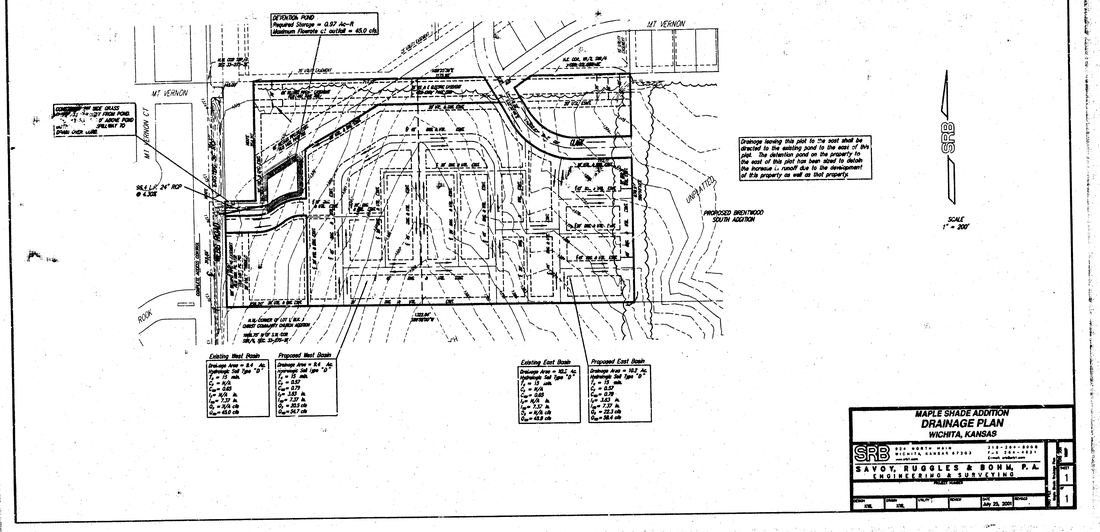
DRAINAGE PLAN
MAPLE SHADE ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS



MAPLE SHADE ADDITION
DRAINAGE PLAN
WICHITA, KANSAS

SAVOY, RUGGLES & BOHM, P.A.
ENGINEERING & SURVEYING

DESIGN	DRAWN	QUALITY	CHECK	DATE	REVISED
KML	KML			July 25, 2000	

Sheet No. 1 of 1

Project MAPLE SHADE ADD. DRAINAGE
By JDS Date 7-19-00 Page 1 Of

SAVOY, RUGGLES & BOHM, P.A.
ENGINEERING & SURVEYING

East Basin

Area = 660' x 670' = 442,200 ft² = 10.2 Ac

Soil types from all basins are Rosehill (Rd) and Irwin (Ia). Both are in hydrologic soil group D.

T_c = 15 min
C_2 = 0.57
C_{100} = 0.79
I_2 = 3.83 in.
I_{100} = 7.37 in.

Q = CIA (Rational Method)

$Q_{2_{DEV}}$ = (0.57)(3.83)(10.2) = 22.3 cfs

$Q_{100_{DEV}}$ = (0.79)(7.37)(10.2) = 59.4 cfs

For undeveloped flows: Use C_2 = 0.30 and C_{100} = 0.65

$Q_{100_{UNDEV}}$ = (0.65)(7.37)(10.2) = 48.9 cfs

West Basin

Area = 610' x 670' = 408,700 ft² = 9.4 Ac

$Q_{2_{DEV}}$ = (0.57)(3.83)(9.4) = 20.5 cfs

$Q_{100_{DEV}}$ = (0.79)(7.37)(9.4) = 54.7 cfs

$Q_{100_{UNDEV}}$ = (0.65)(7.37)(9.4) = 45.0 cfs

Req'd Storage = $(Q_{in} - Q_{out})(3)(T_c)(0.5)(60\ sec/min)(K)$
where K = 1.5

West Basin Storage = (54.7 - 45.0)(3)(15)(0.5)(60)(1.5) = 19,642.5 cu.ft
= 0.45 Ac-ft

East Basin Storage = (59.4 - 48.9)(3)(15)(0.5)(60)(1.5) = 21,262.5 cu.ft
= 0.49 Ac-ft

Project MAPLE SHADE ADD. DRAINAGE
By JDS Date 7-20-00 Page 2 Of

SAVOY, RUGGLES & BOHM, P.A.
ENGINEERING & SURVEYING

Partial West Basin (Part of Lot 2)

Area = 355' x 470' = 166,850 ft² = 3.8 Ac.

$Q_{100_{DEV}}$ = (0.79)(7.37)(3.8) = 22.0 cfs

Difference between the full basin and partial basin is (54.7 cfs - 22.0 cfs) = 32.7 cfs

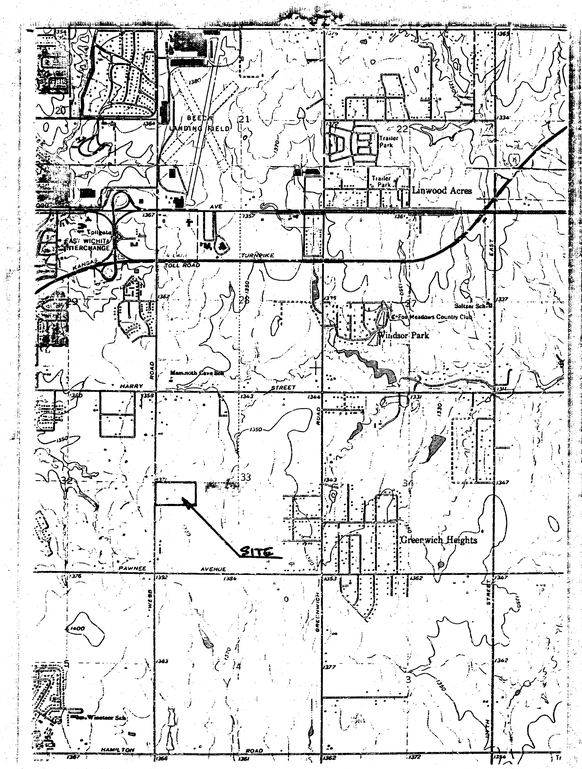
∴ 32.7 cfs will run off west basin without detention

45.0 cfs is allowed to run off west basin

The difference (45.0 - 32.7) is 12.3 cfs.

∴ 12.3 cfs is allowed to run off partial basin on Lot 2

Req'd Storage in NW corner of Lot 2 =
(22.0 - 12.3)(3)(15)(0.5)(60)(1.5) = 19,642.5 cu.ft
= 0.45 Ac-ft



Project MAPLE SHADE ADD. DRAINAGE
By JDS Date 7-19-00 Page 1 Of

SAVOY, RUGGLES & BOHM, P.A.
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For undeveloped flows: Use C_2 = 0.30 and C_{100} = 0.65

$Q_{100_{UNDEV}}$ = (0.65)(7.37)(10.2) = 48.9 cfs

West Basin

Area = 610' x 670' = 408,700 ft² = 9.4 Ac

$Q_{2_{DEV}}$ = (0.57)(3.83)(9.4) = 20.5 cfs

$Q_{100_{DEV}}$ = (0.79)(7.37)(9.4) = 54.7 cfs

$Q_{100_{UNDEV}}$ = (0.65)(7.37)(9.4) = 45.0 cfs

Req'd Storage = $(Q_{in} - Q_{out})(3)(T_c)(0.5)(60\ sec/min)(K)$
where K = 1.5

West Basin Storage = (54.7 - 45.0)(3)(15)(0.5)(60)(1.5) = 19,642.5 cu.ft
= 0.45 Ac-ft

East Basin Storage = (59.4 - 48.9)(3)(15)(0.5)(60)(1.5) = 21,262.5 cu.ft
= 0.49 Ac-ft

Project MAPLE SHADE ADD. DRAINAGE
By JDS Date 7-20-00 Page 2 Of

SAVOY, RUGGLES & BOHM, P.A.
ENGINEERING & SURVEYING

Partial West Basin (Part of Lot 2)

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$Q_{100_{DEV}}$ = (0.79)(7.37)(3.8) = 22.0 cfs

Difference between the full basin and partial basin is (54.7 cfs - 22.0 cfs) = 32.7 cfs

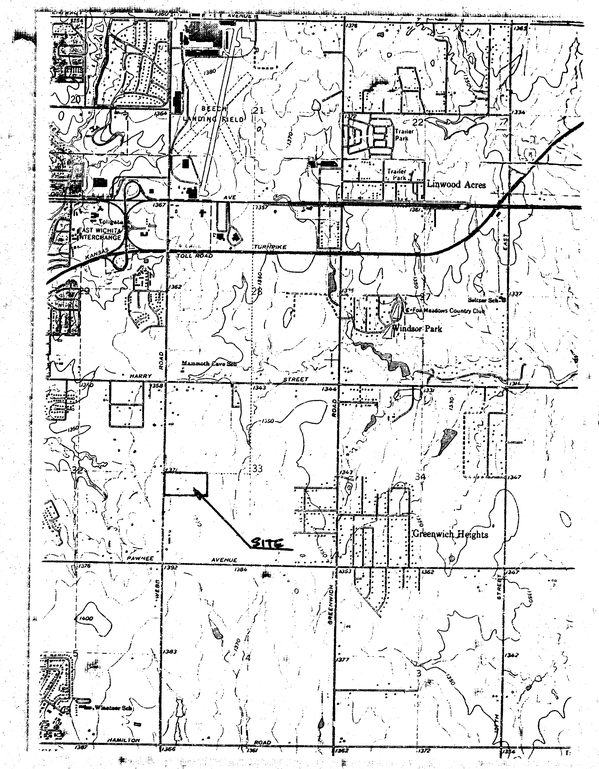
∴ 32.7 cfs will run off west basin without detention

45.0 cfs is allowed to run off west basin

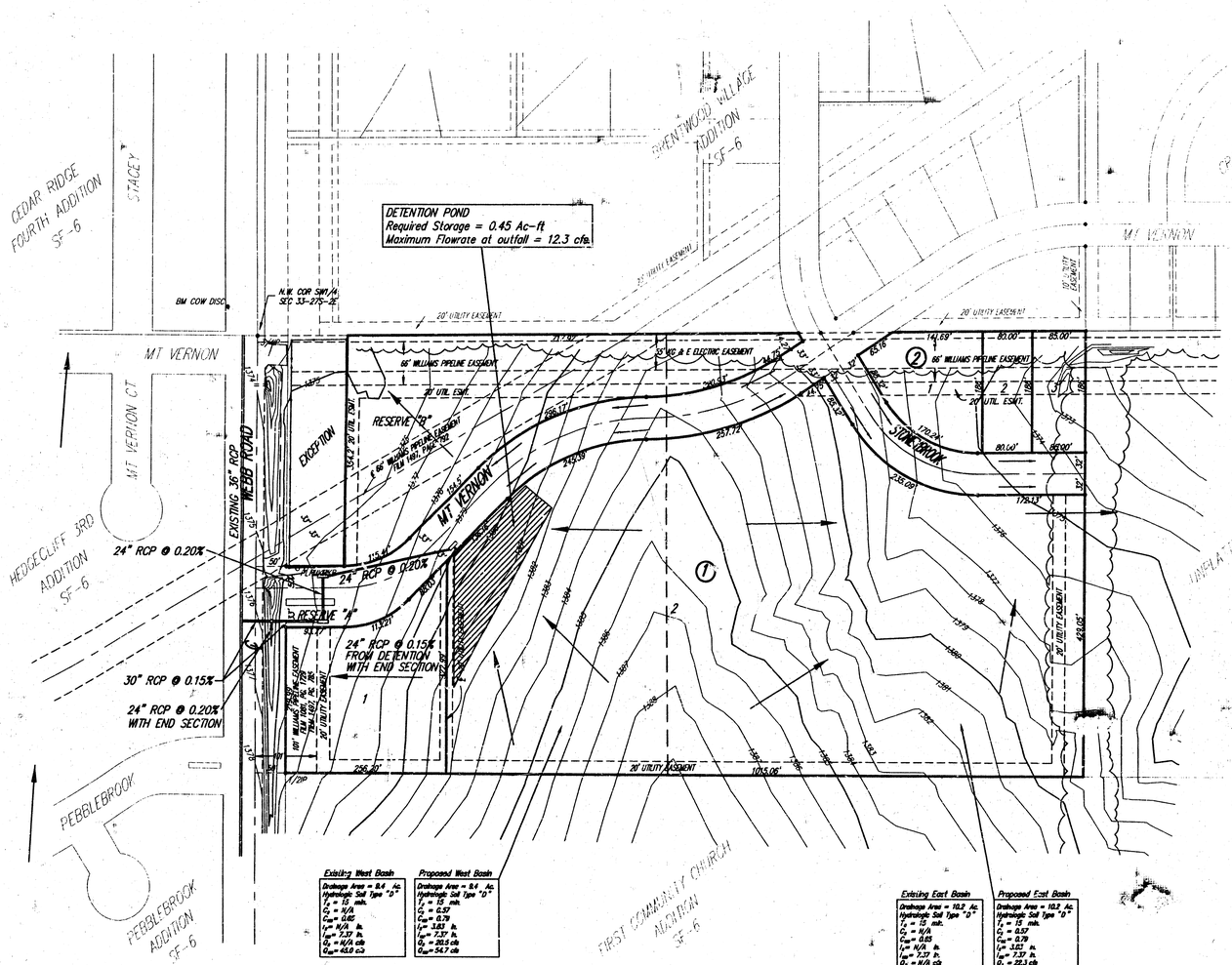
The difference (45.0 - 32.7) is 12.3 cfs.

∴ 12.3 cfs is allowed to run off partial basin on Lot 2

Req'd Storage in NW corner of Lot 2 =
(22.0 - 12.3)(3)(15)(0.5)(60)(1.5) = 19,642.5 cu.ft
= 0.45 Ac-ft



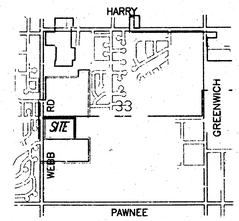
DRAINAGE PLAN
MAPLE SHADE ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS



Existing West Basin	Proposed West Basin
Drainage Area = 9.4 Ac	Drainage Area = 9.4 Ac
Hydrologic Soil Type "D"	Hydrologic Soil Type "D"
T_c = 15 min.	T_c = 15 min.
C_2 = N/A	C_2 = 0.57
C_{100} = 0.62	C_{100} = 0.79
i_2 = N/A in.	i_2 = 3.83 in.
i_{100} = 7.37 in.	i_{100} = 7.37 in.
Q_2 = N/A cfs	Q_2 = 20.5 cfs
Q_{100} = 43.0 cfs	Q_{100} = 54.7 cfs

Existing East Basin	Proposed East Basin
Drainage Area = 10.2 Ac	Drainage Area = 10.2 Ac
Hydrologic Soil Type "D"	Hydrologic Soil Type "D"
T_c = 12 min.	T_c = 15 min.
C_2 = N/A	C_2 = 0.57
C_{100} = 0.65	C_{100} = 0.79
i_2 = N/A in.	i_2 = 3.61 in.
i_{100} = 7.37 in.	i_{100} = 7.37 in.
Q_2 = N/A cfs	Q_2 = 22.3 cfs
Q_{100} = 48.8 cfs	Q_{100} = 58.4 cfs

Drainage leaving this plat to the east shall be directed to the existing pond to the east of this plat and the detention pond on the property to the east of this plat shall be sized to detain the increase in runoff due to the development of this property as well as that property.



VICINITY MAP
NO SCALE

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