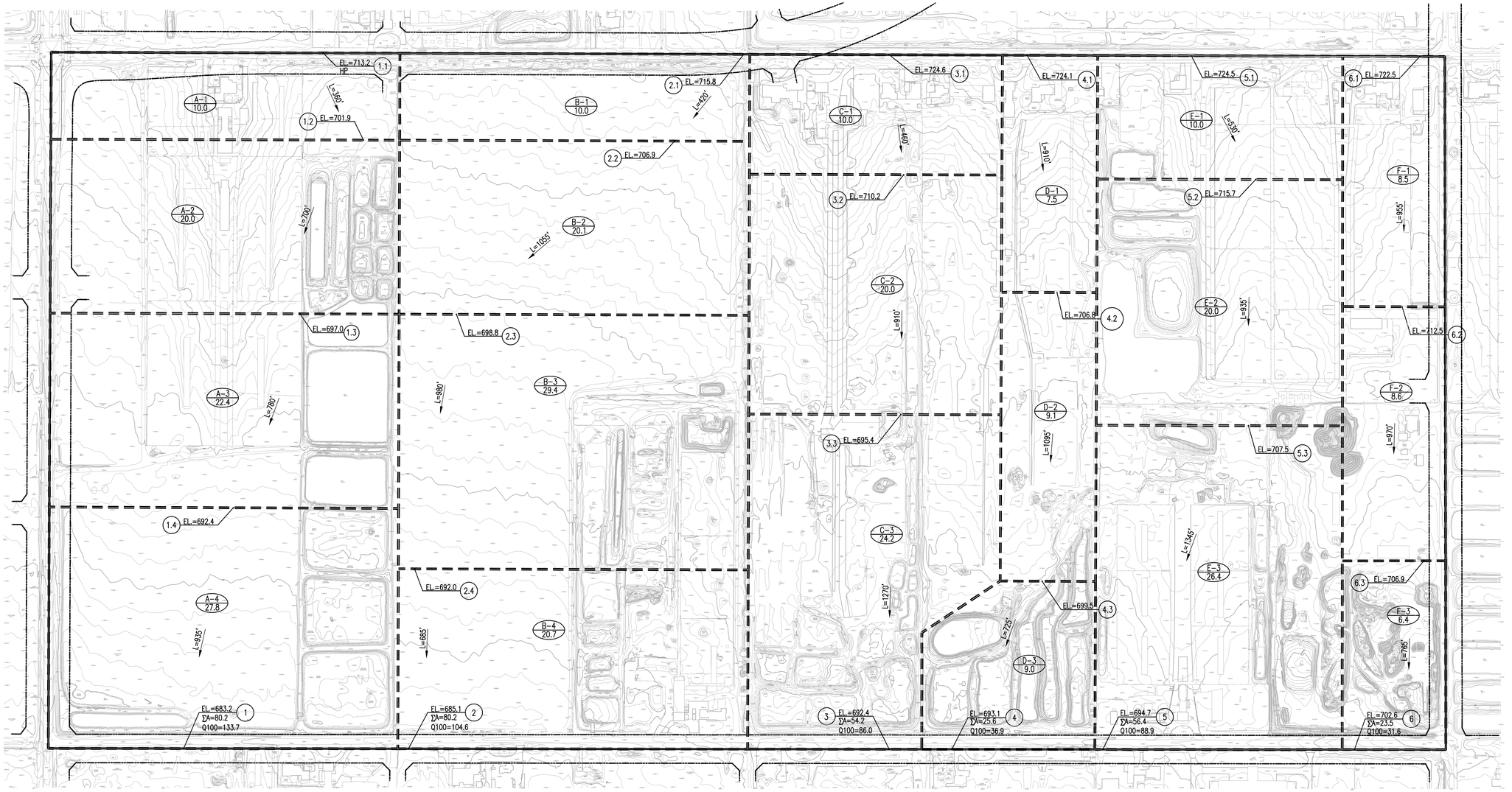
Appendix H: Hydrology Study

H.1 - Hydrology Existing Conditions

HYDROLOGY MAP
FOR
GREAT PARK SPECIFIC PLAN
IN THE
CITY OF ONTARIO
EXISTING CONDITION

SCALE: 1"=200'



LEGEND

31	NODE NUMBER
700.00 / Q100=20.0	ELEVATION IN FEET AND 100-YEAR STORM PEAK FLOW IN C.F.S.
ΣA=20.0	SUMMATION OF ACREAGE
Tc=8.6	TIME OF CONCENTRATION FOR PEAK FLOW IN MINUTES
L=200'	LENGTH OF DRAINAGE COURSE AND DRAINAGE DIRECTION
D-1 10.00	DRAINAGE SUB-AREA DESIGNATION ACREAGE OF DRAINAGE SUB-AREA
———	DRAINAGE AREA BOUNDARY
- - - -	SUB-DRAINAGE AREA BOUNDARY

LOCATION

VICINITY MAP
NTS

STUDY FILES

570014A
570014B
570014C
570014D
570014E
570014F

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JN 570014 Armada, LLC E:\500-599\570-Armada\0570-014\HYDROLOGY\570014HYDRO.dwg, Plotted: Aug 30, 2007 - 2:23pm

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-1999 Version 6.2
Rational Hydrology Study Date: 08/30/07

Great Park Specific Plan Hydrology
Q100 Existing Condition
File: 570014A

L. D. King, Inc., Ontario, California - S/N 566

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.150 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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Process from Point/Station 1.100 to Point/Station 1.200
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 84.80
Adjusted SCS curve number for AMC 3 = 96.88
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.062(In/Hr)
Initial subarea data:
Initial area flow distance = 360.000(Ft.)
Top (of initial area) elevation = 713.200(Ft.)
Bottom (of initial area) elevation = 701.900(Ft.)
Difference in elevation = 11.300(Ft.)
Slope = 0.03139 s(%)= 3.14
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.049 min.
Rainfall intensity = 3.174(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.883
Subarea runoff = 28.010(CFS)
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.062(In/Hr)

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Process from Point/Station 1.200 to Point/Station 1.300
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 56.021(CFS)
Depth of flow = 0.882(Ft.), Average velocity = 2.880(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	50.00	0.00
3	100.00	2.00

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 56.021(CFS)
' ' flow top width = 44.104(Ft.)
' ' velocity= 2.880(Ft/s)
' ' area = 19.452(Sq.Ft)
' ' Froude number = 0.764

Upstream point elevation = 701.900(Ft.)
Downstream point elevation = 697.000(Ft.)
Flow length = 700.000(Ft.)
Travel time = 4.05 min.
Time of concentration = 15.10 min.

```
Depth of flow =   0.882(Ft.)
Average velocity =   2.880(Ft/s)
Total irregular channel flow =    56.021(CFS)
Irregular channel normal depth above invert elev. =   0.882(Ft.)
Average velocity of channel(s) =   2.880(Ft/s)

Sub-Channel No. 1 Critical depth =      0.789(Ft.)
  '     '       '     Critical flow top width =     39.453(Ft.)
  '     '       '     Critical flow velocity=    3.599(Ft/s)
  '     '       '     Critical flow area =     15.565(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 84.80
Adjusted SCS curve number for AMC 3 = 96.88
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.062(In/Hr)
Rainfall intensity =      2.631(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.879
Subarea runoff =     41.375(CFS) for   20.000(Ac.)
Total runoff =     69.386(CFS)
Effective area this stream =       30.00(Ac.)
Total Study Area (Main Stream No. 1) =       30.00(Ac.)
Area averaged Fm value =    0.062(In/Hr)


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Process from Point/Station        1.300 to Point/Station        1.400
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     95.290(CFS)
Depth of flow =   1.112(Ft.), Average velocity =   3.084(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              2.00
        2            50.00              0.00
        3           100.00              2.00
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     95.290(CFS)
  '     '         flow top width =     55.584(Ft.)
  '     '    velocity=    3.084(Ft/s)
  '     '         area =     30.896(Sq.Ft)
  '     '         Froude number =     0.729

Upstream point elevation =   697.000(Ft.)
Downstream point elevation =   692.400(Ft.)
Flow length =   780.000(Ft.)
Travel time  =    4.22 min.
Time of concentration =   19.32 min.
Depth of flow =   1.112(Ft.)
Average velocity =   3.084(Ft/s)
Total irregular channel flow =    95.290(CFS)
Irregular channel normal depth above invert elev. =   1.112(Ft.)
Average velocity of channel(s) =   3.084(Ft/s)

Sub-Channel No. 1 Critical depth =      0.977(Ft.)
  '     '       '     Critical flow top width =     48.828(Ft.)
  '     '       '     Critical flow velocity=    3.997(Ft/s)
  '     '       '     Critical flow area =     23.842(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 84.80
Adjusted SCS curve number for AMC 3 = 96.88
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.062(In/Hr)
Rainfall intensity =      2.270(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
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Subarea runoff =     34.766(CFS) for   22.400(Ac.)
Total runoff =    104.152(CFS)
Effective area this stream =       52.40(Ac.)
Total Study Area (Main Stream No. 1) =       52.40(Ac.)
Area averaged Fm value =    0.062(In/Hr)


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Process from Point/Station        1.400 to Point/Station        1.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =    131.780(CFS)
Depth of flow =   0.469(Ft.), Average velocity =   2.454(Ft/s)
!!Warning: Water is above left or right bank elevations
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              0.40
        2            100.00              0.00
        3            200.00              0.40
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =    131.780(CFS)
  '     '         flow top width =    200.000(Ft.)
  '     '    velocity=    2.454(Ft/s)
  '     '         area =     53.701(Sq.Ft)
  '     '         Froude number =     0.835

Upstream point elevation =   692.400(Ft.)
Downstream point elevation =   683.200(Ft.)
Flow length =   935.000(Ft.)
Travel time  =    6.35 min.
Time of concentration =   25.67 min.
Depth of flow =   0.469(Ft.)
Average velocity =   2.454(Ft/s)
Total irregular channel flow =   131.780(CFS)
Irregular channel normal depth above invert elev. =   0.469(Ft.)
Average velocity of channel(s) =   2.454(Ft/s)
!!Warning: Water is above left or right bank elevations

Sub-Channel No. 1 Critical depth =      0.438(Ft.)
  '     '       '     Critical flow top width =    200.000(Ft.)
  '     '       '     Critical flow velocity=    2.774(Ft/s)
  '     '       '     Critical flow area =     47.500(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.150
Decimal fraction soil group C = 0.850
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 84.80
Adjusted SCS curve number for AMC 3 = 96.88
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.062(In/Hr)
Rainfall intensity =      1.914(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.871
Subarea runoff =     29.563(CFS) for   27.800(Ac.)
Total runoff =    133.715(CFS)
Effective area this stream =       80.20(Ac.)
Total Study Area (Main Stream No. 1) =       80.20(Ac.)
Area averaged Fm value =    0.062(In/Hr)
End of computations, Total Study Area =           80.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  84.8
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San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-1999 Version 6.2
Rational Hydrology Study Date: 08/30/07

Great Park Specific Plan Hydrology
Q100 Existing Condition
File: 570014B

L. D. King, Inc., Ontario, California - S/N 566

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.150 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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Process from Point/Station 2.100 to Point/Station 2.200
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 84.00
Adjusted SCS curve number for AMC 3 = 96.40
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.071(In/Hr)
Initial subarea data:
Initial area flow distance = 420.000(Ft.)
Top (of initial area) elevation = 715.800(Ft.)
Bottom (of initial area) elevation = 706.900(Ft.)
Difference in elevation = 8.900(Ft.)
Slope = 0.02119 s(%)= 2.12
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.712 min.
Rainfall intensity = 2.918(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.878
Subarea runoff = 25.621(CFS)
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.071(In/Hr)

++

Process from Point/Station 2.200 to Point/Station 2.300
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 51.370(CFS)
Depth of flow = 0.354(Ft.), Average velocity = 1.641(Ft/s)

******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.40
2	100.00	0.00
3	200.00	0.40

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 51.370(CFS)
' ' flow top width = 176.912(Ft.)
' ' velocity= 1.641(Ft/s)
' ' area = 31.298(Sq.Ft)
' ' Froude number = 0.688

Upstream point elevation = 706.900(Ft.)
Downstream point elevation = 698.800(Ft.)
Flow length = 1055.000(Ft.)
Travel time = 10.71 min.
Time of concentration = 23.43 min.

```
Depth of flow =   0.354(Ft.)
Average velocity =   1.641(Ft/s)
Total irregular channel flow =    51.370(CFS)
Irregular channel normal depth above invert elev. =   0.354(Ft.)
Average velocity of channel(s) =   1.641(Ft/s)

Sub-Channel No. 1 Critical depth =      0.305(Ft.)
  '     '       '     Critical flow top width =    152.344(Ft.)
  '     '       '     Critical flow velocity=    2.213(Ft/s)
  '     '       '     Critical flow area =     23.209(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 84.00
Adjusted SCS curve number for AMC 3 = 96.40
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.071(In/Hr)
Rainfall intensity =      2.022(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.868
Subarea runoff =     27.231(CFS) for   20.100(Ac.)
Total runoff =     52.852(CFS)
Effective area this stream =       30.10(Ac.)
Total Study Area (Main Stream No. 1) =       30.10(Ac.)
Area averaged Fm value =    0.071(In/Hr)


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Process from Point/Station        2.300 to Point/Station        2.400
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     78.663(CFS)
Depth of flow =   0.419(Ft.), Average velocity =   1.798(Ft/s)
!!Warning: Water is above left or right bank elevations
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              0.40
        2           100.00              0.00
        3           200.00              0.40
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     78.664(CFS)
  '     '         flow top width =    200.000(Ft.)
  '     '    velocity=    1.798(Ft/s)
  '     '        area =     43.757(Sq.Ft)
  '     '        Froude number =     0.677

Upstream point elevation =   698.800(Ft.)
Downstream point elevation =   692.000(Ft.)
Flow length =   980.000(Ft.)
Travel time  =    9.09 min.
Time of concentration =   32.51 min.
Depth of flow =   0.419(Ft.)
Average velocity =   1.798(Ft/s)
Total irregular channel flow =    78.663(CFS)
Irregular channel normal depth above invert elev. =   0.419(Ft.)
Average velocity of channel(s) =   1.798(Ft/s)
!!Warning: Water is above left or right bank elevations

Sub-Channel No. 1 Critical depth =      0.361(Ft.)
  '     '       '     Critical flow top width =    180.664(Ft.)
  '     '       '     Critical flow velocity=    2.410(Ft/s)
  '     '       '     Critical flow area =     32.640(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 84.00
Adjusted SCS curve number for AMC 3 = 96.40
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.071(In/Hr)
Rainfall intensity =      1.661(In/Hr) for a   100.0 year storm
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Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.862
Subarea runoff =     32.293(CFS) for   29.400(Ac.)
Total runoff =     85.145(CFS)
Effective area this stream =       59.50(Ac.)
Total Study Area (Main Stream No. 1) =       59.50(Ac.)
Area averaged Fm value =    0.071(In/Hr)


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Process from Point/Station        2.400 to Point/Station        2.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     99.956(CFS)
Depth of flow =   0.426(Ft.), Average velocity =   2.213(Ft/s)
!!Warning: Water is above left or right bank elevations
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              0.40
        2            100.00              0.00
        3            200.00              0.40
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     99.957(CFS)
  '     '         flow top width =    200.000(Ft.)
  '     '    velocity=    2.213(Ft/s)
  '     '         area =     45.176(Sq.Ft)
  '     '         Froude number =     0.820

Upstream point elevation =   692.000(Ft.)
Downstream point elevation =   685.100(Ft.)
Flow length =   685.000(Ft.)
Travel time  =    5.16 min.
Time of concentration =   37.67 min.
Depth of flow =   0.426(Ft.)
Average velocity =   2.213(Ft/s)
Total irregular channel flow =    99.956(CFS)
Irregular channel normal depth above invert elev. =   0.426(Ft.)
Average velocity of channel(s) =   2.213(Ft/s)
!!Warning: Water is above left or right bank elevations

Sub-Channel No. 1 Critical depth =      0.398(Ft.)
  '     '       '     Critical flow top width =    199.219(Ft.)
  '     '       '     Critical flow velocity=    2.519(Ft/s)
  '     '       '     Critical flow area =     39.688(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.250
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 84.00
Adjusted SCS curve number for AMC 3 = 96.40
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.071(In/Hr)
Rainfall intensity =      1.520(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.858
Subarea runoff =     19.480(CFS) for   20.700(Ac.)
Total runoff =    104.625(CFS)
Effective area this stream =       80.20(Ac.)
Total Study Area (Main Stream No. 1) =       80.20(Ac.)
Area averaged Fm value =    0.071(In/Hr)
End of computations, Total Study Area =           80.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  84.0
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San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-1999 Version 6.2
Rational Hydrology Study Date: 08/30/07

Great Park Specific Plan
Q100 Existing Condition
File: 570014C

L. D. King, Inc., Ontario, California - S/N 566

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.150 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

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Process from Point/Station 3.100 to Point/Station 3.200
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 460.000(Ft.)
Top (of initial area) elevation = 724.600(Ft.)
Bottom (of initial area) elevation = 710.200(Ft.)
Difference in elevation = 14.400(Ft.)
Slope = 0.03130 s(%)= 3.13
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.194 min.
Rainfall intensity = 2.992(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.858
Subarea runoff = 25.664(CFS)
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++

Process from Point/Station 3.200 to Point/Station 3.300
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 51.328(CFS)
Depth of flow = 0.729(Ft.), Average velocity = 3.865(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	50.00	0.00
3	100.00	2.00

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 51.329(CFS)
' ' flow top width = 36.441(Ft.)
' ' velocity= 3.865(Ft/s)
' ' area = 13.279(Sq.Ft)
' ' Froude number = 1.128

Upstream point elevation = 710.200(Ft.)
Downstream point elevation = 695.400(Ft.)
Flow length = 910.000(Ft.)
Travel time = 3.92 min.
Time of concentration = 16.12 min.

```
Depth of flow =   0.729(Ft.)
Average velocity =   3.865(Ft/s)
Total irregular channel flow =    51.328(CFS)
Irregular channel normal depth above invert elev. =   0.729(Ft.)
Average velocity of channel(s) =   3.865(Ft/s)

Sub-Channel No. 1 Critical depth =      0.766(Ft.)
  '     '       '     Critical flow top width =     38.281(Ft.)
  '     '       '     Critical flow velocity=    3.503(Ft/s)
  '     '       '     Critical flow area =     14.655(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      2.531(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.850
Subarea runoff =     38.879(CFS) for   20.000(Ac.)
Total runoff =     64.543(CFS)
Effective area this stream =       30.00(Ac.)
Total Study Area (Main Stream No. 1) =       30.00(Ac.)
Area averaged Fm value =    0.140(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        3.300 to Point/Station        3.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     90.575(CFS)
Depth of flow =   1.295(Ft.), Average velocity =   2.161(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              2.00
        2            50.00              0.00
        3           100.00              2.00
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     90.576(CFS)
  '     '         flow top width =     64.742(Ft.)
  '     '    velocity=    2.161(Ft/s)
  '     '         area =     41.916(Sq.Ft)
  '     '         Froude number =     0.473

Upstream point elevation =   695.400(Ft.)
Downstream point elevation =   692.400(Ft.)
Flow length =  1270.000(Ft.)
Travel time  =    9.80 min.
Time of concentration =   25.91 min.
Depth of flow =   1.295(Ft.)
Average velocity =   2.161(Ft/s)
Total irregular channel flow =    90.575(CFS)
Irregular channel normal depth above invert elev. =   1.295(Ft.)
Average velocity of channel(s) =   2.161(Ft/s)

Sub-Channel No. 1 Critical depth =      0.961(Ft.)
  '     '       '     Critical flow top width =     48.047(Ft.)
  '     '       '     Critical flow velocity=    3.924(Ft/s)
  '     '       '     Critical flow area =     23.085(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      1.903(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.834
```

Subarea runoff = 21.463(CFS) for 24.200(Ac.)
Total runoff = 86.007(CFS)
Effective area this stream = 54.20(Ac.)
Total Study Area (Main Stream No. 1) = 54.20(Ac.)
Area averaged Fm value = 0.140(In/Hr)
End of computations, Total Study Area = 54.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 78.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 08/30/07

Great Park Specific Plan Hydrology
Q100 Existing Condition
File: 570014D

L. D. King, Inc., Ontario, California - S/N 566

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.150 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++

Process from Point/Station 4.100 to Point/Station 4.200
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 910.000(Ft.)
Top (of initial area) elevation = 724.100(Ft.)
Bottom (of initial area) elevation = 706.800(Ft.)
Difference in elevation = 17.300(Ft.)
Slope = 0.01901 s(%)= 1.90
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.700 min.
Rainfall intensity = 2.392(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.847
Subarea runoff = 15.202(CFS)
Total initial stream area = 7.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++

Process from Point/Station 4.200 to Point/Station 4.300
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 24.425(CFS)
Depth of flow = 0.652(Ft.), Average velocity = 2.298(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	50.00	0.00
3	100.00	2.00

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 24.425(CFS)
' ' flow top width = 32.604(Ft.)
' ' velocity= 2.298(Ft/s)
' ' area = 10.630(Sq.Ft)
' ' Froude number = 0.709

Upstream point elevation = 706.800(Ft.)
Downstream point elevation = 699.500(Ft.)
Flow length = 1095.000(Ft.)
Travel time = 7.94 min.
Time of concentration = 25.64 min.

```
Depth of flow =   0.652(Ft.)
Average velocity =   2.298(Ft/s)
Total irregular channel flow =    24.425(CFS)
Irregular channel normal depth above invert elev. =   0.652(Ft.)
Average velocity of channel(s) =   2.298(Ft/s)

Sub-Channel No. 1 Critical depth =      0.570(Ft.)
  '     '       '     Critical flow top width =     28.516(Ft.)
  '     '       '     Critical flow velocity=    3.004(Ft/s)
  '     '       '     Critical flow area =      8.131(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      1.915(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.834
Subarea runoff =     11.319(CFS) for    9.100(Ac.)
Total runoff =     26.521(CFS)
Effective area this stream =       16.60(Ac.)
Total Study Area (Main Stream No. 1) =       16.60(Ac.)
Area averaged Fm value =    0.140(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        4.300 to Point/Station        4.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     33.711(CFS)
Depth of flow =   0.698(Ft.), Average velocity =   2.767(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              2.00
        2            50.00              0.00
        3           100.00              2.00
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     33.711(CFS)
  '     '         flow top width =     34.904(Ft.)
  '     '    velocity=    2.767(Ft/s)
  '     '         area =     12.183(Sq.Ft)
  '     '         Froude number =     0.825

Upstream point elevation =   699.500(Ft.)
Downstream point elevation =   693.100(Ft.)
Flow length =   725.000(Ft.)
Travel time  =    4.37 min.
Time of concentration =   30.01 min.
Depth of flow =   0.698(Ft.)
Average velocity =   2.767(Ft/s)
Total irregular channel flow =    33.711(CFS)
Irregular channel normal depth above invert elev. =   0.698(Ft.)
Average velocity of channel(s) =   2.767(Ft/s)

Sub-Channel No. 1 Critical depth =      0.648(Ft.)
  '     '       '     Critical flow top width =     32.422(Ft.)
  '     '       '     Critical flow velocity=    3.207(Ft/s)
  '     '       '     Critical flow area =     10.512(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      1.743(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.828
```

Subarea runoff = 10.406(CFS) for 9.000(Ac.)
Total runoff = 36.927(CFS)
Effective area this stream = 25.60(Ac.)
Total Study Area (Main Stream No. 1) = 25.60(Ac.)
Area averaged Fm value = 0.140(In/Hr)
End of computations, Total Study Area = 25.60 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 78.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 08/30/07

Great Park Specific Plan Hydrology
Q100 Existing Condition
File: 570014E

L. D. King, Inc., Ontario, California - S/N 566

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.150 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++

Process from Point/Station 5.100 to Point/Station 5.200
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 530.000(Ft.)
Top (of initial area) elevation = 724.500(Ft.)
Bottom (of initial area) elevation = 715.700(Ft.)
Difference in elevation = 8.800(Ft.)
Slope = 0.01660 s(%)= 1.66
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.650 min.
Rainfall intensity = 2.680(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.853
Subarea runoff = 22.857(CFS)
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++

Process from Point/Station 5.200 to Point/Station 5.300
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 45.715(CFS)
Depth of flow = 0.784(Ft.), Average velocity = 2.979(Ft/s)

******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	50.00	0.00
3	100.00	2.00

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 45.715(CFS)
' ' flow top width = 39.176(Ft.)
' ' velocity= 2.979(Ft/s)
' ' area = 15.347(Sq.Ft)
' ' Froude number = 0.839

Upstream point elevation = 715.700(Ft.)
Downstream point elevation = 707.500(Ft.)
Flow length = 935.000(Ft.)
Travel time = 5.23 min.
Time of concentration = 19.88 min.

```
Depth of flow =   0.784(Ft.)
Average velocity =   2.979(Ft/s)
Total irregular channel flow =    45.715(CFS)
Irregular channel normal depth above invert elev. =   0.784(Ft.)
Average velocity of channel(s) =   2.979(Ft/s)

Sub-Channel No. 1 Critical depth =      0.730(Ft.)
  '     '       '     Critical flow top width =     36.523(Ft.)
  '     '       '     Critical flow velocity=    3.427(Ft/s)
  '     '       '     Critical flow area =     13.340(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      2.231(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.844
Subarea runoff =     33.602(CFS) for   20.000(Ac.)
Total runoff =     56.460(CFS)
Effective area this stream =       30.00(Ac.)
Total Study Area (Main Stream No. 1) =       30.00(Ac.)
Area averaged Fm value =    0.140(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        5.300 to Point/Station        5.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     81.302(CFS)
Depth of flow =   0.958(Ft.), Average velocity =   3.547(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              2.00
        2            50.00              0.00
        3           100.00              2.00
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     81.302(CFS)
  '     '         flow top width =     47.877(Ft.)
  '     '    velocity=    3.547(Ft/s)
  '     '         area =     22.922(Sq.Ft)
  '     '         Froude number =     0.903

Upstream point elevation =   707.500(Ft.)
Downstream point elevation =   694.700(Ft.)
Flow length =  1345.000(Ft.)
Travel time  =    6.32 min.
Time of concentration =   26.20 min.
Depth of flow =   0.958(Ft.)
Average velocity =   3.547(Ft/s)
Total irregular channel flow =    81.302(CFS)
Irregular channel normal depth above invert elev. =   0.958(Ft.)
Average velocity of channel(s) =   3.547(Ft/s)

Sub-Channel No. 1 Critical depth =      0.922(Ft.)
  '     '       '     Critical flow top width =     46.094(Ft.)
  '     '       '     Critical flow velocity=    3.827(Ft/s)
  '     '       '     Critical flow area =     21.246(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      1.891(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.833
```

Subarea runoff = 32.399(CFS) for 26.400(Ac.)
Total runoff = 88.858(CFS)
Effective area this stream = 56.40(Ac.)
Total Study Area (Main Stream No. 1) = 56.40(Ac.)
Area averaged Fm value = 0.140(In/Hr)
End of computations, Total Study Area = 56.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 78.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 08/30/07

Great Park Specific Plan Hydrology
Q100 Existing Condition
File: 570014F

L. D. King, Inc., Ontario, California - S/N 566

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.150 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++

Process from Point/Station 6.100 to Point/Station 6.200
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 955.000(Ft.)
Top (of initial area) elevation = 722.500(Ft.)
Bottom (of initial area) elevation = 712.500(Ft.)
Difference in elevation = 10.000(Ft.)
Slope = 0.01047 s(%)= 1.05
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.331 min.
Rainfall intensity = 2.201(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.843
Subarea runoff = 15.769(CFS)
Total initial stream area = 8.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++

Process from Point/Station 6.200 to Point/Station 6.300
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 23.747(CFS)
Depth of flow = 0.663(Ft.), Average velocity = 2.162(Ft/s)

******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.00
2	50.00	0.00
3	100.00	2.00

Manning's 'N' friction factor = 0.025

Sub-Channel flow = 23.747(CFS)
' ' flow top width = 33.143(Ft.)
' ' velocity= 2.162(Ft/s)
' ' area = 10.985(Sq.Ft)
' ' Froude number = 0.662

Upstream point elevation = 712.500(Ft.)
Downstream point elevation = 706.900(Ft.)
Flow length = 970.000(Ft.)
Travel time = 7.48 min.
Time of concentration = 27.81 min.

```
Depth of flow =   0.663(Ft.)
Average velocity =   2.162(Ft/s)
Total irregular channel flow =    23.747(CFS)
Irregular channel normal depth above invert elev. =   0.663(Ft.)
Average velocity of channel(s) =   2.162(Ft/s)

Sub-Channel No. 1 Critical depth =      0.563(Ft.)
  '     '       '     Critical flow top width =     28.125(Ft.)
  '     '       '     Critical flow velocity=    3.002(Ft/s)
  '     '       '     Critical flow area =      7.910(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      1.824(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.831
Subarea runoff =     10.150(CFS) for    8.600(Ac.)
Total runoff =     25.920(CFS)
Effective area this stream =       17.10(Ac.)
Total Study Area (Main Stream No. 1) =       17.10(Ac.)
Area averaged Fm value =    0.140(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station        6.300 to Point/Station        6.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     30.770(CFS)
Depth of flow =   0.734(Ft.), Average velocity =   2.283(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              2.00
        2            50.00              0.00
        3           100.00              2.00
Manning's 'N' friction factor =   0.025
------------------------------------------------------------------
Sub-Channel flow  =     30.770(CFS)
  '     '         flow top width =     36.709(Ft.)
  '     '    velocity=    2.283(Ft/s)
  '     '         area =     13.475(Sq.Ft)
  '     '         Froude number =     0.664

Upstream point elevation =   706.900(Ft.)
Downstream point elevation =   702.600(Ft.)
Flow length =   765.000(Ft.)
Travel time  =    5.58 min.
Time of concentration =   33.39 min.
Depth of flow =   0.734(Ft.)
Average velocity =   2.283(Ft/s)
Total irregular channel flow =    30.770(CFS)
Irregular channel normal depth above invert elev. =   0.734(Ft.)
Average velocity of channel(s) =   2.283(Ft/s)

Sub-Channel No. 1 Critical depth =      0.625(Ft.)
  '     '       '     Critical flow top width =     31.250(Ft.)
  '     '       '     Critical flow velocity=    3.151(Ft/s)
  '     '       '     Critical flow area =      9.766(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
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
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      1.635(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.823
```

Subarea runoff = 5.689(CFS) for 6.400(Ac.)
Total runoff = 31.609(CFS)
Effective area this stream = 23.50(Ac.)
Total Study Area (Main Stream No. 1) = 23.50(Ac.)
Area averaged Fm value = 0.140(In/Hr)
End of computations, Total Study Area = 23.50 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 78.0

H.2 - 2012 Master Plan of Drainage

MASTER PLAN OF DRAINAGE

CITY OF ONTARIO

FINAL REPORT

MARCH 2012

MASTER PLAN OF DRAINAGE

CITY OF ONTARIO

PREPARED FOR:

CITY OF ONTARIO
Engineering Department
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RCE No. 37127
Exp: 6/30/2012

3/15/2012
Date

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Section I

EXECUTIVE SUMMARY

PURPOSE AND SCOPE:

The purpose of this Master Plan of Drainage (MPD) is to provide an update to the City of Ontario's (City's) current MPD. The current MPD, dated October 14, 1999, encompassed all the area within the City Limits at the time; this 37.2 acre area is now known as the "Old Model Colony". In 1999 the City has annexed approximately 12.8 acres of the San Bernardino County Agricultural Preserve area, which is now known as the "New Model Colony". The current MPD for the New Model Colony was prepared by L. D. King in 2000.

This study updates the master plan of drainage for the New Model Colony and the Old Model Colony, based on the latest Land Use Plan adopted by the City Council on January 27, 2010, as a part of The Ontario Plan. It presents preliminary sizes, alignments and construction cost estimates for recommended city-owned backbone storm drain facilities needed to mitigate existing drainage deficiencies and support future built-out conditions; and to establish priority to implement the recommended storm drain improvements.

This study does not include the evaluation of regional drainage facilities in the City that are owned and/or operated by other jurisdictional agencies including San Bernardino County Flood District, Caltrans and US Army Corps of Engineers.

The Master Plan of Drainage is a planning level drainage study based on most recent applicable standards and criteria, and is comprised of the following:

- Update and evaluation of inventory and capacities of the existing city-owned storm drain facilities.
- Preparation of hydrology studies to quantify peak flow rates for runoffs during major storm events, for built-out conditions based on the Land Use Plan.
- Identification and quantification of upgrades to existing City-owned storm drain systems to provide adequate flood protection and mitigate development impacts, based on the City's latest policies and goals.
- Evaluation of alternatives to eliminate drainage deficiencies utilizing the existing facilities to the maximum extent.

- Development of a master plan that establishes preliminary alignment and sizes for recommended backbone drainage facilities that will ensure adequate flood protection in the study area.

- Development of project costs and prioritization for the implementation of the recommended master planned facilities.

The master plan study should not be misconstrued as a design document. It is a planning document, intended to serve as a basis for scheduling, budgeting, and funding the implementation of the recommended backbone storm drain facilities. Some of the key tasks to be accomplished prior to constructing the recommended facilities include:

- Development of design hydrology, detailed design and final construction documents.
- Coordination with impacted jurisdictional agencies, including neighboring cities, San Bernardino County Flood Control District, Caltrans, US Army Corps of Engineers, and railroad companies.
- Processing of right-of-way and/or easement documentations.
- Processing of all applicable environmental and encroachment permits.

It should be noted that this drainage master plan study addresses flood protection goals established by the City. The water quality element of storm water generated in the study area is covered by other documents prepared by the City, such as NMC Arterial Streets Water Quality Management Plan. Facilities needed to address water quality goals should be incorporated into, or implemented in conjunction with, the implementation of the flood protection facilities recommended herein. These facilities may be located outside of City limits, such as the Mill Creek Wetland; and Water Quality Basins for the Euclid Avenue system outfall (EULD-XIV_1) and the Grove Avenue system outfall (GROV-XIII-1).

WATERSHED AND EXISTING FACILITIES:

The City presently owns and maintains over 136 miles of storm drains, mostly serving the Old Model Colony area of the City. In addition to the city-owned storm drains there are the local state-owned storm drains along Caltrans' I-10 and SR-60 corridors. All the city-owned and state-owned facilities drain to a number of regional backbone facilities owned and operated by San Bernardino County Flood Control District that are tributary to the US Army Corps of Engineers' Prado Flood Control Basin.

RECOMMENDED FACILITIES:

Recommended city-owned master-planned storm drains facilities, totaling approximately 86.3 miles in length, are presented in Section IV of this report. The proposed facilities have been prioritized by projects and classified into three categories, generally following the criteria below:

1. Category A projects include mainline storm drain facilities that will relieve flooding in areas without any current storm drain facilities. Category A includes fifteen (15) projects with a total construction cost of approximately $ 70 million.

2. Category B projects include mainline storm drain facilities that will mitigate impacts of additional development, and improved drainage conditions in City streets with existing storm drains, based on City's Flood Protection Goals. Category B includes twenty eight (28) projects with a total construction cost of approximately $ 77 million.

3. Category C Projects will service future development within the City. Category C includes 19 projects with a total construction cost of approximately $136 million.

Estimated construction cost for each of the master planned projects is summarized in the following Table.

CITY OF ONTARIO

MASTER PLAN OF DRAINAGE

PROJECT COST ESTIMATES* - BY PRIORITY

*(SYSTEM DESCRIPTION LIMITS, LOCATIONS AND ESTIMTATED COSTS ARE PRELIMINARY ONLY. ULTIMATE LOCATIONSAND COSTS TO BE DETERMINED UPON FINAL ENGINEERING.)

PRIORITY	LOCATION	LIMITS	ESTIMATED COST OLD MODEL COLONY	ESTIMATED COST NEW MODEL COLONY
A-1	FRANCIS STREET	CAMPUS AVE TO WEST CUCAMONGA CHANNEL	$ 8,613,443	
A-2	5TH STREET/PRINCETON 5TH STREET	BERLYN AVE TO WEST CUCAMONGA CHANNEL 5TH STREET TO WEST CUCAMONGA CHANNEL	$ 1,794,104	
A-3	SIXTH STREET	GROVE AVE TO CUCAMONGA CHANNEL	$ 6,559,543	
A-4	MOUNTAIN AVENUE	PHILLIPS STREET TO PHILADELPHIA STREET/ CYPRESS-SULTANA CHANNEL	$ 6,529,068	
A-5	4TH STREET 5TH STREET	CUCAMONGA CHANNEL TO CORONA AVE 4TH STREET/ CORONA AVE TO EL DORADO AVE	$ 5,611,713	
A-6	SAN ANTONIO AVENUE	FRANCIS STREET TO CYPRESS CHANNEL	$ 11,304,443	
A-7	PARCO AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,347,323	
A-8	GROVE AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 1,848,453	
A-9	CUCAMONGA AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,080,580	
A-10	BON VIEW AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,461,144	
A-11	CAMPUS AVENUE	CEDAR STREET TO RIVERSIDE DR	$ 3,085,019	
A-12	SULTANA AVENUE	PHILLIPS STREET TO PHILADELPHIA STREET	$ 3,638,916	
A-13	CAMPUS AVENUE MISSION BOULEVARD	STATE STREET TO FRANCIS STREET CUCAMONGA AVE TO GROVE AVE	$ 3,596,108	
A-14	SAN ANTONIO AVENUE PHILLIPS STREET	FRANCIS STREET TO PHILLIPS STREET SAN ANTONIO AVE TO EUCLID AVE	$ 4,828,448	
A-15	G STREET ALLYN AVENUE	ALLYN AVE TO WEST CUCAMONGA CHANNEL G STREET TO 5TH STREET	$ 5,641,383	
		PRIORITY A SUBTOTAL	**$ 69,939,682**	**$ -**
B-1	G STREET	DEL NORTE AVE TO CORONA AVE	$ 2,391,943	
B-2	DEL NORTE AVENUE IMPERIAL AVENUE	I STREET TO G STREET I STREET TO G STREET	$ 1,055,643	
B-3	WALKER AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 1,620,005	
B-4	BAKER AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,288,730	
B-5	VINE AVENUE LAUREL AVENUE G STREET	HOLT BLVD TO G ST. B STREET TO HOLT BLVD LEMON AVE TO EUCLID AVE	$ 3,151,173	
B-6	VINE AVENUE	G STREET TO 6TH STREET	$ 3,311,598	
B-7	SULTANA AVENUE MELROSE AVENUE	HOLT BVLD TO 5TH STREET MONTEREY AVE/HOLT BLVD TO EMPORIA STREET	$ 5,661,134	
B-8	MOUNTAIN AVENUE BOULDER AVENUE I STREET	STATE STREET TO HOLT BLVD HOLT BLVD TO I STREET MOUNTAIN AVE TO BOULDER AVE	$ 10,842,718	
B-9	MOUNTAIN AVENUE BOULDER AVENUE G STREET	I-10 SAN BERNARDINO FREEWAY TO I STREET 5TH STREET TO I STREET BOULDER AVE TO MOUNTAIN AVE	$ 4,943,534	
B-10	MOUNTAIN AVENUE	PHILLIPS STREET TO STATE STREET	$ 1,869,181	

PRIORITY	LOCATION	LIMITS	ESTIMATED COST OLD MODEL COLONY	ESTIMATED COST NEW MODEL COLONY
B-11	OAKLAND AVENUE	PHILLIPS STREET TO HOLT BLVD	$ 6,045,214	
	PALM AVENUE	PHILIPS STREET TO MISSION BLVD		
	FRANCIS STREET	EUCLID AVE TO FERN AVE		
	FERN AVENUE	FRANCIS STREET TO PHILADELPHIA STREET		
B-12	SULTANA AVENUE	PHILLIPS STREET TO STATE STREET	$ 2,879,370	
	WALNUT STREET	EUCLID AVE TO SULTANA AVE		
	EUCLID AVENUE	WALNUT STREET TO I-60 POMONA FREEWAY		
	FERN AVENUE	WALNUT STREET TO I-60 POMONA FREEWAY		
B-13	BON VIEW AVENUE	MISSION BLVD TO FRANCIS STREET	$ 3,082,690	
B-14	CUCAMONGA AVENUE	BELMONT STREET TO FRANCIS STREET	$ 1,905,493	
B-15	6TH STREET	BENSON AVE TO FUCHSIA AVE	$ 1,900,720	
	5TH STREET	BENSON AVE TO HELEN AVE		
	4TH STREET	BENSONAVE TO OAKS AVE		
	BENSON AVENUE	I-10 SAN BERNARDINO FREEWAY TO 6 STREET		
B-16	BENSON AVENUE	I STREET TO STATE STREET	$ 3,427,431	
B-17	I STREET	BENSON AVE TO ELDERBERRY AVE	$ 3,692,909	
	G STREET	BENSON AVE TO OAKS AVE		
	D STREET	BENSON AVE TO OAKS AVE		
	STONERIDGE COURT	BENSON AVE TO D STREET		
	BROOKS STREET	BENSON AVE TO OAKS AVE		
B-18	BENSON AVENUE	PHILADELPHIA STREET TO FRANCIS AVE	$ 2,523,100	
	FRANCIS AVENUE	BENSON AVE TO OAKS AVE		
	OAKS AVENUE	SR-60 POMONA FREEWAY TO PHILADELPHIA STREET		
B-19	BENSON AVENUE	PHILLIPS STREET TO MISSION BLVD	$ 4,051,019	
	MISSION BOULEVARD	BENSON AVE TO MAGNOLIA AVE		
	PHILLIPS STREET	BENSON AVE TO OAKS AVE		
B-20	I STREET	LA PALOMA AVE TO WEST CUCAMONGA CHANNEL	$ 1,200,169	
	D STREET	GROVE AVE TO WEST CUCAMONGA CHANNEL		
B-21	BON VIEW AVENUE	SR-60 POMONA FREEWAY TO FRANCIS STREET	$ 1,352,458	
B-22	CUCAMONGA AVENUE	SR-60 POMONA FREEWAY TO FRANCIS STREET	$ 1,071,225	
B-23	GROVE AVENUE	SR-60 POMONA FREEWAY TO FRANCIS STREET	$ 1,193,010	
B-24	PARCO AVENUE	SR-60 POMONA FREEWAY TO PHILADELPHIA STREET	$ 772,570	
B-25	BAKER AVENUE	BAKER AVENUE (FRANCIS STREET TO ACACIA STREET)	$ 2,288,342	
	VINEYARD AVENUE	VINEYARD AVENUE (FRANCIS STREET TO LOCUST STREET)		
	CARLOS AVENUE	CARLOS AVENUE (LOCUST STREET TO ELM CT)		
	HELLMAN AVENUE	HELLMAN AVENUE (PHILADELPHIA STREET TO CEDAR STREET)		
B-26	CONVENTION CENTER WAY	DEARBORN CT TO HOLT BLVD	$ 939,320	
	HOLT BOULEVARD	CONVENTION CENTER WAY TO CUCAMONGA CREEK		
B-27	MISSION BOULEVARD	ARCHIBALD AVE TO TURNER AVE	$ 870,838	
B-28	6TH STREET	GROVE AVE TO WEST CUCAMONGA CHANNEL	$ 457,930	
		PRIORITY B SUBTOTAL	**$ 76,789,462**	**$ -**
C-1	MILLIKEN AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 3,167,560
C-2	MILL CREEK AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 12,209,450
C-3	HAVEN AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 9,656,460
C-4	TURNER AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 9,650,630
C-5	ARCHIBALD AVENUE	COUNTY LINE CHANNEL TO SCHAEFER AVE.		$ 7,776,560
C-6	CHINO AVENUE	E/O CUCAMONGA CHANNEL TO N/O CHINO AVE		$ 1,067,550
C-7	EDISON AVENUE	E/O CUCAMONGA CHANNEL TO N/O EDISON AVE		$ 959,420
C-8	EUCALYPTUS AVENUE	E/O CUCAMONGA CHANNEL TO N/O EUCALYPTUS AVE		$ 607,420

PRIORITY	LOCATION	LIMITS	ESTIMATED COST	
			OLD MODEL COLONY	NEW MODEL COLONY
C-9	HELLMAN AVENUE	RIVERSIDE DR TO CHINO AVE		$ 483,560
C-10	HELLMAN AVENUE EDISON AVENUE	EUCALYPTUS AVE TO EDISON AVE HELLMAN AVE TO VINEYARD AVE		$ 5,232,040
C-11	HELLMAN AVENUE SCHAEFER AVENUE	EDISON AVE TO SCHAEFER AVE HELLMAN AVE TO VINEYARD AVE		$ 4,178,240
C-12	MERRILL AVENUE	W/O CUCAMONGA CHANNEL TO EUCALYPTUS AVE		$ 4,894,643
C-13	WALKER AVENUE	CUCAMONGA CREEK TO CHINO AVE		$ 31,153,650
C-14	GROVE AVENUE	MERRILL AVE TO CHINO AVE		$ 10,251,244
C-15	MERRILL AVENUE BON VIEW AVENUE	EUCLID AVE TO BON VIEW AVE MERRILL AVE TO CHINO AVE		$ 14,384,508
C-16	EUCLID AVENUE	MERRILL AVE TO RIVERSIDE DR		$ 13,651,550
C-17	ARCHIBALD AVENUE	INLAND EMPIRE BLVD TO AIRPORT DR.	$ 1,885,598	
C-18	INLAND EMPIRE BLVD. PLAZA SERENA	CUCAMONGA CHANNEL TO VINEYARD AVE VINEYARD AVE TO ORANGE AVE	$ 3,369,558	
C-19	FIFTH STREET	BALBOA AVE TO CUCAMONGA CHANNEL	$ 1,193,844	
		PRIORITY C SUBTOTAL	**$ 6,448,999**	**$ 129,324,484**
		PRIORITY C TOTAL	**$ 135,773,483**	
		ESTIMATED COSTS	**$ 153,178,143**	**$ 129,324,484**
		GRAND TOTAL	**$ 282,502,627**	

Section II

INTRODUCTION

STUDY AREA

The City of Ontario (City) encompasses an area of approximately 50 square miles, located in the southwest portion of the County of San Bernardino. As shown in *Exhibit 1 – Vicinity Map*, the City borders with the Cities of Upland and Rancho Cucamonga to the north, Cities of Montclair and Chino to the west, Cities of Chino and Eastvale to the south, and Cities of Eastvale, Jurupa Valley and Fontana to the east.

Prior to 1999 the City was comprised of approximately 37.2 square miles of mostly developed area now known as the Old Model Colony (OMC). In 1999, approximately 12.8 square miles of San Bernardino County Agricultural Preserve area, known as the Ontario Sphere of Influence, was annexed as a part of the City. This annexed area, now known as the New Model Colony (NMC), generally lies to the south of Riverside Drive and is primarily comprised of agricultural land, dairy farms and open space areas. As shown in *Exhibit 2 – Study Area Map*, the portions of OMC lying to the east or west of Cucamonga Creek are known as OMC-East or OMC-West, respectively; and portions of NMC generally lying to the east or west of Cucamonga Creek are known as NMC-East and NMC-West, respectively.

The study area lies in the western portion of the Santa Ana River's watershed, upstream of the Prado Flood Control Basin. It is in a 277 square-mile area referred to as Zone 1 by San Bernardino County Flood Control District (SBCFCD). Zone 1 generally slopes towards the south, encompassing the alluvial fan from the San Gabriel Mountains to Santa Ana River. Four major regional channel systems traverse Zone 1 in a north-south direction; they include *San Antonio Channel, Cucamonga Channel, Day Creek Channel and San Sevaine Channel.*

San Antonio Channel runs along the westerly boundaries of San Bernardino County through the Cities of Montclair, Chino and Chino Hills. The northwest portion of the City drains to San Antonio Channel via the City of Montclair's San Bernardino Avenue Storm Drain, SBCFCD's West State Street Storm Drain and SBCFCD's Chino Storm Drain. All three storm drains extend westerly from the City to San Antonio Channel, through the cities of Montclair or Chino. The area lying to the north of 4th Street and west of Mountain Avenue is tributary to San Bernardino Avenue Storm Drain; the area between 4th Street and State Street, and between Mountain Avenue and San Antonio Avenue, is tributary to West State Street Storm Drain; and the area to the south of State Street and

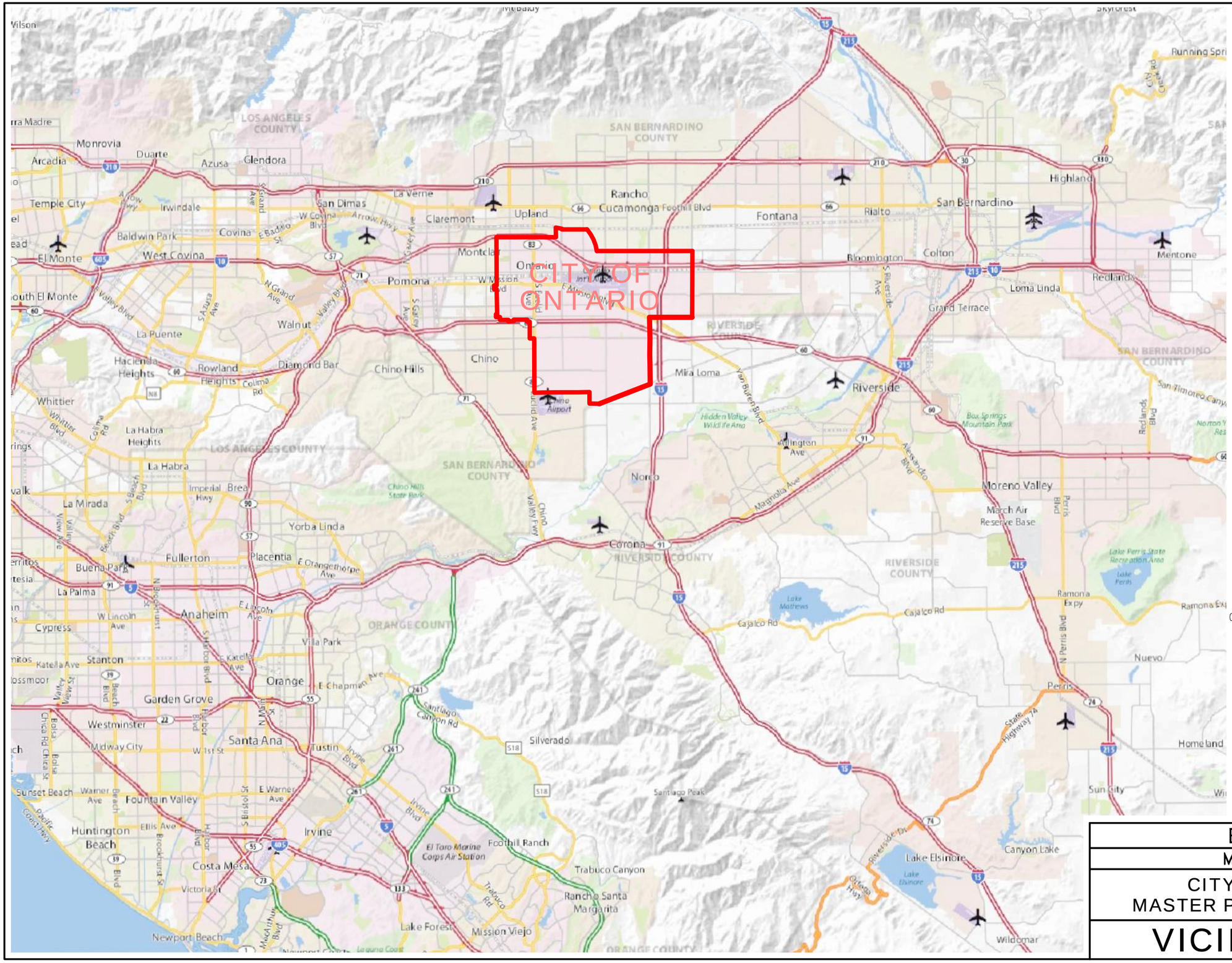

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EXHIBIT 1

MARCH 2012

CITY OF ONTARIO
MASTER PLAN OF DRAINAGE

VICINITY MAP

UPLAND

RANCHO CUCAMONGA

MONTCLAIR

CHINO

S.B. COUNTY

FONTANA

JURUPA VALLEY

EASTVALE

8TH ST

6TH ST

4TH ST

GROVE AVE

VINEYARD AVE

N ARCHIBALD AVE

HAVEN AVE

MILLIKEN AVE

SR83

10

15

SR60

OMC-WEST

OMC-EAST

EUCLID AVE

AIRPORT DR

MISSION BLVD

PHILLIPS ST

FRANCIS ST

PHILADELPHIA ST

BENSON AVE

ONTARIO INTERNATIONAL AIRPORT

CUCAMONGA CHANNEL

JURUPA ST

WINEVILLE AVE

ETIWANDA AVE

SAN ANTONIO AVE

RIVERSIDE DR

MOUNTAIN AVE

CHINO AVE

SCHAEFER AVE

EDISON AVE

EUCALYPTUS AVE

MERRILL AVE

NMC-WEST

NMC-EAST

ARCHIBALD AVE

TURNER AVE

HAVEN AVE

S MILLIKEN AVE

BON VIEW AVE

WALKER AVE

BELLGRAVE AVE

CHINO AIRPORT

REMINGTON AVE

SAN BERNARDINO/ RIVERSIDE COUNTY LINE

LEGEND

NMC – NEW MODEL COLONY

OMC – OLD MODEL COLONY

CITY LIMIT LINE

COUNTY LIMIT LINE

GRAPHIC SCALE

0 2,500 5,000 10,000

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EXHIBIT 2

MARCH 2012

CITY OF ONTARIO
MASTER PLAN OF DRAINAGE

STUDY AREA MAP

west of Magnolia Avenue is tributary to Chino Storm Drain via City of Chino's existing and/or master planned storm drains.

Cucamonga Channel and a number of its major tributary systems traverse through the central portion of the City. Some of the regional storm drain systems (SBCFCD-owned) in the City that are tributary to Cucamonga Channel include the following:

- West Cucamonga Channel System including 8th Street Basins, Princeton Basin, East State Street Storm Drain, Francis Street Storm Drain, and Ely Basins.
- Riverside Drive Storm Drain # 2 and Lower Cucamonga Spreading Grounds.
- Deer Creek Channel and Turner Basins.
- Lower Deer Creek Channel, Commerce Center Storm Drain, and Chris Basin.
- County Line Channel.

Day Creek Channel System, which includes the Day Creek Channel, Lower Etiwanda Creek Channel, Wineville Basin, and Riverside Basin, is located to the east of Interstate 15. The easterly portion of the study area from Milliken Avenue to Etiwanda Avenue (easterly limits of the City) drains to the Day Creek Channel System.

The study area does not drain to *San Sevaine Channel*, which lies to the east of the City boundary.

Areas located in the southwest portion of the City that do not drain to the major watercourses outlined above, drain to the Prado Flood Control Basin via other regional and/or backbone facilities in the City of Chino, which include the following:

- *SBCFCD's Cypress Channel* system including Magnolia Storm Drain and Sultana-Cypress Storm Drain, which drains south through the City of Chino to the Prado Flood Control Basin.
- *Airport Channel (City of Chino's master planned Euclid Avenue Storm Drain – Line I)*, which drains along the easterly side of Euclid Avenue, from Merrill Avenue to Prado Flood Control Basin. This system conveys runoff generated in the cities of Ontario and Chino.
- *Grove Avenue Storm Drain (City of Chino's master planned storm drain- Line J),* which drains south from Merrill Avenue to an existing RCB under the runway in Chino Airport; thence, through the City of Chino to Prado Flood Control Basin. This system conveys runoff generated in the cities of Ontario and Chino.

- *Future Walker Avenue Storm Drain (City of Chino's master planned storm drain – Line A)*, is a planned storm drain system that will extend south of Merrill Avenue through Walker Avenue and Remington Avenue to drain to Cucamonga Creek in the City of Chino. Essentially all the flows conveyed by this storm drain will be from its tributary drainage area in the City of Ontario.

EXISTING STORM DRAIN FACILITIES

As shown in *Exhibit 3 – Existing Facilities Map* the City of Ontario owns and maintains approximately 137 miles of existing storm drain conduits, culverts and channels of various sizes and materials.

Non-Continuous Systems (Gaps)

Within the City, there are storm drain systems which are non-continuous, or existing systems which accept and convey flows in a conduit (pipe, box or open channel) and then discharge downstream into the street or a ditch, which are picked up eventually by another conduit.

Most notable are these locations:

- Intersection of Mountain Avenue and 6th Street – an extensive system of drainage facilities collects storm flows from the north, east and west side of this intersection, which is then surface-discharged on Mountain Avenue via an outlet basin (bubbler) south of the intersection.

- West of Archibald Avenue, between Inland Empire Drive and Airport Drive – an existing pipe discharges tributary flows just south of Inland Empire Drive at this location via an open ditch. Flows are conveyed by conduit beneath the San Bernardino Freeway (I-10) to another open ditch, then via a double 48" pipe beneath Guasti Road to another open ditch, thence, eventually to an existing pipe just north of Airport Drive. It should be noted that the open ditches are located in undeveloped areas.

- Mission Boulevard from the westerly City limits to Grove Avenue – most north-south streets intersecting Mission Boulevard, between Benson Avenue and Grove Avenue have small pipes or box culvert that conveys surface flows across Mission Boulevard and discharges them in the streets.

- Culvert crossing under SR-60 at Fern Avenue, Bon View Avenue and Cucamonga Avenue – Tributary flows north of the freeway are conveyed across the freeway embankment and discharged into the three street cul-de-sacs via large parkway culvert outlets.

8th ST STORM DRAIN
8th ST BASINS
8th ST INTERCEPT
UPLAND
RANCHO CUCAMONGA
MONTCLAIR
UPLAND
MONTCLAIR BASINS
SAN BERNARDINO AVE STORM DRAIN
SAN ANTONIO CHANNEL
BROOKS ST STORM DRAIN
BROOKS BASIN
WEST STATE ST STORM DRAIN
MONTCLAIR
S.B. COUNTY
WEST STATE ST STORM DRAIN
EAST STATE ST STORM DRAIN
PRINCETON BASIN
CUCAMONGA-GUASTI REGIONAL PARK
DEER CREEK CHANNEL
TURNER BASINS
INLAND EMPIRE BLVD
ONTARIO INTERNATIONAL AIRPORT
CUCAMONGA CHANNEL
COMMERCE CENTER STORM DRAIN
S.B. COUNTY
CHINO
S.B. COUNTY
FONTANA
SAN SEVAINE CHANNEL
DAY CREEK CHANNEL
LOWER ETIWANDA CREEK CHANNEL
WINEVILLE BASIN
FRANCIS ST STORM DRAIN
WEST CUCAMONGA CHANNEL
ELY BASINS
CHINO STORM DRAIN
SULTANA CYPRESS STORM DRAIN
MAGNOLIA STORM DRAIN
RIVERSIDE BASIN
SAN BERNARDINO/ RIVERSIDE COUNTY LINE
EASTVALE
JURUPA VALLEY
RIVERSIDE DR STORM DRAIN 2
GROVE AVE BASIN
RIVERSIDE DR STORM DRAIN 1
RIVERSIDE DR STORM DRAIN 1
GROVE AVE BASIN DRAIN
RIVERSIDE DR STORM DRAIN 2
LOWER CUCAMONGA SPREADING GROUNDS
CHRIS BASIN
LOWER DEER CREEK CHANNEL
CHINO CREEK
CYPRESS CHANNEL
SAN ANTONIO CHANNEL
AIRPORT CHANNEL
CHINO AIRPORT
GROVE AVE STORM DRAIN
COUNTY LINE CHANNEL
BELLGRAVE AVE
TO PRADO BASIN

LEGEND

- COUNTY LIMITS
- CITY LIMITS
- ULTIMATE REGIONAL (SBCFCD) OPEN CHANNELS WITH SIZES IN INCHES
- ULTIMATE REGIONAL (SBCFCD) STORM DRAINS WITH SIZES IN INCHES
- ULTIMATE REGIONAL (SBCFCD) DETENTION BASINS
- INTERIM REGIONAL (SBCFCD) OPEN CHANNELS WITH SIZES IN INCHES
- INTERIM REGIONAL (SBCFCD) STORM DRAINS WITH SIZES IN INCHES
- INTERIM REGIONAL (SBCFCD) DETENTION BASINS
- STORM DRAINS – CALTRANS
- OPEN CHANNELS – CITY OF ONTARIO WITH SIZES IN INCHES
- STORM DRAINS – CITY OF ONTARIO WITH SIZES IN INCHES
- STORM DRAINS/CHANNELS – CITY OF CHINO WITH SIZES IN INCHES
- EXISTING STORM DRAINS – CITY OF MONTCLAIR

GRAPHIC SCALE
0 1,000 2,000 3,000 4,000 5,000
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EXHIBIT 3
MARCH 2012
CITY OF ONTARIO
MASTER PLAN OF DRAINAGE
EXISTING FACILITIES MAP

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- Grove Avenue between the Grove Avenue Basin and the southerly City limits – the Grove Avenue Basin outlets onto Grove Avenue via the Grove Avenue Basin Drain, a 66" storm drain. Downstream of the storm drain, these flows travel on surface for more than two miles to an existing concrete-lined trapezoidal channel in Chino Airport.

- Euclid Avenue between Riverside Drive and the southerly City limits – surface flows from the north are conveyed via pipes and gutters into Riverside Drive, where they then flow on street surface and in unimproved parkways to the southerly City limits.

LAND USE PLAN

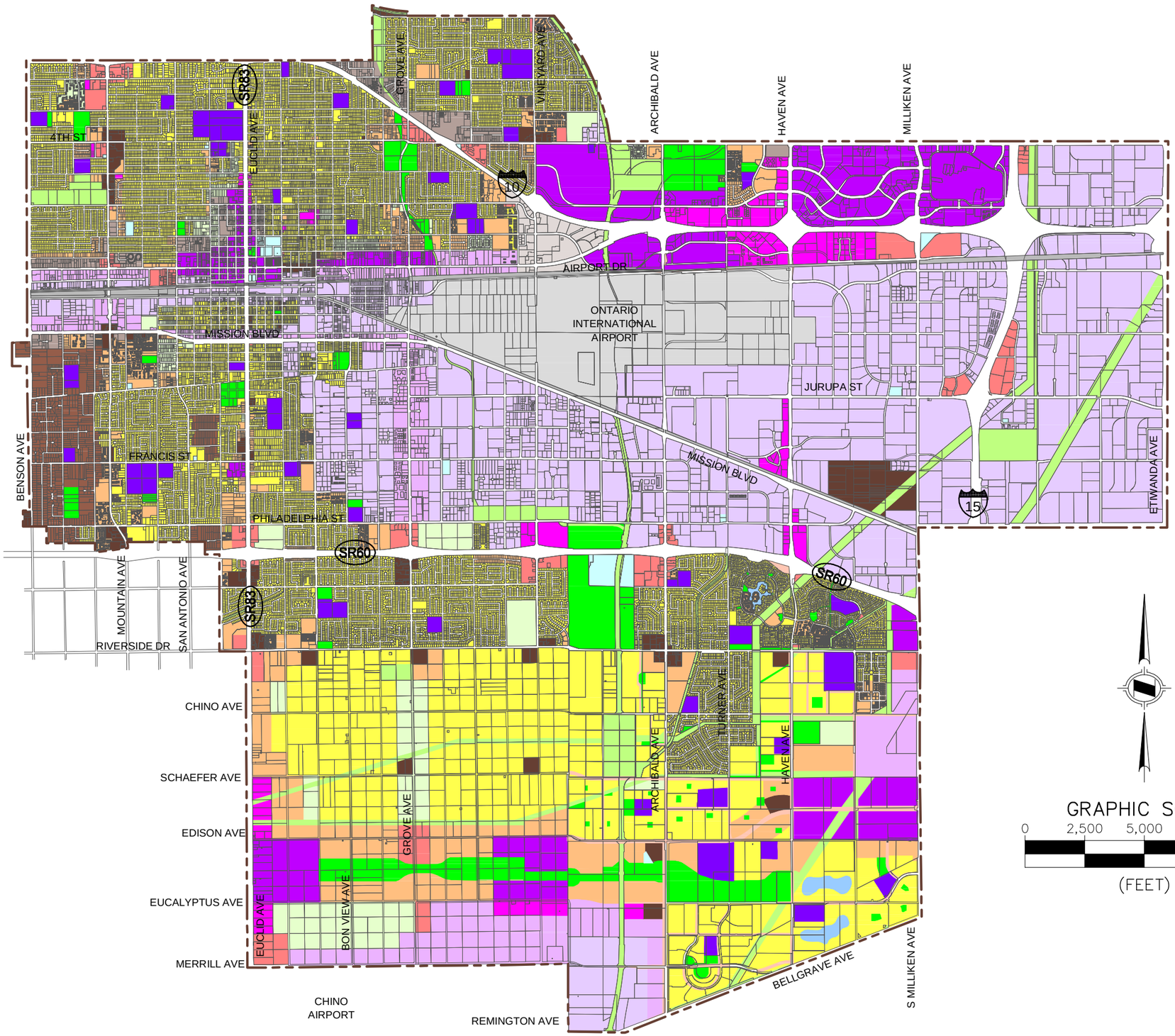
As a part of The Ontario Plan, the City adopted a new Land Use Plan on January 27, 2010. The new Land Use Plan, shown in *Exhibit 4 – Land Use Plan,* includes changes in land uses in areas of New Model Colony that will result in an increase of storm runoff generated from these areas due to increase in density and imperviousness. Areas with changes in land use include the following:

- Area east of Euclid Avenue, between Chino Avenue and Schaefer Avenue changed from Low-Medium Density Residential to Medium Density Residential.

- Areas between Edison Avenue and Eucalyptus Avenue, and between Campus Avenue and Haven Avenue, changed from Low-Medium Density Residential to Medium Density Residential.

- Areas between Chino Avenue and Edison Avenue, and between Mill Creek Avenue and Turner Avenue, changed from Low-Medium Density Residential to Medium Density Residential and Mixed Use.

- Area south of Riverside Avenue and east of Grove Avenue changed from Low-Medium residential to Medium Density Residential.



Residential

- Rural
- Low Density
- Low - Medium Density
- Medium Density
- High Density

Retail/Service

- Neighborhood Commercial
- General Commercial
- Office Commercial
- Hospitality

Employment

- Business Park
- Industrial

Other

- Open Space - Non Recreation
- Open Space - Parkland
- Open Space - Water
- Public Facility
- Public School
- Airport
- Rail
- Landfill

Mixed Use

- Mixed Use

GRAPHIC SCALE

0 2,500 5,000 10,000

(FEET)

*ADOPTED BY CITY COUNCIL
ON JANUARY 27, 2010

03/10/2012

EXHIBIT 4

MARCH 2012

CITY OF ONTARIO
MASTER PLAN OF DRAINAGE

LAND USE PLAN

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In addition to the land use changes noted above, The Ontario Plan also includes changes to the Ontario Master Plan of Streets in the NMC area, resulting in changes in surface flow patterns. Street segments with changes include:

- Change in alignment of Merrill Avenue between Walker Avenue and Hellman Avenue.
- Change in alignment of Eucalyptus Avenue between Walker Avenue and Hellman Avenue.
- Change in alignment of Walker Avenue between Merrill Avenue and Eucalyptus Avenue.
- Change in alignment of Schaefer Avenue between Archibald Avenue and Haven Avenue.
- Extension of Chino Avenue between Mill Creek Avenue and Hamner Avenue.

SCOPE OF THE STUDY

Hunsaker and Associates Irvine, Inc. was contracted by the City of Ontario to update its Master Plan of Drainage. The scope of the project included the following tasks:

1. Preparation of detailed hydrologic and hydraulic studies to quantify peak flow rates for storm runoff generated within the City, based on present criteria.

2. Verification of existing City-owned storm drain capacities to identify deficiencies based on built-out conditions in conformance with the City's latest Land Use Plan dated January 27, 2010.

3. Evaluation of alternative solutions to eliminate drainage deficiencies, while utilizing the existing storm drains and storm drain projects that have already been designed and approved by the City to the maximum extent possible.

4. Development of preliminary alignment and sizes for recommended mainline storm drains needed to provide adequate flood protection in the City.

5. Development of a prioritized list of projects for the implementation of the master planned storm drain improvements, and estimates of associated project costs.

6. Preparation of a Comprehensive Master Plan of Drainage Report that summarizes the study along with its findings, assumptions, criteria, conclusions and recommendations, including all relevant maps, exhibits, tables, and supporting calculations.

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REFERENCE MATERIAL

The following material was used in the development of this study:

Previous Studies: Following are the relevant studies and reports used during the development of this MPD:

- The Ontario Plan, City of Ontario, dated January 27, 2010.

- Ontario Master Plan of Major Storm Drains – Prepared October 14, 1999; Updated October 10, 2003.

- Master Plan of Drainage for the New Model Colony, prepared by L.D. King, Inc., dated April 11, 2000.

- New Model Colony Master Plan of Drainage Update, 95 Percent Submittal, prepared by Stantec for NMC Builders, LLC., dated February 9, 2007.

- City of Chino's Master Plan of Drainage, prepared by BSI Consultants, Inc., dated November 1993.

- Storm Drain Master Plan Update Report, Sub-Area 2 – Chino Agricultural Preserve Area, City of Chino, prepared by Bureau Veritas North America, Inc., dated December 2007.

- City of Montclair Master Plan of Drainage, prepared by Hromadka & Associates, dated February 2006.

- Hydrology Sub-Area Map, prepared by City of Upland, Public Works Department.

As-Built Drawings:
As-built drawings for existing storm drain improvements gathered from the City of Ontario and San Bernardino County Flood Control District were used to verify and update the storm drain data extracted from the City's GIS files.

Approved Storm Drain Projects:
Design Drawings for proposed storm drain projects that have been approved for construction by the City of Ontario were evaluated and utilized in the development of future facilities recommended in this master plan. These projects include:

- ARCHIBALD AVENUE - FROM COUNTY LINE CHANNEL TO RIVERSIDE DRIVE, prepared by Stantec Consulting, Inc., dated December 17, 2007.

- MILLIKEN AVENUE/HAMNER AVENUE - FROM BELLEGRAVE AVENUE TO RIVERSIDE DRIVE, prepared by Stantec Consulting, Inc., dated December 17, 2007.

- MILL CREEK AVENUE – FROM BELLEGRAVE AVENUE TO RIVERSIDE DRIVE, prepared by Stantec Consulting, Inc. December 17, 2007.

- BELLEGRAVE AVENUE – FROM ARCHIBALD AVENUETO MILLIKEN AVENUE, prepared by Stantec Consulting, Inc. December 17, 2007.
- MERRILL AVENUE – FROM CARPENTER AVENUE TO MILLIKEN AVENUE, prepared by Stantec Consulting, Inc. December 17, 2007.

- RIVERSIDE DRIVE – FROM VINEYARD AVENUE TO MILLIKEN AVENUE, prepared by Stantec Consulting, Inc. December 17, 2007.

- FRANCIS STREET STORM DRAIN AND STREET REHABILITATION PROJECT, prepared by SB&O Planning Design Consultants, dated June 1, 2005.

Geographic Information System:

Shape files from City of Ontario's GIS files were used in the development of the base-map and overlay data including contour lines, streets, easements, property lines, jurisdictional boundaries, soil classification, and existing storm drain facilities (underground conduits, channels and basins).

Section III

CRITERIA

This section outlines the criteria to be used as a guide for the development of design hydrology and final design of storm drain facilities in the City of Ontario. This criteria has been used to the extent applicable in the development of preliminary hydrology and hydraulic evaluation of existing and proposed facilities recommended in this master plan study.

FLOOD PROTECTION GOALS:

Provide and size storm drains, when needed, to meet the following Flood Protection Goals:

For Arterial and Collector Streets (*):

1. Peak runoff during 25-year return frequency storm events shall be contained within curb-to-curb capacity of the street.

2. Peak runoff during 100-year return frequency storm events shall be contained within the limits of street rights-of-way, and the water surface elevation of the street flows shall be at least one foot lower than the lowest finished floor elevation of adjacent inhabitable structures.

(*) As identified in the Master Plan of Streets and Highways.

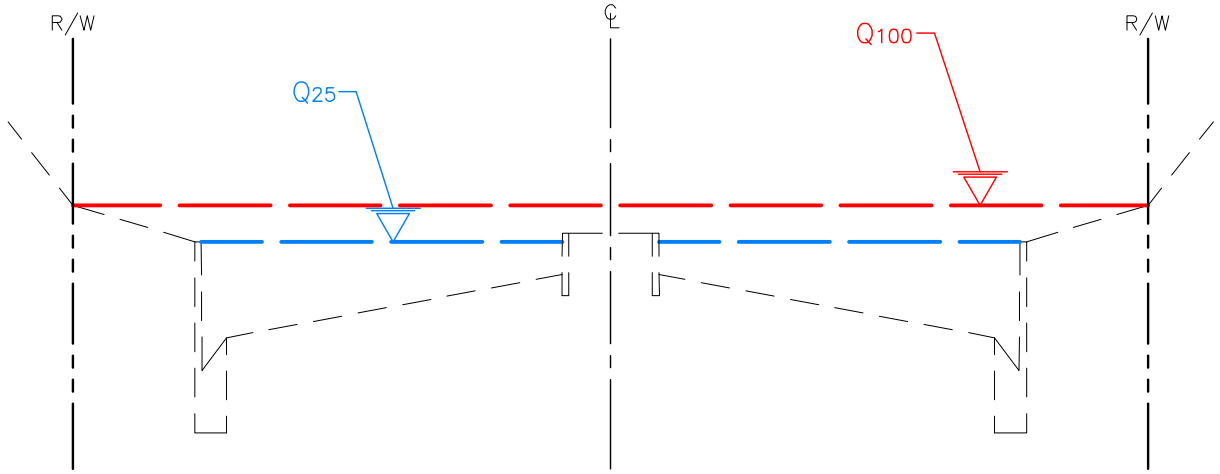
For Local and Residential Streets:

1. Peak runoff during 10-year return frequency storm events shall be contained within curb-to-curb capacity of the street.

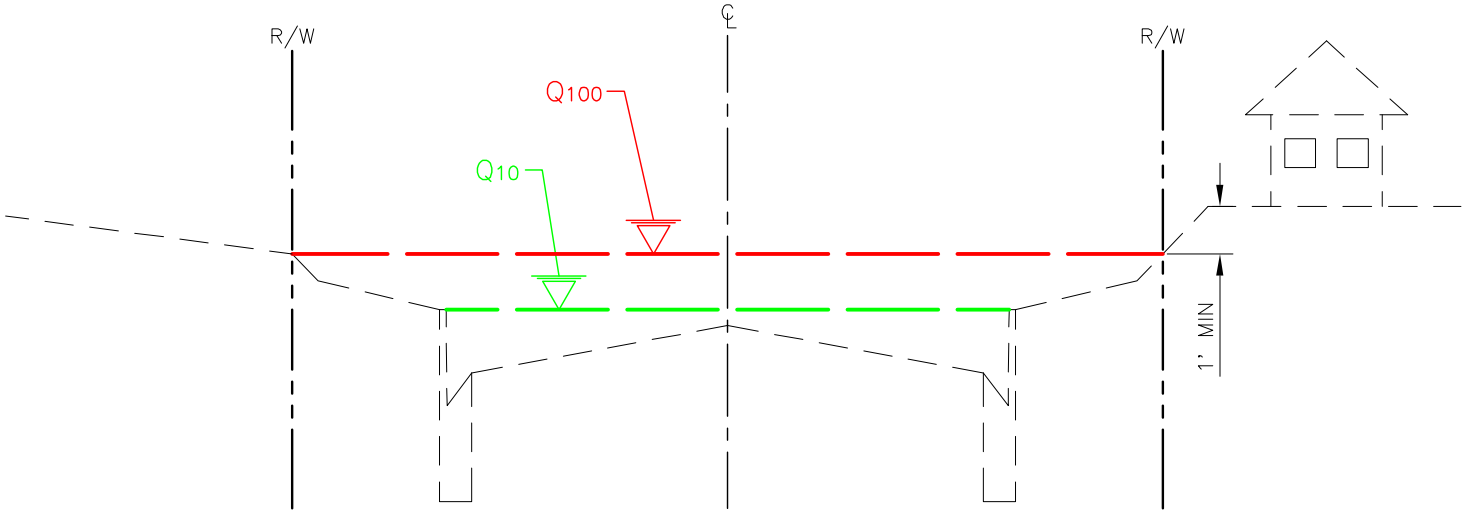
2. Peak runoff during 100-year frequency storm events shall be contained within the limits of street rights-of-way, and the water surface elevation of the street flows shall be at least one foot lower than the lowest finished floor elevation of adjacent inhabitable structures.

Special Flood Protection Consideration:

1. The best possible and practical flood protection shall be provided for high pedestrian areas (such as schools, hospital, retail centers, public parks, etc.), and emergency facilities.



ARTERIAL & COLLECTOR STREETS



LOCAL & RESIDENTIAL STREETS

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EXHIBIT 5

MARCH 2012

CITY OF ONTARIO
MASTER PLAN OF DRAINAGE

FLOOD PROTECTION GOALS

HYDROLOGY:

This master plan study has been prepared using the 2011 version of Advanced Engineering Software's (AES's) hydrology program, which is based on the procedures and standards set forth in the San Bernardino County Hydrology Manual, 1986 Revision (Hydrology Manual). Based on the size of each drainage area, the Rational Method or the Unit Hydrograph method was used to calculate peak runoff for storms of 10, 25 and 100 year return frequencies ($\mathbf{Q_{10}}$, $\mathbf{Q_{25}}$ and $\mathbf{Q_{100}}$).

RUNOFF COEFFICIENT:

The runoff coefficient is based on the surface and sub-surface characteristics of the watershed. As shown in *Exhibit 6 - Soils Map*, most of the soils in the study area are comprised of well-draining sand and sandy loam, classified as Soil Groups A and B in the Hydrology Manual. Surface characteristics of pervious areas were based on built-out conditions per the City's Land Use Plan, with urban landscaped covers, and an average antecedent moisture condition (AMC II).

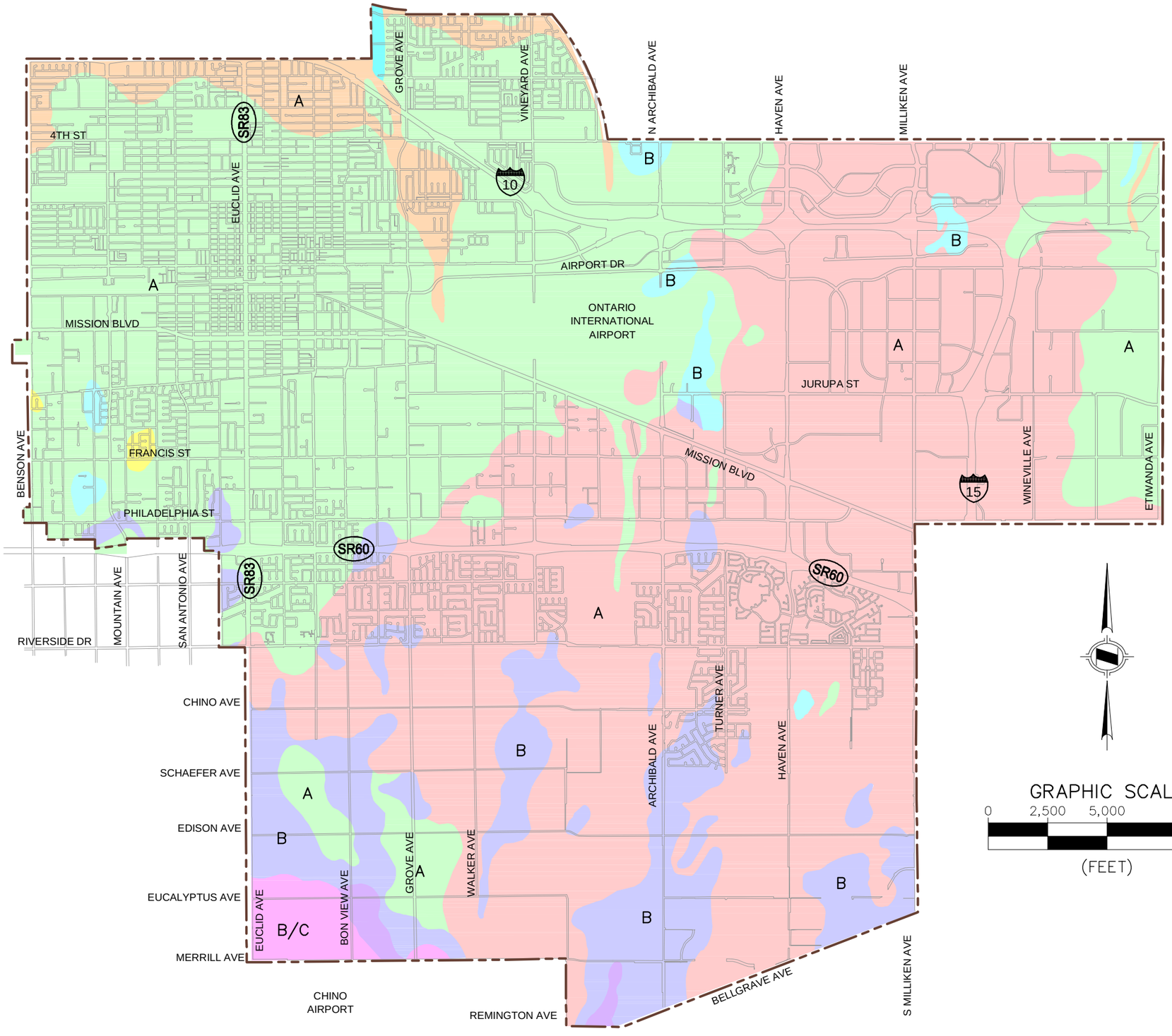
HYDRAULIC ANALYSIS

Hydraulic capacities of existing storm drains were based on design flow data shown on their as-built plans, when available. For storm drains with no available as-built design information, preliminary hydraulic calculations were performed to estimate capacities using 80% of the general ground surface slope as the gradient of the mainline Hydraulic Grade Line.

Hydraulic capacities of the streets to convey surface flows at concentration nodes were calculated using the Street Capacity Curves included in *Appendix A*. These curves have been developed for various street sections based on the The Ontario Plan - Figure M-2 "Functional Roadway Classification Plan", and Ontario Standard Drawing Numbers 1001 thru 1010.

DESIGN CRITERIA

All master-planned storm drains and appurtenances should be designed to conform with the City's Flood Protection Goals using the latest City Standards. Facilities located in State or County R/W shall conform to Caltrans or San Bernardino County Flood Control District's standards and criteria.



B/C
CHINO SILT LOAM
(350 AC)

A
DELHI FINE SAND
(14,079 AC)

B/C
GRANGEVILLE FINE SANDY LOAM
(126 AC)

B
HANFORD COARSE SANDY LOAM
(45 AC)

B
HANFORD SANDY LOAM
(366 AC)

C/D
HILMAR LOAMY FINE SAND
(2,833 AC)

A
SOBODA STONY LOAMY SAND
(36 AC)

A
TUJUNGA GRAVELLY LOAMY SAND
(1,096 AC)

A
TUJUNGA LOAMY SAND
(13,033 AC)

* BASED ON CITY OF ONTARIO'S GIS DATABASE

GRAPHIC SCALE
0 2,500 5,000 10,000
(FEET)

03/10/2012

EXHIBIT 6
MARCH 2012
CITY OF ONTARIO MASTER PLAN OF DRAINAGE
SOILS MAP

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Hydraulic Design of storm drain facilities, including closed conduits, catch basins, manholes, junction structures, transition structures, open channels, detention basins and appurtenances, shall be in accordance with Los Angeles County Flood Control District's Hydraulic Design Manual dated March 1982. Additionally, the master plan is based on the following assumptions and/or criteria:

- All master planned facilities will be located in available public street rights-of-way or drainage easements (cost to acquire any drainage easement has not been incorporated in the project costs included in Section VI of this report);

- All storm drain conduits will be either RCPs (pre-cast reinforced concrete pipes) or RCBs (cast-in-place or pre-cast reinforced concrete rectangular boxes).

CRITERIA FOR INTERIM FACILITIES

In general, interim detention basins are not allowed for development of properties in the City. However, on a case-by-case basis, the City Engineer may approve on-site detention of storm flows for developments that are located in the drainage areas with drainage deficiencies, prior to the implementation of downstream master planned facilities. The developer would be responsible to own and operate the interim facilities used to detain storm runoff on-site. Following is the recommended criteria for interim facilities.

1. Detention facilities should be sized to reduce the post-development peak flows from the subject property to less than eighty percent (<80%) of the pre-development peak flow for 100-year frequency storm.

2. If one or more detention basin(s) is proposed to mitigate development impacts, additional drainage studies should be performed to ensure that there is no adverse impact to downstream properties due to the increase in the volume of runoff generated from the proposed development. This study should also evaluate the effects of detained discharges from multiple basins including any other interim detention basin in the tributary watershed, if applicable.

Section IV

MASTER PLANNED FACILITIES

DRAINAGE AREAS

Based on the drainage patterns, the Study Area has been divided into fourteen (14) Drainage Areas as shown in *Exhibit 7 – Drainage Area Map*. Each Drainage Area is tributary to one of the following regional or backbone storm drain facilities:

- A regional drainage facility owned and/or operated by San Bernardino County Flood District (SBCFCD).

- Existing or master planned backbone storm drain in a neighboring City (Chino and Montclair).

Drainage Area I

Drainage Area I consists of an area approximately 6.1 square miles tributary to the Day Creek Channel. The area is generally bounded by 4th Street to the north, Milliken Avenue to the west, Philadelphia Street to the south, and Etiwanda Avenue to the east. It borders with Rancho Cucamonga to the north; San Bernardino County and Fontana to the east; and, Jurupa Valley and Eastvale to the south.

Drainage Area I is served by two regional channel systems; Day Creek Channel and Lower Etiwanda Creek Channel; both discharging into the Wineville Basin. The aforementioned facilities are owned and maintained by the San Bernardino County Flood Control District. Outlet flows from Wineville Basin drains south across Philadelphia Avenue to the Riverside Basin, located in the City of Jurupa Valley in Riverside County.

The Eastern Drainage Channel, is an extension to the Lower Etiwanda Channel. It extends from the north side of the Interstate-10 to the north-easterly boundary of the City. This storm drain is designed to convey flows of 1,224 cubic feet per second from drainage area lying outside the City boundary (off-site area). An off-site drainage area of approximately 460 acres, in the City of Rancho Cucamonga and San Bernardino County, drains to the Eastern Drainage Channel.

CITY OF ONTARIO

DRAINAGE AREAS

I	(3,906 AC)
II	(236 AC)
III	(5,174 AC)
IV	(4,937 AC)
V	(4,105 AC)
VI	(1,307 AC)
VII	(2,501 AC)
VIII	(1,286 AC)
IX	(572 AC)
X	(2,903 AC)
XI	(1,471 AC)
XII	(1,255 AC)
XIII	(681 AC)
XIV	(1,758 AC)

LEGEND

- PLANNED STORM DRAIN
- EXISTING COUNTY OPEN CHANNEL
- EXISTING COUNTY STORM DRAIN
- CITY LIMIT LINE
- COUNTY LIMIT LINE
- EXISTING DETENTION BASIN
- OFF-SITE AREAS TRIBUTARY TO CITY OF ONTARIO

GRAPHIC SCALE
0 2,500 5,000 10,000
(FEET)

03/10/2012

EXHIBIT 7
MARCH 2012
CITY OF ONTARIO
MASTER PLAN OF DRAINAGE
DRAINAGE AREA MAP

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Drainage Area II

Drainage Area II is tributary to the Deer Creek Channel system, just upstream of its confluence with Cucamonga Channel. It consists of an area approximately 0.4 square miles along the northerly boundaries of the City between Cucamonga Channel and Milliken Avenue, including the Turner Basins and Cucamonga-Guasti Regional Park property.

Existing City-owned facilities in Drainage Area II drain directly to Deer Creek Channel, or to the Turner Basins. The majority of the flows tributary to the Deer Creek Channel system originate from the area lying to the north of Fourth Street in the City of Rancho Cucamonga.

Drainage Area III

Drainage Area III consists of an area approximately 8.0 square miles tributary to Lower Deer Creek Channel system. The area is generally bounded by 4th Street to the north, Milliken Avenue to the east, Riverside Drive and Schaefer Avenue to the south, and Archibald Avenue and Turner Avenue to the west.

Drainage Area III is served by Lower Deer Creek Channel, Commerce Center Storm Drain, Chris Basin and Lower Cucamonga Spreading Grounds. These regional facilities are owned and maintained by the San Bernardino County Flood Control District. Existing city-owned facilities in this drainage area drain directly to Lower Deer Creek Channel. On-site drainage facilities for Ontario International Airport are owned and maintained separately.

Drainage Area IV

Drainage Area IV consists of an area approximately 7.7 square miles, tributary to the Cucamonga Channel and Lower Cucamonga Spreading Grounds. The 8th Street Interceptor forms a drainage divide along the northerly City boundary in this drainage area.

SBCFCD's Riverside Drive Storm Drain No. 2, and a number of city-owned storm drains service this area. On-site drainage facilities for Ontario International Airport are owned and maintained separately, with the exception of the Cucamonga Channel, which extends through and underneath the airport runways.

Drainage Area V

Drainage Area V consists of an approximately 6.4 square miles area tributary to the West Cucamonga Channel system. It is generally bounded by: San Antonio Avenue and Monterey Avenue along the west; Holt Boulevard, Francis Street, and Philadelphia Street along the south; Carlos Avenue, Mission Boulevard and Grove Avenue along the east; and I-10 Freeway to the north. No off-site flows drain to this drainage area from the north due to the I-10 embankment.

Drainage Area V is served by the West Cucamonga Channel, and the East State Street Storm Drain. In addition, a number of flood control basins including the 8th Street Basins, Princeton Basin and Ely Basins are a part of the West Cucamonga Channel system. Downstream of Ely Basins, the West Cucamonga Channel drains easterly to Cucamonga Channel. The aforementioned facilities are owned and maintained by the San Bernardino Flood Control District.

Drainage Area VI

Drainage Area VI consists of an area approximately 2.0 square miles in the north-west corner of the City. It borders with the City of Montclair to the west and the City of Upland to the north.

Drainage Area VI is tributary to two storm drain systems that run westerly through the City of Montclair to San Antonio Channel. A portion of Drainage Area VI, bounded by Benson Avenue, Interstate 10, Mountain Avenue and 4th Street, is tributary to City of Montclair's San Bernardino Avenue Storm Drain, which extend north along Benson Avenue from 4th Street to 6th Street. The remainder of Drainage Area VI is tributary to the SBCFCD's West State Street Storm Drain.

Two off-site areas from the City of Upland presently drain south to Drainage Area VI. These off-site flows enter the City through the I-10 under-crossings along Mountain Avenue and Benson Avenue. Following is a brief description of these off-site areas:

- Mountain Avenue: Off-site area from the City of Upland that is tributary to Mountain Avenue is comprised of approximately 139 acres of developed properties fronting Mountain Avenue between I-10 Freeway and 9th Street. Peak flow rates for runoff generated in this area have been calculated at 411 cfs, 324 cfs and 281 cfs for 100-year, 25-year and 10-year frequency storms, respectively. These off-site flows tributary to Mountain Avenue have been incorporated in the sizing of the planned city-owned storm drains recommended in this report.

- Benson Avenue: Off-site area from the City of Upland that is tributary to Benson Avenue is comprised of approximately 223 acres bounded by Benson Avenue to the east, 9th Street to the north, Sinclair Avenue to the west and the I-10 Freeway to the south. Peak flow rates for runoff generated in this area have been calculated at 384 cfs, 302 cfs and 239 cfs, for 100-year, 25-year and 10-year frequency storms, respectively. However, the City of Montclair's MPD includes a master planned storm drain in Benson Avenue north of I-10 (54-inch conduit), which will turn west along the northerly side of I-10 (87-inch conduit). This master-planned facility will intercept all the off-site flows from Upland that are presently draining towards the City.

Drainage Area VII

Drainage Area VII consists of an area approximately 3.9 square miles tributary to the Cypress Channel system. The area is generally bounded by State Street to the north, Magnolia Avenue to the west, Pomona Freeway and Riverside Drive to the south, and Sultana Avenue to the east.

Drainage Area VII is served by two regional storm drain extensions to the Cypress Channel; the Magnolia Storm Drain and the Sultana Cypress Storm Drain. Existing City-owned facilities in this Drainage Area discharge to the Magnolia Storm Drain or the Sultana Cypress Storm Drain.

Drainage Area VIII

Drainage Area VIII consists of an area approximately 2 square miles tributary to the Grove Avenue Basin. The Drainage Area is bounded by Sultana Avenue to the west, Riverside Drive to the south, Walker Avenue to the east, and State Street and Francis Street to the north. This Drainage Area is tributary to SBCFCD's Riverside Drive Storm Drain No. 1 and the Grove Avenue Basin. Existing City-owned facilities servicing this area discharge to the Riverside Drive Storm Drain No. 1.

Drainage Area IX

Drainage Area XI consists of an area approximately 0.9 square miles in the southwest corner City, tributary to SBCFCD's Chino Storm Drain. The area is generally bounded by State Street to the north, Magnolia Avenue to the east, Pomona Freeway to the south, and Benson Avenue to the west.

A portion of Drainage Area IX bounded by Benson Avenue, State Street, and Magnolia Avenue and Phillips Boulevard has been included in the drainage area tributary to City

of Chino MPD - System 28, a master planned storm drain that will start at the intersection of Philips Boulevard and Oak Avenue, and will extend westerly in Philips Boulevard to discharge into San Antonio Channel. The remaining portion of Drainage Area IX will keep draining to the Chino Storm Drain via existing City of Chino's storm drain in Benson Avenue, and proposed city-owned storm drains in Benson Avenue and Oak Avenue.

Drainage Area X

Drainage Area X consists of an area approximately 4.5 square miles in NMC-East. The area is generally bounded by Riverside Drive to the north, Archibald Avenue to the west, Milliken Avenue to the east, and Bellgrave Avenue to the south.

Drainage Area X is tributary to the County Line Channel, which is owned and maintained by the San Bernardino County Flood Control District. There are no other improved drainage facilities other than graded earthen ditches, since the majority of the area is currently being used for agriculture.

Drainage Area XI

Drainage Area XI consists of an area approximately 2.3 square miles, that is tributary to Cucamonga Channel south of Lower Cucamonga Spreading Grounds via master-planned, city-owned storm drains. There are no existing storm drains in this Drainage Area except for a 60-inch conduit that drains outflow from Lower Cucamonga Spreading Grounds to the Cucamonga Channel.

Drainage Area XII

Drainage Area XII consists of an approximately 1.9 square-mile area tributary to a master-planned storm drain, Walker Avenue Storm Drain. The area is generally bounded by Riverside Drive to the north, Vineyard Avenue to the east, Merrill Avenue to the south, and Grove Avenue to the west.

Drainage Area XII has no improved drainage facilities other than graded earthen ditches, since the majority of the area is currently being used for agriculture. South of Merrill Avenue, the Walker Avenue Storm Drain will extend south and east through the City of Chino to drain to Cucamonga Channel. Alignment of this master-planned storm drain conforms to the planned alignment for this facility in City of Chino's MPD Subarea 2 (Line "A").

Drainage Area XIII

Drainage Area XIII consists of approximately 1.1 square miles in NMC-West. The area is generally bounded by Riverside Drive to the north, Bon View Avenue to the west, Merrill Drive to the south, and Walker Avenue to the east. The Grove Avenue Basin is projected to discharge approximately 300 cubic feet per second (based on Grove Avenue Detention Basin Study, prepared by San Bernardino County, dated January 1995) at the upstream of this Drainage Area. There are no other improved drainage facilities other than graded earthen ditches, since the majority of the area is currently being used for agriculture.

This area has been identified to drain through the City of Chino to Prado Flood Control Basin. It is tributary to Chino's master-planned Grove Avenue Storm Drain (Line "J"), per City of Chino's MPD Subarea 2.

Drainage Area XIV

Drainage Area XIV consists of an area approximately 2.8 square miles along the westerly boundary of NMC-West. The area is generally bounded by Riverside Drive to the north, Euclid Avenue to the west, Merrill Avenue to the south, and Bon View Avenue to the east. There are no improved drainage facilities other than graded earthen ditches, since the majority of the area is currently being used for agriculture.

Drainage Area XIV drains to the City of Chino. It discharges to the existing Airport Channel at the intersection of Euclid Avenue and Merrill Avenue. The Airport Channel is an interim facility that runs south along the east side of Euclid Avenue to the Prado Flood Control Basin. The City of Chino's future master-planned storm drain, the Euclid Avenue Storm Drain (Line "I" per City of Chino's Master Plan of Drainage for Subarea 2) that would need to be re-evaluated to accommodate updated flow rates projected to be discharged from Drainage Area XIV per this study.

FACILITIES PLAN:

Master-planned alignment and sizes of all recommended city-owned backbone storm drain facilities, along with their Line Identifications are shown in *Exhibit 8 – Planned Facilities Map*. Also shown are all existing local and regional storm drains servicing each of the 14 Drainage Areas.

PROJECT PRIORITY:

The master-planned facilities recommended on the Facilities Plan have been classified into three categories, as follows:

A. Master-planned storm drains to service and/or relieve flooding in areas without any current storm drain facilities.

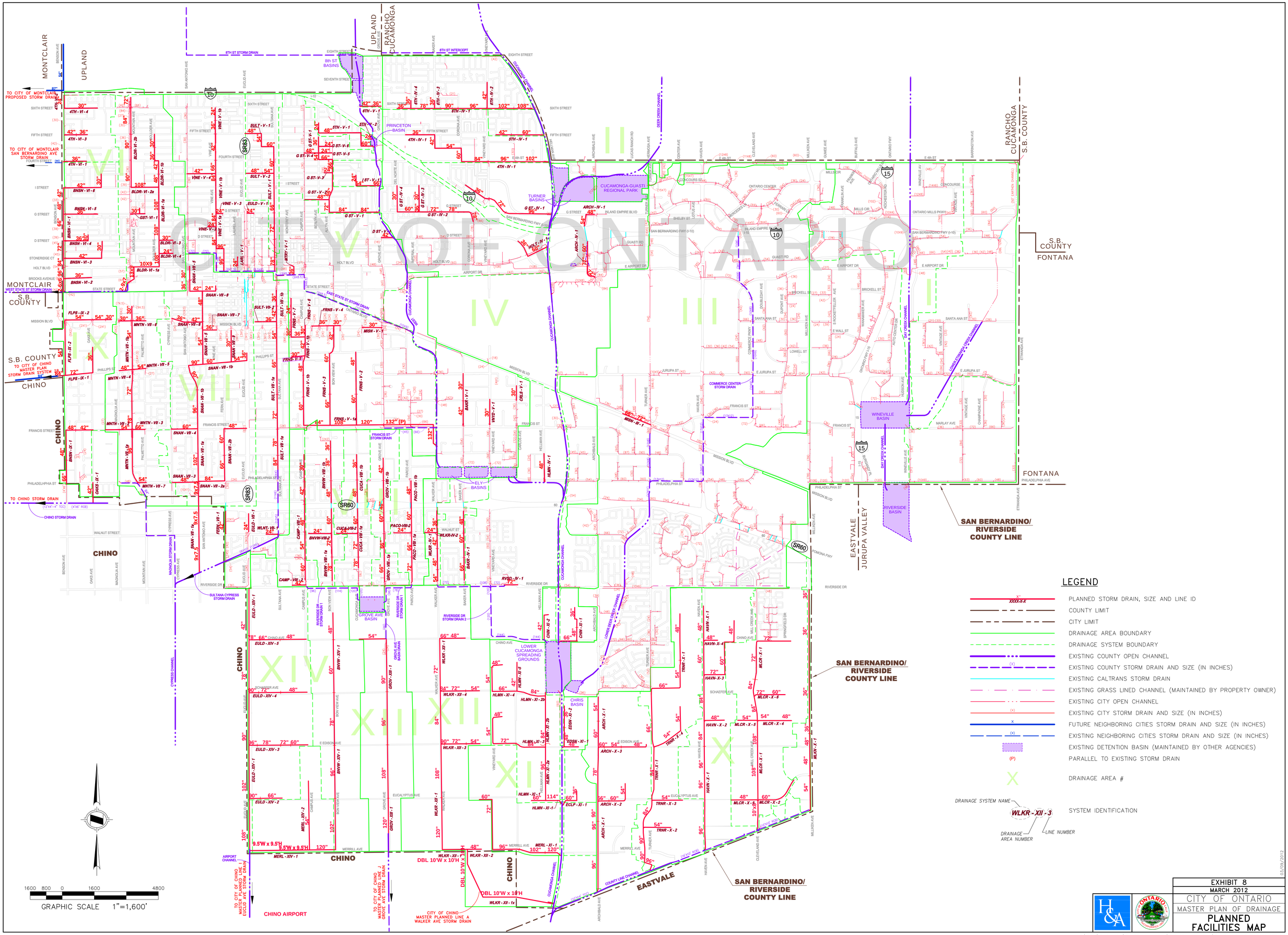
B. Master-planned storm drains that will mitigate impacts of additional development, and improve drainage conditions in City streets, based on City's Flood Protection Goals.

C. Master-planned storm drains to service future development.

Projects have been prioritized within each category based on certain criteria which include: level of existing deficiency based on amount of flow tributary to the master-planned storm drain; impact to the public; proximity to schools, public and emergency facilities, such as hospitals; anticipated pattern of future development, etc.

Location and limit of each Priority Project is shown in *Exhibit 9 – Priority Plan.*

Construction and project cost estimates for each project have been summarized in the following Section V.


MONTCLAIR
UPLAND
RANCHO CUCAMONGA
CHINO
S.B. COUNTY
FONTANA
TO CITY OF MONTCLAIR PROPOSED STORM DRAIN
TO CITY OF MONTCLAIR SAN BERNARDINO AVE STORM DRAIN
MONTCLAIR WEST STATE ST STORM DRAIN
TO CITY OF CHINO MASTER PLAN STORM DRAIN SYSTEM
TO CHINO STORM DRAIN
CHINO STORM DRAIN
8TH ST STORM DRAIN
8TH ST INTERCEPT
8TH ST BASINS
EAST STATE ST STORM DRAIN
PRINCETON BASIN
TURNER BASINS
CUCAMONGA-GUASTI REGIONAL PARK
COMMERCE CENTER STORM DRAIN
WINEVILLE BASIN
RIVERSIDE BASIN
ELY BASINS
GROVE AVE BASIN
CHRIS BASIN
LOWER CUCAMONGA SPREADING GROUNDS
CHINO AIRPORT
SAN BERNARDINO/ RIVERSIDE COUNTY LINE
EASTVALE
JURUPA VALLEY
CUCAMONGA CHANNEL
DEER CREEK CHANNEL
LOWER DEER CREEK CHANNEL
SAN ANTONIO CHANNEL
CYPRESS CHANNEL
DAY CREEK CHANNEL
LOWER ETIWANDA CREEK CHANNEL
MAGNOLIA STORM DRAIN
SULTANA/CYPRESS STORM DRAIN
RIVERSIDE DR STORM DRAIN 2
GROVE AVE BASIN DRAIN
AIRPORT CHANNEL
TO CITY OF CHINO MASTER PLANNED LINE J EUCLID AVE STORM DRAIN
TO CITY OF CHINO MASTER PLANNED GROVE AVE STORM DRAIN
CITY OF CHINO MASTER PLANNED LINE A WALKER AVE STORM DRAIN
DBL 10'W x 10'H
9.5'W x 9.5'H
SR83
SR60
I-10
I-15
CITY OF ONTARIO
GRAPHIC SCALE 1"=1,600'
1600 800 0 1600 4800
LEGEND
PLANNED STORM DRAIN, SIZE AND LINE ID
COUNTY LIMIT
CITY LIMIT
DRAINAGE AREA BOUNDARY
DRAINAGE SYSTEM BOUNDARY
EXISTING COUNTY OPEN CHANNEL
EXISTING COUNTY STORM DRAIN AND SIZE (IN INCHES)
EXISTING CALTRANS STORM DRAIN
EXISTING GRASS LINED CHANNEL (MAINTAINED BY PROPERTY OWNER)
EXISTING CITY OPEN CHANNEL
EXISTING CITY STORM DRAIN AND SIZE (IN INCHES)
FUTURE NEIGHBORING CITIES STORM DRAIN AND SIZE (IN INCHES)
EXISTING NEIGHBORING CITIES STORM DRAIN AND SIZE (IN INCHES)
EXISTING DETENTION BASIN (MAINTAINED BY OTHER AGENCIES)
PARALLEL TO EXISTING STORM DRAIN
DRAINAGE AREA #
DRAINAGE SYSTEM NAME
SYSTEM IDENTIFICATION
DRAINAGE AREA NUMBER
LINE NUMBER
EXHIBIT 8
MARCH 2012
CITY OF ONTARIO
MASTER PLAN OF DRAINAGE
PLANNED FACILITIES MAP
03/09/2012
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GRAPHIC SCALE 1"=1,600'
1600 800 0 1600 4800

LEGEND

- PLANNED STORM DRAIN, SIZE AND PRIORITY
- COUNTY LIMITS
- CITY LIMITS
- DRAINAGE AREA BOUNDARY
- DRAINAGE SYSTEM BOUNDARY
- EXISTING COUNTY OPEN CHANNEL
- EXISTING COUNTY STORM DRAIN AND SIZE (IN INCHES)
- EXISTING CALTRANS STORM DRAIN
- EXISTING GRASS LINED CHANNEL
- EXISTING CITY OPEN CHANNEL
- EXISTING CITY STORM DRAIN AND SIZE (IN INCHES)
- FUTURE NEIGHBORING CITIES STORM DRAIN AND SIZE (IN INCHES)
- EXISTING NEIGHBORING CITIES STORM DRAIN AND SIZE (IN INCHES)
- EXISTING DETENTION BASIN
- DRAINAGE AREA #

DESCRIPTION OF PRIORITY CLASSIFICATION

A: Storm drain facilities that will relieve flooding in areas without any current storm drain facilities.	A-X
B: Storm drains facilities that will mitigate impacts of additional development, and improved drainage conditions in City streets, based on City's Flood Protection Goals.	B-X
C: Storm drains to service future development.	C-X

EXHIBIT 9
MARCH 2012
CITY OF ONTARIO
MASTER PLAN OF DRAINAGE
PRIORITY PLAN

02/09/2012

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Section V

COST ESTIMATES

Construction cost estimates for the proposed master planned facilities have been developed for budgetary purpose, and are based on average construction costs for the second quarter of 2011 (Engineering News Record Construction Cost Index of 9150). Construction costs for the recommended projects are based on the following assumptions and unit prices:

Mainline Conduits:

All storm drain conduits are assumed to be either pre-cast reinforced concrete pipe (RCP) or cast-in-place reinforced concrete box (RCB). Unit Cost of conduits summarized in below include costs of material and labor for the installation of the conduit with a cover of approximately 8 feet, including trench excavation, trench shoring, pipe bedding, backfill and compaction. Unit Costs used for the storm conduit is as follows:

CONDUIT SIZE	UNIT COST PER LINEAR FOOT
24” RCP	$ 155
30” RCP	$ 180
36” RCP	$ 210
42” RCP	$ 240
48” RCP	$ 270
54” RCP	$ 305
60” RCP	$ 340
66” RCP	$ 380
72” RCP	$ 420
78” RCP	$ 460
84” RCP	$ 500
90” RCP	$ 550
96” RCP	$ 600
102” RCP	$ 660
108” RCP	$ 720
114” RCP	$ 790
120” RCP	$ 860
132” RCP	$1,000
9.5’ x 9.5’ RCB	$1,200
9’ x 7.5’ RCB	$1.100
10’ x 8’ RCB	$1,200
10’ x 9’ RCB	$ 1,250
13’ x 9’ RCB	$ 1,350
9’ x 7’ DBL RCB	$ 1,500
10’ x 10’ DBL RCB	$2,300

Junction Structures:

Junction structures at major confluences and at outlets to regional facilities (with no existing stub-outs), have been estimated at $9,000 each.

Manholes:

Manholes in RCP storm drains have been assumed to be at an average spacing of 400 feet at a unit cost of $4,500 each. Costs for manholes in RCB are included in the unit cost of the conduit.

Inlets:

Number of catch basins within each segment of the conduit is based on one linear foot of basin opening for each cubic foot per second of surface runoff intercepted by the conduit. Unit costs for each inlet is estimated at $11,000, which includes the cost for constructing a curb-opening catch basin (14' wide & 4.5' deep) and local depression, with approximately 30 linear feet of 24" RCP connector pipe.

Trench Re-pavement:

Width of re-paving of roadway sections along the conduit trench alignments are based on the internal diameter of RCP (or internal width of RCB) conduits plus 6 feet. Unit costs for the construction of the Asphalt Concrete over Crushed Aggregate Base (AC/CAB) pavement sections are estimated at $5.00 per square foot.

Costs for Trench Re-pavement have not been included with construction cost estimates for the proposed storm drains in the New Model Colony area, since they are expected to be implemented in conjunction with the street improvement projects.

Unit Cost Note:

Costs for mobilization and traffic control are not included in the project costs.
For the storm drain projects in the NMC area, it can be assumed that the storm drain improvements, along with the other public infrastructure, will be constructed at the same time with the street improvements. Therefore, costs for mobilization and traffic control can be assumed to be combined in the street construction cost estimates.

For the storm drain projects in the OMC area, it is more likely that the storm drian construction is a stand-alone project. It is therefore recommended that 10% be added to the construction cost at the time when the budgets are calculated.

CITY OF ONTARIO

MASTER PLAN OF DRAINAGE

PROJECT COST ESTIMATES* - BY PRIORITY

*(SYSTEM DESCRIPTION LIMITS, LOCATIONS AND ESTIMTATED COSTS ARE PRELIMINARY ONLY. ULTIMATE LOCATIONSAND COSTS TO BE DETERMINED UPON FINAL ENGINEERING.)

PRIORITY	LOCATION	LIMITS	ESTIMATED COST OLD MODEL COLONY	ESTIMATED COST NEW MODEL COLONY
A-1	FRANCIS STREET	CAMPUS AVE TO WEST CUCAMONGA CHANNEL	$ 8,613,443	
A-2	5TH STREET/PRINCETON 5TH STREET	BERLYN AVE TO WEST CUCAMONGA CHANNEL 5TH STREET TO WEST CUCAMONGA CHANNEL	$ 1,794,104	
A-3	SIXTH STREET	GROVE AVE TO CUCAMONGA CHANNEL	$ 6,559,543	
A-4	MOUNTAIN AVENUE	PHILLIPS STREET TO PHILADELPHIA STREET/ CYPRESS-SULTANA CHANNEL	$ 6,529,068	
A-5	4TH STREET 5TH STREET	CUCAMONGA CHANNEL TO CORONA AVE 4TH STREET/ CORONA AVE TO EL DORADO AVE	$ 5,611,713	
A-6	SAN ANTONIO AVENUE	FRANCIS STREET TO CYPRESS CHANNEL	$ 11,304,443	
A-7	PARCO AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,347,323	
A-8	GROVE AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 1,848,453	
A-9	CUCAMONGA AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,080,580	
A-10	BON VIEW AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,461,144	
A-11	CAMPUS AVENUE	CEDAR STREET TO RIVERSIDE DR	$ 3,085,019	
A-12	SULTANA AVENUE	PHILLIPS STREET TO PHILADELPHIA STREET	$ 3,638,916	
A-13	CAMPUS AVENUE MISSION BOULEVARD	STATE STREET TO FRANCIS STREET CUCAMONGA AVE TO GROVE AVE	$ 3,596,108	
A-14	SAN ANTONIO AVENUE PHILLIPS STREET	FRANCIS STREET TO PHILLIPS STREET SAN ANTONIO AVE TO EUCLID AVE	$ 4,828,448	
A-15	G STREET ALLYN AVENUE	ALLYN AVE TO WEST CUCAMONGA CHANNEL G STREET TO 5TH STREET	$ 5,641,383	
		PRIORITY A SUBTOTAL	**$ 69,939,682**	**$ -**
B-1	G STREET	DEL NORTE AVE TO CORONA AVE	$ 2,391,943	
B-2	DEL NORTE AVENUE IMPERIAL AVENUE	I STREET TO G STREET I STREET TO G STREET	$ 1,055,643	
B-3	WALKER AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 1,620,005	
B-4	BAKER AVENUE	SR-60 POMONA FREEWAY TO RIVERSIDE DR	$ 2,288,730	
B-5	VINE AVENUE LAUREL AVENUE G STREET	HOLT BLVD TO G ST. B STREET TO HOLT BLVD LEMON AVE TO EUCLID AVE	$ 3,151,173	
B-6	VINE AVENUE	G STREET TO 6TH STREET	$ 3,311,598	
B-7	SULTANA AVENUE MELROSE AVENUE	HOLT BVLD TO 5TH STREET MONTEREY AVE/HOLT BLVD TO EMPORIA STREET	$ 5,661,134	
B-8	MOUNTAIN AVENUE BOULDER AVENUE I STREET	STATE STREET TO HOLT BLVD HOLT BLVD TO I STREET MOUNTAIN AVE TO BOULDER AVE	$ 10,842,718	
B-9	MOUNTAIN AVENUE BOULDER AVENUE G STREET	I-10 SAN BERNARDINO FREEWAY TO I STREET 5TH STREET TO I STREET BOULDER AVE TO MOUNTAIN AVE	$ 4,943,534	
B-10	MOUNTAIN AVENUE	PHILLIPS STREET TO STATE STREET	$ 1,869,181	

PRIORITY	LOCATION	LIMITS	ESTIMATED COST OLD MODEL COLONY	ESTIMATED COST NEW MODEL COLONY
B-11	OAKLAND AVENUE	PHILLIPS STREET TO HOLT BLVD	$ 6,045,214	
	PALM AVENUE	PHILIPS STREET TO MISSION BLVD		
	FRANCIS STREET	EUCLID AVE TO FERN AVE		
	FERN AVENUE	FRANCIS STREET TO PHILADELPHIA STREET		
B-12	SULTANA AVENUE	PHILLIPS STREET TO STATE STREET	$ 2,879,370	
	WALNUT STREET	EUCLID AVE TO SULTANA AVE		
	EUCLID AVENUE	WALNUT STREET TO I-60 POMONA FREEWAY		
	FERN AVENUE	WALNUT STREET TO I-60 POMONA FREEWAY		
B-13	BON VIEW AVENUE	MISSION BLVD TO FRANCIS STREET	$ 3,082,690	
B-14	CUCAMONGA AVENUE	BELMONT STREET TO FRANCIS STREET	$ 1,905,493	
B-15	6TH STREET	BENSON AVE TO FUCHSIA AVE	$ 1,900,720	
	5TH STREET	BENSON AVE TO HELEN AVE		
	4TH STREET	BENSONAVE TO OAKS AVE		
	BENSON AVENUE	I-10 SAN BERNARDINO FREEWAY TO 6 STREET		
B-16	BENSON AVENUE	I STREET TO STATE STREET	$ 3,427,431	
B-17	I STREET	BENSON AVE TO ELDERBERRY AVE	$ 3,692,909	
	G STREET	BENSON AVE TO OAKS AVE		
	D STREET	BENSON AVE TO OAKS AVE		
	STONERIDGE COURT	BENSON AVE TO D STREET		
	BROOKS STREET	BENSON AVE TO OAKS AVE		
B-18	BENSON AVENUE	PHILADELPHIA STREET TO FRANCIS AVE	$ 2,523,100	
	FRANCIS AVENUE	BENSON AVE TO OAKS AVE		
	OAKS AVENUE	SR-60 POMONA FREEWAY TO PHILADELPHIA STREET		
B-19	BENSON AVENUE	PHILLIPS STREET TO MISSION BLVD	$ 4,051,019	
	MISSION BOULEVARD	BENSON AVE TO MAGNOLIA AVE		
	PHILLIPS STREET	BENSON AVE TO OAKS AVE		
B-20	I STREET	LA PALOMA AVE TO WEST CUCAMONGA CHANNEL	$ 1,200,169	
	D STREET	GROVE AVE TO WEST CUCAMONGA CHANNEL		
B-21	BON VIEW AVENUE	SR-60 POMONA FREEWAY TO FRANCIS STREET	$ 1,352,458	
B-22	CUCAMONGA AVENUE	SR-60 POMONA FREEWAY TO FRANCIS STREET	$ 1,071,225	
B-23	GROVE AVENUE	SR-60 POMONA FREEWAY TO FRANCIS STREET	$ 1,193,010	
B-24	PARCO AVENUE	SR-60 POMONA FREEWAY TO PHILADELPHIA STREET	$ 772,570	
B-25	BAKER AVENUE	BAKER AVENUE (FRANCIS STREET TO ACACIA STREET)	$ 2,288,342	
	VINEYARD AVENUE	VINEYARD AVENUE (FRANCIS STREET TO LOCUST STREET)		
	CARLOS AVENUE	CARLOS AVENUE (LOCUST STREET TO ELM CT)		
	HELLMAN AVENUE	HELLMAN AVENUE (PHILADELPHIA STREET TO CEDAR STREET)		
B-26	CONVENTION CENTER WAY	DEARBORN CT TO HOLT BLVD	$ 939,320	
	HOLT BOULEVARD	CONVENTION CENTER WAY TO CUCAMONGA CREEK		
B-27	MISSION BOULEVARD	ARCHIBALD AVE TO TURNER AVE	$ 870,838	
B-28	6TH STREET	GROVE AVE TO WEST CUCAMONGA CHANNEL	$ 457,930	
		PRIORITY B SUBTOTAL	**$ 76,789,462**	**$ -**
C-1	MILLIKEN AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 3,167,560
C-2	MILL CREEK AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 12,209,450
C-3	HAVEN AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 9,656,460
C-4	TURNER AVENUE	COUNTY LINE CHANNEL TO RIVERSIDE DR.		$ 9,650,630
C-5	ARCHIBALD AVENUE	COUNTY LINE CHANNEL TO SCHAEFER AVE.		$ 7,776,560
C-6	CHINO AVENUE	E/O CUCAMONGA CHANNEL TO N/O CHINO AVE		$ 1,067,550
C-7	EDISON AVENUE	E/O CUCAMONGA CHANNEL TO N/O EDISON AVE		$ 959,420
C-8	EUCALYPTUS AVENUE	E/O CUCAMONGA CHANNEL TO N/O EUCALYPTUS AVE		$ 607,420

PRIORITY	LOCATION	LIMITS	ESTIMATED COST	
			OLD MODEL COLONY	NEW MODEL COLONY
C-9	HELLMAN AVENUE	RIVERSIDE DR TO CHINO AVE		$ 483,560
C-10	HELLMAN AVENUE EDISON AVENUE	EUCALYPTUS AVE TO EDISON AVE HELLMAN AVE TO VINEYARD AVE		$ 5,232,040
C-11	HELLMAN AVENUE SCHAEFER AVENUE	EDISON AVE TO SCHAEFER AVE HELLMAN AVE TO VINEYARD AVE		$ 4,178,240
C-12	MERRILL AVENUE	W/O CUCAMONGA CHANNEL TO EUCALYPTUS AVE		$ 4,894,643
C-13	WALKER AVENUE	CUCAMONGA CREEK TO CHINO AVE		$ 31,153,650
C-14	GROVE AVENUE	MERRILL AVE TO CHINO AVE		$ 10,251,244
C-15	MERRILL AVENUE BON VIEW AVENUE	EUCLID AVE TO BON VIEW AVE MERRILL AVE TO CHINO AVE		$ 14,384,508
C-16	EUCLID AVENUE	MERRILL AVE TO RIVERSIDE DR		$ 13,651,550
C-17	ARCHIBALD AVENUE	INLAND EMPIRE BLVD TO AIRPORT DR.	$ 1,885,598	
C-18	INLAND EMPIRE BLVD. PLAZA SERENA	CUCAMONGA CHANNEL TO VINEYARD AVE VINEYARD AVE TO ORANGE AVE	$ 3,369,558	
C-19	FIFTH STREET	BALBOA AVE TO CUCAMONGA CHANNEL	$ 1,193,844	
		PRIORITY C SUBTOTAL	**$ 6,448,999**	**$ 129,324,484**
		PRIORITY C TOTAL	**$ 135,773,483**	
		ESTIMATED COSTS	**$ 153,178,143**	**$ 129,324,484**
		GRAND TOTAL	**$ 282,502,627**	

PRIORITY A-1

FRANCIS STREET (CAMPUS AVE TO WEST CUCAMONGA CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
FRNS-V-1a	84	1330	$ 665,000		$ -	3	$ 13,500	10	$ 110,000	$ 86,450	$ 874,950	$ 131,243	$ 1,006,193
FRNS-V-1a	108	1320	$ 950,400	1	$ 9,000	3	$ 13,500	12	$ 132,000	$ 99,000	$ 1,203,900	$ 180,585	$ 1,384,485
FRNS-V-1a	120	1380	$ 1,186,800	1	$ 9,000	3	$ 13,500	8	$ 88,000	$ 110,400	$ 1,407,700	$ 211,155	$ 1,618,855
FRNS-V-1a	132	3640	$ 3,640,000	1	$ 9,000	10	$ 45,000		$ -	$ 309,400	$ 4,003,400	$ 600,510	$ 4,603,910

PRIORITY A-1 TOTALS $ 8,613,443

PRIORITY A-2

5TH STREET/PRINCETON AVENUE (BERLYN AVE TO WEST CUCAMONGA CHANNEL)

5TH STREET (5TH STREET TO WEST CUCAMONGA CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
5TH-V-1	24	502	$ 77,810		$ -	1	$ 4,500	4	$ 44,000	$ 20,080	$ 146,390	$ 21,959	$ 168,349
5TH-V-2	24	250	$ 38,750	1	$ 9,000	1	$ 4,500	2	$ 22,000	$ 10,000	$ 84,250	$ 12,638	$ 96,888
5TH-V-1	48	2770	$ 747,900		$ -	7	$ 31,500	6	$ 66,000	$ 138,500	$ 983,900	$ 147,585	$ 1,131,485
5TH-V-1	60	690	$ 234,600	1	$ 9,000	2	$ 9,000	5	$ 55,000	$ 37,950	$ 345,550	$ 51,833	$ 397,383

PRIORITY A-2 TOTALS $ 1,794,104

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-3
SIXTH STREET (GROVE AVE TO CUCAMONGA CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
6TH-IV-1	36	455	$ 95,550		$ -	1	$ 4,500	6	$ 66,000	$ 20,475	$ 186,525	$ 27,979	$ 214,504
6TH-IV-3	36	455	$ 95,550	1	$ 9,000	2	$ 9,000	6	$ 66,000	$ 20,475	$ 200,025	$ 30,004	$ 230,029
6TH-IV-4	36	700	$ 147,000		$ -	2	$ 9,000	7	$ 77,000	$ 31,500	$ 264,500	$ 39,675	$ 304,175
6TH-IV-2	42	1280	$ 307,200		$ -	4	$ 18,000	14	$ 154,000	$ 60,800	$ 540,000	$ 81,000	$ 621,000
6TH-IV-1	78	1190	$ 547,400	1	$ 9,000	4	$ 18,000	2	$ 22,000	$ 74,375	$ 670,775	$ 100,616	$ 771,391
6TH-IV-1	90	1170	$ 643,500	1	$ 9,000	3	$ 13,500	7	$ 77,000	$ 78,975	$ 821,975	$ 123,296	$ 945,271
6TH-IV-1	96	1430	$ 858,000		$ -	4	$ 18,000	7	$ 77,000	$ 100,100	$ 1,053,100	$ 157,965	$ 1,211,065
6TH-IV-1	102	1340	$ 884,400	1	$ 9,000	4	$ 18,000	6	$ 66,000	$ 97,150	$ 1,074,550	$ 161,183	$ 1,235,733
6TH-IV-1	108	1000	$ 720,000	2	$ 18,000	3	$ 13,500	6	$ 66,000	$ 75,000	$ 892,500	$ 133,875	$ 1,026,375

PRIORITY A-3 TOTALS $ 6,559,543

PRIORITY A-4
MOUNTAIN AVENUE (PHILLIPS STREET TO PHILADELPHIA STREET/CYPRESS-SULTANA CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
MNTN-VII-4	48	650	$ 175,500		$ -	2	$ 9,000	5	$ 55,000	$ 32,500	$ 272,000	$ 40,800	$ 312,800
MNTN-VII-2	54	1410	$ 430,050		$ -	4	$ 18,000	13	$ 143,000	$ 74,025	$ 665,075	$ 99,761	$ 764,836
MNTN-VII-1a	54	100	$ 30,500		$ -	1	$ 4,500	4	$ 44,000	$ 5,250	$ 84,250	$ 12,638	$ 96,888
MNTN-VII-5	54	650	$ 198,250		$ -	2	$ 9,000	8	$ 88,000	$ 34,125	$ 329,375	$ 49,406	$ 378,781
MNTN-VII-7	54	500	$ 152,500	1	$ 9,000	2	$ 9,000	8	$ 88,000	$ 26,250	$ 284,750	$ 42,713	$ 327,463
MNTN-VII-3	66	640	$ 243,200		$ -	2	$ 9,000	14	$ 154,000	$ 36,800	$ 443,000	$ 66,450	$ 509,450
MNTN-VII-1a	72	1550	$ 651,000	1	$ 9,000	4	$ 18,000	4	$ 44,000	$ 93,000	$ 815,000	$ 122,250	$ 937,250
MNTN-VII-1a	78	1400	$ 644,000		$ -	4	$ 18,000	4	$ 44,000	$ 87,500	$ 793,500	$ 119,025	$ 912,525
MNTN-VII-1a	96	2700	$ 1,620,000	2	$ 18,000	7	$ 31,500	12	$ 132,000	$ 189,000	$ 1,990,500	$ 298,575	$ 2,289,075

PRIORITY A-4 TOTALS $ 6,529,068

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-5
4TH STREET (CUCAMONGA CHANNEL TO CORONA AVE)
5TH STREET (FROM 4TH STREET/ CORONA AVE TO EL DORADO AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
4TH-IV-1	36	1460	$ 306,600		$ -	4	$ 18,000	6	$ 66,000	$ 65,700	$ 456,300	$ 68,445	$ 524,745
4TH-IV-1	42	680	$ 163,200		$ -	2	$ 9,000	6	$ 66,000	$ 32,300	$ 270,500	$ 40,575	$ 311,075
4TH-IV-1	54	1320	$ 402,600		$ -	3	$ 13,500	8	$ 88,000	$ 69,300	$ 573,400	$ 86,010	$ 659,410
4TH-IV-1	60	670	$ 227,800		$ -	2	$ 9,000	11	$ 121,000	$ 36,850	$ 394,650	$ 59,198	$ 453,848
4TH-IV-1	84	1330	$ 665,000	1	$ 9,000	3	$ 13,500	10	$ 110,000	$ 86,450	$ 883,950	$ 132,593	$ 1,016,543
4TH-IV-1	96	1320	$ 792,000		$ -	3	$ 13,500	4	$ 44,000	$ 92,400	$ 941,900	$ 141,285	$ 1,083,185
4TH-IV-1	102	1740	$ 1,148,400	2	$ 18,000	5	$ 22,500	4	$ 44,000	$ 126,150	$ 1,359,050	$ 203,858	$ 1,562,908

PRIORITY A-5 TOTALS $ 5,611,713

PRIORITY A-6
SAN ANTONIO AVENUE (FRANCIS STREET TO CYPRESS CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
SNAN-VII-3	48	1290	$ 348,300		$ -	4	$ 18,000	12	$ 132,000	$ 64,500	$ 562,800	$ 84,420	$ 647,220
SNAN-VII-4	60	1300	$ 442,000		$ -	4	$ 18,000	11	$ 121,000	$ 71,500	$ 652,500	$ 97,875	$ 750,375
SNAN-VII-2a	66	200	$ 76,000		$ -		$ -	4	$ 44,000	$ 11,500	$ 131,500	$ 19,725	$ 151,225
SNAN-VII-2a	84	1320	$ 660,000		$ -	4	$ 18,000	9	$ 99,000	$ 85,800	$ 862,800	$ 129,420	$ 992,220
SNAN-VII-1	96	200	$ 120,000		$ -		$ -		$ -	$ 14,000	$ 134,000	$ 20,100	$ 154,100
SNAN-VII-1	102	2630	$ 1,735,800	1	$ 9,000	7	$ 31,500	6	$ 66,000	$ 190,675	$ 2,032,975	$ 304,946	$ 2,337,921
SNAN-VII-1a	9'X7.5'	4565	$ 5,021,500	2	$ 18,000	11	$ 49,500	2	$ 22,000	$ 342,375	$ 5,453,375	$ 818,006	$ 6,271,381

PRIORITY A-6 TOTALS $ 11,304,443

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-7
PARCO AVENUE (SR-60 POMONA FREEWAY TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
PACO-VIII-2	24	890	$ 137,950		$ -	3	$ 13,500	2	$ 22,000	$ 35,600	$ 209,050	$ 31,358	$ 240,408
PACO-VIII-1a	60	1230	$ 418,200		$ -	3	$ 13,500	6	$ 66,000	$ 67,650	$ 565,350	$ 84,803	$ 650,153
PACO-VIII-1a	66	1180	$ 448,400	1	$ 9,000	3	$ 13,500	6	$ 66,000	$ 67,850	$ 604,750	$ 90,713	$ 695,463
PACO-VIII-1a	72	1250	$ 525,000		$ -	4	$ 18,000	4	$ 44,000	$ 75,000	$ 662,000	$ 99,300	$ 761,300

PRIORITY A-7 TOTALS $ 2,347,323

PRIORITY A-8
GROVE AVENUE (SR-60 POMONA FREEWAY TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
GROV-VIII-1a	60	1030	$ 350,200		$ -	3	$ 13,500	4	$ 44,000	$ 56,650	$ 464,350	$ 69,653	$ 534,003
GROV-VIII-1a	66	2400	$ 912,000		$ -	6	$ 27,000	6	$ 66,000	$ 138,000	$ 1,143,000	$ 171,450	$ 1,314,450

PRIORITY A-8 TOTALS $ 1,848,453

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-9
CUCAMONGA AVENUE (SR-60 POMONA FREEWAY TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
CUCA-VIII-2	24	1060	$ 164,300		$ -	3	$ 13,500	4	$ 44,000	$ 42,400	$ 264,200	$ 39,630	$ 303,830
CUCA-VIII-1a	60	1260	$ 428,400		$ -	3	$ 13,500	4	$ 44,000	$ 69,300	$ 555,200	$ 83,280	$ 638,480
CUCA-VIII-1a	72	1160	$ 487,200	1	$ 9,000	3	$ 13,500	6	$ 66,000	$ 69,600	$ 645,300	$ 96,795	$ 742,095
CUCA-VIII-1a	78	600	$ 276,000		$ -	2	$ 9,000	2	$ 22,000	$ 37,500	$ 344,500	$ 51,675	$ 396,175

PRIORITY A-9 TOTALS $ 2,080,580

PRIORITY A-10
BON VIEW AVENUE (SR-60 POMONA FREEWAY TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BNVW-VIII-2	24	1150	$ 178,250		$ -	2	$ 9,000	5	$ 55,000	$ 46,000	$ 288,250	$ 43,238	$ 331,488
BNVW-VIII-1a	60	1260	$ 428,400		$ -	3	$ 13,500	4	$ 44,000	$ 69,300	$ 555,200	$ 83,280	$ 638,480
BNVW-VIII-1a	72	1210	$ 508,200	1	$ 9,000	2	$ 9,000	6	$ 66,000	$ 72,600	$ 664,800	$ 99,720	$ 764,520
BNVW-VIII-1a	78	1150	$ 529,000		$ -	2	$ 9,000	2	$ 22,000	$ 71,875	$ 631,875	$ 94,781	$ 726,656

PRIORITY A-10 TOTALS $ 2,461,144

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-11
CAMPUS AVENUE (CEDAR STREET TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
CAMP-VIII-1	30	1340	$ 241,200		$ -	4	$ 18,000	6	$ 66,000	$ 56,950	$ 382,150	$ 57,323	$ 439,473
CAMP-VIII-1	42	1260	$ 302,400		$ -	3	$ 13,500	4	$ 44,000	$ 59,850	$ 419,750	$ 62,963	$ 482,713
CAMP-VIII-2	42	660	$ 158,400	1	$ 9,000	2	$ 9,000	2	$ 22,000	$ 31,350	$ 229,750	$ 34,463	$ 264,213
CAMP-VIII-1	48	1350	$ 364,500		$ -	4	$ 18,000	5	$ 55,000	$ 67,500	$ 505,000	$ 75,750	$ 580,750
CAMP-VIII-1	54	1330	$ 405,650		$ -	3	$ 13,500	6	$ 66,000	$ 69,825	$ 554,975	$ 83,246	$ 638,221
CAMP-VIII-1	60	1300	$ 442,000	1	$ 9,000	3	$ 13,500	5	$ 55,000	$ 71,500	$ 591,000	$ 88,650	$ 679,650

PRIORITY A-11 TOTALS $ 3,085,019

PRIORITY A-12
SULTANA AVENUE (PHILLIPS STREET TO PHILADELPHIA STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
SULT-VII-1a	66	1820	$ 691,600		$ -	4	$ 18,000	12	$ 132,000	$ 104,650	$ 946,250	$ 141,938	$ 1,088,188
SULT-VII-1a	72	1750	$ 735,000		$ -	4	$ 18,000	8	$ 88,000	$ 105,000	$ 946,000	$ 141,900	$ 1,087,900
SULT-VII-1a	78	1330	$ 611,800		$ -	4	$ 18,000	6	$ 66,000	$ 83,125	$ 778,925	$ 116,839	$ 895,764
SULT-VII-1a	84	740	$ 370,000		$ -	2	$ 9,000	6	$ 66,000	$ 48,100	$ 493,100	$ 73,965	$ 567,065

PRIORITY A-12 TOTALS $ 3,638,916

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-13
CAMPUS AVENUE (STATE STREET TO FRANCIS STREET)
MISSION BOULEVARD (CUCAMONGA AVE TO GROVE AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
FRNS-V-7	24	1150	$ 172,500		$ -	3	$ 13,500	2	$ 22,000	$ 46,000	$ 254,000	$ 38,100	$ 292,100
FRNS-V-7	30	730	$ 131,400		$ -	2	$ 9,000	2	$ 22,000	$ 31,025	$ 193,425	$ 29,014	$ 222,439
FRNS-V-5	30	700	$ 126,000		$ -	2	$ 9,000	2	$ 22,000	$ 29,750	$ 186,750	$ 28,013	$ 214,763
FRNS-V-6	30	580	$ 104,400		$ -	2	$ 9,000	5	$ 55,000	$ 24,650	$ 193,050	$ 28,958	$ 222,008
MISN-V-1	30	990	$ 178,200		$ -	2	$ 9,000	3	$ 33,000	$ 42,075	$ 262,275	$ 39,341	$ 301,616
FRNS-V-7	36	760	$ 159,600		$ -	2	$ 9,000	2	$ 22,000	$ 34,200	$ 224,800	$ 33,720	$ 258,520
FRNS-V-1b	42	940	$ 225,600	1	$ 9,000	3	$ 13,500	4	$ 44,000	$ 44,650	$ 336,750	$ 50,513	$ 387,263
FRNS-V-1b	48	2140	$ 577,800	1	$ 9,000	5	$ 22,500	10	$ 110,000	$ 107,000	$ 826,300	$ 123,945	$ 950,245
FRNS-V-1b	60	1460	$ 496,400		$ -	4	$ 18,000	5	$ 55,000	$ 80,300	$ 649,700	$ 97,455	$ 747,155

PRIORITY A-13 TOTALS $ 3,596,108

PRIORITY A-14
SAN ANTONIO AVENUE (FRANCIS STREET TO PHILLIPS STREET)
PHILLIPS STREET (SAN ANTONIO AVE TO EUCLID AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
SNAN-VII-1	36	380	$ 72,200		$ -	1	$ 4,500	10	$ 110,000	$ 17,100	$ 203,800	$ 30,570	$ 234,370
SNAN-VII-1	54	780	$ 237,900	1	$ 9,000	2	$ 9,000	10	$ 110,000	$ 40,950	$ 406,850	$ 61,028	$ 467,878
SNAN-VII-5	54	100	$ 30,500		$ -	1	$ 4,500	4	$ 44,000	$ 5,250	$ 84,250	$ 12,638	$ 96,888
SNAN-VII-1	60	1420	$ 482,800	1	$ 9,000	4	$ 18,000	8	$ 88,000	$ 78,100	$ 675,900	$ 101,385	$ 777,285
SNAN-VII-1	90	2020	$ 1,111,000	1	$ 9,000	5	$ 22,500	16	$ 176,000	$ 136,350	$ 1,454,850	$ 218,228	$ 1,673,078
SNAN-VII-1	96	1950	$ 1,170,000		$ -	5	$ 22,500	4	$ 44,000	$ 136,500	$ 1,373,000	$ 205,950	$ 1,578,950

PRIORITY A-14 TOTALS $ 4,828,448

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY A-15
G STREET (ALLYN AVE TO WEST CUCAMONGA CHANNEL)
ALLYN AVENUE (G STREET TO 5TH STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
G ST-V-5	24	680	$ 105,400		$ -	2	$ 9,000	2	$ 22,000	$ 27,200	$ 163,600	$ 24,540	$ 188,140
G ST-V-6	24	670	$ 103,850		$ -	2	$ 9,000	2	$ 22,000	$ 26,800	$ 161,650	$ 24,248	$ 185,898
G ST-V-3	24	410	$ 63,550		$ -	2	$ 9,000	2	$ 22,000	$ 16,400	$ 110,950	$ 16,643	$ 127,593
G ST-V-1	36	820	$ 172,200	1	$ 9,000	2	$ 9,000	4	$ 44,000	$ 36,900	$ 271,100	$ 40,665	$ 311,765
G ST-V-4	48	730	$ 197,100		$ -	2	$ 9,000	4	$ 44,000	$ 36,500	$ 286,600	$ 42,990	$ 329,590
G ST-V-2	48	1220	$ 329,400		$ -	3	$ 13,500	6	$ 66,000	$ 61,000	$ 469,900	$ 70,485	$ 540,385
G ST-V-1	54	320	$ 97,600	1	$ 9,000	1	$ 4,500	4	$ 44,000	$ 16,800	$ 171,900	$ 25,785	$ 197,685
G ST-V-1	66	2660	$ 1,010,800	1	$ 9,000	7	$ 31,500	14	$ 154,000	$ 152,950	$ 1,358,250	$ 203,738	$ 1,561,988
G ST-V-1	72	630	$ 264,600	1	$ 9,000	2	$ 9,000	4	$ 44,000	$ 37,800	$ 364,400	$ 54,660	$ 419,060
G ST-V-1	84	2480	$ 1,240,000	1	$ 9,000	6	$ 27,000	10	$ 110,000	$ 161,200	$ 1,547,200	$ 232,080	$ 1,779,280

PRIORITY A-15 TOTALS $ 5,641,383

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY B-1
G STREET (DEL NORTE AVE TO CORONA AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
G ST-IV-2	60	1100	$ 380,800		$ -	3	$ 13,500	2	$ 22,000	$ 60,500	$ 476,800	$ 71,520	$ 548,320
G ST-IV-2	72	1130	$ 474,600	1	$ 9,000	3	$ 13,500	8	$ 88,000	$ 67,800	$ 652,900	$ 97,935	$ 750,835
G ST-IV-2	78	1700	$ 782,000		$ -	4	$ 18,000	4	$ 44,000	$ 106,250	$ 950,250	$ 142,538	$ 1,092,788

PRIORITY B-1 TOTALS $ 2,391,943

PRIORITY B-2
DEL NORTE AVENUE (I STREET TO G STREET)
IMPERIAL AVENUE (I STREET TO G STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
G ST-IV-2	30	1310	$ 235,800		$ -	3	$ 13,500	10	$ 110,000	$ 55,675	$ 414,975	$ 62,246	$ 477,221
G ST-IV-3	30	1330	$ 239,400		$ -	3	$ 13,500	8	$ 88,000	$ 56,525	$ 397,425	$ 59,614	$ 457,039
G ST-IV-2	36	310	$ 65,100		$ -	1	$ 4,500	2	$ 22,000	$ 13,950	$ 105,550	$ 15,833	$ 121,383

PRIORITY B-2 TOTALS $ 1,055,643

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-3
WALKER AVENUE (SR-60 POMONA FREEWAY TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
WLKR-IV-2	24	620	$ 96,100		$ -	2	$ 9,000	2	$ 22,000	$ 24,800	$ 151,900	$ 22,785	$ 174,685
WLKR-IV-1	36	1090	$ 228,900		$ -	3	$ 13,500	8	$ 88,000	$ 49,050	$ 379,450	$ 56,918	$ 436,368
WLKR-IV-1	42	790	$ 189,600	1	$ 9,000	2	$ 9,000	2	$ 22,000	$ 37,525	$ 267,125	$ 40,069	$ 307,194
WLKR-IV-1	48	1040	$ 280,800		$ -	3	$ 13,500	2	$ 22,000	$ 52,000	$ 368,300	$ 55,245	$ 423,545
WLKR-IV-1	54	590	$ 179,950		$ -	2	$ 9,000	2	$ 22,000	$ 30,975	$ 241,925	$ 36,289	$ 278,214

PRIORITY B-3 TOTALS $ 1,620,005

PRIORITY B-4
BAKER AVENUE (SR-60 POMONA FREEWAY TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BAKR-IV-1	48	1060	$ 286,200		$ -	3	$ 13,500	6	$ 66,000	$ 53,000	$ 418,700	$ 62,805	$ 481,505
BAKR-IV-1	60	1250	$ 425,000		$ -	3	$ 13,500	8	$ 88,000	$ 68,750	$ 595,250	$ 89,288	$ 684,538
BAKR-IV-1	66	1140	$ 433,200		$ -	3	$ 13,500	6	$ 66,000	$ 65,550	$ 578,250	$ 86,738	$ 664,988
RVSD-IV-1	72	700	$ 294,000	1	$ 9,000	2	$ 9,000	4	$ 44,000	$ 42,000	$ 398,000	$ 59,700	$ 457,700

PRIORITY B-4 TOTALS $ 2,288,730

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-5
VINE AVENUE (HOLT BLVD TO G STREET)
LAUREL AVENUE(B STREET TO HOLT BLVD)
G STREET (LEMON AVE TO EUCLID AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
VINE-V-2	24	450	$ 69,750		$ -	1	$ 4,500	2	$ 22,000	$ 18,000	$ 114,250	$ 17,138	$ 131,388
VINE-V-3	24	350	$ 54,250		$ -	1	$ 4,500	3	$ 33,000	$ 14,000	$ 105,750	$ 15,863	$ 121,613
EULD-V-1	24	350	$ 54,250	1	$ 9,000	1	$ 4,500	4	$ 44,000	$ 14,000	$ 125,750	$ 18,863	$ 144,613
LARL-V-1	24	440	$ 68,200	1	$ 9,000	2	$ 9,000	2	$ 22,000	$ 17,600	$ 125,800	$ 18,870	$ 144,670
VINE-V-1a	84	1900	$ 950,000	1	$ 9,000	4	$ 18,000	10	$ 110,000	$ 123,500	$ 1,210,500	$ 181,575	$ 1,392,075
VINE-V-1a	96	1480	$ 888,000	1	$ 9,000	3	$ 13,500	4	$ 44,000	$ 103,600	$ 1,058,100	$ 158,715	$ 1,216,815

PRIORITY B-5 TOTALS $ 3,151,173

PRIORITY B-6
VINE AVENUE (G STREET TO 6TH STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
VINE-V-1b	24	630	$ 97,650		$ -	2	$ 9,000	7	$ 77,000	$ 25,200	$ 208,850	$ 31,328	$ 240,178
VINE-V-1b	36	700	$ 147,000		$ -	2	$ 9,000	4	$ 44,000	$ 31,500	$ 231,500	$ 34,725	$ 266,225
VINE-V-1b	42	1310	$ 314,400		$ -	3	$ 13,500	6	$ 66,000	$ 62,225	$ 456,125	$ 68,419	$ 524,544
VINE-V-4	42	1440	$ 345,600		$ -	4	$ 18,000	3	$ 33,000	$ 68,400	$ 465,000	$ 69,750	$ 534,750
VINE-V-1b	66	650	$ 247,000		$ -	2	$ 9,000	5	$ 55,000	$ 37,375	$ 348,375	$ 52,256	$ 400,631
VINE-V-1b	84	1820	$ 910,000	1	$ 9,000	5	$ 22,500	10	$ 110,000	$ 118,300	$ 1,169,800	$ 175,470	$ 1,345,270

PRIORITY B-6 TOTALS $ 3,311,598

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-7
SULTANA AVENUE (HOLT BLVD TO 5TH STREET)
MELROSE AVENUE (MONTEREY AVE/HOLT BLVD TO EMPORIA STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
MTRY-V-1	36	570	$ 119,700	1	$ 9,000	2	$ 9,000	2	$ 22,000	$ 25,650	$ 185,350	$ 27,803	$ 213,153
SULT-V-1	48	820	$ 221,400		$ -	2	$ 9,000	7	$ 77,000	$ 41,000	$ 348,400	$ 52,260	$ 400,660
SULT-V-2	48	840	$ 226,800		$ -	3	$ 13,500	4	$ 44,000	$ 42,000	$ 326,300	$ 48,945	$ 375,245
SULT-V-1	54	660	$ 201,300		$ -	2	$ 9,000	6	$ 66,000	$ 34,650	$ 310,950	$ 46,643	$ 357,593
SULT-V-2	54	610	$ 186,050		$ -	1	$ 4,500	4	$ 44,000	$ 32,025	$ 266,575	$ 39,986	$ 306,561
SULT-V-1	60	1960	$ 666,400		$ -	5	$ 22,500	8	$ 88,000	$ 107,800	$ 884,700	$ 132,705	$ 1,017,405
SULT-V-1	66	1980	$ 752,400	1	$ 9,000	5	$ 22,500	11	$ 121,000	$ 113,850	$ 1,018,750	$ 152,813	$ 1,171,563
SULT-V-1	72	1320	$ 554,400		$ -	4	$ 18,000	4	$ 44,000	$ 79,200	$ 695,600	$ 104,340	$ 799,940
SULT-V-1	78	1560	$ 717,600	1	$ 9,000	4	$ 18,000	4	$ 44,000	$ 97,500	$ 886,100	$ 132,915	$ 1,019,015

PRIORITY B-7 TOTALS $ 5,661,134

PRIORITY B-8
MOUNTAIN AVENUE (STATE STREET TO HOLT BLVD)
BOULDER AVENUE (HOLT BLVD TO I STREET)
I STREET (MOUNTAIN AVE TO BOULDER AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BLDR-VI-4	24	700	$ 108,500		$ -	2	$ 9,000	3	$ 33,000	$ 28,000	$ 178,500	$ 26,775	$ 205,275
BLDR-VI-3	30	700	$ 126,000		$ -	2	$ 9,000	2	$ 22,000	$ 29,750	$ 186,750	$ 28,013	$ 214,763
BLDR-VI-1b	48	200	$ 54,000		$ -		$ -		$ -	$ 10,000	$ 64,000	$ 9,600	$ 73,600
BLDR-VI-2b	90	200	$ 110,000		$ -		$ -		$ -	$ 13,500	$ 123,500	$ 18,525	$ 142,025
BLDR-VI-1a	108	3980	$ 2,865,600	3	$ 27,000	10	$ 45,000	14	$ 154,000	$ 298,500	$ 3,390,100	$ 508,515	$ 3,898,615
BLDR-VI-2a	108	1380	$ 993,600		$ -	4	$ 18,000	6	$ 66,000	$ 103,500	$ 1,181,100	$ 177,165	$ 1,358,265
BLDR-VI-1a	10'X9'	1420	$ 1,775,000	1	$ 9,000	4	$ 18,000	2	$ 22,000	$ 134,900	$ 1,958,900	$ 293,835	$ 2,252,735
BLDR-VI-1a	13'X9'	650	$ 877,500	1	$ 9,000	2	$ 9,000	13	$ 143,000	$ 97,500	$ 1,136,000	$ 170,400	$ 1,306,400
BLDR-VI-1a	DBL. 9'X7'	730	$ 1,095,000	2	$ 18,000	2	$ 9,000		$ -	$ 87,600	$ 1,209,600	$ 181,440	$ 1,391,040

PRIORITY B-8 TOTALS $ 10,842,718

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-9
MOUNTAIN AVENUE (I-10 SAN BERNARDINO FREEWAY TO I STREET)
BOULDER AVENUE (5TH STREET TO I STREET)
G STREET (BOULDER AVE TO MOUNTAIN AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BLDR-VI-1b	30	710	$ 127,800		$ -	2	$ 9,000	6	$ 66,000	$ 30,175	$ 232,975	$ 34,946	$ 267,921
G ST-VI-1	30	1010	$ 181,800	1	$ 9,000	3	$ 13,500	6	$ 66,000	$ 42,925	$ 313,225	$ 46,984	$ 360,209
BLDR-VI-1b	36	820	$ 172,200		$ -	2	$ 9,000	4	$ 44,000	$ 36,900	$ 262,100	$ 39,315	$ 301,415
BLDR-VI-1b	42	840	$ 201,600		$ -	2	$ 9,000	4	$ 44,000	$ 39,900	$ 294,500	$ 44,175	$ 338,675
BLDR-VI-1b	48	500	$ 135,000		$ -	2	$ 9,000	4	$ 44,000	$ 25,000	$ 213,000	$ 31,950	$ 244,950
BLDR-VI-2b	72	560	$ 235,200		$ -	2	$ 9,000	6	$ 66,000	$ 33,600	$ 343,800	$ 51,570	$ 395,370
BLDR-VI-2b	84	1330	$ 665,000		$ -	3	$ 13,500	7	$ 77,000	$ 86,450	$ 841,950	$ 126,293	$ 968,243
BLDR-VI-2b	90	2610	$ 1,435,500		$ -	7	$ 31,500	14	$ 154,000	$ 176,175	$ 1,797,175	$ 269,576	$ 2,066,751

PRIORITY B-9 TOTALS $ 4,943,534

PRIORITY B-10
MOUNTAIN AVENUE (PHILLIPS STREET TO STATE STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
MNTN-VII-1b	30	725	$ 130,500		$ -	2	$ 9,000	6	$ 66,000	$ 30,813	$ 236,313	$ 35,447	$ 271,759
MNTN-VII-6	30	655	$ 117,900		$ -	2	$ 9,000	5	$ 55,000	$ 27,838	$ 209,738	$ 31,461	$ 241,198
MNTN-VII-6	36	690	$ 144,900		$ -	2	$ 9,000	4	$ 44,000	$ 31,050	$ 228,950	$ 34,343	$ 263,293
MNTN-VII-1b	54	2250	$ 686,250	1	$ 9,000	6	$ 27,000	10	$ 110,000	$ 118,125	$ 950,375	$ 142,556	$ 1,092,931

PRIORITY B-10 TOTALS $ 1,869,181

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-11
OAKLAND AVENUE (PHILLIPS STREET TO HOLT BLVD)
PALM AVENUE (PHILLIPS STREET TO MISSION BLVD)
FRANCIS STREET(EUCLID AVE TO FERN AVE)
FERN AVENUE (FRANCIS STREET TO PHILADELPHIA STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
SNAN-VII-8	24	900	$ 139,500		$ -	3	$ 13,500	2	$ 22,000	$ 36,000	$ 211,000	$ 31,650	$ 242,650
SNAN-VII-5	30	700	$ 126,000		$ -	2	$ 9,000	4	$ 44,000	$ 29,750	$ 208,750	$ 31,313	$ 240,063
SNAN-VII-9	30	1575	$ 283,500		$ -	4	$ 18,000	6	$ 66,000	$ 66,938	$ 434,438	$ 65,166	$ 499,603
SNAN-VII-5	36	550	$ 115,500		$ -	1	$ 4,500	3	$ 33,000	$ 24,750	$ 177,750	$ 26,663	$ 204,413
SNAN-VII-6	36	850	$ 178,500		$ -	2	$ 9,000	2	$ 22,000	$ 38,250	$ 247,750	$ 37,163	$ 284,913
SNAN-VII-7	36	700	$ 147,000		$ -	2	$ 9,000	2	$ 22,000	$ 31,500	$ 209,500	$ 31,425	$ 240,925
SNAN-VII-5	42	640	$ 153,600		$ -	2	$ 9,000	2	$ 22,000	$ 30,400	$ 215,000	$ 32,250	$ 247,250
SNAN-VII-6	42	730	$ 175,200		$ -	2	$ 9,000	2	$ 22,000	$ 34,675	$ 240,875	$ 36,131	$ 277,006
SNAN-VII-5	48	1581	$ 426,870		$ -	4	$ 18,000	8	$ 88,000	$ 79,050	$ 611,920	$ 91,788	$ 703,708
SNAN-VII-2b	48	1100	$ 297,000		$ -	3	$ 13,500	26	$ 286,000	$ 55,000	$ 651,500	$ 97,725	$ 749,225
SNAN-VII-5	54	2130	$ 649,650	2	$ 18,000	6	$ 27,000	6	$ 66,000	$ 111,825	$ 872,475	$ 130,871	$ 1,003,346
SNAN-VII-2b	60	1300	$ 442,000		$ -	3	$ 13,500	4	$ 44,000	$ 71,500	$ 571,000	$ 85,650	$ 656,650
SNAN-VII-2b	66	1100	$ 418,000		$ -	3	$ 13,500	10	$ 110,000	$ 63,250	$ 604,750	$ 90,713	$ 695,463

PRIORITY B-11 TOTALS $ 6,045,214

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-12
SULTANA AVENUE (PHILLIPS STREET TO STATE STREET)
WALNUT STREET (EUCLID AVE TO SULTANA AVE)
EUCLID AVENUE (WALNUT STREET TO I-60 POMONA FREEWAY)
FERN AVENUE (WALNUT STREET TO I-60 POMONA FREEWAY)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
EULD-VII-1	24	900	$ 139,500	1	$ 9,000	2	$ 9,000	5	$ 55,000	$ 36,000	$ 248,500	$ 37,275	$ 285,775
WLNT-VII-1	24	600	$ 93,000	1	$ 9,000	2	$ 9,000	4	$ 44,000	$ 24,000	$ 179,000	$ 26,850	$ 205,850
SULT-VII-1b	36	820	$ 172,200		$ -	2	$ 9,000	8	$ 88,000	$ 36,900	$ 306,100	$ 45,915	$ 352,015
SULT-VII-2	36	1080	$ 226,800		$ -	2	$ 9,000	4	$ 44,000	$ 48,600	$ 328,400	$ 49,260	$ 377,660
SULT-VII-1b	42	780	$ 187,200		$ -	4	$ 18,000	4	$ 44,000	$ 37,050	$ 286,250	$ 42,938	$ 329,188
FERN-VII-1	42	1100	$ 264,000	1	$ 9,000	3	$ 13,500	4	$ 44,000	$ 52,250	$ 382,750	$ 57,413	$ 440,163
SULT-VII-1b	54	1840	$ 561,200	1	$ 9,000	4	$ 18,000	8	$ 88,000	$ 96,600	$ 772,800	$ 115,920	$ 888,720

PRIORITY B-12 TOTALS $ 2,879,370

PRIORITY B-13
BON VIEW AVENUE (MISSION BLVD TO FRANCIS STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
FRNS-V-4	30	330	$ 59,400		$ -	1	$ 4,500	2	$ 22,000	$ 14,025	$ 99,925	$ 14,989	$ 114,914
FRNS-V-4	36	1100	$ 231,000		$ -	3	$ 13,500	4	$ 44,000	$ 49,500	$ 338,000	$ 50,700	$ 388,700
FRNS-V-3	42	1470	$ 352,800		$ -	4	$ 18,000	10	$ 110,000	$ 69,825	$ 550,625	$ 82,594	$ 633,219
FRNS-V-3	60	2070	$ 745,200		$ -	4	$ 18,000	6	$ 66,000	$ 113,850	$ 943,050	$ 141,458	$ 1,084,508
FRNS-V-3	66	1520	$ 577,600		$ -	4	$ 18,000	6	$ 66,000	$ 87,400	$ 749,000	$ 112,350	$ 861,350

PRIORITY B-13 TOTALS $ 3,082,690

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-14
CUCAMONGA AVENUE (BELMONT STREET TO FRANCIS STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
FRNS-V-2	48	2100	$ 630,000		$ -	5	$ 22,500	12	$ 132,000	$ 105,000	$ 889,500	$ 133,425	$ 1,022,925
FRNS-V-2	60	1530	$ 550,800		$ -	5	$ 22,500	10	$ 110,000	$ 84,150	$ 767,450	$ 115,118	$ 882,568

PRIORITY B-14 TOTALS $ 1,905,493

PRIORITY B-15
BENSON AVENUE (I-10 SAN BERNARDINO FREEWAY TO 6TH STREET)
6TH STREET (BENSON AVE TO FUCHSIA AVE)
5TH STREET (BENSON AVE TO HELEN AVE)
4TH STREET (BENSON AVE TO OAKS AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
4 TH-VI-2	24	650	100750		$ -	2	$ 9,000	4	$ 44,000	$ 26,000	$ 179,750	$ 26,963	$ 206,713
4 TH-VI-1	36	1680	$ 352,800	1	$ 9,000	5	$ 22,500	6	$ 66,000	$ 75,600	$ 525,900	$ 78,885	$ 604,785
4 TH-VI-3	36	570	$ 119,700		$ -	2	$ 9,000	8	$ 88,000	$ 25,650	$ 242,350	$ 36,353	$ 278,703
4 TH-VI-4	30	1730	$ 311,400	1	$ 9,000	5	$ 22,500	6	$ 66,000	$ 73,525	$ 482,425	$ 72,364	$ 554,789
4 TH-VI-3	42	650	$ 156,000	1	$ 9,000	1	$ 4,500	2	$ 22,000	$ 30,875	$ 222,375	$ 33,356	$ 255,731

PRIORITY B-15 TOTALS $ 1,900,720

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-16
BENSON AVENUE (I STREET TO STATE STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BNSN-VI-1	42	650	$ 156,000		$ -	1	$ 4,500	4	$ 44,000	$ 30,875	$ 235,375	$ 35,306	$ 270,681
BNSN-VI-1	48	770	$ 207,900		$ -	2	$ 9,000	2	$ 22,000	$ 38,500	$ 277,400	$ 41,610	$ 319,010
BNSN-VI-1	66	1320	$ 501,600	1	$ 9,000	2	$ 9,000	4	$ 44,000	$ 75,900	$ 639,500	$ 95,925	$ 735,425
BNSN-VI-1	72	980	$ 411,600	1	$ 9,000	1	$ 4,500	8	$ 88,000	$ 58,800	$ 571,900	$ 85,785	$ 657,685
BNSN-VI-1	84	440	$ 220,000	1	$ 9,000	1	$ 4,500	5	$ 55,000	$ 28,600	$ 317,100	$ 47,565	$ 364,665
BNSN-VI-1	96	1230	$ 738,000	2	$ 18,000	2	$ 9,000	8	$ 88,000	$ 86,100	$ 939,100	$ 140,865	$ 1,079,965

PRIORITY B-16 TOTALS $ 3,427,431

PRIORITY B-17
I STREET (BENSON AVE TO ELDERBERRY AVE)
G STREET (BENSON AVE TO OAKS AVE)
D STREET (BENSON AVE TO OAKS AVE)
STONERIDGE COURT (BENSON AVE TO D STREET)
BROOKS STREET (BENSON AVE TO OAKS AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BNSN-VI-6	30	680	$ 122,400		$ -	2	$ 9,000	7	$ 77,000	$ 28,900	$ 237,300	$ 35,595	$ 272,895
BNSN-VI-3	30	300	$ 54,000		$ -	1	$ 4,500	4	$ 44,000	$ 12,750	$ 115,250	$ 17,288	$ 132,538
BNSN-VI-4	30	860	$ 154,800		$ -	2	$ 9,000	4	$ 44,000	$ 36,550	$ 244,350	$ 36,653	$ 281,003
BNSN-VI-5	36	1710	$ 359,100		$ -	5	$ 22,500	8	$ 88,000	$ 76,950	$ 546,550	$ 81,983	$ 628,533
BNSN-VI-4	36	1230	$ 258,300		$ -	4	$ 18,000	4	$ 44,000	$ 55,350	$ 375,650	$ 56,348	$ 431,998
BNSN-VI-2	36	1400	$ 294,000		$ -	4	$ 18,000	4	$ 44,000	$ 63,000	$ 419,000	$ 62,850	$ 481,850
BNSN-VI-6	42	1890	$ 453,600		$ -	4	$ 18,000	7	$ 77,000	$ 89,775	$ 638,375	$ 95,756	$ 734,131
BNSN-VI-3	42	1900	$ 456,000		$ -	5	$ 22,500	6	$ 66,000	$ 90,250	$ 634,750	$ 95,213	$ 729,963

PRIORITY B-17 TOTALS $ 3,692,909

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-18
BENSON AVENUE (PHILADELPHIA STREET TO FRANCIS AVE)
FRANCIS AVENUE (BENSON AVE TO OAKS AVE)
OAKS AVENUE (SR-60 POMONA FREEWAY TO PHILADELPHIA STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BNSN-IX-1	42	900	$ 216,000		$ -	3	$ 13,500	8	$ 88,000	$ 42,750	$ 360,250	$ 54,038	$ 414,288
OAKS-IX-1	42	1020	$ 244,800	1	$ 9,000	3	$ 13,500	8	$ 88,000	$ 48,450	$ 403,750	$ 60,563	$ 464,313
BNSN-IX-1	48	2000	$ 540,000		$ -	5	$ 22,500	10	$ 110,000	$ 100,000	$ 772,500	$ 115,875	$ 888,375
BNSN-IX-1	66	1200	$ 456,000	1	$ 9,000	3	$ 13,500	10	$ 110,000	$ 69,000	$ 657,500	$ 98,625	$ 756,125

PRIORITY B-18 TOTALS $ 2,523,100

PRIORITY B-19
BENSON AVENUE (PHILLIPS STREET TO MISSION BLVD)
MISSION BOULEVARD (BENSON AVE TO MAGNOLIA AVE)
PHILLIPS STREET (BENSON AVE TO OAKS AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
FLPS-IX-2	30	300	$ 54,000		$ -	1	$ 4,500	3	$ 33,000	$ 12,750	$ 104,250	$ 15,638	$ 119,888
FLPS-IX-1	36	1280	$ 268,800		$ -	3	$ 13,500	10	$ 110,000	$ 57,600	$ 449,900	$ 67,485	$ 517,385
FLPS-IX-2	54	4810	$ 1,467,050		$ -	12	$ 54,000	17	$ 187,000	$ 252,525	$ 1,960,575	$ 294,086	$ 2,254,661
FLPS-IX-1	72	1380	$ 579,600		$ -	4	$ 18,000	8	$ 88,000	$ 82,800	$ 768,400	$ 115,260	$ 883,660
FLPS-IX-1	84	400	$ 200,000	1	$ 9,000	1	$ 4,500		$ -	$ 26,000	$ 239,500	$ 35,925	$ 275,425

PRIORITY B-19 TOTALS $ 4,051,019

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-20
I STREET (LA PALOMA AVE TO WEST CUCAMONGA CHANNEL)
D STREET (GROVE AVE TO WEST CUCAMONGA CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
I ST-V-1	24	920	$ 142,600		$ -	3	$ 13,500	5	$ 55,000	$ 36,800	$ 247,900	$ 37,185	$ 285,085
D ST-V-1	42	600	$ 144,000	1	$ 9,000	2	$ 9,000	6	$ 66,000	$ 28,500	$ 256,500	$ 38,475	$ 294,975
I ST-V-1	54	930	$ 283,650		$ -	3	$ 13,500	6	$ 66,000	$ 48,825	$ 411,975	$ 61,796	$ 473,771
I ST-V-1	66	220	$ 83,600	1	$ 9,000		$ -	2	$ 22,000	$ 12,650	$ 127,250	$ 19,088	$ 146,338

PRIORITY B-20 TOTALS $ 1,200,169

PRIORITY B-21
BON VIEW AVENUE (SR-60 POMONA FREEWAY TO FRANCIS STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BNVW-VIII-1b	36	2030	$ 426,300		$ -	5	$ 22,500	17	$ 187,000	$ 91,350	$ 727,150	$ 109,073	$ 836,223
BNVW-VIII-1b	48	1120	$ 302,400		$ -	3	$ 13,500	7	$ 77,000	$ 56,000	$ 448,900	$ 67,335	$ 516,235

PRIORITY B-21 TOTALS $ 1,352,458

PRIORITY B-22
CUCAMONGA AVENUE (SR-60 POMONA FREEWAY TO FRANCIS STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
CUCA-VIII-1b	36	1300	$ 247,000		$ -	3	$ 13,500	15	$ 165,000	$ 58,500	$ 484,000	$ 72,600	$ 556,600
CUCA-VIII-1b	48	1150	$ 310,500		$ -	3	$ 13,500	6	$ 66,000	$ 57,500	$ 447,500	$ 67,125	$ 514,625

PRIORITY B-22 TOTALS $ 1,071,225

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-23
GROVE AVENUE (SR-60 POMONA FREEWAY TO FRANCIS STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
GROV-VIII-1b	42	1160	$ 278,400		$ -	3	$ 13,500	10	$ 110,000	$ 55,100	$ 457,000	$ 68,550	$ 525,550
GROV-VIII-1b	48	1620	$ 437,400		$ -	4	$ 18,000	4	$ 44,000	$ 81,000	$ 580,400	$ 87,060	$ 667,460

PRIORITY B-23 TOTALS $ 1,193,010

PRIORITY B-24
PARCO AVENUE (SR-60 POMONA FREEWAY TO PHILADELPHIA STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
PACO-VIII-1b	48	1390	$ 375,300		$ -	4	$ 18,000	19	$ 209,000	$ 69,500	$ 671,800	$ 100,770	$ 772,570

PRIORITY B-24 TOTALS $ 772,570

PRIORITY B-25
BAKER AVENUE (FRANCIS STREET TO ACACIA STREET)
VINEYARD AVENUE (FRANCIS STREET TO LOCUST STREET)
CARLOS AVENUE (LOCUST STREET TO ELM CT)
HELLMAN AVENUE (PHILADELPHIA STREET TO CEDAR STREET)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
BAKR-V-1	30	1420	$ 255,600		$ -	4	$ 18,000	6	$ 66,000	$ 60,350	$ 399,950	$ 59,993	$ 459,943
VNYD-V-1	30	1275	$ 229,500		$ -	3	$ 13,500	5	$ 55,000	$ 54,188	$ 352,188	$ 52,828	$ 405,016
CRLS-V-1	30	750	$ 135,000		$ -	1	$ 4,500	7	$ 77,000	$ 31,875	$ 248,375	$ 37,256	$ 285,631
BAKR-V-1	42	1260	$ 264,600		$ -	3	$ 13,500	6	$ 66,000	$ 59,850	$ 403,950	$ 60,593	$ 464,543
HLMN-IV-1	48	1410	$ 338,400	1	$ 9,000	3	$ 13,500	14	$ 154,000	$ 70,500	$ 585,400	$ 87,810	$ 673,210

PRIORITY B-25 TOTALS $ 2,288,342

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY B-26
CONVENTION CENTER WAY (DEARBORN CT TO HOLT BLVD)
HOLT BOULEVARD (CONVENTION CENTER WAY TO CUCAMONGA CREEK)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
HOLT-IV-1	36	920	$ 193,200		$ -	2	$ 9,000	4	$ 44,000	$ 41,400	$ 287,600	$ 43,140	$ 330,740
HOLT-IV-1	60	1060	$ 360,400	1	$ 9,000	3	$ 13,500	8	$ 88,000	$ 58,300	$ 529,200	$ 79,380	$ 608,580

PRIORITY B-26 TOTALS $ 939,320

PRIORITY B-27
MISSION BOULEVARD (ARCHIBALD AVE TO TURNER AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
MISN-III-1	66	700	$ 266,000		$ -	2	$ 9,000	4	$ 44,000	$ 40,250	$ 359,250	$ 53,888	$ 413,138
MISN-III-1	72	700	$ 294,000	1	$ 9,000	2	$ 9,000	4	$ 44,000	$ 42,000	$ 398,000	$ 59,700	$ 457,700

PRIORITY B-27 TOTALS $ 870,838

PRIORITY B-28
6TH STREET (GROVE AVE TO WEST CUCAMONGA CHANNEL)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.y.		GENCY 15%	CONST. COST
6 TH-V-1	36	450	$ 94,500		$ -	1	$ 4,500	4	$ 44,000	$ 20,250	$ 163,250	$ 24,488	$ 187,738
6 TH-V-1	42	620	$ 148,000	1	$ 9,000	1	$ 4,500	4	$ 44,000	$ 29,450	$ 234,950	$ 35,243	$ 270,193

PRIORITY B-28 TOTALS $ 457,930

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETEREMINED UPON FINAL ENGINEERING.

PRIORITY C-1
MILLIKEN AVENUE (COUNTY LINE CHANNEL TO RIVERSIDE DR.)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
MLKN-X-1	36	7200	$ 1,512,000		$ -	19	$ 85,500	4	$ 44,000		$ 1,641,500	$ 164,150	$ 1,805,650
MLKN-X-1	48	2070	$ 558,900		$ -	5	$ 22,500	5	$ 55,000		$ 636,400	$ 63,640	$ 700,040
MLKN-X-1	54	1740	$ 530,700	1	$ 9,000	4	$ 18,000	4	$ 44,000		$ 601,700	$ 60,170	$ 661,870

PRIORITY C-1 TOTALS $ 3,167,560

PRIORITY C-2
MILL CREEK AVENUE (COUNTY LINE CHANNEL TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
MLCR-X-4	48	740	$ 199,800		$ -	2	$ 9,000	6	$ 66,000		$ 274,800	$ 27,480	$ 302,280
MLCR-X-3	48	1360	$ 367,200		$ -	4	$ 18,000	13	$ 143,000		$ 528,200	$ 52,820	$ 581,020
MLCR-X-4	54	970	$ 295,850		$ -	3	$ 13,500	6	$ 66,000		$ 375,350	$ 37,535	$ 412,885
MLCR-X-5	54	990	$ 301,950		$ -	3	$ 13,500	6	$ 66,000		$ 381,450	$ 38,145	$ 419,595
MLCR-X-2	60	650	$ 221,000		$ -	2	$ 9,000	6	$ 66,000		$ 296,000	$ 29,600	$ 325,600
MLCR-X-6	60	2310	$ 785,400		$ -	6	$ 27,000	9	$ 99,000		$ 911,400	$ 91,140	$ 1,002,540
MLCR-X-1	72	3600	$ 1,512,000		$ -	9	$ 40,500	24	$ 264,000		$ 1,816,500	$ 181,650	$ 1,998,150
MLCR-X-6	72	940	$ 394,800		$ -	3	$ 13,500	6	$ 66,000		$ 474,300	$ 47,430	$ 521,730
MLCR-X-1	84	2110	$ 1,055,000	1	$ 9,000	5	$ 22,500	3	$ 33,000		$ 1,119,500	$ 111,950	$ 1,231,450
MLCR-X-1	108	4000	$ 2,880,000	2	$ 18,000	10	$ 45,000	9	$ 99,000		$ 3,042,000	$ 304,200	$ 3,346,200
MLCR-X-1	10'x8'	1500	$ 1,800,000	2	$ 18,000	4	$ 18,000	4	$ 44,000		$ 1,880,000	$ 188,000	$ 2,068,000

PRIORITY C-2 TOTALS $ 12,209,450

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-3
HAVEN AVENUE (COUNTY LINE CHANNEL TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
HAVN-X-1	48	1780	$ 480,600		$ -	5	$ 22,500	6	$ 66,000		$ 569,100	$ 56,910	$ 626,010
HAVN-X-4	48	720	$ 194,400		$ -	2	$ 9,000	5	$ 55,000		$ 258,400	$ 25,840	$ 284,240
HAVN-X-3	48	1070	$ 288,900		$ -	3	$ 13,500	9	$ 99,000		$ 401,400	$ 40,140	$ 441,540
HAVN-X-2	48	1030	$ 278,100		$ -	3	$ 13,500	3	$ 33,000		$ 324,600	$ 32,460	$ 357,060
HAVN-X-1	60	1710	$ 581,400	1	$ 9,000	4	$ 18,000	2	$ 22,000		$ 630,400	$ 63,040	$ 693,440
HAVN-X-3	60	2110	$ 717,400		$ -	6	$ 27,000	2	$ 22,000		$ 766,400	$ 76,640	$ 843,040
HAVN-X-3	72	1090	$ 457,800		$ -	3	$ 13,500	2	$ 22,000		$ 493,300	$ 49,330	$ 542,630
HAVN-X-1	84	3540	$ 1,770,000	2	$ 18,000	9	$ 40,500	11	$ 121,000		$ 1,949,500	$ 194,950	$ 2,144,450
HAVN-X-1	96	5200	$ 3,120,000	1	$ 9,000	13	$ 58,500	18	$ 198,000		$ 3,385,500	$ 338,550	$ 3,724,050

PRIORITY C-3 TOTALS $ 9,656,460

PRIORITY C-4
TURNER AVENUE (COUNTY LINE CHANNEL TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
TRNR-X-1	48	2270	$ 612,900		$ -	6	$ 27,000	8	$ 88,000		$ 727,900	$ 72,790	$ 800,690
TRNR-X-1	54	1460	$ 445,300		$ -	4	$ 18,000	5	$ 55,000		$ 518,300	$ 51,830	$ 570,130
TRNR-X-2	54	1400	$ 427,000		$ -	4	$ 18,000	3	$ 33,000		$ 478,000	$ 47,800	$ 525,800
TRNR-X-3	54	1540	$ 469,700		$ -	4	$ 18,000	3	$ 33,000		$ 520,700	$ 52,070	$ 572,770
TRNR-X-4	54	2800	$ 854,000		$ -	7	$ 31,500	9	$ 99,000		$ 984,500	$ 98,450	$ 1,082,950
TRNR-X-1	66	4280	$ 1,626,400		$ -	10	$ 45,000	8	$ 88,000		$ 1,759,400	$ 175,940	$ 1,935,340
TRNR-X-1	84	4300	$ 2,150,000	2	$ 18,000	11	$ 49,500	6	$ 66,000		$ 2,283,500	$ 228,350	$ 2,511,850
TRNR-X-1	90	1730	$ 951,500	1	$ 9,000	4	$ 18,000	6	$ 66,000		$ 1,044,500	$ 104,450	$ 1,148,950
TRNR-X-1	96	680	$ 408,000		$ -	1	$ 4,500	4	$ 44,000		$ 456,500	$ 45,650	$ 502,150

PRIORITY C-4 TOTALS $ 9,650,630

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-5

ARCHIBALD AVENUE (COUNTY LINE CHANNEL TO SCHAEFER AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
ARCH-X-3	48	1380	$ 372,600		$ -	4	$ 18,000	4	$ 44,000		$ 434,600	$ 43,460	$ 478,060
ARCH-X-1	54	1210	$ 369,050		$ -	3	$ 13,500	14	$ 154,000		$ 536,550	$ 53,655	$ 590,205
ARCH-X-3	54	860	$ 262,300		$ -	2	$ 9,000	6	$ 66,000		$ 337,300	$ 33,730	$ 371,030
ARCH-X-2	54	890	$ 271,450		$ -	3	$ 13,500	4	$ 44,000		$ 328,950	$ 32,895	$ 361,845
ARCH-X-1	60	1350	$ 459,000		$ -	4	$ 18,000	2	$ 22,000		$ 499,000	$ 49,900	$ 548,900
ARCH-X-3	60	280	$ 95,200		$ -	2	$ 9,000	2	$ 22,000		$ 126,200	$ 12,620	$ 138,820
ARCH-X-2	60	790	$ 268,600		$ -	2	$ 9,000	4	$ 44,000		$ 321,600	$ 32,160	$ 353,760
ARCH-X-2	66	500	$ 190,000		$ -	2	$ 9,000	2	$ 22,000		$ 221,000	$ 22,100	$ 243,100
ARCH-X-1	78	2640	$ 1,214,400	1	$ 9,000	7	$ 31,500	6	$ 66,000		$ 1,320,900	$ 132,090	$ 1,452,990
ARCH-X-1	90	1030	$ 566,500	1	$ 9,000	7	$ 31,500	2	$ 22,000		$ 629,000	$ 62,900	$ 691,900
ARCH-X-1	96	3530	$ 2,118,000	1	$ 9,000	5	$ 22,500	15	$ 165,000		$ 2,314,500	$ 231,450	$ 2,545,950

PRIORITY C-5 TOTALS $ 7,776,560

PRIORITY C-6

CHINO AVENUE (E/O CUCAMONGA CHANNEL TO N/O CHINO AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
CHIN-XI-1	36	1100	$ 231,000		$ -	3	$ 13,500	5	$ 55,000		$ 299,500	$ 29,950	$ 329,450
CHIN-XI-1	48	680	$ 183,600		$ -	2	$ 9,000	4	$ 44,000		$ 236,600	$ 23,660	$ 260,260
CHIN-XI-1	66	980	$ 372,400	1	$ 9,000	2	$ 9,000	4	$ 44,000		$ 434,400	$ 43,440	$ 477,840

PRIORITY C-6 TOTALS $ 1,067,550

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-7
EDISON AVENUE (E/O CUCAMONGA CHANNEL TO N/O EDISON AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
EDSN-XI-1	48	810	$ 218,700		$ -	2	$ 9,000	4	$ 44,000		$ 271,700	$ 27,170	$ 298,870
EDSN-XI-2	36	1100	$ 231,000		$ -	3	$ 13,500	4	$ 44,000		$ 288,500	$ 28,850	$ 317,350
EDSN-XI-2	48	950	$ 256,500	1	$ 9,000	3	$ 13,500	3	$ 33,000		$ 312,000	$ 31,200	$ 343,200

PRIORITY C-7 TOTALS $ 959,420

PRIORITY C-8
EUCALYPTUS AVENUE (E/O CUCAMONGA CHANNEL TO N/O EUCALYPTUS AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
ECLP-XI-1	36	480	$ 100,800		$ -	2	$ 9,000	6	$ 66,000		$ 175,800	$ 17,580	$ 193,380
ECLP-XI-1	60	860	$ 292,400	1	$ 9,000	2	$ 9,000	6	$ 66,000		$ 376,400	$ 37,640	$ 414,040

PRIORITY C-8 TOTALS $ 607,420

PRIORITY C-9
HELLMAN AVENUE (RIVERSIDE DR TO CHINO AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
CHIN-XI-2	42	1490	$ 357,600	1	$ 9,000	4	$ 18,000	5	$ 55,000		$ 439,600	$ 43,960	$ 483,560

PRIORITY C-9 TOTALS $ 483,560

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-10
HELLMAN AVENUE (EUCALYPTUS AVE TO EDISON AVE)
EDISON AVENUE (HELLMAN AVE TO VINEYARD AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
HLMN-XI-3	48	500	$ 135,000		$ -	2	$ 9,000	2	$ 22,000		$ 166,000	$ 16,600	$ 182,600
HLMN-XI-3	54	1220	$ 372,100		$ -	4	$ 18,000	6	$ 66,000		$ 456,100	$ 45,610	$ 501,710
HLMN-XI-1	60	720	$ 244,800		$ -	2	$ 9,000	4	$ 44,000		$ 297,800	$ 29,780	$ 327,580
HLMN-XI-3	72	1200	$ 504,000		$ -	3	$ 13,500	6	$ 66,000		$ 583,500	$ 58,350	$ 641,850
HLMN-XI-3	84	1490	$ 745,000		$ -	4	$ 18,000	4	$ 44,000		$ 807,000	$ 80,700	$ 887,700
HLMN-XI-2a	96	2640	$ 1,584,000	1	$ 9,000	7	$ 31,500	8	$ 88,000		$ 1,712,500	$ 171,250	$ 1,883,750
HLMN-XI-1	114	850	$ 671,500	2	$ 18,000	0	$ -	4	$ 44,000		$ 733,500	$ 73,350	$ 806,850

PRIORITY C-10 TOTALS $ 5,232,040

PRIORITY C-11
HELLMAN AVENUE (EDISON AVE TO SCHAEFER AVE)
SCHAEFER AVENUE (HELLMAN AVE TO VINEYARD AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
HLMN-XI-5	42	1440	$ 345,600		$ -	4	$ 18,000	6	$ 66,000		$ 429,600	$ 42,960	$ 472,560
HLMN-XI-4	48	570	$ 153,900		$ -	2	$ 9,000	3	$ 33,000		$ 195,900	$ 19,590	$ 215,490
HLMN-XI-4	54	1220	$ 372,100		$ -	4	$ 18,000	4	$ 44,000		$ 434,100	$ 43,410	$ 477,510
HLMN-XI-4	66	1210	$ 459,800		$ -	3	$ 13,500	4	$ 44,000		$ 517,300	$ 51,730	$ 569,030
HLMN-XI-2b	84	4220	$ 2,110,000	2	$ 18,000	11	$ 49,500	4	$ 44,000		$ 2,221,500	$ 222,150	$ 2,443,650

PRIORITY C-11 TOTALS $ 4,178,240

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-12
MERRILL AVENUE (W/O CUCAMONGA CHANNEL TO EUCALYPTUS AVE)

LINE ID	SIZE	LENGTH (feet)	PIPING COST	JUNCTION STR. NO.	JUNCTION STR. COST	MANHOLES NO.	MANHOLES COST	INLETS NO.	INLETS COST	TRENCH REPAVEMENT $5/s.f.	SUBTOTAL	CONTIN-GENCY 10%	TOTAL CONST. COST
MERL-XI-1	60	640	$ 217,600		$ -	2	$ 9,000	20	$ 220,000		$ 446,600	$ 44,660	$ 491,260
MERL-XI-1	72	2460	$ 1,033,200		$ -	7	$ 31,500	4	$ 44,000		$ 1,108,700	$ 110,870	$ 1,219,570
MERL-XI-1	96	1370	$ 822,000		$ -	4	$ 18,000	4	$ 44,000	$ 95,900	$ 979,900	$ 97,990	$ 1,077,890
MERL-XI-1	102	1230	$ 811,800		$ -	3	$ 13,500	14	$ 154,000	$ 89,175	$ 1,068,475	$ 106,848	$ 1,175,323
MERL-XI-1	120	830	$ 713,800	1	$ 9,000	1	$ 4,500	4	$ 44,000	$ 74,700	$ 846,000	$ 84,600	$ 930,600

PRIORITY C-12 TOTALS $ 4,894,643

PRIORITY C-13
WALKER AVENUE (CUCAMONGA CREEK TO CHINO AVE)

LINE ID	SIZE	LENGTH (feet)	PIPING COST	JUNCTION STR. NO.	JUNCTION STR. COST	MANHOLES NO.	MANHOLES COST	INLETS NO.	INLETS COST	TRENCH REPAVEMENT $5/s.f.	SUBTOTAL	CONTIN-GENCY 10%	TOTAL CONST. COST
WLKR-XII-1	48	780	$ 210,600		$ -	2	$ 9,000	4	$ 44,000		$ 263,600	$ 26,360	$ 289,960
WLKR-XII-2	48	710	$ 191,700		$ -	2	$ 9,000	8	$ 88,000		$ 288,700	$ 28,870	$ 317,570
WLKR-XII-3	54	700	$ 213,500		$ -	2	$ 9,000	4	$ 44,000		$ 266,500	$ 26,650	$ 293,150
WLKR-XII-4	54	700	$ 213,500		$ -	2	$ 9,000	4	$ 44,000		$ 266,500	$ 26,650	$ 293,150
WLKR-XII-1	66	500	$ 190,000		$ -	1	$ 4,500	4	$ 44,000		$ 238,500	$ 23,850	$ 262,350
WLKR-XII-1	72	2630	$ 1,104,600		$ -	7	$ 31,500	14	$ 154,000		$ 1,290,100	$ 129,010	$ 1,419,110
WLKR-XII-3	72	1030	$ 432,600		$ -	3	$ 13,500	6	$ 66,000		$ 512,100	$ 51,210	$ 563,310
WLKR-XII-4	72	1050	$ 441,000		$ -	3	$ 13,500	6	$ 66,000		$ 520,500	$ 52,050	$ 572,550
WLKR-XII-1	84	2650	$ 1,325,000	1	$ 9,000	7	$ 31,500	14	$ 154,000		$ 1,519,500	$ 151,950	$ 1,671,450
WLKR-XII-4	84	200	$ 100,000		$ -		$ -	2	$ 22,000		$ 122,000	$ 12,200	$ 134,200
WLKR-XII-3	90	180	$ 99,000		$ -		$ -	2	$ 22,000		$ 121,000	$ 12,100	$ 133,100
WLKR-XII-1	108	2700	$ 1,944,000	1	$ 9,000	7	$ 31,500	12	$ 132,000		$ 2,116,500	$ 211,650	$ 2,328,150
WLKR-XII-1	120	2600	$ 2,236,000		$ -	7	$ 31,500	14	$ 154,000		$ 2,421,500	$ 242,150	$ 2,663,650
WLKR-XII-1	DBL 10'x10'	3125	$ 7,500,000	2	$ 18,000	8	$ 36,000	11	$ 121,000	$ 200,000	$ 7,875,000	$ 787,500	$ 8,662,500

OUTSIDE CITY LIMITS- C-13 (SD-51)

WLKR-XII-1x	DBL 10'x10'	4225	$ 10,140,000		$ -	11	$ 49,500	10	$ 110,000	$ 200,000	$ 10,499,500	$ 1,049,950	$ 11,549,450

PRIORITY C-13 TOTALS $ 31,153,650

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-14
GROVE AVENUE (MERRILL TO CHINO)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
GROV-XIII-1	54	1360	$ 414,800		$ -	3	$ 13,500	17	$ 187,000	$ 71,400	$ 686,700	$ 68,670	$ 755,370
GROV-XIII-1	90	2640	$ 1,452,000		$ -	7	$ 31,500	12	$ 132,000	$ 178,200	$ 1,793,700	$ 179,370	$ 1,973,070
GROV-XIII-1	96	2650	$ 1,590,000		$ -	7	$ 31,500	14	$ 154,000	$ 185,500	$ 1,961,000	$ 196,100	$ 2,157,100
GROV-XIII-1	108	2645	$ 1,904,400		$ -	7	$ 31,500	12	$ 132,000	$ 178,538	$ 2,246,438	$ 224,644	$ 2,471,081
GROV-XIII-1	120	2630	$ 2,261,800	1	$ 9,000	6	$ 27,000	13	$ 143,000	$ 190,675	$ 2,631,475	$ 263,148	$ 2,894,623

PRIORITY C-14 TOTALS $ 10,251,244

PRIORITY C-15
MERRILL AVENUE (EUCLID AVE TO BON VIEW AVE)
BON VIEW AVENUE (MERRILL AVE TO CHINO AVE)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVMENT $5/s.f.		GENCY 10%	CONST. COST
BNVW-XIV-1	48	1360	$ 367,200		$ -	4	$ 18,000	5	$ 55,000		$ 440,200	$ 44,020	$ 484,220
MERL-XIV-2	54	3450	$ 1,052,250		$ -	9	$ 40,500	12	$ 132,000		$ 1,224,750	$ 122,475	$ 1,347,225
BNVW-XIV-1	60	2640	$ 897,600		$ -	7	$ 31,500	16	$ 176,000		$ 1,105,100	$ 110,510	$ 1,215,610
BNVW-XIV-1	78	2640	$ 1,214,400		$ -	7	$ 31,500	13	$ 143,000		$ 1,388,900	$ 138,890	$ 1,527,790
BNVW-XIV-1	96	2640	$ 1,584,000		$ -	7	$ 31,500	9	$ 99,000		$ 1,714,500	$ 171,450	$ 1,885,950
BNVW-XIV-1	102	2540	$ 1,676,400		$ -	6	$ 27,000	12	$ 132,000		$ 1,835,400	$ 183,540	$ 2,018,940
MERL-XIV-1	120	1300	$ 1,118,000	1	$ 9,000	3	$ 13,500	14	$ 154,000	$ 94,250	$ 1,388,750	$ 138,875	$ 1,527,625
MERL-XIV-1	9.5'X9.5'	2990	$ 3,588,000	2	$ 18,000	7	$ 31,500	10	$ 110,000	$ 231,725	$ 3,979,225	$ 397,923	$ 4,377,148

PRIORITY C-15 TOTALS $ 14,384,508

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-16
EUCLID AVENUE (MERRILL AVE TO RIVERSIDE DR)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 10%	CONST. COST
EULD-XIV-1	42	2710	$ 650,400		$ -	7	$ 31,500	6	$ 66,000		$ 747,900	$ 74,790	$ 822,690
EULD-XIV-5	48	1330	$ 359,100		$ -	3	$ 13,500	9	$ 99,000		$ 471,600	$ 47,160	$ 518,760
EULD-XIV-4	48	1330	$ 359,100		$ -	4	$ 18,000	9	$ 99,000		$ 476,100	$ 47,610	$ 523,710
EULD-XIV-3	60	850	$ 289,000		$ -	2	$ 9,000	6	$ 66,000		$ 364,000	$ 36,400	$ 400,400
EULD-XIV-5	66	1020	$ 387,600		$ -	4	$ 18,000	8	$ 88,000		$ 493,600	$ 49,360	$ 542,960
EULD-XIV-2	66	1080	$ 410,400		$ -	3	$ 13,500	16	$ 176,000		$ 599,900	$ 59,990	$ 659,890
EULD-XIV-4	72	1100	$ 462,000		$ -	3	$ 13,500	7	$ 77,000		$ 552,500	$ 55,250	$ 607,750
EULD-XIV-3	72	500	$ 210,000		$ -	2	$ 9,000	6	$ 66,000		$ 285,000	$ 28,500	$ 313,500
EULD-XIV-1	78	2650	$ 1,219,000	1	$ 9,000	6	$ 27,000	2	$ 22,000		$ 1,277,000	$ 127,700	$ 1,404,700
EULD-XIV-5	78	540	$ 248,400		$ -	1	$ 4,500	2	$ 22,000		$ 274,900	$ 27,490	$ 302,390
EULD-XIV-3	78	1180	$ 542,800		$ -	3	$ 13,500	6	$ 66,000		$ 622,300	$ 62,230	$ 684,530
EULD-XIV-1	90	2640	$ 1,452,000	1	$ 9,000	7	$ 31,500	10	$ 110,000		$ 1,602,500	$ 160,250	$ 1,762,750
EULD-XIV-4	90	490	$ 269,500		$ -	1	$ 4,500	2	$ 22,000		$ 296,000	$ 29,600	$ 325,600
EULD-XIV-2	90	580	$ 319,000		$ -	2	$ 9,000	2	$ 22,000		$ 350,000	$ 35,000	$ 385,000
EULD-XIV-3	96	420	$ 252,000	1	$ 9,000	1	$ 4,500	2	$ 22,000		$ 287,500	$ 28,750	$ 316,250
EULD-XIV-1	102	2610	$ 1,722,600	1	$ 9,000	7	$ 31,500	2	$ 22,000		$ 1,785,100	$ 178,510	$ 1,963,610
EULD-XIV-1	108	2580	$ 1,857,600	2	$ 18,000	6	$ 27,000	2	$ 22,000		$ 1,924,600	$ 192,460	$ 2,117,060

PRIORITY C-16 TOTALS $ 13,651,550

PRIORITY C-17
ARCHIBALD AVENUE (INLAND EMPIRE BLVD TO AIRPORT DR.)

PIPING				JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
ARCH-IV-1	48	440	$ 118,800		$ -	1	$ 4,500	10	$ 110,000	$ 22,000	$ 255,300	$ 38,295	$ 293,595
ARCH-IV-1	54	620	$ 189,100		$ -	2	$ 9,000	5	$ 55,000	$ 32,550	$ 285,650	$ 42,848	$ 328,498
ARCH-IV-1	60	700	$ 238,000		$ -	2	$ 9,000	7	$ 77,000	$ 38,500	$ 362,500	$ 54,375	$ 416,875
ARCH-IV-1	72	1340	$ 562,800	1	$ 9,000	4	$ 18,000	6	$ 66,000	$ 80,400	$ 736,200	$ 110,430	$ 846,630

*note: 15% contingency used in OMC projects due to higher potential of conflicts/unknown conditions in existing streets

PRIORITY C-17 TOTALS $ 1,885,598

FIGURES SHOWN ARE FOR BUDGETING PURPOSES ONLY. ULTIMATE FIGURES TO BE DETERMINED UPON FINAL ENGINEERING.

PRIORITY C-18
INLAND EMPIRE BOULEVARD (CUCAMONGA CHANNEL TO VINEYARD AVE)
PLAZA SERENA (VINEYARD AVE TO ORANGE AVE)

	PIPING			JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
G ST-IV-1	36	1350	$ 256,500		$ -	4	$ 18,000	13	$ 143,000	$ 60,750	$ 478,250	$ 71,738	$ 549,988
G ST-IV-1	72	1140	$ 456,000		$ -	3	$ 13,500	12	$ 132,000	$ 68,400	$ 669,900	$ 100,485	$ 770,385
G ST-IV-1	96	2330	$ 1,340,800	1	$ 9,000	6	$ 27,000	22	$ 242,000	$ 163,100	$ 1,781,900	$ 267,285	$ 2,049,185

*note: 15% contingency used in OMC projects due to higher potential of conflicts/unknown conditions in existing streets

PRIORITY C-18 TOTALS $ 3,369,558

PRIORITY C-19
FIFTH STREET (BALBOA AVE TO CUCAMONGA CHANNEL)

	PIPING			JUNCTION STR.		MANHOLES		INLETS		TRENCH	SUBTOTAL	CONTIN-	TOTAL
LINE ID	SIZE	LENGTH (feet)	PIPING COST	NO.	COST	NO.	COST	NO.	COST	REPAVEMENT $5/s.f.		GENCY 15%	CONST. COST
5 TH-IV-1	42	790	$ 189,600		$ -	2	$ 9,000	7	$ 77,000	$ 37,525	$ 313,125	$ 46,969	$ 360,094
5 TH-IV-1	60	1600	$ 544,000	1	$ 9,000	4	$ 18,000	6	$ 66,000	$ 88,000	$ 725,000	$ 108,750	$ 833,750

*note: 15% contingency used in OMC projects due to higher potential of conflicts/unknown conditions in existing streets

PRIORITY C-19 TOTALS $ 1,193,844

APPENDIX

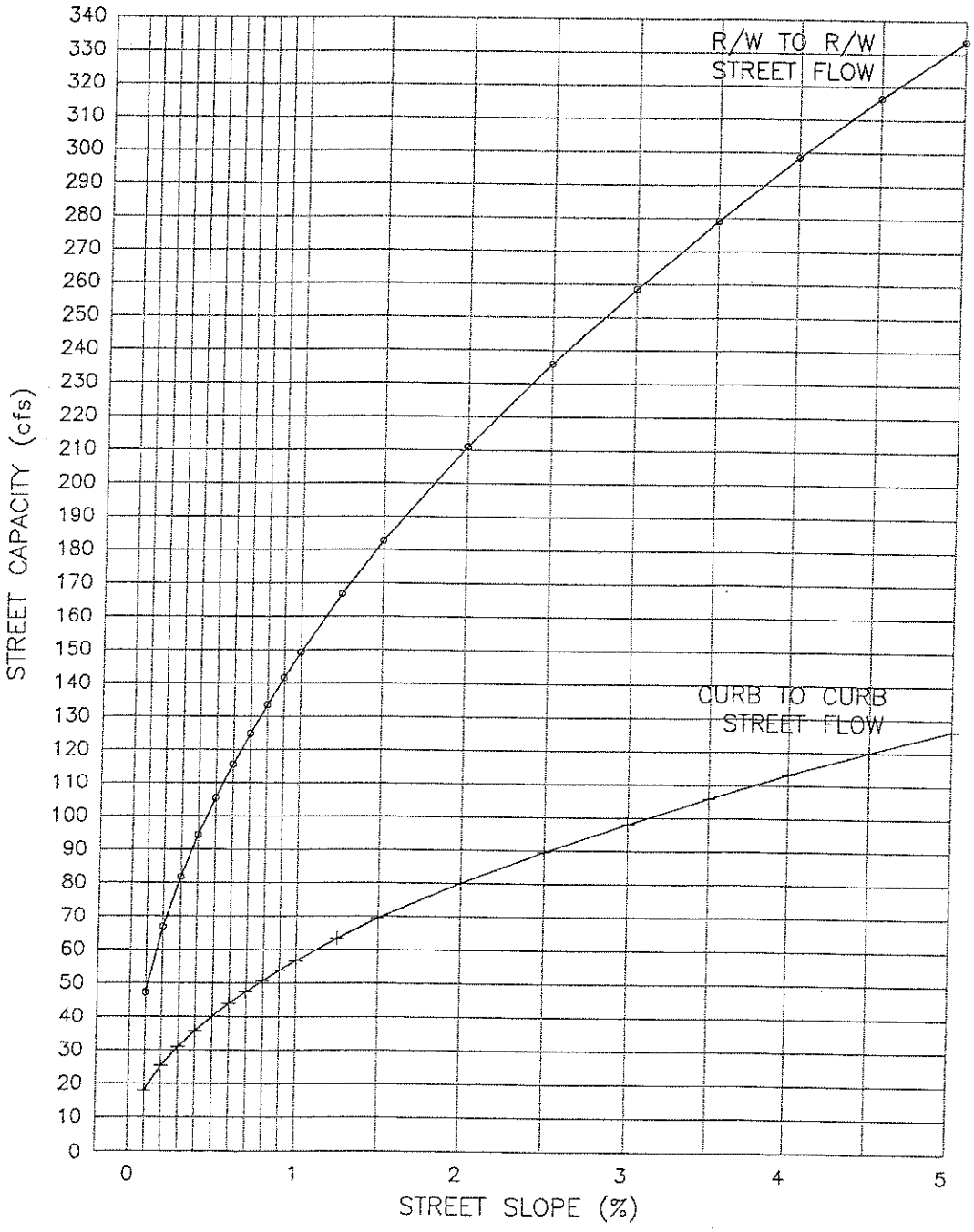
"A"

STREET FLOW CAPACITY CURVES

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

100' RIGHT OF WAY WIDTH
76' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1001
LEVEL SECTION

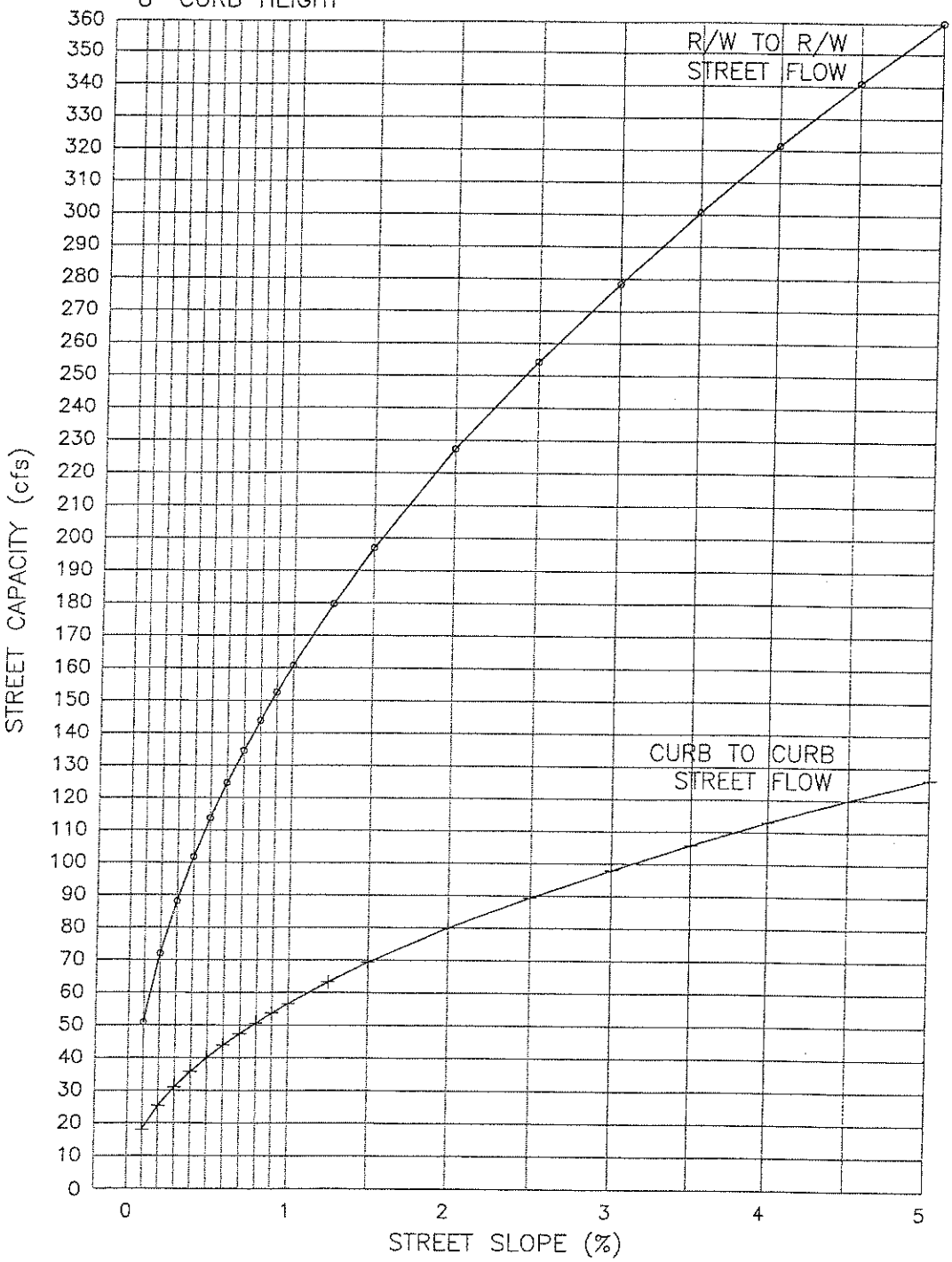


o FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

120' RIGHT OF WAY WIDTH
94' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1002

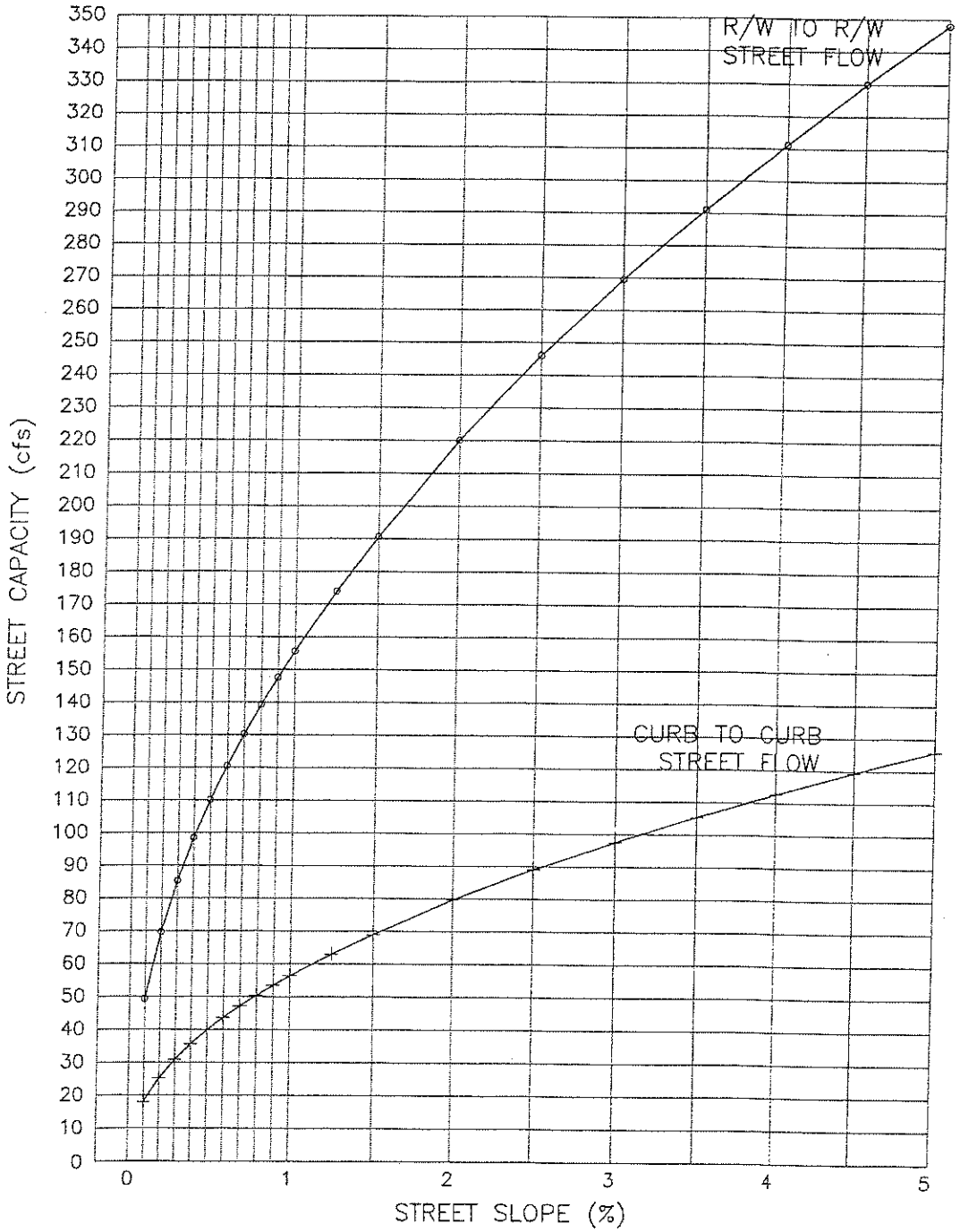


∘ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

88' RIGHT OF WAY WIDTH
64' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1003
LEVEL SECTION

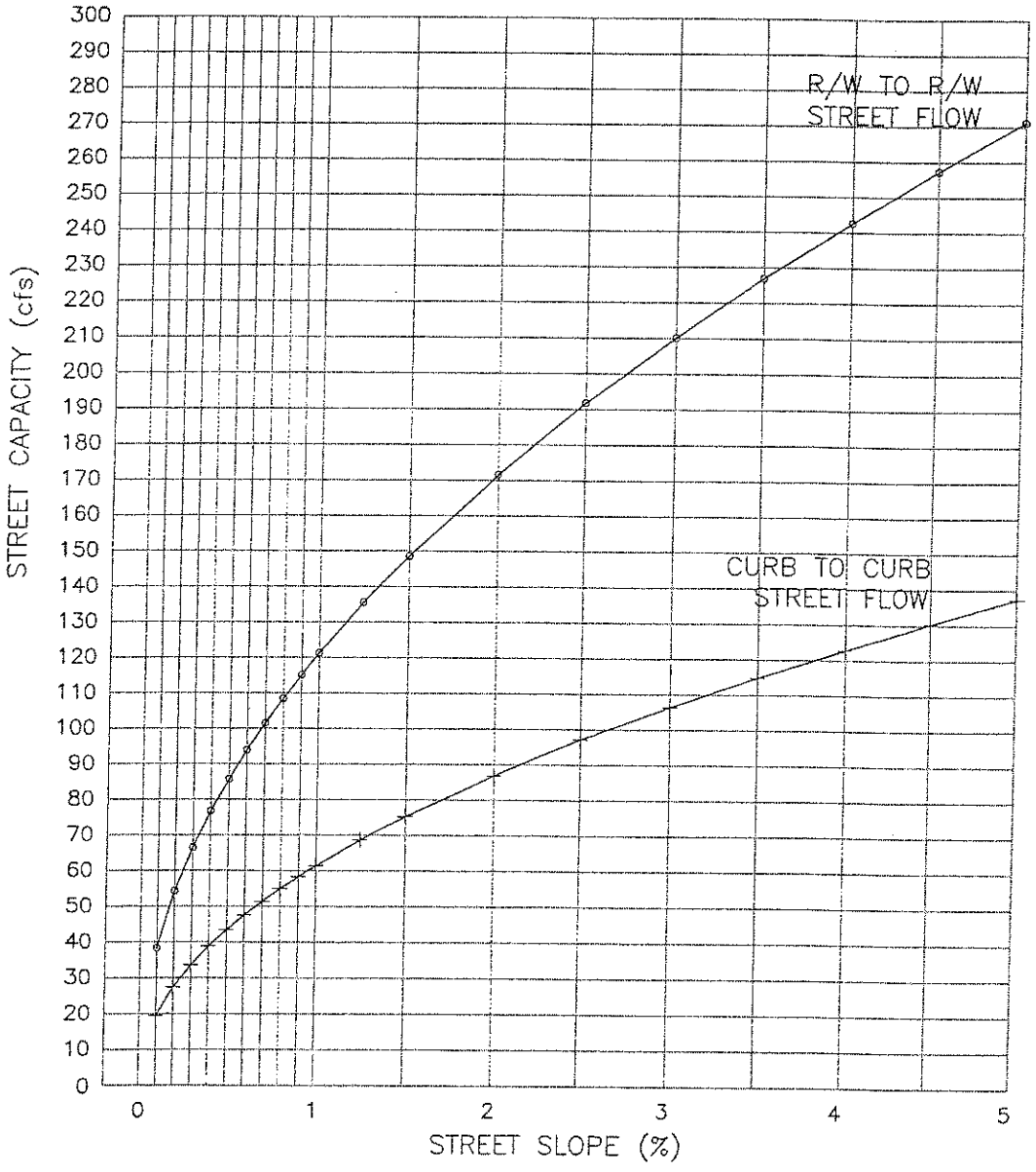


○ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

60' RIGHT OF WAY WIDTH
40' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1004
LEVEL SECTION

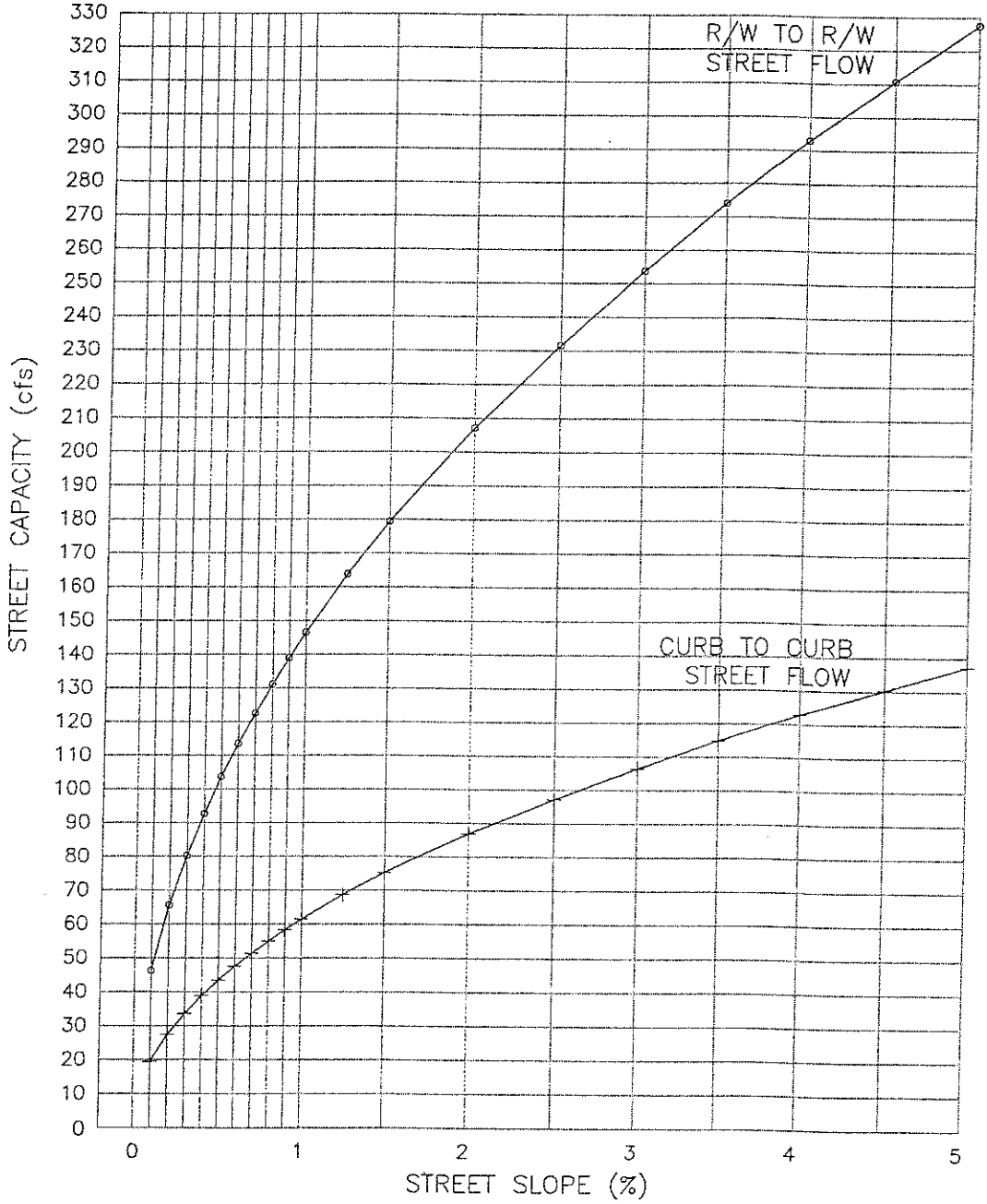


○ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

66' RIGHT OF WAY WIDTH
40' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1004
LEVEL SECTION



o FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE

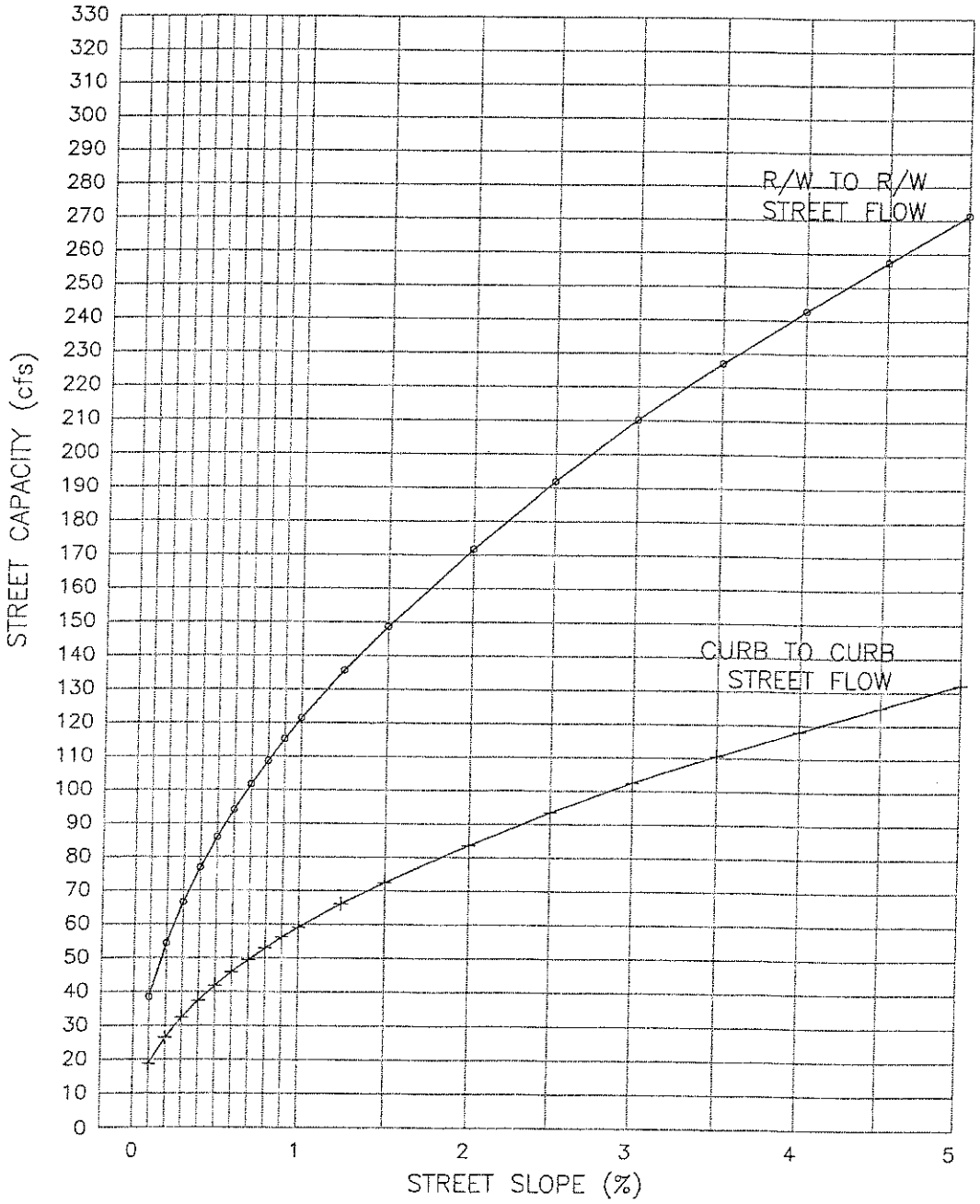
FEBRUARY 2012

CITY OF ONTARIO

STREET FLOW CAPACITY

66' RIGHT OF WAY WIDTH
48' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1005
LEVEL SECTION

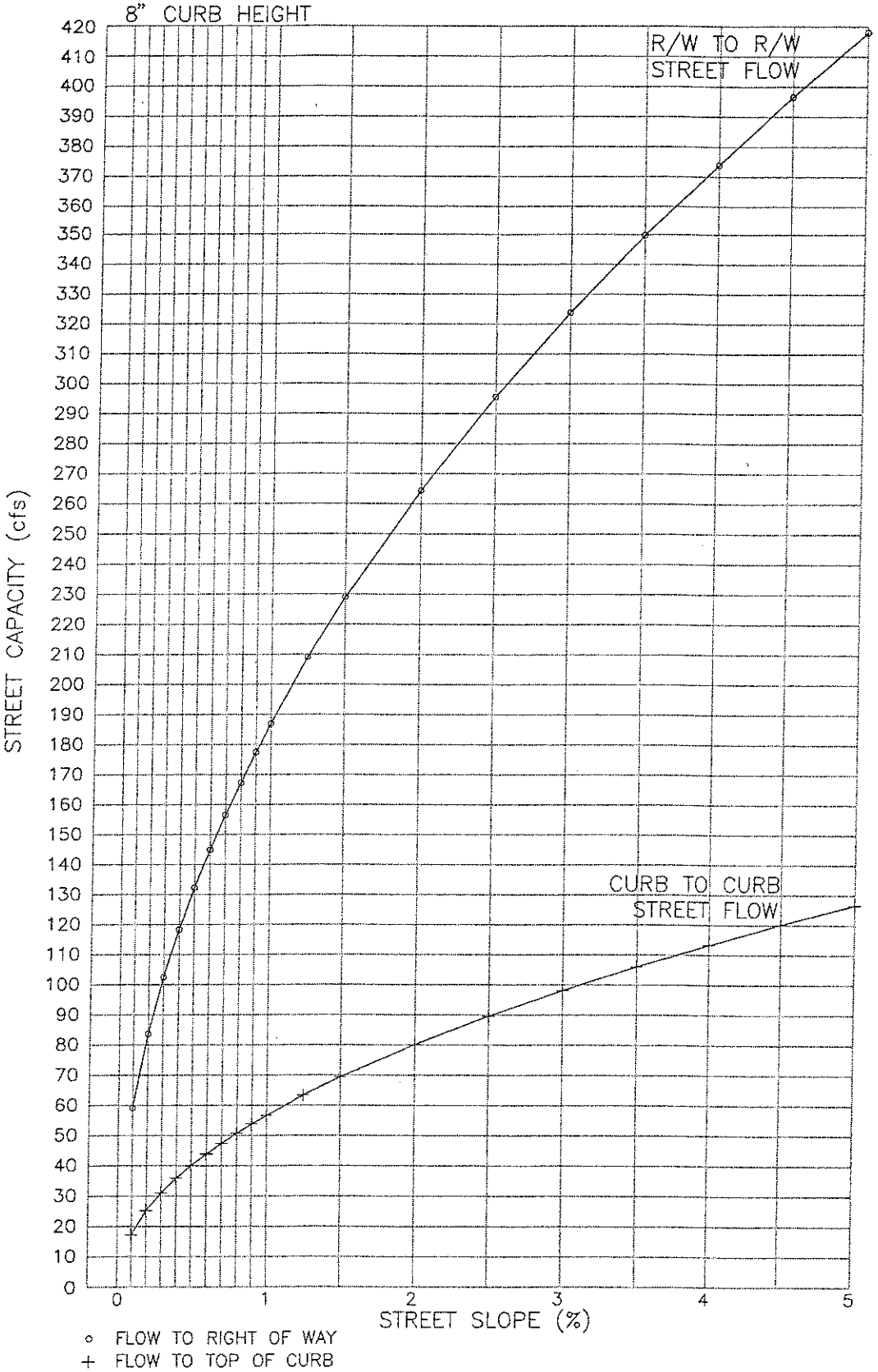


o FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

160' RIGHT OF WAY WIDTH
130' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1006

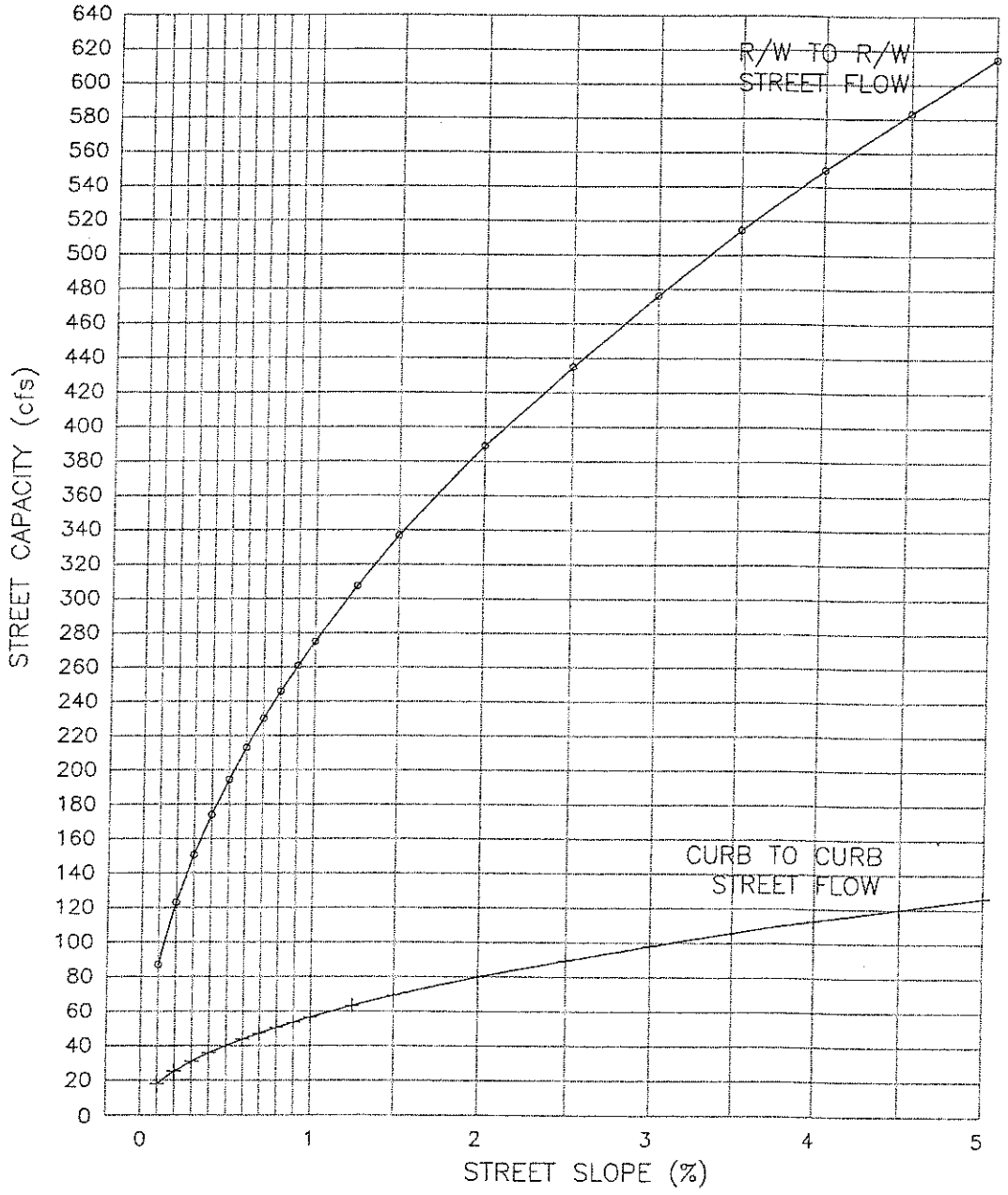


○ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

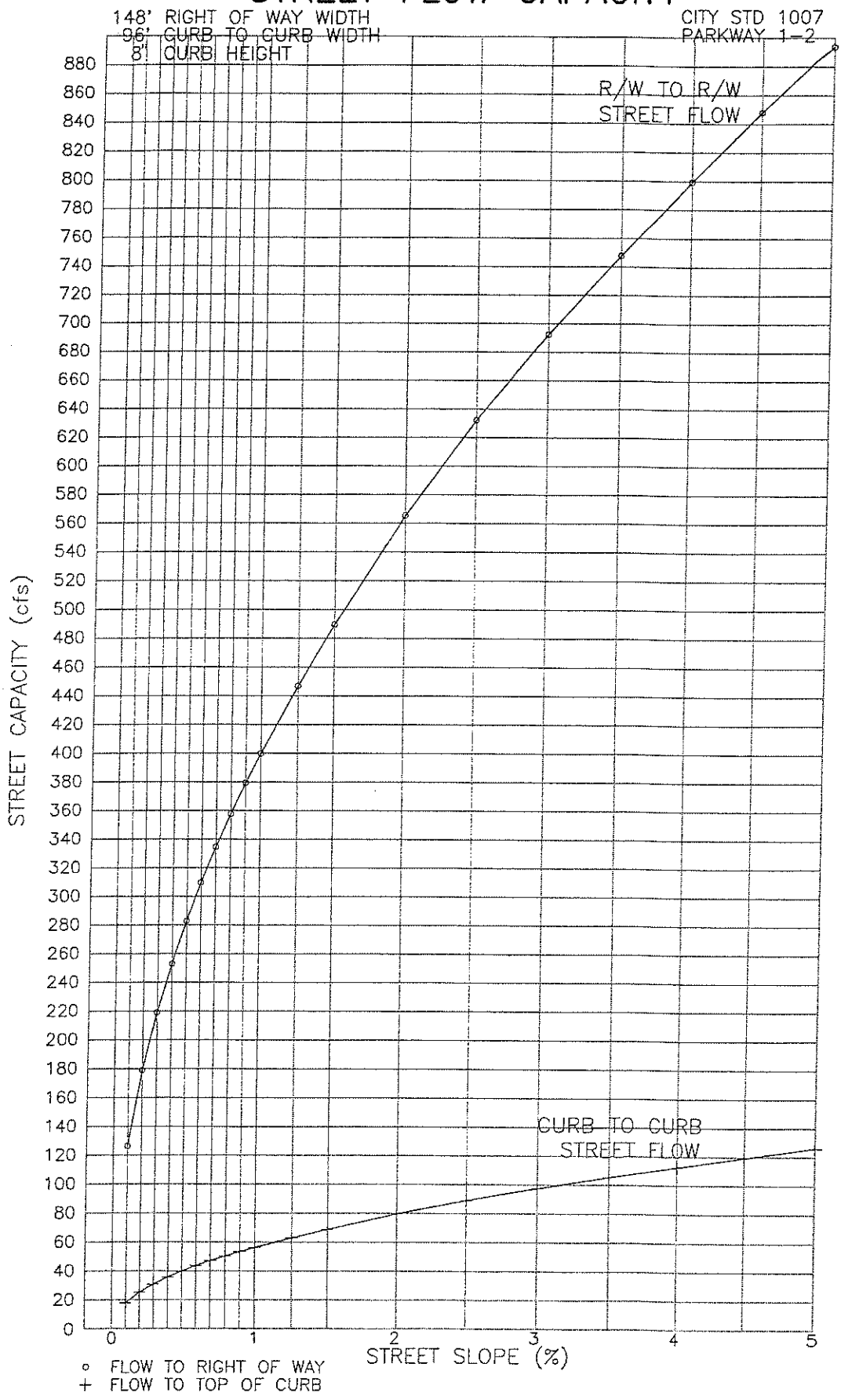
148' RIGHT OF WAY WIDTH
108' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1007
PARKWAY 1-1



o FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

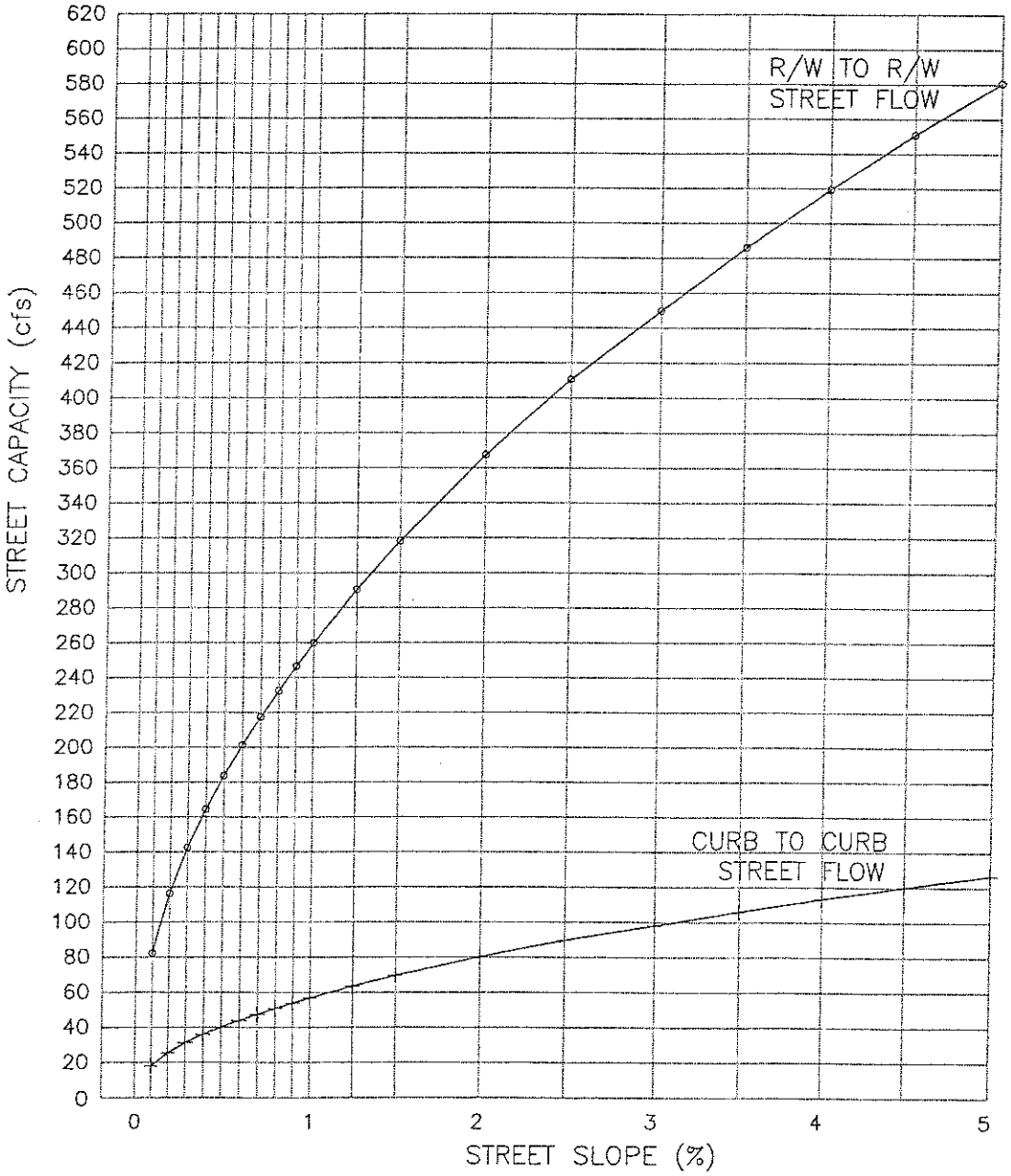
MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY



MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

124' RIGHT OF WAY WIDTH
84' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1008
PARKWAY 2-1

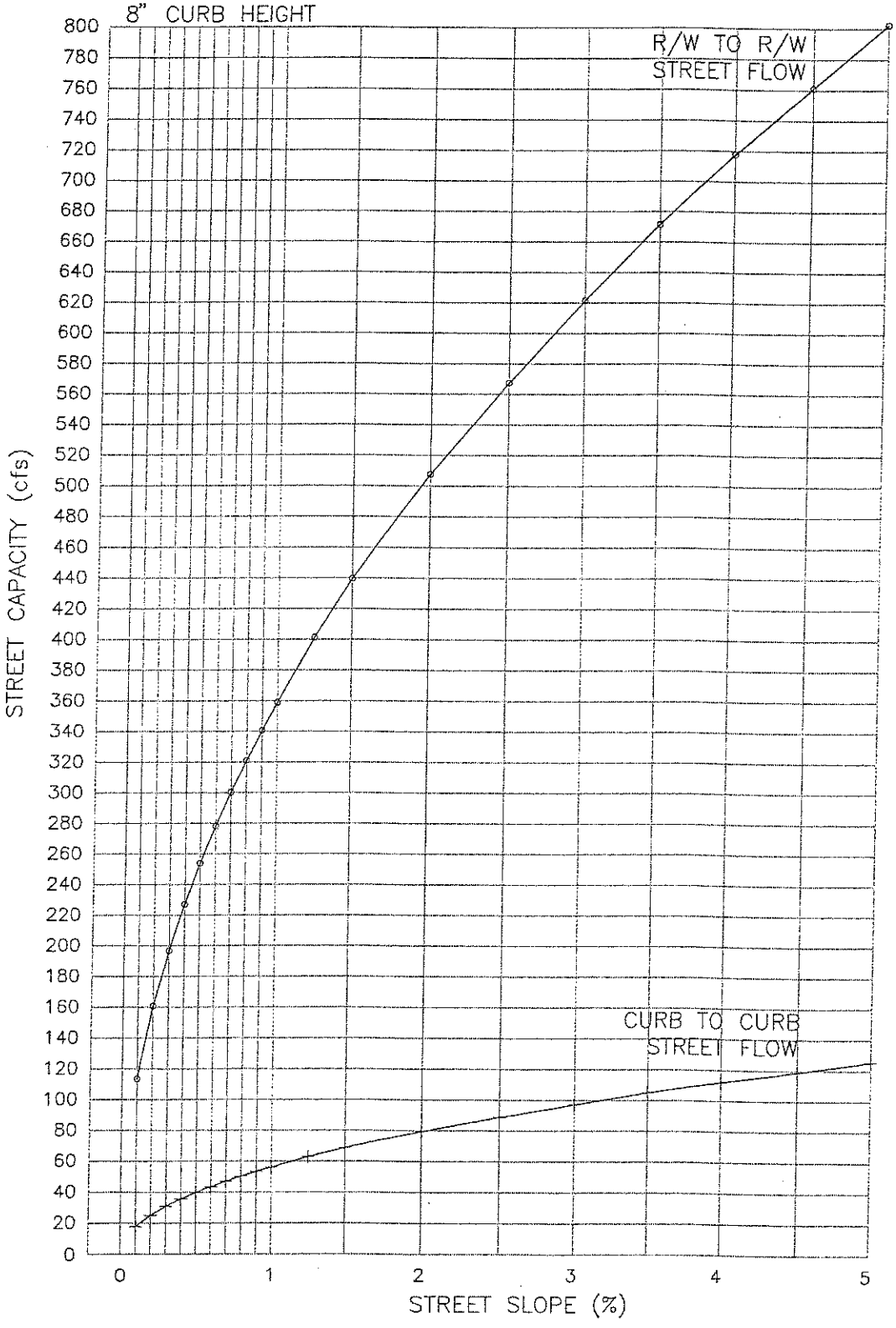


∘ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

124' RIGHT OF WAY WIDTH
72' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1008
PARKWAY 2-2

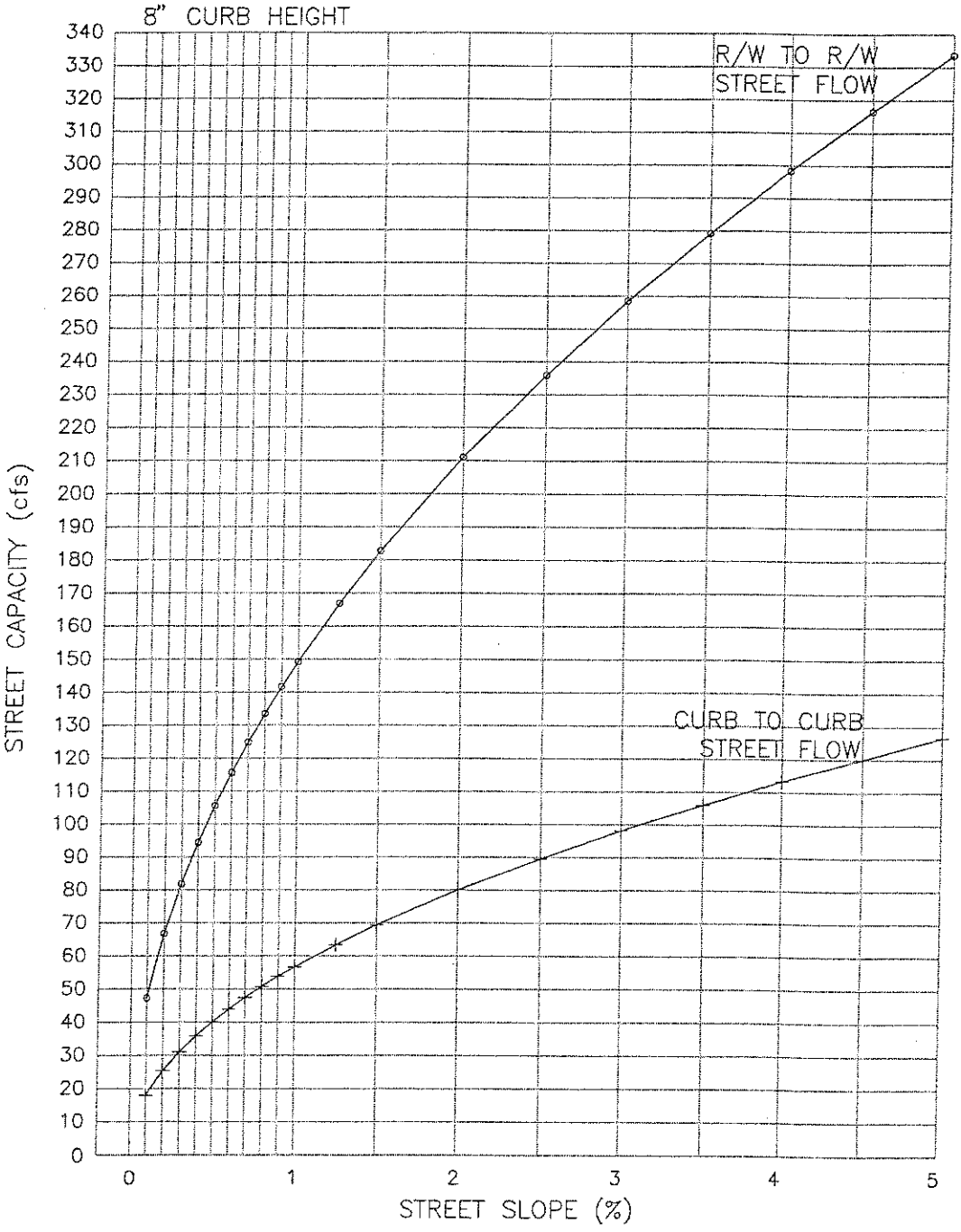


○ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

108' RIGHT OF WAY WIDTH
84' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1009

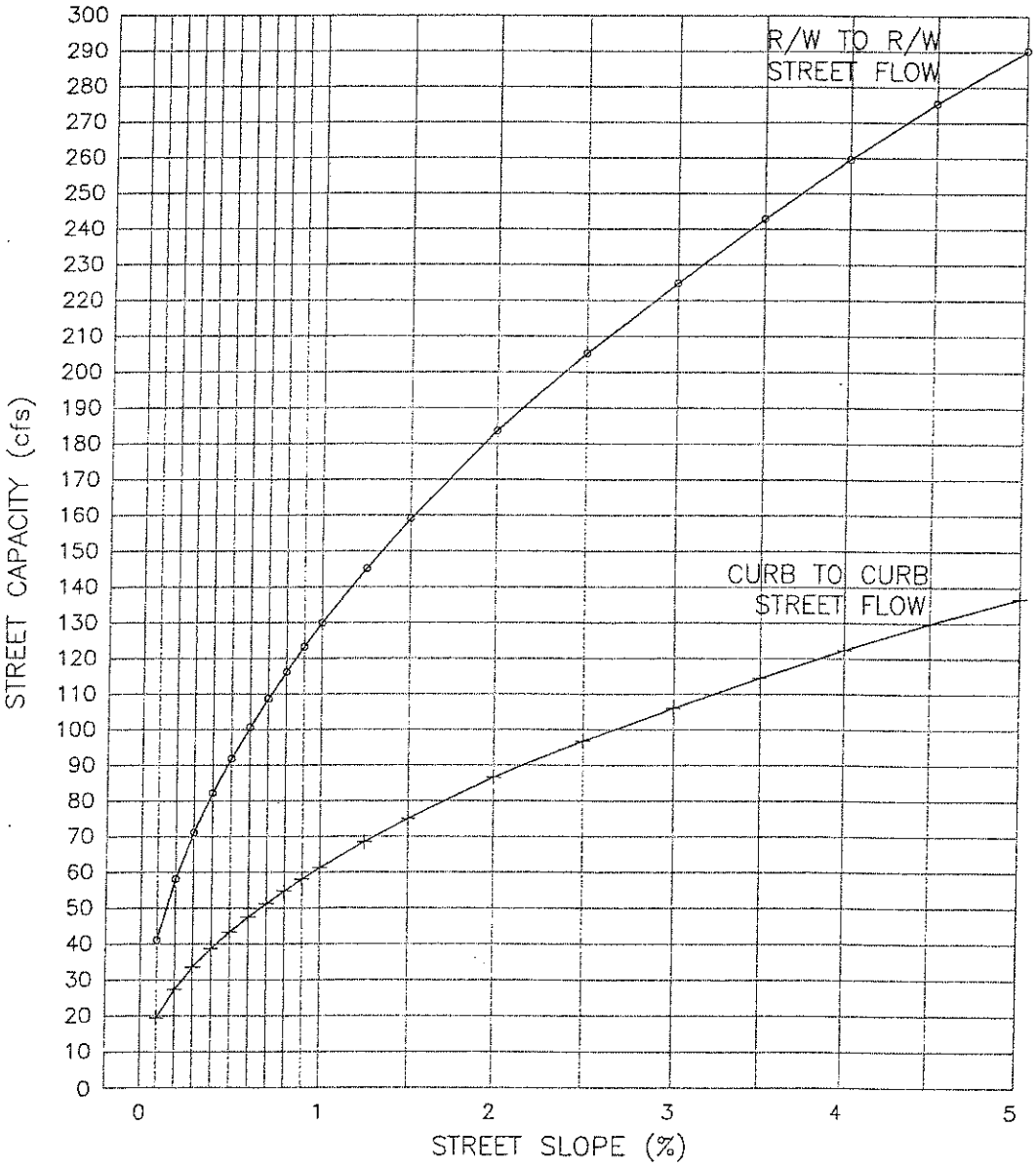


○ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

MASTER PLAN OF DRAINAGE
FEBRUARY 2012
CITY OF ONTARIO
STREET FLOW CAPACITY

60' RIGHT OF WAY WIDTH
36' CURB TO CURB WIDTH
8" CURB HEIGHT

CITY STD 1010



○ FLOW TO RIGHT OF WAY
\+ FLOW TO TOP OF CURB

APPENDIX

B

HYDROLOGY MAPS

FOR

DRAINAGE AREAS “I”

THRU

DRAINAGE AREA “XIV”

OFF-SITE FLOWS FROM CITY OF UPLAND
AREA = 223.3 AC
Q(100) = 394 CFS
Q(25) = 302 CFS
Q(10) = 239 CFS

OFF-SITE FLOWS FROM CITY OF UPLAND
AREA = 138.8 AC
Q(100) = 411 CFS
Q(24) = 324 CFS
Q(10) = 281 CFS

PROPOSED STORM DRAIN PER CITY OF MONTCLAIR MASTER PLAN

I-10 SAN BERNARDINO FREEWAY

8th ST BASINS

CUCAMONGA CHANNEL

TO CITY OF MONTCLAIR SAN BERNARDINO AVE. STORM DRAIN

OFF-SITE Q100=4

WEST STATE STREET STORM DRAIN

EAST STATE STREET STORM DRAIN

EAST STATE ST STORM DRAIN

WEST CUCAMONGA CHANNEL

FUTURE STORM DRAIN PER CITY OF CHINO MASTER PLAN (SYSTEM 28)

FRANCIS ST STORM DRAIN

ELY BASINS

EXISTING BASIN

EXISTING BASIN

CHINO STORM DRAIN

MAGNOLIA STORM DRAIN

SULTANA CYPRESS STORM DRAIN

CYPRESS CHANNEL

RIVERSIDE DR STORM DRAIN 1

GROVE AVE BASIN

RIVERSIDE DR STORM DRAIN 2

LOWER CUCAMONGA SPREADING GROUNDS

ONTARIO INTERNATIONAL

LEGEND

- COUNTY LIMITS
- CITY LIMITS
- X" / XXXX-X-X — PLANNED STORM DRAIN, SIZE AND LINE ID
- DRAINAGE AREA BOUNDARY
- DRAINAGE SYSTEM BOUNDARY
- MINOR DRAINAGE BOUNDARY
- (X) — EXISTING CITY STORM DRAIN AND SIZE (IN INCHES)
- EXISTING CITY OPEN CHANNEL
- EXISTING COUNTY OPEN CHANNEL
- (X) — EXISTING COUNTY STORM DRAIN AND SIZE (IN INCHES)
- EXISTING CALTRANS STORM DRAIN
- (X) / X" — EXISTING NEIGHBORING CITIES STORM DRAIN AND SIZE (IN INCHES)
- FUTURE NEIGHBORING CITIES STORM DRAIN AND SIZE
- EXISTING DETENTION BASIN
- X — DRAINAGE AREA #

DRAINAGE SYSTEM NAME
WLKR - XII - 3 — SYSTEM IDENTIFICATION
DRAINAGE AREA NUMBER
LINE NUMBER

X / X.X — AREA DESIGNATION / AREA ACREAGE (IN ACRES)

Q_{10} =861.0cfs
Q_{25} =981.1cfs
Q_{100}=1213.7cfs
833.9 AC
NODE 350

PEAK FLOW RATE
AREA (IN ACRES)
NODE NO.

SCALE: 1" = 900'

900 450 0 900 2700
GRAPHIC SCALE 1"=900'

DATED: 3/15/2012 10:48 AM

MARCH 2012

REVISIONS

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
Three Hughes ▪ Irvine, CA 92618 ▪ PH: (949) 583-1010 ▪ FX: (949) 583-0759

CITY OF ONTARIO
MASTER PLAN OF DRAINAGE

HYDROLOGY MAP
OLD MODEL COLONY-WEST

1 OF 3

F:\0641\Engineering\SY_SD Master Plan\Rpt_SD Master Plan\HYDROLOGY MAPS\HYDROLOGY MAP-OMC-ALL.dwg

OFF-SITE FLOWS Q100=46 CFS

OFF-SITE FLOWS Q100=1008 CFS

OFF-SITE FLOWS Q100=82 CFS

OFF-SITE FLOWS Q100=132 CFS

OFF-SITE FLOWS Q100=183 CFS

OFF-SITE FLOWS Q100=714 CFS

OFF-SITE FLOWS Q100=620 CFS

OFF-SITE FLOWS Q100=714 CFS

OFF-SITE FLOWS Q100=1224 CFS

CUCAMONGA CHANNEL

DAY CREEK CHANNEL

TURNER BASINS

CUCAMONGA-GUASTI REGIONAL PARK

ONAL AIRPORT

COMMERCE CENTER STORM DRAIN

COMMERCE CENTER STORM DRAIN

COMMERCE CENTER STORM DRAIN

WINEVILLE BASIN

RIVERSIDE BASIN

LOWER CUCAMONGA SPREADING GROUNDS

CHRIS BASIN

LOWER DEER CREEK CHANNEL

LOWER ETIWANDA CREEK CHANNEL

SR-60 POMONA FREEWAY

LEGEND

- COUNTY LIMITS
- CITY LIMITS
- X" XXXX-X-X — PLANNED STORM DRAIN, SIZE AND LINE ID
- DRAINAGE AREA BOUNDARY
- DRAINAGE SYSTEM BOUNDARY
- MINOR DRAINAGE BOUNDARY
- (X) — EXISTING CITY STORM DRAIN AND SIZE (IN INCHES)
- EXISTING CITY OPEN CHANNEL
- EXISTING COUNTY OPEN CHANNEL
- (X) — EXISTING COUNTY STORM DRAIN AND SIZE (IN INCHES)
- EXISTING CALTRANS STORM DRAIN
- EXISTING DETENTION BASIN
- X — DRAINAGE AREA #
- DRAINAGE SYSTEM NAME / WLKR-XII-3 / DRAINAGE AREA NUMBER / LINE NUMBER — SYSTEM IDENTIFICATION
- X / X.X — AREA DESIGNATION, AREA ACREAGE (IN ACRES)

Q_{10} =861.0cfs
Q_{25} =981.1cfs
Q_{100}=1213.7cfs — PEAK FLOW RATE
833.9 AC — AREA (IN ACRES)
NODE 350 — NODE NO.

SCALE: 1" = 900'

900 450 0 900 2700

GRAPHIC SCALE 1"=900'

DATED: 3/15/2012 10:33 AM

MARCH 2012

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CITY OF ONTARIO

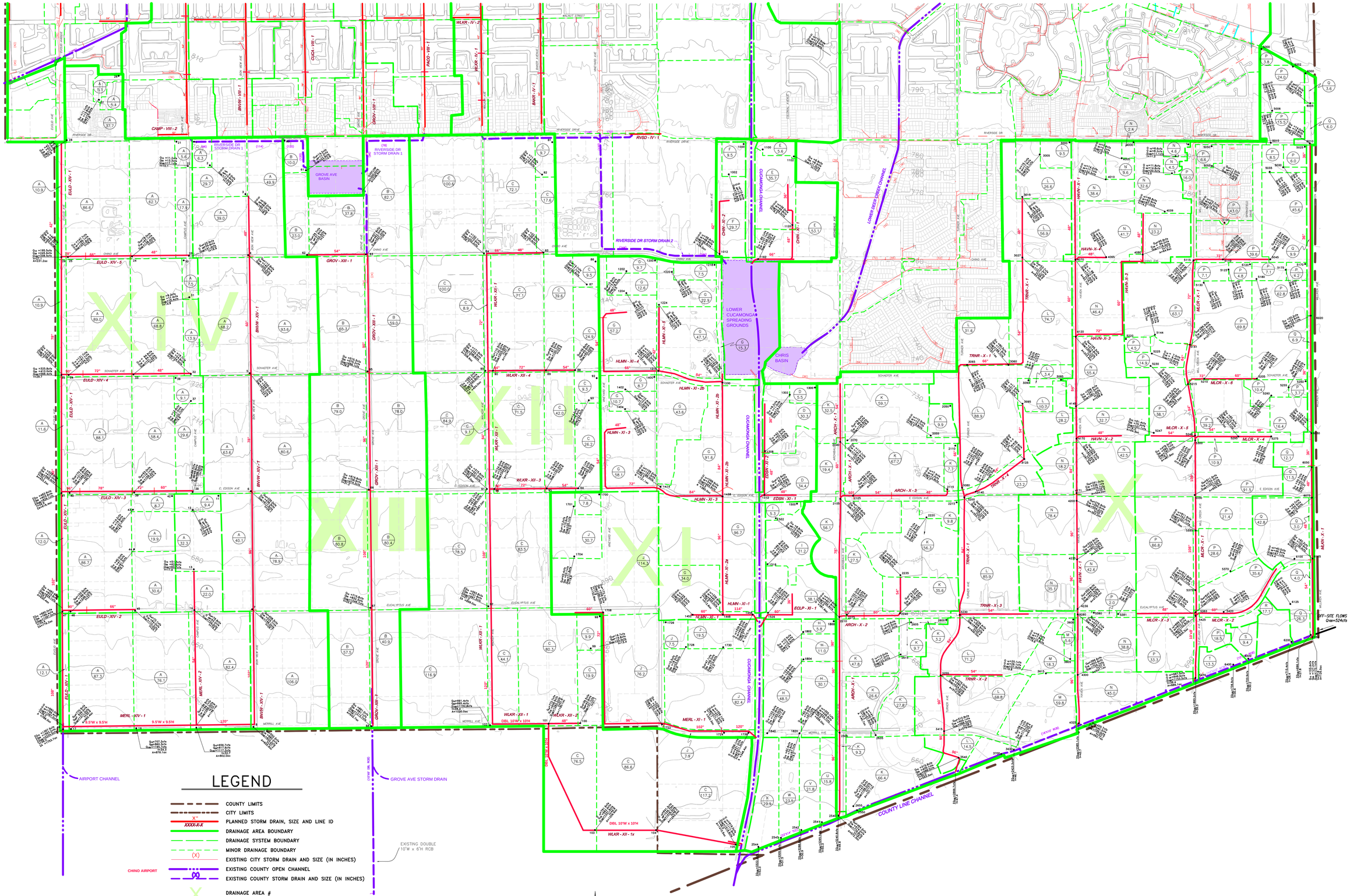
MASTER PLAN OF DRAINAGE

HYDROLOGY MAP

OLD MODEL COLONY-EAST

2 OF 3

F:\0641\Engineering\SY_SD Master Plan\Rpt_SD Master Plan\HYDROLOGY MAPS\HYDROLOGY MAP-OMC-ALL.dwg



LEGEND

- COUNTY LIMITS
- CITY LIMITS
- X - PLANNED STORM DRAIN, SIZE AND LINE ID
- XXXX-X-X - DRAINAGE AREA BOUNDARY
- DRAINAGE SYSTEM BOUNDARY
- MINOR DRAINAGE BOUNDARY
- (X) - EXISTING CITY STORM DRAIN AND SIZE (IN INCHES)
- CHINO AIRPORT - EXISTING COUNTY OPEN CHANNEL
- 99 - EXISTING COUNTY STORM DRAIN AND SIZE (IN INCHES)
- X - DRAINAGE AREA #

DRAINAGE SYSTEM NAME

WLKR - XII - 3 — SYSTEM IDENTIFICATION

DRAINAGE AREA NUMBER — LINE NUMBER

X / X.X — AREA DESIGNATION / AREA ACREAGE (IN ACRES)

Q_{10} =861.0cfs
Q_{25} =981.1cfs
Q_{100}=1213.7cfs — PEAK FLOW RATE
t=36.1 — TIME OF CONCENTRATION
A=942.7ac — AREA

SCALE: 1" = 800'

800 400 0 800 2400
GRAPHIC SCALE 1"=800'

MARCH 2012

REVISIONS

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING ▪ ENGINEERING ▪ SURVEYING
Three Hughes ▪ Irvine, CA 92618 ▪ PH: (949) 583-1010 ▪ FX: (949) 583-0759

CITY OF ONTARIO
MASTER PLAN OF DRAINAGE
HYDROLOGY MAP
NEW MODEL COLONY

3 OF 3

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