Watershed Characterization

June 2008

NMFS-SWR-HCD

San Francisquito Creek Watershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
27,660 Acres	18050003	2205500101	Corte Madera Creek (16,553 acres)
11,194 Hectares	4th Field **HUC**	2205500202	Deer Creek (1,003 acres)
43 Square Miles		2205500400	Sunnyvale (2,477 acres)
	2205	2205500102	West Union Creek (7,602 acres)

Location

4th Field **Calwater**

San Mateo County

Santa Clara County

Species Potential	Miles of Streams with Species Present
Central California Coast **Coho**	Coho
San Francisco Bay Diversity Stratum	0
- Dependent Population	CDFG, Coho Distribution, May 2007
Central California Coast **Steelhead**	Steelhead
Coastal San Francisco Bay Diversity Stratum	26
- Potentially Independent Population	NOAA Fisheries, Critical Habitat Redesignation, 2005

Critical Habitat

Central California Coast Steelhead	26 Miles of Stream

Miles of Waterway[A]	Miles
Naturally Occurring Waterways	
Connector	1
Canal / Ditch	1
Pipeline / Aquaduct	3
Intermittent Stream	80
Perennial Stream	0
Artificial Path	3

[A]USGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

Number of **Dams**[C]
29
2 - Impassable
3 - Not a Barrier
19 - Partially Impassable
5 - Unknown passage status

[C]Passage Assessment Database, Pacific States Marine Fisheries Commission, 2005

USGS **Gaging Stations**[B]
Napa River at Calistoga
USGS11162940
San Francisquito Creek below Ladera Damsite
USGS11162950
San Francisquito Creek tributary near Stanford University
USGS11163200
Los Trancos Creek tributary near Stanford University
USGS11163500
Los Trancos Creek at Stanford University
USGS11164000
Lagunita Canyon at Stanford University
USGS11164500
San Francisquito Creek at Stanford University
USGS11165000
San Francisquito Creek at Menlo Park
USGS11165500
San Francisquito Creek at Palo Alto

[B]US Environmental Protection Agnecy BASINS Project, 2001

Number of **Barriers**[C]
78
29 Dams (2 Impassable)
1 Water Rights Diversions
30 Road Crossings (10 Impassable)
16 Non-structural (Logjam or Falls) (4 Impassable)

[C]Passage Assessment Database, Pacific States Marine Fisheries Commission, 2006

EPA Total Maximum Daily Load Classification (**TMDL**)[I]

High Priority -Diazinon; Medium Priority - Sediment / Siltation

Sources: Diazinon = Urban Runoff / Storm Sewers Sediment /Siltation = Nonpoint Source

[I]State Water Resources Control Board, 2003

Average Annual **Precipitation**[E]	Average Annual **Precipitation Range**[E]
29.4 inches	14-45"

[E]California Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990

Roads[A]	Miles
Roads in Watershed	
Primary Road or Highway	7
Secondary and connecting road, state highways	10
Local, neighborhood, and rural road, city street, unseparated	208
Vehicular trail, road passable only by 4WD vehicle, unseparated	1
Driveway or service road	9
Total Miles	235

Road Density	
Miles of Roads per SqMi of Watershed	5.5
Miles of Roads per SqMi of 100m Riparian Buffer*	4.7

*Buffer is 100 meters on either side of the stream centerline

[A]U.S. Census Bureau - Tiger 2000, 2002. 1:24,000

Slope[D]	Acres	Percent of watershed
Lands of 0-2 percent slope	1,867	7%
Lands of 2-4 percent slope	1,917	7%
Lands of 4-10 percent slope	4,626	17%
Lands of 10-15 percent slope	3,095	11%
Lands of 15-30 percent slope	8,258	30%
Lands of 30-60 percent slope	7,239	26%
Lands of 60-100 percent slope	659	2%
Lands of > 100 percent slope	1	0%
Elevation Range	0-2565 ft.	0-782 m

[D]Slope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation[G]	Acres	Percent of watershed
Agriculture	371	1%
Annual grassland	2,419	9%
Barren	116	0%
Conifer Forest		0%
Douglas Fir	358	1%
Montane Hardwood-Conifer	247	1%
Redwood	4,072	15%
Unknown Conifer Type	1,673	6%
Hardwood Forest		0%
Montane Hardwood	294	1%
Hardwood Woodland		0%
Coastal Oak Woodland	2,182	8%
Valley Foothill Riparian	22	0%
Mixed Chaparral	12	0%
Shrub	7,557	27%
Urban	8,196	30%
Water	116	0%

[G]Multi-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

Erodability of Watershed[F]	Acres	Percent of watershed
Ranking = 4	16,556	60%
Ranking = 5	8,626	31%
Remainder of Watershed Unranked		

[F]Department of Conservation, Division of Mines and Geology; minimum mapping unit: approx. 8000 acres Watersheds were rated based on slope, precipitation, and lithologic susceptibility to failure. Total erosion potential is based on a combination of the landslide potential, debris slide potential, and the surface erosion potential. Rating 0-10 [**0 = Low slide potential, 10 = High slide potential**]

Land Ownership[H]	Acres	Percent of watershed
Private	24,569	89%
Local	1,870	7%
Not Coded	1,221	4%

[H]Management Landscape, CA Department of Forestry, 2002 and US FWS (data supplied by major landowners who were undergoing an HCP), 2000

Population[I]

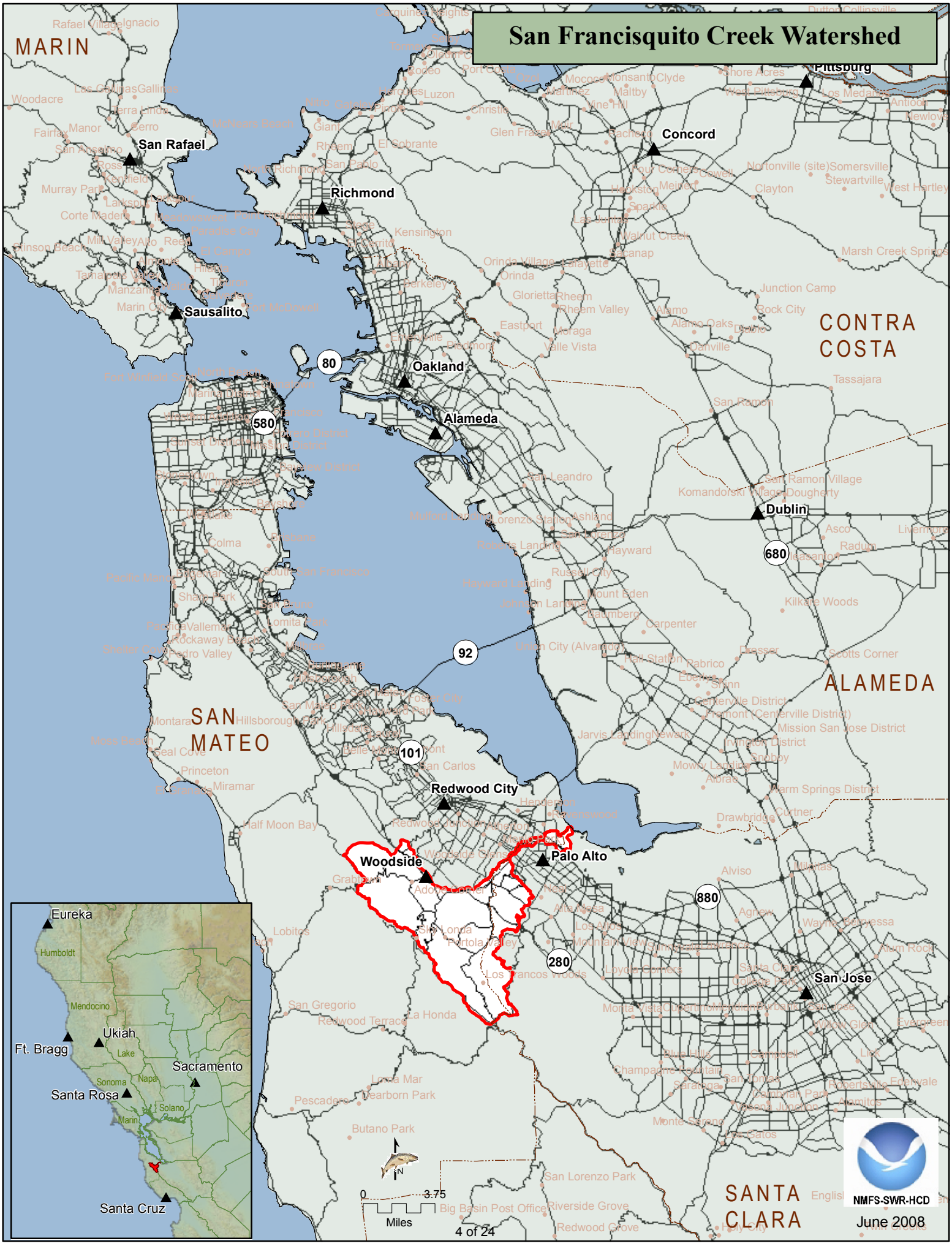
Total Population within the watershed -- 33,628 People

Housing[I]

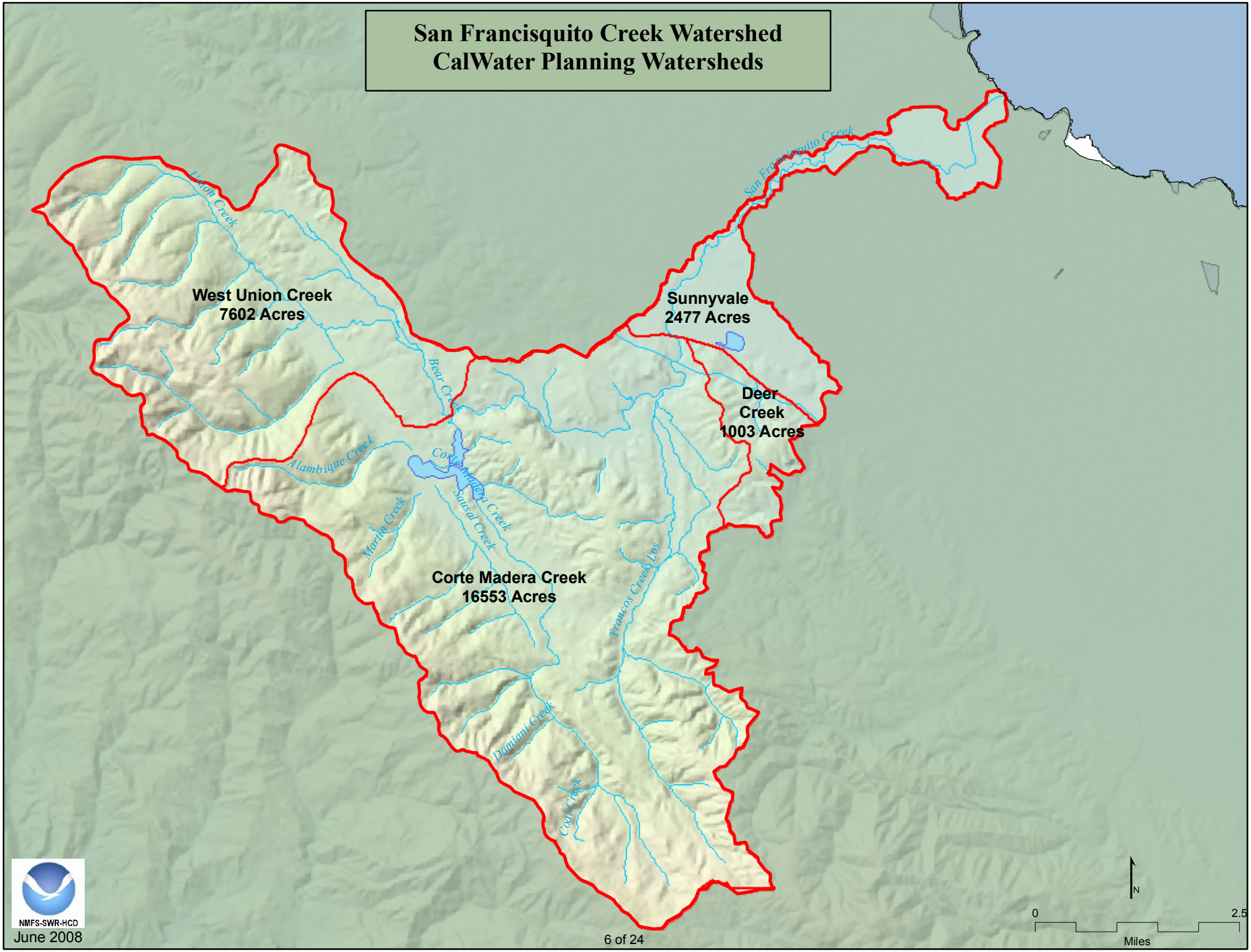
Total Housing Units within the watershed -- 10,747 Houses

Housing Density	
0 to Less than 1 Housing Unit / 160 Acres	39%
1 Unit / 160 Acres to 1 Unit / 20 Acres	9%
1 Unit / 20 Acres to 1 Unit / 5 Acres	24%
1 Unit / 5 Acres to 2 Units / Acre	24%
2 Units / Acres to Greater than or Equal to 5 Units / Acre	4%

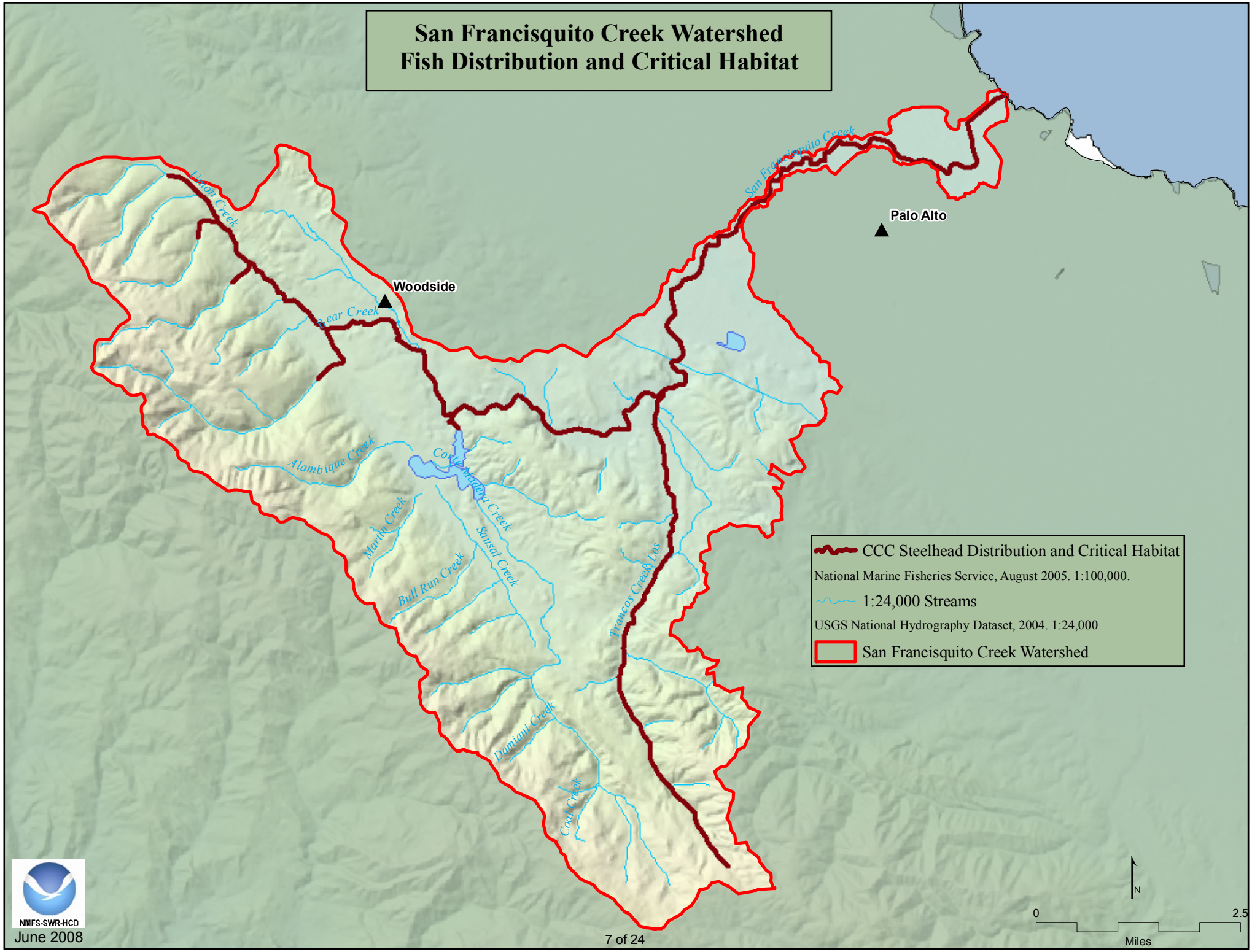
[I]Census 2000 Block Data (Migrated), CA Department of Forestry, 2003


San Francisquito Creek Watershed
MARIN
CONTRA COSTA
ALAMEDA
SAN MATEO
SANTA CLARA
San Rafael
Richmond
Sausalito
Oakland
Alameda
Concord
Pittsburg
Dublin
Redwood City
Palo Alto
Woodside
San Jose
80
580
680
92
101
880
280
Eureka
Humboldt
Mendocino
Ukiah
Ft. Bragg
Lake
Sacramento
Sonoma
Napa
Santa Rosa
Solano
Marin
Santa Cruz
0
3.75
Miles
N
NMFS-SWR-HCD
June 2008
4 of 24

San Francisquito Creek Watershed
Woodside
Palo Alto
NMFS-SWR-HCD
June 2008
0
2
Miles
N

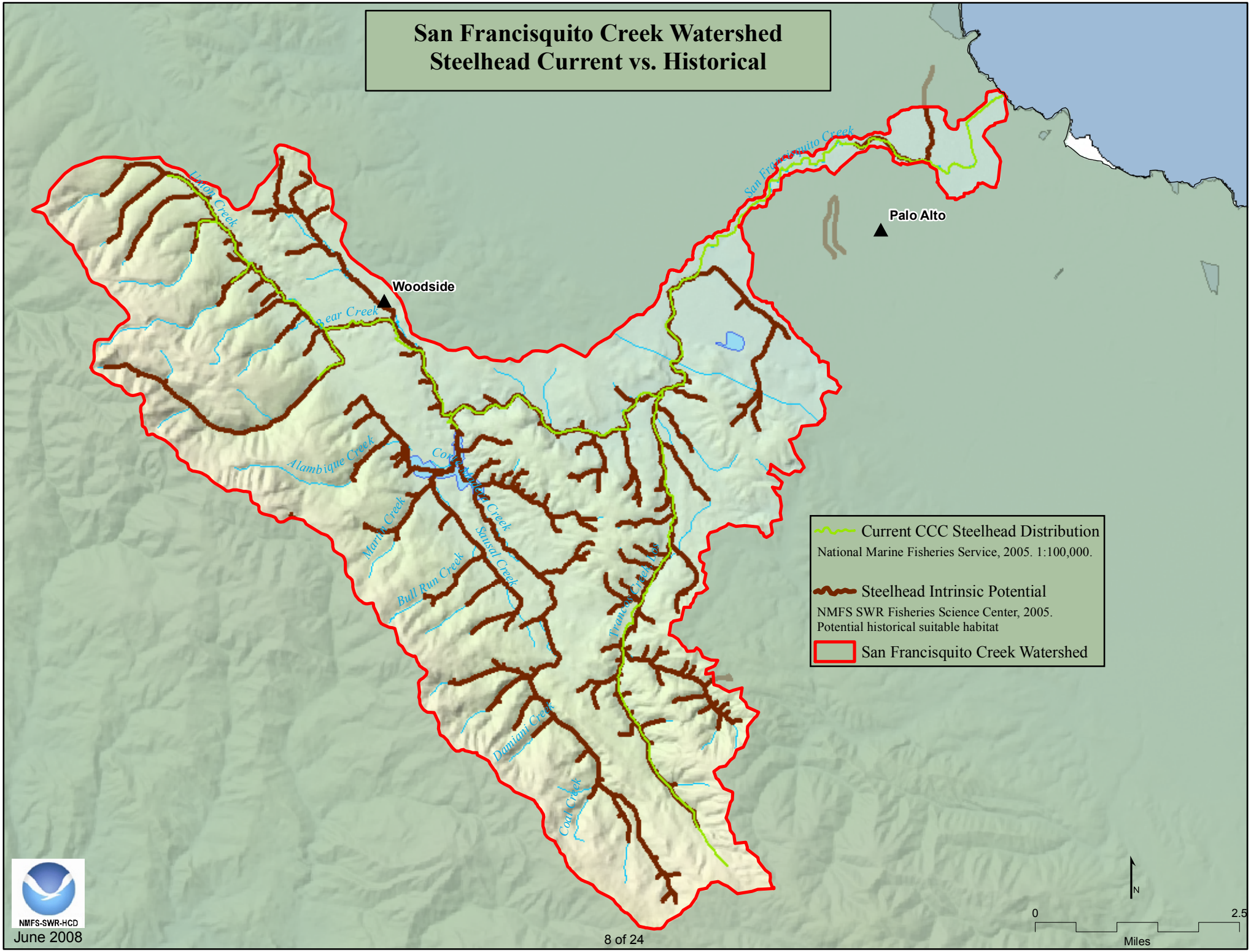

San Francisquito Creek Watershed
CalWater Planning Watersheds
West Union Creek
7602 Acres
Sunnyvale
2477 Acres
Deer
Creek
1003 Acres
Corte Madera Creek
16553 Acres
Union Creek
Bear Creek
Alambique Creek
Corte Madera Creek
Sausal Creek
Marin Creek
Los Trancos Creek
Damiani Creek
Coal Creek
San Francisquito Creek
NMFS-SWR-HCD
June 2008
N
0
2.5
Miles

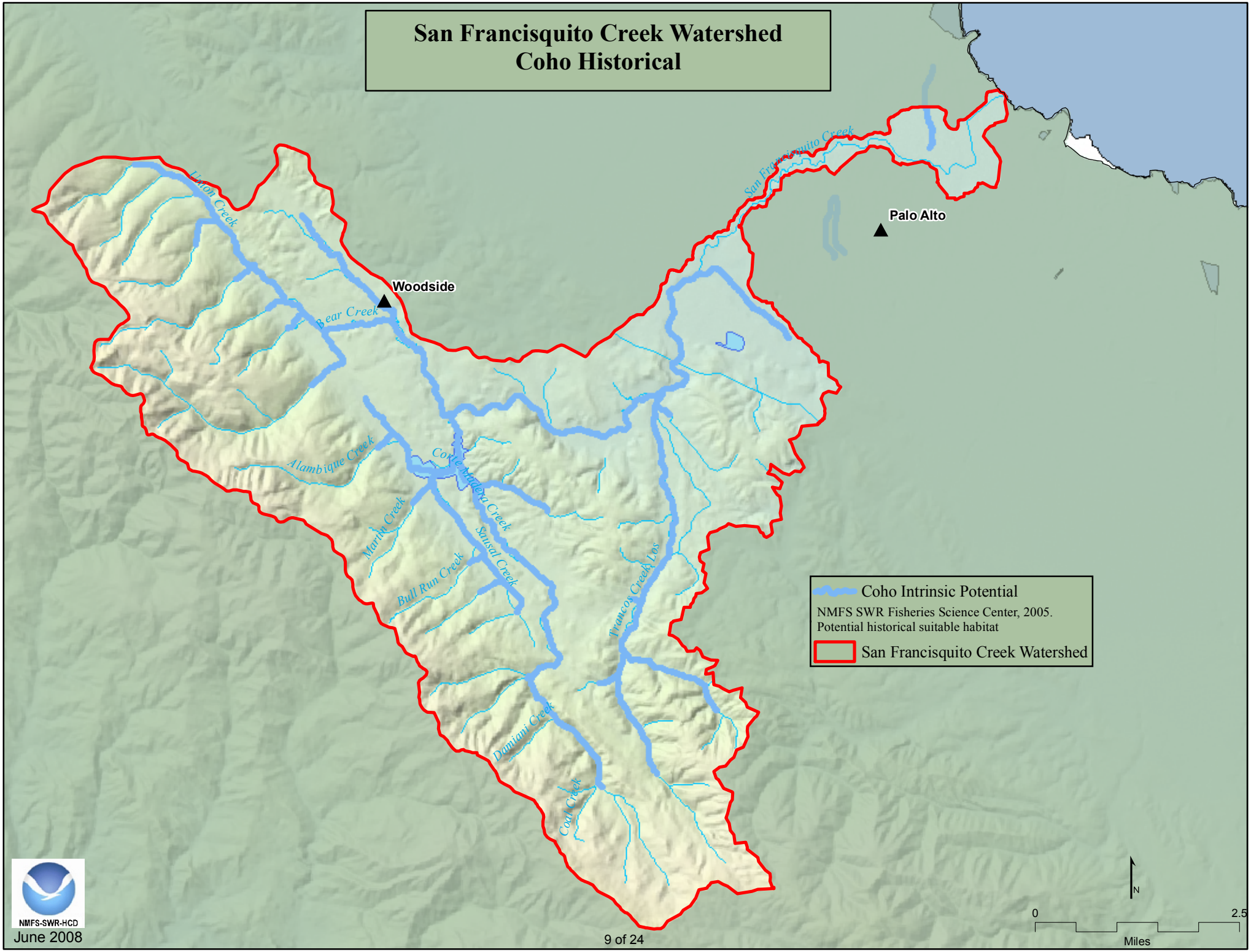
San Francisquito Creek Watershed
Fish Distribution and Critical Habitat

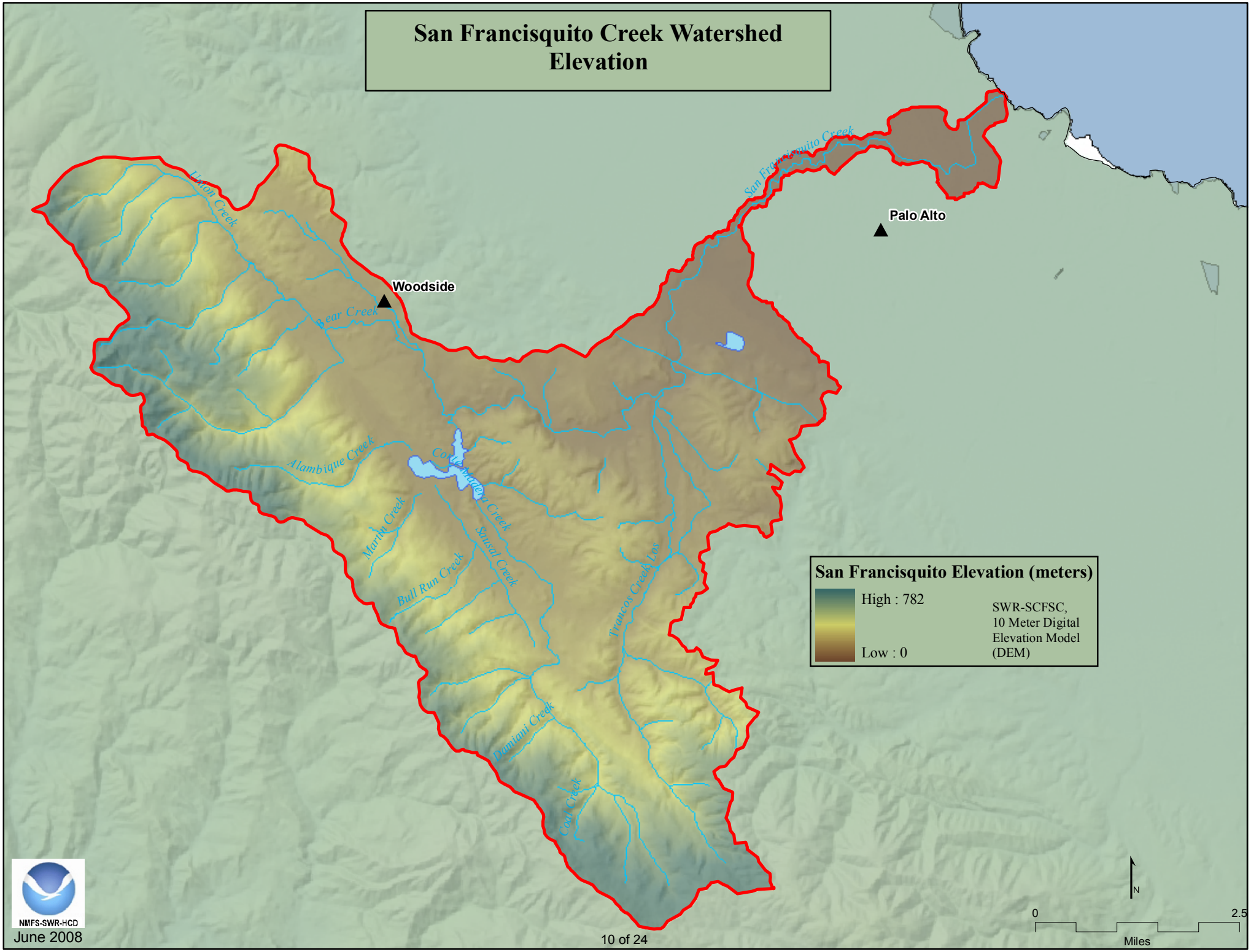


NMFS-SWR-HCD

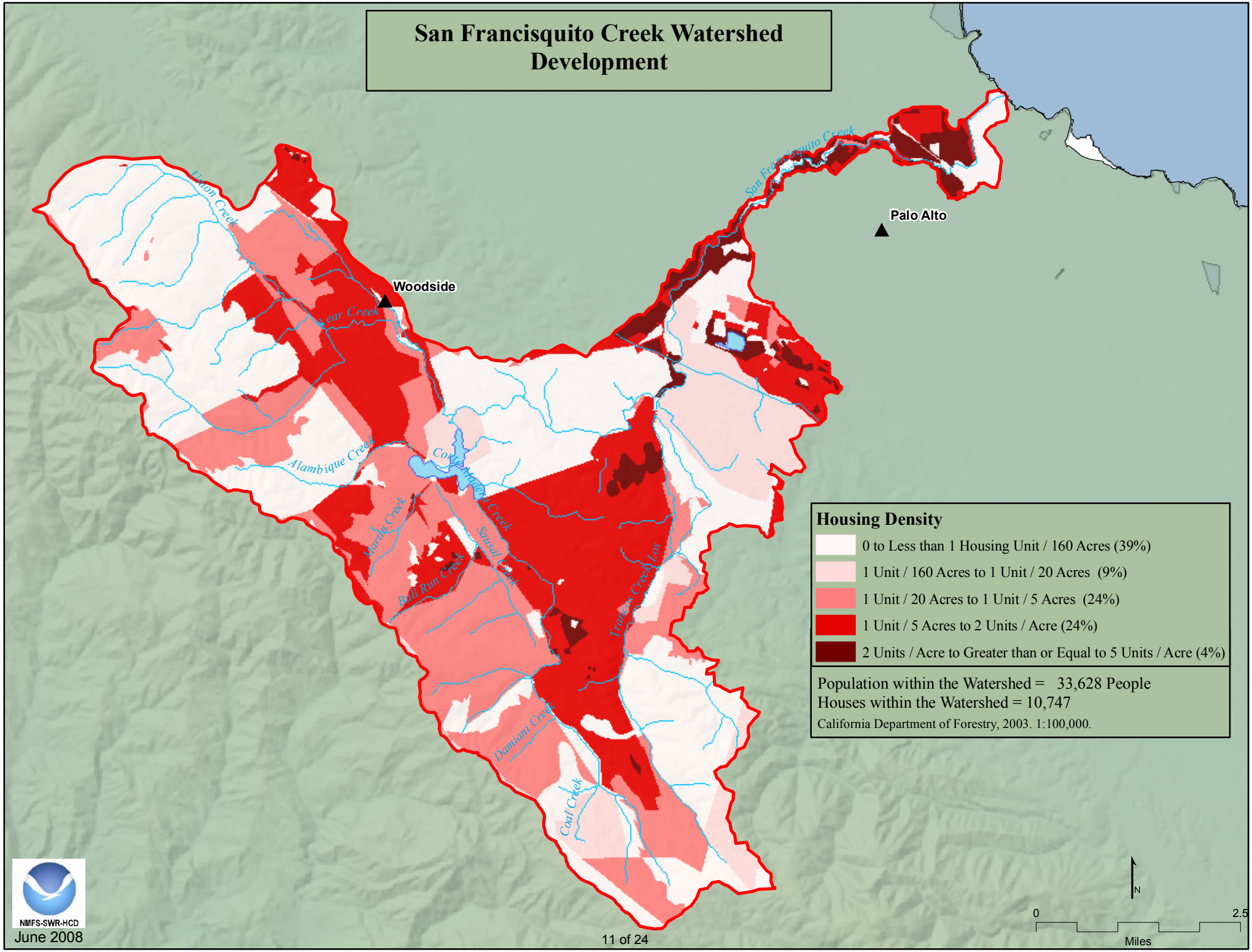
June 2008


San Francisquito Creek Watershed
Steelhead Current vs. Historical
Palo Alto
Woodside
San Francisquito Creek
Bear Creek
Alambique Creek
Corte Madera Creek
Marsh Creek
Bull Run Creek
Sausal Creek
Trancas Creek
Damiani Creek
Coal Creek
Current CCC Steelhead Distribution
National Marine Fisheries Service, 2005. 1:100,000.
Steelhead Intrinsic Potential
NMFS SWR Fisheries Science Center, 2005.
Potential historical suitable habitat
San Francisquito Creek Watershed
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008


San Francisquito Creek Watershed
Coho Historical
Woodside
Palo Alto
Bear Creek
Alambique Creek
Corte Madera Creek
Sausal Creek
Bull Run Creek
Trancos Creek, Los
Damiani Creek
Coal Creek
Coho Intrinsic Potential
NMFS SWR Fisheries Science Center, 2005.
Potential historical suitable habitat
San Francisquito Creek Watershed
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008

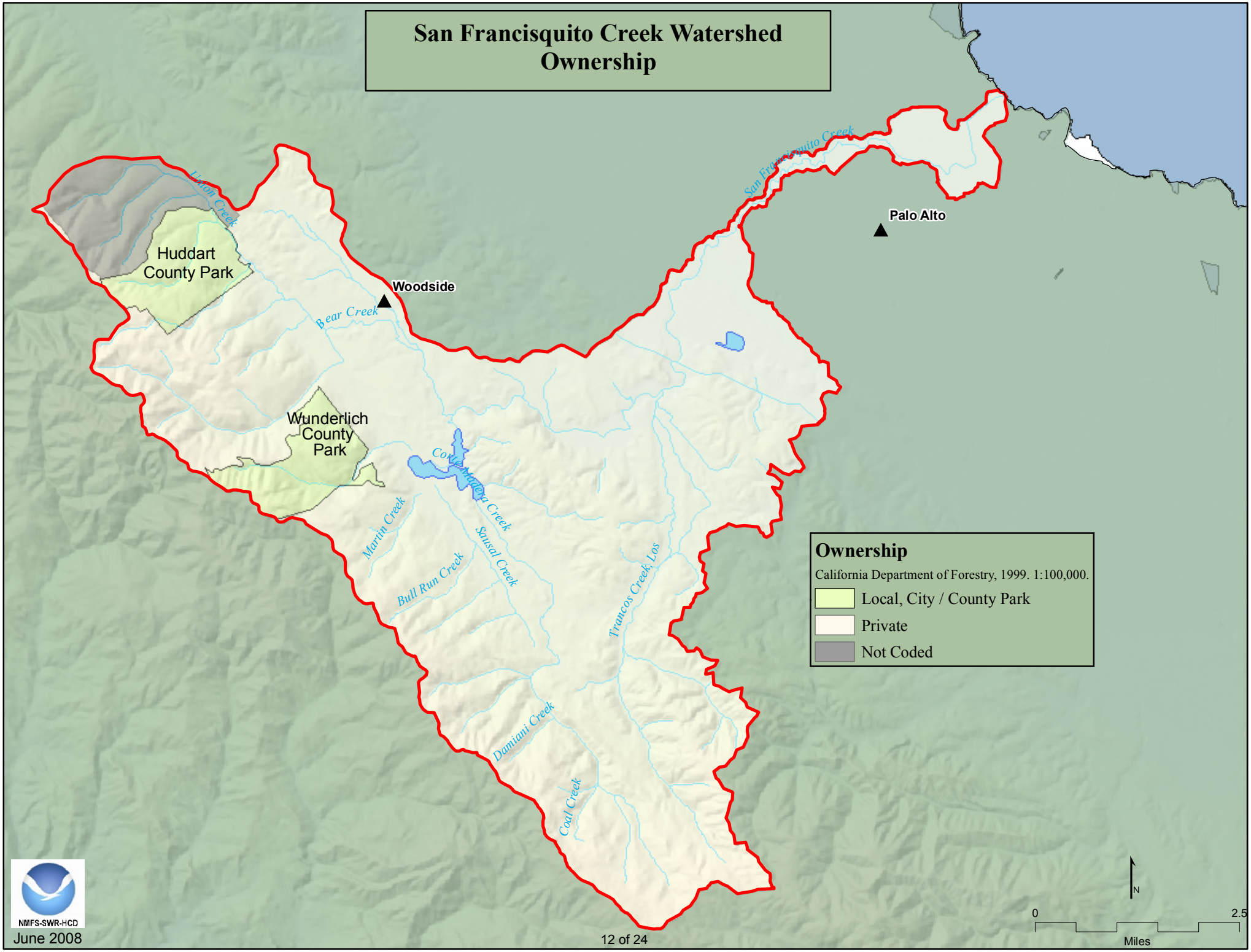

San Francisquito Creek Watershed
Elevation
Woodside
Palo Alto
Bear Creek
Alambique Creek
Marlin Creek
Bull Run Creek
Corte Madera Creek
Sausal Creek
Trancos Creek, Los
Damiani Creek
Coal Creek
San Francisquito Creek
San Francisquito Elevation (meters)
High : 782
Low : 0
SWR-SCFSC,
10 Meter Digital
Elevation Model
(DEM)
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008

San Francisquito Creek Watershed Development



NMFS-SWR-HCD

June 2008


San Francisquito Creek Watershed
Ownership
Huddart
County Park
Woodside
Palo Alto
Bear Creek
Wunderlich
County
Park
Martin Creek
Bull Run Creek
Sausal Creek
Trancos Creek, Los
Damiani Creek
Coal Creek
Ownership
California Department of Forestry, 1999. 1:100,000.
Local, City / County Park
Private
Not Coded
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008
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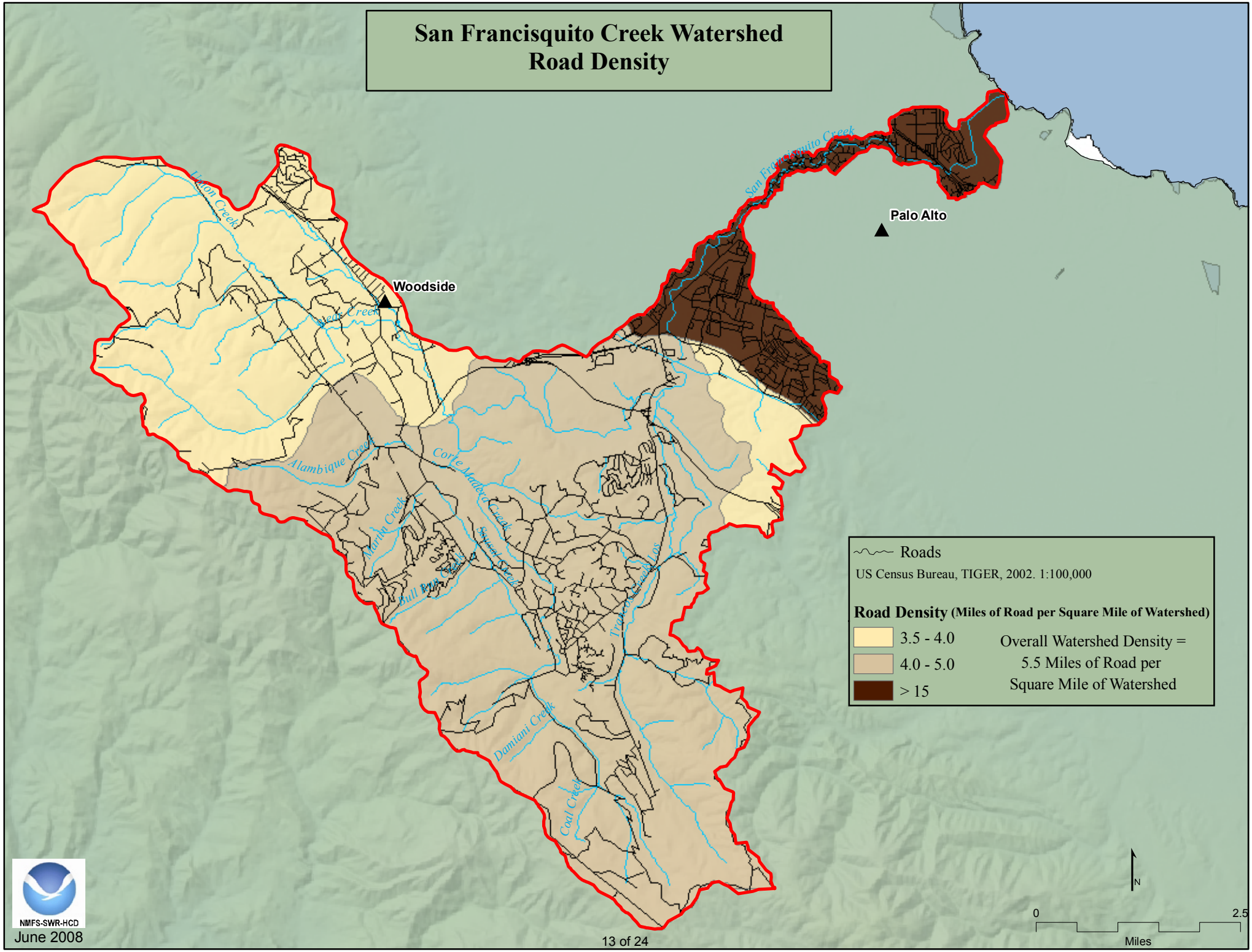
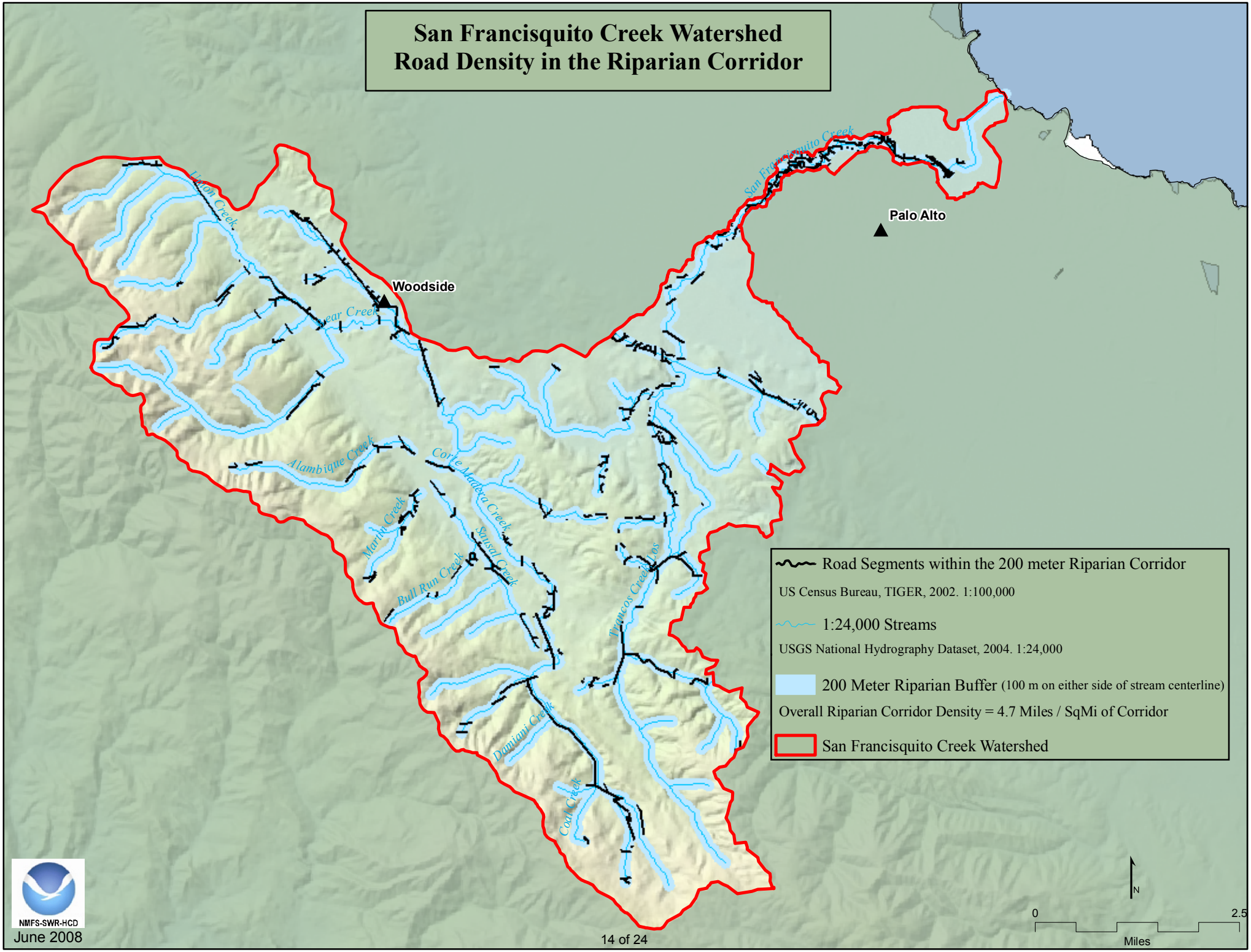
San Francisquito Creek Watershed
Road Density



NMFS-SWR-HCD

June 2008

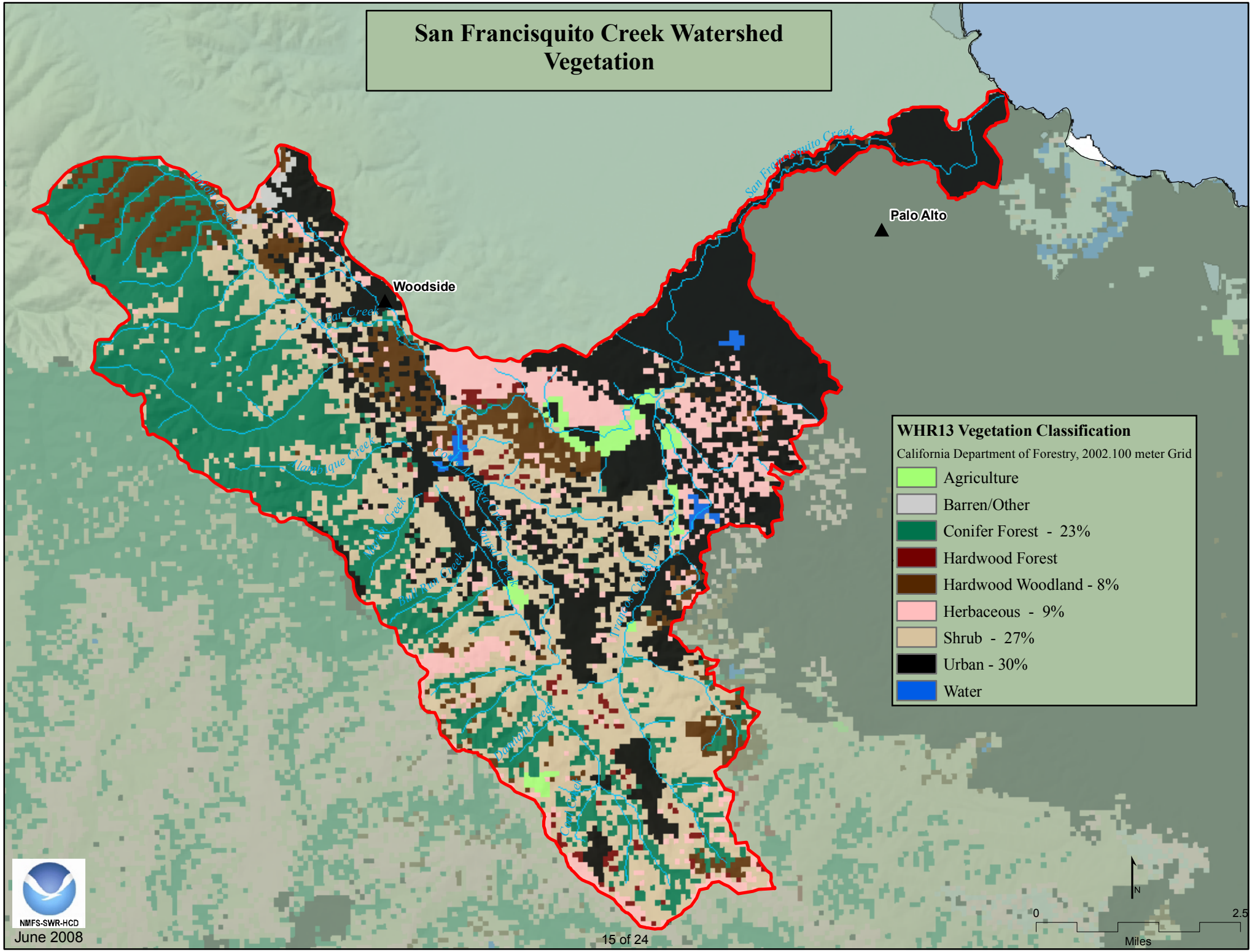
San Francisquito Creek Watershed
Road Density in the Riparian Corridor



NMFS-SWR-HCD

June 2008

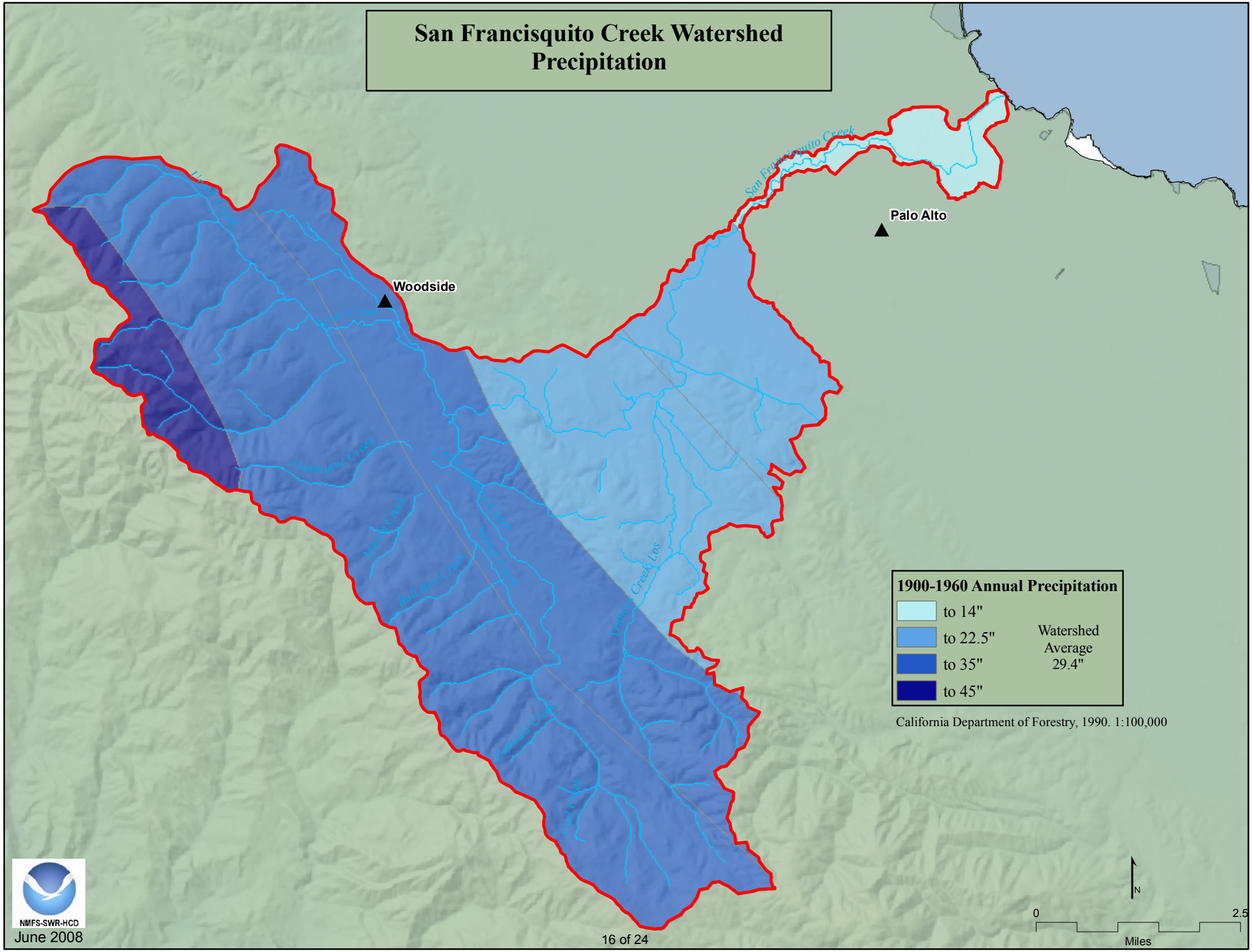
San Francisquito Creek Watershed Vegetation



NMFS-SWR-HCD

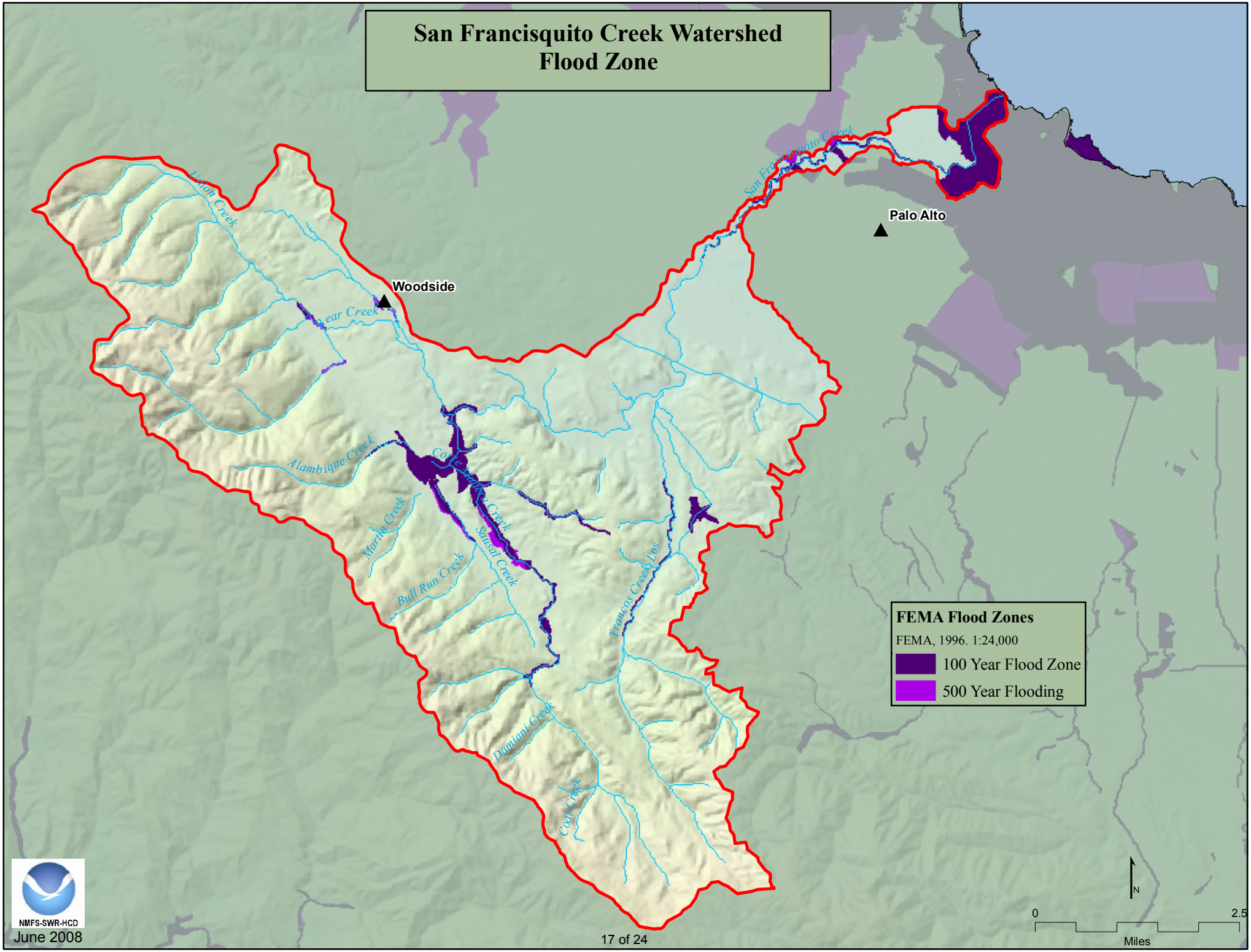
June 2008

San Francisquito Creek Watershed Precipitation

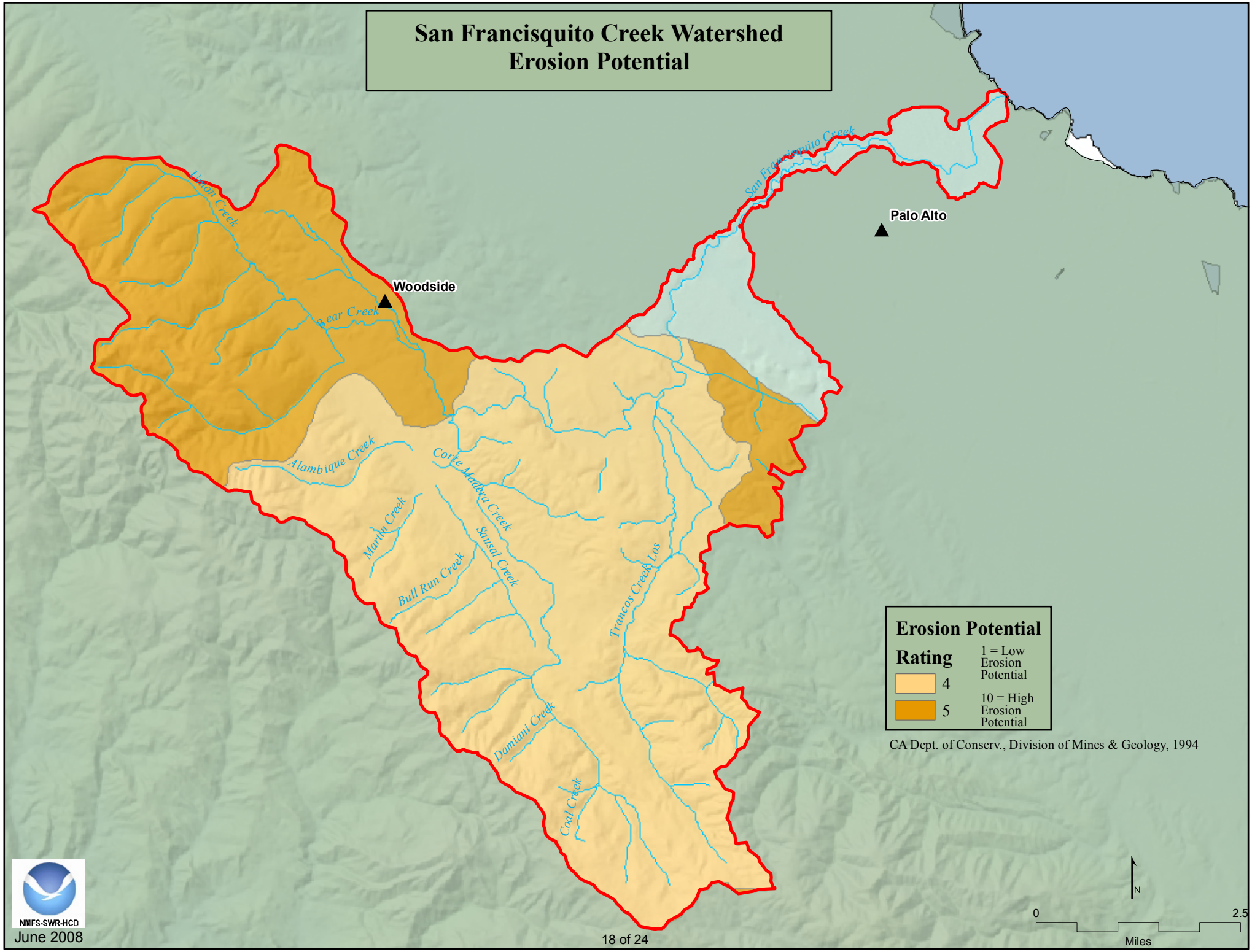


NMFS-SWR-HCD

June 2008


San Francisquito Creek Watershed
Flood Zone
Woodside
Palo Alto
Alambique Creek
Marlin Creek
Bull Run Creek
Sausal Creek
Los Trancos Creek
Damiani Creek
Coal Creek
FEMA Flood Zones
FEMA, 1996. 1:24,000
100 Year Flood Zone
500 Year Flooding
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008

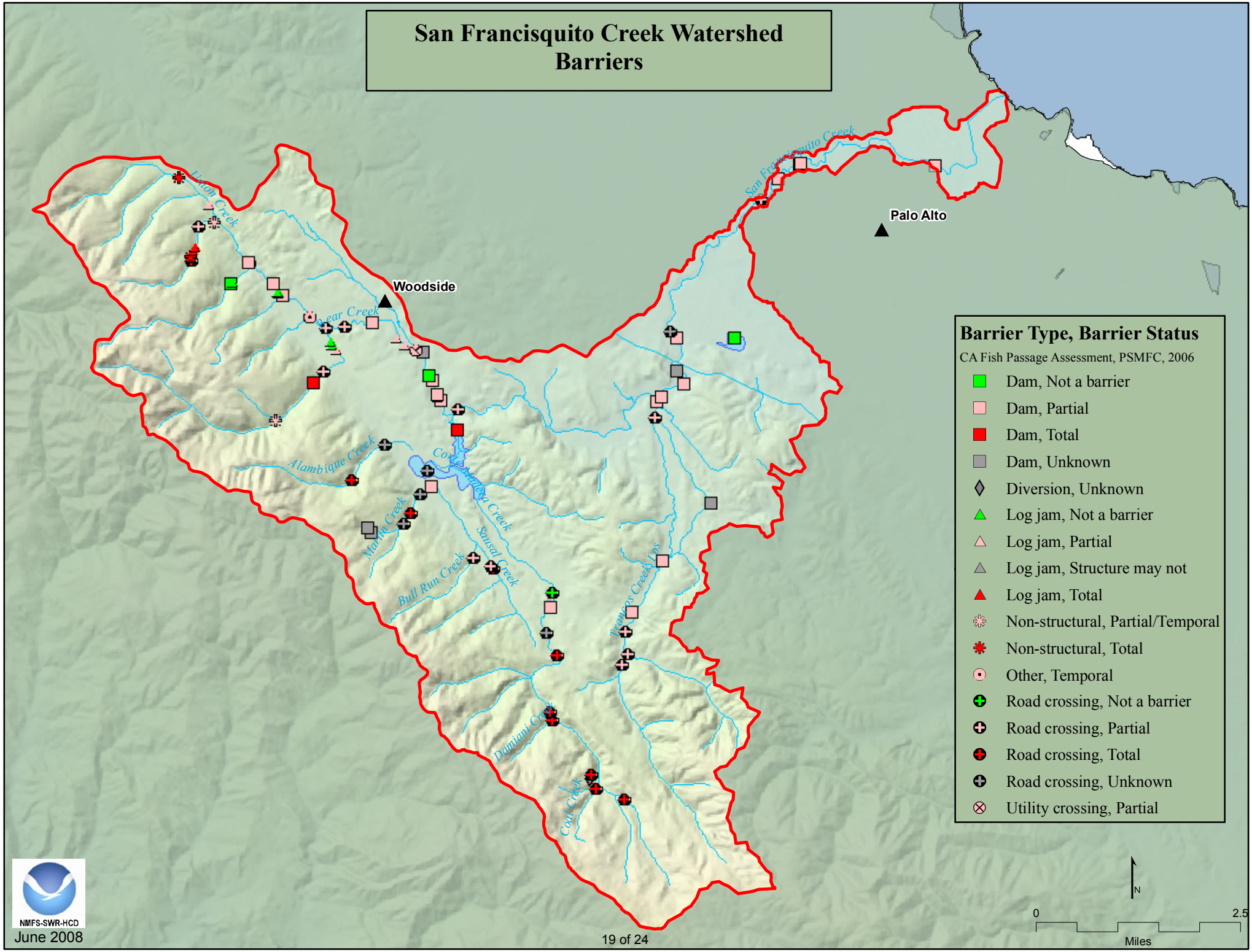
San Francisquito Creek Watershed Erosion Potential



NMFS-SWR-HCD

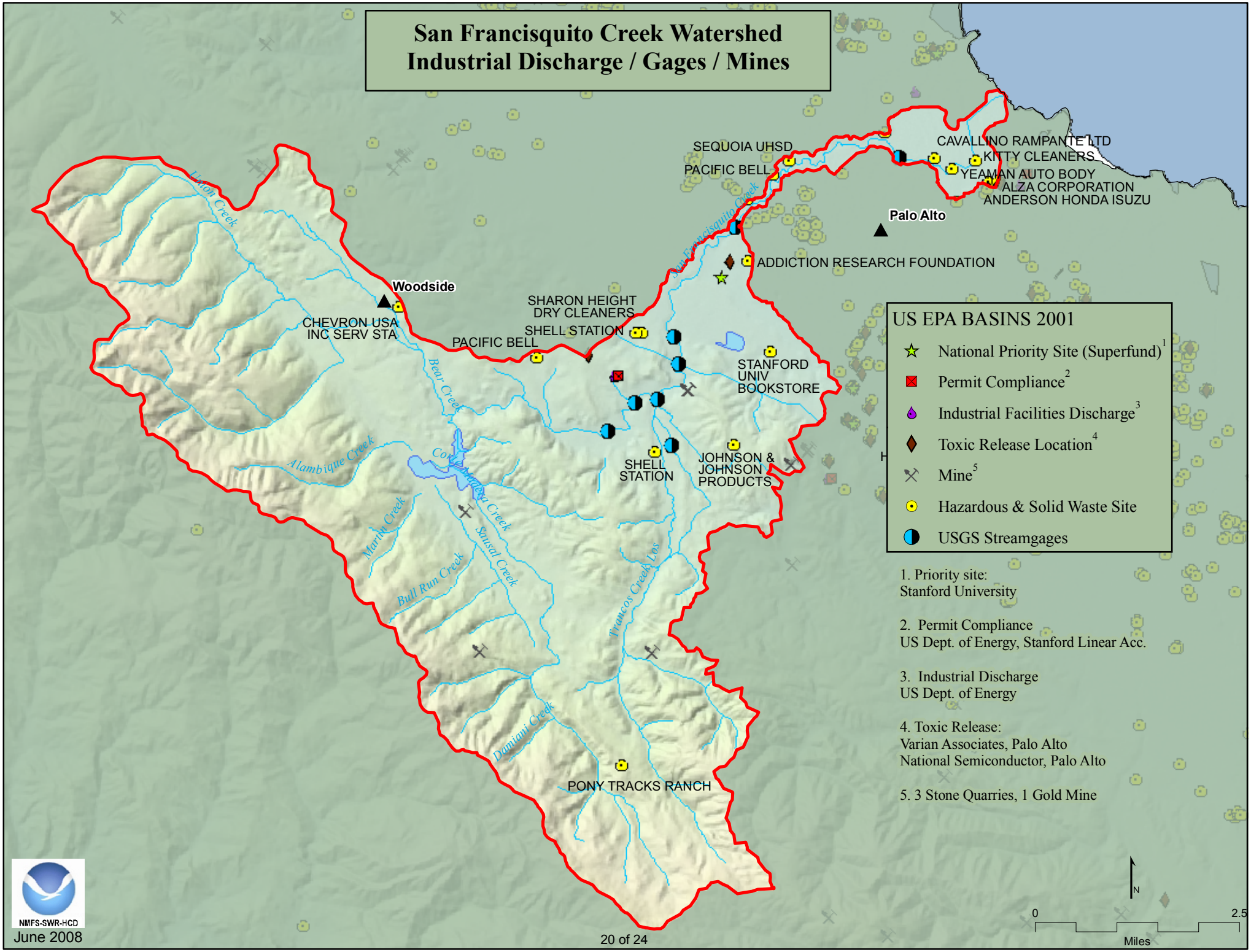
June 2008

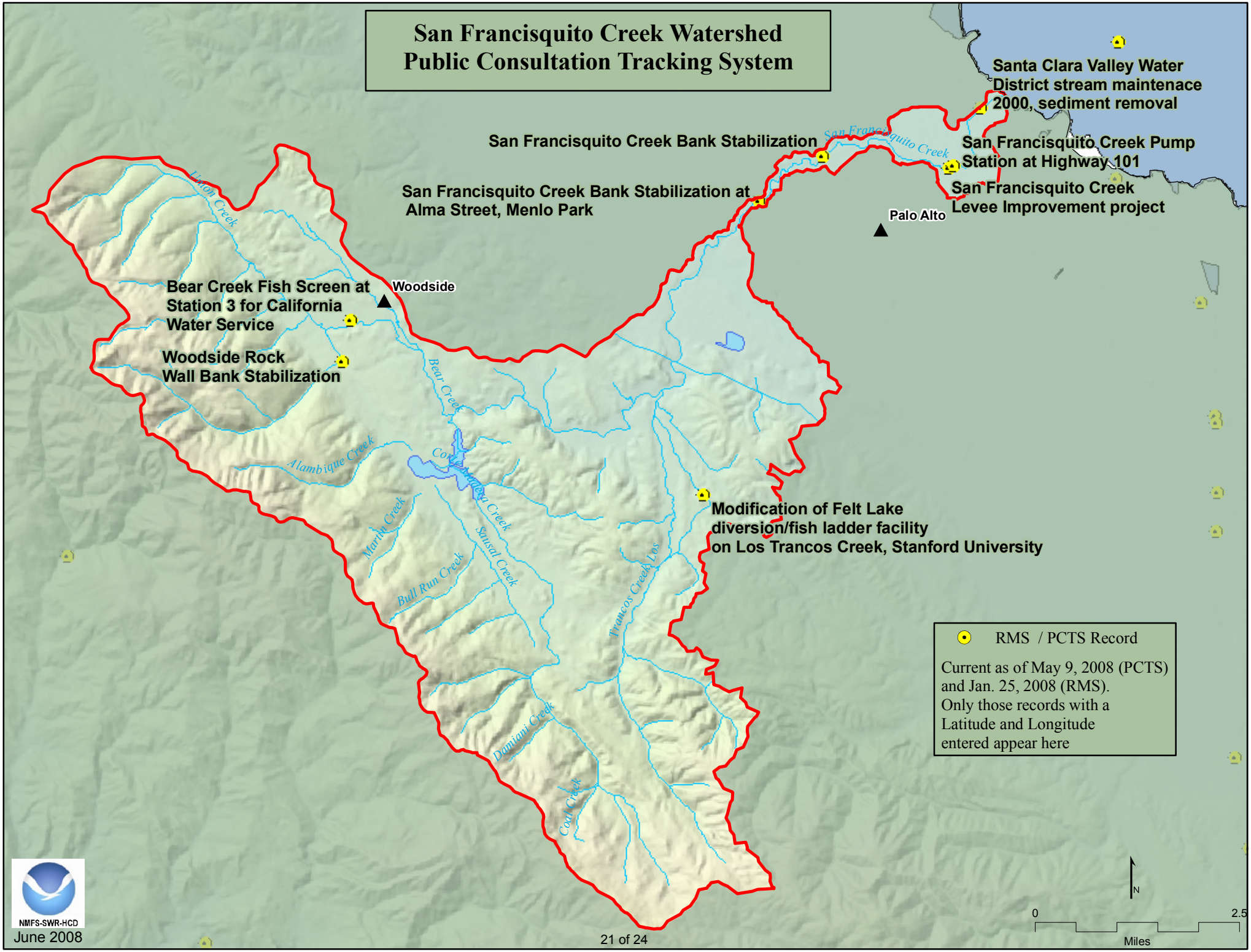
San Francisquito Creek Watershed Barriers



NMFS-SWR-HCD

June 2008


San Francisquito Creek Watershed
Industrial Discharge / Gages / Mines
SEQUOIA UHSD
PACIFIC BELL
CAVALLINO RAMPANTE LTD
KITTY CLEANERS
YEAMAN AUTO BODY
ALZA CORPORATION
ANDERSON HONDA ISUZU
Palo Alto
San Francisquito Creek
ADDICTION RESEARCH FOUNDATION
Woodside
SHARON HEIGHT
DRY CLEANERS
SHELL STATION
CHEVRON USA
INC SERV STA
PACIFIC BELL
STANFORD
UNIV
BOOKSTORE
Bear Creek
Alambique Creek
Corte Madera Creek
SHELL
STATION
JOHNSON &
JOHNSON
PRODUCTS
Marsh Creek
Bull Run Creek
Sausal Creek
Trancos Creek, Los
Damiani Creek
PONY TRACKS RANCH
US EPA BASINS 2001
National Priority Site (Superfund)[1]
Permit Compliance[2]
Industrial Facilities Discharge[3]
Toxic Release Location[4]
Mine[5]
Hazardous & Solid Waste Site
USGS Streamgages
1. Priority site:
Stanford University
2. Permit Compliance
US Dept. of Energy, Stanford Linear Acc.
3. Industrial Discharge
US Dept. of Energy
4. Toxic Release:
Varian Associates, Palo Alto
National Semiconductor, Palo Alto
5. 3 Stone Quarries, 1 Gold Mine
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008
20 of 24


San Francisquito Creek Watershed
Public Consultation Tracking System
Santa Clara Valley Water District stream maintenace 2000, sediment removal
San Francisquito Creek Bank Stabilization
San Francisquito Creek Pump Station at Highway 101
San Francisquito Creek Bank Stabilization at Alma Street, Menlo Park
San Francisquito Creek Levee Improvement project
Palo Alto
Woodside
Bear Creek Fish Screen at Station 3 for California Water Service
Woodside Rock Wall Bank Stabilization
Modification of Felt Lake diversion/fish ladder facility on Los Trancos Creek, Stanford University
Union Creek
Bear Creek
Alambique Creek
Corte Madera Creek
Marlin Creek
Bull Run Creek
Sausal Creek
Trancos Creek, Los
Damiani Creek
Coal Creek
RMS / PCTS Record
Current as of May 9, 2008 (PCTS) and Jan. 25, 2008 (RMS).
Only those records with a Latitude and Longitude entered appear here
N
0
2.5
Miles
NMFS-SWR-HCD
June 2008
21 of 24

References

Watersheds
calwater_ver2_2
vector digital data
California Watersheds (CALWATER 2.2)
California Department of Forestry and Fire Protection
1:24,000
1999
http://www.ca.nrcs.usda.gov/features/calwater/

Distribution
Coho_Distribution
vector digital data
Eric Haney - CDFG - NCNCR-ISB
1:100,000
2006
Draft
http://www.calfish.org/

CCC_Steelhead_Distribution_06_2005
vector digital data
National Marine Fisheries Service (NOAA Fisheries)
1:100,000
August 2005
http://swr.nmfs.noaa.gov/salmon/layers/finalgis.htm

Critical Habitat
CCC_Steelhead_ch_06_2005
vector digital data
National Marine Fisheries Service (NOAA Fisheries)
1:100,000
August 2005
http://swr.nmfs.noaa.gov/salmon/layers/finalgis.htm

Hydrology
1805 NHD Flowline
vector digital data
National Hydrography Dataset High Resolution
United States Geological Survey
1:24,000
2004

Dams
Dams_2005
vector digital data
Goslin, M.,
Santa Cruz Fishery Science Center
National Marine Fisheries Service
2005
http://swfsc.noaa.gov/

Barriers and Diversions
pad_september2006
vector digital data
California Fish Passage Assessment Database
Pacific States Marine Fisheries Commission
September 2006
http://www.calfish.org/

Gaging Stations
gages
vector digital data
Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/

Total Maximum Daily Load (TMDL)
R2_rivers_2002 303d
vector digital data
State Water Resources Control Board (SWRCB)
California Environmental Protection Agency
2002

Precipitation
California Mean Annual Precipitation Zones, 1900-1960
Vector digital data
California Department of Forestry and Fire Protection1990
1:100,000
http://frap.cdf.ca.gov/data/frapgisdata/select.asp

Roads
TGRR00
vector digital data
Roads
United States Census Bureau
1:100000
2000
http://www.census.gov/geo/www/tiger/

Elevation
Spln_mos_01
Spln_mos_02
10 Meter Digital Elevation Model (DEM)
NOAA Fisheries, Santa Cruz Laboratory
2003

Vegetation
fveg02_2
raster digital data
Multi-source Land Cover Data
California Department of Forestry and Fire Protection
100 meter Grid
2002
http://frap.cdf.ca.gov/data/frapgisdata/select.asp

Erodabilty
Highly Erodible Watersheds
vector digital data
Depart. of Conservation, Division of Mines & Geology
Minimum Mapping Unit: Approximately 8000 Acres (20,000 Hectares)
1994
http://gis.ca.gov/catalog/BrowseRecord.epl?id=380

Land Ownership
GOVTOWNA
vector digital data
California Department of Forestry Forest and Rangeland Resources Assessment Program
Bureau of Land Management Surface Management
1:100,000
September 1999
http://old.casil.ucdavis.edu/casil/gis.ca.gov/teale/govtowna/

Developed Area and Population
Census 2000 Block Data (Migrated)
vector digital data
California and the Department of Forestry and Fire Protection, FRAP
2003
1:100,000
http://frap.cdf.ca.gov/data/frapgisdata/select.asp

Historic Suitable Habitat (Coho, Steelhead)
Intrinsic Potential Model
vector digital data
NOAA Fisheries
Santa Cruz Laboratory, Santa Cruz, CA
2005
http://swfsc.noaa.gov/

Toxins
Hazardous_&_solid_waste_sites
Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
vector digital data
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/

mines
vector digital data
Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/

Industrial_discharge_sites
vector digital data
Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/

Toxic_release_inventory
vector digital data
Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/
Permit_compliance
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Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/

Priority_list_sites
vector digital data
Better Assessment Science Integrating point and Nonpoint Sources (BASINS)
United States Environmental Protection Agency
2001
http://www.epa.gov/waterscience/basins/

Records Management System (RMS)
Public Consultation Tracking System (PCTS)
National Marine Fisheries Service
Oracle Databases
2008

Imagery
Google Maps
remote-sensing image
raster digital data
2008