

Bound Reports

1720

**STORMWATER CALCULATIONS
MANCHESTER @ KINGS RIDGE
FBA #941216.060**

APPROVED
MAY 11 1998
4-069-0326 AM 8
SER RMD

19411-7

**FARNER, BARLEY & ASSOCIATES, INC.
350 N. Sinclair Avenue
Tavares, FL 32778**

By: 
Duane K. Booth, P.E.

Date: MAY 11 1998

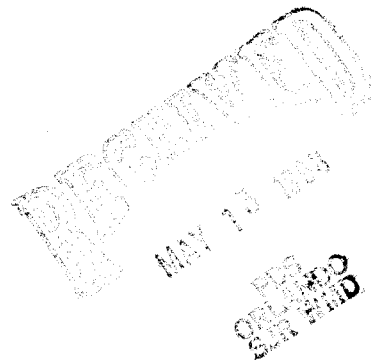
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EXHIBITS

Developed Drainage Basin Map



PROJECT DESIGN SUMMARY

Manchester at Kings Ridge is a 40.07 acre project within Kings Ridge P.U.D. consisting of 181 lots. This project lies adjacent to the previously permitted 430 acres - Kings Ridge Phase IV Master Stormwater Permit, Permit No. 4-069-0326M2-ERP. This permit is sought to modify the master ERP permit, more specifically, modify drainage basins 5-A, 1-L, 1-G and add basins 6-A and 6-B.

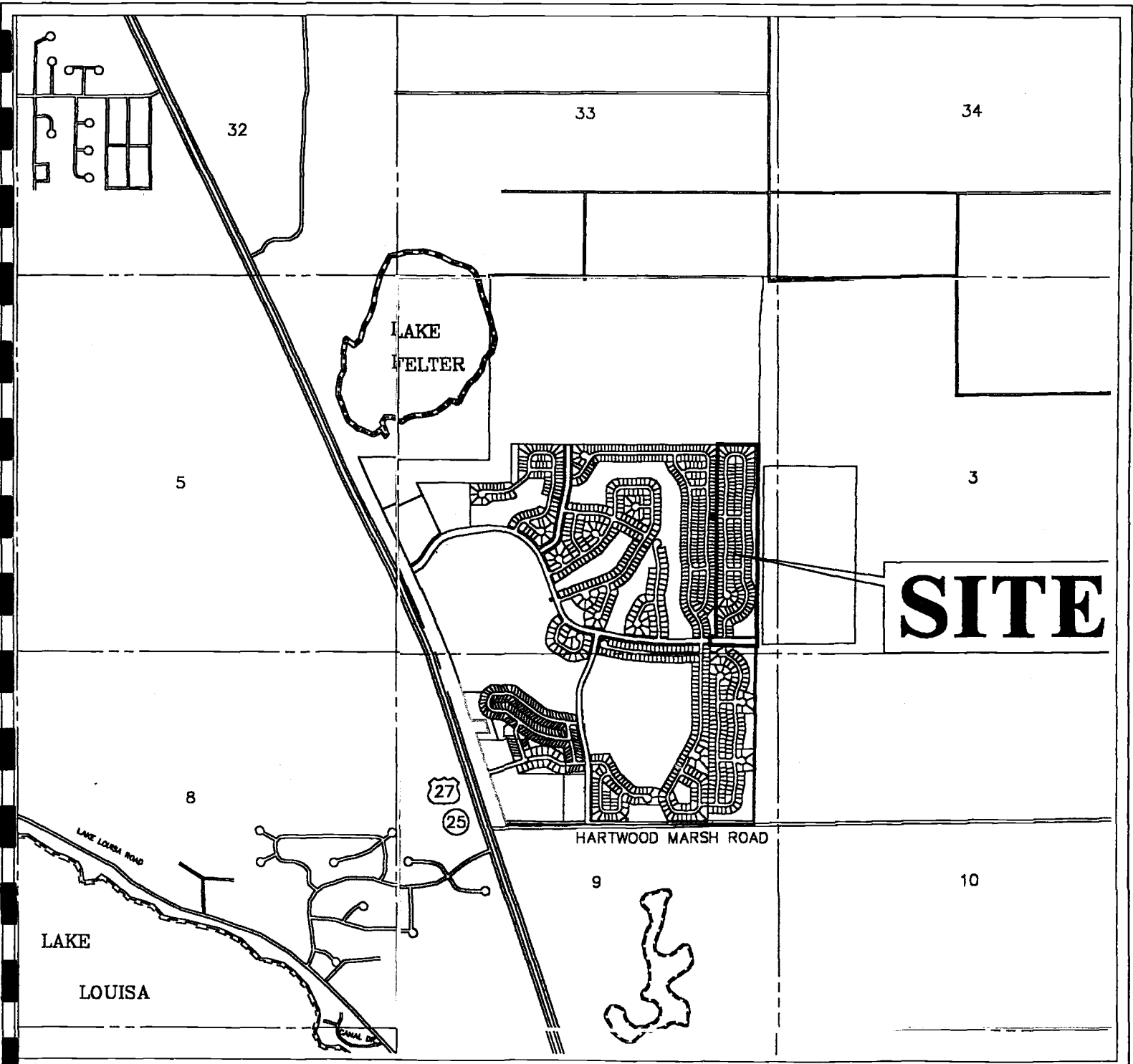
The stormwater calculations meet or exceed the requirements of St. Johns River Water Management District, the City of Clermont and Florida Department of Transportation.

Stormwater design results:

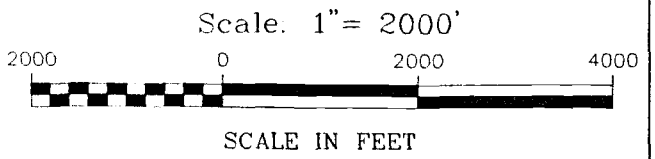
Basin/Pond Name	Top of Pond Elevation	Peak Stage		Treatment Recovery Time (hr)
		25 yr/96 hr	100 yr/24 hr	
5-A	183	178.18	177.86	0.43 hrs
6-A	192	187.83	187.29	1.33 hrs
6-B	222	221.02	220.57	0.64 hrs

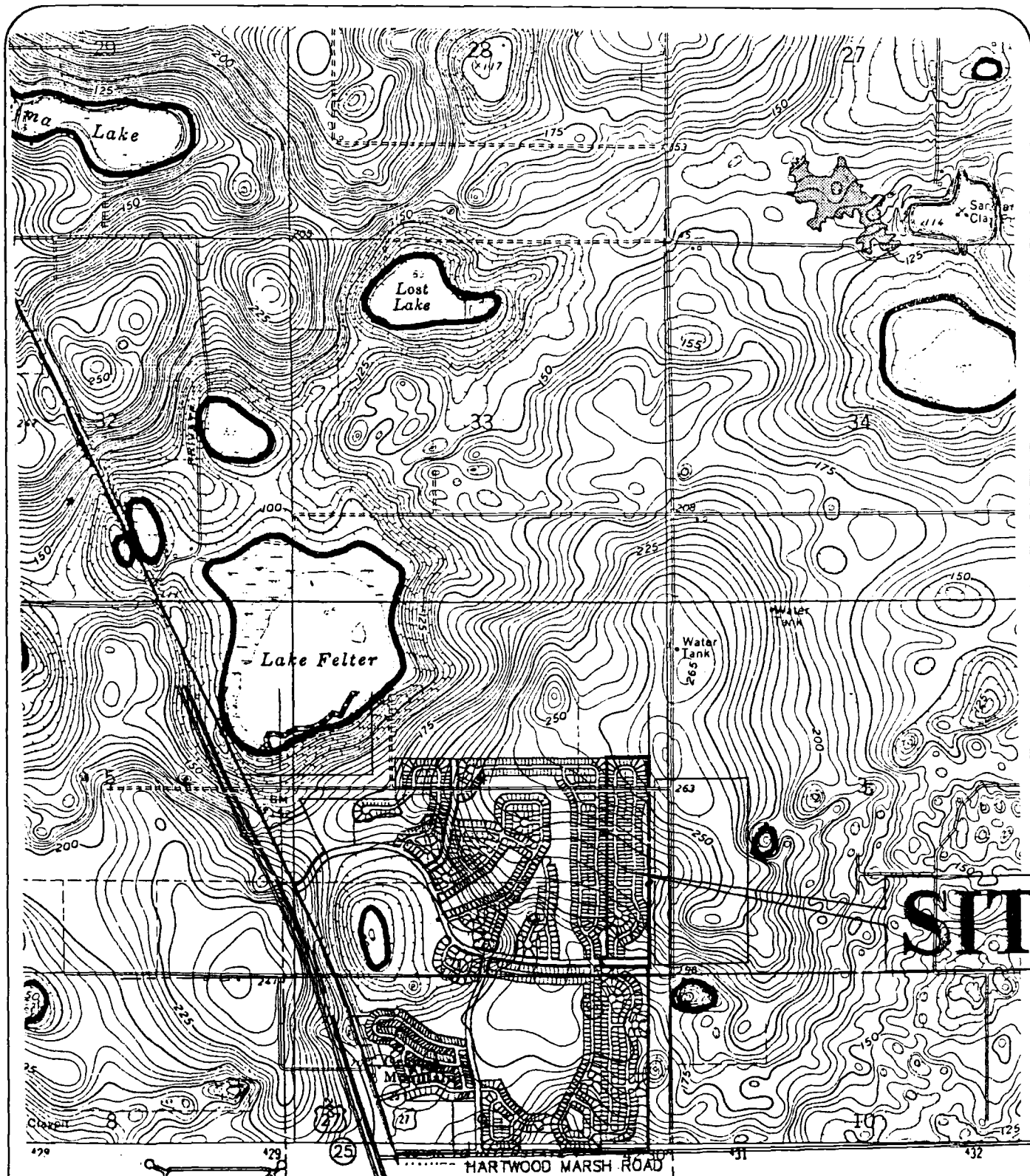
Basin 1-L: received less runoff (rate and volume) than previously permitted (see calculations).

Basin 1-G: does not exceed previously permitted area and curve number (see calculations).



VICINITY MAP





SITE

Clermont East, Florida Quadrangle



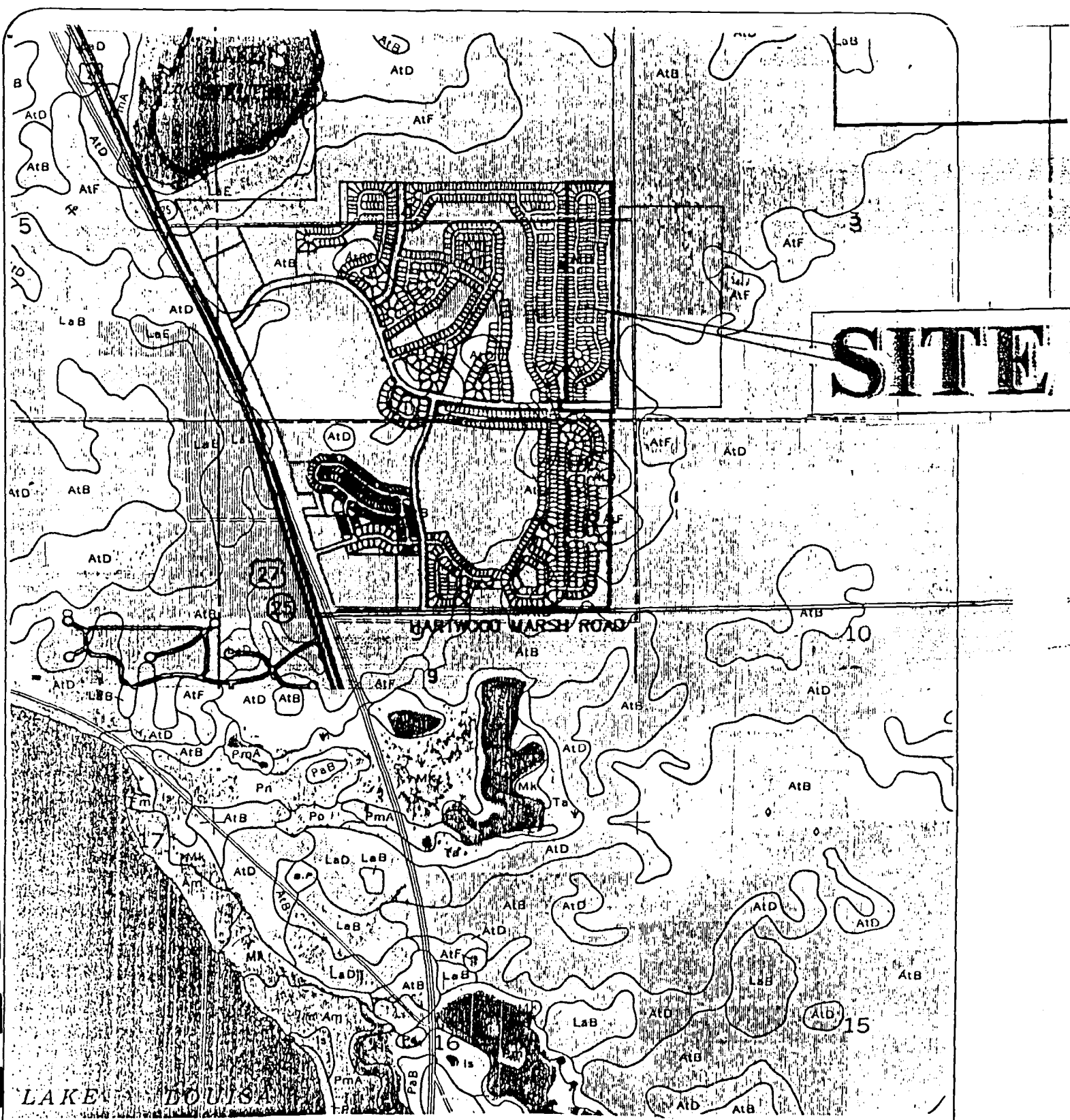
**FARNER
BARLEY**
AND ASSOCIATES, INC.

- ▲ ENGINEERS
- ▲ SURVEYORS
- ▲ PLANNERS

**USGS QUAD
MAP**

350 North Sinclair Avenue O Tavares, Florida 32778 O (904) 343-8481

SCALE 1" = 2000'



LAKE COUNTY SOIL SURVEY



**FARNER
BARLEY**
AND ASSOCIATES, INC.

- ▲ ENGINEERS
- ▲ SURVEYORS
- ▲ PLANNERS

350 North Sinclair Avenue O Tavares, Florida 32778 O (904) 343-8481

**SCS SOILS
MAP**

SCALE 1" = 1667'

DESIGN CRITERIA

DESIGN STORMS

SJRWMD: 25 year - 96 hour storm event, 11.2 inches rainfall, closed basin - no outfall

City of Clermont: 50 year - 24 hour storm event, 9.2 inches rainfall

TREATMENT VOLUME: based on on-line retention

V = 1.25 inches x impervious area + 0.5 inches x drainage basin or 1" of runoff which ever is greater.

ON SITE SOILS: AtB, AtD. Astatula find sand

Hydrologic Group "A"

PRE-DEVELOPED SITE CONDITIONS:

Since the site is land locked, the existing site condition was not modeled as the design for developed condition retains and treats 100% of the stormwater runoff with no discharge.

DEVELOPED SITE CONDITIONS:

Basin 5-A:

Area = 7.64 acres

CN = 42.0% 1/5 Ac. lots x 65 = 27.3

58.0% pervious x 39 = 22.6

CN = 49.9

Retention Pond 5-A Stage/Area

<u>Stage</u>	<u>Area (Ac.)</u>
177	.530
178	.639
179	.750
180	.865
181	.982
182	1.102
183	1.226

Basin 6-A:

Area = 14.08 acres
CN = 41.8% 1/8 Ac. lots x 98 = 41.3
58.2% pervious x 39 = 22.7
CN = 64.0

Retention Pond 6-A Stage/Area

<u>Stage</u>	<u>Area (Ac.)</u>
184	0.69
185	0.76
186	0.83
187	0.91
188	0.99
189	1.07
190	1.15
191	1.24
192	1.32

Basin 6-B:

Area = 7.05 acres
CN = 25.3% 1/8 Ac. lots x 98 = 24.7
74.7% pervious x 39 = 29.3
CN = 54.0

Retention Pond 6-A Stage/Area

<u>Stage</u>	<u>Area (Ac.)</u>
218	0.15
219	0.29
220	0.44
221	0.60
222	0.76

**MANCHESTER @ KINGS RIDGE
DEVELOPED SITE CONDITION
BASIN 1-G**

Project Area = 4.14 Ac. (Developed in Manchester)
 Impervious Area = 1.53 Ac. (36.96%)
 CN = 36.96% x 98 (Impervious)
 = 63.04% x 39 (Grass Good Condition 'A' Soils)
 Weighted CN = 61
 Total Basin = 33.08 Ac.
 CN = 45.76% x 98 (Impervious)
 = 54.24% x 39 (Grass Good Condition 'A' Soils)
 Weighted CN = 66

BASIN SUMMARY

BASIN	AREA (Ac.)	CN (Permitted)	CN (Actual) including this page	BASIN STATUS
1-G	33.08	75	66	67% Complete

**POST DEVELOPMENT
WATERSHED DATA TABLE
BASIN NO. 1**

BASIN NO.	DRAINAGE AREA (AC.)	LAND USES	WEIGHTED C.N.
1-A	74.16	COMMERCIAL, RECREATION/ OPEN SPACE, RETENTION	86
1-B	22.13	RESIDENTIAL, RECREATION/ OPEN SPACE	62
1-C	11.79	RESIDENTIAL, RECREATION/ OPEN SPACE, RETENTION	67
1-D	4.97	RESIDENTIAL, RECREATION/ OPEN SPACE, RETENTION	69
1-E	6.73	RESIDENTIAL, RETENTION	80
1-F	19.82	RESIDENTIAL, RECREATION/ OPEN SPACE	66
1-G	33.08	RESIDENTIAL, RECREATION/ OPEN SPACE, RETENTION	75
1-H	23.98	RESIDENTIAL, RECREATION/ OPEN SPACE	65
1-I	23.50	RESIDENTIAL, RECREATION/ OPEN SPACE	64
1-J	15.29	RESIDENTIAL, RETENTION	79
1-K	22.62	RESIDENTIAL, RETENTION, RECREATION/ OPEN SPACE	71

BASIN 1-L

BASIN 1-L

Basin 1-L was modified to receive runoff from previous basin 1-M3 not to exceed the rate of discharge or volume as previously calculated from Pond 1-M3. Basin 1-M3 has been divided by Hancock Road running North - South and for that portion west of Hancock Road, it has been re-designated as basin 6-A and 6-B and 7.7 acres added to basin 1-L2.

Previous design Basin 1-M3 discharge to Basin 1-L.

Total Runoff from 1-M3	=	1,805,373 CF
Overflow Elevation in Pond 1-M3	=	218
Therefore volume stored in 1-M3	=	1,097,712 CF
Volume to Basin 1-L	=	1,805,373 CF - 1,097,712 CF = 707,661 CF
Discharge Rate to Basin 1-L	=	22.95 CFS

Basin 1-L2		
Volume Runoff	=	188,711 CF < 707,661 CF allowed
Runoff Rate	=	13.16 CFS < 22.95 CFS allowed (see Basin Summary next page for rate and volume calculation)

Therefore design okay.

25YR 96HR STORM EVENT OF BASIN 1-L

***** Basin Summary - MANCHE1 *****

	1-G	1-L2	999
Basin Name:	1-G	1-L2	999
Group Name:	BASE	BASE	BASE
Node Name:	1-G	1-L2	999
Hydrograph Type:	SB	SB	SB
Spec Time Inc (sec):	60.00	60.00	60.00
Comp Time Inc (sec):	60.00	60.00	60.00
Rainfall File:	SJRWMD96	SJRWMD96	SJRWMD96
Rainfall Amount (in):	11.20	11.20	11.20
Storm Duration (hr):	96.00	96.00	96.00
Status:	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	27.00	15.00	15.00
Lag Time (hr):	0.00	0.00	0.00
Area (acres):	33.08	7.70	1.00
Curve Number:	75.00	66.00	1.00
DCIA (%):	0.00	0.00	0.00
Time Max (hrs):	60.00	59.00	0.00
Flow Max (cfs):	59.65	13.16	0.00
Runoff Volume (in):	8.00	6.75	0.00
Runoff Volume (cf):	960859	188711	0

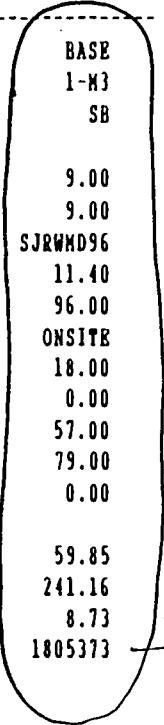
Revised Basin 1-L2

previously approved calcs

KINGS RIDGE BASIN NO. 1 POST-DEVELOPED

***** Basin Summary - KINGS *****

Group Name:	BASE	BASE	BASE	BASE	BASE
Node Name:	1-K	1-L	1-M	1-M2	1-M3
Hydrograph Type:	SB	SB	SB	SB	SB
Spec Time Inc (sec):	8.40	11.10	5.00	6.60	9.00
Comp Time Inc (sec):	8.40	11.10	5.00	6.60	9.00
Rainfall File:	SJRWMD96	SJRWMD96	SJRWMD96	SJRWMD96	SJRWMD96
Rainfall Amount (in):	11.40	11.40	11.40	11.40	11.40
Storm Duration (hr):	96.00	96.00	96.00	96.00	96.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	16.80	22.20	10.00	13.20	18.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	22.62	41.12	2.67	9.59	57.00
Curve Number:	71.00	65.00	69.00	78.00	79.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	59.92	59.94	59.92	59.84	59.85
Flow Max (cfs):	86.91	123.32	12.25	43.96	241.16
Runoff Volume (in):	7.63	6.78	7.35	8.59	8.73
Runoff Volume (cf):	626621	1011554	71248	299177	1805373



total runoff from 1-m3 to pond.

Basin Name:	1-N	1-O	1-P	1-Q	1-DOT
Group Name:	BASE	BASE	BASE	BASE	BASE
Node Name:	1-N	1-O	1-P	1-Q	1-A
Hydrograph Type:	SB	SB	SB	SB	SB
Spec Time Inc (sec):	5.40	6.30	8.70	8.10	7.50
Comp Time Inc (sec):	5.40	6.30	8.70	8.10	7.50
Rainfall File:	SJRWMD96	SJRWMD96	SJRWMD96	SJRWMD96	SJRWMD96
Rainfall Amount (in):	11.40	11.40	11.40	11.40	11.40
Storm Duration (hr):	96.00	96.00	96.00	96.00	96.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE	OPPSITE
Time of Conc. (min):	10.80	12.60	17.40	16.20	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00	0.00
Area (acres):	21.05	14.73	17.83	23.87	14.22
Curve Number:	80.00	68.00	71.00	66.00	55.00
DCIA (%):	0.00	0.00	0.00	0.00	0.00
Time Max (hrs):	59.85	59.85	59.88	59.94	59.88
Flow Max (cfs):	104.49	59.78	68.26	84.49	42.57
Runoff Volume (in):	8.86	7.21	7.64	6.93	5.31
Runoff Volume (cf):	677273	385623	494194	600240	274205

Basin Name:	1-OPP
Group Name:	BASE
Node Name:	1-A

FARNER, BARLEY & ASSOCIATES, INC.
Engineers & Land Surveyors
350 North Sinclair Avenue
Tavares, Florida 32778
(352) 343-8481

JOB _____
SHEET _____
CALCU _____
CHECK _____
SCALE _____

RIDGE
OF _____
WL DATE _____
DATE _____

BASIN No. 1-M3

RETENTION POND # 1-M3

<u>STAGE (FT.)</u>	<u>AREA (Ac.)</u>	<u>STORAGE (Ac.-FT.)</u>
212.00	3.77	0
213.00	3.91	3.84
214.00	4.05	7.82
215.00	4.19	11.84
216.00	4.34	16.21
217.00	4.49	20.65
218.00	4.64	25.20 ← overflow elevation
219.00	4.79	29.92
220.00	4.95	34.78

previously approved calcs

KINGS RIDGE BASIN NO. 1 POST-DEVELOPED

Prev. Approved Calcs

***** Node Maximum Conditions - KINGS *****

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
1-A	BASE	125.00	139.20	140.00	0.0010	1169426.75	60.03	791.15	0.00	0.00
1-B	BASE	60.05	146.88	147.00	0.0006	18090.89	60.00	208.73	60.05	205.53
1-BA	BASE	60.27	150.95	151.00	0.0010	435.60	60.27	147.16	60.27	147.16
1-C	BASE	60.27	157.72	159.00	0.0007	57280.51	60.04	165.17	60.27	147.16
1-D	BASE	125.00	162.90	165.00	0.0013	42150.75	60.04	39.78	0.00	0.00
1-E	BASE	60.10	181.44	184.00	0.0005	30221.25	60.00	29.37	60.10	23.18
1-F	BASE	60.08	208.41	210.00	0.0009	5896.91	60.07	133.80	60.08	133.74
1-G	BASE	60.15	228.52	229.00	0.0009	68502.94	60.00	98.46	60.15	85.06
1-H	BASE	60.04	151.59	152.50	0.0012	2515.33	60.00	76.16	59.93	72.84
1-I	BASE	60.00	165.90	170.00	0.0004	3393.97	60.00	67.94	60.00	67.82
1-J	BASE	60.24	149.81	150.00	0.0010	55435.63	60.00	206.65	60.15	130.12
1-K	BASE	60.63	146.43	147.00	0.0009	130958.57	60.30	260.67	60.63	237.33
1-L	BASE	60.27	183.73	184.00	0.0010	54360.22	60.00	165.04	60.26	109.38
1-M	BASE	59.94	185.06	190.00	0.0010	6201.81	59.90	49.51	59.94	49.50
1-M2	BASE	59.90	190.62	193.00	0.0010	12778.08	59.75	39.30	59.90	38.98
1-M3	BASE	61.64	218.43	220.00	0.0006	204960.20	60.00	220.56	61.64	22.95
1-N	BASE	60.96	179.34	180.00	0.0012	166986.24	59.82	197.79	60.25	146.82
1-O	BASE	61.01	179.11	180.00	0.0011	67463.21	60.19	176.67	61.01	105.86
1-OA	BASE	61.06	174.59	178.00	0.0030	20876.21	61.01	105.86	61.06	105.85
1-P	BASE	60.02	167.17	170.00	0.0007	29779.16	60.00	61.58	60.02	59.80
1-Q	BASE	125.00	139.20	140.00	0.0019	30310.97	60.46	295.77	60.47	295.31
10A	BASE	60.03	166.67	173.00	0.0003	5180.60	60.02	59.80	60.03	59.76
10B	BASE	60.04	157.69	164.00	0.0003	10991.34	60.03	59.76	60.04	59.60
10C	BASE	60.06	148.58	155.00	0.0002	10761.32	60.04	59.60	60.06	59.50
11A	BASE	60.63	145.34	152.00	0.0007	6686.28	60.63	237.33	60.63	237.32
14A	BASE	61.06	173.86	181.00	0.0015	5072.10	61.06	105.85	61.06	105.85
14B	BASE	61.07	163.68	170.00	0.0012	8433.10	61.06	105.85	61.07	105.85
16A	BASE	61.00	179.17	184.00	0.0010	7240.93	60.25	146.82	60.25	146.62
18A	BASE	59.94	184.62	193.00	-0.0010	2962.53	59.94	49.50	59.94	49.49
20A	BASE	61.65	214.03	216.50	0.0129	11.48	61.64	22.95	61.64	22.97
20B	BASE	61.65	213.67	216.00	0.0060	713.23	61.64	22.97	61.65	22.95
20C	BASE	61.68	213.36	215.00	0.0005	11385.85	61.65	22.95	61.68	22.94
2A	BASE	60.52	150.24	156.00	0.0006	9302.00	60.27	147.16	60.28	147.13
4A	BASE	0.00	163.00	170.00	-0.0000	0.00	0.00	0.00	59.81	0.00
8A	BASE	60.16	228.07	234.00	0.0004	6821.74	60.15	85.06	60.16	85.02
8B	BASE	60.18	222.70	229.00	0.0002	11561.54	60.16	85.02	60.18	84.97

← discharge rate to basin 1-L

**ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
25 YEAR - 96 HOUR STORM EVENT
HYDROLOGY & ROUTING ANALYSIS**

MANCHESTER AT KINGS RIDGE

***** Input Report: Nodes *****

Name: 5A Base Flow(cfs): 0 Init Stage(ft): 177
Group: BASE Length(ft): 0 Warn Stage(ft): 183

Comment:

Stage(ft)	Area(ac)
177	0.53
178	0.639
179	0.75
180	0.865
181	0.982
182	1.102
183	1.226

Name: 6A Base Flow(cfs): 0 Init Stage(ft): 184
Group: BASE Length(ft): 0 Warn Stage(ft): 192

Comment:

Stage(ft)	Area(ac)
184	0.69
185	0.76
186	0.83
187	0.91
188	0.99
189	1.07
190	1.15
191	1.24
192	1.32

Name: 6B Base Flow(cfs): 0 Init Stage(ft): 218
Group: BASE Length(ft): 0 Warn Stage(ft): 222

Comment:

Stage(ft)	Area(ac)
218	0.15
219	0.29
220	0.44
221	0.6
222	0.76

Name: 999 Base Flow(cfs): 0 Init Stage(ft): 100
Group: BASE Length(ft): 0 Warn Stage(ft): 999

Comment:

Time(hrs)	Stage(ft)
24	100.5
60	101
96	101.5

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.01) [1]

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MANCHESTER AT KINGS RIDGE

***** Input Report: Simulations *****

C:\ICPR2\MANCHE

Execution: Both

Header: ST. JOHN'S 25YR96HR STORM EVENT

-----HYDRAULICS-----

-----HYDROLOGY-----

Max Delta Z (ft): 1

Delta Z Factor: 0.05

Override Defaults: No

Time Step Optimizer: 10

rop Structure Optimizer: 10

Sim Start Time(hrs): 0

Sim End Time(hrs): 96

Min Calc Time(sec): 60

Max Calc Time(sec): 300

To Hour: PInc(min):

96 60

To Hour: PInc(min):

96 60

-----GROUP SELECTIONS-----

+ BASE [05/11/98]

MANCHESTER AT KINGS RIDGE

***** Input Report: Basins *****

Basin: 5A Node: 5A Status: On Site Type: Santa Barbara
Group: BASE
 Rainfall File: SJRWMD96 Storm Duration(hrs): 96
Rainfall Amount(in): 11.2 Lag Time(hrs): 0
Time Increment(min): 30 Concentration Time(min): 15
 Area(ac): 7.64 DCIA(%): 0
 Curve #: 49.9

Basin: 6A Node: 6A Status: On Site Type: Santa Barbara
Group: BASE
 Rainfall File: SJRWMD96 Storm Duration(hrs): 96
Rainfall Amount(in): 11.2 Lag Time(hrs): 0
Time Increment(min): 60 Concentration Time(min): 15
 Area(ac): 14.08 DCIA(%): 0
 Curve #: 64

Basin: 6B Node: 6B Status: On Site Type: Santa Barbara
Group: BASE
 Rainfall File: SJRWMD96 Storm Duration(hrs): 96
Rainfall Amount(in): 11.2 Lag Time(hrs): 0
Time Increment(min): 30 Concentration Time(min): 15
 Area(ac): 7.05 DCIA(%): 0
 Curve #: 55

Basin: 999 Node: 999 Status: On Site Type: Santa Barbara
Group: BASE
 Rainfall File: SJRWMD96 Storm Duration(hrs): 96
Rainfall Amount(in): 11.2 Lag Time(hrs): 0
Time Increment(min): 30 Concentration Time(min): 15
 Area(ac): 1 DCIA(%): 0
 Curve #: 1

ST. JOHN'S 25YR96HR STORM EVENT

***** Basin Summary - MANCHE *****

Basin Name:	6B	999	6A	5A
Group Name:	BASE	BASE	BASE	BASE
Node Name:	6B	999	6A	5A
Hydrograph Type:	SB	SB	SB	SB
Spec Time Inc (sec):	30.00	30.00	60.00	30.00
Comp Time Inc (sec):	30.00	30.00	60.00	30.00
Rainfall File:	SJRWMD96	SJRWMD96	SJRWMD96	SJRWMD96
Rainfall Amount (in):	11.20	11.20	11.20	11.20
Storm Duration (hr):	96.00	96.00	96.00	96.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	15.00	15.00	15.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	7.05	1.00	14.08	7.64
Curve Number:	55.00	1.00	64.00	49.90
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	60.00	0.00	59.00	60.00
Flow Max (cfs):	14.55	0.00	23.07	13.44
Runoff Volume (in):	5.15	0.00	6.47	4.39
Runoff Volume (cf):	131903	0	330506	121841

Written By Devo Seereeram, Ph.D., P.E.
And Robert D. Casper

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Retention Pond Recovery Analysis - Inflow Hydrograph

I. Job Information

Job Name: WELLINGTON EAST POND 5A
Engineer: DKB
Date: 3-5-98

II. Input Data

Equivalent Pond Length, [L] (ft): 450.00
Equivalent Pond Width, [W] (ft): 250.00

Base Of Aquifer Elevation, [B] (ft above datum): 172.00
Water Table Elevation, [WT] (ft above datum): 172.10
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day) 28.00
Fillable Porosity of Aquifer, [n] (%): 30.00

Is there a ditch parallel to the pond length axis?: No

Is there a ditch parallel to the pond width axis?: No

Include unsaturated vertical infiltration?: Yes
Unsaturated vertical infiltration rate, (ft/day): 14.00
Maximum area for unsaturated infiltration, (sq ft): 23087

Groundwater mound intersects pond bottom?: Yes

PONDS - Version 2.26
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Written By Devo Seereeram, Ph.D., P.E.
And Robert D. Casper

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III. Input Data - Discharge Structures

Weir (or Orifice) #1 is Inactive

Weir (or Orifice) #2 is Inactive

Weir (or Orifice) #3 is Inactive

Input Data - Stage vs Area Data

Stage (ft datum)	Area (ft ²)
177.000	23087.0
178.000	27835.0
179.000	32670.0
180.000	37679.0
181.000	42776.0
182.000	48003.0
183.000	53405.0

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
0.00	0.00000	172.10	0.000000	0.000000	N.A.
1.00	0.00000	172.10	0.000000	0.000000	U
2.00	0.00000	172.10	0.000000	0.000000	U
3.00	0.00000	172.10	0.000000	0.000000	U
4.00	0.00000	172.10	0.000000	0.000000	U
5.00	0.00000	172.10	0.000000	0.000000	U
6.00	0.00000	172.10	0.000000	0.000000	U
7.00	0.00000	172.10	0.000000	0.000000	U
8.00	0.00000	172.10	0.000000	0.000000	U
9.00	0.00000	172.10	0.000000	0.000000	U
10.00	0.00000	172.10	0.000000	0.000000	U
11.00	0.00000	172.10	0.000000	0.000000	U
12.00	0.00000	172.10	0.000000	0.000000	U
13.00	0.00000	172.10	0.000000	0.000000	U
14.00	0.00000	172.10	0.000000	0.000000	U
15.00	0.00000	172.10	0.000000	0.000000	U
16.00	0.00000	172.10	0.000000	0.000000	U
17.00	0.00000	172.10	0.000000	0.000000	U
18.00	0.00000	172.10	0.000000	0.000000	U
19.00	0.00000	172.10	0.000000	0.000000	U
20.00	0.00000	172.10	0.000000	0.000000	U
21.00	0.00000	172.10	0.000000	0.000000	U
22.00	0.00000	172.10	0.000000	0.000000	U
23.00	0.00000	172.10	0.000000	0.000000	U
24.00	0.00000	172.10	0.000000	0.000000	U
25.00	0.00000	172.10	0.000000	0.000000	U
26.00	0.00000	172.10	0.000000	0.000000	U
27.00	0.00000	172.10	0.000000	0.000000	U
28.00	0.00000	172.10	0.000000	0.000000	U
29.00	0.00000	172.10	0.000000	0.000000	U
30.00	0.00000	172.10	0.000000	0.000000	U
31.00	0.00000	172.10	0.000000	0.000000	U
32.00	0.00000	172.10	0.000000	0.000000	U

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
33.00	0.00000	172.10	0.000000	0.000000	U
34.00	0.00000	172.10	0.000000	0.000000	U
35.00	0.00000	172.10	0.000000	0.000000	U
36.00	0.00000	172.10	0.000000	0.000000	U
37.00	0.00000	172.10	0.000000	0.000000	U
38.00	0.00000	172.10	0.000000	0.000000	U
39.00	0.00000	172.10	0.000000	0.000000	U
40.00	0.00000	172.10	0.000000	0.000000	U
41.00	0.00000	172.10	0.000000	0.000000	U
42.00	0.00000	172.10	0.000000	0.000000	U
43.00	0.00000	172.10	0.000000	0.000000	U
44.00	0.00000	172.10	0.000453	0.000000	U
45.00	0.00181	172.10	0.002878	0.000000	U
46.00	0.00789	172.10	0.007905	0.000000	U
47.00	0.01403	172.11	0.015010	0.000000	U
48.00	0.02409	172.12	0.024940	0.000000	U
49.00	0.03755	172.13	0.037918	0.000000	U
50.00	0.05248	172.16	0.053090	0.000000	U
51.00	0.06985	172.19	0.071540	0.000000	U
52.00	0.09398	172.23	0.095195	0.000000	U
53.00	0.12297	172.29	0.125322	0.000000	U
54.00	0.16137	172.36	0.163135	0.000000	U
55.00	0.20683	172.46	0.218843	0.000000	U
56.00	0.30034	172.59	0.306183	0.000000	U
57.00	0.41722	172.78	0.451475	0.000000	U
58.00	0.67112	173.06	0.799598	0.000000	U
59.00	1.43893	173.61	2.397987	0.000000	U
60.00	13.44113	177.55	4.457232	0.000000	U/P
61.00	2.26808	177.91	3.262271	0.000000	U/S
62.00	1.48778	177.98	1.186285	0.000000	S
63.00	1.16225	178.02	0.940152	0.000000	S
64.00	0.94571	178.04	0.805564	0.000000	S
65.00	0.71772	178.05	0.715198	0.000000	S

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VII. Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
66.00	0.72363	178.06	0.652699	0.000000	S
67.00	0.72940	178.07	0.606801	0.000000	S
68.00	0.61115	178.08	0.566827	0.000000	S
69.00	0.49207	178.08	0.531163	0.000000	S
70.00	0.49419	178.08	0.502556	0.000000	S
71.00	0.49627	178.08	0.478183	0.000000	S
72.00	0.37865	178.08	0.452795	0.000000	S
73.00	0.25975	178.06	0.427355	0.000000	S
74.00	0.26037	178.04	0.405962	0.000000	S
75.00	0.26097	178.02	0.388738	0.000000	S
76.00	0.26265	178.01	0.374091	0.000000	S
77.00	0.26434	178.00	0.361335	0.000000	S
78.00	0.26494	177.98	0.350011	0.000000	S
79.00	0.26555	177.97	0.339971	0.000000	S
80.00	0.26505	177.96	0.330901	0.000000	S
81.00	0.26457	177.96	0.322685	0.000000	S
82.00	0.26515	177.95	0.315208	0.000000	S
83.00	0.26572	177.94	0.308369	0.000000	S
84.00	0.26630	177.94	0.302133	0.000000	S
85.00	0.26686	177.93	0.296431	0.000000	S
86.00	0.26742	177.93	0.291200	0.000000	S
87.00	0.26797	177.93	0.286306	0.000000	S
88.00	0.26962	177.93	0.281912	0.000000	S
89.00	0.27128	177.92	0.277874	0.000000	S
90.00	0.27183	177.92	0.273984	0.000000	S
91.00	0.27238	177.92	0.270411	0.000000	S
92.00	0.27181	177.92	0.267038	0.000000	S
93.00	0.27125	177.92	0.263833	0.000000	S
94.00	0.27177	177.93	0.260822	0.000000	S
95.00	0.27230	177.93	0.255760	0.000000	S
96.00	0.13634	177.92	-----	-----	N.A.

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Summary - Cumulative Volumes, Peaks Rates, and Peak Stage

Inflow

Peak Inflow Rate, (cfs):	13.44
Time, (hrs):	60.00
Cumulative Inflow Volume, (ft ³):	121595

Stage

Peak Stage, (ft datum):	178.08
Time, (hrs):	69.00

Overflow Discharge

Peak Discharge Rate, (cfs):	0.00
Time, (hrs):	0.00
Cumulative weir discharge volume, (ft ³):	0

Infiltration Rate

Peak Infiltration Rate, (cfs):	4.4572
Time, (hrs):	60.00
Cumulative Infiltration Volume, (ft ³):	98307

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Retention Pond Recovery Analysis - Inflow Hydrograph

I. Job Information

Job Name: 6A
Engineer: KK
Date: 4-20-98

Input Data

Equivalent Pond Length, [L] (ft): 280.00
Equivalent Pond Width, [W] (ft): 240.00

Base Of Aquifer Elevation, [B] (ft above datum): 176.00
Water Table Elevation, [WT] (ft above datum): 177.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day) 28.00
Fillable Porosity of Aquifer, [n] (%): 30.00

Is there a ditch parallel to the pond length axis?: No

Is there a ditch parallel to the pond width axis?: No

Include unsaturated vertical infiltration?: Yes
Unsaturated vertical infiltration rate, (ft/day): 14.00
Maximum area for unsaturated infiltration, (sq ft): 33087

Groundwater mound intersects pond bottom?: Yes

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I. Input Data - Discharge Structures

Weir (or Orifice) #1 is Inactive

Weir (or Orifice) #2 is Inactive

Weir (or Orifice) #3 is Inactive

II. Input Data - Stage vs Area Data

Stage (ft datum)	Area (ft ²)
184.000	30084.0
185.000	33087.0
186.000	36225.0
187.000	39499.0
188.000	42908.0
189.000	46442.0
190.000	50079.0
191.000	53816.0
192.000	57653.0

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Results - Summary

Lapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
0.00	0.00000	177.00	0.000000	0.000000	N.A.
1.00	0.00000	177.00	0.000000	0.000000	U
2.00	0.00000	177.00	0.000000	0.000000	U
3.00	0.00000	177.00	0.000000	0.000000	U
4.00	0.00000	177.00	0.000000	0.000000	U
5.00	0.00000	177.00	0.000000	0.000000	U
6.00	0.00000	177.00	0.000000	0.000000	U
7.00	0.00000	177.00	0.000000	0.000000	U
8.00	0.00000	177.00	0.000000	0.000000	U
9.00	0.00000	177.00	0.000000	0.000000	U
10.00	0.00000	177.00	0.000000	0.000000	U
11.00	0.00000	177.00	0.000000	0.000000	U
12.00	0.00000	177.00	0.000000	0.000000	U
13.00	0.00000	177.00	0.000000	0.000000	U
14.00	0.00000	177.00	0.000000	0.000000	U
15.00	0.00000	177.00	0.000000	0.000000	U
16.00	0.00000	177.00	0.000000	0.000000	U
17.00	0.00000	177.00	0.000000	0.000000	U
18.00	0.00000	177.00	0.000000	0.000000	U
19.00	0.00000	177.00	0.000000	0.000000	U
20.00	0.00000	177.00	0.000000	0.000000	U
21.00	0.00000	177.00	0.000000	0.000000	U
22.00	0.00000	177.00	0.000000	0.000000	U
23.00	0.00000	177.00	0.000000	0.000000	U
24.00	0.00000	177.00	0.000000	0.000000	U
25.00	0.00000	177.00	0.000000	0.000000	U
26.00	0.00000	177.00	0.000000	0.000000	U
27.00	0.00000	177.00	0.000000	0.000000	U
28.00	0.00000	177.00	0.000000	0.000000	U
29.00	0.00000	177.00	0.000000	0.000000	U
30.00	0.00000	177.00	0.001240	0.000000	U
31.00	0.00496	177.00	0.007892	0.000000	U
32.00	0.02165	177.01	0.022703	0.000000	U

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
33.00	0.04255	177.02	0.042020	0.000000	U
34.00	0.06133	177.04	0.061298	0.000000	U
35.00	0.07998	177.06	0.079788	0.000000	U
36.00	0.09786	177.09	0.097732	0.000000	U
37.00	0.11523	177.13	0.115088	0.000000	U
38.00	0.13203	177.18	0.131900	0.000000	U
39.00	0.14831	177.23	0.149145	0.000000	U
40.00	0.16793	177.29	0.167660	0.000000	U
41.00	0.18647	177.35	0.185600	0.000000	U
42.00	0.20153	177.42	0.201650	0.000000	U
43.00	0.21707	177.50	0.215587	0.000000	U
44.00	0.22668	177.58	0.226877	0.000000	U
45.00	0.23708	177.66	0.238015	0.000000	U
46.00	0.25122	177.75	0.250780	0.000000	U
47.00	0.26360	177.84	0.280007	0.000000	U
48.00	0.34161	177.95	0.337620	0.000000	U
49.00	0.40366	178.09	0.402128	0.000000	U
50.00	0.45958	178.24	0.460980	0.000000	U
51.00	0.52110	178.42	0.531502	0.000000	U
52.00	0.62423	178.63	0.622590	0.000000	U
53.00	0.72080	178.87	0.733160	0.000000	U
54.00	0.86681	179.16	0.865373	0.000000	U
55.00	1.00707	179.50	1.070885	0.000000	U
56.00	1.40259	179.94	1.389565	0.000000	U
57.00	1.74601	180.51	1.906672	0.000000	U
58.00	2.73208	181.32	3.556883	0.000000	U
59.00	23.06933	184.92	5.815670	0.000000	U/P
60.00	20.49759	186.45	4.705326	0.000000	U/S
61.00	2.42840	187.27	2.309221	0.000000	S
62.00	3.88110	187.37	1.822422	0.000000	S
63.00	2.33966	187.50	1.580647	0.000000	S
64.00	2.15255	187.56	1.409585	0.000000	S
65.00	1.50258	187.61	1.285678	0.000000	S

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
66.00	1.72595	187.64	1.197308	0.000000	S
67.00	1.65904	187.68	1.128753	0.000000	S
68.00	1.31407	187.72	1.063962	0.000000	S
69.00	1.06049	187.73	1.006350	0.000000	S
70.00	1.14773	187.74	0.961446	0.000000	S
71.00	1.12130	187.76	0.921142	0.000000	S
72.00	0.77097	187.76	0.876708	0.000000	S
73.00	0.52732	187.74	0.833955	0.000000	S
74.00	0.60945	187.72	0.799619	0.000000	S
75.00	0.58297	187.71	0.771366	0.000000	S
76.00	0.59590	187.69	0.746557	0.000000	S
77.00	0.59570	187.68	0.724779	0.000000	S
78.00	0.59666	187.67	0.705402	0.000000	S
79.00	0.59722	187.66	0.687865	0.000000	S
80.00	0.59467	187.66	0.671793	0.000000	S
81.00	0.59315	187.65	0.657078	0.000000	S
82.00	0.59450	187.64	0.643746	0.000000	S
83.00	0.59489	187.64	0.631544	0.000000	S
84.00	0.59559	187.64	0.620205	0.000000	S
85.00	0.59617	187.64	0.609781	0.000000	S
86.00	0.59679	187.64	0.600046	0.000000	S
87.00	0.59738	187.64	0.591040	0.000000	S
88.00	0.60123	187.64	0.582770	0.000000	S
89.00	0.60400	187.64	0.575009	0.000000	S
90.00	0.60387	187.64	0.567798	0.000000	S
91.00	0.60470	187.65	0.560942	0.000000	S
92.00	0.60193	187.65	0.554402	0.000000	S
93.00	0.60035	187.65	0.548272	0.000000	S
94.00	0.60164	187.66	0.542392	0.000000	S
95.00	0.60195	187.66	0.532184	0.000000	S
96.00	0.20078	187.65	-----	-----	N.A.

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III. Summary - Cumulative Volumes, Peaks Rates, and Peak Stage

Inflow

Peak Inflow Rate, (cfs): 23.07
Time, (hrs): 59.00

Cumulative Inflow Volume, (ft³): 330265

Stage

Peak Stage, (ft datum): 187.76
Time, (hrs): 72.00

Overflow Discharge

Peak Discharge Rate, (cfs): 0.00
Time, (hrs): 0.00

Cumulative weir discharge volume, (ft³): 0

Infiltration Rate

Peak Infiltration Rate, (cfs): 5.8157
Time, (hrs): 59.00

Cumulative Infiltration Volume, (ft³): 199647

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Retention Pond Recovery Analysis - Inflow Hydrograph

I. Job Information

Job Name: MANCHE
Engineer: KK
Date: 4-20-98

Input Data

Equivalent Pond Length, [L] (ft): 930.00
Equivalent Pond Width, [W] (ft): 60.00

Base Of Aquifer Elevation, [B] (ft above datum): 215.00
Water Table Elevation, [WT] (ft above datum): 215.10
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day) 28.00
Fillable Porosity of Aquifer, [n] (%): 30.00

Is there a ditch parallel to the pond length axis?: No

Is there a ditch parallel to the pond width axis?: No

Include unsaturated vertical infiltration?: Yes
Unsaturated vertical infiltration rate, (ft/day): 14.00
Maximum area for unsaturated infiltration, (sq ft): 12600

Groundwater mound intersects pond bottom?: Yes

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I. Input Data - Discharge Structures

Weir (or Orifice) #1 is Inactive

Weir (or Orifice) #2 is Inactive

Weir (or Orifice) #3 is Inactive

II. Input Data - Stage vs Area Data

Stage (ft datum)	Area (ft ²)
218.000	6343.0
219.000	12600.0
220.000	19172.0
221.000	25996.0
222.000	32592.0

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
33.00	0.00000	215.10	0.000000	0.000000	U
34.00	0.00000	215.10	0.000000	0.000000	U
35.00	0.00000	215.10	0.000000	0.000000	U
36.00	0.00000	215.10	0.000000	0.000000	U
37.00	0.00000	215.10	0.000000	0.000000	U
38.00	0.00000	215.10	0.000145	0.000000	U
39.00	0.00058	215.10	0.001932	0.000000	U
40.00	0.00657	215.10	0.006940	0.000000	U
41.00	0.01404	215.11	0.013985	0.000000	U
42.00	0.02129	215.13	0.021248	0.000000	U
43.00	0.02837	215.15	0.028175	0.000000	U
44.00	0.03467	215.18	0.034552	0.000000	U
45.00	0.04050	215.22	0.040590	0.000000	U
46.00	0.04669	215.26	0.046655	0.000000	U
47.00	0.05274	215.31	0.055365	0.000000	U
48.00	0.06929	215.37	0.070115	0.000000	U
49.00	0.08914	215.44	0.088935	0.000000	U
50.00	0.10817	215.54	0.108737	0.000000	U
51.00	0.12947	215.65	0.131800	0.000000	U
52.00	0.16009	215.79	0.161265	0.000000	U
53.00	0.19541	215.96	0.198198	0.000000	U
54.00	0.24188	216.16	0.243523	0.000000	U
55.00	0.29492	216.42	0.310228	0.000000	U
56.00	0.40919	216.76	0.414510	0.000000	U
57.00	0.54474	217.21	0.584848	0.000000	U
58.00	0.84072	217.87	0.986465	0.000000	U
59.00	1.71968	217.89	1.583349	0.000000	U/S
60.00	14.54513	219.85	1.960069	0.000000	S
61.00	2.34629	220.91	1.757490	0.000000	S
62.00	1.52991	220.97	1.348042	0.000000	S
63.00	1.19063	220.99	1.133404	0.000000	S
64.00	0.96608	221.00	0.992444	0.000000	S
65.00	0.73165	220.98	0.888610	0.000000	S

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
0.00	0.00000	215.10	0.000000	0.000000	N.A.
1.00	0.00000	215.10	0.000000	0.000000	U
2.00	0.00000	215.10	0.000000	0.000000	U
3.00	0.00000	215.10	0.000000	0.000000	U
4.00	0.00000	215.10	0.000000	0.000000	U
5.00	0.00000	215.10	0.000000	0.000000	U
6.00	0.00000	215.10	0.000000	0.000000	U
7.00	0.00000	215.10	0.000000	0.000000	U
8.00	0.00000	215.10	0.000000	0.000000	U
9.00	0.00000	215.10	0.000000	0.000000	U
10.00	0.00000	215.10	0.000000	0.000000	U
11.00	0.00000	215.10	0.000000	0.000000	U
12.00	0.00000	215.10	0.000000	0.000000	U
13.00	0.00000	215.10	0.000000	0.000000	U
14.00	0.00000	215.10	0.000000	0.000000	U
15.00	0.00000	215.10	0.000000	0.000000	U
16.00	0.00000	215.10	0.000000	0.000000	U
17.00	0.00000	215.10	0.000000	0.000000	U
18.00	0.00000	215.10	0.000000	0.000000	U
19.00	0.00000	215.10	0.000000	0.000000	U
20.00	0.00000	215.10	0.000000	0.000000	U
21.00	0.00000	215.10	0.000000	0.000000	U
22.00	0.00000	215.10	0.000000	0.000000	U
23.00	0.00000	215.10	0.000000	0.000000	U
24.00	0.00000	215.10	0.000000	0.000000	U
25.00	0.00000	215.10	0.000000	0.000000	U
26.00	0.00000	215.10	0.000000	0.000000	U
27.00	0.00000	215.10	0.000000	0.000000	U
28.00	0.00000	215.10	0.000000	0.000000	U
29.00	0.00000	215.10	0.000000	0.000000	U
30.00	0.00000	215.10	0.000000	0.000000	U
31.00	0.00000	215.10	0.000000	0.000000	U
32.00	0.00000	215.10	0.000000	0.000000	U

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Results - Summary

Lapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
66.00	0.73638	220.97	0.814035	0.000000	S
67.00	0.74100	220.96	0.758011	0.000000	S
68.00	0.61993	220.96	0.707064	0.000000	S
69.00	0.49854	220.94	0.660458	0.000000	S
70.00	0.50017	220.92	0.622935	0.000000	S
71.00	0.50175	220.90	0.590573	0.000000	S
72.00	0.38250	220.88	0.555898	0.000000	S
73.00	0.26222	220.85	0.520764	0.000000	S
74.00	0.26271	220.82	0.491425	0.000000	S
75.00	0.26319	220.79	0.468168	0.000000	S
76.00	0.26475	220.76	0.448520	0.000000	S
77.00	0.26631	220.73	0.431512	0.000000	S
78.00	0.26680	220.71	0.416552	0.000000	S
79.00	0.26727	220.69	0.403136	0.000000	S
80.00	0.26664	220.67	0.391151	0.000000	S
81.00	0.26603	220.65	0.380345	0.000000	S
82.00	0.26649	220.63	0.370473	0.000000	S
83.00	0.26693	220.62	0.361537	0.000000	S
84.00	0.26739	220.60	0.353404	0.000000	S
85.00	0.26783	220.59	0.345953	0.000000	S
86.00	0.26827	220.58	0.339113	0.000000	S
87.00	0.26870	220.57	0.332810	0.000000	S
88.00	0.27024	220.56	0.327022	0.000000	S
89.00	0.27178	220.55	0.321773	0.000000	S
90.00	0.27221	220.54	0.316936	0.000000	S
91.00	0.27264	220.54	0.312398	0.000000	S
92.00	0.27195	220.53	0.308052	0.000000	S
93.00	0.27127	220.53	0.303869	0.000000	S
94.00	0.27168	220.52	0.300057	0.000000	S
95.00	0.27209	220.52	0.293030	0.000000	S
96.00	0.13620	220.50	-----	-----	N.A.

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II. Summary - Cumulative Volumes, Peaks Rates, and Peak Stage

Inflow

Peak Inflow Rate, (cfs): 14.55
Time, (hrs): 60.00

Cumulative Inflow Volume, (ft³): 131658

Stage

Peak Stage, (ft datum): 221.00
Time, (hrs): 64.00

Overflow Discharge

Peak Discharge Rate, (cfs): 0.00
Time, (hrs): 0.00

Cumulative weir discharge volume, (ft³): 0

Infiltration Rate

Peak Infiltration Rate, (cfs): 1.9601
Time, (hrs): 60.00

Cumulative Infiltration Volume, (ft³): 95769

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Maximum Conditions - MANCHE *****

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
5A	BASE	68.54	178.18	183.00	0.0216	28689.47	59.99	8.92	0.00	0.00
6A	BASE	71.62	187.83	192.00	0.0500	42517.58	59.02	17.23	0.00	0.00
6B	BASE	63.71	221.02	222.00	0.0496	26309.99	59.99	12.50	0.00	0.00
999	BASE	96.04	101.50	999.00	0.5000	0.00	0.00	0.00	0.00	0.00

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	!<-----Inflow----->!					Link Q (cfs)	Link Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)	Link Q (cfs)		
*** Group: BASE		Node: 5A							
0.000	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
1.050	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
2.019	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
3.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
4.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
5.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
6.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
7.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
8.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
9.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
10.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
11.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
12.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
13.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
14.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
15.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
16.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
17.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
18.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
19.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
20.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
21.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
22.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
23.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
24.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
25.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
26.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
27.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
28.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
29.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
30.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
31.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
32.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
33.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
34.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
35.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
36.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
37.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
38.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
39.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
40.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
41.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
42.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
43.014	177.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	
44.014	177.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	

45.014 177.00

0.00

0.00

0.00

-0.00

0.00

0.00

0.00

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	<-----Inflow----->				Link Q (cfs)	Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)		
46.014	177.00	0.00	0.00	0.01	-0.01	0.00	0.00	0.00
47.014	177.00	0.00	0.00	0.01	-0.02	0.00	0.00	0.00
48.014	177.00	0.00	0.00	0.02	-0.03	0.00	0.00	0.00
49.014	177.00	0.00	0.00	0.04	-0.04	0.00	0.00	0.00
50.015	177.00	0.00	0.00	0.05	-0.05	0.00	0.00	0.00
51.028	177.00	0.00	0.00	0.07	-0.07	0.00	0.00	0.00
52.012	177.00	0.00	0.00	0.09	-0.10	0.00	0.00	0.00
53.048	177.00	0.00	0.00	0.12	-0.13	0.00	0.00	0.00
54.082	177.00	0.00	0.00	0.17	-0.17	0.00	0.00	0.00
55.019	177.00	0.00	0.00	0.21	-0.22	0.00	0.00	0.00
56.033	177.00	0.00	0.00	0.30	-0.31	0.00	0.00	0.00
57.039	177.00	0.00	0.00	0.43	-0.47	0.00	0.00	0.00
58.058	177.00	0.00	0.00	0.72	-0.89	0.00	0.00	0.00
59.019	176.99	0.00	0.00	1.67	-2.44	0.00	0.00	0.00
60.011	177.61	0.60	0.00	13.32	-4.44	0.00	0.00	0.00
61.014	178.13	0.65	0.00	2.26	-3.23	0.00	0.00	0.00
62.046	178.08	0.65	0.00	1.47	-1.18	0.00	0.00	0.00
63.006	178.12	0.65	0.00	1.16	-0.94	0.00	0.00	0.00
64.039	178.14	0.65	0.00	0.94	-0.80	0.00	0.00	0.00
65.039	178.15	0.66	0.00	0.72	-0.71	0.00	0.00	0.00
66.039	178.15	0.66	0.00	0.72	-0.65	0.00	0.00	0.00
67.039	178.17	0.66	0.00	0.72	-0.61	0.00	0.00	0.00
68.039	178.18	0.66	0.00	0.61	-0.57	0.00	0.00	0.00
69.039	178.18	0.66	0.00	0.49	-0.53	0.00	0.00	0.00
70.039	178.17	0.66	0.00	0.49	-0.50	0.00	0.00	0.00
71.039	178.17	0.66	0.00	0.49	-0.48	0.00	0.00	0.00
72.039	178.17	0.66	0.00	0.37	-0.45	0.00	0.00	0.00
73.039	178.15	0.66	0.00	0.26	-0.43	0.00	0.00	0.00
74.039	178.13	0.65	0.00	0.26	-0.41	0.00	0.00	0.00
75.039	178.12	0.65	0.00	0.26	-0.39	0.00	0.00	0.00
76.039	178.10	0.65	0.00	0.26	-0.37	0.00	0.00	0.00
77.039	178.09	0.65	0.00	0.26	-0.36	0.00	0.00	0.00
78.039	178.08	0.65	0.00	0.26	-0.35	0.00	0.00	0.00
79.039	178.07	0.65	0.00	0.27	-0.34	0.00	0.00	0.00
80.039	178.06	0.65	0.00	0.27	-0.33	0.00	0.00	0.00
81.039	178.05	0.64	0.00	0.26	-0.32	0.00	0.00	0.00
82.039	178.04	0.64	0.00	0.27	-0.31	0.00	0.00	0.00
83.039	178.04	0.64	0.00	0.27	-0.31	0.00	0.00	0.00
84.039	178.03	0.64	0.00	0.27	-0.30	0.00	0.00	0.00
85.039	178.03	0.64	0.00	0.27	-0.30	0.00	0.00	0.00
86.039	178.02	0.64	0.00	0.27	-0.29	0.00	0.00	0.00
87.039	178.02	0.64	0.00	0.27	-0.29	0.00	0.00	0.00
88.039	178.02	0.64	0.00	0.27	-0.28	0.00	0.00	0.00
89.039	178.02	0.64	0.00	0.27	-0.28	0.00	0.00	0.00
90.039	178.02	0.64	0.00	0.27	-0.27	0.00	0.00	0.00

91.039	178.02	0.64	0.00	0.27	-0.27	0.00	0.00	0.00
92.039	178.02	0.64	0.00	0.27	-0.27	0.00	0.00	0.00

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	Inflow					Link Q (cfs)	Link Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)	Link Q (cfs)		
93.039	178.02	0.64	0.00	0.27	-0.26	0.00	0.00	0.00	
94.039	178.02	0.64	0.00	0.27	-0.26	0.00	0.00	0.00	
95.039	178.02	0.64	0.00	0.27	-0.25	0.00	0.00	0.00	
96.039	178.03	0.64	0.00	0.00	0.00	0.00	0.00	0.00	
96.081	178.03	0.64	0.00	0.00	0.00	0.00	0.00	0.00	

*** Group: BASE Node: 6A

0.000	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
1.050	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
2.019	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
3.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
4.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
5.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
6.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
7.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
8.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
9.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
10.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
11.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
12.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
13.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
14.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
15.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
16.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
17.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
18.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
19.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
20.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
21.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
22.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
23.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
24.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
25.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
26.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
27.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
28.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
29.014	184.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00
30.014	184.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00
31.014	184.00	0.00	0.00	0.01	-0.01	0.00	0.00	0.00
32.014	184.00	0.00	0.00	0.02	-0.02	0.00	0.00	0.00
33.014	184.00	0.69	0.00	0.04	-0.04	0.00	0.00	0.00
34.014	184.00	0.69	0.00	0.06	-0.06	0.00	0.00	0.00
35.014	184.00	0.69	0.00	0.08	-0.08	0.00	0.00	0.00
36.014	184.00	0.69	0.00	0.10	-0.10	0.00	0.00	0.00
37.014	184.00	0.69	0.00	0.12	-0.12	0.00	0.00	0.00

38.014	184.00	0.69	0.00	0.13	-0.13	0.00	0.00	0.00
39.014	184.00	0.69	0.00	0.15	-0.15	0.00	0.00	0.00

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	!<-----Inflow----->!				Link Q (cfs)	Link Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)		
40.014	184.00	0.69	0.00	0.17	-0.17	0.00	0.00	0.00
41.014	184.00	0.69	0.00	0.19	-0.19	0.00	0.00	0.00
42.014	184.00	0.69	0.00	0.20	-0.20	0.00	0.00	0.00
43.014	184.00	0.69	0.00	0.22	-0.22	0.00	0.00	0.00
44.014	184.00	0.69	0.00	0.23	-0.23	0.00	0.00	0.00
45.014	184.00	0.69	0.00	0.24	-0.24	0.00	0.00	0.00
46.014	184.00	0.69	0.00	0.25	-0.25	0.00	0.00	0.00
47.014	184.00	0.00	0.00	0.26	-0.28	0.00	0.00	0.00
48.014	184.00	0.69	0.00	0.34	-0.34	0.00	0.00	0.00
49.014	184.00	0.69	0.00	0.40	-0.40	0.00	0.00	0.00
50.015	184.00	0.69	0.00	0.46	-0.46	0.00	0.00	0.00
51.028	184.00	0.00	0.00	0.52	-0.53	0.00	0.00	0.00
52.012	184.00	0.69	0.00	0.63	-0.62	0.00	0.00	0.00
53.048	184.00	0.00	0.00	0.73	-0.74	0.00	0.00	0.00
54.082	184.00	0.69	0.00	0.88	-0.88	0.00	0.00	0.00
55.019	184.00	0.00	0.00	1.01	-1.08	0.00	0.00	0.00
56.033	184.00	0.69	0.00	1.41	-1.41	0.00	0.00	0.00
57.039	184.00	0.00	0.00	1.78	-1.97	0.00	0.00	0.00
58.058	184.00	0.00	0.00	3.91	-3.69	0.00	0.00	0.00
59.019	184.98	0.76	0.00	23.02	-5.79	0.00	0.00	0.00
60.011	186.64	0.88	0.00	20.30	-4.68	0.00	0.00	0.00
61.014	187.35	0.94	0.00	2.45	-2.30	0.00	0.00	0.00
62.046	187.45	0.95	0.00	3.81	-1.81	0.00	0.00	0.00
63.006	187.56	0.96	0.00	2.34	-1.58	0.00	0.00	0.00
64.039	187.63	0.96	0.00	2.13	-1.40	0.00	0.00	0.00
65.039	187.67	0.96	0.00	1.51	-1.28	0.00	0.00	0.00
66.039	187.70	0.97	0.00	1.72	-1.19	0.00	0.00	0.00
67.039	187.75	0.97	0.00	1.65	-1.13	0.00	0.00	0.00
68.039	187.78	0.97	0.00	1.30	-1.06	0.00	0.00	0.00
69.039	187.79	0.97	0.00	1.06	-1.00	0.00	0.00	0.00
70.039	187.80	0.97	0.00	1.15	-0.96	0.00	0.00	0.00
71.039	187.82	0.98	0.00	1.11	-0.92	0.00	0.00	0.00
72.039	187.82	0.98	0.00	0.76	-0.88	0.00	0.00	0.00
73.039	187.81	0.97	0.00	0.53	-0.83	0.00	0.00	0.00
74.039	187.79	0.97	0.00	0.61	-0.80	0.00	0.00	0.00
75.039	187.77	0.97	0.00	0.58	-0.77	0.00	0.00	0.00
76.039	187.75	0.97	0.00	0.60	-0.75	0.00	0.00	0.00
77.039	187.74	0.97	0.00	0.60	-0.72	0.00	0.00	0.00
78.039	187.73	0.97	0.00	0.60	-0.70	0.00	0.00	0.00
79.039	187.72	0.97	0.00	0.60	-0.69	0.00	0.00	0.00
80.039	187.72	0.97	0.00	0.59	-0.67	0.00	0.00	0.00
81.039	187.71	0.97	0.00	0.59	-0.66	0.00	0.00	0.00
82.039	187.71	0.97	0.00	0.59	-0.64	0.00	0.00	0.00
83.039	187.70	0.97	0.00	0.59	-0.63	0.00	0.00	0.00
84.039	187.70	0.97	0.00	0.60	-0.62	0.00	0.00	0.00

85.039	187.70	0.97	0.00	0.60	-0.61	0.00	0.00	0.00
86.039	187.70	0.97	0.00	0.60	-0.60	0.00	0.00	0.00

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	'<-----Inflow----->'					Link Q (cfs)	Link Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)	Link Q (cfs)		
87.039	187.70	0.97	0.00	0.60	-0.59	0.00	0.00	0.00	
88.039	187.70	0.97	0.00	0.60	-0.58	0.00	0.00	0.00	
89.039	187.70	0.97	0.00	0.60	-0.57	0.00	0.00	0.00	
90.039	187.70	0.97	0.00	0.60	-0.57	0.00	0.00	0.00	
91.039	187.71	0.97	0.00	0.60	-0.56	0.00	0.00	0.00	
92.039	187.71	0.97	0.00	0.60	-0.55	0.00	0.00	0.00	
93.039	187.72	0.97	0.00	0.60	-0.55	0.00	0.00	0.00	
94.039	187.72	0.97	0.00	0.60	-0.54	0.00	0.00	0.00	
95.039	187.73	0.97	0.00	0.59	-0.51	0.00	0.00	0.00	
96.039	187.74	0.97	0.00	0.00	0.00	0.00	0.00	0.00	
96.081	187.74	0.97	0.00	0.00	0.00	0.00	0.00	0.00	

*** Group: BASE Node: 6B

0.000	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
1.050	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
2.019	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
3.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
4.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
5.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
6.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
7.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
8.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
9.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
10.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
11.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
12.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
13.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
14.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
15.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
16.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
17.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
18.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
19.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
20.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
21.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
22.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
23.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
24.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
25.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
26.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
27.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
28.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
29.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
30.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
31.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00

32.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
33.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00

ST. JOHN'S 25YR96HR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	!<-----Inflow----->!					Link Q (cfs)	Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)	Link Q (cfs)		
34.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
35.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
36.014	218.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	
37.014	218.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	
38.014	218.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	
39.014	218.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	
40.014	218.00	0.00	0.00	0.01	-0.01	0.00	0.00	0.00	
41.014	218.00	0.15	0.00	0.01	-0.01	0.00	0.00	0.00	
42.014	218.00	0.15	0.00	0.02	-0.02	0.00	0.00	0.00	
43.014	218.00	0.15	0.00	0.03	-0.03	0.00	0.00	0.00	
44.014	218.00	0.15	0.00	0.03	-0.03	0.00	0.00	0.00	
45.014	218.00	0.15	0.00	0.04	-0.04	0.00	0.00	0.00	
46.014	218.00	0.15	0.00	0.05	-0.05	0.00	0.00	0.00	
47.014	218.00	0.00	0.00	0.05	-0.06	0.00	0.00	0.00	
48.014	218.00	0.00	0.00	0.07	-0.07	0.00	0.00	0.00	
49.014	218.00	0.15	0.00	0.09	-0.09	0.00	0.00	0.00	
50.015	218.00	0.00	0.00	0.11	-0.11	0.00	0.00	0.00	
51.028	218.00	0.00	0.00	0.13	-0.13	0.00	0.00	0.00	
52.012	218.00	0.00	0.00	0.16	-0.16	0.00	0.00	0.00	
53.048	218.00	0.00	0.00	0.20	-0.20	0.00	0.00	0.00	
54.082	218.00	0.00	0.00	0.25	-0.25	0.00	0.00	0.00	
55.019	218.00	0.00	0.00	0.30	-0.31	0.00	0.00	0.00	
56.033	218.00	0.00	0.00	0.41	-0.42	0.00	0.00	0.00	
57.039	218.00	0.00	0.00	0.56	-0.60	0.00	0.00	0.00	
58.058	217.99	0.00	0.00	0.89	-1.02	0.00	0.00	0.00	
59.019	218.02	0.15	0.00	1.96	-1.59	0.00	0.00	0.00	
60.011	219.90	0.43	0.00	14.41	-1.96	0.00	0.00	0.00	
61.014	220.95	0.59	0.00	2.34	-1.75	0.00	0.00	0.00	
62.046	221.01	0.60	0.00	1.51	-1.34	0.00	0.00	0.00	
63.006	221.02	0.60	0.00	1.19	-1.13	0.00	0.00	0.00	
64.039	221.02	0.60	0.00	0.96	-0.99	0.00	0.00	0.00	
65.039	221.01	0.60	0.00	0.73	-0.89	0.00	0.00	0.00	
66.039	221.00	0.60	0.00	0.74	-0.81	0.00	0.00	0.00	
67.039	220.99	0.60	0.00	0.74	-0.76	0.00	0.00	0.00	
68.039	220.98	0.60	0.00	0.62	-0.71	0.00	0.00	0.00	
69.039	220.96	0.59	0.00	0.50	-0.66	0.00	0.00	0.00	
70.039	220.94	0.59	0.00	0.50	-0.62	0.00	0.00	0.00	
71.039	220.93	0.59	0.00	0.50	-0.59	0.00	0.00	0.00	
72.039	220.91	0.59	0.00	0.38	-0.55	0.00	0.00	0.00	
73.039	220.88	0.58	0.00	0.26	-0.52	0.00	0.00	0.00	
74.039	220.84	0.58	0.00	0.26	-0.49	0.00	0.00	0.00	
75.039	220.81	0.57	0.00	0.26	-0.47	0.00	0.00	0.00	
76.039	220.79	0.57	0.00	0.26	-0.45	0.00	0.00	0.00	
77.039	220.76	0.56	0.00	0.27	-0.43	0.00	0.00	0.00	
78.039	220.74	0.56	0.00	0.27	-0.42	0.00	0.00	0.00	

79.039	220.72	0.55	0.00	0.27	-0.40	0.00	0.00	0.00
80.039	220.70	0.55	0.00	0.27	-0.39	0.00	0.00	0.00

**CITY OF CLERMONT
50 YEAR - 24 HOUR STORM EVENT
HYDROLOGY & ROUTING ANALYSIS**

CITY OF CLERMONT 50 YEAR 24 HOUR STORM EVENT

***** Basin Summary - MANCHE *****

Basin Name:	6B	999	6A	5A
Group Name:	BASE	BASE	BASE	BASE
Node Name:	6B	999	6A	5A
Hydrograph Type:	SB	SB	SB	SB
Spec Time Inc (sec):	30.00	30.00	60.00	30.00
Comp Time Inc (sec):	30.00	30.00	60.00	30.00
Rainfall File:	FLMOD	FLMOD	FLMOD	FLMOD
Rainfall Amount (in):	9.20	9.20	9.20	9.20
Storm Duration (hr):	24.00	24.00	24.00	24.00
Status:	ONSITE	ONSITE	ONSITE	ONSITE
Time of Conc. (min):	15.00	15.00	15.00	15.00
Lag Time (hr):	0.00	0.00	0.00	0.00
Area (acres):	7.05	1.00	14.08	7.64
Curve Number:	55.00	1.00	64.00	49.90
DCIA (%):	0.00	0.00	0.00	0.00
Time Max (hrs):	12.00	0.00	12.00	12.00
Flow Max (cfs):	12.30	0.00	20.23	10.68
Runoff Volume (in):	3.63	0.00	4.76	3.00
Runoff Volume (cf):	92983	0	243375	83245

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Retention Pond Recovery Analysis - Inflow Hydrograph

I. Job Information

Job Name: WELLINGTON EAST POND 5A
Engineer: DKB
Date: 3-5-98

Input Data

Equivalent Pond Length, [L] (ft): 450.00
Equivalent Pond Width, [W] (ft): 250.00

Base Of Aquifer Elevation, [B] (ft above datum): 172.00
Water Table Elevation, [WT] (ft above datum): 172.10
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day) 28.00
Fillable Porosity of Aquifer, [n] (%): 30.00

Is there a ditch parallel to the pond length axis?: No

Is there a ditch parallel to the pond width axis?: No

Include unsaturated vertical infiltration?: Yes
Unsaturated vertical infiltration rate, (ft/day): 14.00
Maximum area for unsaturated infiltration, (sq ft): 23087

Groundwater mound intersects pond bottom?: Yes

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I. Input Data - Discharge Structures

Weir (or Orifice) #1 is Inactive

Weir (or Orifice) #2 is Inactive

Weir (or Orifice) #3 is Inactive

II. Input Data - Stage vs Area Data

Stage (ft datum)	Area (ft ²)
177.000	23087.0
178.000	27835.0
179.000	32670.0
180.000	37679.0
181.000	42776.0
182.000	48003.0
183.000	53405.0

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VII. Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
0.00	0.00000	172.10	0.000000	0.000000	N.A.
1.00	0.00000	172.10	0.000000	0.000000	U
2.00	0.00000	172.10	0.000000	0.000000	U
3.00	0.00000	172.10	0.000000	0.000000	U
4.00	0.00000	172.10	0.000000	0.000000	U
5.00	0.00000	172.10	0.000000	0.000000	U
6.00	0.00000	172.10	0.000000	0.000000	U
7.00	0.00000	172.10	0.000000	0.000000	U
8.00	0.00000	172.10	0.000000	0.000000	U
9.00	0.00000	172.10	0.000965	0.000000	U
10.00	0.00386	172.10	0.121748	0.000000	U
11.00	0.47927	172.23	1.991257	0.000000	U
12.00	10.67929	177.28	3.740949	0.000000	U/P
13.00	2.56697	177.69	3.774838	0.000000	U/P
14.00	1.67723	177.45	2.497470	0.000000	U/S
15.00	1.30711	177.50	1.043437	0.000000	S
16.00	1.07677	177.54	0.832144	0.000000	S
17.00	0.96373	177.57	0.721154	0.000000	S
18.00	0.84425	177.60	0.648483	0.000000	S
19.00	0.76414	177.63	0.595026	0.000000	S
20.00	0.68104	177.65	0.553270	0.000000	S
21.00	0.64141	177.67	0.520644	0.000000	S
22.00	0.64654	177.69	0.494300	0.000000	S
23.00	0.55830	177.70	0.465648	0.000000	S
24.00	0.23379	177.70	-----	-----	N.A.

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VI. Summary - Cumulative Volumes, Peaks Rates, and Peak Stage

Inflow

Peak Inflow Rate, (cfs):	10.68
Time, (hrs):	12.00
Cumulative Inflow Volume, (ft ³):	82825

Stage

Peak Stage, (ft datum):	177.70
Time, (hrs):	23.00

Overflow Discharge

Peak Discharge Rate, (cfs):	0.00
Time, (hrs):	0.00
Cumulative weir discharge volume, (ft ³):	0

Infiltration Rate

Peak Infiltration Rate, (cfs):	3.7748
Time, (hrs):	13.00
Cumulative Infiltration Volume, (ft ³):	65613

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Retention Pond Recovery Analysis - Inflow Hydrograph

I. Job Information

Job Name: 6A
Engineer: KK
Date: 4-20-98

II. Input Data

Equivalent Pond Length, [L] (ft): 280.00
Equivalent Pond Width, [W] (ft): 240.00

Base Of Aquifer Elevation, [B] (ft above datum): 176.00
Water Table Elevation, [WT] (ft above datum): 177.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day) 28.00
Fillable Porosity of Aquifer, [n] (%): 30.00

Is there a ditch parallel to the pond length axis?: No

Is there a ditch parallel to the pond width axis?: No

Include unsaturated vertical infiltration?: Yes
Unsaturated vertical infiltration rate, (ft/day): 14.00
Maximum area for unsaturated infiltration, (sq ft): 33087

Groundwater mound intersects pond bottom?: Yes

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III. Input Data - Discharge Structures

Weir (or Orifice) #1 is Inactive

Weir (or Orifice) #2 is Inactive

Weir (or Orifice) #3 is Inactive

IV. Input Data - Stage vs Area Data

Stage (ft datum)	Area (ft ²)
184.000	30084.0
185.000	33087.0
186.000	36225.0
187.000	39499.0
188.000	42908.0
189.000	46442.0
190.000	50079.0
191.000	53816.0
192.000	57653.0

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Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
0.00	0.00000	177.00	0.000000	0.000000	N.A.
1.00	0.00000	177.00	0.000000	0.000000	U
2.00	0.00000	177.00	0.000000	0.000000	U
3.00	0.00000	177.00	0.000000	0.000000	U
4.00	0.00000	177.00	0.000000	0.000000	U
5.00	0.00000	177.00	0.000000	0.000000	U
6.00	0.00000	177.00	0.004798	0.000000	U
7.00	0.01919	177.00	0.066003	0.000000	U
8.00	0.22563	177.05	0.289455	0.000000	U
9.00	0.68737	177.21	0.821527	0.000000	U
10.00	1.68574	177.64	3.030638	0.000000	U
11.00	17.32090	184.54	5.005949	0.000000	U/P
12.00	20.23056	185.99	5.249249	0.000000	U/P
13.00	6.08969	186.74	5.922346	0.000000	U/P
14.00	3.70396	186.59	4.382045	0.000000	U/S
15.00	3.08671	186.69	2.017179	0.000000	S
16.00	2.50980	186.79	1.624331	0.000000	S
17.00	2.17336	186.87	1.414195	0.000000	S
18.00	1.95406	186.94	1.277629	0.000000	S
19.00	1.83102	187.00	1.179017	0.000000	S
20.00	1.59947	187.05	1.100867	0.000000	S
21.00	1.47197	187.09	1.037866	0.000000	S
22.00	1.45137	187.13	0.986083	0.000000	S
23.00	1.24806	187.17	0.930428	0.000000	S
24.00	0.37846	187.16	-----	-----	N.A.

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VIII. Summary - Cumulative Volumes, Peaks Rates, and Peak Stage

Inflow

Peak Inflow Rate, (cfs):	20.23
Time, (hrs):	12.00
Cumulative Inflow Volume, (ft ³):	242921

Stage

Peak Stage, (ft datum):	187.17
Time, (hrs):	23.00

Overflow Discharge

Peak Discharge Rate, (cfs):	0.00
Time, (hrs):	0.00
Cumulative weir discharge volume, (ft ³):	0

Infiltration Rate

Peak Infiltration Rate, (cfs):	5.9223
Time, (hrs):	13.00
Cumulative Infiltration Volume, (ft ³):	132440

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Retention Pond Recovery Analysis - Inflow Hydrograph

I. Job Information

Job Name: ~~MANCHE~~ 6B
Engineer: KK
Date: 4-20-98

Input Data

Equivalent Pond Length, [L] (ft): 930.00
Equivalent Pond Width, [W] (ft): 60.00

Base Of Aquifer Elevation, [B] (ft above datum): 215.00
Water Table Elevation, [WT] (ft above datum): 215.10
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day) 28.00
Fillable Porosity of Aquifer, [n] (%): 30.00

Is there a ditch parallel to the pond length axis?: No

Is there a ditch parallel to the pond width axis?: No

Include unsaturated vertical infiltration?: Yes
Unsaturated vertical infiltration rate, (ft/day): 14.00
Maximum area for unsaturated infiltration, (sq ft): 12600

Groundwater mound intersects pond bottom?: Yes

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Input Data - Discharge Structures

Weir (or Orifice) #1 is Inactive

Weir (or Orifice) #2 is Inactive

Weir (or Orifice) #3 is Inactive

Input Data - Stage vs Area Data

Stage (ft datum)	Area (ft ²)
218.000	6343.0
219.000	12600.0
220.000	19172.0
221.000	25996.0
222.000	32592.0

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VI. Results - Summary

Elapsed Time (hrs)	Inflow Rate (cfs)	Stage Elevation (ft datum)	Infiltration Rate (cfs)	Overflow Discharge Rate (cfs)	Flow Type
0.00	0.00000	215.10	0.000000	0.000000	N.A.
1.00	0.00000	215.10	0.000000	0.000000	U
2.00	0.00000	215.10	0.000000	0.000000	U
3.00	0.00000	215.10	0.000000	0.000000	U
4.00	0.00000	215.10	0.000000	0.000000	U
5.00	0.00000	215.10	0.000000	0.000000	U
6.00	0.00000	215.10	0.000000	0.000000	U
7.00	0.00000	215.10	0.000000	0.000000	U
8.00	0.00000	215.10	0.000180	0.000000	U
9.00	0.00072	215.10	0.040587	0.000000	U
10.00	0.16091	215.18	0.311788	0.000000	U
11.00	0.92461	215.69	0.785281	0.000000	U
12.00	12.30200	219.71	2.763315	0.000000	U/P
13.00	2.72136	220.28	3.075831	0.000000	U/S
14.00	1.75952	220.38	1.450275	0.000000	S
15.00	1.36269	220.43	1.147501	0.000000	S
16.00	1.11752	220.46	0.984779	0.000000	S
17.00	0.99666	220.48	0.878131	0.000000	S
18.00	0.87054	220.50	0.799894	0.000000	S
19.00	0.78598	220.51	0.738121	0.000000	S
20.00	0.69903	220.51	0.687675	0.000000	S
21.00	0.65713	220.51	0.647377	0.000000	S
22.00	0.66124	220.52	0.614231	0.000000	S
23.00	0.57010	220.52	0.575581	0.000000	S
24.00	0.23849	220.50	-----	-----	N.A.

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VI. Summary - Cumulative Volumes, Peaks Rates, and Peak Stage

Inflow

Peak Inflow Rate, (cfs):	12.30
Time, (hrs):	12.00
Cumulative Inflow Volume, (ft ³):	92553

Stage

Peak Stage, (ft datum):	220.52
Time, (hrs):	23.00

Overflow Discharge

Peak Discharge Rate, (cfs):	0.00
Time, (hrs):	0.00
Cumulative weir discharge volume, (ft ³):	0

Infiltration Rate

Peak Infiltration Rate, (cfs):	3.0758
Time, (hrs):	13.00
Cumulative Infiltration Volume, (ft ³):	56797

CITY OF CLERMONT 50 YEAR 24 HOUR STORM EVENT

***** Node Maximum Conditions - MANCHE *****

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (ft)	Warning Stage (ft)	Max Delta Stage (ft)	Max Surface Area (sf)	Max Time Inflow	Max Inflow (cfs)	Max Time Outflow	Max Outflow (cfs)
5A	BASE	24.04	177.86	183.00	0.0215	27183.81	12.00	6.92	0.00	0.00
6A	BASE	24.04	187.29	192.00	0.0485	40662.19	12.00	14.94	0.00	0.00
6B	BASE	24.04	220.57	222.00	0.0493	23113.39	12.00	9.51	0.00	0.00
999	BASE	24.04	100.50	999.00	0.5000	0.00	0.00	0.00	0.00	0.00

CITY OF CLERMONT 50 YEAR 24 HOUR STORM EVENT

***** Node Time Series by Node - MANCHE *****

Time (hrs)	Stage (ft)	Surface Ar.(ac)	<-----Inflow----->					Link Q (cfs)	Link Outflow (cfs)
			Base Q (cfs)	Onsite (cfs)	Offsite (cfs)	Bndry Q (cfs)	Link Q (cfs)		
*** Group: BASE		Node: 5A							
0.000	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
1.050	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
2.019	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
3.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
4.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
5.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
6.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
7.014	177.00	0.53	0.00	0.00	0.00	0.00	0.00	0.00	
8.014	177.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	
9.014	177.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	
10.014	177.00	0.00	0.00	0.01	-0.15	0.00	0.00	0.00	
11.012	176.98	0.00	0.00	0.60	-2.01	0.00	0.00	0.00	
12.003	177.43	0.58	0.00	10.66	-3.74	0.00	0.00	0.00	
13.008	177.82	0.62	0.00	2.56	-3.77	0.00	0.00	0.00	
14.036	177.68	0.60	0.00	1.66	-2.45	0.00	0.00	0.00	
15.036	177.65	0.60	0.00	1.30	-1.04	0.00	0.00	0.00	
16.036	177.68	0.60	0.00	1.07	-0.83	0.00	0.00	0.00	
17.036	177.72	0.61	0.00	0.96	-0.72	0.00	0.00	0.00	
18.036	177.75	0.61	0.00	0.84	-0.65	0.00	0.00	0.00	
19.036	177.77	0.61	0.00	0.76	-0.59	0.00	0.00	0.00	
20.036	177.79	0.62	0.00	0.68	-0.55	0.00	0.00	0.00	
21.036	177.81	0.62	0.00	0.64	-0.52	0.00	0.00	0.00	
22.036	177.83	0.62	0.00	0.64	-0.49	0.00	0.00	0.00	
23.036	177.84	0.62	0.00	0.55	-0.45	0.00	0.00	0.00	
24.036	177.86	0.62	0.00	0.00	0.00	0.00	0.00	0.00	
24.078	177.86	0.62	0.00	0.00	0.00	0.00	0.00	0.00	

*** Group: BASE		Node: 6A						
0.000	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
1.050	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
2.019	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
3.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
4.014	184.00	0.69	0.00	0.00	0.00	0.00	0.00	0.00
5.014	184.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00
6.014	184.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
7.014	184.00	0.00	0.00	0.02	-0.07	0.00	0.00	0.00
8.014	184.00	0.00	0.00	0.23	-0.30	0.00	0.00	0.00
9.014	184.00	0.00	0.00	0.70	-0.85	0.00	0.00	0.00
10.014	183.98	0.00	0.00	1.90	-3.06	0.00	0.00	0.00
11.012	184.67	0.74	0.00	17.35	-5.01	0.00	0.00	0.00
12.003	186.09	0.84	0.00	20.19	-5.25	0.00	0.00	0.00
13.008	186.81	0.89	0.00	6.07	-5.91	0.00	0.00	0.00
14.036	186.78	0.89	0.00	3.68	-4.30	0.00	0.00	0.00
15.036	186.81	0.89	0.00	3.07	-2.00	0.00	0.00	0.00
16.036	186.90	0.90	0.00	2.50	-1.62	0.00	0.00	0.00

17.036 186.97 0.91 0.00 2.17 -1.41 0.00 0.00 0.00

**POLLUTION VOLUME
RECOVERY ANALYSIS**

STORMWATER TREATMENT VOLUME CALCULATIONS

Basin 5-A:

$$VT = 3.21 \text{ Ac. (imp.)} \times 1.25 \text{ inches} + 7.64 \text{ Ac.} \times 0.5 \text{ inches}$$

$$VT = 28,432 \text{ CF}$$

Basin 6-A:

$$VT = 5.88 \text{ Ac. (imp.)} \times 1.25 \text{ inches} + 14.08 \text{ Ac.} \times 0.5 \text{ inches}$$

$$VT = 52,236 \text{ CF}$$

Basin 6-B:

$$VT = 1.78 \text{ Ac. (imp.)} \times 1.25 \text{ inches} + 7.05 \text{ Ac.} \times 0.5 \text{ inches}$$

$$VT = 20,873 \text{ CF}$$

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Retention Pond Recovery Analysis

I. Job Information

Job Name: 5A
Engineer: KK
Date: 5-11-98

II. Input Data

Equivalent Pond Length, [L] (ft):	450.00
Equivalent Pond Width, [W] (ft):	250.00
Pond Bottom Elevation, [PB] (ft above datum):	177.00
Porosity Of Material Within Pond, [p] (%):	100.00
Base Of Aquifer Elevation, [B] (ft above datum):	172.00
Water Table Elevation, [WT] (ft above datum):	172.10
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day)	28.00
Fillable Porosity of Aquifer, [n] (%):	30.00
Vertical Unsaturated Infiltration, [Iv] (ft/day):	14.00
Runoff Volume, [V] (cubic feet)	28432.00
Percent Recovery Of Runoff Volume, [PV] (%)	100.00

I. Results

UNSATURATED FLOW

Recovery Time From Unsaturated Flow, [T1] (days):	0.0181
Recovered Volume From Unsaturated Flow, [V1] (ft ³):	28432.00

SATURATED FLOW

Recovery Time From Saturated Flow, [T2] (days):	0.0000
Recovered Volume From Saturated Flow, [V2] (ft ³):	0.00
Maximum Radius Of Influence, [R] (ft):	0.00
Maximum Driving Head, [Hmax] (ft):	0.000
Minimum Driving Head, [Hmin] (ft):	0.000

TOTAL

Total Recovery Time, [T] (days):	0.0181
Total Recovered Volume, [V] (ft ³):	28432.00

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Retention Pond Recovery Analysis

I. Job Information

Job Name: 6A
Engineer: KK
Date: 5-11-98

II. Input Data

Equivalent Pond Length, [L] (ft):	280.00
Equivalent Pond Width, [W] (ft):	240.00
Pond Bottom Elevation, [PB] (ft above datum):	184.00
Porosity Of Material Within Pond, [p] (%):	100.00
Base Of Aquifer Elevation, [B] (ft above datum):	176.00
Water Table Elevation, [WT] (ft above datum):	177.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day)	28.00
Fillable Porosity of Aquifer, [n] (%):	30.00
Vertical Unsaturated Infiltration, [Iv] (ft/day):	14.00
Runoff Volume, [V] (cubic feet)	52236.00
Percent Recovery Of Runoff Volume, [PV] (%)	100.00

I. Results

UNSATURATED FLOW

Recovery Time From Unsaturated Flow, [T1] (days):	0.0555
Recovered Volume From Unsaturated Flow, [V1] (ft ³):	52236.00

SATURATED FLOW

Recovery Time From Saturated Flow, [T2] (days):	0.0000
Recovered Volume From Saturated Flow, [V2] (ft ³):	0.00
Maximum Radius Of Influence, [R] (ft):	0.00
Maximum Driving Head, [Hmax] (ft):	0.000
Minimum Driving Head, [Hmin] (ft):	0.000

TOTAL

Total Recovery Time, [T] (days):	0.0555
Total Recovered Volume, [V] (ft ³):	52236.00

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Retention Pond Recovery Analysis

I. Job Information

Job Name: 6B
Engineer: KK
Date: 5-11-98

II. Input Data

Equivalent Pond Length, [L] (ft):	930.00
Equivalent Pond Width, [W] (ft):	60.00
Pond Bottom Elevation, [PB] (ft above datum):	218.00
Porosity Of Material Within Pond, [p] (%):	100.00
Base Of Aquifer Elevation, [B] (ft above datum):	215.00
Water Table Elevation, [WT] (ft above datum):	215.10
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day)	28.00
Fillable Porosity of Aquifer, [n] (%):	30.00
Vertical Unsaturated Infiltration, [Iv] (ft/day):	14.00
Runoff Volume, [V] (cubic feet)	20873.00
Percent Recovery Of Runoff Volume, [PV] (%)	100.00

I. Results

UNSATURATED FLOW

Recovery Time From Unsaturated Flow, [T1] (days):	0.0267
Recovered Volume From Unsaturated Flow, [V1] (ft^3):	20873.00

SATURATED FLOW

Recovery Time From Saturated Flow, [T2] (days):	0.0000
Recovered Volume From Saturated Flow, [V2] (ft^3):	0.00
Maximum Radius Of Influence, [R] (ft):	0.00
Maximum Driving Head, [Hmax] (ft):	0.000
Minimum Driving Head, [Hmin] (ft):	0.000

TOTAL

Total Recovery Time, [T] (days):	0.0267
Total Recovered Volume, [V] (ft^3):	20873.00

STORM SEWER TABULATIONS

Rainfall Table

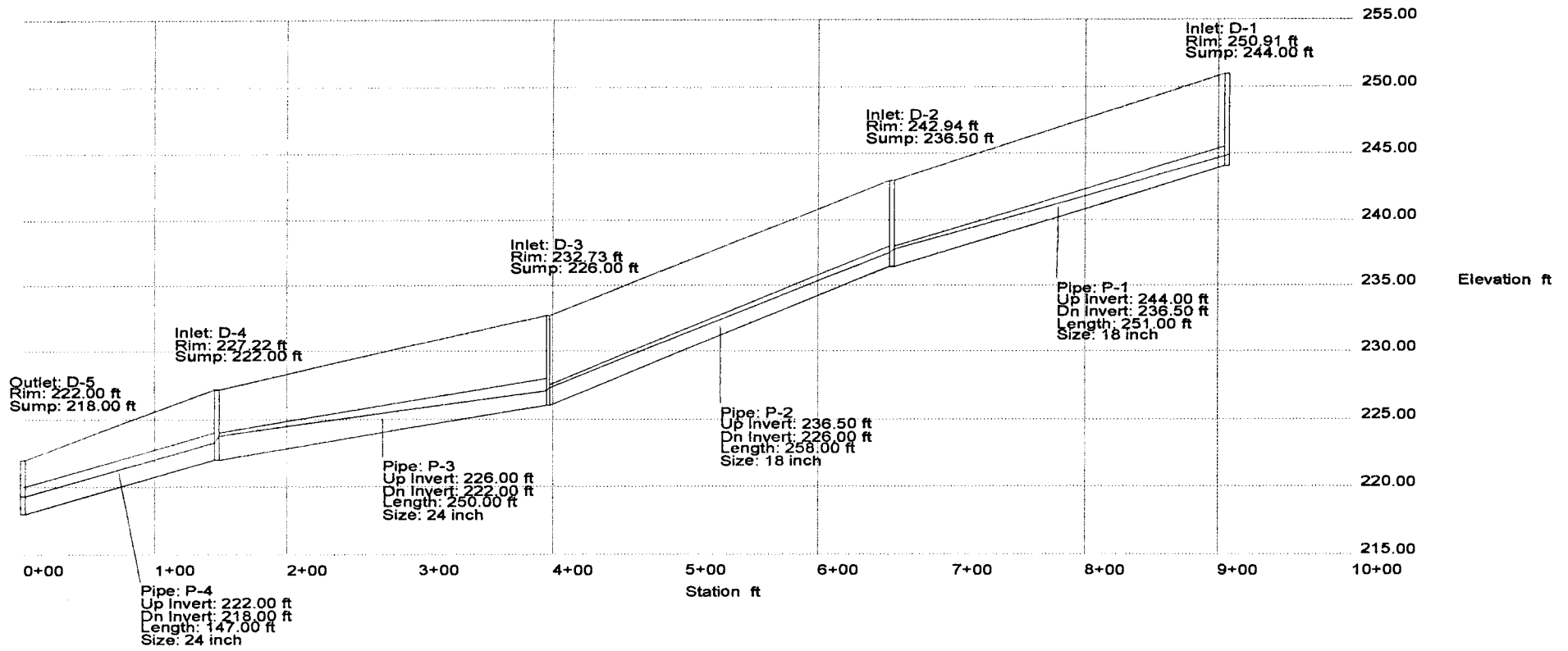
Return Periods

Durations	10 year
10 min	7.30
15 min	6.30
20 min	5.70
25 min	5.20
30 min	4.80
35 min	4.50

Rainfall Intensities are in (in/hr)

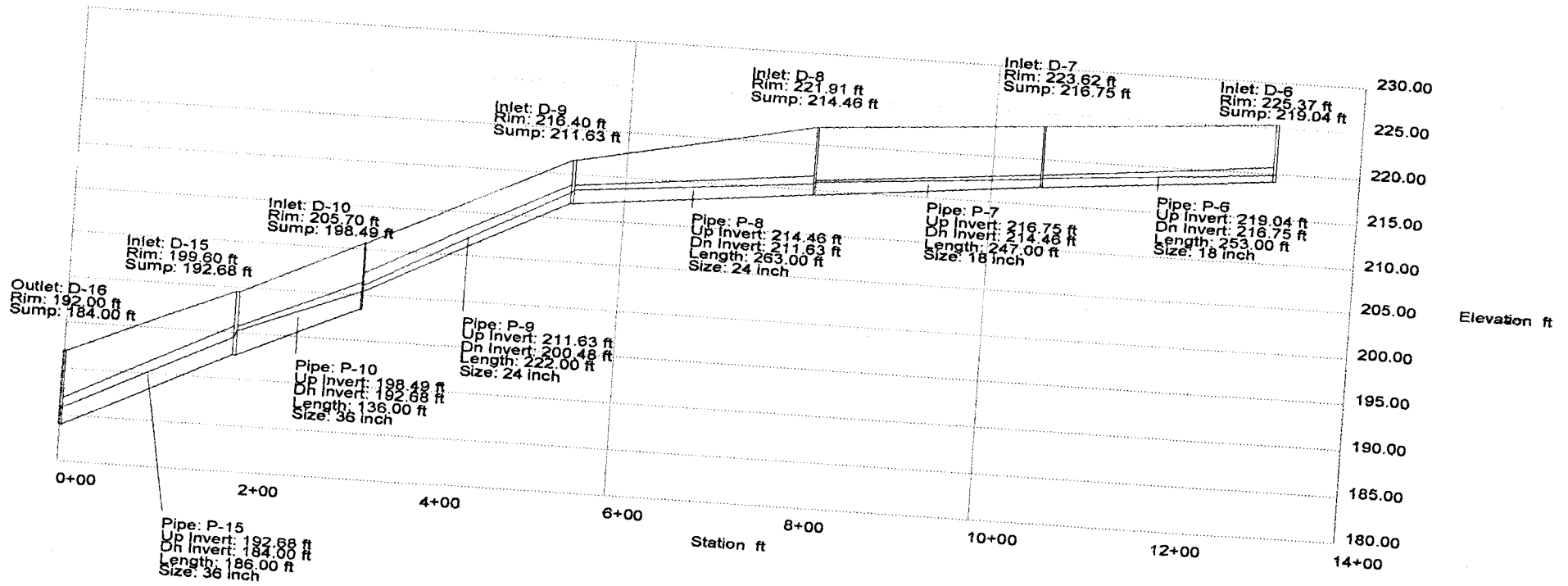
DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-1	D-1	1.24	0.59	0.59	250.91	244.74	0.028657	3.72	Circular	251.00	3.34	
	D-2				242.94	237.74	0.029880	18.16	18 inch			
P-2	D-2	0.99	0.53	1.11	242.94	237.52	0.040127	6.90	Circular	258.00	4.76	
	D-3				232.73	227.36	0.040698	21.19	18 inch			
P-3	D-3	0.90	0.52	1.63	232.73	227.13	0.014703	9.93	Circular	250.00	4.44	
	D-4				227.22	223.73	0.016000	28.61	24 inch			
P-4	D-4	0.85	0.50	2.13	227.22	223.28	0.027211	12.73	Circular	147.00	5.98	
	D-5				222.00	219.28	0.027211	37.32	24 inch			



DOT Report

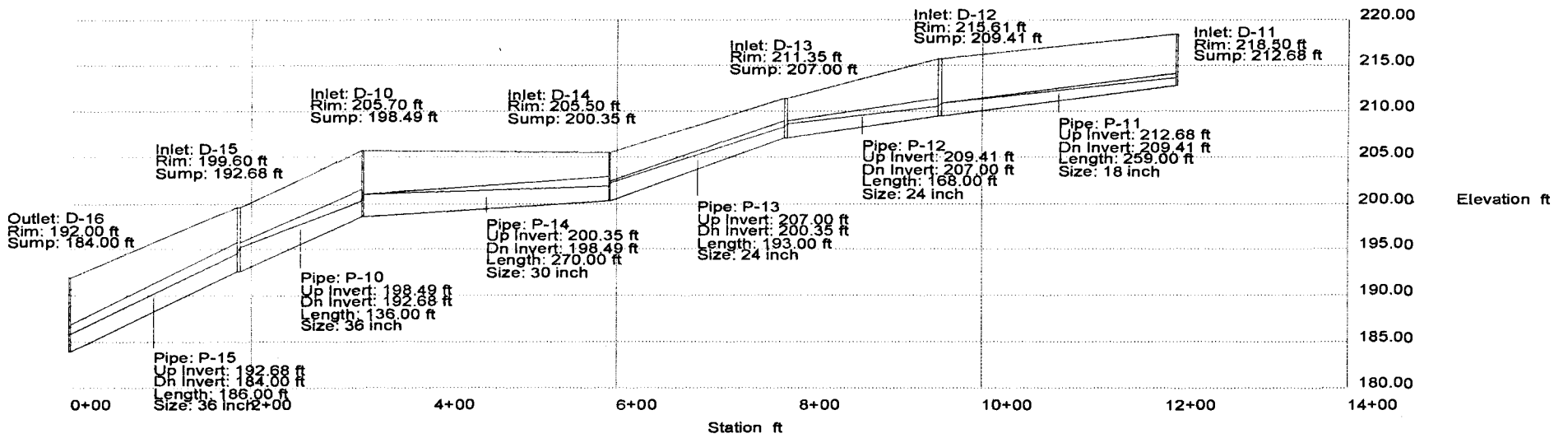
Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-6	D-6	0.90	0.51	0.51	225.37	219.73	0.007821	3.24	Circular	253.00	3.14	
	D-7				223.62	217.94	0.009051	9.99	18 inch			
P-7	D-7	0.94	0.52	1.03	223.62	217.73	0.008676	6.36	Circular	247.00	4.55	
	D-8				221.91	215.77	0.009271	10.11	18 inch			
P-8	D-8	0.91	0.51	1.54	221.91	215.55	0.009782	9.36	Circular	263.00	4.40	
	D-9				216.40	213.24	0.010760	23.47	24 inch			
P-9	D-9	1.17	0.57	2.11	216.40	212.91	0.042846	12.58	Circular	222.00	9.67	
	D-10				205.70	201.16	0.050225	50.70	24 inch			
P-11	D-11	1.46	0.81	0.81	218.50	213.55	0.011527	5.14	Circular	259.00	3.92	
	D-12				215.61	210.79	0.012625	11.80	18 inch			
P-12	D-12	1.54	0.83	1.63	215.61	210.55	0.012927	10.17	Circular	168.00	4.59	
	D-13				211.35	208.64	0.014345	27.09	24 inch			
P-13	D-13	0.82	0.48	2.11	211.35	208.30	0.033370	12.99	Circular	193.00	5.22	
	D-14				205.50	202.12	0.034456	41.99	24 inch			
P-14	D-14	1.65	0.78	2.89	205.50	201.77	0.004393	17.56	Circular	270.00	4.85	
	D-10				205.70	200.96	0.006889	34.04	30 inch			
P-10	D-10	0.88	0.48	5.48	205.70	200.34	0.040419	32.40	Circular	136.00	6.08	
	D-15				199.60	195.22	0.042721	137.85	36 inch			
P-15	D-15	0.77	0.31	5.79	199.60	194.57	0.046667	33.98	Circular	186.00	7.23	
	D-16				192.00	185.89	0.046667	144.08	36 inch			



Project Title: MANCHESTER AT KINGS RIDGE
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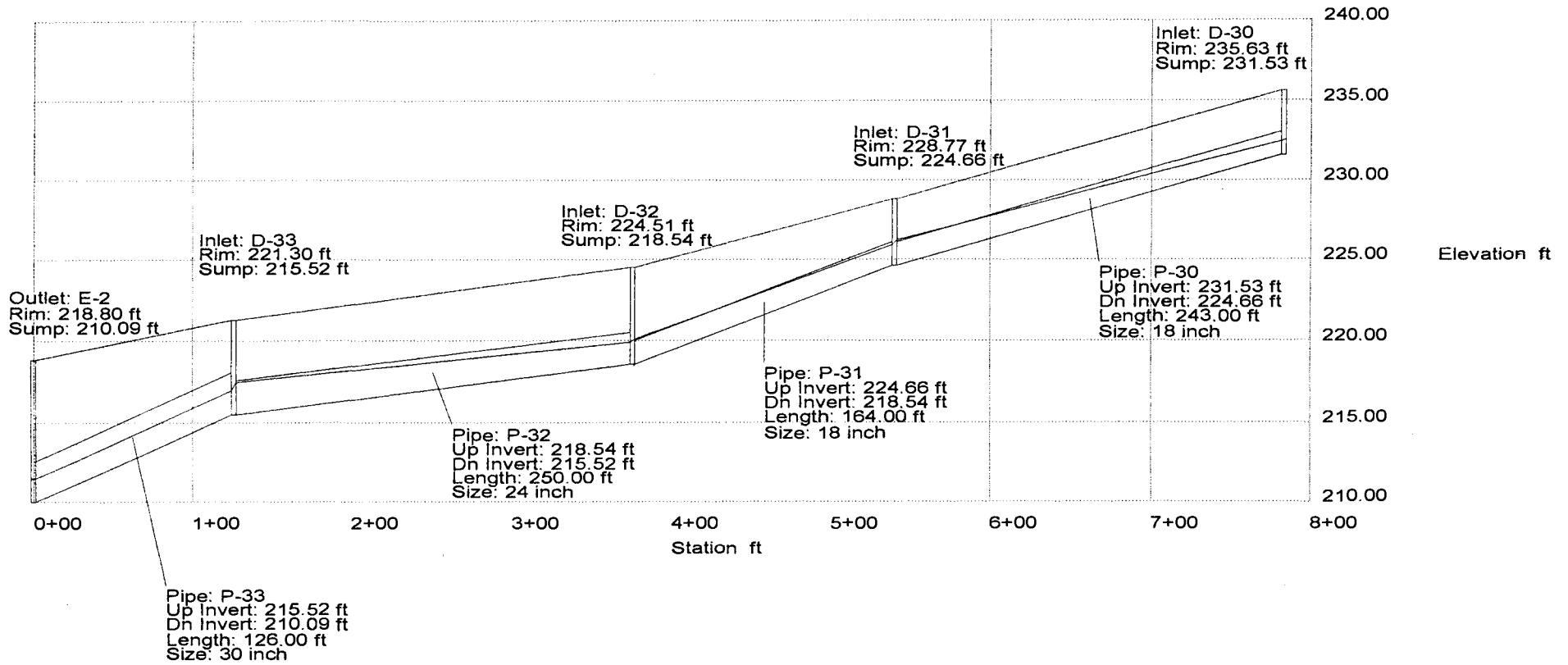
FARNER BARLEY & ASSOC.
 Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 (203) 755-1666

Project Engineer: FARNER BARLEY & ASSOC.
 StormCAD v1.0
 Page 1 of 1



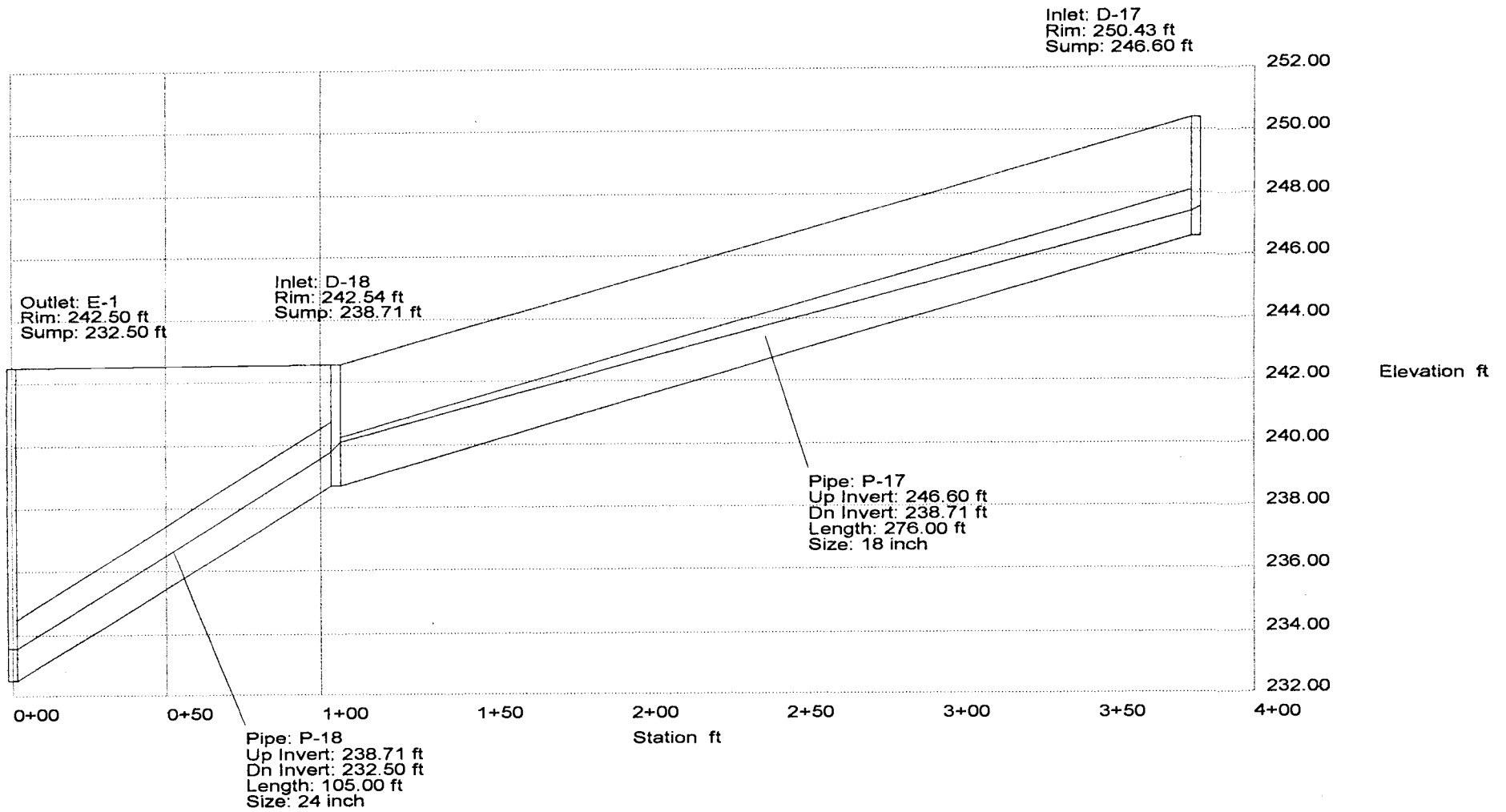
DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-30	D-30	1.46	0.81	0.81	235.63	232.40	0.026398	5.14	Circular	243.00	3.86	
	D-31				228.77	226.22	0.028272	17.66	18 inch			
P-31	D-31	1.41	0.81	1.62	228.77	225.88	0.035880	10.11	Circular	164.00	6.13	
	D-32				224.51	220.16	0.037317	20.29	18 inch			
P-32	D-32	1.06	0.57	2.20	224.51	219.87	0.010873	13.55	Circular	250.00	5.26	
	D-33				221.30	217.43	0.012080	24.86	24 inch			
P-33	D-33	1.34	0.78	2.97	221.30	216.96	0.043095	18.06	Circular	126.00	6.17	
	E-2				218.80	211.53	0.043095	85.14	30 inch			



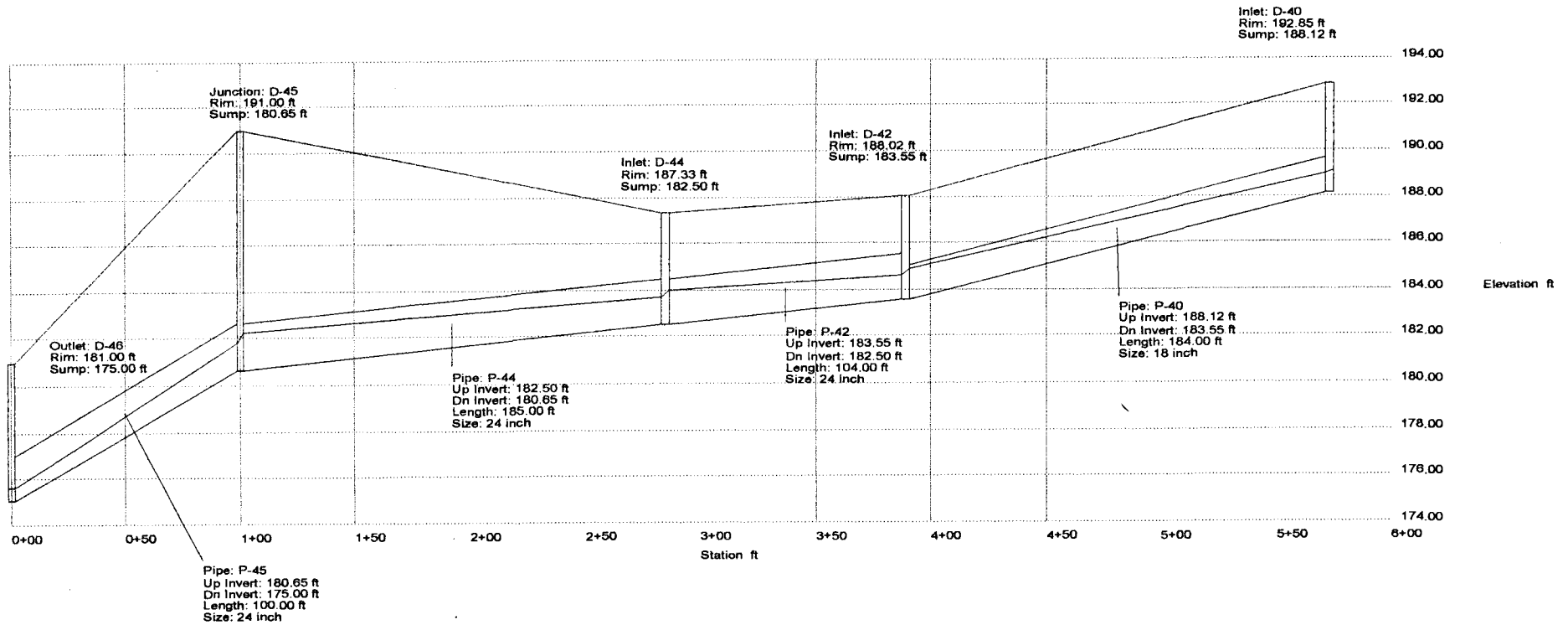
DOT Report

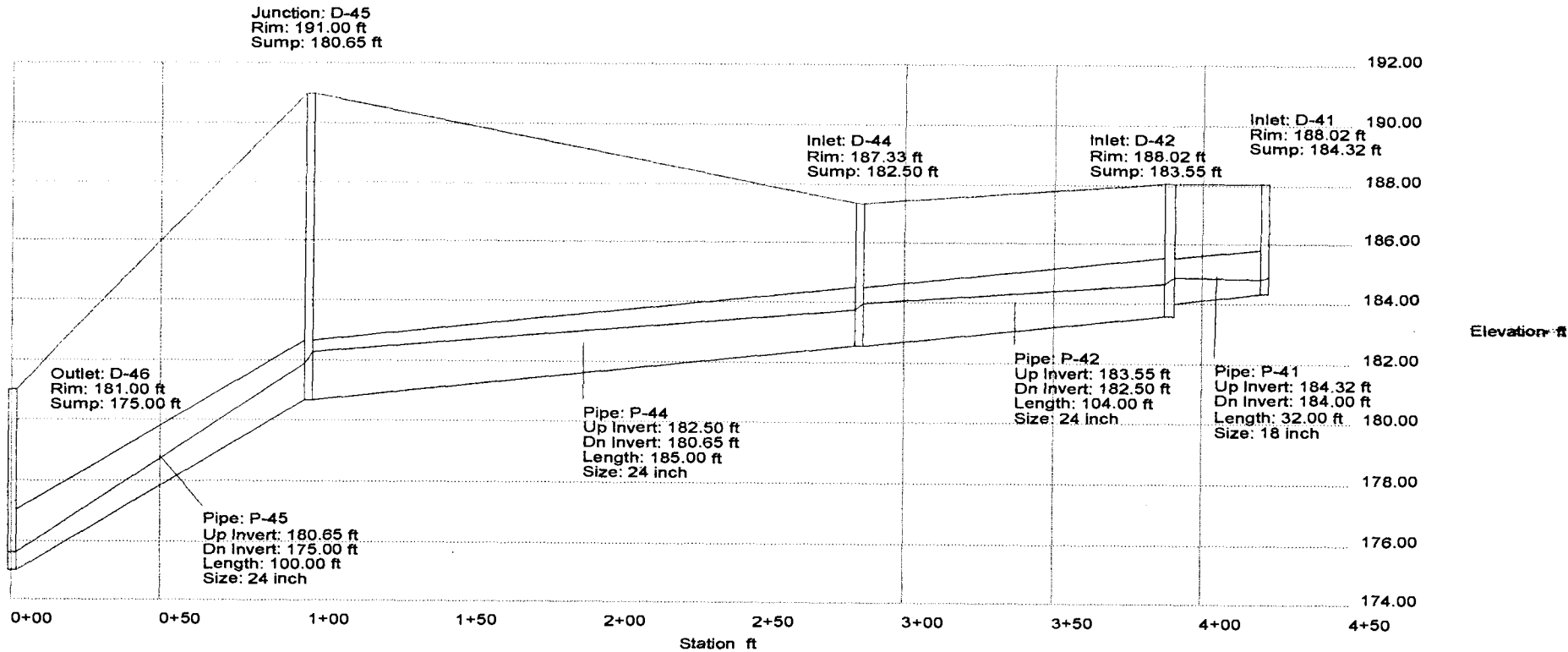
Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-17	D-17	1.52	0.69	0.69	250.43	247.40	0.027256	4.36	Circular	276.00	3.55	
	D-18				242.54	240.10	0.028587	17.76	18 inch			
P-18	D-18	1.34	0.72	1.40	242.54	239.76	0.059143	8.70	Circular	105.00	5.19	
	E-1				242.50	233.55	0.059143	55.01	24 inch			

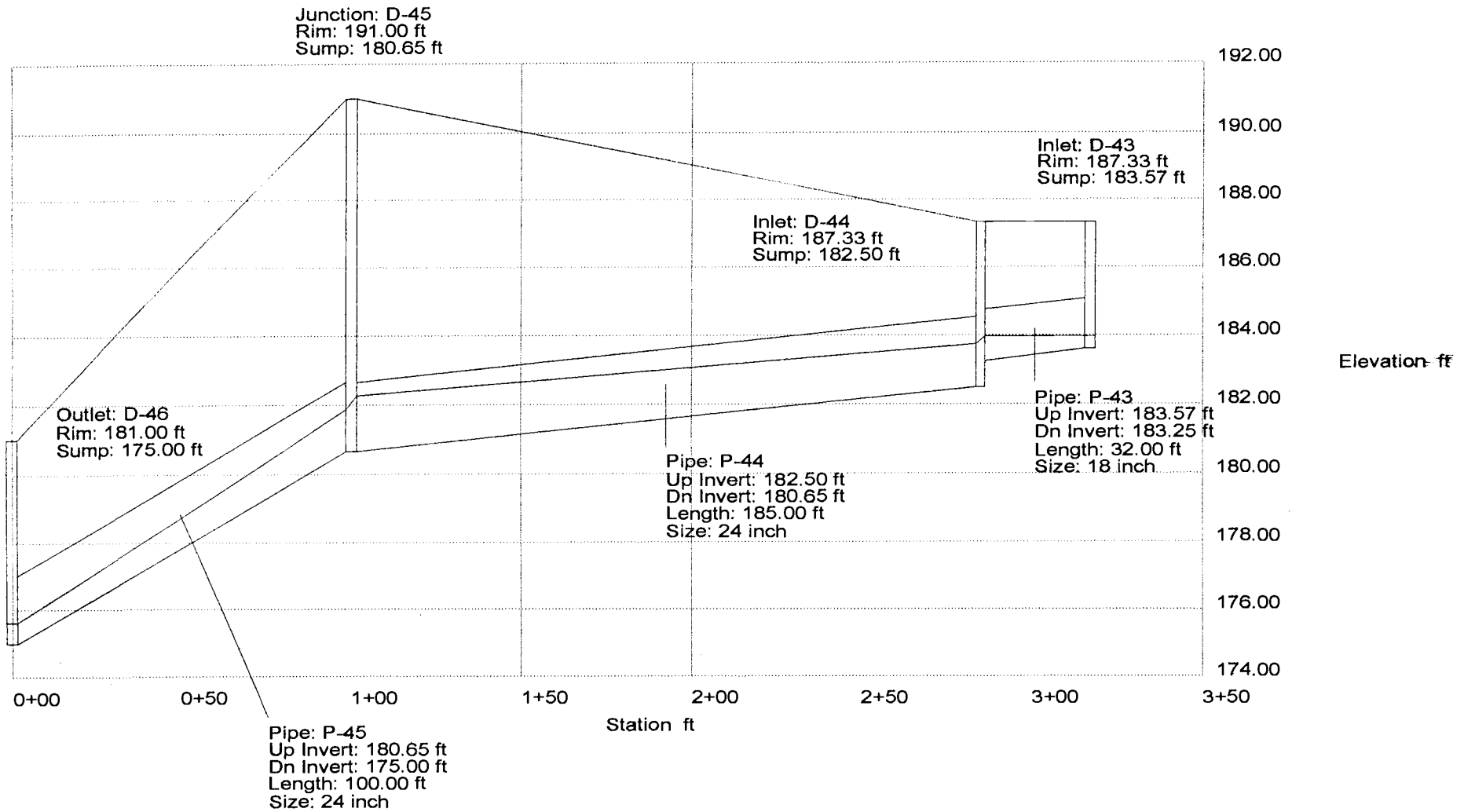


DOT Report

Pipe	-Node- Upstream Downstream	Inlet Area (acres)	Inlet CA (acres)	Total CA (acres)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	-Section- Shape Size	Length (ft)	Average Velocity (ft/s)	Description
P-43	D-43	0.17	0.09	0.09	187.33	183.94	0.000527	0.55	Circular	32.00	1.16	
	D-44				187.33	183.95	0.010000	10.50	18 inch			
P-40	D-40	1.46	0.69	0.69	192.85	188.92	0.023098	4.38	Circular	184.00	3.59	
	D-42				188.02	184.89	0.024837	16.55	18 inch			
P-41	D-41	0.50	0.27	0.27	188.02	184.81	0.001912	1.68	Circular	32.00	2.46	
	D-42				188.02	184.89	0.010000	10.50	18 inch			
P-42	D-42	1.01	0.50	1.46	188.02	184.63	0.008566	9.10	Circular	104.00	4.50	
	D-44				187.33	183.95	0.010096	22.73	24 inch			
P-44	D-44	0.51	0.27	1.81	187.33	183.70	0.009137	11.22	Circular	185.00	4.94	
	D-45				191.00	182.24	0.010000	22.62	24 inch			
P-45	D-45	N/A	N/A	1.81	191.00	181.84	0.039034	11.09	Circular	100.00	9.57	
	D-46				181.00	175.62	0.056500	53.77	24 inch			







INLET SPREAD CALCULATIONS
"HEC 12"

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Project : MANCHESTER AT KINGS RIDGE

Sta 35+84 INPUT
 Intens.= 7.30 C1=0.48 A1= 1.24 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D1 C2=0.00 A2= 0.00 Qrunoff= 4.4 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0258 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.0 Qtotal= 4.4 Qint= 4.1 Flowby dn= 0.3 Depth=0.17 Spread= 8.70 Veloc= 3.47

Sta 33+33 INPUT
 Intens.= 7.30 C1=0.54 A1= 0.99 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D2 C2=0.00 A2= 0.00 Qrunoff= 3.9 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0386 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.3 Qtotal= 4.2 Qint= 4.0 Flowby dn= 0.2 Depth=0.16 Spread= 7.95 Veloc= 3.99

Sta 30+75 INPUT
 Intens.= 7.30 C1=0.58 A1= 0.90 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D3 C2=0.00 A2= 0.00 Qrunoff= 3.8 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0265 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.2 Qtotal= 4.0 Qint= 3.8 Flowby dn= 0.2 Depth=0.17 Spread= 8.40 Veloc= 3.44

Sta 28+25 INPUT
 Intens.= 7.30 C1=0.59 A1= 0.85 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D4 C2=0.00 A2= 0.00 Qrunoff= 3.7 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0073 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.2 Qtotal= 3.9 Qint= 3.6 Flowby dn= 0.3 Depth=0.21 Spread= 10.55 Veloc= 2.11

Sta 25+71 INPUT
 Intens.= 7.30 C1=0.57 A1= 0.90 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D6 C2=0.00 A2= 0.00 Qrunoff= 3.8 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0069 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.3 Qtotal= 4.1 Qint= 3.8 Flowby dn= 0.3 Depth=0.22 Spread= 10.85 Veloc= 2.08

Sta 23+18 INPUT
 Intens.= 7.30 C1=0.55 A1= 0.94 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D7 C2=0.00 A2= 0.00 Qrunoff= 3.8 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0069 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.3 Qtotal= 4.1 Qint= 3.8 Flowby dn= 0.3 Depth=0.22 Spread= 10.90 Veloc= 2.09

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Project : MANCHESTER AT KINGS RIDGE

Sta 20+70 INPUT
 Intens.= 7.30 C1=0.56 A1= 0.91 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D8 C2=0.00 A2= 0.00 Qrunoff= 3.8 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0069 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.3 Qtotal= 4.1 Qint= 3.8 Flowby dn= 0.3 Depth=0.22 Spread= 10.85 Veloc= 2.09

Sta 18+05 INPUT
 Intens.= 7.30 C1=0.49 A1= 1.17 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D9 C2=0.00 A2= 0.00 Qrunoff= 4.2 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0402 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.3 Qtotal= 4.6 Qint= 4.3 Flowby dn= 0.2 Depth=0.16 Spread= 8.10 Veloc= 4.17

Sta 15+79 INPUT
 Intens.= 7.30 C1=0.55 A1= 0.88 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D10 C2=0.00 A2= 0.00 Qrunoff= 3.6 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0489 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.2 Qtotal= 3.8 Qint= 3.7 Flowby dn= 0.1 Depth=0.15 Spread= 7.30 Veloc= 4.28

Sta 14+44 INPUT
 Intens.= 7.30 C1=0.40 A1= 0.77 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D15 C2=0.00 A2= 0.00 Qrunoff= 2.3 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0354 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.1 Qtotal= 2.4 Qint= 2.4 Flowby dn= 0.0 Depth=0.13 Spread= 6.55 Veloc= 3.36

Sta 12+36 INPUT
 Intens.= 7.30 C1=0.46 A1= 1.46 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D40 C2=0.00 A2= 0.00 Qrunoff= 4.9 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0305 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.0 Qtotal= 5.0 Qint= 4.7 Flowby dn= 0.3 Depth=0.18 Spread= 8.85 Veloc= 3.82

CRITERIA

Runoff computed by Rational Method Manning's n Gutter=0.016 Manning's n Pavement=0.022

Clogging Factors in Sag Location:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Clogging Factors on Continuous Grade:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Prepared by: Date:05/11/98 Time:11:13:04 Checked by: Date:

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Project : MANCHESTER AT KINGS RIDGE

Sta 41+09 INPUT
 Intens.= 7.30 C1=0.45 A1= 1.52 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D17 C2=0.00 A2= 0.00 Qrunoff= 5.0 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0282 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.0 Qtotal= 5.0 Qint= 4.7 Flowby dn= 0.4 Depth=0.18 Spread= 9.00 Veloc= 3.73

Sta 43+89 INPUT
 Intens.= 7.30 C1=0.54 A1= 1.34 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D18 C2=0.00 A2= 0.00 Qrunoff= 5.3 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0282 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.4 Qtotal= 5.7 Qint= 5.2 Flowby dn= 0.5 Depth=0.19 Spread= 9.45 Veloc= 3.82

Sta 46+34 INPUT
 Intens.= 7.30 C1=0.55 A1= 1.46 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D30 C2=0.00 A2= 0.00 Qrunoff= 5.9 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0282 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.5 Qtotal= 6.4 Qint= 5.8 Flowby dn= 0.6 Depth=0.20 Spread= 9.85 Veloc= 3.94

Sta 48+77 INPUT
 Intens.= 7.30 C1=0.57 A1= 1.41 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D31 C2=0.00 A2= 0.00 Qrunoff= 5.9 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0282 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.6 Qtotal= 6.5 Qint= 5.9 Flowby dn= 0.6 Depth=0.20 Spread= 9.90 Veloc= 3.96

Sta 50+41 INPUT
 Intens.= 7.30 C1=0.54 A1= 1.06 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D32 C2=0.00 A2= 0.00 Qrunoff= 4.2 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0178 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.6 Qtotal= 4.8 Qint= 4.4 Flowby dn= 0.4 Depth=0.19 Spread= 9.65 Veloc= 3.09

Sta 52+91 INPUT
 Intens.= 7.30 C1=0.58 A1= 1.34 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D33 C2=0.00 A2= 0.00 Qrunoff= 5.7 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0109 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.4 Qtotal= 6.1 Qint= 5.5 Flowby dn= 0.6 Depth=0.23 Spread= 11.55 Veloc= 2.74

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Project : MANCHESTER AT KINGS RIDGE

Sta 55+49 INPUT
 Intens.= 7.30 C1=0.55 A1= 1.46 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D11 C2=0.00 A2= 0.00 Qrunoff= 5.9 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0109 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.6 Qtotal= 6.5 Qint= 5.8 Flowby dn= 0.7 Depth=0.24 Spread= 11.85 Veloc= 2.80

Sta 58+08 INPUT
 Intens.= 7.30 C1=0.54 A1= 1.54 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D12 C2=0.00 A2= 0.00 Qrunoff= 6.1 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0156 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.7 Qtotal= 6.8 Qint= 6.1 Flowby dn= 0.7 Depth=0.23 Spread= 11.30 Veloc= 3.22

Sta 59+76 INPUT
 Intens.= 7.30 C1=0.59 A1= 0.82 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D13 C2=0.00 A2= 0.00 Qrunoff= 3.6 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0356 Slope3= 0.0200 W = 3.00 Length= 4.00

OUTPUT
 Flowby= 0.7 Qtotal= 4.3 Qint= 4.1 Flowby dn= 0.2 Depth=0.16 Spread= 8.15 Veloc= 3.88

Sta 61+60 INPUT
 Intens.= 4.30 C1=0.47 A1= 1.65 Qadd = 0.0 Slope1= 0.0300 Gutter= 0.01 Area =12.00
 CB ID = D14 C2=0.00 A2= 0.00 Qrunoff= 3.4 Slope2= 0.0200 a = 0.50 Perim =14.00
 Grt P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0000 Slope3= 0.0200 W = 4.00 Length= 4.00

OUTPUT
 Flowby= 0.2 Qtotal= 3.6 Qint= 3.6 Flowby dn= 0.0 Depth=0.23 Spread= 11.25 Veloc= 0.00

CRITERIA

Runoff computed by Rational Method Manning's n Gutter=0.016 Manning's n Pavement=0.022
 Clogging Factors in Sag Location:
 ----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25
 Clogging Factors on Continuous Grade:
 ----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Prepared by: Date:05/11/98 Time:11:21:03 Checked by: Date:
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Project : MANCHESTER AT KINGS RIDGE

Sta 9+48

INPUT

Intens.= 7.30 C1=0.53 A1= 0.51 Qadd = 0.0 Slope1= 3.0000 Gutter= 1.80 Area =12.00
CB ID = D44 C2=0.00 A2= 0.00 Qrunoff= 2.0 Slope2= 0.3400 a = 5.50 Lgrate= 5.00
Com P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0256 Slope3= 0.0200 W = 1.50 Length= 9.00

OUTPUT

Flowby= 0.0 Qtotal= 2.0 Qint= 2.0 Flowby dn= 0.0 Depth=0.44 Spread= 1.28 Veloc= 6.42

CRITERIA

Runoff computed by Rational Method Manning's n Gutter=0.016 Manning's n Pavement=0.022

Clogging Factors in Sag Location:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Clogging Factors on Continuous Grade:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Prepared by: Date:05/11/98 Time:11:22:56 Checked by: Date:

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Project : MANCHESTER AT KINGS RIDGE

Sta 9+47

INPUT

Intens.= 7.30 C1=0.53 A1= 0.17 Qadd = 0.0 Slope1= 3.0000 Gutter= 1.80 Area =12.00
CB ID = D43 C2=0.00 A2= 0.00 Qrunoff= 0.7 Slope2= 0.3400 a = 5.50 Lgrate= 5.00
Con P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0256 Slope3= 0.0200 W = 1.50 Length= 9.00

OUTPUT

Flowby= 0.0 Qtotal= 0.7 Qint= 0.7 Flowby dn= 0.0 Depth=0.29 Spread= 0.85 Veloc= 4.85

CRITERIA

Runoff computed by Rational Method Manning's n Gutter=0.016 Manning's n Pavement=0.022

Clogging Factors in Sag Location:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Clogging Factors on Continuous Grade:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Prepared by: Date:05/11/98 Time:11:23:35 Checked by: Date:

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Project : MANCHESTER AT KINGS RIDGE

Sta 10+51 INPUT
Intens.= 7.30 C1=0.54 A1= 0.50 Qadd = 0.2 Slope1= 3.0000 Gutter= 1.80 Area =12.00
CB ID = D41 C2=0.00 A2= 0.00 Qrunoff= 2.1 Slope2= 0.3400 a = 5.50 Lgrate= 4.00
Com P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0000 Slope3= 0.0200 W = 1.50 Length=14.50

OUTPUT
Flowby= 0.0 Qtotal= 2.1 Qint= 2.1 Flowby dn= 0.0 Depth=0.12 Spread= 0.36 Veloc= 0.00

CRITERIA
Runoff computed by Rational Method Manning's n Gutter=0.016 Manning's n Pavement=0.022
Clogging Factors in Sag Location:
----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25
Clogging Factors on Continuous Grade:
----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Prepared by: Date:05/11/98 Time:11:24:07 Checked by: Date:
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Project : MANCHESTER AT KINGS RIDGE

Sta 10+52

INPUT

Intens.= 7.30 C1=0.50 A1= 1.01 Qadd = 0.2 Slope1= 3.0000 Gutter= 1.80 Area =12.00
CB ID = D42 C2=0.00 A2= 0.00 Qrunoff= 3.9 Slope2= 0.3400 a = 5.50 Lgrate= 4.00
Com P-1-7/8 C3=0.00 A3= 0.00 Grade = 0.0000 Slope3= 0.0200 W = 1.50 Length=14.50

OUTPUT

Flowby= 0.0 Qtotal= 3.9 Qint= 3.9 Flowby dn= 0.0 Depth=0.18 Spread= 0.53 Veloc= 0.00

CRITERIA

Runoff computed by Rational Method Manning's n Gutter=0.016 Manning's n Pavement=0.022

Clogging Factors in Sag Location:

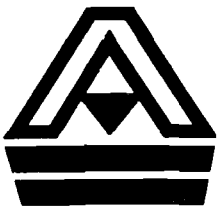
----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Clogging Factors on Continuous Grade:

----- Curb Opening= 1.25 Grate= 1.25 Slotted Drain= 1.25 Comb-Curb= 1.25 Comb-Grate= 1.25

Prepared by: Date:05/11/98 Time:11:24:39 Checked by: Date:
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GEOTECHNICAL INVESTIGATION



Andreyev Engineering, Inc.

TAVARES OFFICE
405 N. Sinclair Avenue
Tavares, Florida 32778
352-742-9622
Fax: 352-742-9623
Email: ANDENGI@AOL.COM

▼ Groundwater ▼ Environmental ▼ Geotechnical ▼ Construction Materials Testing

March 3, 1998
Project No: TPGT 98-011

TO: Lennar Homes
C/o Farner Barley & Assoc. Inc.
350 North Sinclair
Tavares, Florida 32778

Attn: Duane Booth, P.E.

SUBJECT: Geotechnical Investigation of Wellington East and Brighton East Parcels in KingsRidge Subdivision, Stormwater Retention Systems, Clermont, Lake County, Florida

Dear Mr. Booth

As requested, Andreyev Engineering, Inc. (AEI) has completed a geotechnical investigation for the subject site. The following report presents the results of our field and laboratory investigation along with evaluation and recommendations for the proposed site.

SITE LOCATION AND DESCRIPTION

The subject site consists of two +/- 40 acre parcels located immediately east of U.S. 27 in Clermont, FL. We understand that the property will be used for residential development. Six (6) stormwater retention areas associated with the proposed development will be located as shown on the attached site plan labeled **Figure 1**.

PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to explore shallow subsurface conditions at the proposed retention areas to determine the suitability for stormwater retention. The field exploration consisted of drilling seven (7) auger borings to a depth of 8 feet within the proposed retention areas. In addition, seven (7) field permeability tests were conducted at each boring in order to measure the hydraulic conductivity of the soils. These tests were conducted by installing slotted screen PVC piezometers in the ground to a depth of 7 to 8 feet below ground surface, saturating the soil, then applying a measured flow of water in order to maintain a constant head in the piezometers. The flow rate, in conjunction with the head elevation and the piezometer geometry, was used in calculating the horizontal saturated hydraulic conductivity of the soil.

Samples were recovered from the borings and returned to AEI 's laboratory for visual classification and stratification. Soil strata were classified according to the Unified Soil Classification System. Approximate boring locations are shown on **Figure 1** and results of the borings in profile form are presented on **Figure 2**. Also shown on **Figure 2** next to the tested depths are the results of the field permeability tests. On the profiles, horizontal lines designating the interface between differing materials represent approximate boundaries. The actual transition between layers is typically gradual.

SUBSURFACE CONDITIONS

Three (3) soil strata were identified in the borings. Strata 1 and 2 were classified as highly permeable fine sand. Stratum 3 was classified as slightly silty fine sand. In AB-1, Stratum 1 was found from the ground surface to a depth of 0.8 foot below the ground surface, Stratum 2 was found from 0.8 foot below ground surface to the boring termination depth. In AB-2, Stratum 1 started at the ground surface to 0.8 foot below the ground surface, Stratum 2 extended from 0.8 feet below the ground surface to the boring termination depth. In AB-3, Stratum 1 extends from the ground surface to 1.2 feet below the ground surface, Stratum 2 was found at various depths from 1.2 to 5.5 feet and 6.5 to 8 feet below the ground surface, Stratum 3 was found at 5.5 to 6.5 feet below the ground surface. In AB-4, Stratum 1 was found from the ground surface to 1 foot below the ground surface, Stratum 2 extended from 1 foot below the ground surface to the boring termination depth.

In AB-5, Stratum 1 was found from the ground surface to 1.2 feet below the ground surface, Stratum 2 extended from 1.2 feet below the ground surface to the boring termination depth. In AB-6, Stratum 1 was found from the ground surface to 0.6 foot below ground surface, Stratum 2 extended from 0.6 foot below ground surface to the boring termination depth.

In AB-7, Stratum 1 was found from ground surface to 1.2 feet below ground surface, Stratum 2 extended from 1.2 feet below the ground surface to the boring termination depth of 8 feet.

Field permeability tests measured the shallow soil hydraulic conductivity at the proposed retention areas. Soil hydraulic conductivity measured 29 feet per day at the location of boring AB-1, 29 feet per day at boring locations AB-2, 28 feet per day at boring location AB-3, 28 feet per day at boring location AB-4, 25 feet per day at boring location AB-5, 26 feet per day at boring location AB-6 and 28 feet per day at the location of boring AB-7. Results of these tests are shown next to the tested depths and borings on **Figure 2**.

The groundwater table was not encountered in any of the seven borings, however, based on the surrounding lake levels, the groundwater table is estimated to range from 20 to 25 feet below the ground surface across the subject property.

For purposes of design and evaluation of retention area recovery, the base of shallow aquifer should be set at the boring termination depth of 8 feet and the seasonal high groundwater table should be assumed to perch 0.5 feet above the base of the aquifer.

EVALUATION AND RECOMMENDATIONS

Based on the borings and field permeability tests, the site is suitable for construction and long-term performance of dry stormwater retention systems. Adequate separation exists between the bottom of the proposed ponds and the groundwater table. The well-drained and highly permeable nature of the soils, and deep ground water table should be well suited for dry stormwater retention areas.

For analysis and design purposes the following aquifer characteristics should be assumed. These aquifer characteristics were determined from the results of the field and laboratory investigation results:

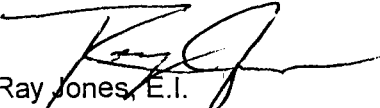
Parameters	Vicinity of AB-1	Vicinity of AB-2	Vicinity of AB-3	Vicinity of AB-4	Vicinity of AB-5	Vicinity of AB-6	Vicinity of AB-7
Depth to Aquifer Base	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface
Depth to Seasonal High Groundwater Table	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface	8 feet below ground surface
Saturated Horizontal Hydraulic Conductivity (w/o F.S.)	29 feet per day	29 feet per day	28 feet per day	28 feet per day	25 feet per day	26 feet per day	28 feet per day
Soil Storage Coefficient	0.3	0.3	0.3	0.3	0.3	0.3	0.3


CLOSURE

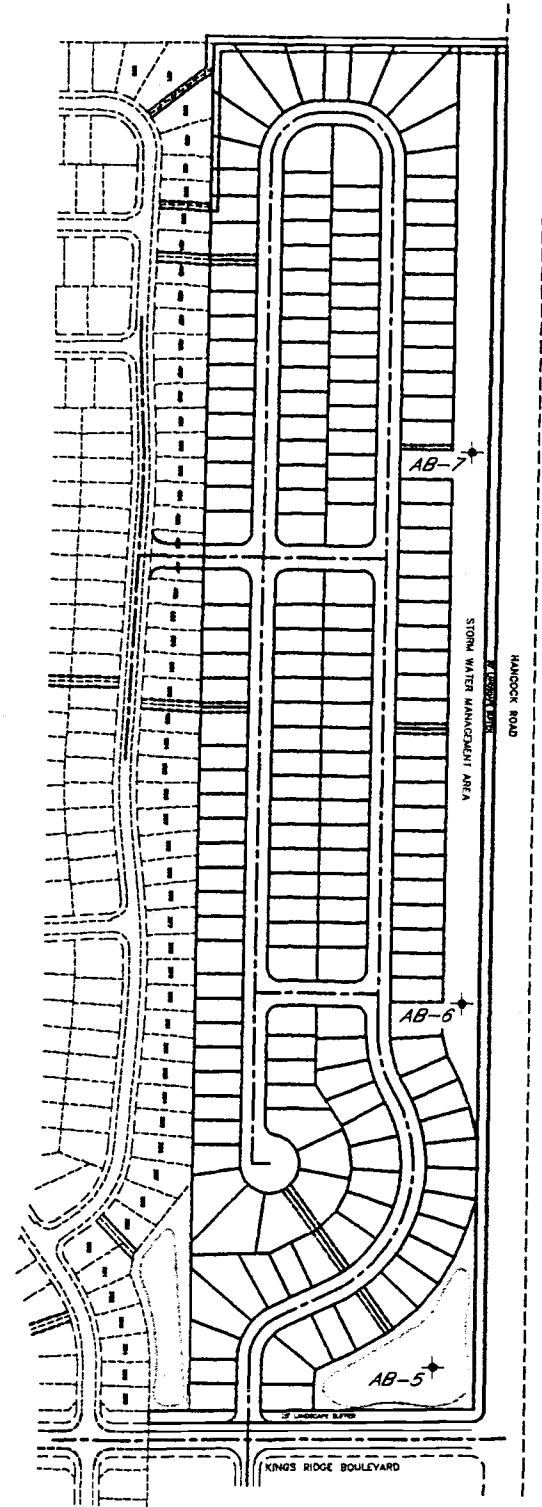
AEI appreciates the opportunity to participate in this project, and we trust that the information herein is sufficient for your immediate needs. If you have any questions or comments concerning the contents of this report, please do not hesitate to contact the undersigned.

Sincerely,

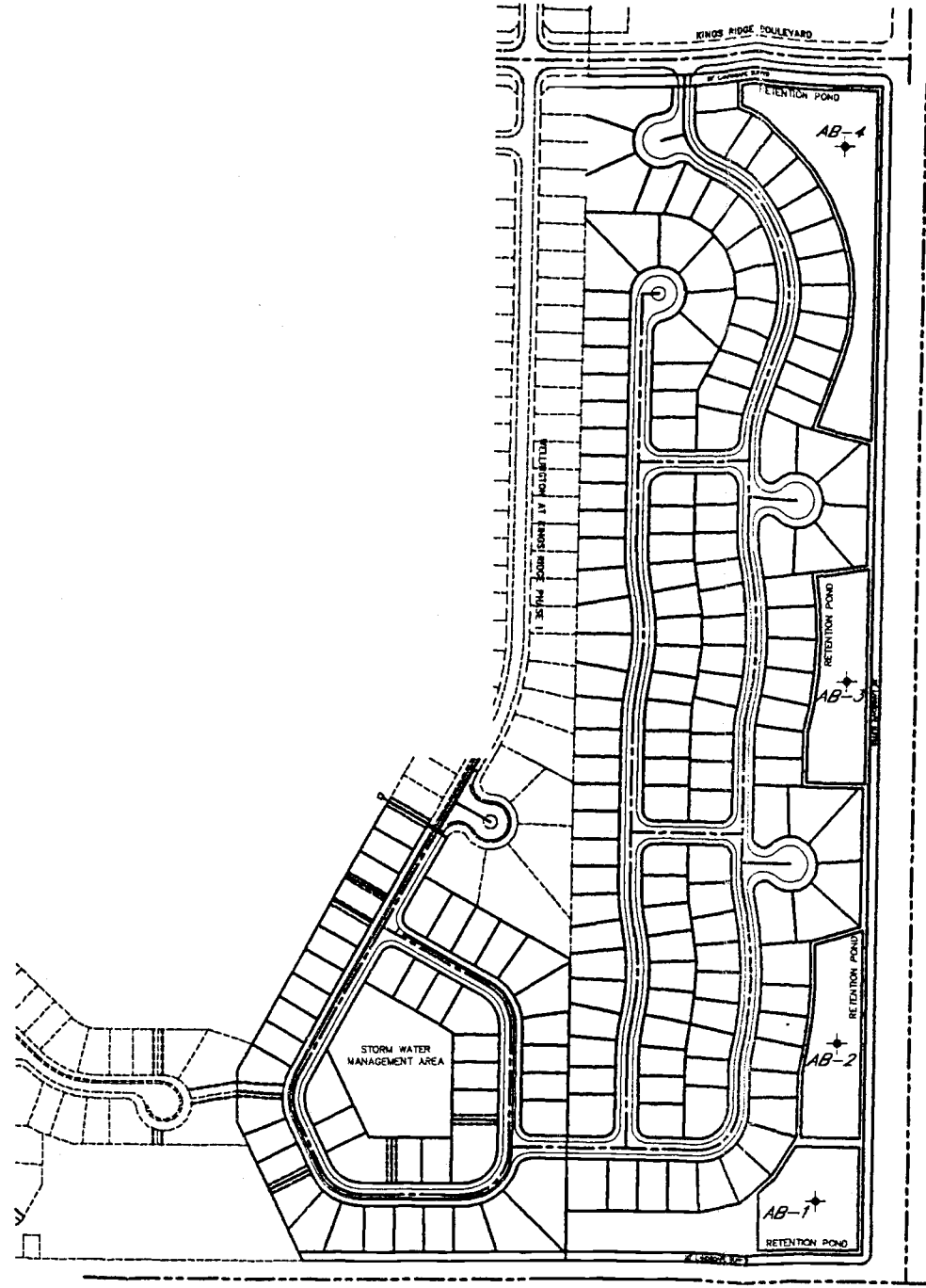
ANDREYEV ENGINEERING, INC.


 Ray Jones, E.I.
 Project Engineer
 Tavares Office


 T. Scott Cavin, P.E.
 Vice-President
 Florida Registration No. 48125




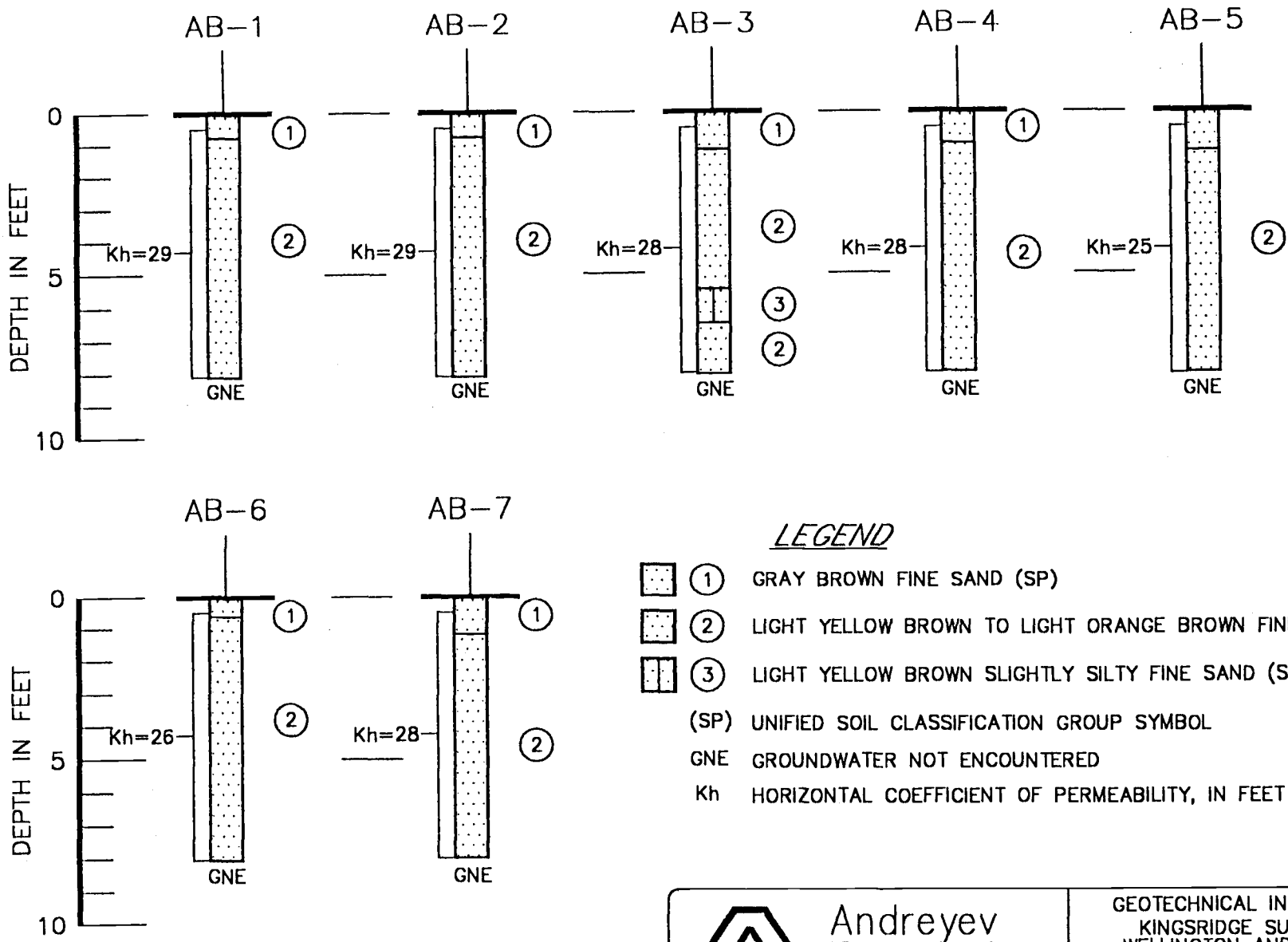
BRIGHTON EAST
AKA MANCHESTER



WELLINGTON EAST


LEGEND
+ AUGER BORING LOCATION

 Andreyev Engineering, Inc.	GEOTECHNICAL INVESTIGATION KINGSRIDGE SUBDIVISION WELLINGTON AND BRIGHTON EAST PARCELS LAKE COUNTY, FLORIDA	
	SITE PLAN FIGURE 1	
SCALE: 1" = 400'	DATE: 2/23/98 PN: TPGT-98-011	ENGINEER: RJ DRAWN BY: MK

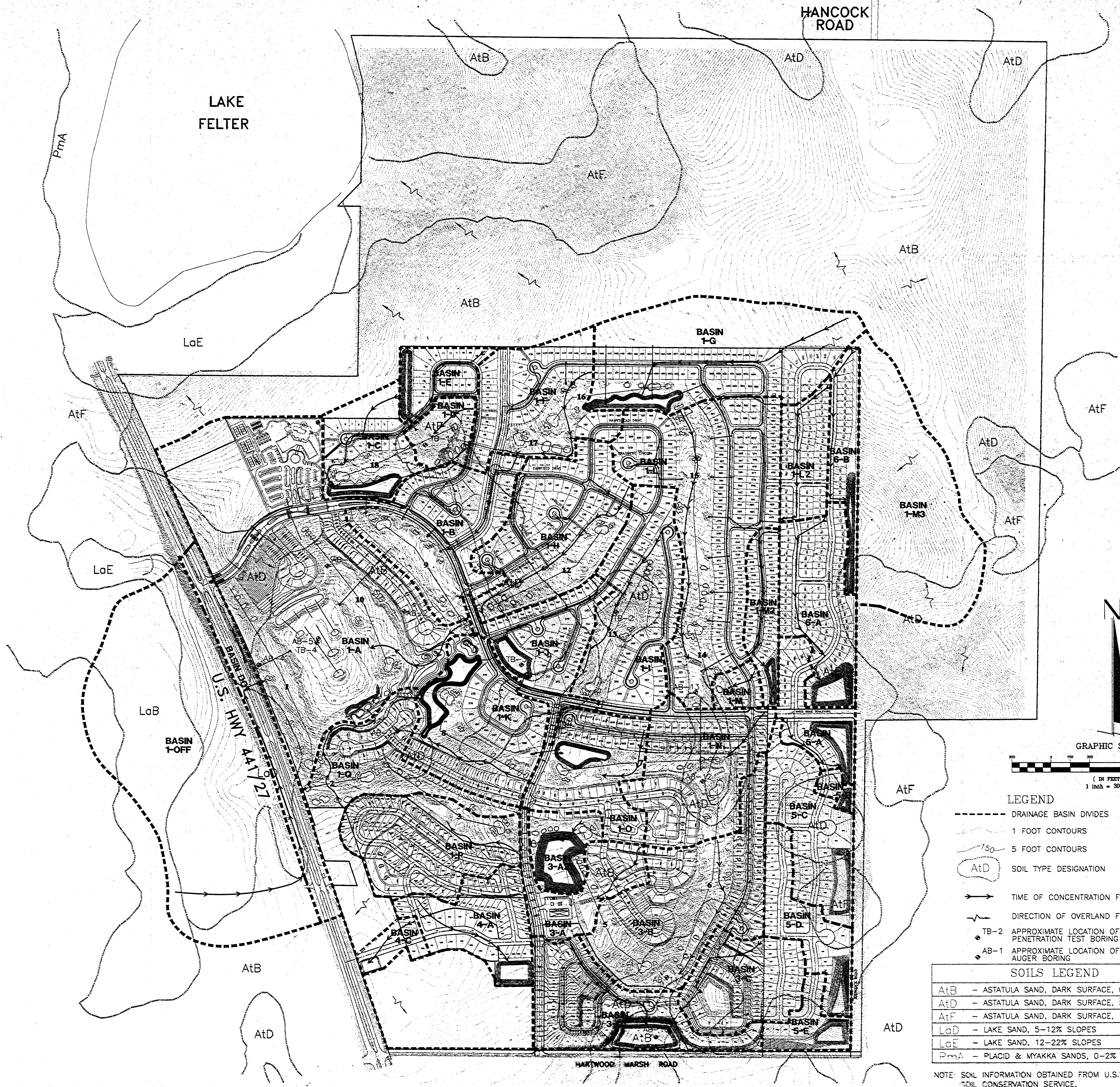


LEGEND

- ① GRAY BROWN FINE SAND (SP)
- ② LIGHT YELLOW BROWN TO LIGHT ORANGE BROWN FINE SAND (SP)
- ③ LIGHT YELLOW BROWN SLIGHTLY SILTY FINE SAND (SP-SM)
- (SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL
- GNE GROUNDWATER NOT ENCOUNTERED
- Kh HORIZONTAL COEFFICIENT OF PERMEABILITY, IN FEET PER DAY

 Andreyev Engineering, Inc.	GEOTECHNICAL INVESTIGATION KINGSRIDGE SUBDIVISION WELLINGTON AND BRIGHTON EAST PARCELS LAKE COUNTY, FLORIDA	
	SOIL PROFILES	
SCALE: 1"=5'	DATE: 2/20/98 PN: TPGT-98-011	ENGINEER: RJ DRAWN BY: MK
		FIGURE 2

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LEGEND

- DRAINAGE BASIN DIVIDES
- 1 FOOT CONTOURS
- 5 FOOT CONTOURS
- AtD SOIL TYPE DESIGNATION
- TIME OF CONCENTRATION FLOW PATH
- ~ DIRECTION OF OVERLAND FLOW
- ◆ TB-2 APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING
- ◆ AB-1 APPROXIMATE LOCATION OF AUGER BORING

SOILS LEGEND

AtB	- ASTATULA SAND, DARK SURFACE, 0-5% SLOPES
AtD	- ASTATULA SAND, DARK SURFACE, 5-12% SLOPES
AtF	- ASTATULA SAND, DARK SURFACE, 12-40% SLOPES
LoD	- LAKE SAND, 5-12% SLOPES
LoE	- LAKE SAND, 12-22% SLOPES
PmA	- PLACID & MYAKKA SANDS, 0-2% SLOPES

NOTE: SOIL INFORMATION OBTAINED FROM U.S.D.A. SOIL CONSERVATION SERVICE.

KINGS RIDGE P.U.D. PHASE IV
POST-DEVELOPMENT
MASTER DRAINAGE MAP

ENGINEERS SURVEYORS AND PLANNERS
FARNER BARLEY AND ASSOCIATES, INC.
 350 North Saddle Creek Avenue • Fortessa, Florida 32778 • (800) 343-8461

DATE: 5-11-98
 JOB NO. 941218.017
 DWG. NO. P4-POST
 F.B. _____ PG. _____
 DRAWN BY: DC
 CHKD BY: _____
 SHT. 1 OF 1

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 MAY 13 1998
 4-09-98 LAMB

MAY 11 1998