Baughman

TRANSMITTAL

TO:	FROM:
Scott Lindebak, PE CFM	Trevor Kurth, PE CFM
COMPANY:	DATE:
City of Wichita	7-26-12
ADDRESS:	PROJECT:
8th Floor City Hall	Great Plains Business Park
CITY/ STATE:	PROJECT NUMBER:
Wichita, Kansas	

RE:
Great Plains Business Park Drainage Plan

VIA: DELIVERY

We are sending you ☒ ATTACHED ☐ UNDER SEPARATE COVER

☒ PLANS ☐ PRINTS ☐ SHOP DRAWINGS ☐ SAMPLES ☐ SPECS
☐ COPY OF LETTER ☐ CHANGE ORDER ☐ DISK ☐ OTHER

COPIES	DATE	DESCRIPTION
1	7-30-12	Great Plains Business Park Drainage Plan

☐ URGENT ☒ FOR APPROVAL ☐ FOR YOUR INFO ☒ FOR REVIEW & COMMENT
☐ APPROVED, AS NOTED ☐ REVISE AS NOTED ☐ REVISE AND RETURN
☐ AS REQUESTED ☐ PLEASE REPLY ☐ FOR BIDS DUE ☐

NOTES/ COMMENTS:

SIGNED: _____
Trevor R. Kurth, P.E. CFM

Copy: file

ENGINEERING
SURVEYING
PLANNING
LANDSCAPE ARCHITECTURE

Baughman Company, P.A.
315 Ellis Street
Wichita, Kansas 67203
P 316.262.7271
F 316.262.0149

DRAINAGE PLAN

GREAT PLAINS BUSINESS PARK 4TH ADDITION

TO

WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY

24 JULY 2012

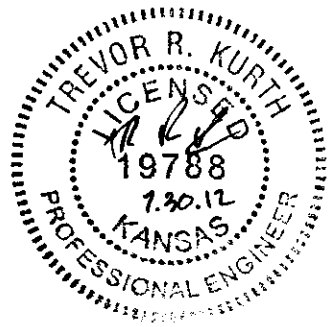
ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

DRAINAGE PLAN
GREAT PLAINS BUSINESS PARK 4TH ADDITON

FINAL REPORT

Prepared by Baughman Company, P.A.
24 July 2012

By Trevor R. Kurth, P.E., CFM
N. Brent Wooten, P.E., L.S.



REPORT CONTENTS

PROJECT NARRATIVE

EXISTING CONDITIONS

The site is located along the north side of K-96 and just east of Oliver, at the intersection of Ridgewood and 34th Street North. The site is currently platted as Lots 2-6, Block 3 or Great Plains Business Park 3rd Addition. The site encompasses approximately 12 acres of open space. This area is currently not developed; however, there is storm water sewer, streets, and sanitary sewer existing on the site. The property ultimately drains to the southeast and into the KDOT ROW. There is a ditch section located along the rear (east) of the property which conveys this sites runoff as well as north offsite runoff to the south.

There is no FEMA SFHA located on this property as of this report. The drainage patterns as defined above can be seen on the Aerial (Exhibit 2).

PROPOSED CONDITIONS

The property is being platted as one General Commercial (with CUP) lot which will house apartment buildings and all associated parking, utilities, and drainage ponds and structures. The detention facilities proposed will serve the property for detention of the storm water across all storm events as well as meet the City of Wichita's water quality and channel protection requirements. The majority of the site is expected to be impervious areas with developed drainage ultimately flowing to the south east. For a half-scale copy of the Plat, see Exhibit 3.

OFFSITE CONDITIONS

The site currently drains to the south east and into the KDOT ROW. This includes approximately 5.8 acres of area located offsite to the north of this property. This flow, current site plus the north offsite, flows along the east property line (which adjoins City of Wichita park property) in a channel section before entering the ROW ditch section. There is a small portion of undeveloped property to the west, 2.0 acres, which encroaches the site via a 15" RCP under Ridgewood. This area overland flows to the south east and into the ROW ditch section.

The KDOT ROW ditch section conveys this runoff to the east approximately 300 feet before being conveyed south via a large RCBC under the K-96 roadway. At this point, there is FEMA Floodplain due to the East Fork Chisholm Creek Tributary #6.

The overall site location and hydrogeodatabase can be seen with the site location plotted as Exhibit 1.

EXISTING CONDITIONS RUNOFF CALCULATIONS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values.

- STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
  - 2-yr Rainfall Depth = 3.5 in
  - 10-yr Rainfall Depth = 5.3 in
  - 100-yr Rainfall Depth = 7.9 in

- FLOW DATA
  - Areas per LIDAR data, USGS Quadrangle Sheet, Aerial Photos, and Site Visits
  - SCS Curve Number used for Existing Flows (composite computed using %)
  - Time of Concentration: Lag Method (minimum 15 min)

SITE CHARACTERISTICS

The site is currently platted as commercial/industrial lots; however, the site is currently open space with utilities serving the site. There is a drainage ditch along the east line as well as a 15" RCP draining onto the midsection of this site from the west. The existing site characteristics can be seen from the aerial exhibit (Exhibit 2).

EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site was analyzed for pre-development conditions using the SCS Curve Number method for the entire storm event series. A Curve Number of 77 was used (composite CN based on total discharge to the south ROW, includes 4 acres at a 98 and 15.3 acres at a 71). The soil type in this area is a Type B farnum loam. The entire basin (19.3 acres) to the south KDOT ROW was routed in this analysis which also included a calculated Tc of 55 min (based on Lidar, run length of 2000', basin slope 1.2%).

DOWNSTREAM DRAINAGE CAPACITY

The existing site, along with portions of other developed and undeveloped lots in this same previous addition, drains to the KDOT ROW at the south east corner of this proposed site. At this point, there is a uniform roadway ditch section which then dumps into an 8' x 14' RCBC. The box culvert primarily drains East Fork Chisholm Creek Tributary #6 to the south.

POST-DEVELOPMENT HYDROLOGIC ANALYSIS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, 100-yr Storm Events Modeled
  - 1.2" Water Quality Flow modeled as '3-yr event' in HydraFlow
  - Hydrograph Method utilized for Developed Flows
  - CN = 95 (Soil Type B – composite of impervious area and disturbed area)
  - Time of Concentration; Lag Method, minimum Tc = 15min

- GRADING CONSTRAINTS TO BE OBSERVED AT SITE PLAN
  - One foot freeboard between 100-yr WSE and adjacent lot corner
  - Match all existing perimeter grades

DEVELOPED CONDITIONS HYDROLOGIC ANALYSIS

The site is proposed to be platted into one lot which will feature an apartment complex with associated parking, utilities, and storm water management facilities. There are currently two wet detention ponds proposed on this site which will act as detention facilities for quantity control as well as handle on site water quality and downstream channel protection. A composite CN was calculated (HydraFlow) using CN's of 80 for disturbed pervious and 98 for impervious areas.

Please be aware, that the storm listed as the '3-yr event' in the Hydraflow model is actually the 1.2" rainfall water quality event. This is due to the constraints of the programs naming conventions. All the other storm events correspond to their respective years. The Channel Protection volume is generated using the 1-year event.

DETENTION FACILITIES

There are 2 detention facilities proposed for this plat. Both detention ponds are proposed to be wet ponds and will be used for amenities as well as quantity and quality control to meet current City of Wichita requirements. Each facility is detailed further below.

- **Middle Pond**

  This pond is located at the middle of the property and will detain runoff from the north half of the proposed site. The pond is relatively small compared to the site, but will allow for some water quality and detention before it discharges to the south and into the larger South Pond. This pond will drain via a 15" RCP as the main outfall pipe with a 5' weir section located 2' higher for larger storm events. These outfall structures will drain to the ditch section along the east line which drains into the South Pond. This pond will have 100-year water surface of approximately 1365.0 with a static elevation of 1361.0.

- **South Pond**

  The south pond will accept the south half of the developed site in its entirety as well as offsite flow from the east. The ditch section along the east line will also flow into this pond where it will be detained and held for water quality. The pond is located along the south line of the property and will be 2/3 of an acre in size at its static elevation of 1356.0. The pond will discharge at the south east corner of the pond/site via a multistage riser structure. The outlet is expected to have a 3.5" orifice at static elevation with an overflow at elevation 1358.5. The overflow elevation was modeled as a 15' broadcrested drop structure with a 36" RCP located at elevation 1356.0. This will give the pond a corresponding 100-year elevation of 1360.8. The pond will discharge directly into the ditch section and into the KDOT ROW. Since the pond is a wet surface, it will have adequate storage under the static volume for water quality.

DISCHARGE POINTS SUMMARY

The site will discharge, ultimately, at the south east corner of the property, as it does currently. The downstream channel, ROW ditch, appears to be well maintained and conveys the runoff to the east and into a RCBC under K96. This site, after development, will limit the developed discharge – via the wet ponds – to at least existing flow rates. Due to the offsite flow from the north and east, and developed site flow, being conveyed through the south pond, all of this flow will be discharged with respect to the downstream channel protection volume. In short, the flow rates from 1 and 2 year storm events, which are the 'erosion causing storms' will be greatly reduced by the pond outfall and storage.

WATER QUALITY

Preliminary water quality calculations have been provided for the proposed site and detention facilities. The proposed detention facilities located at the middle and south portions of the site will provide all the needed water quality volume under their static water surface. The total water quality volume generated on the site in the 1.2 in storm event is approximately 42,335 cubic foot of storage needed. The two ponds will contain approximately 140,000 cubic feet of volume under their static water surface. The WQ calculations can be found in the Appendix.

DOWNSTREAM CHANNEL PROTECTION

Downstream channel protection will be provided on the site primarily in the south detention pond. The pond will provide approximately 25 hours of extended detention during the 1-year storm even. This is achieved via the 3.5" orifice and overflow structure. This will be done for not only the proposed site, but also the north offsite and west offsite runoff which drains through this basin.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

Due to the construction of detention ponds, and the utilization of the existing outfall elevation, we do not anticipate any downstream impacts with this development. The site will accept all offsite runoff; therefore, no upstream impacts are expected.

SOURCE OF FLOODPLAIN INFORMATION

The site lies within a FEMA Zone X - Unshaded. The location of the property, on FEMA FIRM Panel 357 of 700 for Sedgwick County, Kansas, effective February 2, 2007, is attached as Exhibit 6.

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS
There does not appear to be any jurisdictional waters of the US on this site.

KANSAS DEPT OF AGRICULTURE – DWR PERMITTING
There does not appear to be any DWR permitting needed on the proposed site at this time. The areas of discharge do not account for more than 240 acres.

FEMA
There is no mapped floodplain located upon the proposed site. Therefore, no FEMA permitting is expected at this time.

KANSAS DEPT OF TRANSPORTATION
A KDOT ROW discharge permit will likely be needed as the existing site discharges into the ROW ditch.

SEDGWICK COUNTY PERMITTING
There does not appear to be any Sedgwick County permitting needed at this time.

EXHIBITS

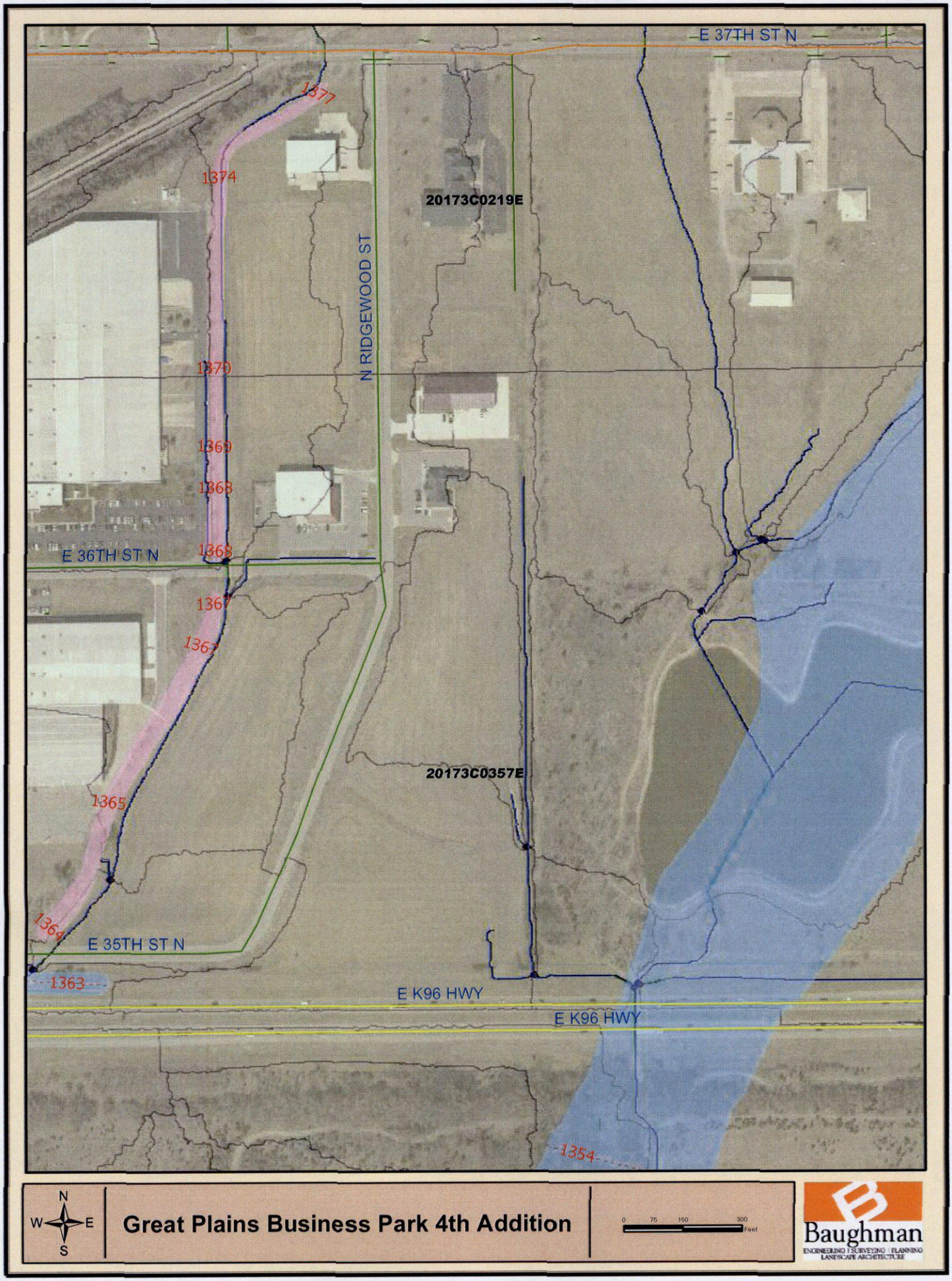
EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with *Lidar* Topography

EXHIBIT 3: Plat – Half Scale

EXHIBIT 4: Drainage Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)



N
W E
S

Great Plains Business Park 4th Addition

0 75 150 300 Feet

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LANDSCAPE ARCHITECTURE

Great Plains Business Park 4th Addition

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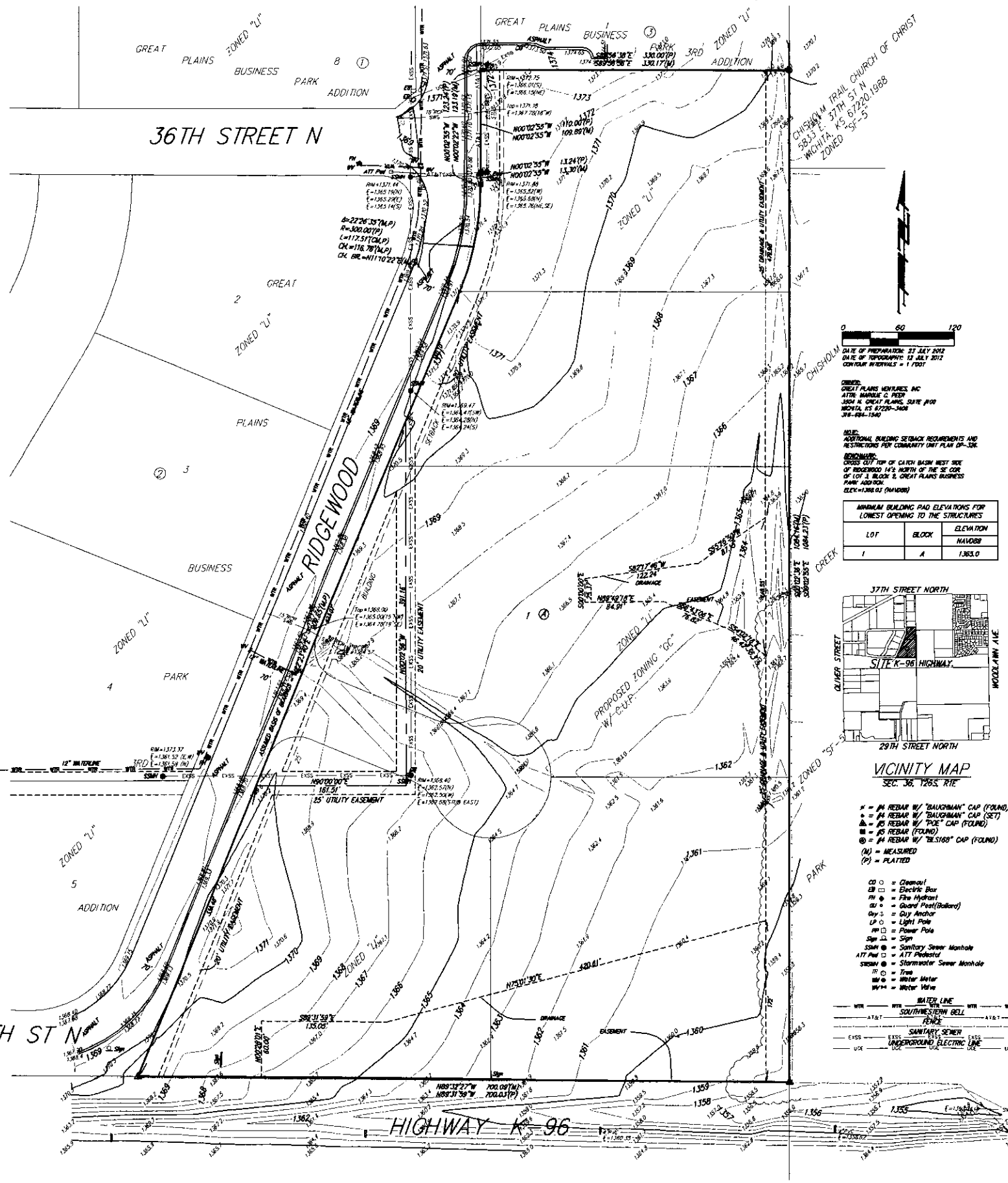
ONE-STEP FINAL PLAT

GREAT PLAINS BUSINESS PARK 4TH ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



State of Kansas) SS
Sedgwick County)

We, Baughman Company, P.A., Surveyors in aforesaid county and state do hereby certify that we have surveyed and platted "GREAT PLAINS BUSINESS PARK 4TH ADDITION", Wichita, Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as and being a replat of all of Lots 2, 3, 4, 5, and 6, Block 3, Great Plains Business Park 3rd Addition to Wichita, Kansas, Sedgwick County, Kansas, TOGETHER with all of Ridgewood Court as dedicated in said Great Plains Business Park 3rd Addition.

All being situated in the Northwest Quarter of Section 36, Township 26 South, Range 1 East of the 6th Principal Meridian, Sedgwick County, Kansas.

Existing public easements and dedications being vacated by virtue of K.S.A. 12-512b.

Baughman Company, P.A.

_____, Surveyor
Michael G. Conrey

Know all men by these presents that we, the undersigned, have caused the land in the surveyors certificate to be platted into a Lot and a Block, to be known as "GREAT PLAINS BUSINESS PARK 4TH ADDITION", Wichita, Sedgwick County, Kansas. The utility easements are hereby granted as indicated for the construction and maintenance of all public utilities. The drainage and utility easements are hereby granted as indicated for drainage purposes and for the construction and maintenance of all public utilities. The drainage easements are hereby granted as indicated for drainage purposes. The Minimum Building Pad Elevations for the lowest opening to the structures shall be as indicated on the face of the plat.

Great Plains Ventures, Inc.

_____, Vice-President
John L. Kratzer, Jr.

State of Kansas) SS
Sedgwick County)

The foregoing instrument acknowledged before me, this _____ day of _____, 2012, by John L. Kratzer, Jr., Vice-President of Great Plains Ventures, Inc., on behalf of the corporation.

_____ Notary Public

My App't. Exp. _____

This plat of "GREAT PLAINS BUSINESS PARK 4TH ADDITION", Wichita, Sedgwick County, Kansas has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this ____ day of _____, 2012.
Wichita-Sedgwick County Metropolitan Area Planning Commission

_____, Chair
Shawn Forney

_____, Secretary
John L. Schlegel

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this ____ day of _____, 2012.

_____, Mayor
Carl Brewer

_____, City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this ____ day of _____, 2012.

_____
Tricia L. Robello, L.S. #1246
Deputy County Surveyor
Sedgwick County, Kansas

Entered on transfer record this ____ day of _____, 2012.

_____, County Clerk
Kelly B. Arnold

State of Kansas) SS
Sedgwick County)

This is to certify that this plat has been filed for record in the office of the Register of Deeds, this ____ day of _____, 2012 at ____ o'clock __M; and is duly recorded.

_____, Register of Deeds
Bill Meek

_____, Deputy
Tonya Buckingham

GREAT PLAINS BUSINESS PARK 4TH ADDITION
24 JULY 2012

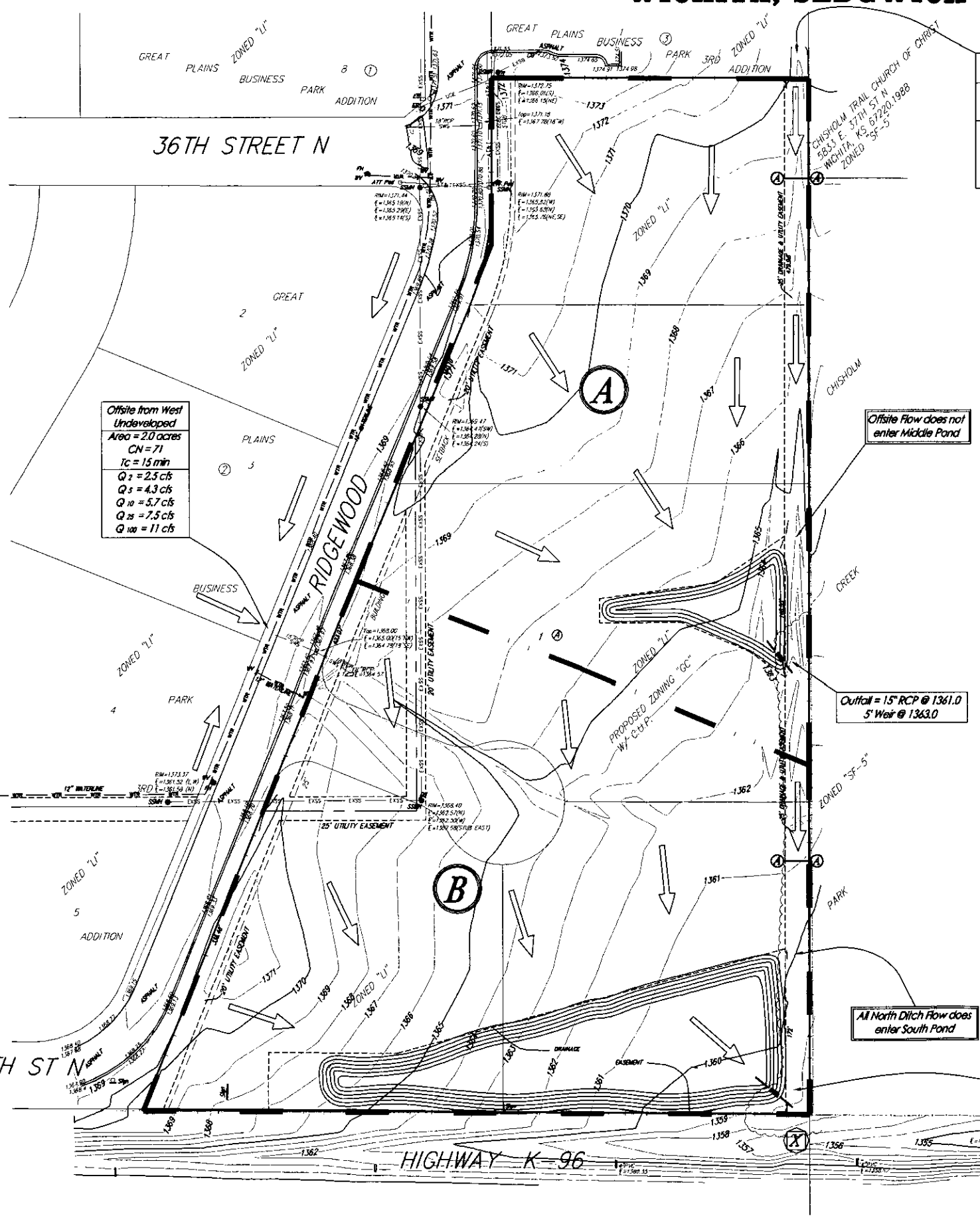
Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-267-7221 F 316-267-0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

E:\PROJECTS\GREAT PLAINS BUSINESS PARK 4TH\DGN\BP 4TH_F.DWG 8/8/12

DRAINAGE PLAN

GREAT PLAINS BUSINESS PARK 4TH ADDITION

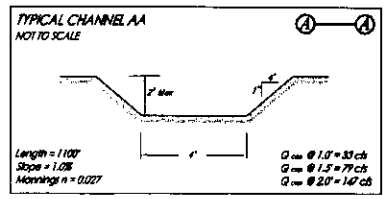
WICHITA, SEDGWICK COUNTY, KANSAS



Offsite from West Undeveloped
Area = 2.0 acres
CN = 71
Tc = 15 min
Q_2 = 2.5 cfs
Q_5 = 4.3 cfs
Q_{10} = 5.7 cfs
Q_{25} = 7.5 cfs
Q_{100} = 11 cfs

Offsite from North Existing
Area = 5.8 acres
CN = 93
Tc = 34 min
Q_2 = 12 cfs
Q_5 = 16 cfs
Q_{10} = 19 cfs
Q_{25} = 23 cfs
Q_{100} = 30 cfs

TYPICAL CHANNEL AA
NOT TO SCALE

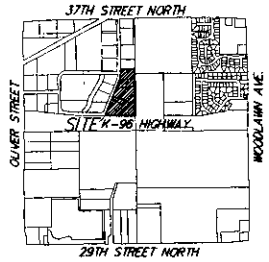


LEGEND

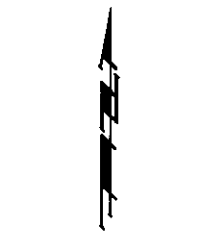
- Proposed SWS
- Drainage Basin Boundary
- Proposed Flow Direction
- (A) Proposed Drainage Basin

A NORTH DEVELOPED
DA = 5.5 acres
CN = 95
Tc = 15 min
Q_2 = 19 cfs
Q_5 = 25 cfs
Q_{10} = 29 cfs
Q_{100} = 45 cfs

B SOUTH DEVELOPED
DA = 6.5 acres
CN = 95
Tc = 15 min
Q_2 = 23 cfs
Q_5 = 30 cfs
Q_{10} = 35 cfs
Q_{100} = 53 cfs



VICINITY MAP
SEC. 36, 12S, R1E



DATE OF PREPARATION: 23 JULY 2012
DATE OF TOPOGRAPHY: 19 JULY 2012
CONTOUR INTERVALS = 1' FOOT

OWNER:
GREAT PLAINS VENTURES, INC
ATTN: MARQUE C. PEET
3504 N. GREAT PLAINS, SUITE #100
WICHITA, KS. 67220-3408
316-684-1540

MIDDLE POND (Static = 1361.0)			
STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	19 cfs	14 cfs	1364.0
10 yr	30 cfs	23 cfs	1364.5
100 yr	45 cfs	37 cfs	1365.0

MIDDLE POND	
ELEVATION	AREA (sq ft)
1361	4600
1362	6600
1363	8600
1364	10750
1365	11000

SOUTH POND (Static = 1356.0)			
STAGE	INFLOW	OUTFLOW	ELEVATION
2 yr	46 cfs	8.3 cfs	1358.8
10 yr	76 cfs	30 cfs	1359.6
100 yr	121 cfs	57 cfs	1360.8

SOUTH POND	
ELEVATION	AREA (sq ft)
1356	29200
1357	33500
1358	38000
1359	42500
1360	47200
1361	49000

Table 4-13 Volumetric Runoff Coefficients by Land Use and Hydrologic Soil Group

Land Use	Hydrologic Soil Group A	B	C	D	Land Use	Hydrologic Soil Group A	B	C	D
Undisturbed	0.02	0.03	0.04	0.05	Undisturbed	55	71	80	84
Turf or Disturbed Soil	0.15	0.20	0.22	0.25	Turf or Disturbed Soils	71	80	84	88
Impervious Cover	0.95	0.95	0.95	0.95	Impervious Cover	98	98	98	98

Basin #	Undist. ft²	Dist. ft²	Red. Imp. ft²	New Imp. ft²	Total Area ft²	U %	D %	Redevl. I %	I %	R_v %	WQ_v ft³ eq. 4-25*
Total Site	0	98,000	0	425,000	523,000	0.000	0.037	0.000	0.772	0.8035	42,335

Pond Volume Below Spash Pond

Basin	Spash Sq. Ft.	Pond Bottom Area Acre	Sq. Ft.	Acre	Depth Feet	Volume Acre-Ft.
North:	4900	0.1	1500	0.0	6	0.4
South	58800	0.7	10500	0.2	7	3.5
Totals:		0.7		0.2		3.9

Pond Volume > WQv		
Pond	WQv	Check
3.9	1.0	Yes

X

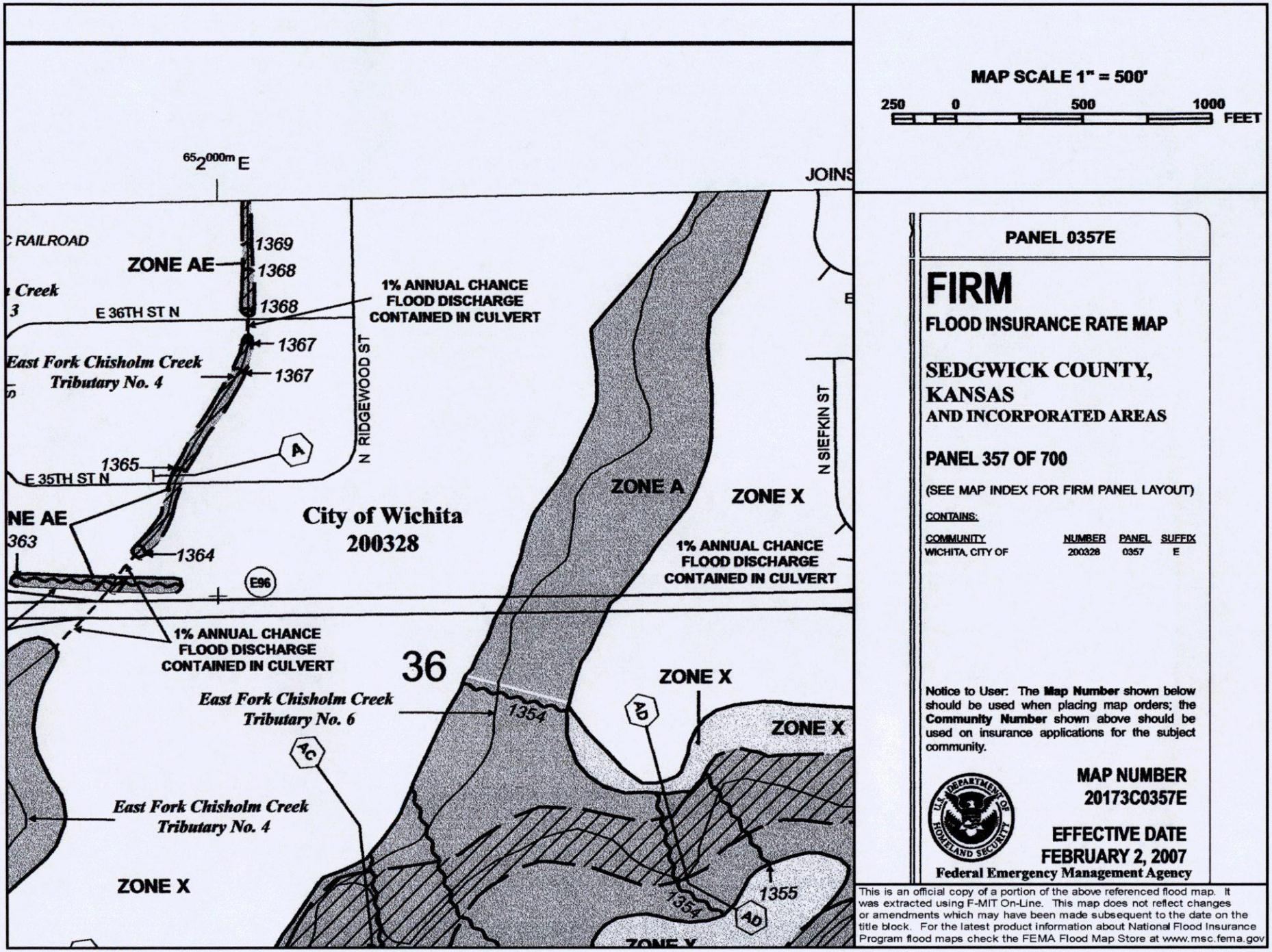
SOUTH KDOT ROW DISCHARGE POINT	
EXISTING (from North and Site	DEVELOPED (Post Detention)
Q_2 = 16 cfs	Q_2 = 8.2 cfs
Q_5 = 25 cfs	Q_5 = 22 cfs
Q_{10} = 32 cfs	Q_{10} = 31 cfs
Q_{100} = 59 cfs	Q_{100} = 57 cfs
Area = 19.8 acres	
CN = 77	
Tc = 55 min	

NOTES: There is no FEMA SFHA located on this property as of this date per FEMA FIRM Panel 357 of 700, for Wichita, Sedgwick County, Kansas; effective February 2, 2007.

The internal Storm Water Sewer will be sized and final location approved during the site plan process.

DRAINAGE PLAN
GREAT PLAINS BUSINESS PARK 4TH ADDITION
23 JULY 2012

Baughman Company, P.A.
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE


MAP SCALE 1" = 500'
250 0 500 1000 FEET
652000m E
JOINS
C RAILROAD
ZONE AE
1369
1368
1368
1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT
E 36TH ST N
1367
1367
East Fork Chisholm Creek Tributary No. 4
N RIDGEWOOD ST
A
1365
E 35TH ST N
N SIEFKIN ST
ZONE A
ZONE X
City of Wichita
200328
1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT
1364
E96
1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CULVERT
36
ZONE X
East Fork Chisholm Creek Tributary No. 6
1354
AD
ZONE X
AC
East Fork Chisholm Creek Tributary No. 4
ZONE X
1354
1355
AD
PANEL 0357E
FIRM
FLOOD INSURANCE RATE MAP
SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS
PANEL 357 OF 700
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
WICHITA, CITY OF 200328 0357 E
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.
MAP NUMBER
20173C0357E
EFFECTIVE DATE
FEBRUARY 2, 2007
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

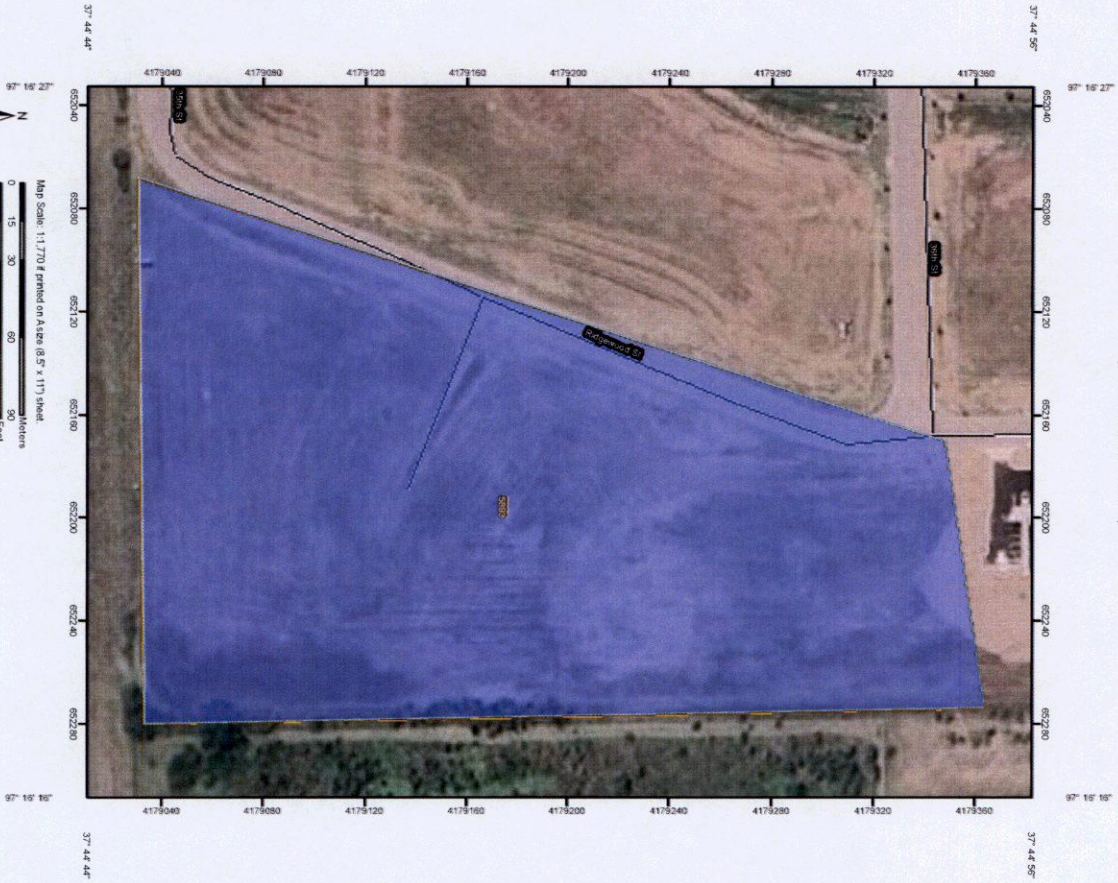
SUPPORTING CALCULATIONS

APPENDIX A: USGS Soils Survey

APPENDIX B : HydraFlow Hydrographs
Site Flow and Pond Routing

APPENDIX C : HydraFlow Express
Channel Section AA

USGS Soils Survey



Hydrologic Soil Group—Sedgwick County, Kansas
(Great Plains Business Park)

Hydrologic Soil Group–Sedgwick County, Kansas
(Great Plains Business Park)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:1,770 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sedgwick County, Kansas
Survey Area Data: Version 7, Nov 30, 2010

Date(s) aerial images were photographed: 6/20/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Sedgwick County, Kansas (KS173)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5893	Farnum loam, 1 to 3 percent slopes	B	12.5	100.0%
Totals for Area of Interest			12.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced *to a single* value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component *is* either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

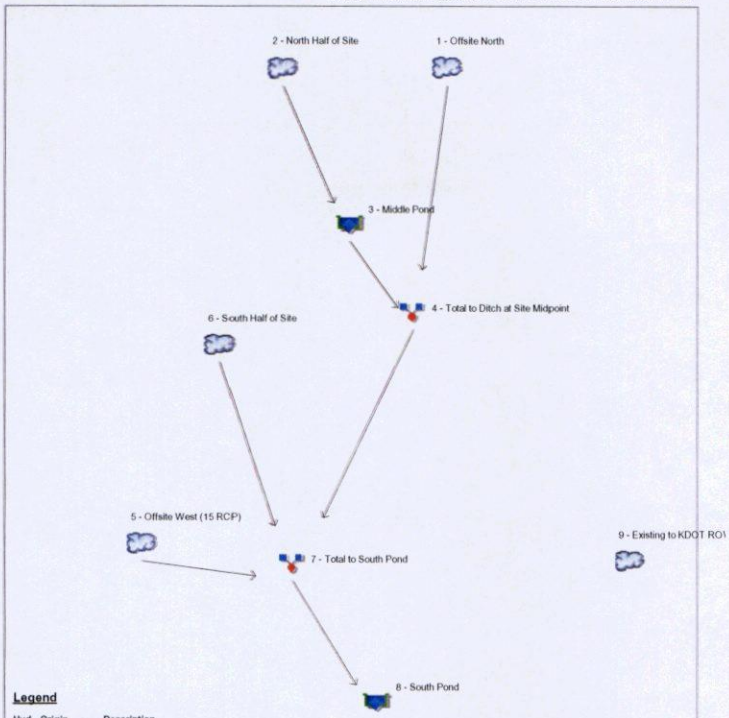
The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

HydraFlow Hydrographs

Site Flow & Pond Routing

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8



Legend

Hyd.	Origin	Description
1	SCS Runoff	Offsite North
2	SCS Runoff	North Half of Site
3	Reservoir	Middle Pond
4	Combine	Total to Ditch at Site Midpoint
5	SCS Runoff	Offsite West (15 RCP)
6	SCS Runoff	South Half of Site
7	Combine	Total to South Pond
8	Reservoir	South Pond
9	SCS Runoff	Existing to KDOT ROW

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	9.363	12.28	2.790	16.42	19.30	22.99	26.25	29.90	Offsite North
2	SCS Runoff	------	14.89	19.12	5.113	25.11	29.28	34.61	39.34	44.64	North Half of Site
3	Reservoir	2	8.455	13.59	0.071	19.45	23.09	27.68	31.78	36.54	Middle Pond
4	Combine	1, 3	17.68	25.23	2.790	34.68	40.89	48.76	55.85	63.85	Total to Ditch at Site Midpoint
5	SCS Runoff	------	1.456	2.547	0.008	4.317	5.678	7.509	9.190	11.12	Offsite West (15 RCP)
6	SCS Runoff	------	17.60	22.60	6.043	29.68	34.60	40.90	46.49	52.75	South Half of Site
7	Combine	4, 5, 6	31.82	45.89	7.948	64.02	76.00	91.34	105.05	120.52	Total to South Pond
8	Reservoir	7	1.605	8.236	0.230	22.05	30.74	41.77	49.44	56.88	South Pond
9	SCS Runoff	------	10.04	16.02	0.526	25.36	32.24	41.34	49.58	58.99	Existing to KDOT ROW

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	9.363	2	734	42,947	------	------	------	Offsite North
2	SCS Runoff	14.89	2	722	43,884	------	------	------	North Half of Site
3	Reservoir	8.455	2	730	30,735	2	1363.76	20,387	Middle Pond
4	Combine	17.68	2	732	73,662	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	1.456	2	724	4,588	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	17.60	2	722	51,863	------	------	------	South Half of Site
7	Combine	31.82	2	726	130,133	4, 5, 6	------	------	Total to South Pond
8	Reservoir	1.605	2	904	121,661	7	1358.59	90,860	South Pond
9	SCS Runoff	10.04	2	748	66,096	------	------	------	Existing to KDOT ROW

Hydrograph Report

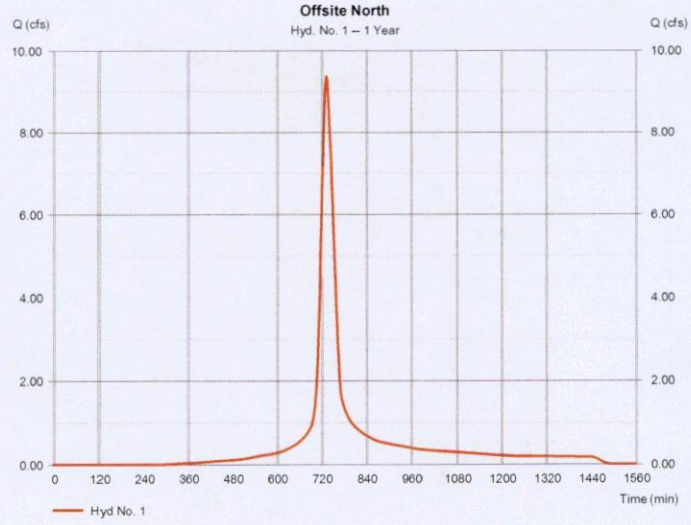
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 9.363 cfs
Storm frequency	= 1 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 42,947 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



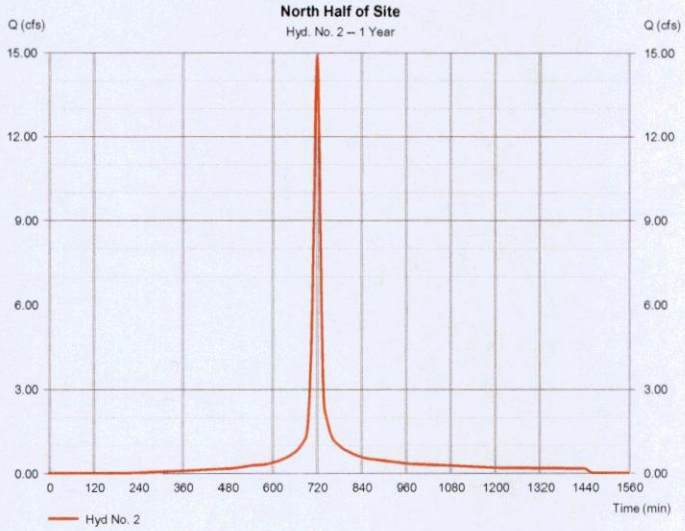
Hydrograph Report

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 14.89 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 43,884 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



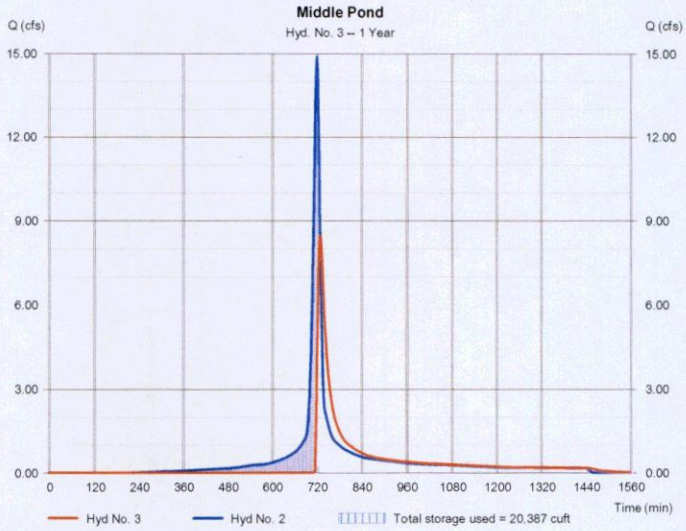
Hydrograph Report

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 8.455 cfs
Storm frequency	= 1 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 30,735 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1363.76 ft
Reservoir name	= Middle Pond	Max. Storage	= 20,387 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Middle Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1361.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1361.00	4,800	0	0
1.00	1362.00	6,600	5,569	5,569
2.00	1363.00	8,600	7,577	13,147
3.00	1364.00	10,750	9,654	22,801
4.00	1365.00	11,000	10,874	33,674

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	0.00	0.00	0.00
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1361.00	0.00	0.00	0.00
Length (ft)	= 40.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 5.00	0.00	0.00	0.00
Crest El. (ft)	= 1363.00	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	Broad	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

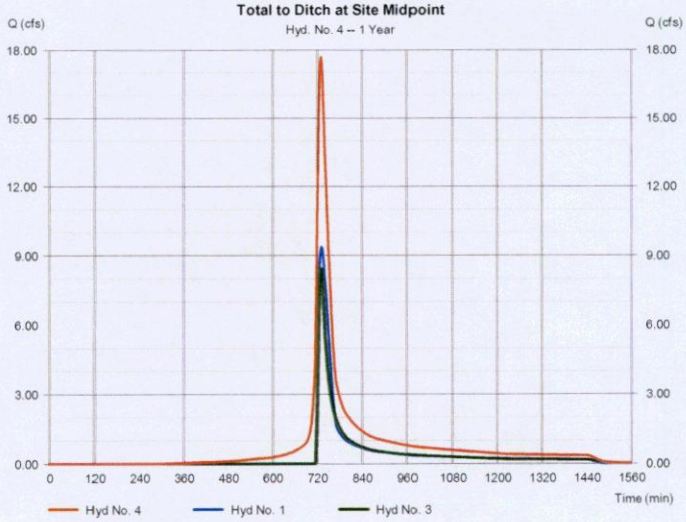
Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 17.68 cfs
Storm frequency	= 1 yrs	Time to peak	= 732 min
Time interval	= 2 min	Hyd. volume	= 73,682 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

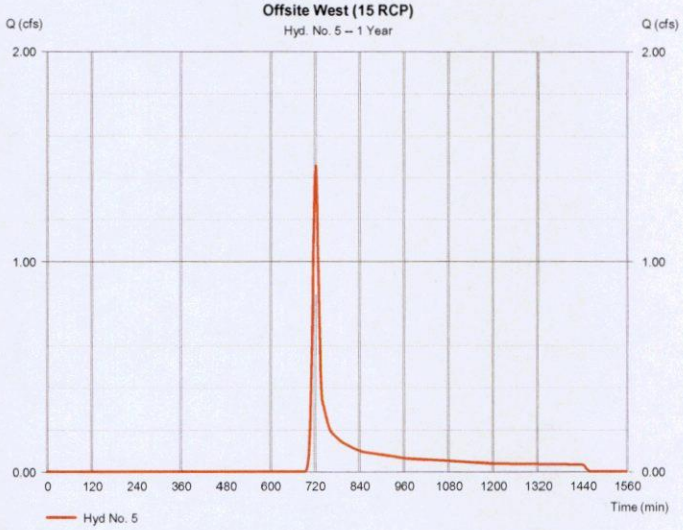


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 1.456 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 4,588 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

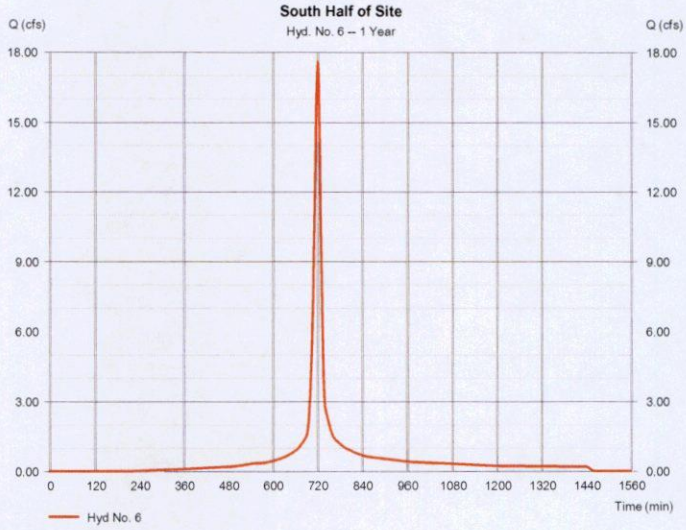


Hydrograph Report

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 17.60 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 51,863 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

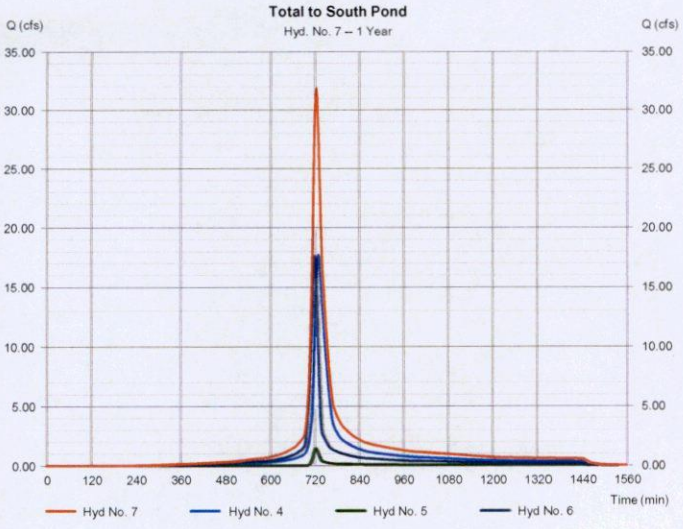


Hydrograph Report

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 31.82 cfs
Storm frequency	= 1 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 130,133 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



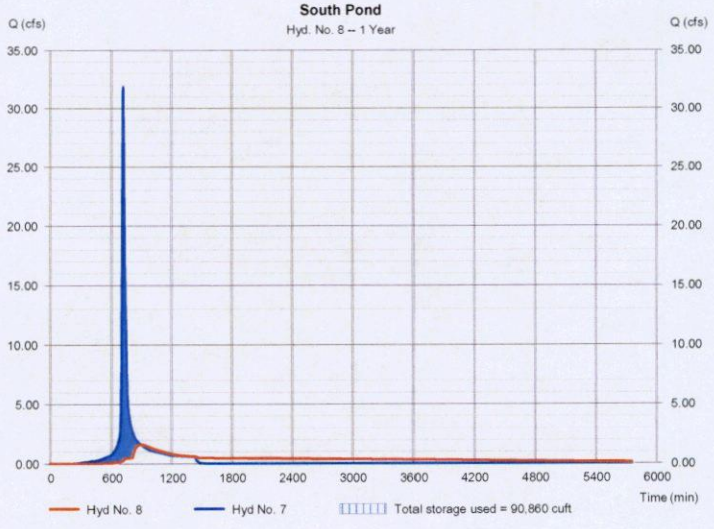
Hydrograph Report

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 1.605 cfs
Storm frequency	= 1 yrs	Time to peak	= 904 min
Time interval	= 2 min	Hyd. volume	= 121,661 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1358.59 ft
Reservoir name	= South Pond	Max. Storage	= 90,860 cuft

Storage Indication method used.



Pond Report

Pond No. 2 - South Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 1356.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	1356.00	29,200	0	0
1.00	1357.00	33,500	31,322	31,322
2.00	1358.00	38,000	35,723	67,045
3.00	1359.00	42,500	40,225	107,270
4.00	1360.00	47,200	44,825	152,095
5.00	1361.00	49,000	48,092	200,187

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	3.50	0.00	0.00
Span (in)	= 36.00	3.50	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 1356.00	1356.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 15.00	0.00	0.00	0.00
Crest El. (ft)	= 1358.50	0.00	0.00	0.00
Weir Coeff.	= 2.60	3.33	3.33	3.33
Weir Type	= Broad	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

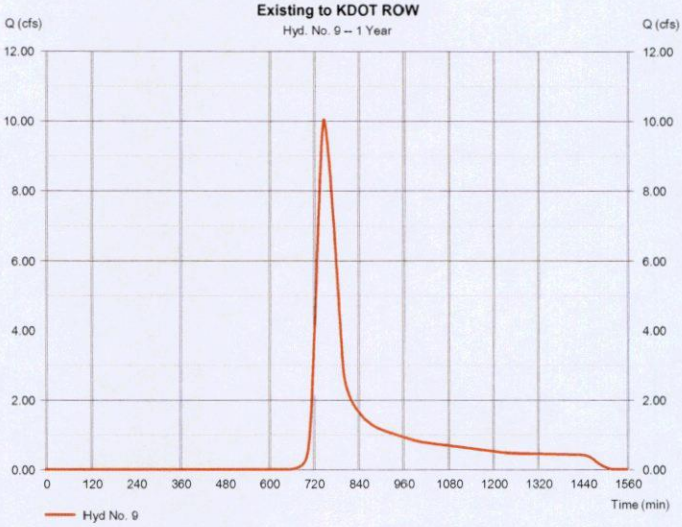
Hydrograph Report

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 10.04 cfs
Storm frequency	= 1 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 66,696 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	12.28	2	734	56,926	------	------	------	Offsite North
2	SCS Runoff	19.12	2	722	57,212	------	------	------	North Half of Site
3	Reservoir	13.59	2	728	44,063	2	1364.03	23,119	Middle Pond
4	Combine	25.23	2	730	100,988	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	2.547	2	724	7,530	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	22.60	2	722	67,614	------	------	------	South Half of Site
7	Combine	45.89	2	724	176,132	4, 5, 6	------	------	Total to South Pond
8	Reservoir	8.236	2	786	167,557	7	1358.84	100,871	South Pond
9	SCS Runoff	16.02	2	748	102,060	------	------	------	Existing to KDOT ROW

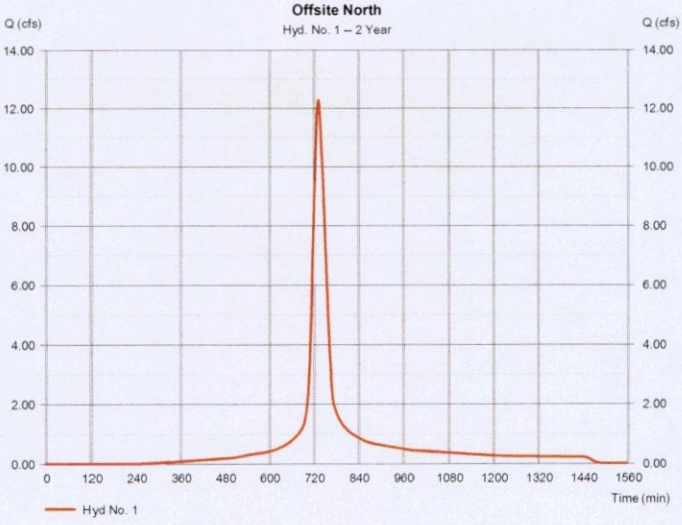
Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 12.28 cfs
Storm frequency	= 2 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 56,926 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



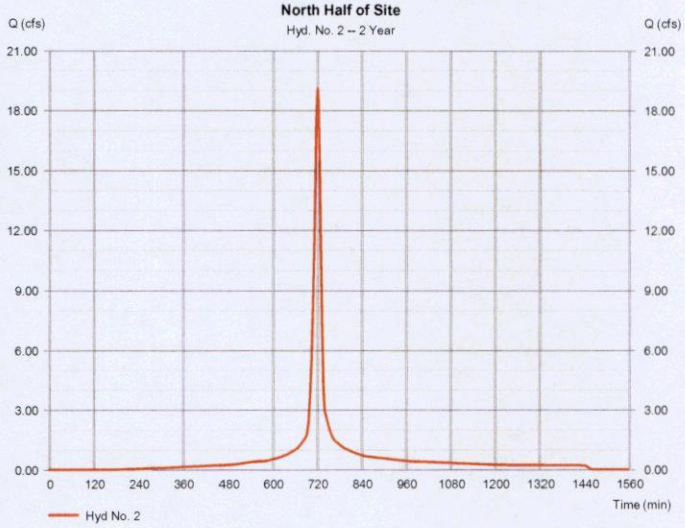
Hydrograph Report

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 19.12 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 57,212 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



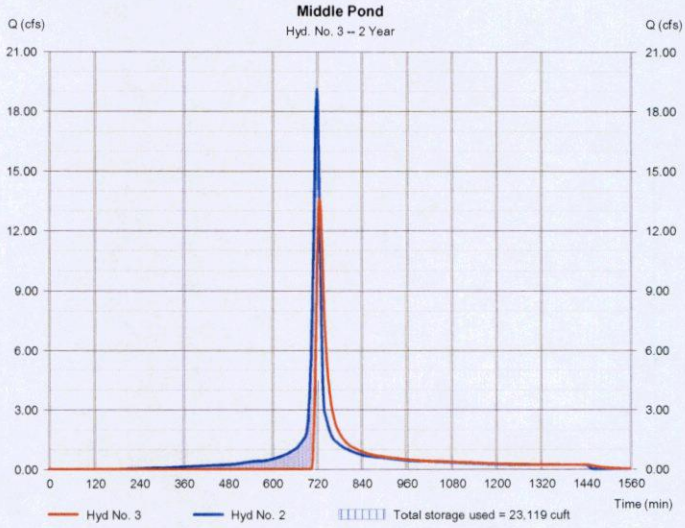
Hydrograph Report

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 13.59 cfs
Storm frequency	= 2 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 44,063 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1364.03 ft
Reservoir name	= Middle Pond	Max. Storage	= 23,119 cuft

Storage Indication method used.

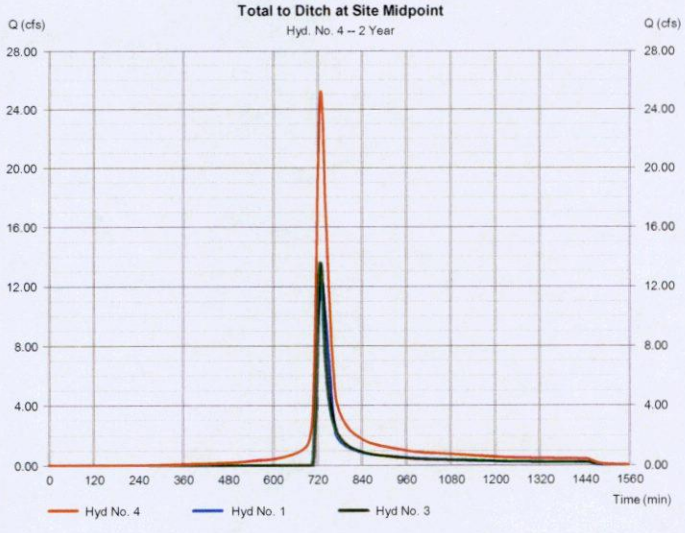


Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 25.23 cfs
Storm frequency	= 2 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 100,988 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

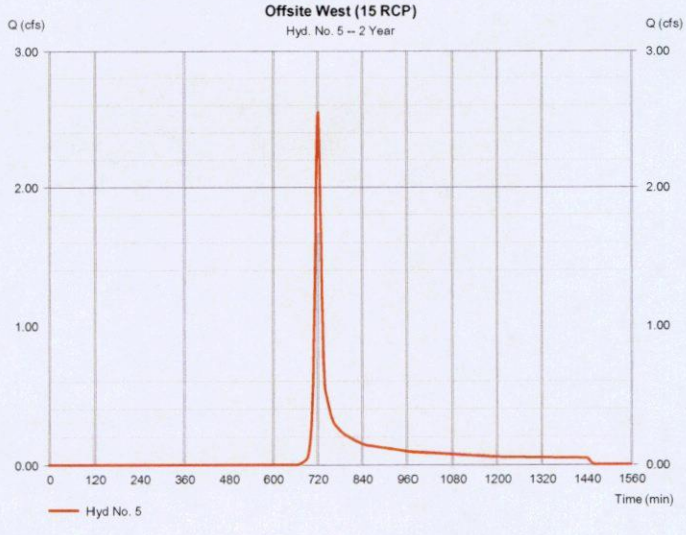


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.547 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 7,530 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



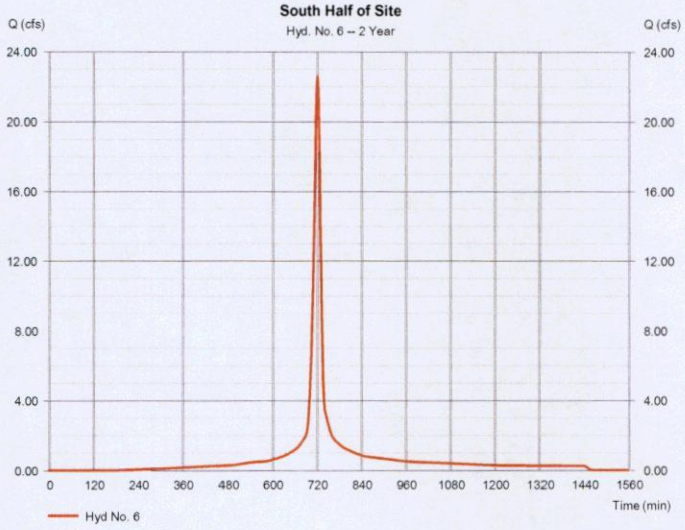
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v6 Monday, Jul 30, 2012

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 22.60 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 67,614 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



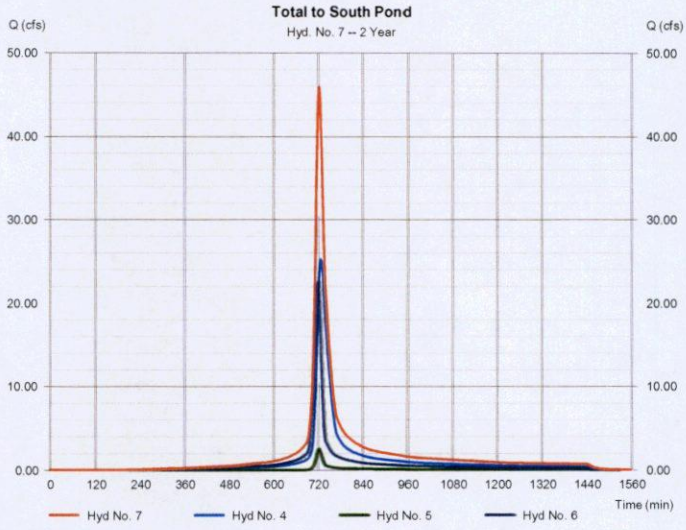
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v6 Monday, Jul 30, 2012

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 45.89 cfs
Storm frequency	= 2 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 176,132 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



Hydrograph Report

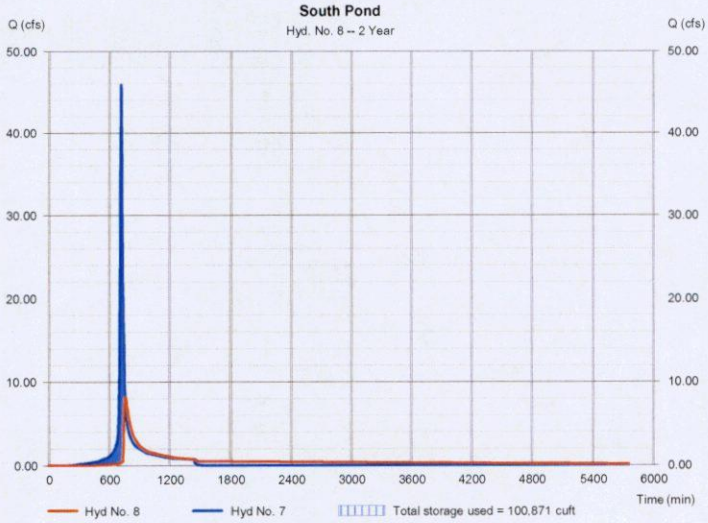
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v6 Monday, Jul 30, 2012

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 8.236 cfs
Storm frequency	= 2 yrs	Time to peak	= 766 min
Time interval	= 2 min	Hyd. volume	= 167,557 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1358.84 ft
Reservoir name	= South Pond	Max. Storage	= 100,871 cuft

Storage Indication method used.



Hydrograph Report

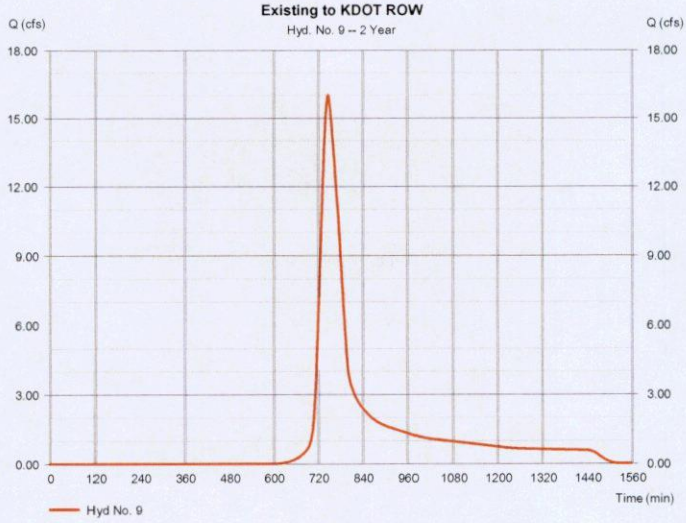
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v6 Monday, Jul 30, 2012

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 16.02 cfs
Storm frequency	= 2 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 102,060 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	2.790	2	736	12,721	------	------	------	Offsite North
2	SCS Runoff	5.113	2	722	14,391	------	------	------	North Half of Site
3	Reservoir	0.071	2	1304	1,242	2	1363.02	13,313	Middle Pond
4	Combine	2.790	2	736	13,963	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	0.008	2	804	233	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	6.043	2	722	17,008	------	------	------	South Half of Site
7	Combine	7.948	2	724	31,203	4, 5, 6	------	------	Total to South Pond
8	Reservoir	0.230	2	1094	29,491	7	1356.68	21,319	South Pond
9	SCS Runoff	0.526	2	766	7,207	------	------	------	Existing to KDOT ROW

final site with offsite flow in ponds.gpw | Return Period: 3 Year | Monday, Jul 30, 2012

Hydrograph Report

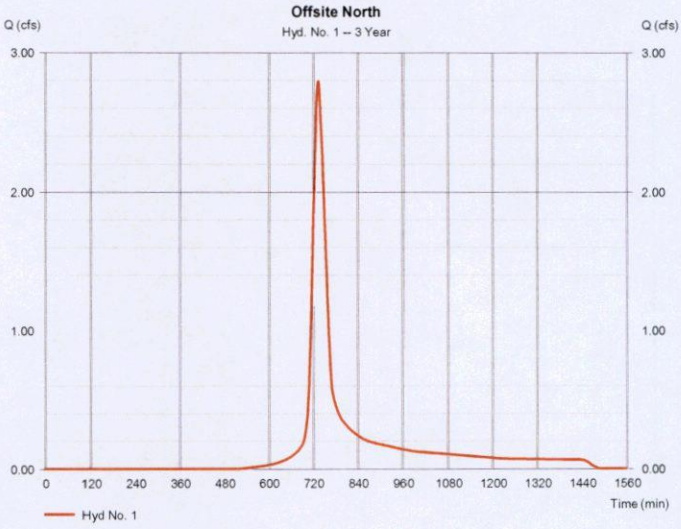
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 2.790 cfs
Storm frequency	= 3 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 12,721 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



Hydrograph Report

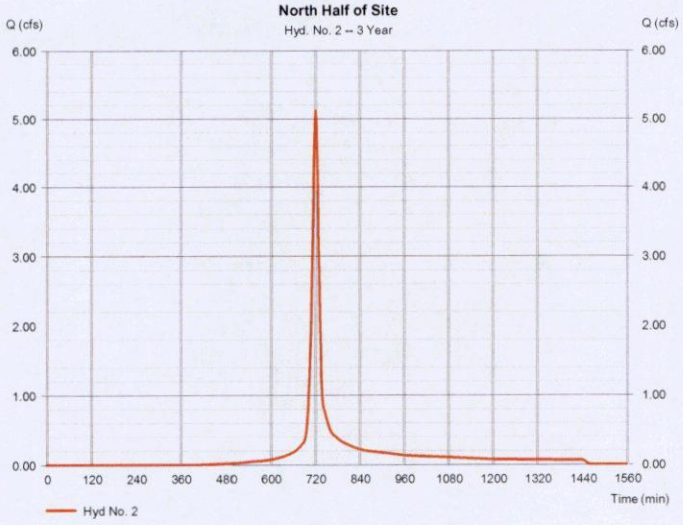
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 5.113 cfs
Storm frequency	= 3 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 14,391 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



Hydrograph Report

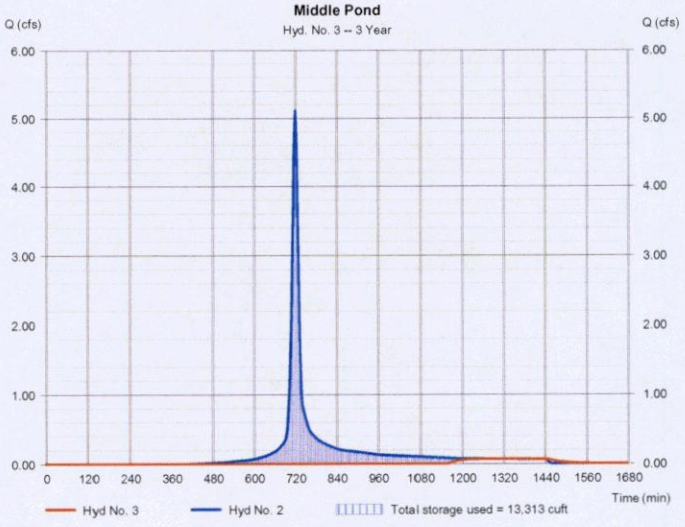
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 0.071 cfs
Storm frequency	= 3 yrs	Time to peak	= 1304 min
Time interval	= 2 min	Hyd. volume	= 1,242 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1363.02 ft
Reservoir name	= Middle Pond	Max. Storage	= 13,313 cuft

Storage Indication method used.



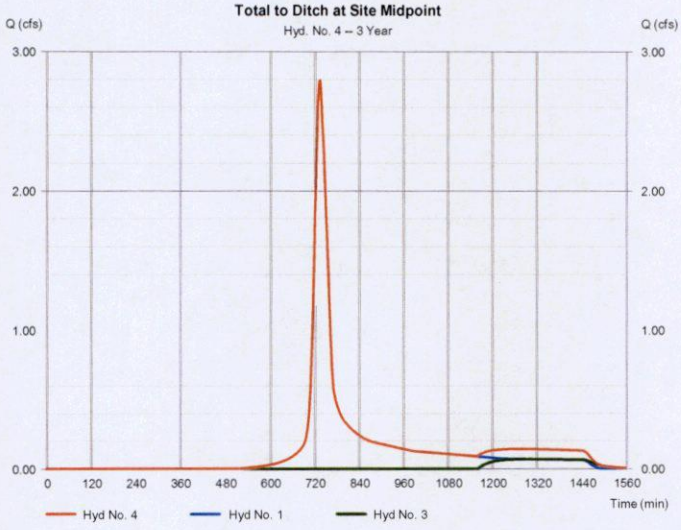
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 2.790 cfs
Storm frequency	= 3 yrs	Time to peak	= 736 min
Time interval	= 2 min	Hyd. volume	= 13,963 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac



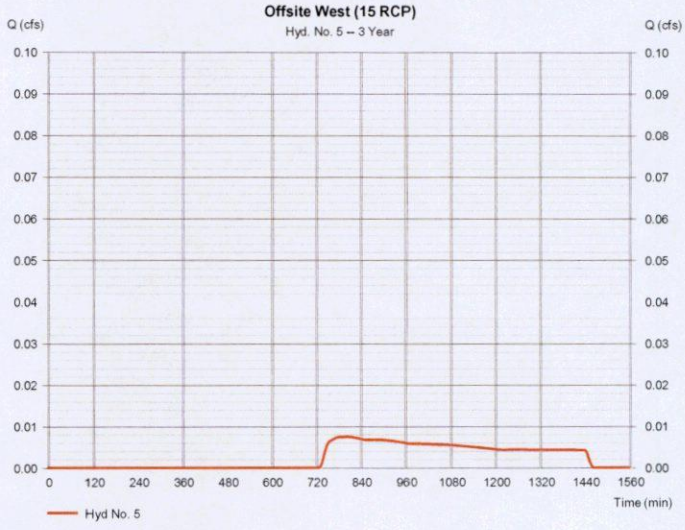
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.008 cfs
Storm frequency	= 3 yrs	Time to peak	= 804 min
Time interval	= 2 min	Hyd. volume	= 233 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



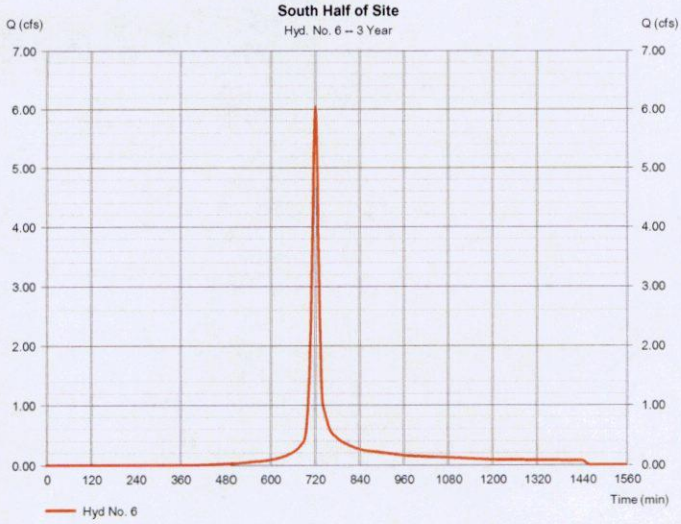
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 6.043 cfs
Storm frequency	= 3 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 17,008 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



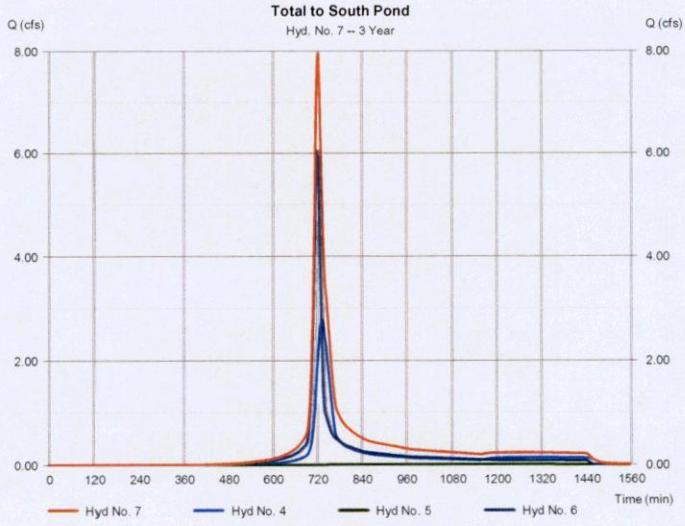
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 7.948 cfs
Storm frequency	= 3 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 31,203 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



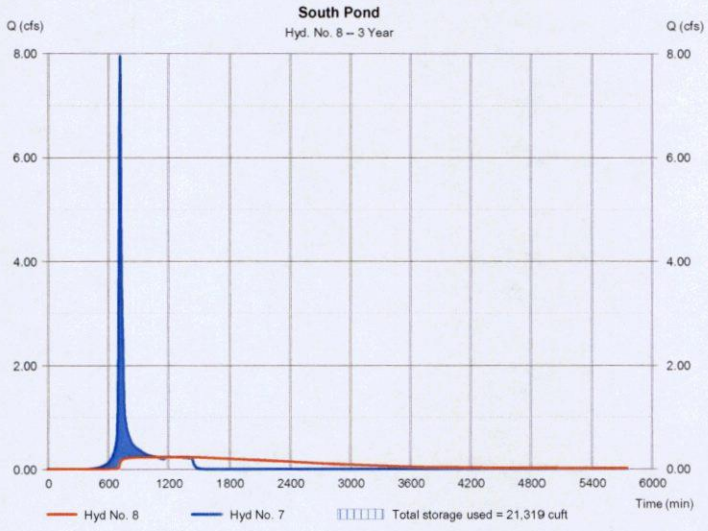
Hydrograph Report

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 0.230 cfs
Storm frequency	= 3 yrs	Time to peak	= 1094 min
Time interval	= 2 min	Hyd. volume	= 29,491 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1356.68 ft
Reservoir name	= South Pond	Max. Storage	= 21,319 cuft

Storage Indication method used.



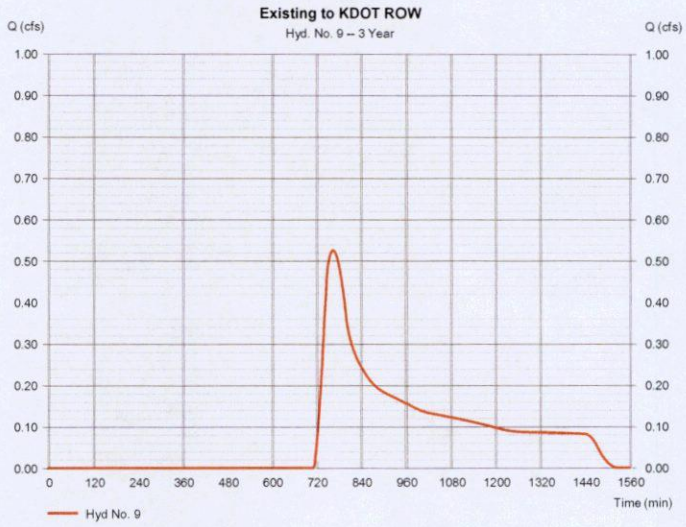
Hydrograph Report

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 0.526 cfs
Storm frequency	= 3 yrs	Time to peak	= 766 min
Time interval	= 2 min	Hyd. volume	= 7,207 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 1.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	16.42	2	734	77,177	------	------	------	Offsite North
2	SCS Runoff	25.11	2	722	76,398	------	------	------	North Half of Site
3	Reservoir	19.45	2	728	63,249	2	1364.31	26,148	Middle Pond
4	Combine	34.68	2	730	140,426	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	4.317	2	722	12,362	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	29.68	2	722	90,288	------	------	------	South Half of Site
7	Combine	64.02	2	724	243,076	4, 5, 6	------	------	Total to South Pond
8	Reservoir	22.05	2	750	234,391	7	1359.24	118,096	South Pond
9	SCS Runoff	25.36	2	748	157,717	------	------	------	Existing to KDOT ROW

final site with offsite flow in ponds.gpw | Return Period: 5 Year | Monday, Jul 30, 2012

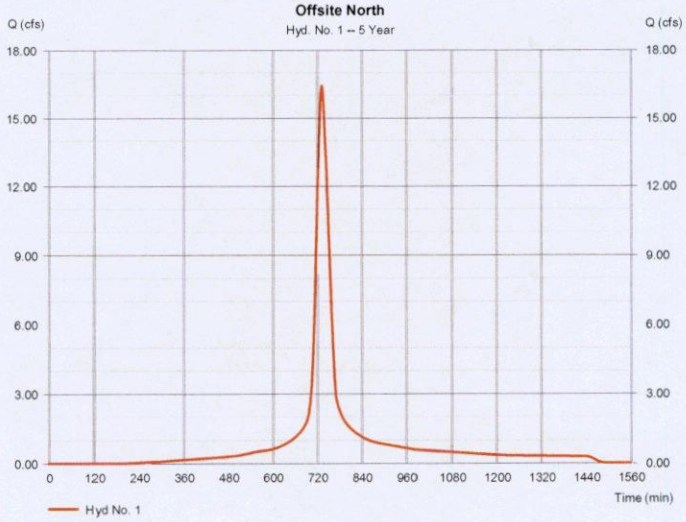
Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 16.42 cfs
Storm frequency	= 5 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 77,177 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



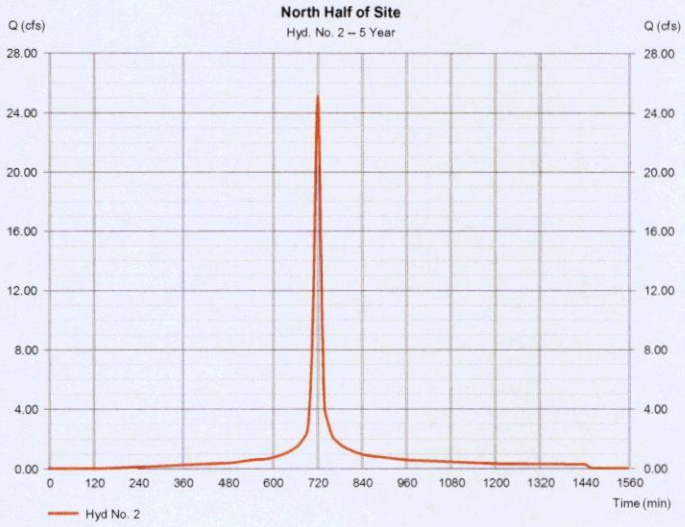
Hydrograph Report

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 25.11 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 76,398 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



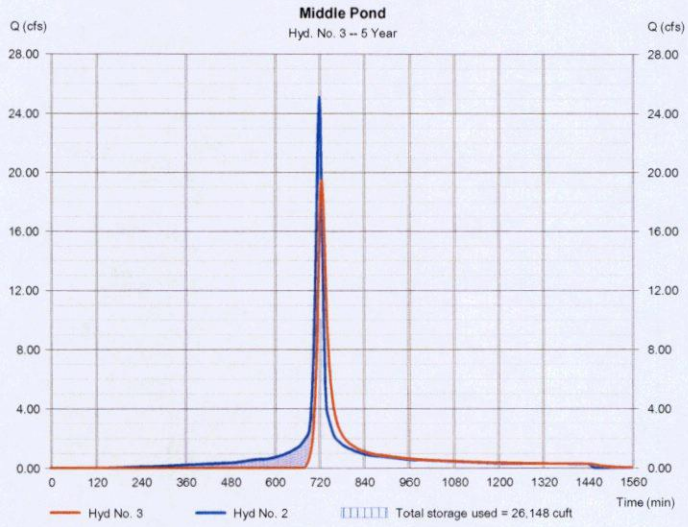
Hydrograph Report

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 19.45 cfs
Storm frequency	= 5 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 63,249 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1364.31 ft
Reservoir name	= Middle Pond	Max. Storage	= 26,148 cuft

Storage Indication method used.

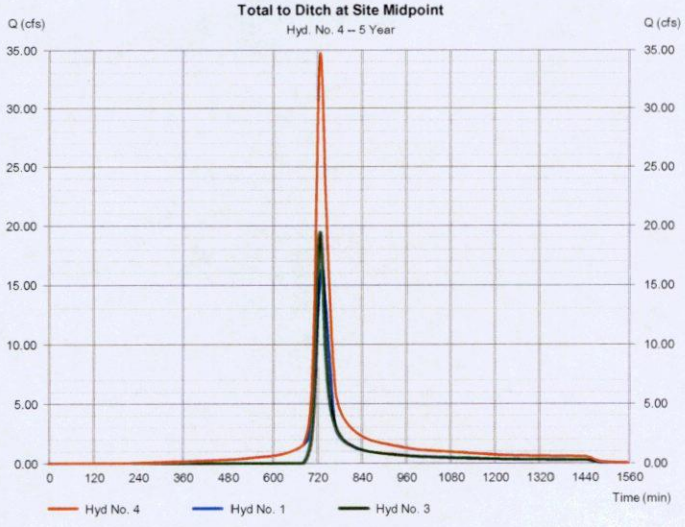


Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 34.68 cfs
Storm frequency	= 5 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 140,426 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

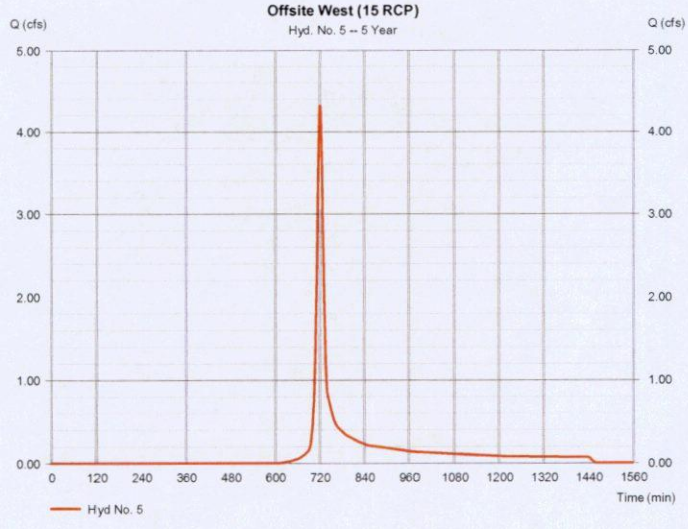


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 4.317 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 12,362 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

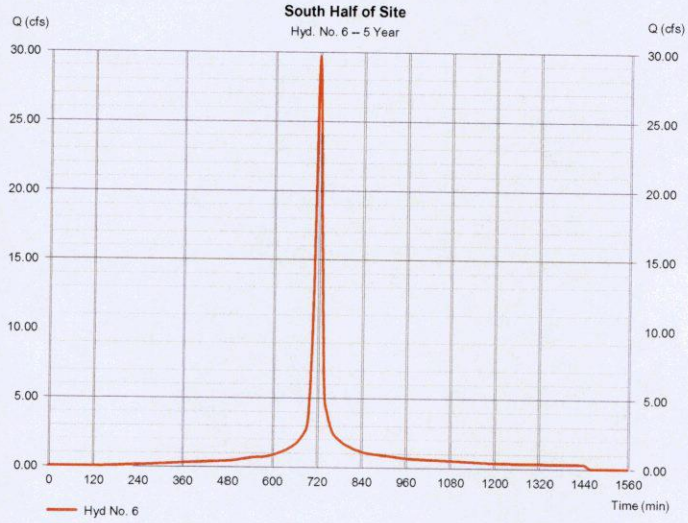
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Jul 30, 2012

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 29.68 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 90,288 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

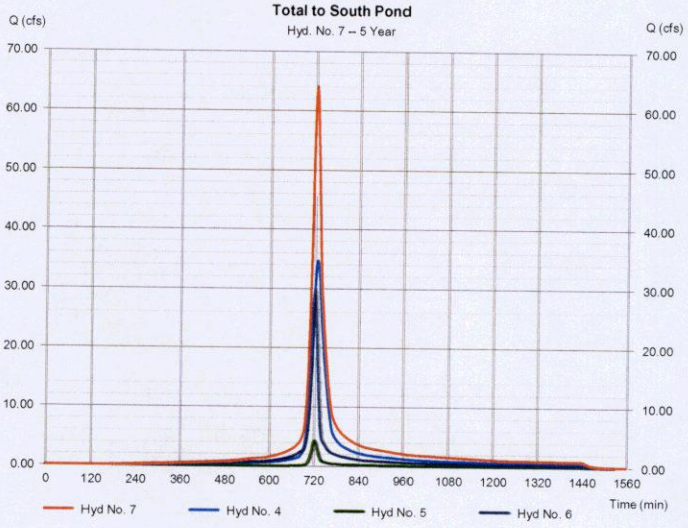
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Monday, Jul 30, 2012

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 64.02 cfs
Storm frequency	= 5 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 243,076 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

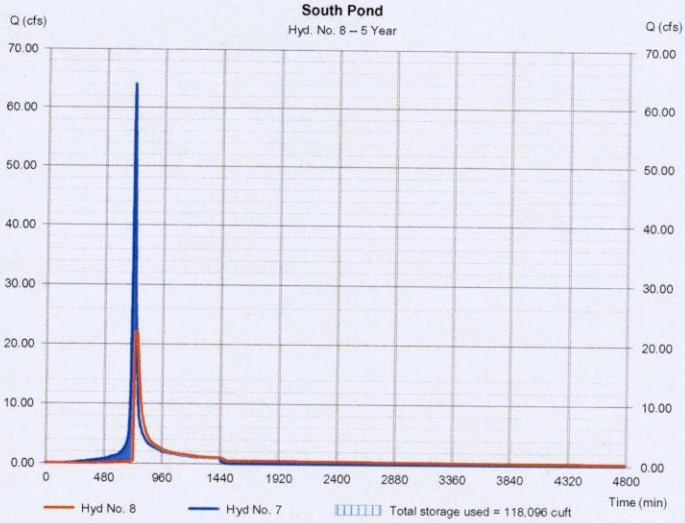
Monday, Jul 30, 2012

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 22.05 cfs
Storm frequency	= 5 yrs	Time to peak	= 750 min
Time interval	= 2 min	Hyd. volume	= 234,391 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1359.24 ft
Reservoir name	= South Pond	Max. Storage	= 118,096 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

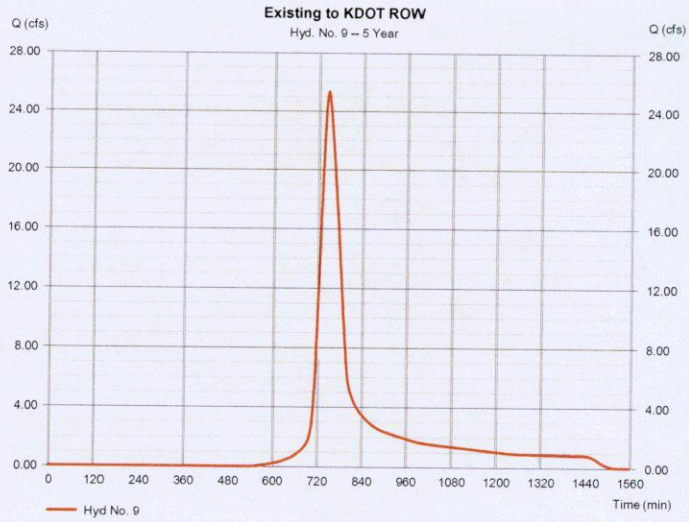
Monday, Jul 30, 2012

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 25.36 cfs
Storm frequency	= 5 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 157,717 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	19.30	2	734	91,469	------	------	------	Offsite North
2	SCS Runoff	29.28	2	722	89,888	------	------	------	North Half of Site
3	Reservoir	23.09	2	728	76,739	2	1364.47	27,870	Middle Pond
4	Combine	40.89	2	730	168,207	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	5.678	2	722	16,060	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	34.60	2	722	106,231	------	------	------	South Half of Site
7	Combine	76.00	2	724	290,498	4, 5, 6	------	------	Total to South Pond
8	Reservoir	30.74	2	744	281,751	7	1359.58	133,136	South Pond
9	SCS Runoff	32.24	2	748	199,137	------	------	------	Existing to KDOT ROW

final site with offsite flow in ponds.gpw | Return Period: 10 Year | Monday, Jul 30, 2012

Hydrograph Report

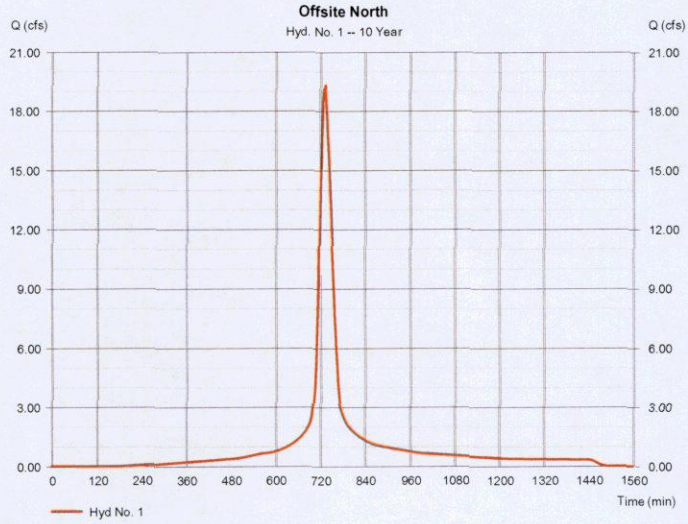
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 19.30 cfs
Storm frequency	= 10 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 91,469 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



Hydrograph Report

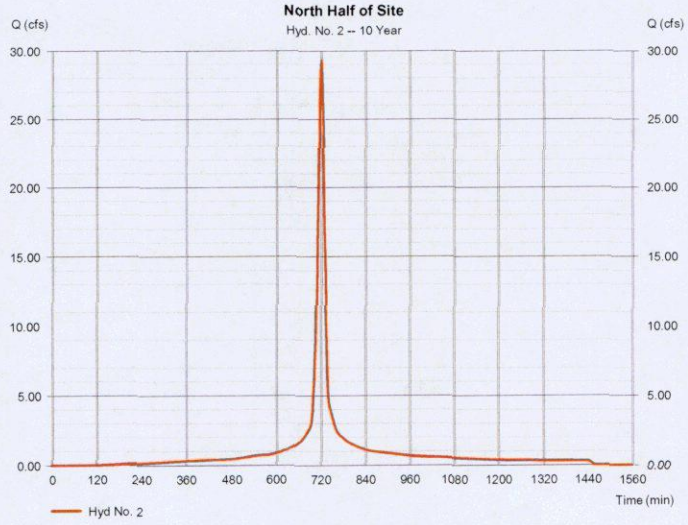
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 29.28 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 89,888 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



Hydrograph Report

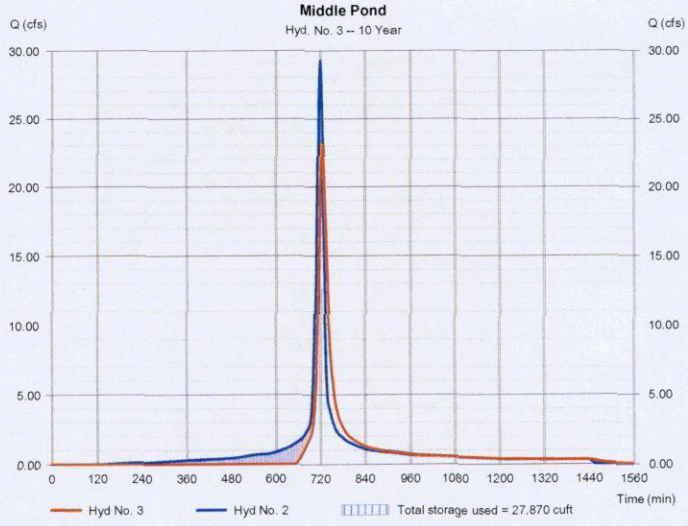
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 23.09 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 76,739 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1364.47 ft
Reservoir name	= Middle Pond	Max. Storage	= 27,870 cuft

Storage Indication method used.

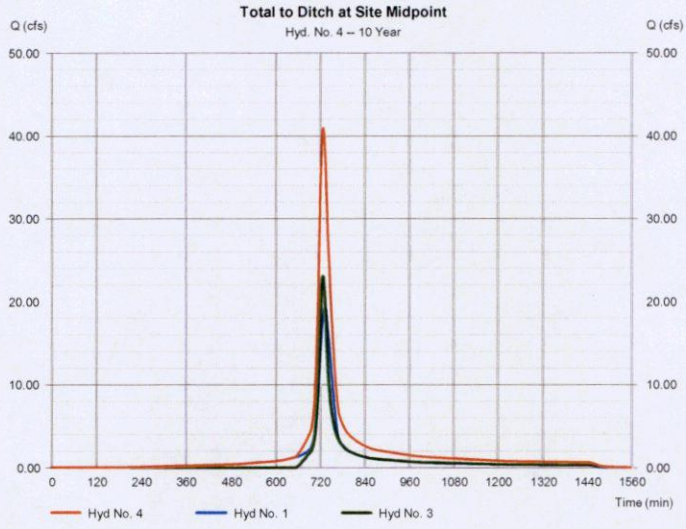


Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 40.89 cfs
Storm frequency	= 10 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 168,207 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

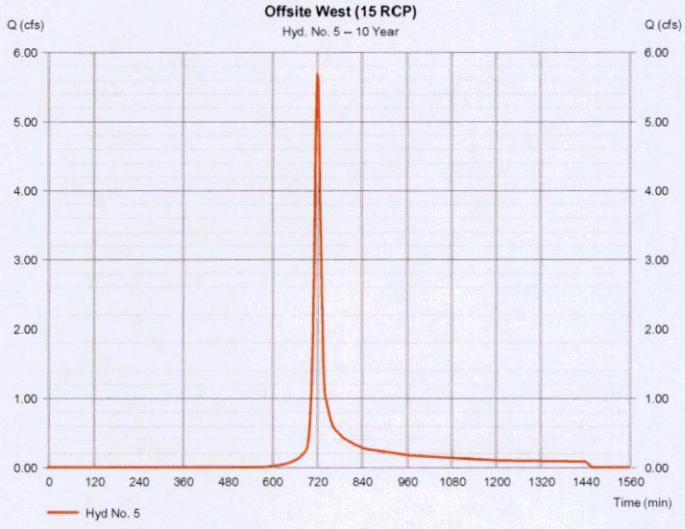


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 5.678 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 16,060 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

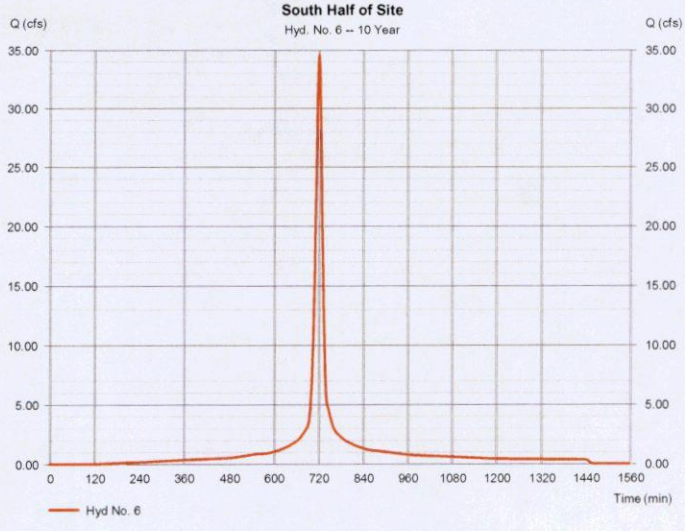


Hydrograph Report

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 34.60 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 106,231 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

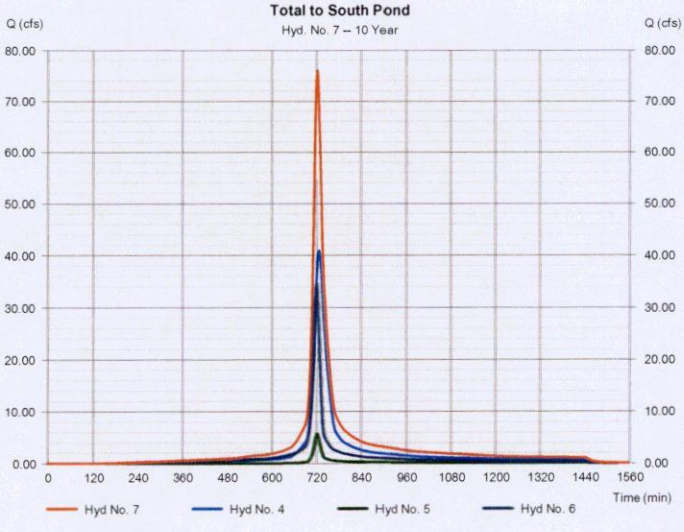


Hydrograph Report

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 76.00 cfs
Storm frequency	= 10 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 290,498 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



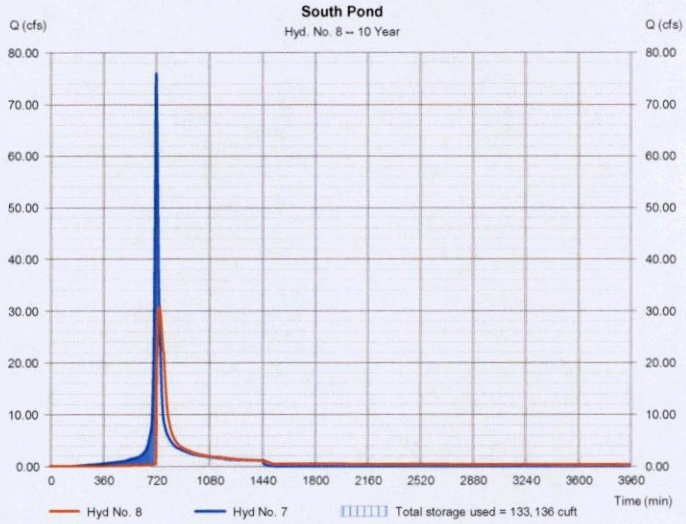
Hydrograph Report

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 30.74 cfs
Storm frequency	= 10 yrs	Time to peak	= 744 min
Time interval	= 2 min	Hyd. volume	= 281,751 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1359.58 ft
Reservoir name	= South Pond	Max. Storage	= 133,136 cuft

Storage Indication method used.



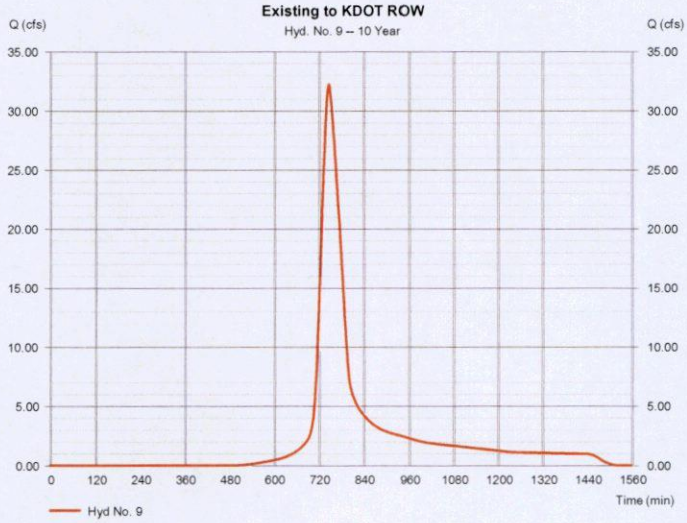
Hydrograph Report

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 32.24 cfs
Storm frequency	= 10 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 199,137 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	22.99	2	734	109,929	------	------	------	Offsite North
2	SCS Runoff	34.61	2	722	107,274	------	------	------	North Half of Site
3	Reservoir	27.68	2	728	94,126	2	1364.67	29,922	Middle Pond
4	Combine	48.76	2	730	204,055	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	7.509	2	722	21,091	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	40.90	2	722	126,779	------	------	------	South Half of Site
7	Combine	91.34	2	724	351,924	4, 5, 6	------	------	Total to South Pond
8	Reservoir	41.77	2	742	343,108	7	1360.00	152,165	South Pond
9	SCS Runoff	41.34	2	748	254,457	------	------	------	Existing to KDOT ROW

final site with offsite flow in ponds.gpw | Return Period: 25 Year | Monday, Jul 30, 2012

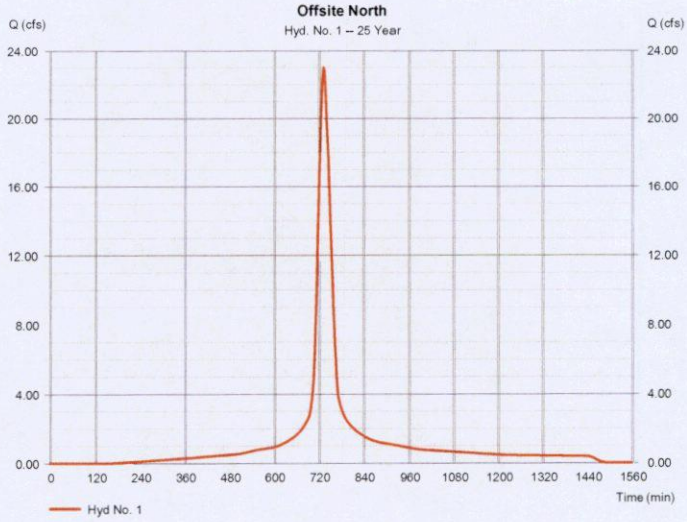
Hydrograph Report

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 22.99 cfs
Storm frequency	= 25 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 109,929 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



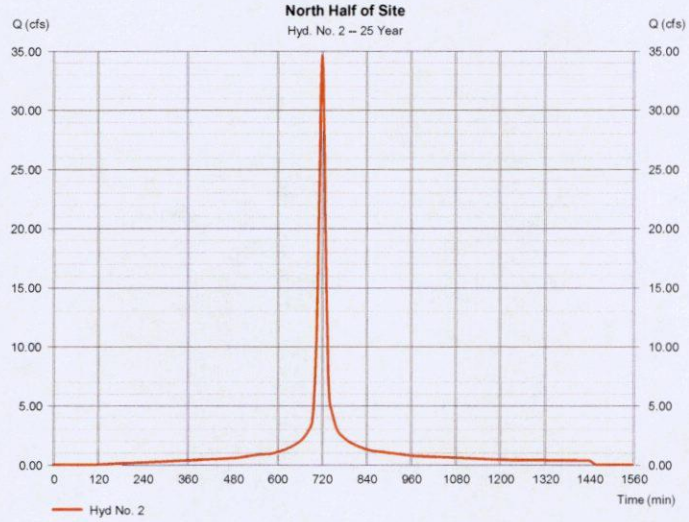
Hydrograph Report

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 34.61 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 107,274 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



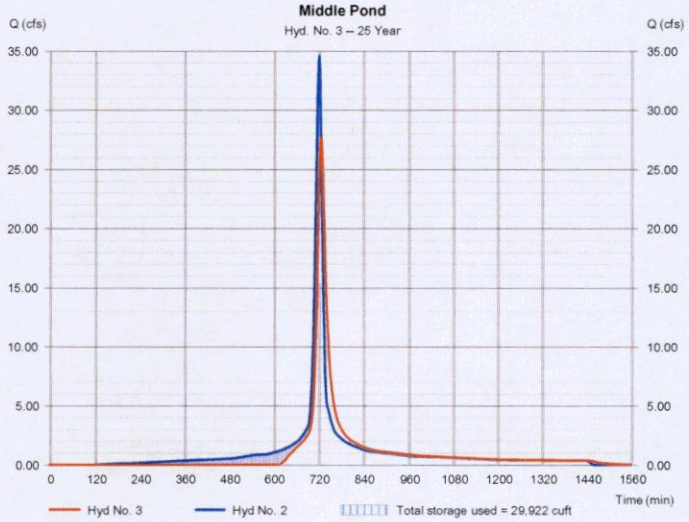
Hydrograph Report

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 27.68 cfs
Storm frequency	= 25 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 94,126 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1364.67 ft
Reservoir name	= Middle Pond	Max. Storage	= 29,922 cuft

Storage Indication method used.

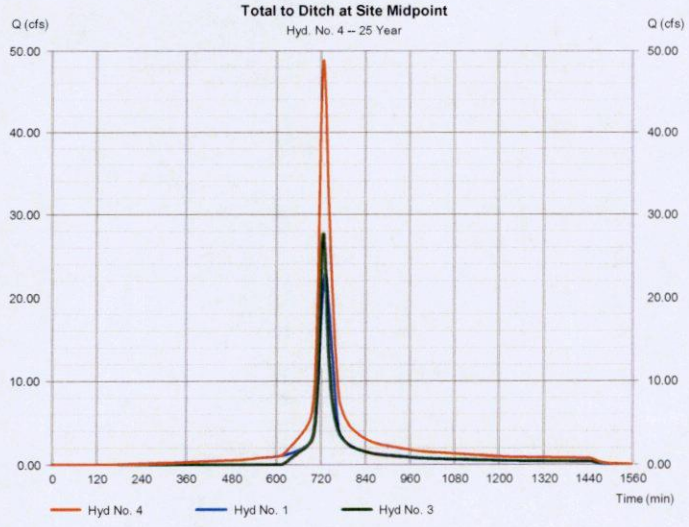


Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 48.76 cfs
Storm frequency	= 25 yrs	Time to peak	= 730 min
Time interval	= 2 min	Hyd. volume	= 204,055 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

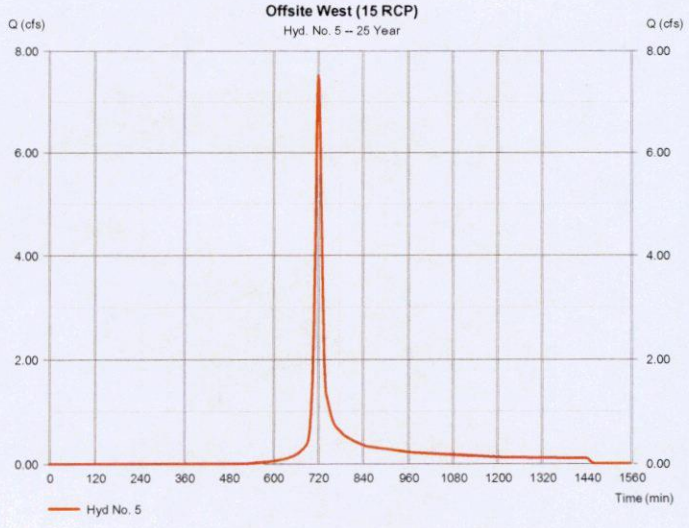


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 7.509 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 21,091 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



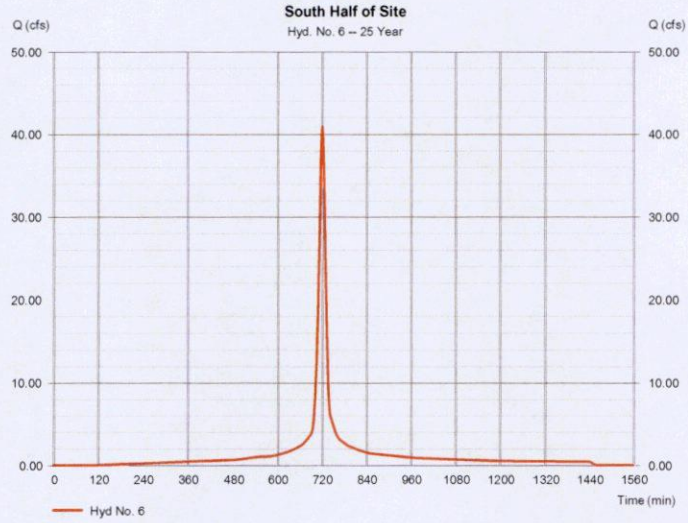
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 40.90 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 126,779 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



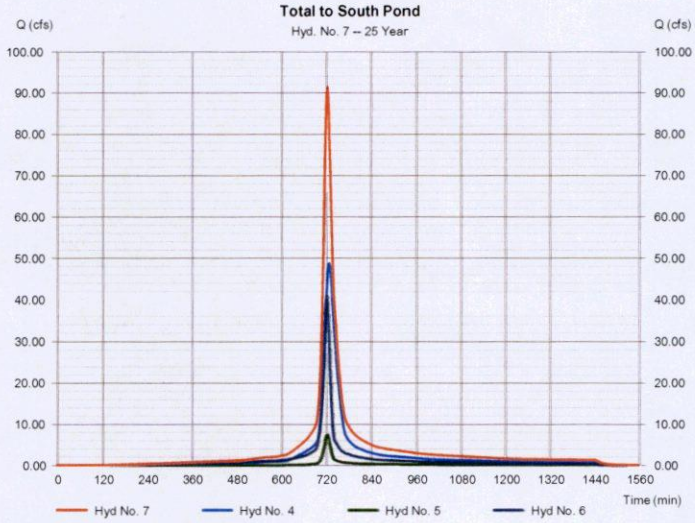
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 91.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 351,924 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



Hydrograph Report

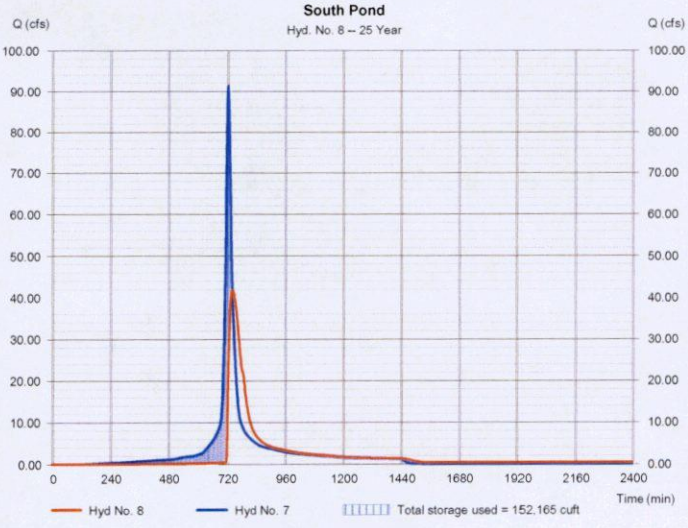
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 41.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 742 min
Time interval	= 2 min	Hyd. volume	= 343,108 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1360.00 ft
Reservoir name	= South Pond	Max. Storage	= 152,165 cuft

Storage Indication method used.



Hydrograph Report

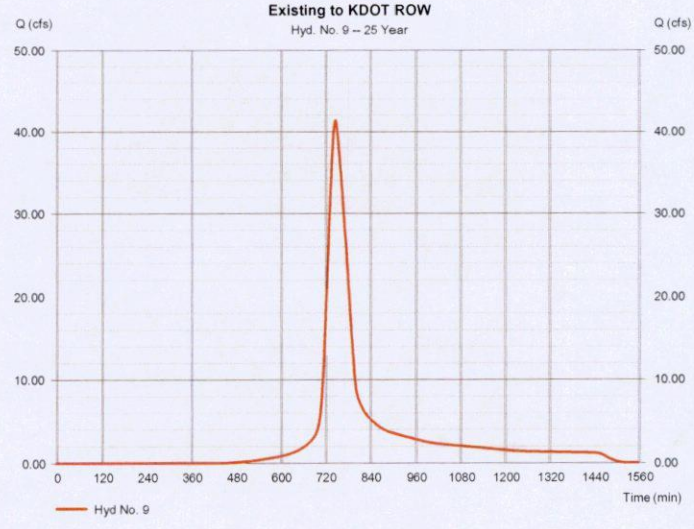
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 41.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 254,457 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 6.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	26.25	2	734	126,393	------	------	------	Offsite North
2	SCS Runoff	39.34	2	722	122,757	------	------	------	North Half of Site
3	Reservoir	31.78	2	726	109,608	2	1364.83	31,662	Middle Pond
4	Combine	55.85	2	728	236,001	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	9.190	2	722	25,762	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	46.49	2	722	145,076	------	------	------	South Half of Site
7	Combine	105.05	2	724	406,839	4, 5, 6	------	------	Total to South Pond
8	Reservoir	49.44	2	740	397,973	7	1360.38	170,032	South Pond
9	SCS Runoff	49.58	2	748	305,076	------	------	------	Existing to KDOT ROW

final site with offsite flow in ponds.gpw | Return Period: 50 Year | Monday, Jul 30, 2012

Hydrograph Report

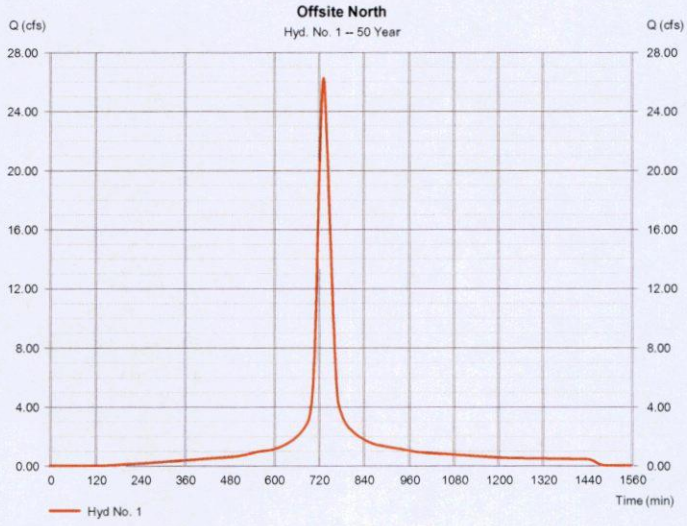
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 26.25 cfs
Storm frequency	= 50 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 126,393 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



Hydrograph Report

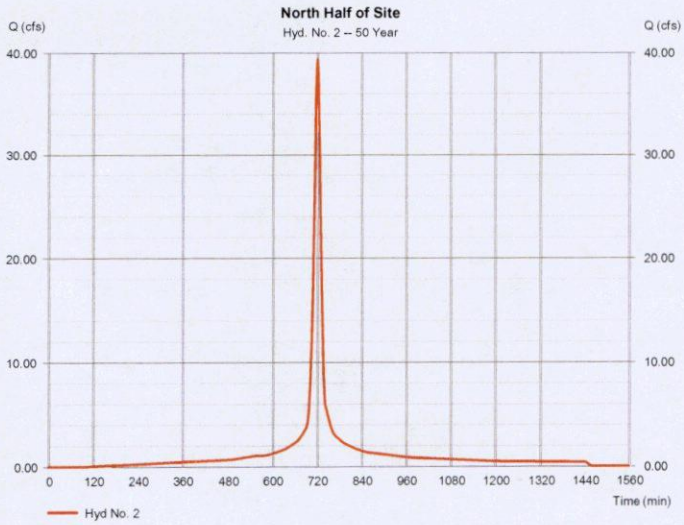
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 39.34 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 122,757 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



Hydrograph Report

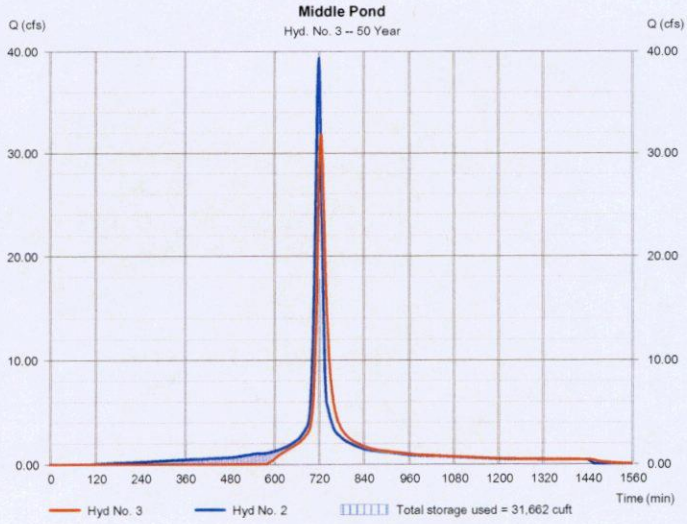
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 — Monday, Jul 30, 2012

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 31.78 cfs
Storm frequency	= 50 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 109,608 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1364.83 ft
Reservoir name	= Middle Pond	Max. Storage	= 31,662 cuft

Storage Indication method used.

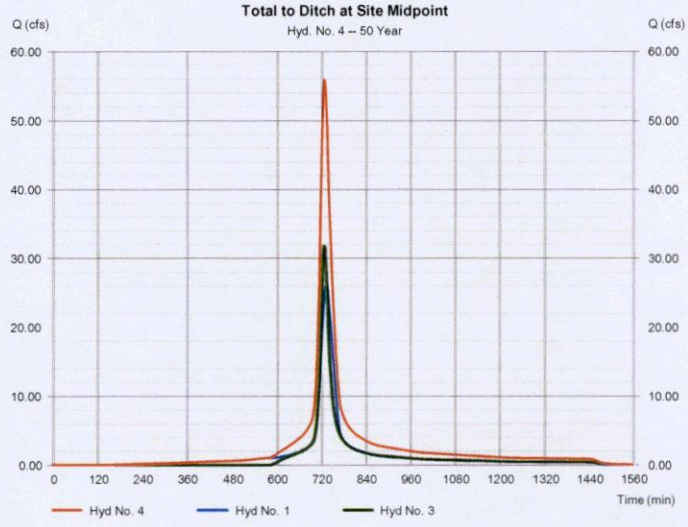


Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 55.85 cfs
Storm frequency	= 50 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 236,001 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

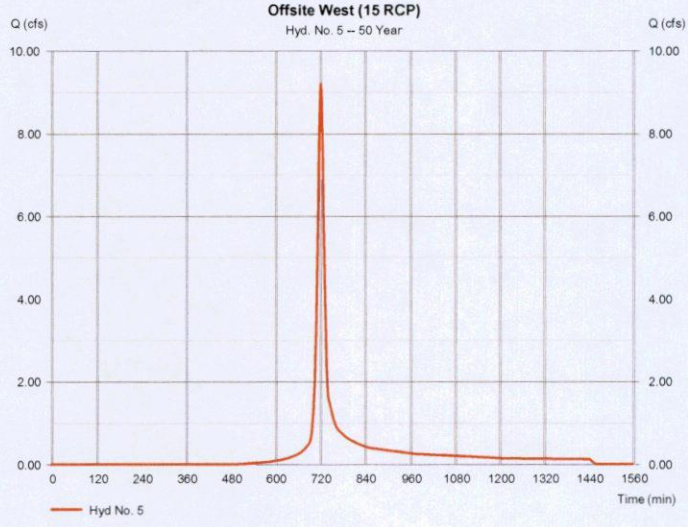


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 9.190 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 25,762 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

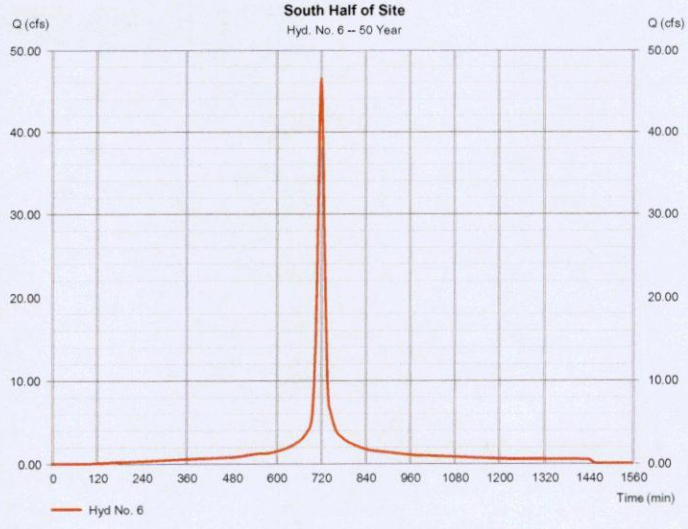


Hydrograph Report

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 46.49 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 145,076 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

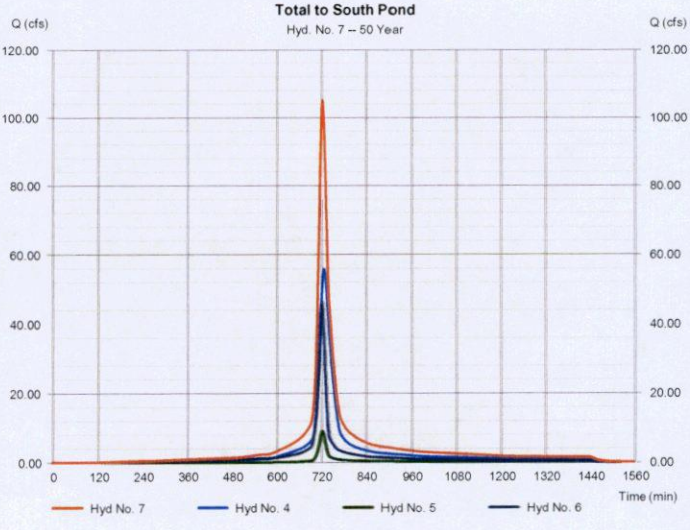


Hydrograph Report

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 105.05 cfs
Storm frequency	= 50 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 406,839 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



Hydrograph Report

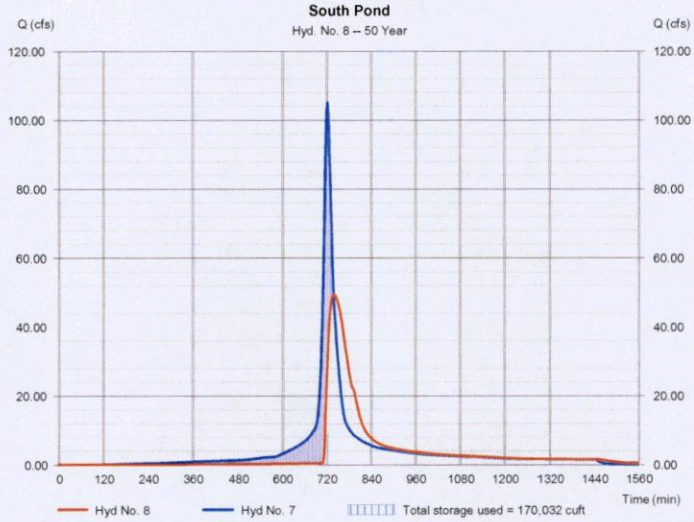
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 49.44 cfs
Storm frequency	= 50 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 397,973 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1360.38 ft
Reservoir name	= South Pond	Max. Storage	= 170,032 cuft

Storage Indication method used.



Hydrograph Report

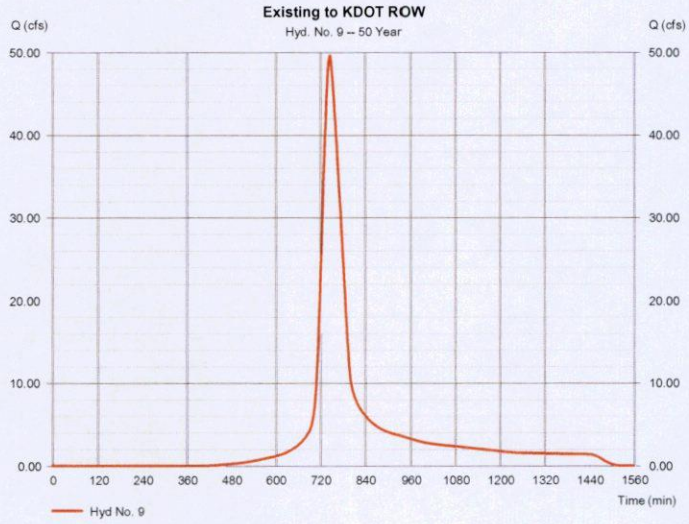
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 49.58 cfs
Storm frequency	= 50 yrs	Time to peak	= 748 min
Time interval	= 2 min	Hyd. volume	= 305,076 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 6.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	29.90	2	734	144,958	------	------	------	Offsite North
2	SCS Runoff	44.64	2	722	140,196	------	------	------	North Half of Site
3	Reservoir	36.54	2	726	127,047	2	1364.99	33,581	Middle Pond
4	Combine	63.85	2	728	272,005	1, 3	------	------	Total to Ditch at Site Midpoint
5	SCS Runoff	11.12	2	722	31,188	------	------	------	Offsite West (15 RCP)
6	SCS Runoff	52.75	2	722	165,686	------	------	------	South Half of Site
7	Combine	120.52	2	724	468,878	4, 5, 6	------	------	Total to South Pond
8	Reservoir	56.88	2	740	459,970	7	1360.80	190,709	South Pond
9	SCS Runoff	58.99	2	746	363,235	------	------	------	Existing to KDOT ROW

final site with offsite flow in ponds.gpw | Return Period: 100 Year | Monday, Jul 30, 2012

Hydrograph Report

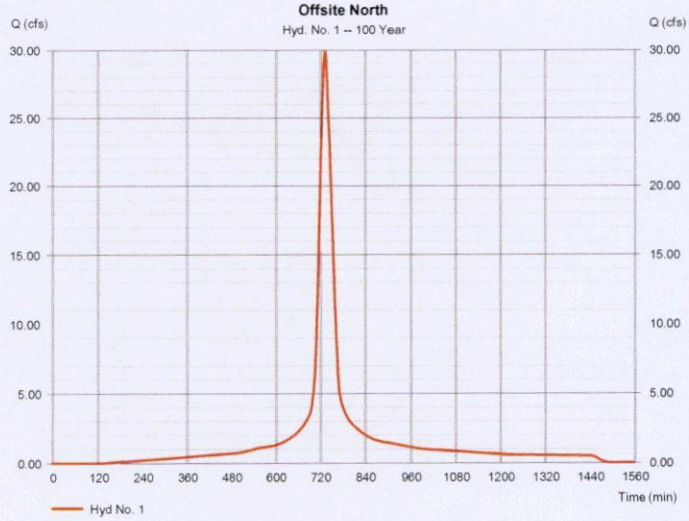
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. v8 Monday, Jul 30, 2012

Hyd. No. 1

Offsite North

Hydrograph type	= SCS Runoff	Peak discharge	= 29.90 cfs
Storm frequency	= 100 yrs	Time to peak	= 734 min
Time interval	= 2 min	Hyd. volume	= 144,958 cuft
Drainage area	= 5.800 ac	Curve number	= 93*
Basin Slope	= 1.0 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 34.10 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.100 x 98) + (1.700 x 80)] / 5.800



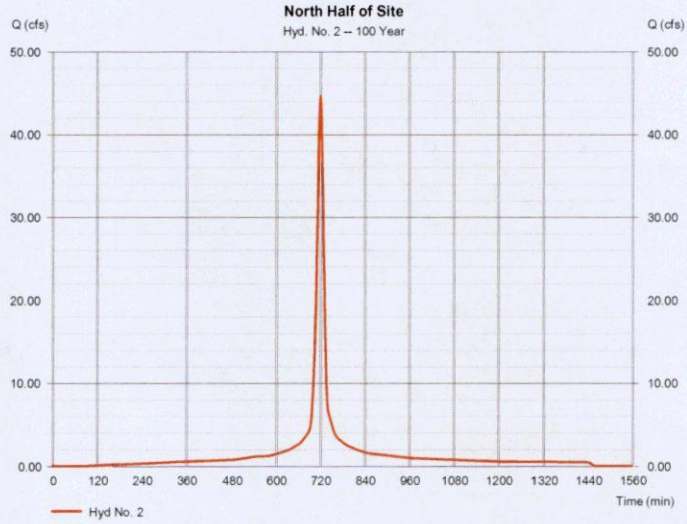
Hydrograph Report

Hyd. No. 2

North Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 44.64 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 140,196 cuft
Drainage area	= 5.500 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.500 x 98) + (1.000 x 80)] / 5.500



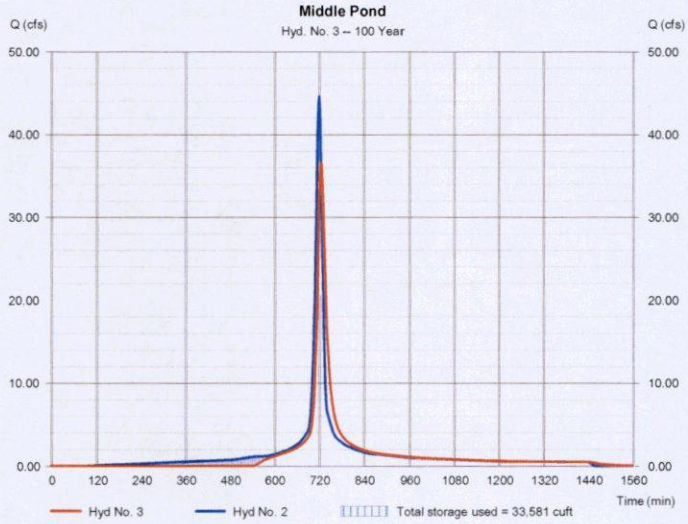
Hydrograph Report

Hyd. No. 3

Middle Pond

Hydrograph type	= Reservoir	Peak discharge	= 36.54 cfs
Storm frequency	= 100 yrs	Time to peak	= 726 min
Time interval	= 2 min	Hyd. volume	= 127,047 cuft
Inflow hyd. No.	= 2 - North Half of Site	Max. Elevation	= 1364.99 ft
Reservoir name	= Middle Pond	Max. Storage	= 33,581 cuft

Storage Indication method used.

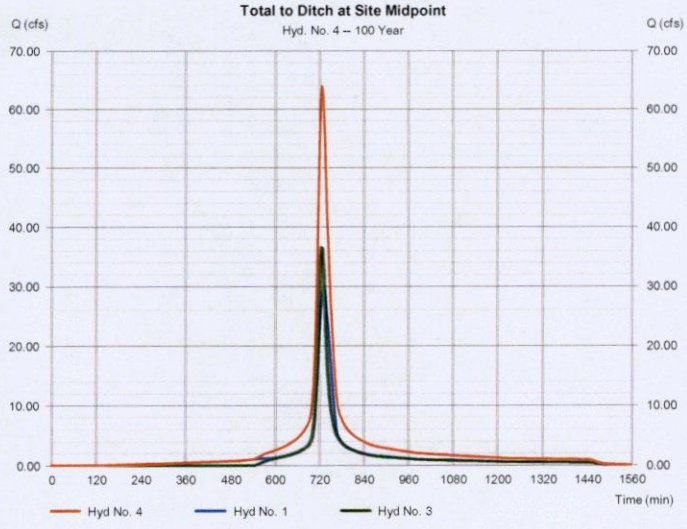


Hydrograph Report

Hyd. No. 4

Total to Ditch at Site Midpoint

Hydrograph type	= Combine	Peak discharge	= 63.85 cfs
Storm frequency	= 100 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 272,005 cuft
Inflow hyds.	= 1, 3	Contrib. drain. area	= 5.800 ac

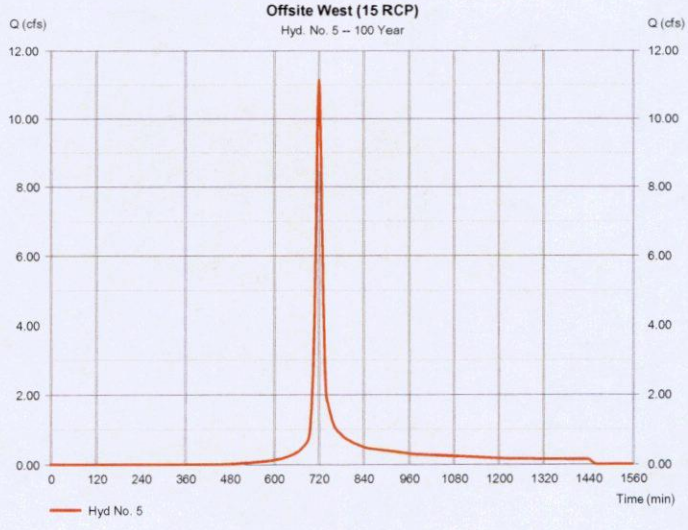


Hydrograph Report

Hyd. No. 5

Offsite West (15 RCP)

Hydrograph type	= SCS Runoff	Peak discharge	= 11.12 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 31,188 cuft
Drainage area	= 2.000 ac	Curve number	= 71
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

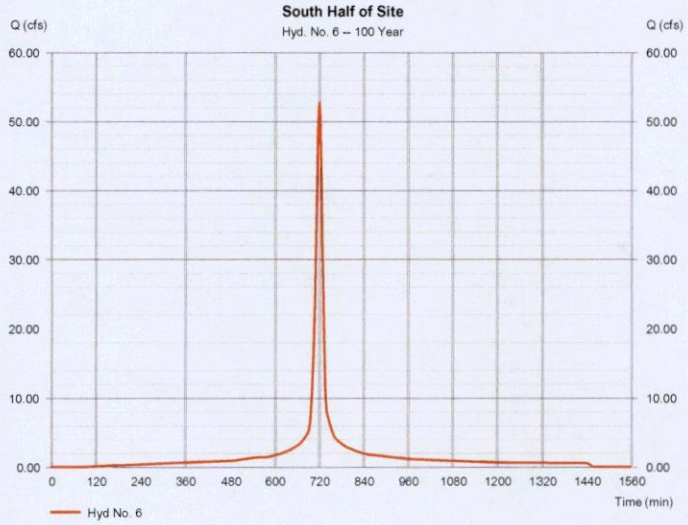


Hydrograph Report

Hyd. No. 6

South Half of Site

Hydrograph type	= SCS Runoff	Peak discharge	= 52.75 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 165,686 cuft
Drainage area	= 6.500 ac	Curve number	= 95
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

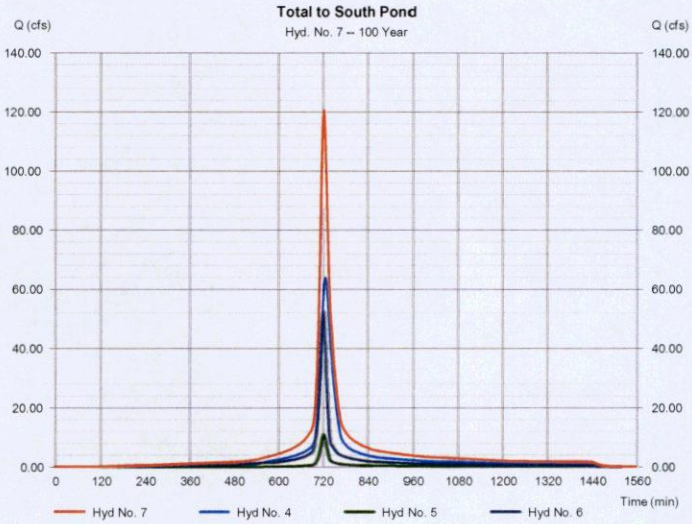


Hydrograph Report

Hyd. No. 7

Total to South Pond

Hydrograph type	= Combine	Peak discharge	= 120.52 cfs
Storm frequency	= 100 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 468,878 cuft
Inflow hyds.	= 4, 5, 6	Contrib. drain. area	= 8.500 ac



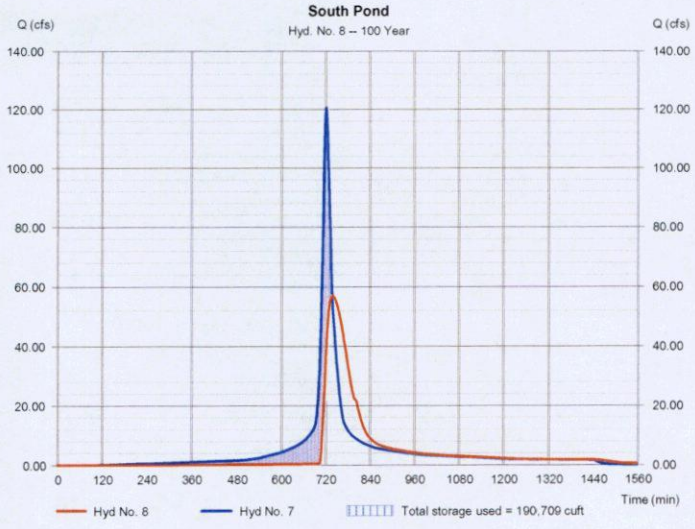
Hydrograph Report

Hyd. No. 8

South Pond

Hydrograph type	= Reservoir	Peak discharge	= 56.88 cfs
Storm frequency	= 100 yrs	Time to peak	= 740 min
Time interval	= 2 min	Hyd. volume	= 459,970 cuft
Inflow hyd. No.	= 7 - Total to South Pond	Max. Elevation	= 1360.80 ft
Reservoir name	= South Pond	Max. Storage	= 190,709 cuft

Storage Indication method used.



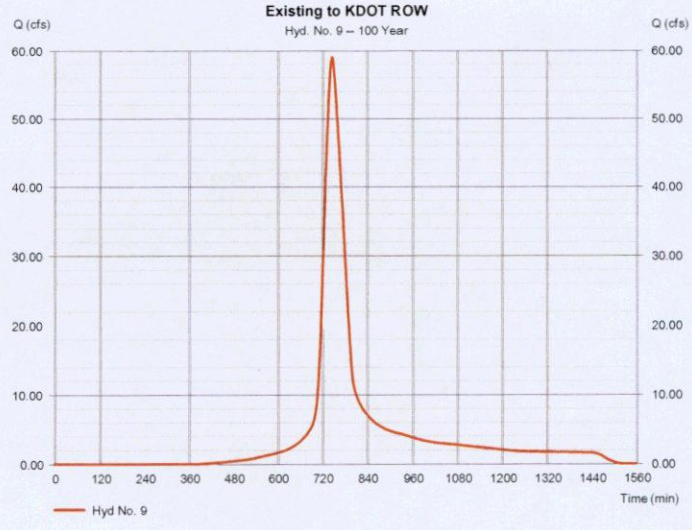
Hydrograph Report

Hyd. No. 9

Existing to KDOT ROW

Hydrograph type	= SCS Runoff	Peak discharge	= 58.99 cfs
Storm frequency	= 100 yrs	Time to peak	= 746 min
Time interval	= 2 min	Hyd. volume	= 363,235 cuft
Drainage area	= 19.800 ac	Curve number	= 77*
Basin Slope	= 1.2 %	Hydraulic length	= 2000 ft
Tc method	= LAG	Time of conc. (Tc)	= 55.40 min
Total precip.	= 7.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(4.000 x 98) + (15.300 x 71)] / 19.800



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	27.8967	9.8000	0.7047	--------
2	76.3137	14.3000	0.8844	--------
3	1.2000	0.1000	0.0000	--------
5	52.6224	11.2000	0.7497	--------
10	55.1841	11.1000	0.7229	--------
25	60.7012	11.1000	0.7068	--------
50	66.9222	11.3000	0.7004	--------
100	62.2794	10.1000	0.6824	--------

File name: wich_IDF.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.18	3.40	2.90	2.55	2.29	2.08	1.91	1.78	1.66	1.56	1.48	1.40
2	5.57	4.54	3.85	3.35	2.97	2.67	2.43	2.23	2.06	1.92	1.80	1.69
3	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
5	6.52	5.33	4.55	3.99	3.57	3.24	2.97	2.75	2.57	2.41	2.27	2.15
10	7.40	6.09	5.22	4.60	4.13	3.76	3.46	3.21	3.00	2.82	2.67	2.53
25	8.51	7.03	6.05	5.35	4.81	4.39	4.05	3.76	3.52	3.32	3.14	2.98
50	9.47	7.86	6.78	6.00	5.41	4.94	4.56	4.24	3.98	3.75	3.55	3.37
100	10.31	8.53	7.37	6.53	5.90	5.40	5.00	4.66	4.37	4.13	3.92	3.73

Tc = time in minutes. Values may exceed 60.

Precip. file name: wich_24hr.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.80	3.50	1.20	4.50	5.20	6.10	6.90	7.80
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

Hydraflow Table of Contents

Contents continued...

Contents continued...

HydraFlow Express
Channel Section AA

Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2011 by Autodesk, Inc. Monday, Jul 30 2012

<Name>

Trapezoidal

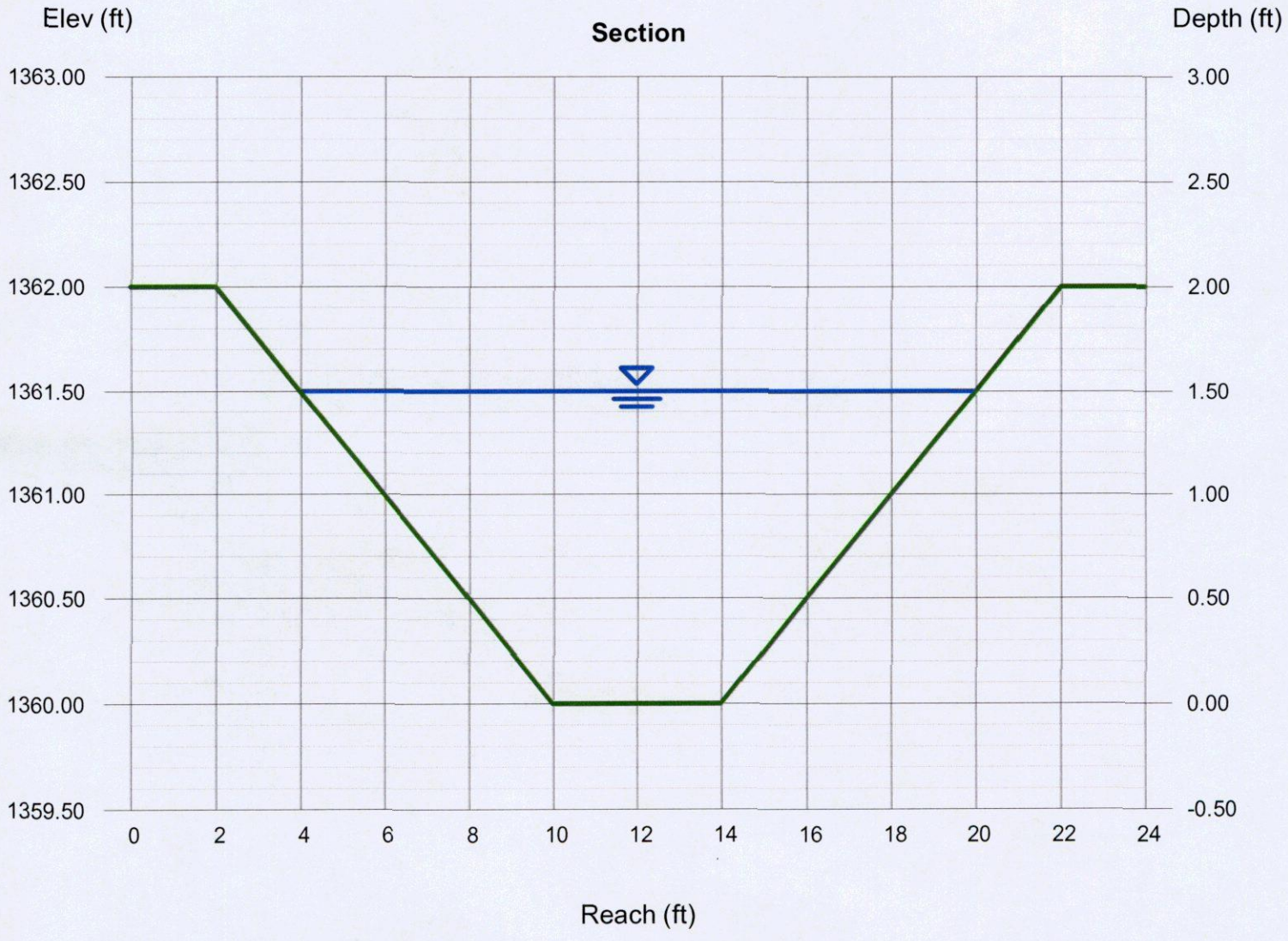
Bottom Width (ft)	= 4.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 1360.00
Slope (%)	= 1.00
N-Value	= 0.027

Calculations

Compute by:	Q vs Depth
No. Increments	= 12

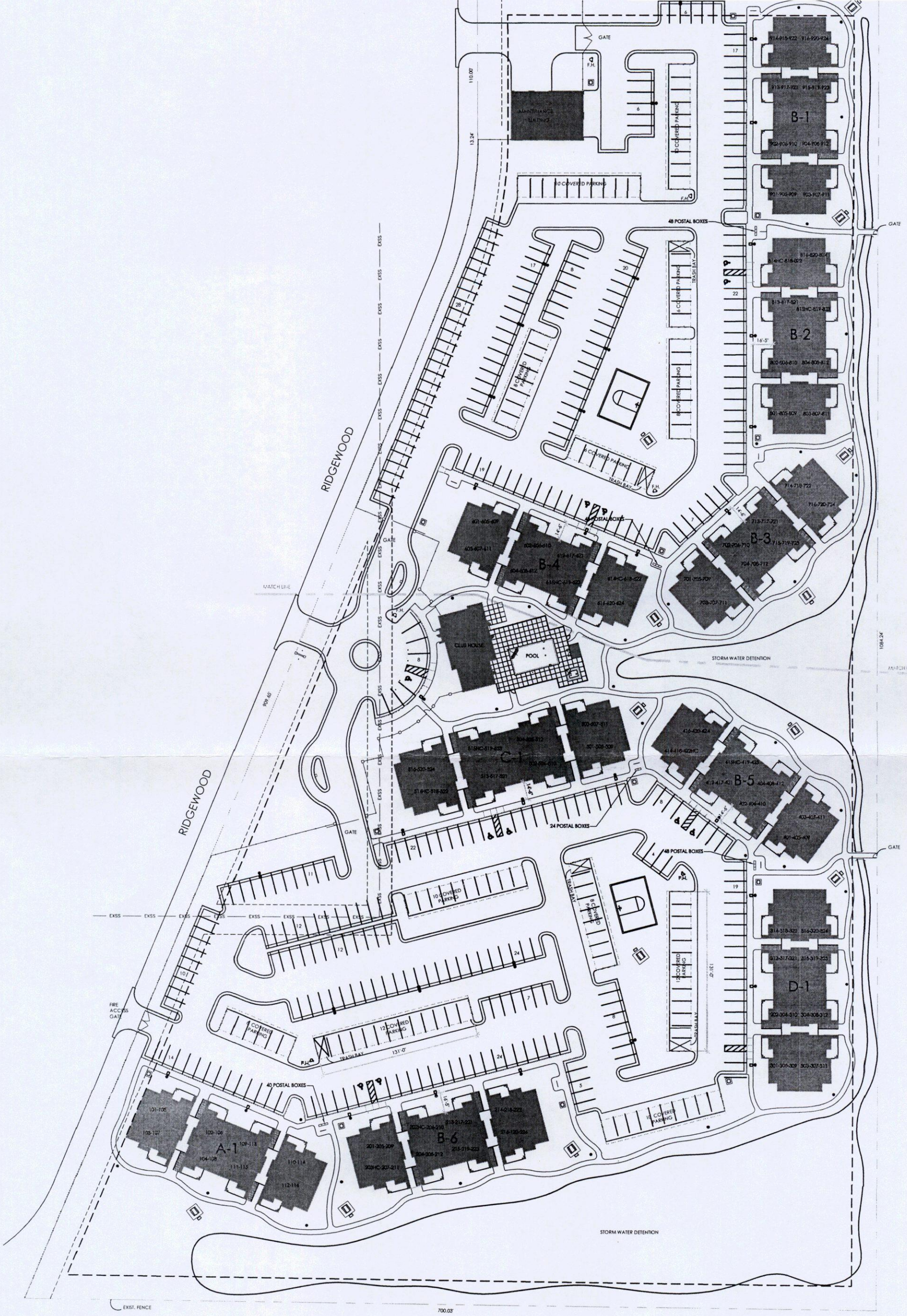
Highlighted

Depth (ft)	= 1.50
Q (cfs)	= 77.88
Area (sqft)	= 15.00
Velocity (ft/s)	= 5.19
Wetted Perim (ft)	= 16.37
Crit Depth, Yc (ft)	= 1.29
Top Width (ft)	= 16.00
EGL (ft)	= 1.92



Drainage Plan

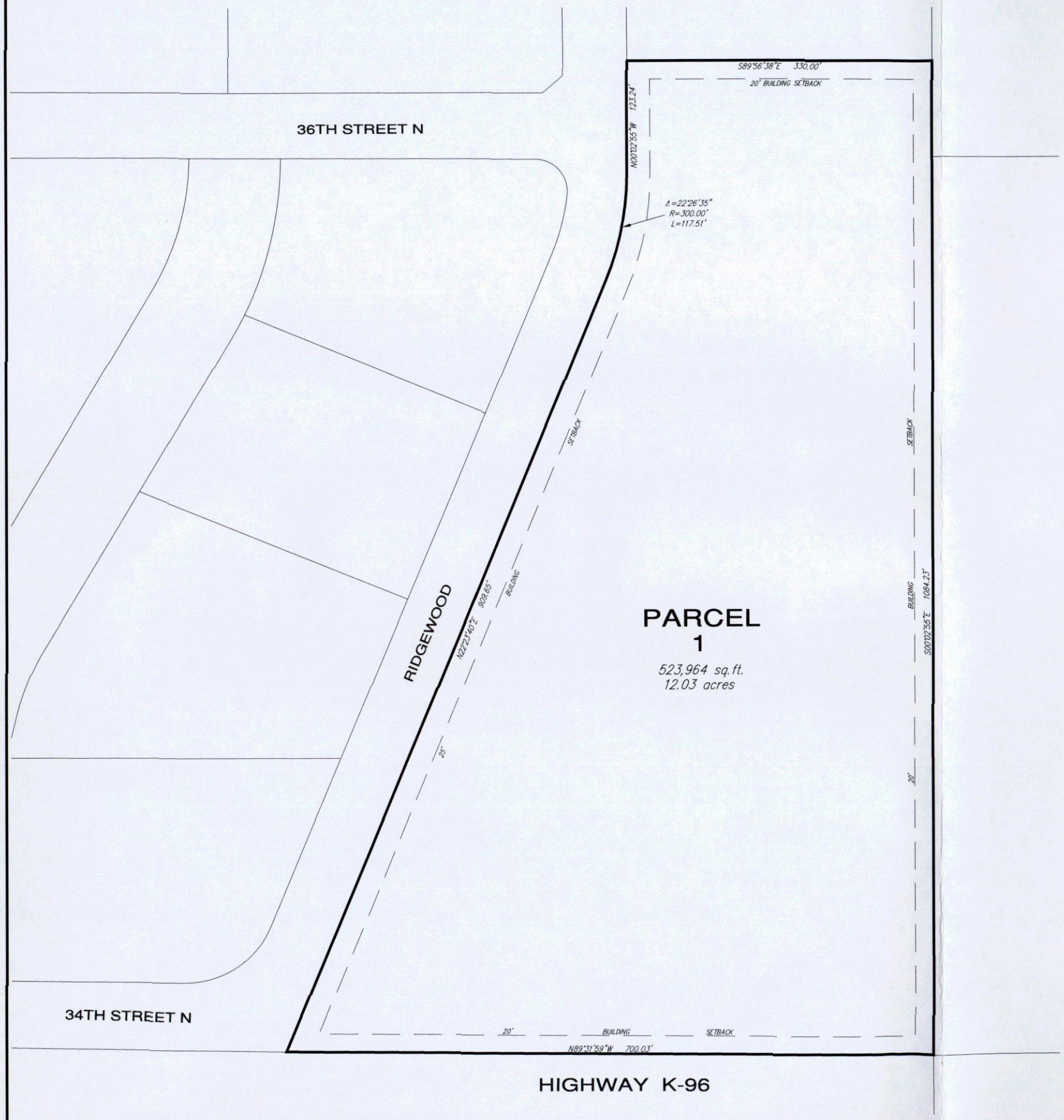
1:60 Scale



A SITE DEVELOPMENT PLAN
1"= 30'-0"

NORTH

GREAT PLAINS BUSINESS PARK
COMMUNITY UNIT PLAN
DP-326



GENERAL PROVSIONS:

1. Total Land Area: 523,964 ± sq.ft. or 12.03 ± acres
   Net Land Area: 523,964 ± sq.ft. or 12.03 ± acres
2. Total Gross Floor Area: 183,387.48 sq.ft.
   Total Floor Area Ratio: 35 percent
   Total Building Coverage: 157,189 sq.ft.
   Total Building Coverage Ratio: 30 percent
3. Parking shall be provided in accordance with Section IV of the Unified Zoning Code, unless otherwise specified in the parcel description.
4. Setbacks are as indicated on the C.U.P. drawing, or as specified in the parcel description.
5. A Drainage Plan shall be submitted to the appropriate Engineer for approval during the platting process. Required guarantees for drainage shall be provided at the time of platting improvements.
6. Signs will be as allowed by the Sign Code, City Code Title 24.04 of the City of Wichita, with the following additional conditions/limitations:
   A. Signs shall be spaced a minimum of 150' apart, irrespective of how land is leased or sold.
   B. L.E.D./Digital signs, flashing signs, rotating or moving signs, signs with moving lights or signs which create illusions of movement are not permitted.
   C. Portable, billboards, and off-site signs are not permitted.
   D. Window display signs are limited to 25% of the window area.
   E. All building signs shall meet the City of Wichita Sign Code for the "GC" zoning district, shall not exceed 3 total building signs per street frontage, per building, and limited to 20% of the facade elevation with no individual sign exceeding 400 sq.ft.
   F. All freestanding signs for non-residential uses within Parcel 1 must be monument type, shall have a maximum height of 30 feet, and shall share similar elements in design.
7. All exterior lighting shall be shielded to direct light disbursement in a downward direction.
8. All parcels shall share similar or consistent parking lot lighting elements (i.e., fixtures, poles, and lamps, and etc.).
   A. Limited height of light poles, including fixtures, lamps and base, to 25 feet.
   B. Extensive use of back lit canopies and neon or fluorescent tube lighting on buildings is not permitted.
9. Utilities shall be installed underground on all parcels.
10. Landscaping for this site shall be required as follows:
    A. Development of all parcels within the C.U.P. shall comply with the Landscape Ordinance of the City of Wichita.
    B. A landscape plan shall be prepared by a Kansas Landscape Architect for the above referenced landscaping, indicating the type, location, and specifications of all plant material. This plan shall be submitted to the Planning Department for their review and approval prior to issuance of a building permit.
    C. A financial guarantee for the plant material approved on the landscape plan for that portion of the C.U.P. being developed shall be required prior to issuance of any occupancy permit, if the required landscape has not been planted.
11. Screening shall be provided in accordance with the Unified Zoning Code
12. Trash receptacles, loading docks, outdoor storage, and loading areas shall be appropriately screened, with similar materials to the main buildings, to reasonably hide them from ground view.
13. All buildings in the C.U.P. shall share uniform architectural character, color, texture, and the same predominate exterior building material, and shall be reviewed and approved by the Planning Director prior to the issuance of any building permits. Building walls and roofs must have predominately earth-tone colors, with vivid colors limited to incidental accent, and must employ materials similar to surrounding residential areas. Metal as an exterior material shall be limited to incidental accent.
14. Fire lanes shall be in accordance with the appropriate Fire Code. No parking shall be allowed in said fire lanes, although they may be used for passenger loading and unloading. The Fire Chief or his designated representative shall review and approve the location and design of all fire lanes. Fire hydrant installation and paved access to all building sites shall be provided for each phase of construction prior to the issuance of building permits.
15. No parcel within this C.U.P. shall allow the use of adult entertainment establishments; sexually oriented business; correctional placement residences; night club in the city; and tavern and drinking establishment. Restaurants that serve liquor can be developed and may serve liquor, as long as food is the primary service of the establishment. Restaurants with drive-through windows, convenience stores, service stations, and vehicle repair, limited will not be permitted within 200 feet of residential uses. Overhead doors associated with vehicle repair uses shall not be allowed within 200 feet of residential uses and shall not be facing any residential zoning district. Exterior audio systems that project sound beyond the boundaries of the C.U.P. are prohibited.
16. Amendments, adjustments or interpretations to this C.U.P. shall be done in accordance with the Unified Zoning Code.
17. The Transfer of title of all or any portion of land included within the Community Unit Plan (or any amendments thereto) does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land and be binding upon present owners, their successors and assigns.
18. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the Governing Body, and any substantial deviation of the plan, as determined by the Zoning Administrator and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.
19. Any major changes in this development plan shall be submitted to the Planning Commission and to the Governing Body for their consideration.
20. Approval of a site circulation plan by the Planning Director is required for each phase of construction prior to the issuance of a building permit. An overall site plan shall be required for review and approval by the Planning Director prior to the issuance of any building permits; the site plan shall ensure internal circulation within the development.

PARCEL 1

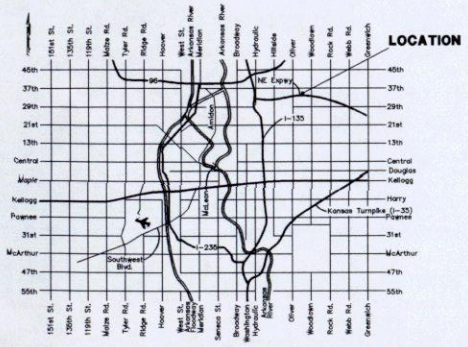
A. Total Land Area: 523,964 ± sq.ft. or 12.03 ± acres
B. Maximum Building Coverage for commercial development: 157,189 sq.ft. (30%)
C. Maximum Gross Floor Area for commercial development: 183,387.48 sq.ft.
D. Floor Area Ratio: 35 percent
E. Maximum Number of Commercial Buildings: Five (5)
F. Maximum Number of Residential Dwelling Units: 217
G. Maximum building height to conform to Chapter 28.08 Code of the City of Wichita, but shall be not greater than 45 feet.
H. Setbacks: See Drawing
I. Access Points from Ridgewood: To be determined at the time of site development
J. Permitted Uses:
All permitted uses by right in the "General Commercial" zoning district of the Wichita-Sedgwick County Unified Zoning Code, except for those listed under C.P. #16.

LEGAL DESCRIPTION:

Lots 2 through 6, Block 3, together with Ridgewood Court, as platted and dedicated in Great Plains Business Park 3rd Addition to Wichita, Sedgwick County, Kansas.

REVISIONS

Submitted: May 25, 2012



SCALE: 1" = 60'

DP-326
GREAT PLAINS BUSINESS PARK COMMUNITY UNIT PLAN

Baughman Company, P.A.
315 Elle St Wichita, KS 67211 P 316.262.7271 F 316.262.0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE