HYDROLOGIC REPORT FOR

MONTICELLO ESTATES

DRY DETENTION BASIN

25 YEAR / 20 MIN. STORM

PRS NO. 91-030 /26890

PREPARED BY: JAN. 14,1993

PICKETT RAY & SILVER, INC.

333 MID RIVERS MALL DRIVE

ST. PETERS, MO. 63376

DESIGNER: TANYA DIETZ

0

HYDROLOGIC REPORT

MONTICELLO ESTATES....
DRY DETENTION.....
INFLOW.....

Hyd. No. 9

Hydrograph type = RATIONAL
Storm frequency = 25 yr
Time of conc. = 20 min
~~Runoff coeff. = .6057~~

Peak ~~discharge~~ INFLOW = 92.79 cfs
Time interval = 1 min
Intensity = 5.06 in/hr
Basin area = 30.3 ac

HYDROGRAPH DISCHARGE TABLE

TIME (min)	OUTFLOW cfs	TIME (min)	OUTFLOW cfs	TIME (min)	OUTFLOW cfs	TIME (min)	OUTFLOW cfs
1.00	4.64	2.00	9.28	3.00	13.92	4.00	18.56
5.00	23.20	6.00	27.84	7.00	32.48	8.00	37.12
9.00	41.76	10.00	46.40	11.00	51.04	12.00	55.68
13.00	60.32	14.00	64.96	15.00	69.60	16.00	74.24
17.00	78.88	18.00	83.51	19.00	88.15	20.00	92.79
21.00	88.15	22.00	83.51	23.00	78.88	24.00	74.24
25.00	69.60	26.00	64.96	27.00	60.32	28.00	55.68
29.00	51.04	30.00	46.40	31.00	41.76	32.00	37.12
33.00	32.48	34.00	27.84	35.00	23.20	36.00	18.56
37.00	13.92	38.00	9.28	39.00	4.64	40.00	0.00

Peak In-Flow to Basin:

Offsite 6.3 Ac. x 2.31 = 14.55 cfs
Onsite (Res.) 24.0 Ac. x 3.26 = 78.24 cfs

Total 30.3 Acres = 92.79 cfs (Peak Inflow)

Existing Watershed Condition (On-site):

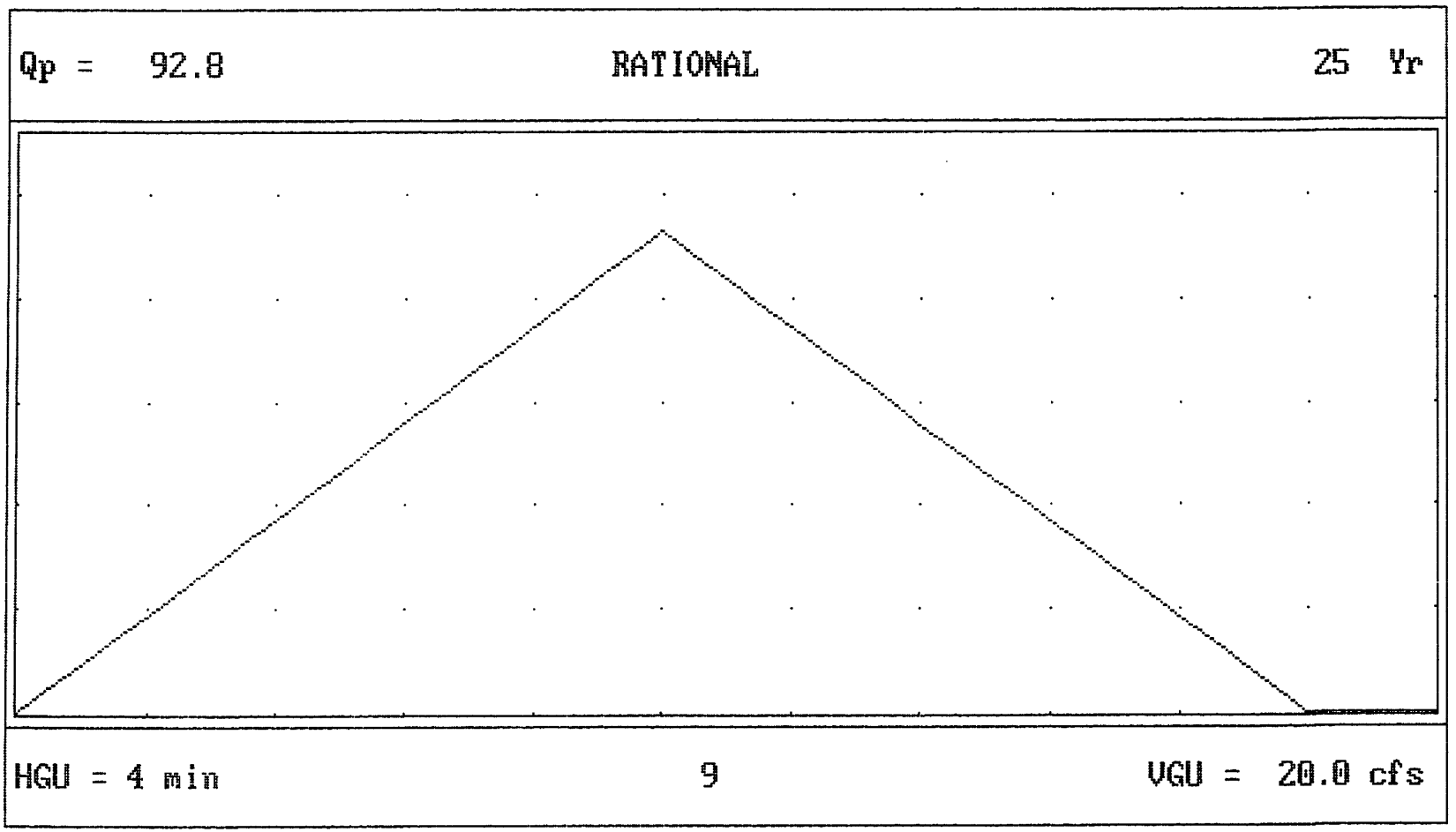
11.8 Acres x 2.31 = 27.26 cfs 30.63 OUTFLOW pg.12

Detention Required: + 14.55 / 41.81 ALLOWABLE FLOW? CHECK WITH TANYA

Phase I = 117,125 Cu. Ft. Storage Provided
Phase II = 54,114 Cu. Ft. Storage Required

Total = 171,239 Cu. Ft. Storage Requird For Entire Development

*Peak Inflow is based on offsite areas providing their own detention or retention basins.



VOL = (cuft/acft) = 111353 / 2.556

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OUTLET STRUCTURES
 Reservoir:  2
CULVERT STRUC  A. Q=CoA[2gh/k]^.5        CULVERT STRUC  B. Q=CoA[2gh/k]^.5

 1. WIDTH  (in)     = 24.                 9. WIDTH  (in)     = 0..
 2. HEIGHT (in)     = 24.                10. HEIGHT (in)     = 0..
 3. No. BARRELS     = 1..                11. No. BARRELS     = 0..
 4. INVERT ELEV.    = 481.9....          12. INVERT ELEV.    = 0........
 5. Co = 0.60                            13. Co = 0.60
 6. CULVERT LENGTH (ft) = 45..           14. CULVERT LENGTH (ft) = 0...
 7. CULVERT SLOPE (%)   = 2...           15. CULVERT SLOPE (%)   = 0...
 8. MANNING'S N-VALUE   = .013           16. MANNING'S N-VALUE   = .013
                                         17. MULTI-STAGE OPTION ? (Y/N) N
;
; WEIR STRUCTURE A.       Q=CwLH^EXP     WEIR STRUCTURE B.       Q=CwLH^EXP
;
; 18. CREST LENGTH (ft)  = 0......       23. CREST LENGTH (ft)  = 0......
; 19. CREST ELEVATION    = 0......       24. CREST ELEVATION    = 0......
; 20. Cw = 3.00                          25. Cw = 3.00
; 21. EXP = 1.50                         26. EXP = 1.50
; 22. MULTI-STAGE OPTION ? (Y/N) N       27. MULTI-STAGE OPTION ? (Y/N) N
;
;
Change item number: 0                                              DY to cont
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HYDROLOGIC REPORT

STAGE / STORAGE / DISCHARGE

RESERVOIR NUMBER = 2

RESERVOIR NAME = DET.BASIN...
STORAGE VALUES WERE INPUT MANUALLY

DISCHARGE VALUES: CULVERT STRUCT A. Q = .6 *A*[2gh/k]^.5 * 1
CULVERT STRUCT B. Q = .6 *A*[2gh/k]^.5 * 0
WEIR STRUCT A. Q = 3 * 0 * H ^ 1.5
WEIR STRUCT B. Q = 3 * 0 * H ^ 1.5

TOP PIPE AND FLOOD ELEV.

ELEVATION	DISCHARGE (cfs)			
	CULVERT A	CULVERT B	WEIR A	WEIR B
481.90	0.00	0.00	0.00	0.00
482.00	0.07	0.00	0.00	0.00
484.00	15.86	0.00	0.00	0.00
485.00	21.92	0.00	0.00	0.00
486.00	26.63	0.00	0.00	0.00
487.00	30.63	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
0.00	481.90	0	0	0.00
0.10	482.00	730	730	0.07
2.10	484.00	39848	40578	15.86
3.10	485.00	27371	67949	21.92
4.10	486.00	31629	99578	26.63
5.10	487.00	35887	135465	30.63
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00

Reservoir No. 2 STAGE / STORAGE / DISCHAR DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

ELEVATION	DISCHARGE (cfs)				
	CULVERT A	CULVERT B	WEIR A	WEIR B	TOTAL
481.90	0.00	0.00 -	0.00	0.00	0.00
481.91	0.00 IC	0.00 -	0.00	0.00	0.00
481.92	0.01 IC	0.00 -	0.00	0.00	0.01
481.93	0.01 IC	0.00 -	0.00	0.00	0.01
481.94	0.01 IC	0.00 -	0.00	0.00	0.01
481.95	0.05 IC	0.00 -	0.00	0.00	0.05
481.96	0.06 IC	0.00 -	0.00	0.00	0.06
481.97	0.06 IC	0.00 -	0.00	0.00	0.06
481.98	0.06 IC	0.00 -	0.00	0.00	0.06
481.99	0.07 IC	0.00 -	0.00	0.00	0.07
482.00	0.07 IC	0.00 -	0.00	0.00	0.07

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

ELEVATION	DISCHARGE (cfs)				
	CULVERT A	CULVERT B	WEIR A	WEIR B	TOTAL
482.00	0.07 IC	0.00 -	0.00	0.00	0.07
482.20	0.87 IC	0.00 -	0.00	0.00	0.87
482.40	1.67 IC	0.00 -	0.00	0.00	1.67
482.60	3.58 IC	0.00 -	0.00	0.00	3.58
482.80	5.07 IC	0.00 -	0.00	0.00	5.07
483.00	6.72 IC	0.00 -	0.00	0.00	6.72
483.20	8.45 IC	0.00 -	0.00	0.00	8.45
483.40	11.15 IC	0.00 -	0.00	0.00	11.15
483.60	12.67 IC	0.00 -	0.00	0.00	12.67
483.80	14.65 IC	0.00 -	0.00	0.00	14.65
484.00	15.86 IC	0.00 -	0.00	0.00	15.86

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHAR DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

ELEVATION	DISCHARGE (cfs)				
	CULVERT A	CULVERT B	WEIR A	WEIR B	TOTAL
484.00	15.86 IC	0.00 -	0.00	0.00	15.86
484.10	16.57 IC	0.00 -	0.00	0.00	16.57
484.20	17.25 IC	0.00 -	0.00	0.00	17.25
484.30	17.90 IC	0.00 -	0.00	0.00	17.90
484.40	18.52 IC	0.00 -	0.00	0.00	18.52
484.50	19.13 IC	0.00 -	0.00	0.00	19.13
484.60	19.72 IC	0.00 -	0.00	0.00	19.72
484.70	20.29 IC	0.00 -	0.00	0.00	20.29
484.80	20.85 IC	0.00 -	0.00	0.00	20.85
484.90	21.39 IC	0.00 -	0.00	0.00	21.39
485.00	21.92 IC	0.00 -	0.00	0.00	21.92

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

ELEVATION	DISCHARGE (cfs)				
	CULVERT A	CULVERT B	WEIR A	WEIR B	TOTAL
485.00	21.92 IC	0.00 -	0.00	0.00	21.92
485.10	22.43 IC	0.00 -	0.00	0.00	22.43
485.20	22.94 IC	0.00 -	0.00	0.00	22.94
485.30	23.43 IC	0.00 -	0.00	0.00	23.43
485.40	23.91 IC	0.00 -	0.00	0.00	23.91
485.50	24.39 IC	0.00 -	0.00	0.00	24.39
485.60	24.85 IC	0.00 -	0.00	0.00	24.85
485.70	25.31 IC	0.00 -	0.00	0.00	25.31
485.80	25.76 IC	0.00 -	0.00	0.00	25.76
485.90	26.20 IC	0.00 -	0.00	0.00	26.20
486.00	26.63 IC	0.00 -	0.00	0.00	26.63

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

ELEVATION	DISCHARGE (cfs)				
	CULVERT A	CULVERT B	WEIR A	WEIR B	TOTAL
486.00	26.63 IC	0.00 -	0.00	0.00	26.63
486.10	27.06 IC	0.00 -	0.00	0.00	27.06
486.20	27.48 IC	0.00 -	0.00	0.00	27.48
486.30	27.89 IC	0.00 -	0.00	0.00	27.89
486.40	28.30 IC	0.00 -	0.00	0.00	28.30
486.50	28.70 IC	0.00 -	0.00	0.00	28.70
486.60	29.09 IC	0.00 -	0.00	0.00	29.09
486.70	29.48 IC	0.00 -	0.00	0.00	29.48
486.80	29.87 IC	0.00 -	0.00	0.00	29.87
486.90	30.25 IC	0.00 -	0.00	0.00	30.25
487.00	30.63 IC	0.00 -	0.00	0.00	30.63

[PgDn] [Esc] to exit

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I=========== MS STAGE / STORAGE TABLE ===========
:
: 1. RESERVOIR No = 2.     2. RESERVOIR NAME = DET.BASIN...
: 3. S = Ks * Z^b
:      Ks = 0.............     b = 0..........
:      START ELEV = 0.....    INCREMENT = 0...
:
:      STAGE      ELEVATION      CO AREA       INC STORAGE      TOT STORAGE
:      ft         ft             sq ft         cu ft            cu ft
:
:  4     0.00        481.90.      0.......              0                0
:  5     0.10        482.00.      14605...            730              730
:  6     2.10        484.00.      25243...          39848            40578
:  7     3.10        485.00.      29500...          27371            67949
:  8     4.10        486.00.      33758...          31629            99578
:  9     5.10        487.00.      38016...          35887           135465
: 10     0.00          0.00.      0.......              0                0
: 11     0.00          0.00.      0.......              0                0
: 12     0.00          0.00.      0.......              0                0
: 13     0.00          0.00.      0.......              0                0
: 14     0.00          0.00.      0.......              0                0
:
:                                    R to reset
H==========================================================================
Change item number: 0                                              DY to cont
```

Reservoir No. 2 STAGE / STORAGE / DISCHAR DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
0.00	481.90	0	0	0.00
0.01	481.91	73	73	0.00
0.02	481.92	73	146	0.01
0.03	481.93	73	219	0.01
0.04	481.94	73	292	0.01
0.05	481.95	73	365	0.05
0.06	481.96	73	438	0.06
0.07	481.97	73	511	0.06
0.08	481.98	73	584	0.06
0.09	481.99	73	657	0.07
0.10	482.00	73	730	0.07

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
0.10	482.00	73	730	0.07
0.30	482.20	3985	4715	0.87
0.50	482.40	3985	8700	1.67
0.70	482.60	3985	12684	3.58
0.90	482.80	3985	16669	5.07
1.10	483.00	3985	20654	6.72
1.30	483.20	3985	24639	8.45
1.50	483.40	3985	28624	11.15
1.70	483.60	3985	32608	12.67
1.90	483.80	3985	36593	14.65
2.10	484.00	3985	40578	15.86

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHA DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
2.10	484.00	3985	40578	15.86
2.20	484.10	2737	43315	16.57
2.30	484.20	2737	46052	17.25
2.40	484.30	2737	48789	17.90
2.50	484.40	2737	51526	18.52
2.60	484.50	2737	54264	19.13
2.70	484.60	2737	57001	19.72
2.80	484.70	2737	59738	20.29
2.90	484.80	2737	62475	20.85
3.00	484.90	2737	65212	21.39
3.10	485.00	2737	67949	21.92

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
3.10	485.00	2737	67949	21.92
3.20	485.10	3163	71112	22.43
3.30	485.20	3163	74275	22.94
3.40	485.30	3163	77438	23.43
3.50	485.40	3163	80601	23.91
3.60	485.50	3163	83763	24.39
3.70	485.60	3163	86926	24.85
3.80	485.70	3163	90089	25.31
3.90	485.80	3163	93252	25.76
4.00	485.90	3163	96415	26.20
4.10	486.00	3163	99578	26.63

[PgDn] [Esc] to exit

Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
4.10	486.00	3163	99578	26.63
4.20	486.10	3589	103167	27.06
4.30	486.20	3589	106755	27.48
4.40	486.30	3589	110344	27.89
4.50	486.40	3589	113933	28.30
4.60	486.50	3589	117522	28.70
4.70	486.60	3589	121110	29.09
4.80	486.70	3589	124699	29.48
4.90	486.80	3589	128288	29.87
5.00	486.90	3589	131876	30.25
5.10	487.00	3589	135465	30.63

[PgDn] [Esc] to exit

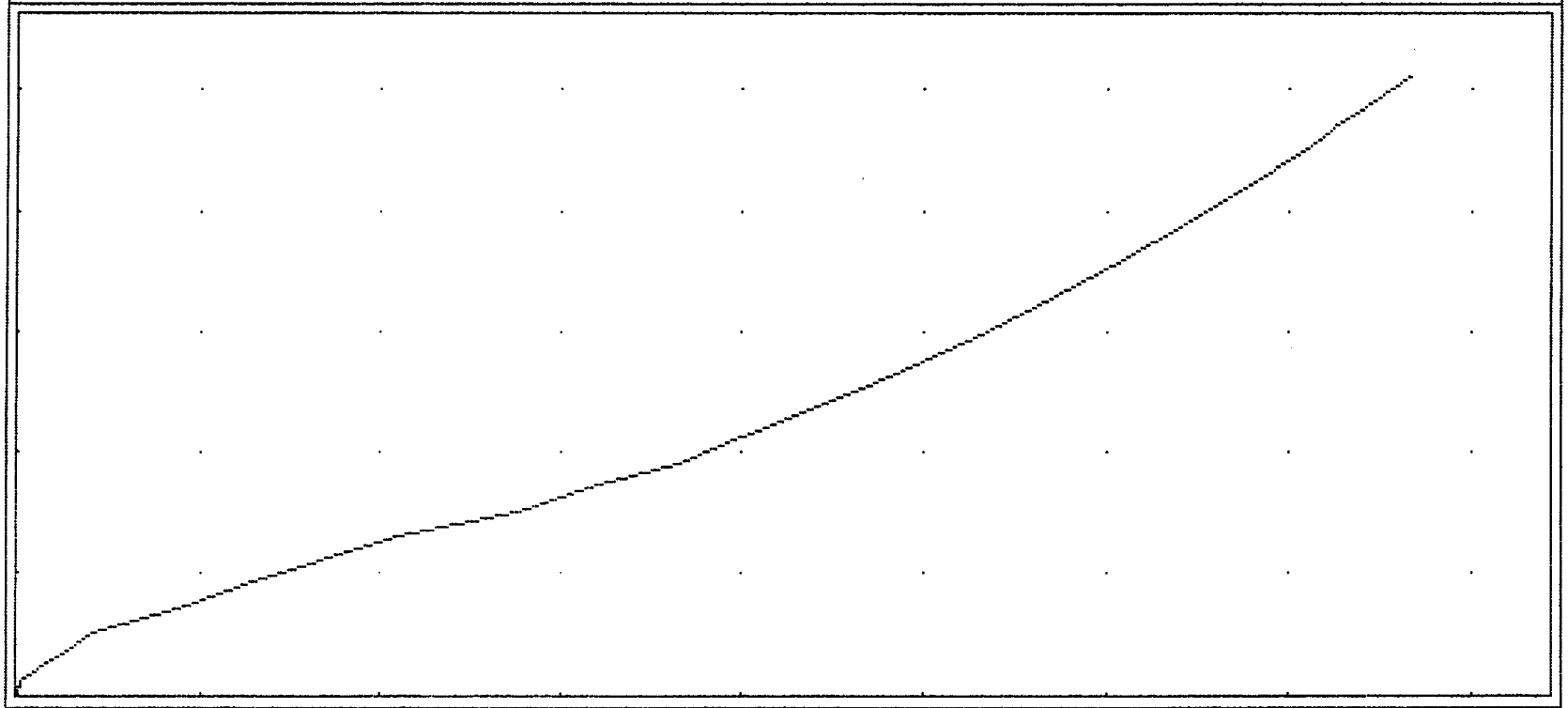
Reservoir No. 2 STAGE / STORAGE / DISCHARGE DET.BASIN...

Storage values were input manually
Discharge values: Culvert struct A. Q = .6 * A * [2gh/k]^.5 * 1
Culvert struct B. Q = .6 * A * [2gh/k]^.5 * 0
Weir struct A. Q = 3 * 0 * H ^ 1.5
Weir struct B. Q = 3 * 0 * H ^ 1.5

STAGE	ELEVATION	INC STOR cu ft	TOT STOR cu ft	OUTFLOW cfs
5.10	487.00	3589	135465	30.63
0.00	0.00	-135465	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00
0.00	0.00	0	0	0.00

[PgDn] [Esc] to exit

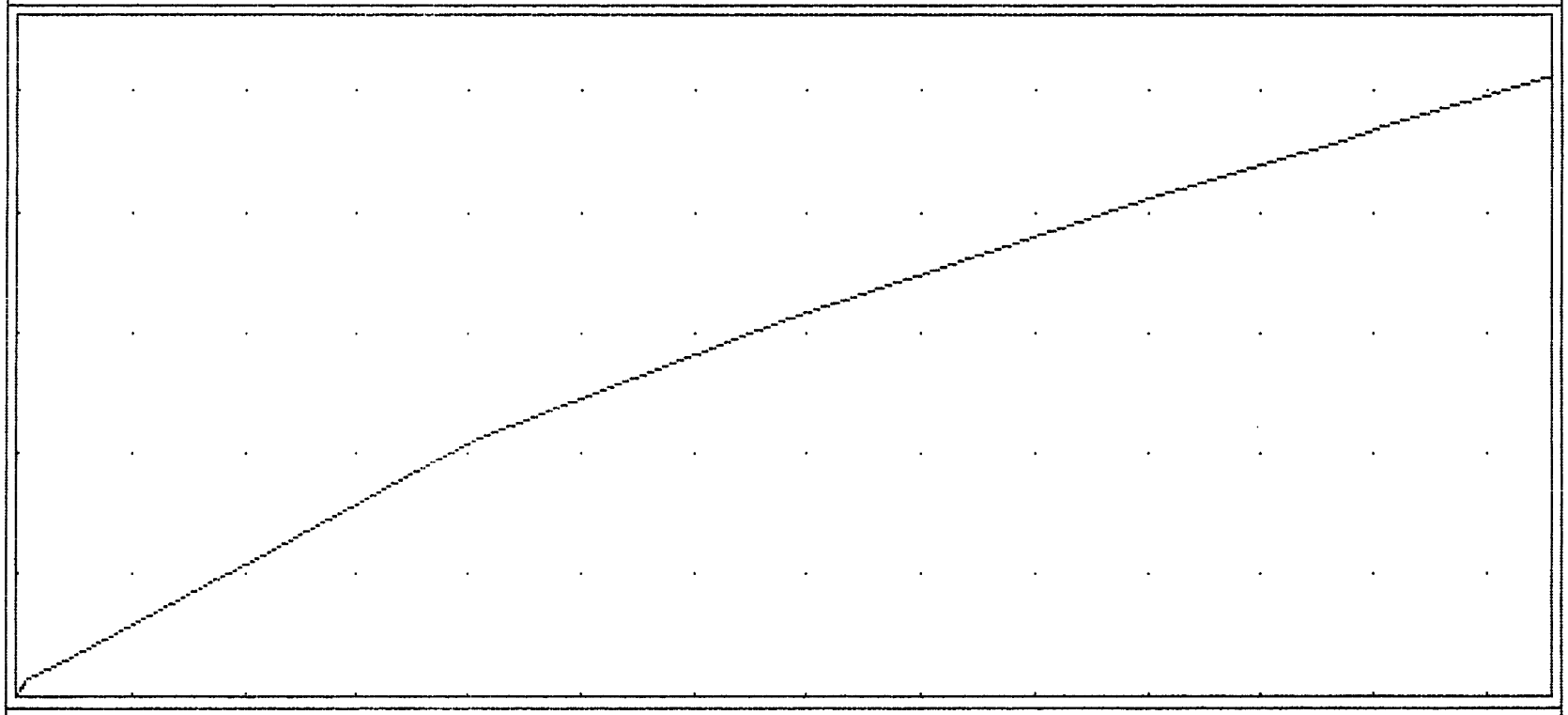
STAGE / DISCHARGE CURVE



HGU = 4.0 cfs VGU = 1.0 ft

[↵] Cont [Esc] Exit

STAGE / STORAGE CURVE



HGU = 10000 cu ft VGU = 1.0 ft

[↵] Cont [Esc] Exit

HYDROLOGIC REPORT

MONTICELLO ESTATES....
DETENTION BASIN.....
OUTFLOW.............

Hyd. No. 10

Hydrograph type = RESERVOIR ROUTE Peak discharge = 23.95 cfs
Storm frequency = 25 yr Time interval = 1 min
Inflow hyd. no. = 9 Reservoir no. = 2

HYDROGRAPH DISCHARGE TABLE

TIME min	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
1.00	4.64	9.28	4.62	4.64	0.01
2.00	9.28	13.92	18.42	18.54	0.06
3.00	13.92	18.56	41.27	41.61	0.17
4.00	18.56	23.20	73.01	73.74	0.37
5.00	23.20	27.84	113.55	114.77	0.61
6.00	27.84	32.48	162.76	164.58	0.91
7.00	32.48	37.12	220.56	223.08	1.26
8.00	37.12	41.76	286.83	290.16	1.66
9.00	41.76	46.40	360.26	365.71	2.72
10.00	46.40	51.04	440.76	448.42	3.83
11.00	51.04	55.68	528.56	538.20	4.82
12.00	55.68	60.32	623.31	635.27	5.98
13.00	60.32	64.96	724.73	739.30	7.29
14.00	64.96	69.60	832.29	850.00	8.85
15.00	69.60	74.24	944.52	966.85	11.17
16.00	74.24	78.88	1063.25	1088.35	12.55
17.00	78.88	83.51	1187.60	1216.36	14.38
18.00	83.51	88.15	1318.60	1349.99	15.70
19.00	88.15	92.79	1456.69	1490.27	16.79
20.00	92.79	88.15	1601.94	1637.64	17.85
21.00	88.15	83.51	1745.22	1782.89	18.83
22.00	83.51	78.88	1877.48	1916.89	19.70
23.00	78.88	74.24	1998.95	2039.87	20.46
24.00	74.24	69.60	2109.78	2152.06	21.14
25.00	69.60	64.96	2210.16	2253.62	21.73

HYDROGRAPH DISCHARGE TABLE Cont'd

TIME min	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
26.00	64.96	60.32	2300.31	2344.71	22.20
27.00	60.32	55.68	2380.41	2425.59	22.59
28.00	55.68	51.04	2450.55	2496.40	22.93
29.00	51.04	46.40	2510.84	2557.26	23.21
30.00	46.40	41.76	2561.38	2608.27	23.45
31.00	41.76	37.12	2602.26	2649.53	23.64
32.00	37.12	32.48	2633.57	2681.14	23.78
33.00	32.48	27.84	2655.41	2703.17	23.88
34.00	27.84	23.20	2667.85	2715.73	23.94
35.00	23.20	18.56	2670.98	2718.89	23.95
36.00	18.56	13.92	2664.89	2712.74	23.92
37.00	13.92	9.28	2649.66	2697.37	23.85
38.00	9.28	4.64	2625.38	2672.86	23.74
39.00	4.64	0.00	2592.12	2639.30	23.59
40.00	0.00	0.00	2549.97	2596.76	23.39
41.00	0.00	0.00	2503.61	2549.97	23.18
42.00	0.00	0.00	2457.69	2503.61	22.96
43.00	0.00	0.00	2412.21	2457.69	22.74
44.00	0.00	0.00	2367.16	2412.21	22.53
45.00	0.00	0.00	2322.54	2367.16	22.31
46.00	0.00	0.00	2278.36	2322.54	22.09
47.00	0.00	0.00	2234.62	2278.36	21.87
48.00	0.00	0.00	2191.38	2234.62	21.62
49.00	0.00	0.00	2148.65	2191.38	21.37
50.00	0.00	0.00	2106.42	2148.65	21.12
51.00	0.00	0.00	2064.68	2106.42	20.87
52.00	0.00	0.00	2023.45	2064.68	20.61
53.00	0.00	0.00	1982.73	2023.45	20.36
54.00	0.00	0.00	1942.50	1982.73	20.11
55.00	0.00	0.00	1902.78	1942.50	19.86
56.00	0.00	0.00	1863.55	1902.78	19.61
57.00	0.00	0.00	1824.83	1863.55	19.36
58.00	0.00	0.00	1786.61	1824.83	19.11
59.00	0.00	0.00	1748.89	1786.61	18.86
60.00	0.00	0.00	1711.67	1748.89	18.61
61.00	0.00	0.00	1674.96	1711.67	18.36
62.00	0.00	0.00	1638.75	1674.96	18.11
63.00	0.00	0.00	1603.03	1638.75	17.86
64.00	0.00	0.00	1567.82	1603.03	17.60
65.00	0.00	0.00	1533.11	1567.82	17.35
66.00	0.00	0.00	1498.91	1533.11	17.10
67.00	0.00	0.00	1465.20	1498.91	16.85

HYDROGRAPH DISCHARGE TABLE Cont'd

TIME min	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
68.00	0.00	0.00	1431.99	1465.20	16.60
69.00	0.00	0.00	1399.29	1431.99	16.35
70.00	0.00	0.00	1367.09	1399.29	16.10
71.00	0.00	0.00	1335.39	1367.09	15.85
72.00	0.00	0.00	1304.27	1335.39	15.56
73.00	0.00	0.00	1273.70	1304.27	15.28
74.00	0.00	0.00	1243.70	1273.70	15.00
75.00	0.00	0.00	1214.23	1243.70	14.73
76.00	0.00	0.00	1185.53	1214.23	14.35
77.00	0.00	0.00	1157.66	1185.53	13.93
78.00	0.00	0.00	1130.62	1157.66	13.52
79.00	0.00	0.00	1104.36	1130.62	13.13
80.00	0.00	0.00	1078.87	1104.36	12.74
81.00	0.00	0.00	1054.00	1078.87	12.44
82.00	0.00	0.00	1029.68	1054.00	12.16
83.00	0.00	0.00	1005.93	1029.68	11.88
84.00	0.00	0.00	982.71	1005.93	11.61
85.00	0.00	0.00	960.02	982.71	11.35
86.00	0.00	0.00	937.93	960.02	11.04
87.00	0.00	0.00	916.72	937.93	10.60
88.00	0.00	0.00	896.36	916.72	10.18
89.00	0.00	0.00	876.81	896.36	9.78
90.00	0.00	0.00	858.03	876.81	9.39
91.00	0.00	0.00	840.00	858.03	9.01
92.00	0.00	0.00	822.69	840.00	8.66
93.00	0.00	0.00	805.97	822.69	8.36
94.00	0.00	0.00	789.68	805.97	8.15
95.00	0.00	0.00	773.81	789.68	7.93
96.00	0.00	0.00	758.35	773.81	7.73
97.00	0.00	0.00	743.29	758.35	7.53
98.00	0.00	0.00	728.61	743.29	7.34
99.00	0.00	0.00	714.32	728.61	7.15
100.00	0.00	0.00	700.40	714.32	6.96
101.00	0.00	0.00	686.83	700.40	6.78
102.00	0.00	0.00	673.60	686.83	6.61
103.00	0.00	0.00	660.70	673.60	6.45
104.00	0.00	0.00	648.11	660.70	6.29
105.00	0.00	0.00	635.83	648.11	6.14
106.00	0.00	0.00	623.86	635.83	5.99
107.00	0.00	0.00	612.17	623.86	5.84
108.00	0.00	0.00	600.77	612.17	5.70
109.00	0.00	0.00	589.65	600.77	5.56

HYDROGRAPH DISCHARGE TABLE Cont'd

TIME min	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
110.00	0.00	0.00	578.81	589.65	5.42
111.00	0.00	0.00	568.23	578.81	5.29
112.00	0.00	0.00	557.91	568.23	5.16
113.00	0.00	0.00	547.83	557.91	5.04
114.00	0.00	0.00	537.98	547.83	4.93
115.00	0.00	0.00	528.34	537.98	4.82
116.00	0.00	0.00	518.92	528.34	4.71
117.00	0.00	0.00	509.71	518.92	4.61
118.00	0.00	0.00	500.70	509.71	4.50
119.00	0.00	0.00	491.89	500.70	4.40
120.00	0.00	0.00	483.27	491.89	4.31
121.00	0.00	0.00	474.85	483.27	4.21
122.00	0.00	0.00	466.61	474.85	4.12
123.00	0.00	0.00	458.56	466.61	4.03
124.00	0.00	0.00	450.68	458.56	3.94
125.00	0.00	0.00	442.98	450.68	3.85
126.00	0.00	0.00	435.44	442.98	3.77
127.00	0.00	0.00	428.08	435.44	3.68
128.00	0.00	0.00	420.87	428.08	3.60
129.00	0.00	0.00	413.86	420.87	3.50
130.00	0.00	0.00	407.05	413.86	3.41
131.00	0.00	0.00	400.44	407.05	3.31
132.00	0.00	0.00	394.01	400.44	3.21
133.00	0.00	0.00	387.76	394.01	3.12
134.00	0.00	0.00	381.69	387.76	3.03
135.00	0.00	0.00	375.79	381.69	2.95
136.00	0.00	0.00	370.06	375.79	2.87
137.00	0.00	0.00	364.49	370.06	2.78
138.00	0.00	0.00	359.09	364.49	2.70
139.00	0.00	0.00	353.83	359.09	2.63
140.00	0.00	0.00	348.72	353.83	2.55
141.00	0.00	0.00	343.76	348.72	2.48
142.00	0.00	0.00	338.94	343.76	2.41
143.00	0.00	0.00	334.26	338.94	2.34
144.00	0.00	0.00	329.70	334.26	2.28
145.00	0.00	0.00	325.28	329.70	2.21
146.00	0.00	0.00	320.99	325.28	2.15
147.00	0.00	0.00	316.81	320.99	2.09
148.00	0.00	0.00	312.75	316.81	2.03
149.00	0.00	0.00	308.81	312.75	1.97
150.00	0.00	0.00	304.98	308.81	1.91
151.00	0.00	0.00	301.26	304.98	1.86

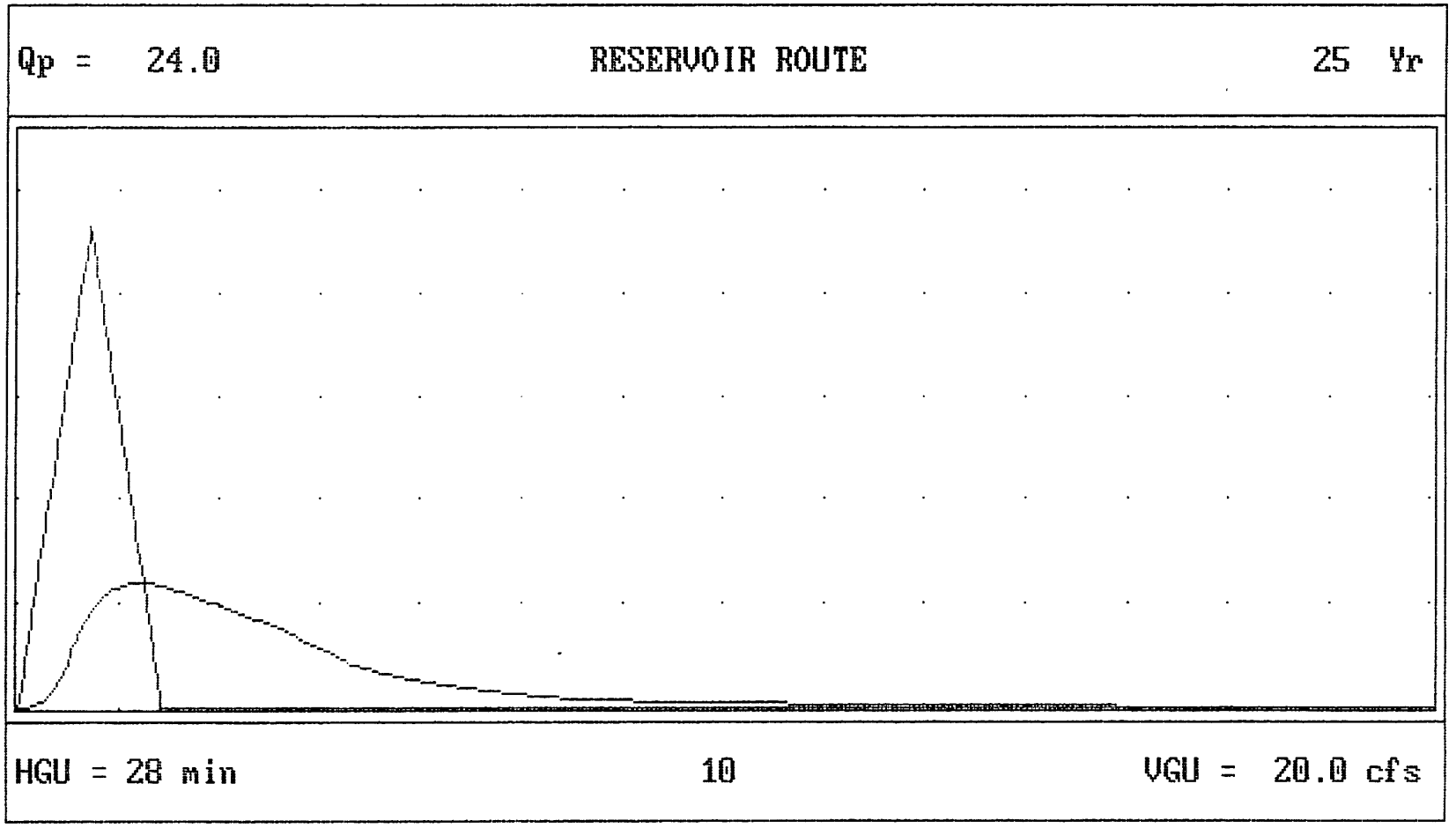
HYDROGRAPH DISCHARGE TABLE Cont'd

TIME min	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
152.00	0.00	0.00	297.65	301.26	1.81
153.00	0.00	0.00	294.14	297.65	1.76
154.00	0.00	0.00	290.72	294.14	1.71
155.00	0.00	0.00	287.39	290.72	1.67
156.00	0.00	0.00	284.10	287.39	1.65
157.00	0.00	0.00	280.85	284.10	1.63
158.00	0.00	0.00	277.64	280.85	1.61
159.00	0.00	0.00	274.46	277.64	1.59
160.00	0.00	0.00	271.33	274.46	1.57
161.00	0.00	0.00	268.23	271.33	1.55
162.00	0.00	0.00	265.17	268.23	1.53
163.00	0.00	0.00	262.14	265.17	1.51
164.00	0.00	0.00	259.15	262.14	1.49
165.00	0.00	0.00	256.20	259.15	1.48
166.00	0.00	0.00	253.28	256.20	1.46
167.00	0.00	0.00	250.40	253.28	1.44
168.00	0.00	0.00	247.55	250.40	1.42
169.00	0.00	0.00	244.74	247.55	1.41
170.00	0.00	0.00	241.96	244.74	1.39
171.00	0.00	0.00	239.21	241.96	1.37
172.00	0.00	0.00	236.50	239.21	1.36
173.00	0.00	0.00	233.82	236.50	1.34
174.00	0.00	0.00	231.17	233.82	1.32
175.00	0.00	0.00	228.55	231.17	1.31
176.00	0.00	0.00	225.97	228.55	1.29
177.00	0.00	0.00	223.41	225.97	1.28
178.00	0.00	0.00	220.89	223.41	1.26
179.00	0.00	0.00	218.40	220.89	1.25
180.00	0.00	0.00	215.93	218.40	1.23
181.00	0.00	0.00	213.50	215.93	1.22
182.00	0.00	0.00	211.10	213.50	1.20
183.00	0.00	0.00	208.72	211.10	1.19
184.00	0.00	0.00	206.37	208.72	1.17
185.00	0.00	0.00	204.05	206.37	1.16
186.00	0.00	0.00	201.76	204.05	1.15
187.00	0.00	0.00	199.50	201.76	1.13
188.00	0.00	0.00	197.26	199.50	1.12
189.00	0.00	0.00	195.05	197.26	1.10
190.00	0.00	0.00	192.87	195.05	1.09
191.00	0.00	0.00	190.71	192.87	1.08
192.00	0.00	0.00	188.58	190.71	1.07
193.00	0.00	0.00	186.47	188.58	1.05

HYDROGRAPH DISCHARGE TABLE Cont'd

TIME min	INFLOW (i) cfs	INFLOW (j) cfs	2S/dt-O (i) cfs	2S/dt+O (j) cfs	OUTFLOW cfs
194.00	0.00	0.00	184.39	186.47	1.04
195.00	0.00	0.00	182.34	184.39	1.03
196.00	0.00	0.00	180.31	182.34	1.02
197.00	0.00	0.00	178.30	180.31	1.00

Maximum outflow (cfs) = 23.95 ← NOTE: ALLOWABLE OUTFLOW=
Maximum storage (cu ft) = 80848 ← REQUIRED STORAGE =
Maximum elevation (ft) = 485.41



MAX STORAGE = 80848

MAX ELEVATION = 485.41

RECEIVED
FEB 19 1993
BUILDING DEPT.

FILE
PHASE
II

PICKETT RAY & SILVER

Civil Engineers
Planners
Land Surveyors

333 Mid Rivers Mall Dr.
St. Peters, MO 63376
441-1211 278-1211

February 18, 1993

Mr. Frank Godwin
City of O'Fallon
138 South Main Street
O'Fallon, Missouri 63366

RE: Monticello Estates (91-030/26890)

Dear Frank:

Per our telephone conversation February 16, 1993, I am sending you the following summary of runoff calculations.

Total Development = 108.2 A^c
Common Ground (Flood Plain) = 8.06 A^c

I. Required Storage: 108.2 A^c - 8.06 = 100.14 A^c (25 yr. Storm)
100.14 A^c x 3.26 = 326.46 cfs. " "
100.14 A^c x 2.31 = 231.32
95.14 cfs.
95.14 cfs. x (60 sec. x 30 min.) = 171,252 cf.

II. Actual Storage Provided:

A) Phase I - Basin
(High Water Elev. - 488.0) 230,068 cf.
(Flood Elev. - 484.0) 112,943
117,125 cf. (25 yr. Storm)

USE AS - SED. STORAGE

(Capacity Provided) 117,125 cf. ÷ (60 sec. x 30 min) = 65.07 cfs.

B) Phase II - Basin
(High Water Elev. - 485.41) 80,~~061~~ 601 c.f.
(Flood Elev. - 482.0) 730.000
79,871.00 c.f. (25 yr. Storm)

USE AS - SED STOR.

(Capacity Provided) ~~82,501~~ 79,871 c.f. ÷ (1800) = ~~45.8~~ 44.37 c.f.s.

PICKETT RAY & SILVER

III. Summary

Required Storage = 171,252 c.f ✓
Storage Provided = 117,125 ✓ + 79,871 = 196,996 c.f. = 109.44

or

95.14 c.f. vs. (65.07+45.8) = 110.87 A^c

or

100.14 A^c vs. [110.87 ÷ (3.26-2.31)] = 110.87 A^c

If you have any questions and or comments please feel free to call.

Sincerely,

PICKETT, RAY & SILVER

Tanya Dietz

Tanya Dietz

TD:jen

cc: Whittaker

SED STOR. REQD = 17,300 CF
SED STOR. PROVIDED = 113,700 CF OK

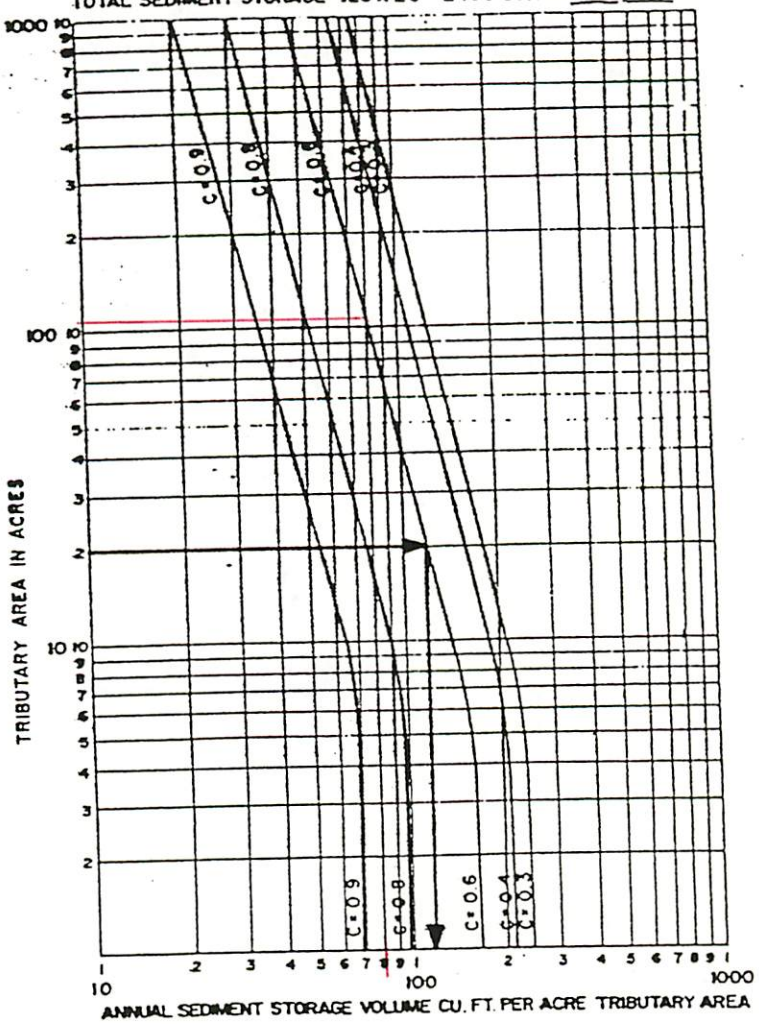
PROVIDING MORE THAN REQD. BY ORDINANCE
ACTUAL FLOWS FROM SITE ARE LESS
AFTER DEV. THAN BEFORE.

DESIGN AS STATED IS APPROVED
2-22-93
F.G.

ORIGINAL

2 YEAR SEDIMENT STORAGE REQUIRED

EXAMPLE:
TRIBUTARY AREA = 20 ACRES
RATIONAL METHOD RUNOFF COEFFICIENT "C" = 0.6
SEDIMENT STORAGE = 120 CU. FT. PER ACRE PER YEAR
TOTAL SEDIMENT STORAGE = 120 X 20 = 2400 CU. FT. PER YEAR.



80 CF PER ACRE PER YEAR

ANNUAL SEDIMENT STORAGE

FIG. 6

CF ACRE YEAR
80 X 108 X 2 = 17,280 CF
≈ 17,300 CF