

DRAINAGE REPORT

for

**Lot 49-A, BLOCK 59  
RIO RANCHO ESTATES, UNIT 16  
RIO RANCHO, NEW MEXICO**

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APRIL 2005



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CITY OF RIO RANCHO  
DEPARTMENT OF  
PUBLIC INFRASTRUCTURE  
APPROVED: Rmm  
DATE: 4.19.05

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## **PURPOSE**

The purpose of this report is to provide the Drainage Management Plan for the development of Lot 49, Block 59, Rio Rancho Estates Unit 16. The proposed development will consist of a 4000 square foot office building with its associated parking lot. This plan will identify the upstream and downstream hydraulic constraints affecting the subject property. This plan was prepared in accordance with city of Rio Rancho's Drainage Guidelines, as well as the City of Albuquerque's Development Process Manual Drainage Criterion. This report will demonstrate that the proposed improvements do not adversely affect the surrounding properties, nor the upstream or downstream facilities.

## **INTRODUCTION**

The subject of this report, as shown on the Exhibit A vicinity map, is an 0.4-acre parcel of land located on the west side of Golf Course Road between 21<sup>st</sup> Avenue and 22<sup>nd</sup> Avenue. The site is currently undeveloped. It appears the site has never been disturbed. The proposed legal description of the parcel is Lot 49, Block 59, Rio Rancho Estates Unit 16. The entire site lies with flood zone x as described by FIRM map 3504C0894C. This site is impacted by minor offsite flows from the adjacent undeveloped tract to the north.

The site is located at the peak of a localized hill where the front  $\frac{1}{4}$  drains to Golf Course Road and the back  $\frac{3}{4}$  drains to the southwest onto undeveloped private property. The development of this site will be in accordance to the City of Rio Rancho's policy. The onsite flow will be retained and the flow leaving the site onto Golf Course will be slightly, yet insignificantly increased from historical.



## **EXISTING CONDITIONS**

The site is located at the apex of a localized hill. The front  $\frac{1}{4}$  of the site has a significant elevation drop from west to east. This slope is stabilized with natural fiber slope blankets. This portion of the site discharges .20 cfs directly to Golf Course road. The remaining site slopes from northeast to southwest, with general grades between 3 and 5 %. The site is currently undeveloped. Minor offsite currently enter the site from an adjacent undeveloped lot north of this site. This flow is predicted to be 0.06 CFS. The flow enters the site as sheet flows with along the boundary. The flows pass through the site and are combined with the onsite flow. The total flow leaving the site to the west is .51 cfs

## **PROPOSED CONDITIONS**

The proposed improvements consist of the construction of a 4000 square foot office building and its associated parking. The minor offsite flow will be allowed to enter the site. The site is graded such that there are 3 onsite basing. The basin map is located in Appendix A. The front basin A will sheet flow out of the driveway discharging .38 cfs to Golf Course Road. This is an increase of .18 cfs, which is insignificant. The middle basin B contains the majority of the parking lot and building. This area will pond in the central courtyard. As shown the pond has the capacity to hold the 100-year 10-day storm event. The back or western portion contains a portion of the building and the landscape buffer. This pond will contain the 100-year, 10-day volume as well. Should a rain event exceed the 100-year, 10-day event, the soil type is fast draining and should not retain water for any extended periods of time. In an emergency situation, the ponds will overflow and discharge the site at the far southwest corner.

## SUMMARY AND RECOMMENDATIONS

This site is an undeveloped parcel of land. The site will retain the majority of the onsite flows. The front portion of the lot will continue to discharge to Golf Course Road with a minor increase of .18 cfs. The proposed onsite ponds will retain the 100-year, 10-day storm water runoff. This retention pond includes an emergency overflow that will discharge to the historical drainage path. The grading plan and drainage report was prepared in conformance to Rio Rancho Public Works Departments drainage criteria. The ponding volumes have been calculated using the City of Albuquerque's Weighted E method as prescribed in the DPM. Since the proposed subdivision and the improvements shown within this plan do not adversely affect the upstream or downstream facilities, we recommend approval of the site-grading plan. Since this site encompasses less than 1 acre, a NPDES permit will not be required prior to any construction activity.

# APPENDIX A

## SITE HYDROLOGY

## Weighted E Method

### Existing Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year		
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
OFFSITE	1890.00	0.043	100%	0.0433884	0%	0.000	0%	0.000	0%	0.000	0.440	0.002	0.06
ONSITE A	6000.00	0.138	92%	0.1267218	0%	0.000	6%	0.00826	2%	0.003	0.504	0.006	0.20
ONSITE B	11360.00	0.261	100%	0.2607897	0%	0.000	0%	0.000	10%	0.026	0.637	0.014	0.45
Total	19250.00	0.442		0.4308999		0.000		0.00826		0.029		0.021	0.71

### Proposed Developed Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-hr.			10-day	
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)	Flow cfs
A	4620.00	0.106	7%	0.0074242	20%	0.021	10%	0.01061	63%	0.067	1.505	0.013	0.38	0.021	0.021
B	9710.00	0.223	20%	0.0445822	15%	0.033	13%	0.02898	52%	0.116	1.342	0.025	0.72	0.038	0.038
C	3030.00	0.070	30%	0.0208678	30%	0.021	25%	0.01739	15%	0.010	0.876	0.005	0.16	0.006	0.006
OFF-1	1890.00	0.043	100%	0.0433884	0%	0.000	0%	0.000	0%	0.000	0.440	0.002	0.06	0.002	0.002
Total	19250.00	0.442		0.1162626		0.076		0.05697		0.193		0.045	1.31		

### Equations:

$$\text{Weighted E} = \text{Ea} * \text{Aa} + \text{Eb} * \text{Ab} + \text{Ec} * \text{Ac} + \text{Ed} * \text{Ad} / (\text{Total Area})$$

$$\text{Volume} = \text{Weighted D} * \text{Total Area}$$

$$\text{Flow} = \text{Qa} * \text{Aa} + \text{Qb} * \text{Ab} + \text{Qc} * \text{Ac} + \text{Qd} * \text{Ad}$$

Where for 100-year, 6-hour storm

$$\text{Ea} = 0.44$$

$$\text{Eb} = 0.67$$

$$\text{Ec} = 0.99$$

$$\text{Ed} = 1.97$$

$$\text{Qa} = 1.29$$

$$\text{Qb} = 2.03$$

$$\text{Qc} = 2.87$$

$$\text{Qd} = 4.37$$

$$\text{POND C} = \frac{0.006}{0.038} \text{ AC-FT}$$

$$\text{POND B} = \frac{0.038}{0.038} \text{ AC-FT}$$

$$\text{EXISTING LEAVING SITE} = 0.20 \text{ CFS}$$

$$\text{PROPOSED LEAVING SITE} = 0.38 \text{ CFS}$$



N00°16'55"E 159.97'

*Office*

LOT 49-A  
RIO RANCHO ESTATES UNIT 18  
BLOCK 59  
BOOK 13, PAGE 63

227' LF OF  
4" SCREEN WALL  
1.5' RETAINAGE MAX.

37' LF OF  
1'-3' RW

43' LF OF  
SCREEN WALL  
1.5' RETAINAGE MAX.

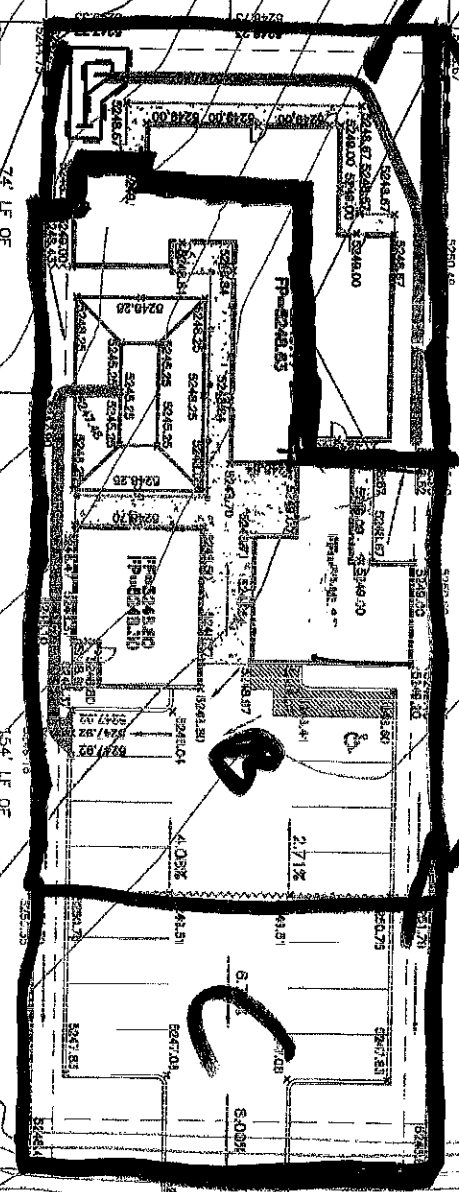
74' LF OF  
1'-3' RW

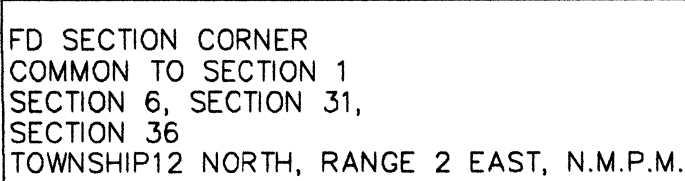
LOT 50-A  
RIO RANCHO ESTATES UNIT 18  
BLOCK 59  
BOOK 13, PAGE 63

154' LF OF  
4" SCREEN WALL  
1.5' RETAINAGE MAX.

S00°17'07"W 80.04'

PD SECTION 34  
COMMON TO 130 N 1  
SECTION 8, S 3 C 1 31  
TOWNSHIP 12 N 3 T 3 R 12 E 2 S 4 T 1 N 1 M 1 M





1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.



35043C0894 C

2. ALL CURBS TO BE 6" STANDARD, UNLESS OTHERWISE NOTED.

	EXISTING STORM SEWER LINE
	EXISTING CURB & GUTTER
	PROPOSED CURB
	BOUNDARY LINE
	EASEMENT
	PROPOSED PERIMETER WALL
	PROPOSED RETAINING WALL
	EXISTING CONTOUR
	EXISTING INDEX CONTOUR
	FLOW ARROW
	SLOPE TIE
	PROPOSED SPOT ELEVATION
	EXISTING SPOT ELEVATION
	CENTERLINE
	RIGHT-OF-WAY
	PROPOSED CONCRETE SWALE



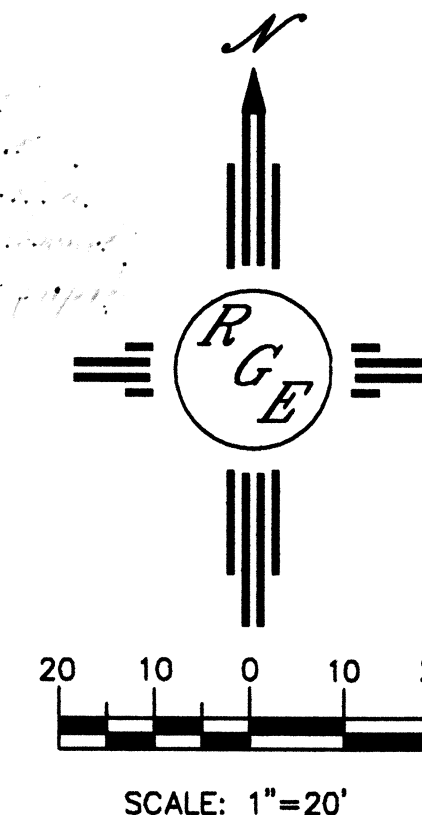
12 INCH REINFORCED CONCRETE MASONRY WALL										
H		X		A	B	T	Y-BARS		X-BARS	
ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.	ft.-in.				
5'-4"	4'-8"	14"	3'-8"	10"	#4	24	O.C.	#3	25"	O.C.
6'-0"	5'-4"	15"	4'-2"	12"	#4	16	O.C.	#4	30"	O.C.
6'-8"	6'-0"	16"	4'-6"	12"	#6	24	O.C.	#4	22"	O.C.
7'-4"	6'-8"	18"	4'-10"	12"	5	16	O.C.	#5	26"	O.C.
8'-0"	7'-4"	20"	5'-4"	12"	#7	24	O.C.	#5	21"	O.C.
8'-8"	8'-0"	20"	5'-8"	12"	#7	16	O.C.	#5	21"	O.C.

1. ALL CONCRETE IS TO BE 4000 PSI @ 28 DAYS.
2. MINIMUM COMPACTION UNDER FOOTINGS IS TO BE 95% PER ASTM. D 1557 FOR A DEPTH OF 12" MOISTURE CONTENT IS TO BE  $\pm 2.0\%$ .
3. BACK FILL AGAINST WALLS IS TO BE HAND-PLACED AND COMPACTED.
4. ALL BARS ARE TO BE GRADE 60, ASTM 615.
5. TRUSS TYPE DUR-O-WALL EVERY OTHER COURSE.
6. DOWELS SHALL BE AT LEAST EQUAL IN SIZE AND SPACING TO Y-BARS, SHALL PROJECT A MINIMUM OF 30 BAR DIA. INTO THE FILLED BLOCK CORES, AND SHALL EXTEND TO THE TOE OF THE FOOTING.
7. PROVIDE REINFORCING BARS 8" AND 12" WALLS WHERE H EXCEEDS 6'-0" AND USE EITHER EXPANSION JOINTS ON 20' CENTERS OR PILASTERS EVERY 16'.
9. #3 BARS TO BE USED ON WALLS EXCEEDING 2'-8" HEIGHT
10. X BARS TO BE USED ON WALLS EXCEEDING 2'-8" HEIGHT
11. #4 BARS TO BE USED ON WALLS SMALLER THAN 3'-4"
12. BOND BEAM: #4 BARS FOR WALLS UNDER 3'-4", 2-#4 BARS FOR WALLS UNDER 5'-4", 2-#5 BARS FOR WALLS OVER 5'-4".
13. TW DESIGNATES FINISHED GRADE @ TOP OF RETAINING WALL  
BW - DESIGNATES FINISHED GRADE @ BOTTOM OF WALL.  
BOTTOM OF FOOTING IS 20" BELOW THE DESIGNATED BW ELEVATION.




NTS

1. *Confession* (1911)  
 2. *Confession* (1911)  
 3. *Confession* (1911)  
 4. *Confession* (1911)  
 5. *Confession* (1911)  
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 10. *Confession* (1911)

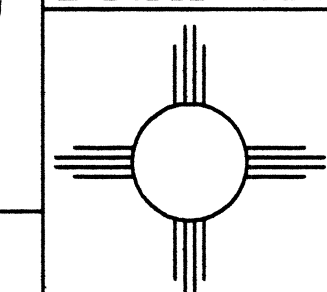


EXISTING UTILITIES ARE NOT SHOWN.  
IT SHALL BE THE SOLE RESPONSIBILITY  
OF THE CONTRACTOR TO CONDUCT ALL  
NECESSARY FIELD INVESTIGATIONS PRIOR  
TO ANY EXCAVATION TO DETERMINE THE  
ACTUAL LOCATION OF UTILITIES & OTHER  
IMPROVEMENTS.

DATE \_\_\_\_\_



GOLF COURSE OFFICE COMPLEX
GRADING AND DRAINAGE PLAN



*Rio Grande  
Engineering*

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2512