HYDROLOGY D2 3/D2 9 PLANS

D23/D2

9 Plans

ENGINEERS & PHOTOGRAMMETRISTS

BOHANNAN WESTMAN HUSTON & ASSOCIATES INC.

4125 CARLISLE BLVD. N.E.
ALBUQUERQUE, NEW MEXICO 87107
PHONE 505 345-2681

5 September 1973

City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

ATTN: Mr. Don Campbell

RE: Drainage Reports for Units 10, 11 & 12
Sandia Heights Subdivision

Dear Mr. Campbell:

The following Drainage Reports are included for your review and comments. Drainage Reports for Unit 10, and supplement to Drainage Report for Unit 9 and 10 and Drainage Report for Units 11 and 12, Sandia Heights Subdivision.

We are requesting approval of the Drainage Report for Unit 10 and your signature on the original plat which we have sent with the package. You will find the supplement to the Drainage Reports for Unit 9 and 10 which reflect inclusion of a diversion berm on the Domingo Baca Arroyo. Unit 9 has previously been approved by the City and the Albuquerque Metropolitan Arroyo Flood Control Authority. Unit 10 has also received approval from the Albuquerque Metropolitan Arroyo Flood Control Authority.

We have included the Drainage Report for Units 11 and 12 and the supplement Drainage Report on Units 11 and 12 which includes a portion of land on the southwest corner of Unit 12 which was purchased and included in the unit after the initial report was accomplished. These Drainage Reports are submitted for your review and when the plats are designed and computed, they will be forwarded for your approval.

If there should be any questions concerning these reports, please feel free to contact this office and we will attempt to clarify these points.

Sincerely yours,

Michial M. Emery

Michial M. Emery, PE
Chief Engineer

MME/teg
Encl
cc; Don Miller/Alvarado Realty

SANDIA HEIGHTS
UNITS 11 and 12

Bernalillo County, New Mexico

Supplement to

DRAINAGE REPORT

for

SANDIA PEAK
TRAM COMPANY

AUGUST
1973

BOHANNAN WESTMAN HUSTON

BOHANNAN WESTMAN HUSTON & ASSOCIATES INC.
4125 CARLISLE BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87107
PHONE 505 345-2681

ENGINEERS & PHOTOGRAMMETRISTS

August 6, 1973

Sandia Peak Tram Company
Number 10 Tramway Loop
Albuquerque, New Mexico 87122

Gentlemen:

We are submitting this Supplement to our previous Drainage Report on Units 11 & 12 of the Sandia Heights Subdivision in order that the parcel recently purchased along the southwestern boundary of the development may be included in the Drainage Report.

Plates 1 & 2 of this Supplemental Report show the subject property, flows generated in the Pino Canyon for the Standard Project Flood, and the associated flood plain limits. Plate 3 shows cross sectional views along scetion lines indicated on Plates 1 & 2. All techniques of analysis and methods of computation indicated in the original report on Units 11 & 12 apply to this Supplemental Report.

We are again happy to have been able to serve you. Please contact us if there are any further questions.

Very truly yours,

Michial M. Emery
Chief Engineer

MME/dkw

STATE OF NEW MEXICO
MICHIAL M. EMERY
No. 5194
REGISTERED PROFESSIONAL ENGINEER

SUPPLEMENT
TO
DRAINAGE REPORTS
FOR
UNITS 11 & 12
SANDIA HEIGHTS SUBDIVISION

ITEM	PLATE #
Property Limits & Flood Plain Layout (Eastern half)	1
Property Limits & Flood Plain Layout (Western half)	2
Arroyo Cross Sections	3

BOHANNAN WESTMAN HUSTON

SANDIA HEIGHTS
UNITS 11 and 12

Bernalillo County, New Mexico

DRAINAGE REPORT
for
SANDIA PEAK
TRAM COMPANY

JULY
1973

BOHANNAN WESTMAN HUSTON

ENGINEERS & PHOTOGRAMMETRISTS

BOHANNAN WESTMAN HUSTON & ASSOCIATES INC.

4125 CARLISLE BLVD., N.E.
ALBUQUERQUE, NEW MEXICO 87107
PHONE 505 345-2681

10 July 1973

Sandia Peak Tram Company
Number 10 Tramway Loop
Albuquerque, New Mexico 87122

Gentlemen:

We are submitting this Drainage Report to you on Sandia Heights Subdivision covering the development of Units 11 and 12. The control of the runoff shall comply with the requirements of the Albuquerque Metropolitan Arroyo Flood Control Authority and with present City of Albuquerque policies.

We appreciate this opportunity to serve you. If any questions develop, we will be available to assist in your response.

Very truly yours,

Michial M. Emery

Michial M. Emery, PE
Chief Engineer

MME/teg

Enclosure

DRAINAGE REPORT

FOR

UNITS 11 AND 12

SANDIA HEIGHTS SUBDIVISION

BERNALILLO COUNTY, NEW MEXICO

JULY 1973

PREPARED FOR:

SANDIA PEAK TRAM COMPANY

NUMBER 10 TRAMWAY LOOP

ALBUQUERQUE, NEW MEXICO 87122

BY

BOHANNAN WESTMAN HUSTON AND ASSOCIATES, INC.

4125 CARLISLE BLVD NE

ALBUQUERQUE, NEW MEXICO 87107

Michial M. Emery

Michial M. Emery, PE
Chief Engineer

DRAINAGE REPORT

SANDIA HEIGHTS SUBDIVISION

UNITS 11 AND 12

LOCATION AND DESCRIPTION

Units 11 and 12 of the Sandia Heights Subdivision are located east of Tramway Boulevard, approximately two and one-half (2-1/2) miles north of Albuquerque's City limits. They cover an area of approximately 181 acres. (See Location Map, Plate I). All property is presently undeveloped, and plans call for development to take place exclusively as R-1 single family lots of approximately one acre or more each.

Units 11 and 12 lie on an alluvial fan that extends westward from the Sandia Mountains. The land slopes at approximately 5% from east to west and has a moderate to poor grass cover.

DRAINAGE BEFORE DEVELOPMENT

Runoff from the Domingo Baca and Pino Canyon has formed the alluvial fan on which the property is located. The runoff flows across the property in an arroyo system that enters on the east and exits on the west. From there the arroyos extend on west to the northern diversion channel which is several miles away. Water that falls on the property flows off via the arroyos from the Domingo Baca and Pino Canyon, and also via smaller arroyos that eventually tie into the larger arroyos. (See Plates 3 and 4.)

METHOD

Flows in the arroyos were derived from the Standard Project Flood occurring in the Domingo Baca and Pino Canyons above and east of the subject property. In addition to these flows, local runoff from and through the property were calculated based on a one hundred (100) year, six (6) hour storm. The Corp of Engineers "Hydrologic Data for Flood Plain Information Study, Albuquerque Arroyos Part IV, Area 1-11 was very instrumental in determining the flows. (See Plate 2). This study was developed for the Embudo Canyon area but the terrain is similar enough in the Domingo Baca and Pino Canyons to use the study for these areas.

Flows for the smaller local arroyos as well as incremental flows through the property along the Domingo Baca and Pino Canyon arroyos were calculated using the Rational Runoff approach.

Flood plain boundaries were calculated using Mannings formula and the cross sectional geometry of the arroyos. The flow boundaries are delineated on Plates 3 and 4, and cross sections are shown on Plates 5 through 8.

DRAINAGE AFTER DEVELOPMENT

The intent of this subdivision is to keep the area as natural as possible. One of the main ways of doing this is to permit no construction that interferes with the natural drainage channels. There is a note to this effect on the plat of the area.

The lots and streets will be designed and constructed to drain into the natural arroyos, thus eliminating the need for storm sewers and other types of improved drainage structures and the high velocities and runoff rates they produce.

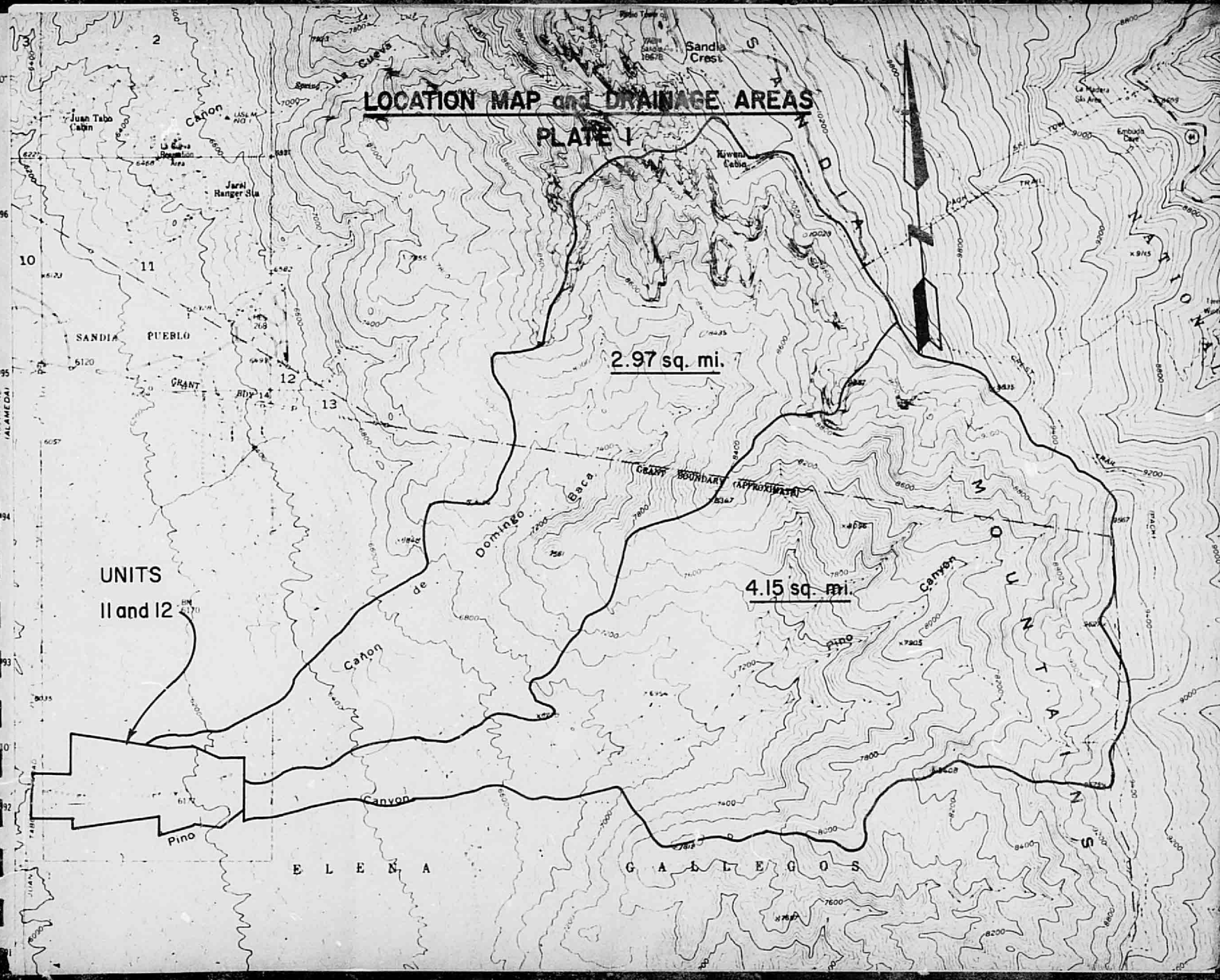
There is a tendency for streets and roofs to increase the runoff, but this will be partially off set by ponding and longer retention times caused by minor landscaping, planted areas, graveled areas, etc. Therefore, in our Engineering judgement the flows from the subject properties after development will not materially exceed the velocity or flow rate before development.

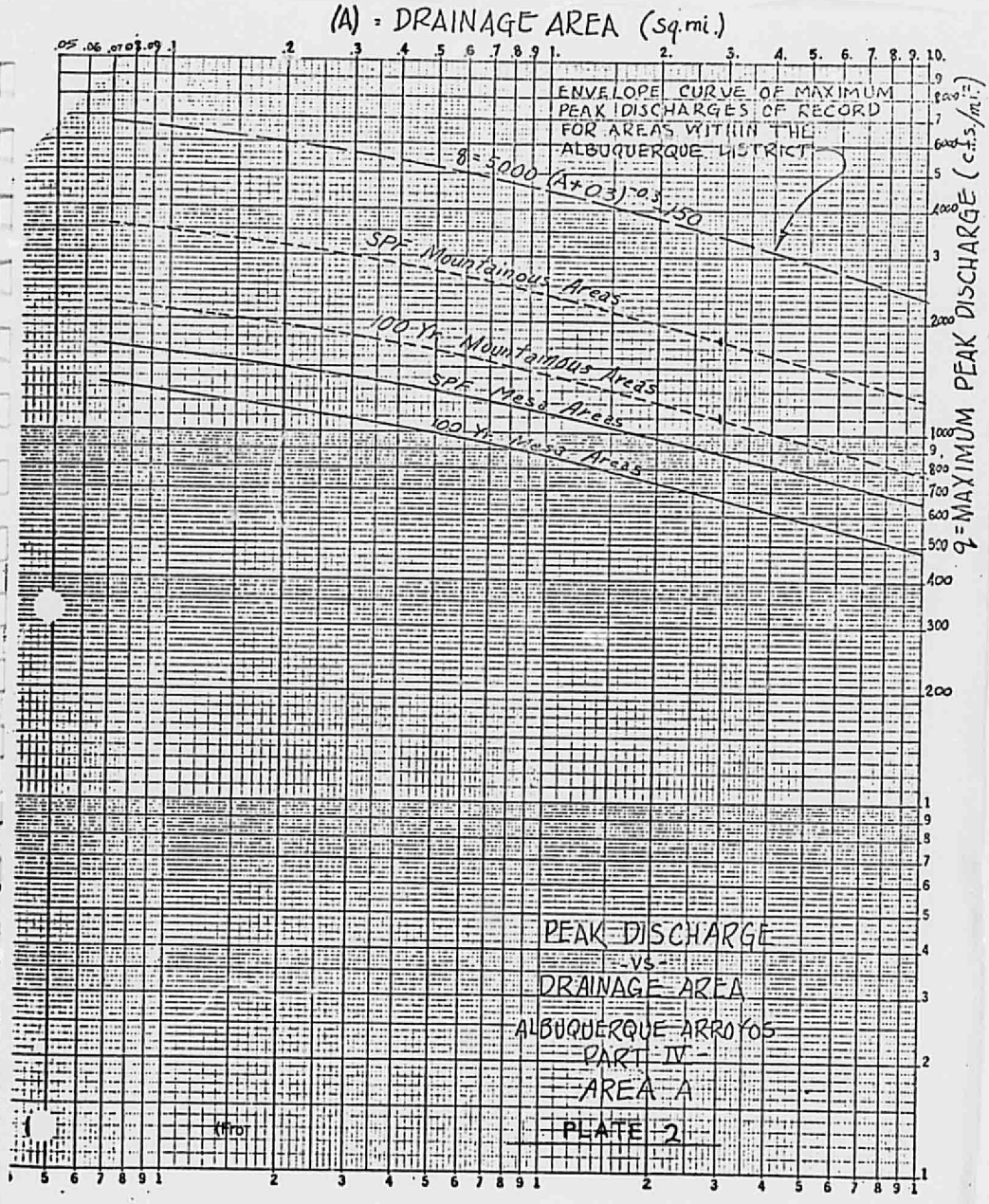
CONCLUSION

Leaving the flood ways completely open and in a natural state and extending their boundaries out far enough to carry flows produced by the Standard Project Flood falling in the Domingo Baca and Pino Canyon drainage areas insures that the area will not be flooded by any rain that can reasonably be expected. The buffering effect of large lots, landscaping, and natural flood ways will insure that the flow rate and velocity of storm runoff will not be increased by development of the area. For these reasons it is felt the drainage plan as presented in this report for Units 11 and 12 should be approved.

BIBLIOGRAPHY

Department of the Army Corps of Engineers	Flood Plain Information Part I and IV 1971
King and Brater	Handbook of Hydraulics 1963
Gordon Herkenhoff and Associates for the City of Albuquerque	Master Plan of Drainage 1963
Bohannan Westman Huston and Associates, Inc.	Tramway Boulevard Corridor and Drainage Study 1972


LOCATION MAP and DRAINAGE AREAS
PLATE I
2.97 sq. mi.
4.15 sq. mi.
UNITS
11 and 12
Sandia Crest
Juan Tabo Cabin
Jaral Ranger Sta
SANDIA PUEBLO
GRANT BDY
GRANT BOUNDARY (APPROXIMATE)
Cañon de Domingo Baca
Pino Canyon
Cañon
Pino Canyon
ELENA GALLEGOS
SANDIA MOUNTAINS
Embudo Cave
Kiwanis Cabin
La Cueva Recreation Area
La Cueva
TRAIL



(From Corp of Engineers Study)

BOHANNAN WESTHAFF HUSTON

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