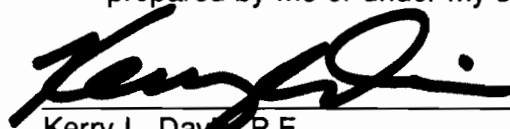


DRAINAGE REPORT
FOR
EAGLE RIDGE
FORMERLY EAGLE RANCH
TRACT 5A-1

April 1992

APR 13 1992

I certify that I am a registered professional engineer
in the State of New Mexico and that this report was
prepared by me or under my supervision.


Kerry L. Davis, P.E.

4/13/92
Date



DRAINAGE REPORT

FOR

**EAGLE RIDGE UNIT 2 SUBDIVISION
FORMERLY EAGLE RANCH - TR 5A-1**

April 3, 1992

Prepared for:

**PASEO DEL NORTE JOINT VENTURE
#10 Tramway Loop
Albuquerque, NM**

Prepared by:

**BOHANNAN-HUSTON INC.
7500 Jefferson, N.E.
Courtyard I
Albuquerque, NM 87109**

Job No. 9214601

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APPENDIX 1 (HYDROLOGIC COMPUTATIONS)

APPENDIX 2 (HYDRAULIC COMPUTATIONS including
analysis of Temporary Swale
behind lots 8 - 13)

APPENDIX 3 (EXCERPTS FROM PREVIOUS REPORTS
AND DESIGN PLANS FOR EXISTING
FACILITIES)

APPENDIX 4 (PLATES AND COPY OF PRELIMINARY
GRADING PLAN)

PURPOSE

The purpose of this report is to present the drainage management plan for preliminary plat and rough grading approval for the Proposed Eagle Ridge Unit 2 Subdivision, formerly Tract 5A-1, Eagle Ranch Subdivision. The Drainage Ordinance and the Development Process Manual are utilized to develop the plan.

SITE LOCATION AND EXISTING CONDITIONS

The property is located north of Irving Boulevard and bordered by an existing subdivision, Eagle Ridge Unit One, on the northwest; by a parcel owned by AMAFCA to the northeast and developed commercial parcel on the east.

This area is included in the aproved " Master Drainage Plan for Eagle Ranch and portions of Paradise Hills" prepared by Community Sciences Corporation, dated March, 1983. The Master Drainage Plan allows free discharge to the Calabacillas Arroyo which is to the north east of the proposed subdivision.

The proposed development fronts onto Snowflake Drive, an existing improved residential street. Runoff from existing developed lots on the west side of Snowflake and the proposed provject site currently drains into Snowflake right of way and is conveyed by an existing 50' temporary drainage easement across Tract 5A-1 to AMAFCA's property, and then discharges freely to the Calabacillas Arroyo.

HYDROLOGIC ANALYSIS

The August 1991 proposed changes to the D.P.M section 22.2, Hydrology was utilitized to determine the hydrologic discharge and volumes. The modified rational method was used to determine the volumes. Due to the small sizes of the contributing offsite basins no routing was considered in this analysis. For accompilation of of result of the this analysis see table 1 appendix I.

The proposed development of the 13 lots on (onsite Basin A) the east side of Snowflake Drive in their existing condition discharges a total of 4.37 cfs. In the fully developed condition the lots will discharge a total of 8.61 cfs at analysis point c (see plate 1 appendix IV). This runoff is contained on the east side of Snowflake drive right of way until it is discharged into the blanket drainage easement.

OFFSITE RUNOFF

There are two offsite basins which discharge into Snowflake Drive right of way (see plate 1 in appendix IV). These basins are

a portion of Irving Blvd and a portion of the existing Eagle Ridge Subdivision including the west side of Snowflake Drive.

Offsite Basin 01 contains approximately 0.31 acres, resulting in a flow of 1.35 cfs at analysis point a. Offsite Basin 02 contains approximately 3.29 acres, resulting in a contributing flow of 11.05 cfs. The combined flow from offsite basins at analysis point b is 12.40 cfs. This existing runoff is contained on the west side of Snowflake Drive until it enters the area proposed as the temporary blanket Drainage easement where it currently is conveyed overland to the AMAFCA's property bordering the Calabacillas Arroyo.

DRAINAGE MANAGEMENT PLAN

Based on the field investigations and preliminary discussions with AMAFCA and City of Albuquerque Staff members it is proposed that the 13 lots be developed based on the existing infrastructure and the runoff be allowed to continue to be discharged overland through the proposed temporary blanket drainage easement. The owner of tract A will be responsible for the maintenance of the drainage easement until Tract A is developed and additional drainage infrastructure, which will convey developed runoff from the remainder of Tract A, is accepted by AMAFCA and/or the City of Albuquerque.

Additional Temporary measures are also recommended along the proposed back yard retaining walls for lots 8 thru 13. Approximately 6.6 acres (On-site basin B) of undeveloped land, with well established native vegetation, runoff flows toward this back wall resulting in a peak discharge of 8.51 cfs. A 10' temporary earthen diversion swale centered 15' to the east of the proposed wall with 5:1 side slope is proposed to intercept undeveloped runoff and divert it east to the proposed blanket easement.

CONCLUSIONS

Based on existing conditions, the lack of field evidence of erosion and the dedication of the temporary blanket easement the drainage management plan is recommended to be implemented by continuing to allow free discharge from Snowflake Drive through the proposed temporary blanket drainage easement. The installation the temporary drainage swale behind lots 8 thru 13 will protect those lots from undeveloped sheet flow upstream property.

OFFSITE BASINS

EXISTING CONDITIONS BASIN 01

PORTION OF IRVING BLVD. WHICH DRAINS INTO
SNOWFLAKE DRIVE

TOTAL AREA: 0.31 ACRE

PAVED RIGHT OF WAY:

$$Q = 0.31 (4.37) = 1.35 \text{ CFS}$$

$$V = 0.31 (1.97) / \frac{12}{12} = 0.05$$

BASIN 02

PORTION OF EAGLE RIDGE UNIT / WHICH DRAINS
INTO WEST SIDE SNOWFLAKE DRIVE

TOTAL AREA: 3.29 ACRES

WEST SIDE SNOWFLAKE PAVEMENT PLUS C & G

$$16' \times 1015' = 16,240 \text{ SF}$$

SILVERGRADE CT PAVEMENT PLUS C & G

$$32' \times 170' = 5,440 \text{ SF}$$

PANDORA LANE PAVEMENT PLUS C & G

$$32' \times 55' = 1,760 \text{ SF}$$

BUTTERFLY DR PAVEMENT PLUS C & G

$$32' \times 20' = 640 \text{ SF}$$

TOTAL PAVEMENT 24,080 \approx 0.55 AC

RESIDENTIAL LOTS MAKEUP REMAINING ACREAGE

USING TYPICAL LOT PLUS RIGHT OF WAY BEHIND CURB AS 9,000 SF TOTAL AREA

% IMPERVIOUS BASED ON 80' FRONTAGE

SIDEWALK (80x4) 320'
DRIVEWAY (20x20) 400
PATIO (10x10) 100
HOUSE (55x55) 3025
3845

$$\% \text{ IMPERVIOUS } \frac{3845}{9000} = 0.43 \approx 43\%$$



BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____
PROJECT NO. _____ BY _____ DATE _____
SUBJECT _____ CH'D _____ DATE _____

BASIN 02 CONT.

TOTAL AREA : 3.29 AC
TOTAL PAVEMENT: 0.55 AC
TOTAL REMAINING: 2.74

$$2.74 \times \% \text{ IMPERVIOUS } (0.43) = 1.18 \text{ AC}$$

TOTAL IMPERVIOUS FOR BASIN 02
 $0.55 \text{ AC} + 1.18 \text{ AC} = 1.73 \text{ AC}$

ASSUME 75% OF REMAINING IS LUSH LANDSCAPE
 $0.75(1.56 \text{ AC}) = 1.17 \text{ AC}$

ASSUME 25% OF REMAINING IS DESERT LANDSCAPE
 $0.25(1.56 \text{ AC}) = 0.39 \text{ AC}$

$$Q = 0(1.29) + 1.17 \text{ AC}(2.03) + 0.39 \text{ AC}(2.87) + 1.73 \text{ AC}(4.37) = 11.05 \text{ CFS}$$

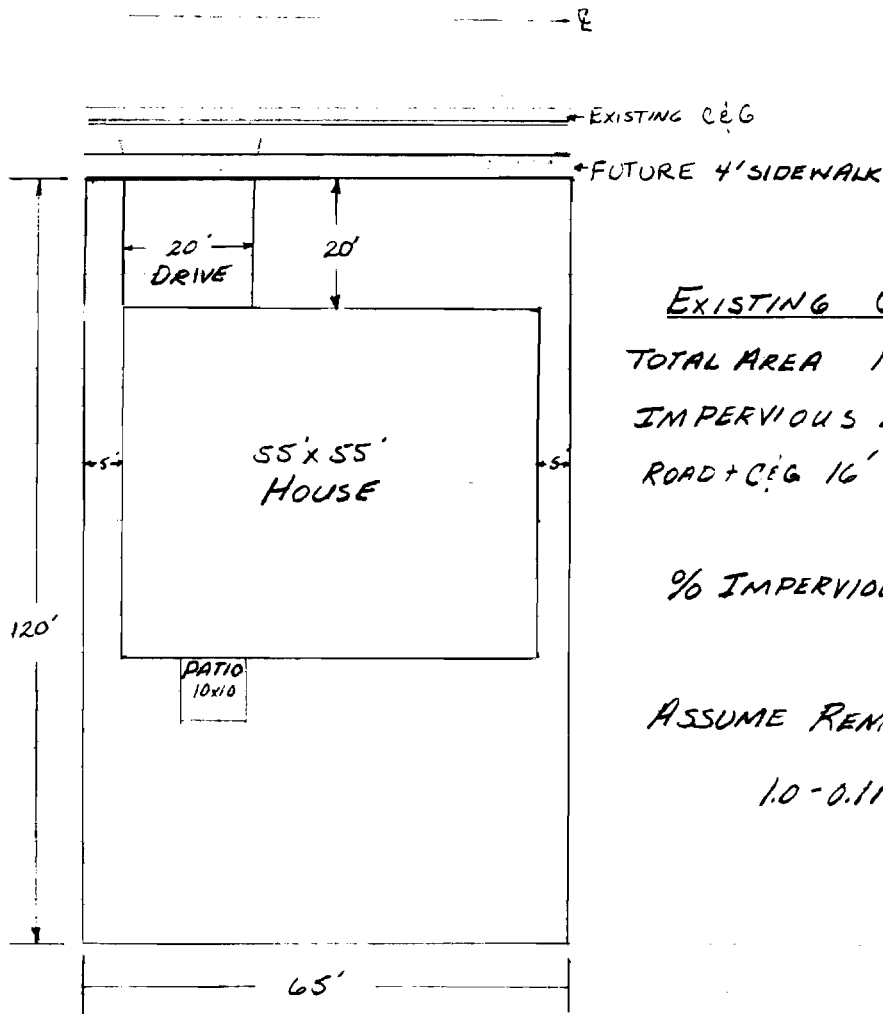
$$V = 0(0.44) + 1.17(0.67) + (0.39)(0.99) + 1.73(1.97) / 12 = 0.38 \text{ AC-FT}$$



BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____
PROJECT NO. _____ BY _____ DATE _____
SUBJECT _____ CH'D _____ DATE _____

TYPICAL LOT "A"



EXISTING CONDITIONS

TOTAL AREA 145' x 65' = 9,425.00 SF

IMPERVIOUS AREA

ROAD + C&G 16' x 65' = 1,040 SF

% IMPERVIOUS $\frac{1040}{9,425.00} \approx 11\%$

ASSUME REMAINING IS LAND TREATMENT A

$1.0 - 0.11 = 0.89$

PEAK DISCHARGE & VOLUME CALCULATIONS

BASED ON AUGUST 1991 REVISIONS OF COA DPM SEC 22.2

$G = 0.89(1.29) + 0(2.03) + 0.0(2.87) + 0.11(4.37) = 1.63 \text{ CFS/AC}$

$V = 0.89(0.44) + 0(0.67) + 0.0(0.99) + 0.11(1.97) = 0.61/12 \Rightarrow 0.05 \text{ AC-FT/AC}$



BOHANNAN-HUSTON INC.

PROJECT NAME EAGLE RIDGE SHEET 1 OF
 PROJECT NO. C9214601 BY DATE
 SUBJECT EXISTING CONDITIONS. TYPE A LOTS CH'D DATE

TYPICAL LOT "A"

PROPOSED CONDITIONS

TOTAL AREA 9,425 SF

IMPERVIOUS AREAS

ROAD + C&G 1,040
SIDEWALK (45'x4') 260
HOUSE (55'x55') 3,025
DRIVE (20'x20') 400
PATIO (10'x10') 100

4,825 SF

% IMPERVIOUS $4,825/9,425 \Rightarrow 51\%$

ASSUME 75% OF REMAINING IS LUSH
LANDSCAPE (LAND TREATMENT B)

$$0.75(0.49) = 0.37$$

ASSUME 25% OF REMAINING IS DESERT
LANDSCAPE (LANDSCAPE TREAT C)

$$0.25(0.49) = 0.12$$

PEAK DISCHARGE & VOLUME CALCULATIONS

BASED ON AUGUST 1991 REVISIONS OF CDA DPM SEC. 22.2

(LAND TREATMENT)

$$\begin{aligned} Q &= 0(1.29) + 0.37(2.03) + 0.12(2.87) + 0.51(4.37) = 3.32 \text{ CFS/AC} \\ V &= 0(0.44) + 0.37(0.67) + 0.12(0.99) + 0.51(1.97) = 1.37 \text{ AC-FT/AC} \end{aligned}$$

TOTAL ACREAGE: 2.68 AC

TOTAL LOTS : 13

TYPE A LOTS : 4

$$\% \text{ TYPE A LOTS } 4/13 = 0.31 \Rightarrow 31\%$$

TOTAL ACREAGE TYPE A LOTS = 0.82 ACRES

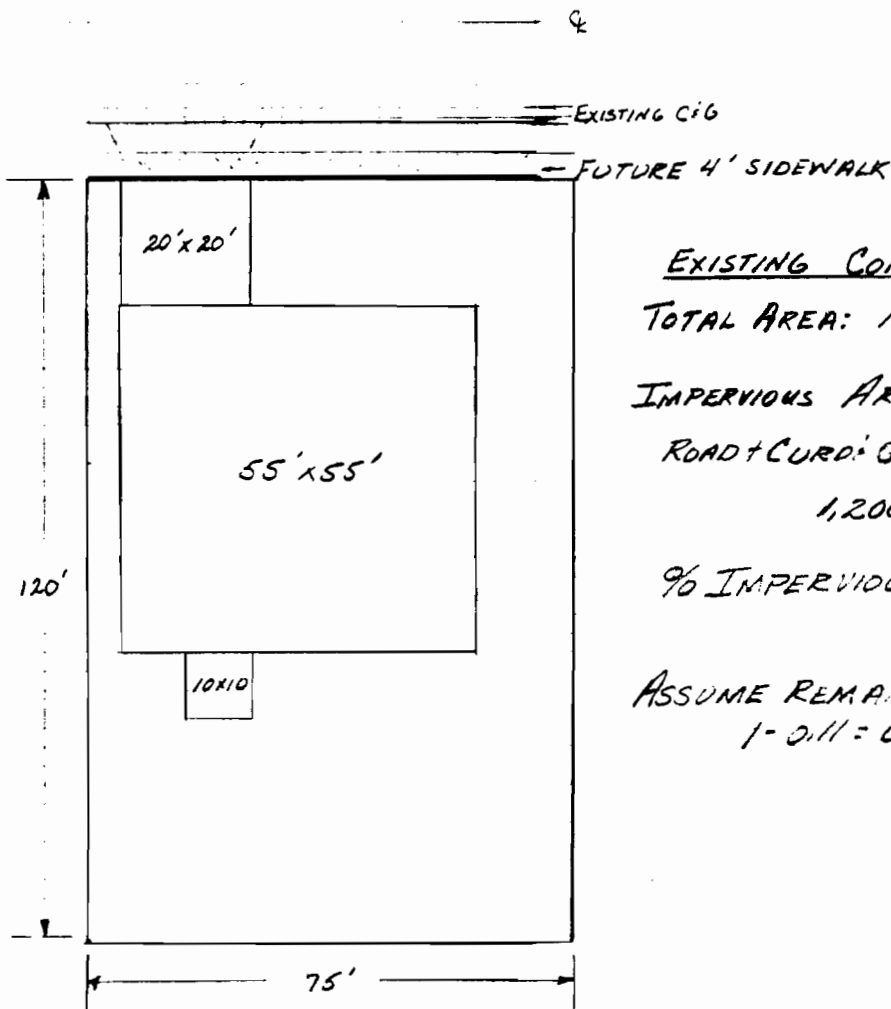
	EXISTING	PROPOSED
PEAK DISCHARGE	1.34 CFS	2.73 CFS
VOLUME	0.04 AC-FT	0.09 AC-FT



BOHANNAN-HUSTON INC.

PROJECT NAME EAGLE RIDGE SHEET 2 OF
PROJECT NO. C9214601 BY DATE
SUBJECT TYPICAL LOT A CH'D DATE

TYPICAL LOT "B"



EXISTING CONDITIONS

TOTAL AREA: 10,875 SF

IMPERVIOUS AREA

ROAD + CURB + GUTTER 16 x 75
1,200

% IMPERVIOUS $\frac{1200}{10,875} \approx 11\%$

ASSUME REMAINING IS LAND TREATMENT A
 $1 - 0.11 = 0.89$

PEAK DISCHARGE & VOLUME

BASE ON AUGUST 1991 REVISION OF COA DPM SEC 22.2

$$Q = 0.89(1.29) + 0.0(2.03) + 0.0(2.87) + 0.11(4.37) = 1.63$$

$$V = 0.89(0.44) + 0.0(0.67) + 0.0(0.99) + 0.11(1.97) = 0.6112 \approx 0.11$$



BOHANNAN-HUSTON INC.

PROJECT NAME EAGLE RIDGE UNIT 2 SHEET 3 OF
PROJECT NO. 09014601 BY DATE
SUBJECT EXISTING CONDITIONS TYPE B CH'D DATE

TYPICAL LOT "B"

PROPOSED CONDITIONS

TOTAL AREA $145 \times 75 = 10,875 \text{ SF}$

IMPERVIOUS AREAS

ROAD & C&G 1,040
SIDEWALK (75x4) 300
HOUSE (55x55) 3025
DRIVE (20x20) 400
PATIO (10x10) 100
4,825 SF

% IMPERVIOUS $\frac{4,825}{10,875} \Rightarrow 44\%$

ASSUME 75% OF REMAINING WASH LANDSCAPE
(LAND TREATMENT B)
 $0.75(0.56) = 0.42$

ASSUME 25% OF REMAINING DESERT
(LAND TREATMENT C)
 $0.25(0.56) = 0.14$

PEAK DISCHARGE & VOLUME CALCULATION:

BASED ON AUGUST 1991 REVISION OF CDA DPM SEC. 22.2

$$Q = 0(1.29) + 0.42(2.03) + 0.14(2.87) + 0.44(4.37) = 3.18 \text{ CFS/AC}$$

$$V = 0(0.44) + 0.42(0.67) + 0.14(0.99) + 0.44(1.97) = 1.29 \Rightarrow 0.11 \text{ AC-FT/AC}$$

TOTAL ACREAGE: 2.68 AC

TOTAL LOTS: 13

TYPE B LOTS: 9

% TYPE B LOTS $9/13 = 0.69 \Rightarrow 69\%$
TOTAL ACREAGE TYPE B LOTS: 1.85 ACRES

	EXISTING	PROPOSED
PEAK DISCHARGE	3.02 CFS	5.88 CFS
VOLUME	0.09 AC-FT	0.20 AC-FT



BOHANNAN-HUSTON INC.

PROJECT NAME EAGLE RIDGE UNIT 2 SHEET 4 OF
PROJECT NO. 19214201 BY DATE
SUBJECT PROPOSED CONDITIONS TYPE B CH'D DATE

ONSITE TEMPORARY DRAINAGE
CONSIDERATIONS

A PORTION OF TRACT A FLOWS TOWARD THE
BACK WALLS OF LOTS 8 THRU 13.

THE AREA CONTRIBUTING TO THE FLOW IS APPROXIMATELY
6.6 ACRES OF NATIVE VEGETATION IN ITS NATURAL
STATE.

PEAK DISCHARGE & RUNOFF VOLUME EXPECTED

$$Q = 6.6 \text{ AC}(1.29) = 8.51 \text{ CFS}$$

$$V = 6.6 \text{ AC}(0.44) = 2.90/12 \Rightarrow 0.24 \text{ AC-FT}$$

PROPOSE TEMPORARY DRAINAGE SWELL DIRECTING
RUNOFF TO TEMPORARY BLANKET DRAINAGE EASEMENT.



BOHANNAN-HUSTON INC.

PROJECT NAME _____ SHEET _____ OF _____
PROJECT NO. _____ BY _____ DATE _____
SUBJECT _____ CH'D _____ DATE _____

**MASTER DRAINAGE PLAN
FOR
EAGLE RANCH AND
PORTIONS OF PARADISE HILLS**

AN

AMENDMENT TO THE PARADISE HILLS

MASTER DRAINAGE PLAN

March, 1983

Prepared For:

 **Bellamah
Community
Development**

By:

**community
sciences
corporation**

Kent M. Whitman, P.E.

**SURVEYING
ENGINEERING
LAND PLANNING**

Area 9 which is zoned for manufacturing will generate a 100 year storm flow of approximately 135 cfs, but like Area 8D will not contribute 135 cfs to the peak flow in the storm sewer due to differences in Tc between Area 9 and the entire storm sewer basin. It is recommended that the flow from this area be collected and conveyed in future local streets (not shown on Plate 3) to Point 9 near the storm sewer outlet where inlets sized for 135 cfs will allow the flow to reach the Calabacillas through the trunk sewer outlet.

Area 10 is used as a designation for areas adjacent to the Calabacillas which will generate storm waters flowing directly to the Calabacillas as sheet flow or in small concentrated streams from local streets. Individual local street flow velocities will be addressed when these areas are developed and specific outlet locations and erosion protection measures can be determined and addressed in drainage reports and plans for those areas.

Area 11 is located on the north side of the Calabacillas and the flow for the developed site is addressed in the 7 Bar Ranch Sector Plan (Bohannon Huston 12-'82) as part of area I-6 (See Plate 3 Bohannon-Huston report). The 7 Bar Ranch