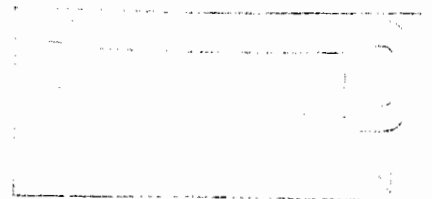


**Drainage Report**  
**for**  
**West Mesa Medical Center**  
**Medical Office Building**  
  
**Albuquerque, New Mexico**  
**September 23, 2004**

I, Angela N. Valdez, P.E., do hereby certify that this report was prepared by me or under my direction and that I am a duly registered Professional Engineer under the laws of the State of New Mexico

Angela Valdez  
Angela N. Valdez, P.E.  
NMPE No. 15814

9/23/04  
Date



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## *Introduction*

The purpose of this report is to clarify the developed drainage conditions related to the proposed on-site improvements of the West Mesa Medical Center area. The project site is bounded by Paradise Terrace Subdivision to the North, Golf Course Road to the East, McMahon Boulevard to the South and Paradise Heights, Unit 1 Subdivision to the West. The site is comprised of 19.03-acres, including the existing West Mesa Hospital, the existing Professional Building, the Plant Operations Building and various parking lots. A detention pond is located at the north end of the property. The proposed development will include a new Medical Office Building, additional parking areas and a paved perimeter road along the north and west between Golf Course Road and McMahon Boulevard. The area of the new building will be approximately, 61,000-square feet.

## *Methodology*

Post-development flows for the 2-year, 100-year, 24 hour storm events were calculated using Chapter 22, Section 2 of the City of Albuquerque Development Process Manual. Flows from the 100-year storm event were compared to the allowable discharge into the Golf Course Road System. Calculations and summary information can be found in Appendix A.

## *Existing Conditions*

The project site consists of 12.4-acres of partially developed land. The detention pond at the north end of the property detains flow from the property. Various drop inlets throughout the southern portion of the site capture runoff from paved areas and discharge north to the existing pond. Runoff from the western portion of the property flows east to the detention pond. The detention pond discharges, at a rate of 10-cfs, to the storm drain constructed with the recent Golf Course Road Improvements Project by the City of Albuquerque. The Golf Course storm drain flows north and eventually outlets at the Black's Arroyo.

In September 2002, Wilson & Company submitted the Drainage Report for Golf Course Road Improvements Project. This report, in conjunction with the Special Assessment District 225 Drainage Analysis (Larkin Group, March 2002), set the maximum discharge from the West Mesa Medical Center site at 10-cfs.

## *Proposed Conditions*

In addition to ~~two new parking areas~~, a **new Medical Office Building** will be constructed on-site. A **new access road** will also be constructed to connect the parking areas to both McMahon Boulevard and Golf Course Road. The east-west portion of the roadway will divide the existing detention pond into two smaller ponding areas. The majority of the property will continue to drain to the northeast corner. The **new parking lot at the southeast corner will drain directly into Golf Course Road through sidewalk drains**. Figure 1 illustrates the proposed basins information.

Design of the proposed detention ponds was based on discharge from the 100-year, 24 –hour storm event. Each was designed to detain the runoff volumes generated by their respective basins, leaving 1-foot of freeboard above the 100-year water surface elevation (WSE). The outlet structures were designed to discharge 10.26-cfs into the system in Golf Course Road. Much of the existing on-site system will be left as is, with some minor modifications necessary for placement of additional curb. Existing drainage patterns for the existing developed areas will remain.

# WEST MESA MEDICAL CENTER MEDICAL OFFICE BUILDING

## POND 1 RISER - DISCHARGE CALCULATIONS

### 12" OUTLET PIPE

INVERT OF OUTLET PIPE  
PIPE SIZE (in)

5153  
12

ORIFICE FLOW			
ELEVATION	A (sf)	h (ft)	Q (cfs)
5154	0.79	0.50	2.76
5155	0.79	1.50	4.79
5156	0.79	2.50	6.18
5157	0.79	3.50	7.31
5158	0.79	4.50	8.29
5158.3	0.79	4.80	8.56
5159	0.79	5.50	9.16
5160	0.79	6.50	9.96

\* 100-YR WSE

Orifice Equation,  $Q=0.62 \cdot A \cdot (2gh)^{1/2}$

A = area of orifice, h = , Q = discharge rate

WSE = Water Surface Elevation

### 36" RISER

INVERT OF PERFORATION(S)  
DIAM OF PERFORATION(S) (in)

5153  
4

# PERFORATIONS			1	2	3	4	5
ELEVATION	A (sf)	h (ft)	Q (cfs)	Q (cfs)	Q (cfs)	Q (cfs)	Q (cfs)
5154	0.09	0.83	0.40	0.79	1.19	1.59	1.98
5155	0.09	1.83	0.59	1.18	1.76	2.35	2.94
5156	0.09	2.83	0.73	1.46	2.19	2.92	3.65
5157	0.09	3.83	0.85	1.70	2.55	3.40	4.25
5158	0.09	4.83	0.95	1.91	2.86	3.82	4.77
5158.3	0.09	5.13	0.98	1.97	2.95	3.93	4.92
5159	0.09	5.83	1.05	2.10	3.15	4.19	5.24
5160	0.09	6.83	1.14	2.27	3.41	4.54	5.68

\* 100-YR WSE

# WEST MESA MEDICAL CENTER MEDICAL OFFICE BUILDING

## POND 2 RISER - DISCHARGE CALCULATIONS

### 12" OUTLET PIPE

INVERT OF OUTLET PIPE  
PIPE SIZE (in)

5162  
12

ORIFICE FLOW			
ELEVATION	A (sf)	h (ft)	Q (cfs)
5163	0.79	0.50	2.76
5164	0.79	1.50	4.79
5165	0.79	2.50	6.18
5165.9	0.79	3.40	7.21
5166	0.79	3.50	7.31
5167	0.79	4.50	8.29

\* 100-YR WSE

Orifice Equation,  $Q=0.62 \cdot A \cdot (2gh)^{1/2}$

A = area of orifice, h = , Q = discharge rate

WSE = Water Surface Elevation

### 36" RISER

INVERT OF PERFORATION(S)  
DIAM OF PERFORATION(S) (in)

5162  
4

# PERFORATIONS			1	2	3	4	5
ELEVATION	A (sf)	h (ft)	Q (cfs)	Q (cfs)	Q (cfs)	Q (cfs)	Q (cfs)
5163	0.09	0.83	0.40	0.79	1.19	1.59	1.98
5164	0.09	1.83	0.59	1.18	1.76	2.35	2.94
5165	0.09	2.83	0.73	1.46	2.19	2.92	3.65
5165.9	0.09	3.73	0.84	1.68	2.52	3.36	4.19
5166	0.09	3.83	0.85	1.70	2.55	3.40	4.25
5167	0.09	4.83	0.95	1.91	2.86	3.82	4.77

\* 100-YR WSE

# WEST MESA MEDICAL CENTER MEDICAL OFFICE BUILDING

## POND DISCHARGE SUMMARIES

BASIN	AREA	WEIGHTED E	V <sub>100-YR</sub>	Q <sub>100-YR,24-HR</sub>
	(ac)	(in)	(ac-ft)	(cfs)
1	1.37	1.79	0.24	5.37
2	0.88	1.56	0.14	3.36
3	1.71	1.89	0.32	6.75
4	0.28	1.97	0.06	1.22
5	5.77	2.42	1.36	24.18
6	2.08	1.98	0.42	8.84
7	1.33	1.79	0.23	5.25
8	0.49	1.97	0.10	2.14
P1	0.99	0.98	0.08	2.84
P2	3.23	1.63	0.46	5.82

### POND 1

BASIN	V (ac-ft)	Q (cfs)
1	0.24	5.37
2	0.14	3.36
3	0.32	6.75
P1	0.08	2.84
<b>TOTAL</b>	<b>0.77</b>	<b>18.32</b>

### POND 2

BASIN	V (ac-ft)	Q (cfs)
4	0.06	1.22
5	1.36	24.18
6	0.42	8.84
P2	0.46	5.82
<b>TOTAL</b>	<b>2.29</b>	<b>40.06</b>

# WEST MESA MEDICAL CENTER MEDICAL OFFICE BUILDING

## POND VOLUME CALCULATIONS

### POND 1

ELEVATION	AREA (sf)	VOLUME (cf)	CUMM. VOLUME (cf)	CUMM. VOLUME (ac-ft)
5153	3134.22			
		3682.20	3682.20	0.08
5154	4230.17			
		4133.68	7815.87	0.18
5155	4037.18			
		5454.91	13270.78	0.30
5156	6872.64			
		7646.97	20917.75	0.48
5157	8421.29			
		9269.81	30187.55	0.69
5158	10118.32			
		11041.03	41228.58	0.95
5159	11963.74			
		12956.90	54185.48	1.24
5160	13950.06			

### POND 2

ELEVATION	AREA (sf)	VOLUME (cf)	CUMM. VOLUME (cf)	CUMM. VOLUME (ac-ft)
5162	20699.48			
		21780.61	21780.61	0.50
5163	22861.73			
		23989.24	45769.85	1.05
5164	25116.75			
		26290.66	72060.50	1.65
5165	27464.56			
		28684.85	100745.35	2.31
5166	29905.14			
		31242.65	131988.00	3.03
5167	32580.16			
		16290.08	148278.08	3.40