PUBLIC WORKS/HYDROLOGY

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

KEN SCHULTZ
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PUBLIC SERVICES

FRED E. MONDRAGON
DEPUTY CAO
DEVELOPMENT & ENTERPRISE SERVICES

February 23, 1989

Mr. Robert O. Nellums
1241 Stitz N.E.
Albuquerque, NM 87112

RE: DRAINAGE REPORT FOR LOT 1530, UNIT 15, SANDIA HEIGHTS SOUTH SUBDIVISION, SUBMITTED FEBRUARY 8, 1989, FOR PRELIMINARY AND FINAL PLAT APPROVALS (D-23/D20)

Dear Mr. Nellums:

Your submittal, referred to above, prepared by Philip W. Clark, P.E., is approved. If AMAFCA approves, and is willing to vacate the easement as you have drawn at the southern boundary of your lot, then we will be happy to sign both the preliminary and final plats at the Development Review Board Meeting.

If you have any questions, please call me at 768-2650.

Cordially,

Stuart Reeder

G. Stuart Reeder, P.E.
C.E./Hydrology Section

xc: Philip Clark, P.E.
3802 San Isidro N.W.
Albuquerque, NM 87107

Cliff Anderson, AMAFCA

GSR
(WP+1027)

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DRAINAGE INFORMATION SHEET

PROJECT TITLE: Drainage Analysis ZONE ATLAS/DRAINAGE FILE# D-23 / D20

LEGAL DESCRIPTION: Lot 1530, Unit 15, Sandia Heights South

CITY ADDRESS: 1530 Eagle Ridge Drive

ENGINEER Philip W. Clark, P.E. CONTACT: Philip W. Clark, P.E.

ADDRESS: 3802 San Isidro N.W. 87107 PHONE: 345-1382 881-2759 (DAY)

OWNER: Mr. Robert O. Nellums CONTACT: see owner

ADDRESS: 1241 STUTZ N.E. 87112 PHONE: 294-8400 844-6011 (DAY)

ARCHITECT: N/A CONTACT:

ADDRESS: PHONE:

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich, P.S.

ADDRESS: 308 Wayne N.W. 87114 PHONE: 897-7674

CONTRACTOR: N/A CONTACT:

ADDRESS: PHONE:

PRE-DESIGN MEETING:

____ YES

_X_ NO

____ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED
FEB 08 1989
HYDROLOGY SECTION

DRB NO. for vacation plat, to be determined

EPC NO. ____

PROJECT NO. ____

TYPE OF SUBMITTAL:

- _X_ DRAINAGE REPORT } easement analysis
- _X_ DRAINAGE PLAN }
- ____ CONCEPTUAL GRADING & DRAIN PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ FOUNDATION PERMIT APPROVAL
- ____ ROUGH GRADING PERMIT APPROVAL
- ____ OTHER ____

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SECTOR PLAN APPROVAL
- ____ SKETCH PLAT APPROVAL
- _X_ PRELIMINARY PLAT APPROVAL
- ____ SITE DEVELOPMENT PLAN APPROVAL
- _X_ FINAL PLAT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- ____ GRADING/PAVING PERMIT APPROVAL
- ____ (SPECIFY)

DATE SUBMITTED: 2-8-89

BY: Robert O. Nellums

Note: please copy "engineer" on all correspondence

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DRAINAGE REPORT/EASEMENT ANALYSIS

for

Lot 1530, Unit 15

Sandia Heights South

RECEIVED
FEB 08 1989
HYDROLOGY SECTION

Prepared for Owner:

Mr. Robert O. Nellums

January, 1989

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	FEMA Map	
	Drainage Plan	Pocket

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I. Easement Analysis

PURPOSE/DESCRIPTION

The purpose of this report/analysis is to establish criteria which will relocate the boundaries of an existing drainage easement. The easement, approximately 40 feet wide, is located along the southern boundary of the subject single family residential lot in the far northeast heights of Albuquerque. See Following Vicinity Map. The 0.75 acre parcel is described as Lot 1530, Unit 15, Sandia Heights South. Lot 1531 to the south is also encumbered by the same easement. This proposal is for the relocation of the existing north easement boundary only.

The analysis is presented in a manner acceptable to the City of Albuquerque using hydrologic procedures as outlined in Chapter 22, Vol. II., of the Development Process Manual.

EXISTING CONDITIONS

The subject property is bounded on the north by a developed residential lot, and the east by U.S. Forest Service lands. Adjacent to the south is vacant subdivided lot 1531 with paved Eagle Ridge Drive on the west boundary. Lot 1530 drains essentially from northeast to southwest at 4-6%. The major soil present is the ETC, Embudo Tijeras Complex. The United States Department of Agriculture, Soil Conservation Service classifies the soil as type 'B'. See Soils Map, following. Although the site does not lie within a designated floodplain, see following FEMA map, a drainage easement was dedicated as a result of a drainage report and subsequent platting action. The report for Sandia Heights South, Unit 15 prepared by Bohannan-Huston in 1983 conservatively sized the easement on Lot 1530 for flows well downstream. (See Basin 'C' and calculations at C-1 of that report).

PROPOSED RELOCATION (SEE POCKET)

This analysis and plan propose to relocate the north boundary of the existing drainage easement further south (see calculations). Shifting the line south will increase usable space for the proposed construction of a residential home. No grading nor improvements to the existing arroyo are planned. The Drainage plan shows existing topography, the existing drainage easement, quantifies storm run-off generated by the 100-year, 6 hour storm, and the proposed drainage easement reduction.

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SUMMARY

The following calculations indicate that the existing arroyo will flow approximately 0.35 feet deep at a discharge rate of 7.5 to 9.5 c.f.s. during the 100-year storm. Associated velocities of 2 f.p.s. are non-erosive. A 5 foot minimum buffer from the calculated water surface level will contain a storm generating approximately 20.5 c.f.s.

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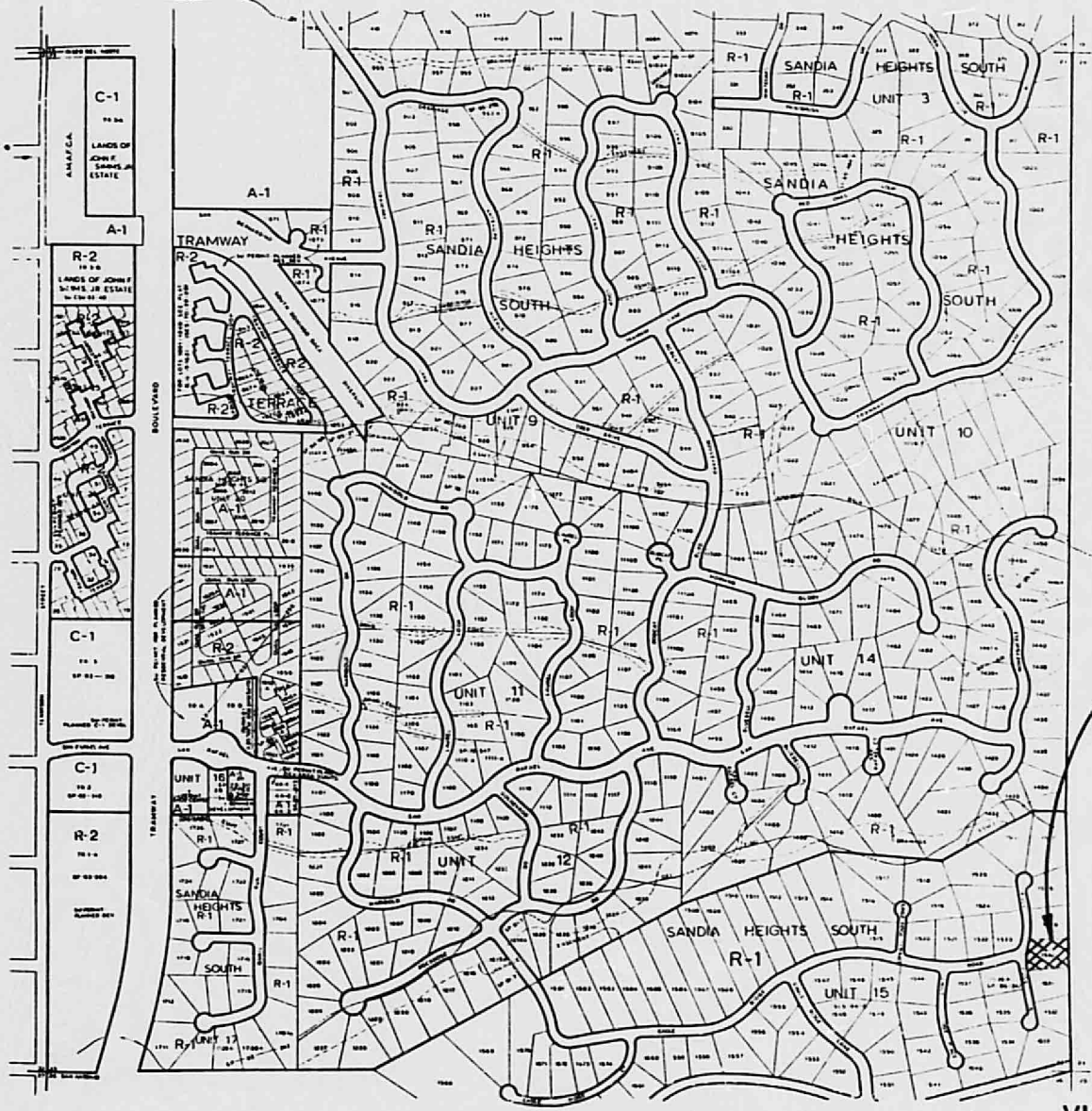

D-23-Z

VICINITY MAP 1"=

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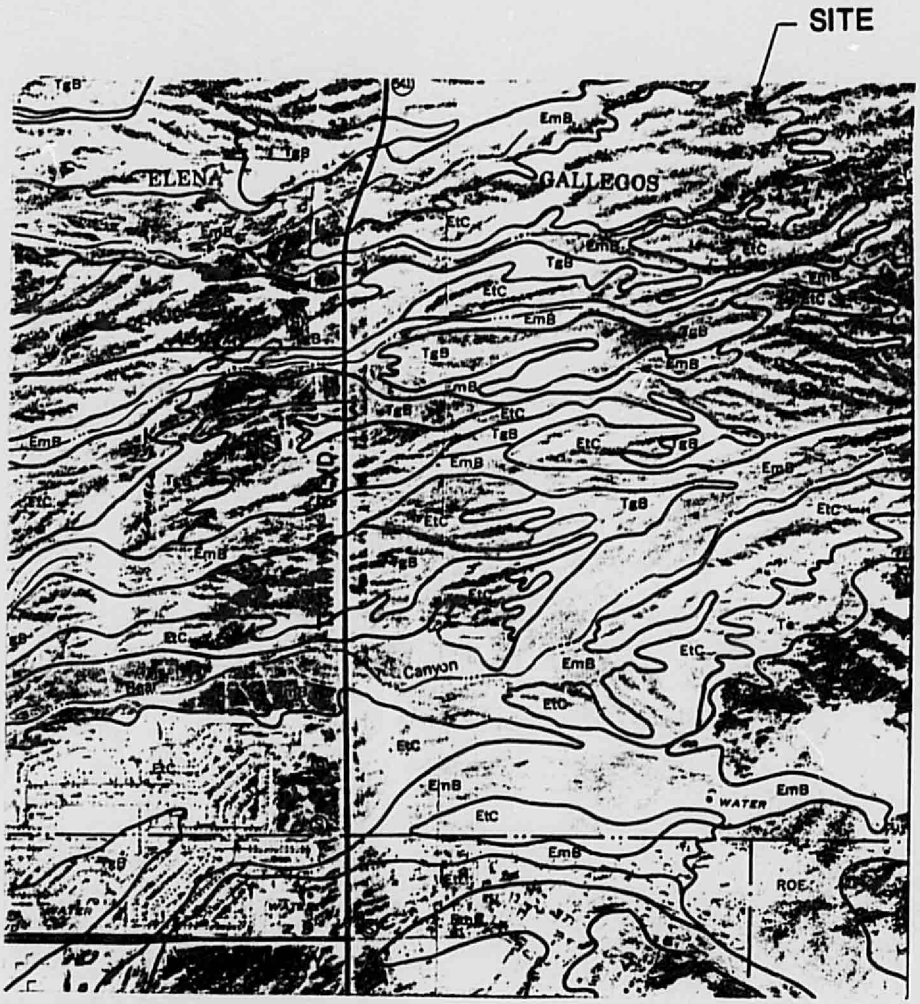
OF THE ORIGINAL DOCUMENT.



SOILS MAP 1"=2000'

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OF THE ORIGINAL DOCUMENT.

FEMA MAP 1"=500' PANEL 11

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Project Lot 1530, Unit 15, Sandia Heights South
Subject Easement Analysis
Project No. 89.01 Date 1-18-89 By BJC

☐ Memorandum
☐ Telephone Record
☐ Note to the File
☐ To be Typed
☐ Minutes of Mtg.
☐

II. CALCULATIONS

A. DESIGN CRITERIA

DEVELOPMENT PROCESS MANUAL, CH. 22, VOL. II.
Emergency Rule, Adopted 2/86, City of Albuq.

RATIONAL METHOD $Q = CIA$

MANNINGS EQ. $Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$, $V = \frac{Q}{A}$

$P_{100} = 2.7$ in. $I = P 6.84 TC^{-0.51}$

$n = 0.05$ (gravelly, grassy, earthen Arroyo @ depths of 6" or less)

$TC = 0.0078 L^{0.77} \% S^{0.385}$, use 10 minutes, min.

B. CALCULATE DRAINAGE AREAS CONTRIBUTING
(Areas using Planimeter)

OFF-SITE AREA (SEE FEMA MAP, PANEL 11)

3.20 AC. TO EASTERN BOUNDARY

AREA TO WESTERN BOUNDARY
ADD 3.20 Ac.
0.50 Ac (ON-SITE)
0.25 Ac. (OFF-SITE)
3.95 Ac. TO WESTERN BOUNDARY

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Project LOT 1530, UNIT 15, SANDIA HEIGHTS SOUTH

Subject Easement Analysis

Project No. 89:01 Date 1-19-89 By R.C

☐ Memorandum
☐ Telephone Record
☐ Note to the File
☐ To be Typed
☐ Minutes of Mtg.
☒ report

(Calcs. cont'd)

C. CALCULATE FLOWS, discharge Rate

1.) To Eastern Boundary
Area = 3.2 AC.

C = 0.40 (undeveloped)
TC = 10 min.
i_{100} = 5.7 in./hr.

$Q = CiA$
$= (0.4)(5.7)(3.2)$
$Q_{100} = 7.3$ c.f.s.

2.) TO WESTERN BOUNDARY
Area = 3.95 AC.

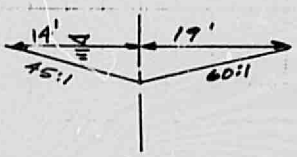
$'C' = \frac{.11(.95) + .4(3.84)}{3.95}$
'C' = 0.42
TC = 10 min.
i_{100} = 5.7 in./hr.

$Q = CiA$
$= (0.42)(5.7)(3.95)$
$Q_{100} = 9.5$ c.f.s.

D. Calculate depths @ Analysis Points, SEE PLAN

A.P. #1, Q_{100} = 9.5 c.f.s.

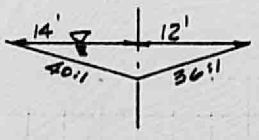
Manning's eq.
n = 0.025
S = 0.05'/ft.



d_{100} = 0.31', $Q_{\frac{1}{2}}$ = 9.7 ok
v = 1.2 f.p.s.

A.P. #2, Q_{100} = 8.7 c.f.s.

S = 0.05'/ft



d_{100} = 0.34', $Q_{\frac{1}{2}}$ = 8.96 cfs, ok
v = 2.04 f.p.s.

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Project Lot 1 & 3, Unit E, Sandia Heights South

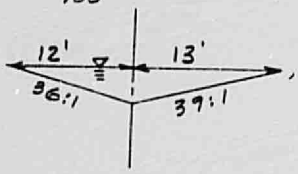
Subject EASEMENT Analysis

Project No. 87.01 Date 1-19-89 By JWC

☐ Memorandum
☐ Telephone Record
☐ Note to the File
☐ To be Typed
☐ Minutes of Mtg.
☐

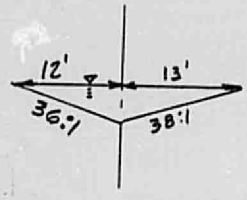
(Calcs. cont'd)

A.P. #3, Q_{100} = 8.0 c.f.s. $S = 0.048$ '/Ft.



, $d_{100} = 0.33'$ ⇒ Q = 8.0 cfs
$v = 1.96$ f.p.s.

A.P. #4, Q_{100} = 7.3 c.f.s. $S = 0.042$ '/Ft.



, $d_{100} = 0.33'$ ⇒ Q = 7.4 cfs ok
$v = 1.83$ fps

E. Calculate 5' Buffer Freeboard Capacity

Avg. side slope, SS = 39:1
Δdepth = 5 ÷ 39 = 0.13'
Avg. depth = 0.33'

TOTAL depth = 0.33 + 0.13 = 0.46'
avg. slope = 0.0475'/Ft.

Q_{CAP} = 20.06 cfs AVG.

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PLANS/PLATS ON FILE

FILE DESC: D23/D24

PLANS/PLATS 1

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