Analysis of the 2005 New Years Eve Storm

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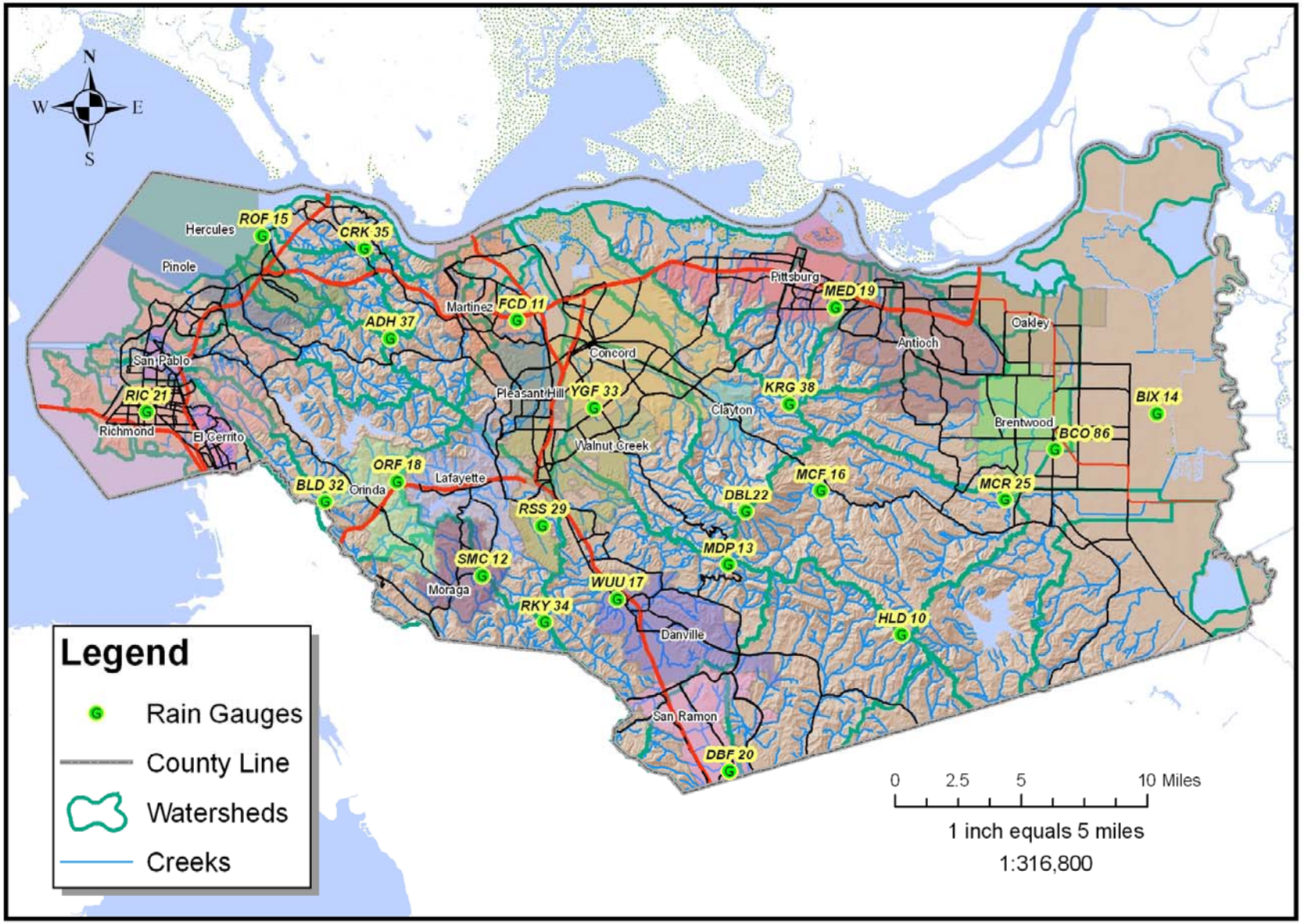
Sr. Hydrologist

Contra Costa County Flood Control
and Water Conservation District

Outline

- Data Collection System Overview
- Return Periods
- Overview of Dec. 31, 2005 Storm
- NRCS Emergency Watershed Protection Program
- Storm Photos

Rainfall Data Collection System Overview



Contra Costa County Flood Control and Water Conservation District

PREPARED BY
CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT
CONSERVATION & DEVELOPMENT DIVISION
255 GLACIER DRIVE
MARTINEZ, CALIFORNIA 94553

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DATE : January 5, 2006 FILENAME : FCD Rain Gauges Locations.mxd BY : M. Boucher

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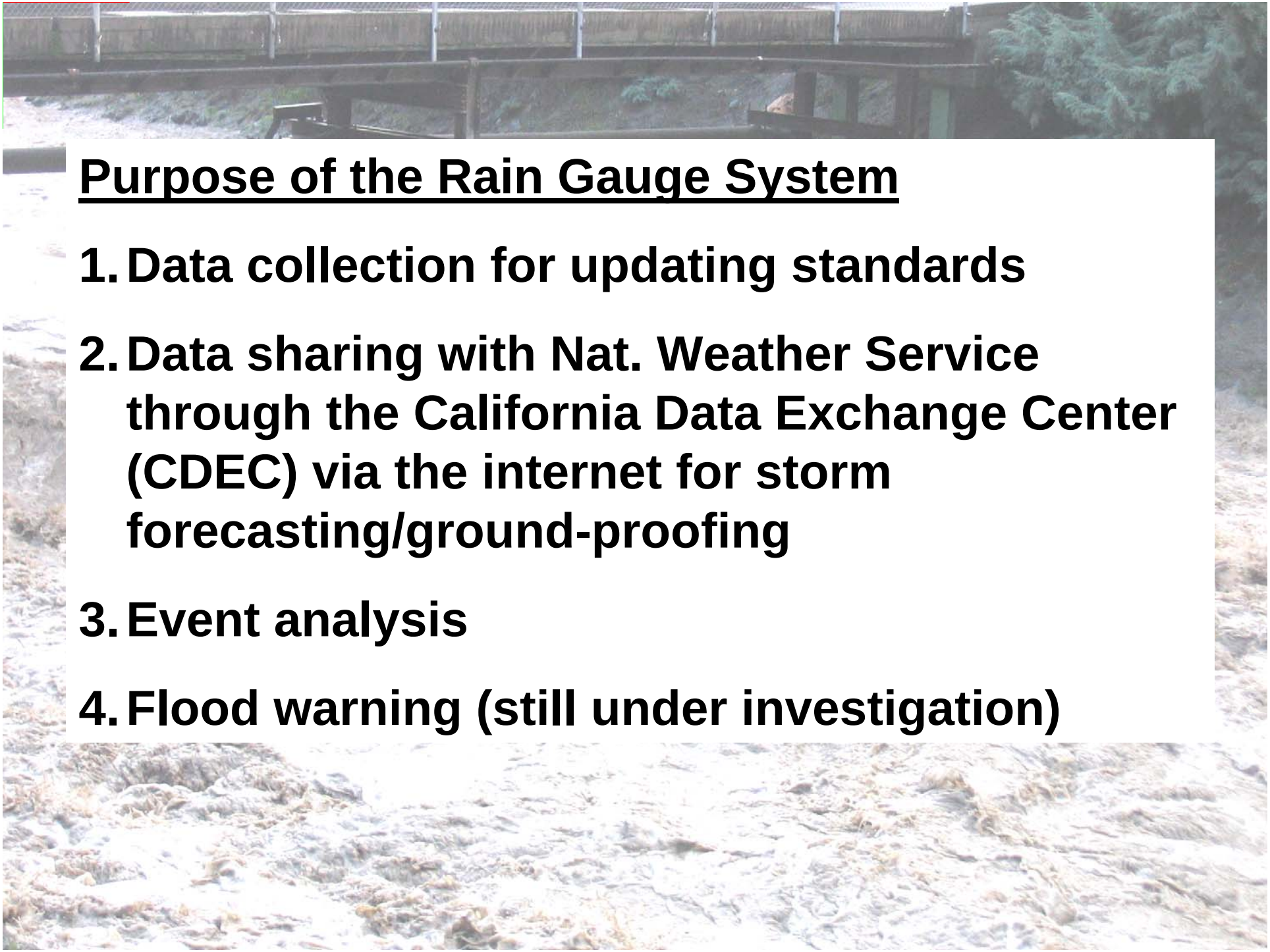
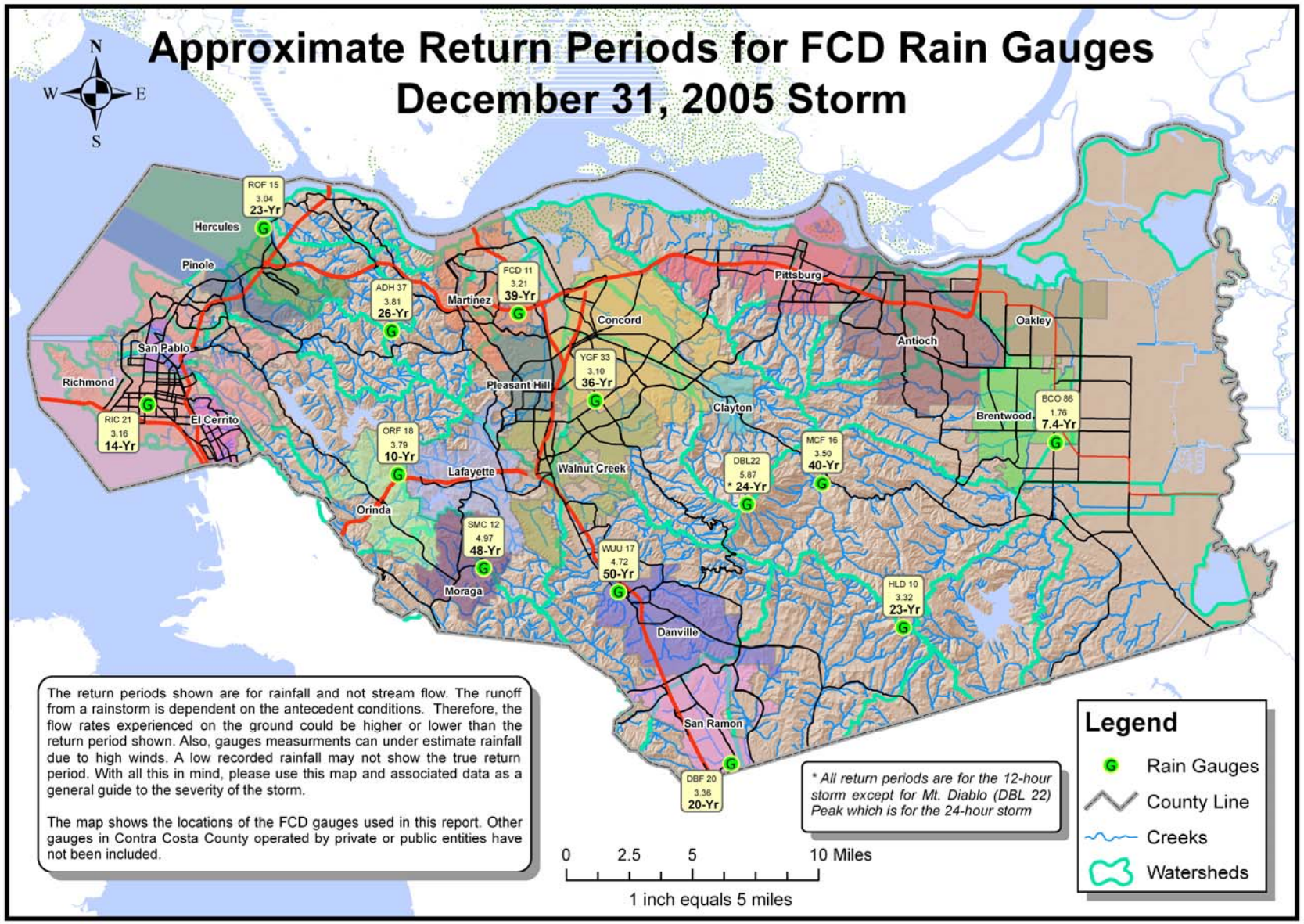


Purpose of the Rain Gauge System

1. Data collection for updating standards
2. Data sharing with Nat. Weather Service through the California Data Exchange Center (CDEC) via the internet for storm forecasting/ground-proofing
3. Event analysis
4. Flood warning (still under investigation)

Rainfall Amount and Return Period Overview for the December 31, 2005 Storm



Contra Costa County Flood Control and Water Conservation District
Rain Gauge Locations

PREPARED BY:
CONTRA COSTA COUNTY
PUBLIC WORKS DEPARTMENT
COMPUTER SERVICES - MAPPING SCIENCES SECTION
255 GLACIER DRIVE
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DATE : January 31, 2006 (Revised) FILENAME : Rain Gauges 12-31-05 Storm.mxd BY : M. Boucher

Contra Costa Count Flood Control and Water Conservation District

Return Period

IN ANY GIVEN YEAR

100-year storm: 1 in 100 chance = 1/100

1% chance storm

50-year storm: 1 in 50 chance = 1/50 = 2/100

2% chance storm

10-year storm: 1 in 10 chance = 1/10 = 10/100

10% chance storm

Same chance every year.

Chances of Being Flooded				
Time Period	**Flood Level**			
	10-year flood	25-year flood	50-year flood	100-year flood
1 year	10%	4%	2%	1%
10 years	65%	34%	18%	10%
20 years	88%	56%	33%	18%
30 years	96%	71%	45%	26%
50 years	99%	87%	64%	39%

Things to keep in mind

1. Return periods discussed here are for rainfall not stream flow.
2. Stream return period flow depends on antecedent conditions.
3. Flows in the streams could have a higher or lower return period than the rain gauges indicate.
4. Rain gauge measurements are effected by wind. Depths measured on peaks could be under measured.
5. Rainfall return period is based on the depth of rainfall over a certain time period.

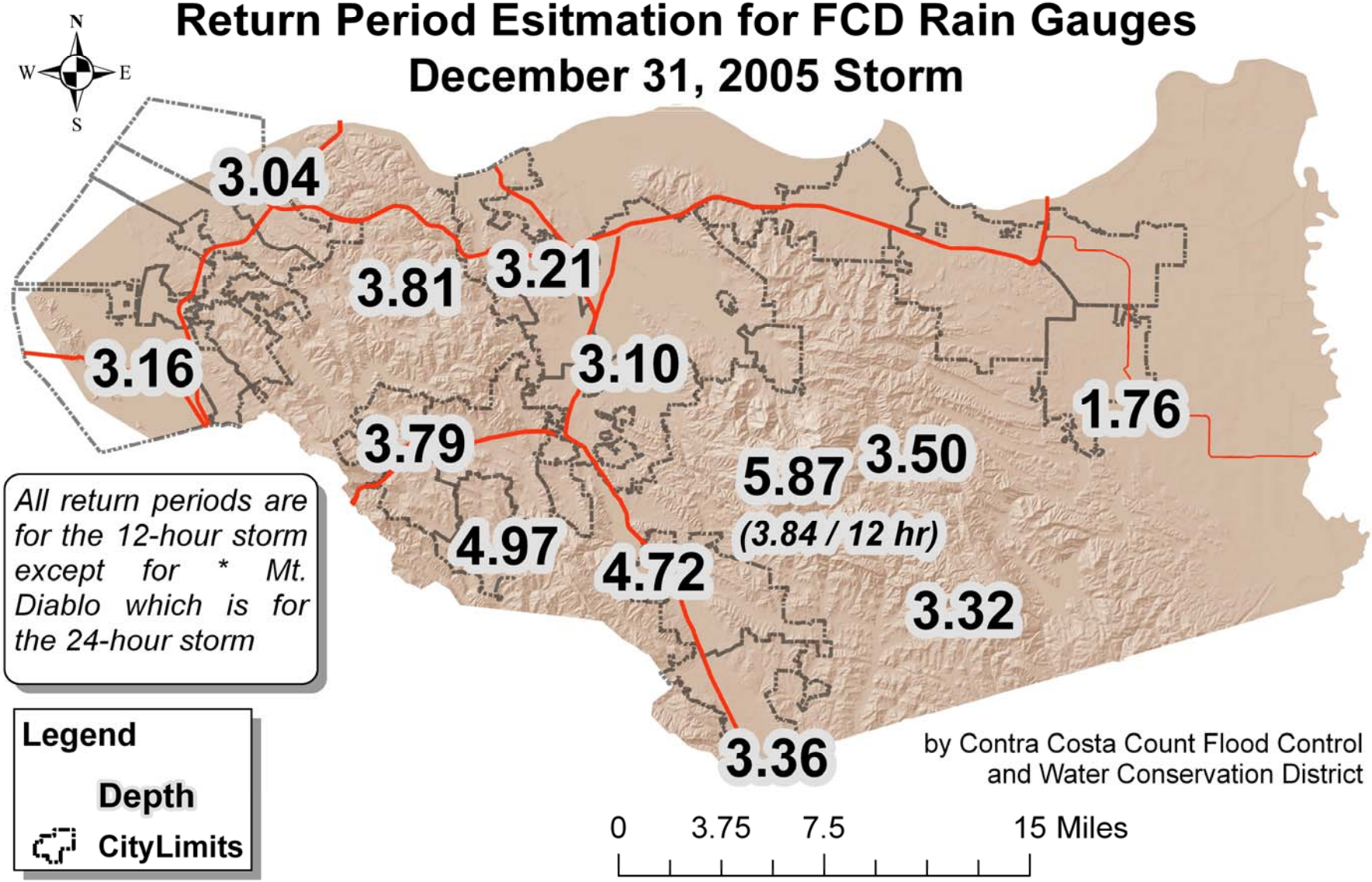
Example:

3 inches in 12 hours

is different than

3 inches in 3 hours.

Storm Depths Used for Return Period Esitmation for FCD Rain Gauges December 31, 2005 Storm



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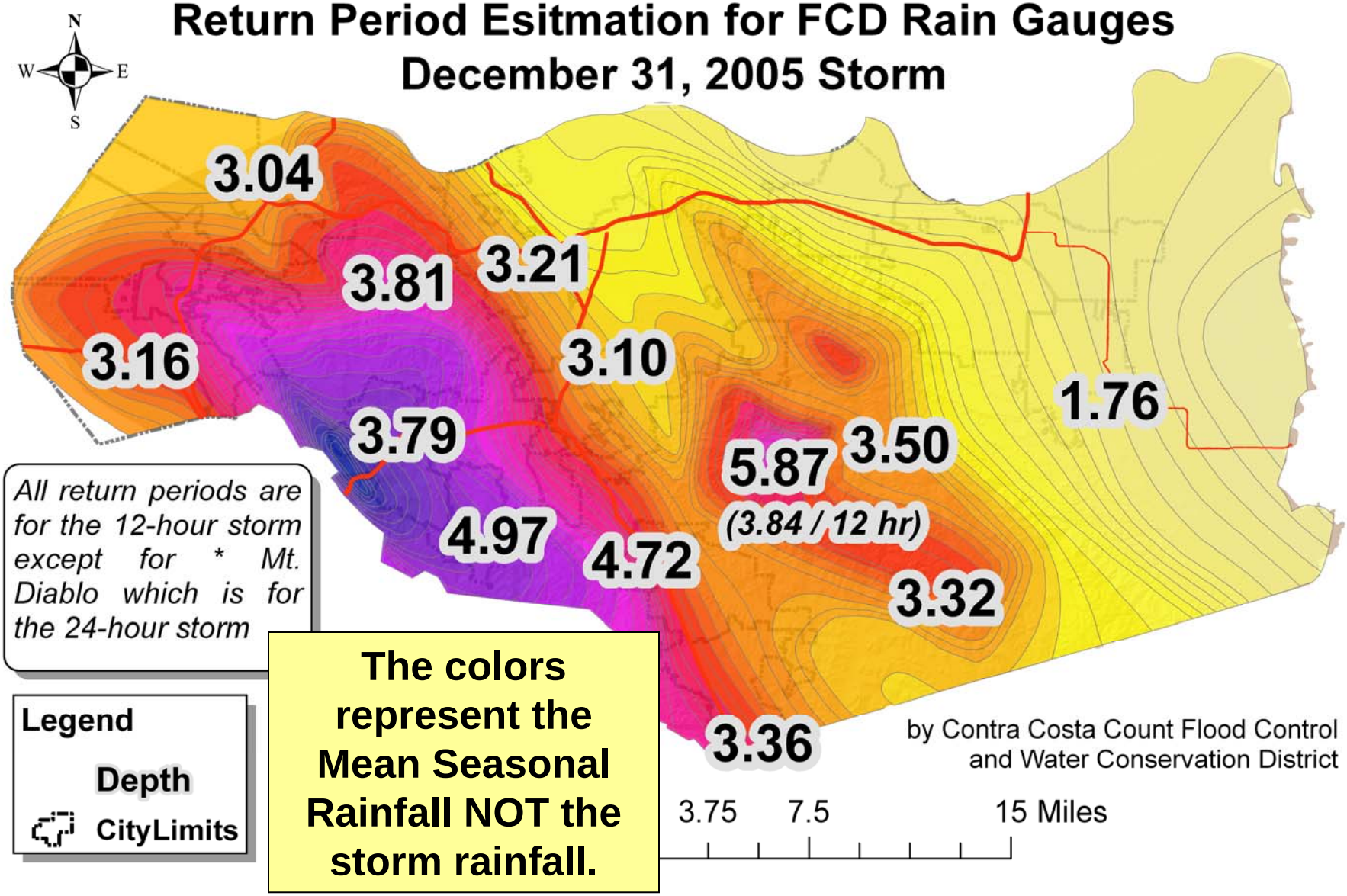
Storm Depths Used for Return Period Esitmation for FCD Rain Gauges December 31, 2005 Storm



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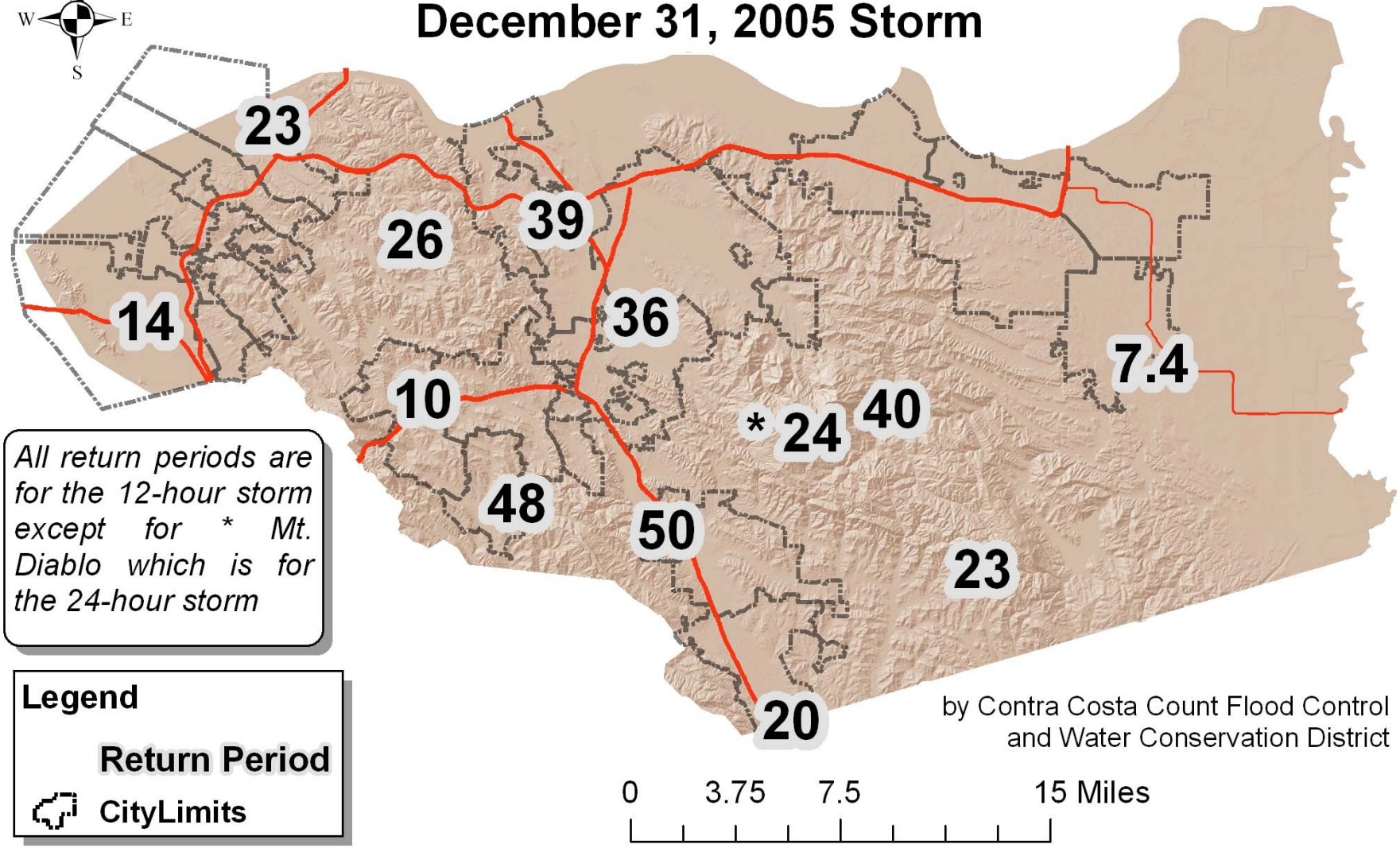
Approximate Return Periods for FCD Rain Gauges
December 31, 2005 Storm



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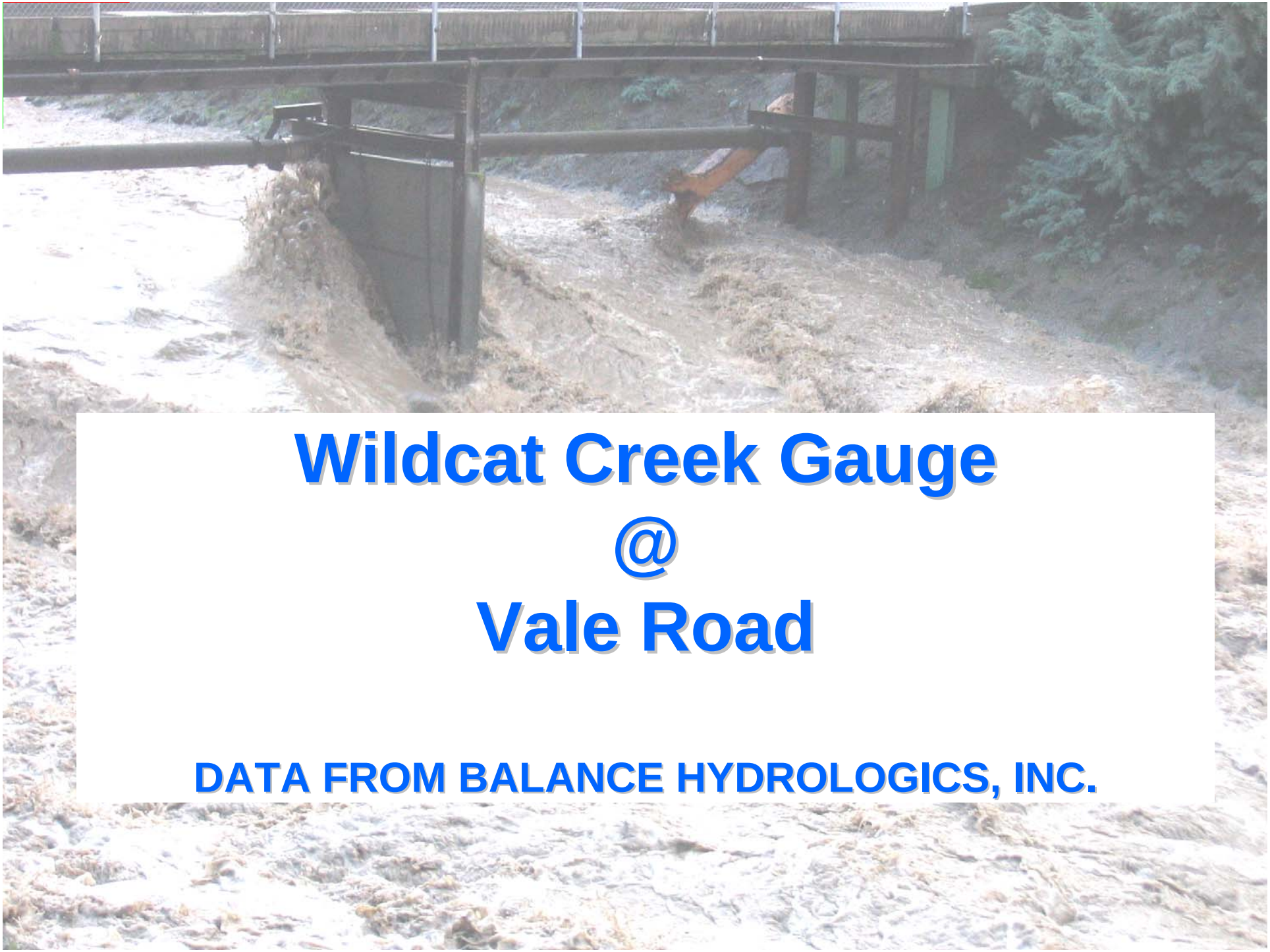
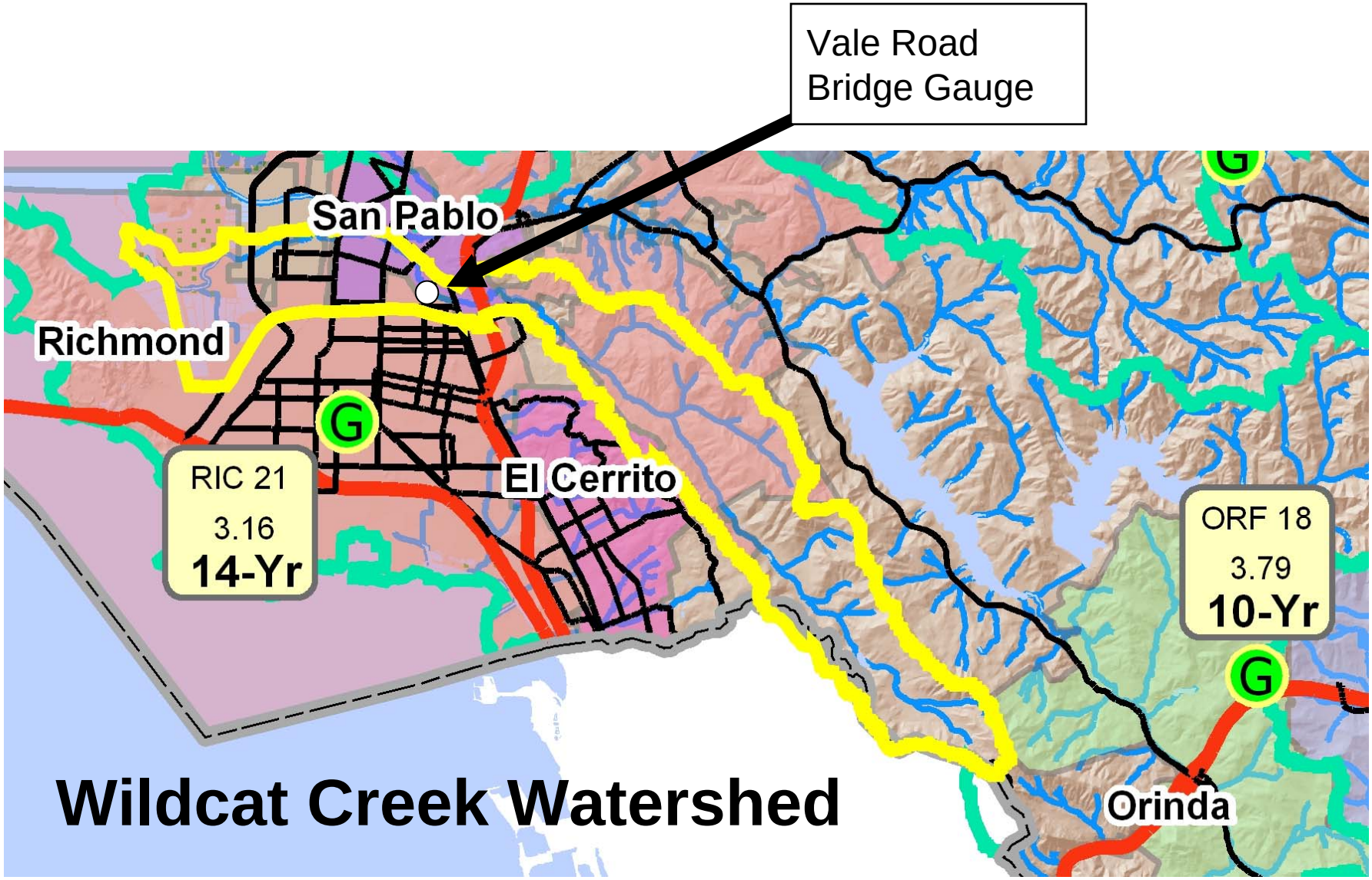


Wildcat Creek Gauge
@
Vale Road

DATA FROM BALANCE HYDROLOGICS, INC.



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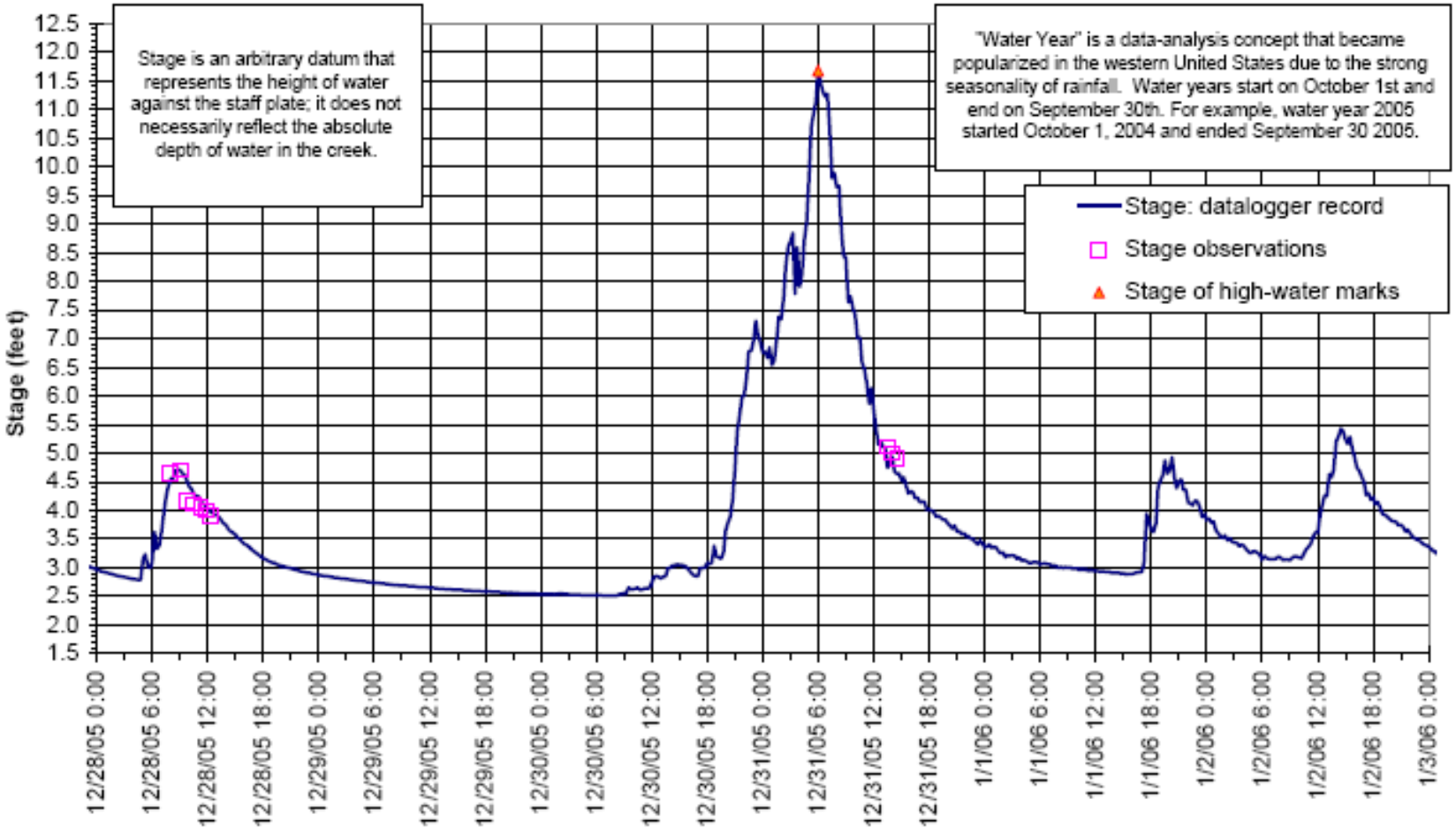
preliminary and subject to revision



Balance Hydrologics, Inc.

Figure __. **Stage hydrograph: Wildcat Creek at Vale Road, water year 2006.** Our observed high-water mark for the water year is approximately 11.7 feet, and occurred 12/31/05.

203046 WCVR WY06_15min, 15-stage (high)

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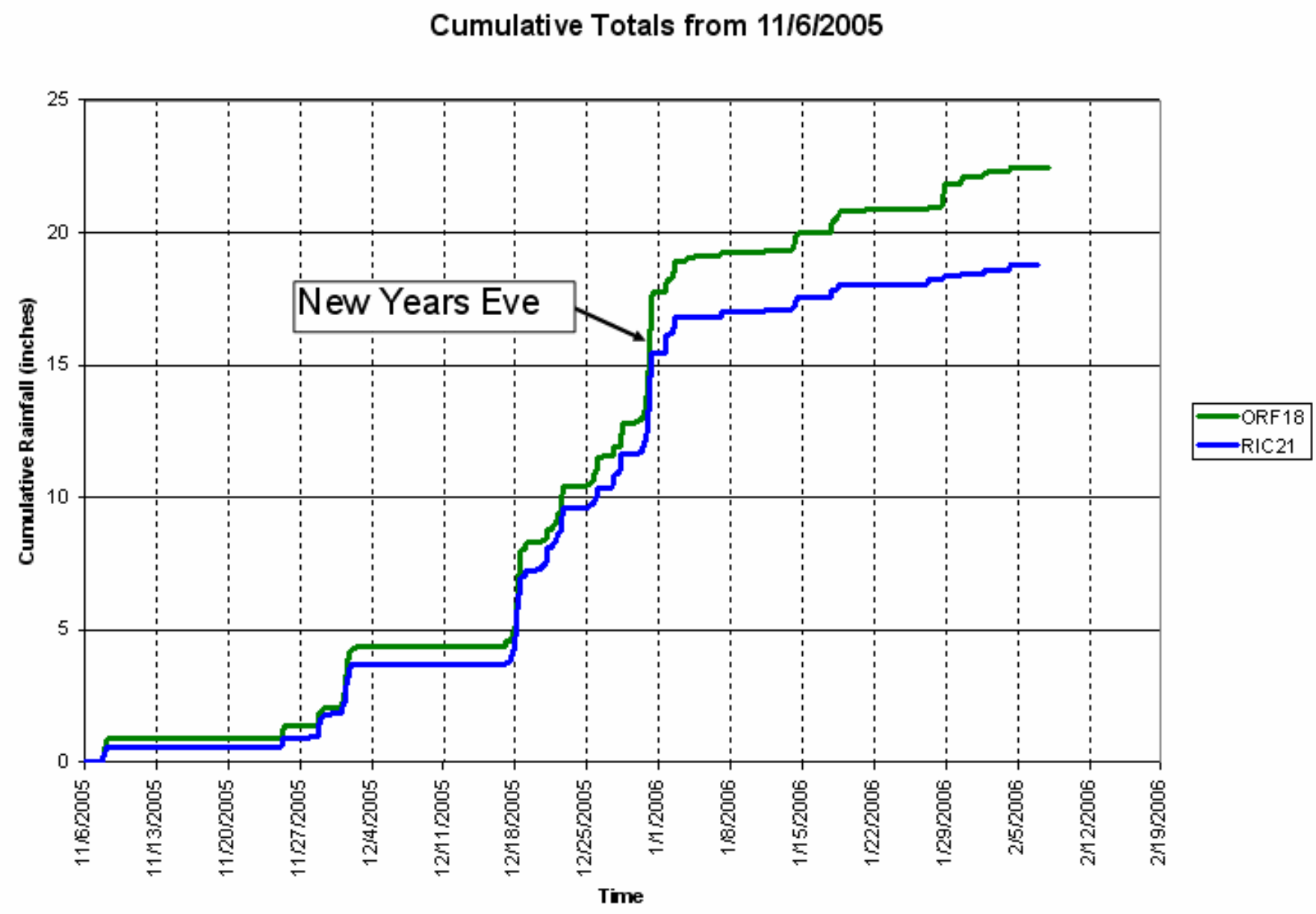

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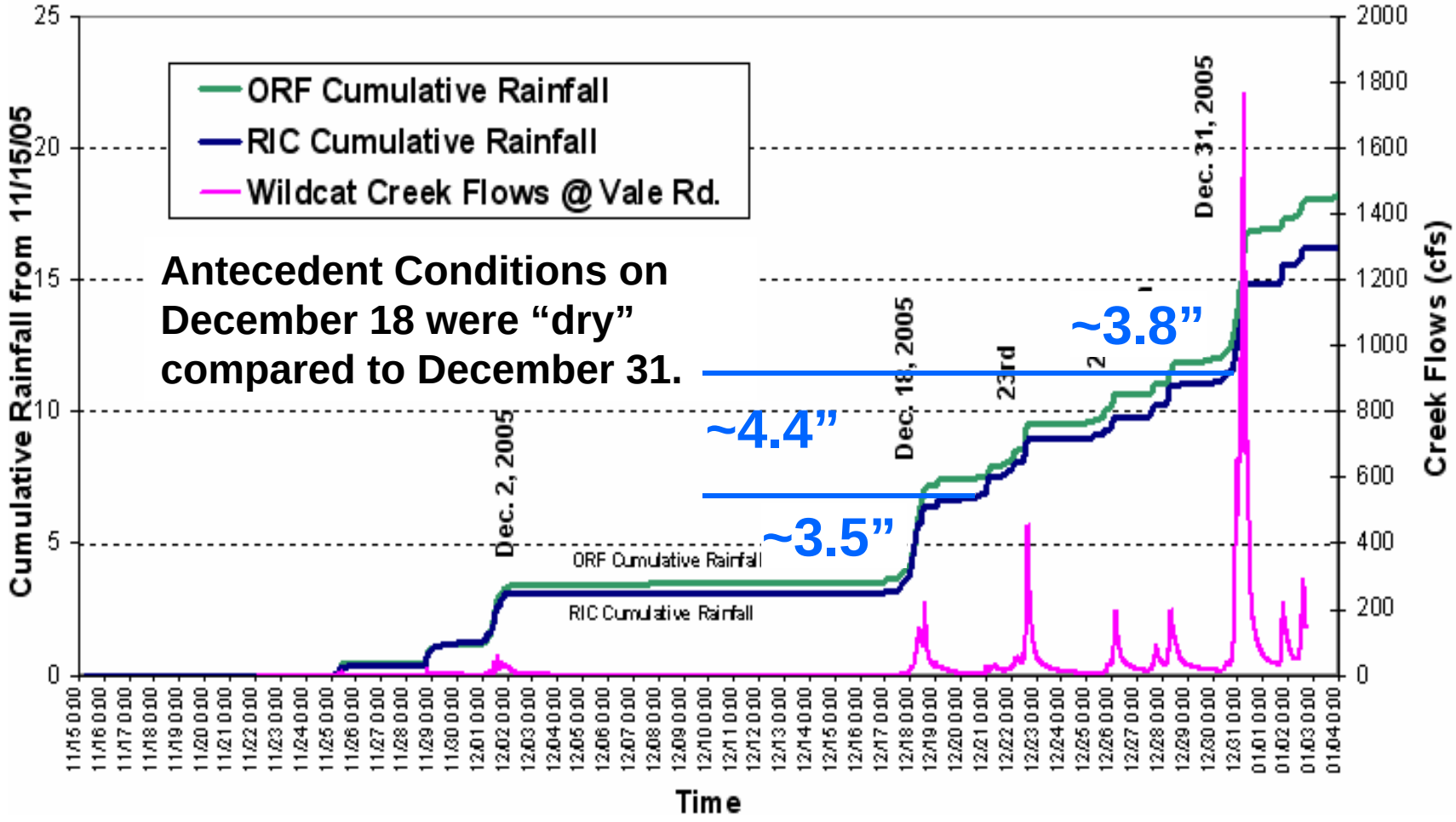
Antecedent Conditions Leading up to the December 31, 2005 Storm



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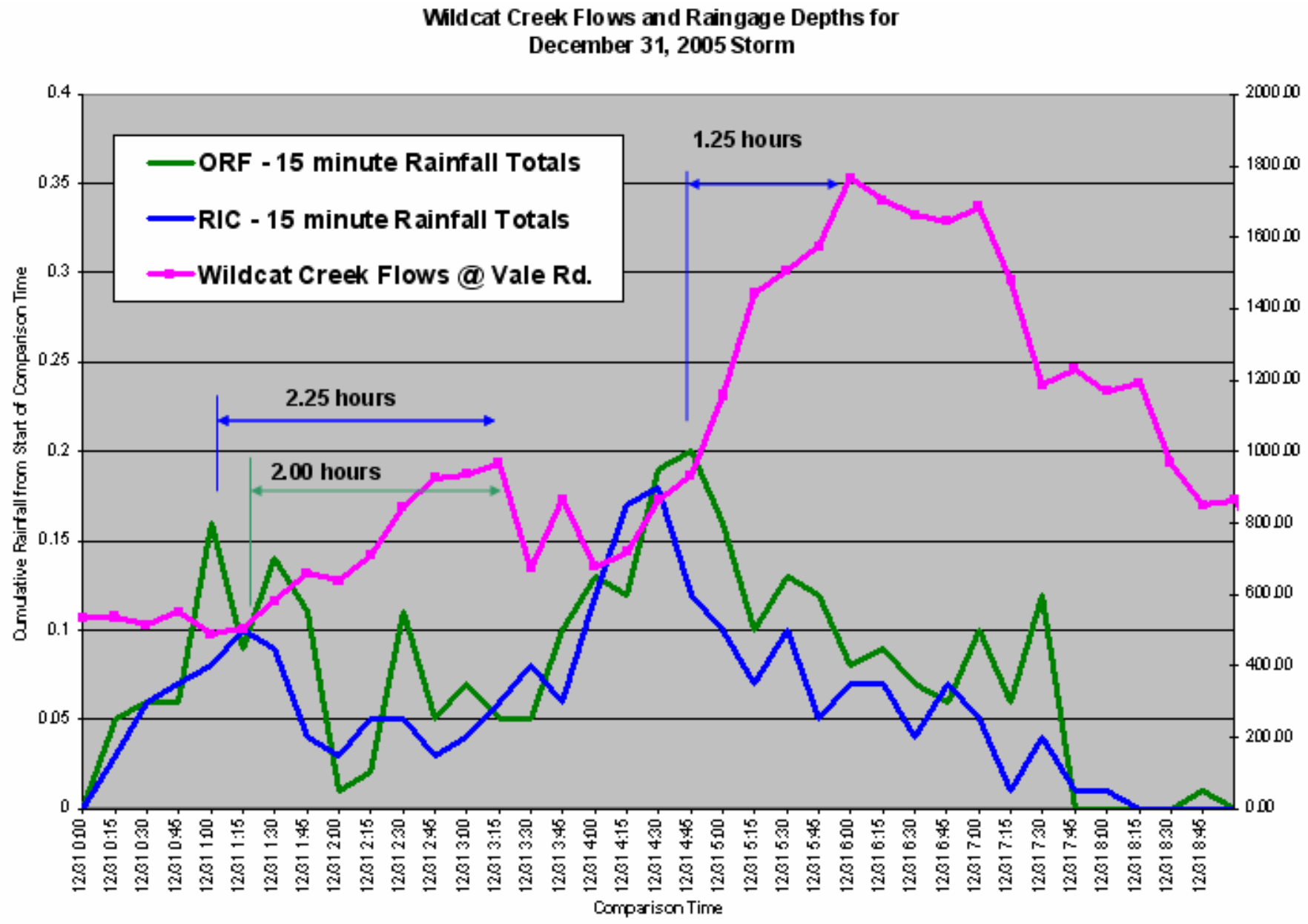

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NRCS
EWP Program

(Emergency Watershed Protection Program)

Property Owner covers 25% Construction Costs + Costs incurred by County for design & assistance

NRCS covers 75% of Construction Costs

Emergency Watershed Protection Program

NRCS Natural Resources Conservation Service

San Ramon Creek @ Finley Lane

18ft drop off

San Ramon Creek @ Finley Lane

Storm Photos for December 31, 2005 Storm

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Port Costa Community Center

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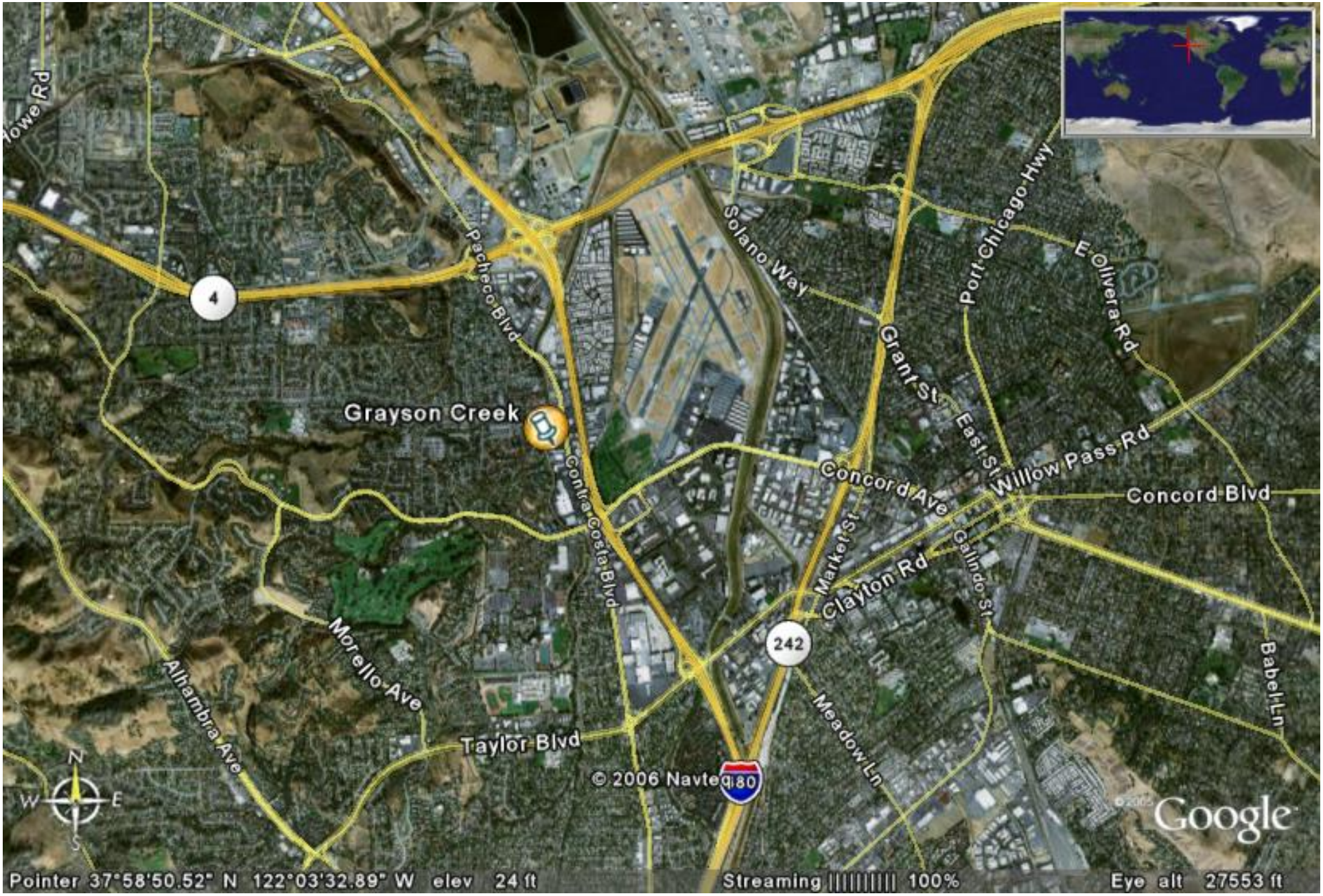

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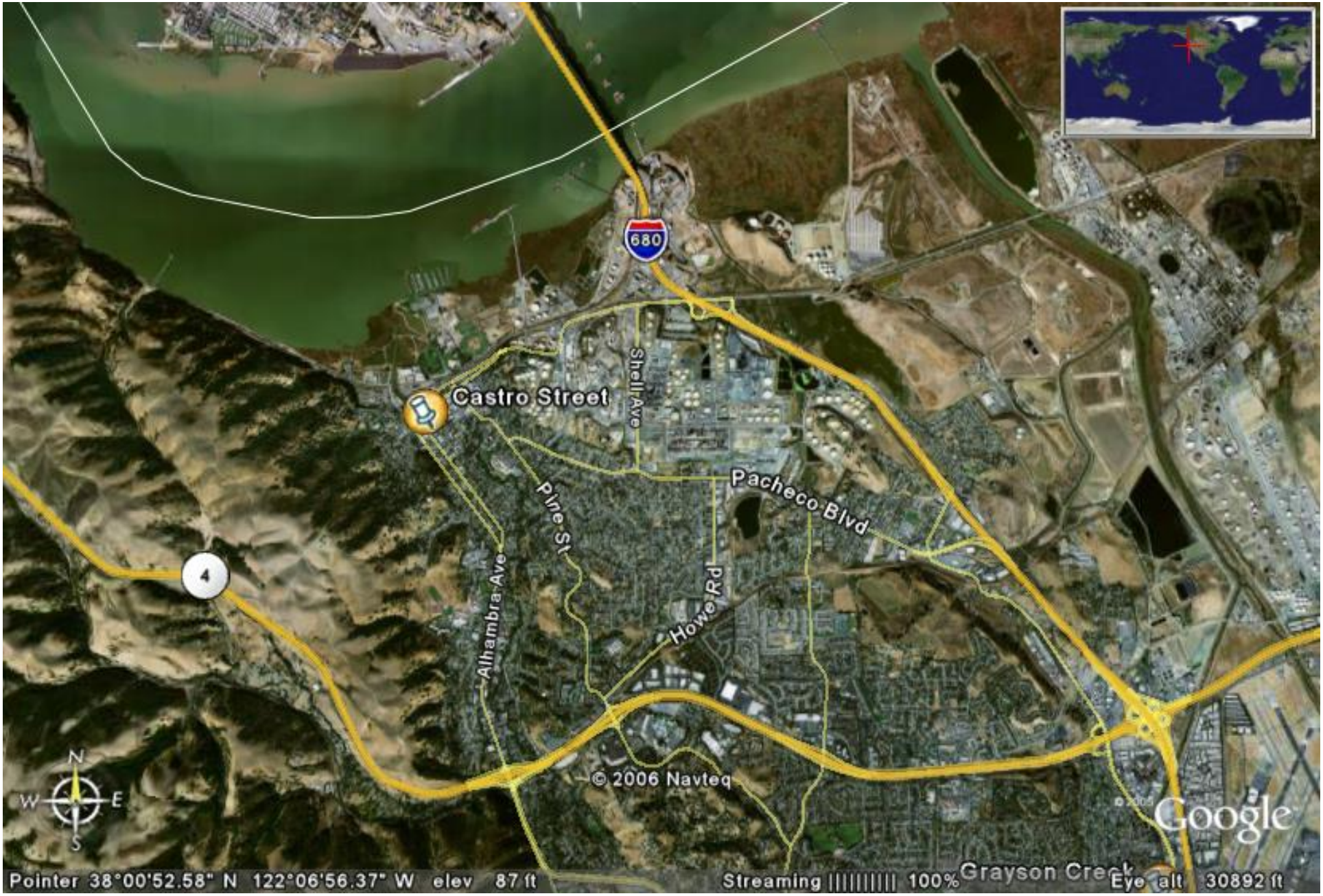
Grayson Creek @ Center Avenue, Pacheco



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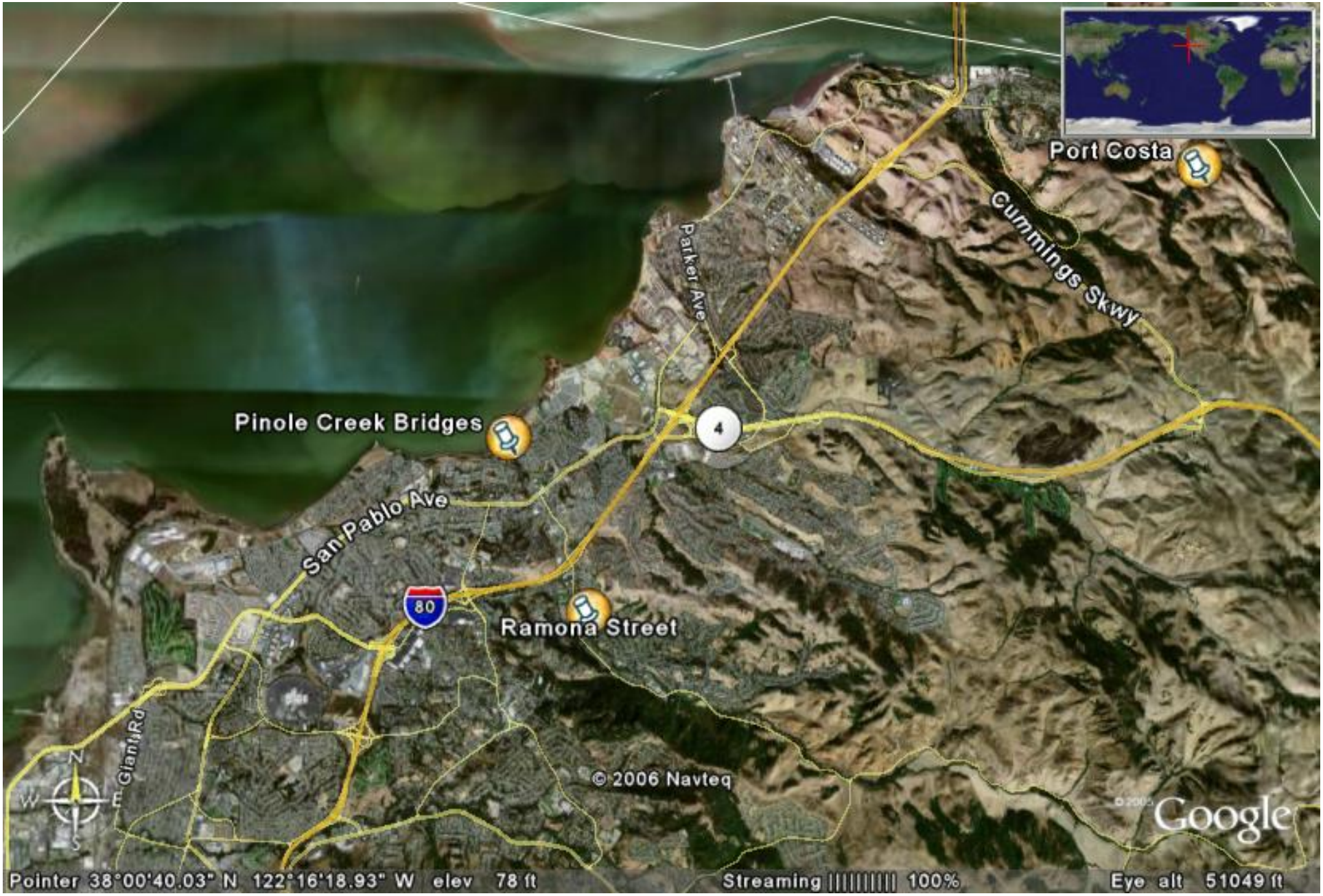
Castro Street, Martinez – Alhambra Creek Watershed



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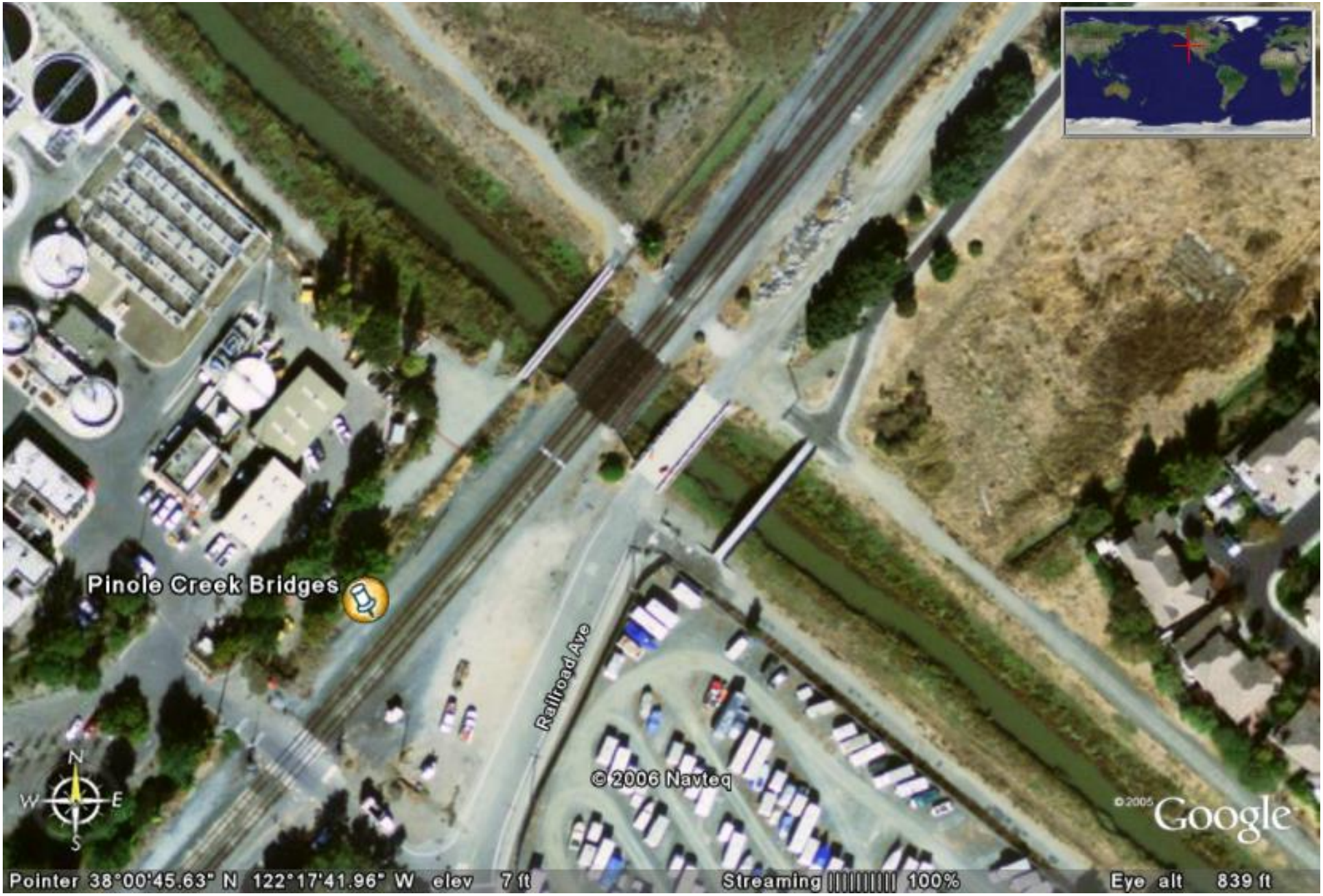

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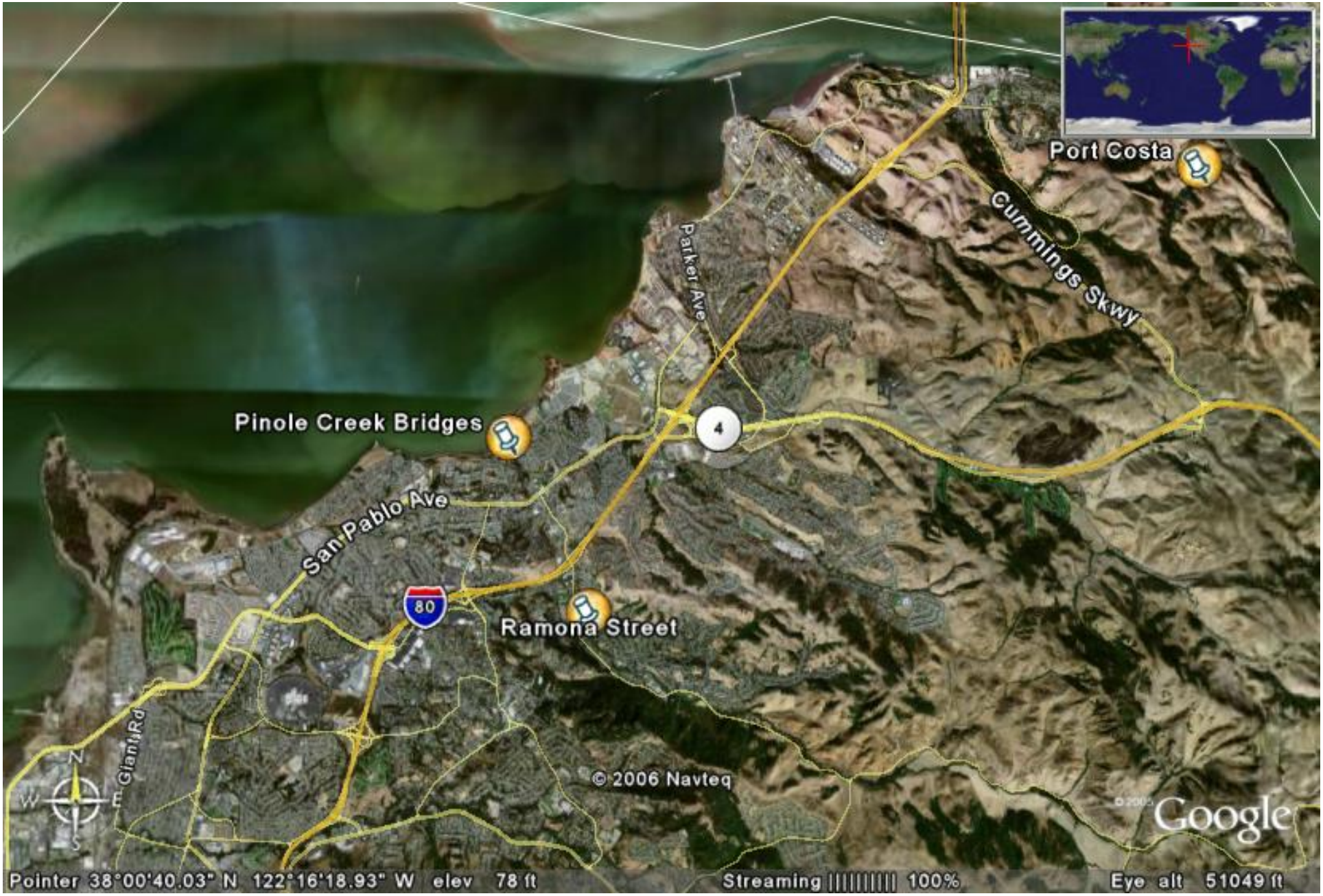
Pinole Creek @ Pedestrian Bridge

Pinole Creek @ Railroad Ave.

Pinole Creek @ Railroad Ave.

Tide Meets Trains



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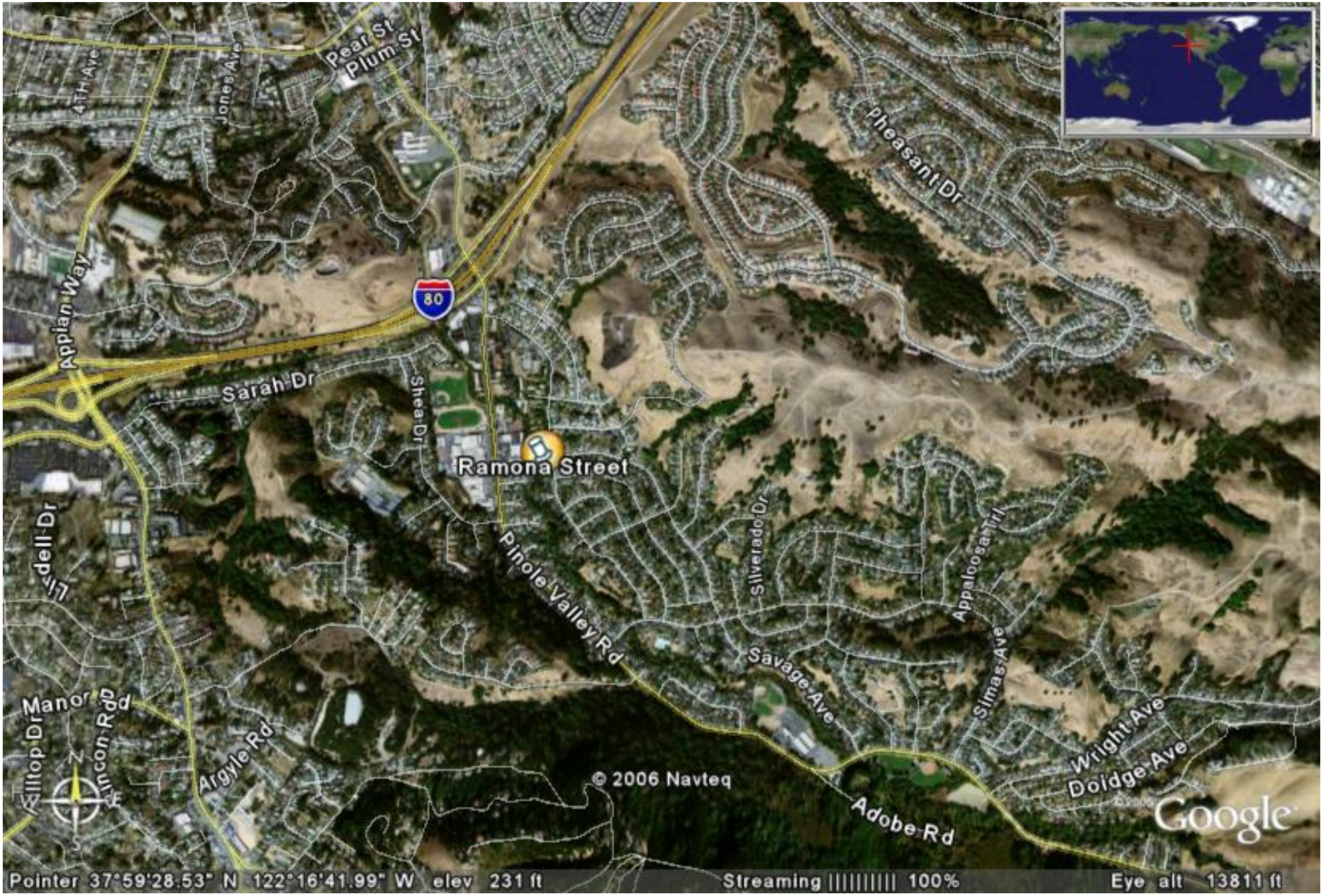

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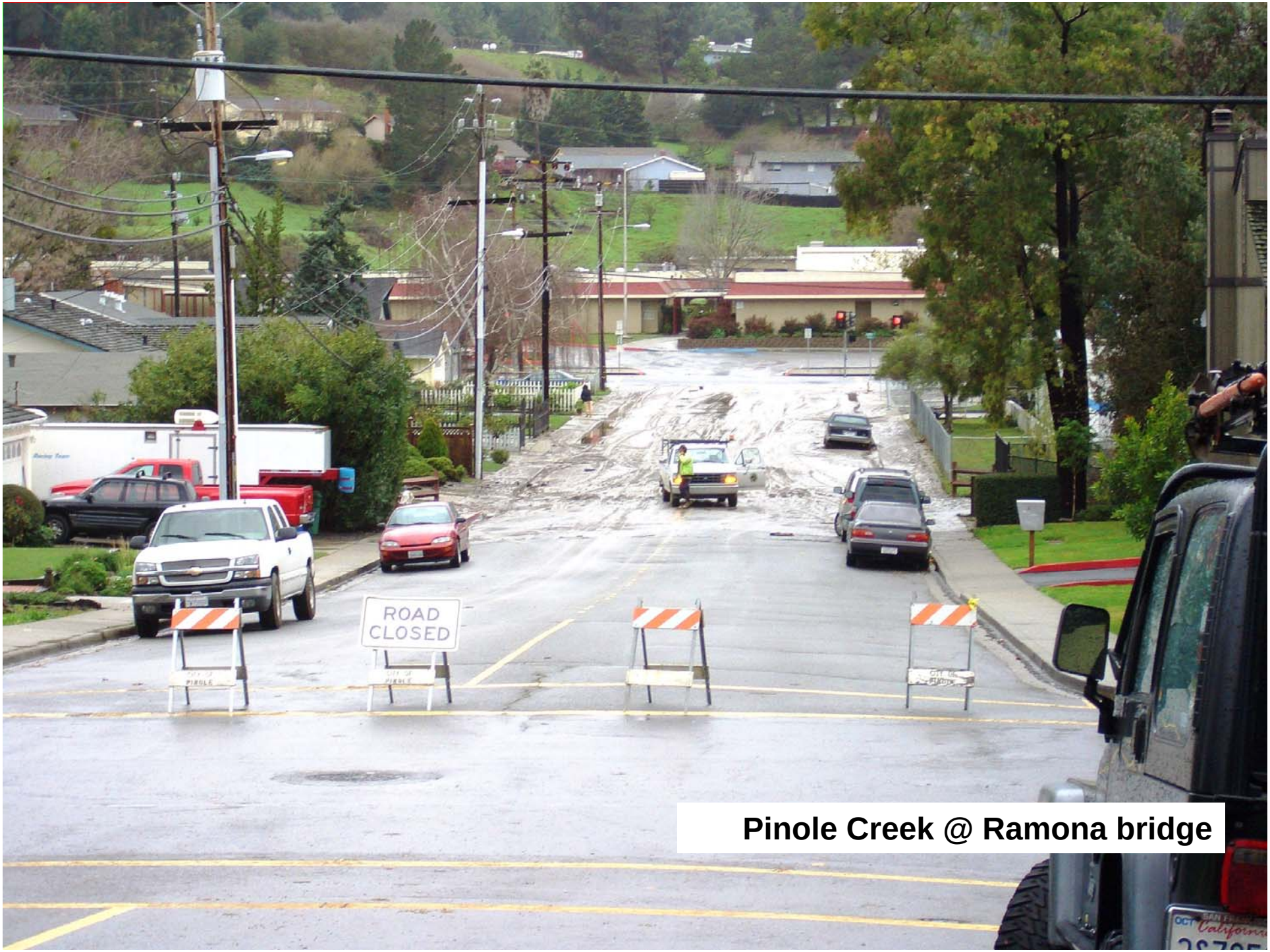
Pinole Creek @ Ramona bridge

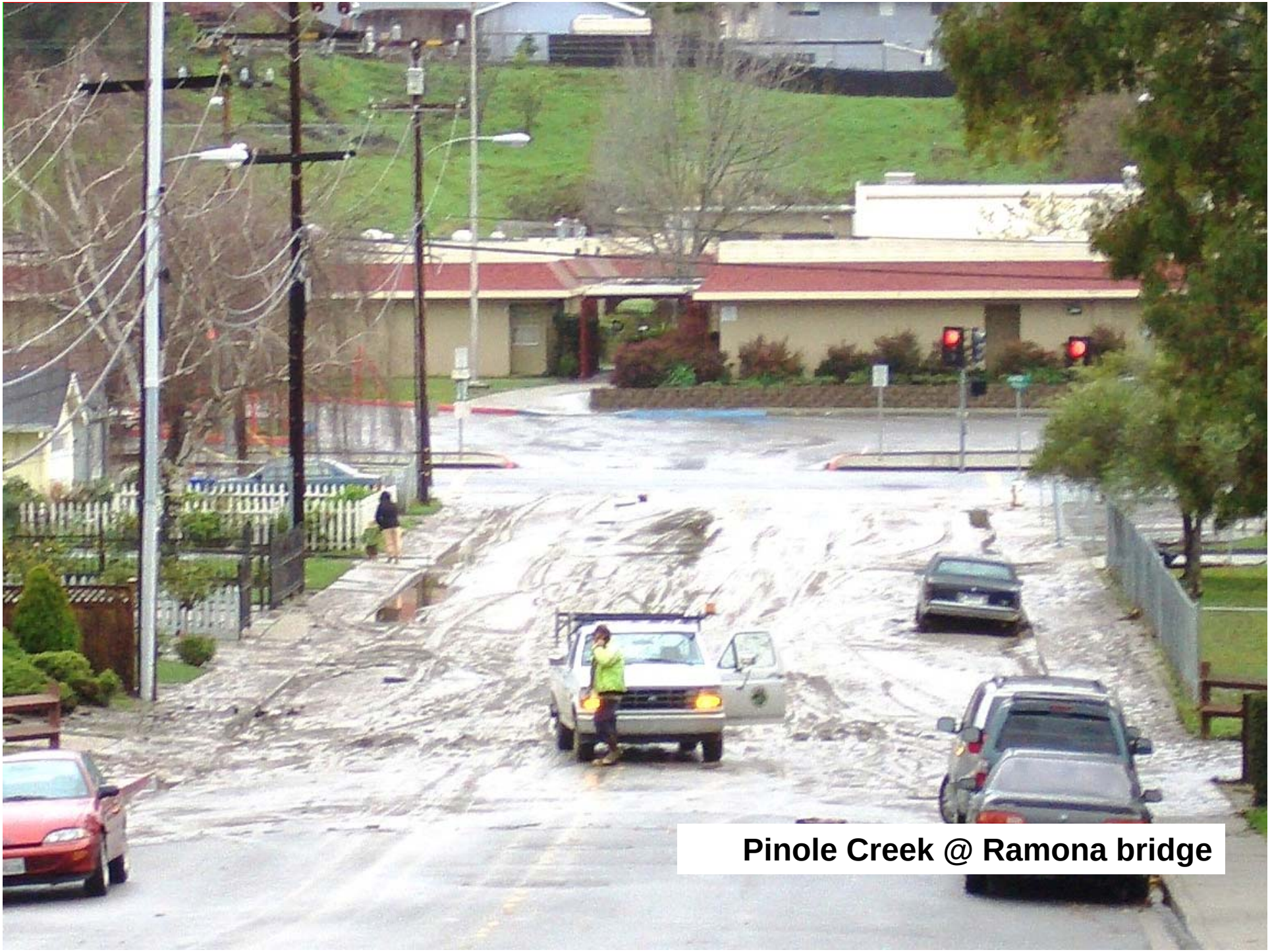
Pinole Creek @ Ramona bridge
12.31.2005 09:12

Pinole Creek @ Ramona bridge

Pinole Creek @ Ramona bridge

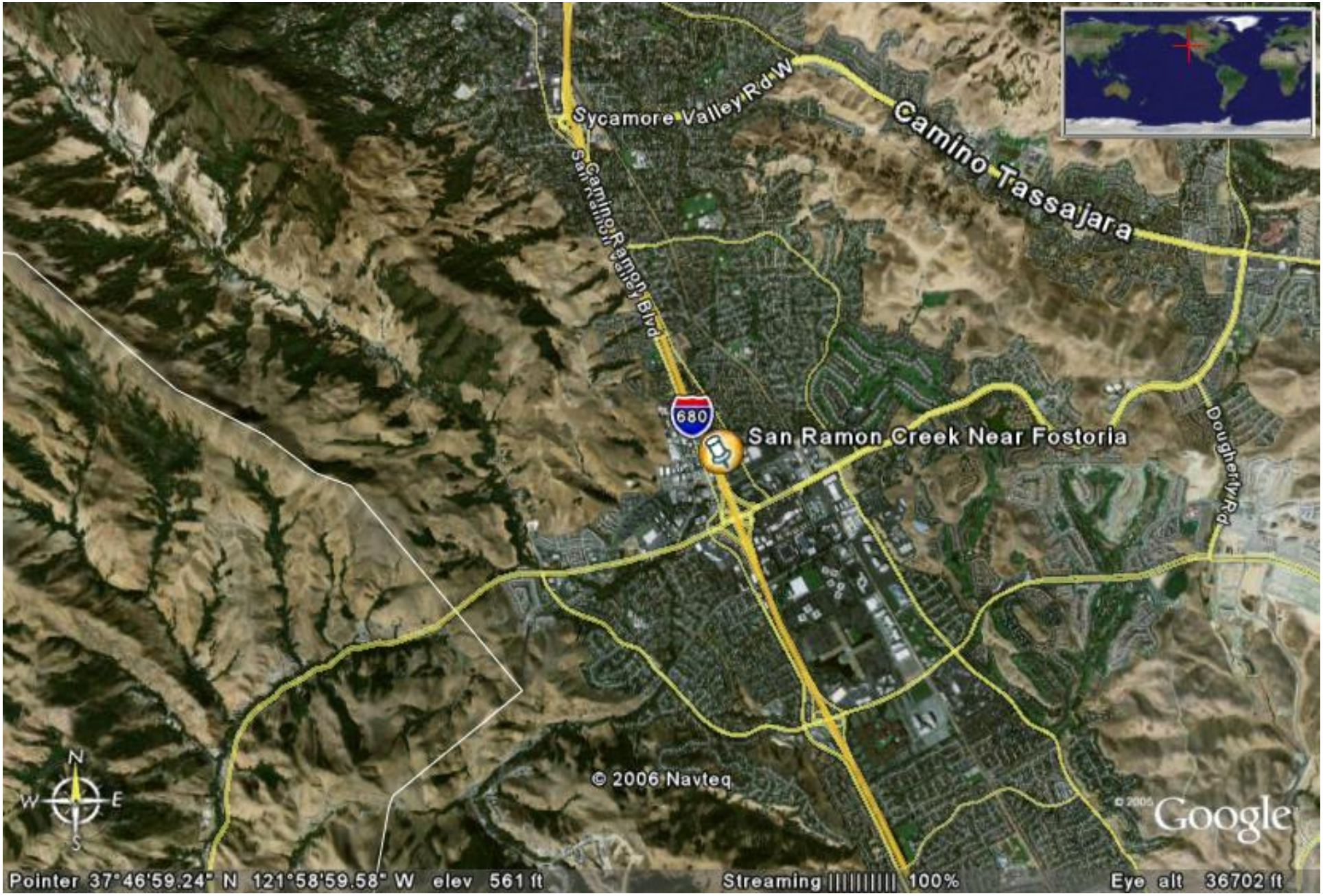


Pinole Creek @ Ramona bridge


Pinole Creek @ Ramona bridge

01. 03. 2006 12:28

01.01.2006 14:05



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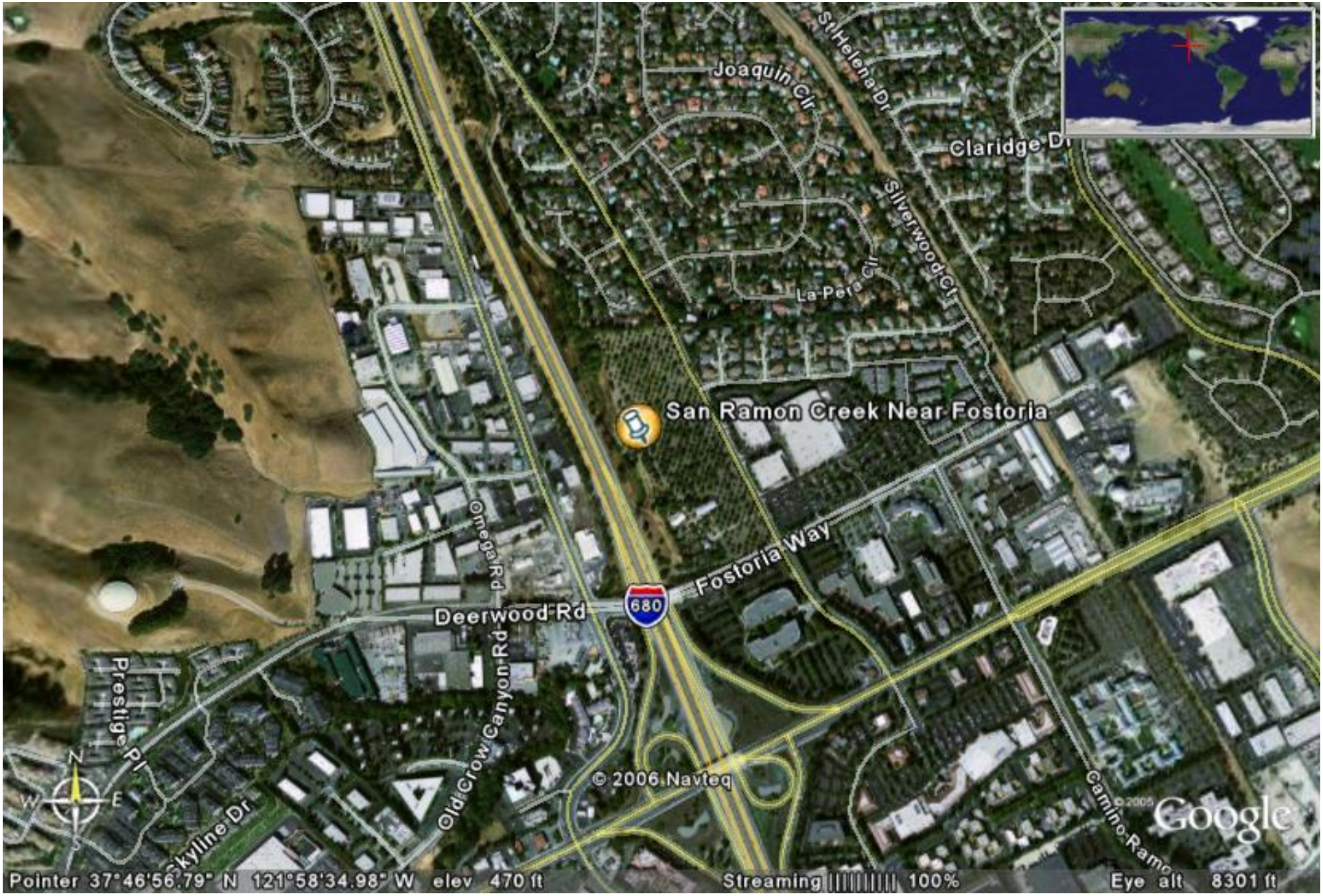

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San Ramon Creek near Fostoria Drive, Danville

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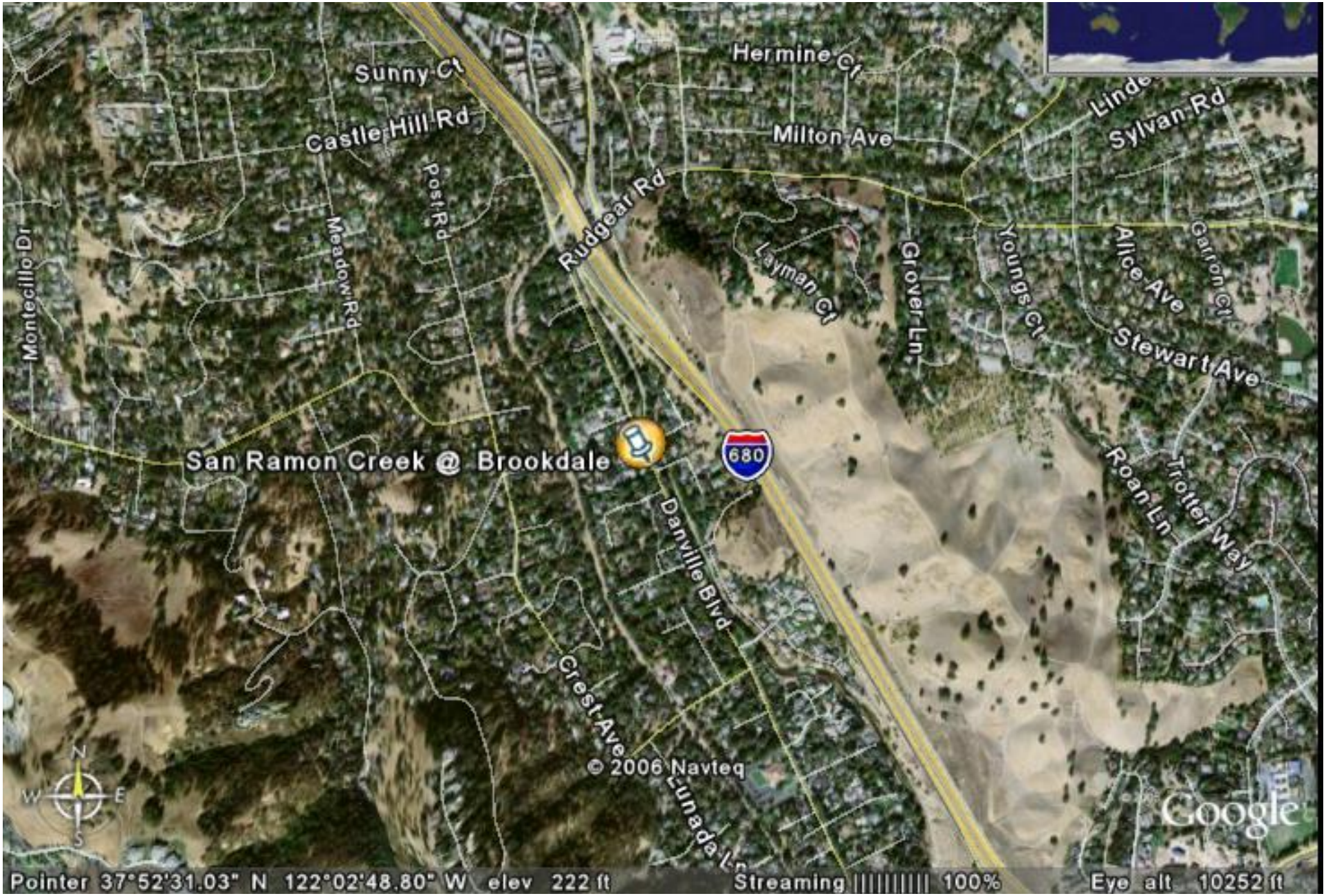
San Ramon Creek @ Livorna Rd, Alamo

San Ramon Creek @ Livorna Rd, Alamo



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San Ramon Creek @ Brookdale Avenue

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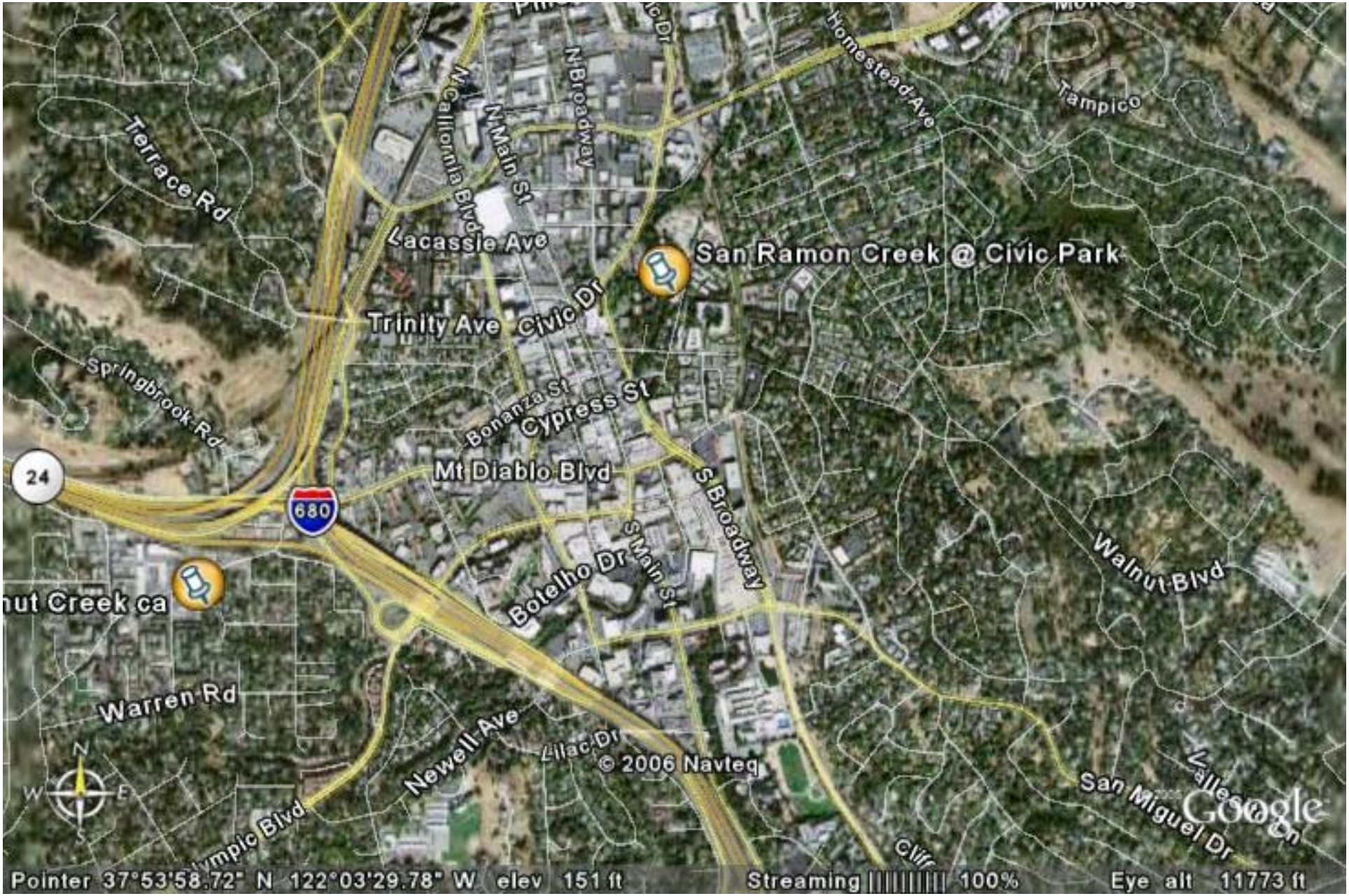

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San Ramon Creek @ Walnut Creek Civic Park

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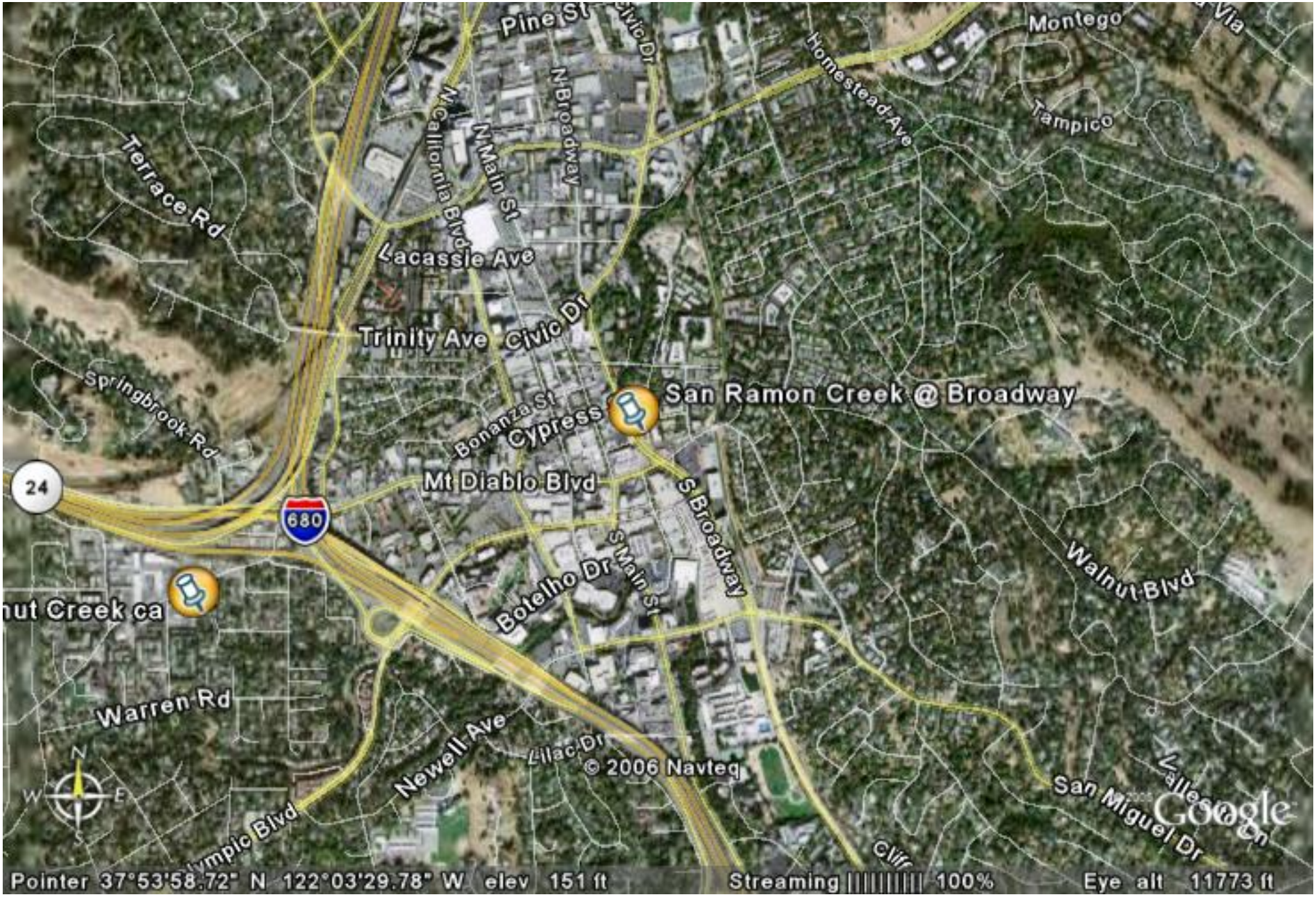

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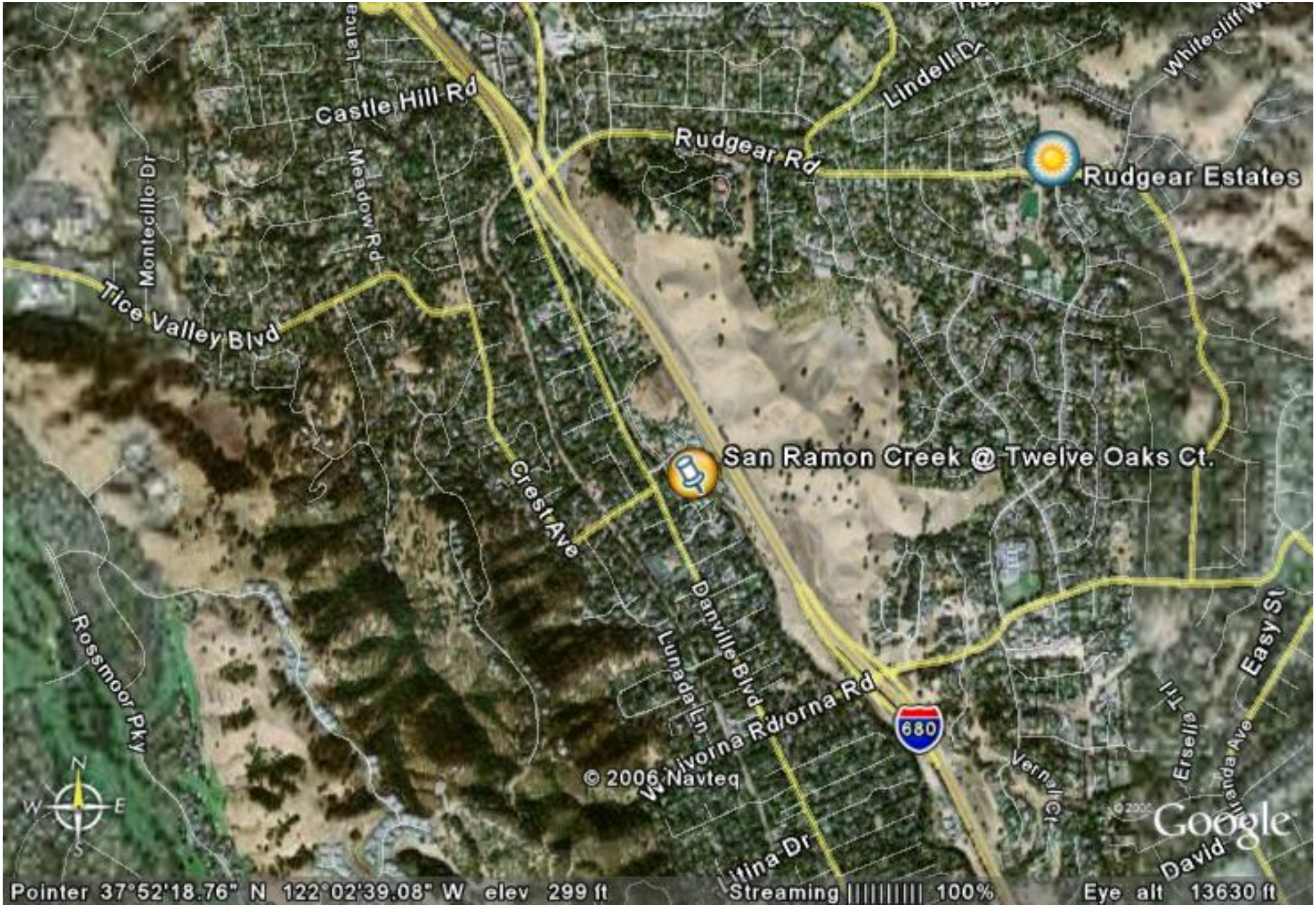
San Ramon Creek @ S. Broadway

San Ramon Creek @ S. Broadway



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San Ramon Creek @ Twelve Oaks Ct.

San Ramon Creek @ Twelve Oaks Ct.

Q & A

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