

Tentative Tract Map 36846

# WINEVILLE MARKET & VILLAGES

IN THE  
CITY OF JURUPA VALLEY, CA

# SUPPLEMENTAL PRELIMINARY HYDROLOGY AND HYDRAULIC STUDY

AUGUST 8<sup>TH</sup>, 2024

Reference: 766-2932

PREPARED BY:

Madole & Associates, Inc.



## INTRODUCTION

THE PURPOSE OF THIS SUPPLEMENTAL REPORT IS TO DEMONSTRATE THE TILT SECTION STREET CAPACITY IN THE PRELIMINARY DESIGN OF TENTATIVE TRACT 36846.

THE LARGEST SUBAREA ON EITHER SIDE OF DAYCREEK CHANNEL WAS CHOSEN. A RATIONAL METHOD INITIAL SUBAREA STUDY WAS USED TO DETERMINE THE RUNOFF FOR EACH AREA. A STREET CAPACITY CALCULATION WAS DONE TO DETERMINE THE FLOW DEPTH IN THE GUTTER.

IT WAS DETERMINED THAT THE TILT SECTION HAS THE NECESSARY CAPACITY TO RETAIN THE 100 YEAR FLOW WITHIN THE CURB UNTIL IT REACHES AN INLET.

ATTACHED ARE THE INITIAL AREA RATIONAL METHOD ANALYSIS, FOLLOWED BY THE STREETFLOW CALCULATION AND THE SUBAREA UNDER REVIEW.

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON  
RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT  
(RCFC&WCD) 1978 HYDROLOGY MANUAL  
(c) Copyright 1982-2016 Advanced Engineering Software (aes)  
(Rational Tabling Version 23.0)  
Release Date: 07/01/2016 License ID 1251

Analysis prepared by:

MADOLE & ASSOCIATES, INC.

SUBAREA B (WEST OF CHANNEL) ALONG PROP. "B" STREET

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FILE NAME: WINE100.DAT  
TIME/DATE OF STUDY: 13:45 08/08/2024  
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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:  
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USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95  
10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 1.740  
10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = 0.777  
100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 2.720  
100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = 1.210  
SLOPE OF 10-YEAR INTENSITY-DURATION CURVE = 0.4499487  
SLOPE OF 100-YEAR INTENSITY-DURATION CURVE = 0.4520759  
COMPUTED RAINFALL INTENSITY DATA:

STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.210  
SLOPE OF INTENSITY DURATION CURVE = 0.4521

RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD  
NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL  
AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- CROWN TO		STREET-CROSSFALL:			CURB GUTTER-GEOMETRIES:			MANNING FACTOR (n)	
	WIDTH (FT)	CROSSFALL (FT)	IN- SIDE	OUT- / SIDE	PARK- / WAY	HEIGHT (FT)	WIDTH (FT)	LIP (FT)		HIKE (FT)
1	30.0	20.0	0.018	0.018	0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)

\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*

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FLOW PROCESS FROM NODE 200.00 TO NODE 200.10 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
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ASSUMED INITIAL SUBAREA UNIFORM  
DEVELOPMENT IS APARTMENT

TC =  $K * [(LENGTH ** 3) / (ELEVATION CHANGE)] ** .2$   
INITIAL SUBAREA FLOW-LENGTH(FEET) = 426.00  
UPSTREAM ELEVATION(FEET) = 60.66  
DOWNSTREAM ELEVATION(FEET) = 57.10  
ELEVATION DIFFERENCE(FEET) = 3.56  
TC =  $0.323 * [(426.00 ** 3) / (3.56)] ** .2 = 9.466$   
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.788  
APARTMENT DEVELOPMENT RUNOFF COEFFICIENT = .8682  
SOIL CLASSIFICATION IS "C"  
SUBAREA RUNOFF(CFS) = 4.36  
TOTAL AREA(ACRES) = 1.80 TOTAL RUNOFF(CFS) = 4.36

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END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 1.8 TC(MIN.) = 9.47  
PEAK FLOW RATE(CFS) = 4.36

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END OF RATIONAL METHOD ANALYSIS

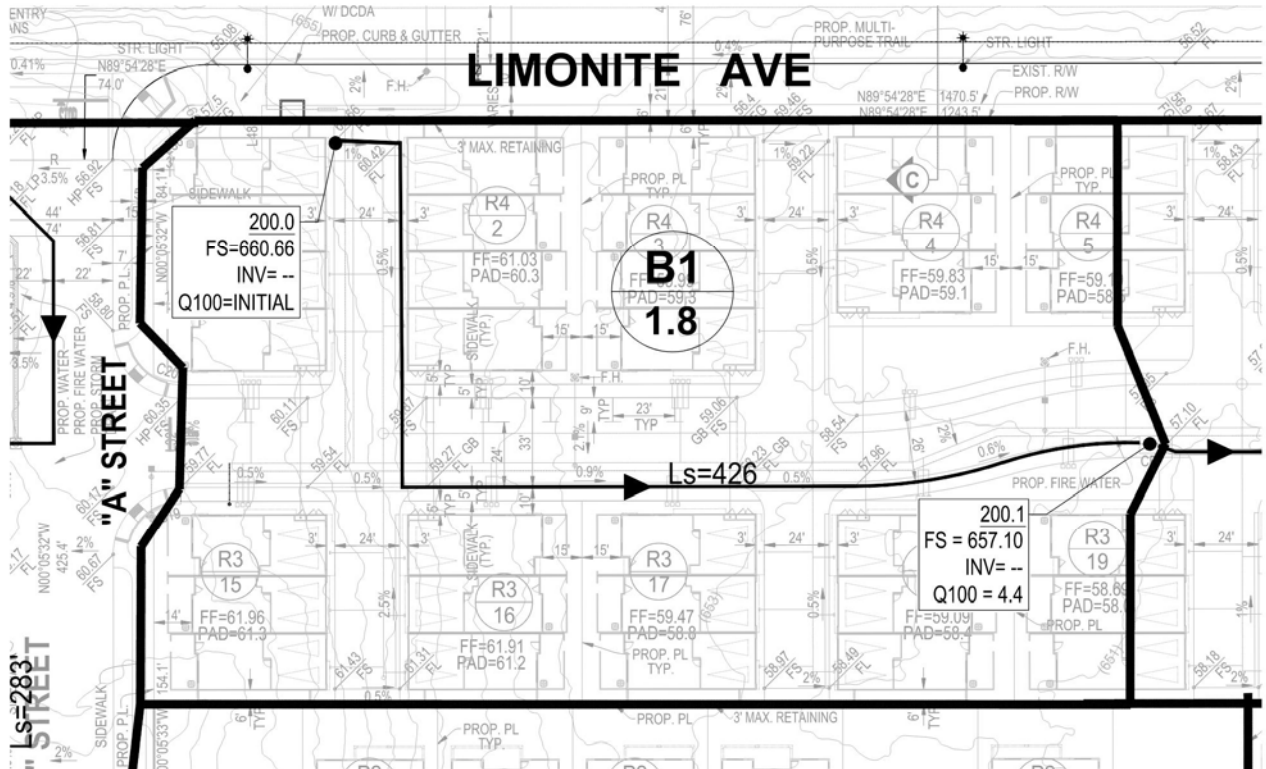
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>>>>STREETFLOW MODEL INPUT INFORMATION<<<<

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CONSTANT STREET GRADE(FEET/FEET) = 0.005000  
CONSTANT STREET FLOW(CFS) = 4.40  
AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000  
CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) = 53.00  
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 31.50  
INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000  
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020000  
CONSTANT SYMMETRICAL CURB HEIGHT(FEET) = 0.50  
CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) = 1.50  
CONSTANT SYMMETRICAL GUTTER-LIP(FEET) = 0.03125  
CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) = 0.12500  
FLOW ASSUMED TO FILL STREET ON ONE SIDE, AND THEN SPLITS  
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STREET FLOW MODEL RESULTS:

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**STREET FLOW DEPTH(FEET) = 0.42**  
HALFSTREET FLOOD WIDTH(FEET) = 14.78  
AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.91  
PRODUCT OF DEPTH&VELOCITY = 0.81  
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(Rational Tabling Version 23.0)  
Release Date: 07/01/2016 License ID 1251

Analysis prepared by:

SUBAREA A (EAST OF CHANNEL) ALONG PROP. "D" STREET

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FILE NAME: WINES100.DAT  
TIME/DATE OF STUDY: 14:41 08/08/2024  
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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:  
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USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95  
10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 1.740  
10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = 0.777  
100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) = 2.720  
100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) = 1.210  
SLOPE OF 10-YEAR INTENSITY-DURATION CURVE = 0.4499487  
SLOPE OF 100-YEAR INTENSITY-DURATION CURVE = 0.4520759  
COMPUTED RAINFALL INTENSITY DATA:

STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.210  
SLOPE OF INTENSITY DURATION CURVE = 0.4521

RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD  
NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL  
AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)  
2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*

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FLOW PROCESS FROM NODE 100.00 TO NODE 100.10 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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      ASSUMED INITIAL SUBAREA UNIFORM
      DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
      TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
      INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.00
      UPSTREAM ELEVATION(FEET) = 67.39
      DOWNSTREAM ELEVATION(FEET) = 57.59
      ELEVATION DIFFERENCE(FEET) = 9.80
      TC = 0.393*[(488.00**3)/(9.80)]**.2 = 10.204
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.695
      SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .8182
      SOIL CLASSIFICATION IS "C"
      SUBAREA RUNOFF(CFS) = 5.80
      TOTAL AREA(ACRES) = 2.63 TOTAL RUNOFF(CFS) = 5.80
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END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 2.6 TC(MIN.) = 10.20
PEAK FLOW RATE(CFS) = 5.80
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END OF RATIONAL METHOD ANALYSIS
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>>>>STREETFLOW MODEL INPUT INFORMATION<<<<

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CONSTANT STREET GRADE(FEET/FEET) = 0.020000
CONSTANT STREET FLOW(CFS) = 5.80
AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) = 44.00
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 22.50
INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020000
CONSTANT SYMMETRICAL CURB HEIGHT(FEET) = 0.50
CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) = 1.50
CONSTANT SYMMETRICAL GUTTER-LIP(FEET) = 0.03125
CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) = 0.12500
FLOW ASSUMED TO FILL STREET ON ONE SIDE, AND THEN SPLITS
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STREET FLOW MODEL RESULTS:
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STREET FLOW DEPTH(FEET) = 0.38
HALFSTREET FLOOD WIDTH(FEET) = 12.46
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.47
PRODUCT OF DEPTH&VELOCITY = 1.30
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