MOEHRING & ASSOCIATES ——— CONSULTING ENGINEERS

CENTRAL MAIZE SCHOOLS ADDITION

SEDGWICK COUNTY, KANSAS

DRAINAGE EVALUATION

&

SUPPORTING CALCULATIONS

MOEHRING & ASSOCIATES
CONSULTING ENGINEERS
JULY 2001

433 S. HYDRAULIC ——— WICHITA, KANSAS 67211 ——— 263-8291

PREFACE

Attached hereto are the hydrology evaluations, computations and exhibits for the drainage analysis for Maize Central Schools Addition.

The computations and subsequent computer print-outs contained in this report employed portions of the computer programs entitled "Quick TR-55, Hydrology For Small Watersheds" and also "Pond-2, Detention Pond Design and Analysis", both of which have been compiled and published by Haestad Methods, Inc., Waterbury, CT.

The Quick TR-55 computer program is based upon methodologies established in Technical Release No. 55, "Urban Hydrology for Small Watersheds" as developed by the United States Soil Conservation Service. The TR-55 methodology is particularly applicable to the conversion of rural land to urban use.

The Quick TR-55 program contains not only the Graphical Peak and the Tabular Hydrograph methods as developed by the S.C.S., but also the Modified Rational Method for determination of peak discharge from small watersheds. The Graphical Peak Method does not yield a hydrograph for routing purposes, while the Tabular Hydrograph Method does not lend itself to the configuration of the watershed that is here being evaluated.

Therefore, the option of the Modified Rational Method has been utilized to determine the peak discharge, and at the same time generate a hydrograph by use of the S.C.S. Dimensionless Unit Hydrograph template, which expresses the ratio of incremental discharge to the peak discharge (Q/Qp), for each corresponding time increment to the time to peak (T/Tp).

Also, the "Quick TR-55" program has been used for the calculation of the time of concentration (Tc), which in this case is the sum of the travel times for overland sheet flow, shallow concentrated flow and open channel flow, or the appropriate combination thereof.

The design storm rainfall intensities, for each respective time of concentration (Tc), are based on the Intensity-Duration-Frequency (I-D-F) values for this area, based upon data from the NOOA Technical Memorandum, NWS-HYDRO - 35, as published by the National Weather Service.

The Soil Survey for Sedgwick County, published by the SCS, was used to determine the hydrologic soil groups (HSG) for this site.

The City of Wichita, "Interim Drainage and Storm Sewer Policy for Design Criteria and Documentation" was used as a source of Rational "C" values for the various land uses, correlated to each hydrologic soil group.

PURPOSE

Ideally, the goal of good storm water management is to limit the peak rate of runoff from a given site, resulting from post-developed conditions, to be equal to or less than the runoff from the site under existing or pre-developed conditions. This would serve to preserve the capacity of water courses downstream, natural or manmade.

After review of this project by the Sedgwick County Department of Public Works, it was decided to keep the post-developed outflow equal to or less than the capacity of the existing culvert pipes under Tyler Rd., located near the intersection of Tyler Rd. and 37th Street, North. With a water surface elevation equal to the edge of the Tyler Rd. pavement, the maximum capacity of the existing culvert(s) installation is estimated to be 37 cubic feet per second

Runoff is determined primarily by the amount of precipitation and by infiltration characteristics related to soil type, impervious surfaces, and surface detention and/ or retention.

Travel time for each contributing basin is determined primarily by slope, length of flow path, depth of flow and roughness of flow surface.

Peak discharges are then based on the relationship of these parameters, and on the drainage area of the watershed, the location of the development, and the affect of any natural or man made storage.

Then, the objective of this report will be to evaluate the peak rate of discharge from the site under post-developed conditions, resulting from the 100 yr rainfall event, and to reduce the peak rate of discharge through the use of on-site detention.

INITIAL DATA

The area being evaluated in this report is being platted as "Central Maize Schools Addition", and is located in the N.E. 1/4 of Section 32, Township 26 South, Range 1 West of the 6th P.M., Sedgwick County, Kansas, and is generally located at the Southwest Corner of Tyler Road and 37th Street North.

This property lies within the watershed contributing to Big Slough North. There are no FEMA flood plains within this property.

The time of concentration (Tc) for Basin 1 has been determined for the principal flow, with 300' of overland sheet flow (A to B) originating near the North edge of the Basin; followed by 830' of shallow concentrated flow (B to C); then East 1237' as open channel flow (C to D) discharging into Pond # 1.

The time of concentration (Tc) for Basin 2 has been determined for the principal flow path, with 300' of overland sheet flow (A to B); then 2300' of shallow concentrated flow (B to C) discharging into Pond # 2.

Additionally, 3.7 Ac. of off-site contribution from land to the South, contributes to Basin 1 and 10.42 Ac. of off-site contribution from land to the West, contributes to Basin 2.

The Rational "C" values used in this study are taken from the City of Wichita "Drainage Policy", and for the 100 year design storm is as follows:

Land Use	Rational "C"	Basin 1- Area	Basin 2 - Area
Lawns, B Soils	0.37	75.43 Ac.	34.77 Ac.
Offsite	0.57	3.66 Ac.	1.40 Ac.
Bldgs, Drives	0.89	0.99 Ac.	9.78 Ac.
Running Track	0.89	0.68 Ac.	0.23 Ac.

COMPUTATION PROCEDURE

Computer print out Page C-1 is the determination of the time of concentration (Tc) for that part of Basin 1 contributing to Node C of the principal flow path, as shown on the enclosed Exhibit "A". This location is at the entrance of a proposed channel that will convey runoff into Pond 1. At Node C, the 100 year peak discharge is found to be 56.27 cubic feet per second (cfs).

Page C-2 contains the flow characteristics of the proposed Channel #1, having an 8 foot bottom width, 4:1 side slopes and a gradient of 0.30 %. The flow depth would be 1.48', flowing at a rate of 2.74 feet per second.

Page C-3 is the determination of the time of concentration (Tc) for Basin 1, to the point of discharge into detention Pond 1. Tc = 1.87 hours = 112.2 minutes.

Pages C-4 and C-5 are the computations for the determination of the peak discharge and subsequent hydrograph ordinates, for the 100 year discharge into Pond 1.

Page C-6 is the pond volume (stage / storage) file for Pond #1.

Pages C-7 thru C-12 inclusive, are exhibits of the input data for each of the 2 - 18" outlet pipe structures; prepares a pipe(s) outflow rating table; summarizes the composite outflow (if more than 1 outlet pipe is used) and then combines the outflow rating table with the pond volume file, to produce and store the pond rating table output file for later use in the routing computations.

Pages C-13, C-14 and C-15 are the routing computations for Pond 1.

Page C-16 is the summary of the routing computations, in numerical form.

Page C-17 is the graphical representation of the inflow / outflow relationship.

Page C-18, C-19 and C-20 are the determinations for the time of concentration, the 100 year peak discharge and the corresponding inflow hydrograph ordinates, respectively, for detention Pond 2, located generally East of the proposed school building as shown on Exhibit "A".

Page C-21 is the pond volume file, based on a planimeter survey of detention Pond # 2.

Pages C-22, C-23 and C-24 produce a file summary for the composite hydrograph, by adding the inflow hydrograph from Basin #2 with the outflow hydrograph from detention Pond #1, for the 100 year rainfall event.

Pages C-25 thru C-30 inclusive, are exhibits of the input data for the 1 - 24" & 1-18" outlet pipe structures; prepares an outflow rating for each pipe; summarizes the composite outflow of the two pipes, and then combines the outflow rating table with the pond volume file, to produce and store the pond rating table output file for later use in the routing computations.

Pages C-31 thru C-34 inclusive, are the routing computations for detention Pond # 2.

Page C-35 is the summary of the routing computations, in numerical form.

Page C-36 is the graphical representation of the inflow / outflow relationship, for detention Pond # 2.

SUMMARY

As stated previously in this report, Sedgwick County Department of Public Works, has required that the outflow from this property under developed conditions, be equal to or less than the capacity of the existing culvert installation under Tyler Rd., which has been estimated as a maximum of 37 cubic feet / second.

From the summary of routing computations for detention Pond # 2, the Peak flow into Pond # 2 was found to be 105.94 cfs; the peak outflow through the 1 - 24" & 1-18" RCP's is equal to 35.52 cfs; and the resulting maximum water surface elevation in the detention pond will be 1,343.42 MSL.

Implementation of the drainage plan, as shown on the enclosed Exhibit "A", will then meet the discharge requirements as established by the County.

Respectfully Submitted,

Don C. Moehring II

MAIZE CENTRAL SCHOOLS

Tc COMPUTATIONS FOR:

SHEET FLOW (Applicable to Tc only)

		A TO B	
Segment ID			
Surface description		CULTIVATED	
Manning's roughness coeff., n		0.2400	
Flow length, L (total < or = 300)	ft	300.0	
Two-yr 24-hr rainfall, P2	in	3.500	
Land slope, s	ft/ft	0.0033	
$T = \frac{.007 * (n*L)^{0.8}}{P2^{0.5} * s^{0.4}}$	hrs	1.13	= 1.13

SHALLOW CONCENTRATED FLOW

		B TO C	
Segment ID			
Surface (paved or unpaved)?		Unpaved	
Flow length, L	ft	1700.0	
Watercourse slope, s	ft/ft	0.0039	
$Avg.V = Csf * (s)^{0.5}$	ft/s	1.0076	
where: Unpaved Csf = 16.1345			
Paved Csf = 20.3282			
T = L / (3600*V)	hrs	0.47	= 0.47

CHANNEL FLOW

Segment ID			
Cross Sectional Flow Area, a	sq.ft	0.00	
Wetted perimeter, Pw	ft	0.00	
Hydraulic radius, r = a/Pw	ft	0.000	
Channel slope, s	ft/ft	0.0000	
Manning's roughness coeff., n		0.0000	
$V = \frac{1.49 * r^{2/3} * s^{1/2}}{n}$	ft/s	0.0000	
Flow length, L	ft	0	
T = L / (3600*V)	hrs	0.00	= 0.00

TOTAL TIME (hrs) 1.59

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: MAIZE SCHOOLS

Comment: BASIN 1 CHANNEL FLOW

Solve For Depth

Given Input Data:

Bottom Width.....	8.00 ft
Left Side Slope..	4.00:1 (H:V)
Right Side Slope.	4.00:1 (H:V)
Manning's n.....	0.030
Channel Slope....	0.0030 ft/ft
Discharge.....	56.27 cfs

Computed Results:

Depth.....	1.48 ft
Velocity.....	2.74 fps
Flow Area.....	20.51 sf
Flow Top Width...	19.80 ft
Wetted Perimeter.	20.17 ft
Critical Depth...	0.97 ft
Critical Slope...	0.0148 ft/ft
Froude Number....	0.48 (flow is Subcritical)

MAIZE CENTRAL SCHOOLS ADDITION
BASIN 1 POST DEVELOPED CONDITIONS

Tc COMPUTATIONS FOR:

SHEET FLOW (Applicable to Tc only)

Segment ID		A TO B	
Surface description		CULTIVATED	
Manning's roughness coeff., n		0.2400	
Flow length, L (total < or = 300)	ft	300.0	
Two-yr 24-hr rainfall, P2	in	3.500	
Land slope, s	ft/ft	0.0017	
$T = \frac{.007 * (n*L)^{0.8}}{P2^{0.5} * s^{0.4}}$	hrs	1.47	= 1.47

SHALLOW CONCENTRATED FLOW

Segment ID		B TO C	
Surface (paved or unpaved)?		Unpaved	
Flow length, L	ft	830.0	
Watercourse slope, s	ft/ft	0.0028	
$Avg.V = Csf * (s)^{0.5}$	ft/s	0.8538	
where: Unpaved Csf = 16.1345			
Paved Csf = 20.3282			
T = L / (3600*V)	hrs	0.27	= 0.27

CHANNEL FLOW

Segment ID		C TO D	
Cross Sectional Flow Area, a	sq.ft	19.63	
Wetted perimeter, Pw	ft	19.80	
Hydraulic radius, r = a/Pw	ft	0.991	
Channel slope, s	ft/ft	0.0030	
Manning's roughness coeff., n		0.0300	
$V = \frac{1.49 * r^{2/3} * s^{1/2}}{n}$	ft/s	2.7048	
Flow length, L	ft	1237	
T = L / (3600*V)	hrs	0.13	= 0.13

TOTAL TIME (hrs) 1.87

CENTRAL MAIZE SCHOOLS ADDITION
DEVELOPED CONDITIONS
BASIN 1- 100 YR. STORM

* * * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * * *

Q = adj * C * I * A
Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
'C' adjustment, k = 1
Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
LAWNS B SOIL	0.370	55.07						
RES. OFFSITE	0.570	3.66						
62% OF TRACK	0.890	0.56						
			112.20	0.387	0.387	2.451	59.29	56.27

CENTRAL MAIZE SCHOOLS ADDITION
DEVELOPED CONDITIONS
BASIN 1- 100 YR. STORM

**** Rational Method Hydrograph Using Q/Qp Template *****
Weighted C = 0.387 Area= 59.290 acres Tc = 112.20 minutes

Adjusted C = 0.387 Tc= 112.20 min. I= 2.45 in/hr Qp= 56.27 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00
Q/Qp Template: IDF Output file: BASIN1 .HYD

HYDROGRAPH ORDINATES (cfs)
Time increment = 0.167 Hours
Time on left represents time for first Q in each row.

Time Hours							
0.037	0.33	2.03	5.54	10.03	15.83	23.32	32.26
1.203	41.06	48.16	53.07	55.77	56.27	55.77	53.07
2.370	49.68	45.85	41.32	35.92	30.17	25.37	21.87
3.537	18.86	16.31	14.33	12.50	10.84	9.34	7.98
4.703	6.98	5.98	5.23	4.48	3.89	3.34	2.88
5.870	2.51	2.16	1.89	1.62	1.42	1.22	1.06
7.037	0.91	0.79	0.69	0.60	0.54	0.48	0.42
8.203	0.36	0.30	0.24	0.19	0.14	0.09	0.04
9.370	0.00						

CENTRAL MAIZE SCHOOLS ADDITION
POND VOLUME FILE
POND 1

CALCULATED 06-15-2001 17:56:05
DISK FILE: POND1 .VOL

Planimeter scale: 1 inch = 150 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
45.00	0.00	0.00	0.00	0.00	0.00
46.00	2.06	1.06	1.06	0.35	0.35
47.00	3.58	1.85	4.31	1.44	1.79
48.00	6.50	3.36	7.70	2.57	4.36
49.00	11.08	5.72	13.46	4.49	8.85

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Outlet Structure File: POND1 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 1 OUTLET STRUCTURE
2-18" RCP'S
****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	45
E2 elev.(ft)?	49
Diam. (ft)?	1.5
Inv. el.(ft)?	45
Slope (ft/ft)?	.0053
T1 ratio?	
T2 ratio?	
K Coeff.?	.0045
M Coeff.?	2.0
c Coeff.?	0.0317
Y Coeff.?	.69
Form 1 or 2?	1
Slope factor?	-0.5

Outlet Structure File: POND1 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 1 OUTLET STRUCTURE
2-18" RCP'S
****

Outflow Rating Table for Structure #1
CULVERT-CR Circular Culvert (With Inlet Control)

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages		
45.00	0.0	No headwater		
45.25	0.3	Equ.1: HW =.25	dc=.194	Ac=.134
45.50	1.0	Equ.1: HW =.5	dc=.364	Ac=.332
45.75	2.1	Equ.1: HW =.750	dc=.545	Ac=.581
46.00	3.4	Equ.1: HW =1.0	dc=.706	Ac=.818
46.25	5.1	Equ.1: HW =1.25	dc=.865	Ac=1.056
46.50	6.7	Equ.1: HW =1.5	dc=.999	Ac=1.25
46.75	8.4	Transition: HW =1.75		
47.00	9.7	Submerged: HW =2.0		
47.25	11.0	Submerged: HW =2.25		
47.50	12.0	Submerged: HW =2.5		
47.75	13.0	Submerged: HW =2.75		
48.00	13.9	Submerged: HW =3.0		
48.25	14.8	Submerged: HW =3.25		
48.50	15.6	Submerged: HW =3.5		
48.75	16.4	Submerged: HW =3.75		
49.00	0.0	E = or > E2=49		

Used Unsubmerged Equ. Form (1) for elev. less than 46.64 ft
Used Submerged Equation for elevations greater than 46.79 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=46.64 ft; Q1=7.58 cfs; Dc=1.07 ft; E2=46.79 ft; Q2=8.66 cfs

Outlet Structure File: POND1 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 1 OUTLET STRUCTURE
2-18" RCP'S
****

>>>>>> Structure No. 2 <<<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	45
E2 elev.(ft)?	49
Diam. (ft)?	1.5
Inv. el.(ft)?	45
Slope (ft/ft)?	.0053
T1 ratio?	
T2 ratio?	
K Coeff.?	.0045
M Coeff.?	2.0
c Coeff.?	.0317
Y Coeff.?	.69
Form 1 or 2?	1
Slope factor?	-0.5

Outlet Structure File: POND1 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 1 OUTLET STRUCTURE
2-18" RCP'S
****

Outflow Rating Table for Structure #2
CULVERT-CR Circular Culvert (With Inlet Control)

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages		
45.00	0.0	No headwater		
45.25	0.3	Equ.1: HW =.25	dc=.194	Ac=.134
45.50	1.0	Equ.1: HW =.5	dc=.364	Ac=.332
45.75	2.1	Equ.1: HW =.750	dc=.545	Ac=.581
46.00	3.4	Equ.1: HW =1.0	dc=.706	Ac=.818
46.25	5.1	Equ.1: HW =1.25	dc=.865	Ac=1.056
46.50	6.7	Equ.1: HW =1.5	dc=.999	Ac=1.25
46.75	8.4	Transition: HW =1.75		
47.00	9.7	Submerged: HW =2.0		
47.25	11.0	Submerged: HW =2.25		
47.50	12.0	Submerged: HW =2.5		
47.75	13.0	Submerged: HW =2.75		
48.00	13.9	Submerged: HW =3.0		
48.25	14.8	Submerged: HW =3.25		
48.50	15.6	Submerged: HW =3.5		
48.75	16.4	Submerged: HW =3.75		
49.00	0.0	E = or > E2=49		

Used Unsubmerged Equ. Form (1) for elev. less than 46.64 ft
Used Submerged Equation for elevations greater than 46.79 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=46.64 ft; Q1=7.58 cfs; Dc=1.07 ft; E2=46.79 ft; Q2=8.66 cfs

Outlet Structure File: POND1 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 1 OUTLET STRUCTURE
2-18" RCP'S
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
45.00	0.0	2 +1
45.25	0.6	2 +1
45.50	1.9	2 +1
45.75	4.2	2 +1
46.00	6.9	2 +1
46.25	10.1	2 +1
46.50	13.4	2 +1
46.75	16.7	2 +1
47.00	19.5	2 +1
47.25	21.9	2 +1
47.50	24.0	2 +1
47.75	26.0	2 +1
48.00	27.8	2 +1
48.25	29.6	2 +1
48.50	31.2	2 +1
48.75	32.7	2 +1
49.00	0.0	

Outlet Structure File: POND1 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 1 OUTLET STRUCTURE
2-18" RCP'S
****

Outlet Structure File: POND1 .STR
Planimeter Input File: POND1 .VOL
Rating Table Output File: POND1 .PND

Min. Elev.(ft) = 45 Max. Elev.(ft) = 49 Incr.(ft) = .25

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
CULVERT-CR	2		->	2
CULVERT-CR	1		->	1

Outflow rating table summary was stored in file:
POND1 .PND

```
**************************************
*                                    *
*                                    *
*  CENTRAL MAIZE SCHOOLS ADDITION    *
*     POND 1 OUTLET STRUCTURE        *
*           2-18" RCP'S              *
*                                    *
**************************************
```

Inflow Hydrograph: BASIN1 .HYD
Rating Table file: POND1 .PND

----INITIAL CONDITIONS----
Elevation = 45.00 ft
Outflow = 0.00 cfs
Storage = 0.00 ac-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)
45.00	0.0	0.000
45.25	0.6	0.006
45.50	1.9	0.044
45.75	4.2	0.149
46.00	6.9	0.354
46.25	10.1	0.642
46.50	13.4	0.975
46.75	16.7	1.358
47.00	19.5	1.792
47.25	21.9	2.296
47.50	24.0	2.887
47.75	26.0	3.572
48.00	27.8	4.359
48.25	29.6	5.264
48.50	31.2	6.307
48.75	32.7	7.498

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
0.8	1.4
6.4	8.3
21.7	25.9
51.4	58.3
93.2	103.3
141.6	155.0
197.1	213.8
260.3	279.8
333.4	355.3
419.2	443.2
518.7	544.7
632.8	660.6
764.3	793.9
915.7	946.9
1088.7	1121.4

Time increment (t) = 0.167 hrs.

Pond File: POND1 .PND
Inflow Hydrograph: BASIN1 .HYD
Outflow Hydrograph: OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.037	0.33	-----	0.0	0.0	0.00	45.00
0.203	2.03	2.4	0.8	2.4	0.78	45.28
0.370	5.54	7.6	4.6	8.4	1.91	45.50
0.537	10.03	15.6	13.2	20.1	3.44	45.67
0.703	15.83	25.9	28.5	39.1	5.30	45.85
0.870	23.32	39.2	52.5	67.7	7.56	46.05
1.037	32.26	55.6	87.3	108.1	10.41	46.27
1.203	41.06	73.3	133.2	160.6	13.72	46.52
1.370	48.16	89.2	188.3	222.4	17.07	46.78
1.537	53.07	101.2	249.9	289.5	19.81	47.03
1.703	55.77	108.8	314.8	358.7	21.98	47.26
1.870	56.27	112.0	379.6	426.8	23.61	47.45
2.037	55.77	112.0	441.7	491.6	24.95	47.62
2.203	53.07	108.8	498.4	550.6	26.09	47.76
2.370	49.68	102.8	547.4	601.1	26.88	47.87
2.537	45.85	95.5	587.8	642.9	27.52	47.96
2.703	41.32	87.2	619.0	675.0	27.99	48.03
2.870	35.92	77.2	639.7	696.3	28.28	48.07
3.037	30.17	66.1	649.0	705.8	28.41	48.08
3.203	25.37	55.5	647.7	704.5	28.39	48.08
3.370	21.87	47.2	638.4	695.0	28.26	48.06
3.537	18.86	40.7	623.1	679.2	28.05	48.03
3.703	16.31	35.2	602.7	658.2	27.76	47.99
3.870	14.33	30.6	578.6	633.4	27.38	47.94
4.037	12.50	26.8	551.5	605.4	26.94	47.88
4.203	10.84	23.3	521.9	574.9	26.47	47.82
4.370	9.34	20.2	490.2	542.1	25.95	47.74
4.537	7.98	17.3	457.0	507.5	25.27	47.66
4.703	6.98	15.0	422.8	472.0	24.57	47.57
4.870	5.98	13.0	388.1	435.8	23.82	47.48
5.037	5.23	11.2	353.5	399.4	22.95	47.38
5.203	4.48	9.7	319.0	363.2	22.09	47.27
5.370	3.89	8.4	285.3	327.4	21.01	47.16
5.537	3.34	7.2	252.7	292.6	19.91	47.04
5.703	2.88	6.2	221.7	259.0	18.62	46.92
5.870	2.51	5.4	192.6	227.1	17.27	46.80
6.037	2.16	4.7	165.7	197.3	15.77	46.68
6.203	1.89	4.1	141.3	169.8	14.23	46.56
6.370	1.62	3.5	119.3	144.8	12.75	46.45
6.537	1.42	3.0	99.7	122.4	11.32	46.34
6.703	1.22	2.6	82.3	102.4	10.03	46.24
6.870	1.06	2.3	67.0	84.6	8.77	46.15
7.037	0.91	2.0	53.7	69.0	7.66	46.06
7.203	0.79	1.7	42.1	55.4	6.65	45.98
7.370	0.69	1.5	32.2	43.6	5.67	45.89

Pond File: POND1 .PND
Inflow Hydrograph: BASIN1 .HYD
Outflow Hydrograph: OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
7.537	0.60	1.3	23.8	33.5	4.83	45.81
7.703	0.54	1.1	16.8	25.0	4.08	45.74
7.870	0.48	1.0	11.6	17.8	3.15	45.64
8.037	0.42	0.9	7.6	12.5	2.44	45.56
8.203	0.36	0.8	4.6	8.4	1.90	45.50
8.370	0.30	0.7	2.6	5.2	1.31	45.39
8.537	0.24	0.5	1.3	3.1	0.92	45.31
8.704	0.19	0.4	0.4	1.7	0.66	45.26
8.870	0.14	0.3	0.1	0.7	0.31	45.13
9.037	0.09	0.2	0.0	0.3	0.14	45.06
9.204	0.04	0.1	0.0	0.2	0.08	45.03
9.370	0.00	0.0	0.0	0.1	0.03	45.01

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: POND1 .PND
Inflow Hydrograph: BASIN1 .HYD
Outflow Hydrograph: OUT .HYD

Starting Pond W.S. Elevation = 45.00 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	56.27 cfs
Peak Outflow	=	28.41 cfs
Peak Elevation	=	48.08 ft

***** Summary of Approximate Peak Storage *****

Initial Storage	=	0.00 ac-ft
Peak Storage From Storm	=	4.67 ac-ft
Total Storage in Pond	=	4.67 ac-ft

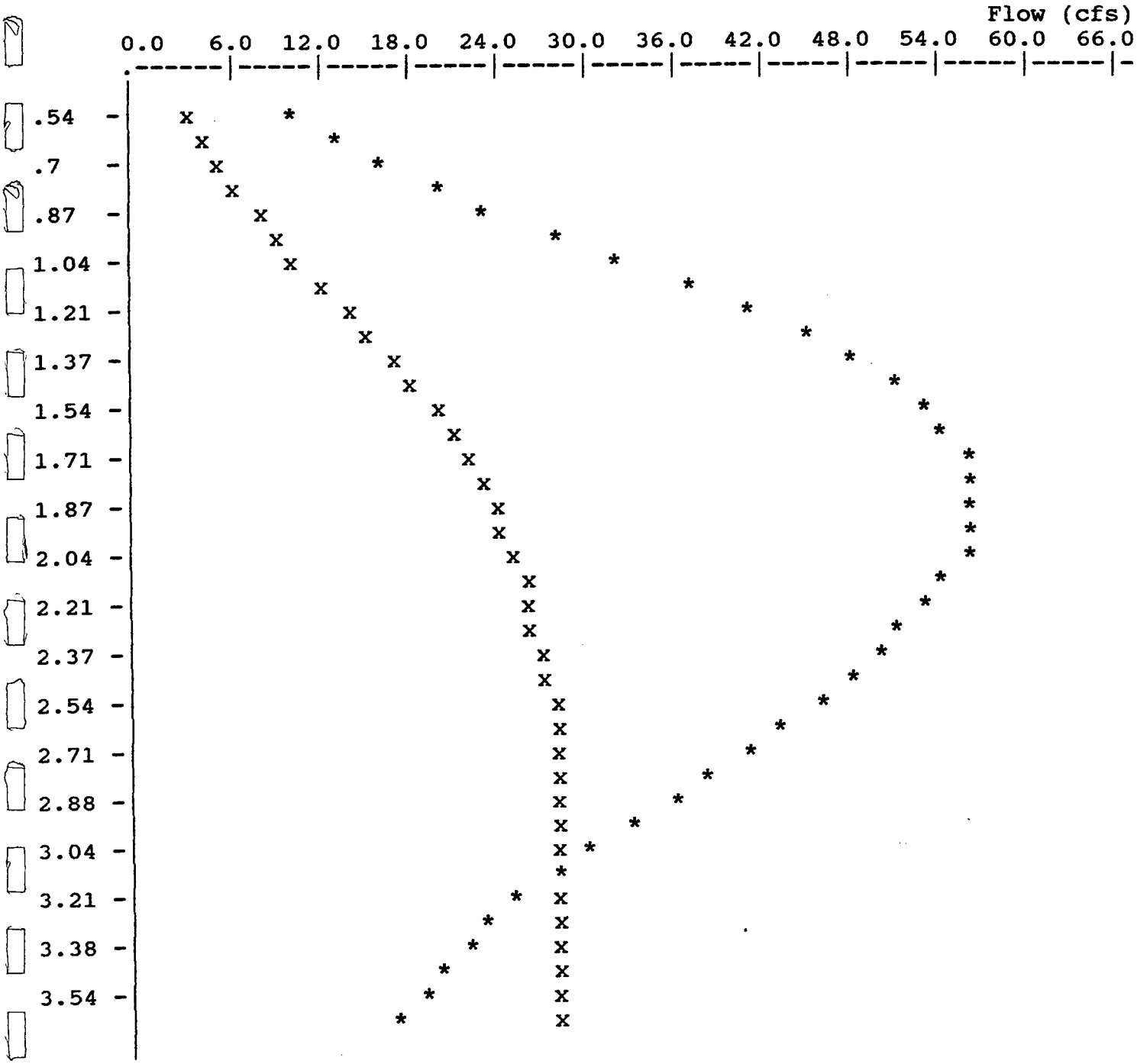
Warning: Inflow hydrograph truncated on left side.

POND-2 Version: 5.21 S/N:

Pond File: POND1 .PND
Inflow Hydrograph: BASIN1 .HYD
Outflow Hydrograph: OUT .HYD

EXECUTED: 08-09-2001
09:48:53

Peak Inflow = 56.27 cfs
Peak Outflow = 28.41 cfs
Peak Elevation = 48.08 ft



x File: OUT .HYD Qmax = 28.4 cfs
* File: BASIN1 .HYD Qmax = 56.3 cfs

Quick TR-55 Ver.5.47 S/N:
Executed: 09:52:52 08-09-2001 BASIN2.TCT

CENTRAL MAIZE SCHOOLS ADDITION
TIME OF CONCENTRATION
BASIN 2 100 YR. STORM

Tc COMPUTATIONS FOR:

SHEET FLOW (Applicable to Tc only)

Segment ID		A-B		
Surface description		LAWNS		
Manning's roughness coeff., n		0.2400		
Flow length, L (total < or = 300)	ft	300.0		
Two-yr 24-hr rainfall, P2	in	3.500		
Land slope, s	ft/ft	0.0020		
$T = \frac{.007 * (n*L)^{0.8}}{P2^{0.5} * s^{0.4}}$	hrs	1.38	=	1.38

SHALLOW CONCENTRATED FLOW

Segment ID		B-C		
Surface (paved or unpaved)?		Unpaved		
Flow length, L	ft	2300.0		
Watercourse slope, s	ft/ft	0.0075		
$Avg.V = Csf * (s)^{0.5}$	ft/s	1.3973		
where: Unpaved Csf = 16.1345				
Paved Csf = 20.3282				
T = L / (3600*V)	hrs	0.46	=	0.46

CHANNEL FLOW

Segment ID				
Cross Sectional Flow Area, a	sq.ft	0.00		
Wetted perimeter, Pw	ft	0.00		
Hydraulic radius, r = a/Pw	ft	0.000		
Channel slope, s	ft/ft	0.0000		
Manning's roughness coeff., n		0.0000		
$V = \frac{1.49 * r^{2/3} * s^{1/2}}{n}$	ft/s	0.0000		
Flow length, L	ft	0		
T = L / (3600*V)	hrs	0.00	=	0.00

TOTAL TIME (hrs) 1.83

CENTRAL MAIZE SCHOOLS ADDITION
BASIN 2 100 YR. STORM

* * * * * * SUMMARY OF RATIONAL METHOD PEAK DISCHARGES * * * * * *

Q = adj * C * I * A
Where: Q=cfs, C=Weighted Runoff Coefficient, I=in/hour, A=acres
adj = 'C' adjustment factor for each return frequency

RETURN FREQUENCY = 100 years
'C' adjustment, k = 1
Adj. 'C' = Wtd.'C' x 1

Subarea Descr.	Runoff 'C'	Area acres	Tc (min)	Wtd. 'C'	Adj. 'C'	I in/hr	Total acres	Peak Q (cfs)
LAWNS B SOIL	0.370	46.11						
BLDGS,DRIVES	0.890	10.77						
RES. OFFSITE	0.570	10.42						
38% OF TRACK	0.890	0.35						
			109.80	0.486	0.486	2.497	67.65	82.15

CENTRAL MAIZE SCHOOLS ADDITION
BASIN 2 100 YR. STORM

**** Rational Method Hydrograph Using Q/Qp Template *****
Weighted C = 0.486 Area= 67.650 acres Tc = 109.80 minutes

Adjusted C = 0.486 Tc= 109.80 min. I= 2.50 in/hr Qp= 82.15 cfs

RETURN FREQUENCY: 100 year storm Adj.factor = 1.00
Q/Qp Template: IDF Output file: BASIN2 .HYD

HYDROGRAPH ORDINATES (cfs)
Time increment = 0.167 Hours
Time on left represents time for first Q in each row.

Time Hours							
0.163	2.20	7.08	13.49	21.77	32.51	45.58	58.91
1.330	69.78	77.28	81.40	82.15	81.40	77.28	72.19
2.497	66.42	59.53	51.28	42.92	36.14	31.07	26.67
3.663	22.95	20.22	17.49	15.16	12.91	11.14	9.64
4.830	8.31	7.18	6.13	5.31	4.50	3.93	3.37
5.997	2.94	2.53	2.19	1.89	1.62	1.40	1.19
7.163	1.04	0.90	0.81	0.72	0.63	0.54	0.45
8.330	0.37	0.29	0.22	0.14	0.07	0.00	

CENTRAL MAIZE SCHOOLS ADDITION
POND VOLUME FILE
POND 2

CALCULATED 06-15-2001 17:57:14
DISK FILE: POND2 .VOL

Planimeter scale: 1 inch = 150 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
40.50	0.00	0.00	0.00	0.00	0.00
41.00	1.75	0.90	0.90	0.15	0.15
42.00	10.50	5.42	8.54	2.85	3.00
43.00	18.58	9.60	22.24	7.41	10.41
44.00	19.12	9.88	29.21	9.74	20.15

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Executed 08-09-2001 09:56:09

Data directory: *.HYD

File Summary for Composite Hydrograph

Time (hrs)	OUT (cfs)	BASIN2 (cfs)	BASIN2IN (Total)
0.00	0.0	Missing	0.0
0.10	0.3	Missing	0.3
0.20	0.8	3.3	4.0
0.30	1.4	6.2	7.6
0.40	2.2	9.8	11.9
0.50	3.1	13.7	16.7
0.60	4.1	18.6	22.8
0.70	5.2	24.1	29.4
0.80	6.6	30.6	37.2
0.90	8.0	38.0	46.0
1.00	9.7	45.8	55.6
1.10	11.6	53.8	65.5
1.20	13.6	61.3	74.9
1.30	15.6	67.8	83.4
1.40	17.5	72.9	90.4
1.50	19.2	77.4	96.5
1.60	20.6	79.8	100.4
1.70	21.9	81.6	103.5
1.80	22.9	82.0	104.9
1.90	23.8	81.8	105.7
2.00	24.6	81.3	105.9
2.10	25.4	78.8	104.2
2.20	26.0	76.2	102.2
2.30	26.5	73.1	99.6
2.40	27.0	69.8	96.7
2.50	27.4	66.3	93.6
2.60	27.7	62.2	89.8
2.70	28.0	57.7	85.7
2.80	28.1	52.8	80.9
2.90	28.3	47.8	76.1
3.00	28.4	42.8	71.2
3.10	28.4	38.7	67.1
3.20	28.4	35.0	63.4
3.30	28.3	32.0	60.3
3.40	28.2	29.2	57.5
3.50	28.1	26.6	54.7
3.60	28.0	24.4	52.3
3.70	27.8	22.4	50.1
3.80	27.6	20.7	48.3
3.90	27.3	19.1	46.4

>>>>>>>>>>>>>>>>> SUMMATION WARNING <<<<<<<<<<<<<<<<<
Peaks were missed during interpolation for the following files:
BASIN2 .HYD

Data directory: *.HYD

File Summary for Composite Hydrograph

Time (hrs)	OUT (cfs)	BASIN2 (cfs)	BASIN2IN (Total)
4.00	27.1	17.4	44.5
4.10	26.8	16.0	42.8
4.20	26.5	14.7	41.2
4.30	26.2	13.3	39.5
4.40	25.9	12.2	38.0
4.50	25.5	11.1	36.6
4.60	25.0	10.2	35.3
4.70	24.6	9.3	34.0
4.80	24.2	8.6	32.7
4.90	23.7	7.8	31.6
5.00	23.2	7.2	30.4
5.10	22.7	6.5	29.2
5.20	22.2	6.0	28.1
5.30	21.5	5.5	27.0
5.40	20.9	5.0	25.9
5.50	20.2	4.5	24.7
5.60	19.5	4.1	23.7
5.70	18.7	3.8	22.5
5.80	17.9	3.5	21.4
5.90	17.1	3.2	20.3
6.00	16.2	2.9	19.1
6.10	15.3	2.7	18.0
6.20	14.4	2.5	16.8
6.30	13.5	2.3	15.7
6.40	12.6	2.1	14.7
6.50	11.7	1.9	13.6
6.60	10.9	1.7	12.7
6.70	10.2	1.6	11.7
6.80	9.4	1.4	10.8
6.90	8.7	1.3	10.0
7.00	8.0	1.2	9.2
7.10	7.4	1.1	8.5
7.20	6.8	1.0	7.8
7.30	6.2	0.9	7.1
7.40	5.6	0.9	6.5
7.50	5.1	0.8	5.9
7.60	4.6	0.8	5.4
7.70	4.2	0.7	4.9
7.80	3.6	0.6	4.3
7.90	3.1	0.6	3.7
8.00	2.7	0.5	3.2

>>>>>>>>>>>>>>>> SUMMATION WARNING <<<<<<<<<<<<<<<<
Peaks were missed during interpolation for the following files:
BASIN2 .HYD

Executed 08-09-2001 09:56:09

Data directory: *.HYD

File Summary for Composite Hydrograph

Time (hrs)	OUT (cfs)	BASIN2 (cfs)	BASIN2IN (Total)
8.10	2.3	0.5	2.8
8.20	2.0	0.4	2.4
8.30	1.6	0.4	2.0
8.40	1.3	0.3	1.6
8.50	1.0	0.3	1.3
8.60	0.8	0.2	1.1
8.70	0.7	0.2	0.9
8.80	0.5	0.2	0.6
8.90	0.3	0.1	0.4
9.00	0.2	0.1	0.3
9.10	0.1	0.0	0.2
9.20	0.1	0.0	0.1
9.30	0.1	0.0	0.1
9.40	0.0	0.0	0.0
9.50	0.0	0.0	0.0
9.60	0.0	0.0	0.0
9.70	0.0	0.0	0.0
9.80	0.0	0.0	0.0
9.90	0.0	0.0	0.0
10.00	0.0	0.0	0.0

>>>>>>>>>>>>>>>>> SUMMATION WARNING <<<<<<<<<<<<<<<<<
Peaks were missed during interpolation for the following files:
BASIN2 .HYD

Outlet Structure File: POND2 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 2 STRUCTURE FILE
1-24" RCP & 1-18" RCP
****

>>>>>> Structure No. 1 <<<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	40.5
E2 elev.(ft)?	44
Diam. (ft)?	1.5
Inv. el.(ft)?	40.5
Slope (ft/ft)?	.003
T1 ratio?	
T2 ratio?	
K Coeff.?	.0045
M Coeff.?	2
c Coeff.?	.0317
Y Coeff.?	.69
Form 1 or 2?	1
Slope factor?	-0.5

Outlet Structure File: POND2 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 2 STRUCTURE FILE
1-24" RCP & 1-18" RCP

****

Outflow Rating Table for Structure #1
CULVERT-CR Circular Culvert (With Inlet Control)

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages		
40.50	0.0	No headwater		
40.75	0.3	Equ.1: HW =.25	dc=.194	Ac=.134
41.00	1.0	Equ.1: HW =.5	dc=.364	Ac=.332
41.25	2.1	Equ.1: HW =.750	dc=.545	Ac=.581
41.50	3.4	Equ.1: HW =1.0	dc=.706	Ac=.818
41.75	5.0	Equ.1: HW =1.25	dc=.856	Ac=1.043
42.00	6.7	Equ.1: HW =1.5	dc=.999	Ac=1.25
42.25	8.3	Transition: HW =1.75		
42.50	9.7	Submerged: HW =2.0		
42.75	11.0	Submerged: HW =2.25		
43.00	12.0	Submerged: HW =2.5		
43.25	13.0	Submerged: HW =2.75		
43.50	13.9	Submerged: HW =3.0		
43.75	14.8	Submerged: HW =3.25		
44.00	0.0	E = or > E2=44		

Used Unsubmerged Equ. Form (1) for elev. less than 42.14 ft
Used Submerged Equation for elevations greater than 42.29 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=42.14 ft; Q1=7.58 cfs; Dc=1.07 ft; E2=42.29 ft; Q2=8.66 cfs

Outlet Structure File: POND2 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 2 STRUCTURE FILE
1-24" RCP & 1-18" RCP
****

>>>>>> Structure No. 2 <<<<<<
(Input Data)

CULVERT-CR
Circular Culvert (With Inlet Control)

E1 elev.(ft)?	40.5
E2 elev.(ft)?	44
Diam. (ft)?	2.0
Inv. el.(ft)?	40.5
Slope (ft/ft)?	.003
T1 ratio?	
T2 ratio?	
K Coeff.?	.0045
M Coeff.?	2
c Coeff.?	.0317
Y Coeff.?	.69
Form 1 or 2?	1
Slope factor?	-0.5

Outlet Structure File: POND2 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 2 STRUCTURE FILE
1-24" RCP & 1-18" RCP
****

Outflow Rating Table for Structure #2
CULVERT-CR Circular Culvert (With Inlet Control)

***** INLET CONTROL ASSUMED *****

Elevation (ft)	Q (cfs)	Computation Messages		
40.50	0.0	No headwater		
40.75	0.3	Equ.1: HW =.25	dc=.184	Ac=.144
41.00	1.1	Equ.1: HW =.5	dc=.369	Ac=.398
41.25	2.5	Equ.1: HW =.750	dc=.547	Ac=.697
41.50	4.3	Equ.1: HW =1.0	dc=.727	Ac=1.032
41.75	6.3	Equ.1: HW =1.25	dc=.889	Ac=1.349
42.00	8.6	Equ.1: HW =1.5	dc=1.045	Ac=1.661
42.25	11.1	Equ.1: HW =1.75	dc=1.193	Ac=1.954
42.50	13.7	Equ.1: HW =2.0	dc=1.334	Ac=2.226
42.75	16.2	Transition: HW =2.25		
43.00	18.7	Submerged: HW =2.5		
43.25	20.7	Submerged: HW =2.75		
43.50	22.5	Submerged: HW =3.0		
43.75	24.1	Submerged: HW =3.25		
44.00	0.0	E = or > E2=44		

Used Unsubmerged Equ. Form (1) for elev. less than 42.69 ft
Used Submerged Equation for elevations greater than 42.89 ft
HW=Headwater (ft) dc=Critical depth (ft) Ac=Area (sq.ft) at dc

Transition flows interpolated from the following values:
E1=42.69 ft; Q1=15.55 cfs; Dc=1.42 ft; E2=42.89 ft; Q2=17.77 cfs

Outlet Structure File: POND2 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 2 STRUCTURE FILE
1-24" RCP & 1-18" RCP
****

***** COMPOSITE OUTFLOW SUMMARY ****

Elevation (ft)	Q (cfs)	Contributing Structures
40.50	0.0	2 +1
40.75	0.6	2 +1
41.00	2.1	2 +1
41.25	4.6	2 +1
41.50	7.7	2 +1
41.75	11.3	2 +1
42.00	15.3	2 +1
42.25	19.4	2 +1
42.50	23.5	2 +1
42.75	27.2	2 +1
43.00	30.7	2 +1
43.25	33.7	2 +1
43.50	36.4	2 +1
43.75	38.9	2 +1
44.00	0.0	

Outlet Structure File: POND2 .STR

POND-2 Version: 5.21 S/N:
Date Executed: Time Executed:

****

CENTRAL MAIZE SCHOOLS ADDITION
POND 2 STRUCTURE FILE
1-24" RCP & 1-18" RCP
****

Outlet Structure File: POND2 .STR
Planimeter Input File: POND2 .VOL
Rating Table Output File: POND2 .PND

Min. Elev.(ft) = 40.5 Max. Elev.(ft) = 44 Incr.(ft) = .25

Additional elevations (ft) to be included in table:
* *

****
SYSTEM CONNECTIVITY
****

Structure	No.	Q Table		Q Table
CULVERT-CR	2		->	2
CULVERT-CR	1		->	1

Outflow rating table summary was stored in file:
POND2 .PND

```
**************************************
*                                    *
*                                    *
*  CENTRAL MAIZE SCHOOLS ADDITION    *
*       POND 2 STRUCTURE FILE        *
*       1-24" RCP & 1-18" RCP        *
*                                    *
**************************************
```

Inflow Hydrograph: BASIN2IN.HYD
Rating Table file: POND2 .PND

----INITIAL CONDITIONS----
Elevation = 40.50 ft
Outflow = 0.00 cfs
Storage = 0.00 ac-ft

GIVEN POND DATA

ELEVATION (ft)	OUTFLOW (cfs)	STORAGE (ac-ft)
40.50	0.0	0.000
40.75	0.6	0.019
41.00	2.1	0.151
41.25	4.6	0.468
41.50	7.7	1.009
41.75	11.3	1.833
42.00	15.3	2.998
42.25	19.4	4.469
42.50	23.5	6.182
42.75	27.2	8.156
43.00	30.7	10.410
43.25	33.7	12.818
43.50	36.4	15.243
43.75	38.9	17.686

INTERMEDIATE ROUTING COMPUTATIONS

2S/t (cfs)	2S/t + O (cfs)
0.0	0.0
4.6	5.2
36.5	38.6
113.4	118.0
244.3	252.0
443.5	454.8
725.5	740.8
1081.4	1100.8
1496.1	1519.6
1973.8	2001.0
2519.1	2549.8
3101.8	3135.5
3688.8	3725.2
4279.9	4318.8

Time increment (t) = 0.100 hrs.

Pond File: POND2 .PND
Inflow Hydrograph: BASIN2IN.HYD
Outflow Hydrograph: OUT .HYD

INFLOW HYDROGRAPH

ROUTING COMPUTATIONS

TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
0.000	0.00	-----	0.0	0.0	0.00	40.50
0.100	0.29	0.3	0.2	0.3	0.03	40.51
0.200	4.03	4.3	3.5	4.5	0.53	40.72
0.300	7.63	11.7	13.0	15.1	1.05	40.82
0.400	11.95	19.6	29.0	32.6	1.83	40.96
0.500	16.75	28.7	52.3	57.7	2.70	41.06
0.600	22.75	39.5	84.2	91.8	3.78	41.17
0.700	29.38	52.1	126.3	136.3	5.03	41.28
0.800	37.16	66.5	180.2	192.8	6.33	41.39
0.900	46.04	83.2	247.6	263.4	7.90	41.51
1.000	55.59	101.6	330.3	349.2	9.43	41.62
1.100	65.46	121.1	428.9	451.4	11.24	41.75
1.200	74.90	140.4	543.5	569.3	12.90	41.85
1.300	83.43	158.3	672.3	701.8	14.75	41.97
1.400	90.44	173.9	813.2	846.2	16.50	42.07
1.500	96.52	187.0	963.6	1000.1	18.25	42.18
1.600	100.42	196.9	1120.6	1160.6	19.98	42.29
1.700	103.45	203.9	1281.3	1324.5	21.59	42.38
1.800	104.90	208.4	1443.2	1489.6	23.21	42.48
1.900	105.65	210.6	1604.7	1653.8	24.53	42.57
2.000	105.94	211.6	1764.7	1816.3	25.78	42.65
2.100	104.20	210.1	1920.9	1974.9	27.00	42.74
2.200	102.20	206.4	2071.3	2127.3	28.01	42.81
2.300	99.63	201.8	2215.2	2273.1	28.94	42.87
2.400	96.74	196.4	2351.9	2411.6	29.82	42.94
2.500	93.64	190.4	2481.0	2542.3	30.65	43.00
2.600	89.83	183.5	2601.9	2664.5	31.29	43.05
2.700	85.68	175.5	2713.7	2777.4	31.87	43.10
2.800	80.92	166.6	2815.5	2880.3	32.39	43.14
2.900	76.07	157.0	2906.8	2972.5	32.86	43.18
3.000	71.16	147.2	2987.4	3054.0	33.28	43.22
3.100	67.12	138.3	3058.4	3125.7	33.65	43.25
3.200	63.42	130.5	3121.1	3189.0	33.94	43.27
3.300	60.30	123.7	3176.4	3244.8	34.20	43.30
3.400	57.45	117.8	3225.3	3294.1	34.43	43.32
3.500	54.70	112.2	3268.2	3337.4	34.62	43.34
3.600	52.32	107.0	3305.6	3375.2	34.80	43.35
3.700	50.13	102.5	3338.2	3408.1	34.95	43.37
3.800	48.27	98.4	3366.4	3436.6	35.08	43.38
3.900	46.40	94.7	3390.7	3461.1	35.19	43.39
4.000	44.50	90.9	3411.0	3481.6	35.28	43.40
4.100	42.83	87.3	3427.6	3498.4	35.36	43.40
4.200	41.17	84.0	3440.8	3511.6	35.42	43.41
4.300	39.51	80.7	3450.5	3521.5	35.47	43.41
4.400	38.03	77.5	3457.1	3528.1	35.50	43.42

Pond File: POND2 .PND
Inflow Hydrograph: BASIN2IN.HYD
Outflow Hydrograph: OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
4.500	36.57	74.6	3460.7	3531.7	35.51	43.42
4.600	35.25	71.8	3461.4	3532.5	35.52	43.42
4.700	33.97	69.2	3459.6	3530.7	35.51	43.42
4.800	32.73	66.7	3455.4	3526.3	35.49	43.42
4.900	31.55	64.3	3448.7	3519.6	35.46	43.41
5.000	30.35	61.9	3439.8	3510.6	35.42	43.41
5.100	29.21	59.6	3428.6	3499.4	35.37	43.40
5.200	28.11	57.3	3415.3	3485.9	35.30	43.40
5.300	26.99	55.1	3400.0	3470.4	35.23	43.39
5.400	25.86	52.8	3382.5	3452.8	35.15	43.38
5.500	24.72	50.6	3363.0	3433.1	35.06	43.38
5.600	23.66	48.4	3341.4	3411.3	34.96	43.37
5.700	22.54	46.2	3317.9	3387.6	34.85	43.36
5.800	21.40	43.9	3292.4	3361.8	34.74	43.35
5.900	20.30	41.7	3264.9	3334.1	34.61	43.33
6.000	19.14	39.4	3235.4	3304.3	34.47	43.32
6.100	17.99	37.1	3203.8	3272.5	34.33	43.31
6.200	16.83	34.8	3170.3	3238.6	34.17	43.29
6.300	15.74	32.6	3134.9	3202.9	34.01	43.28
6.400	14.67	30.4	3097.6	3165.3	33.84	43.26
6.500	13.63	28.3	3058.6	3125.9	33.65	43.25
6.600	12.66	26.3	3018.0	3084.9	33.44	43.23
6.700	11.73	24.4	2975.9	3042.4	33.22	43.21
6.800	10.84	22.6	2932.5	2998.5	33.00	43.19
6.900	9.98	20.8	2887.8	2953.3	32.77	43.17
7.000	9.19	19.2	2841.9	2907.0	32.53	43.15
7.100	8.46	17.7	2795.0	2859.6	32.29	43.13
7.200	7.77	16.2	2747.1	2811.2	32.04	43.11
7.300	7.09	14.9	2698.4	2762.0	31.79	43.09
7.400	6.46	13.6	2648.9	2712.0	31.53	43.07
7.500	5.90	12.4	2598.7	2661.3	31.27	43.05
7.600	5.37	11.3	2548.0	2610.0	31.01	43.03
7.700	4.87	10.2	2496.7	2558.2	30.74	43.00
7.800	4.28	9.2	2445.1	2505.9	30.42	42.98
7.900	3.68	8.0	2392.9	2453.0	30.08	42.96
8.000	3.20	6.9	2340.2	2399.7	29.74	42.93
8.100	2.77	6.0	2287.4	2346.2	29.40	42.91
8.200	2.40	5.2	2234.5	2292.6	29.06	42.88
8.300	2.00	4.4	2181.4	2238.9	28.72	42.86
8.400	1.62	3.6	2128.3	2185.1	28.37	42.83
8.500	1.33	3.0	2075.2	2131.3	28.03	42.81
8.600	1.10	2.4	2022.2	2077.6	27.69	42.78
8.700	0.90	2.0	1969.5	2024.2	27.35	42.76
8.800	0.65	1.6	1917.2	1971.1	26.97	42.73
8.900	0.41	1.1	1865.1	1918.2	26.56	42.71
9.000	0.26	0.7	1813.4	1865.8	26.16	42.68

Pond File: POND2 .PND
Inflow Hydrograph: BASIN2IN.HYD
Outflow Hydrograph: OUT .HYD

INFLOW HYDROGRAPH		ROUTING COMPUTATIONS				
TIME (hrs)	INFLOW (cfs)	I1+I2 (cfs)	2S/t - O (cfs)	2S/t + O (cfs)	OUTFLOW (cfs)	ELEVATION (ft)
9.100	0.15	0.4	1762.3	1813.8	25.76	42.65
9.200	0.09	0.2	1711.8	1762.6	25.37	42.63
9.300	0.06	0.2	1662.0	1712.0	24.98	42.60
9.400	0.03	0.1	1612.9	1662.1	24.60	42.57
9.500	0.01	0.0	1564.5	1613.0	24.22	42.55
9.600	0.00	0.0	1516.8	1564.5	23.85	42.52
9.700	0.00	0.0	1469.9	1516.8	23.47	42.50
9.800	0.00	0.0	1423.9	1469.9	23.01	42.47
9.900	0.00	0.0	1378.7	1423.9	22.56	42.44
10.000	0.00	0.0	1334.5	1378.7	22.12	42.42

********** SUMMARY OF ROUTING COMPUTATIONS **********

Pond File: POND2 .PND
Inflow Hydrograph: BASIN2IN.HYD
Outflow Hydrograph: OUT .HYD

Starting Pond W.S. Elevation = 40.50 ft

***** Summary of Peak Outflow and Peak Elevation *****

Peak Inflow	=	105.94 cfs
Peak Outflow	=	35.52 cfs
Peak Elevation	=	43.42 ft

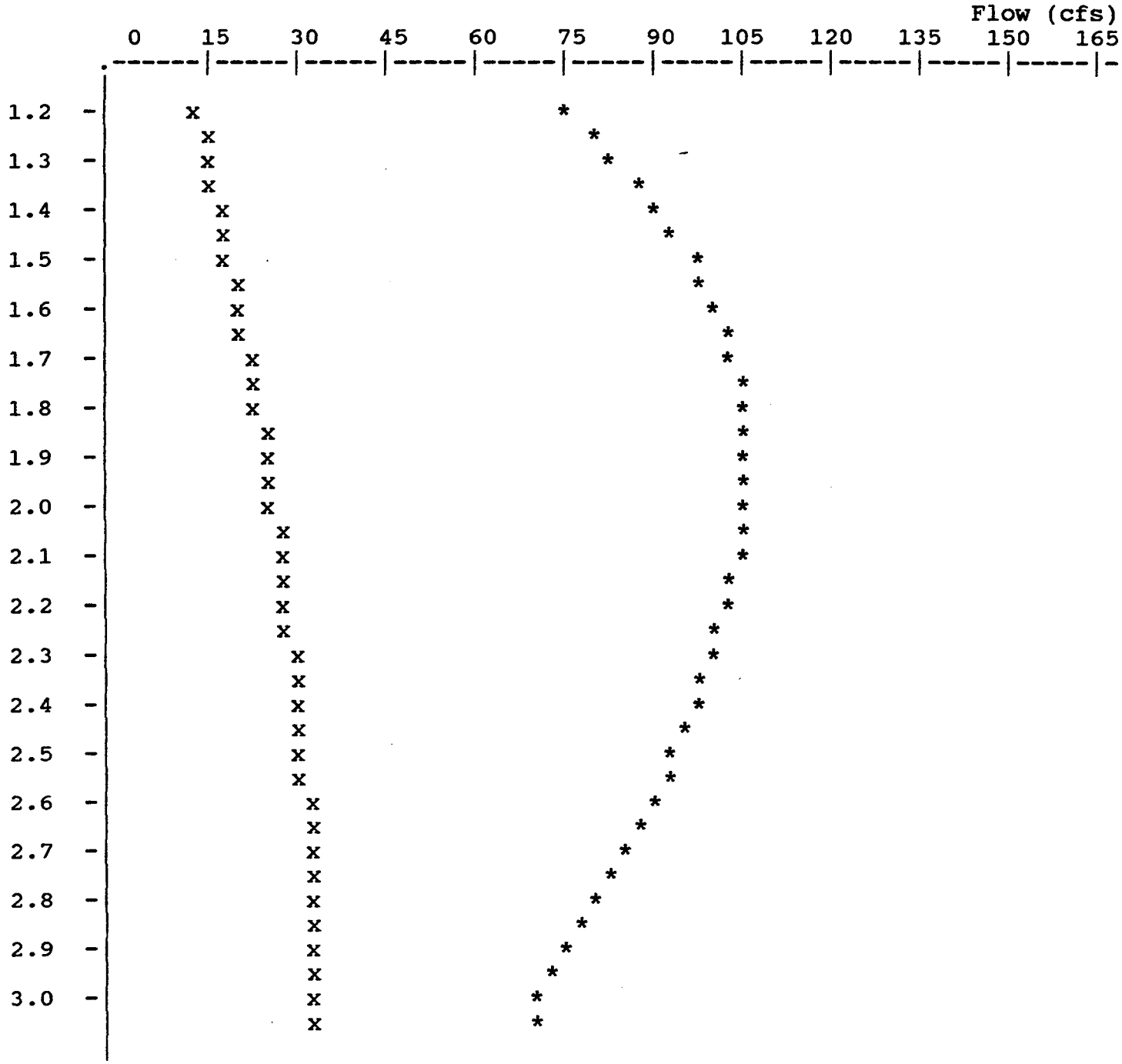
***** Summary of Approximate Peak Storage *****

Initial Storage	=	0.00 ac-ft
Peak Storage From Storm	=	14.45 ac-ft
Total Storage in Pond	=	14.45 ac-ft

Pond File: POND2 .PND C-36
Inflow Hydrograph: BASIN2IN.HYD
Outflow Hydrograph: OUT .HYD

EXECUTED: 08-09-2001
10:02:55

Peak Inflow = 105.94 cfs
Peak Outflow = 35.52 cfs
Peak Elevation = 43.42 ft



* File: BASIN2IN.HYD Qmax = 105.9 cfs
x File: OUT .HYD Qmax = 35.5 cfs