January 28, 2020

PROPOSED NEW BASIN CALCULATIONS
FOR THE SEC OF COX & TYLERSVILLE REDEVELOPMENT

1)

    CYS Calculation: (See Attached Drainage Map)

    1 year pre-development (1986 ±) (See Attached Pages 1-2)
        CN = 79 - Bayer Becker (2005) + AMB (1986)
        Tc = 1.0 hour - Bayer Becker (2005) + AMB (1986)
        Area = 69 Ac

        Q_1 peak = 36.09 CFS
        1 yr Volume = 6.005 Ac. Ft.

    1 year proposed development (2020 ±) (See Attached Pages 3-4)
        CN = 92.0
        Tc = .37 hours
        Area = 69 Ac

        Q_1 peak = 135.14 CFS
        1 yr Volume = 11.34 Ac. Ft.

$$\frac{11.34\ Ac-ft-6.00\ Ac-Ft}{6.00\ Ac.\ Ft.} = \ 89\%$$

10 yr is the CYS

2) __WQV:__

WQV = Rv x P x A/12

Rv = 0.05 + 0.9 (.76) = 0.734
P = 0.9 in
A = 66 Ac

WQV = .734 x .9 in x 66 Ac /12
= 3.633 Ac. Ft.
= 158,266.5 C.F. @ 873.23 ±

3) **System Design:** (See Attached TR55 Calculations)

10 yr is the CYS

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Predevelopment
On Site 69 Ac
$CN = 79$, $tc = 1.0$ hr (VOA) (June #10)

Off-Site Existing Flow
from North of Tylersville Rd.
(Junc #10)

Off-Site Area
East of Church
(Sub #50)

Allowable
Out Flow from
the Development
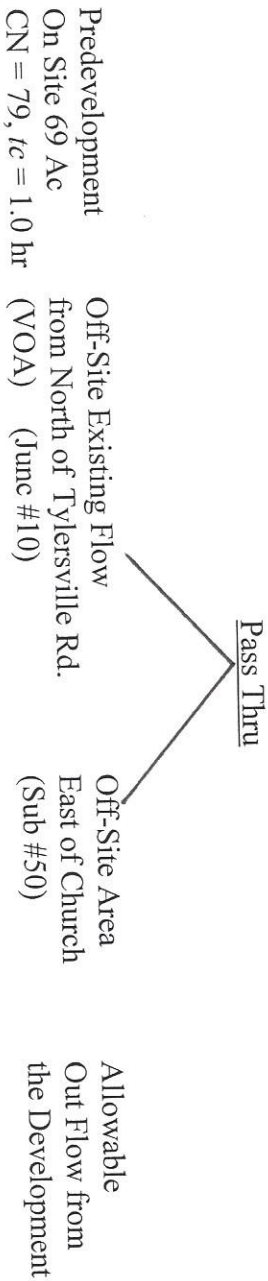
Design Out-Flow from the new Development

$Q_1 = 36.09$ CFS	$Q_{10} = 70.6$ CFS	$Q_{10} = 3.9$ CFS	$Q_{10} = 110.59$ CFS
$Q_{10} = 73.68$ CFS	$Q_{25} = 84.22$ CFS	$Q_{25} = 4.75$ CFS	$Q_{25} = 162.65$ CFS
$Q_{25} = 92.34$ CFS	$Q_{50} = 95.93$ CFS	$Q_{50} = 5.46$ CFS	$Q_{50} = 193.73$ CFS
$Q_{50} = 108.25$ CFS	$Q_{100} = 112.02$ CFS	$Q_{100} = 6.33$ CFS	$Q_{100} = 226.6$ CFS

Design Out-Flow from the new Development:
$Q_{10} = 64.98$ CFS
$Q_{25} = 84.38$ CFS
$Q_{50} = 102.27$ CFS
$Q_{100} = 125.57$ CFS