APPENDIX A

HYDRAULIC MODELING INFORMATION – SWMM 5.0

- Project Maps
- Input and Output – 100 year 6 hour storm
- Input and Output – 25 year 6 hour storm

```
 100year6hr-2.7Max          10:30      0.0945
 100year6hr-2.7Max          10:45      0.1566
 100year6hr-2.7Max          11:00      0.216
 100year6hr-2.7Max          11:15      0.2916
 100year6hr-2.7Max          11:30      0.3645
 100year6hr-2.7Max          11:45      0.4941
 100year6hr-2.7Max          12:00      0.621
 100year6hr-2.7Max          12:15      1.1205
 100year6hr-2.7Max          12:30      1.62
 100year6hr-2.7Max          12:45      1.755
 100year6hr-2.7Max          13:00      1.89
 100year6hr-2.7Max          13:15      1.998
 100year6hr-2.7Max          13:30      2.106
 100year6hr-2.7Max          13:45      2.1816
 100year6hr-2.7Max          14:00      2.2545
 100year6hr-2.7Max          14:15      2.3166
 100year6hr-2.7Max          14:30      2.376
 100year6hr-2.7Max          14:45      2.43
 100year6hr-2.7Max          15:00      2.484
 100year6hr-2.7Max          15:15      2.538
 100year6hr-2.7Max          15:30      2.592
 100year6hr-2.7Max          15:45      2.646
 100year6hr-2.7Max          16:00      2.7

[REPORT]
 INPUT      YES
 CONTROLS   NO

[OPTIONS]
 TEMPDIR    "C:\Carlsbad\DMP\"
```

Drainage Project BCA (Park Drive/Tamarack Avenue)

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)
--------------------------------------------------------------

Drainage Project BCA (Park Drive/Tamarack Avenue)
25 Year 6 Hour Storm

****************
Analysis Options
****************
Flow Units ..... CFS
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date ..... SEP-30-2005 22:00:00
Ending Date ..... OCT-02-2005 00:00:00
Report Time Step ..... 00:15:00
Wet Time Step ..... 00:15:00
Dry Time Step ..... 01:00:00
Routing Time Step ..... 30.00 sec

**************************      Volume         Depth
Runoff Quantity Continuity    acre-feet        inches
**************************    ---------      -------
Total Precipitation .....         9.737         2.100
Evaporation Loss .....            0.000         0.000
Infiltration Loss .....           6.350         1.370
Surface Runoff .....              3.424         0.738
Final Surface Storage ....        0.000         0.000
Continuity Error (%) .....        -0.383

**************************      Volume         Volume
Flow Routing Continuity       acre-feet       Mgallons
**************************    ---------      ---------
Dry Weather Inflow .....          0.000         0.000
Wet Weather Inflow .....          3.425         1.116
Groundwater Inflow .....          0.000         0.000
RDII Inflow .....                 0.000         0.000
External Inflow .....            0.000         0.000
External Outflow .....           3.426         1.116
Surface Flooding .....           0.000         0.000
Evaporation Loss .....           0.000         0.000
Initial Stored Volume ....       0.000         0.000
Final Stored Volume .....        0.000         0.000
Continuity Error (%) .....       -0.039

****************************
Subcatchment Runoff Summary
****************************

---------------------------------------------------------------------------
                 Total      Total      Total      Total      Total     Runoff
                 Precip     Runon      Evap       Infil      Runoff    Coeff
Subcatchment         in         in         in         in          in
---------------------------------------------------------------------------
S1                2.100      0.000      0.000      1.360      0.749     0.357
S2                2.100      0.000      0.000      1.362      0.746     0.355
S3                2.100      0.000      0.000      1.363      0.744     0.354
S4                2.100      0.000      0.000      1.297      0.812     0.387
S5                2.100      0.000      0.000      1.572      0.535     0.255
S6                2.100      0.000      0.000      1.356      0.759     0.361
S7                2.100      0.262      0.000      1.529      0.845     0.358
S8                2.100      0.000      0.000      0.000      2.105     1.003
S9                2.100      0.000      0.000      1.301      0.806     0.384
S10               2.100      0.000      0.000      1.301      0.806     0.384
---------------------------------------------------------------------------
Totals            2.100      0.036      0.000      1.370      0.774     0.363

******************
```

Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.01	0.07	317.07	0 12:45	0	0
J2	0.01	0.07	267.57	0 12:45	0	0
J3	0.10	1.02	216.02	0 12:45	0	0
J4	0.02	0.21	248.21	0 12:45	0	0
J5	0.02	0.21	243.21	0 12:45	0	0
J6	0.01	0.13	289.13	0 12:45	0	0
J7	0.03	0.32	239.32	0 12:45	0	0
J8	0.10	1.02	213.02	0 12:45	0	0
J9	0.10	1.00	185.50	0 12:45	0	0
OUT1	0.91	2.00	133.30	0 10:15	0	0

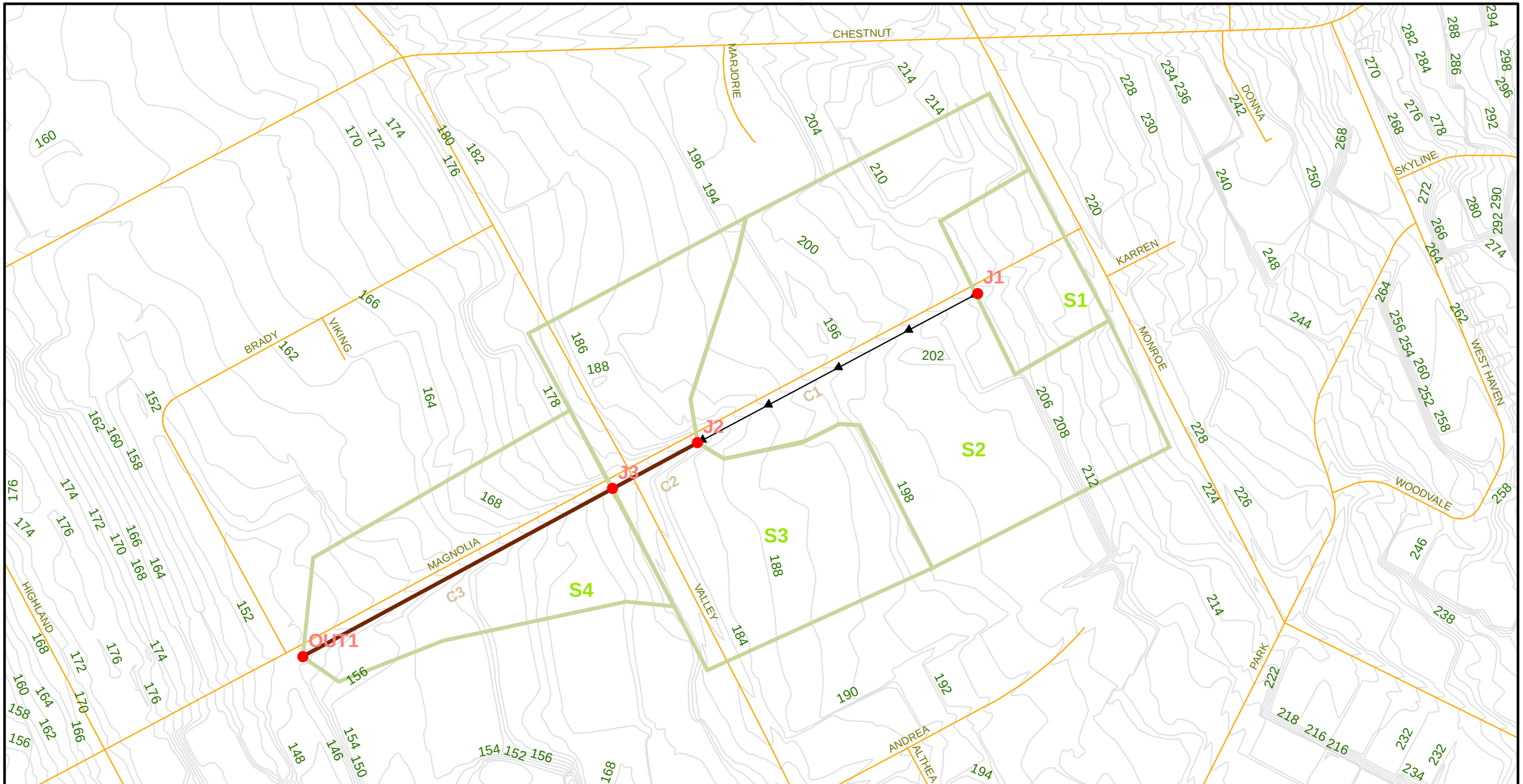
****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	0.61	0 12:45	4.73	1.00	0.04	0
C2	4.58	0 12:46	3.44	1.00	0.02	0
C3	0.75	0 12:45	5.11	1.00	0.04	0
C4	0.74	0 12:45	5.08	1.00	0.02	0
C5	1.92	0 12:45	4.94	1.00	0.02	0
C6	2.66	0 12:46	8.18	1.00	0.06	0
C7	19.50	0 12:45	12.09	1.00	0.52	0
C8	19.75	0 12:45	12.68	1.00	0.50	0
C9	22.53	0 12:46	15.34	1.00	0.46	0

****
Routing Time Step Summary
****
Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.02

Analysis begun on: Thu Jun 15 09:06:30 2006
Total elapsed time: < 1 sec

Project BCB
Magnolia Avenue Project



N
W E
S

0 200 400
Feet

LEGEND

- JUNCTIONS
- CONDUITS
- GUTTER FLOW
- SUBCATCHMENTS
- CONTOURS
- ROADS

PROJECT BCB

PROJECT LOCATION

MAGNOLIA AVE
CARLSBAD, CALIFORNIA

DATE
NOV 2007

PROJECT NUMBER
128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

N

W E

S

0 200 400

Feet

LEGEND

- JUNCTIONS
- GUTTER FLOW
- CONDUITS
- SUBCATCHMENTS
- ROADS

PROJECT BCB

PROJECT LOCATION

MAGNOLIA AVE
CARLSBAD, CALIFORNIA

DATE
NOV 2007

PROJECT NUMBER
128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

Project BCB

SWMM 5.0 – Input

100 Year 6 Hour Storm

Drainage Project BCB (Magnolia Avenue)

```
[TITLE]
Drainage Project BCB (Magnolia Avenue)
100 Year 6 Hour

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/03/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;                Rain      Recd.  Snow  Data       Source           Station    Rain
;;Name            Type      Freq.  Catch Source     Name             ID         Units
;;--------------------------------------------------------------------------------------
;Rain gage does not exist. Use SD Hydrology Manual SCS
;Type II rainfall curve. Place rain gage in central location.
  R1              CUMULATIVE 0:15   1.0    TIMESERIES 100year6hrCumulative

[SUBCATCHMENTS]
;;                                                    Total     Pcnt.              Pcnt.     Curb      Snow
;;Name            Raingage          Outlet           Area      Imperv    Width    Slope     Length    Pack
;;--------------------------------------------------------------------------------------------------------
  S1              R1                J1               1.73      42        274      4         0
  S2              R1                J2               10.60     50        474      4         0
  S3              R1                J3               7.25      38        472      3         0
  S4              R1                OUT1             5.02      33        278      3         0

[SUBAREAS]
;;Subcatchment    N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;--------------------------------------------------------------------------------------------
  S1              0.011      0.15       0.05       0.05       100        OUTLET
  S2              0.011      0.15       0.05       0.05       100        OUTLET
  S3              0.011      0.15       0.05       0.05       100        OUTLET
  S4              0.011      0.15       0.05       0.05       100        OUTLET

[INFILTRATION]
;;Subcatchment    Suction    HydCon     IMDmax
;;--------------------------------------------
  S1              2.4        1.18       0
  S2              2.4        1.18       0
  S3              2.4        1.18       0
  S4              2.4        1.18       0

[JUNCTIONS]
;;                Invert     Max.       Init.      Surcharge  Ponded
;;Name            Elev.      Depth      Depth      Depth      Area
;;--------------------------------------------------------------------------
;Gutter flow junction
  J1              207        0          0          0          0
;Created Manhole
  J2              175        9          0          0          0
;Created Manhole
  J3              168        8          0          0          0
```

Drainage Project BCB (Magnolia Avenue)

```
[OUTFALLS]
;;                Invert     Outfall    Stage/Table      Tide
;;Name            Elev.      Type       Time Series      Gate
;;--------------------------------------------------------------
;Created Outlet/Manhole
  OUT1            139.8      FIXED      142.3 NO

[CONDUITS]
;;                Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Ma
;;Name            Node             Node             Length     N          Height     Height     Flow       Fl
;;-------------------------------------------------------------------------------------------------------------
;Gutter Flow
  C1              J1               J2               650.7      0.013      0          0          0          0
;30" RCP - BCB
  C2              J2               J3               197.78     0.013      0          0          0          0
;30" RCP - BCB
  C3              J3               OUT1             723.48     0.013      0          0          0          0

[XSECTIONS]
;;Link            Type         Geom1      Geom2      Geom3      Geom4      Barrels
;;-------------------------------------------------------------------------------
  C1              RECT_OPEN    0.5        3          0          0          1
  C2              CIRCULAR     2.5        0          0          0          1
  C3              CIRCULAR     2.5        0          0          0          1

[TIMESERIES]
;;Name            Date       Time       Value
;;-----------------------------------------------
;100 year 6 hr SCS Type B Design Storm Max Precip = 2.6 inches
  100year6hrCumulative 10/01/2005 10:00      0.0
  100year6hrCumulative            10:15      0.0468
  100year6hrCumulative            10:30      0.091
  100year6hrCumulative            10:45      0.1508
  100year6hrCumulative            11:00      0.208
  100year6hrCumulative            11:15      0.2808
  100year6hrCumulative            11:30      0.351
  100year6hrCumulative            11:45      0.4758
  100year6hrCumulative            12:00      0.598
  100year6hrCumulative            12:15      1.079
  100year6hrCumulative            12:30      1.56
  100year6hrCumulative            12:45      1.69
  100year6hrCumulative            13:00      1.82
  100year6hrCumulative            13:15      1.924
  100year6hrCumulative            13:30      2.028
  100year6hrCumulative            13:45      2.1008
  100year6hrCumulative            14:00      2.171
  100year6hrCumulative            14:15      2.2308
  100year6hrCumulative            14:30      2.288
  100year6hrCumulative            14:45      2.34
  100year6hrCumulative            15:00      2.392
  100year6hrCumulative            15:15      2.444
  100year6hrCumulative            15:30      2.496
  100year6hrCumulative            15:45      2.548
  100year6hrCumulative            16:00      2.6

[REPORT]
 INPUT     NO
 CONTROLS  NO

[OPTIONS]
 TEMPDIR   "C:\Carlsbad\DMP\"
```

Project AC

SWMM 5.0 – Output

100 Year 6 Hour Storm

Drainage Project AC (Highland Drive)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)

Drainage Project AC (Highland Drive)
100 Year 6 Hour Storm

****
Analysis Options
****

```
Flow Units ............... CFS
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date ............ SEP-30-2005 23:00:00
Ending Date .............. OCT-02-2005 00:00:00
Report Time Step ......... 00:15:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 30.00 sec
```

****
Element Count
****

```
Number of rain gages ...... 1
Number of subcatchments ... 7
Number of nodes ........... 9
Number of links ........... 9
Number of pollutants ...... 0
Number of land uses ....... 0
```

****
Raingage Summary
****

Name	Data Source	Data Type	Interval hours
R1	100year6hr-2.7Max	CUMULATIVE	0.00

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage
S1	32.00	996.00	62.00	2.4000	R1
S2	7.88	458.00	43.00	3.7000	R1
S3	3.27	238.00	46.00	3.8000	R1
S4	0.54	124.00	60.00	2.1000	R1
S5	3.36	261.00	46.00	3.8000	R1
S6	3.38	300.00	50.00	1.2000	R1
S7	12.38	413.00	3.00	12.2000	R1

****
Node Summary
****

Name	Type	Invert	Depth
J1	JUNCTION	158.00	1.00
J2	JUNCTION	151.00	7.00
J3	JUNCTION	150.00	7.00
J4	JUNCTION	147.50	8.00
J5	JUNCTION	143.00	5.00
J6	JUNCTION	141.68	5.66
J7	JUNCTION	61.00	3.00
OUT1	OUTFALL	6.00	1.50
BasinB1	STORAGE	14.00	4.00

****

Drainage Project AC (Highland Drive)

Link Summary

Name	From Node	To Node	Type	Length	%Slope	N
C1	J1	J2	CONDUIT	258	2.7184	0.0130
C2	J2	J3	CONDUIT	94	1.0684	0.0130
C3	J3	J4	CONDUIT	202	1.2364	0.0130
C4	J4	J5	CONDUIT	461	0.9757	0.0130
C5	J5	J6	CONDUIT	40	3.3334	0.0130
C6	J6	J7	CONDUIT	350	23.0514	0.0130
C7	J7	BasinB1	CONDUIT	600	7.8333	0.0130
C8a	BasinB1	OUT1	CONDUIT	125	6.4000	0.0130
C8b	BasinB1	OUT1	CONDUIT	125	6.4000	0.0130

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	Full Flow
C1	RECT_OPEN	1.00	40.00	0.95	40.00	729.74
C2	CIRCULAR	3.00	7.07	0.75	3.00	68.94
C3	CIRCULAR	3.00	7.07	0.75	3.00	74.16
C4	CIRCULAR	3.00	7.07	0.75	3.00	65.88
C5	CIRCULAR	3.00	7.07	0.75	3.00	121.77
C6	CIRCULAR	3.00	7.07	0.75	3.00	320.23
C7	TRAPEZOIDAL	1.00	8.50	0.83	9.00	240.25
C8a	CIRCULAR	1.50	1.77	0.38	1.50	26.57
C8b	CIRCULAR	1.50	1.77	0.38	1.50	26.57

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	14.132	2.700
Evaporation Loss	0.000	0.000
Infiltration Loss	7.487	1.430
Surface Runoff	6.713	1.283
Final Surface Storage	0.002	0.000
Continuity Error (%)	-0.490	

Flow Routing Continuity	Volume acre-feet	Volume Mgallons
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	6.719	2.190
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	6.660	2.170
Surface Flooding	0.000	0.000
Evaporation Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.060	0.020
Continuity Error (%)	-0.012	

Subcatchment Runoff Summary

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Runoff Coeff
S1	2.700	0.000	0.000	0.993	1.724	0.639
S2	2.700	0.000	0.000	1.472	1.242	0.460
S3	2.700	0.000	0.000	1.382	1.332	0.493
S4	2.700	0.000	0.000	0.989	1.731	0.641

S5	2.700	0.000	0.000	1.379	1.335	0.494
S6	2.700	0.000	0.000	1.291	1.423	0.527
S7	2.700	0.000	0.000	2.619	0.081	0.030
Totals	2.700	0.000	0.000	1.430	1.283	0.475

****
Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.02	0.18	158.18	0 13:45	0	0
J2	0.20	1.94	152.94	0 13:45	0	0
J3	0.20	1.94	151.94	0 13:45	0	0
J4	0.22	2.26	149.76	0 13:45	0	0
J5	0.22	2.25	145.25	0 13:45	0	0
J6	0.17	1.55	143.23	0 13:45	0	0
J7	0.10	0.91	61.91	0 13:45	0	0
OUT1	0.81	1.50	7.50	0 11:29	0	0
BasinB1	0.14	1.15	15.15	0 13:52	0	0

****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	43.14	0 13:45	6.01	1.00	0.06	0
C2	51.66	0 13:45	10.71	1.00	0.75	0
C3	55.41	0 13:45	11.52	1.00	0.75	0
C4	60.11	0 13:45	10.65	1.00	0.91	0
C5	64.07	0 13:45	17.44	1.00	0.53	0
C6	64.05	0 13:45	35.36	1.00	0.20	0
C7	64.02	0 13:46	17.55	1.00	0.27	0
C8a	24.94	0 13:52	17.08	1.00	0.94	0
C8b	24.94	0 13:52	17.08	1.00	0.94	0

****
Routing Time Step Summary
****
Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.09

Analysis begun on: Tue Jun 06 09:48:41 2006
Total elapsed time: < 1 sec

Project AC

SWMM 5.0 – Input

25 Year 6 Hour Storm

Drainage Project AC (Highland Drive)

```
[TITLE]
Drainage Project AC (Highland Drive)
25 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            23:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     23:00:00
 END_DATE              10/02/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain      Recd.  Snow   Data       Source           Station    Rain
;;Name           Type      Freq.  Catch  Source     Name             ID         Units
;;-------------------------------------------------------------------------------------
;Rain gage does not exist. Use SD Hydrology Manual SCS
;Type II rainfall curve. Place rain gage in central location.
  R1             CUMULATIVE 0:15   1.0    TIMESERIES 25year6hr-2.1Max

[SUBCATCHMENTS]
;;                                                    Total     Pcnt.              Pcnt.     Curb      Snow
;;Name           Raingage         Outlet              Area      Imperv   Width     Slope     Length    Pack
;;-------------------------------------------------------------------------------------------------------
  S1             R1               J1                  32        58       996       2.4       0
  S2             R1               J2                  7.88      36       458       3.7       0
  S3             R1               J3                  3.27      40       238       3.8       0
  S4             R1               J4                  0.54      55       124       2.1       0
  S5             R1               J4                  3.36      40       261       3.8       0
  S6             R1               J5                  3.38      44       300       1.2       0
  S7             R1               BasinB1             12.38     3        413       12.2      0

[SUBAREAS]
;;Subcatchment     N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------------------------------------------------------------------------------------
  S1               0.011      0.15       0.05       0.05       100        OUTLET
  S2               0.011      0.15       0.05       0.05       100        OUTLET
  S3               0.011      0.15       0.05       0.05       100        OUTLET
  S4               0.011      0.15       0.05       0.05       100        OUTLET
  S5               0.011      0.15       0.05       0.05       100        OUTLET
  S6               0.011      0.15       0.05       0.05       100        OUTLET
  S7               0.011      0.015      0.05       0.05       100        OUTLET

[INFILTRATION]
;;Subcatchment     Suction    HydCon     IMDmax
;;-----------------------------------------------
  S1               2.4        1.18       0
  S2               2.4        1.18       0
  S3               2.4        1.18       0
  S4               2.4        1.18       0
  S5               2.4        1.18       0
  S6               2.4        1.18       0
  S7               1.18       2.4        0

[JUNCTIONS]
```

Drainage Project AC (Highland Drive)

```
;;                Invert     Max.       Init.      Surcharge  Ponded
;;Name            Elev.      Depth      Depth      Depth      Area
;;--------------------------------------------------------------------
;Confluence from S1, begin gutter flow.
  J1              158        1          0.5        0          0
;Created Manhole, H=6.00'
  J2              151        7          0          0          0
;Created Manhole, H= 6.00'
  J3              150        7          0          0          0
;Created Manhole, H=6.00'
  J4              147.5      8          0          0          0
;Existing Manhole, H=5.00
  J5              143        5          0          0          0
;Existing Manhole, H=5.66'
  J6              141.68     5.66       0          0          0
  J7              61         0          0          0          0

[OUTFALLS]
;;                Invert     Outfall    Stage/Table      Tide
;;Name            Elev.      Type       Time Series      Gate
;;--------------------------------------------------------------
;Outfall (Two parallel 18 inch RCP) to Buena Vista Lagoon
  OUT1            6          FREE                        NO

[STORAGE]
;;                Invert   Max.     Init.    Shape      Shape                          Ponded   Evap.
;;Name            Elev.    Depth    Depth    Curve      Parameters                     Area     Frac.
;;-----------------------------------------------------------------------------------------------------
;Natural Settling Basin - Estimate surface area = 60,000 ft2
  BasinB1         14       4        0        FUNCTIONAL 495.6    1        58016    600000   0

[CONDUITS]
;;                Inlet            Outlet                      Manning    Inlet      Outlet     Init.      Ma
;;Name            Node             Node             Length     N          Height     Height     Flow       Fl
;;-------------------------------------------------------------------------------------------------------------
;Gutter Flow along Highland Drive
  C1              J1               J2               257.5      0.013      0          0          0          0
;AC: RCP -36"
  C2              J2               J3               93.6       0.013      0          0          0          0
;AC: RCP -36"
  C3              J3               J4               202.2      0.013      0          0          0          0
;AC: RCP -36"
  C4              J4               J5               461.2      0.013      0          0          0          0
;AC: RCP -36"
  C5              J5               J6               39.6       0.013      0          0          0          0
;AC: RCP -36"
  C6              J6               J7               350        0.013      0          0          0          0
  C7              J7               BasinB1          600        0.013      0          0          0          0
;18" RCP Existing
  C8a             BasinB1          OUT1             125        0.013      0          0          0          0
;AC:18" inch parallel structure
  C8b             BasinB1          OUT1             125        0.013      0          0          0          0

[XSECTIONS]
;;Link            Type         Geom1      Geom2      Geom3      Geom4      Barrels
;;--------------------------------------------------------------------------------
  C1              RECT_OPEN    1          40         0          0          1
  C2              CIRCULAR     3          0          0          0          1
  C3              CIRCULAR     3          0          0          0          1
  C4              CIRCULAR     3          0          0          0          1
  C5              CIRCULAR     3          0          0          0          1
  C6              CIRCULAR     3          0          0          0          1
  C7              TRAPEZOIDAL  1          8          0.5        0.5        1
  C8a             CIRCULAR     1.5        0          0          0          1
  C8b             CIRCULAR     1.5        0          0          0          1

[TIMESERIES]
;;Name            Date         Time       Value
;;--------------------------------------------------
;100 year 6 hour Type B SCS Design Storm P Max = 2.7 iinches
  100year6hr-2.7Max 10/1/2005  10:00      0
  100year6hr-2.7Max            10:15      0.0486
```

```
 100year6hr-2.7Max              10:30      0.0945
 100year6hr-2.7Max              10:45      0.1566
 100year6hr-2.7Max              11:00      0.216
 100year6hr-2.7Max              11:15      0.2916
 100year6hr-2.7Max              11:30      0.3645
 100year6hr-2.7Max              11:45      0.4941
 100year6hr-2.7Max              12:00      0.621
 100year6hr-2.7Max              12:15      1.1205
 100year6hr-2.7Max              12:30      1.62
 100year6hr-2.7Max              12:45      1.755
 100year6hr-2.7Max              13:00      1.89
 100year6hr-2.7Max              13:15      1.998
 100year6hr-2.7Max              13:30      2.106
 100year6hr-2.7Max              13:45      2.1816
 100year6hr-2.7Max              14:00      2.2545
 100year6hr-2.7Max              14:15      2.3166
 100year6hr-2.7Max              14:30      2.376
 100year6hr-2.7Max              14:45      2.43
 100year6hr-2.7Max              15:00      2.484
 100year6hr-2.7Max              15:15      2.538
 100year6hr-2.7Max              15:30      2.592
 100year6hr-2.7Max              15:45      2.646
 100year6hr-2.7Max              16:00      2.7

;SCS II Storm SD Hydrology Manual - 2.1 Cumulative 6 Hour 25 yr Storm
  25year6hr-2.1Max              10:00      0
  25year6hr-2.1Max              10:15      0.0378
  25year6hr-2.1Max              10:30      0.0735
  25year6hr-2.1Max              10:45      0.1218
  25year6hr-2.1Max              11:00      0.168
  25year6hr-2.1Max              11:15      0.2268
  25year6hr-2.1Max              11:30      0.2835
  25year6hr-2.1Max              11:45      0.3843
  25year6hr-2.1Max              12:00      0.483
  25year6hr-2.1Max              12:15      0.8715
  25year6hr-2.1Max              12:30      1.26
  25year6hr-2.1Max              12:45      1.365
  25year6hr-2.1Max              13:00      1.47
  25year6hr-2.1Max              13:15      1.554
  25year6hr-2.1Max              13:30      1.638
  25year6hr-2.1Max              13:45      1.6968
  25year6hr-2.1Max              14:00      1.7535
  25year6hr-2.1Max              14:15      1.8018
  25year6hr-2.1Max              14:30      1.848
  25year6hr-2.1Max              14:45      1.89
  25year6hr-2.1Max              15:00      1.932
  25year6hr-2.1Max              15:15      1.974
  25year6hr-2.1Max              15:30      2.016
  25year6hr-2.1Max              15:45      2.058
  25year6hr-2.1Max              16:00      2.1

[REPORT]
 INPUT     YES
 CONTROLS  NO

[OPTIONS]
 TEMPDIR   "C:\Carlsbad\DMP\"
```

Project AC

SWMM 5.0 – Output

25 Year 6 Hour Storm

Drainage Project AC (Highland Drive)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)

Drainage Project AC (Highland Drive)
25 Year 6 Hour Storm

****
Analysis Options
****

Flow Units .... CFS
Infiltration Method ...... GREEN_AMPT
Flow Routing Method ...... KINWAVE
Starting Date SEP-30-2005 23:00:00
Ending Date OCT-02-2005 00:00:00
Report Time Step 00:15:00
Wet Time Step 00:15:00
Dry Time Step 01:00:00
Routing Time Step .... 30.00 sec

****
Element Count
****

Number of rain gages 1
Number of subcatchments ... 7
Number of nodes 9
Number of links 9
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Interval hours
R1	25year6hr-2.1Max	CUMULATIVE	0.00

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage
S1	32.00	996.00	58.00	2.4000	R1
S2	7.88	458.00	36.00	3.7000	R1
S3	3.27	238.00	40.00	3.8000	R1
S4	0.54	124.00	55.00	2.1000	R1
S5	3.36	261.00	40.00	3.8000	R1
S6	3.38	300.00	44.00	1.2000	R1
S7	12.38	413.00	3.00	12.2000	R1

****
Node Summary
****

Name	Type	Invert	Depth
J1	JUNCTION	158.00	1.00
J2	JUNCTION	151.00	7.00
J3	JUNCTION	150.00	7.00
J4	JUNCTION	147.50	8.00
J5	JUNCTION	143.00	5.00
J6	JUNCTION	141.68	5.66
J7	JUNCTION	61.00	3.00
OUT1	OUTFALL	6.00	1.50
BasinB1	STORAGE	14.00	4.00

****

Drainage Project AC (Highland Drive)

Link Summary

Name	From Node	To Node	Type	Length	%Slope	N
C1	J1	J2	CONDUIT	258	2.7184	0.0130
C2	J2	J3	CONDUIT	94	1.0684	0.0130
C3	J3	J4	CONDUIT	202	1.2364	0.0130
C4	J4	J5	CONDUIT	461	0.9757	0.0130
C5	J5	J6	CONDUIT	40	3.3334	0.0130
C6	J6	J7	CONDUIT	350	23.0514	0.0130
C7	J7	BasinB1	CONDUIT	600	7.8333	0.0130
C8a	BasinB1	OUT1	CONDUIT	125	6.4000	0.0130
C8b	BasinB1	OUT1	CONDUIT	125	6.4000	0.0130

Cross Section Summary

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	Full Flow
C1	RECT_OPEN	1.00	40.00	0.95	40.00	729.74
C2	CIRCULAR	3.00	7.07	0.75	3.00	68.94
C3	CIRCULAR	3.00	7.07	0.75	3.00	74.16
C4	CIRCULAR	3.00	7.07	0.75	3.00	65.88
C5	CIRCULAR	3.00	7.07	0.75	3.00	121.77
C6	CIRCULAR	3.00	7.07	0.75	3.00	320.23
C7	TRAPEZOIDAL	1.00	8.50	0.83	9.00	240.25
C8a	CIRCULAR	1.50	1.77	0.38	1.50	26.57
C8b	CIRCULAR	1.50	1.77	0.38	1.50	26.57

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	10.992	2.100
Evaporation Loss	0.000	0.000
Infiltration Loss	6.383	1.219
Surface Runoff	4.658	0.890
Final Surface Storage	0.001	0.000
Continuity Error (%)	-0.461	

Flow Routing Continuity	Volume acre-feet	Volume Mgallons
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	4.660	1.518
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	4.608	1.501
Surface Flooding	0.000	0.000
Evaporation Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.053	0.017
Continuity Error (%)	-0.015	

Subcatchment Runoff Summary

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Runoff Coeff
S1	2.100	0.000	0.000	0.878	1.234	0.587
S2	2.100	0.000	0.000	1.336	0.774	0.369
S3	2.100	0.000	0.000	1.250	0.861	0.410
S4	2.100	0.000	0.000	0.927	1.189	0.566

S5	2.100	0.000	0.000	1.250	0.862	0.411
S6	2.100	0.000	0.000	1.169	0.942	0.448
S7	2.100	0.000	0.000	2.037	0.063	0.030
Totals	2.100	0.000	0.000	1.219	0.890	0.424

****
Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.01	0.14	158.14	0 12:45	0	0
J2	0.17	1.50	152.50	0 12:45	0	0
J3	0.17	1.50	151.50	0 12:45	0	0
J4	0.18	1.68	149.18	0 12:45	0	0
J5	0.18	1.68	144.68	0 12:45	0	0
J6	0.14	1.22	142.90	0 12:45	0	0
J7	0.09	0.73	61.73	0 12:45	0	0
OUT1	0.87	1.50	7.50	0 10:30	0	0
BasinB1	0.12	0.86	14.86	0 12:52	0	0

****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	29.67	0 12:45	5.18	1.00	0.04	0
C2	34.52	0 12:45	9.75	1.00	0.50	0
C3	36.74	0 12:45	10.47	1.00	0.50	0
C4	39.56	0 12:45	9.79	1.00	0.60	0
C5	41.99	0 12:45	15.63	1.00	0.34	0
C6	41.99	0 12:45	31.36	1.00	0.13	0
C7	41.97	0 12:46	14.97	1.00	0.17	0
C8a	16.62	0 12:52	15.86	1.00	0.63	0
C8b	16.62	0 12:52	15.86	1.00	0.63	0

****
Routing Time Step Summary
****
Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.05

Analysis begun on: Tue Jun 06 09:56:23 2006
Total elapsed time: < 1 sec

Project BB – 1
Project BB – 2
Washington Street Project

LEGEND

- JUNCTIONS
- CONDUITS
- SUBCATCHMENTS
- ROADS
- CONTOUR

PROJECTS BB-1 AND BB-2

PROJECT LOCATION

WASHINGTON STREET
CARLSBAD, CALIFORNIA

DATE	PROJECT NUMBER
NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

0 250 500 1,000 Feet

LEGEND

- JUNCTIONS
- CONDUITS
- SUBCATCHMENTS
- ROADS

PROJECTS BB-1 AND BB-2

PROJECT LOCATION	DATE	PROJECT NUMBER
WASHINGTON STREET CARLSBAD, CALIFORNIA	NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

Project BB – 1

Project BB – 2

SWMM 5.0 – Input

100 Year 6 Hour Storm

Drainage Project BB (Washington Street Drainage Improvements)

```
[TITLE]
Drainage Project BB (Washington Street Drainage Improvements)
100 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/02/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain      Recd.  Snow  Data       Source           Station    Rain
;;Name           Type      Freq.  Catch Source     Name             ID         Units
;;---------------------------------------------------------------------------------
  R1             CUMULATIVE 0:15   1.0   TIMESERIES 100yr6hrCum2.6

[SUBCATCHMENTS]
;;                                                  Total     Pcnt.             Pcnt.     Curb      Snow
;;Name           Raingage          Outlet           Area      Imperv    Width   Slope     Length    Pack
;;---------------------------------------------------------------------------------------------------
  S1             R1                J1               2.4       80        246     0.941     0
  S2             R1                J2               5.12      77        743     3         0
  S3             R1                J4               1.89      69        206     2.2       0
  S4             R1                J5               1.98      68        207     1.9       0
  S5             R1                J6               1.56      68        181     2.1       0
  S6             R1                J7               2.18      68        292     3.1       0
  S7             R1                J8               7.19      68        696     2.2       0
  S8             R1                J9               3.7       67        383     1.9       0
  S9             R1                J10              2.49      67        252     2.8       0
  S10            R1                J11              2.21      67        241     3         0
  S11            R1                J10              1.17      65        221     2.8       0
  S12            R1                J11              1.88      69        182     2.2       0
  S13            R1                J13              0.19      65        24      1.14      0
  S14            R1                J14              0.79      66        104     1.2       0
  S15            R1                J16              1.47      66        169     2.9       0
  S16            R1                J16              0.84      67        108     2.6       0
  S17            R1                J18              6.25      67        340     2         0
  S18            R1                J20              1.46      65        193     1.2       0
  S19            R1                J21              0.93      68        144     2.1       0
  S20            R1                J22              2.96      65        24      0.189     0
  S21            R1                J22              3.22      68        255     1.8       0
  S22            R1                J25              0.72      65        116     1.5       0
  S23            R1                J26              1.84      67        211     3.68      0
  S24            R1                J28              2.59      67        245     2.2       0
  S25            R1                J29              3.08      68        280     2.5       0

[SUBAREAS]
;;Subcatchment     N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-----------------------------------------------------------------------------------------
  S1               0.011      0.015      0.05       0.05       100        OUTLET
  S2               0.011      0.015      0.05       0.05       100        OUTLET
  S3               0.011      0.015      0.05       0.05       100        OUTLET
  S4               0.011      0.015      0.05       0.05       100        OUTLET
```

S5	0.011	0.015	0.05	0.05	100	OUTLET
S6	0.011	0.015	0.05	0.05	100	OUTLET
S7	0.011	0.015	0.05	0.05	100	OUTLET
S8	0.011	0.015	0.05	0.05	100	OUTLET
S9	0.011	0.015	0.05	0.05	100	OUTLET
S10	0.011	0.015	0.05	0.05	100	OUTLET
S11	0.011	0.015	0.05	0.05	100	OUTLET
S12	0.011	0.015	0.05	0.05	100	OUTLET
S13	0.011	0.015	0.05	0.05	100	OUTLET
S14	0.011	0.015	0.05	0.05	100	OUTLET
S15	0.011	0.015	0.05	0.05	100	OUTLET
S16	0.011	0.015	0.05	0.05	100	OUTLET
S17	0.011	0.015	0.05	0.05	100	OUTLET
S18	0.011	0.015	0.05	0.05	100	OUTLET
S19	0.011	0.015	0.05	0.05	100	OUTLET
S20	0.011	0.015	0.05	0.05	100	OUTLET
S21	0.011	0.015	0.05	0.05	100	OUTLET
S22	0.011	0.015	0.05	0.05	100	OUTLET
S23	0.011	0.015	0.05	0.05	100	OUTLET
S24	0.011	0.015	0.05	0.05	100	OUTLET
S25	0.011	0.015	0.05	0.05	100	OUTLET

[INFILTRATION]

;;Subcatchment	Suction	HydCon	IMDmax
S1	2.4	1.18	0
S2	2.4	1.18	0
S3	2.4	1.18	0
S4	2.4	1.18	0
S5	2.4	1.18	0
S6	2.4	1.18	0
S7	2.4	1.18	0
S8	2.4	1.18	0
S9	2.4	1.18	0
S10	2.4	1.18	0
S11	2.4	1.18	0
S12	2.4	1.18	0
S13	2.4	1.18	0
S14	2.4	1.18	0
S15	2.4	1.18	0
S16	2.4	1.18	0
S17	2.4	1.18	0
S18	2.4	1.18	0
S19	2.4	1.18	0
S20	2.4	1.18	0
S21	2.4	1.18	0
S22	2.4	1.18	0
S23	2.4	1.18	0
S24	2.4	1.18	0
S25	2.4	1.18	0

[JUNCTIONS]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
J1	49.5	3	0	0	0
J2	44.9	7	0	0	0
J3	40	4	0	0	0
J4	49	2.5	0	0	0
J5	47.8	2.25	0	0	0
J6	47.63	4	0	0	0
J7	37.62	10.38	0	0	0
J8	48.62	2.5	0	0	0
J9	33	14	0	0	0
J10	48	2	0	0	0
J11	48	2	0	0	0
J12	47	3	0	0	0
J13	54.25	1.75	0	0	0
J14	53.5	1.5	0	0	0
J15	46	5	0	0	0
J16	37.34	9.42	0	0	0
J17	37	10	0	0	0

Project AC –
Highland Drive Project

J18	42	6	0	0	0
J19	33.64	11.36	0	0	0
J20	50.5	4.5	0	0	0
J21	50	5	0	0	0
J22	48.5	6.5	0	0	0
J23	45	5	0	0	0
J24	32.18	12.82	0	0	0
J25	41.7	6.58	0	0	0
J26	44.2	5.75	0	0	0
J27	40.6	9.5	0	0	0
J28	35.6	5.92	0	0	0
J29	35.6	5.25	0	0	0
J30	33.5	7.5	0	0	0
J31	31.8	9.42	0	0	0
J32	31.45	12.55	0	0	0
J33	28.9	14.9	0	0	0

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
OUT1	29.77	FIXED	32.77 NO	
OUT2	21.64	FIXED	24.71 NO	

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Height	Outlet Height	Init. Flow	Ma Fl
;12" RCP C1	J1	J2	481	0.011	0	0	0	0
;18" RCP C2	J2	J3	481	0.011	0	0	0	0
;18" RCP C3	J3	J7	475	0.011	0	0	0	0
;12" RCP C4	J4	J6	97	0.011	0	0	0	0
;12" RCP C5	J5	J6	74	0.011	0	0	0	0
;12" RCP C6	J6	J7	289	0.011	0	0	0	0
;18" RCP C7	J7	J9	468	0.011	0	0	0	0
;12" PVC C8	J8	J9	407	0.011	0	0	0	0
;18" RCP C9	J9	OUT1	144	0.011	0	0	0	0
;18" RCP C10	J10	J12	42	0.011	0	0	0	0
;12" RCP C11	J11	J12	28	0.011	0	0	0	0
;12" RCP C12	J12	J15	300	0.011	0	0	0	0
;18" RCP C13	J13	J15	13	0.011	0	0	0	0
;18" RCP C14	J14	J15	23	0.011	0	0	0	0
;24" RCP C15	J15	J16	112	0.011	0	0	0	0
;24" RCP C16	J16	J17	39	0.011	0	0	0	0
;36" RCP C17	J17	J19	673	0.011	0	0	0	0
;18" RCP C18	J18	J19	41	0.011	0	0	0	0
;36" RCP C19	J19	J24	291	0.011	0	0	0	0
;12" PVC C20	J20	J22	30	0.011	0	0	0	0
;12" PVC C21	J21	J22	41	0.011	0	0	0	0
;12" RCP C22	J22	J23	476	0.011	0	0	0	0

```
;12" RCP
  C23              J23              J24              52         0.011      0          0          0          0
;36" RCP
  C24              J24              J33              656        0.011      0          0          0          0
;18" RCP
  C25              J25              J27              45         0.011      0          0          0          0
;18" RCP
  C26              J26              J27              21         0.011      0          0          0          0
;18" RCP
  C27              J27              J30              405        0.011      0          0          0          0
;18" RCP
  C28              J28              J30              41         0.011      0          0          0          0
;18" RCP
  C29              J29              J30              28         0.011      0          0          0          0
;36" RCP
  C30              J30              J31              107        0.011      0          0          0          0
;36" RCP
  C31              J31              J32              70         0.011      0          0          0          0
;36" RCP
  C32              J32              J33              22         0.011      0          0          0          0
;36" RCP
  C33              J33              OUT2             104        0.011      0          0          0          0

[XSECTIONS]
;;Link            Type         Geom1      Geom2      Geom3      Geom4      Barrels
;;-----------------------------------------------------------------------------
  C1               CIRCULAR     1          0          0          0          1
  C2               CIRCULAR     1.5        0          0          0          1
  C3               CIRCULAR     2          0          0          0          1
  C4               CIRCULAR     1          0          0          0          1
  C5               CIRCULAR     1          0          0          0          1
  C6               CIRCULAR     1          0          0          0          1
  C7               CIRCULAR     2          0          0          0          1
  C8               CIRCULAR     1          0          0          0          1
  C9               CIRCULAR     2          0          0          0          1
  C10              CIRCULAR     1.5        0          0          0          1
  C11              CIRCULAR     1          0          0          0          1
  C12              CIRCULAR     1          0          0          0          1
  C13              CIRCULAR     1.5        0          0          0          1
  C14              CIRCULAR     1.5        0          0          0          1
  C15              CIRCULAR     2          0          0          0          1
  C16              CIRCULAR     2          0          0          0          1
  C17              CIRCULAR     3          0          0          0          1
  C18              CIRCULAR     1.5        0          0          0          1
  C19              CIRCULAR     3          0          0          0          1
  C20              CIRCULAR     1          0          0          0          1
  C21              CIRCULAR     1          0          0          0          1
  C22              CIRCULAR     1          0          0          0          1
  C23              CIRCULAR     1          0          0          0          1
  C24              CIRCULAR     3          0          0          0          1
  C25              CIRCULAR     1.5        0          0          0          1
  C26              CIRCULAR     1.5        0          0          0          1
  C27              CIRCULAR     1.5        0          0          0          1
  C28              CIRCULAR     1.5        0          0          0          1
  C29              CIRCULAR     1.5        0          0          0          1
  C30              CIRCULAR     3          0          0          0          1
  C31              CIRCULAR     3          0          0          0          1
  C32              CIRCULAR     3          0          0          0          1
  C33              CIRCULAR     3          0          0          0          1

[TIMESERIES]
;;Name            Date         Time       Value
;;-----------------------------------------------
;100 year 6 hour Type B SCS Design Storm Max Precip = 2.6
  100yr6hrCum2.6   10/01/2005 10:00      0.0
  100yr6hrCum2.6               10:15      0.0468
  100yr6hrCum2.6               10:30      0.091
  100yr6hrCum2.6               10:45      0.1508
  100yr6hrCum2.6               11:00      0.208
  100yr6hrCum2.6               11:15      0.2808
  100yr6hrCum2.6               11:30      0.351
  100yr6hrCum2.6               11:45      0.4758
```

```
 100yr6hrCum2.6                12:00      0.598
 100yr6hrCum2.6                12:15      1.079
 100yr6hrCum2.6                12:30      1.56
 100yr6hrCum2.6                12:45      1.69
 100yr6hrCum2.6                13:00      1.82
 100yr6hrCum2.6                13:15      1.924
 100yr6hrCum2.6                13:30      2.028
 100yr6hrCum2.6                13:45      2.1008
 100yr6hrCum2.6                14:00      2.171
 100yr6hrCum2.6                14:15      2.2308
 100yr6hrCum2.6                14:30      2.288
 100yr6hrCum2.6                14:45      2.34
 100yr6hrCum2.6                15:00      2.392
 100yr6hrCum2.6                15:15      2.444
 100yr6hrCum2.6                15:30      2.496
 100yr6hrCum2.6                15:45      2.548
 100yr6hrCum2.6                16:00      2.6

[REPORT]
 INPUT      NO
 CONTROLS   NO

[OPTIONS]
 TEMPDIR    "C:\Carlsbad\DMP\"
```

Project BB – 1

Project BB – 2

SWMM 5.0 – Output

100 Year 6 Hour Storm

Drainage Project BB (Washington Street Drainage Improvements)

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)
--------------------------------------------------------------

Drainage Project BB (Washington Street Drainage Improvements)
100 Year 6 Hour Storm

****************
Analysis Options
****************
Flow Units ..... CFS
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date ..... SEP-30-2005 22:00:00
Ending Date ..... OCT-02-2005 00:00:00
Report Time Step ..... 00:15:00
Wet Time Step ..... 00:15:00
Dry Time Step ..... 01:00:00
Routing Time Step ..... 30.00 sec

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation .....         13.024         2.600
Evaporation Loss .....             0.000         0.000
Infiltration Loss .....            3.704         0.740
Surface Runoff .....               9.468         1.890
Final Surface Storage ....         0.008         0.002
Continuity Error (%) .....       -1.203

**************************        Volume         Volume
Flow Routing Continuity        acre-feet       Mgallons
**************************     ---------       ---------
Dry Weather Inflow .....           0.000         0.000
Wet Weather Inflow .....           9.502         3.096
Groundwater Inflow .....           0.000         0.000
RDII Inflow .....                  0.000         0.000
External Inflow .....             0.000         0.000
External Outflow .....            8.697         2.834
Surface Flooding .....            0.807         0.263
Evaporation Loss .....             0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume .....          0.000         0.000
Continuity Error (%) .....       -0.024

***************************
Subcatchment Runoff Summary
***************************

-----------------------------------------------------------------------------
                 Total      Total      Total      Total      Total     Runoff
                 Precip     Runon      Evap       Infil      Runoff    Coeff
Subcatchment         in         in         in         in          in
-----------------------------------------------------------------------------
S1                2.600      0.000      0.000      0.468      2.160     0.831
S2                2.600      0.000      0.000      0.533      2.088     0.803
S3                2.600      0.000      0.000      0.725      1.906     0.733
S4                2.600      0.000      0.000      0.750      1.883     0.724
S5                2.600      0.000      0.000      0.748      1.883     0.724
S6                2.600      0.000      0.000      0.744      1.883     0.724
S7                2.600      0.000      0.000      0.750      1.887     0.726
S8                2.600      0.000      0.000      0.774      1.860     0.715
S9                2.600      0.000      0.000      0.772      1.860     0.715
S10               2.600      0.000      0.000      0.770      1.860     0.715
S11               2.600      0.000      0.000      0.812      1.815     0.698
S12               2.600      0.000      0.000      0.726      1.906     0.733
S13               2.600      0.000      0.000      0.822      1.813     0.697
S14               2.600      0.000      0.000      0.797      1.837     0.706
S15               2.600      0.000      0.000      0.794      1.837     0.707
```

S16	2.600	0.000	0.000	0.769	1.860	0.716
S17	2.600	0.000	0.000	0.783	1.855	0.713
S18	2.600	0.000	0.000	0.821	1.813	0.697
S19	2.600	0.000	0.000	0.745	1.883	0.724
S20	2.600	0.000	0.000	0.889	1.690	0.650
S21	2.600	0.000	0.000	0.754	1.882	0.724
S22	2.600	0.000	0.000	0.817	1.814	0.698
S23	2.600	0.000	0.000	0.769	1.860	0.715
S24	2.600	0.000	0.000	0.774	1.860	0.715
S25	2.600	0.000	0.000	0.750	1.887	0.726
Totals	2.600	0.000	0.000	0.740	1.890	0.727

****
Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.07	0.81	50.31	0 14:45	0	0
J2	0.14	7.00	51.90	0 14:36	0.01	10
J3	0.12	1.50	41.50	0 14:37	0	0
J4	0.05	0.55	49.55	0 14:45	0	0
J5	0.11	2.25	50.05	0 14:24	0.37	29
J6	0.09	1.00	48.63	0 14:25	0	0
J7	0.14	1.46	39.08	0 14:46	0	0
J8	0.11	2.50	51.12	0 14:25	0.95	26
J9	0.14	1.53	34.53	0 14:45	0	0
J10	0.06	0.56	48.56	0 14:45	0	0
J11	0.06	0.68	48.68	0 14:45	0	0
J12	0.27	3.00	50.00	0 13:58	4.93	86
J13	0.01	0.06	54.31	0 14:45	0	0
J14	0.01	0.14	53.64	0 14:45	0	0
J15	0.15	1.00	47.00	0 14:03	0	0
J16	0.10	0.75	38.09	0 14:45	0	0
J17	0.10	0.75	37.75	0 14:45	0	0
J18	0.04	0.42	42.42	0 14:45	0	0
J19	0.14	1.14	34.78	0 14:45	0	0
J20	0.03	0.31	50.81	0 14:45	0	0
J21	0.03	0.29	50.29	0 14:45	0	0
J22	0.35	6.50	55.00	0 14:17	3.42	56
J23	0.15	1.00	46.00	0 14:23	0	0
J24	0.18	1.27	33.45	0 14:45	0	0
J25	0.02	0.24	41.94	0 14:45	0	0
J26	0.02	0.24	44.44	0 14:45	0	0
J27	0.05	0.50	41.10	0 14:45	0	0
J28	0.04	0.38	35.98	0 14:45	0	0
J29	0.04	0.38	35.98	0 14:45	0	0
J30	0.07	0.73	34.23	0 14:45	0	0
J31	0.10	0.98	32.78	0 14:45	0	0
J32	0.10	0.98	32.43	0 14:45	0	0
J33	0.18	1.27	30.17	0 14:46	0	0
OUT1	0.90	2.00	31.77	0 12:16	0	0
OUT2	1.58	3.00	24.64	0 12:17	0	0

****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	4.10	0 14:45	6.12	1.00	0.99	0
C2	13.55	0 14:46	8.43	1.00	1.08	10
C3	13.14	0 14:46	6.63	1.00	0.69	0

C4	2.97	0	14:45	6.65	1.00	0.59	0
C5	2.10	0	14:52	3.05	1.00	1.04	28
C6	7.42	0	14:45	11.40	1.00	0.95	0
C7	23.34	0	14:45	9.63	1.00	0.88	0
C8	8.68	0	14:51	12.50	1.00	1.05	24
C9	37.31	0	14:45	14.48	1.00	0.93	0
C10	5.64	0	14:45	9.42	1.00	0.29	0
C11	6.37	0	14:45	11.26	1.00	0.80	0
C12	2.62	0	15:24	3.64	1.00	1.08	84
C13	0.29	0	14:45	12.37	1.00	0.00	0
C14	1.21	0	14:45	15.07	1.00	0.02	0
C15	3.93	0	14:45	12.54	1.00	0.05	0
C16	7.49	0	14:45	6.94	1.00	0.30	0
C17	7.51	0	14:45	5.56	1.00	0.13	0
C18	9.65	0	14:45	23.71	1.00	0.17	0
C19	17.11	0	14:45	6.97	1.00	0.31	0
C20	2.22	0	14:45	10.87	1.00	0.20	0
C21	1.45	0	14:45	7.75	1.00	0.18	0
C22	3.89	0	15:13	5.39	1.00	1.08	53
C23	3.86	0	15:13	20.33	1.00	0.18	0
C24	20.73	0	14:46	7.35	1.00	0.37	0
C25	1.10	0	14:45	5.94	1.00	0.06	0
C26	2.85	0	14:45	15.63	1.00	0.06	0
C27	3.94	0	14:45	7.70	1.00	0.24	0
C28	4.01	0	14:45	11.26	1.00	0.14	0
C29	4.80	0	14:45	13.59	1.00	0.14	0
C30	12.75	0	14:45	9.67	1.00	0.13	0
C31	12.75	0	14:45	6.39	1.00	0.23	0
C32	12.75	0	14:45	19.54	1.00	0.05	0
C33	33.42	0	14:45	21.59	1.00	0.16	0

```
**************************
Routing Time Step Summary
**************************
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.05

Analysis begun on:  Wed Jun 07 16:03:14 2006
Total elapsed time: < 1 sec
```

Project BB – 1

Project BB – 2

SWMM 5.0 – Input

25 Year 6 Hour Storm

Drainage Project BB (Washington Street Drainage Improvements)

```
[TITLE]
Drainage Project BB (Washington Street Drainage Improvements)
25 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/02/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain      Recd.  Snow   Data       Source           Station    Rain
;;Name           Type      Freq.  Catch  Source     Name             ID         Units
;;---------------------------------------------------------------------------------
  R1             CUMULATIVE 0:15   1.0    TIMESERIES 25yr6hrCum2.1

[SUBCATCHMENTS]
;;                                                    Total     Pcnt.              Pcnt.     Curb      Snow
;;Name           Raingage          Outlet             Area      Imperv    Width    Slope     Length    Pack
;;---------------------------------------------------------------------------------------------------------
  S1             R1                J1                 2.4       80        246      0.941     0
  S2             R1                J2                 5.12      77        743      3         0
  S3             R1                J4                 1.89      69        206      2.2       0
  S4             R1                J5                 1.98      68        207      1.9       0
  S5             R1                J6                 1.56      68        181      2.1       0
  S6             R1                J7                 2.18      68        292      3.1       0
  S7             R1                J8                 7.19      68        696      2.2       0
  S8             R1                J9                 3.7       67        383      1.9       0
  S9             R1                J10                2.49      67        252      2.8       0
  S10            R1                J11                2.21      67        241      3         0
  S11            R1                J10                1.17      65        221      2.8       0
  S12            R1                J11                1.88      69        182      2.2       0
  S13            R1                J13                0.19      65        24       1.14      0
  S14            R1                J14                0.79      66        104      1.2       0
  S15            R1                J16                1.47      66        169      2.9       0
  S16            R1                J16                0.84      67        108      2.6       0
  S17            R1                J18                6.25      67        340      2         0
  S18            R1                J20                1.46      65        193      1.2       0
  S19            R1                J21                0.93      68        144      2.1       0
  S20            R1                J22                2.96      65        24       0.189     0
  S21            R1                J22                3.22      68        255      1.8       0
  S22            R1                J25                0.72      65        116      1.5       0
  S23            R1                J26                1.84      67        211      3.68      0
  S24            R1                J28                2.59      67        245      2.2       0
  S25            R1                J29                3.08      68        280      2.5       0

[SUBAREAS]
;;Subcatchment     N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-----------------------------------------------------------------------------------------
  S1               0.011      0.015      0.05       0.05       100        OUTLET
  S2               0.011      0.015      0.05       0.05       100        OUTLET
  S3               0.011      0.015      0.05       0.05       100        OUTLET
  S4               0.011      0.015      0.05       0.05       100        OUTLET
```

S5	0.011	0.015	0.05	0.05	100	OUTLET
S6	0.011	0.015	0.05	0.05	100	OUTLET
S7	0.011	0.015	0.05	0.05	100	OUTLET
S8	0.011	0.015	0.05	0.05	100	OUTLET
S9	0.011	0.015	0.05	0.05	100	OUTLET
S10	0.011	0.015	0.05	0.05	100	OUTLET
S11	0.011	0.015	0.05	0.05	100	OUTLET
S12	0.011	0.015	0.05	0.05	100	OUTLET
S13	0.011	0.015	0.05	0.05	100	OUTLET
S14	0.011	0.015	0.05	0.05	100	OUTLET
S15	0.011	0.015	0.05	0.05	100	OUTLET
S16	0.011	0.015	0.05	0.05	100	OUTLET
S17	0.011	0.015	0.05	0.05	100	OUTLET
S18	0.011	0.015	0.05	0.05	100	OUTLET
S19	0.011	0.015	0.05	0.05	100	OUTLET
S20	0.011	0.015	0.05	0.05	100	OUTLET
S21	0.011	0.015	0.05	0.05	100	OUTLET
S22	0.011	0.015	0.05	0.05	100	OUTLET
S23	0.011	0.015	0.05	0.05	100	OUTLET
S24	0.011	0.015	0.05	0.05	100	OUTLET
S25	0.011	0.015	0.05	0.05	100	OUTLET

[INFILTRATION]

;;Subcatchment	Suction	HydCon	IMDmax
S1	2.4	1.18	0
S2	2.4	1.18	0
S3	2.4	1.18	0
S4	2.4	1.18	0
S5	2.4	1.18	0
S6	2.4	1.18	0
S7	2.4	1.18	0
S8	2.4	1.18	0
S9	2.4	1.18	0
S10	2.4	1.18	0
S11	2.4	1.18	0
S12	2.4	1.18	0
S13	2.4	1.18	0
S14	2.4	1.18	0
S15	2.4	1.18	0
S16	2.4	1.18	0
S17	2.4	1.18	0
S18	2.4	1.18	0
S19	2.4	1.18	0
S20	2.4	1.18	0
S21	2.4	1.18	0
S22	2.4	1.18	0
S23	2.4	1.18	0
S24	2.4	1.18	0
S25	2.4	1.18	0

[JUNCTIONS]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
J1	49.5	3	0	0	0
J2	44.9	7	0	0	0
J3	40	4	0	0	0
J4	49	2.5	0	0	0
J5	47.8	2.25	0	0	0
J6	47.63	4	0	0	0
J7	37.62	10.38	0	0	0
J8	48.62	2.5	0	0	0
J9	33	14	0	0	0
J10	48	2	0	0	0
J11	48	2	0	0	0
J12	47	3	0	0	0
J13	54.25	1.75	0	0	0
J14	53.5	1.5	0	0	0
J15	46	5	0	0	0
J16	37.34	9.42	0	0	0
J17	37	10	0	0	0

J18	42	6	0	0	0
J19	33.64	11.36	0	0	0
J20	50.5	4.5	0	0	0
J21	50	5	0	0	0
J22	48.5	6.5	0	0	0
J23	45	5	0	0	0
J24	32.18	12.82	0	0	0
J25	41.7	6.58	0	0	0
J26	44.2	5.75	0	0	0
J27	40.6	9.5	0	0	0
J28	35.6	5.92	0	0	0
J29	35.6	5.25	0	0	0
J30	33.5	7.5	0	0	0
J31	31.8	9.42	0	0	0
J32	31.45	12.55	0	0	0
J33	28.9	14.9	0	0	0

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
OUT1	29.77	FIXED	32.77 NO	
OUT2	21.64	FIXED	24.71 NO	

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Height	Outlet Height	Init. Flow	Ma Fl
;12" RCP C1	J1	J2	481	0.011	0	0	0	0
;18" RCP C2	J2	J3	481	0.011	0	0	0	0
;18" RCP C3	J3	J7	475	0.011	0	0	0	0
;12" RCP C4	J4	J6	97	0.011	0	0	0	0
;12" RCP C5	J5	J6	74	0.011	0	0	0	0
;12" RCP C6	J6	J7	289	0.011	0	0	0	0
;18" RCP C7	J7	J9	468	0.011	0	0	0	0
;12" PVC C8	J8	J9	407	0.011	0	0	0	0
;18" RCP C9	J9	OUT1	144	0.011	0	0	0	0
;18" RCP C10	J10	J12	42	0.011	0	0	0	0
;12" RCP C11	J11	J12	28	0.011	0	0	0	0
;12" RCP C12	J12	J15	300	0.011	0	0	0	0
;18" RCP C13	J13	J15	13	0.011	0	0	0	0
;18" RCP C14	J14	J15	23	0.011	0	0	0	0
;24" RCP C15	J15	J16	112	0.011	0	0	0	0
;24" RCP C16	J16	J17	39	0.011	0	0	0	0
;36" RCP C17	J17	J19	673	0.011	0	0	0	0
;18" RCP C18	J18	J19	41	0.011	0	0	0	0
;36" RCP C19	J19	J24	291	0.011	0	0	0	0
;12" PVC C20	J20	J22	30	0.011	0	0	0	0
;12" PVC C21	J21	J22	41	0.011	0	0	0	0
;12" RCP C22	J22	J23	476	0.011	0	0	0	0

```
;12" RCP
  C23              J23              J24              52         0.011      0          0          0          0
;36" RCP
  C24              J24              J33              656        0.011      0          0          0          0
;18" RCP
  C25              J25              J27              45         0.011      0          0          0          0
;18" RCP
  C26              J26              J27              21         0.011      0          0          0          0
;18" RCP
  C27              J27              J30              405        0.011      0          0          0          0
;18" RCP
  C28              J28              J30              41         0.011      0          0          0          0
;18" RCP
  C29              J29              J30              28         0.011      0          0          0          0
;36" RCP
  C30              J30              J31              107        0.011      0          0          0          0
;36" RCP
  C31              J31              J32              70         0.011      0          0          0          0
;36" RCP
  C32              J32              J33              22         0.011      0          0          0          0
;36" RCP
  C33              J33              OUT2             104        0.011      0          0          0          0

[XSECTIONS]
;;Link            Type         Geom1      Geom2      Geom3      Geom4      Barrels
;;-----------------------------------------------------------------------------
  C1               CIRCULAR     1          0          0          0          1
  C2               CIRCULAR     1.5        0          0          0          1
  C3               CIRCULAR     2          0          0          0          1
  C4               CIRCULAR     1          0          0          0          1
  C5               CIRCULAR     1          0          0          0          1
  C6               CIRCULAR     1          0          0          0          1
  C7               CIRCULAR     2          0          0          0          1
  C8               CIRCULAR     1          0          0          0          1
  C9               CIRCULAR     2          0          0          0          1
  C10              CIRCULAR     1.5        0          0          0          1
  C11              CIRCULAR     1          0          0          0          1
  C12              CIRCULAR     1          0          0          0          1
  C13              CIRCULAR     1.5        0          0          0          1
  C14              CIRCULAR     1.5        0          0          0          1
  C15              CIRCULAR     2          0          0          0          1
  C16              CIRCULAR     2          0          0          0          1
  C17              CIRCULAR     3          0          0          0          1
  C18              CIRCULAR     1.5        0          0          0          1
  C19              CIRCULAR     3          0          0          0          1
  C20              CIRCULAR     1          0          0          0          1
  C21              CIRCULAR     1          0          0          0          1
  C22              CIRCULAR     1          0          0          0          1
  C23              CIRCULAR     1          0          0          0          1
  C24              CIRCULAR     3          0          0          0          1
  C25              CIRCULAR     1.5        0          0          0          1
  C26              CIRCULAR     1.5        0          0          0          1
  C27              CIRCULAR     1.5        0          0          0          1
  C28              CIRCULAR     1.5        0          0          0          1
  C29              CIRCULAR     1.5        0          0          0          1
  C30              CIRCULAR     3          0          0          0          1
  C31              CIRCULAR     3          0          0          0          1
  C32              CIRCULAR     3          0          0          0          1
  C33              CIRCULAR     3          0          0          0          1

[TIMESERIES]
;;Name            Date         Time         Value
;;-----------------------------------------------
;100 year 6 hour Type B SCS Design Storm Max Precip = 2.6
  100yr6hrCum2.6   10/01/2005 10:00        0.0
  100yr6hrCum2.6               10:15        0.0468
  100yr6hrCum2.6               10:30        0.091
  100yr6hrCum2.6               10:45        0.1508
  100yr6hrCum2.6               11:00        0.208
  100yr6hrCum2.6               11:15        0.2808
  100yr6hrCum2.6               11:30        0.351
  100yr6hrCum2.6               11:45        0.4758
```

```
 100yr6hrCum2.6                12:00      0.598
 100yr6hrCum2.6                12:15      1.079
 100yr6hrCum2.6                12:30      1.56
 100yr6hrCum2.6                12:45      1.69
 100yr6hrCum2.6                13:00      1.82
 100yr6hrCum2.6                13:15      1.924
 100yr6hrCum2.6                13:30      2.028
 100yr6hrCum2.6                13:45      2.1008
 100yr6hrCum2.6                14:00      2.171
 100yr6hrCum2.6                14:15      2.2308
 100yr6hrCum2.6                14:30      2.288
 100yr6hrCum2.6                14:45      2.34
 100yr6hrCum2.6                15:00      2.392
 100yr6hrCum2.6                15:15      2.444
 100yr6hrCum2.6                15:30      2.496
 100yr6hrCum2.6                15:45      2.548
 100yr6hrCum2.6                16:00      2.6

;SCS II Storm SD Hydrology Manual - 2.1 Cumulative 6 Hour 25 yr Storm
  25yr6hrCum2.1                10:00      0
  25yr6hrCum2.1                10:15      0.0378
  25yr6hrCum2.1                10:30      0.0735
  25yr6hrCum2.1                10:45      0.1218
  25yr6hrCum2.1                11:00      0.168
  25yr6hrCum2.1                11:15      0.2268
  25yr6hrCum2.1                11:30      0.2835
  25yr6hrCum2.1                11:45      0.3843
  25yr6hrCum2.1                12:00      0.483
  25yr6hrCum2.1                12:15      0.8715
  25yr6hrCum2.1                12:30      1.26
  25yr6hrCum2.1                12:45      1.365
  25yr6hrCum2.1                13:00      1.47
  25yr6hrCum2.1                13:15      1.554
  25yr6hrCum2.1                13:30      1.638
  25yr6hrCum2.1                13:45      1.6968
  25yr6hrCum2.1                14:00      1.7535
  25yr6hrCum2.1                14:15      1.8018
  25yr6hrCum2.1                14:30      1.848
  25yr6hrCum2.1                14:45      1.89
  25yr6hrCum2.1                15:00      1.932
  25yr6hrCum2.1                15:15      1.974
  25yr6hrCum2.1                15:30      2.016
  25yr6hrCum2.1                15:45      2.058
  25yr6hrCum2.1                16:00      2.1

[REPORT]
 INPUT     NO
 CONTROLS  NO

[OPTIONS]
 TEMPDIR   "C:\Carlsbad\DMP\"
```

Project BB – 1

Project BB – 2

SWMM 5.0 – Output

25 Year 6 Hour Storm

Drainage Project BB (Washington Street Drainage Improvements)

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)
--------------------------------------------------------------

Drainage Project BB (Washington Street Drainage Improvements)
25 Year 6 Hour Storm

****************
Analysis Options
****************
Flow Units ..... CFS
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date ..... SEP-30-2005 22:00:00
Ending Date ..... OCT-02-2005 00:00:00
Report Time Step ..... 00:15:00
Wet Time Step ..... 00:15:00
Dry Time Step ..... 01:00:00
Routing Time Step ..... 30.00 sec

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation .....         10.519         2.100
Evaporation Loss .....             0.000         0.000
Infiltration Loss .....            3.164         0.632
Surface Runoff .....               7.442         1.486
Final Surface Storage ....         0.006         0.001
Continuity Error (%) .....       -0.882

**************************        Volume         Volume
Flow Routing Continuity        acre-feet       Mgallons
**************************     ---------       ---------
Dry Weather Inflow .....           0.000         0.000
Wet Weather Inflow .....           7.465         2.432
Groundwater Inflow .....           0.000         0.000
RDII Inflow .....                  0.000         0.000
External Inflow .....             0.000         0.000
External Outflow .....            7.035         2.292
Surface Flooding .....            0.431         0.140
Evaporation Loss .....             0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume .....          0.000         0.000
Continuity Error (%) .....       -0.021

****************************
Subcatchment Runoff Summary
****************************

-----------------------------------------------------------------------------
                 Total      Total      Total      Total      Total     Runoff
                 Precip     Runon      Evap       Infil      Runoff    Coeff
Subcatchment         in         in         in         in          in
-----------------------------------------------------------------------------
S1                2.100      0.000      0.000      0.401      1.718     0.818
S2                2.100      0.000      0.000      0.457      1.658     0.789
S3                2.100      0.000      0.000      0.621      1.498     0.713
S4                2.100      0.000      0.000      0.642      1.478     0.704
S5                2.100      0.000      0.000      0.641      1.478     0.704
S6                2.100      0.000      0.000      0.638      1.479     0.704
S7                2.100      0.000      0.000      0.642      1.477     0.704
S8                2.100      0.000      0.000      0.662      1.457     0.694
S9                2.100      0.000      0.000      0.661      1.458     0.694
S10               2.100      0.000      0.000      0.660      1.458     0.694
S11               2.100      0.000      0.000      0.697      1.421     0.676
S12               2.100      0.000      0.000      0.622      1.498     0.713
S13               2.100      0.000      0.000      0.703      1.417     0.675
S14               2.100      0.000      0.000      0.682      1.437     0.684
S15               2.100      0.000      0.000      0.680      1.439     0.685
```

S16	2.100	0.000	0.000	0.659	1.459	0.695
S17	2.100	0.000	0.000	0.668	1.454	0.692
S18	2.100	0.000	0.000	0.703	1.417	0.675
S19	2.100	0.000	0.000	0.639	1.479	0.704
S20	2.100	0.000	0.000	0.732	1.352	0.644
S21	2.100	0.000	0.000	0.644	1.476	0.703
S22	2.100	0.000	0.000	0.700	1.419	0.676
S23	2.100	0.000	0.000	0.659	1.459	0.695
S24	2.100	0.000	0.000	0.662	1.457	0.694
S25	2.100	0.000	0.000	0.642	1.478	0.704
Totals	2.100	0.000	0.000	0.632	1.486	0.707

****
Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.06	0.66	50.16	0 12:45	0	0
J2	0.10	1.00	45.90	0 12:45	0	0
J3	0.10	1.02	41.02	0 12:45	0	0
J4	0.05	0.47	49.47	0 12:45	0	0
J5	0.10	2.25	50.05	0 12:28	0.08	20
J6	0.08	1.00	48.63	0 12:30	0	0
J7	0.12	1.23	38.85	0 12:45	0	0
J8	0.08	2.50	51.12	0 12:35	0.02	11
J9	0.13	1.32	34.32	0 12:45	0	0
J10	0.05	0.48	48.48	0 12:45	0	0
J11	0.05	0.56	48.56	0 12:45	0	0
J12	0.19	3.00	50.00	0 12:16	3.17	45
J13	0.01	0.05	54.30	0 12:45	0	0
J14	0.01	0.12	53.62	0 12:45	0	0
J15	0.14	1.00	47.00	0 12:21	0	0
J16	0.09	0.68	38.02	0 12:45	0	0
J17	0.10	0.68	37.68	0 12:45	0	0
J18	0.04	0.36	42.36	0 12:45	0	0
J19	0.12	1.01	34.65	0 12:45	0	0
J20	0.03	0.27	50.77	0 12:45	0	0
J21	0.03	0.25	50.25	0 12:45	0	0
J22	0.28	6.50	55.00	0 12:20	1.90	40
J23	0.14	1.00	46.00	0 12:25	0	0
J24	0.17	1.14	33.32	0 12:45	0	0
J25	0.02	0.21	41.91	0 12:45	0	0
J26	0.02	0.21	44.41	0 12:45	0	0
J27	0.04	0.43	41.03	0 12:45	0	0
J28	0.04	0.33	35.93	0 12:45	0	0
J29	0.04	0.33	35.93	0 12:45	0	0
J30	0.07	0.63	34.13	0 12:45	0	0
J31	0.09	0.85	32.65	0 12:45	0	0
J32	0.09	0.85	32.30	0 12:45	0	0
J33	0.17	1.14	30.04	0 12:46	0	0
OUT1	0.90	2.00	31.77	0 10:16	0	0
OUT2	1.81	3.00	24.64	0 10:18	0	0

****
Conduit Flow Summary
****

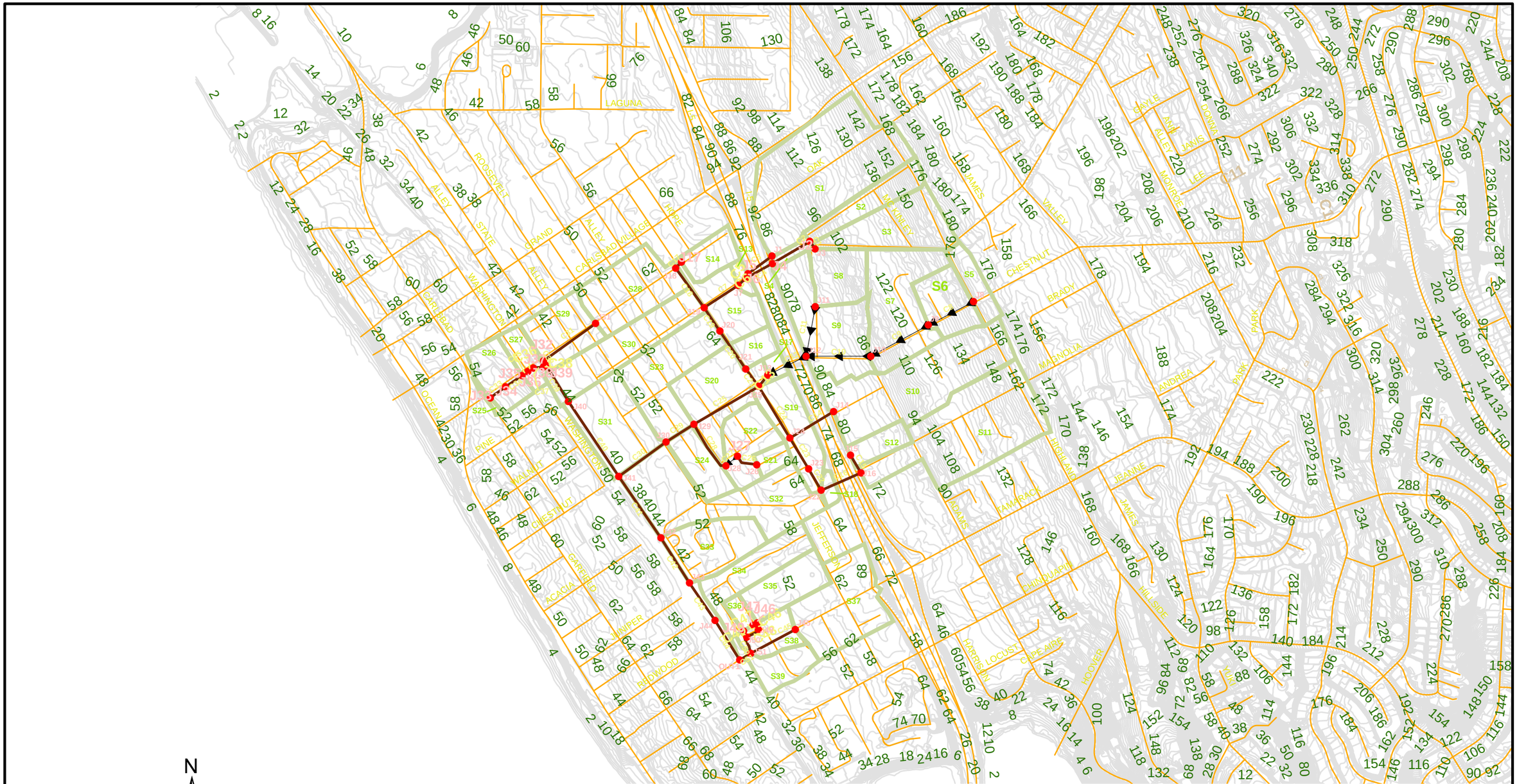
Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	3.19	0 12:45	5.87	1.00	0.77	0
C2	9.80	0 12:45	7.92	1.00	0.78	0
C3	9.79	0 12:46	6.13	1.00	0.52	0

C4	2.26	0	12:45	6.22	1.00	0.45	0
C5	2.11	0	12:48	3.04	1.00	1.05	19
C6	6.12	0	12:45	11.07	1.00	0.78	0
C7	18.47	0	12:45	9.16	1.00	0.70	0
C8	8.69	0	12:46	12.46	1.00	1.05	10
C9	31.04	0	12:45	14.09	1.00	0.78	0
C10	4.27	0	12:45	8.72	1.00	0.22	0
C11	4.84	0	12:45	10.62	1.00	0.61	0
C12	2.63	0	13:00	3.70	1.00	1.08	41
C13	0.22	0	12:45	11.33	1.00	0.00	0
C14	0.92	0	12:45	13.95	1.00	0.01	0
C15	3.57	0	12:45	12.21	1.00	0.05	0
C16	6.26	0	12:45	6.61	1.00	0.25	0
C17	6.27	0	12:45	5.27	1.00	0.11	0
C18	7.27	0	12:45	21.90	1.00	0.13	0
C19	13.49	0	12:45	6.52	1.00	0.24	0
C20	1.68	0	12:45	10.03	1.00	0.15	0
C21	1.10	0	12:45	7.18	1.00	0.14	0
C22	3.89	0	13:00	5.65	1.00	1.08	36
C23	3.86	0	13:00	20.25	1.00	0.18	0
C24	17.10	0	12:46	6.98	1.00	0.31	0
C25	0.83	0	12:45	5.48	1.00	0.04	0
C26	2.16	0	12:45	14.44	1.00	0.04	0
C27	2.99	0	12:45	7.11	1.00	0.18	0
C28	3.04	0	12:45	10.40	1.00	0.11	0
C29	3.65	0	12:45	12.56	1.00	0.11	0
C30	9.66	0	12:45	8.92	1.00	0.10	0
C31	9.66	0	12:45	5.90	1.00	0.17	0
C32	9.66	0	12:45	17.97	1.00	0.04	0
C33	26.69	0	12:45	20.27	1.00	0.13	0

```
**************************
Routing Time Step Summary
**************************
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.04

Analysis begun on:  Wed Jun 07 16:03:32 2006
Total elapsed time: < 1 sec
```

Project BB 84 INCH
Backwater Check
Washington Street Project



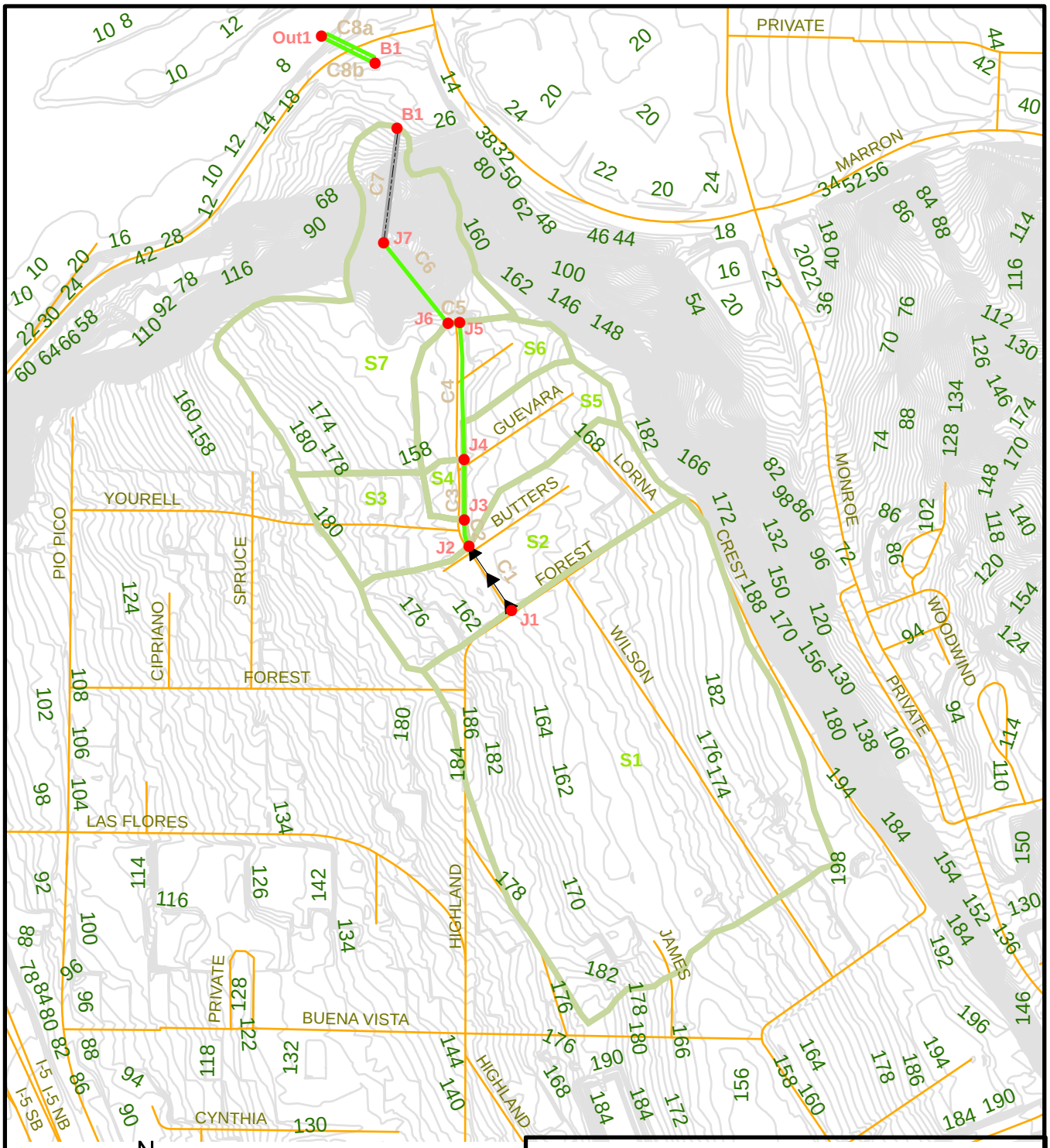
LEGEND

- ● JUNCTIONS
- CMP
- ◂—◂ GUTTER
- RCP
- ◀◀◀ OVERLAND FLOW
- 🟩 SUBCATCHMENTS
- ROADS
- CONTOURS

PROJECT BB
84 INCH PIPE

PROJECT LOCATION	DATE	PROJECT NUMBER
WASHINGTON STREET CARLSBAD, CALIFORNIA	NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA



LEGEND

- JUNCTIONS
- CONCRETE CULVERT
- GUTTER
- RCP
- SUBCATCHMENTS
- ROADS
- CONTOURS

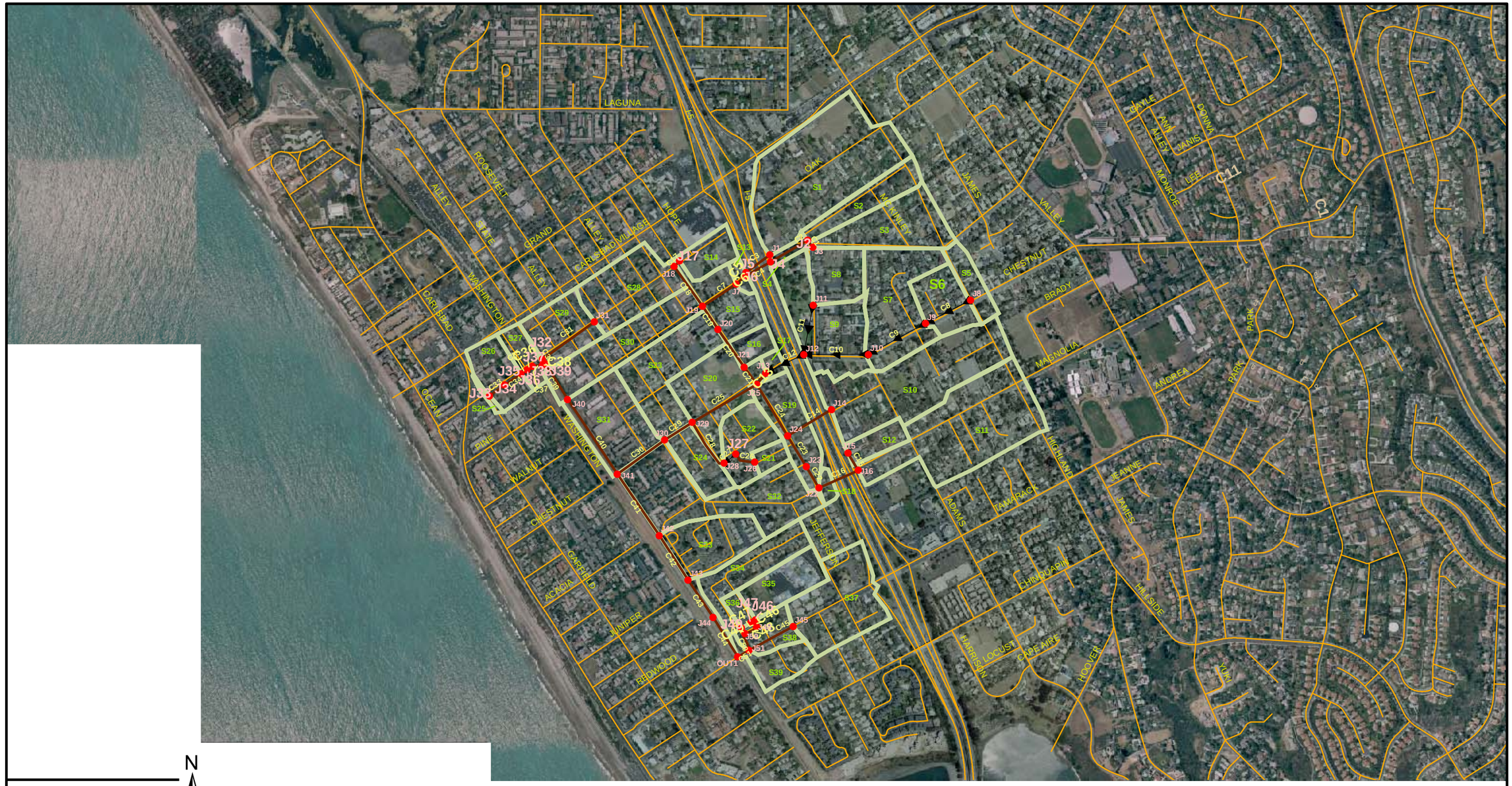
DATE	PROJECT NUMBER
NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

PROJECT AC

PROJECT LOCATION

HIGHLAND DRIVE
CARLSBAD, CALIFORNIA



LEGEND

● JUNCTIONS	RCP
CMP	◀◀◀ OVERLAND FLOW
▶▶▶ GUTTER	▢ SUBCATCHMENTS
◀— Gutter	ROADS

PROJECT BB

84 INCH PIPE

PROJECT LOCATION

WASHINGTON STREET
CARLSBAD, CALIFORNIA

DATE	PROJECT NUMBER
NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

Project BB 84 INCH

Backwater Check

SWMM 5.0 – Input

100 Year 6 Hour Storm

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

```
[TITLE]
Drainage Project BB - 84 inch (Washington St. Drainage Improvements)
100 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/03/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;                Rain       Recd.   Snow   Data       Source           Station    Rain
;;Name            Type       Freq.   Catch  Source     Name             ID         Units
;;--------------------------------------------------------------------------------------
  R1              CUMULATIVE 0:15    1.0    TIMESERIES 100yr6hrCum2.6

[SUBCATCHMENTS]
;;                                                    Total      Pcnt.                Pcnt.      Curb       Snow
;;Name            Raingage         Outlet            Area       Imperv     Width     Slope      Length     Pack
;;--------------------------------------------------------------------------------------------------------------
  S1              R1               J1                32.31      25         757       5.59       0
  S2              R1               J2                6.9        25         220       6.72       0
  S3              R1               J3                12.52      25         376       6.3        0
  S4              R1               J4                1.25       12         127       2.33       0
  S5              R1               J8                4.17       25         319       2.28       0
  S6              R1               J9                7.32       25         490       5.08       0
  S7              R1               J10               17.14      25         439       4.35       0
  S8              R1               J11               7.14       26         404       5.71       0
  S9              R1               J12               16.07      23         700       3.6        0
  S10             R1               J14               25.97      32         586       4.97       0
  S11             R1               J16               27.11      27         570       4.83       0
  S12             R1               J15               3.53       47         237       2.92       0
  S13             R1               J7                1.1        40         174       1.45       0
  S14             R1               J18               4.4        49         325       1.36       0
  S15             R1               J20               8.27       41         554       0.92       0
  S16             R1               J21               2.83       40         257       1.25       0
  S17             R1               J13               1.12       40         188       1.15       0
  S18             R1               J22               1.06       33         231       1.5        0
  S19             R1               J25               9.29       37         337       25         0
  S20             R1               J29               13.07      47         662       1.05       0
  S21             R1               J26               1.9        3          251       91         0
  S22             R1               J28               7.73       37         561       1.5        0
  S23             R1               J30               14.76      53         367       0.8        0
  S24             R1               J30               5.91       31         322       0.63       0
  S25             R1               J33               0.46       25         106       1          0
  S26             R1               J35               6.55       65         476       1          0
  S27             R1               J39               5          60         292       0.5        0
  S28             R1               J31               13.2       69         575       1.4        0
  S29             R1               J32               8.71       85         480       1.27       0
  S30             R1               J40               13.46      63         345       1.41       0
  S31             R1               J41               13.21      75         548       0.76       0
  S32             R1               J42               22.49      38         516       0.95       0
  S33             R1               J43               10.4       42         503       1.78       0
```

S34	R1	J49	9.46	42	259	0.38	0
S35	R1	J46	7.56	51	366	1.11	0
S36	R1	J47	1.41	40	166	0.54	0
S37	R1	J45	15.73	46	571	1.67	0
S38	R1	J51	4.78	36	353	1.36	0
S39	R1	OUT1	5.23	28	268	0.94	0

[SUBAREAS]

;;Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
S1	0.011	0.15	0.05	0.1	100	OUTLET	
S2	0.011	0.15	0.05	0.1	100	OUTLET	
S3	0.011	0.15	0.05	0.1	100	OUTLET	
S4	0.011	0.15	0.05	0.1	100	OUTLET	
S5	0.011	0.15	0.05	0.1	100	OUTLET	
S6	0.011	0.15	0.05	0.1	100	OUTLET	
S7	0.011	0.15	0.05	0.1	100	OUTLET	
S8	0.011	0.15	0.05	0.1	100	OUTLET	
S9	0.011	0.15	0.05	0.1	100	OUTLET	
S10	0.011	0.15	0.05	0.1	100	OUTLET	
S11	0.011	0.15	0.05	0.1	100	OUTLET	
S12	0.011	0.15	0.05	0.1	100	OUTLET	
S13	0.011	0.15	0.05	0.1	100	OUTLET	
S14	0.011	0.15	0.05	0.1	100	OUTLET	
S15	0.011	0.15	0.05	0.1	100	OUTLET	
S16	0.011	0.15	0.05	0.1	100	OUTLET	
S17	0.011	0.15	0.05	0.1	100	OUTLET	
S18	0.011	0.15	0.05	0.1	100	OUTLET	
S19	0.011	0.15	0.05	0.1	100	OUTLET	
S20	0.011	0.15	0.05	0.1	100	OUTLET	
S21	0.011	0.15	0.05	0.1	100	OUTLET	
S22	0.011	0.15	0.05	0.1	100	OUTLET	
S23	0.011	0.15	0.05	0.1	100	OUTLET	
S24	0.011	0.15	0.05	0.1	100	OUTLET	
S25	0.011	0.15	0.05	0.1	100	OUTLET	
S26	0.011	0.15	0.05	0.05	100	OUTLET	
S27	0.011	0.015	0.05	0.05	100	OUTLET	
S28	0.011	0.15	0.05	0.1	100	OUTLET	
S29	0.011	0.15	0.05	0.1	100	OUTLET	
S30	0.011	0.15	0.05	0.1	100	OUTLET	
S31	0.011	0.15	0.05	0.1	100	OUTLET	
S32	0.011	0.15	0.05	0.1	100	OUTLET	
S33	0.011	0.15	0.05	0.1	100	OUTLET	
S34	0.011	0.15	0.05	0.1	100	OUTLET	
S35	0.011	0.15	0.05	0.1	100	OUTLET	
S36	0.011	0.15	0.05	0.1	100	OUTLET	
S37	0.011	0.15	0.05	0.1	100	OUTLET	
S38	0.011	0.15	0.05	0.1	100	OUTLET	
S39	0.011	0.15	0.05	0.1	100	OUTLET	

[INFILTRATION]

;;Subcatchment	Suction	HydCon	IMDmax
S1	2.4	1.18	0
S2	2.4	1.18	0
S3	2.4	1.18	0
S4	2.4	1.18	0
S5	2.4	1.18	0
S6	2.4	1.18	0
S7	2.4	1.18	0
S8	2.4	1.18	0
S9	2.4	1.18	0
S10	2.4	1.18	0
S11	2.4	1.18	0
S12	2.4	1.18	0
S13	2.4	1.18	0
S14	2.4	1.18	0
S15	2.4	1.18	0
S16	2.4	1.18	0
S17	2.4	1.18	0
S18	2.4	1.18	0
S19	2.4	1.18	0

S20	2.4	1.18	0
S21	2.4	1.18	0
S22	2.4	1.18	0
S23	2.4	1.18	0
S24	2.4	1.18	0
S25	2.4	1.18	0
S26	2.4	1.18	0
S27	2.4	1.18	0
S28	2.4	1.18	0
S29	2.4	1.18	0
S30	2.4	1.18	0
S31	2.4	1.18	0
S32	2.4	1.18	0
S33	2.4	1.18	0
S34	2.4	1.18	0
S35	2.4	1.18	0
S36	2.4	1.18	0
S37	2.4	1.18	0
S38	2.4	1.18	0
S39	2.4	1.18	0

[JUNCTIONS]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
J1	71.4	0	0	0	0
J2	77.2	0	0	0	0
J3	81.4	0	0	0	0
J4	71.4	0	0	0	0
J5	66	6	0	0	0
J6	65	6	0	0	0
J7	62	6	0	0	0
J8	167	0	0	0	0
J9	131	0	0	0	0
J10	92	0	0	0	0
J11	81	0	0	0	0
J12	72	0	0	0	0
J13	59	6	0	0	0
J14	69	0	0	0	0
J15	73	0	0	0	0
J16	69	0	0	0	0
J17	59	0	0	0	0
J18	58	4	0	0	0
J19	56.5	6.5	0	0	0
J20	56	7	0	0	0
J21	54.2	7.8	0	0	0
J22	53	8.3	0	0	0
J23	52	9	0	0	0
J24	49	11	0	0	0
J25	47	16	0	0	0
J26	54.52	0	0	0	0
J27	53.2	0	0	0	0
J28	51.2	0	0	0	0
J29	39.5	12	0	0	0
J30	36	14	0	0	0
J31	40.9	0	0	0	0
J32	35	0	0	0	0
J33	46	4	0	0	0
J34	45.04	1.5	0	0	0
J35	38.6	4	0	0	0
J36	37.4	4	0	0	0
J37	37.09	0	0	0	0
J38	36.57	0	0	0	0
J39	34.93	0	0	0	0
J40	34.4	0	0	0	0
J41	29.77	8.23	0	0	0
J42	25.94	0	0	0	0
J43	24.78	0	0	0	0
J44	23.62	0	0	0	0
J45	42.1	0	0	0	0
J46	46.8	0	0	0	0
J47	46.8	0	0	0	0

J48	46.4	0	0	0	0
J49	46.8	0	0	0	0
J50	45.4	0	0	0	0
J51	34.4	0	0	0	0

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
OUT1	21.64	FREE		NO

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Height	Outlet Height	Init. Flow	Ma Fl
;18" RCP C1	J3	J2	91	0.011	0	0	0	0
;24" RCP C2	J2	J4	445	0.011	0	0	0	0
;24" RCP C3	J4	J6	313	0.011	0	0	0	0
;24" RCP C4	J1	J5	307	0.011	0	0	0	0
;18" RCP C5	J5	J6	51	0.011	0	0	0	0
;18" RCP C6	J6	J7	111	0.011	0	0	0	0
;24" RCP C7	J7	J19	415	0.011	0	0	0	0
;Gutter C8	J8	J9	523	0.011	0	0	0	0
;Gutter C9	J9	J10	671	0.011	0	0	0	0
;Gutter C10	J10	J12	666	0.011	0	0	0	0
;Gutter C11	J11	J12	517	0.011	0	0	0	0
;Gutter C12	J12	J13	439	0.011	0	0	0	0
;18" RCP C13	J13	J25	151	0.011	0	0	0	0
;24" RCP C14	J14	J24	527	0.011	0	0	0	0
;18" RCP C15	J15	J16	210	0.011	0	0	0	0
;18" RCP C16	J16	J22	446	0.011	0	0	0	0
;24" RCP C17	J17	J18	84	0.011	0	0	0	0
;24" RCP C18	J18	J19	502	0.011	0	0	0	0
;24" RCP C19	J19	J20	292	0.011	0	0	0	0
;24" RCP C20	J20	J21	471	0.011	0	0	0	0
;24" RCP C21	J21	J25	222	0.011	0	0	0	0
;18" RCP C22	J22	J23	254	0.011	0	0	0	0
;24" RCP C23	J23	J24	371	0.011	0	0	0	0
;24" RCP C24	J24	J25	618	0.011	0	0	0	0
;24" RCP C25	J25	J29	771	0.011	0	0	0	0
;18" RCP C26	J26	J27	238	0.011	0	0	0	0
;Gutter C27	J27	J28	153	0.011	0	0	0	0
;18" RCP C28	J28	J29	560	0.011	0	0	0	0
;24" RCP								

C29	J29	J30	338	0.011	0	0	0	0
;24" RCP								
C30	J30	J41	602	0.011	0	0	0	0
;24" RCP								
C31	J31	J32	661	0.011	0	0	0	0
;72" RCP								
C32	J32	J39	55.95	0.011	0	0	0	0
;12" CMP								
C33	J33	J34	191.79	0.011	0	0	0	0
;18" RCP								
C34	J34	J35	205.97	0.011	0	0	0	0
;18" RCP								
C35	J35	J36	73.18	0.011	0	0	0	0
;18" RCP								
C36	J36	J37	67	0.011	0	0	0	0
;36" CMP								
C37	J37	J38	103	0.011	0	0	0	0
;Sheet Flow								
C38	J38	J39	33.32	0.15	0	0	0	0
;72" RCP								
C39	J39	J40	400	0.011	0	0	0	0
;24" RCP								
C40	J40	J41	926	0.011	0	0	0	0
;84" RCP								
C41	J41	J42	766	0.011	0	0	0	0
;84" RCP								
C42	J42	J43	549	0.011	0	0	0	0
;84" RCP								
C43	J43	J44	464	0.011	0	0	0	0
;84" RCP								
C44	J44	OUT1	479	0.011	0	0	0	0
;36" RCP								
C45	J45	J51	520	0.011	0	0	0	0
;18" RCP								
C46	J46	J48	69	0.011	0	0	0	0
;18" RCP								
C47	J47	J48	69	0.011	0	0	0	0
;24" RCP								
C48	J48	J50	143	0.011	0	0	0	0
;18" RCP								
C49	J49	J50	70	0.011	0	0	0	0
;24" RCP								
C50	J50	J51	189	0.011	0	0	0	0
;36" RCP								
C51	J51	OUT1	133	0.011	0	0	0	0

[XSECTIONS]

;;Link	Type	Geom1	Geom2	Geom3	Geom4	Barrels
C1	CIRCULAR	1.5	0	0	0	1
C2	CIRCULAR	2	0	0	0	1
C3	CIRCULAR	2	0	0	0	1
C4	CIRCULAR	2	0	0	0	1
C5	CIRCULAR	2	0	0	0	1
C6	CIRCULAR	2	0	0	0	1
C7	CIRCULAR	2	0	0	0	1
C8	RECT_OPEN	0.1667	5	0	0	1
C9	RECT_OPEN	0.3	30	0	0	1
C10	RECT_OPEN	0.3	30	0	0	1
C11	RECT_OPEN	0.3	40	0	0	1
C12	RECT_OPEN	0.3	30	0	0	1
C13	CIRCULAR	1.5	0	0	0	1
C14	CIRCULAR	2	0	0	0	1
C15	CIRCULAR	1.5	0	0	0	1
C16	CIRCULAR	1.5	0	0	0	1
C17	CIRCULAR	2	0	0	0	1
C18	CIRCULAR	2	0	0	0	1
C19	CIRCULAR	2	0	0	0	1
C20	CIRCULAR	2	0	0	0	1
C21	CIRCULAR	2	0	0	0	1
C22	CIRCULAR	2	0	0	0	1
C23	CIRCULAR	2	0	0	0	1

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

```
 C24              CIRCULAR     2          0          0          0          1
 C25              CIRCULAR     3          0          0          0          1
 C26              CIRCULAR     1.5        0          0          0          1
 C27              RECT_OPEN    0.1667     5          0          0          1
 C28              CIRCULAR     1.5        0          0          0          1
 C29              CIRCULAR     3          0          0          0          1
 C30              CIRCULAR     3          0          0          0          1
 C31              CIRCULAR     2          0          0          0          1
 C32              CIRCULAR     6          0          0          0          1
 C33              CIRCULAR     1          0          0          0          1
 C34              CIRCULAR     1.5        0          0          0          1
 C35              CIRCULAR     1.5        0          0          0          1
 C36              CIRCULAR     1.5        0          0          0          1
 C37              CIRCULAR     36         0          0          0          1
 C38              RECT_OPEN    0.5        50         0          0          1
 C39              CIRCULAR     6          0          0          0          1
 C40              CIRCULAR     6          0          0          0          1
 C41              CIRCULAR     7          0          0          0          1
 C42              CIRCULAR     7          0          0          0          1
 C43              CIRCULAR     7          0          0          0          1
 C44              CIRCULAR     7          0          0          0          1
 C45              CIRCULAR     3          0          0          0          1
 C46              CIRCULAR     1.5        0          0          0          1
 C47              CIRCULAR     1.5        0          0          0          1
 C48              CIRCULAR     2          0          0          0          1
 C49              CIRCULAR     1.5        0          0          0          1
 C50              CIRCULAR     2          0          0          0          1
 C51              CIRCULAR     3          0          0          0          1

[LOSSES]
;;Link             Inlet      Outlet     Average    Flap Gate
;;---------------------------------------------------------
  C32              0.5        0.5        0          NO
  C39              0.5        0.5        0          NO

[INFLOWS]
;;                                                  Concen   Conversion
;;Node             Parameter        Time Series      /Mass    Factor
;;---------------------------------------------------------------------
  J41              FLOW             Out1-BB

[TIMESERIES]
;;Name             Date       Time       Value
;;-----------------------------------------------
;100 year 6 hr Type B SCS Storm Cum Max Precip 2.6 inches
  100yr6hrCum2.6                10:15      0.0468
  100yr6hrCum2.6                10:30      0.091
  100yr6hrCum2.6                10:45      0.1508
  100yr6hrCum2.6                11:00      0.208
  100yr6hrCum2.6                11:15      0.2808
  100yr6hrCum2.6                11:30      0.351
  100yr6hrCum2.6                11:45      0.4758
  100yr6hrCum2.6                12:00      0.598
  100yr6hrCum2.6                12:15      1.079
  100yr6hrCum2.6                12:30      1.56
  100yr6hrCum2.6                12:45      1.69
  100yr6hrCum2.6                13:00      1.82
  100yr6hrCum2.6                13:15      1.924
  100yr6hrCum2.6                13:30      2.028
  100yr6hrCum2.6                13:45      2.1008
  100yr6hrCum2.6                14:00      2.171
  100yr6hrCum2.6                14:15      2.2308
  100yr6hrCum2.6                14:30      2.288
  100yr6hrCum2.6                14:45      2.34
  100yr6hrCum2.6                15:00      2.392
  100yr6hrCum2.6                15:15      2.444
  100yr6hrCum2.6                15:30      2.496
  100yr6hrCum2.6                15:45      2.548
  100yr6hrCum2.6                16:00      2.6

;Table - Node OUT1
  Out1-BB          09/30/2005 22:15:00   0.00
```

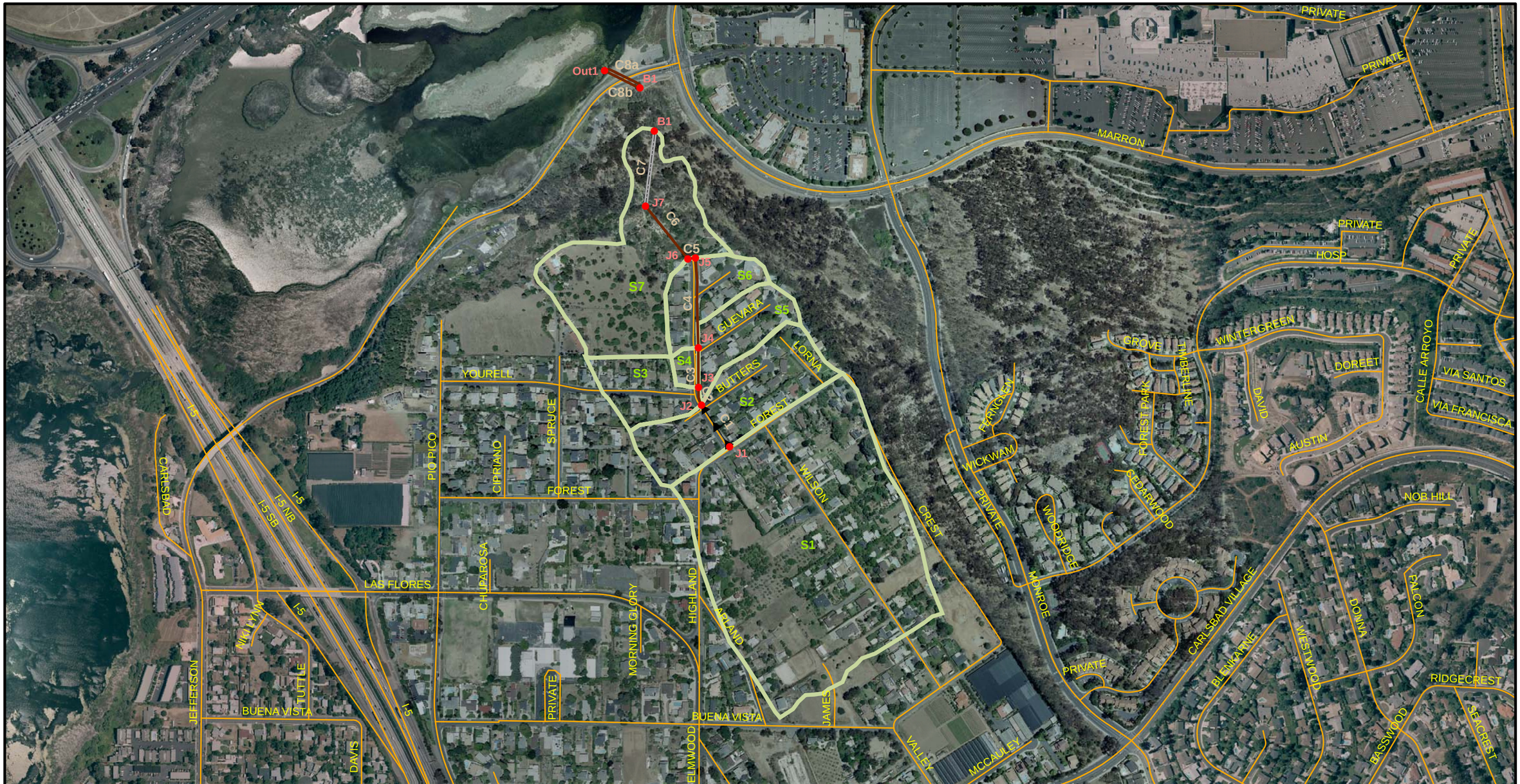
Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

Out1-BB	09/30/2005 22:30:00	0.00
Out1-BB	09/30/2005 22:45:00	0.00
Out1-BB	09/30/2005 23:00:00	0.00
Out1-BB	09/30/2005 23:15:00	0.00
Out1-BB	09/30/2005 23:30:00	0.00
Out1-BB	09/30/2005 23:45:00	0.00
Out1-BB	10/01/2005 00:00:00	0.00
Out1-BB	10/01/2005 00:15:00	0.00
Out1-BB	10/01/2005 00:30:00	0.00
Out1-BB	10/01/2005 00:45:00	0.00
Out1-BB	10/01/2005 01:00:00	0.00
Out1-BB	10/01/2005 01:15:00	0.00
Out1-BB	10/01/2005 01:30:00	0.00
Out1-BB	10/01/2005 01:45:00	0.00
Out1-BB	10/01/2005 02:00:00	0.00
Out1-BB	10/01/2005 02:15:00	0.00
Out1-BB	10/01/2005 02:30:00	0.00
Out1-BB	10/01/2005 02:45:00	0.00
Out1-BB	10/01/2005 03:00:00	0.00
Out1-BB	10/01/2005 03:15:00	0.00
Out1-BB	10/01/2005 03:30:00	0.00
Out1-BB	10/01/2005 03:45:00	0.00
Out1-BB	10/01/2005 04:00:00	0.00
Out1-BB	10/01/2005 04:15:00	0.00
Out1-BB	10/01/2005 04:30:00	0.00
Out1-BB	10/01/2005 04:45:00	0.00
Out1-BB	10/01/2005 05:00:00	0.00
Out1-BB	10/01/2005 05:15:00	0.00
Out1-BB	10/01/2005 05:30:00	0.00
Out1-BB	10/01/2005 05:45:00	0.00
Out1-BB	10/01/2005 06:00:00	0.00
Out1-BB	10/01/2005 06:15:00	0.00
Out1-BB	10/01/2005 06:30:00	0.00
Out1-BB	10/01/2005 06:45:00	0.00
Out1-BB	10/01/2005 07:00:00	0.00
Out1-BB	10/01/2005 07:15:00	0.00
Out1-BB	10/01/2005 07:30:00	0.00
Out1-BB	10/01/2005 07:45:00	0.00
Out1-BB	10/01/2005 08:00:00	0.00
Out1-BB	10/01/2005 08:15:00	0.00
Out1-BB	10/01/2005 08:30:00	0.00
Out1-BB	10/01/2005 08:45:00	0.00
Out1-BB	10/01/2005 09:00:00	0.00
Out1-BB	10/01/2005 09:15:00	0.00
Out1-BB	10/01/2005 09:30:00	0.00
Out1-BB	10/01/2005 09:45:00	0.00
Out1-BB	10/01/2005 10:00:00	0.00
Out1-BB	10/01/2005 10:15:00	0.00
Out1-BB	10/01/2005 10:30:00	2.08
Out1-BB	10/01/2005 10:45:00	3.09
Out1-BB	10/01/2005 11:00:00	4.14
Out1-BB	10/01/2005 11:15:00	4.26
Out1-BB	10/01/2005 11:30:00	5.16
Out1-BB	10/01/2005 11:45:00	5.23
Out1-BB	10/01/2005 12:00:00	8.70
Out1-BB	10/01/2005 12:15:00	9.08
Out1-BB	10/01/2005 12:30:00	34.63
Out1-BB	10/01/2005 12:45:00	37.31
Out1-BB	10/01/2005 13:00:00	13.46
Out1-BB	10/01/2005 13:15:00	9.76
Out1-BB	10/01/2005 13:30:00	8.05
Out1-BB	10/01/2005 13:45:00	7.75
Out1-BB	10/01/2005 14:00:00	5.85
Out1-BB	10/01/2005 14:15:00	5.29
Out1-BB	10/01/2005 14:30:00	4.62
Out1-BB	10/01/2005 14:45:00	4.31
Out1-BB	10/01/2005 15:00:00	3.96
Out1-BB	10/01/2005 15:15:00	3.88
Out1-BB	10/01/2005 15:30:00	3.87
Out1-BB	10/01/2005 15:45:00	3.86
Out1-BB	10/01/2005 16:00:00	3.86
Out1-BB	10/01/2005 16:15:00	3.86

```
 Out1-BB          10/01/2005 16:30:00   1.35
 Out1-BB          10/01/2005 16:45:00   0.42
 Out1-BB          10/01/2005 17:00:00   0.20
 Out1-BB          10/01/2005 17:15:00   0.11
 Out1-BB          10/01/2005 17:30:00   0.07
 Out1-BB          10/01/2005 17:45:00   0.05
 Out1-BB          10/01/2005 18:00:00   0.03
 Out1-BB          10/01/2005 18:15:00   0.02
 Out1-BB          10/01/2005 18:30:00   0.02
 Out1-BB          10/01/2005 18:45:00   0.01
 Out1-BB          10/01/2005 19:00:00   0.01
 Out1-BB          10/01/2005 19:15:00   0.00
 Out1-BB          10/01/2005 19:30:00   0.00
 Out1-BB          10/01/2005 19:45:00   0.00
 Out1-BB          10/01/2005 20:00:00   0.00
 Out1-BB          10/01/2005 20:15:00   0.00
 Out1-BB          10/01/2005 20:30:00   0.00
 Out1-BB          10/01/2005 20:45:00   0.00
 Out1-BB          10/01/2005 21:00:00   0.00
 Out1-BB          10/01/2005 21:15:00   0.00
 Out1-BB          10/01/2005 21:30:00   0.00
 Out1-BB          10/01/2005 21:45:00   0.00
 Out1-BB          10/01/2005 22:00:00   0.00
 Out1-BB          10/01/2005 22:15:00   0.00
 Out1-BB          10/01/2005 22:30:00   0.00
 Out1-BB          10/01/2005 22:45:00   0.00
 Out1-BB          10/01/2005 23:00:00   0.00
 Out1-BB          10/01/2005 23:15:00   0.00
 Out1-BB          10/01/2005 23:30:00   0.00
 Out1-BB          10/01/2005 23:45:00   0.00
 Out1-BB          10/02/2005 00:00:00   0.00

[REPORT]
 INPUT     NO
 CONTROLS  NO

[OPTIONS]
 TEMPDIR   "C:\Carlsbad\DMP\"
```



N
W E
S

0 500 1,000
Feet

LEGEND

- JUNCTIONS
- CONCRETE CULVERT
- GUTTER
- RCP
- SUBCATCHMENTS
- ROADS

PROJECT AC

PROJECT LOCATION	DATE	PROJECT NUMBER
HIGHLAND DRIVE CARLSBAD, CALIFORNIA	NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

Project BB 84 INCH

Backwater Check

SWMM 5.0 – Output

100 Year 6 Hour Storm

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)
100 Year 6 Hour Storm

Analysis Options

Flow Units	CFS
Infiltration Method	GREEN_AMPT
Flow Routing Method	KINWAVE
Starting Date	SEP-30-2005 22:00:00
Ending Date	OCT-03-2005 00:00:00
Report Time Step	00:15:00
Wet Time Step	00:15:00
Dry Time Step	01:00:00
Routing Time Step	30.00 sec

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	80.279	2.600
Evaporation Loss	0.000	0.000
Infiltration Loss	47.604	1.542
Surface Runoff	33.005	1.069
Final Surface Storage	0.001	0.000
Continuity Error (%)	-0.413	

Flow Routing Continuity	Volume acre-feet	Volume Mgallons
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	33.042	10.767
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	4.098	1.335
External Outflow	34.493	11.240
Surface Flooding	2.657	0.866
Evaporation Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	-0.028	

Subcatchment Runoff Summary

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Runoff Coeff
S1	2.600	0.000	0.000	1.926	0.681	0.262
S2	2.600	0.000	0.000	1.917	0.691	0.266
S3	2.600	0.000	0.000	1.919	0.688	0.265
S4	2.600	0.000	0.000	2.232	0.377	0.145
S5	2.600	0.000	0.000	1.907	0.701	0.270
S6	2.600	0.000	0.000	1.898	0.712	0.274
S7	2.600	0.000	0.000	1.927	0.680	0.261
S8	2.600	0.000	0.000	1.876	0.733	0.282
S9	2.600	0.000	0.000	1.968	0.639	0.246
S10	2.600	0.000	0.000	1.746	0.862	0.331
S11	2.600	0.000	0.000	1.878	0.729	0.281
S12	2.600	0.000	0.000	1.339	1.272	0.489
S13	2.600	0.000	0.000	1.504	1.108	0.426
S14	2.600	0.000	0.000	1.294	1.317	0.506
S15	2.600	0.000	0.000	1.508	1.102	0.424

S16	2.600	0.000	0.000	1.523	1.087	0.418
S17	2.600	0.000	0.000	1.506	1.105	0.425
S18	2.600	0.000	0.000	1.671	0.943	0.363
S19	2.600	0.000	0.000	1.582	1.029	0.396
S20	2.600	0.000	0.000	1.357	1.255	0.483
S21	2.600	0.000	0.000	2.384	0.288	0.111
S22	2.600	0.000	0.000	1.604	1.005	0.387
S23	2.600	0.000	0.000	1.212	1.400	0.538
S24	2.600	0.000	0.000	1.775	0.833	0.320
S25	2.600	0.000	0.000	1.881	0.731	0.281
S26	2.600	0.000	0.000	0.875	1.741	0.670
S27	2.600	0.000	0.000	0.971	1.673	0.643
S28	2.600	0.000	0.000	0.787	1.829	0.703
S29	2.600	0.000	0.000	0.374	2.245	0.864
S30	2.600	0.000	0.000	0.949	1.665	0.640
S31	2.600	0.000	0.000	0.636	1.980	0.762
S32	2.600	0.000	0.000	1.602	1.008	0.388
S33	2.600	0.000	0.000	1.482	1.128	0.434
S34	2.600	0.000	0.000	1.500	1.109	0.427
S35	2.600	0.000	0.000	1.253	1.359	0.523
S36	2.600	0.000	0.000	1.527	1.083	0.416
S37	2.600	0.000	0.000	1.384	1.227	0.472
S38	2.600	0.000	0.000	1.631	0.978	0.376
S39	2.600	0.000	0.000	1.850	0.757	0.291
Totals	2.600	0.000	0.000	1.542	1.069	0.411

****
Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.05	1.03	72.43	0 12:45	0	0
J2	0.04	0.86	78.06	0 12:45	0	0
J3	0.03	0.55	81.95	0 12:45	0	0
J4	0.04	0.86	72.26	0 12:45	0	0
J5	0.05	1.03	67.03	0 12:45	0	0
J6	0.06	1.23	66.23	0 12:45	0	0
J7	0.08	6.00	68.00	0 12:42	0.04	5
J8	0.00	0.08	167.08	0 12:45	0	0
J9	0.00	0.08	131.08	0 12:45	0	0
J10	0.00	0.11	92.11	0 12:45	0	0
J11	0.00	0.05	81.05	0 12:45	0	0
J12	0.01	0.16	72.16	0 12:45	0	0
J13	0.05	1.13	60.13	0 12:46	0	0
J14	0.04	0.82	69.82	0 12:45	0	0
J15	0.03	0.48	73.48	0 12:45	0	0
J16	0.05	1.06	70.06	0 12:45	0	0
J17	0.00	0.00	59.00	0 00:00	0	0
J18	0.04	0.78	58.78	0 12:45	0	0
J19	0.19	6.50	63.00	0 12:19	10.79	43
J20	0.17	7.00	63.00	0 12:26	0.50	25
J21	0.12	2.00	56.20	0 12:31	0	0
J22	0.13	8.30	61.30	0 12:29	0.90	22
J23	0.08	2.00	54.00	0 12:31	0	0
J24	0.24	11.00	60.00	0 12:20	8.80	40
J25	0.13	2.37	49.37	0 12:45	0	0
J26	0.01	0.39	54.91	0 12:45	0	0
J27	0.01	0.39	53.59	0 12:45	0	0
J28	0.03	0.69	51.89	0 12:45	0	0
J29	0.22	12.00	51.50	0 12:30	3.34	23
J30	0.28	14.00	50.00	0 12:26	7.38	31
J31	0.07	1.27	42.17	0 12:45	0	0
J32	0.11	1.76	36.76	0 12:45	0	0
J33	0.01	0.23	46.23	0 12:45	0	0
J34	0.01	0.23	45.27	0 12:45	0	0
J35	0.04	0.83	39.43	0 12:45	0	0

J36	0.08	4.00	41.40	0	12:30	0.14	18
J37	0.06	1.50	38.59	0	12:31	0	0
J38	0.02	0.41	36.98	0	12:48	0	0
J39	0.12	2.12	37.05	0	12:45	0	0
J40	0.12	2.12	36.52	0	12:45	0	0
J41	0.21	3.00	32.77	0	12:29	0	0
J42	0.26	3.63	29.57	0	12:45	0	0
J43	0.26	3.63	28.41	0	12:46	0	0
J44	0.26	3.55	27.17	0	12:46	0	0
J45	0.05	0.81	42.91	0	12:45	0	0
J46	0.05	1.07	47.87	0	12:45	0	0
J47	0.02	0.37	47.17	0	12:45	0	0
J48	0.05	1.07	47.47	0	12:45	0	0
J49	0.04	0.70	47.50	0	12:45	0	0
J50	0.05	0.90	46.30	0	12:45	0	0
J51	0.05	0.81	35.21	0	12:45	0	0
OUT1	3.04	7.00	28.64	0	10:15	0	0

****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	7.54	0 12:45	12.97	1.00	0.28	0
C2	11.72	0 12:45	9.13	1.00	0.38	0
C3	12.26	0 12:45	10.85	1.00	0.32	0
C4	18.51	0 12:45	11.46	1.00	0.52	0
C5	18.50	0 12:45	11.88	1.00	0.49	0
C6	30.71	0 12:45	15.13	1.00	0.70	0
C7	32.85	0 12:47	11.58	1.00	1.07	4
C8	2.71	0 12:45	6.62	1.00	0.32	0
C9	7.70	0 12:46	4.74	1.00	0.06	0
C10	17.30	0 12:46	5.34	1.00	0.19	0
C11	4.92	0 12:46	2.48	1.00	0.05	0
C12	31.11	0 12:46	6.69	1.00	0.34	0
C13	32.17	0 12:46	22.46	1.00	0.92	0
C14	18.18	0 12:45	15.18	1.00	0.35	0
C15	3.75	0 12:45	7.80	1.00	0.22	0
C16	19.95	0 12:45	15.02	1.00	0.85	0
C17	0.00	0 00:00	0.00	1.00	0.00	0
C18	4.72	0 12:45	4.22	1.00	0.32	0
C19	11.84	0 13:01	4.30	1.00	1.07	39
C20	17.86	0 12:51	6.24	1.00	1.08	22
C21	19.31	0 12:52	14.59	1.00	0.40	0
C22	17.72	0 12:50	6.37	1.00	1.06	20
C23	17.39	0 12:51	8.52	1.00	0.72	0
C24	16.43	0 13:00	6.09	1.00	1.08	34
C25	74.91	0 12:46	12.61	1.00	0.96	0
C26	1.35	0 12:45	3.77	1.00	0.15	0
C27	1.34	0 12:46	3.02	1.00	0.36	0
C28	7.84	0 12:45	9.87	1.00	0.44	0
C29	84.06	0 12:53	13.39	1.00	1.05	22
C30	85.14	0 12:56	13.53	1.00	1.06	28
C31	18.56	0 12:45	8.89	1.00	0.73	0
C32	33.30	0 12:45	4.80	1.00	0.19	0
C33	0.35	0 12:45	2.57	1.00	0.12	0
C34	0.35	0 12:46	4.60	1.00	0.02	0
C35	9.38	0 12:45	9.36	1.00	0.59	0
C36	8.74	0 12:47	5.53	1.00	1.04	18
C37	8.62	0 12:48	3.84	1.00	0.00	0
C38	8.56	0 12:48	0.80	1.00	0.25	0
C39	48.83	0 12:45	5.49	1.00	0.27	0
C40	65.39	0 12:46	9.60	1.00	0.18	0
C41	167.83	0 12:46	12.29	1.00	0.31	0
C42	184.64	0 12:46	9.17	1.00	0.53	0
C43	193.72	0 12:46	9.88	1.00	0.51	0
C44	193.67	0 12:46	11.91	1.00	0.40	0

C45	15.15	0	12:45	9.98	1.00	0.16	0
C46	8.06	0	12:45	6.02	1.00	0.85	0
C47	1.27	0	12:45	3.74	1.00	0.13	0
C48	9.32	0	12:45	6.80	1.00	0.42	0
C49	7.80	0	12:45	9.63	1.00	0.44	0
C50	17.09	0	12:45	17.35	1.00	0.27	0
C51	36.16	0	12:45	24.75	1.00	0.15	0

****
Routing Time Step Summary
****

Minimum Time Step	:	30.00 sec
Average Time Step	:	30.00 sec
Maximum Time Step	:	30.00 sec
Percent in Steady State	:	0.00
Average Iterations per Step	:	1.03

Analysis begun on: Tue Jun 06 13:53:30 2006
Total elapsed time: 00:00:01

Project BB 84 INCH

Backwater Check

SWMM 5.0 – Input

25 Year 6 Hour Storm

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

```
[TITLE]
Drainage Project BB - 84 inch (Washington St. Drainage Improvements)
25 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/03/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain      Recd.   Snow   Data       Source           Station    Rain
;;Name           Type      Freq.   Catch  Source     Name             ID         Units
;;-------------------------------------------------------------------------------------
  R1             CUMULATIVE 0:15   1.0    TIMESERIES 25yr6hr2.1Max

[SUBCATCHMENTS]
;;                                                    Total      Pcnt.                 Pcnt.      Curb       Snow
;;Name           Raingage          Outlet             Area       Imperv     Width      Slope      Length     Pack
;;-------------------------------------------------------------------------------------------------------------
  S1             R1                J1                 32.31      25         757        5.59       0
  S2             R1                J2                 6.9        25         220        6.72       0
  S3             R1                J3                 12.52      25         376        6.3        0
  S4             R1                J4                 1.25       12         127        2.33       0
  S5             R1                J8                 4.17       25         319        2.28       0
  S6             R1                J9                 7.32       25         490        5.08       0
  S7             R1                J10                17.14      25         439        4.35       0
  S8             R1                J11                7.14       26         404        5.71       0
  S9             R1                J12                16.07      23         700        3.6        0
  S10            R1                J14                25.97      32         586        4.97       0
  S11            R1                J16                27.11      27         570        4.83       0
  S12            R1                J15                3.53       47         237        2.92       0
  S13            R1                J7                 1.1        40         174        1.45       0
  S14            R1                J18                4.4        49         325        1.36       0
  S15            R1                J20                8.27       41         554        0.92       0
  S16            R1                J21                2.83       40         257        1.25       0
  S17            R1                J13                1.12       40         188        1.15       0
  S18            R1                J22                1.06       33         231        1.5        0
  S19            R1                J25                9.29       37         337        25         0
  S20            R1                J29                13.07      47         662        1.05       0
  S21            R1                J26                1.9        3          251        91         0
  S22            R1                J28                7.73       37         561        1.5        0
  S23            R1                J30                14.76      53         367        0.8        0
  S24            R1                J30                5.91       31         322        0.63       0
  S25            R1                J33                0.46       25         106        1          0
  S26            R1                J35                6.55       65         476        1          0
  S27            R1                J39                5          60         292        0.5        0
  S28            R1                J31                13.2       69         575        1.4        0
  S29            R1                J32                8.71       85         480        1.27       0
  S30            R1                J40                13.46      63         345        1.41       0
  S31            R1                J41                13.21      75         548        0.76       0
  S32            R1                J42                22.49      38         516        0.95       0
  S33            R1                J43                10.4       42         503        1.78       0
```

S34	R1	J49	9.46	42	259	0.38	0
S35	R1	J46	7.56	51	366	1.11	0
S36	R1	J47	1.41	40	166	0.54	0
S37	R1	J45	15.73	46	571	1.67	0
S38	R1	J51	4.78	36	353	1.36	0
S39	R1	OUT1	5.23	28	268	0.94	0

[SUBAREAS]

;;Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
S1	0.011	0.15	0.05	0.1	100	OUTLET	
S2	0.011	0.15	0.05	0.1	100	OUTLET	
S3	0.011	0.15	0.05	0.1	100	OUTLET	
S4	0.011	0.15	0.05	0.1	100	OUTLET	
S5	0.011	0.15	0.05	0.1	100	OUTLET	
S6	0.011	0.15	0.05	0.1	100	OUTLET	
S7	0.011	0.15	0.05	0.1	100	OUTLET	
S8	0.011	0.15	0.05	0.1	100	OUTLET	
S9	0.011	0.15	0.05	0.1	100	OUTLET	
S10	0.011	0.15	0.05	0.1	100	OUTLET	
S11	0.011	0.15	0.05	0.1	100	OUTLET	
S12	0.011	0.15	0.05	0.1	100	OUTLET	
S13	0.011	0.15	0.05	0.1	100	OUTLET	
S14	0.011	0.15	0.05	0.1	100	OUTLET	
S15	0.011	0.15	0.05	0.1	100	OUTLET	
S16	0.011	0.15	0.05	0.1	100	OUTLET	
S17	0.011	0.15	0.05	0.1	100	OUTLET	
S18	0.011	0.15	0.05	0.1	100	OUTLET	
S19	0.011	0.15	0.05	0.1	100	OUTLET	
S20	0.011	0.15	0.05	0.1	100	OUTLET	
S21	0.011	0.15	0.05	0.1	100	OUTLET	
S22	0.011	0.15	0.05	0.1	100	OUTLET	
S23	0.011	0.15	0.05	0.1	100	OUTLET	
S24	0.011	0.15	0.05	0.1	100	OUTLET	
S25	0.011	0.15	0.05	0.1	100	OUTLET	
S26	0.011	0.15	0.05	0.05	100	OUTLET	
S27	0.011	0.015	0.05	0.05	100	OUTLET	
S28	0.011	0.15	0.05	0.1	100	OUTLET	
S29	0.011	0.15	0.05	0.1	100	OUTLET	
S30	0.011	0.15	0.05	0.1	100	OUTLET	
S31	0.011	0.15	0.05	0.1	100	OUTLET	
S32	0.011	0.15	0.05	0.1	100	OUTLET	
S33	0.011	0.15	0.05	0.1	100	OUTLET	
S34	0.011	0.15	0.05	0.1	100	OUTLET	
S35	0.011	0.15	0.05	0.1	100	OUTLET	
S36	0.011	0.15	0.05	0.1	100	OUTLET	
S37	0.011	0.15	0.05	0.1	100	OUTLET	
S38	0.011	0.15	0.05	0.1	100	OUTLET	
S39	0.011	0.15	0.05	0.1	100	OUTLET	

[INFILTRATION]

;;Subcatchment	Suction	HydCon	IMDmax
S1	2.4	1.18	0
S2	2.4	1.18	0
S3	2.4	1.18	0
S4	2.4	1.18	0
S5	2.4	1.18	0
S6	2.4	1.18	0
S7	2.4	1.18	0
S8	2.4	1.18	0
S9	2.4	1.18	0
S10	2.4	1.18	0
S11	2.4	1.18	0
S12	2.4	1.18	0
S13	2.4	1.18	0
S14	2.4	1.18	0
S15	2.4	1.18	0
S16	2.4	1.18	0
S17	2.4	1.18	0
S18	2.4	1.18	0
S19	2.4	1.18	0

Project AC

SWMM 5.0 – Input

100 Year 6 Hour Storm

S20	2.4	1.18	0
S21	2.4	1.18	0
S22	2.4	1.18	0
S23	2.4	1.18	0
S24	2.4	1.18	0
S25	2.4	1.18	0
S26	2.4	1.18	0
S27	2.4	1.18	0
S28	2.4	1.18	0
S29	2.4	1.18	0
S30	2.4	1.18	0
S31	2.4	1.18	0
S32	2.4	1.18	0
S33	2.4	1.18	0
S34	2.4	1.18	0
S35	2.4	1.18	0
S36	2.4	1.18	0
S37	2.4	1.18	0
S38	2.4	1.18	0
S39	2.4	1.18	0

[JUNCTIONS]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
J1	71.4	0	0	0	0
J2	77.2	0	0	0	0
J3	81.4	0	0	0	0
J4	71.4	0	0	0	0
J5	66	6	0	0	0
J6	65	6	0	0	0
J7	62	6	0	0	0
J8	167	0	0	0	0
J9	131	0	0	0	0
J10	92	0	0	0	0
J11	81	0	0	0	0
J12	72	0	0	0	0
J13	59	6	0	0	0
J14	69	0	0	0	0
J15	73	0	0	0	0
J16	69	0	0	0	0
J17	59	0	0	0	0
J18	58	4	0	0	0
J19	56.5	6.5	0	0	0
J20	56	7	0	0	0
J21	54.2	7.8	0	0	0
J22	53	8.3	0	0	0
J23	52	9	0	0	0
J24	49	11	0	0	0
J25	47	16	0	0	0
J26	54.52	0	0	0	0
J27	53.2	0	0	0	0
J28	51.2	0	0	0	0
J29	39.5	12	0	0	0
J30	36	14	0	0	0
J31	40.9	0	0	0	0
J32	35	0	0	0	0
J33	46	4	0	0	0
J34	45.04	1.5	0	0	0
J35	38.6	4	0	0	0
J36	37.4	4	0	0	0
J37	37.09	0	0	0	0
J38	36.57	0	0	0	0
J39	34.93	0	0	0	0
J40	34.4	0	0	0	0
J41	29.77	8.23	0	0	0
J42	25.94	0	0	0	0
J43	24.78	0	0	0	0
J44	23.62	0	0	0	0
J45	42.1	0	0	0	0
J46	46.8	0	0	0	0
J47	46.8	0	0	0	0

J48	46.4	0	0	0	0
J49	46.8	0	0	0	0
J50	45.4	0	0	0	0
J51	34.4	0	0	0	0

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
OUT1	21.64	FREE		NO

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Height	Outlet Height	Init. Flow	Ma Fl
;18" RCP C1	J3	J2	91	0.011	0	0	0	0
;24" RCP C2	J2	J4	445	0.011	0	0	0	0
;24" RCP C3	J4	J6	313	0.011	0	0	0	0
;24" RCP C4	J1	J5	307	0.011	0	0	0	0
;18" RCP C5	J5	J6	51	0.011	0	0	0	0
;18" RCP C6	J6	J7	111	0.011	0	0	0	0
;24" RCP C7	J7	J19	415	0.011	0	0	0	0
;Gutter C8	J8	J9	523	0.011	0	0	0	0
;Gutter C9	J9	J10	671	0.011	0	0	0	0
;Gutter C10	J10	J12	666	0.011	0	0	0	0
;Gutter C11	J11	J12	517	0.011	0	0	0	0
;Gutter C12	J12	J13	439	0.011	0	0	0	0
;18" RCP C13	J13	J25	151	0.011	0	0	0	0
;24" RCP C14	J14	J24	527	0.011	0	0	0	0
;18" RCP C15	J15	J16	210	0.011	0	0	0	0
;18" RCP C16	J16	J22	446	0.011	0	0	0	0
;24" RCP C17	J17	J18	84	0.011	0	0	0	0
;24" RCP C18	J18	J19	502	0.011	0	0	0	0
;24" RCP C19	J19	J20	292	0.011	0	0	0	0
;24" RCP C20	J20	J21	471	0.011	0	0	0	0
;24" RCP C21	J21	J25	222	0.011	0	0	0	0
;18" RCP C22	J22	J23	254	0.011	0	0	0	0
;24" RCP C23	J23	J24	371	0.011	0	0	0	0
;24" RCP C24	J24	J25	618	0.011	0	0	0	0
;24" RCP C25	J25	J29	771	0.011	0	0	0	0
;18" RCP C26	J26	J27	238	0.011	0	0	0	0
;Gutter C27	J27	J28	153	0.011	0	0	0	0
;18" RCP C28	J28	J29	560	0.011	0	0	0	0
;24" RCP								

C29	J29	J30	338	0.011	0	0	0	0
;24" RCP								
C30	J30	J41	602	0.011	0	0	0	0
;24" RCP								
C31	J31	J32	661	0.011	0	0	0	0
;72" RCP								
C32	J32	J39	55.95	0.011	0	0	0	0
;12" CMP								
C33	J33	J34	191.79	0.011	0	0	0	0
;18" RCP								
C34	J34	J35	205.97	0.011	0	0	0	0
;18" RCP								
C35	J35	J36	73.18	0.011	0	0	0	0
;18" RCP								
C36	J36	J37	67	0.011	0	0	0	0
;36" CMP								
C37	J37	J38	103	0.011	0	0	0	0
;Sheet Flow								
C38	J38	J39	33.32	0.15	0	0	0	0
;72" RCP								
C39	J39	J40	400	0.011	0	0	0	0
;24" RCP								
C40	J40	J41	926	0.011	0	0	0	0
;84" RCP								
C41	J41	J42	766	0.011	0	0	0	0
;84" RCP								
C42	J42	J43	549	0.011	0	0	0	0
;84" RCP								
C43	J43	J44	464	0.011	0	0	0	0
;84" RCP								
C44	J44	OUT1	479	0.011	0	0	0	0
;36" RCP								
C45	J45	J51	520	0.011	0	0	0	0
;18" RCP								
C46	J46	J48	69	0.011	0	0	0	0
;18" RCP								
C47	J47	J48	69	0.011	0	0	0	0
;24" RCP								
C48	J48	J50	143	0.011	0	0	0	0
;18" RCP								
C49	J49	J50	70	0.011	0	0	0	0
;24" RCP								
C50	J50	J51	189	0.011	0	0	0	0
;36" RCP								
C51	J51	OUT1	133	0.011	0	0	0	0

[XSECTIONS]

;;Link	Type	Geom1	Geom2	Geom3	Geom4	Barrels
C1	CIRCULAR	1.5	0	0	0	1
C2	CIRCULAR	2	0	0	0	1
C3	CIRCULAR	2	0	0	0	1
C4	CIRCULAR	2	0	0	0	1
C5	CIRCULAR	2	0	0	0	1
C6	CIRCULAR	2	0	0	0	1
C7	CIRCULAR	2	0	0	0	1
C8	RECT_OPEN	0.1667	5	0	0	1
C9	RECT_OPEN	0.3	30	0	0	1
C10	RECT_OPEN	0.3	30	0	0	1
C11	RECT_OPEN	0.3	40	0	0	1
C12	RECT_OPEN	0.3	30	0	0	1
C13	CIRCULAR	1.5	0	0	0	1
C14	CIRCULAR	2	0	0	0	1
C15	CIRCULAR	1.5	0	0	0	1
C16	CIRCULAR	1.5	0	0	0	1
C17	CIRCULAR	2	0	0	0	1
C18	CIRCULAR	2	0	0	0	1
C19	CIRCULAR	2	0	0	0	1
C20	CIRCULAR	2	0	0	0	1
C21	CIRCULAR	2	0	0	0	1
C22	CIRCULAR	2	0	0	0	1
C23	CIRCULAR	2	0	0	0	1

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

```
 C24              CIRCULAR     2          0          0          0          1
 C25              CIRCULAR     3          0          0          0          1
 C26              CIRCULAR     1.5        0          0          0          1
 C27              RECT_OPEN    0.1667     5          0          0          1
 C28              CIRCULAR     1.5        0          0          0          1
 C29              CIRCULAR     3          0          0          0          1
 C30              CIRCULAR     3          0          0          0          1
 C31              CIRCULAR     2          0          0          0          1
 C32              CIRCULAR     6          0          0          0          1
 C33              CIRCULAR     1          0          0          0          1
 C34              CIRCULAR     1.5        0          0          0          1
 C35              CIRCULAR     1.5        0          0          0          1
 C36              CIRCULAR     1.5        0          0          0          1
 C37              CIRCULAR     36         0          0          0          1
 C38              RECT_OPEN    0.5        50         0          0          1
 C39              CIRCULAR     6          0          0          0          1
 C40              CIRCULAR     6          0          0          0          1
 C41              CIRCULAR     7          0          0          0          1
 C42              CIRCULAR     7          0          0          0          1
 C43              CIRCULAR     7          0          0          0          1
 C44              CIRCULAR     7          0          0          0          1
 C45              CIRCULAR     3          0          0          0          1
 C46              CIRCULAR     1.5        0          0          0          1
 C47              CIRCULAR     1.5        0          0          0          1
 C48              CIRCULAR     2          0          0          0          1
 C49              CIRCULAR     1.5        0          0          0          1
 C50              CIRCULAR     2          0          0          0          1
 C51              CIRCULAR     3          0          0          0          1

[LOSSES]
;;Link             Inlet      Outlet     Average    Flap Gate
;;---------------------------------------------------------
  C32              0.5        0.5        0          NO
  C39              0.5        0.5        0          NO

[INFLOWS]
;;                                                  Concen   Conversion
;;Node             Parameter        Time Series      /Mass    Factor
;;---------------------------------------------------------------------
  J41              FLOW             Out1-BB

[TIMESERIES]
;;Name             Date       Time       Value
;;-----------------------------------------------
;100 year 6 hr Type B SCS Storm Cum Max Precip 2.6 inches
  100yr6hrCum2.6                10:15      0.0468
  100yr6hrCum2.6                10:30      0.091
  100yr6hrCum2.6                10:45      0.1508
  100yr6hrCum2.6                11:00      0.208
  100yr6hrCum2.6                11:15      0.2808
  100yr6hrCum2.6                11:30      0.351
  100yr6hrCum2.6                11:45      0.4758
  100yr6hrCum2.6                12:00      0.598
  100yr6hrCum2.6                12:15      1.079
  100yr6hrCum2.6                12:30      1.56
  100yr6hrCum2.6                12:45      1.69
  100yr6hrCum2.6                13:00      1.82
  100yr6hrCum2.6                13:15      1.924
  100yr6hrCum2.6                13:30      2.028
  100yr6hrCum2.6                13:45      2.1008
  100yr6hrCum2.6                14:00      2.171
  100yr6hrCum2.6                14:15      2.2308
  100yr6hrCum2.6                14:30      2.288
  100yr6hrCum2.6                14:45      2.34
  100yr6hrCum2.6                15:00      2.392
  100yr6hrCum2.6                15:15      2.444
  100yr6hrCum2.6                15:30      2.496
  100yr6hrCum2.6                15:45      2.548
  100yr6hrCum2.6                16:00      2.6

;Table - Node OUT1
  Out1-BB          09/30/2005 22:15:00   0.00
```

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

Out1-BB	09/30/2005 22:30:00	0.00
Out1-BB	09/30/2005 22:45:00	0.00
Out1-BB	09/30/2005 23:00:00	0.00
Out1-BB	09/30/2005 23:15:00	0.00
Out1-BB	09/30/2005 23:30:00	0.00
Out1-BB	09/30/2005 23:45:00	0.00
Out1-BB	10/01/2005 00:00:00	0.00
Out1-BB	10/01/2005 00:15:00	0.00
Out1-BB	10/01/2005 00:30:00	0.00
Out1-BB	10/01/2005 00:45:00	0.00
Out1-BB	10/01/2005 01:00:00	0.00
Out1-BB	10/01/2005 01:15:00	0.00
Out1-BB	10/01/2005 01:30:00	0.00
Out1-BB	10/01/2005 01:45:00	0.00
Out1-BB	10/01/2005 02:00:00	0.00
Out1-BB	10/01/2005 02:15:00	0.00
Out1-BB	10/01/2005 02:30:00	0.00
Out1-BB	10/01/2005 02:45:00	0.00
Out1-BB	10/01/2005 03:00:00	0.00
Out1-BB	10/01/2005 03:15:00	0.00
Out1-BB	10/01/2005 03:30:00	0.00
Out1-BB	10/01/2005 03:45:00	0.00
Out1-BB	10/01/2005 04:00:00	0.00
Out1-BB	10/01/2005 04:15:00	0.00
Out1-BB	10/01/2005 04:30:00	0.00
Out1-BB	10/01/2005 04:45:00	0.00
Out1-BB	10/01/2005 05:00:00	0.00
Out1-BB	10/01/2005 05:15:00	0.00
Out1-BB	10/01/2005 05:30:00	0.00
Out1-BB	10/01/2005 05:45:00	0.00
Out1-BB	10/01/2005 06:00:00	0.00
Out1-BB	10/01/2005 06:15:00	0.00
Out1-BB	10/01/2005 06:30:00	0.00
Out1-BB	10/01/2005 06:45:00	0.00
Out1-BB	10/01/2005 07:00:00	0.00
Out1-BB	10/01/2005 07:15:00	0.00
Out1-BB	10/01/2005 07:30:00	0.00
Out1-BB	10/01/2005 07:45:00	0.00
Out1-BB	10/01/2005 08:00:00	0.00
Out1-BB	10/01/2005 08:15:00	0.00
Out1-BB	10/01/2005 08:30:00	0.00
Out1-BB	10/01/2005 08:45:00	0.00
Out1-BB	10/01/2005 09:00:00	0.00
Out1-BB	10/01/2005 09:15:00	0.00
Out1-BB	10/01/2005 09:30:00	0.00
Out1-BB	10/01/2005 09:45:00	0.00
Out1-BB	10/01/2005 10:00:00	0.00
Out1-BB	10/01/2005 10:15:00	0.00
Out1-BB	10/01/2005 10:30:00	2.08
Out1-BB	10/01/2005 10:45:00	3.09
Out1-BB	10/01/2005 11:00:00	4.14
Out1-BB	10/01/2005 11:15:00	4.26
Out1-BB	10/01/2005 11:30:00	5.16
Out1-BB	10/01/2005 11:45:00	5.23
Out1-BB	10/01/2005 12:00:00	8.70
Out1-BB	10/01/2005 12:15:00	9.08
Out1-BB	10/01/2005 12:30:00	34.63
Out1-BB	10/01/2005 12:45:00	37.31
Out1-BB	10/01/2005 13:00:00	13.46
Out1-BB	10/01/2005 13:15:00	9.76
Out1-BB	10/01/2005 13:30:00	8.05
Out1-BB	10/01/2005 13:45:00	7.75
Out1-BB	10/01/2005 14:00:00	5.85
Out1-BB	10/01/2005 14:15:00	5.29
Out1-BB	10/01/2005 14:30:00	4.62
Out1-BB	10/01/2005 14:45:00	4.31
Out1-BB	10/01/2005 15:00:00	3.96
Out1-BB	10/01/2005 15:15:00	3.88
Out1-BB	10/01/2005 15:30:00	3.87
Out1-BB	10/01/2005 15:45:00	3.86
Out1-BB	10/01/2005 16:00:00	3.86
Out1-BB	10/01/2005 16:15:00	3.86

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

```
 Out1-BB            10/01/2005 16:30:00   1.35
 Out1-BB            10/01/2005 16:45:00   0.42
 Out1-BB            10/01/2005 17:00:00   0.20
 Out1-BB            10/01/2005 17:15:00   0.11
 Out1-BB            10/01/2005 17:30:00   0.07
 Out1-BB            10/01/2005 17:45:00   0.05
 Out1-BB            10/01/2005 18:00:00   0.03
 Out1-BB            10/01/2005 18:15:00   0.02
 Out1-BB            10/01/2005 18:30:00   0.02
 Out1-BB            10/01/2005 18:45:00   0.01
 Out1-BB            10/01/2005 19:00:00   0.01
 Out1-BB            10/01/2005 19:15:00   0.00
 Out1-BB            10/01/2005 19:30:00   0.00
 Out1-BB            10/01/2005 19:45:00   0.00
 Out1-BB            10/01/2005 20:00:00   0.00
 Out1-BB            10/01/2005 20:15:00   0.00
 Out1-BB            10/01/2005 20:30:00   0.00
 Out1-BB            10/01/2005 20:45:00   0.00
 Out1-BB            10/01/2005 21:00:00   0.00
 Out1-BB            10/01/2005 21:15:00   0.00
 Out1-BB            10/01/2005 21:30:00   0.00
 Out1-BB            10/01/2005 21:45:00   0.00
 Out1-BB            10/01/2005 22:00:00   0.00
 Out1-BB            10/01/2005 22:15:00   0.00
 Out1-BB            10/01/2005 22:30:00   0.00
 Out1-BB            10/01/2005 22:45:00   0.00
 Out1-BB            10/01/2005 23:00:00   0.00
 Out1-BB            10/01/2005 23:15:00   0.00
 Out1-BB            10/01/2005 23:30:00   0.00
 Out1-BB            10/01/2005 23:45:00   0.00
 Out1-BB            10/02/2005 00:00:00   0.00

;SCS II Storm SD Hydrology Manual - 2.1 Cumulative 6 Hour 25 yr Storm
  25yr6hr2.1Max                 10:00      0
  25yr6hr2.1Max                 10:15      0.0378
  25yr6hr2.1Max                 10:30      0.0735
  25yr6hr2.1Max                 10:45      0.1218
  25yr6hr2.1Max                 11:00      0.168
  25yr6hr2.1Max                 11:15      0.2268
  25yr6hr2.1Max                 11:30      0.2835
  25yr6hr2.1Max                 11:45      0.3843
  25yr6hr2.1Max                 12:00      0.483
  25yr6hr2.1Max                 12:15      0.8715
  25yr6hr2.1Max                 12:30      1.26
  25yr6hr2.1Max                 12:45      1.365
  25yr6hr2.1Max                 13:00      1.47
  25yr6hr2.1Max                 13:15      1.554
  25yr6hr2.1Max                 13:30      1.638
  25yr6hr2.1Max                 13:45      1.6968
  25yr6hr2.1Max                 14:00      1.7535
  25yr6hr2.1Max                 14:15      1.8018
  25yr6hr2.1Max                 14:30      1.848
  25yr6hr2.1Max                 14:45      1.89
  25yr6hr2.1Max                 15:00      1.932
  25yr6hr2.1Max                 15:15      1.974
  25yr6hr2.1Max                 15:30      2.016
  25yr6hr2.1Max                 15:45      2.058
  25yr6hr2.1Max                 16:00      2.1

[REPORT]
 INPUT     NO
 CONTROLS  NO

[OPTIONS]
 TEMPDIR   "C:\Carlsbad\DMP\"
```

Project BB 84 INCH

Backwater Check

SWMM 5.0 – Output

25 Year 6 Hour Storm

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)
--------------------------------------------------------------

Drainage Project BB - 84 inch (Washington St. Drainage Improvements)
25 Year 6 Hour Storm

****************
Analysis Options
****************
Flow Units ..... CFS
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date ..... SEP-30-2005 22:00:00
Ending Date ..... OCT-03-2005 00:00:00
Report Time Step ..... 00:15:00
Wet Time Step ..... 00:15:00
Dry Time Step ..... 01:00:00
Routing Time Step ..... 30.00 sec

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation .....         64.841         2.100
Evaporation Loss .....             0.000         0.000
Infiltration Loss .....           39.034         1.264
Surface Runoff .....              26.045         0.844
Final Surface Storage ....         0.001         0.000
Continuity Error (%) .....       -0.368

**************************        Volume         Volume
Flow Routing Continuity        acre-feet       Mgallons
**************************     ---------       ---------
Dry Weather Inflow .....           0.000         0.000
Wet Weather Inflow .....          26.050         8.489
Groundwater Inflow .....           0.000         0.000
RDII Inflow .....                  0.000         0.000
External Inflow .....             4.098         1.335
External Outflow .....            29.031         9.460
Surface Flooding .....             1.123         0.366
Evaporation Loss .....             0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume .....          0.000         0.000
Continuity Error (%) .....       -0.021

****************************
Subcatchment Runoff Summary
****************************

-------------------------------------------------------------------------------
                 Total      Total      Total      Total      Total     Runoff
                 Precip     Runon      Evap       Infil      Runoff    Coeff
Subcatchment         in         in         in         in          in
-------------------------------------------------------------------------------
S1                2.100      0.000      0.000      1.574      0.531     0.253
S2                2.100      0.000      0.000      1.573      0.532     0.253
S3                2.100      0.000      0.000      1.573      0.532     0.253
S4                2.100      0.000      0.000      1.845      0.261     0.125
S5                2.100      0.000      0.000      1.572      0.533     0.254
S6                2.100      0.000      0.000      1.572      0.535     0.255
S7                2.100      0.000      0.000      1.574      0.531     0.253
S8                2.100      0.000      0.000      1.551      0.555     0.264
S9                2.100      0.000      0.000      1.615      0.490     0.233
S10               2.100      0.000      0.000      1.427      0.679     0.323
S11               2.100      0.000      0.000      1.532      0.573     0.273
S12               2.100      0.000      0.000      1.110      0.998     0.475
S13               2.100      0.000      0.000      1.256      0.853     0.406
S14               2.100      0.000      0.000      1.069      1.040     0.495
S15               2.100      0.000      0.000      1.238      0.870     0.414
```

S16	2.100	0.000	0.000	1.258	0.850	0.405
S17	2.100	0.000	0.000	1.256	0.852	0.406
S18	2.100	0.000	0.000	1.401	0.709	0.337
S19	2.100	0.000	0.000	1.319	0.789	0.376
S20	2.100	0.000	0.000	1.112	0.997	0.475
S21	2.100	0.000	0.000	2.015	0.113	0.054
S22	2.100	0.000	0.000	1.321	0.786	0.374
S23	2.100	0.000	0.000	0.986	1.122	0.534
S24	2.100	0.000	0.000	1.448	0.658	0.313
S25	2.100	0.000	0.000	1.570	0.539	0.257
S26	2.100	0.000	0.000	0.730	1.384	0.659
S27	2.100	0.000	0.000	0.820	1.302	0.620
S28	2.100	0.000	0.000	0.650	1.463	0.697
S29	2.100	0.000	0.000	0.314	1.801	0.858
S30	2.100	0.000	0.000	0.776	1.334	0.635
S31	2.100	0.000	0.000	0.524	1.589	0.756
S32	2.100	0.000	0.000	1.301	0.805	0.383
S33	2.100	0.000	0.000	1.217	0.891	0.424
S34	2.100	0.000	0.000	1.218	0.889	0.423
S35	2.100	0.000	0.000	1.028	1.082	0.515
S36	2.100	0.000	0.000	1.258	0.849	0.404
S37	2.100	0.000	0.000	1.133	0.976	0.465
S38	2.100	0.000	0.000	1.342	0.765	0.364
S39	2.100	0.000	0.000	1.511	0.594	0.283
Totals	2.100	0.000	0.000	1.264	0.844	0.402

****
Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.05	0.84	72.24	0 12:45	0	0
J2	0.04	0.70	77.90	0 12:45	0	0
J3	0.02	0.45	81.85	0 12:45	0	0
J4	0.04	0.70	72.10	0 12:45	0	0
J5	0.05	0.84	66.84	0 12:45	0	0
J6	0.05	0.98	65.98	0 12:45	0	0
J7	0.06	1.25	63.25	0 12:45	0	0
J8	0.00	0.06	167.06	0 12:45	0	0
J9	0.00	0.06	131.06	0 12:45	0	0
J10	0.00	0.09	92.09	0 12:45	0	0
J11	0.00	0.04	81.04	0 12:45	0	0
J12	0.01	0.12	72.12	0 12:45	0	0
J13	0.05	0.85	59.85	0 12:45	0	0
J14	0.04	0.69	69.69	0 12:45	0	0
J15	0.02	0.40	73.40	0 12:45	0	0
J16	0.04	0.85	69.85	0 12:45	0	0
J17	0.00	0.00	59.00	0 00:00	0	0
J18	0.04	0.66	58.66	0 12:45	0	0
J19	0.17	6.50	63.00	0 12:21	6.08	38
J20	0.12	2.00	58.00	0 12:25	0	0
J21	0.10	1.70	55.90	0 12:45	0	0
J22	0.07	1.48	54.48	0 12:45	0	0
J23	0.07	1.48	53.48	0 12:45	0	0
J24	0.21	11.00	60.00	0 12:22	5.08	35
J25	0.12	2.01	49.01	0 12:46	0	0
J26	0.01	0.23	54.75	0 12:45	0	0
J27	0.01	0.23	53.43	0 12:45	0	0
J28	0.03	0.55	51.75	0 12:45	0	0
J29	0.13	2.32	41.82	0 12:45	0	0
J30	0.22	14.00	50.00	0 12:30	2.32	21
J31	0.06	1.08	41.98	0 12:45	0	0
J32	0.10	1.55	36.55	0 12:45	0	0
J33	0.01	0.18	46.18	0 12:44	0	0
J34	0.01	0.18	45.22	0 12:45	0	0
J35	0.04	0.70	39.30	0 12:45	0	0

Drainage Project AC (Highland Drive)

```
[TITLE]
Drainage Project AC (Highland Drive)
100 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            23:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     23:00:00
 END_DATE              10/02/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain      Recd.  Snow   Data       Source           Station    Rain
;;Name           Type      Freq.  Catch  Source     Name             ID         Units
;;-------------------------------------------------------------------------------------
;Rain gage does not exist. Use SD Hydrology Manual SCS
;Type II rainfall curve. Place rain gage in central location.
  R1             CUMULATIVE 0:15   1.0    TIMESERIES 100year6hr-2.7Max

[SUBCATCHMENTS]
;;                                                    Total     Pcnt.              Pcnt.     Curb      Snow
;;Name           Raingage          Outlet             Area      Imperv    Width    Slope     Length    Pack
;;-------------------------------------------------------------------------------------------------------
  S1             R1                J1                 32        62        996      2.4       0
  S2             R1                J2                 7.88      43        458      3.7       0
  S3             R1                J3                 3.27      46        238      3.8       0
  S4             R1                J4                 0.54      60        124      2.1       0
  S5             R1                J4                 3.36      46        261      3.8       0
  S6             R1                J5                 3.38      50        300      1.2       0
  S7             R1                BasinB1            12.38     3         413      12.2      0

[SUBAREAS]
;;Subcatchment     N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------------------------------------------------------------------------------------
  S1               0.011      0.15       0.05       0.05       100        OUTLET
  S2               0.011      0.15       0.05       0.05       100        OUTLET
  S3               0.011      0.15       0.05       0.05       100        OUTLET
  S4               0.011      0.15       0.05       0.05       100        OUTLET
  S5               0.011      0.15       0.05       0.05       100        OUTLET
  S6               0.011      0.15       0.05       0.05       100        OUTLET
  S7               0.011      0.015      0.05       0.05       100        OUTLET

[INFILTRATION]
;;Subcatchment     Suction    HydCon     IMDmax
;;-----------------------------------------------
  S1               2.4        1.18       0
  S2               2.4        1.18       0
  S3               2.4        1.18       0
  S4               2.4        1.18       0
  S5               2.4        1.18       0
  S6               2.4        1.18       0
  S7               1.18       2.4        0

[JUNCTIONS]
```

J36	0.05	1.05	38.45	0	12:45	0	0
J37	0.05	1.05	38.14	0	12:45	0	0
J38	0.02	0.38	36.95	0	12:45	0	0
J39	0.11	1.86	36.79	0	12:45	0	0
J40	0.11	1.86	36.26	0	12:45	0	0
J41	0.19	3.00	32.77	0	12:33	0	0
J42	0.24	3.36	29.30	0	12:45	0	0
J43	0.24	3.36	28.14	0	12:46	0	0
J44	0.24	3.28	26.90	0	12:46	0	0
J45	0.04	0.70	42.80	0	12:45	0	0
J46	0.05	0.88	47.68	0	12:45	0	0
J47	0.02	0.31	47.11	0	12:45	0	0
J48	0.05	0.88	47.28	0	12:45	0	0
J49	0.04	0.61	47.41	0	12:45	0	0
J50	0.05	0.77	46.17	0	12:45	0	0
J51	0.04	0.70	35.10	0	12:45	0	0
OUT1	3.00	7.00	28.64	0	10:15	0	0

****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	5.15	0 12:45	11.66	1.00	0.19	0
C2	7.98	0 12:45	8.24	1.00	0.26	0
C3	8.26	0 12:45	9.74	1.00	0.22	0
C4	13.11	0 12:45	10.48	1.00	0.37	0
C5	13.11	0 12:45	10.85	1.00	0.35	0
C6	21.35	0 12:45	13.89	1.00	0.49	0
C7	22.08	0 12:45	10.70	1.00	0.72	0
C8	1.76	0 12:45	5.58	1.00	0.20	0
C9	4.89	0 12:46	3.96	1.00	0.04	0
C10	11.79	0 12:45	4.59	1.00	0.13	0
C11	3.16	0 12:46	2.08	1.00	0.03	0
C12	20.95	0 12:45	5.71	1.00	0.23	0
C13	21.68	0 12:45	20.84	1.00	0.62	0
C14	13.34	0 12:45	13.95	1.00	0.26	0
C15	2.70	0 12:45	7.10	1.00	0.16	0
C16	14.48	0 12:45	14.05	1.00	0.62	0
C17	0.00	0 00:00	0.00	1.00	0.00	0
C18	3.49	0 12:45	3.88	1.00	0.24	0
C19	11.94	0 12:59	4.30	1.00	1.08	35
C20	17.04	0 12:45	6.11	1.00	1.03	2
C21	18.86	0 12:46	14.48	1.00	0.39	0
C22	15.08	0 12:45	6.09	1.00	0.90	0
C23	15.06	0 12:46	8.12	1.00	0.63	0
C24	16.38	0 12:57	5.97	1.00	1.08	30
C25	60.97	0 12:46	12.23	1.00	0.78	0
C26	0.47	0 12:45	2.79	1.00	0.05	0
C27	0.47	0 12:46	2.00	1.00	0.13	0
C28	5.08	0 12:45	8.79	1.00	0.28	0
C29	75.62	0 12:45	12.93	1.00	0.94	0
C30	86.37	0 12:51	13.41	1.00	1.08	19
C31	14.35	0 12:45	8.38	1.00	0.57	0
C32	25.89	0 12:45	4.47	1.00	0.15	0
C33	0.21	0 12:45	2.19	1.00	0.07	0
C34	0.20	0 12:45	3.90	1.00	0.01	0
C35	7.09	0 12:45	8.73	1.00	0.45	0
C36	7.08	0 12:45	5.36	1.00	0.84	0
C37	7.07	0 12:45	3.52	1.00	0.00	0
C38	7.07	0 12:45	0.73	1.00	0.21	0
C39	38.09	0 12:45	5.13	1.00	0.21	0
C40	50.95	0 12:46	8.97	1.00	0.14	0
C41	149.15	0 12:46	11.91	1.00	0.28	0
C42	162.08	0 12:46	8.87	1.00	0.47	0
C43	168.74	0 12:46	9.54	1.00	0.45	0
C44	168.70	0 12:46	11.47	1.00	0.35	0

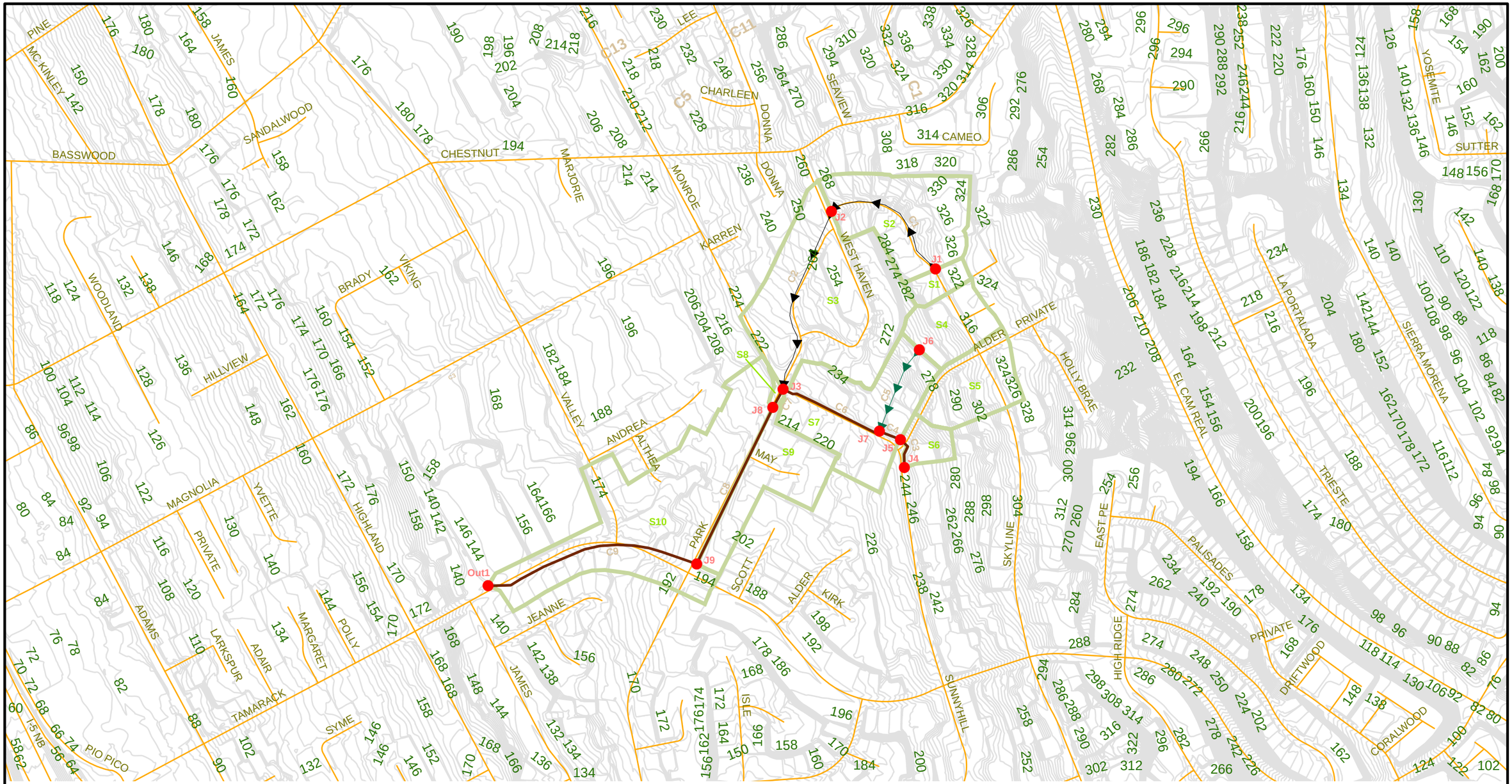
C45	11.49	0	12:45	9.20	1.00	0.12	0
C46	6.12	0	12:45	5.69	1.00	0.65	0
C47	0.91	0	12:45	3.40	1.00	0.10	0
C48	7.03	0	12:45	6.31	1.00	0.31	0
C49	6.06	0	12:45	9.01	1.00	0.35	0
C50	13.08	0	12:45	16.09	1.00	0.20	0
C51	27.34	0	12:45	22.81	1.00	0.11	0

****
Routing Time Step Summary
****

Minimum Time Step	:	30.00 sec
Average Time Step	:	30.00 sec
Maximum Time Step	:	30.00 sec
Percent in Steady State	:	0.00
Average Iterations per Step	:	1.02

Analysis begun on: Tue Jun 06 14:13:04 2006
Total elapsed time: < 1 sec

Project BCA
Park Drive/Tamarack Avenue Project



N

W E

S

0 250 500 1,000 Feet

LEGEND

- JUNCTIONS
- GUTTER FLOW
- OVERLAND FLOW
- CONTOURS
- CONDUITS
- SUBCATCHMENTS
- ROADS

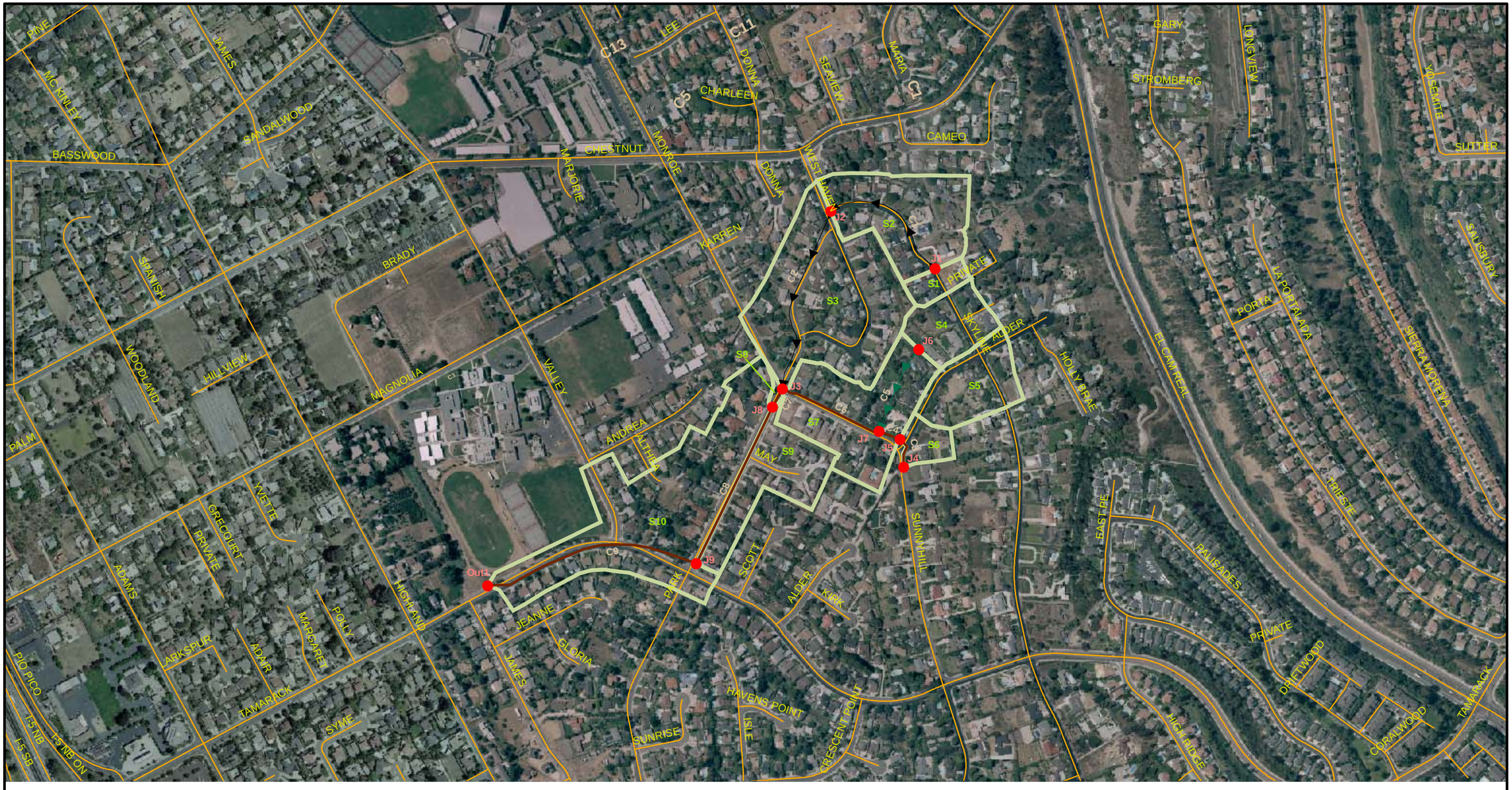
PROJECT BCA

PROJECT LOCATION

TAMARACK AVE
CARLSBAD, CALIFORNIA

DATE	PROJECT NUMBER
NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA



N
W E
S

0 250 500 1,000
Feet

Legend

- JUNCTIONS
- CONDUITS
- GUTTER FLOW
- SUBCATCHMENTS
- OVERLAND FLOW
- ROADS

PROJECT BCA

PROJECT LOCATION

TAMARACK AVE
CARLSBAD, CALIFORNIA

DATE	PROJECT NUMBER
NOV 2007	128290

BROWN AND CALDWELL
SAN DIEGO, CALIFORNIA

Project BCA

SWMM 5.0 – Input

100 Year 6 Hour Storm

Drainage Project BCA (Park Drive/Tamarack Avenue)

```
[TITLE]
Drainage Project BCA (Park Drive/Tamarack Avenue)
100 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/02/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain      Recd.  Snow  Data       Source           Station    Rain
;;Name           Type      Freq.  Catch Source     Name             ID         Units
;;---------------------------------------------------------------------------------
  R1             CUMULATIVE 0:15   1.0   TIMESERIES 100yr6hr2.6Max

[SUBCATCHMENTS]
;;                                                 Total     Pcnt.             Pcnt.     Curb      Snow
;;Name           Raingage          Outlet           Area      Imperv    Width   Slope     Length    Pack
;;---------------------------------------------------------------------------------------------------
  S1             R1                J1               1.02      35        234     1         0
  S2             R1                J2               6.77      35        368     7         0
  S3             R1                J3               12.49     35        544     5         0
  S4             R1                J6               2.97      38        238     8         0
  S5             R1                S7               3.74      25        207     8         0
  S6             R1                J4               1.16      35        169     11        0
  S7             R1                J3               7.65      35        333     7         0
  S8             R1                J8               0.18      100       40      4         0
  S9             R1                J9               4.69      38        189     2         0
  S10            R1                OUT1             14.97     38        326     4         0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;---------------------------------------------------------------------------------------
  S1             0.011      0.15       0.05       0.1        100        OUTLET
  S2             0.011      0.15       0.05       0.1        100        OUTLET
  S3             0.011      0.15       0.05       0.1        100        OUTLET
  S4             0.011      0.15       0.05       0.1        100        OUTLET
  S5             0.011      0.15       0.05       0.1        100        OUTLET
  S6             0.011      0.15       0.05       0.1        100        OUTLET
  S7             0.011      0.15       0.05       0.1        100        OUTLET
  S8             0.011      0.15       0.05       0.1        100        OUTLET
  S9             0.011      0.15       0.05       0.1        100        OUTLET
  S10            0.011      0.15       0.05       0.1        100        OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
;;--------------------------------------------
  S1             2.4        1.18       0
  S2             2.4        1.18       0
  S3             2.4        1.18       0
  S4             2.4        1.18       0
  S5             2.4        1.18       0
```

S6	2.4	1.18	0
S7	2.4	1.18	0
S8	2.4	1.18	0
S9	2.4	1.18	0
S10	2.4	1.18	0

[JUNCTIONS]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
J1	317	1	0	0	0
J2	267.5	1	0	0	0
J3	215	6	0	0	0
J4	248	1	0	0	0
J5	243	6	0	0	0
J6	289	1	0	0	0
J7	239	3	0	0	0
J8	212	6	0	0	0
J9	184.5	9	0	0	0

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
;Connection to a 60 inch				
OUT1	131.3	FIXED	133.3	NO

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Height	Outlet Height	Init. Flow	Ma Fl
;Gutter - Box								
C1	J1	J2	727.18	0.013	0	0	0	0
;Gutter - Box								
C2	J2	J3	981.82	0.013	0	0	0	0
;Pipe - RCP 18"								
C3	J4	J5	164.69	0.013	0	0	0	0
;BCA: Pipe - RCP 24"								
C4	J5	J7	116.38	0.013	0	0	0	0
;Swale - Trapezoid								
C5	J6	J7	470.27	0.024	0	0	0	0
;BCA: Pipe - RCP 24"								
C6	J7	J3	551.44	0.013	0	0	0	0
;BCA: Pipe - RCP 24"								
C7	J3	J8	108.15	0.013	0	0	0	0
;BCA: Pipe - RCP 24"								
C8	J8	J9	896.07	0.013	0	0	0	0
;Pipe - RCP 24"								
C9	J9	OUT1	1135.8	0.013	0	0	0	0

[XSECTIONS]

;;Link	Type	Geom1	Geom2	Geom3	Geom4	Barrels
C1	RECT_OPEN	0.5	2	0	0	1
C2	RECT_OPEN	0.5	30	0	0	1
C3	CIRCULAR	1.5	0	0	0	1
C4	CIRCULAR	2	0	0	0	1
C5	TRAPEZOIDAL	1.5	3	0.5	0.5	1
C6	CIRCULAR	2	0	0	0	1
C7	CIRCULAR	2	0	0	0	1
C8	CIRCULAR	2	0	0	0	1
C9	CIRCULAR	2	0	0	0	1

[TIMESERIES]

;;Name	Date	Time	Value
;100 Year 6 Hr SCS Type B Desgin Storm Max Precip = 2.6 inches			
100yr6hr2.6Max	10/01/2005	10:00	0.0
100yr6hr2.6Max		10:15	0.0468
100yr6hr2.6Max		10:30	0.091
100yr6hr2.6Max		10:45	0.1508
100yr6hr2.6Max		11:00	0.208

Drainage Project AC (Highland Drive)

```
;;                Invert     Max.       Init.      Surcharge  Ponded
;;Name            Elev.      Depth      Depth      Depth      Area
;;--------------------------------------------------------------------
;Confluence from S1, begin gutter flow.
  J1              158        1          0.5        0          0
;Created Manhole, H=6.00'
  J2              151        7          0          0          0
;Created Manhole, H= 6.00'
  J3              150        7          0          0          0
;Created Manhole, H=6.00'
  J4              147.5      8          0          0          0
;Existing Manhole, H=5.00
  J5              143        5          0          0          0
;Existing Manhole, H=5.66'
  J6              141.68     5.66       0          0          0
  J7              61         0          0          0          0

[OUTFALLS]
;;                Invert     Outfall    Stage/Table      Tide
;;Name            Elev.      Type       Time Series      Gate
;;--------------------------------------------------------------
;Outfall (Two parallel 18 inch RCP) to Buena Vista Lagoon
  OUT1            6          FREE                        NO

[STORAGE]
;;                Invert   Max.     Init.    Shape      Shape                          Ponded   Evap.
;;Name            Elev.    Depth    Depth    Curve      Parameters                     Area     Frac.
;;-----------------------------------------------------------------------------------------------------
;Natural Settling Basin - Estimate surface area = 60,000 ft2
  BasinB1         14       4        0        FUNCTIONAL 495.6    1        58016    600000   0

[CONDUITS]
;;                Inlet            Outlet                     Manning    Inlet      Outlet     Init.      Ma
;;Name            Node             Node             Length    N          Height     Height     Flow       Fl
;;-----------------------------------------------------------------------------------------------------------
;Gutter Flow along Highland Drive
  C1              J1               J2               257.5     0.013      0          0          0          0
;AC: RCP -36"
  C2              J2               J3               93.6      0.013      0          0          0          0
;AC: RCP -36"
  C3              J3               J4               202.2     0.013      0          0          0          0
;AC: RCP -36"
  C4              J4               J5               461.2     0.013      0          0          0          0
;AC: RCP -36"
  C5              J5               J6               39.6      0.013      0          0          0          0
;AC: RCP -36"
  C6              J6               J7               350       0.013      0          0          0          0
  C7              J7               BasinB1          600       0.013      0          0          0          0
;18" RCP Existing
  C8a             BasinB1          OUT1             125       0.013      0          0          0          0
;AC:18" inch proposed parallel RCP culvert
  C8b             BasinB1          OUT1             125       0.013      0          0          0          0

[XSECTIONS]
;;Link            Type         Geom1    Geom2    Geom3    Geom4    Barrels
;;--------------------------------------------------------------------------
  C1              RECT_OPEN    1        40       0        0        1
  C2              CIRCULAR     3        0        0        0        1
  C3              CIRCULAR     3        0        0        0        1
  C4              CIRCULAR     3        0        0        0        1
  C5              CIRCULAR     3        0        0        0        1
  C6              CIRCULAR     3        0        0        0        1
  C7              TRAPEZOIDAL  1        8        0.5      0.5      1
  C8a             CIRCULAR     1.5      0        0        0        1
  C8b             CIRCULAR     1.5      0        0        0        1

[TIMESERIES]
;;Name            Date       Time       Value
;;-----------------------------------------------
;100 year 6 hour Type B SCS Design Storm P Max = 2.7 iinches
  100year6hr-2.7Max 10/1/2005  10:00      0
  100year6hr-2.7Max            10:15      0.0486
```

```
 100yr6hr2.6Max                11:15      0.2808
 100yr6hr2.6Max                11:30      0.351
 100yr6hr2.6Max                11:45      0.4758
 100yr6hr2.6Max                12:00      0.598
 100yr6hr2.6Max                12:15      1.079
 100yr6hr2.6Max                12:30      1.56
 100yr6hr2.6Max                12:45      1.69
 100yr6hr2.6Max                13:00      1.82
 100yr6hr2.6Max                13:15      1.924
 100yr6hr2.6Max                13:30      2.028
 100yr6hr2.6Max                13:45      2.1008
 100yr6hr2.6Max                14:00      2.171
 100yr6hr2.6Max                14:15      2.2308
 100yr6hr2.6Max                14:30      2.288
 100yr6hr2.6Max                14:45      2.34
 100yr6hr2.6Max                15:00      2.392
 100yr6hr2.6Max                15:15      2.444
 100yr6hr2.6Max                15:30      2.496
 100yr6hr2.6Max                15:45      2.548
 100yr6hr2.6Max                16:00      2.6

[REPORT]
 INPUT      NO
 CONTROLS   NO

[OPTIONS]
 TEMPDIR    "C:\Carlsbad\DMP\"
```

Project BCA

SWMM 5.0 – Output

100 Year 6 Hour Storm

Drainage Project BCA (Park Drive/Tamarack Avenue)

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.005b)
--------------------------------------------------------------

Drainage Project BCA (Park Drive/Tamarack Avenue)
100 Year 6 Hour Storm

****************
Analysis Options
****************
Flow Units ..... CFS
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date ..... SEP-30-2005 22:00:00
Ending Date ..... OCT-02-2005 00:00:00
Report Time Step ..... 00:15:00
Wet Time Step ..... 00:15:00
Dry Time Step ..... 01:00:00
Routing Time Step ..... 30.00 sec

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation .....         12.055         2.600
Evaporation Loss .....             0.000         0.000
Infiltration Loss .....            7.695         1.660
Surface Runoff .....               4.409         0.951
Final Surface Storage ....         0.000         0.000
Continuity Error (%) .....       -0.410

**************************        Volume         Volume
Flow Routing Continuity        acre-feet       Mgallons
**************************     ---------       ---------
Dry Weather Inflow .....           0.000         0.000
Wet Weather Inflow .....           4.417         1.439
Groundwater Inflow .....           0.000         0.000
RDII Inflow .....                  0.000         0.000
External Inflow .....             0.000         0.000
External Outflow .....            4.418         1.440
Surface Flooding .....            0.000         0.000
Evaporation Loss .....            0.000         0.000
Initial Stored Volume ....        0.000         0.000
Final Stored Volume .....         0.000         0.000
Continuity Error (%) .....       -0.034

****************************
Subcatchment Runoff Summary
****************************

-----------------------------------------------------------------------------
                 Total      Total      Total      Total      Total     Runoff
                 Precip     Runon      Evap       Infil      Runoff    Coeff
Subcatchment         in         in         in         in          in
-----------------------------------------------------------------------------
S1                2.600      0.000      0.000      1.625      0.987     0.380
S2                2.600      0.000      0.000      1.641      0.968     0.372
S3                2.600      0.000      0.000      1.653      0.956     0.368
S4                2.600      0.000      0.000      1.549      1.063     0.409
S5                2.600      0.000      0.000      1.896      0.713     0.274
S6                2.600      0.000      0.000      1.620      1.024     0.394
S7                2.600      0.350      0.000      1.837      1.122     0.380
S8                2.600      0.000      0.000      0.000      2.606     1.002
S9                2.600      0.000      0.000      1.588      1.021     0.393
S10               2.600      0.000      0.000      1.593      1.016     0.391
-----------------------------------------------------------------------------
Totals            2.600      0.048      0.000      1.660      0.999     0.377

******************
```

Node Depth Summary
****

Node	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Total Flooding in/acre	Total Minutes Flooded
J1	0.01	0.09	317.09	0 14:45	0	0
J2	0.01	0.09	267.59	0 14:45	0	0
J3	0.12	1.31	216.31	0 14:45	0	0
J4	0.02	0.27	248.27	0 14:45	0	0
J5	0.02	0.26	243.26	0 14:45	0	0
J6	0.01	0.17	289.17	0 14:45	0	0
J7	0.04	0.40	239.40	0 14:45	0	0
J8	0.12	1.30	213.30	0 14:45	0	0
J9	0.11	1.27	185.77	0 14:46	0	0
OUT1	0.91	2.00	133.30	0 12:15	0	0

****
Conduit Flow Summary
****

Conduit	Maximum Flow CFS	Time of Max Occurrence days hr:min	Maximum Velocity ft/sec	Length Factor	Maximum /Design Flow	Total Minutes Surcharged
C1	0.96	0 14:45	5.59	1.00	0.07	0
C2	6.79	0 14:46	4.02	1.00	0.03	0
C3	1.22	0 14:45	5.89	1.00	0.07	0
C4	1.22	0 14:45	5.94	1.00	0.03	0
C5	2.94	0 14:45	5.79	1.00	0.03	0
C6	4.14	0 14:46	9.32	1.00	0.09	0
C7	28.64	0 14:45	13.20	1.00	0.76	0
C8	28.88	0 14:46	13.85	1.00	0.73	0
C9	32.58	0 14:46	16.78	1.00	0.67	0

****
Routing Time Step Summary
****
Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.02

Analysis begun on: Thu Jun 15 09:06:59 2006
Total elapsed time: < 1 sec

Project BCA

SWMM 5.0 – Input

25 Year 6 Hour Storm

Drainage Project BCA (Park Drive/Tamarack Avenue)

```
[TITLE]
Drainage Project BCA (Park Drive/Tamarack Avenue)
25 Year 6 Hour Storm

[OPTIONS]
 FLOW_UNITS            CFS
 INFILTRATION          GREEN_AMPT
 FLOW_ROUTING          KINWAVE
 START_DATE            09/30/2005
 START_TIME            22:00:00
 REPORT_START_DATE     09/30/2005
 REPORT_START_TIME     22:00:00
 END_DATE              10/02/2005
 END_TIME              00:00:00
 SWEEP_START           01/01
 SWEEP_END             12/31
 DRY_DAYS              0
 REPORT_STEP           00:15:00
 WET_STEP              00:15:00
 DRY_STEP              01:00:00
 ROUTING_STEP          0:00:30
 ALLOW_PONDING         NO
 INERTIAL_DAMPING      PARTIAL
 VARIABLE_STEP         0.75
 LENGTHENING_STEP      0
 MIN_SURFAREA          0
 NORMAL_FLOW_LIMITED   NO
 SKIP_STEADY_STATE     NO

[RAINGAGES]
;;               Rain       Recd.  Snow   Data       Source           Station    Rain
;;Name           Type       Freq.  Catch  Source     Name             ID         Units
;;-------------------------------------------------------------------------------------
  R1             CUMULATIVE 0:15   1.0    TIMESERIES 25yr6hr2.1Max

[SUBCATCHMENTS]
;;                                                    Total      Pcnt.                Pcnt.      Curb       Snow
;;Name           Raingage         Outlet              Area       Imperv     Width     Slope      Length     Pack
;;-------------------------------------------------------------------------------------------------------------
  S1             R1               J1                  1.02       35         234       1          0
  S2             R1               J2                  6.77       35         368       7          0
  S3             R1               J3                  12.49      35         544       5          0
  S4             R1               J6                  2.97       38         238       8          0
  S5             R1               S7                  3.74       25         207       8          0
  S6             R1               J4                  1.16       35         169       11         0
  S7             R1               J3                  7.65       35         333       7          0
  S8             R1               J8                  0.18       100        40        4          0
  S9             R1               J9                  4.69       38         189       2          0
  S10            R1               OUT1                14.97      38         326       4          0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------------------------------------------------------------------------------------
  S1             0.011      0.15       0.05       0.1        100        OUTLET
  S2             0.011      0.15       0.05       0.1        100        OUTLET
  S3             0.011      0.15       0.05       0.1        100        OUTLET
  S4             0.011      0.15       0.05       0.1        100        OUTLET
  S5             0.011      0.15       0.05       0.1        100        OUTLET
  S6             0.011      0.15       0.05       0.1        100        OUTLET
  S7             0.011      0.15       0.05       0.1        100        OUTLET
  S8             0.011      0.15       0.05       0.1        100        OUTLET
  S9             0.011      0.15       0.05       0.1        100        OUTLET
  S10            0.011      0.15       0.05       0.1        100        OUTLET

[INFILTRATION]
;;Subcatchment   Suction    HydCon     IMDmax
;;--------------------------------------------
  S1             2.4        1.18       0
  S2             2.4        1.18       0
  S3             2.4        1.18       0
  S4             2.4        1.18       0
  S5             2.4        1.18       0
```

S6	2.4	1.18	0
S7	2.4	1.18	0
S8	2.4	1.18	0
S9	2.4	1.18	0
S10	2.4	1.18	0

[JUNCTIONS]

;;Name	Invert Elev.	Max. Depth	Init. Depth	Surcharge Depth	Ponded Area
J1	317	1	0	0	0
J2	267.5	1	0	0	0
J3	215	6	0	0	0
J4	248	1	0	0	0
J5	243	6	0	0	0
J6	289	1	0	0	0
J7	239	3	0	0	0
J8	212	6	0	0	0
J9	184.5	9	0	0	0

[OUTFALLS]

;;Name	Invert Elev.	Outfall Type	Stage/Table Time Series	Tide Gate
;Connection to a 60 inch				
OUT1	131.3	FIXED	133.3 NO	

[CONDUITS]

;;Name	Inlet Node	Outlet Node	Length	Manning N	Inlet Height	Outlet Height	Init. Flow	Ma Fl
;Gutter - Box								
C1	J1	J2	727.18	0.013	0	0	0	0
;Gutter - Box								
C2	J2	J3	981.82	0.013	0	0	0	0
;Pipe - RCP 18"								
C3	J4	J5	164.69	0.013	0	0	0	0
;BCA: Pipe - RCP 24"								
C4	J5	J7	116.38	0.013	0	0	0	0
;Swale - Trapezoid								
C5	J6	J7	470.27	0.024	0	0	0	0
;BCA: Pipe - RCP 24"								
C6	J7	J3	551.44	0.013	0	0	0	0
;BCA: Pipe - RCP 24"								
C7	J3	J8	108.15	0.013	0	0	0	0
;BCA: Pipe - RCP 24"								
C8	J8	J9	896.07	0.013	0	0	0	0
;Pipe - RCP 24"								
C9	J9	OUT1	1135.8	0.013	0	0	0	0

[XSECTIONS]

;;Link	Type	Geom1	Geom2	Geom3	Geom4	Barrels
C1	RECT_OPEN	0.5	2	0	0	1
C2	RECT_OPEN	0.5	30	0	0	1
C3	CIRCULAR	1.5	0	0	0	1
C4	CIRCULAR	2	0	0	0	1
C5	TRAPEZOIDAL	1.5	3	0.5	0.5	1
C6	CIRCULAR	2	0	0	0	1
C7	CIRCULAR	2	0	0	0	1
C8	CIRCULAR	2	0	0	0	1
C9	CIRCULAR	2	0	0	0	1

[TIMESERIES]

;;Name	Date	Time	Value
;100 Year 6 Hr SCS Type B Desgin Storm Max Precip = 2.6 inches			
100yr6hr2.6Max	10/01/2005	10:00	0.0
100yr6hr2.6Max		10:15	0.0468
100yr6hr2.6Max		10:30	0.091
100yr6hr2.6Max		10:45	0.1508
100yr6hr2.6Max		11:00	0.208

```
 100yr6hr2.6Max                 11:15      0.2808
 100yr6hr2.6Max                 11:30      0.351
 100yr6hr2.6Max                 11:45      0.4758
 100yr6hr2.6Max                 12:00      0.598
 100yr6hr2.6Max                 12:15      1.079
 100yr6hr2.6Max                 12:30      1.56
 100yr6hr2.6Max                 12:45      1.69
 100yr6hr2.6Max                 13:00      1.82
 100yr6hr2.6Max                 13:15      1.924
 100yr6hr2.6Max                 13:30      2.028
 100yr6hr2.6Max                 13:45      2.1008
 100yr6hr2.6Max                 14:00      2.171
 100yr6hr2.6Max                 14:15      2.2308
 100yr6hr2.6Max                 14:30      2.288
 100yr6hr2.6Max                 14:45      2.34
 100yr6hr2.6Max                 15:00      2.392
 100yr6hr2.6Max                 15:15      2.444
 100yr6hr2.6Max                 15:30      2.496
 100yr6hr2.6Max                 15:45      2.548
 100yr6hr2.6Max                 16:00      2.6

;SCS II Storm SD Hydrology Manual - 2.1 Cumulative 6 Hour 25 yr Storm
  25yr6hr2.1Max                 10:00      0
  25yr6hr2.1Max                 10:15      0.0378
  25yr6hr2.1Max                 10:30      0.0735
  25yr6hr2.1Max                 10:45      0.1218
  25yr6hr2.1Max                 11:00      0.168
  25yr6hr2.1Max                 11:15      0.2268
  25yr6hr2.1Max                 11:30      0.2835
  25yr6hr2.1Max                 11:45      0.3843
  25yr6hr2.1Max                 12:00      0.483
  25yr6hr2.1Max                 12:15      0.8715
  25yr6hr2.1Max                 12:30      1.26
  25yr6hr2.1Max                 12:45      1.365
  25yr6hr2.1Max                 13:00      1.47
  25yr6hr2.1Max                 13:15      1.554
  25yr6hr2.1Max                 13:30      1.638
  25yr6hr2.1Max                 13:45      1.6968
  25yr6hr2.1Max                 14:00      1.7535
  25yr6hr2.1Max                 14:15      1.8018
  25yr6hr2.1Max                 14:30      1.848
  25yr6hr2.1Max                 14:45      1.89
  25yr6hr2.1Max                 15:00      1.932
  25yr6hr2.1Max                 15:15      1.974
  25yr6hr2.1Max                 15:30      2.016
  25yr6hr2.1Max                 15:45      2.058
  25yr6hr2.1Max                 16:00      2.1

[REPORT]
 INPUT      NO
 CONTROLS   NO

[OPTIONS]
 TEMPDIR    "C:\Carlsbad\DMP\"
```

Project BCA

SWMM 5.0 – Output

25 Year 6 Hour Storm