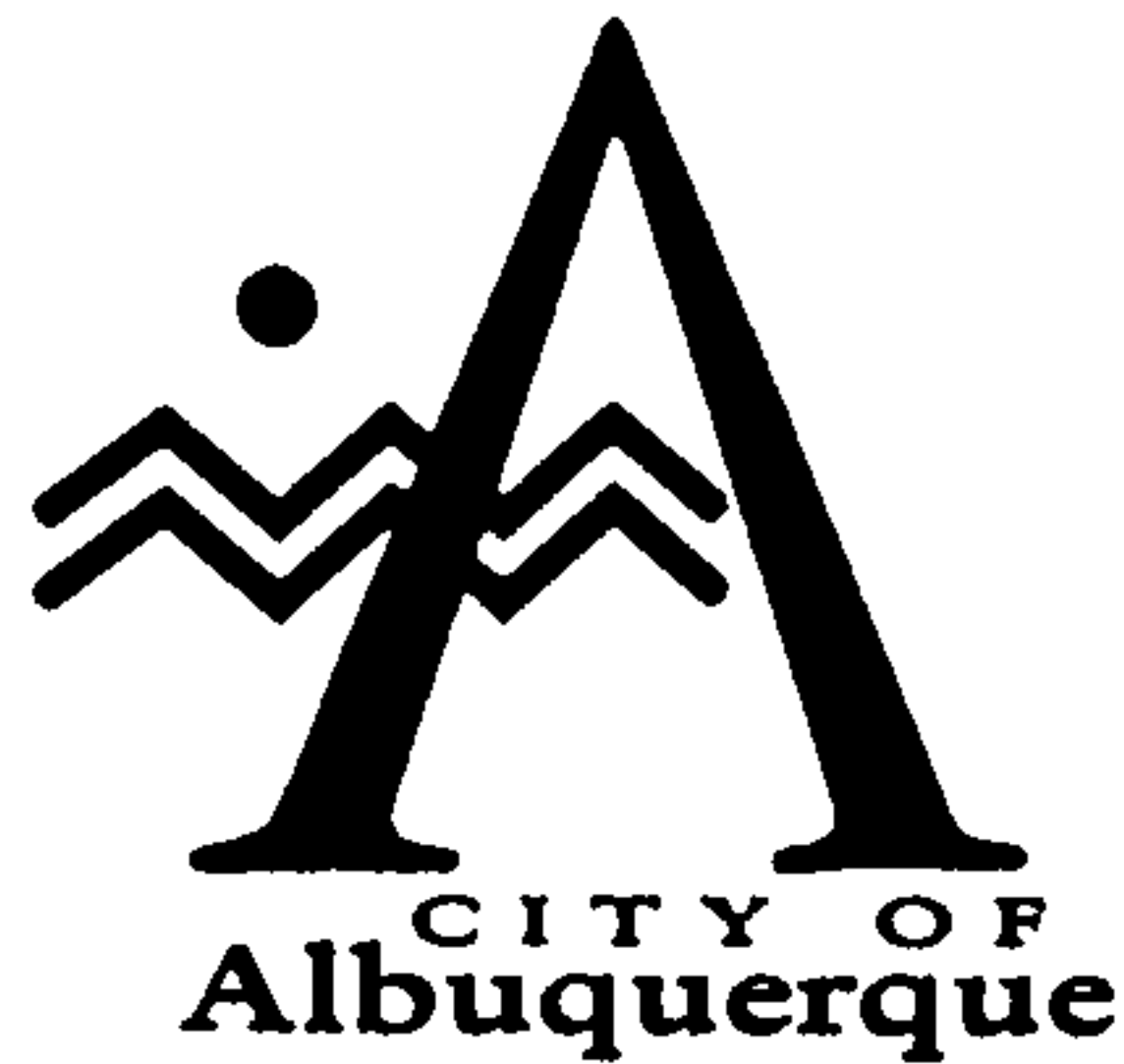
DATE SUBMITTED: September 17, 1999

BY: RICK BELTRAMO

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUBD. 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
- ☒ OTHER (SPECIFY) ROFG





July 29, 1998

Rick Beltramo, P.E.
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: Drainage Report and Revised Grading and Drainage Plan for Mesa Oeste Subdivision (G11/D1), Submitted for Preliminary Plat and Rough Grading Permit Approval, Engineer's Stamp Dated 5/1/98 on Report and Plan Dated 7/28/98.

Dear Mr. Beltramo:

Based on the additional information provided in the submittal of July 28, 1998, the above referenced Grading and Drainage Plan is approved for Preliminary Plat action.

The above referenced plan is also approved for Rough Grading. As you are aware, a top-soil disturbance permit must be obtained before any grading may occur.

Please be advised that the Grading and Drainage Certification is required prior to release of financial guarantees for this subdivision. Please add this requirement to the Infrastructure List.

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

Sincerely,

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

c: Fred Aguirre, DRB 98-18
Jude Baca, Owner
Larry Caudill, Environmental Health
File

Good for You, Albuquerque!





May 27, 1998

Rick Beltramo, P.E.
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

**RE: Drainage Report and Grading and Drainage Plan for Mesa Oeste Subdivision
(G11/D1) Engineer's Stamp Dated 5/1/98.**

Dear Mr. Beltramo:

The drainage concepts presented in the above referenced plan and report are acceptable to City Hydrology. It appears that most of my previous comments were addressed, however, prior to Preliminary Plat approval, please address the following:

1. The off-site runoff from Basins C and D are considered public water and must be conveyed into the site through public systems constructed within public drainage easements. These systems should be hard-lined and built to City standards (such as extending the stub streets to the east). Can the runoff from Basin D be diverted south to Tucson Road?
2. The report states that permission has been obtained from the owner of the Oxbow Subdivision for the proposed off-site grading. Please provide a copy of the permission letter for the file.

Please add the Grading and Drainage Certification requirement on the Infrastructure List.

If you have any questions, please call me at 924-3982.

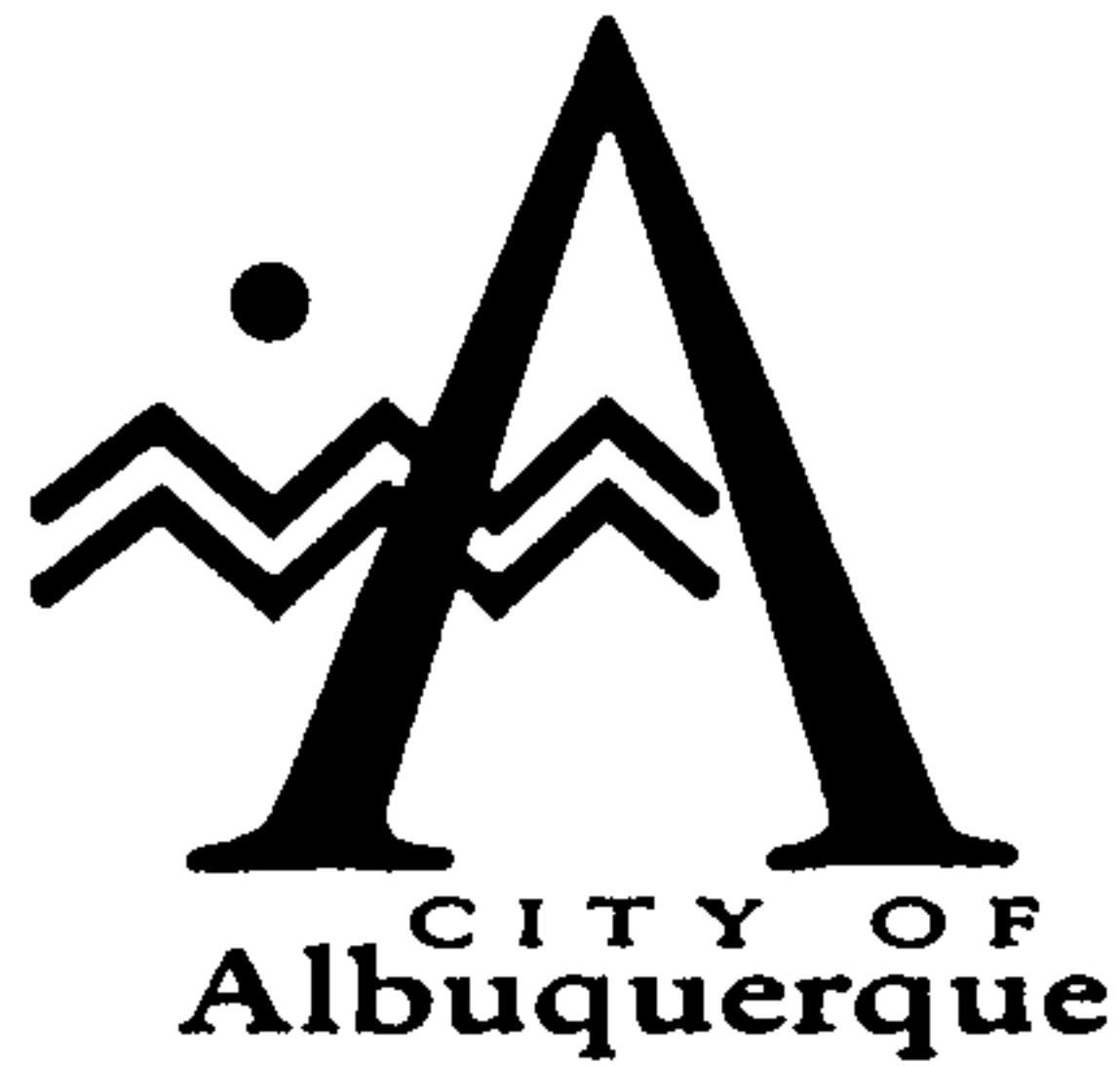
Sincerely,

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

c: DRB 98-18
Jude Baca
File

Good for You, Albuquerque!





April 27, 1998

Rick Beltramo, P.E.
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

**RE: Drainage Report and Grading and Drainage Plan for Mesa Oeste Subdivision
(G11/D1) Engineer's Stamp Dated 4/2/98.**

Dear Mr. Beltramo:

Prior Preliminary Plat and Rough Grading approval for the above referenced subdivision, the following comments must be addressed:

1. It appears from the plan that off-site grading is proposed on Drainage Basin K. How does the proposed grading effect the capacity of the existing playa? Provide the proposed contours and volume calculations for the pond. Has permission been obtained from the adjacent property owner for the proposed grading?
2. The runoff from Basins C and D are considered public water and must be conveyed into the site through public drainage easements. How wide are the proposed drainage easements? The channels to convey this runoff must be built to City standards since they will be maintained by the City.
3. Please label the street names and the existing storm drains on the grading plan. Where is storm drain Line "E" located?
4. The last sentence on page 4 of the report is unclear. How can Basin C drain west through the proposed subdivision if it discharges to Alamogordo to the east?
5. The Basin map left out the area between Basins C and D. If this discharges to Alamogordo, does the runoff flow onto Tucson Road and get into the existing storm drain? Without the basin information from the SAD project it is difficult to tell where the adjacent basins drain.
6. The Basin map shows a pond on the park site on the south side of Tucson. Why does that site have to pond? It appears that this pond is connected to the storm drain in Tucson. What does this do to the storm drain capacity?

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Rick Beltramo, P.E.
page 2

April 27, 1998

7. Please provide street capacity and inlet capacity calculations to demonstrate that the existing storm drain system is adequate.
8. It appears that when combining runoff from Basins Atucson, D and E in the AHYMO run that the total peak runoff is only 18.1 cfs, but the runoff from Basin Atucson alone is 18 cfs. Please explain. Were all basins taken into account?

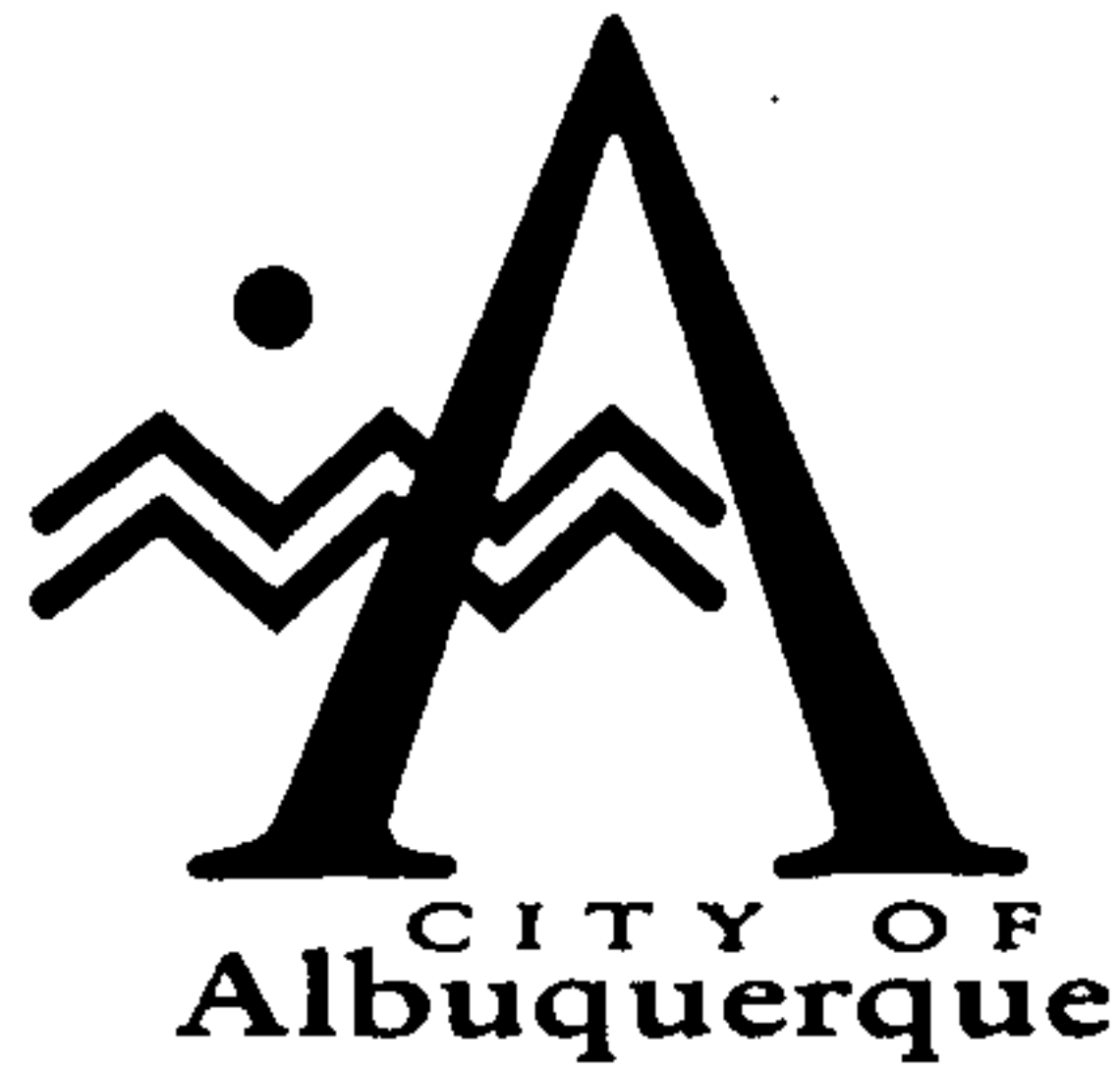
Provide a copy of the preliminary plat with the resubmittal. If you have any questions, please call me at 924-3982.

Sincerely,



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

c: DRB 98-18
Jude Baca
File



November 9, 1998

Rick Beltramo, P.E.
Bohannon-Huston Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: Drainage Report and Grading and Drainage Plan for Park Ridge Estates Subdivision (G11/D1), Submitted for Preliminary Plat and Rough Grading Permit Approval, Engineer's Stamp Dated 10/21/98 on Report, Plans Dated 11/9/98.

Dear Mr. Beltramo:

Based on the information provided in the submittal of October 22, 1998, along with the additional information provided today, the above referenced Grading and Drainage Plan is approved for Preliminary Plat action.

The above referenced plan is also approved for Rough Grading. Prior to grading, the topsoil disturbance permit must be obtained.

As you are aware, the Grading and Drainage Certification is required prior to release of financial guarantees for this subdivision.

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

Sincerely,

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

c: Fred Aguirre, DRB 98-18
Norm Gregory, Centex Real Estate Corp.

File

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Figure 12

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

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

Size/Qty	Type Improvement	Location	From	To
<u>CENTERLINE ROADWAY</u>				
20' F-CL	NORTH SIDE ONLY RES PVG C&G & 4' SW	TUCSON RD	P/L LOTS 4/5	WEST P/L LOT 17
32' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	MELISSA ANN ST	TUCSON RD	PARK RIDGE ROAD
28' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	PARK RIDGE RD	PARK POINTE DR	SUMMIT PARK DR
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (SOUTH SIDE) (STUB STREET)	PARK RIDGE RD	SUMMIT PARK DR	TERMINUS (LOT 16)
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (SOUTH SIDE) (STUB STREET)	PARK RIDGE RD	PARK POINTE DR	TERMINUS (YUCCA, CIRCLE)
28' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	PARK POINTE DR	PARK RIDGE RD	PARK HEIGHTS RD
28' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	SUMMIT PARK DR	PARK RIDGE RD	PARK HEIGHTS RD

28' F-F	RES PVG, C&G & 4' SW*(BOTH SIDES)	PARK HEIGHTS RD	PARK POINTE DR	SUMMIT PARK DR
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (NORTH SIDE) (STUB STREET)	PARK HEIGHTS RD	PARK POINTE DR	TERMINUS
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (NORTH SIDE) (STUB STREET)	PARK HEIGHTS RD	SUMMIT PARK DR	TERMINUS
10' F-F	RES PVG**, (WEST SIDE ONLY) INCLUDING ALLEY GUTTER	ALLEY	TUCSON RD	NORTH PL
	C&G(STANDARD)	YUCCA CIRCLE	ADJACENT TO LOTS 45 & 46	
20'	EMERGENCY BREAK AWAY GATE		BETWEEN LOT 1 & LOT 47	

* Sidewalks to be Deferred

** Improvements to be Bonded

Street Lights as Required per City DPM

WATERLINE IMPROVEMENTS

6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	MELISSA ANN ST	TUCSON RD	PARK RIDGE RD
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	PARK RIDGE RD	YUCCA CIR	EAST TERMINUS
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	PARK POINTE DR	PARK RIDGE RD	PARK HEIGHTS AVE
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	SUMMIT PARK DR	PARK RIDGE RD	PARK HEIGHTS AVE

6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	PARK HEIGHTS RD	WEST TERMINUS	EAST TERMINUS
--------	---	-----------------	------------------	------------------

SANITARY SEWER IMPROVEMENTS

8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	PARK RIDGE RD	YUCCA CIR	EAST TERMINUS
8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	PARK POINTE DR	PARK RIDGE RD	PARK HEIGHTS AVE
8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	SUMMIT PARK DR	PARK RIDGE RD	PARK HEIGHTS AVE
8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	PARK HEIGHTS RD	LOT 41/42	ALLEY/ PARK HEIGHTS
8" DIA	SANITARY SEWER W/NEC MH'S	ALLEY/EASEMENT	PARK HEIGHTS RD/ALLEY	450' NORTH (ST. JOSEPH PL.)
8" DIA	SANITARY SEWER W/NEC MH'S	EASEMENT	ALAMOGORDO/ ST. JOSEPH . PLACE R.O.W.	650' EAST TO EXISTING SNOW GOOSE RD SAS (OXBOW SUBDIVISION)

DRAINAGE IMPROVEMENTS

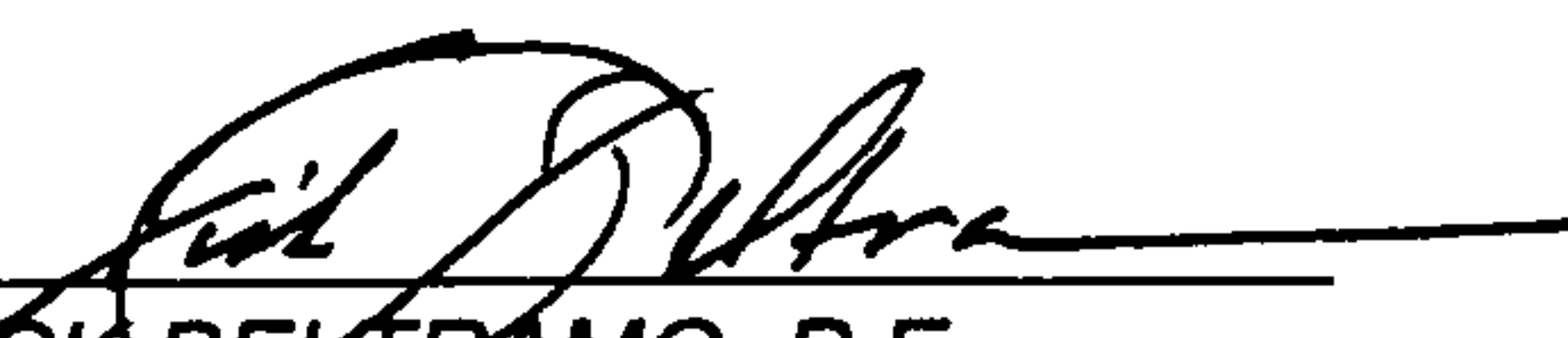
10' WIDE	CONC. CHANNEL	LOT 24	PARK HEIGHTS RD	ALLEY
10' WIDE	CONC. CHANNEL	LOT 17	PARK RIDGE RD	ALLEY
18" RCP	STORM DRAIN CONNECTOR PIPE CATCH BASIN (NORTH SIDE ONLY)	TUCSON RD	EXISTING MANHOLE @ TUCSON RD	NORTH SIDE TUCSON RD @ LOTS 7/8

24" RCP	STORM DRAIN CATCH BASINS	PARK RIDGE RD	TUCSON RD/ MELISSA ANN ST	BETWEEN LOT 55 & 56
24" RCP	STORM PIPE CATCH BASINS	PARK POINTE DR	YUCCA CIR	LOTS 47 & 46

OXBOW SUBDIVISION POND REVISIONS.

Storm Drain Includes Manholes & Catch Basins.

Grading and Drainage Certification is Required Prior to Release of Financial Guarantees.

Prepared by: 
 Print Name: RICK BELTRAMO, P.E.
 Firm: Bohannon Huston, Inc.

Development Review Board Member Approval

 Transportation Development Date

 Utility Development Date

 Planning Section, CIP. Date

 City Engineer/AMAFCA Date

 DRB Chair Date
 Development Services

DRAINAGE REPORT FOR PARK RIDGE ESTATES



BOHANNAN HUSTON

Courtyard One

7500 JEFFERSON NE

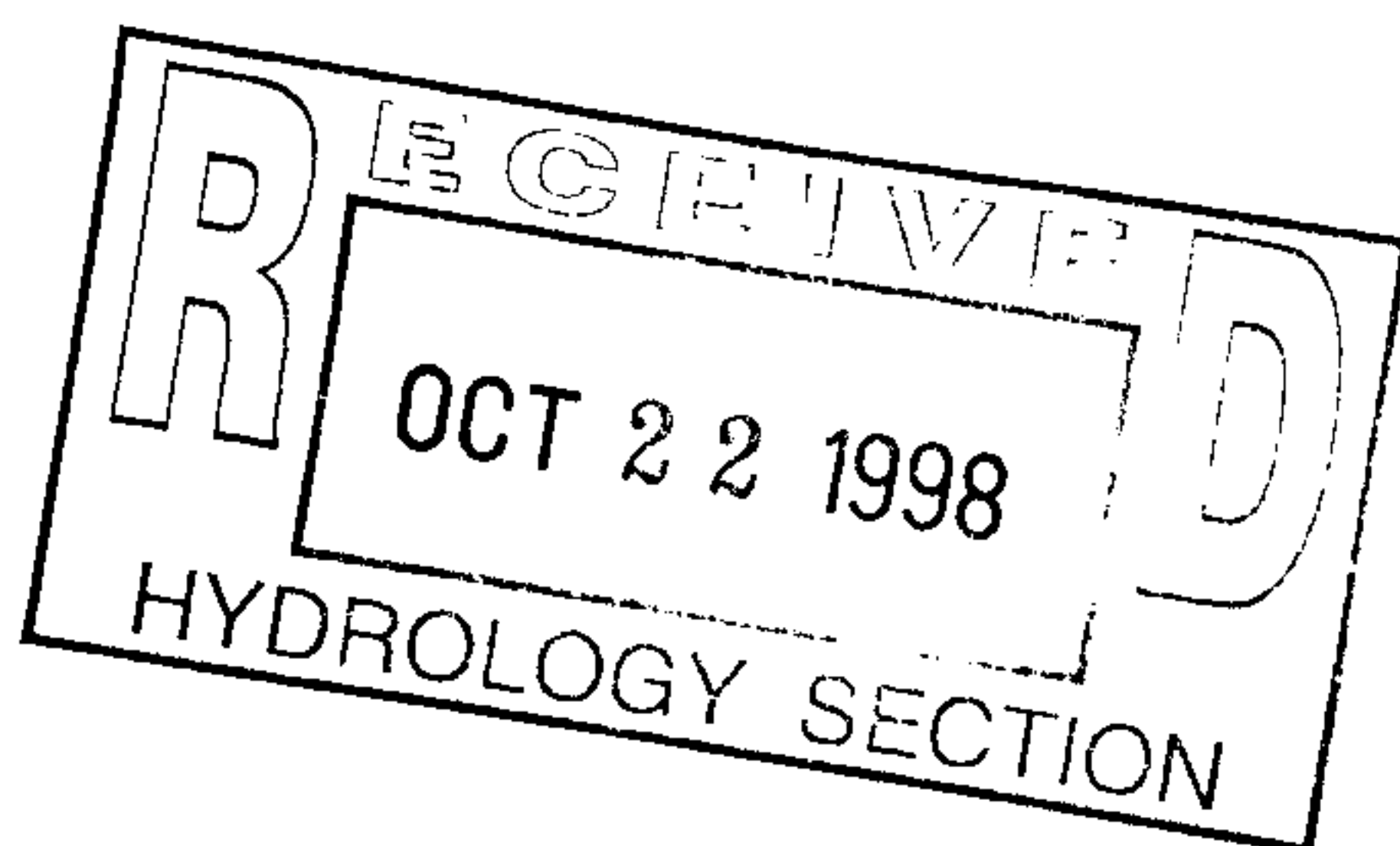
Albuquerque

NEW MEXICO 87109

voice 505.823.1000

fax 505.821.0892

OCTOBER 20, 1998



Prepared for:

**CENTEX REAL ESTATE CORP.
BUILDING B
6700 JEFFERSON NE
ALBUQUERQUE, NM 87109**

**DRAINAGE REPORT
FOR
PARK RIDGE ESTATES**

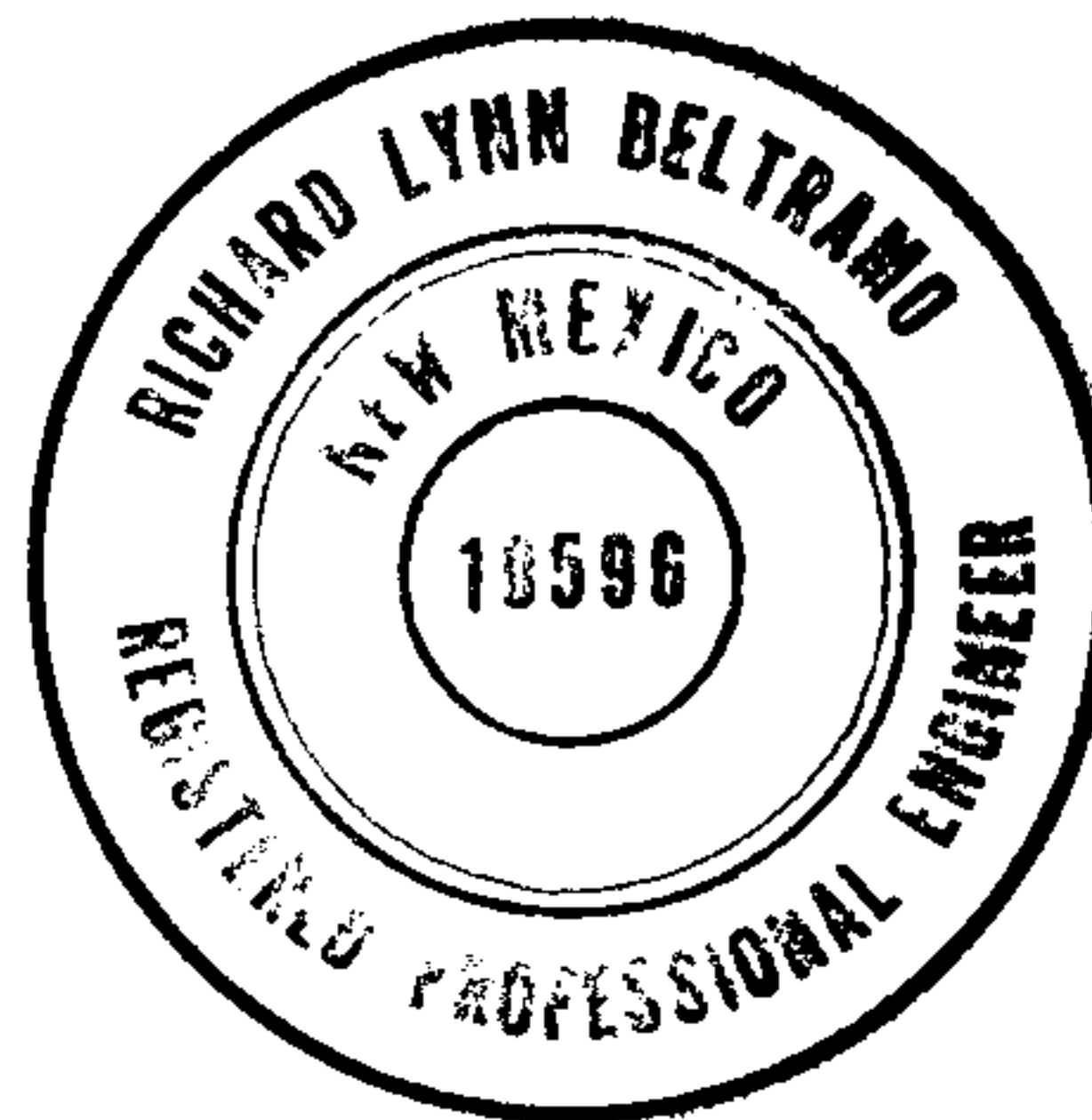
October 20, 1998

PREPARED FOR:

**CENTEX REAL ESTATE CORP.
BUILDING B, 6700 JEFFERSON NE
ALBUQUERQUE, NM 87109**

PREPARED BY:

**BOHANNAN HUSTON
COURTYARD I, 7500 JEFFERSON STREET N.E.
ALBUQUERQUE, NM 87109**



PREPARED BY:

UNDER THE SUPERVISION OF:

Elizabeth Smith *10/21/98*
Elizabeth Smith, E.I. Date

Rick Beltramo *10/21/98*
Rick Beltramo, P.E. Date

(plan revised 11-9-98)

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FIGURES

- FIGURE 1 VICINITY MAP
FIGURE 2 FEMA PANEL #S 114D & 327D

TABLE

- TABLE 1 - HYDROLOGIC SUMMARY TABLE

APPENDICES

- APPENDIX A EXISTING CONDITION HYDROLOGIC CALCULATIONS
APPENDIX B PROPOSED CONDITION HYDROLOGIC CALCULATIONS
APPENDIX C PROPOSED CONDITION HYDRAULIC CALCULATIONS
APPENDIX D PORTIONS OF SPECIAL ASSESSMENT DISTRICT 198 DRAINAGE ANALYSIS

PLATES

- PLATE 1 GRADING AND DRAINAGE PLAN
PLATE 2 GRADING DETAILS
PLATE 3 HYDROLOGIC BASIN MAP
PLATE 4 PRELIMINARY PLAT
PLATE 5 SAD 198 DRAINAGE STUDY BASIN BOUNDARY MAP
PLATE 6 SAD 198 DRAINAGE STUDY STORM SEWER PLAN

I. INTRODUCTION

This report presents the Drainage Management Plan for Park Ridge Estates, a 11 acre site proposed to contain 70 detached single family residential homes and the related streets and infrastructure.

II. PURPOSE OF REPORT

The purpose of this drainage report is to analyze and assess the impacts of the proposed Park Ridge subdivision and to recommend support infrastructure. This report includes a graphical description of the upstream drainage area, an estimate of storm water quantities entering and discharged from the site before and after development, and a graphic description of the direction of water flow and points of discharge from the site after development. In addition, a discussion of the impact of the development on downstream properties is provided including a capacity analysis of current facilities to handle the design flow, and recommended measures to mitigate any adverse impacts. The final purpose of this report is to obtain preliminary plat and construction approval.

III. METHODOLOGY

The existing and proposed conditions were analyzed for the 100-year, 6 hour storm event in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, July, 1997.

The City of Albuquerque AHYMO program was used to determine storm water runoff quantities that flow across the site. The applied rainfall for the 100-year 6-hour event is 2.22 inches as defined the DPM. The time of concentration (T_c) was determined for each basin. T_c is the time it takes for runoff to reach an analysis point from the most hydraulically remote location in the basin. T_c is calculated as the sum of the travel times of the sub-reaches in the basin and is described by the following equation. In these equations, L is the length of the sub-reach in feet, V

is the velocity is feet/sec, S is the slope in feet/feet, and K is a constant describing the surface covering.

$$T_c = (L_1/V_1 + L_2/V_2 + \dots) / 3600 \text{ sec/hour}$$

$$V = 10 * K * (S)^{.5}$$

These T_c values were input to the AHYMO code along with the basin areas, slopes, lengths, soil type, and rainfall data. The code then determined the response of the area to the rainfall. The Hydraulic Summary Table presents the area of each basin, the percent of the area which is impervious, and land treatment values utilized, and the time of concentration values. In addition, the output flow, yield (cfs/acre), and velocity are presented for each basin and for analysis points. The undeveloped and developed conditions are both included in this table.

IV. SITE LOCATION AND CHARACTERISTICS

Park Ridge Estates is located in the northwest quadrant of the City of Albuquerque, Bernalillo County, New Mexico. The subdivision is east of Coors Boulevard, south of St. Pius High School, and north of Tucson Road. See the Vicinity map for more detail.

The vegetation in these areas is primarily Mesa Dropseed, Indian Ricedgrass, Black Gramma and Sand Sagebrush. The soil at the site has been given the SCS soil classification of BKD (Blue-Kokan association, hilly) and MWA (Madurez-wink association, gently sloping). The BKD soils are in the hydrologic soil group A, which have the highest rate of rainfall absorption. The MWA soils are in the hydrologic soil group B, which also absorb more water than typical.

The site consists of very flat slopes that generally drain to the north to a playa area. Existing storm drains extended to serve this area are located in Tucson Road, upgrade from the site.

V. EXISTING CONDITION HYDROLOGIC ANALYSIS

The area was divided into two basins which currently drain into the Yucca Circle FEMA floodplain. The Flood Insurance Rate Map designated this floodplain as Zone X. Zone X is defined as an area of 500-year shallow flooding. The northern basin is a proposed Oxbow subdivision that was analyzed in a master drainage report prepared by Bohannon Huston and referred to as Basin K. That basin name will remain to prevent confusion. Basin K has an area of 36.5 acres and slopes up to 4%. The Basin K flow is approximately 50 cfs before the land is developed. The southern basin, called Basin A, is the 11 acre site to be developed as Park Ridge Estates and 2 acres off-site which drain through the site. The Park Ridge site and the land adjacent to the east produced 9.3 cfs before development occurs.

Land treatments were selected based on Soil Conservation Service (SCS) soil reports as described previously. Soil types were selected which best fit the SCS descriptions. For the AHYMO calculations, the existing soil has been designated 90% type A and 10% type B. These land treatments are considered and incorporated in the existing conditions analysis. It is assumed that portions of A, B, and C land treatments within the Park Ridge Estates subdivision are increased in imperviousness due to development.

VI. PROPOSED CONDITIONS HYDROLOGIC ANALYSIS

A. On-Site Conditions

Before the development of the site, the water from basins A and K drain to a low spot on the northern boundary. This report proposes extending storm drain into the Park Ridge site so that the water travels to storm drains located in Tucson Road. The increased flow would be routed through the existing storm drains. These storm drains were designed to accommodate the flow from this site at a higher density than proposed by this subdivision as shown in the Land Use and Runoff Coefficient Map in the Drainage Analysis of Special Assessment District 198(SAD 198). The storm drains were designed in the Drainage Analysis of SAD 198 to accommodate 39.1 cfs from the Park Ridge site as shown in Table 1: Drainage Basin Data for basin D-4. The actual flow expected from the

on-site and off-site basins after development is 50.1 cfs. Even though the proposed development is at a lower density than originally proposed, the actual flow exceeds the original estimate. (39.1 to 50.1 cfs) The increased flow is due to the fact that the new methods of hydrologic analysis result in larger flows than the older methods. In addition, half of Basins C and D were not included in the original analysis and now contribute flow. The original basin boundaries are displayed in the SAD 198 Drainage Basin Boundary Map.

There are two existing storm drains outside the Park Ridge site that may be used to transport the flow to the Rio Grande. On Tucson Road, there exists a 24" storm drain with a capacity of 16.4 cfs. On Yucca Drive north of Tucson Road, the storm drain is 30" in diameter and can convey 28.1 cfs. Finally, these two storm drains combine into a 42" diameter storm drain on Yucca Drive flowing south from Tucson Road which are designed to convey 51.2 cfs. These storm drains are called out on the SAD 198 Storm Sewer Plan and the Profile Line 'E' Figure included in the appendix.

The flow from the south half of the site, ATucson, combines with the future apartment site, Basin D and the flow in Tucson Road, Basin E, to produce 19.5 cfs. The capacity of this storm drain is 16.4 cfs. The design flow of the storm drain is exceeded by 3.1 cfs, however, the excess flow is small enough to flow in the street without flooding. The flow from the north half of the Park Ridge site, Basin AYucca, combines with the flow from the apartments to the west and the future apartment flow from Basin C to produce 32.4 cfs. The storm drain design flow is 28.1 cfs. The design flow of the storm drain is exceeded by 4.3 cfs, however, the excess flow is small enough to pond in the street without flooding. The combined flow from Yucca Drive and Tucson Road is 50.1 cfs, which can be accommodated by the storm drain designed for 51.2 cfs. In summary, the existing storm drain has adequate capacity. No downstream improvements are required.

SECTION
REVISED

B. Off-site Conditions

Basin D currently slopes toward the Park Ridge development to the west. When Park Ridge is developed, a sidewalk drain will be installed to convey flow from Basin D

through the subdivision to Tucson Road. Basin D will have the option to continue to discharge to the west or to grade the site to the east into Alamogordo drive when it is developed. The sidewalk drains/rundowns will be located in 20' public easements. These rundowns are designed to receive off-site flows through the subdivision wall, pass through the rundown and subsequently through standard COA curb drains, into the streets. See the provided details for a typical section of the rundowns.

Under proposed conditions, Basin C will continue to drain to and pond in the existing public alley. If sufficient volumes occur, water can flow north, outfalling as historically to Analysis Point 2, the existing playa. In the future, Basin C can be graded to drain through the Park Ridge site where sidewalk drains/rundowns have been installed, or graded to discharge to Alamogordo Drive as Lot 3 is currently graded. The existing apartments in lot 3 between Basins C and D discharge to Alamogordo Drive then drain north to a low point in Alamogordo approximately 700 feet away. These apartments, therefore, do not contribute flow to the Tucson storm drain. In addition, there is a water block in Tucson Road that prevents flow from Alamogordo from entering the storm drain.

Basin K will continue to pond in the existing floodplain while the Park Ridge flow into the floodplain will be diverted south. Once the Oxbow Subdivision is built, storm drains will be installed and flows will be taken northeast. The Basin K flow is approximately 50 cfs before the land is developed. Under proposed conditions, Basin K receives less runoff since the Park Ridge subdivision intercepts flow from the south, however, Basin K will also lose some ponding capacity due to grading. A resulting increase in ponding depth from 0.25' to 0.5' occurs. This increase is not large enough to create problems. Permission has been obtained from the adjacent property owner and developer of the Oxbow Subdivision. In fact, the adjacent property owner has agreed to allow slope grading onto their property and will also participate in the cost of building the subdivision wall. The Oxbow Subdivision will be importing fill to this site in order to make their site drain. Once graded, both subdivisions will have similar and matching grades.

The park located on the south side of Tucson Road contributes flow to the Tucson storm drain, however, the park has little effect on downstream capacity. There is a pond on the park site that acts as a surge pond for the area. If flow in excess of the storm drain occurs, runoff volume surges into the pond providing a buffering effect. Our analysis shows that the downstream has more hydraulic capacity than the design flows stated in the SAD report. Between the extra hydraulic capacity and the surge pond, there is significantly more than adequate freeboard built into the system.

VII. CONCLUSIONS

The primary purpose of this report is to evaluate impacts to the downstream system due to the proposed development. The development of Park Ridge Estates does not adversely impact the downstream system. The SAD 198 storm drain was designed to accommodate flow from this development. Runoff previously emptying into the floodplain in Basin K from the Park Ridge site are diverted into the storm drain per the original SAD report. Downstream capacity of existing streets and storm drains are adequate.

This development and drainage management plan provides a unified, final solution to the drainage area served by the SAD 198 storm drain. It resolves on-site and off-site, current and future developed conditions.

VIII. REFERENCES

Development Process Manual, City of Albuquerque, Planning Development and Public Works Department, January, 1993.

AHYMO Computer Program Users Manual and AHYMO194, Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), January, 1994.

Master Drainage Plan for Altura West and Archdiocese of Santa Fe properties near St. Pius High School, Bohannon Huston, October 21, 1997.

Drainage Analysis for Special Assessment District 198, City of Albuquerque, New Mexico, and Andrew, Asbury & Robert, Inc., October 31, 1985.

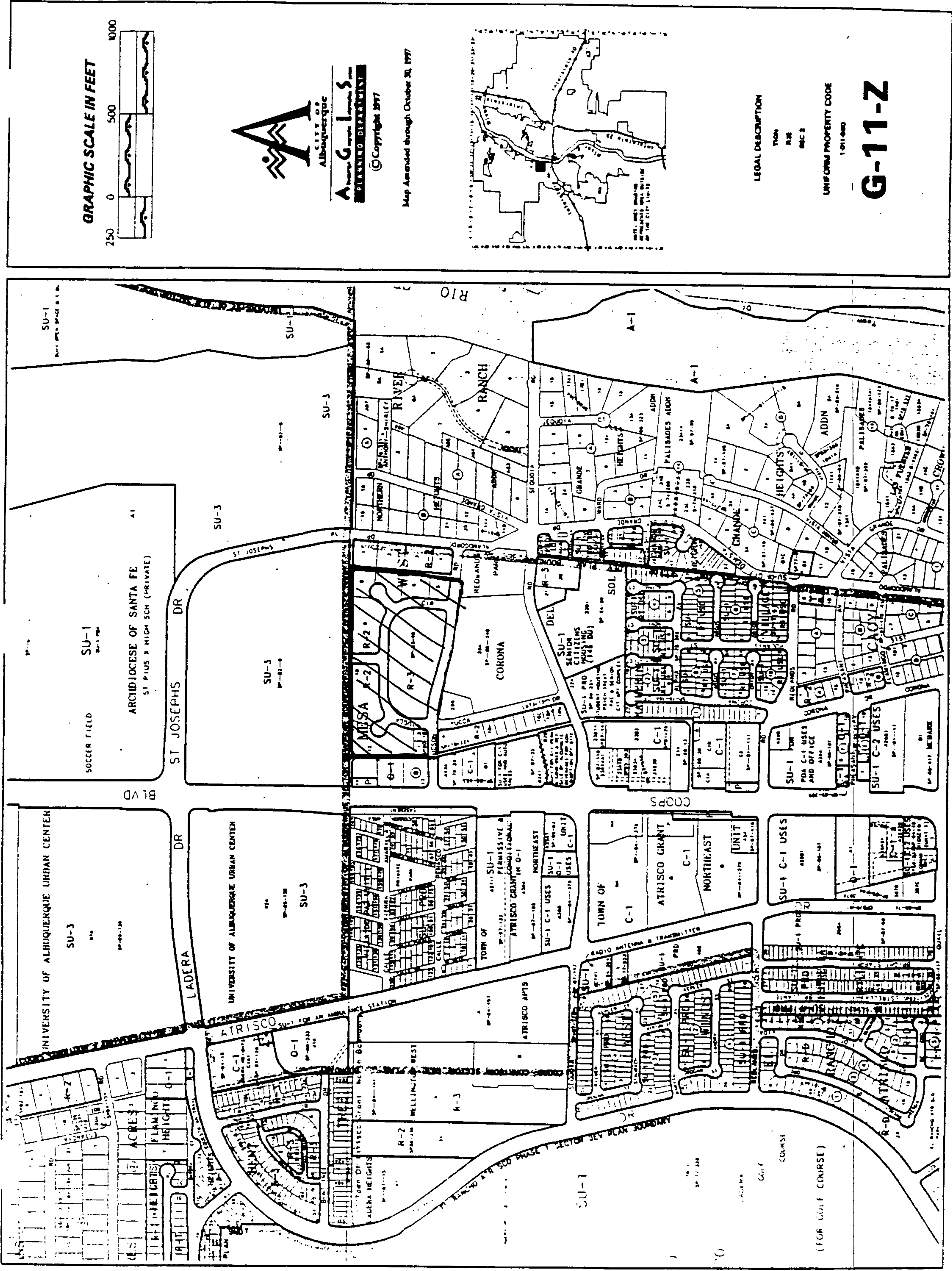
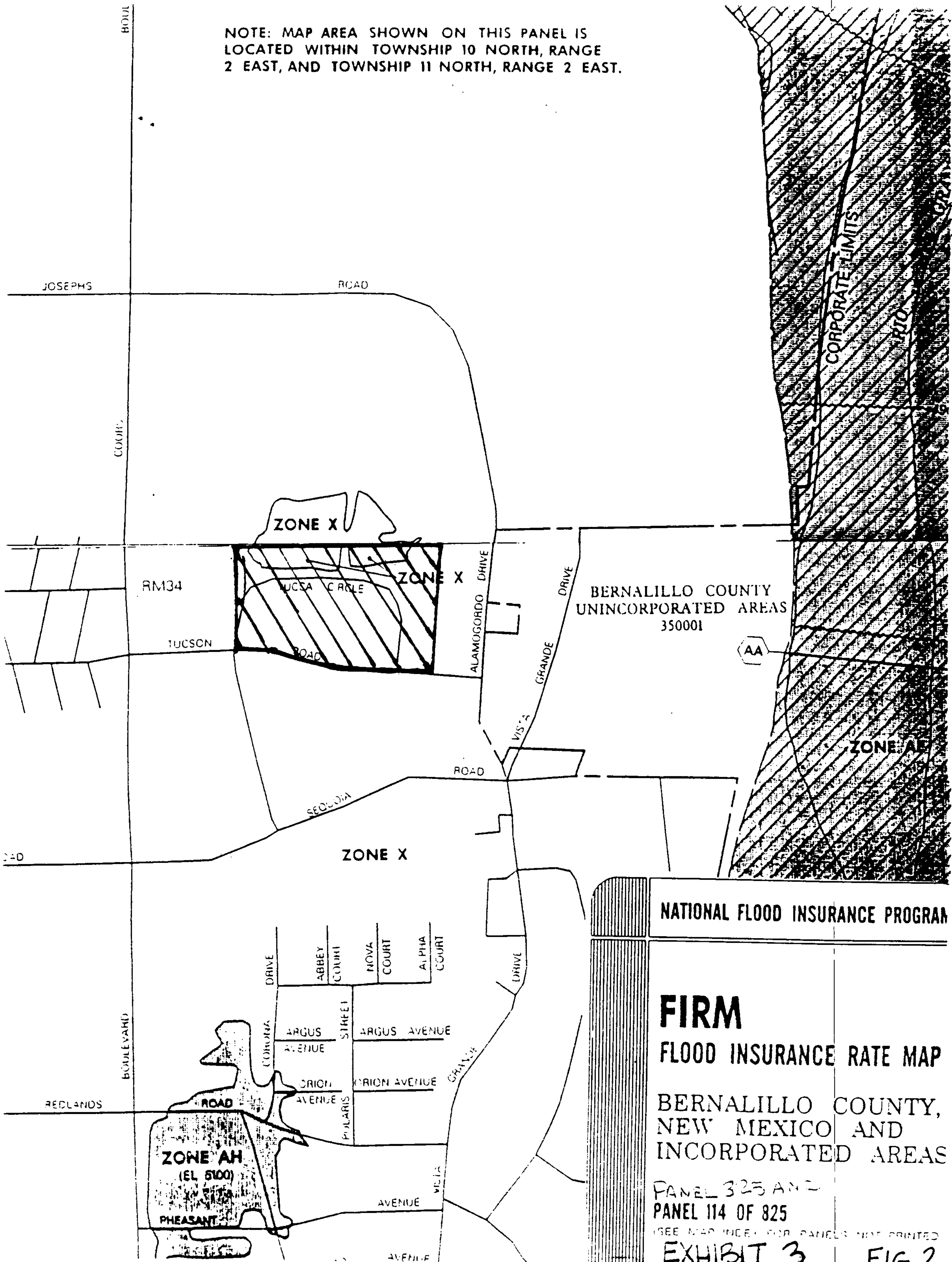


FIG. 1

NOTE: MAP AREA SHOWN ON THIS PANEL IS
LOCATED WITHIN TOWNSHIP 10 NORTH, RANGE
2 EAST, AND TOWNSHIP 11 NORTH, RANGE 2 EAST.



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
BERNALILLO COUNTY,
NEW MEXICO AND
INCORPORATED AREAS

PANEL 325 AND
PANEL 114 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)
EXHIBIT 3 **FIG 2**

TABLE

HYDROLOGIC SUMMARY TABLE APPENDICES

Hydrologic Summary Table **Park Ridge Estates** 19-Oct-98

Undeveloped Conditions

Basin	Area (sq. mi)	% Impervious %	Land Treatment % A B C D	Tc (hrs)	Q100 (cfs)	Yield (cfs/acre)	V100 (acre-ft)
A	0.022	0	90 10 0 0	0.300	9.3	0.66	0.546
K	0.057	0	90 10 0 0	0.200	50.0	1.37	1.391
Σ Areas=	0.079					Σ Volume=	1.937

Undeveloped Analysis Point

AP Floodplain	0.079				63.3	1.25	1.928
---------------	-------	--	--	--	------	------	-------

Developed Conditions

Basin	Area (sq. mi)	% Impervious %	Land Treatment % A B C D	Tc (hrs)	Q100 (cfs)	Yield (cfs/acre)	V100 (acre-ft)
Ayucca	0.011	55	0 22 23 55	0.290	20.8	2.86	0.891
Atucson	0.006	55	0 22 23 55	0.200	12.7	3.49	0.445
B	0.004	80	0 10 10 80	0.200	9.4	3.97	0.348
C	0.002	80	0 10 10 80	0.200	5.3	3.95	0.196
D	0.001	80	0 10 10 80	0.200	2.5	3.97	0.094
E	0.002	90	0 0 10 90	0.210	5.0	4.12	0.191
Σ Areas=	0.026					Σ Volume=	2.165

Developed Analysis Point

AP Yucca	0.017				32.4	2.94	1.436	Capacity cfs 28.1
AP Tucson	0.009				19.5	3.55	0.731	16.4
Combined	0.026				50.1	3.03	2.167	51.2

APPENDICES

- APPENDIX A EXISTING CONDITION HYDROLOGIC CALCULATIONS**
- APPENDIX B PROPOSED CONDITION HYDROLOGIC CALCULATIONS**
- APPENDIX C PROPOSED CONDITION HYDRAULIC CALCULATIONS**
- APPENDIX D PORTIONS OF SPECIAL ASSESSMENT DISTRICT 198 DRAINAGE ANALYSIS**

APPENDIX A

EXISTING CONDITION HYDROLOGIC CALCULATIONS

*S Undeveloped Mesa Oeste Site
START RAINFALL BEGINS AT 0.00 HOURS
100 YEAR RETURN PERIOD

.....
* MISC. DATA ::
* RAINFALL RETURN PERIOD 100-YEAR ::
* RAINFALL DURATION 6-HOUR ::
* RAINFALL DEPTHS: 1 HOUR (P60) 1.87 INCHES ::
* (UNADJUSTED) 6 HOUR (P360) 2.20 INCHES ::
* 24 HOUR (P1440) 2.66 INCHES ::
* RAINFALL DATA TAKEN FROM NOAA. ::
* HYDROGRAPH METHODOLOGY ::
* CITY OF ALBQ. DPM VOL. 2, SECTION 22.2 July, 1997 ::
* INITIAL ABSTRACTION - INFILTRATION METHOD ::
* Tc CALCULATIONS PER C.O.A. DPM 22.2-B.4 ::
* AMAFCA AHYMO VERSION MARCH 20,1992 ::
*

BEGIN ANALYSIS

RAINFALL TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.875
RAIN SIX=2.22 RAIN DAY=2.7 DT=0.05

**** COMPUTE AND PRINT NM HYD DATA FOR BASIN A ****

COMPUTE NM HYD ID=1 HYD=1 AREA=0.022 PER A=90.0 PER B=10.0
PER C=0.0 PER D=0.0 TP=.3 RAINFALL=-1

PRINT HYD ID=1 CODE=1

**** COMPUTE AND PRINT NM HYD DATA FOR BASIN K ****

COMPUTE NM HYD ID=2 HYD=2 AREA=0.057 PER A=90.0 PER B=10.0
PER C=0.0 PER D=0.0 TP=.133 RAINFALL=-1

PRINT HYD ID=2 CODE=1

**** COMBINE HYDROGRAPHS FOR BASINS A AND K ****

*S COMBINE HYDROGRAPHS FOR BASINS A AND K

ADD HYD ID=3 HYD=3 ID I=1 ID II=2

PRINT HYD ID=3 CODE=1

FINISH

```

* S Undeveloped Mesa Oesta Site
START      RAINFALL BEGINS AT 0.00 HOURS
*          100 YEAR RETURN PERIOD
*****
*
*          *****
*          MISC. DATA                                ::
*          RAINFALL RETURN PERIOD _____ 100-YEAR  ::
*          RAINFALL DURATION _____ 6-HOUR      ::
*          RAINFALL DEPTHS: 1 HOUR (P60) _____ 1.87 INCHES  ::
*          (UNADJUSTED) 6 HOUR (P360) _____ 2.20 INCHES  ::
*          24 HOUR (P1440) _____ 2.66 INCHES      ::
*          ::
*          ::
*          RAINFALL DATA TAKEN FROM NOAA.            ::
*          ::
*          HYDROGRAPH METHODOLOGY                      ::
*          ::
*          CITY OF ALBQ. DPM VOL. 2, SECTION 22.2 July, 1997  ::
*          INITIAL ABSTRACTION - INFILTRATION METHOD          ::
*          Tc CALCULATIONS PER C.O.A. DPM 22.2-B.4          ::
*          AMAFCA AHYMO VERSION MARCH 20,1992              ::
*          ::
*          *****
*          BEGIN ANALYSIS

```

```

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .050000 HOURS      END TIME = 6.000000 HOURS
.0000 .0027 .0054 .0083 .0112 .0143 .0174
.0207 .0241 .0277 .0314 .0353 .0393 .0436
.0481 .0529 .0580 .0634 .0692 .0755 .0823
.0902 .0990 .1243 .1841 .2869 .4459 .6749
.9880 1.2349 1.3465 1.4396 1.5212 1.5942 1.6602
1.7205 1.7758 1.8267 1.8737 1.9171 1.9573 1.9665
1.9749 1.9828 1.9902 1.9972 2.0037 2.0100 2.0159
2.0216 2.0271 2.0323 2.0374 2.0423 2.0470 2.0515
2.0560 2.0603 2.0644 2.0685 2.0724 2.0763 2.0800
2.0837 2.0873 2.0908 2.0942 2.0976 2.1008 2.1041
2.1072 2.1103 2.1134 2.1164 2.1193 2.1222 2.1250
2.1278 2.1306 2.1333 2.1360 2.1386 2.1412 2.1437
2.1463 2.1487 2.1512 2.1536 2.1560 2.1583 2.1607
2.1630 2.1652 2.1675 2.1697 2.1719 2.1741 2.1762
2.1783 2.1804 2.1825 2.1845 2.1866 2.1886 2.1906
2.1925 2.1945 2.1964 2.1983 2.2002 2.2021 2.2040
2.2058 2.2076 2.2095 2.2112 2.2130 2.2148 2.2165
2.2183 2.2200

```

K = .360748HR TP = .300000HR K/TP RATIO = 1.202493 SHAPE CONSTANT, N = 2.955577
UNIT PEAK = 20.400 CFS UNIT VOLUME = .9992 B = 278.18 P60 = 1.8750
AREA = .022000 SQ MI IA = .63500 INCHES INF = 1.62800 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

OUTFLOW HYDROGRAPH REACH 1.00

RUNOFF VOLUME = .46502 INCHES = .5456 ACRE-FEET
PEAK DISCHARGE RATE = 9.28 CFS AT 1.700 HOURS BASIN AREA = .0220 SQ. MI.

**** COMPUTE AND PRINT NM HYD DATA FOR BASIN K ****

COMPUTE NM HYD ID=2 HYD=2 AREA=0.057 PER A=90.0 PER B=10.0
PER C=0.0 PER D=0.0 TP=.133 RAINFALL=-1

K = .159932HR TP = .133000HR K/TP RATIO = 1.202493 SHAPE CONSTANT, N = 2.955577
UNIT PEAK = 119.22 CFS UNIT VOLUME = .9984 B = 278.18 P60 = 1.8750
AREA = .057000 SQ MI IA = .63500 INCHES INF = 1.62800 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=2 CODE=1

OUTFLOW HYDROGRAPH REACH 2.00

RUNOFF VOLUME = .46502 INCHES = 1.4136 ACRE-FEET
PEAK DISCHARGE RATE = 49.99 CFS AT 1.500 HOURS BASIN AREA = .0570 SQ. MI.

**** COMBINE HYDROGRAPHS FOR BASINS A AND K ****

*S COMBINE HYDROGRAPHS FOR BASINS A AND K

ADD HYD ID=3 HYD=3 ID I=1 ID II=2

PRINT HYD ID=3 CODE=1

OUTFLOW HYDROGRAPH REACH 3.00

RUNOFF VOLUME = .46502 INCHES = 1.9593 ACRE-FEET
PEAK DISCHARGE RATE = 55.60 CFS AT 1.550 HOURS BASIN AREA = .0790 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:08:02

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE
 (MON/DAY/YR) =03/23/1998
 INPUT FILE = undevsol.txt USER NO.= BOHN_HNM.STE

COMMAND	FROM TO	HYDROGRAPH ID	ID	PEAK AREA	RUNOFF DISCHARGE	TIME TO VOLUME	CFS RUNOFF	PAGE = 1	PEAK PER
NOTATION	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE

*S Undeveloped Mesa Oeste Site

START

TIME= .00

RAINFALL TYPE= 1

RAIN6= 2.220

COMPUTE NM HYD	1.00	-	1	.02200	9.28	.546	.46502	1.700	.659 PER IMP= .00
----------------	------	---	---	--------	------	------	--------	-------	-------------------

COMPUTE NM HYD	2.00	-	2	.05700	49.99	1.414	.46502	1.500	1.370 PER IMP= .00
----------------	------	---	---	--------	-------	-------	--------	-------	--------------------

*S COMBINE HYDROGRAPHS FOR BASINS A AND K

ADD HYD	3.00	1 & 2	3	.07900	55.60	1.959	.46502	1.550	1.100
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FINISH

APPENDIX B

PROPOSED CONDITION HYDROLOGIC CALCULATIONS

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =10/19/1998
INPUT FILE = AFTERIN.TXT USER NO.= BOHN_HNM.STE

COMMAND	IDENTIFICATION	FROM TO HYDROGRAPH ID ID NO. NO.	PEAK AREA (SQ MI)	RUNOFF DISCHARGE (CFS)	TIME TO VOLUME (AC-FT)	CFS RUNOFF (INCHES)	PAGE = 1 PEAK (HOURS)	PER ACRE	NOTATION
---------	----------------	--	-------------------------	------------------------------	------------------------------	---------------------------	-----------------------------	-------------	----------

*S Developed Park Ridge Estates

START

TIME= .00

RAINFALL TYPE= 1

RAIN6= 2.220

COMPUTE NM HYD	AY - 1	.01140	20.84	.891	1.46525	1.550	2.856	PER IMP= 55.00
COMPUTE NM HYD	AT - 2	.00570	12.72	.445	1.46525	1.500	3.486	PER IMP= 55.00
COMPUTE NM HYD	B - 3	.00372	9.40	.348	1.75446	1.500	3.949	PER IMP= 80.00
COMPUTE NM HYD	C - 4	.00210	5.31	.196	1.75445	1.500	3.954	PER IMP= 80.00
COMPUTE NM HYD	D - 5	.00100	2.54	.094	1.75445	1.500	3.965	PER IMP= 80.00
COMPUTE NM HYD	E - 6	.00190	5.01	.191	1.88863	1.500	4.124	PER IMP= 90.00
COMPUTE NM HYD	K - 8	.05700	49.99	1.414	.46502	1.500	1.370	PER IMP= .00

*S ROUTE HYDROGRAPH C THRU BASIN AYucca

ROUTE	NEWC 4 20	.00210	3.65	.197	1.76088	1.583	2.715
-------	-----------	--------	------	------	---------	-------	-------

*S COMBINE HYDROGRAPHS FOR BASINS AYucca AND C

ADD HYD	AY.C 1&20 22	.01350	24.11	1.088	1.51113	1.550	2.790
---------	--------------	--------	-------	-------	---------	-------	-------

*S COMBINE HYDROGRAPHS FOR BASINS AYucca, C AND B

ADD HYD	AY.B.C 22& 3 24	.01722	32.35	1.436	1.56368	1.550	2.935
---------	-----------------	--------	-------	-------	---------	-------	-------

*S ROUTE HYDROGRAPH D THRU BASIN AT

ROUTE	NEWD 5 40	.00100	2.12	.094	1.76150	1.583	3.309
-------	-----------	--------	------	------	---------	-------	-------

*S COMBINE HYDROGRAPHS FOR BASINS D AND ATucson

ADD HYD	ATD 40& 2 42	.00670	14.50	.539	1.50934	1.500	3.382
---------	--------------	--------	-------	------	---------	-------	-------

*S ADD E TO D, AT

ADD HYD	ATDE 42& 6 46	.00860	19.52	.731	1.59310	1.500	3.546
---------	---------------	--------	-------	------	---------	-------	-------

ADD HYD	ALL 24&46 50	.02582	50.10	2.167	1.57348	1.550	3.032
---------	--------------	--------	-------	-------	---------	-------	-------

FINISH

```

*S Developed Park Ridge Estates
START      RAINFALL BEGINS AT 0.00 HOURS
*          100 YEAR RETURN PERIOD
*****
*
* .....
* ::      MISC. DATA      ::
* ::      RAINFALL RETURN PERIOD_____ 100-YEAR  ::
* ::      RAINFALL DURATION_____ 6-HOUR      ::
* ::      RAINFALL DEPTHS: 1 HOUR (P60)___ 1.875 INCHES  ::
* ::      (UNADJUSTED) 6 HOUR (P360)___ 2.22 INCHES  ::
* ::      24 HOUR (P1440)_ 2.70 INCHES  ::
* ::      ::
* ::      RAINFALL DATA TAKEN FROM NOAA.      ::
* ::      ::
* ::      HYDROGRAPH METHODOLOGY      ::
* ::      ::
* ::      CITY OF ALBQ. DPM VOL. 2, SECTION 22.2 July, 1997  ::
* ::      INITIAL ABSTRACTION - INFILTRATION METHOD      ::
* ::      Tc CALCULATIONS PER C.O.A. DPM 22.2-B.4      ::
* ::      AMAFCA AHYMO VERSION MARCH 20,1992      ::
* ::      ::
* .....
*          BEGIN ANALYSIS
*****
RAINFALL      TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.875
              RAIN SIX=2.22 RAIN DAY=2.7 DT=0.05
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN AYucca ****
COMPUTE NM HYD  ID=1 HYD=AY AREA=0.0114 PER A=0.0 PER B=22.0
                PER C=23.0 PER D=55.0 TP=.194 RAINFALL=-1
PRINT HYD      ID=1 CODE=1
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN ATucson ****
COMPUTE NM HYD  ID=2 HYD=AT AREA=0.0057 PER A=0.0 PER B=22.0
                PER C=23.0 PER D=55.0 TP=.133 RAINFALL=-1
PRINT HYD      ID=2 CODE=1
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN B ****
COMPUTE NM HYD  ID=3 HYD=B AREA=0.00372 PER A=0.0 PER B=10.0
                PER C=10.0 PER D=80.0 TP=.133 RAINFALL=-1
PRINT HYD      ID=3 CODE=1
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN C ****
COMPUTE NM HYD  ID=4 HYD=C AREA=0.0021 PER A=0.0 PER B=10.0
                PER C=10.0 PER D=80.0 TP=.133 RAINFALL=-1
PRINT HYD      ID=4 CODE=1
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN D ****
COMPUTE NM HYD  ID=5 HYD=D AREA=0.001 PER A=0.0 PER B=10.0
                PER C=10.0 PER D=80.0 TP=.133 RAINFALL=-1
PRINT HYD      ID=5 CODE=1
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN E ****
COMPUTE NM HYD  ID=6 HYD=E AREA=0.0019 PER A=0.0 PER B=0.0
                PER C=10.0 PER D=90.0 TP=.138 RAINFALL=-1
PRINT HYD      ID=6 CODE=1
*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN K ****
COMPUTE NM HYD  ID=8 HYD=K AREA=0.057 PER A=90.0 PER B=10.0
                PER C=0.0 PER D=0.0 TP=.133 RAINFALL=-1
PRINT HYD      ID=8 CODE=1
*
**** COMPUTE RATING CURVE AND TRAVEL TIME FOR HYDROGRAPH C ****
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=9.333 FT MAX ELEV=10 FT
                      CH SLP=0.005 FP SLP=0.005 N=0.017
                      DIST=28.1 FT
                      DIST ELEV  DIST ELEV  DIST ELEV
                      0  10  .1  9.333  2  9.458

```

```

14 9.7 26 9.458 28 9.333
28.1 10
*
COMPUTE TRAVEL TIME      ID=20 REACH NO=1 NO VS=1 L=850 FT
                          SLP=0.005
*** ROUTE HYDROGRAPH C THRU CHANNEL REACH OF BASIN AYucca *****
*S ROUTE HYDROGRAPH C THRU BASIN AYucca
*
ROUTE                    ID=20 HYD NO=NEWC INFLOW ID=4
                          DT=0.08333 HR
*
**** COMBINE HYDROGRAPHS FOR BASINS AYucca and C *****
*S COMBINE HYDROGRAPHS FOR BASINS AYucca AND C
ADD HYD                  ID=22 HYD=AY.C ID I=1 ID II=20
*
PRINT HYD                ID=22 CODE=1
*
**** COMBINE HYDROGRAPHS FOR BASINS AYucca,C and B *****
*S COMBINE HYDROGRAPHS FOR BASINS AYucca, C AND B
ADD HYD                  ID=24 HYD=AY.B.C ID I=22 ID II=3
*
PRINT HYD                ID=24 CODE=1
*
**** COMPUTE RATING CURVE AND TRAVEL TIME FOR HYDROGRAPH D ****
COMPUTE RATING CURVE     CID=1 VS NO=1 NO SEGS=1
                          MIN ELEV=9.333 FT MAX ELEV=10 FT
                          CH SLP=0.005 FP SLP=0.005 N=0.017
                          DIST=28.1 FT
                          DIST ELEV  DIST ELEV  DIST ELEV
                          0  10  .1  9.333  2  9.458
14 9.7 26 9.458 28 9.333
28.1 10
*
COMPUTE TRAVEL TIME      ID=40 REACH NO=1 NO VS=1 L=400 FT
                          SLP=0.005
*** ROUTE HYDROGRAPH D THRU CHANNEL REACH OF BASIN AT *****
*S ROUTE HYDROGRAPH D THRU BASIN AT
*
ROUTE                    ID=40 HYD NO=NEWD INFLOW ID=5
                          DT=0.08333 HR
*
**** COMBINE HYDROGRAPHS FOR BASINS ATucson, D *****
*S COMBINE HYDROGRAPHS FOR BASINS D AND ATucson
ADD HYD                  ID=42 HYD=ATD ID I=40 ID II=2
*
*S ADD E TO D, AT
ADD HYD                  ID=46 HYD=ATDE ID I=42 ID II=6
PRINT HYD                ID=46 CODE=1
*
**** COMBINE HYDROGRAPHS FOR ALL BASINS *****
ADD HYD                  ID=50 HYD=ALL ID I=24 ID II=46
PRINT HYD                ID=50 CODE=1
FINISH

```

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 10/19/1998
START TIME (HR:MIN:SEC) = 15:36:20 USER NO.= BOHN_HNM.STE
INPUT FILE = AFTERIN.TXT

*S Developed Park Ridge Estates
START RAINFALL BEGINS AT 0.00 HOURS
* 100 YEAR RETURN PERIOD

*
*
* :: MISC. DATA ::
* :: RAINFALL RETURN PERIOD_____ 100-YEAR ::
* :: RAINFALL DURATION_____ 6-HOUR ::
* :: RAINFALL DEPTHS: 1 HOUR (P60)___ 1.875 INCHES ::
* :: (UNADJUSTED) 6 HOUR (P360)___ 2.22 INCHES ::
* :: 24 HOUR (P1440)_ 2.70 INCHES ::
* :: ::
* :: RAINFALL DATA TAKEN FROM NOAA. ::
* :: ::
* :: HYDROGRAPH METHODOLOGY ::
* :: ::
* :: CITY OF ALBQ. DPM VOL. 2, SECTION 22.2 July, 1997 ::
* :: INITIAL ABSTRACTION - INFILTRATION METHOD ::
* :: Tc CALCULATIONS PER C.O.A. DPM 22.2-B.4 ::
* :: AMAFCA AHYMO VERSION MARCH 20,1992 ::
* :: ::
*
* BEGIN ANALYSIS

RAINFALL TYPE=1 RAIN QUARTER=0.0 RAIN ONE=1.875
RAIN SIX=2.22 RAIN DAY=2.7 DT=0.05

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .050000 HOURS END TIME = 6.000000 HOURS
.0000 .0027 .0054 .0083 .0112 .0143 .0174
.0207 .0241 .0277 .0314 .0353 .0393 .0436
.0481 .0529 .0580 .0634 .0692 .0755 .0823
.0902 .0990 .1243 .1841 .2869 .4459 .6749
.9880 1.2349 1.3465 1.4396 1.5212 1.5942 1.6602
1.7205 1.7758 1.8267 1.8737 1.9171 1.9573 1.9665
1.9749 1.9828 1.9902 1.9972 2.0037 2.0100 2.0159
2.0216 2.0271 2.0323 2.0374 2.0423 2.0470 2.0515
2.0560 2.0603 2.0644 2.0685 2.0724 2.0763 2.0800
2.0837 2.0873 2.0908 2.0942 2.0976 2.1008 2.1041
2.1072 2.1103 2.1134 2.1164 2.1193 2.1222 2.1250
2.1278 2.1306 2.1333 2.1360 2.1386 2.1412 2.1437
2.1463 2.1487 2.1512 2.1536 2.1560 2.1583 2.1607
2.1630 2.1652 2.1675 2.1697 2.1719 2.1741 2.1762
2.1783 2.1804 2.1825 2.1845 2.1866 2.1886 2.1906
2.1925 2.1945 2.1964 2.1983 2.2002 2.2021 2.2040
2.2058 2.2076 2.2095 2.2112 2.2130 2.2148 2.2165
2.2183 2.2200

*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN AYucca *****
COMPUTE NM HYD ID=1 HYD=AY AREA=0.0114 PER A=0.0 PER B=22.0
PER C=23.0 PER D=55.0 TP=.194 RAINFALL=-1

K = .105730HR TP = .194000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 17.009 CFS UNIT VOLUME = .9994 B = 526.28 P60 = 1.8750
AREA = .006270 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .171931HR TP = .194000HR K/TP RATIO = .886242 SHAPE CONSTANT, N = 4.003082
UNIT PEAK = 9.3973 CFS UNIT VOLUME = .9988 B = 355.38 P60 = 1.8750
AREA = .005130 SQ MI IA = .42333 INCHES INF = 1.03533 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA AY

RUNOFF VOLUME = 1.46525 INCHES = .8909 ACRE-FEET
PEAK DISCHARGE RATE = 20.84 CFS AT 1.550 HOURS BASIN AREA = .0114 SQ. MI.

*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN ATucson *****
COMPUTE NM HYD ID=2 HYD=AT AREA=0.0057 PER A=0.0 PER B=22.0
PER C=23.0 PER D=55.0 TP=.133 RAINFALL=-1

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 12.405 CFS UNIT VOLUME = .9983 B = 526.28 P60 = 1.8750
AREA = .003135 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .117870HR TP = .133000HR K/TP RATIO = .886242 SHAPE CONSTANT, N = 4.003082
UNIT PEAK = 6.8537 CFS UNIT VOLUME = .9995 B = 355.38 P60 = 1.8750
AREA = .002565 SQ MI IA = .42333 INCHES INF = 1.03533 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA AT

RUNOFF VOLUME = 1.46525 INCHES = .4454 ACRE-FEET
PEAK DISCHARGE RATE = 12.72 CFS AT 1.500 HOURS BASIN AREA = .0057 SQ. MI.

*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN B *****
COMPUTE NM HYD ID=3 HYD=B AREA=0.00372 PER A=0.0 PER B=10.0
PER C=10.0 PER D=80.0 TP=.133 RAINFALL=-1

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.776 CFS UNIT VOLUME = .9981 B = 526.28 P60 = 1.8750
AREA = .002976 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118147HR TP = .133000HR K/TP RATIO = .888324 SHAPE CONSTANT, N = 3.993051
UNIT PEAK = 1.9842 CFS UNIT VOLUME = .9947 B = 354.71 P60 = 1.8750
AREA = .000744 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA B

RUNOFF VOLUME = 1.75446 INCHES = .3481 ACRE-FEET
PEAK DISCHARGE RATE = 9.40 CFS AT 1.500 HOURS BASIN AREA = .0037 SQ. MI.

*
**** COMPUTE AND PRINT NM HYD DATA FOR BASIN C *****
COMPUTE NM HYD ID=4 HYD=C AREA=0.0021 PER A=0.0 PER B=10.0
PER C=10.0 PER D=80.0 TP=.133 RAINFALL=-1

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.6477 CFS UNIT VOLUME = .9976 B = 526.28 P60 = 1.8750

AREA = .001680 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118147HR TP = .133000HR K/TP RATIO = .888324 SHAPE CONSTANT, N = 3.993051
UNIT PEAK = 1.1201 CFS UNIT VOLUME = .9898 B = 354.71 P60 = 1.8750
AREA = .000420 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA C

RUNOFF VOLUME = 1.75445 INCHES = .1965 ACRE-FEET
PEAK DISCHARGE RATE = 5.31 CFS AT 1.500 HOURS BASIN AREA = .0021 SQ. MI.

**** COMPUTE AND PRINT NM HYD DATA FOR BASIN D ****

COMPUTE NM HYD ID=5 HYD=D AREA=0.001 PER A=0.0 PER B=10.0
PER C=10.0 PER D=80.0 TP=.133 RAINFALL=-1

K = .072485HR TP = .133000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.1656 CFS UNIT VOLUME = .9960 B = 526.28 P60 = 1.8750
AREA = .000800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .118147HR TP = .133000HR K/TP RATIO = .888324 SHAPE CONSTANT, N = 3.993051
UNIT PEAK = .53339 CFS UNIT VOLUME = .9780 B = 354.71 P60 = 1.8750
AREA = .000200 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=5 CODE=1

HYDROGRAPH FROM AREA D

RUNOFF VOLUME = 1.75445 INCHES = .0936 ACRE-FEET
PEAK DISCHARGE RATE = 2.54 CFS AT 1.500 HOURS BASIN AREA = .0010 SQ. MI.

**** COMPUTE AND PRINT NM HYD DATA FOR BASIN E ****

COMPUTE NM HYD ID=6 HYD=E AREA=0.0019 PER A=0.0 PER B=0.0
PER C=10.0 PER D=90.0 TP=.138 RAINFALL=-1

K = .075210HR TP = .138000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.5212 CFS UNIT VOLUME = .9970 B = 526.28 P60 = 1.8750
AREA = .001710 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .109658HR TP = .138000HR K/TP RATIO = .794622 SHAPE CONSTANT, N = 4.512163
UNIT PEAK = .53417 CFS UNIT VOLUME = .9797 B = 387.98 P60 = 1.8750
AREA = .000190 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=6 CODE=1

HYDROGRAPH FROM AREA E

RUNOFF VOLUME = 1.88863 INCHES = .1914 ACRE-FEET
PEAK DISCHARGE RATE = 5.01 CFS AT 1.500 HOURS BASIN AREA = .0019 SQ. MI.

**** COMPUTE AND PRINT NM HYD DATA FOR BASIN K ****

COMPUTE NM HYD ID=8 HYD=K AREA=0.057 PER A=90.0 PER B=10.0
PER C=0.0 PER D=0.0 TP=.133 RAINFALL=-1

K = .159932HR TP = .133000HR K/TP RATIO = 1.202493 SHAPE CONSTANT, N = 2.955577
UNIT PEAK = 119.22 CFS UNIT VOLUME = .9984 B = 278.18 P60 = 1.8750
AREA = .057000 SQ MI IA = .63500 INCHES INF = 1.62800 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA K

RUNOFF VOLUME = .46502 INCHES = 1.4136 ACRE-FEET
PEAK DISCHARGE RATE = 49.99 CFS AT 1.500 HOURS BASIN AREA = .0570 SQ. MI.

**** COMPUTE RATING CURVE AND TRAVEL TIME FOR HYDROGRAPH C ****

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=9.333 FT MAX ELEV=10 FT
CH SLP=0.005 FP SLP=0.005 N=0.017
DIST=28.1 FT
DIST ELEV DIST ELEV DIST ELEV
0 10 .1 9.333 2 9.458
14 9.7 26 9.458 28 9.333
28.1 10

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
9.33	.00	.00	.00
9.37	.02	.01	1.11
9.40	.08	.05	2.21
9.44	.17	.15	3.32
9.47	.32	.29	5.47
9.51	.57	.55	8.96
9.54	.95	1.03	12.46
9.58	1.45	1.77	15.95
9.61	2.07	2.82	19.44
9.65	2.81	4.22	22.93
9.68	3.68	6.01	26.42
9.72	4.65	8.54	28.02
9.75	5.63	11.74	28.03
9.79	6.62	15.33	28.04
9.82	7.60	19.28	28.05
9.86	8.59	23.58	28.06
9.89	9.57	28.22	28.07
9.93	10.56	33.17	28.08
9.96	11.54	38.43	28.09
10.00	12.53	43.99	28.10

COMPUTE TRAVEL TIME ID=20 REACH NO=1 NO VS=1 L=850 FT
SLP=0.005

TRAVEL TIME TABLE REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.5868
.070	.078	.05	.3696
.105	.175	.15	.2821
.140	.319	.29	.2619

.176	.572	.55	.2447
.211	.948	1.03	.2169
.246	1.447	1.77	.1926
.281	2.068	2.82	.1730
.316	2.811	4.22	.1573
.351	3.678	6.01	.1444
.386	4.649	8.54	.1285
.421	5.632	11.74	.1133
.456	6.616	15.33	.1019
.491	7.601	19.28	.0931
.527	8.586	23.58	.0860
.562	9.571	28.22	.0801
.597	10.556	33.17	.0751
.632	11.542	38.43	.0709
.667	12.528	43.99	.0672

*** ROUTE HYDROGRAPH C THRU CHANNEL REACH OF BASIN AYucca *****

*S ROUTE HYDROGRAPH C THRU BASIN AYucca

*

ROUTE ID=20 HYD NO=NEWC INFLOW ID=4
DT=0.08333 HR

*

**** COMBINE HYDROGRAPHS FOR BASINS AYucca and C *****

*S COMBINE HYDROGRAPHS FOR BASINS AYucca AND C

ADD HYD ID=22 HYD=AY.C ID I=1 ID II=20

*

PRINT HYD ID=22 CODE=1

HYDROGRAPH FROM AREA AY.C

RUNOFF VOLUME = 1.51113 INCHES = 1.0880 ACRE-FEET

PEAK DISCHARGE RATE = 24.11 CFS AT 1.550 HOURS BASIN AREA = .0135 SQ. MI.

*

**** COMBINE HYDROGRAPHS FOR BASINS AYucca,C and B *****

*S COMBINE HYDROGRAPHS FOR BASINS AYucca, C AND B

ADD HYD ID=24 HYD=AY.B.C ID I=22 ID II=3

*

PRINT HYD ID=24 CODE=1

HYDROGRAPH FROM AREA AY.B.C

RUNOFF VOLUME = 1.56368 INCHES = 1.4361 ACRE-FEET

PEAK DISCHARGE RATE = 32.35 CFS AT 1.550 HOURS BASIN AREA = .0172 SQ. MI.

*

**** COMPUTE RATING CURVE AND TRAVEL TIME FOR HYDROGRAPH D ****

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
MIN ELEV=9.333 FT MAX ELEV=10 FT
CH SLP=0.005 FP SLP=0.005 N=0.017
DIST=28.1 FT
DIST ELEV DIST ELEV DIST ELEV
0 10 .1 9.333 2 9.458
14 9.7 26 9.458 28 9.333
28.1 10

RATING CURVE VALLEY SECTION 1.0			
WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS	TOP WIDTH FT
9.33	.00	.00	.00
9.37	.02	.01	1.11
9.40	.08	.05	2.21
9.44	.17	.15	3.32
9.47	.32	.29	5.47

9.51	.57	.55	8.96
9.54	.95	1.03	12.46
9.58	1.45	1.77	15.95
9.61	2.07	2.82	19.44
9.65	2.81	4.22	22.93
9.68	3.68	6.01	26.42
9.72	4.65	8.54	28.02
9.75	5.63	11.74	28.03
9.79	6.62	15.33	28.04
9.82	7.60	19.28	28.05
9.86	8.59	23.58	28.06
9.89	9.57	28.22	28.07
9.93	10.56	33.17	28.08
9.96	11.54	38.43	28.09
10.00	12.53	43.99	28.10

*
 COMPUTE TRAVEL TIME ID=40 REACH NO=1 NO VS=1 L=400 FT
 SLP=0.005

TRAVEL TIME TABLE
 REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.035	.019	.01	.2761
.070	.078	.05	.1740
.105	.175	.15	.1327
.140	.319	.29	.1233
.176	.572	.55	.1152
.211	.948	1.03	.1021
.246	1.447	1.77	.0907
.281	2.068	2.82	.0814
.316	2.811	4.22	.0740
.351	3.678	6.01	.0680
.386	4.649	8.54	.0605
.421	5.632	11.74	.0533
.456	6.616	15.33	.0480
.491	7.601	19.28	.0438
.527	8.586	23.58	.0404
.562	9.571	28.22	.0377
.597	10.556	33.17	.0354
.632	11.542	38.43	.0334
.667	12.528	43.99	.0316

*** ROUTE HYDROGRAPH D THRU CHANNEL REACH OF BASIN AT *****

*S ROUTE HYDROGRAPH D THRU BASIN AT

*

ROUTE ID=40 HYD NO=NEWD INFLOW ID=5
 DT=0.08333 HR

*

**** COMBINE HYDROGRAPHS FOR BASINS ATucson, D *****

*S COMBINE HYDROGRAPHS FOR BASINS D AND ATucson

ADD HYD ID=42 HYD=ATD ID I=40 ID II=2

*

*S ADD E TO D, AT

ADD HYD ID=46 HYD=ATDE ID I=42 ID II=6

PRINT HYD ID=46 CODE=1

HYDROGRAPH FROM AREA ATDE

RUNOFF VOLUME = 1.59310 INCHES = .7307 ACRE-FEET

PEAK DISCHARGE RATE = 19.52 CFS AT 1.500 HOURS BASIN AREA = .0086 SQ. MI.

**** COMBINE HYDROGRAPHS FOR ALL BASINS *****

ADD HYD ID=50 HYD=ALL ID I=24 ID II=46

PRINT HYD ID=50 CODE=1

HYDROGRAPH FROM AREA ALL

RUNOFF VOLUME = 1.57348 INCHES = 2.1668 ACRE-FEET

PEAK DISCHARGE RATE = 50.10 CFS AT 1.550 HOURS BASIN AREA = .0258 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:36:20

APPENDIX C

PROPOSED CONDITION HYDRAULIC CALCULATIONS

Size Storm Drain

Oct. 20, 1998
Park Ridge

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

$$Q = .6 \left(\frac{\pi d^2}{4} \right) \sqrt{2(32.2)d}$$

Park Ridge Rd

$$15.2 = .6 \left(\frac{\pi d^2}{4} \right) \sqrt{2(32.2)d}$$

$$25.3 = 6.3 d^{2.5}$$

$$1.74' = d = 20.88" \quad \text{Ties to 24"} \\ \text{use 24"} \\ \text{Connections}$$

$$7.6 = .6 \left(\frac{\pi d^2}{4} \right) \sqrt{2(32.2)d}$$

$$12.67 = 6.3 d^{2.5}$$

$$2.01 = d^{2.5}$$

$$1.32' = d = 15.86" \quad \text{use 18"} \\ \text{Park Pointe}$$

$$26.1 = .6 \left(\frac{\pi d^2}{4} \right) \sqrt{2(32.2)d}$$

$$43.5 = 6.3 d^{2.5}$$

$$6.9 = d^{2.5}$$

$$2.16' = d = 25.99"$$

use 30"

ties to 30"

Grates in Sump Condition

Park Ridge Estates

Oct 20, 1998



BOHANNAN HUSTON

Courtyard One

7500 JEFFERSON NE

Albuquerque

NEW MEXICO 87109

voice 505.823.1000

fax 505.821.0892

1) Park Pointe PL

$$Q = CLH^{3/2}$$

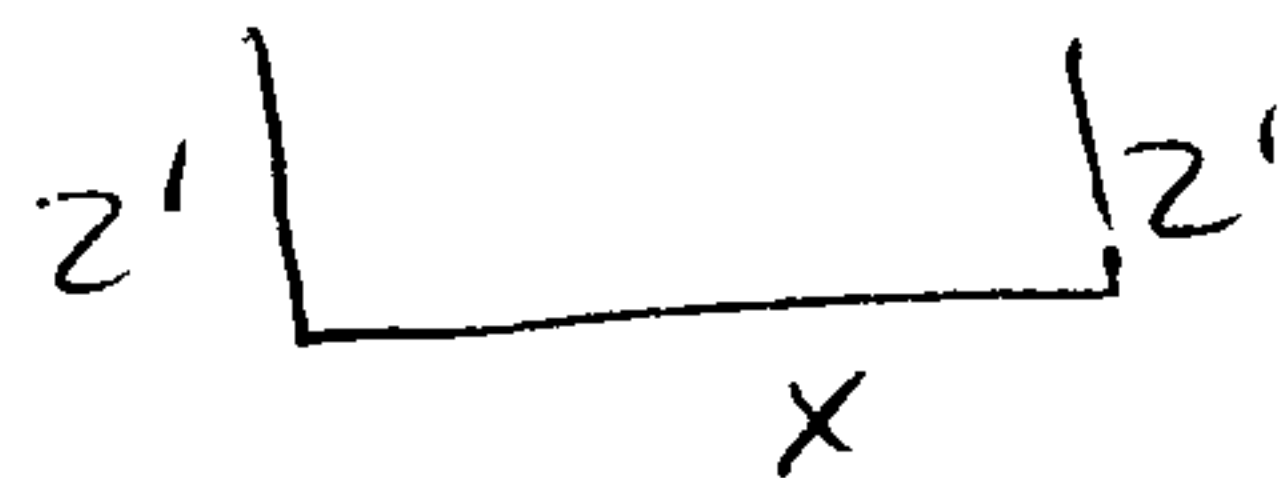
$$26.1 = (2.67)L(.84)^{3/2}$$

$$26.1 = L \times 2.055$$

$$12.7' = L = x + 4$$

$$8.7' = x$$

2 grates



$$H = .84$$

Standard curb

orifice Eq

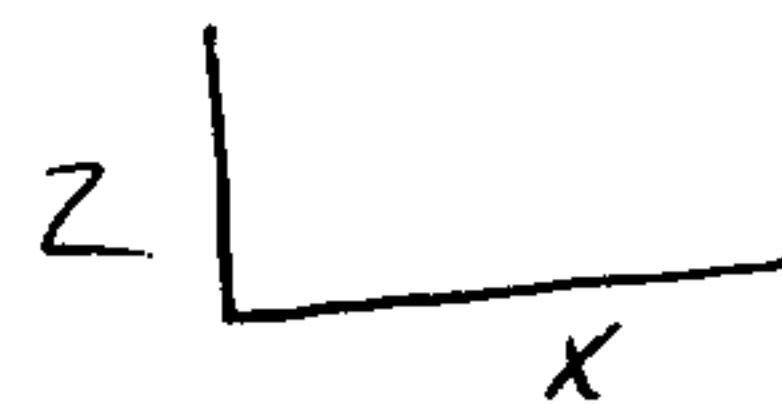
$$Q = CA \sqrt{2gh}$$

$$26.1 = 0.6 A \sqrt{2 \cdot 32.2 \cdot .84}$$

$$26.1 = 4.41 A$$

$$5.91 = A = 2x$$

$$2.96' = x$$



2) Park Ridge

$$Q = CLH^{3/2}$$

$$15.2 = (2.67)L(.84)^{3/2}$$

$$15.2 = 2.055L$$

$$7.4 = L = 4 + x$$

$$3.4' = x \text{ Std. curb w/ 1 grate}$$

$$Q = (2.67)L(.51)^{3/2}$$

$$15.2 = .98L$$

$$15.5 = L = 4 + x$$

$$11.5 = x$$

roll curb w/ 2 grates

$$Q = 15.2 = .6 A \sqrt{2(32.2)(.51)}$$

$$4.42 = A = 2x$$

$$2.2' = x$$

Check $Q = 2 \times Q_{100}$

1) Park Pointe

$$52.2 = 2.67(14)H^{3/2}$$

$$1.4 = H^{1.5}$$

$$1.25' = H$$

The twice 100 year flow will exceed the row by .4 feet. The pads are 1.4 feet above the right-of-way. The pads will be safe.

2) Park Ridge

$$30.4 = 2.67(14)H^{3/2}$$

$$0.81 = H^{3/2}$$

$$.87' = H$$

The twice 100-year flow will exceed the row elevation by 0.36 feet. The pads will be safe from flooding.



BOHANNAN HUSTON

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WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)		(FT)	(FT)
0.45	0.45	5.91	12.7	28.94	2.14	28.23	0.07	0.52
0.46	0.46	6.19	13.7	28.96	2.21	28.23	0.08	0.54
0.47	0.47	6.48	14.7	28.98	2.28	28.24	0.08	0.55
0.48	0.48	6.76	15.8	29.01	2.34	28.24	0.09	0.57
0.49	0.49	7.04	16.9	29.03	2.40	28.25	0.09	0.58
0.50	0.50	7.32	18.1	29.05	2.47	28.25	0.09	0.59
0.51	<u>0.51</u>	7.61	<u>19.2</u>	29.07	2.53	28.26	0.10	0.61
0.52	0.52	7.89	20.4	29.09	2.59	28.26	0.10	0.62
0.53	0.53	8.17	21.7	29.11	2.65	28.27	0.11	0.64
0.54	0.54	8.45	22.9	29.13	2.71	28.27	0.11	0.65
0.55	0.55	8.74	24.2	29.15	2.77	28.28	0.12	0.67
0.56	0.56	9.02	25.5	29.17	2.83	28.28	0.12	0.68
0.57	0.57	9.30	26.8	29.19	2.88	28.29	0.13	0.70
0.58	0.58	9.59	28.2	29.21	2.94	28.29	0.13	0.71
0.59	0.59	9.87	29.6	29.23	3.00	28.30	0.14	0.73
0.60	0.60	10.15	31.0	29.25	3.05	28.30	0.14	0.74
0.61	0.61	10.43	32.4	29.27	3.11	28.31	0.15	0.76
0.62	0.62	10.72	33.9	29.29	3.16	28.31	0.16	0.78
0.63	0.63	11.00	35.4	29.31	3.22	28.32	0.16	0.79
0.64	0.64	11.28	36.9	29.34	3.27	28.32	0.17	0.81
0.65	0.65	11.57	38.4	29.36	3.32	28.33	0.17	0.82
0.66	0.66	11.85	40.0	29.38	3.37	28.33	0.18	0.84
0.67	0.67	12.13	41.6	29.40	3.43	28.34	0.18	0.85
0.68	0.68	12.42	42.2	30.44	3.40	30.30	0.18	0.86
0.69	0.69	12.72	43.0	31.49	3.38	31.34	0.18	0.87
0.70	0.70	13.06	43.1	33.45	3.30	32.39	0.17	0.87
0.71	0.71	13.39	44.0	34.50	3.29	33.44	0.17	0.88
0.72	0.72	13.73	45.0	35.54	3.28	34.48	0.17	0.89
0.73	0.73	14.08	46.0	36.59	3.27	35.53	0.17	0.90
0.74	0.74	14.44	47.1	37.64	3.26	36.58	0.17	0.91
0.75	0.75	14.81	48.3	38.68	3.26	37.62	0.16	0.91
0.76	0.76	15.19	49.5	39.73	3.26	38.67	0.16	0.92
0.77	0.77	15.58	50.7	40.78	3.25	39.72	0.16	0.93
0.78	0.78	15.98	52.0	41.83	3.26	40.77	0.16	0.94
0.79	0.79	16.40	53.4	42.87	3.26	41.81	0.16	0.95
0.80	0.80	16.82	54.8	43.92	3.26	42.86	0.17	0.97
0.81	0.81	17.25	56.3	44.97	3.26	43.91	0.17	0.98
0.82	0.82	17.70	57.9	46.01	3.27	44.95	0.17	0.99
0.83	0.83	18.15	59.5	47.06	3.28	46.00	0.17	1.00

at $Q = 15.2$ Park Ridge
 $D = 0.48 < .51$ roll curb OK

at $Q = 26.8$ Park Pointe
 $D = .57 < .84$ standard curb OK

at $Q = 53.4 = 2 \times Q_{100}$ Park Pointe
 $D = .79 < .84$ flow will be contained in ROW

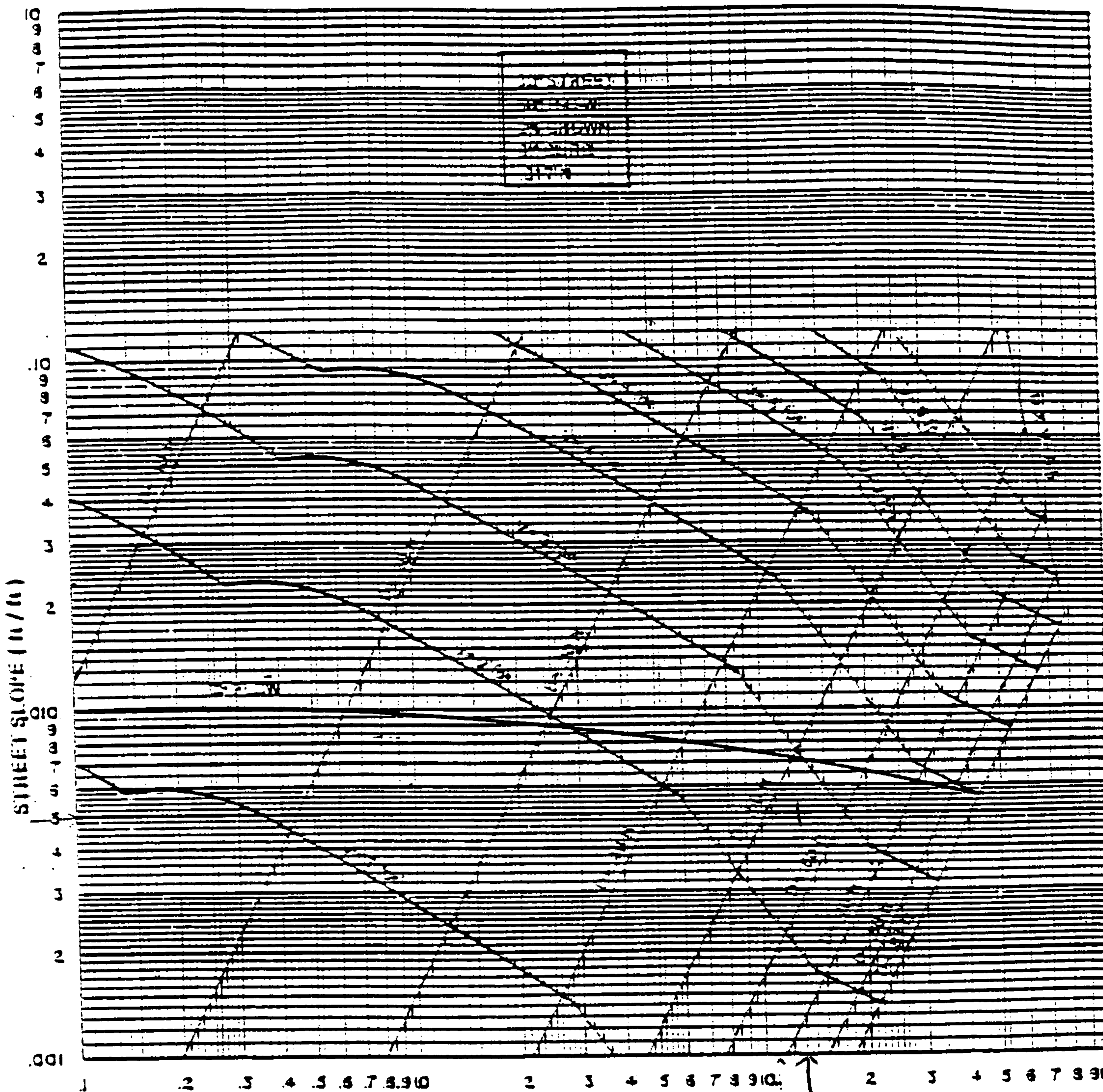
at $Q = 30.4 = 2 \times Q_{100}$ Park Ridge
 $D = 0.6$ ft flow will not flood pad

Park Pointe PL

Oct. 1, 1998

22.3

STREET CAPACITY



ONE HALF STREET FLOWS (cfs)

$Q = 26.1$

$S = 0.54$

$D = 1.54 \text{ ft}$

$V = 2.8 \text{ fps}$

REV 1-83

70

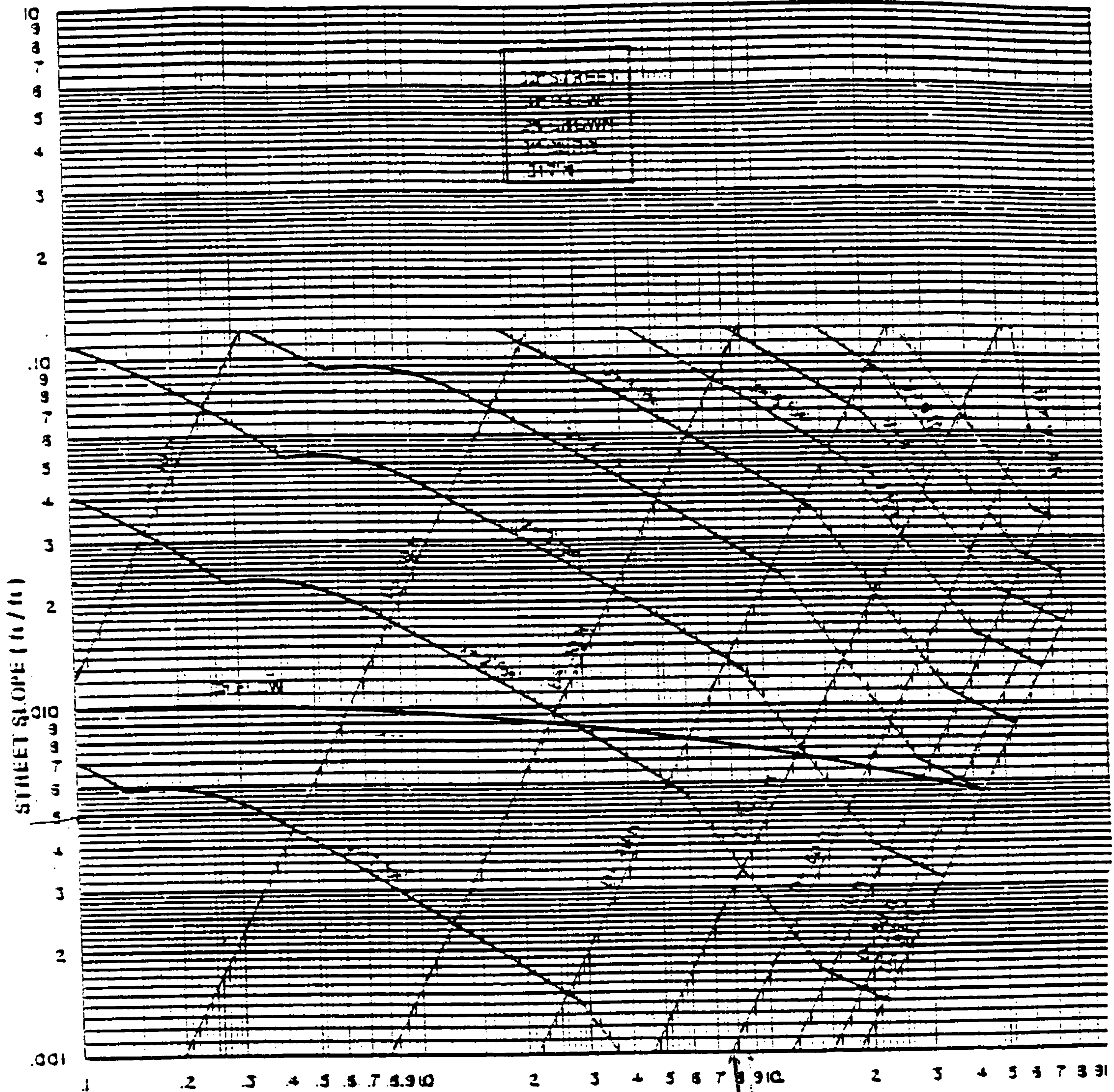
PLATE 22.3 D-1

C-3

Park Ridge Rd
Oct 1, 1998

22.3

STREET CAPACITY



ONE HALF STREET FLOWS (cfs)

$$Q = 152.9 \text{ cfs}$$

$$S = 0.54\%$$

$$D = 45 \text{ ft}$$

$$V = 2.3 \text{ fps}$$

REV 1-81

70

PLATE 22.3 D-1

C-4

32' pavement

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

TUCSON DRIVE @ S=.55%

MANNING'S N= .017 SLOPE= .0055

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	1.00	5	28.00	0.44	9	56.00	1.00
2	9.90	0.67	6	44.00	0.13	10	0.00	0.00
3	10.00	0.00	7	46.00	0.00	11	0.00	0.00
4	12.00	0.13	8	46.10	0.67	12	0.00	0.00

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	INC	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.03	0.03	0.02	0.0	1.14	0.41	1.08	0.00	0.04
0.07	0.07	0.07	0.0	2.27	0.65	2.15	0.01	0.07
0.10	0.10	0.16	0.1	3.41	0.85	3.23	0.01	0.11
0.13	0.13	0.29	0.3	5.11	0.96	4.87	0.01	0.15
0.17	0.17	0.51	0.5	8.51	0.99	8.21	0.02	0.18
0.20	0.20	0.84	0.9	11.91	1.10	11.56	0.02	0.22
0.23	0.23	1.28	1.6	15.31	1.24	14.90	0.02	0.26
0.27	0.27	1.83	2.5	18.71	1.38	18.24	0.03	0.30
0.30	0.30	2.49	3.8	22.11	1.51	21.59	0.04	0.34
0.33	0.33	3.27	5.4	25.52	1.65	24.93	0.04	0.38
0.37	0.37	4.16	7.4	28.92	1.78	28.27	0.05	0.42
0.40	0.40	5.15	9.8	32.32	1.91	31.62	0.06	0.46
0.43	0.43	6.26	12.7	35.72	2.03	34.96	0.06	0.50
0.47	0.47	7.46	16.6	36.96	2.23	36.14	0.08	0.54
0.50	0.50	8.67	21.3	37.03	2.46	36.15	0.09	0.59
0.53	0.53	9.87	26.5	37.09	2.68	36.16	0.11	0.64
0.57	0.57	11.08	32.0	37.16	2.89	36.17	0.13	0.70
0.60	0.60	12.28	38.0	37.23	3.10	36.18	0.15	0.75
0.63	0.63	13.49	44.4	37.29	3.29	36.19	0.17	0.80
0.67	0.67	14.69	51.1	37.36	3.48	36.20	0.19	0.85
0.70	0.70	15.93	56.7	39.17	3.56	38.00	0.20	0.90
0.73	0.73	17.23	62.5	41.17	3.63	40.00	0.20	0.94
0.77	0.77	18.59	68.7	43.17	3.70	42.00	0.21	0.98
0.80	0.80	20.03	75.5	45.17	3.77	44.00	0.22	1.02
0.83	0.83	21.53	82.7	47.17	3.84	46.00	0.23	1.06
0.87	0.87	23.09	90.4	49.17	3.92	47.99	0.24	1.10
0.90	0.90	24.73	98.7	51.17	3.99	49.99	0.25	1.15
0.93	0.93	26.43	107.5	53.17	4.07	51.99	0.26	1.19
0.97	0.97	28.19	116.8	55.17	4.14	53.99	0.27	1.23
1.00	1.00	30.02	126.7	57.17	4.22	55.99	0.28	1.28

J = 0.67 sec
E = 0.87
Q = 51.1 cfs

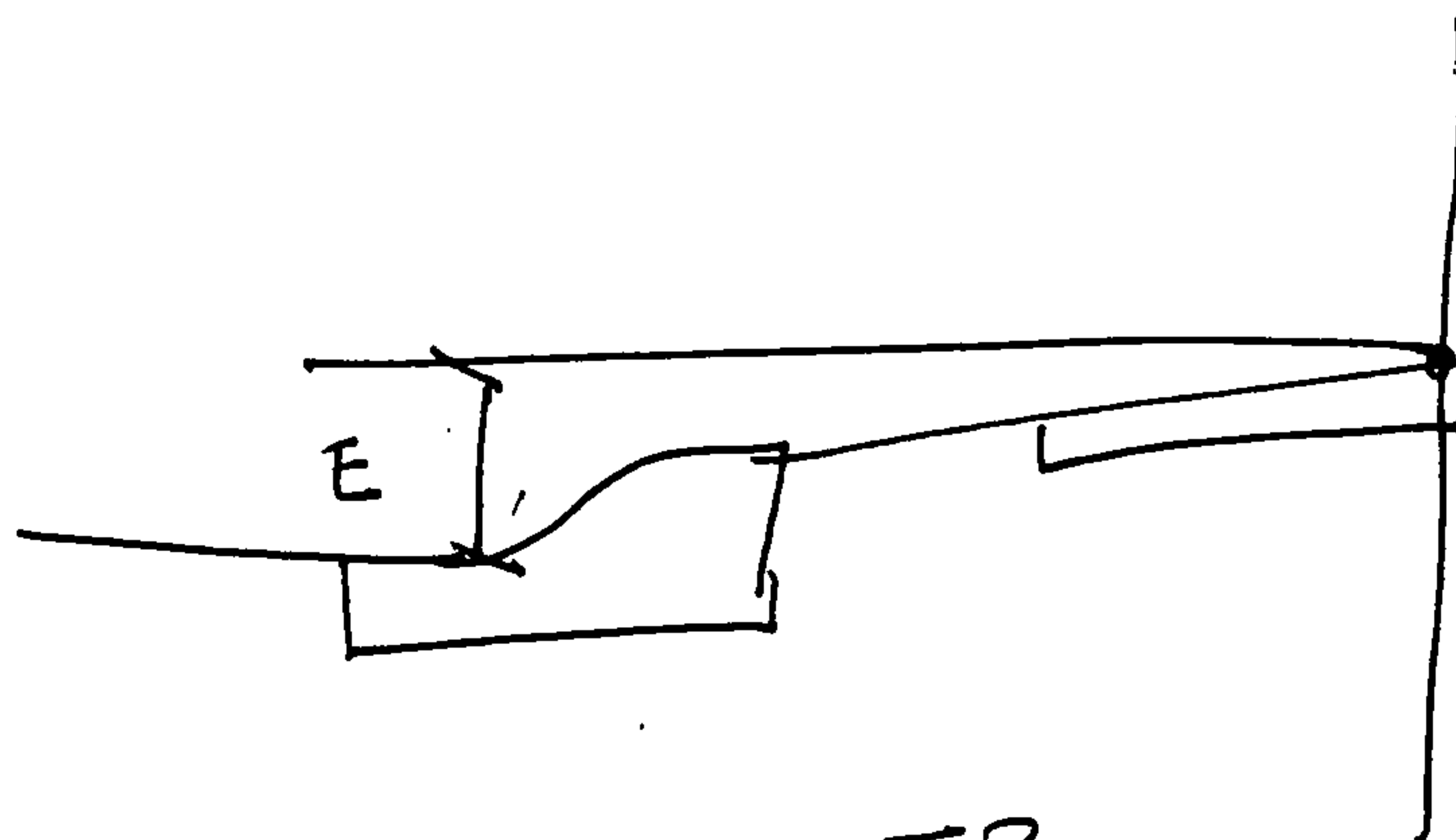
LOUISVILLE DRIVE @ S=.5%
MANNING'S N= .017 SLOPE= .005

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	1.00	5	23.00	0.51	9	46.00	1.00
2	9.00	0.82	6	35.00	0.28	10	0.00	0.00
3	9.10	0.15	7	37.00	0.15	11	0.00	0.00
4	11.00	0.28	8	37.10	0.82	12	0.00	0.00

WSEL	DEPTH	FLOW	FLOW	WETTED	FLOW	TOPWID	VEL	ENERGY
(FT)	(FT)	AREA	RATE	PER	VEL	(FT)	HEAD	HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.18	0.03	0.02	0.0	1.11	0.39	1.05	0.00	0.04
0.22	0.07	0.07	0.0	2.22	0.62	2.10	0.01	0.07
0.25	0.10	0.16	0.1	3.33	0.81	3.15	0.01	0.11
0.28	0.13	0.28	0.3	5.01	0.91	4.77	0.01	0.15
0.32	0.17	0.50	0.5	8.41	0.94	8.11	0.01	0.18
0.35	0.20	0.82	0.9	11.81	1.05	11.46	0.02	0.22
0.38	0.23	1.26	1.5	15.21	1.17	14.80	0.02	0.25
0.42	0.27	1.81	2.4	18.61	1.31	18.14	0.03	0.29
0.45	0.30	2.47	3.6	22.02	1.44	21.49	0.03	0.33
0.48	0.33	3.24	5.1	25.42	1.57	24.83	0.04	0.37
0.52	0.37	4.13	7.0	28.65	1.70	28.01	0.04	0.41
0.55	0.40	5.06	9.8	28.72	1.94	28.02	0.06	0.46
0.58	0.43	5.99	13.0	28.79	2.17	28.03	0.07	0.51
0.62	0.47	6.93	16.5	28.86	2.39	28.04	0.09	0.56
0.65	0.50	7.86	20.4	28.92	2.59	28.05	0.10	0.60
0.68	0.53	8.80	24.6	28.99	2.79	28.06	0.12	0.65
0.72	0.57	9.73	29.0	29.06	2.98	28.07	0.14	0.70
0.75	0.60	10.67	33.8	29.13	3.16	28.08	0.16	0.76
0.78	0.63	11.60	38.8	29.19	3.34	28.09	0.17	0.81
0.82	0.67	12.54	44.1	29.26	3.51	28.10	0.19	0.86
0.85	0.70	13.52	46.8	32.24	3.46	31.08	0.19	0.89
0.88	0.73	14.61	49.9	35.56	3.42	34.39	0.18	0.91
0.92	0.77	15.81	53.7	38.87	3.39	37.71	0.18	0.95
0.95	0.80	17.13	58.0	42.19	3.39	41.02	0.18	0.98
0.98	0.83	18.55	63.0	45.51	3.40	44.33	0.18	1.01
1.00	0.85	19.31	65.8	47.17	3.41	46.00	0.18	1.03

TOTAL ENERGY ROLL CURB
& FLOW RATE

TOTAL ENERGY STD CURB
& FLOW RATE



$$V^2/2g + d = E = 0.53$$

subcritical

13 cfs for Roll curb

NPOES
FORM



United States Environmental Protection Agency
Washington, DC 20460

Notice of Intent (NOI) for Storm Water Discharges Associated with
CONSTRUCTION ACTIVITY Under a NPOES General Permit

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a NPOES permit issued for storm water discharges associated with construction activity in the State/Indian Country Land identified in Section II of this form. Submission of this Notice of Intent also constitutes notice that the party identified in Section I of this form meets the eligibility requirements in Part I.B. of the general permit (including those related to protection of endangered species determined through the procedures in Addendum A of the general permit), understands that continued authorization to discharge is contingent on maintaining permit eligibility, and that implementation of the Storm Water Pollution Prevention Plan required under Part IV of the general permit will begin at the time the permittee commences work on the construction project identified in Section II below. IN ORDER TO OBTAIN AUTHORIZATION, ALL INFORMATION REQUESTED MUST BE INCLUDED ON THIS FORM. SEE INSTRUCTIONS ON BACK OF FORM.

I. Owner/Operator (Applicant) Information

Name: CENTRIX REAL ESTATE CORPS. Phone: 505 761 1960
Address: 10701 TIEFFERSON NE BUILDING B Status of Owner/Operator: ☒ P
City: ALBUQUERQUE State: NM Zip Code: 87109

II. Project/Site Information

Project Name: PARK RIDGE ESTATES Is the facility located on Indian Country Lands? Yes ☐ No ☒
Project Address/Location: TIMSON RIDGE ESTATES
City: ALBUQUERQUE State: NM Zip Code: 87120
Latitude: 35107130 Longitude: 10614208 County: BERNALILLO

Has the Storm Water Pollution Prevention Plan (SWPPP) been prepared? Yes ☒ No ☐

Optional: Address of location of SWPPP for viewing ☒ Address in Section I above ☐ Address in Section II above ☐ Other address (if known) below:

SWPPP Address: _____ Phone: _____
City: _____ State: _____ Zip Code: _____

Name of Receiving Water: RIO GRANDE

10/10/99
Month Day Year

Estimated Construction Start Date

10/10/2001
Month Day Year

Estimated Completion Date

Estimate of area to be disturbed (to nearest acre): _____

Estimate of Likelihood of Discharge (choose only one):

1. ☒ Unlikely 3. ☐ Once per week 5. ☐ Continual
2. ☐ Once per month 4. ☐ Once per day

Based on instruction provided in Addendum A of the permit, are there any listed endangered or threatened species, or designated critical habitat in the project area?

Yes ☐ No ☒

I have satisfied permit eligibility with regard to protection of endangered species through the indicated section of Part I.B.3.e.(2) of the permit (check one or more boxes):

(a) ☐ (b) ☐ (c) ☐ (d) ☐

III. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: TOM HOUSER Date: 09/30/98
Signature: Tom Houser

Figure 12

INFRASTRUCTURE LIST

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

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

Size/Qty	Type Improvement	Location	From	To
<u>CENTERLINE ROADWAY</u>				
20' F-CL	NORTH SIDE ONLY RES PVG C&G & 4' SW	TUCSON RD	P/L LOTS 4/5	WEST P/L LOT 17
32' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	MELISSA ANN ST	TUCSON RD	PARK RIDGE ROAD
28' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	PARK RIDGE RD	PARK POINTE DR	SUMMIT PARK DR
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (SOUTH SIDE) (STUB STREET)	PARK RIDGE RD	SUMMIT PARK DR	TERMINUS (LOT 16)
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (SOUTH SIDE) (STUB STREET)	PARK RIDGE RD	PARK POINTE DR	TERMINUS (YUCCA CIRCLE)
28' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	PARK POINTE DR	PARK RIDGE RD	PARK HEIGHTS RD
28' F-F	RES PVG, C&G & 4' SW* (BOTH SIDES)	SUMMIT PARK DR	PARK RIDGE RD	PARK HEIGHTS RD

28' F-F	RES PVG, C&G & 4' SW*(BOTH SIDES)	PARK HEIGHTS RD	PARK POINTE DR	SUMMIT PARK DR
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (NORTH SIDE) (STUB STREET)	PARK HEIGHTS RD	PARK POINTE DR	TERMINUS
22' F-F	RES PVG, C&G (BOTH SIDES) & 4' SW* (NORTH SIDE) (STUB STREET)	PARK HEIGHTS RD	SUMMIT PARK DR	TERMINUS
10' F-F	RES PVG**, (WEST SIDE ONLY) INCLUDING ALLEY GUTTER	ALLEY	TUSCON	NORTH PL
	C&G(STANDARD)	YUCCA CIRCLE	ADJACENT TO LOTS 45 & 46	
20'	EMERGENCY BREAK AWAY GATE		BETWEEN LOT 1 & LOT 47	

* SIDEWALKS TO BE DEFERRED

** IMPROVEMENTS TO BE BONDED

STREET LIGHTS AS REQUIRED PER CITY DPM

WATERLINE IMPROVEMENTS

6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	MELISSA ANN ST	TUCSON RD	PARK RIDGE RD
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	PARK RIDGE RD	YUCCA CIR	EAST TERMINUS
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	PARK POINTE DR	PARK RIDGE RD	PARK HEIGHTS AVE
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	SUMMIT PARK DR	PARK RIDGE RD	PARK HEIGHTS AVE
6" DIA	WATERLINE W/NEC VALVES, FH'S, MJ'S & RJ'S	PARK HEIGHTS RD	WEST TERMINUS	EAST TERMINUS
	VALVES, FH'S, MJ'S & RJ'S			TERMINUS

Paving Alley
- make sure
it drains to
run downs

SANITARY SEWER IMPROVEMENTS

8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	PARK RIDGE RD	YUCCA CIR	EAST TERMINUS
8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	PARK POINTE DR	PARK RIDGE RD	PARK HEIGHTS AVE
8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	SUMMIT PARK DR	PARK RIDGE RD	PARK HEIGHTS AVE
8" DIA	SANITARY SEWER W/NEC MH'S & SVCS	PARK HEIGHTS RD	LOT 41/42	ALLEY/ PARK HEIGHTS
8" DIA	SANITARY SEWER W/NEC MH'S	ALLEY	PARK HEIGHTS RD/ALLEY	450' NORTH (ST. JOSEPH PL.)
8" DIA	SANITARY SEWER W/NEC MH'S	EASEMENT	ST. JOSEPH PLACE R.O.W.	650' EAST TO EXISTING SNOW GOOSE RD SAS

DRAINAGE IMPROVEMENTS

✓ 10' WIDE	CONC. CHANNEL	LOT 24	PARK HEIGHTS	ALLEY
✓ 10' WIDE	CONC. CHANNEL	LOT 17	PARK RIDGE RD	ALLEY
— 18" RCP	STORM DRAIN CONNECTOR PIPE CATCH BASIN (NORTH SIDE ONLY)	TUCSON RD	EXISTING MANHOLE @ TUCSON RD	NORTH SIDE TUCSON RD @ LOTS 7/8
✓ 24" RCP	24" Storm drain in STORM DRAIN CATCH BASINS	Melissa Ann - PARK RIDGE RD	from Tucson to TUCSON RD/ MELISSA ANN ST intersection	Park Ridge BETWEEN LOT 55 & 56 889 ✓
✓ 24" RCP 24" RCP	STORM PIPE CATCH BASINS S.D.	PARK POINTE DR Park Ridge	Park Ridge YUCCA CIR	LOTS 47 & 46 ✓

✓ STORM DRAIN INCLUDES MANHOLES & CATCH BASINS.

✓ GRADING AND DRAINAGE CERTIFICATION IS REQUIRED PRIOR TO RELEASE OF FINANCIAL GUARANTEES.

Prepared by: _____
Print Name: RICK BELTRAMO, P.E.
Firm: Bohannon Huston

Development Review Board Member Approval

Transportation Development Date

Utility Development Date

Planning Section, CIP. Date

City Engineer/AMAFCA Date

DRB Chair Date
Development Services

APPENDIX D

PORTIONS OF SPECIAL ASSESSMENT DISTRICT 198 DRAINAGE ANALYSIS



FILE
COPY

**CITY OF ALBUQUERQUE
NEW MEXICO**

DRAINAGE ANALYSIS

**SPECIAL ASSESSMENT
DISTRICT 198**

**ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE, NEW MEXICO**

CITY OF ALBUQUERQUE
NEW MEXICO

MUNICIPAL DEVELOPMENT DEPARTMENT

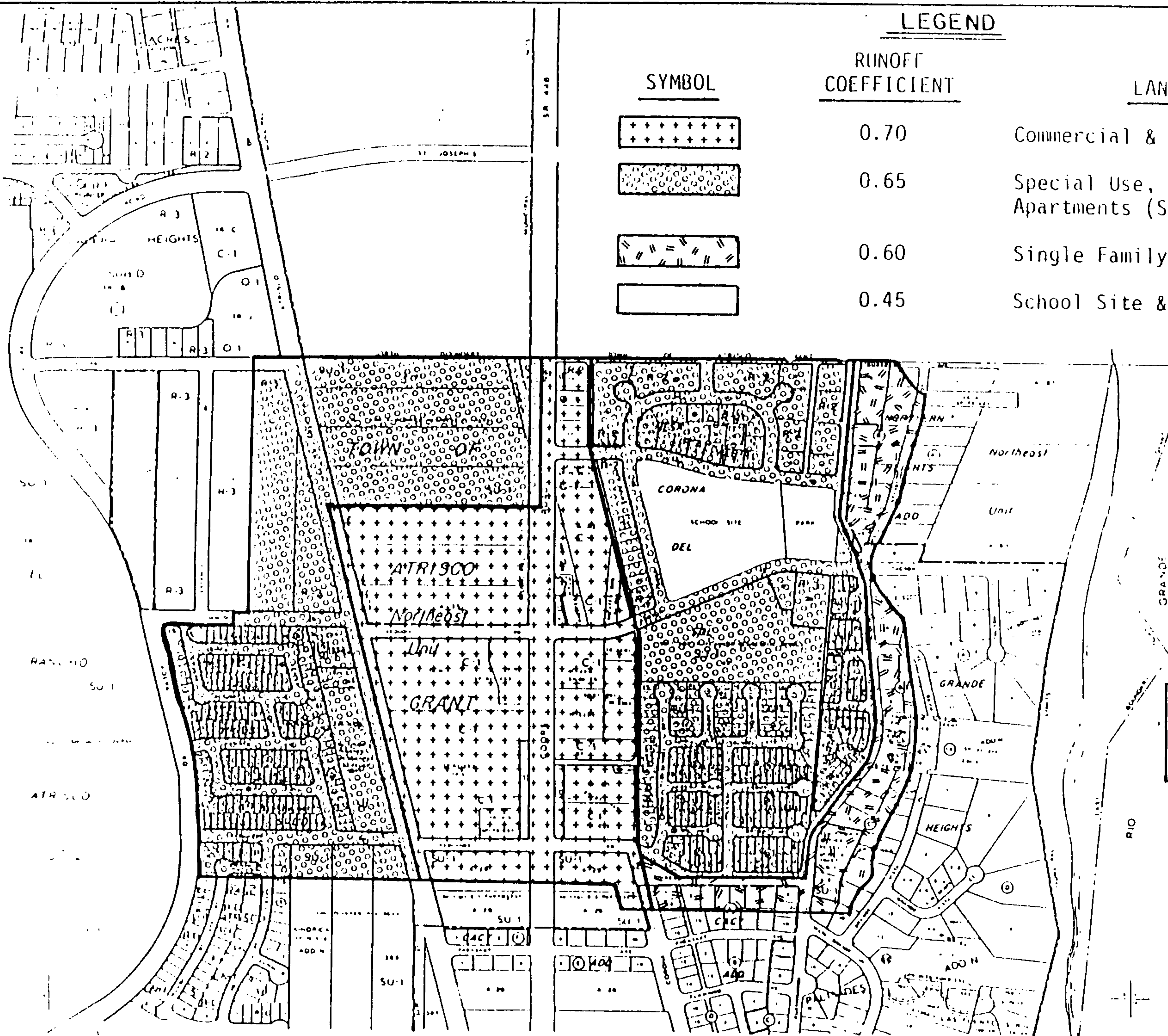
DRAINAGE ANALYSIS

SPECIAL ASSESSMENT
DISTRICT 198

October 31, 1985

..

Andrews, Asbury & Robert, Inc.
Consulting Engineers
149 Jackson NE
Albuquerque, New Mexico 87108

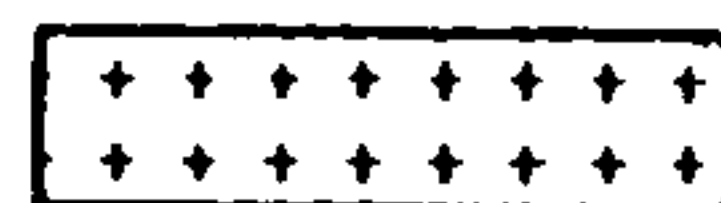


LEGEND

SYMBOL

RUNOFF COEFFICIENT

LAND USE



0.70

Commercial & Office (C-1 & O-1)



0.65

Special Use, Townhouses, &
Apartments (SU-1, R-2, & R-3)



0.60

Single Family Residential (R-1)



0.45

School Site & Park

LAND USE & RUNOFF
COEFFICIENT
MAP

Map No. 2

JUNE 1982

G-11-Z

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
401 San Pedro, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project SAD-198

Sheet 2 of 15

Job No. 201

By [Signature] Chkd [Signature]

Date 9/85

TABLE 1 - DRAINAGE BASIN DATA

SUB-BASIN DESIGNATION	Length (FT)	H (FT)	TC (min)	Area (Ac.)	C	I (in/hr)	Q ₁₀ (cfs)
C-1	1600	8	17.6	13.5	0.65	3.49	30.6
C-2	1300	9.5	13.0	11.3	0.65	4.07	29.9
C-3	1160	13.0	10.1	5.5	0.65	4.63	16.6
C-4	1300	17.0	10.4	18.6	0.70	4.56	59.4
D-1	1100	5.5	13.2	9.2	0.61	4.04	22.6
D-2	1000	9.0	7.8 < 10	2.5	0.65	4.65	7.6
D-3	880	4.0	11.5	4.5	0.69	4.33	13.4
D-4	1500	11.0	14.4	15.6	0.65	3.86	39.1
D-5	1390	4.5	18.6	11.2	0.68	3.38	25.7
D-6	850	15.0	6.6 < 10	10.9	0.48	4.65	24.3

Project SLD 192 Sheet 15 of 15
By [Signature] Chd JA Job No 251
Date 9/85

SUMMARY OF HYDRAULIC CALCULATIONS

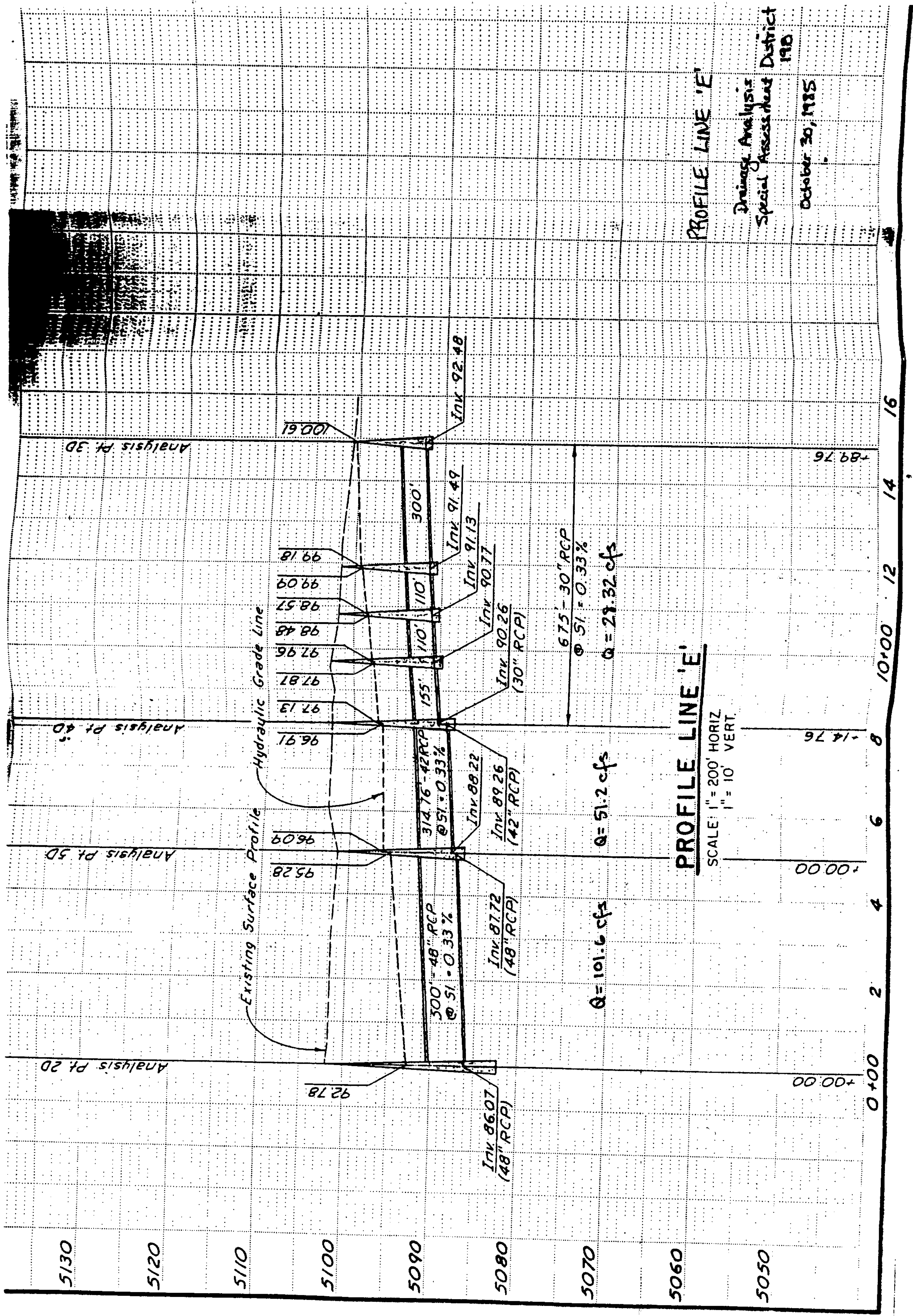
[illegible]

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
401 San Pedro, NE., Albuquerque, N.M. 87108
Telephone (505) 265-6631

Project SAD-198 Sheet 7 of 15
Job No 201
By [Signature] Chkd JA Date 9/85

TABLE 2 - DESIGN FLOWS

Analysis	Hydraulic	Hydraulic Areas	Velocity (ft/sec)	FLOW TIME (mins)			I (in/hr)	C	Q (cfs)	PIPE			
				Inlet or T _c	Pipe	Total				Slope	Size (in.)	Vel (ft/sec)	Length (ft)
2D	-	D-14 D-2	11.7	23.0	-	23.0	3.04	.62	22.1			1	
3D	-	D-34 D-4	20.1	14.4	-	14.4	3.86	.66	51.2				
2D		Basin D	53.9	23.0	-	23.0	3.04	.62	101.6				
2D		Basins A, B, C, D	201.4			* 25.34	2.89	.65	328.3				



PLATES

PLATE 1	GRADING AND DRAINAGE PLAN
PLATE 2	GRADING DETAILS
PLATE 3	HYDROLOGIC BASIN MAP
PLATE 4	PRELIMINARY PLAT
PLATE 5	SAD 198 DRAINAGE STUDY BASIN BOUNDARY MAP
PLATE 6	SAD 198 DRAINAGE STUDY STORM SEWER PLAN

PLATE 1

GRADING AND DRAINAGE PLAN

PLATE 2

GRADING DETAILS

PLATE 3

HYDROLOGIC BASIN MAP

PLATE 4

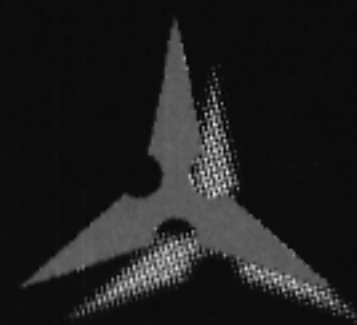
PRELIMINARY PLAT

PLATE 5

SAD 198 DRAINAGE STUDY BASIN BOUNDARY MAP

PLATE 6

SAD 198 DRAINAGE STUDY STORM SEWER PLAN



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