**County of Bernalillo**
State of New Mexico
ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
ADMINISTRATION (505) 768-4000
COMMISSION (505) 768-4217
FAX (505) 768-4329



October 13, 1995

Marvin R. Kortum
1605 Speakman Drive SE
Albuquerque, New Mexico 87123

**RE: ENGINEER'S CERTIFICATION FOR LOTS 15 AND 16, BLOCK 3, TRACT 2, UNIT 1, NORTH ALBUQUERQUE ACRES,(C22/D38)(PWD-94-38), ENGINEER'S STAMP DATED 9/26/95.**

Dear Mr. Kortum:

Due to the fact that there are some issues which must be resolved with Bernalillo County , the Engineer's Certification for the above referenced property is disapproved. Please resolve the issues with respect to Eagle Rock Road prior to resubmitting the plan for Certificate of Occupancy release.

If you should have any questions, please feel free to call me.

Sincerely,

Susan Calongne

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

c: Chris Rivera
Roger Paul
Kurt Browning
File

# County of Bernalillo

State of New Mexico

ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
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December 23, 1994

Marvin R. Kortum
1605 Speakman Drive SE
Albuquerque, New Mexico 87123

RE: LOTS 15 AND 16, BLOCK 3, TRACT 2, UNIT 1, NORTH ALBUQUERQUE ACRES, (C22/D38) (PWD-94-38)

Dear Mr. Kortum:

Based on the additional information provided in the submittal of December 20, 1994, the plan dated 8/12/94 is hereby approved for Building Permit release, if it has not already been released.

The Engineer's Certification must be submitted to and approved by this office prior to final inspection.

If you should have any questions, please feel free to call me.

Sincerely,

Susan M Calongne

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

c: Chris Rivera
Roger Paul
Kurt Browning
File

# County of Bernalillo

State of New Mexico

ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
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COMMISSION (505) 768-4217
FAX (505) 768-4329



October 7, 1994

Marvin R. Kortum
1605 Speakman Drive SE
Albuquerque, NM 87123

RE: DRAINAGE PLAN FOR LOTS 15 & 16, BLOCK 3, TRACT 2 UNIT 1, NORTH ALBUQUERQUE ACRES (C22-D38) (PWD 94-38) RESUBMITTED FOR FINAL PLAT & BUILDING PERMIT APPROVAL, ENGINEER'S STAMP DATED 8/12/94.

Dear Mr. Kortum:

Based on the information provided in the referenced submittal of August 29, 1994, the drainage plan is approved for Building Permit release and Final Plat.

Please be advised that prior to the County Building Department performing final inspection, an Engineer's Certification per the checklist must be submitted and approved by this office.

If you should have any questions, please do not hesitate to call me.

Sincerely,

Susan M Calongne

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

wphyd/8541

c: Chris Rivera, City Hydrology
Roger Paul, Molzen-Corbin, BCPWD
Kurt Browning, AMAFCA
Mathew O'Grady, BCPWD
File

Grading within the County right-of-way will conform to the Bernalillo County Street Standards.

TBM 5970.55
NAIL IN SOUTH SIDE OF POWER POLE

BENCHMARK: Station 2-C21, located about 108 feet north of the Paseo Del Norte right-of-way centerline, and 26 feet south of the Browning Avenue right-of-way centerline. The station is a standard ACS aluminum cap stamped 2-C21, 1985, set on a 2 1/2" aluminum tube.

I certify that I have personally inspected the lots 15 and 16 Block 3, Tract 2, Unit 1, North Albuquerque Acres, site and the surrounding terrain. The representation of the land and the contours are as presented on these drawings and the accompanying text as of February 1994. There is no change from the natural surface within the boundaries of lots 15 and 16, except for some fill placed along the east property line which has spilled from fill being placed on lot 14.

Marvin R Kortum

Topography by Marvin R Kortum

EAGLE ROCK AVE.

LOWELL ST.

1" = 20'

6.5 CFS

100' MIN

FFE 1ST FLOOR
5962.50

RETAINING WALL

$Q_{100}$ = 1100 CFS

100 YEAR EASEMENT

100 YEAR FLOOD PLAIN

FFE
5963.70

135' W

165' W

234'

103'

102'

137'

185'

63'

92'

35'

98'

112'

16

15

14

17

18

19

SITE

EAGLE ROCK AVE.

C-22-Z

LEGAL DESCRIPTION
LOTS 15 AND 16, BLOCK 3, TRACT 2, UNIT 1, NORTH ALBUQUERQUE ACRES, BERNALILLO COUNTY, NEW MEXICO

NOTES

(A) The original natural contour within the right-of-way is to be re-established inorder to direct flows with the designated flood plain.

(B) Fill which has been placed in the designated flood plain is to be removed and the channel restored to original capacity.

(C) Fill material placed on lot 14 away from the designated flood plain will not create additional hazard for lot 15. The minor flows from this portion of lot 14 can be accepted on lot 15.

(D) Runoff from basin B from north of lot 15/16 and north of Eagle Rock Avenue will flow along the ditch along the south side of Eagle Rock Avenue. The entry driveway into lot 15/16 will cross this drainage path. Table B shows the estimated flow from this basin B, and table D shows the flow pattern in the ditch section at the driveway. Flow depth is less than 4" for the 100 year storm. This runoff will cause no hazard to lot 15/16 and is accepted.

(E) Existing drainage channel and flood plain to remain. Landscaping or other treatment to be done in this area shall maintain the flood level flow characteristics similar to those now existing. Small garden patches out of the active channel may be fenced with open meshed fence for the purpose of keeping rodents out of the garden area.

(F) General location of septic tank drain field. Size and depth as required by County of Bernalillo permit.

(G) For detailed house dimensions see architectual drawings.

(H) Quantitative earthwork estimates should be based on more detailed topographic cross sections of the work area.

(I) No solid walls or other structures, berms or swales shall be constructed on the lot property lines which will obstruct cross flow of sheet flow runoff from the adjacent property to the east. Buildings as shown on this plan are permitted. Future buildings, landscaping, or other treatment interior to the lot must provide for continues cross flow of runoff from adjacent property.

(J) All berms and earthwork supporting structures must be compacted to 95% of maximum dry density (Modified Proctor Test).

(K) All cut and fill slopes and constructed drainage swales are to be provided with an erosion control surface by developer/owner. Coverings may be turf, rock, terraced with garden walls or timbers or similar according to the landscape plan. Erosion control is for protection and ease of maintenance. To prevent damage to downstream property, erosion control must be placed within six months of completion of the building, or one year from the issuing of the building permit. Erosion control may be provided by seeding with a native grass mixture as follows:

| Common name | Genus-species | Pounds/Acre |
|---|---|---|
| "Palma" | Oryzopis Hymenoides | 2.0 |
| Indian rice grass | | |
| "Viva" Galleta grass | Hilaria Jamesii | 2.0 |
| "Niner" Sideoates Gramma | Bouteloua curti Pedula | 2.0 |
| "Hatchita" Blue Gramma | Bouteloua Gracilis | 3.0 |
| Sand dropseed (NM Region) | Sporobolus Cryptandrus | 1.0 |
| Four-wing Saltbrush | Atriplel Canesoens' | 1.0 |

The seed will be spread on loose surface soil, raked or worked into the soil about one/half inch, and a straw mulch or a mulch mat placed over the seed to prevent erosion. The seeded area is to be watered daily until a turf is established.

(L) The road in the public right-of-way of Eagle Rock Avenue is presently graded with a natural gravel surface. There is a shallow ditch along the south side of the road. Presently much of the runoff flowing along this ditch flows into the channel which crosses lot 15 and 16. It is proposed that the MLC arroyo flows which flow along this ditch be channelled back into the designated floodplain arroyo. When this is done, the ditch will drain an area of 1.6 acres. Table B shows the estimated peak runoff for this area and the ditch channel flow will be about 6.5 CFS. The driveway entry into lot 15/16 is to be provided with a hard surface such as compacted gravel (or earth materials which are satisfactory to the Bernalillo County Public Works Department) to lessen the surface erosion due to the runoff. The ditch itself is widened and the driveway is graded with a dip section to meet the street surface and the driveway surface on the lot with a shallow slope. There will be no need for a culvert crossing.

(M) The driveway and parking area within the lot may be surfaced with gravel or impervious surface, such as asphalt or portland cement concrete. Runoff estimates are based on an impervious surface.

(N) Landscaped, garden or orchard area.

(O) Additional fill may be placed around the perimeter foundation wall. All wall materials below the finished exterior grade shall be approved for direct contact with the earth. All fill so placed shall have a minimum slope of 5% away from the building.

(P) Footings for foundation walls may be stepped. See architectual drawings for details on footings.

(Q) Undisturbed area.

(R) Unimproved (native earth materials surfaced) access to the pole barn.

## LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| SPOT ELEVATION | x 21.67 | 27.00 |
| UNDISTURBED | x 21.43 | |
| DISTURBED | x 34.18 | |
| CONTOUR LINE 1973 Plan | 5830 | 5829 |
| FINISHED FLOOR ELEVATION | | FFE |
| SWALE | | |
| STRUCTURE | | |
| ROOF DRAIN | | |
| ROOF SLOPE | | |
| DRAIN FIELD | | |
| WELL | | |
| DRAIN BASIN BOUNDARY | | |
| BOTTOM OF FOOTER | | BF |
| TOP OF WALL | | TW |

REVISED BF, SOUTH FLOOD WALLS AUG 12 1994 MRK
CHANNEL AND WALL REVISED APR 26 1994 MRK
ADD 1973 CONTOUR MAR 10 1994 MRK
PRELIMINARY FEB 14 1994 MRK

AUG 29

MARVIN R. KORTUM, P.E.
Civil Engineering
NM PE 6519
1605 Speakman Drive, S.E.
Albuquerque, New Mexico 87123
(505) 299-0774

# GRADING AND DRAINAGE PLAN
LOTS 15 & 16 BLOCK 3, TRACT 2,
UNIT 1, NORTH ALBUQUERQUE ACRES
11900 EAGLE ROCK AVENUE

PROJECT NO. C22/D38 | MAP C-22 | SHEET OF 1 6

PURPOSE:

The purpose of this grading and drainage plan is to obtain approval for a building permit for a residential house on LotS 15 amd 16. The lots are to be consolidated into one residential lot.

SOILS:

Soils on Lots 15 and 16 are identified by reference C as Embudo gravelly fine sandy loam, 0-5% slopes (EmB). The Embudo soil is in drainage ways and depressions. For the soil, runoff is medium and the hazard of water erosion is moderate. The soil is suited for residential buildings and septic drain fields. Soils may be susceptible to consolidation, particularly when wetted, so care must be taken to direct runoff and landscape watering away from building foundations.

DISCUSSION:

A. The proposed construction is to be located on an existing natural ridge adjacent to and northwest of the middle branch of the La Cueva Arroyo (MLC arroyo). The 1.6116 acre site (Lots 15 and 16) is to be developed with a single family residence. The increase in runoff due to the development is shown in Table A. The runoff after development will follow the same flow pattern that presently exists, with 90% of the runoff flowing into the MLC arroyo and 100 year floodplain that crosses the two lots, flowing then along the arroyo. About 5% of the additional runoff is generated by the pole barn placed at the southeast corner of the property, runoff from this area will flow onto the developed lot 18, then entering the MLC arroyo. The remaining 5% of the total runoff will enter the ditch along the north of the property (Eagle Rock Avenue), or the ditch along the west of the property (Lowell Street), and then flow along the ditch until it enters the MLC arroyo. No flows from the development are directed to other drainage basins.

B. The lot is near to the flood plain of a middle branch of the La Cueva Arroyo. The floodway insurance map shows a zone AO for the adjacent floodplain, with a depth of 2 feet.

C. The middle branch channel of La Cueva Arroyo (marked MLC on the drawings) which crosses lots 15 and 16 diagonally northwest to southeast carries direct runoff from the drainage basin C, about 312 acres (32 acres west of Tramway Boulevard, and 280 acres east of Tramway Boulevard, which crosses under Tramway Boulevard by a 72" diameter circular reinforced concrete pipe) along the MLC arroyo. Some of the runoff along the MLC arroyo is diverted at a fork in the MLC arroyo which occurs just south of Modesto Avenue, between Lowell Street and Tennyson Street. At that point, the MLC arroyo has a drainage basin of about 290 acres. The entry into the minor branch channel (BC-1) is presently a 6 feet wide side channel from a meander of the main MLC channel. Based on relative widths, angles to the main channel, and relative depth of the inverts, I would estimate that from 10% to 30% of the total flow could enter the minor channel. Sedimentation and vegetation growth could change the geometry of the fork in the channels over time. The BC-1 channel then continues parallel to Modesto Avenue across developed and undeveloped lots, generally in an established channel about 10 feet wide, with 1-3 feet high steep sides. No possible diversion of the BC-1 channel from its present course could occur which could divert all or part of the flow back to the MLC arroyo prior to its crossing lots 15 and 16. These possible diversions from the basin are not credited with reducing the flow in the existing tributary, but could be considered in the future.

The floodplain and drainage basin E as presently exists shows little change from that shown on the 1973 aerial topography, except for changes in the immediate vicinity of lots 13 and 14, just east of lot15/16.

The estimated flow in this MLC arroyo is estimated by the following method, using the Rational Formula from City of Albuquerque DPM, Section 22.2, January 1993, (reference B), with the 312 acre basin having the following characteristics: (Note all dimensions in feet unless otherwise noted)

Flow path:
L1=400 feet of sheet flow over essentially bare ground, with a slope of (7600-7400)/400=50%, with a K=1 from Table B-1.
L2=2200 feet of upland channel flow, with a slope of (7400-6500)/2200=41%, with a K=2 from Table B-1.
L3=9000 feet of channel flow, with a slope of (6500-6870)/9000=5.9%, with a K=3 from Table B-1.
L=L1+L2+L3=11600, Lca (length to basin centroid)=6500

Runoff coefficient, C:
Land use for typical 1 acre lot plus one-half of street.

| Treatment | | Area (SF) | % | C (Table A-11) [Zone 4] |
|---|---|---|---|---|
| A | Undisturbed.....14060 | 32 | x .39=.1248 | |
| B | Landscaped.....10000 | 23 | x .52=.1196 | |
| C | Compacted earth.....10000 | 23 | x .65=.1495 | |
| D | Paved street (15x165)=2475 | | | |
| | Driveway (20x100)=2000 | | | |
| | House and patio 5000..... 9500 | 22 | x .94=.2068 | |
| | | | | .6007 |

Therefore:
From Table B-2: The length weighted Kn=((400x.033)+(2200x.033)+(9000x.025))/11600=.0267931

From Table B-1 and equation b-3:
K=L/(((s^.5)((L1/K1(s1^.5))+(L2/K2(s2^.5))+(L3/K3(s3^.5)))
where s=((L1xs1)+(L2xs2)+(L3xs3))/L
s=((400x.5)+(2200x.41)+(9000x.059))/11600=.1407759
and K=(11600/(((.1407759^.5)((400/1(.05)^.5)+(2200//2(.41)^.5)+(9000/3(.059)^.5)))=(30916.75)/(14634.39)=2.1126

From equation b-6: Time of concentration,
Tc=((12000-L)/(72000xKxs^.5))+((L-4000)xKnx(Lca/L)^.33/(552.2 x s^0.165))
=(((12000-11600)/(72000x2.1126x(.1407759)^.5))+(((11600-4000)x .0267931x(6500/11600)^.33)/(552.2x(.1407759)^.165)))=.0070088 +.4577142 =.464723 hr.=27.88 min.

From equation a-12: Intensity,
I=(.726x(log10(24.6xTc)))x(1/Tc)xP60
=(.726(log10(24.6x.464723)))x(1/.464723)x2.23=3.6862 (P60=2.23,Tbl.A-2)

Which gives a Qp=CIA=.6007x4.501x115=690.9 CFS

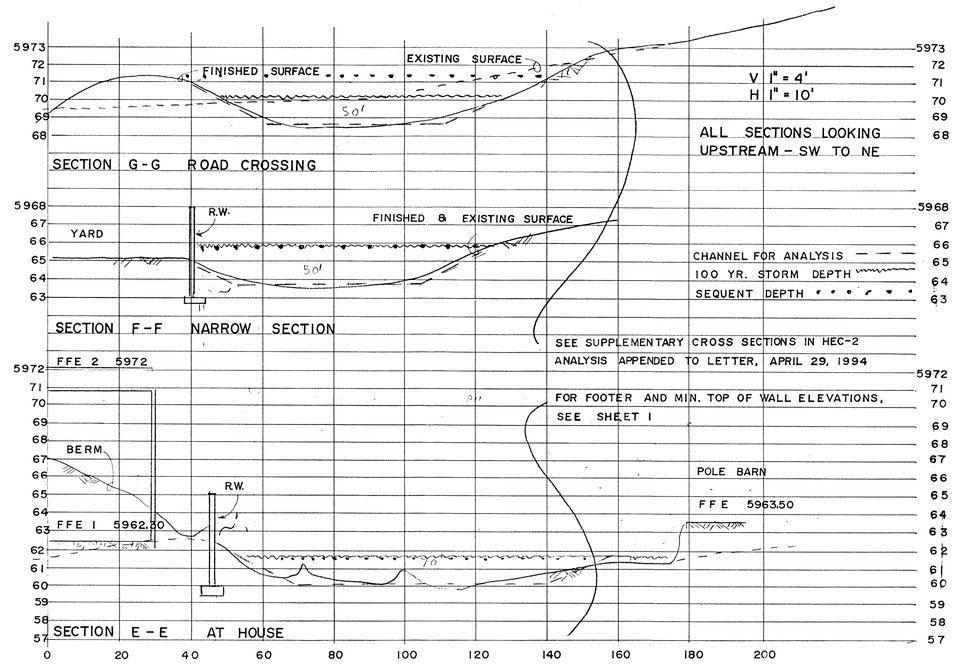
Reference B provides for an additional estimate procedure for slopes steeper than 4%, for natural channels that cannot sustain supercritical flows. The MLC arroyo is a reasonable candidate for consideration under these conditions. The modified estimate is based on a slope adjustment that decreases the effective velocity, and increases the effective time of concentration, providing a larger estimate of peak flow for the basin. The procedure is as follows (paragraph B-4, reference B):

Determine adjusted slope, s'=0.0562467+(0.063627 x S)-(0.18197) x e^(-62.375xs), (equation b-10).
Therefore, s'=0.0562467+(0.063627 x.1407759) -(0.18197) x e^(-62.375 x .1407759) = .052467+.0089571=.000028=.0651758.

Next, determine conveyance factor adjustments,
K'=.302 x s'^(-0.5) x Qp^(0.18), (equation b-11)
K"=.207 x s'^(-0.5) x Qp^(0.18), (equation b-12)
initially, using Qp=690.9 CFS, K'=3.8366879, and K"=2.6299518, and using the criteria:

if K>K', then use K' for K
if K'>/=K>/=K", then use K=K
if K<K", then use K=K"
From above estimate, where K original is 2.1126, K is less that K" therefore use K"=2.78585 to re-compute Qp,
modified Tc=..0056301+.4577142=.4633443, and,
modified I =3.6927, and
modified Qp=.6007 X 3.6926 x 312 = 692.1 CFS, which is 1.2 CFS higher than the shallow slope estimate, and since the 1.2 CFS is less than 10% greater than the original 690.9 CFS, the modified Qp=692.1 may be used as an estimate for the basin.

Mr. Anderson, AMAFCA, states that current estimates of peak flow in the MLC arroyo near lot 15/16 is 1100 CFS. This larger number of the estimated peak flow within the middle La Cueva arroyo as it crosses lot 15/16 (1100 CFS) will be used for assessments in this report. The smaller number of 700 CFS is also shown on the tables.




D. Reference F states that an erosion limit of 6 feet per 100 CFS, or an alternative erosion protection be provided. The 66 feet of erosion limit would greatly limit the buildable portion of lot 15/16. Accordingly, the structure is designed to be flood proofed, as described below:

1. A reinforced concrete masonry unit wall is proposed for construction parallel to the floodplain inorder to limit the erosion. The location and construction details of the wall are shown on the drawings.

2. The upstream (north and east) sides of the house are protected with a berm which is 40 feet wide at the base, and 3 feet high from the natural surface, 5 feet higher than the finished floor of the lower floor, and 7 feet above the existing invert of the existing MLC arroyo.

3. The walls of the lower story of the house are to be constructed of reinforced portland cement concrete.

4. The lower floor is not designed for day to day living quarters.

E. The above discussion is based on the 100 year flood plain existing generally as shown on panel 11 (References F and G). The flow pattern as exists varies from the flow shown on the referenced maps F and G because of changed conditions as outlined below:

1. The flood plain across the adjacent lot to the east (lot 14, see sheet 1 and 3 of ) has been filled with earth materials and broken concrete. This fill material has caused the MLC arroyo to be diverted from the designated flood plain.

2. The grading on the road surface of Eagle Rock Avenue has lowered the surface, allowing the flow from the MLC arroyo to be diverted directly west along the Eagle Rock Avenue right-of-way, flowing partially to the Lowell Street right-of-way, and partially crossing lot 15/16 before entering the Lowell Street right-of-way.

F. The aerial photo enlargements shown on sheet 3 of 4 provide evidence of the diversions discussed in paragraph E above. Specific points are outlined below:

1. The 1973 photo shows the active channels of the MLC arroyo, which cross lot 14 along the north end of lot 14, from about 40 feet from the north property line on the east side, to about 110 feet along the west edge. This channel also crosses the northwest corner of lot 13.

2. The 1973 photo shows the active channels of the MLC arroyo crossing the Eagle Rock Avenue right-of-way from northeast toward southwest, with no flow extending west along the Eagle Rock right-of-way.

3. The 1973 photo shows a very minor arroyo crossing at the mid point of the north property line of lot 15. The drainage basin for this minor arroyo appears to include some overflow from the MLC arroyo due to an aluvial fan which is shown north of lot 22, north of Eagle Rock Avenue. The 1973 aerial photo shows this minor arroyo as a 2' deep channel.

4. The question of fitting the lot lines to the 1973 and the 1980 aerial photo is of considerable importance. The most obvious registration point on the 1973 photo is the bladed road surfaces. The lot lines are fitted to 1973 photo using an overlay from the 1992 photo, and the 1980 photo. The 1992 photo, taken when the sun is almost directly south, clearly shows property lines. The lot lines and right-of-way lines are fitted from the lot line and power pole evidence shown on the 1992 photo. The 1980 photo shows two lots with building activity, lot 13, south of Eagle Rock Avenue, and lot 30, north of Eagle Rock Avenue, and west of Lowell Street. These two sites provide reasonable registration for an overlay of the lot lines onto the 1980 photo, as verified by building placement on the 1992 photo. The evidence suggests that the bladed road surfaces were cut close to the east side of Lowell Street, and the south side of the Eagle Rock Avenue rights-of-way. Field inspection, and the topography shown on the 1994 spirit level survey shown on sheet 1, show that the current road work is placed on the east side of Lowell Street, and the south side of Eagle Rock Avenue, such that vegetation lines on the photos are almost the same as the lot lines on the east side of Lowell Street and the south side of Eagle Rock Avenue. I estimate that the lot lines as shown on the 1"=100" enlargements are accurate to within 2 to 3 feet on the 1992 photo, and within 5 feet on the 1973 and 1980 photos.

5. The 1980 photo is based on aerial topography taken on October 8, 1980, and fitted with the contour lines from the 1973 photos. There is about a 15 feet east to west, and 5 feet north to south shift in the contour lines, as measured from the bladed road surfaces. I have not attempted to determine which is most correct.

6. The 1980 photo shows no evidence of additional water flowing west on the Eagle Rock Avenue right-of-way from the MLC arroyo crossing of Eagle Rock Avenue, and then crossing the lot 15 and 16 properties.

7. Fine detail within the flood plain is obliterated on the FLOODWAY and FIRM maps due to the method used to indicate the flood boundaries.

8. The actual contour line changes on lot 13 due to construction of the house on that lot do not appear to have been accounted for in placing the contours, and hence the flood boundaries, on the 1980 map. The property as it appears today shows a slope from the property line, up to the house finished floor elevation of about 5985, and the contours show about 3 feet less.

9. The 1992 photo shows a significant shift in the active channel of the MLC arroyo (as shown by the light color of the sand/gravel) as it enters near the northeast corner of lot 15, the channel entering at almost a right angle from the right-of-way, and only 30 feet east of the corner. The light color that appears to follow the flow line across the north end of lot 14 is slightly darker than the sand/gravel, and field observations confirm that the material is recently placed loam fill, with very little vegetation. The fill shows broken concrete when checked in the field, and is not indicative of natural sedimentation. My conclusion is that fill was placed on lot 14 at some time between 1980 and 1992. I have found no records of an approval for this apparent work within the flood plain.

10. The 1992 photo shows a significant change in the flow pattern across the northwest corner of lot 15 and across the mid section of lot 16, as shown by the wide strip of light color of the sand/gravel surface. There also appears to be considerable sedimentation along the arroyo that shows on the 1973 and 1980 photos in this area, as confirmed by the spirit level survey in January and February, 1994, and shown on sheet 1. My conclusion is that the street surface along Eagle Rock Avenue was regraded between 1980 and 1992, permiting the flow from the MLC arroyo to flow west on Eagle Rock Avenue, rather than across the street from northeast to south west. An alternative conclusion would be that the surface was first eroded due to normal flow, and that the current grading was then the result of routine maintenance.

G. Flow depth within the MLC arroyo and flood plain is estimated as shown on Tables E, F and G. Froude numbers and an estimate of the sequent depths are also shown. For the channel crossing within the flood plain on lot15/16, the Mannings "n" is considered .044 for low flows, which would follow the existing channels which are relatively free of vegetation. As the flow quantities increase, the Mannings "n" is increased to .060 to account for the heavy brush that is within the flood plain. The Froude numbers for the sections within lot 15/16 are near 1.0, which indicates subcritical flow, and correspondingly low sequent depths. The crossing of the street surface does indicate a supercritical flow, which could produce the hydraulic jump as it enters the brushy channel. Some form of energy dissipation my be required within the Eagle Rock right-of-way. It is noted that a similar crossing of the MLC arroyo at Modesto Avenue, which is paved with an asphalt concrete surface, does not have such erosion protection. Perhaps the county policy is to accept minor erosion, with corrections being made as a part of normal maintenance.

RECOMMENDATIONS:

A. The fill material that has been placed within the flood plain on lot 14 should be removed and the flood plain restored to the condition as shown on the 1980 floodway map.

B. The amount of revised grading on lot 13 is difficult to determine, particularly so since the house apparently had been built on that site prior to the floodway mapping being placed on the photo. Changes on lot 13 are not necessary for lot 15/16 work.

C. The road surface and dip section on Eagle Rock Avenue should be changed to that as shown on the drawings, inorder that the flow be established for the MLC arroyo within the designated flood plain.

CONCLUSIONS:

A. The proposed construction is not within a designated 100 year floodplain.

B. Construction as proposed will not increase the hazard from flooding to downstream properties.

C. The proposed grading and consruction will protect the property from reasonable changes in the flood plain as designated on the current floodway map.

D. The proposed grading and construction will protect the property from reasonable changes in the flood plain which may occur due to changes in the grading along the middle branch of the La Cueva Arroyo, or other changes due to natural arroyo meander.

E. The proposed grading and construction will protect the property from the currently existing flood plain (as created by diversions on Eagle Rock Avenue and lot 14) and reasonable changes which may occur due to other changes in the grading along the middle branch of the La Cueva Arroyo, or other changes due to natural arroyo meander.

G. This Grading and Drainage Plan does not propose changes to the FLOODWAY or FIRM maps.

REFERENCES:


A. Bernalillo County Ordinance No. 90-6

B. Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque...Bernalillo County...AMAFCA, January 1993.

C. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, USDA-SCS.

D. Review and Refinement of the Northeast Heights Drainage Management Plan, for North Arroyo De Domingo Baca, La Cueva Arroyo, El Caminno Arroyo, and North El Camino Arroyo, for AMAFCA, 1980, by Espey, Huston and Assoc.

E. City of Albuquerque INTER-OFFICE CORRESPONDENCE, REF. NO.: WPHYD 0157, March 4, 1991, to Bob Fogelsong, Bernalillo County Public Works; Clifford E. Anderson, AMAFCA; Ted Aguirre, City Hydrologist and Bernie Montoya, Engineering Assistant; from Gilbert Aldaz, Floodplain Administator, SUBJECT: BUILDING PERMIT REQUEST ADJACENT TO 100-YEAR FLOODPLAINS (NATURAL ARROYOS).

F. Flood Insurance Rate Map (FIRM), City of Albuquerque, Bernalillo County, New Mexico, Federal Emergency Management Agency (FEMA), Panel 11 of 50, effective date, October 14, 1983, with revisions to February 12, 1986. Date of aerial photography October 8, 1980, scale 1"=500'.

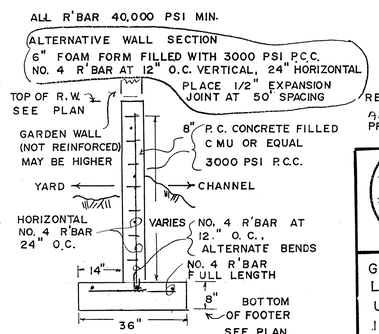
G. Flood Boundary and Floodway Map (FLOODWAY), City of Albuquerque, Bernalillo County, New Mexico, Federal Emergency Management Agency (FEMA), Panel 11 of 50, effective date, September 13, 1983. Date of aerial photography October 8, 1980, scale 1"=500'.

H. Flood Boundary and Floodway Map (FLOODWAY), City of Albuquerque, Bernalillo County, New Mexico, Federal Emergency Management Agency (FEMA), Panel 5 of 50, effective date, September 13, 1983. Date of aerial photography October 8, 1980, scale 1"=500'.

I. Topographic Orthophoto Map, Albuquerque Metropolitan Arroyo Flood Control Authority, Bernalillo County, New Mexico, Sheet C-22, Aerial Photography dated May 15, 1973. Scale 1'=200'.

J. Photorectification, City of Albuquerque, NM, Date of Photography March 25, 1992, sheet B22, B23, C22 and C23, scale 1"=500'.

K. Open-channel Hydraulics, Richard H. French, McGraw-Hill Book Company, 1985.


RETAINING WALL DETAIL

REVISE RETAINING WALL — APR 26, 1994 MRK
ADD CUT OFF WALL — MARCH 15 1994 MRK
PRELIMINARY — FEB 14 1994 MRK

AUG 29 19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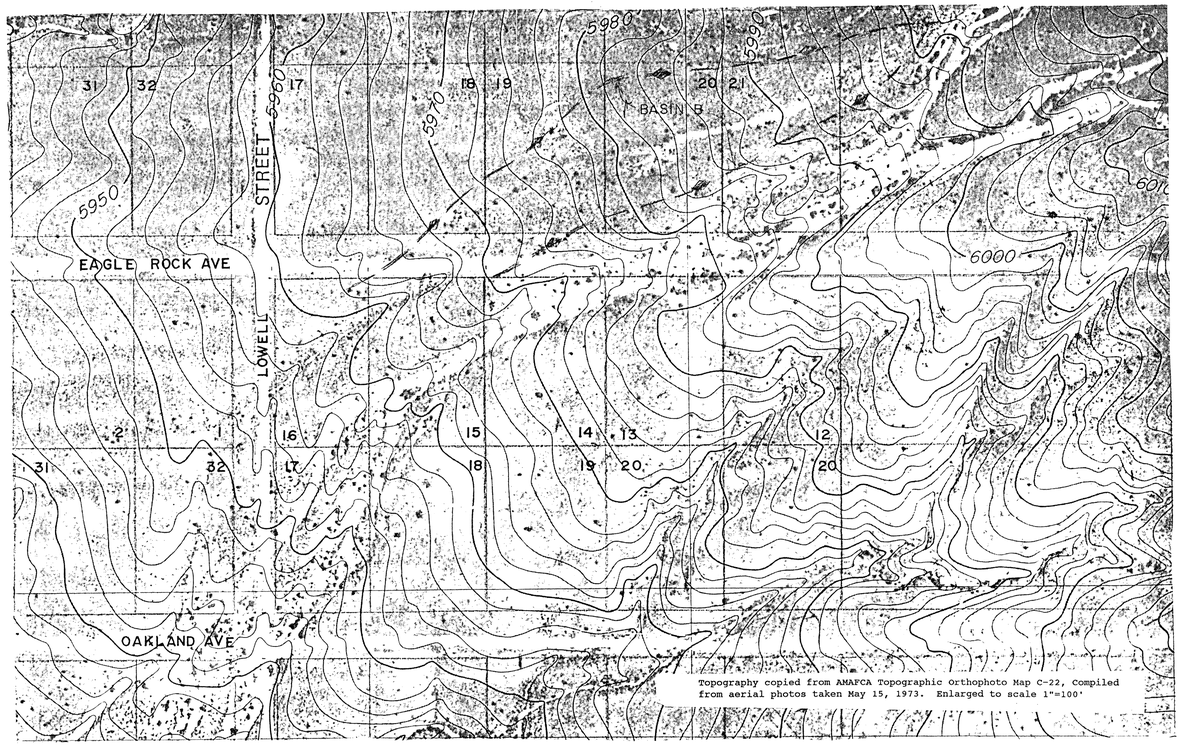
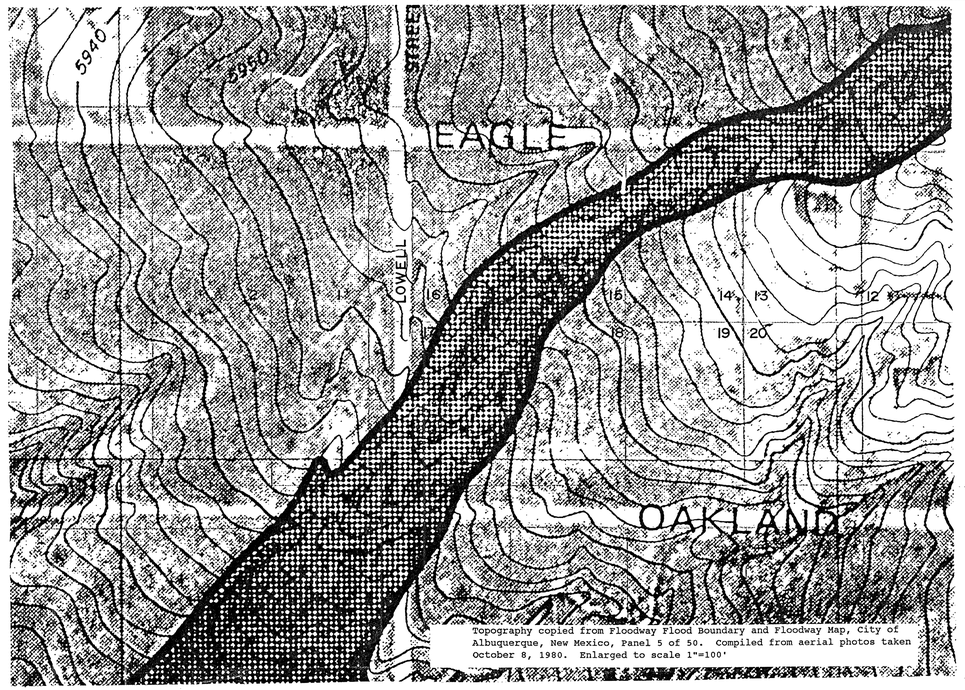
GRADING AND DRAINAGE PLAN
LOTS 15 & 16 BLOCK 3, TRACT 2,
UNIT 1, NORTH ALBUQUERQUE ACRES
11900 EAGLE ROCK AVENUE

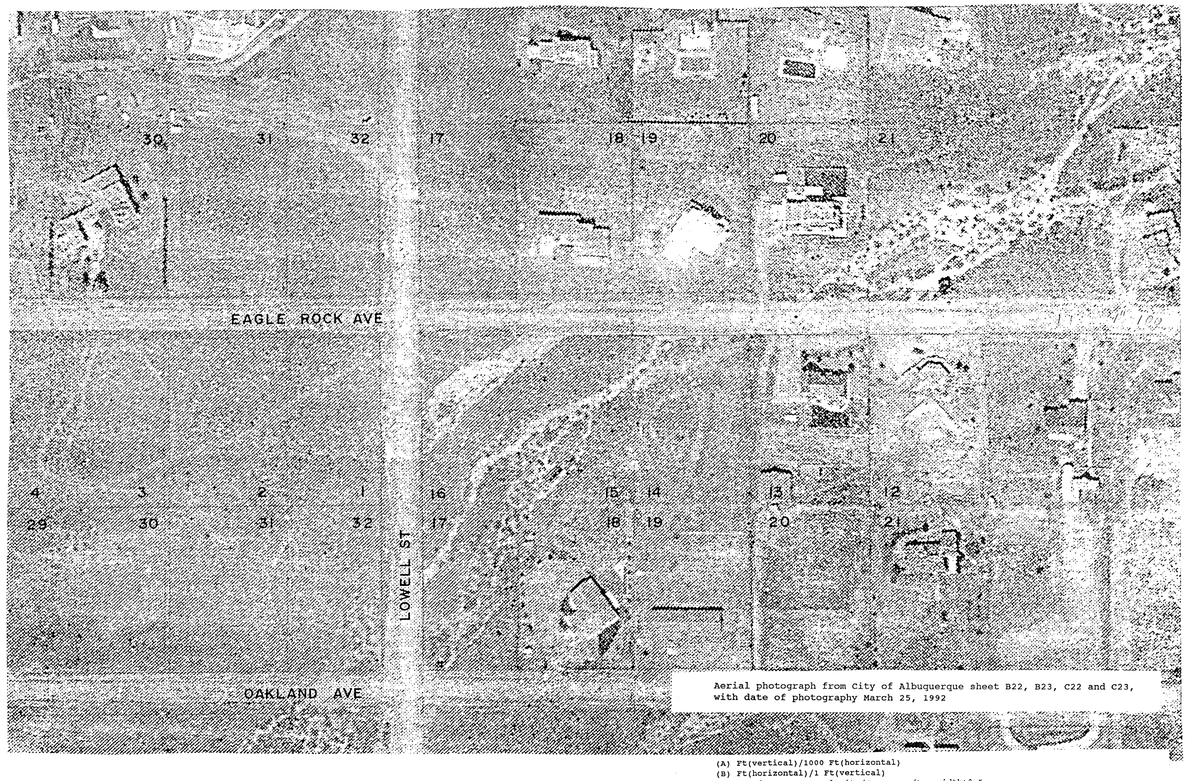
| PROJECT NO. | MAP | SHEET OF |
|---|---|---|
| C22/D38 | C-22 | 2 6 |




Topography copied from AMAFCA Topographic Orthophoto Map C-22, Compiled from aerial photos taken May 15, 1973. Enlarged to scale 1"=100'




Topography copied from Floodway Flood Boundary and Floodway Map, City of Albuquerque, New Mexico, Panel 5 of 50. Compiled from aerial photos taken October 8, 1980. Enlarged to scale 1"=100'




Aerial photograph from City of Albuquerque sheet B22, B23, C22 and C23, with date of photography March 25, 1992

February 14,1994

TABLE D

Ditch capacities along EAGLE ROCK AVENUE for selected channel sections.
Q=Area x Velocity; Velocity=1.486/n x (Rh)^.6667 x (s)^.5

| Mannings n | Ditch Slope (A) | Side slope (B) | Bottom width Ft | Depth Ft | Area SF | Wetted Perimeter Ft | Hydraulic Radius Ft | Velocity FPS | Capacity CFS | Froude # V/(gL)^.5 (C) | Sequent depth Rectangular (D) Ft | Sloped (E) Ft | Trapezoid (F) Ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOUTH DITCH SECTION AT D-D, ON EAGLE ROCK AVE., AT WEST DRIVEWAY ENTRY TO LOT 15/16 | | | | | | | | | | | | | |
| 1 | 0.025 | 36.000 | 10 | 4.0 | 0.20 | 1.2 | 8.020 | 0.150 | 3.178 | 3.814 | 1.45 | 0.32 | 0.38 | 0.27 |
| 2 | 0.025 | 36.000 | 10 | 4.0 | 0.25 | 1.6 | 9.025 | 0.180 | 3.596 | 5.843 | 1.49 | 0.42 | 0.49 | 0.36 |
| 3 | 0.025 | 36.000 | 10 | 4.0 | 0.30 | 2.1 | 10.030 | 0.209 | 3.976 | 8.350 | 1.53 | 0.52 | 0.60 | 0.44 |
| 4 | 0.025 | 36.000 | 10 | 4.0 | 1.00 | 14.0 | 24.100 | 0.581 | 7.852 | 109.924 | 1.81 | 2.11 | 2.46 | 1.79 |
| REQUIRED Q100=6.5 CFS | | | | | | | | | | | | | | |

TABLE E

Arroyo capacities along the middle branch of La Cueva arroyo (MLC) for selected channel sections.
Q=Area x Velocity; Velocity=1.486/n x (Rh)^.6667 x (s)^.5

| Mannings n | Ditch Slope (A) | Side slope (B) | Bottom width Ft | Depth Ft | Area SF | Wetted Perimeter Ft | Hydraulic Radius Ft | Velocity FPS | Capacity CFS | Froude # V/(gL)^.5 (C) | Sequent depth Rectangular (D) Ft | Sloped (E) Ft | Trapezoid (F) Ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARROYO SECTION AT E-E, AS THE MLC CROSSES LOT 15/16 | | | | | | | | | | | | | |
| | 0.044 | 45.000 | 10 | 70.0 | 0.20 | 14.4 | 74.020 | 0.195 | 2.405 | 34.635 | 0.96 | 0.19 | 0.23 | 0.17 |
| | 0.044 | 45.000 | 10 | 70.0 | 0.50 | 37.5 | 80.050 | 0.468 | 4.321 | 162.047 | 1.11 | 0.58 | 0.71 | 0.52 |
| | 0.044 | 45.000 | 10 | 70.0 | 1.00 | 80.0 | 90.100 | 0.888 | 6.618 | 529.466 | 1.24 | 1.32 | 1.62 | 1.18 |
| | 0.044 | 45.000 | 10 | 70.0 | 1.20 | 98.4 | 94.120 | 1.045 | 7.380 | 726.180 | 1.27 | 1.64 | 2.00 | 1.46 |
| | 0.044 | 45.000 | 10 | 70.0 | 1.50 | 127.5 | 100.150 | 1.273 | 8.416 | 1072.984 | 1.31 | 2.14 | 2.61 | 1.90 |
| | 0.044 | 45.000 | 10 | 70.0 | 1.55 | 132.5 | 101.155 | 1.310 | 8.578 | 1136.795 | 1.32 | 2.22 | 2.71 | 1.98 |
| | 0.044 | 45.000 | 10 | 70.0 | 1.87 | 165.9 | 107.587 | 1.542 | 9.561 | 1585.923 | 1.36 | 2.77 | 3.38 | 2.47 |
| | 0.044 | 45.000 | 10 | 70.0 | 2.00 | 180.0 | 110.200 | 1.633 | 9.937 | 1788.603 | 1.37 | 3.00 | 3.66 | 2.67 |
| | 0.060 | 45.000 | 10 | 70.0 | 1.00 | 80.0 | 90.100 | 0.888 | 4.853 | 388.275 | 0.91 | 0.88 | 1.09 | 0.79 |
| | 0.060 | 45.000 | 10 | 70.0 | 1.25 | 103.1 | 95.125 | 1.084 | 5.544 | 571.767 | 0.94 | 1.15 | 1.42 | 1.04 |
| | 0.060 | 45.000 | 10 | 70.0 | 1.50 | 127.5 | 100.150 | 1.273 | 6.171 | 786.855 | 0.96 | 1.43 | 1.76 | 1.29 |
| | 0.060 | 45.000 | 10 | 70.0 | 1.75 | 153.1 | 105.175 | 1.456 | 6.749 | 1033.433 | 0.98 | 1.71 | 2.12 | 1.55 |
| | 0.060 | 45.000 | 10 | 70.0 | 1.85 | 163.7 | 107.185 | 1.528 | 6.968 | 1140.907 | 0.99 | 1.83 | 2.26 | 1.65 |
| | 0.060 | 45.000 | 10 | 70.0 | 2.00 | 180.0 | 110.200 | 1.633 | 7.287 | 1311.642 | 1.00 | 2.01 | 2.48 | 1.81 |
| REQUIRED Q100=1100 CFS | | | | | | | | | | | | | | |

TABLE F

Arroyo capacities along the middle branch of La Cueva arroyo (MLC) for selected channel sections.
Q=Area x Velocity; Velocity=1.486/n x (Rh)^.6667 x (s)^.5

| Mannings n | Ditch Slope (A) | Side slope (B) | Bottom width Ft | Depth Ft | Area SF | Wetted Perimeter Ft | Hydraulic Radius Ft | Velocity FPS | Capacity CFS | Froude # V/(gL)^.5 (C) | Sequent depth Rectangular (D) Ft | Sloped (E) Ft | Trapezoid (F) Ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARROYO SECTION AT F-F, AS THE MLC ENTERS LOT 15/16 | | | | | | | | | | | | | |
| | 0.044 | 45.000 | 10 | 50.0 | 0.20 | 10.4 | 54.020 | 0.193 | 2.389 | 24.841 | 0.96 | 0.19 | 0.23 | 0.17 |
| | 0.044 | 45.000 | 10 | 50.0 | 0.50 | 27.5 | 60.050 | 0.458 | 4.256 | 117.051 | 1.11 | 0.57 | 0.70 | 0.51 |
| | 0.044 | 45.000 | 10 | 50.0 | 1.00 | 60.0 | 70.100 | 0.856 | 6.458 | 387.506 | 1.23 | 1.31 | 1.60 | 1.17 |
| | 0.044 | 45.000 | 10 | 50.0 | 1.25 | 78.1 | 75.125 | 1.040 | 7.354 | 574.515 | 1.27 | 1.71 | 2.08 | 1.52 |
| | 0.044 | 45.000 | 10 | 50.0 | 1.50 | 97.5 | 80.150 | 1.216 | 8.164 | 796.004 | 1.30 | 2.11 | 2.58 | 1.89 |
| | 0.044 | 45.000 | 10 | 50.0 | 1.75 | 118.1 | 85.175 | 1.387 | 8.910 | 1052.463 | 1.33 | 2.54 | 3.09 | 2.26 |
| | 0.044 | 45.000 | 10 | 50.0 | 1.80 | 122.4 | 86.180 | 1.420 | 9.052 | 1108.010 | 1.34 | 2.62 | 3.20 | 2.34 |
| | 0.044 | 45.000 | 10 | 50.0 | 2.00 | 140.0 | 90.200 | 1.552 | 9.604 | 1344.588 | 1.36 | 2.97 | 3.62 | 2.64 |
| | 0.060 | 45.000 | 10 | 50.0 | 1.00 | 60.0 | 70.100 | 0.856 | 4.736 | 284.171 | 0.90 | 0.87 | 1.08 | 0.79 |
| | 0.060 | 45.000 | 10 | 50.0 | 1.25 | 78.1 | 75.125 | 1.040 | 5.393 | 421.311 | 0.93 | 1.14 | 1.41 | 1.03 |
| | 0.060 | 45.000 | 10 | 50.0 | 1.50 | 97.5 | 80.150 | 1.216 | 5.987 | 583.736 | 0.96 | 1.41 | 1.75 | 1.28 |
| | 0.060 | 45.000 | 10 | 50.0 | 1.75 | 118.1 | 85.175 | 1.387 | 6.534 | 771.806 | 0.98 | 1.70 | 2.10 | 1.53 |
| | 0.060 | 45.000 | 10 | 50.0 | 2.00 | 140.0 | 90.200 | 1.552 | 7.043 | 986.032 | 1.00 | 1.99 | 2.45 | 1.79 |
| | 0.060 | 45.000 | 10 | 50.0 | 2.15 | 153.7 | 93.214 | 1.649 | 7.334 | 1127.370 | 1.01 | 2.16 | 2.67 | 1.95 |
| REQUIRED Q100=1100 CFS | | | | | | | | | | | | | | |

TABLE G

Arroyo capacities along the middle branch of La Cueva arroyo (MLC) for selected channel sections.
Q=Area x Velocity; Velocity=1.486/n x (Rh)^.6667 x (s)^.5

| Mannings n | Ditch Slope (A) | Side slope (B) | Bottom width Ft | Depth Ft | Area SF | Wetted Perimeter Ft | Hydraulic Radius Ft | Velocity FPS | Capacity CFS | Froude # V/(gL)^.5 (C) | Sequent depth Rectangular (D) Ft | Sloped (E) Ft | Trapezoid (F) Ft |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARROYO SECTION AT G-G, AS THE MLC CROSSES EAGLE ROCK AVENUE | | | | | | | | | | | | | |
| | 0.025 | 30.000 | 10 | 50.0 | 0.50 | 27.5 | 60.050 | 0.458 | 6.117 | 168.206 | 1.59 | 0.90 | 1.03 | 0.75 |
| | 0.025 | 30.000 | 10 | 50.0 | 1.00 | 60.0 | 70.100 | 0.856 | 9.281 | 556.859 | 1.77 | 2.05 | 2.33 | 1.70 |
| | 0.025 | 30.000 | 10 | 50.0 | 1.25 | 78.1 | 75.125 | 1.040 | 10.568 | 825.597 | 1.82 | 2.66 | 3.02 | 2.20 |
| | 0.025 | 30.000 | 10 | 50.0 | 1.50 | 97.5 | 80.150 | 1.216 | 11.732 | 1143.885 | 1.87 | 3.29 | 3.73 | 2.73 |
| | 0.025 | 30.000 | 10 | 50.0 | 1.75 | 118.1 | 85.175 | 1.387 | 12.804 | 1512.425 | 1.91 | 3.94 | 4.47 | 3.26 |
| REQUIRED Q100=1100 CFS | | | | | | | | | | | | | | |

(A) Ft(vertical)/1000 Ft(horizontal)
(B) Ft(horizontal)/1 Ft(vertical)
(C) Froude No. (Fn)=velocity/(g x area/top width)^.5
(D) Sequent depth for rectangular level channel, y2=(y1/2)x(((1+8 x Fn^2)^.5) -1)
(E) Sequent depth for sloping rectangular channel
y2=((y1/2)/cos slope angle) x (((1+8(((10^(.027 x slope angle))^2) x Fn^2)^.5-1)
(F) Correction factor for trapezoidal channel, figure 3.4
(G) Reference: Richard H French, Open Channel Hydraulics, 1985

AUG 29

NO CHANGE TO DRAWING
SEE ALSO HEC-2 ANALYSIS APRIL 29,1994 MRK
PRELIMINARY FEB 14 1994 MRK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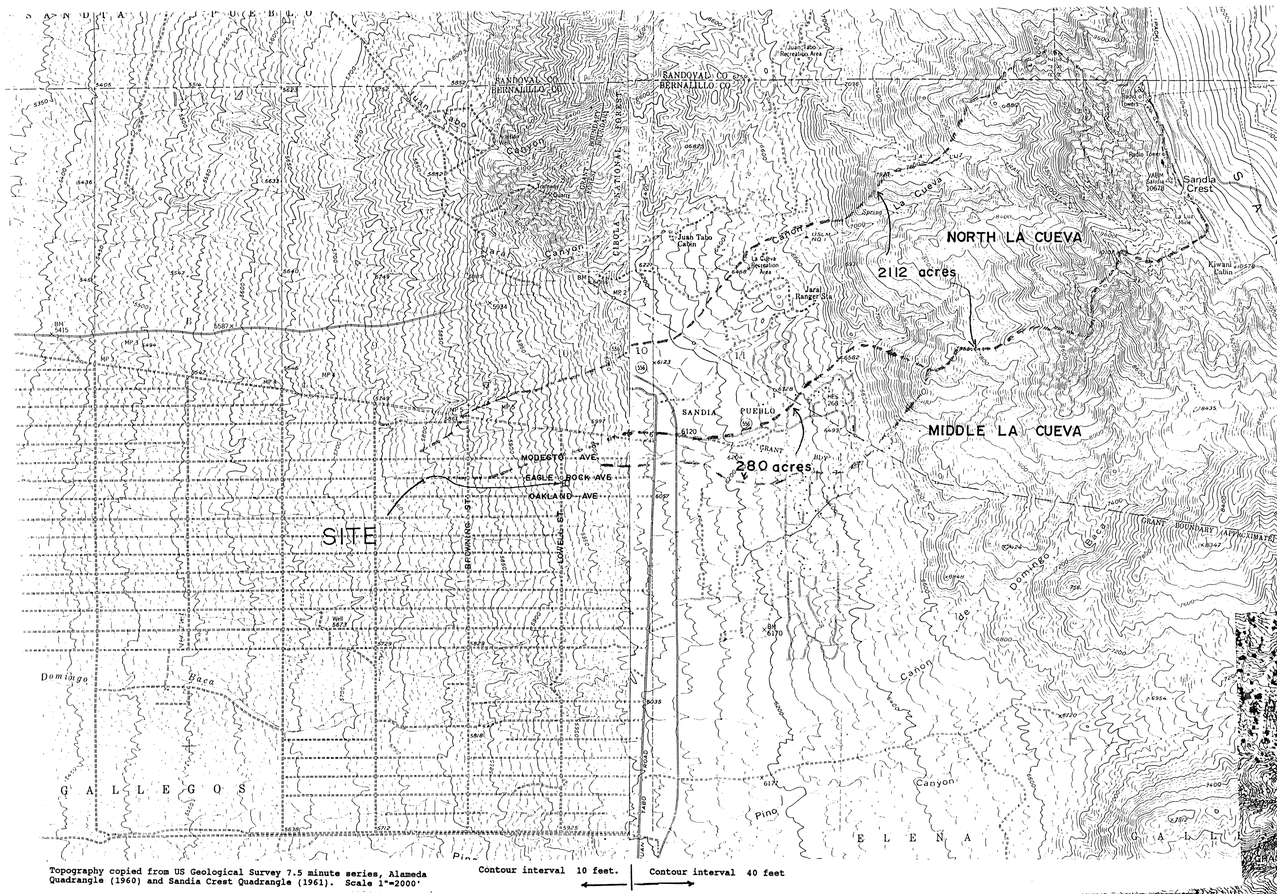
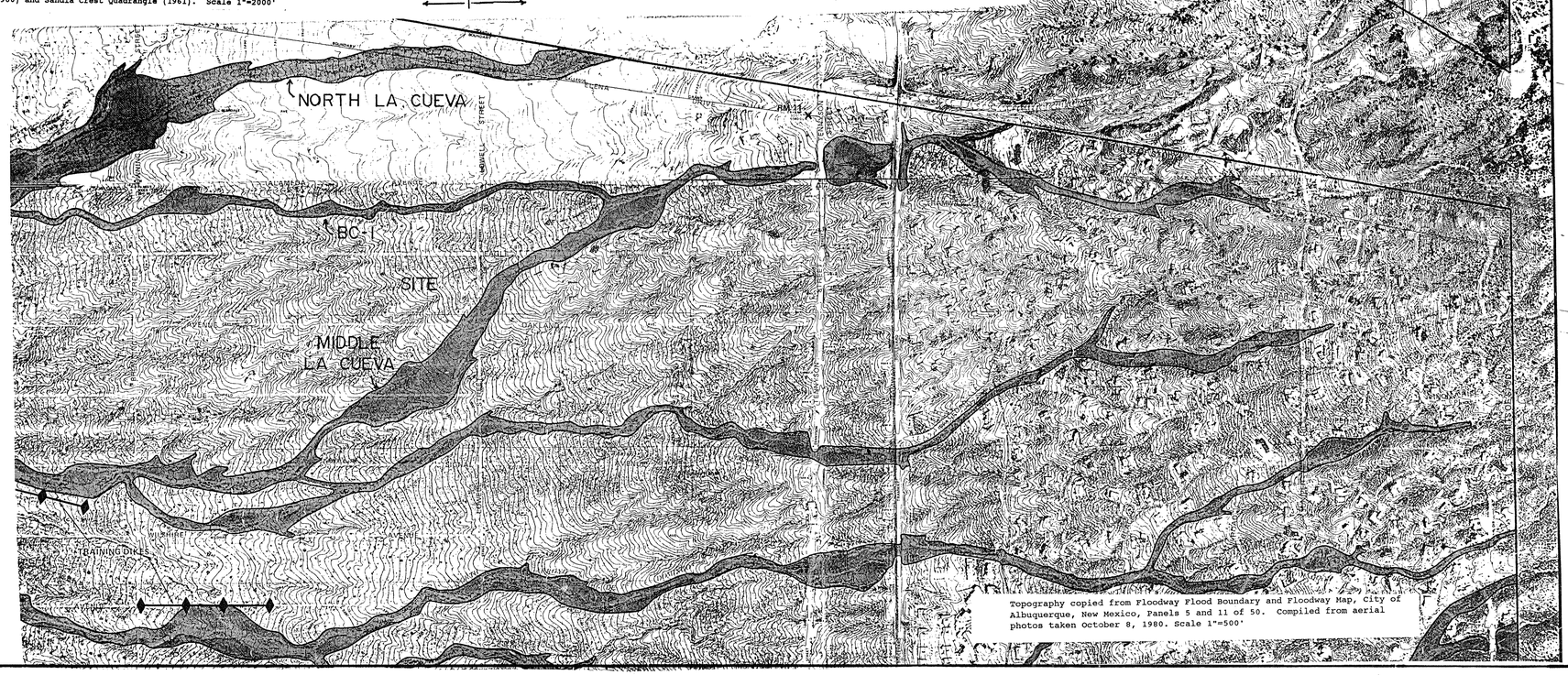
GRADING AND DRAINAGE PLAN
LOTS 15 & 16 BLOCK 3, TRACT 2,
UNIT 1, NORTH ALBUQUERQUE ACRES
11900 EAGLE ROCK AVENUE

| PROJECT NO. | MAP | SHEET OF |
|---|---|---|
| C22/D38 | C-22 | 3 6 |




Topography copied from US Geological Survey 7.5 minute series, Alameda Quadrangle (1960) and Sandia Crest Quadrangle (1961). Scale 1"=2000'

Contour interval 10 feet. | Contour interval 40 feet




Topography copied from Floodway Flood Boundary and Floodway Map, City of Albuquerque, New Mexico, Panels 5 and 11 of 50. Compiled from aerial photos taken October 8, 1980. Scale 1"=500'

February 10, 1994
RUNOFF FOR LOTs 15 and 16, BLOCK 3, TRACT 2, UNIT 1, ALBUQUREQUE ACRES

TABLE A
Runoff Estimate: For On-site Basin of 1.612 acres.

| Land use | Runoff Factors Zone 4 Peak CFS/acre | Total inches | CURRENT USE Area SF | Percent | Peak Runoff CFS | Total Runoff CF | PROPOSED USE Area SF | Percent | Peak Runoff CFS | Total Runoff CF |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 2.20 | 0.80 | 70200 | 1.000 | 3.5 | 4680.0 | 44800 | 0.508 | 2.3 | 2986.7 |
| B | 2.92 | 1.08 | 0 | 0.000 | 0.0 | 0.0 | 10000 | 0.113 | 0.7 | 900.0 |
| C | 3.73 | 1.46 | 0 | 0.000 | 0.0 | 0.0 | 20000 | 0.227 | 1.7 | 2433.3 |
| D | 5.25 | 2.64 | 0 | 0.000 | 0.0 | 0.0 | 13400 | 0.152 | 1.6 | 2948.0 |
| TOTALS | | | 70200 | 1.000 | 3.5 | 4680.0 | 88200 | 1.000 | 6.3 | 9268.0 |
| | | | 1.612 acre | | | | 2.025 acre | | | |

TABLE B
Runoff Estimate: For Off-site Basin of 1.607 acres.

| Land use | Runoff Factors Zone 4 Peak CFS/acre | Total inches | CURRENT USE Area SF | Percent | Peak Runoff CFS | Total Runoff CF | PROPOSED USE Area SF | Percent | Peak Runoff CFS | Total Runoff CF |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 2.20 | 0.80 | 70000 | 1.000 | 3.5 | 4666.7 | 10000 | 0.143 | 0.5 | 666.7 |
| B | 2.92 | 1.08 | 0 | 0.000 | 0.0 | 0.0 | 10000 | 0.143 | 0.7 | 900.0 |
| C | 3.73 | 1.46 | 0 | 0.000 | 0.0 | 0.0 | 20000 | 0.286 | 1.7 | 2433.3 |
| D | 5.25 | 2.64 | 0 | 0.000 | 0.0 | 0.0 | 30000 | 0.429 | 3.6 | 6600.0 |
| TOTALS | | | 70000 | 1.000 | 3.5 | 4666.7 | 70000 | 1.000 | 6.5 | 10600.0 |
| | | | 1.607 acre | | | | 1.607 acre | | | |

NOTES:
a. Runoff factors from Section22.2, Hydrology, Volume 2, DPM, Albuquerque & Bernalillo Co., January, 1993.
b. Land use descriptions: A. Uncompacted soil
B. Lawn, shrubs
C. Compacted soil
D. Impervious areas
c. Peak runoff = Area (acres) x factor (CFS/acre) = CFS
d. Total runoff = Area (SF) x factor (inches) / 12 (inches /foot) = CF
e. Peak and total runoff is based on 6 hour, 100 year frequency storm

AUG 29

| | | |
|---|---|---|
| NO CHANGE | APR 26 1994 | MRK |
| PRELIMINARY | FEB 14 1994 | MRK |

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GRADING AND DRAINAGE PLAN
LOTS 15 & 16 BLOCK 3, TRACT 2,
UNIT 1, NORTH ALBUQUERQUE ACRES
11900 EAGLE ROCK AVENUE

| PROJECT NO. | MAP | SHEET OF |
|---|---|---|
| C 22/D38 | C-22 | 4 6 |

I certify that I have personally inspected the Lots 15 and 16, Block 3, Tract 2, Unit 1, North Albuquerque Acres, site and the surrounding terrain. The proposed grading and drainage plan is correct and adequate to meet the accompanying text as of February 1994. There is no change from the natural surface within the boundaries of lots 15 and 16, except for some fill material along the east property line which has spilled from fill being placed on lot 14.

Marvin R Kortum

Topography by Marvin R Kortum February 14 1994

BENCHMARK: Station 2-C21, located about 108 feet north of the Paseo Del Norte right-of-way centerline, and 26 feet south of the Browning Avenue right-of-way centerline. The station is a chiseled "X" on a 2" AC5 aluminum cap stamped 2-C21, 1985, set on a 2 1/2" aluminum tube.

Grading within the County right-of-way will conform to the Bernalillo County Street Standards.

TBM 5970.55
NAIL IN SOUTH SIDE OF POWER POLE

EAGLE ROCK AVE.

LOWELL ST.

N

1" = 20'

6.5 CFS

100' MIN

RETAINING WALL

FFE 1ST FLOOR
5962.50

100 = 1100 CFS

100 YEAR EASEMENT

100 YEAR
FLOOD PLAIN

FFE
5963.70

BF 53.70

HEC-2 SEC O
IS SOUTH P.L
OF LOT 17

SITE

EAGLE ROCK AVE

LEGAL DESCRIPTION
LOTS 15 AND 16, BLOCK 3, TRACT 2, UNIT 1, NORTH ALBUQUERQUE ACRES, BERNALILLO COUNTY, NEW MEXICO

AUG 29 1994

NOTES

(A) The original natural contour within the right-of-way is to be re-established inorder to direct flows with the designated flood plain.

(B) Fill which has been placed in the designated flood plain is to be removed and the channel restored to original capacity.

(C) Fill material placed on lot 14 away from the designated flood plain will not create additional hazard for lot 15. The minor flows from this portion of lot 14 can be accepted on lot 15.

(D) Runoff from basin B from north of lot 15/16 and north of Eagle Rock Avenue will flow along the ditch along the south side of Eagle Rock Avenue. The entry driveway into lot 15/16 will cross this drainage path. Table B shows the estimated flow from this basin B, and table D shows the flow pattern in the ditch section at the driveway. Flow depth is less than 4" for the 100 year storm. This runoff will cause no hazard to lot 15/16 and is accepted.

(E) Existing drainage channel and flood plain to remain. Landscaping or other treatment to be done in this area shall maintain the flood level flow characteristics similar to those now existing. Small garden patches out of the active channel may be fenced with open meshed fence for the purpose of keeping rodents out of the garden area.

(F) General location of septic tank drain field. Size and depth as required by County of Bernalillo permit.

(G) For detailed house dimensions see architectual drawings.

(H) Quantitative earthwork estimates should be based on more detailed topographic cross sections of the work area.

(I) No solid walls or other structures, berms or swales shall be constructed on the lot property lines which will obstruct cross flow of sheet flow runoff from the adjacent property to the east. Buildings as shown on this plan are permitted. Future buildings, landscaping, or other treatment interior to the lot must provide for continues cross flow of runoff from adjacent property.

(J) All berms and earthwork supporting structures must be compacted to 95% of maximum dry density (Modified Proctor Test).

LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| SPOT ELEVATION | x 21.67 | 27.00 |
| UNDISTURBED | x 21.43 | |
| DISTURBED | x 34.18 | |
| CONTOUR LINE 1973 FIRM | 0-0-0-0-0-0 | |
| CONTOUR LINE | 5830 | 23 |
| FINISHED FLOOR ELEVATION | | FFE |
| SWALE | | |
| STRUCTURE | | |
| ROOF DRAIN | | |
| ROOF SLOPE | | |
| DRAIN FIELD | | |
| WELL | | |
| DRAIN BASIN BOUNDARY | | |

REVISE BF, SOUTH FLOODWALLS AUG 12 1994 MRK
ADD HEC-2 ANALYSIS CROSS SECTIONS APR 26 1994 MRK
ADD 1973 CONTOUR MAR 10 1994 MRK
PRELIMINARY FEB 14 1994 MRK


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# GRADING AND DRAINAGE PLAN
LOTS 15 & 16 BLOCK 3, TRACT 2,
UNIT 1, NORTH ALBUQUERQUE ACRES
11900 EAGLE ROCK AVENUE
HEC-2 SECTION LOCATIONS

| PROJECT NO. | MAP | SHEET OF |
|---|---|---|
| C22/D38 | C-22 | 5 6 |

C-22-Z

LOWELL ST. NE

N

H 1" = 20'
V 1" = 2'

17 18 19 20

EAGLE ROCK AVE NE

16 15 14 13

5978

5978

5976

5974

5972

5970

5968

5966

5964

5962

5960

EXISTING NORTH R.O.W. LINE

EXISTING NORTH DITCH INVERT

EXISTING SURFACE AT CENTER LINE

NEW SURFACE AT CENTER LINE OF R.O.W.

NEW SURFACE AT SOUTH DITCH

S=+.0654

S=-.0480

S=+.0340

S=+.0222

STA 0+00 IS WEST P.L. OF LOT 16

100 V.C. M.O. = .54

40' V.C. M.O. = .57

40' V.C. M.O. = .41

| | STA 1+70 | STA 2+20 | STA 2+70 | STA 3+10 | STA 3+30 | STA 3+50 | STA 3+60 | STA 3+80 | STA 4+00 |
|---|---|---|---|---|---|---|---|---|---|
| | PVC | PVI | PVT | PVC | PVI | PVT | PVC | PVI | PVT |
| ELEV | 63.89 | 65.00 | 68.27 | 70.88 | 72.20 | 71.24 | 70.76 | 69.80 | 70.48 |

0+00 1+00 2+00 3+00 4+00 5+00

PLATE 1 SINGLE PLAN - PROFILE - DOTTED
CHARLES BRUNING COMPANY
MADE IN U.S.A.

BRUNING 44-232

PLAN: SURVEYED, PLOTTED, ALIGNMENT CHECKED, R.O.W. CHECKED, NOTE BOOK, NO, BY, DATE

PROFILE: SURVEYED, PLOTTED, GRADES CHECKED, R.O.W. CHECKED, NOTE BOOK, NO, BY, DATE, STRUCTURE NOTATIONS CHKD.

ADDED ASPHALT SURFACE AUG 12, 1994 MRK
PRELIMINARY APRIL 26, 1994 MRK

MARVIN R. KORTUM, P.E.
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NM PE 6519

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GRADING AND DRAINAGE PLAN
LOTS 15 & 16 BLOCK 3, TRACT 2,
UNIT 1, NORTH ALBUQUERQUE ACRES
11900 EAGLE ROCK AVENUE
STREET DIP PLAN AND PROFILE

| PROJECT NO | MAP NO | SHEET OF |
|---|---|---|
| C22/D38 | C22 | 66 |

# County of Bernalillo

State of New Mexico

ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
ADMINISTRATION (505) 768-4000
COMMISSION (505) 768-4217
FAX (505) 768-4329



May 23, 1994

Marvin R. Kortum
1605 Speakman Drive SE
Albuquerque, NM 87123

RE: DRAINAGE PLAN FOR LOTS 15 & 16, BLOCK 3, TRACT 2 UNIT 1, N.A.A. (C22-D38) RECEIVED MAY 4, 1994 FOR FINAL PLAT & BUILDING PERMIT APPROVAL.

Dear Mr. Kortum:

The drainage plan for the above referenced lots is approved for foundation only for the residence. Please be advised that a top soil permit will be required prior to grading of the site. Prior to framing inspection, certification of the finish floor and flood wall will be required in addition to the following items:

- Dedication of floodplain easement to AMAFCA.
- Hold Harmless Agreement indemnifying the City of Albuquerque, County of Bernalillo and AMAFCA.

Please be advised that the scour depth at the non-parallel flood walls, located on the southeast portion of Lot 15 will need to be revised to reflect the actual flow conditions prior to release of the Building Permit for the structure

The County Public Works Department-Road Maintenance is working toward resolving the grading issues related to Eagle rock and will notify the engineer of the outcome.

If you have any questions, feel free to contact me at 768-2668.

Sincerely,

Bernie J. Montoya
for Fred J. Aguirre
Acting Floodplain Administrator

FJA/dl/WPHYD/8541

c: Clifford E. Anderson, AMAFCA
Bob Foglesong, County PWD
Larry Caudill, Environmental Health
File

# County of Bernalillo

State of New Mexico

ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
ADMINISTRATION (505) 768-4000
COMMISSION (505) 768-4217
FAX (505) 768-4329



March 25, 1994

Marvin R. Kortum, P.E.
1605 Speakman Drive SE
Albuquerque, NM 87123

RE: RESUBMITTAL ON DRAINAGE PLAN FOR LOTS 15 & 16, BLOCK 3, TRACT 2, UNIT 1, N.A.A., (C-22/D38) RECEIVED MARCH 10, 1994 FOR BUILDING PERMIT AND FINAL PLAT

Dear Mr. Kortum:

Regarding the design of the floodwall to protect the house: The angle that flow impinges on the wall (angle of attack) must consider the unconfined arroyo width and the potential for meander patterns that will change flow direction over time. In this case, the unconfined channel width is very wide and the flow is not likely to remain parallel at all times. AMAFCA's Sediment and Erosion Guide provides further guidance based on the unconfined channel width and scour. The scour depth is below the bed elevation of the arroyo. A profile of the arroyo adjacent to the flood wall must be provided to show wall elevations and channel property (sequent depth or energy grade, bed elevations, scour depth). A stability analysis of the proposed retaining wall must be provided to show that the wall will be stable at the computed scour depth.

Regarding item 1 of Mr. Aldaz's letter dated 2/24/94, a HEC-2 analysis will be required to model the flow through this property to determine scour depth and flood height.

Although a note has been added to the plan indicating that grading in the County Right-of-Way will conform to the County standards, the proposed contours do not appear to meet the street standards. Confirm this design with the County development review engineer, Chuck Bowman.

The proposed structure at southeast corner of property (finish floor elevation 5963.70') is assumed to be non-habitable. This review is based on that condition.

Regarding the proposed planting of Chamisa for erosion protection, such treatment may provide little protection for high flows.

If you should have any questions, please do not hesitate to call me at 768-2668.

Cordially,

Fred J. Aguirre, P.E.
Acting City/County Floodplain Administrator

FJA/ses/WPHYD8335

c: Bob Foglesong, County Public Works Department
Cliff Anderson, AMAFCA
File

wp+8335

# County of Bernalillo

State of New Mexico

ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
ADMINISTRATION (505) 768-4000
COMMISSION (505) 768-4217
FAX (505) 768-4329



February 24, 1994

Marvin R. Kortum, P.E.
1605 Speakman Drive SE
Albuquerque, NM 87123

RE: DRAINAGE PLAN FOR LOTS 15 & 16, BLOCK 3, TRACT 2, UNIT 1, N.A.A., (C22-D38) RECEIVED FEBRUARY 16, 1994 FOR BUILDING PERMIT.

Dear Mr. Kortum:

Based on the information provided on the referenced submittal, kindly address the following comments prior to approval:

1. Due to the highly unsteady state of this arroyo and proposed encroachments and grading, a HEC-2 analysis will be required to model the flow through this property.

2. Submit written permission from the property owner for grading the offsite property on lot 14. You indicate there was illegal fill placed on this lot. Please overlay the topography from the floodway maps on the grading plan to show this activity.

3. Grading within the County Right-of-Way must conform to the County Street Standards Ordinance.

4. With the HEC-2 analysis output, evaluate the scour potential for the wall proposed with AMAFCA's erosion design guide.

5. You indicate in your notes of a berm 40 feet wide at the base and 7 feet above the invert of the existing arroyo. We could not locate this on your grading plan.

These comments incorporate AMAFCA and County PWD's review. If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

Gilbert Aldaz, P.E. & P.S.
City/County Floodplain Administrator

c: Clifford E. Anderson, AMAFCA
Bob Foglesong, County PWD
File