Appendix M.1

Preliminary Drainage Study

PRELIMINARY DRAINAGE STUDY

FOR

SAGE STETSON HEMET COMMERCIAL DEVELOPMENT

TENTATIVE PARCEL MAP 37779

CITY OF HEMET, CALIFORNIA

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Sage Stetson Hemet
Drainage Report Narrative

The Sage Stetson Hemet retail project is a proposal to develop approximately 2.3 acres located on the west side of the existing McCrometer facility into a 7-11 convenience store, automated car wash and drive thru restaurant. The property is located at the southeast corner of Sanderson Avenue and Stetson Avenue in Hemet, California. .

The site proposed for development has a natural topographic gradient to the northwest. Proposed grading on the site perpetuates the natural gradient. The aforementioned commercial uses drain to water quality BMPs located at the downstream end of each drainage area. See the project specific Preliminary WQMP for BMP details.

This report includes rational hydrology calculations for both the 10-year and 100-year recurrence intervals. Calculations were performed for the existing condition; McCrometer facility and undeveloped areas. Peak flows were calculated to existing catch basins and drainage area low points. Calculations were also performed for the proposed condition: McCrometer facility and proposed development of the commercial uses.

Hydrology calculations were based on the Rational Method as stipulated in the Riverside County Flood Control and Water Conservation District Hydrology Manual dated 1978. Calculations were performed using CIVILCADD/CIVILDESIGN Engineering software. Onsite soils were categorized as B and BC per the manual.

RUNOFF SUMMARY

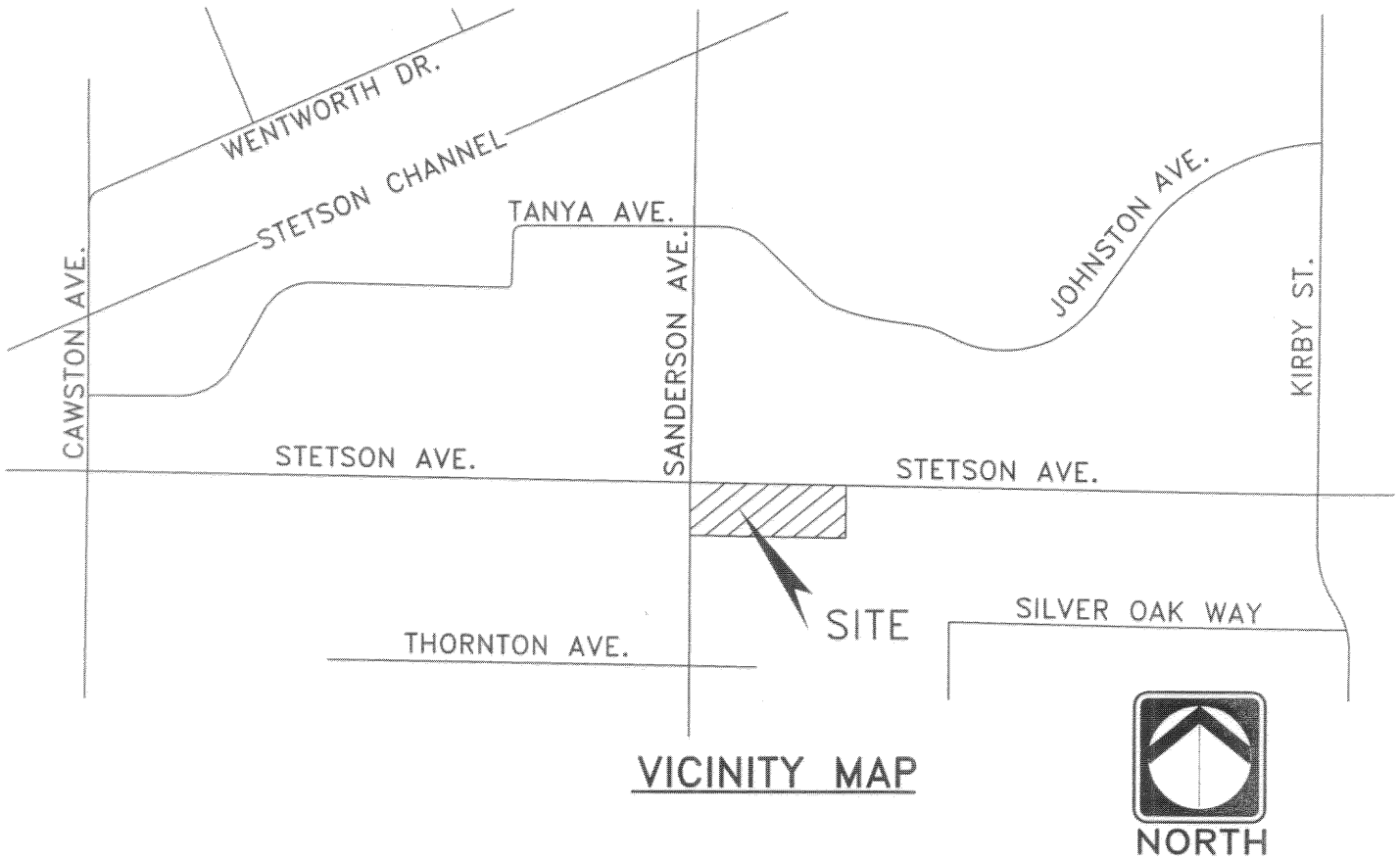
EXISTING CONDITIONS

Drainage Area Designation	Area (Ac)	Q_{10}(cfs)	Q_{100}(cfs)
A	2.3	2.3	3.8
B	0.4	0.7	1.1
C	0.3	0.7	1.1
D	0.3	0.7	1.1
E	5.4	8.6	13.4

PROPOSED CODITIONS

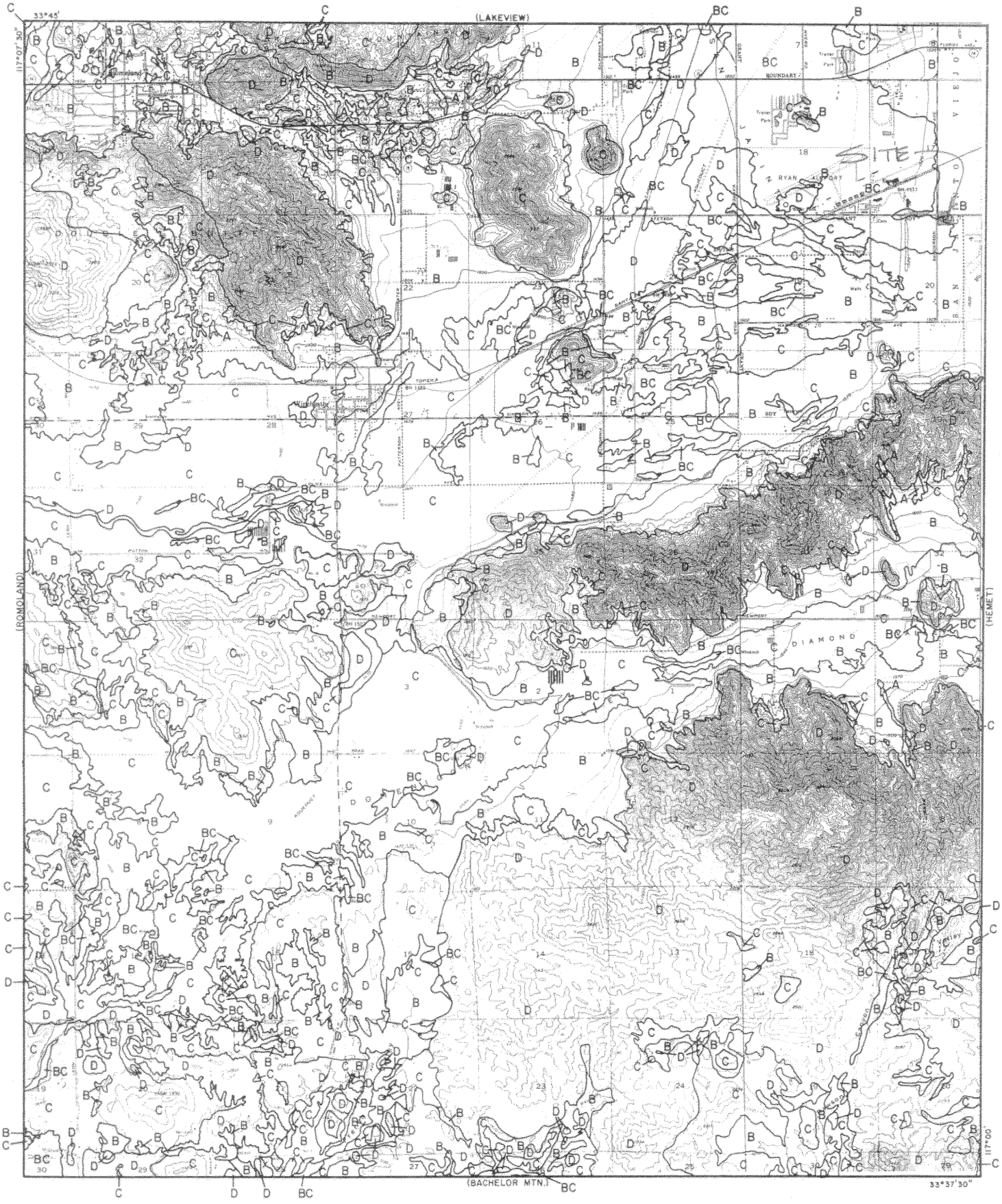
Drainage Area Designation	Area (Ac)	Q_{10}(cfs)	Q_{100}(cfs)
F	1.2	2.2	3.4
G	0.6	1.3	2.0
H	0.4	0.8	1.2
I	2.9	5.0	7.8

APPENDIX ‘A’



VICINITY MAP

Z:\Drawings\R40 PM.dwg, 10/24/2017 4:29:03 PM



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR WINCHESTER

PLATE C-1.43

RAINFALL INTENSITY—INCHES PER HOUR

HEMET			HIGHGROVE			HOMELAND – WINCHESTER			IDYLLWILD			LAKEVIEW		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.84	4.40	5	3.02	4.37	5	2.91	4.37	5	4.91	7.28	5	2.77	4.16
6	2.58	4.00	6	2.75	3.97	6	2.65	3.97	6	4.47	6.62	6	2.53	3.79
7	2.37	3.68	7	2.54	3.67	7	2.44	3.67	7	4.13	6.11	7	2.34	3.51
8	2.21	3.43	8	2.37	3.42	8	2.28	3.42	8	3.85	5.70	8	2.19	3.29
9	2.08	3.23	9	2.23	3.22	9	2.15	3.22	9	3.62	5.36	9	2.07	3.10
10	1.96	3.05	10	2.11	3.05	10	2.03	3.05	10	3.43	5.08	10	1.96	2.94
11	1.87	2.90	11	2.01	2.90	11	1.93	2.90	11	3.26	4.83	11	1.87	2.80
12	1.78	2.77	12	1.92	2.77	12	1.85	2.77	12	3.12	4.62	12	1.79	2.68
13	1.71	2.65	13	1.84	2.66	13	1.77	2.66	13	2.99	4.43	13	1.72	2.58
14	1.64	2.55	14	1.77	2.56	14	1.71	2.56	14	2.88	4.26	14	1.66	2.48
15	1.58	2.46	15	1.71	2.47	15	1.64	2.47	15	2.78	4.11	15	1.60	2.40
16	1.53	2.38	16	1.65	2.39	16	1.59	2.39	16	2.68	3.98	16	1.55	2.32
17	1.48	2.30	17	1.60	2.31	17	1.54	2.31	17	2.60	3.85	17	1.50	2.25
18	1.44	2.23	18	1.55	2.24	18	1.50	2.24	18	2.52	3.74	18	1.46	2.19
19	1.40	2.17	19	1.51	2.18	19	1.45	2.18	19	2.45	3.64	19	1.42	2.13
20	1.36	2.11	20	1.47	2.12	20	1.42	2.12	20	2.39	3.54	20	1.39	2.08
22	1.29	2.01	22	1.40	2.02	22	1.35	2.02	22	2.27	3.37	22	1.32	1.98
24	1.24	1.92	24	1.34	1.93	24	1.29	1.93	24	2.17	3.22	24	1.26	1.90
26	1.18	1.84	26	1.28	1.85	26	1.24	1.85	26	2.09	3.09	26	1.22	1.82
28	1.14	1.77	28	1.23	1.78	28	1.19	1.78	28	2.01	2.97	28	1.17	1.76
30	1.10	1.70	30	1.19	1.72	30	1.15	1.72	30	1.94	2.87	30	1.13	1.70
32	1.06	1.65	32	1.15	1.66	32	1.11	1.66	32	1.87	2.77	32	1.10	1.64
34	1.03	1.59	34	1.12	1.61	34	1.07	1.61	34	1.81	2.69	34	1.06	1.59
36	1.00	1.55	36	1.08	1.57	36	1.04	1.57	36	1.76	2.61	36	1.03	1.55
38	.97	1.50	38	1.05	1.52	38	1.01	1.52	38	1.71	2.54	38	1.01	1.51
40	.94	1.46	40	1.02	1.48	40	.99	1.48	40	1.67	2.47	40	.98	1.47
45	.89	1.37	45	.96	1.39	45	.93	1.39	45	1.57	2.32	45	.92	1.39
50	.84	1.30	50	.91	1.32	50	.88	1.32	50	1.48	2.20	50	.88	1.31
55	.80	1.24	55	.87	1.26	55	.84	1.26	55	1.41	2.09	55	.84	1.25
60	.76	1.18	60	.83	1.20	60	.80	1.20	60	1.35	2.00	60	.80	1.20
65	.73	1.13	65	.80	1.15	65	.77	1.15	65	1.29	1.92	65	.77	1.15
70	.70	1.09	70	.77	1.11	70	.74	1.11	70	1.25	1.85	70	.74	1.11
75	.68	1.05	75	.74	1.07	75	.71	1.07	75	1.20	1.78	75	.72	1.07
80	.65	1.01	80	.71	1.03	80	.69	1.03	80	1.16	1.72	80	.69	1.04
85	.63	.98	85	.69	1.00	85	.67	1.00	85	1.13	1.67	85	.67	1.01
SLOPE = .530			SLOPE = .520			SLOPE = .520			SLOPE = .520			SLOPE = .500		

STANDARD
INTENSITY–DURATION
CURVES DATA

APPENDIX 'B'

RATIONAL HYDROLOGY CALCULATIONS

10-YEAR STORM
100-YEAR STORM
EXISTING CONDITIONS

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRUNDEVAREAA.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA A
UNDEVELOPED CONDITION
10 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   480.000(Ft.)
Top (of initial area) elevation =    29.300(Ft.)
Bottom (of initial area) elevation =    27.500(Ft.)
Difference in elevation =     1.800(Ft.)
Slope =    0.00375  s(percent)=       0.38
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   19.141 min.
Rainfall intensity =      1.392(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.709
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      2.270(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            2.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  78.0
```

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            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRUNDEVAREAB.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA B
MCCROMETER SITE
10 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   230.000(Ft.)
Top (of initial area) elevation =    28.200(Ft.)
Bottom (of initial area) elevation =    27.900(Ft.)
Difference in elevation =     0.300(Ft.)
Slope =    0.00130  s(percent)=       0.13
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.971 min.
Rainfall intensity =      1.967(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.869
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.684(CFS)
Total initial stream area =        0.400(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 07/09/19 File:SAGESTETSON10YRUNDEVAREAC.out

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SAGE STETSON HEMET
AREA C
MCCROMETER SITE
10 YEAR STORM

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4061

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Hemet] area used.
10 year storm 10 minute intensity = 1.960(In/Hr)
10 year storm 60 minute intensity = 0.760(In/Hr)
100 year storm 10 minute intensity = 3.050(In/Hr)
100 year storm 60 minute intensity = 1.180(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.760(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 5.000 to Point/Station 6.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 110.000(Ft.)
Top (of initial area) elevation = 28.100(Ft.)
Bottom (of initial area) elevation = 27.800(Ft.)
Difference in elevation = 0.300(Ft.)
Slope = 0.00273 s(percent)= 0.27
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.405 min.
Rainfall intensity = 2.488(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.652(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRUNDEVAREAD.out
--------------------------------------------------------------------------
SAGE STETSON HEMET
AREA D
MCCROMETER SITE
10 YEAR STORM
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

--------------------------------------------------------------------------


Program License Serial Number 4061

--------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       7.000 to Point/Station       8.000
**** INITIAL AREA EVALUATION ****
--------------------------------------------------------------------------
Initial area flow distance =   115.000(Ft.)
Top (of initial area) elevation =    28.000(Ft.)
Bottom (of initial area) elevation =    27.500(Ft.)
Difference in elevation =     0.500(Ft.)
Slope =    0.00435  s(percent)=       0.43
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.939 min.
Rainfall intensity =      2.589(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.679(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
Rational Hydrology Study Date: 07/09/19 File:SAGESTETSON10YRUNDEVAREAE.out

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SAGE STETSON HEMET
AREA E
MCCROMETER SITE
10 YEAR STORM

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4061

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Hemet] area used.
10 year storm 10 minute intensity = 1.960(In/Hr)
10 year storm 60 minute intensity = 0.760(In/Hr)
100 year storm 10 minute intensity = 3.050(In/Hr)
100 year storm 60 minute intensity = 1.180(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.760(In/Hr)
Slope of intensity duration curve = 0.5300

++
Process from Point/Station 9.000 to Point/Station 10.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 670.000(Ft.)
Top (of initial area) elevation = 28.000(Ft.)
Bottom (of initial area) elevation = 24.500(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.00522 s(percent)= 0.52
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.587 min.
Rainfall intensity = 1.817(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000

```
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      8.560(CFS)
Total initial stream area =        5.400(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            5.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRUNDEVAREAA.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA A
UNDEVELOPED CONDITION
100 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   480.000(Ft.)
Top (of initial area) elevation =    29.300(Ft.)
Bottom (of initial area) elevation =    27.500(Ft.)
Difference in elevation =     1.800(Ft.)
Slope =    0.00375  s(percent)=       0.38
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   19.141 min.
Rainfall intensity =      2.162(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.767
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      3.812(CFS)
Total initial stream area =        2.300(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            2.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  78.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRUNDEVAREAB.out
--------------------------------------------------------------------------
SAGE STETSON HEMET
AREA B
MCCROMETER SITE
100 YEAR STORM
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

--------------------------------------------------------------------------


Program License Serial Number 4061

--------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****

------------------------------------------------------------------------
Initial area flow distance =   230.000(Ft.)
Top (of initial area) elevation =    28.200(Ft.)
Bottom (of initial area) elevation =    27.900(Ft.)
Difference in elevation =     0.300(Ft.)
Slope =    0.00130  s(percent)=       0.13
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.971 min.
Rainfall intensity =      3.055(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.072(CFS)
Total initial stream area =        0.400(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRUNDEVAREAC.out
--------------------------------------------------------------------------
SAGE STETSON HEMET
AREA C
MCCROMETER SITE
100 YEAR STORM
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

--------------------------------------------------------------------------


Program License Serial Number 4061

--------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       5.000 to Point/Station       6.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   110.000(Ft.)
Top (of initial area) elevation =    28.100(Ft.)
Bottom (of initial area) elevation =    27.500(Ft.)
Difference in elevation =     0.600(Ft.)
Slope =    0.00545  s(percent)=       0.55
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.576 min.
Rainfall intensity =      4.157(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.100(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRUNDEVAREAD.out
--------------------------------------------------------------------------
SAGE STETSON HEMET
AREA D
MCCROMETER SITE
100 YEAR STORM
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

--------------------------------------------------------------------------


Program License Serial Number 4061

--------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       7.000 to Point/Station       8.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   115.000(Ft.)
Top (of initial area) elevation =    28.000(Ft.)
Bottom (of initial area) elevation =    27.500(Ft.)
Difference in elevation =     0.500(Ft.)
Slope =    0.00435  s(percent)=       0.43
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    5.939 min.
Rainfall intensity =      4.020(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.063(CFS)
Total initial stream area =        0.300(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRUNDEVAREAE.out
--------------------------------------------------------------------------
SAGE STETSON HEMET
AREA E
MCCROMETER SITE
100 YEAR STORM
--------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

--------------------------------------------------------------------------


Program License Serial Number 4061

--------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        9.000 to Point/Station       10.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
Initial area flow distance =   670.000(Ft.)
Top (of initial area) elevation =    28.000(Ft.)
Bottom (of initial area) elevation =    24.500(Ft.)
Difference in elevation =     3.500(Ft.)
Slope =    0.00522  s(percent)=       0.52
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.587 min.
Rainfall intensity =      2.821(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     13.407(CFS)
Total initial stream area =        5.400(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            5.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

APPENDIX 'C'

RATIONAL HYDROLOGY CALCULATIONS

10-YEAR STORM
100-YEAR STORM
PROPOSED CONDITIONS

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRDEVAREAF.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA F
DEVELOPED CONDITION
10 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   380.000(Ft.)
Top (of initial area) elevation =    28.800(Ft.)
Bottom (of initial area) elevation =    26.800(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00526  s(percent)=       0.53
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.221 min.
Rainfall intensity =      2.051(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)   =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.153(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            1.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRDEVAREAF.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA F
DEVELOPED CONDITION
100 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        2.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   380.000(Ft.)
Top (of initial area) elevation =    28.800(Ft.)
Bottom (of initial area) elevation =    26.800(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00526  s(percent)=       0.53
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.221 min.
Rainfall intensity =      3.184(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)   =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      3.370(CFS)
Total initial stream area =        1.200(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            1.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRDEVAREAG.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA G
DEVELOPED CONDITION
10 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   200.000(Ft.)
Top (of initial area) elevation =    29.300(Ft.)
Bottom (of initial area) elevation =    27.900(Ft.)
Difference in elevation =     1.400(Ft.)
Slope =    0.00700  s(percent)=       0.70
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.738 min.
Rainfall intensity =      2.422(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.268(CFS)
Total initial stream area =        0.600(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRDEVAREAG.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA G
DEVELOPED CONDITION
100 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.000 to Point/Station        4.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   200.000(Ft.)
Top (of initial area) elevation =    29.300(Ft.)
Bottom (of initial area) elevation =    27.900(Ft.)
Difference in elevation =     1.400(Ft.)
Slope =    0.00700  s(percent)=       0.70
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.738 min.
Rainfall intensity =      3.760(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.986(CFS)
Total initial stream area =        0.600(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  56.0
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRDEVAREAH.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA H
DEVELOPED CONDITION
10 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        5.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =    28.800(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     1.800(Ft.)
Slope =    0.00600  s(percent)=       0.60
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.172 min.
Rainfall intensity =      2.186(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      0.766(CFS)
Total initial stream area =        0.400(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRDEVAREAH.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA H
DEVELOPED CONDITION
100 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        1.000 to Point/Station        5.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   300.000(Ft.)
Top (of initial area) elevation =    28.800(Ft.)
Bottom (of initial area) elevation =    27.000(Ft.)
Difference in elevation =     1.800(Ft.)
Slope =    0.00600  s(percent)=       0.60
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.172 min.
Rainfall intensity =      3.394(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)   =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.199(CFS)
Total initial stream area =        0.400(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            0.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON10YRDEVAREAI.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA I
DEVELOPED CONDITION
10 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =   10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year =  10.0
Calculated rainfall intensity data:
1 hour intensity =  0.760(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       6.000 to Point/Station       7.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   415.000(Ft.)
Top (of initial area) elevation =    28.000(Ft.)
Bottom (of initial area) elevation =    26.300(Ft.)
Difference in elevation =     1.700(Ft.)
Slope =    0.00410  s(percent)=       0.41
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.043 min.
Rainfall intensity =      1.960(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      4.967(CFS)
Total initial stream area =        2.900(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            2.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

```
            Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 07/09/19  File:SAGESTETSON100YRDEVAREAI.out
------------------------------------------------------------------------
SAGE STETSON HEMET
AREA I
DEVELOPED CONDITION
100 YEAR STORM
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4061

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Hemet ] area used.
10 year storm 10 minute intensity =  1.960(In/Hr)
10 year storm 60 minute intensity =  0.760(In/Hr)
100 year storm 10 minute intensity =  3.050(In/Hr)
100 year storm 60 minute intensity =  1.180(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.180(In/Hr)
Slope of intensity duration curve = 0.5300




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.000 to Point/Station        7.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Initial area flow distance =   415.000(Ft.)
Top (of initial area) elevation =    28.000(Ft.)
Bottom (of initial area) elevation =    26.300(Ft.)
Difference in elevation =     1.700(Ft.)
Slope =    0.00410  s(percent)=       0.41
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.043 min.
Rainfall intensity =      3.043(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
```

```
RI index for soil(AMC 2)  =  62.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      7.777(CFS)
Total initial stream area =        2.900(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            2.90 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  62.5
```

APPENDIX 'D'

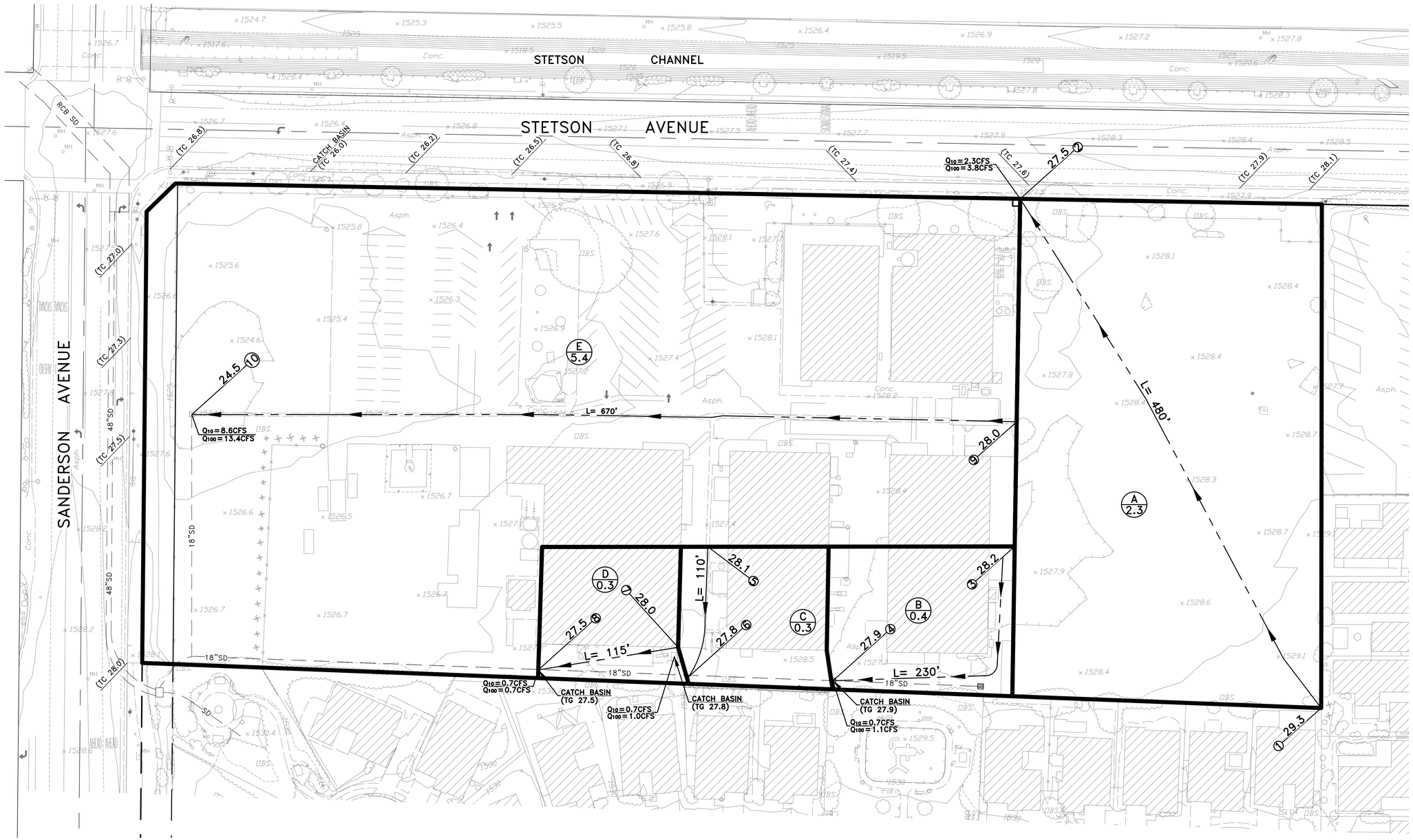
IN THE CITY OF HEMET

SAGE STETSON HEMET
HYDROLOGY EXHIBIT
EXISTING CONDITIONS

NORTH

120' 80' 40' 0'

1" = 40'



LEGEND

- DRAINAGE BOUNDARY
- (6) DRAINAGE NODE
- (A, 2.3) DRAINAGE AREA DESIGNATION, AREA IN ACRES
- FLOW PATH

Underground Service Alert

CALL BEFORE YOU DIG

Call: TOLL FREE 811

TWO WORKING DAYS BEFORE YOU DIG

REVISIONS:

NO:	DATE:	BY:		APPROVED:

DESIGNED BY: | DRAWN BY: | CHECKED BY:

REGISTERED PROFESSIONAL ENGINEER — BLAINE A. WOMER — No. 46354 — CIVIL — STATE OF CALIFORNIA

BAW BLAINE A. WOMER CIVIL ENGINEERING

•PLANNING •SURVEYING •CIVIL ENGINEERING •PUBLIC WORKS

Hemet, CA. 92544, 43355 E Florida Ave., Suite G, Phone (951)658-3727 Fax (951)658-9347
Park City, UT 84098, 5133 Cove Canyon Dr. #302, Phone/Fax (435)615-1489

W.D.

PREPARED UNDER THE SUPERVISION OF:

DATE:

SCALE: | BENCHMARK:

DATE:

APPROVED BY:

DATE:

City of Hemet
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
510 E. Florida Ave.
HEMET, CA 92543
(951) 765-2360

City of Hemet

SAGE STETSON HEMET
HYDROLOGY EXHIBIT
EXISTING CONDITIONS

W.O. | F.N.

1 OF 1 SHEETS

FILE NO.

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IN THE CITY OF HEMET

DEVELOPED CONDITION HYDROLOGY EXHIBIT

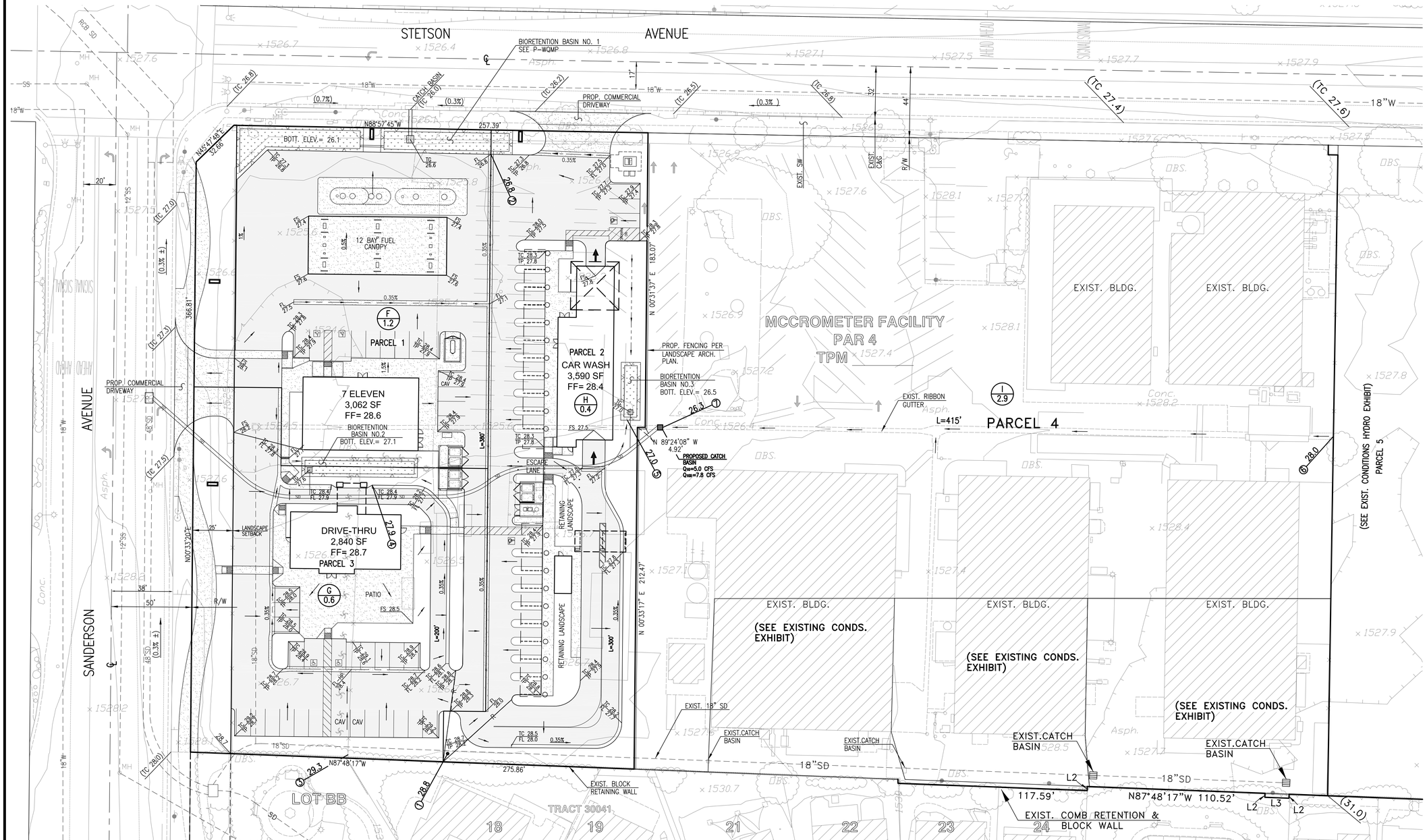
FOR

SAGE STETSON HEMET

NORTH

90 60 30 0

1" = 30'



LEGEND

- DRAINAGE BOUNDARY
- ④ NODE NUMBER
- H / 0.4 DRAINAGE AREA DESIGNATION / AREA (AC)

Underground Service Alert

Call: TOLL FREE 811

TWO WORKING DAYS BEFORE YOU DIG

REVISIONS:

NO:	DATE:	BY:	APPROVED:

DESIGNED BY: | DRAWN BY: | CHECKED BY:

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Park City, UT 84098, 5133 Cove Canyon Dr. #302, Phone/Fax (435)615-1489

W.D.

PREPARED UNDER THE SUPERVISION OF:

DATE:

SCALE: | BENCHMARK:

DATE:

APPROVED BY:

ROBERT VESTAL, PE

DATE:

City of Hemet
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
510 E. Florida Ave.
HEMET, CA 92543
(951) 765-2360

City of Hemet

SAGE STETSON HEMET
HYDROLOGY EXHIBIT
DEVELOPED CONDITION

W.O. | F.N.

1 OF 1 SHEETS

FILE NO.