

Drainage Report for Reed's Cove 4th Addition Wichita, Sedgwick County, Kansas

Location

The site is located in Sedgwick County, Kansas, east of 127th Street East and south of 21st Street North. It lies in the Northwest Quarter, Section 11, Township 27 South, Range 2 East. The total site area is approximately 14.3 acres. Reed Commercial Addition is north of the site, & Reed's Cove Addition is south and east of the site. The site was previously platted as a portion of Reed's Cove Addition. The site is shown in the Andover, Kansas Quadrangle located in Appendix A.

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey (Appendix B), nearly all of the site is in the Irwin Series (Ic: silty clay loam, with 2 to 6 percent slopes.) The Hydrological Soil Group (HSG) for the site is "D".

Pre-developed Conditions

Current Development

The site is undeveloped agricultural land. The site was platted in the Reed's Cove Addition. The Reed's Cove drainage report planned for this area to develop as multi-family apartments.

Current Landform and Slope

Fourmile Creek passes through an existing pond east of the site. Onsite elevations vary from roughly 1379 feet to 1361 feet. Watershed slopes vary from 0.5% to 4.0%. A ridge runs through the middle of the site. Runoff to the east of the ridge drains into the pond in Reed's Cove. The pond is on Fourmile Creek, and outlets near the southeast corner of the addition. Runoff to the west of the ridge drains into a ditch along 127th Street East. The ditch then routes the runoff to an existing 38" x 24" CMP under 127th Street East.

Current Drainage Conditions

An area surrounding the existing pond in Reed's Cove, east of the site, is designated as Zone A (FIRM Panel 150, Sedgwick County, June 3, 1986) (shown in Appendix C). This area has been studied by LOMR Case Number 05-07-0176P. Reed's Cove 4th Addition is designated as Zone C.

Current Runoff Characteristics

In the proposed conditions of the original Reed's Cove drainage report the site was modeled as multi-family residential land. The 100-year runoff draining to the 127th Street East ditch was reduced by diverting area east into the existing lakes within the Reed's

Cove Addition. The lakes were modeled, using Hydraflow Hydrographs by Intelisolve, in the Reed's Cove Drainage Report. Appendix D shows the area draining to the 127th Street East ditch under pre-developed conditions. This area was modeled assuming pre-developed conditions using Hydraflow Hydrographs by Intelisolve, Appendix E. A summary of the pre-developed flows to the 127th Street East ditch is located in Table 1.

Table 1. Pre-Developed Flow to the 127th Street East Ditch.

	2-year (cfs)	5-year (cfs)	10-year (cfs)	100-year (cfs)
127 th Street Ditch	16.6	25.5	41.7	106.7

Post-Developed Condition

Proposed Development

The site will develop as 1/4 acre single-family residential lots.

Proposed Landform and Slope

Final slopes in the residential development have not been determined, but the minimum will be 0.5% within street right-of-way, and 1-2% in backyards. A Preliminary Lot Grading Plan is Appendix F.

Proposed Runoff Characteristics

Detention for this site is provided by Reed's Cove Lake. Approximately 6.3 acres from the pre-developed area draining into the 127th Street ditch was diverted east into the Reed's Cove Lake. A majority of the remaining area draining to the west was developed in earlier phases of the Reed's Cove addition. Appendix G shows the post-project area draining to the 127th Street East ditch. The post-project runoff to 127th Street East ditch was modeled using Hydraflow Hydrographs by Intelisolve, Appendix E. A summary of the post-project flows to the 127th Street ditch is located in Table 2.

Table 2. Post-Project Flow to the 127th Street East Ditch.

	2-year (cfs)	5-year (cfs)	10-year (cfs)	100-year (cfs)
127 th Street Ditch	25.4	35.6	51.5	106.6

The flow to the 127th Street ditch is reduced in the 100-year event by 0.1 cfs. Flow to the ditch is increased in the 2-year event by 53%. To reduce the 2-year runoff back to pre-project conditions, approximately 8.7 additional acres would need to be diverted to the east. The lack of remaining undeveloped land makes this option unreasonable. Detention is also impractical because of the lack of remaining area that would be tributary to a detention pond.

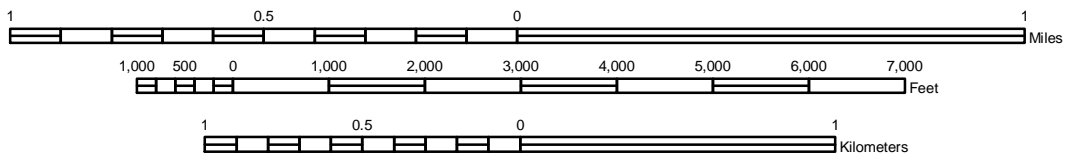
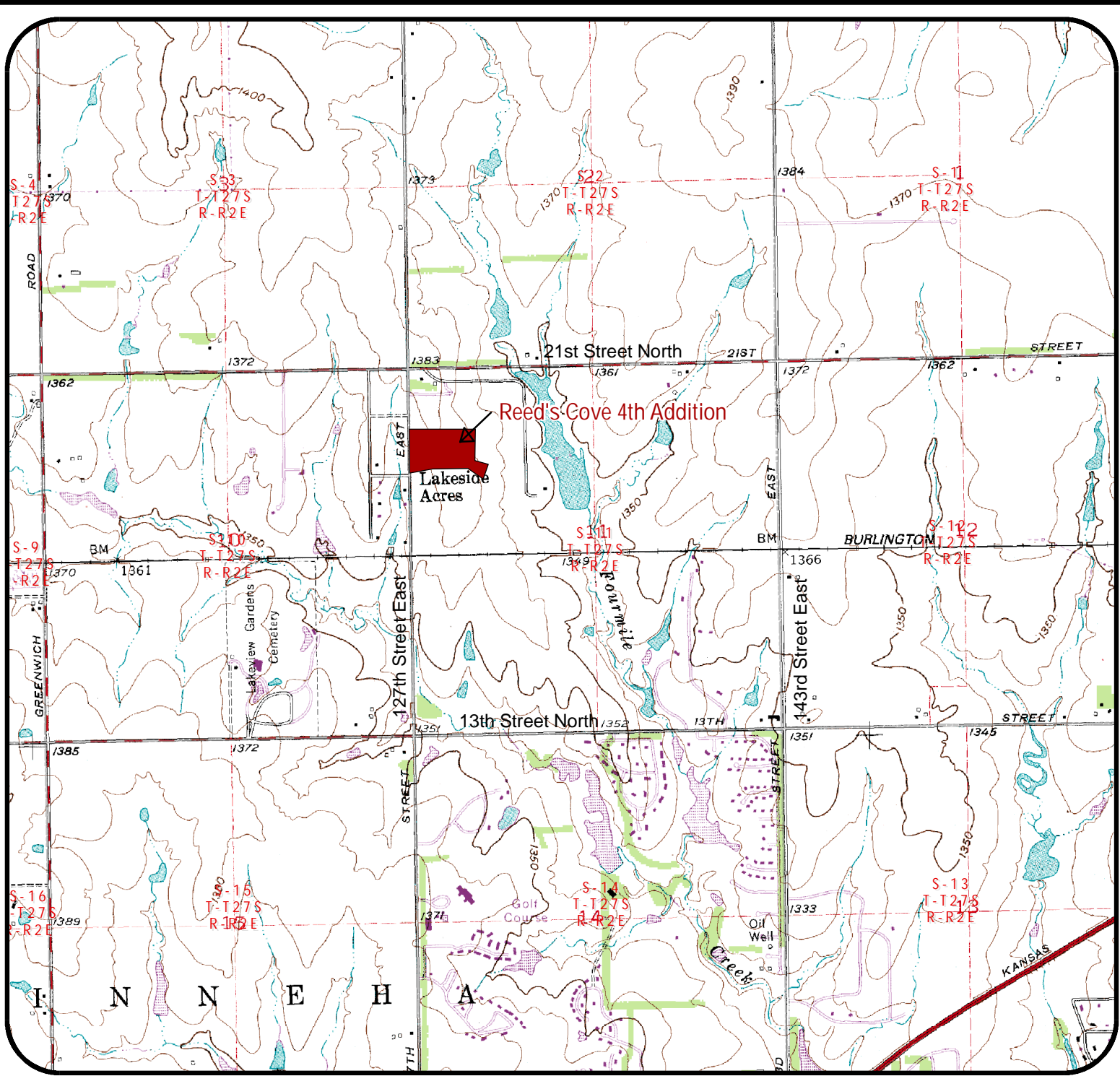
The site has been divided into smaller watersheds, which were used to size inlets and storm water sewer, as seen in the Drainage and Utility Plan in Appendix H. The flow rates entering each inlet were calculated using the rational method in Appendix I. The SWS was sized using Hydraflow Storm Sewer, Appendix J.

Summary

Reed's Cove is located in Sedgwick County, Kansas, on the southeast corner of 127th Street East and 21st Street North. The Reed's Cove 4th Addition location was originally proposed as a multi-family residential site in the original Reed's Cove drainage report. It will develop into 1/4 acre single-family residential lots. Storm sewers will carry runoff from streets and yards into existing ponds located within Reed's Cove Addition and the existing ditch along 127th Street. A portion of the area originally draining to the 127th Street East ditch is being diverted east into the existing Reed's Cove Lake. This diversion reduces the 100-year developed runoff to the west approximately to it's original rate.

Appendix A

Quadrangle

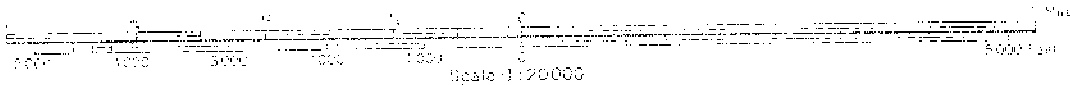
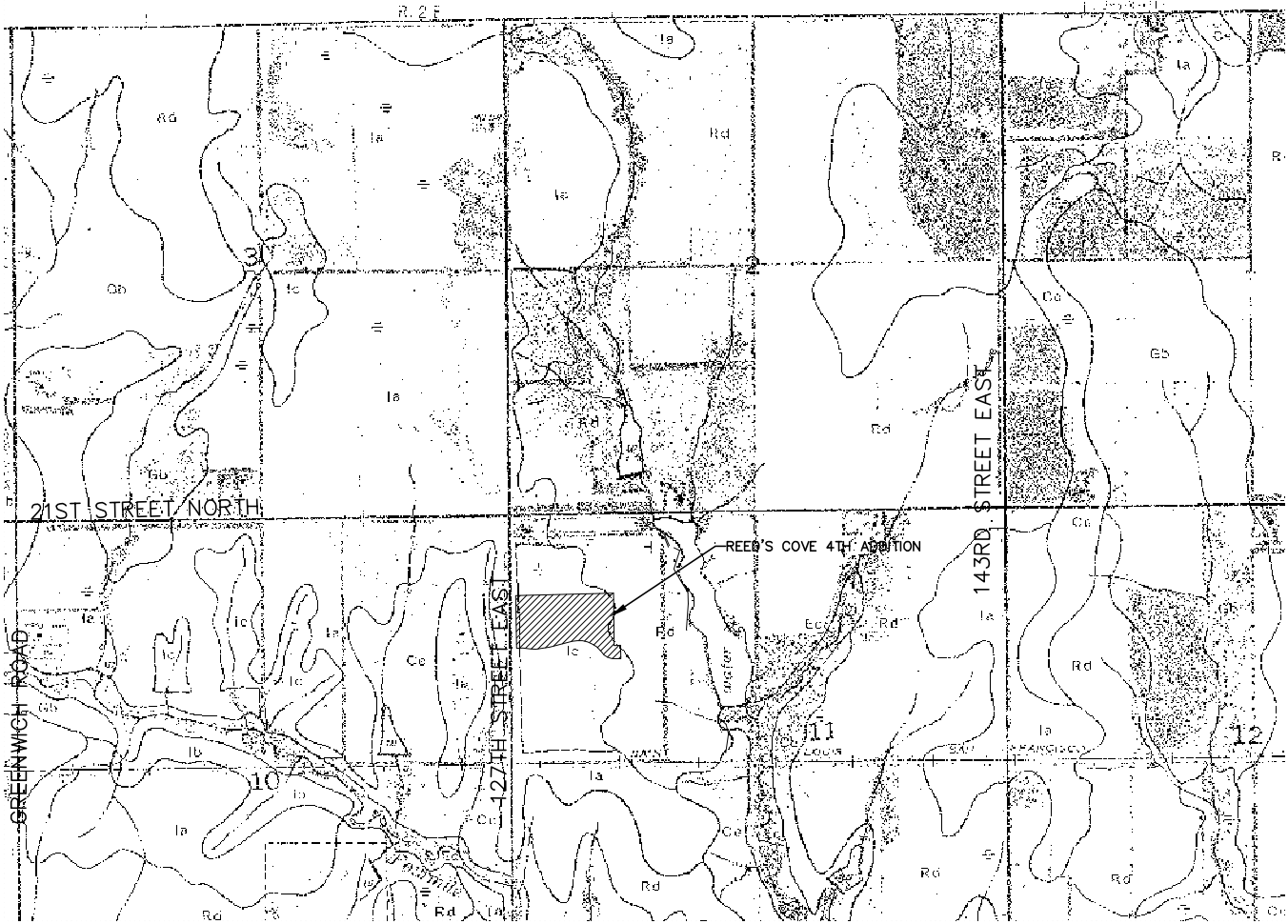


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Reed's Cove 4th Addition									
Project Name:	USGS - Sedgwick County, KS								
Sheet Title:									
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KWS	Feb., 2006								
Drawn By:	Date:								
AJK / KLA	02121								
Design / Review:	Job No.:								

Appendix B

Soil Survey



H:\CIVIL\02121\4TH Addition\DRNG\02121SSM.DWG



MKEC
 ENGINEERING
 CONSULTANTS
 411 N. WEBB ROAD
 WICHITA, KS. 67206
 316 - 684 - 9600

REED'S COVE 4TH ADDITION

PROJECT NAME

**SOIL SURVEY OF
 SEDGWICK COUNTY, KANSAS**

SHEET TITLE

KLA
 DESIGN BY:

AJK
 DRAWN BY:

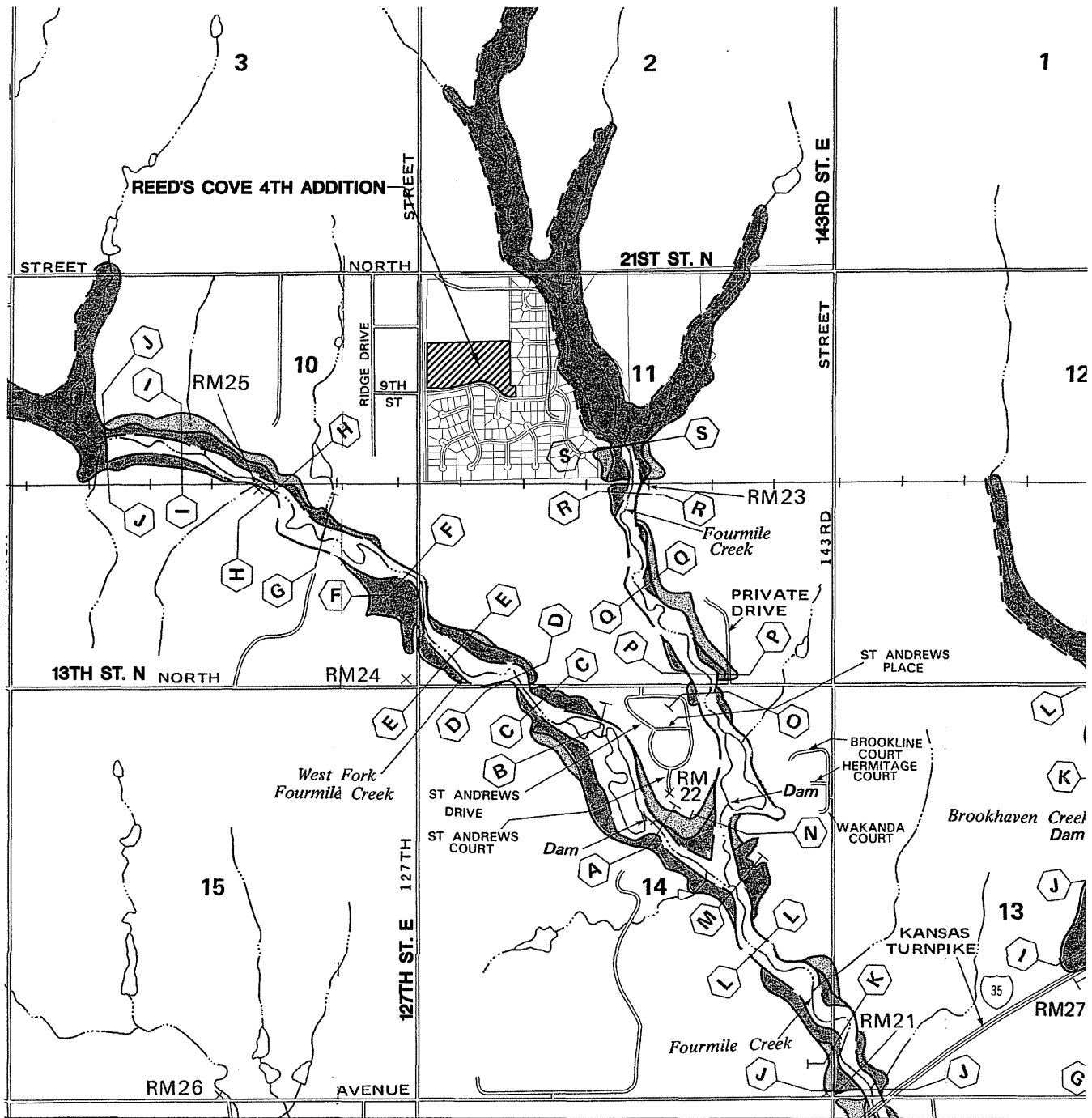
GJA
 CHECKED BY:

OCTOBER 2005
 DATE

05558
 JOB NO.

1 / 1
 SHEET/OF

Appendix C
FIRM & FBFM



SEDGWICK CO 150 FBF

NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY
FLOOD BOUNDARY AND
FLOODWAY MAP

SEDGWICK COUNTY,
KANSAS
(UNINCORPORATED AREAS)

PANEL 150 OF 300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
200321 0150

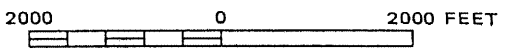
EFFECTIVE DATE:
JUNE 3, 1986



Federal Emergency Management Agency



APPROXIMATE SCALE



MKEC
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411 N. WEBB ROAD
WICHITA, KS. 67206
316 - 684 - 9600

REED'S COVE 4TH ADDITION
PROJECT NAME

FLOOD BOUNDARY AND FLOODWAY MAP
SHEET TITLE

AJK DESIGN BY.	KWS DRAWN BY.	GJA CHECKED BY.
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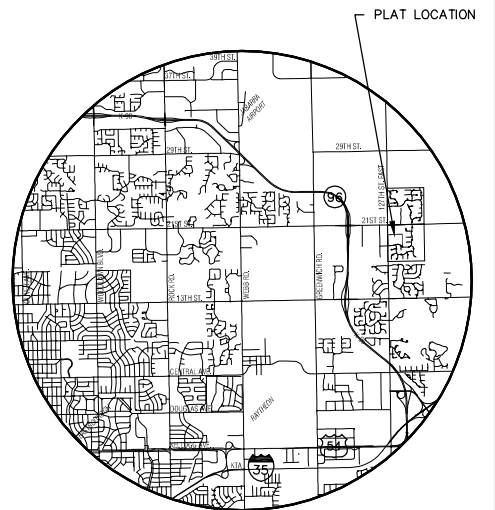
OCTOBER 2005 DATE	02121 JOB NO.	1 / 1 SHEET/OF
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Appendix D
Pre-Developed 127th Street East
Ditch Basin

NOTES

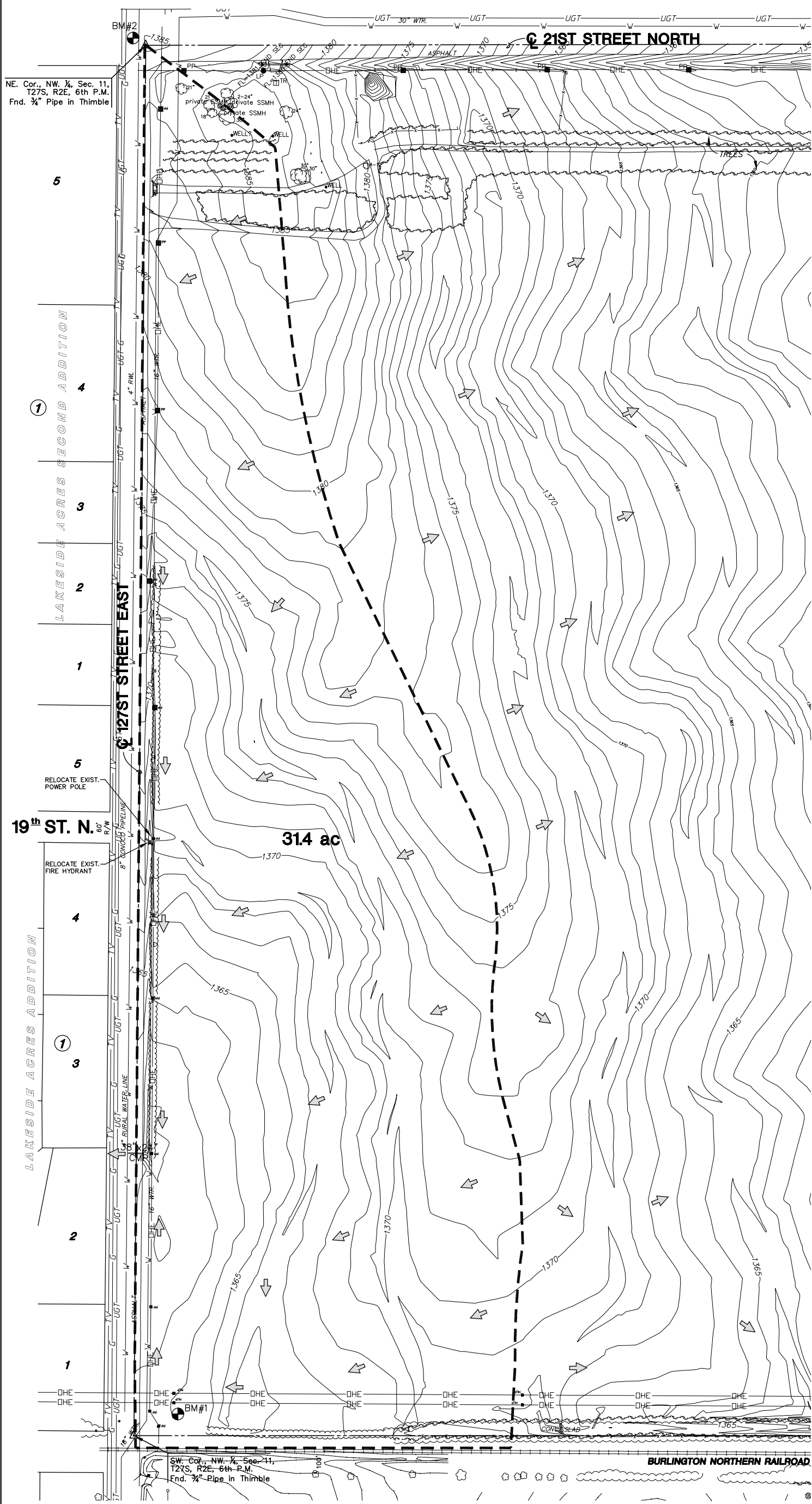
- ZONING: Existing Single Family "SF-20"
Proposed Single Family "SF-5"
- RESERVES platted for:
"A" - lakes, floodway, and drainage in designated locations, club house, pool, playground, sidewalks, landscaping, irrigation, berming, monuments, and open space.
"B" - lakes, floodway, and drainage in designated locations, sidewalks, landscaping, irrigation, berming, monuments, and open space.
"C," "D," "E,"
"F," "G," "H" - monuments, landscaping, irrigation, and open space.
- Lot minimum pad elevations as indicated on the DRAINAGE PLAN, provided at the time of FINAL PLATTING.



VICINITY MAP

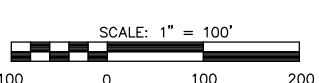
LEGEND

- ⊗ - CONIFEROUS TREE & DIAMETER
- - DECIDUOUS TREE & DIAMETER
- ⊙ - SIGN
- ⊖ - BUSH
- ⋯ - EDGE OF TREES
- - - - - FENCE
- ⊗ - SANITARY SEWER MANHOLE
- ⊙ - GAS METER
- ⊙ - POLE
- ⊙ - HIGH LINE POLE
- ⊙ - GATE
- ⊙ - WALL
- ⊙ - LIGHT POLE
- ⊙ - FIRE HYDRANT
- ⊙ - WATER VALVE
- ⊙ - WATER METER
- ⊙ - POWER POLE AND GUY ANCHOR
- ⊙ - TELEPHONE RISER
- ⊙ - INLET
- ⊙ - STORM SEWER PIPE
- ⊙ - WATER LINE
- ⊙ - SANITARY SEWER LINE
- ⊙ - GAS LINE
- ⊙ - TELEPHONE LINE
- ⊙ - UNDERGROUND ELECTRIC LINE
- ⊙ - OVERHEAD TELEPHONE
- ⊙ - OVERHEAD ELECTRIC
- ⊙ - UNDERGROUND FIBER OPTIC CABLE
- ⊙ - SECTION CORNER
- ⊙ - PROPERTY CORNER FOUND
- ⊙ - BENCHMARK
- ⊙ - REED'S COVE 2ND ADDITION



BENCHMARK

- BM#1 60" IN SOUTH LEG OF "H" POLE HIGH LINE STRUCTURE, 75' NORTH & 80' EAST OF @ 127TH STREET & CENTERLINE BURLINGTON NORTHERN RAILROAD. ELEV. = 1365.37'
- BM#2 Top of iron at SW. Cor., SW. 1/4, Sec. 2, T27S, R2E, (127th St. E. & 21st St. N.). ELEV. = 198.01 (CITY DATUM) 1385.41 NGVD



MKEC
ENGINEERING
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316 - 684 - 9600

REED'S COVE
PROJECT NAME
PRE-DEVELOPMENT
127TH STREET EAST DRAINAGE BASIN
SHEET TITLE

AJK
DESIGN BY:

FEBRUARY 2006
DATE

KWS
DRAWN BY:

02121
JOB NO.

GLA
CHECKED BY:

1 / 1
SHEET/OT

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Appendix E
Hydraflow Hydrographs
Output



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	Rational	16.59	1	62	1.417	----	-----	-----	Pre-Dev Q to 127th ST
2	Rational	25.42	1	49	1.715	----	-----	-----	Post-Dev Q to 127th St

Proj. file: 2yr_Q_to_127th.gpw	Return Period: 2 yr	Run date: 02-06-2006
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Hydrograph Report

Hyd. No. 1

Pre-Dev Q to 127th ST

Hydrograph type	= Rational	Peak discharge	= 16.59 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 31.4 ac	Runoff coeff.	= 0.32
Intensity	= 1.651 in/hr	Time of conc. (Tc)	= 62 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 1.417 acft

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

0.83	13.38
0.85	13.64
0.87	13.91
0.88	14.18
0.90	14.45
0.92	14.71
0.93	14.98
0.95	15.25
0.97	15.52
0.98	15.78
1.00	16.05
1.02	16.32
1.03	16.59 <<
1.05	16.32
1.07	16.05
1.08	15.78
1.10	15.52
1.12	15.25
1.13	14.98
1.15	14.71
1.17	14.45
1.18	14.18
1.20	13.91
1.22	13.64
1.23	13.38

...End

Hydrograph Report

Hyd. No. 2

Post-Dev Q to 127th St

Hydrograph type	= Rational	Peak discharge	= 25.42 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 25.1 ac	Runoff coeff.	= 0.52
Intensity	= 1.947 in/hr	Time of conc. (Tc)	= 49 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 1.715 acft

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

0.67	20.75
0.68	21.27
0.70	21.79
0.72	22.30
0.73	22.82
0.75	23.34
0.77	23.86
0.78	24.38
0.80	24.90
0.82	25.42 <<
0.83	24.90
0.85	24.38
0.87	23.86
0.88	23.34
0.90	22.82
0.92	22.30
0.93	21.79
0.95	21.27
0.97	20.75

...End

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	Rational	25.52	1	58	2.039	----	-----	-----	Pre-Dev Q to 127th ST
2	Rational	35.61	1	46	2.256	----	-----	-----	Post-Dev Q to 127th St

Proj. file: 5yr_Q_to_127th.gpw	Return Period: 5 yr	Run date: 02-06-2006
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Hydrograph Report

Hyd. No. 1

Pre-Dev Q to 127th ST

Hydrograph type	= Rational	Peak discharge	= 25.52 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 31.4 ac	Runoff coeff.	= 0.37
Intensity	= 2.196 in/hr	Time of conc. (Tc)	= 58 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 2.039 acft

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

0.78	20.68
0.80	21.12
0.82	21.56
0.83	22.00
0.85	22.44
0.87	22.88
0.88	23.32
0.90	23.76
0.92	24.20
0.93	24.64
0.95	25.08
0.97	25.52 <<
0.98	25.08
1.00	24.64
1.02	24.20
1.03	23.76
1.05	23.32
1.07	22.88
1.08	22.44
1.10	22.00
1.12	21.56
1.13	21.12
1.15	20.68

...End

Hydrograph Report

Hyd. No. 2

Post-Dev Q to 127th St

Hydrograph type	= Rational	Peak discharge	= 35.61 cfs
Storm frequency	= 5 yrs	Time interval	= 1 min
Drainage area	= 25.1 ac	Runoff coeff.	= 0.56
Intensity	= 2.533 in/hr	Time of conc. (Tc)	= 46 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 2.256 acft

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

0.62	28.64
0.63	29.42
0.65	30.19
0.67	30.97
0.68	31.74
0.70	32.51
0.72	33.29
0.73	34.06
0.75	34.84
0.77	35.61 <<
0.78	34.84
0.80	34.06
0.82	33.29
0.83	32.51
0.85	31.74
0.87	30.97
0.88	30.19
0.90	29.42
0.92	28.64

...End

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	Rational	41.66	1	50	2.869	----	-----	-----	Pre-Dev Q to 127th ST
2	Rational	51.53	1	39	2.768	----	-----	-----	Post-Dev Q to 127th St

Proj. file: 10yr_Q_to_127th.gpw	Return Period: 10 yr	Run date: 02-06-2006
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Hydrograph Report

Hyd. No. 1

Pre-Dev Q to 127th ST

Hydrograph type	= Rational	Peak discharge	= 41.66 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 31.4 ac	Runoff coeff.	= 0.47
Intensity	= 2.823 in/hr	Time of conc. (Tc)	= 50 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 2.869 acft

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

0.67	33.33
0.68	34.16
0.70	35.00
0.72	35.83
0.73	36.66
0.75	37.50
0.77	38.33
0.78	39.16
0.80	40.00
0.82	40.83
0.83	41.66 <<
0.85	40.83
0.87	40.00
0.88	39.16
0.90	38.33
0.92	37.50
0.93	36.66
0.95	35.83
0.97	35.00
0.98	34.16
1.00	33.33

...End

Hydrograph Report

Hyd. No. 2

Post-Dev Q to 127th St

Hydrograph type	= Rational	Peak discharge	= 51.53 cfs
Storm frequency	= 10 yrs	Time interval	= 1 min
Drainage area	= 25.1 ac	Runoff coeff.	= 0.63
Intensity	= 3.259 in/hr	Time of conc. (Tc)	= 39 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 2.768 acft

Hydrograph Discharge Table

Time -- Outflow
(hrs cfs)

0.53	42.28
0.55	43.60
0.57	44.92
0.58	46.24
0.60	47.56
0.62	48.88
0.63	50.21
0.65	51.53 <<
0.67	50.21
0.68	48.88
0.70	47.56
0.72	46.24
0.73	44.92
0.75	43.60
0.77	42.28

...End

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (acft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (acft)	Hydrograph description
1	Rational	106.67	1	34	4.996	----	-----	-----	Pre-Dev Q to 127th ST
2	Rational	106.56	1	28	4.110	----	-----	-----	Post-Dev Q to 127th St

Proj. file: 100yr_Q_to_127th.gpw	Return Period: 100 yr	Run date: 02-06-2006
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Hydrograph Report

Hyd. No. 1

Pre-Dev Q to 127th ST

Hydrograph type	= Rational	Peak discharge	= 106.67 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 31.4 ac	Runoff coeff.	= 0.67
Intensity	= 5.070 in/hr	Time of conc. (Tc)	= 34 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 4.996 acft

Hydrograph Discharge Table

Time -- Outflow (hrs cfs)

0.47	87.85
0.48	90.98
0.50	94.12
0.52	97.26
0.53	100.40
0.55	103.53
0.57	106.67 <<
0.58	103.53
0.60	100.40
0.62	97.26
0.63	94.12
0.65	90.98
0.67	87.85

...End

Hydrograph Report

Hyd. No. 2

Post-Dev Q to 127th St

Hydrograph type	= Rational	Peak discharge	= 106.56 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 25.1 ac	Runoff coeff.	= 0.76
Intensity	= 5.586 in/hr	Time of conc. (Tc)	= 28 min
IDF Curve	= SedgwickCoKS.IDF	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 4.110 acft

Hydrograph Discharge Table

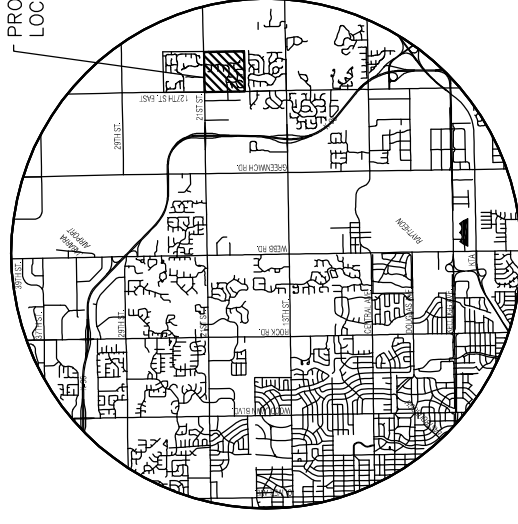
Time -- Outflow
(hrs cfs)

0.38	87.53
0.40	91.34
0.42	95.14
0.43	98.95
0.45	102.76
0.47	106.56 <<
0.48	102.76
0.50	98.95
0.52	95.14
0.53	91.34
0.55	87.53

...End

Appendix F
Preliminary Lot Grading Plan

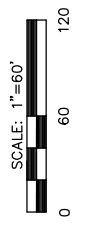
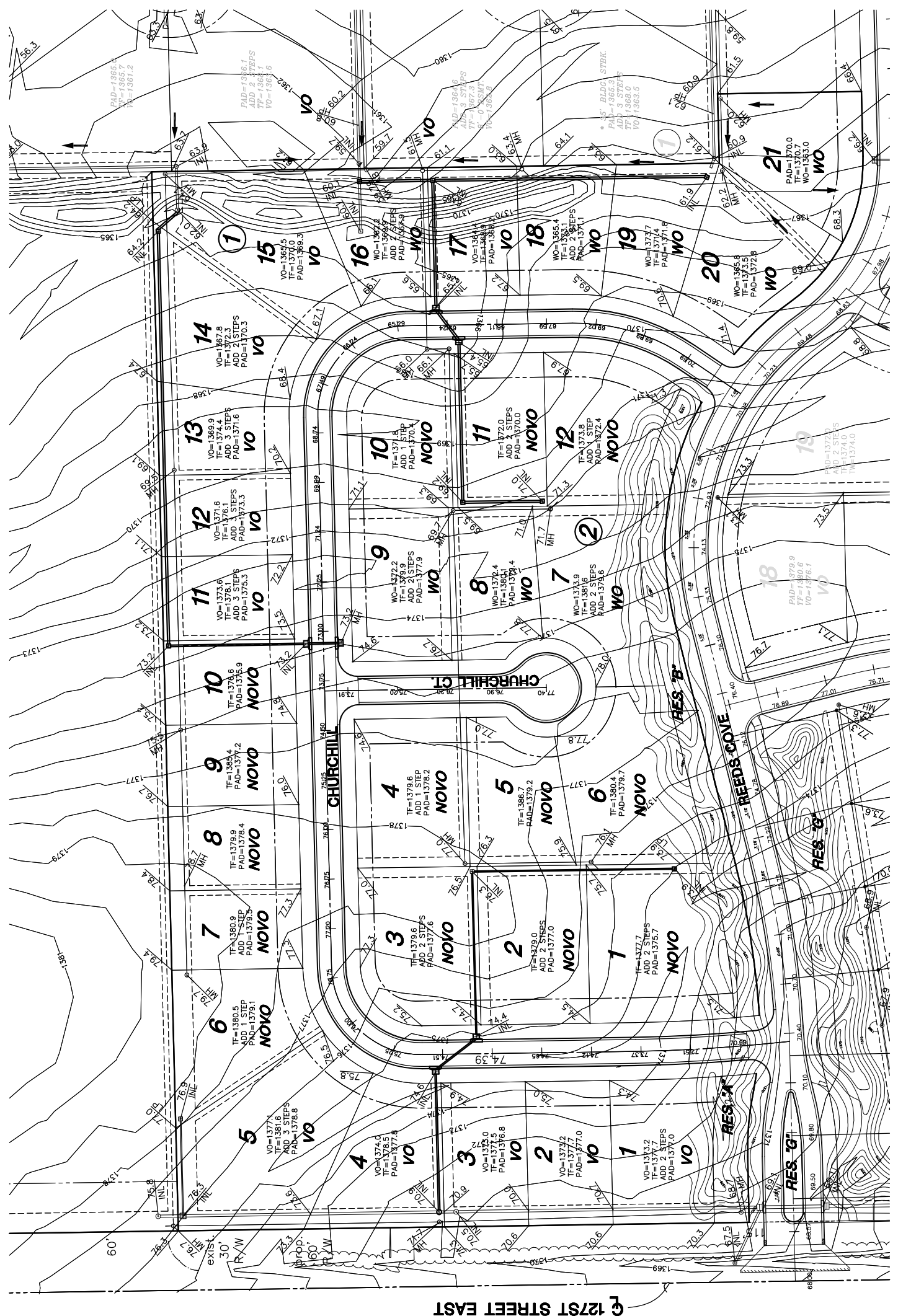
PROJECT LOCATION



VICINITY MAP

LEGEND

- ⊗ - CONIFEROUS TREE & DIAMETER
- ⊙ - DECIDUOUS TREE & DIAMETER
- ⊕ - SIGN
- ⊖ - SIGN
- ⊗ - BUSH
- ⊙ - EDGE OF TREES
- ⊖ - FENCE
- ⊗ - SANITARY SEWER MANHOLE
- ⊙ - GAS METER
- ⊖ - POLE
- ⊗ - HIGH LINE POLE
- ⊙ - GATE
- ⊖ - WALL
- ⊗ - LIGHT POLE
- ⊙ - FIRE HYDRANT
- ⊖ - WATER VALVE
- ⊗ - WATER METER
- ⊙ - POWER POLE AND GUY ANCHOR
- ⊖ - TELEPHONE RISER
- ⊗ - INLET
- ⊙ - STORM SEWER PIPE
- ⊖ - WATER LINE
- ⊗ - SANITARY SEWER LINE
- ⊙ - GAS LINE
- ⊖ - TELEPHONE LINE
- ⊗ - UNDERGROUND ELECTRIC LINE
- ⊙ - OVERHEAD TELEPHONE
- ⊖ - OVERHEAD ELECTRIC
- ⊗ - UNDERGROUND FIBER OPTIC CABLE
- ⊙ - SECTION CORNER
- ⊖ - PROPERTY CORNER FOUND
- ⊗ - BENCHMARK
- ⊙ - WALKOUT
- ⊖ - VIEWOUT
- ⊗ - TERRACED WALKOUT
- ⊙ - TERRACED WALKOUT
- ⊖ - WALKOUT WHICH MAY REQUIRE THICKER FOOTING AND/OR ENGINEERED FILL UNDER FOOTINGS
- ⊗ - SPOT ELEV.



BENCHMARK

- BM#1 ⊙ 60' IN SOUTH LEG OF "H" POLE HIGH LINE STRUCTURE, 75' NORTH & 80' EAST OF @ 127TH STREET & CENTERLINE BURLINGTON NORTHERN RAILROAD. ELEV. = 1385.37
- BM#2 ⊙ Top of iron at SW. Cor., SW. 1/4, Sec. 2, T27S, R2E, (127th St. E. & 21st St. N.). ELEV. = 198.01 (CITY DATUM) 1385.41 NGVD

PROJECT NAME
REEDS COVE 4TH ADDITION

SHEET TITLE
PRELIMINARY LOT GRADING PLAN

DESIGN BY: **JWC**
CHECKED BY: **GJA**
DATE: **FEBRUARY 2006**
JOB NO.: **02121**
SHEET NO.: **1 / 1**

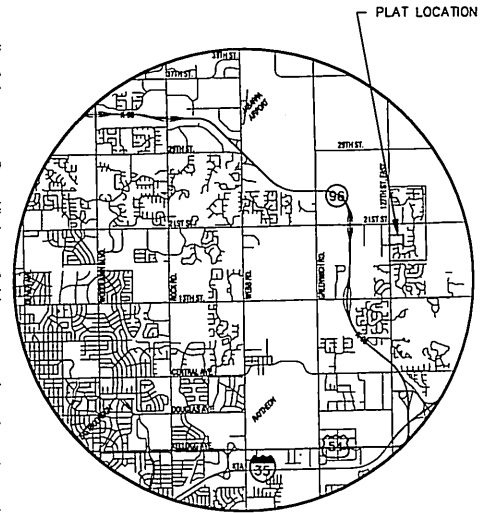
MKEC
ENGINEERING
CONSULTANTS, INC.

411 N. WEBB ROAD
WICHITA, K.S. 67206
316-684-9600

Appendix G
Post-Developed 127th Street East
Ditch Basin

NOTES

- ZONING: Existing Single Family "SF-20"
Proposed Single Family "SF-5"
- RESERVES platted for:
"A" - lakes, floodway, and drainage in designated locations, club house, pool, playground, sidewalks, landscaping, irrigation, berming, monuments, and open space.
"B" - lakes, floodway, and drainage in designated locations, sidewalks, landscaping, irrigation, berming, monuments, and open space.
"C," "D," "E,"
"F," "G," "H" - monuments, landscaping, irrigation, and open space.
- Lot minimum pad elevations as indicated on the DRAINAGE PLAN, provided at the time of FINAL PLATTING.



VICINITY MAP

LEGEND

- ⊗ - CONIFEROUS TREE & DIAMETER
- - DECIDUOUS TREE & DIAMETER
- ⊙ - SIGN
- ⊖ - BUSH
- - EDGE OF TREES
- - - - - FENCE
- ⊗SSMH - SANITARY SEWER MANHOLE
- ⊙ - GAS METER
- ⊙ - POLE
- ⊙HLP - HIGH LINE POLE
- ⊙ - GATE
- - WALL
- ⊙LP - LIGHT POLE
- ⊙FH - FIRE HYDRANT
- ⊙WV - WATER VALVE
- ⊙WM - WATER METER
- ⊙PPA - POWER POLE AND GUY ANCHOR
- ⊙TR - TELEPHONE RISER
- ⊙ - INLET
- - EXIST. STORM SEWER PIPE
- - PROP. STORM SEWER PIPE
- - WATER LINE
- - SANITARY SEWER LINE
- - GAS LINE
- - TELEPHONE LINE
- - UNDERGROUND ELECTRIC LINE
- - OVERHEAD TELEPHONE
- - OVERHEAD ELECTRIC
- - UNDERGROUND FIBER OPTIC CABLE
- ⊙ - SECTION CORNER
- ⊙ - PROPERTY CORNER FOUND
- BM - BENCHMARK

MINIMUM PAD ELEVATIONS (LOWEST OPENINGS)			
LOT	BLOCK	ELEVATION (CITY DATUM)	ELEVATION (USGS)
1	1	165.60	1353.00
2	1	165.60	1353.00
3	1	165.60	1353.00
4	1	165.60	1353.00
5	1	165.60	1353.00
9	1	169.60	1357.00
10	1	169.10	1356.50
11	1	168.10	1355.50
12	1	168.10	1355.50
13	1	166.60	1354.00
14	1	166.60	1354.00
15	1	168.10	1355.50
16	1	168.10	1355.50
17	1	169.10	1356.50
18	1	169.60	1357.00
1	2	165.60	1353.00
2	2	165.60	1353.00
3	2	165.60	1353.00
4	2	165.60	1353.00
5	2	165.60	1353.00
6	2	165.60	1353.00
7	2	165.60	1353.00
8	2	163.60	1351.00
9	2	161.60	1349.00
10	2	161.60	1349.00

BENCHMARK

- BM#1 60" IN SOUTH LEG OF "H" POLE HIGH LINE STRUCTURE, 75' NORTH & 80' EAST OF C 127TH STREET & CENTERLINE BURLINGTON NORTHERN RAILROAD. ELEV. = 1365.37'
- BM#2 Top of iron at SW. Cor., SW. 1/4, Sec. 2, T27S, R2E, (127th St. E. & 21st St. N.). ELEV. = 198.01 (CITY DATUM) 1385.41 NGVD



SCALE: 1" = 100'

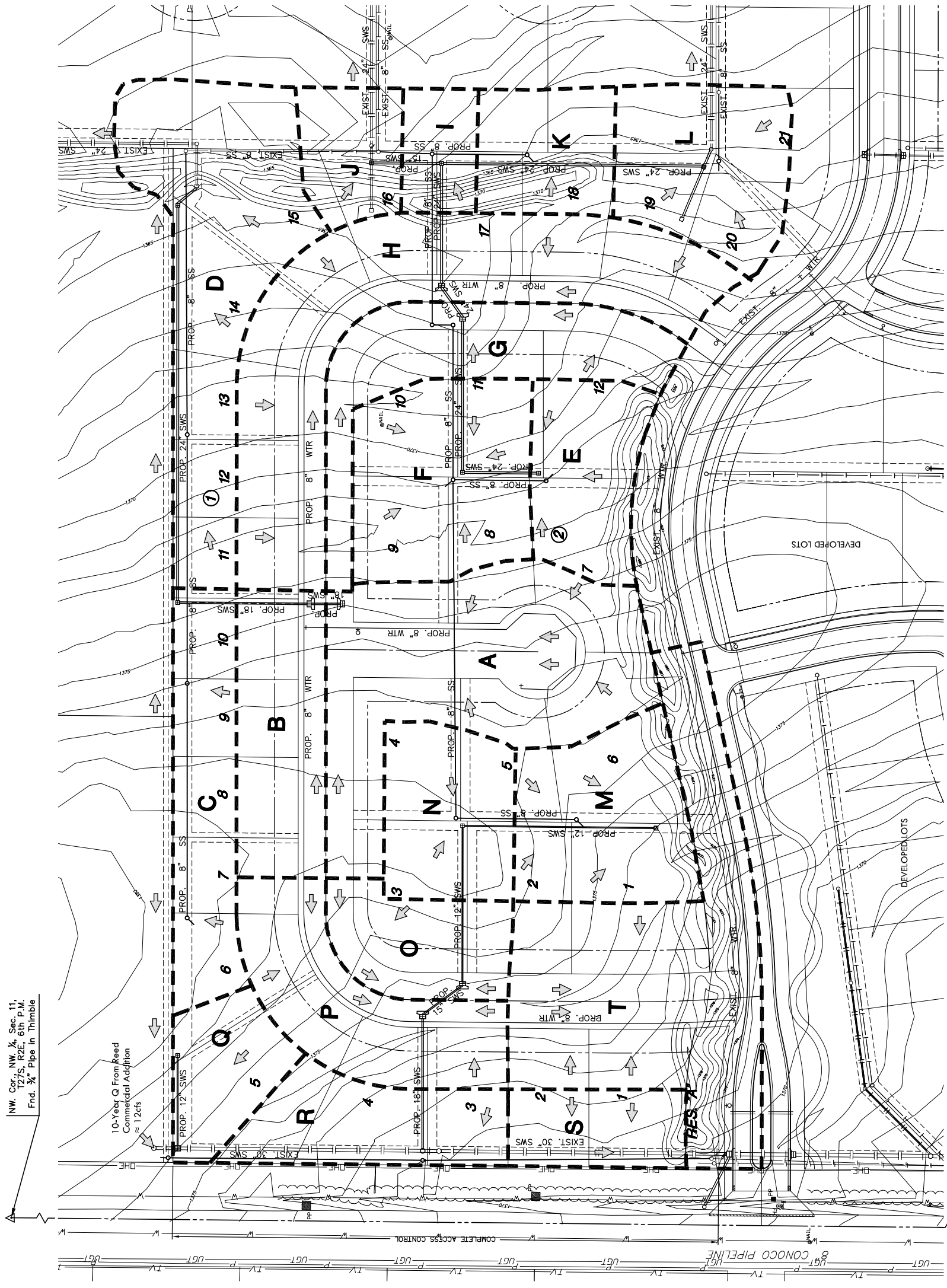


REED'S COVE
PROJECT NAME
POST-DEVELOPMENT
127TH STREET EAST DRAINAGE BASIN
SHEET TITLE

AJK DESIGN BY: KWS DRAWN BY: GLA CHECKED BY:
FEBRUARY 2006 DATE: 02121 JOB NO.: 1 / 1 SHEET/OT

H:\CIVIL\02121.DWG\PROP\DRNG\02121.dwg

Appendix H
Drainage & Utility Plan



NW. Cor., NW. 1/4, Sec. 11,
T27S, R2E, 6th P.M.,
Fnd. 3/4" Pipe in Thimble

10-Year Q From Reed
Commercial Addition
≈ 12cfs

SW. Cor., NW. 1/4, Sec. 11,
T27S, R2E, 6th P.M.,
Fnd. 3/4" Pipe in Thimble

NOTES

1. ZONING: Existing SF-5
2. PUBLIC UTILITIES: Shall be extended to site by petitions
3. LEGAL DESCRIPTION: See attached
4. EXISTING USE: Vacant Land
5. PLAT AREA: 1.432 AC
6. SURVEY DATE: April 9th, 2003 (by MKEC)
7. MINIMUM PADS: As shown on the Final Drainage Plan
8. LOT TOTAL (33)
9. RESERVES: "A" is platted for sidewalks, landscaping, irrigation, open space, monuments, and water features.

BENCH MARKS

- BM 1
60" IN SOUTH LEG OF "H" POLE
HIGH LINE STRUCTURE, 75' NORTH &
80' EAST OF E. 127TH STREET &
CENTERLINE BURLINGTON NORTHERN
RAILROAD.
ELEV. = 1365.37
- BM 2
Top of Iron at SW. Cor., SW. 1/4, Sec. 2,
T27S, R2E, (127th St. E. & 21st St. N.),
ELEV. = 1385.41 NGVD

LEGEND

- △ - Sec. Corner
- SL - SIGN
- - GATE
- - TREES
- - EDGE OF TREES
- - POLE - POLE
- - Fnd. Prop. Corner
- - GAS METER
- - SANITARY SEWER MANHOLE
- - POWER POLE/GUY ANCHOR
- - ELECTRIC BOX
- - FLOW ARROW
- - FIRE HYDRANT
- - WATER VALVE
- - WATER METER
- - TELEPHONE RISER
- - FENCE
- - STORM SEWER PIPE
- - WATER LINE
- - SANITARY SEWER LINE
- - GAS LINE
- - TELEPHONE LINE
- - OVERHEAD ELECTRIC
- - DRAINAGE AREA BOUNDARY
- - WATERSHED

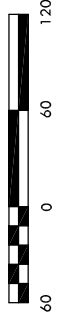
LEGAL DESCRIPTION

All of Lots 39, and 40, Block 1, Reed's Cove Addition,
an addition to Wichita, Sedgwick County, Kansas.

PLAT LOCATION



VICINITY MAP



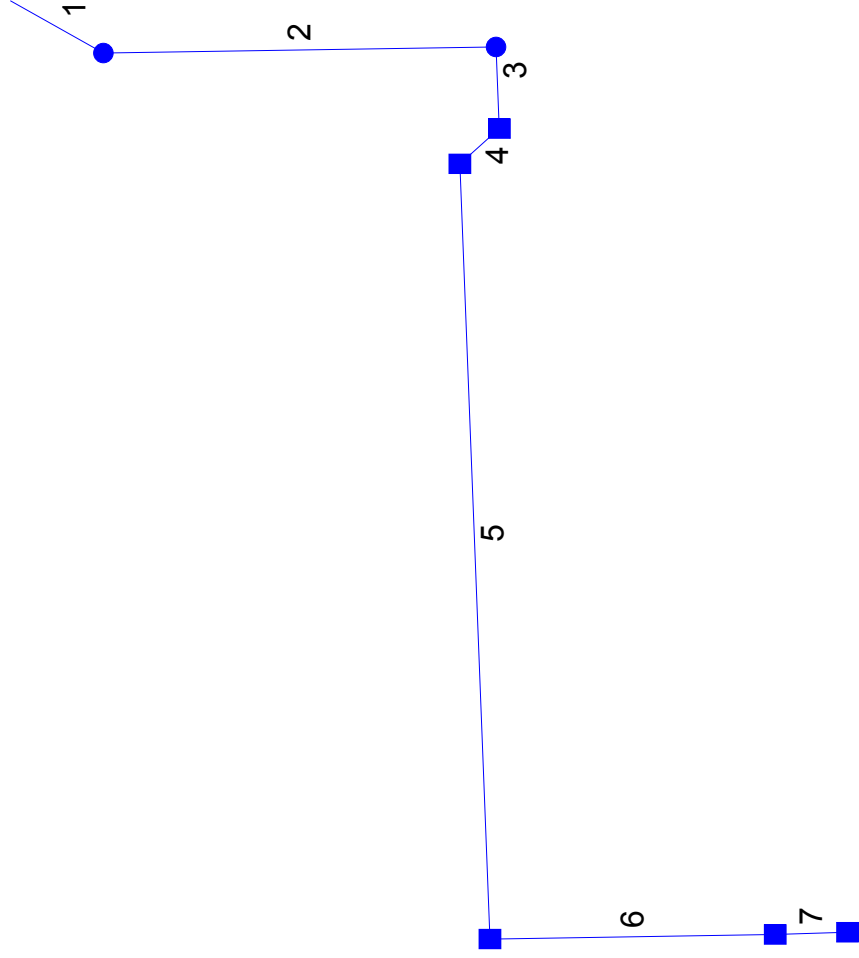
Appendix I
Inlet Flow Rates
Rational Method

**REED'S COVE 4TH ADDITION
WICHITA, SEDGWICK COUNTY, KANSAS
PRELIMINARY STORM SEWER DESIGN
BY THE RATIONAL METHOD**

Area ID	Area ac	Accum. Area ac	Land Use	% Impervious	Runoff Coefficients				Time of Concentration				Rainfall Intensity				Storm Flows			
					C2	C5	C10	C100	Tc2 (min)	Tc5 min	Tc10 min	Tc100 min	I2 (in/hr)	I5 (in/hr)	I10 (in/hr)	I100 (in/hr)	Q2 cfs	Q5 cfs	Q10 cfs	Q100 cfs
A	1.50		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.87	3.69	4.85	8.40
B	0.67		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.28	1.65	2.17	3.75
C	0.69		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.32	1.70	2.23	3.86
D	1.36		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	2.60	3.35	4.40	7.62
E	0.54		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.03	1.33	1.75	3.02
F	0.87		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.67	2.14	2.82	4.87
G	0.77		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.47	1.90	2.49	4.31
H	1.64		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	3.14	4.04	5.31	9.19
I	0.23		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.44	0.57	0.74	1.29
J	0.35		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.67	0.86	1.13	1.96
K	0.44		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.84	1.08	1.42	2.46
L	0.70		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.34	1.72	2.27	3.92
M	0.74		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.42	1.82	2.39	4.14
N	0.56		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.07	1.38	1.81	3.14
O	0.46		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.88	1.13	1.49	2.58
P	0.77		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.47	1.90	2.49	4.31
Q	0.39		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.75	0.96	1.26	2.18
R	0.55		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	1.05	1.35	1.78	3.08
S	0.36		Residential - 1/4 Acre	38	0.50	0.54	0.62	0.76	15	15	15	15	3.83	4.56	5.22	7.37	0.69	0.89	1.17	2.02

Appendix J
Hydraflow Storm Sewer
Output

Hydraflow Plan View



Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Dmg area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/Rim El (ft)	
1	End	53.0	122.0	MH	0.00	0.00	0.00	0.0	1348.72	3.98	1350.83	24	Cir	0.013	0.45	1357.90	
2	1	190.0	-33.0	MH	0.00	0.00	0.00	0.0	1350.93	4.00	1358.53	24	Cir	0.013	1.00	1363.90	
3	2	44.0	89.0	Genr	0.00	0.00	0.00	0.0	1358.63	0.20	1358.72	24	Cir	0.013	1.10	1362.00	
4	3	27.0	47.0	Genr	7.62	0.00	0.00	0.0	1358.82	0.30	1358.90	24	Cir	0.013	1.10	1364.00	
5	4	418.0	-47.0	Genr	3.86	0.00	0.00	0.0	1359.00	2.07	1367.65	24	Cir	0.013	1.50	1373.00	
6	5	138.0	-89.0	Curb	3.75	0.00	0.00	0.0	1368.15	0.66	1369.06	18	Cir	0.013	0.50	1374.00	
7	6	35.0	-1.0	Curb	8.40	0.00	0.00	0.0	1369.31	0.69	1369.55	15	Cir	0.013	1.00	1374.00	
Project File: RC 4th SWS Line 1.stm IDF File: sampleFHA.IDF Total number of lines: 7 Date: 02-06-2006																	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		23.63	24 c	53.0	1348.72	1350.83	3.981	1354.03*	1354.61*	0.40	End
2		23.63	24 c	190.0	1350.93	1358.53	4.000	1355.01	1360.26	1.04	1
3		23.63	24 c	44.0	1358.63	1358.72	0.204	1361.30*	1361.78*	0.97	2
4		23.63	24 c	27.0	1358.82	1358.90	0.297	1362.75*	1363.04*	0.97	3
5		16.01	24 c	418.0	1359.00	1367.65	2.069	1364.01	1369.07	1.06	4
6		12.15	18 c	138.0	1368.15	1369.06	0.659	1370.12*	1371.97*	0.37	5
7		8.40	15 c	35.0	1369.31	1369.55	0.686	1372.34*	1372.93*	0.73	6

Project File: RC 4th SWS Line 1.stm

IDF File: sampleFHA.IDF

Total No. Lines: 7

Run Date: 02-06-2006

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Storm Sewer Tabulation

Station Line	To Line	Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
			Incr (ac)	Total (ac)		Incr (min)	Syst (min)	Total (%)	Size (in)					Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)		Dn (ft)
1	End	53.0	0.00	0.00	0.00	0.00	0.00	2.4	0.0	0.0	23.63	45.13	7.52	24	3.98	1350.83	1348.72	1354.61	1354.03	1357.90	1355.10		
2	1	190.0	0.00	0.00	0.00	0.00	0.0	1.9	0.0	0.0	23.63	45.24	7.86	24	4.00	1358.53	1350.93	1360.26	1355.01	1363.90	1357.90		
3	2	44.0	0.00	0.00	0.00	0.00	0.0	1.8	0.0	0.0	23.63	10.23	7.52	24	0.20	1358.72	1358.63	1361.78	1361.30	1362.00	1363.90		
4	3	27.0	0.00	0.00	0.00	0.00	0.0	1.8	0.0	0.0	23.63	12.32	7.52	24	0.30	1358.90	1358.82	1363.04	1362.75	1364.00	1362.00		
5	4	418.0	0.00	0.00	0.00	0.00	0.0	0.4	0.0	0.0	16.01	32.54	5.91	24	2.07	1367.65	1359.00	1369.07	1364.01	1373.00	1364.00		
6	5	138.0	0.00	0.00	0.00	0.00	0.0	0.1	0.0	0.0	12.15	8.53	6.88	18	0.66	1369.06	1368.15	1371.97	1370.12	1374.00	1373.00		
7	6	35.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0	8.40	5.35	6.85	15	0.69	1369.55	1369.31	1372.93	1372.34	1374.00	1374.00		
Project File: RC 4th SWS Line 1.stm														IDF File: sampleFHA.IDF				Total number of lines: 7				Run Date: 02-06-2006	
NOTES: Intensity = 62.28 / (Inlet time + 10.10) ^ 0.66; Return period = 100 Yrs.; Initial tailwater elevation = 1354.03 (ft)																							

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No								
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)	depth (ft)		spread (ft)	depth (ft)						
1		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Off
2		0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
3		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	0.00	Sag	2.00	0.030	0.030	0.000	0.000	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.30	5.33	0.00	2
4		7.62*	0.00	7.62	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	0.00	Sag	2.00	0.030	0.030	0.000	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.30	5.33	0.00	3	
5		3.86*	0.00	3.86	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	0.00	Sag	2.00	0.030	0.030	0.000	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.30	5.33	0.00	4	
6		3.75*	0.00	3.75	0.00	Curb	6.0	5.00	0.00	0.00	0.00	0.00	0.00	Sag	2.00	0.030	0.030	0.000	0.000	0.47	10.94	0.49	10.94	0.49	10.94	0.49	10.94	2.00	5	
7		8.40*	0.00	8.40	0.00	Curb	6.0	10.00	0.00	0.00	0.00	0.00	0.00	Sag	2.00	0.030	0.030	0.000	0.000	0.55	13.81	0.58	13.81	0.58	13.81	0.58	13.81	2.00	6	

Project File: RC 4th SWS Line 1.stm

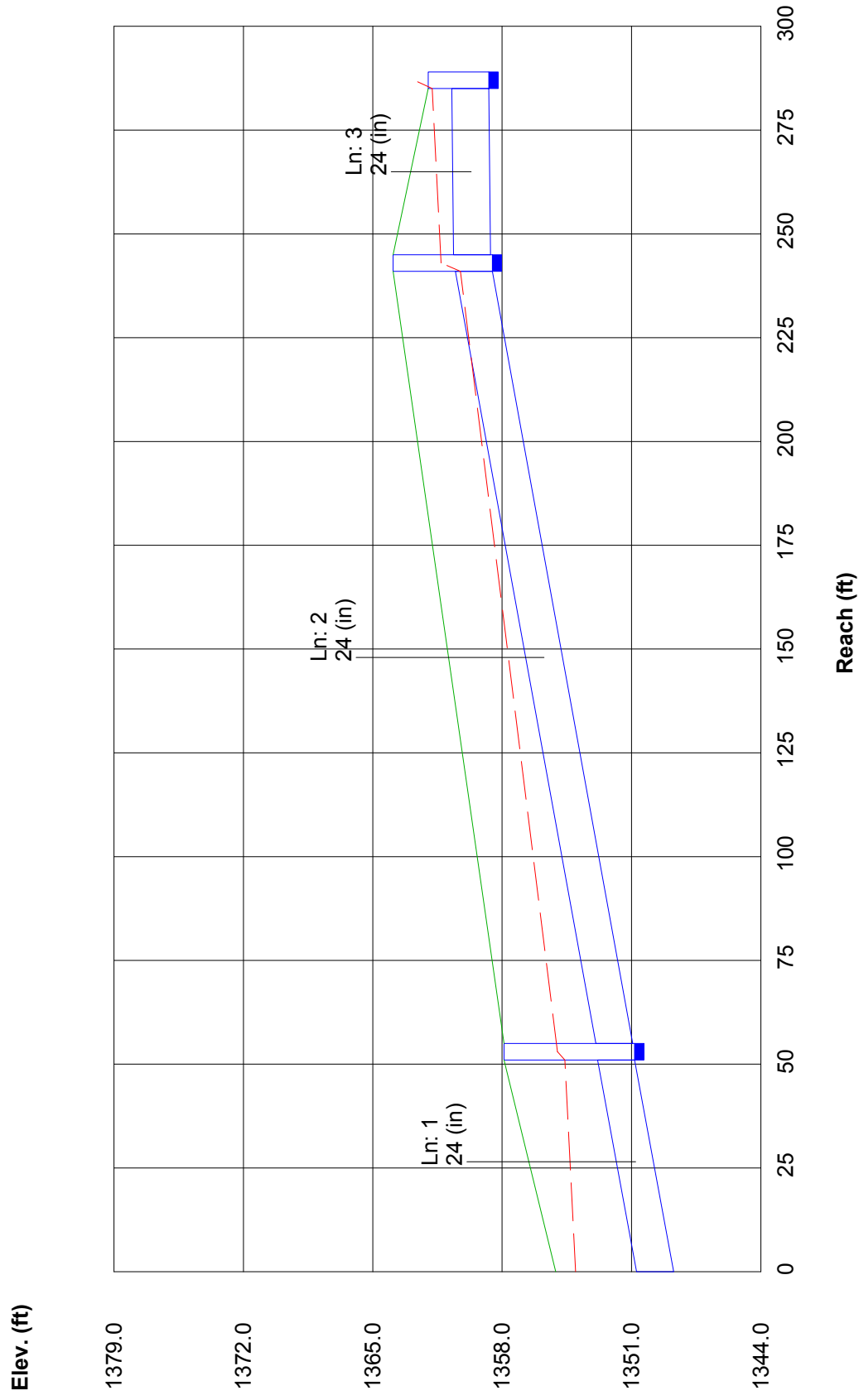
I-D-F File: sampleFHA.IDF

Total number of lines: 7

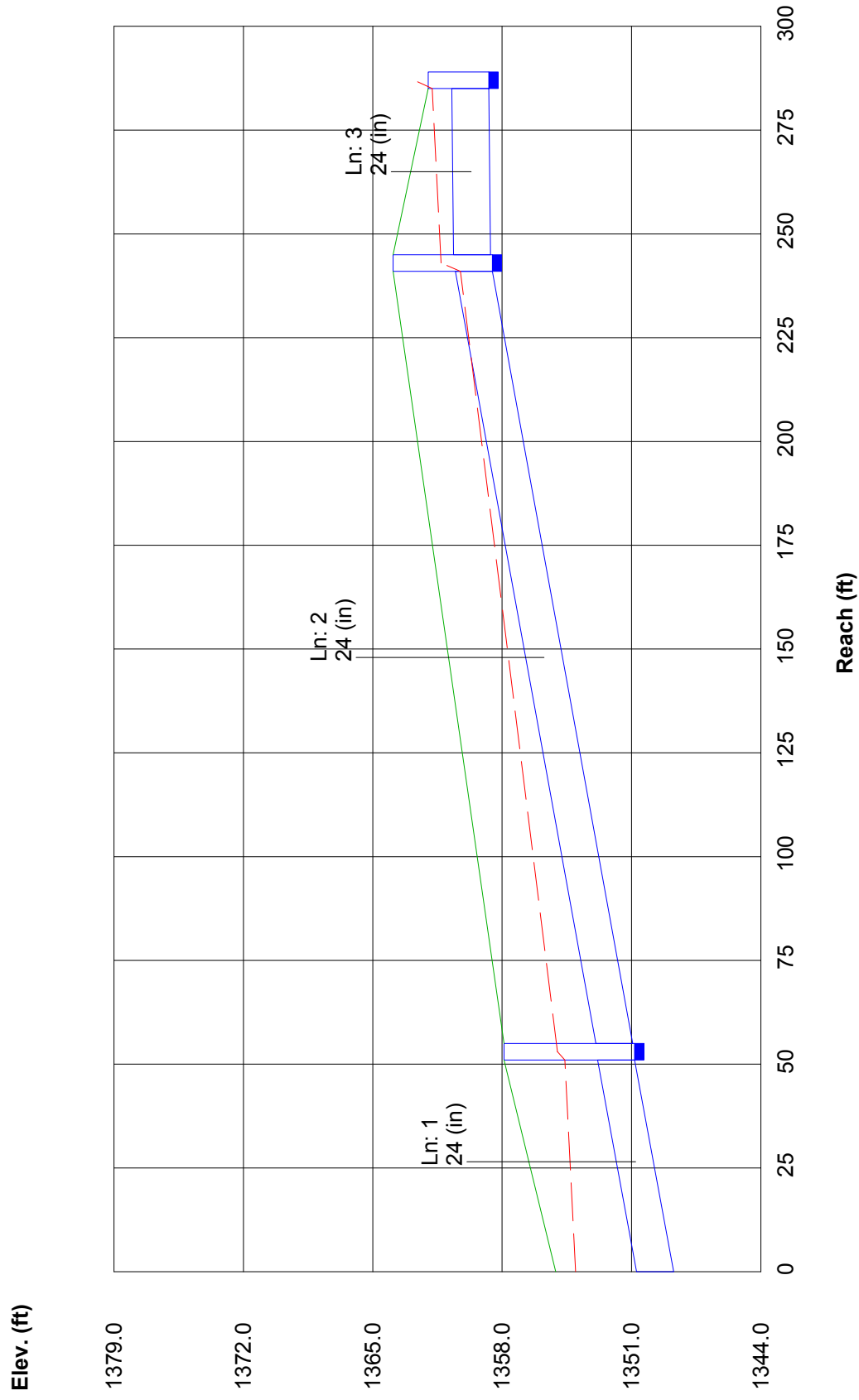
Run Date: 02-06-2006

NOTES: inlet N-Values = 0.016 ; intensity = 62.28 / (inlet time + 10.10) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added

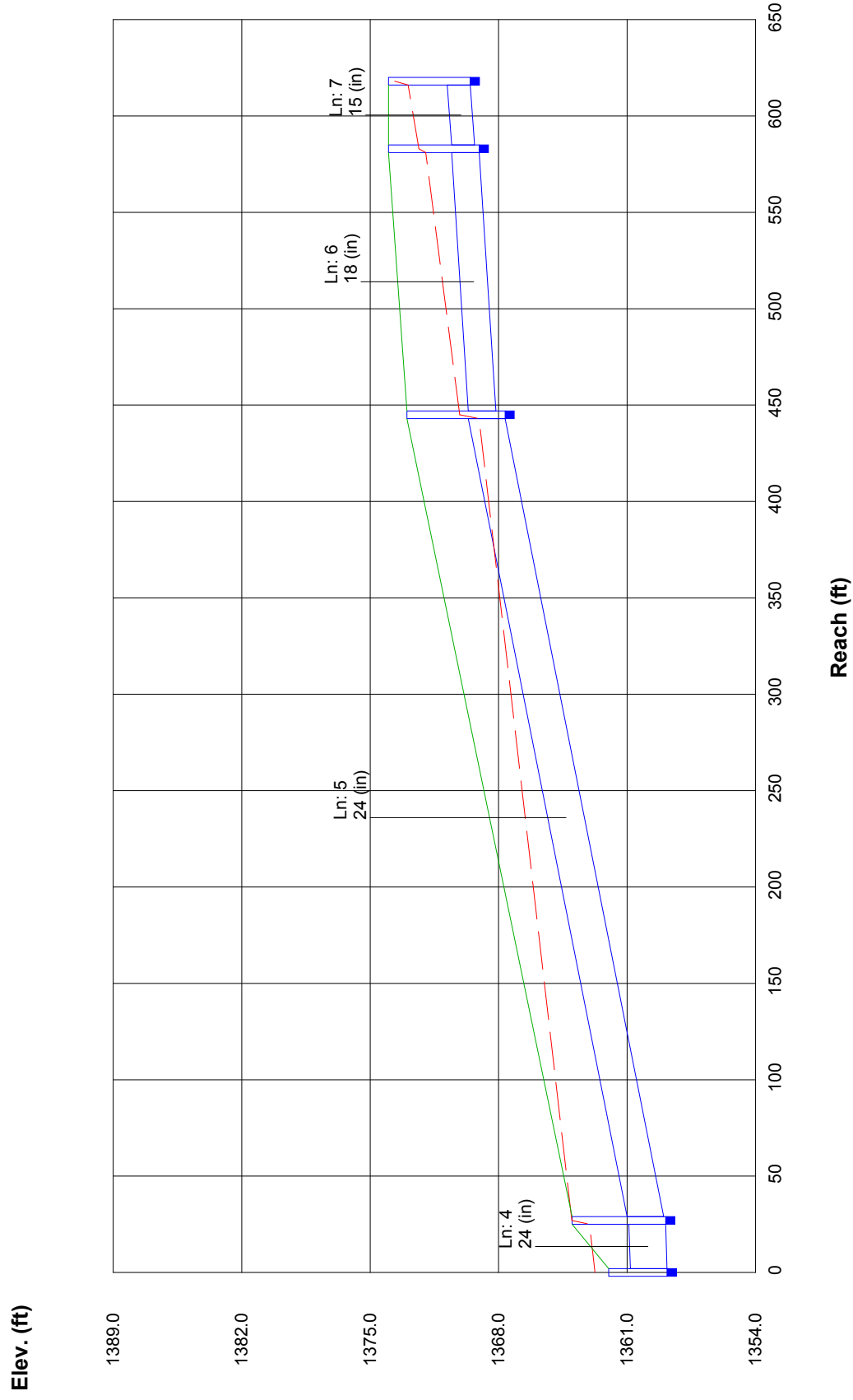
Storm Sewer Profile



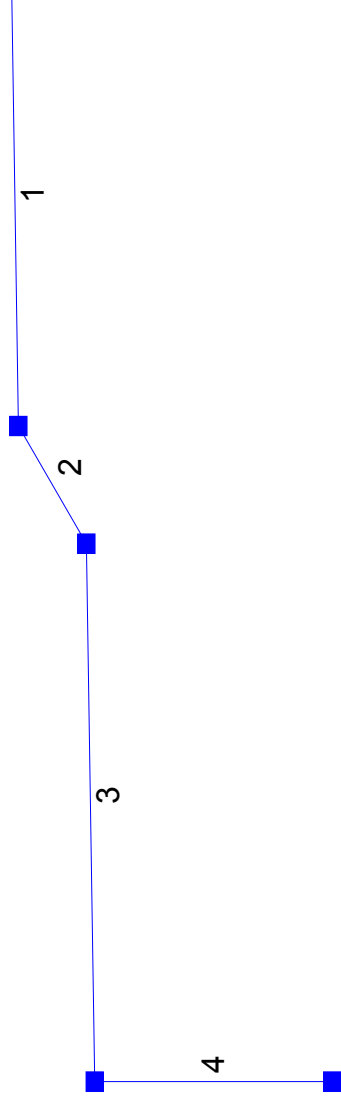
Storm Sewer Profile



Storm Sewer Profile



Hydraflow Plan View



Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Dmg area (ac)	Runoff coeff (C)	Inlet time (min)	Invert EI Dn (ft)	Line slope (%)	Invert EI Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim EI (ft)	
1	End	128.0	179.0	Curb	9.19	0.00	0.00	0.0	1358.59	1.10	1360.00	24	Cir	0.013	0.70	1364.80	
2	1	42.0	-32.0	Curb	4.31	0.00	0.00	0.0	1360.50	0.40	1360.67	18	Cir	0.013	0.70	1364.80	
3	2	161.0	32.0	Genr	4.87	0.00	0.00	0.0	1360.92	2.00	1364.14	15	Cir	0.013	1.50	1369.29	
4	3	80.0	-89.0	Genr	3.02	0.00	0.00	0.0	1364.39	2.00	1365.99	12	Cir	0.013	1.00	1370.99	
Project File: RC 4th SWS Line 2.stm IDF File: SedgwickCokS.IDF Total number of lines: 4 Date: 02-09-2006																	

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		21.39	24 c	128.0	1358.59	1360.00	1.102	1360.42	1361.64	0.66	End
2		12.20	18 c	42.0	1360.50	1360.67	0.405	1362.30*	1362.86*	0.52	1
3		7.89	15 c	161.0	1360.92	1364.14	2.000	1363.38*	1365.79*	0.96	2
4		3.02	12 c	80.0	1364.39	1365.99	2.000	1366.75*	1367.32*	0.23	3

Project File: RC 4th SWS Line 2.stm

IDF File: SedgwickCoKS.IDF

Total No. Lines: 4

Run Date: 02-09-2006

NOTES: c = circular; e = elliptical; b = box; Return period = 100 Yrs.; * Indicates surcharge condition.

Hydraflow Storm Sewer Tabulation

Station Line	To Line	Len (ft)	Drng Area (ac)		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
			Incr	Total		Inlet (min)	Syst (min)	Size (in)	Slope (%)					Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)			
1	End	128.0	0.00	0.00	0.00	0.00	0.00	0.0	0.9	0.0	21.39	23.74	7.43	24	1.10	1360.00	1358.59	1361.64	1360.42	1364.80	1361.10	
2	1	42.0	0.00	0.00	0.00	0.00	0.0	0.8	0.0	0.0	12.20	6.68	6.90	18	0.40	1360.67	1360.50	1362.86	1362.30	1364.80	1364.80	
3	2	161.0	0.00	0.00	0.00	0.00	0.0	0.3	0.0	0.0	7.89	9.13	6.43	15	2.00	1364.14	1360.92	1365.79	1363.38	1369.29	1364.80	
4	3	80.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0	3.02	5.04	3.85	12	2.00	1365.99	1364.39	1367.32	1366.75	1370.99	1369.29	
Project File: RC 4th SWS Line 2.stm											IDF File: SedgwickCoKS.IDF		Total number of lines: 4		Run Date: 02-09-2006							

NOTES: Intensity = 62.28 / (Inlet time + 10.10) ^ 0.66; Return period = 100 Yrs.; Initial tailwater elevation = 1360.42 (ft)

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No			
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)	depth (ft)		spread (ft)	Dep (in)	
1		9.19*	0.00	9.19	0.00	Curb	6.0	17.16	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.46	10.51	0.48	10.51	0.48	10.51	0.48	10.51	2.00	Off
2		4.31*	0.00	4.31	0.00	Curb	6.0	6.14	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.47	11.05	0.50	11.05	0.50	11.05	0.50	11.05	2.00	1
3		4.87*	0.00	4.87	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.30	5.33	0.0	2
4		3.02*	0.00	3.02	0.00	Genr	0.0	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.30	5.33	0.0	3

Project File: RC 4th SWS Line 2.stm

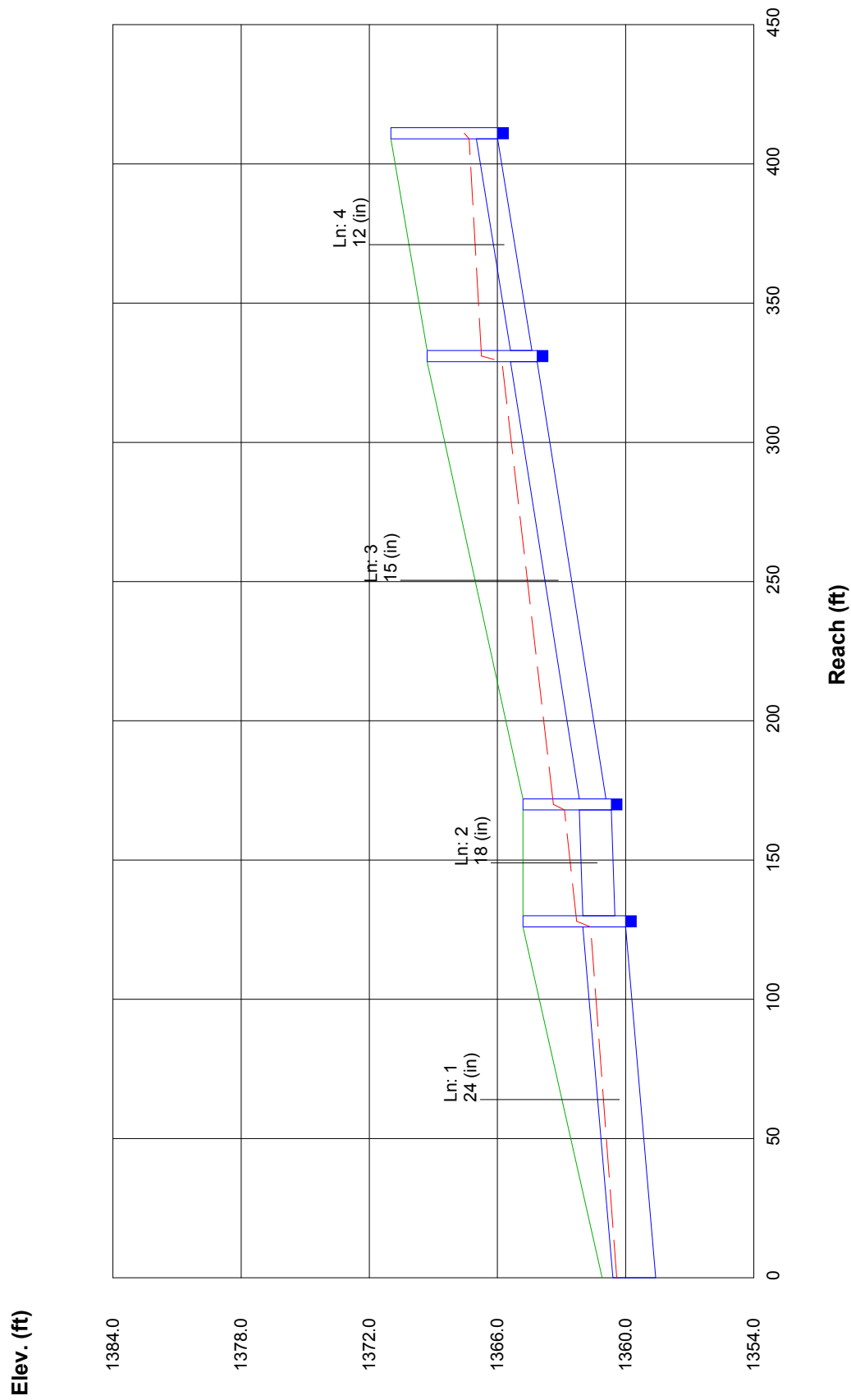
I-D-F File: SedgwickCoKS.IDF

Total number of lines: 4

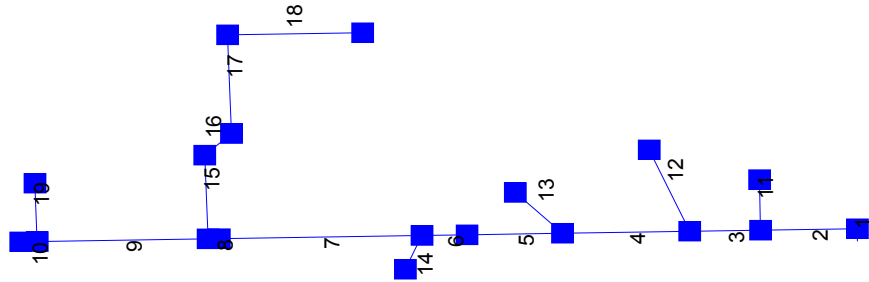
Run Date: 02-09-2006

NOTES: inlet N-Values = 0.016 ; intensity = 62.28 / (inlet time + 10.10) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added

Storm Sewer Profile



Hydraflow Plan View



Hydraflow Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data							Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Dmg area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	
1	End	21.0	-1.0	Genr	0.00	0.00	0.00	0.0	1360.14	0.14	1360.17	34 53	Ellip	0.013	1.50	1364.60
2	1	146.0	-90.0	Genr	0.00	0.00	0.00	0.0	1360.27	0.12	1360.44	34 53	Ellip	0.013	1.50	1364.90
3	2	107.0	0.0	Genr	0.00	0.00	0.00	0.0	1360.54	0.12	1360.67	34 53	Ellip	0.013	1.25	1365.30
4	3	192.0	0.0	Genr	0.00	0.00	0.00	0.0	1360.77	0.20	1361.15	36	Cir	0.013	1.10	1366.30
5	4	144.0	0.0	Genr	4.21	0.00	0.00	0.0	1361.25	0.50	1361.97	36	Cir	0.013	0.50	1369.11
6	5	68.0	0.0	Genr	6.54	0.00	0.00	0.0	1362.47	0.50	1362.81	30	Cir	0.013	1.25	1369.11
7	6	306.0	0.0	Genr	0.00	0.00	0.00	0.0	1362.91	0.50	1364.44	30	Cir	0.013	0.50	1370.50
8	7	17.0	0.0	Genr	1.78	0.00	0.00	0.0	1364.54	1.41	1364.78	30	Cir	0.013	1.50	1370.50
9	8	258.0	0.0	Genr	0.00	0.00	0.00	0.0	1364.78	1.40	1368.39	30	Cir	0.013	1.50	1375.80
10	9	25.0	0.0	Genr	12.00	0.00	0.00	0.0	1368.40	1.40	1368.75	30	Cir	0.013	1.00	1375.80
11	2	85.0	90.0	Genr	4.63	0.00	0.00	0.0	1362.12	1.00	1362.97	12	Cir	0.013	1.00	0.00
12	3	150.0	67.0	Genr	8.32	0.00	0.00	0.0	1362.50	1.00	1364.00	12	Cir	0.013	1.00	0.00
13	4	99.0	45.0	Genr	5.15	0.00	0.00	0.0	1363.15	1.00	1364.14	12	Cir	0.013	1.00	0.00
14	6	62.0	-65.0	Genr	8.09	0.00	0.00	0.0	1363.31	0.50	1363.62	24	Cir	0.013	1.00	1367.47
15	8	141.0	89.0	Curb	2.49	0.00	0.00	0.0	1364.88	1.00	1366.29	30	Cir	0.013	1.10	1374.14
16	15	54.0	50.0	Curb	1.49	0.00	0.00	0.0	1366.79	0.80	1367.22	24	Cir	0.013	1.10	1373.94
17	16	166.0	-50.0	Genr	1.81	0.00	0.00	0.0	1367.72	0.80	1369.05	18	Cir	0.013	1.50	1376.33
18	17	204.0	91.0	Genr	2.39	0.00	0.00	0.0	1369.30	0.40	1370.12	15	Cir	0.013	1.00	1373.93
19	9	98.0	89.0	Genr	1.26	0.00	0.00	0.0	1372.39	0.40	1372.78	12	Cir	0.013	1.00	1376.91

Hydraflow Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	Dns line No.
1		60.16	34 x 53 e	21.0	1360.14	1360.17	0.143	1362.41	1362.44	1.20	End
2		60.16	34 x 53 e	146.0	1360.27	1360.44	0.116	1363.64*	1364.15*	0.87	1
3		55.53	34 x 53 e	107.0	1360.54	1360.67	0.121	1365.02*	1365.34*	0.62	2
4		47.21	36 c	192.0	1360.77	1361.15	0.198	1365.96*	1366.93*	0.76	3
5		42.06	36 c	144.0	1361.25	1361.97	0.500	1367.69*	1368.26*	0.28	4
6		37.85	30 c	68.0	1362.47	1362.81	0.500	1368.54*	1369.12*	1.16	5
7		23.22	30 c	306.0	1362.91	1364.44	0.500	1370.27*	1371.25*	0.17	6
8		23.22	30 c	17.0	1364.54	1364.78	1.412	1371.43*	1371.48*	0.52	7
9		13.26	30 c	258.0	1364.78	1368.39	1.399	1372.00*	1372.27*	0.17	8
10		12.00	30 c	25.0	1368.40	1368.75	1.400	1372.44*	1372.46*	0.09	9
11		4.63	12 c	85.0	1362.12	1362.97	1.000	1365.02*	1366.46*	0.54	2
12		8.32	12 c	150.0	1362.50	1364.00	1.000	1365.96*	1374.15*	1.74	3
13		5.15	12 c	99.0	1363.15	1364.14	1.000	1367.69*	1369.76*	0.67	4
14		8.09	24 c	62.0	1363.31	1363.62	0.500	1370.27*	1370.35*	0.10	6
15		8.18	30 c	141.0	1364.88	1366.29	1.000	1372.00*	1372.06*	0.05	8
16		5.69	24 c	54.0	1366.79	1367.22	0.796	1372.11*	1372.14*	0.06	15
17		4.20	18 c	166.0	1367.72	1369.05	0.801	1372.20*	1372.46*	0.13	16
18		2.39	15 c	204.0	1369.30	1370.12	0.402	1372.59*	1372.87*	0.06	17
19		1.26	12 c	98.0	1372.39	1372.78	0.398	1372.93	1373.32	0.13	9

Project File: RC 4th SWS Line 3.stm

IDF File: SalineCoKS.IDF

Total No. Lines: 19

Run Date: 02-06-2006

NOTES: c = circular; e = elliptical; b = box; Return period = 10 Yrs.; * Indicates surcharge condition.

Hydraflow Storm Sewer Tabulation

Station Line	Len (ft)	Drng Area (ac)		Rnoff coeff (C)	Area x C		Tc (min)		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev (ft)		HGL Elev (ft)		Grnd / Rim Elev (ft)		Line ID			
		Incr	Total		Inlet	Syst	Size (in)	Slope (%)					Up	Dn	Up	Dn	Up	Dn						
1	End	21.0	0.00	0.00	0.00	0.00	0.0	7.7	0.0	60.16	43.52	6.99	58 e	0.14	1360.17	1360.14	1362.44	1362.41	1364.60	0.00				
2	1	146.0	0.00	0.00	0.00	0.00	0.0	7.3	0.0	60.16	39.26	6.12	58 e	0.12	1360.44	1360.27	1364.15	1363.64	1364.90	1364.60				
3	2	107.0	0.00	0.00	0.00	0.00	0.0	7.0	0.0	55.53	40.12	5.65	58 e	0.12	1360.67	1360.54	1365.34	1365.02	1365.30	1364.90				
4	3	192.0	0.00	0.00	0.00	0.00	0.0	6.5	0.0	47.21	29.67	6.68	36	0.20	1361.15	1360.77	1366.93	1365.96	1366.30	1365.30				
5	4	144.0	0.00	0.00	0.00	0.00	0.0	6.1	0.0	42.06	47.16	5.95	36	0.50	1361.97	1361.25	1368.26	1367.69	1369.11	1366.30				
6	5	68.0	0.00	0.00	0.00	0.00	0.0	6.0	0.0	37.85	29.00	7.71	30	0.50	1362.81	1362.47	1369.12	1368.54	1369.11	1369.11				
7	6	306.0	0.00	0.00	0.00	0.00	0.0	4.9	0.0	23.22	29.00	4.73	30	0.50	1364.44	1362.91	1371.25	1370.27	1370.50	1369.11				
8	7	17.0	0.00	0.00	0.00	0.00	0.0	4.8	0.0	23.22	48.73	4.73	30	1.41	1364.78	1364.54	1371.48	1371.43	1370.50	1370.50				
9	8	258.0	0.00	0.00	0.00	0.00	0.0	1.0	0.0	13.26	48.51	2.70	30	1.40	1368.39	1364.78	1372.27	1372.00	1375.80	1370.50				
10	9	25.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	12.00	48.52	2.44	30	1.40	1368.75	1368.40	1372.46	1372.44	1375.80	1375.80				
11	2	85.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.32	3.56	5.90	12	1.00	1362.97	1362.12	1366.46	1365.02	0.00	1364.90				
12	3	150.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.32	3.56	10.59	12	1.00	1364.00	1362.50	1374.15	1365.96	0.00	1365.30				
13	4	99.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.15	3.56	6.56	12	1.00	1364.14	1363.15	1369.76	1367.69	0.00	1366.30				
14	6	62.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.09	15.99	2.58	24	0.50	1363.62	1363.31	1370.35	1370.27	1367.47	1369.11				
15	8	141.0	0.00	0.00	0.00	0.00	0.0	3.4	0.0	8.18	41.01	1.67	30	1.00	1366.29	1364.88	1372.06	1372.00	1374.14	1370.50				
16	15	54.0	0.00	0.00	0.00	0.00	0.0	2.9	0.0	5.69	20.18	1.81	24	0.80	1367.22	1366.79	1372.14	1372.11	1373.94	1374.14				
17	16	166.0	0.00	0.00	0.00	0.00	0.0	1.7	0.0	4.20	9.40	2.38	18	0.80	1369.05	1367.72	1372.46	1372.20	1376.33	1373.94				
18	17	204.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.39	4.09	1.95	15	0.40	1370.12	1369.30	1372.87	1372.59	1373.93	1376.33				
19	9	98.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.26	2.25	2.94	12	0.40	1372.78	1372.39	1373.32	1372.93	1376.91	1375.80				
Project File: RC 4th SWS Line 3.stm													IDF File: SalineCoKS.IDF				Total number of lines: 19				Run Date: 02-06-2006			

NOTES: Intensity = 55.18 / (Inlet time + 11.10) ^ 0.72; Return period = 10 Yrs. ; Initial tailwater elevation = 1362.41 (ft)

Hydraflow Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No		
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	depth (ft)	spread (ft)	depth (ft)	spread (ft)	depth (ft)		spread (ft)	Dep (in)
1		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	Off
2		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	1
3		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	2
4		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	3
5		4.21*	0.00	4.21	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	4
6		6.54*	0.00	6.54	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	5
7		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	6
8		1.78*	0.00	1.78	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	7
9		0.00	0.00	0.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	8
10		12.00*	0.00	12.00	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	9
11		4.63*	0.00	4.63	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	2
12		8.32*	0.00	8.32	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	3
13		5.15*	0.00	5.15	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	4
14		8.09*	0.00	8.09	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	6
15		2.49*	0.00	2.49	0.00	Curb	6.0	5.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.39	8.31	0.42	8.31	0.42	8.31	2.00	8
16		1.49*	0.00	1.49	0.00	Curb	6.0	5.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.32	5.89	0.34	5.89	0.34	5.89	2.00	15
17		1.81*	0.00	1.81	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	16
18		2.39*	0.00	2.39	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	17
19		1.26*	0.00	1.26	0.00	Genr	0.0	0.00	0.00	0.00	0.00	0.00	2.00	0.100	0.030	0.000	0.30	5.33	0.30	5.33	0.30	5.33	0.0	9

Project File: RC 4th SWS Line 3.stm

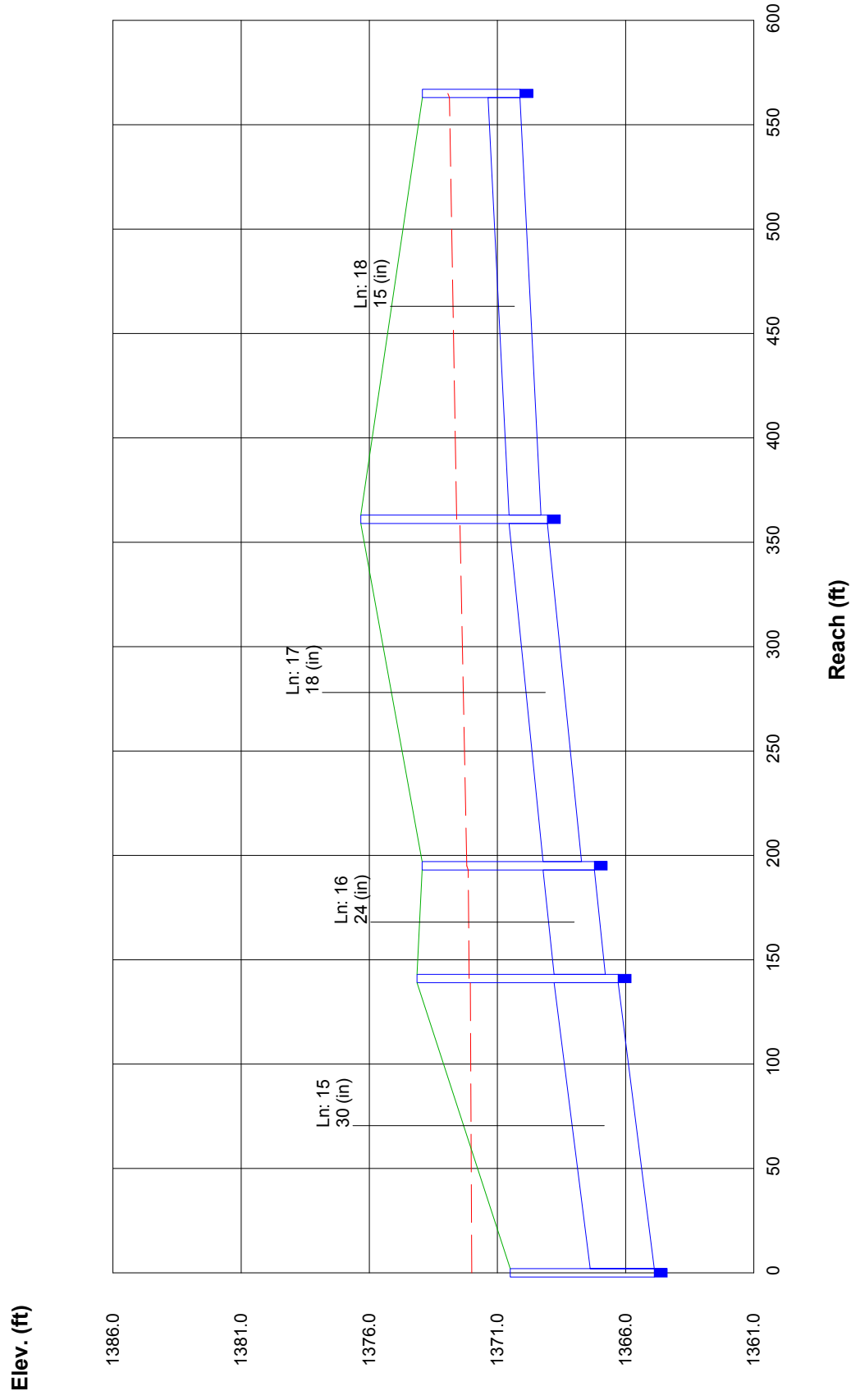
I-D-F File: SalineCokS.IDF

Total number of lines: 19

Run Date: 02-06-2006

NOTES: inlet N-Values = 0.016 ; intensity = 55.18 / (inlet time + 11.10) ^ 0.72; Return period = 10 Yrs. ; * Indicates Known Q added

Storm Sewer Profile



Storm Sewer Profile

