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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNO Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2y24h	3.5000	Synthetic Curve	SCSTYPES	Typel 24hr
5y24h	4.5000	Synthetic Curve	SCSTYPES	Typel 24hr
100y24	7.9000	Synthetic Curve	SCSTYPES	Typel 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversi on;)
(Trun= HYG Truncation; Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
24" CMP 5' HEAD	AREA	2	.705		12.0500	8.75		
24" CMP 5' HEAD	AREA	5	.913		12.0500	11.26		
24" CMP 5' HEAD	AREA	100	1.621		12.0500	19.80		
*BOX	JCT	2	13.665		12.3000	106.07		
*BOX	JCT	5	19.612		12.3000	155.71		
*BOX	JCT	100	41.076		12.2500	331.22		
EAST OFFSITE	AREA	2	8.568		12.2000	78.62		
EAST OFFSITE	AREA	5	12.362		12.2000	113.61		
EAST OFFSITE	AREA	100	25.993		12.2000	234.87		
NORTH	AREA	2	1.151		12.0500	15.54		
NORTH	AREA	5	1.537		12.0500	20.40		
NORTH	AREA	100	2.860		12.0500	36.71		
POND	IN POND	2	13.665		12.1500	127.28		
POND	IN POND	5	19.613		12.1500	183.64		
POND	IN POND	100	41.076		12.1500	381.38		
POND	OUT POND	2	13.665		12.3000	106.07	1345.39	1.895
POND	OUT POND	5	19.612		12.3000	155.71	1345.91	2.550
POND	OUT POND	100	41.076		12.2500	331.22	1347.43	4.715

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversi on;)
(Trun= HYG Truncati on; Bl ank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Return Type	Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
PROPOSED SITE	AREA	2	1.094		12.0500	15.15		
PROPOSED SITE	AREA	5	1.483		12.0500	20.17		
PROPOSED SITE	AREA	100	2.825		12.0500	37.00		
WEST OFFSITE	AREA	2	2.147		12.1500	24.36		
WEST OFFSITE	AREA	5	3.317		12.1500	38.13		
WEST OFFSITE	AREA	100	7.777		12.1000	89.55		

Type... Design Storms
Name... Sedgwick24

File... C:\HAESTAD\PPKW\RAINFALL\SEDGWICK.RNO
Title...

JOB TITLE NOT SPECIFIED
Click Project Summary on the File Menu to enter title

DESIGN STORMS SUMMARY

Design Storm File, ID = SEDGWICK.RNO Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeI 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeI 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeI 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type... Design Storms
Name... Sedgwick24
File... C:\HAESTAD\PPKW\RAI NFALL\SEDGWICK.RNQ
Storm... Typell 24hr Tag: 2y24h

Page 2.02
Event: 2 yr

DESIGN STORMS SUMMARY

Design Storm File, ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF Typell 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF Typell 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF Typell 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type. . . . Tc Calcs
Name. . . . EAST OFFSITE

File. . . . F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Shallow

Hydraulic Length 3000.00 ft
Slope .005000 ft/ft
Paved

Avg. Velocity 1.44 ft/sec

Segment #1 Time: .5797 hrs

=====
Total Tc: .5797 hrs
=====

Type. . . . Tc Calcs
Name. . . . EAST OFFSITE

File. . . . F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

Tc Equations used. . .

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf^{**0.5})$$

Paved surface:

$$V = 20.3282 * (Sf^{**0.5})$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

Type. . . . Tc Calcs
Name. . . . WEST OFFSITE

File. . . . F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

.....
TIME OF CONCENTRATION CALCULATOR
.....

Segment #1: Tc: TR-55 Shallow

Hydraulic Length 2300.00 ft
Slope .010000 ft/ft
Unpaved

Avg. Velocity 1.61 ft/sec

Segment #1 Time: .3960 hrs

=====
Total Tc: .3960 hrs
=====

Tc Equations used...

==== SCS TR-55 Shallow Concentrated Flow =====

Unpaved surface:

$$V = 16.1345 * (Sf^{**0.5})$$

Paved surface:

$$V = 20.3282 * (Sf^{**0.5})$$

$$Tc = (Lf / V) / (3600sec/hr)$$

Where: V = Velocity, ft/sec
Sf = Slope, ft/ft
Tc = Time of concentration, hrs
Lf = Flow length, ft

File. . . . F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

Elevation (ft)	Planimeter (sq. in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1343.60	-----	.9700	.0000	.000	.000
1344.00	-----	.9900	2.9399	.392	.392
1345.00	-----	1.1200	3.1630	1.054	1.446
1346.00	-----	1.3200	3.6559	1.219	2.665
1347.00	-----	1.4800	4.1977	1.399	4.064
1348.00	-----	1.6100	4.6336	1.545	5.609

POND VOLUME EQUATIONS

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

$$\text{Volume} = (1/3) * (\text{EL2}-\text{EL1}) * (\text{Area1} + \text{Area2} + \text{sq. rt.}(\text{Area1}*\text{Area2}))$$

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

REQUESTED POND WS ELEVATIONS:

Min. Elev. = 1343.60 ft
Increment = .50 ft
Max. Elev. = 1348.00 ft

OUTLET CONNECTIVITY

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.	Outfall	E1, ft	E2, ft
----- Culvert-Box TW SETUP, DS Channel	BX	---> TW	1343.600	1348.000

OUTLET STRUCTURE INPUT DATA

Structure ID = BX
Structure Type = Culvert-Box

No. Barrels = 3
Barrel Height = 3.00 ft
Barrel Width = 6.00 ft
Upstream Invert = 1343.60 ft
Dnstream Invert = 1340.00 ft
Horiz. Length = 160.00 ft
Barrel Length = 160.04 ft
Barrel Slope = .02250 ft/ft

OUTLET CONTROL DATA...

Mannings n = .0130
Ke = .5000 (forward entrance loss)
Kb = .004925 (per ft of full flow)
Kr = .5000 (reverse entrance loss)
HW Convergence = .001 +/- ft

INLET CONTROL DATA...

Equation form = 1
Inlet Control K = .0260
Inlet Control M = 1.0000
Inlet Control c = .03850
Inlet Control Y = .8100
T1 ratio (HW/D) = 1.167
T2 ratio (HW/D) = 1.415
Slope Factor = -.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

At T1 Elev = 1347.10 ft ---> Flow = 109.12 cfs
At T2 Elev = 1347.84 ft ---> Flow = 124.71 cfs

Type... Outlet Input Data
Name... 3-6X3

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File... F:\HYDRO\PROJECTS\GOLDEN CORRAL ADDITION\PONDPACK\GOLDEN-CORRAL.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

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----- W -----
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WEST OFFSITE... 3.03