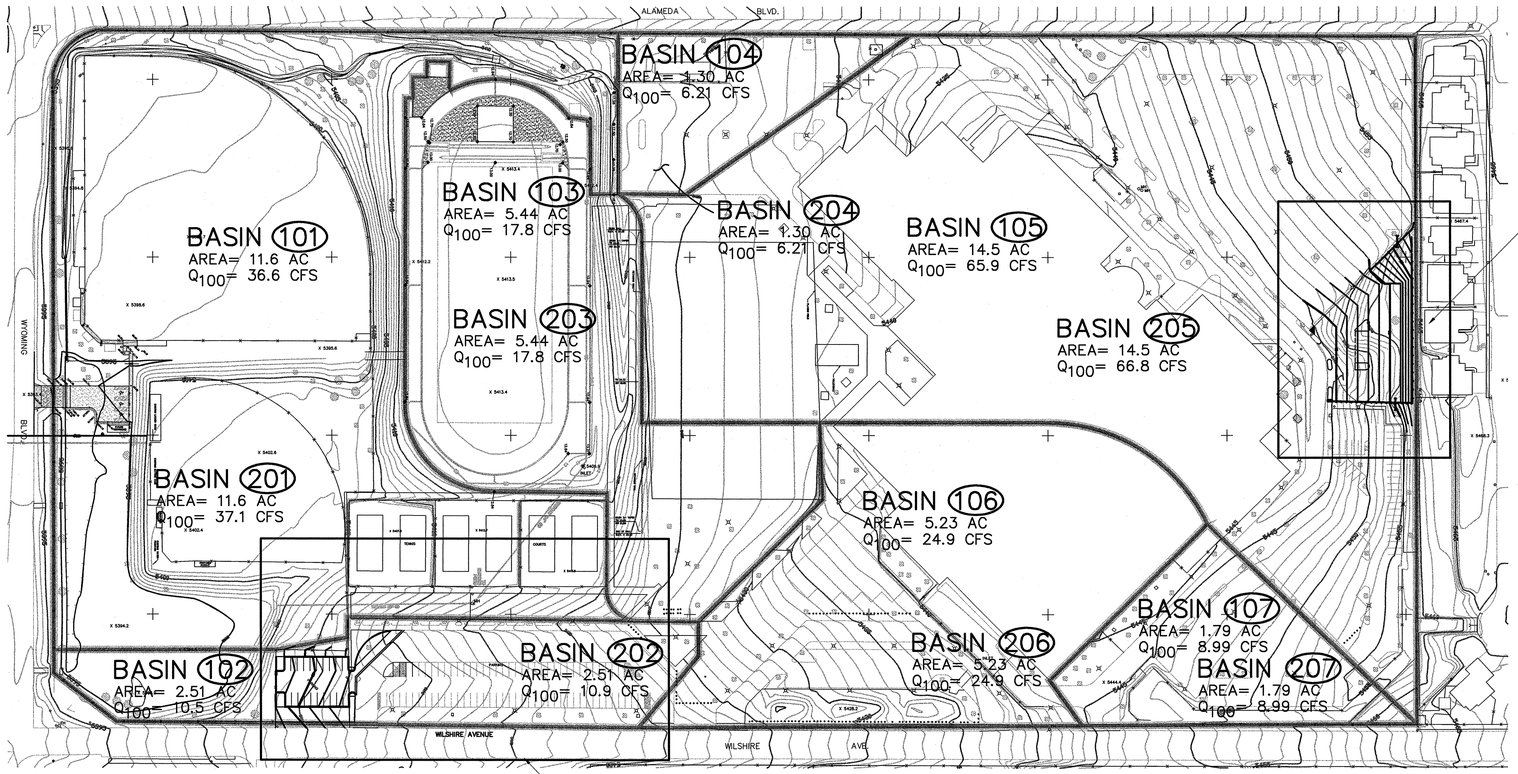
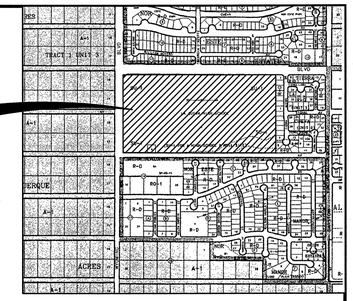
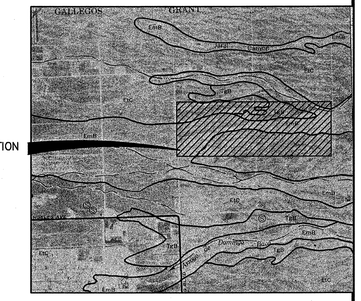
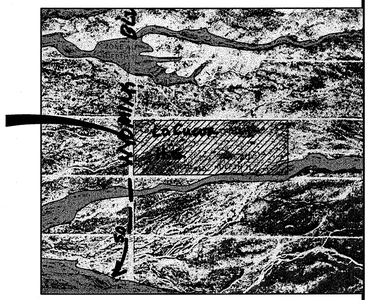




LOCATION MAP
ZONE ATLAS MAP NO. C-19



SOILS MAP
REFERENCE: SCS BERNALILLO COUNTY SOIL SURVEY
SHEET NO. 11



FLOOD INSURANCE MAP
REFERENCE: FLOOD INSURANCE STUDY
PANEL 10C

W&C

GRAPHIC SCALE

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

LA CUEVA HIGH SCHOOL

Parking Lot Additions

Master Drainage Report

Site Location: La Cueva High School is located northeast of the intersection of Wilshire and Wyoming. The proposed developments include two (2) new parking lots and grass removal that will be replaced with concrete. The parking lots will include paving, concrete curb and gutter and landscaping modifications.

Methodology: Section 22.2 of City of Albuquerque DMP was followed to calculate the design volume. The charts and formulas in Part A were followed using the 100-year frequency 24-hour rainfall as the design storm. The site is located in Zone 3 as determined from Table A-1. The total storm volume was calculated as per section A.5. The peak discharge was calculated as per section A.6.

Existing Conditions: The site consists of seven (7) basins; Basins 101 through 107. Each basin is designated as shown on the grading & drainage plan and discharge as described below.

Basin 101 encompasses both the softball and baseball fields, approximately 75% of the existing pond and the tennis courts. All drainage from this basin sheet flows to the existing pond at the southwest corner of the site.

Basin 102 encompasses the southwest parking lot and approximately 25% of the existing pond. Drainage from the parking lot sheet flows to an inlet located on the west end. This is then diverted west to the pond.

Basin 103 encompasses the track and football field, approximately 33% of the soccer field and a portion of the area just east of the tennis courts. All drainage from this basin is diverted to an existing inlet located at the southeast corner of the track. Flows through this inlet are carried to the existing pond via a 24" storm drain.

Basin 104 encompasses the majority of the parking lot located north of the soccer field. Drainage from this basin sheet flows west into a concrete swale and conveyed to the existing pond at the southwest corner of the site.

Basin 105 encompasses the remaining 66% of the soccer field, approximately 60% of the north section of the school building, the area just north of the school building, the entire northeast parking lot, and 50% of the southeast parking lot. Drainage from the soccer field and the area just north of the school building sheet flows west to the existing pond. Drainage from the remainder of the basin sheet flows north into Alameda Boulevard and then west into Wyoming Boulevard.

Basin 106 encompasses the remaining 40% of the school building and the entire south parking lot. Drainage from this basin sheet flows south into Wilshire Ave. and then west into Wyoming Boulevard.

Basin 107 encompasses the remaining 50% of the southeast parking lot. Drainage sheet flows south into Wilshire Avenue and then west into Wyoming Boulevard.

Existing volumetric runoff and peak discharge quantities are as shown below:

Table 1 – Existing Conditions

Basin	Area (ac)	Treatment A (%)	Treatment B (%)	Treatment C (%)	Treatment D (%)	V_{360}(ac-ft)	Q_p(cfs)
101	11.6	0	54.7	33.7	11.6	1.17	36.6
102	2.51	0	28.1	10.1	61.8	0.387	10.5
103	5.44	0	72.5	0	27.5	0.597	17.8
104	1.30	0	0	15.5	84.5	0.238	6.21
105	14.5	0	19.4	0	80.6	2.51	65.9
106	5.23	0	10.8	0	89.2	0.961	24.9
107	1.79	0	0	0	100.0	0.352	8.99
Total	42.4					6.22	170.9

Table 1 - provides a breakdown of existing volumetric runoff and peak discharge of the site.

Basins 101, 102, 103, 104, and approximately 17% of Basin 105 contribute drainage to the existing pond, only. This total drainage is approximately 82.2 cfs or a volumetric runoff of 2.81 acre-ft.

The existing pond has an approximate volume of 1.37 acre-ft. It discharges through a 2' x 6' inlet (1-Double Type D) into a 36" storm drain and eventually into the North Arroyo de Domingo Baca via Wyoming Boulevard. This 36" RCP was installed as part of AMAFCA's Wyoming Storm drain improvements in late 1997. The inlet is located at the southwest corner of the pond with an approximate top of grate elevation equivalent to pond finish floor elevation of 5394.5. Storm drain invert elevation is approximately 5386.3. Also, 4 – 12" overflow outlets are provided on the west side of the pond.

The discharge rate of this storm drain is:

$$Q = 0.67 * \sqrt{(2 * g * h)} * A \quad \text{(orifice eqn.)}$$

or

$$Q = 0.67 * \sqrt{(2 * 32.2 * 10)} * \pi * (1.5)^2 = 120.2 \text{ cfs} > 83.2 \text{ cfs}$$

The discharge rate for the grate is:

$$Q = C * L * H^{3/2} \quad \text{(weir eqn.)}$$

or

$$Q = 3 * (6 + 2 + 2) * 2^{3/2} = 84.9 \text{ cfs} > 83.2 \text{ cfs}$$

Proposed Conditions: The proposed basin boundaries, 201 through 207, remained the same as the existing with the following improvements. Asphalt parking lots were added to Basin 202 and 205, thus increasing impervious land treatment. Also, grass located south of the tennis courts was removed and replaced with concrete in Basin 201 and 203.

Proposed volumetric runoff and peak discharge quantities are as shown below:

Table 2 – Proposed Conditions

Basin	Area (ac)	Treatment A (%)	Treatment B (%)	Treatment C (%)	Treatment D (%)	V_{360}(ac-ft)	Q_p(cfs)
201	11.6	0	54.6	31.2	14.2	1.19	37.1
202	2.51	0	28.1	0	71.9	0.409	10.9
203	5.44	0	72.0	0	28.0	0.600	17.8
204	1.30	0	0	15.5	84.5	0.238	6.21
205	14.5	0	16.9	0	83.1	2.56	66.8
206	5.23	0	10.8	0	89.2	0.961	24.9
207	1.79	0	0	0	100.0	0.352	8.99
Total	42.4					6.31	172.7

Table 2 - provides a breakdown of proposed volumetric runoff and peak discharge of the site.

Proposed improvements to the site will increase the amount of discharge from the site slightly. Volumetric runoff will increase from 6.22 ac-ft to 6.31 ac-ft. Hence an increase of 1.45% or 0.09 ac-ft. Peak discharge will also increase from 170.9 cfs to 172.7 cfs or an increase of 1.05%.

However, Basins 201, 202, 203, 204, and approximately 17% of Basin 205 contribute drainage to the existing pond, only. This total drainage is approximately 83.2 cfs or a volumetric runoff of 2.87 acre-ft.

Conclusion: Referencing existing conditions, the controlling Q_{out} is based on the weir equation used on the grate. As calculated above (Q_{out} = 84.9 cfs) > (Q_{IN} = 83.2 cfs). In conclusion, the increase in both volumetric runoff and peak discharge will not effect the amount of discharge to and from the pond significantly.

LEGEND

5070	EXISTING INDEX CONTOUR
5071	EXISTING INTERMEDIATE CONTOUR
5175	PROPOSED INDEX CONTOUR
73	PROPOSED INTERMEDIATE CONTOUR
+ 5359.15	EXISTING SPOT ELEVATION
75.1	PROPOSED SPOT ELEVATION
BASIN (101)	EXISTING BASIN DESIGNATION
BASIN (201)	PROPOSED BASIN DESIGNATION
	EXISTING BASIN BOUNDARY
	PROPOSED BASIN BOUNDARY

LEGAL DESCRIPTION

TRACT A, LA CUEVA HIGH SCHOOL

BENCH MARK

A STANDARD BRASS USC&GS BRASS TABLET STAMPED "HEAVEN 1969" SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND. LOCATED 70.4' SOUTH OF PASEO DEL NORTE AND 180' EAST OF CEMETERY ENTRANCE. ELEVATION = 5378.787

LA CUEVA HIGH SCOOL
3211 MONTE VISTA DR. N.E.
PARKING IMPROVEMENTS

OVERALL GRADING & DRAINAGE PLAN

DESIGN	DRAWN
JAT	RGS

WILSON & COMPANY
4900 LANG AVENUE N.E.
ALBUQUERQUE, NEW MEXICO
87109
(505) 348-4000

DATE: FEB. 2001

FILE NO.: X0-218-066

SHEET NO. 2 OF 8

C-2

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