

MASTER DRAINAGE PLAN  
FOR  
MOUNT WOODMEN ESTATES

H. J. KRAETTLI & SONS  
CONSULTING ENGINEERS  
15 NORTH IOWA STREET  
COLORADO SPRINGS, COLORADO 80909



# H. J. KRAETTLI & SONS CONSULTING ENGINEERS

15 NORTH IOWA

PHONE 473-3774

COLORADO SPRINGS, COLORADO 80909



July 11, 1977

Mr. Don Jeffries  
Colorado Springs City Engineer  
City Hall  
Colorado Springs, CO 80904

Dear Sir:

Transmitted herewith is the Master Drainage Report of a portion of the North half of Section 12, in Township 13 South, Range 67 West, in the City of Colorado Springs, El Paso County, Colorado, to be known as MOUNT WOODMEN ESTATES.

Respectfully submitted,

H. J. KRAETTLI & SONS

Roger G. Berge  
Colorado P.E. No. 9646

*Donell Jeffries*  
by CA  
8-23-77

MASTER DRAINAGE REPORT  
FOR  
MOUNT WOODMEN ESTATES

July 12, 1977

H. J. Kraettli & Sons  
Colorado Springs, Colorado

Prepared By:

Roger G. Berge  
Colorado P.E. No. 9646

## TABLE OF CONTENTS

Letter of Transmittal	1
Title	2
Table of Contents	3
Report	4
Land Use Summary	7
Vicinity Map	9
Calculations	10
Certification	14

## REPORT

### GENERAL:

Mount Woodmen Estates is a parcel of land that is bounded on the East by Discovery Subdivision Filing No. 9 and unplatted lands. The Subdivision is bounded by unplatted lands on the North, West, and South. The Subdivision occupies an Easterly flowing valley and its associated ridges. The valley floor is covered with grasses and is classified under Hydrologic Soil Group B. The steeper forested ridges are classified under Hydrologic Soil Group D. The flatter portions of the tops of the ridges are classified under Hydrologic Soil Group B. The Subdivision is located in the Dry Creek Drainage Basin.

Runoff quantities were computed using the Modified SCS Methodology as developed and approved by the City of Colorado Springs City Engineering Division.

### EXTERIOR DRAINAGE:

Exterior drainage flows onto the Subdivision from the West, South and North. Exterior drainage from the North and South is identified on the Master Drainage Plan and acreages are listed on the Land Use Summary. These parcels are not expected to be developed. Exterior drainage areas to the West, however, are developable lands and have been assigned land use characteristics based on averages derived in Mount Woodmen Estates. The exterior areas to the West are identified on the Master Drainage Plan and the Vicinity Map with projected land use totals listed in the Land Use Summary.

### INTERIOR DRAINAGE:

The major portion of all Interior Drainage plus all Exterior Drainage except that flowing onto Tract A flows Easterly down the primary valley. Drainage flowing off the Subdivision to the North and to the South originates on lands that will remain essentially undeveloped under this Master Plan. Since this drainage is flowing from undisturbed land to unplatted, and therefore, undisturbed lands to the North and South, there is no increased flow and flow quantities have not been determined. Flow quantities have been determined for the nine locations where drainage structures might be required. The locations are identified on the Master Drainage Plan by the capital letters A through I. Each location will receive drainage from a summation of the drainage areas identified by numbers 1 through 26 on the Master Drainage Plan. Drainage characteristics at each of the nine subject locations were derived through summation of the applicable drainage areas as listed below:

<u>LOCATION</u>	<u>DRAINAGE AREA</u>
A	2, 3, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 25, 26
B	4
C	6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 25, 26
D	10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 25, 26,
E	12, 13, 14, 17, 18, 19, 21, 22, 23, 26
F	17, 18, 19, 21, 22, 23
G	17
H	15
I	21, 23

Summation of these acreages and land use characteristics are listed in the calculations section.

PLANNED IMPROVEMENTS:

Drainage structures are to be located in the planned public rights-of-way in conjunction with planned improvements. Where increased drainage flows cross platted lots, it shall be the responsibility of the individual lot owners to stabilize against any increased erosive action.

An underground storm drain system is to be installed in Big Valley Drive and Timbergrove Place. A 24-inch R.C.P. crossing will be placed at the low point of the Westerly portion of Big Valley Drive. Size and locations are identified on the Master Drainage Plan. Quantities are identified below:

DRAINAGE STRUCTURES AND DRAINAGE FEES:

36" R.C.P.	50 L.F. @ \$ 32.00 per L.F.	\$ 1,600.00
30" R.C.P.	1500 L.F. @ \$ 25.00 per L.F.	37,500.00
24" R.C.P.	1500 L.F. @ \$ 15.60 per L.F.	23,400.00
18" R.C.P.	120 L.F. @ \$ 10.90 per L.F.	1,308.00
Manholes	6 EACH @ \$1000.00 per M.H.	6,000.00
8' D-10R Catch Basins	6 EACH @ \$1200.00 per C.B.	7,200.00
Inlet Structure	1 EACH @ \$1500.00 per I.S.	<u>1,500.00</u>
TOTAL		\$78,508.00

The drainage fee summary for Mount Woodmen Estates is as follows:

1977 Fees for Dry Creek Basin

142 acres @ \$1,008.00 per acre \$143,136.00

MOUNT WOODMEN ESTATES

LAND USE SUMMARY

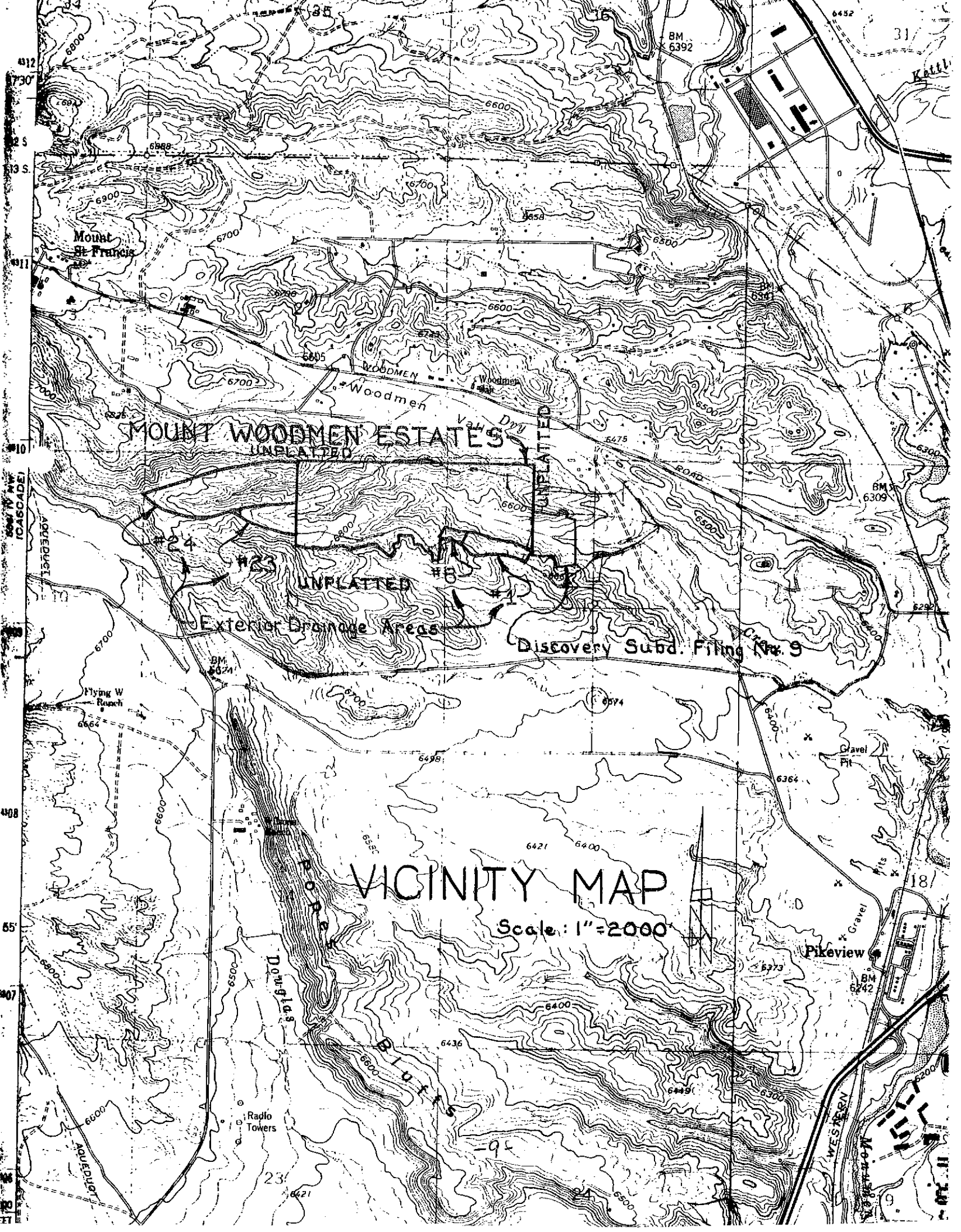
AREA	ACREAGE	1/2 ACRES RES. (B)	LAND USE 1/2 ACRE RES. (D)	FOREST * (Preservation Esmt.)	STREETS
1 (Ext.)	6.1			6.1	
2	7.3	2.6	2.1	2.3	0.3
3	9.7	2.6	5.1	1.7	0.3
4	5.0		4.6		0.4
5	7.2		3.5	3.7	
6	7.2	1.2	5.2		0.8
7	5.1	1.7	2.2	1.0	0.2
8 (Ext.)	2.0			2.0	
9	1.0		0.5	0.5	
10	6.4	1.2	4.4	0.5	0.3
11	2.1	0.4	1.6		0.1
12	11.5	2.0	6.8	2.1	0.6
13	5.4	1.7	2.1	1.2	0.4
14	17.3	0.3	11.0	5.6	0.4
15	2.8	0.5	0.8		1.5
16	8.4	0.6	4.9	2.8	0.1



17	2.1	1.5				0.6
18	21.9	1.9	13.5		6.1	0.4
19	4.3	0.5	2.5			1.3
20	14.1	(2.3)	(6.8)		(4.5)	(0.5)
21	2.1	0.9	1.0			0.2
22 (Ext.)	0.2	0.2				
23 (Ext.)	9.2	(1.3)	(5.2)		(2.0)	(0.7)
24 (Ext.)	40.4	(5.7)	(22.9)		(8.8)	(3.0)
25 (Ext.)	0.4				0.4	
26 (Ext.)	0.8				0.8	

( ) Projected

\* Forest acreages are those acreages falling within the Preservation Easement boundaries.



MOUNT WOODMEN ESTATES  
UNPLATTED

UNPLATTED

UNPLATTED

Exterior Drainage Areas

Discovery Subd. Filing No. 9

# VICINITY MAP

Scale: 1" = 2000'

Douglas  
Bluffs

Pikeview

Mount  
St. Francis

Woodmen  
Woodmen  
Woodmen

WESERN  
KILL

730  
735  
740  
745  
750  
755  
760  
765  
770  
775  
780  
785  
790  
795  
800  
805  
810  
815  
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CALCULATIONS

Basin	Acreage	Sq. Mi.	L. Ft.	H(Ft.)	n	Land Use*	%	Curve Number	Rainfall Q	t <sub>c</sub> (hr.)	Q <sub>p</sub> csm/in.	q (cfs)		
A	117.8	0.1814				1/2 Ac. Res.(B)	17	70	0.71					
						1/2 Ac. Res.(D)	54	77						
						Forest, Good Cover (D)	22	77						
						Streets	7	98						
						<u>Weighted Ave.</u>	<u>82</u>							
						700	45	0.30					Overland	0.32
						1600	135						Unimproved Channel	0.10
						3000	135	0.013					Storm Sewer	<u>0.06</u>
						<b>Total</b>	<b>0.48</b>	<b>760</b>					<b>97</b>	
						B	5.0	0.00781						
Streets	8	98												
<u>Weighted Ave.</u>	<u>86</u>													
400	70	0.40	Overland	0.23										
150	15	0.020	Street	<u>0.09</u>										
<b>Total</b>	<b>0.32</b>	<b>1340</b>	<b>9.6</b>											
C	100.8	0.1575				1/2 Ac. Res.(B)	15	70	0.71					
						1/2 Ac. Res.(D)	56	85						
						Forest, Good Cover (D)	22	77						
						Streets	7	98						
						<u>Weighted Ave.</u>	<u>82</u>							

700	45	0.30	Overland	0.30
1600	135		Unimproved Channel	0.10
2200	100	0.020	Street	<u>0.04</u>

Total 0.44 780 87

D 86.5 0.1352

1/2 Ac. Res. (B)	14	70
1/2 Ac. Res. (D)	56	85

Forest, Good Cover (D)	22	77
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Streets	8	98
<u>Weighted Ave.</u>		<u>82</u>

0.71

700	45	0.30	Overland	0.32
1600	135		Unimproved Channel	0.10
1700	77	0.020	Street	<u>0.06</u>

Total 0.48 750 72

E 74.8 0.1169

1/2 Ac. Res. (B)	15	70
1/2 Ac. Res. (D)	56	85

Forest, Good Cover (D)	24	77
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Streets	6	98
<u>Weighted Ave.</u>		<u>82</u>

0.71

700	45	0.30	Overland	0.32
1600	135		Unimproved Channel	0.10
1450	65	0.020	Street	<u>0.05</u>

Total 0.47 760 63

F	39.8	0.0622				1/2 Ac. Res. (B)	16	70							
						1/2 Ac. Res. (D)	56	85							
						Forest, Good Cover (D)	20	77							
						Streets	8	98							
						<u>Weighted Ave.</u>		<u>82</u>			0.71				
						700	45	0.30	Overland					0.32	
			1600	135		Unimproved Channel					0.10				
			300	15	0.020	Street					<u>0.01</u>				
									Total	0.43	780	34			
G	2.1	0.00328				1/2 Ac. Res. (B)	71	70							
						Streets	29	98							
						<u>Weighted Ave.</u>		<u>78</u>			0.54				
						1100	36	0.020	Street					<u>0.08</u>	
									Total	0.08	2370	4.2			
H	2.8	0.00438				1/2 Ac. Res. (B)	18	70							
						1/2 Ac. Res. (D)	29	85							
						Streets	53	98							
						<u>Weighted Ave.</u>		<u>89</u>			1.12				
			2250	90	0.020	Street					<u>0.13</u>				
									Total	0.13	2120	10.4			

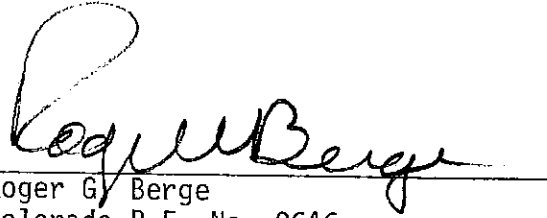
I	11.3	0.0177											
						1/2 Ac. Res. (B)	19	70					
						1/2 Ac. Res. (D)	55	85					
						Forest, Good Cover (D)	18	77					
						Streets	8	98					
						Weighted Ave.		82	0.71				
	750		60	0.30	Overland							<u>0.34</u>	
										Total	0.34	1250	15.7
J	54.5	0.0852											
						1/2 Ac. Res. (B)	15	70					
						1/2 Ac. Res. (D)	54	85					
						Forest, Good Cover (D)	24	77					
						Streets	7	98					
						Weighted Ave.		82	0.71				
	2400		200	0.30	Overland							0.62	
	1000		80	0.020	Street							<u>0.06</u>	
										Total	0.68	715	43

\*Hydrologic Soil Groups

1. Tree Covered - D
2. Grass Covered - B

CERTIFICATION

I, Roger G. Berge, a registered engineer in the State of Colorado, hereby certify that the attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. I further certify that said drainage report is in accordance with all City of Colorado Springs Ordinances, specifications and criteria.



Roger G. Berge  
Colorado P.E. No. 9646

OWNERS STATEMENT

"The developer has read and will comply with all of the requirements specified in this drainage report as approved by the City Engineer."

MOUNT WOODMEN ESTATES

By David K. Nelson  
Title owner