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Project MELDONIA C.U.P.

Item DETENTION BASIN DESIGN

DRAINAGE AREA 19.72 AC

SOIL TYPE (FROM SCS SOIL SURVEY OF SEDGWICK COUNTY)

URBAN-FARNUM HYDROLOGIC SOIL GROUP B

LAND USE

PRE-DEVELOPMENT

PASTURE - GOOD CONDITION

(USGS OPEN-FILE REPORT 78-974)

CN = 61

PROPOSED DEVELOPMENT

MULTI-FAMILY RESIDENTIAL

30% IMPERVIOUS

CN = 98

50% OPEN AREA

CN = 61

$CN_{WE} = 79.5$

PRECIPITATION [100HR, 64E]

5.9 IN

RUNOFF

PRE-DEVELOPMENT (CN = 61)

1.94 IN

PROPOSED DEVELOPMENT (CN = 79.5)

3.64 IN

VOLUME OF RUNOFF

PRE-DEVELOPMENT 19.72 AC $\left(\frac{1.94 \text{ IN}}{12 \text{ IN/FT}}\right)$

3.19 AC-FT

PROPOSED DEVELOPMENT 19.72 AC $\left(\frac{3.64 \text{ IN}}{12 \text{ IN/FT}}\right)$

5.98 AC-FT

TIME OF CONCENTRATION

LENGTH OF BASIN 1484 FT[±]

FALL THROUGH BASIN

0.28 MIN
20 FT[±]

TIME OF CONCENTRATION (FERPIC)

$$T_c = \left[\frac{11.09L^3}{H} \right]^{0.385} = 0.19 \text{ HR} = 11.3 \text{ MIN}$$

11.3 MIN



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RUNOFF FLOW RATE (FROM SCS HYDROLOGY GUIDE - KANSAS)

UNIT PEAK DISCHARGE 0.80 CFS/Ac/IN

PRE-DEVELOPMENT

$$(0.80)(19.72)(1.94)$$

31 CFS

PROPOSED DEVELOPMENT

$$(0.80)(19.72)(3.64)$$

58 CFS

SUMMARY

	VOLUME	FLOW RATE
PRE-DEVELOPMENT	3.19	31
PROPOSED DEVELOPMENT	5.98	58
PERCENT INCREASE	88%	88%

RETENTION VOLUME REQUIRED 2.80 AC-FT (MIN)