



# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 9, 1999

Fred C. Arfman, P.E.  
Isaacson & Arfman  
128 Monroe Street NE  
Albuquerque, New Mexico 87108

***RE: Grading and Drainage Plan for Lot 1, Block 12, Volcano Cliffs Subdivision Unit 3,  
(E10/D11) Submitted for Preliminary and Final Plat and Grading Permit Approval,  
Engineer's Stamp Dated 3/17/99.***

Dear Mr. Arfman:

Based on the information provided in the submittal of March 18, 1999, the above referenced plan is approved for Preliminary Plat action by the DRB.

Before Final Plat sign-off, a Readjustment of Assessment needs to be completed through the Special Assessment Office.

The above referenced plan is also approved for Rough Grading Permit release. A top soil disturbance permit must be obtained prior to grading on this site.

Prior to release of each Building Permit for these Lots, the grading certification of all five Lots, including certification of the retaining walls, must be submitted to and approved by this office. If an Infrastructure List is required, the grading certification is required prior to release of the SIA.

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

Sincerely,

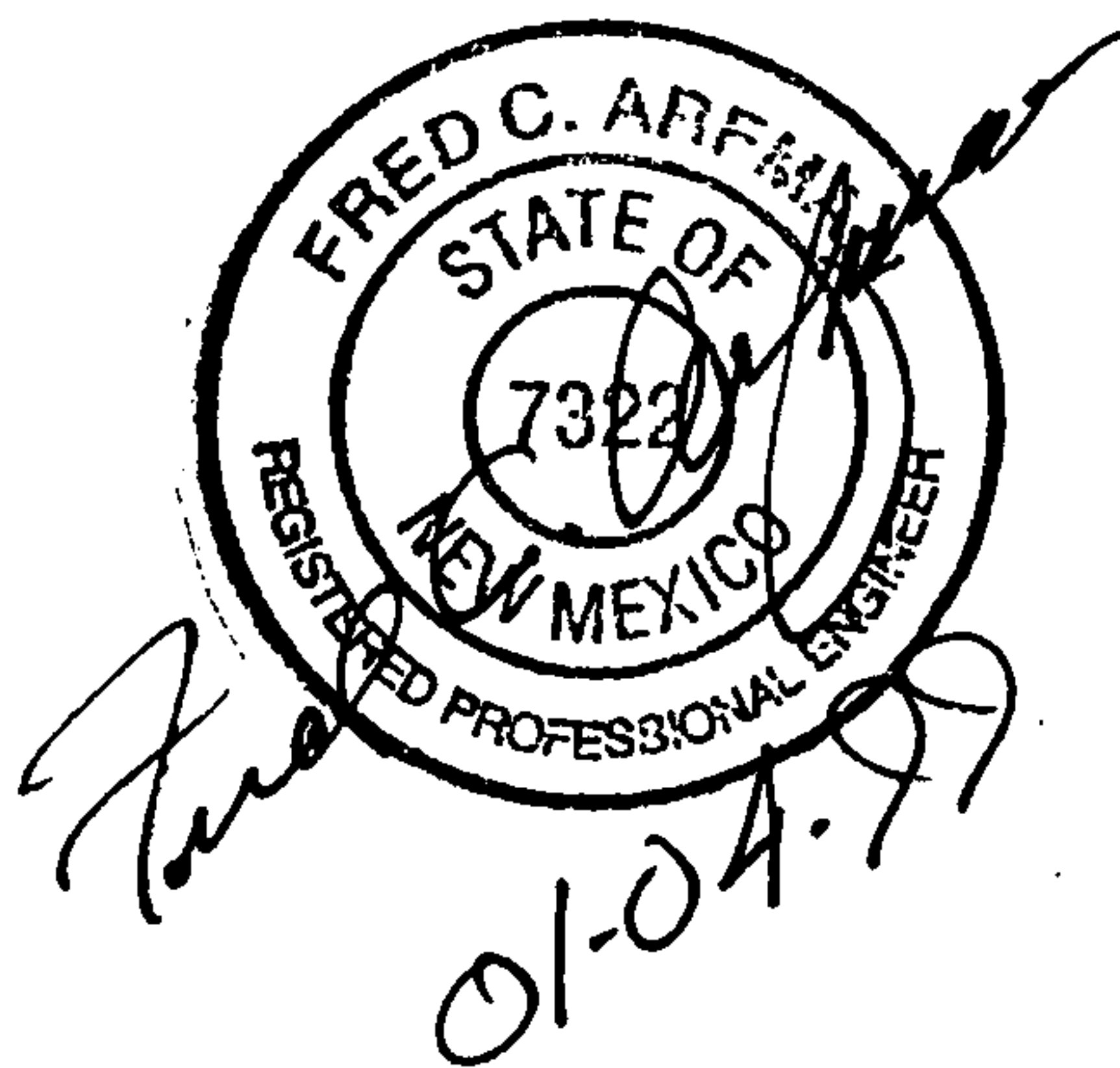
Susan M. Calongne, P.E.  
City/County Floodplain Administrator

c: Andrew Garcia, City Hydrology  
Phil Ward, Owner  
(File)



SUPPLEMENTAL  
HYDROLOGICAL INFORMATION  
FOR THE  
MOJAVE SUBDIVISION  
BEING  
LOT 1, BLOCK 12  
VOLCANO CLIFFS SUBDIVISION  
UNIT 3

JANUARY, 1999





BACKGROUND: THE SUBJECT PROPERTY WAS ORIGINALLY PLATTED IN FEB., 1946 (CG-107). PUBLIC ROADS AND UTILITIES WERE CONSTRUCTED AS PART OF SPECIAL ASSESSMENT DISTRICT 219 IN 1990. THE CORRESPONDING DRAINAGE REPORT WAS PREPARED IN JANUARY, 1989 AND HAS THE FOLLOWING HYDROLOGICAL DATA:

- SUBJECT PARCEL CONTAINED WITHIN DRAINAGE BASIN E10-3 (TOTAL AREA = 17.08 AC.)
- COMPOSITE CURVE NUMBER USED FOR THE OFFICE ZONED TRACT WAS 89.
- 100 YR PEAK RUNOFF RATE = 106.9 CFS

THE COMPOSITE CURVE NO. OF 89 USED FOR THE BASIN WAS THE HIGHEST USED FOR ANY OF THE SUB-BASINS. RESIDENTIAL VALUES WERE ESTABLISHED AT 79 TO 82.

ANALYSIS: BASED ON AN AREA/CFS RUNOFF PRO-RATA: 
$$\frac{106.9 \text{ CFS}}{17.08 \text{ AC}} = 6.26 \text{ CFS/AC.}$$

THEREFORE: THE SUBJECT RESIDENTIAL SUBDIVISION BEING 1.37 AC. SHOULD HAVE A RUNOFF CREDIT OF 
$$1.37 \text{ AC} \times 6.26 \text{ CFS/AC} = 8.57 \text{ CFS}$$

FROM I&A DRAINAGE PLAN, DATE 11-08-88 THE  $Q_p$  WAS COMPUTED AT 4.40 CFS

$4.40 \text{ CFS} < 8.57 \text{ CFS} \text{ ——— O.K.}$

ATTACHMENT: THAT PERTAINENT PORTION OF THE S.A.D. 219 DRAINAGE REPORT



DRAINAGE REPORT  
for  
THE CITY OF ALBUQUERQUE  
SPECIAL ASSESSMENT DISTRICT 219

Presented to  
THE CITY OF ALBUQUERQUE

January 1989



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## I. VOLCANO CLIFFS AREA

Proposed street improvements for SAD 219 in the Volcano Cliffs Area consist of the following:

San Ildefonso Drive from Montano Road to Mojave Street  
Sierra Linda Avenue from San Ildefonso to Mojave Street  
Meadow Lake Place from Sierra Linda Avenue to Mojave Street  
Mojave Street from San Ildefonso Drive to Boca Negra Arroyo  
Kiva Street from San Ildefonso Drive to Pojoaque Drive  
Pojoaque Drive from Kiva Street to Mojave Street  
Mojave Street from Pojoaque Drive to Atrisco Road  
Tesuque Drive from Mojave Street to Target Lane  
Agate Avenue from Tesuque Drive to Agate Lane  
Mariposa Place from Agate Avenue to Seville Place  
Seville Place from Mariposa Place to Agate Avenue  
Acacia Street from Tesuque Drive to Hokona Place  
Tamarisk Place from Acacia Street to Hokona Place  
Hokona Place from Tamarisk Place to Acacia Street  
Acacia Street from Tesuque Drive to Sonora Avenue  
Sonora Avenue from Acacia Street to Tesuque Drive  
Tesuque Court from Tesuque Drive to end of Tesuque Court  
Jasmine Street from Sonora Avenue to Tesuque Drive  
Carousel Street from San Ildefonso to Pojoaque  
Thunderbird Circle

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A. Hydrology / Hydraulics

Hydrologic analysis criteria utilized for this area of study are listed as follows:

1. City of Albuquerque Development Process Manual
2. Albuquerque Master Drainage Study
3. Far Northwest Drainage Management Plan Final Report
4. Northwest Mesa Drainage Management Plan (not yet approved).

Other pertinent information was obtained from the Special Assessment District 197 Final Storm Drainage Report, Montano Road from Atrisco to the Mariposa Channel, and from the Drainage Report for Butterfield Subdivision. Additionally, information was derived from coordination with the Mariposa Drainage Area Conservation and Stabilization Plan for Public Open Space Lands and Privately Held Lands prior to Development Report being written by C. Easterling and Associates.

There are four major outfall points for the Volcano Cliffs Area of SAD 219; those being the Boca Negra Arroyo, Montano Blvd., Kachina Street east of San Ildefonso, and the Mariposa North Arroyo.

The Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, as published by the US Department of Agriculture Soil Conservation Service and Forest Service, records that the larger part of soils within this area of SAD 219 are in Hydrologic Soil Group A. However, the very southeast portion of this area bounded on the north by Mojave, on the east by San Ildefonso, on the south by Montano, and on the west by Whiteman Drive are in Hydrologic Soil Group B.

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Curve numbers utilized for the Volcano Cliffs area were consistent with those used by Easterling and Associates in their Mariposa Drainage Area Report previously mentioned. In general, a curve number of 79 was used north of the Boca Negra Arroyo; a curve number of 89 was used along the south edge of the Boca Negra Arroyo where commercially zoned land exists; and a curve number of 82 was used for residential areas south of the Boca Negra Arroyo.

The drainage areas utilized in this study are defined on Sheets 1 of 9 to 4 of 9 in the map pockets at the end of this report. The drainage areas designated above on the escarpment to the west of SAD 219 are taken from the Far Northwest Drainage Management Plan were considered during this study, but the condition is such that the majority of flows from the upper bluffs would be intercepted by Atrisco Drive, the Boca Negra Arroyo, or the Mariposa North Channel. These are some of the major outfalls that will also be utilized for SAD 219.

#### Boca Negra Outfall

There are approximately 53 acres upon the escarpment (Area M11A) which currently drain onto SAD 219 drainage areas D11-2 and E11-1. The 100 year peak runoff rate for this basin is estimated at 72.2 cfs. If this runoff were allowed to enter the proposed SAD 219 area, it would increase the cost for storm sewer requirements substantially. The Northwest Mesa Drainage Management Plan defines a 128' drop structure (Project No. 173.10) to be constructed in the future to collect the escarpment

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drainage. The plan shows the outfall of the drop structure to be in SAD 219 area E10-1. We feel that a greater benefit would be realized if the drop structure would provide the outfall about 1,200 feet west of what is shown on Plate 2 in the report. This would lead to an existing natural arroyo leading into the Boca Negra Arroyo and would bypass future developed areas.

Since the construction date of the 128' drop structure is unknown, we will assume that it is to be constructed substantially later than the construction of SAD 219. Therefore, some kind of interim measure to facilitate the drainage from the escarpment will be required. It is proposed to construct a shallow earthen channel utilizing existing Vista Prado Drive and Compass Drive rights of way. To carry the 72.2 cfs it is proposed to construct a 1' deep trapezoidal ditch with a 25' flat bottom and 3:1 side slopes which will also serve as a dirt road during dry weather. The dirt from the excavation of this channel can be used to construct a 2' high, 10' wide earthen berm along the east side of the channel/road to provide even more capacity for the channel/road. The channel/road will divert drainage south and west around the proposed SAD 219 project to the Boca Negra Arroyo. Times of concentration determined in the Far Northwest Drainage Management Plan ranged from 35 minutes to 1 hour and 19 minutes. Even though the Volcano Cliffs Area of SAD 219 is intended to discharge directly into Boca Negra Arroyo and the Mariposa North Channel, the determined times to concentration for the drainage subareas in SAD 219 do not exceed 10 minutes. The FNDMP states on page 25

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in the last paragraph that "In some instances, the runoff hydrograph generated by development adjacent to outfall does not adversely affect the system capacity due to the timing of the hydrograph peaks." Therefore, it is proposed that the assigned flowrate/acre criteria as outlined on page 25 of the FNDMP not be applied to this area of SAD 219 because the entire SAD 219 area is at the extreme lower reaches of the watershed. Direct discharge into the Boca Negra Arroyo and the Mariposa North Channel will be acceptable.

#### Montano Outfall

Portions of the SAD 219 Volcano Cliffs Area will discharge into Montano Road which was designed and constructed under SAD 197. The SAD 197 drainage areas that correspond with improvements proposed in SAD 219 are Drainage Areas 3, 4, 5, and 6. A summary of these drainage areas and their associated runoff rates are summarized in the following table:



SAD 197 DRAINAGE AREAS SUMMARY

Drainage Area	Area	Q10	Q100
<u>Designation</u>	<u>(acres)</u>	<u>(cfs)</u>	<u>(cfs)</u>
3	26	46	70
4	7	12	19
5	7	12	19
6	<u>45</u>	<u>80</u>	<u>121</u>
Total	59	150	229

Totals for Areas 1 thru 7                      224                      341



The SAD 197 Drainage Report allots 150 cfs peak flows for the 10 year storm and 229 cfs peak flows for the 100 year storm for Areas 3, 4, 5, and 6. The Report utilizes calculations based on the Rational Method utilizing a C value of 0.58. By redefining the drainage areas somewhat during the design of SAD 219 and utilizing HYMO to calculate the flows, the runoff from those areas was reduced to 52 cfs for the 10 year storm and 115 cfs for the 100 year storm. At the catch basin located on San Ildefonso at Montano, the capacity of the 48" storm sewer pipe is 143 cfs as shown on Sheet 32 of 35 of the record drawings of SAD 197 (City Drawing No. 1635). Therefore, the proposed 100 year discharge from SAD 219 is within the allowances of the SAD 197 report and within the capacity of the existing 48" storm sewer on Montano.

#### Kachina Street Outfall

SAD 219 Drainage Area E11-3 is proposed to discharge across San Ildefonso east to Kachina Street. Research into the Butterfield Subdivision Drainage Report revealed that an allowance of 32 cfs offsite flows from the west across San Ildefonso was anticipated and taken into account for design purposes. Kachina Street was designed to surface carry these flows. This study resulted in a developed discharge rate of 31.1 cfs for the 100 year storm. The discharge rate onto Kachina Street east of San Ildefonso is within the limits of the design of existing Kachina as established by the Butterfield Subdivision Drainage Report.

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## B. Summary

The proposed public improvements for SAD 219 and the resulting private development thereafter will drain in conformance with and within the limits of previously accepted drainage plans assuming no future density changes or zone changes. The four major outfalls for the Volcano Cliffs Area of SAD 219 are the Mariposa North Channel, the Boca Negra Arroyo, Montano Road (SAD 197), and Kachina Street east of San Ildefonso. The table on the following page summarizes the proposed conditions for each of the basins in this area.

Additionally, drainage area D11-1 (Hokona Place and Tamarisk Place) currently exists in a low area creating a "bowl" effect. In order to properly design the proposed improvements, it was necessary to create a detailed grading plan to properly define the lot and street drainage. It is essential that future builders follow the intent of this grading plan for proper drainage of the development. Many of the lots require significant fill or cut prior to construction of dwelling units. Recommendation is made to require conformance to this grading plan prior to issuance of any building permit including the requirement that Lots 32, 22, and 34, Block 7 grant the designated rear yard drainage easements. See Sheets 8 of 9 and 9 of 9 in the map pockets at the end of this report.

In conformance with the recommendations of the Northwest Mesa Drainage Management Plan, the Boca Negra Arroyo is proposed to be improved as part of Special Assessment District 219.

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