Lindebak, Scott

From: Logan Mills [lmills@cedpa.com]
Sent: Monday, January 16, 2012 10:41 AM
To: Lindebak, Scott
Cc: Davidson, Tim
Subject: Prairie Pond Plaza 2nd Addition Drainage Plan
Attachments: Prairie Pond Plaza-DP.pdf; Hydraflow Calcs.pdf

Scott and TIm,

After looking through the drainage plan for the Prairie Pond Plaza 2nd Addition, I found some things that don't make sense to me. I don't think the SCS 24 hour rainfall precipitation values they used for the Hydraflow program match up with the City of Wichita values. In the report, the file name for the precipitation values is called GB rainfall. I am wondering if this stands for Great Bend. I have attached the drainage plan in this email with my comments in yellow and red. Obviously, the difference in precipitation values makes a big difference in the calculations. I recomputed the Hydraflow calculations with the correct SCS 24 hour precipitation values and attached them in this email as well. The 100 yr design storm gets rejected because it overtops the pond at contour elevation 1325. The 50 year design storm has a computed water surface elevation of 1324.28. The calculated discharge rates and water surface elevations for the pond for each of the design storms is shown on the third page of the Hydraflow Calcs pdf. There might be a reason as to why the SCS 24 hour precipitation values are less than normal. If I model the pond for the channel protection volume, do I use these modified precipitation values? I think you are closed today for the holiday, but please get back with me as soon as possible so I can resume on the design of the Integrity Auto site.

Thanks,

Logan Mills, E.I.T.

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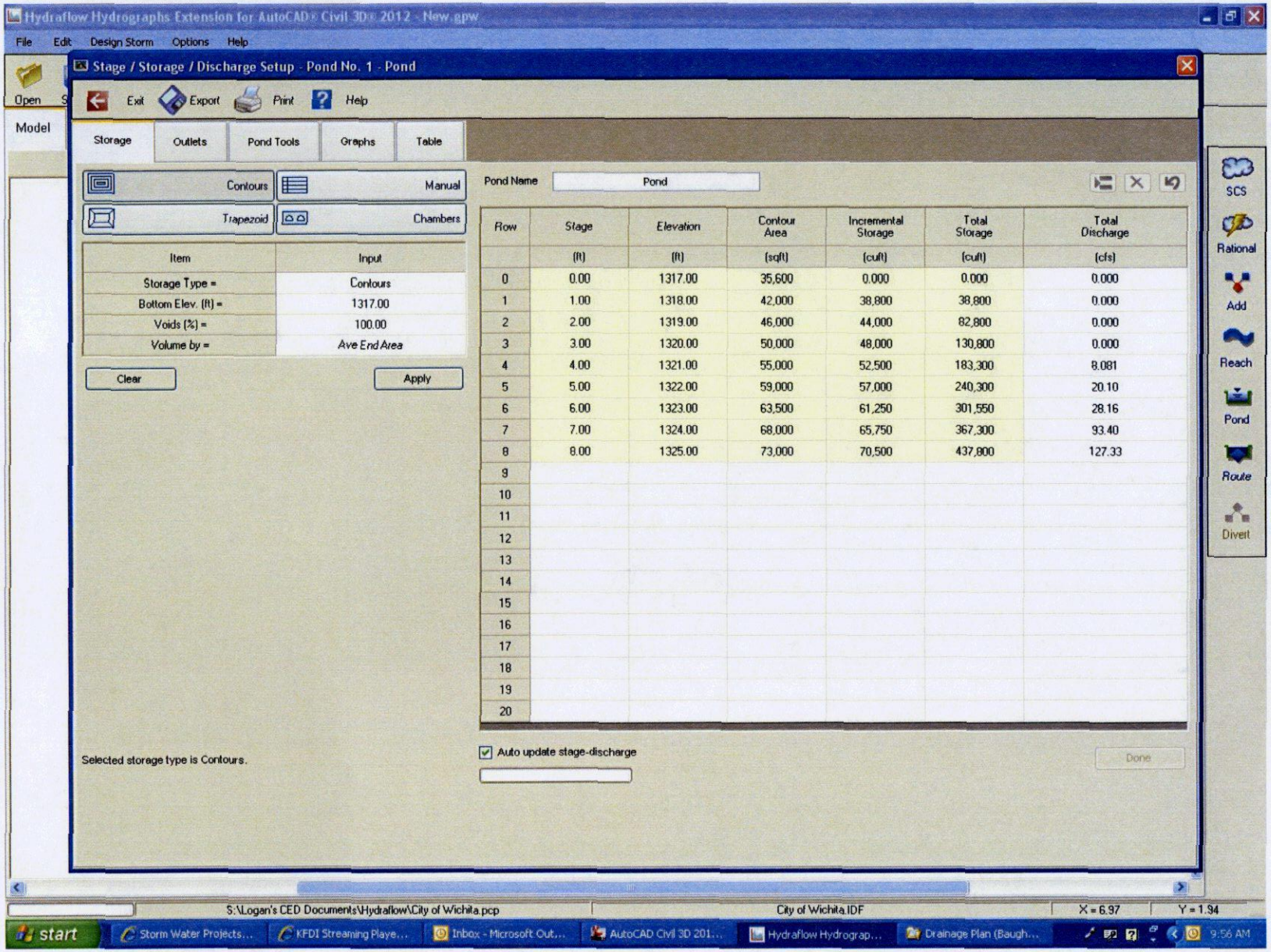
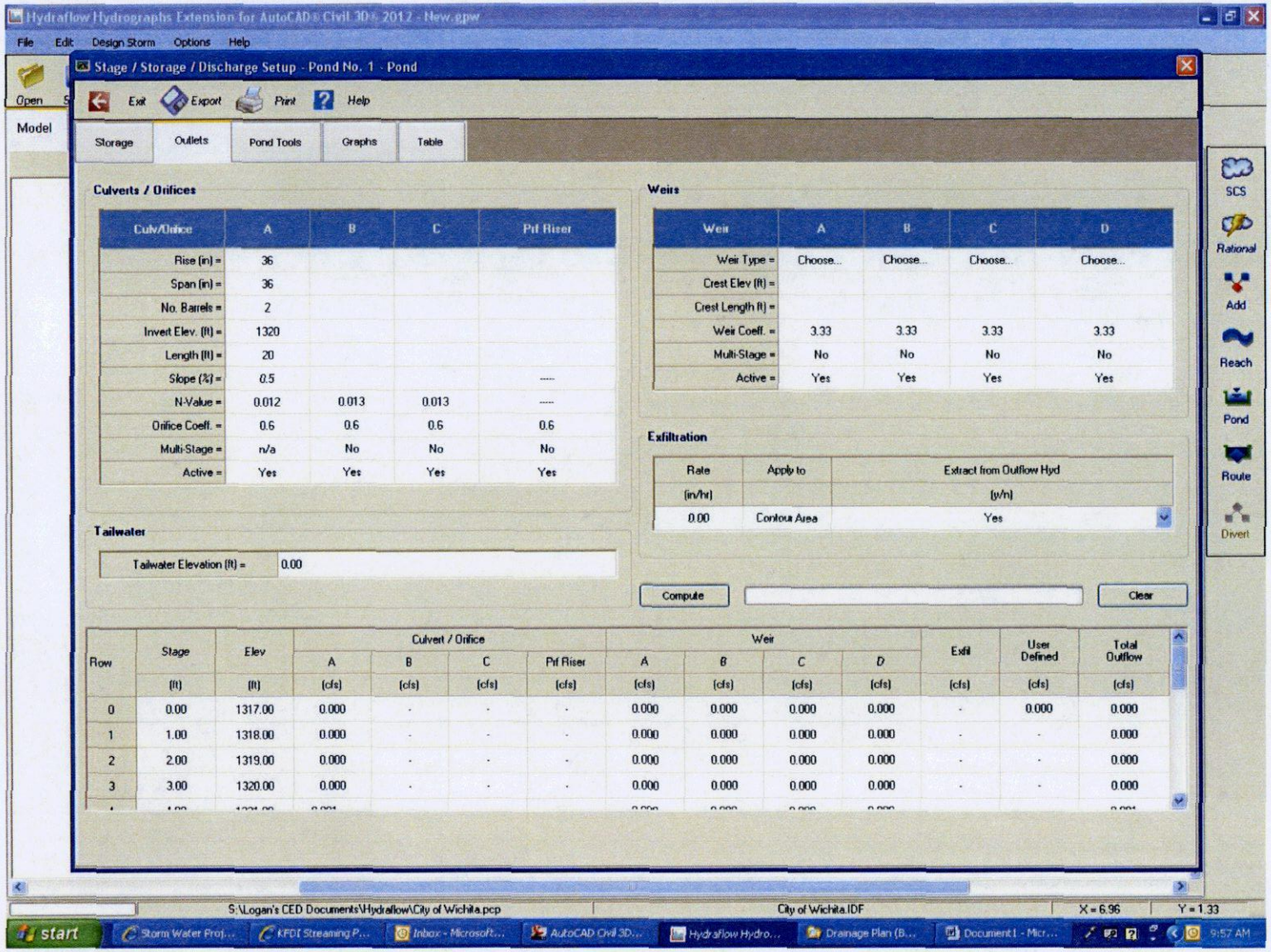
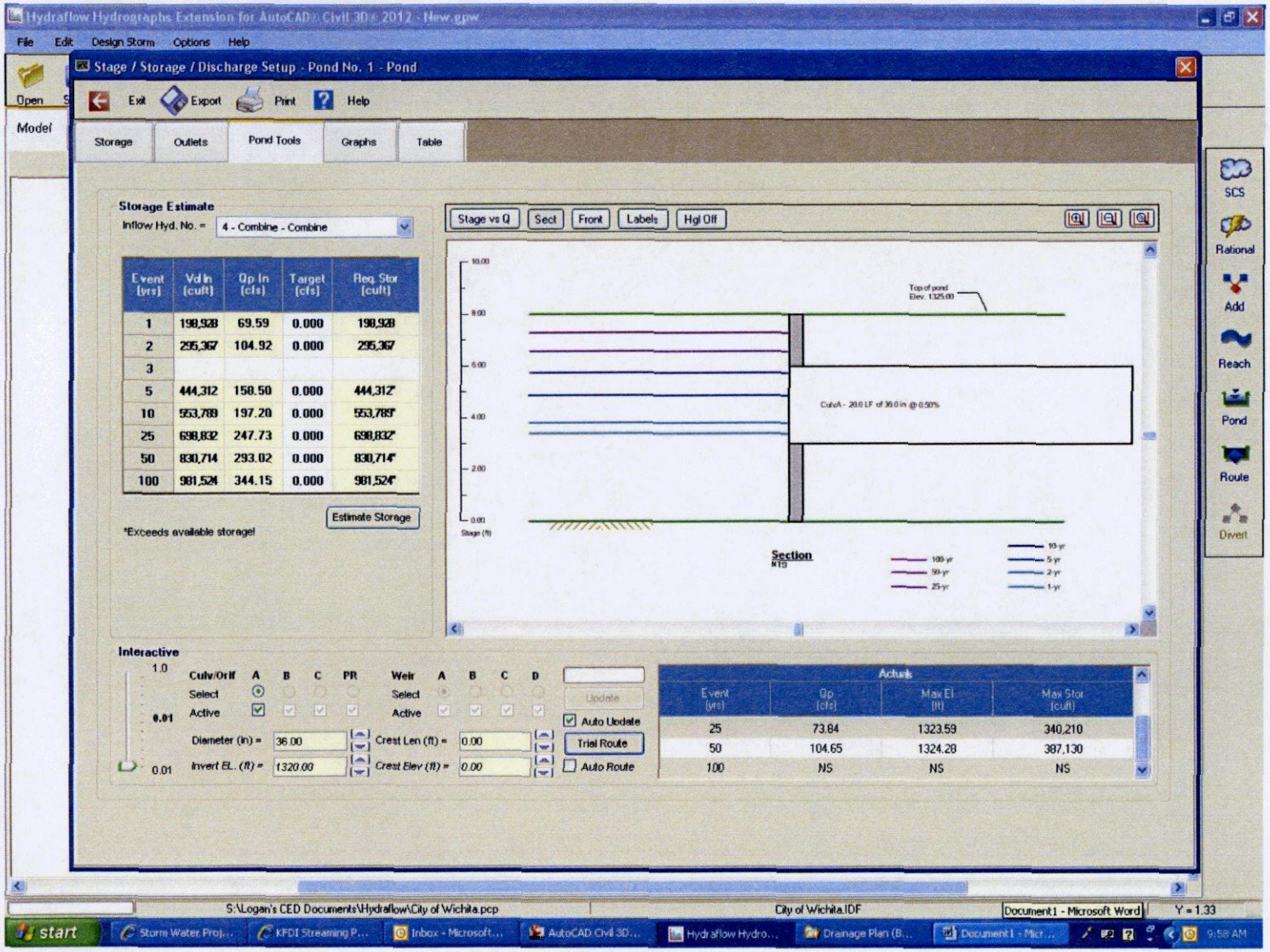

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 - New.gpw
File Edit Design Storm Options Help
Stage / Storage / Discharge Setup - Pond No. 1 - Pond
Exit Export Print Help
Storage Outlets Pond Tools Graphs Table
Contours Manual
Trapezoid Chambers
Item Input
Storage Type = Contours
Bottom Elev. (ft) = 1317.00
Voids (%) = 100.00
Volume by = Ave End Area
Clear Apply
Pond Name Pond
Row Stage Elevation Contour Area Incremental Storage Total Storage Total Discharge
(ft) (ft) (sqft) (cuft) (cuft) (cfs)
0 0.00 1317.00 35,600 0.000 0.000 0.000
1 1.00 1318.00 42,000 38,800 38,800 0.000
2 2.00 1319.00 46,000 44,000 82,800 0.000
3 3.00 1320.00 50,000 48,000 130,800 0.000
4 4.00 1321.00 55,000 52,500 183,300 8.081
5 5.00 1322.00 59,000 57,000 240,300 20.10
6 6.00 1323.00 63,500 61,250 301,550 28.16
7 7.00 1324.00 68,000 65,750 367,300 93.40
8 8.00 1325.00 73,000 70,500 437,800 127.33
9
10
11
12
13
14
15
16
17
18
19
20
Selected storage type is Contours.
Auto update stage-discharge
Done
SCS
Rational
Add
Reach
Pond
Route
Divert
S:\Logan's CED Documents\Hydraflow\City of Wichita.pcp
City of Wichita.IDF
X = 6.97
Y = 1.94
start
Storm Water Projects...
KFDI Streaming Playe...
Inbox - Microsoft Out...
AutoCAD Civil 3D 201...
Hydraflow Hydrograp...
Drainage Plan (Baugh...
9:56 AM


Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 - New.gpw
File
Edit
Design Storm
Options
Help
Open
Model
Stage / Storage / Discharge Setup - Pond No. 1 - Pond
Exit
Export
Print
Help
Storage
Outlets
Pond Tools
Graphs
Table
Culverts / Orifices
Culv/Orifice
A
B
C
Prf Riser
Rise (in) =
Span (in) =
No. Barrels =
Invert Elev. (ft) =
Length (ft) =
Slope (%) =
N-Value =
Orifice Coeff. =
Multi-Stage =
Active =
Weirs
Weir
A
B
C
D
Weir Type =
Crest Elev (ft) =
Crest Length ft) =
Weir Coeff. =
Multi-Stage =
Active =
Exfiltration
Rate
(in/hr)
Apply to
Extract from Outflow Hyd
(y/n)
0.00
Contour Area
Yes
Tailwater
Tailwater Elevation (ft) =
0.00
Compute
Clear
Row
Stage
Elev
Culvert / Orifice
Weir
Exfil
User Defined
Total Outflow
(ft)
(cfs)
0
1
2
3
SCS
Rational
Add
Reach
Pond
Route
Divert
S:\Logan's CED Documents\Hydraflow\City of Wichita.pcp
City of Wichita.IDF
X = 6.96
Y = 1.33
start
9:57 AM


Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2012 - New.gpw
File Edit Design Storm Options Help
Stage / Storage / Discharge Setup - Pond No. 1 - Pond
Exit Export Print Help
Storage Outlets Pond Tools Graphs Table
Storage Estimate
Inflow Hyd. No. = 4 - Combine - Combine
Event (yrs) | Vol In (cuft) | Qp In (cfs) | Target (cfs) | Req. Stor (cuft)
1 | 198,928 | 69.59 | 0.000 | 198,928
2 | 295,367 | 104.92 | 0.000 | 295,367
3
5 | 444,312 | 158.50 | 0.000 | 444,312
10 | 553,789 | 197.20 | 0.000 | 553,789
25 | 698,832 | 247.73 | 0.000 | 698,832
50 | 830,714 | 293.02 | 0.000 | 830,714
100 | 981,524 | 344.15 | 0.000 | 981,524
Estimate Storage
*Exceeds available storage!
Stage vs Q Sect Front Labels Hgl Off
Top of pond Elev 1325.00
CulvA - 20.0 LF of 36.0 in @ 0.50%
Section
Interactive
Culv/Orif A B C PR Weir A B C D
Select Active
Diameter (in) = 36.00
Invert El. (ft) = 1320.00
Crest Len (ft) = 0.00
Crest Elev (ft) = 0.00
Update Auto Update Trial Route Auto Route
Actuals
Event (yrs) | Qp (cfs) | Max El (ft) | Max Stor (cuft)
25 | 73.84 | 1323.59 | 340,210
50 | 104.65 | 1324.28 | 387,130
100 | NS | NS | NS
SCS Rational Add Reach Pond Route Divert
S:\Logan's CED Documents\Hydraflow\City of Wichita.pcp
City of Wichita.IDF
Document1 - Microsoft Word
Y = 1.33
start
9:58 AM