

Watershed Characterization

July 2008



NMFS-SWR-HCD

San Vicente Watershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
6,972 Acres	18060001	3304110203	San Vicente Creek (6972 Acres)
2822 Hectares	4th Field HUC		
11 Square Miles	3304		
<hr/>			
Location	4th Field Calwater		
Santa Cruz County			

Species Potential	Miles of Streams with Species Present
Central California Coast Steelhead Santa Cruz Mountains Diversity Stratum - Dependent Population	<u>Steelhead</u> 3 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast Coho Santa Cruz Mountains Diversity Stratum - Dependent Population	<u>Coho</u> 4 CDFG, Coho Distribution, May 2007

Critical Habitat	
Central California Coast Steelhead	3 Miles of Stream
Central California Coast Coho	All accessible river reaches between Punta Gorda & San Lorenzo River including 2 San Francisco Bay streams: Arroyo Corte Madera del Presidio and Corte Madera Creek (64 FR 24049)

Coho Intrinsic Potential	
Km of Historical Coho IP (21.5 C mask)	3
% of IP (21.5 C Mask) with Current Coho Distribution	97%
<small>Spence, B. C., et al., 2008. A framework for assessing the viability of threatened and endangered salmon and steelhead in the North-Central California Coast Recovery Domain. NOAA Tech Memo NMFS-SWFSC-423.</small>	

Miles of Waterway ^A	Miles	Number of Dams ^C
Naturally Occurring Waterways		7
Intermittent Stream	2	1 - Impassable
Perennial Stream	21	1 - Partial Barrier 5 - Not a Barrier
<small>^CPassage Assessment Database, Pacific States Marine Fisheries Commission, 2008</small>		

^AUSGS National Hydrography Dataset, High Resolution, 2004. 1:24,000

USGS Gaging Stations ^B	Number of Barriers ^C
11161800	19
San Vicente Creek Near Davenport	7 Dams 3 Road Crossings (2 Partially Impassable) 5 Natural Barriers (Chutes, Falls, Log Jams, etc. (4 Impassable))
<small>^CPassage Assessment Database, Pacific States Marine Fisheries Commission, 2008</small>	

Average Annual Precipitation ^E	Average Annual Precipitation Range ^E
38.4"	27.5 - 55"

^ECalifornia Mean Annual Precipitation Zones, 1900-1960, CA Department of Forestry, 1990



Roads^A	Miles
Roads in Watershed	
Secondary and connecting road, state highways	0
Local, neighborhood, and rural road, city street, unseparated	25
Total Miles	25

Road Density	
Miles of Roads per SqMi of Watershed	2.3
Miles of Roads per SqMi of 100m Riparian Buffer*	2.3

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

^AU.S. Census Bureau - Tiger 2000, 2002. 1:24,000

Slope^D	Acres	Percent of watershed
Lands of 0-2 percent slope	65	1%
Lands of 2-4 percent slope	171	2%
Lands of 4-10 percent slope	1,166	17%
Lands of 10-15 percent slope	898	13%
Lands of 15-30 percent slope	1,898	27%
Lands of 30-60 percent slope	2,345	34%
Lands of 60-100 percent slope	413	6%
Lands of 100-117 percent slope	16	0%

Elevation Range	10 - 2651 ft.	3 - 808 m
------------------------	----------------------	------------------

^DSlope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation^G	Acres	Percent of watershed
Agriculture	252	4%
Annual grassland	227	3%
Conifer Forest		
Closed Cone-Pine-Cypress	67	1%
Redwood	1,821	26%
Unknown Conifer	2,325	33%
Hardwood Forest		
Montane Hardwood	116	2%
Shrub	1,707	25%
Urban	435	6%

^GMulti-source Land Cover Data (2002 v2), CA Department of Forestry, 2002. 100 meter Grid

Erodability of Watershed^F	Acres	Percent of watershed
All of watershed is ranked as 7		

^FDepartment 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]

Area Under a Timber Harvest Plan^A past 10 years	Area Under a Timber Harvest Plan^A past 13 years (1994-2006)
1,560 22% of watershed	1,957 28% of watershed

^ACalifornia Department of Forestry, Timber Harvest Plans for San Vicente Watershed, 2006



Land Ownership^H	Acres	Percent of watershed
Private	6,925	99%
State (Fish & Game)	47	1%

^HManagement Landscape, CA Department of Forestry, 2002

Population^I	Housing^I
Total Population within the watershed -- 1,233 People	Total Housing Units within the watershed -- 457 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres 32%
	1 Unit / 160 Acres to 1 Unit / 20 Acres 27%
	1 Unit / 20 Acres to 1 Unit / 5 Acres 34%
	1 Unit / 5 Acres to 2 Units / Acre 7%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre

^ICensus 2000 Block Data (Migrated), CA Department of Forestry, 2003



San Vicente Creek

Vegetation density and age class in the entire watershed

California Department of Forestry and Fire Protection; fveg02_2. Vector digital dataset. 100m Grid, 2002.

Acres

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class
Not Determined	Not Determined	255		146				222	941	423			
	S												
	P			54									
	M			131									
Seedling	D			3714									
	Total	255		4045		0	222	941	423				5886
	S												
	P												
Sapling	M												
	D												
	Total												0
	S												
Pole	P												
	M												
	D												
	Total					0							0
Small Tree	S												
	P												
	M			89									
	D			121	116			754					
Medium/Large Tree	Total			210	116			754					1080
	S												
	P												
	M												
Multi Layered	D												
	Total												0
	S												
	P												
Grand Total by Species Type		255	0	4255	0	116	0	222	1695	423	0	0	6966

SIZE	Description	Diameter at Breast Height (DBH)
Not Determined		N/A
Seedling		Less Than 1 inch
Sapling		1 to 6 inches
Pole		6 to 11 inches
Small Tree		11 to 24 inches
Medium/Large Tree		Greater Than 24 inches
Multi Layered		Size 5 Over Size 4 Or 3; Total Tree Crown Closure Greater Than 60%

Percent

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class
Not Determined	Not Determined	4%		2%				3%	14%	6%			
	S												
	P			1%									
	M			2%									
Seedling	D			53%									
	Total	4%		58%		0%	3%	14%	6%				84%
	S												
	P												
Sapling	M												
	D												
	Total												0%
	S												
Pole	P												
	M												
	D												
	Total												0%
Small Tree	S												
	P												
	M			1%									
	D			2%	2%			11%					
Medium/Large Tree	Total			3%	0%	2%	0%	0%	11%				16%
	S												
	P												
	M												
Multi Layered	D												
	Total												0%
	S												
	P												
Grand Total by Species Type		4%	0%	61%	0%	2%	0%	3%	24%	6%	0%	0%	100%

SIZE (SHRUB)	Desc.	Crown Decadence	DENSITY	Description
Not Determined		N/A		None
Seedling Shrub		Seedlings or sprouts < 3 years	S	10 to 24%
Young Shrub		None	P	25 to 39%
Mature Shrub		1 - 25%	M	40 to 59%
Decadent Shrub		> 25%	D	60 to 100%

San Vicente Creek

Vegetation within Riparian Buffer (100 meter on either side of stream)

California Department of Forestry and Fire Protection; fveg02_2. Vector digital dataset. 100m Grid, 2002.

Acres

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class	
Not Determined	Not Determined	25.0						27.0	111.0	94.0			1507	
	S													
	P													
	M													
	D													
Total	1250.0	0.0	27.0	111.0	94.0									
Seedling	S													0
	P													
	M													
	D													
	Total													
Sapling	S													0
	P													
	M													
	D													
	Total													
Pole	S													0
	P													
	M													
	D													
	Total													
Small Tree	S													250
	P													
	M													
	D													
	Total													
Medium/Large Tree	S													0
	P													
	M													
	D													
	Total													
Multi Layered	S													0
	P													
	M													
	D													
	Total													
Grand Total by Species Type		25	0	1307	0	10	0	27	294	94	0	0	1757	

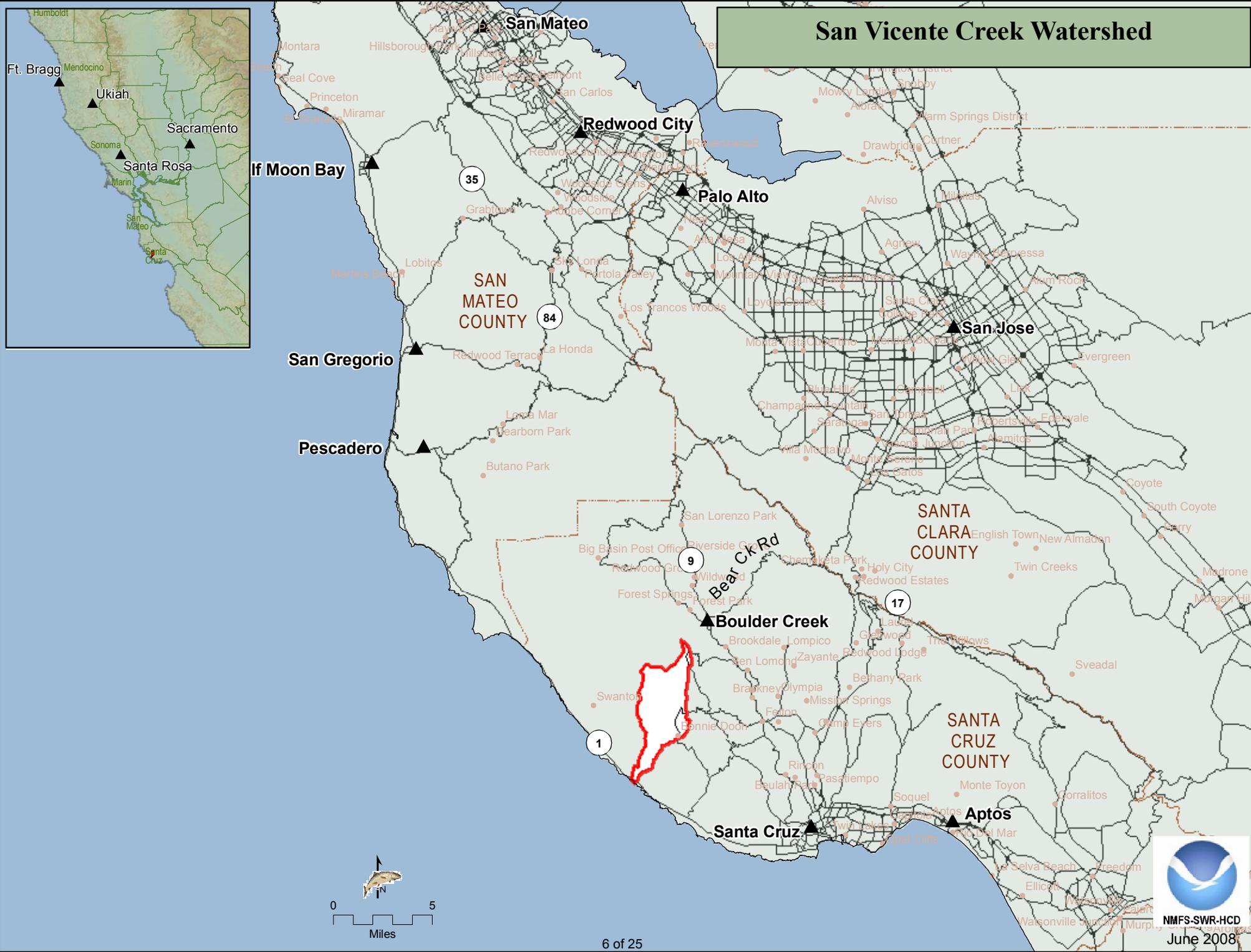
SIZE	Description	Diameter at Breast Height (DBH)
Not Determined		N/A
Seedling		Less Than 1 inch
Sapling		1 to 6 inches
Pole		6 to 11 inches
Small Tree		11 to 24 inches
Medium/Large Tree		Greater Than 24 inches
Multi Layered		Size 5 Over Size 4 Or 3; Total Tree Crown Closure Greater Than 60%

Percent

Size	Density	Agriculture	Barren	Conifer Forest	Conifer Woodland	Hardwood Forest	Hardwood Woodland	Herbaceous	Shrub	Urban	Water	Wetland	Grand Total by Size class
Not Determined	Not Determined	1%	0%					2%	6%	5%			86%
	S												
	P												
	M												
	D												
Total	71%	0%	2%	6%	5%								
Seedling	S												0%
	P												
	M												
	D												
	Total												
Sapling	S												0%
	P												
	M												
	D												
	Total												
Pole	S												0%
	P												
	M												
	D												
	Total												
Small Tree	S												14%
	P												
	M												
	D												
	Total												
Medium/Large Tree	S												0%
	P												
	M												
	D												
	Total												
Multi Layered	S												0%
	P												
	M												
	D												
	Total												
Grand Total by Species Type		1%	0%	74%	0%	1%	0%	2%	17%	5%	0%	0%	100%

SIZE (SHRUB)	Desc.	Crown Decadence	DENSITY	Description
Not Determined		N/A		None
Seedling Shrub		Seedlings or sprouts < 3 years	S	10 to 24%
Young Shrub		None	P	25 to 39%
Mature Shrub		1 - 25%	M	40 to 59%
Decadent Shrub		> 25%	D	60 to 100%

San Vicente Creek Watershed





NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed





NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed CalWater Planning Watersheds



**San Vicente Creek
6972 Acres**

Mill Creek

San Vicente Creek

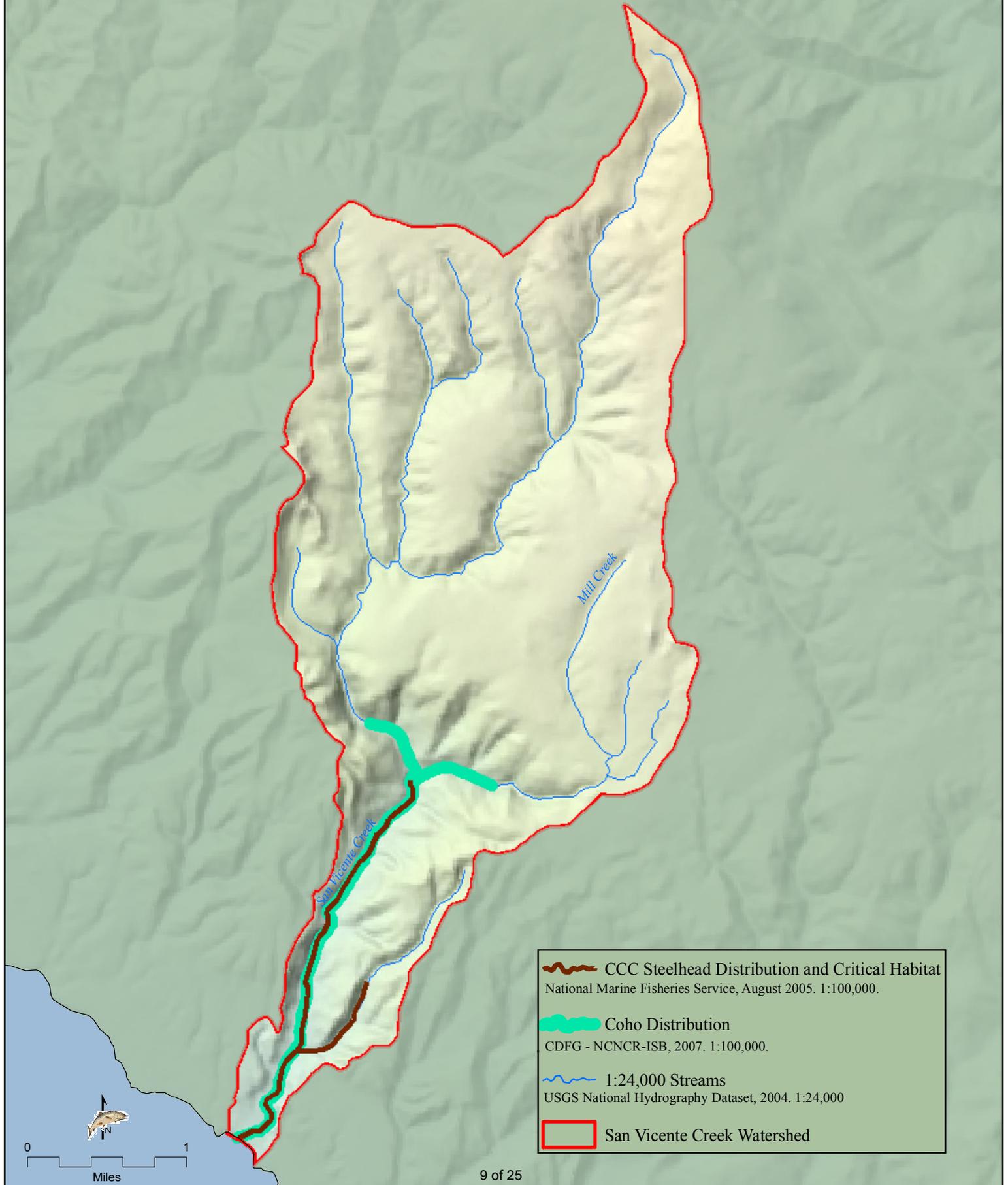




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Fish Distribution and Critical Habitat



- CCC Steelhead Distribution and Critical Habitat
National Marine Fisheries Service, August 2005. 1:100,000.
- Coho Distribution
CDFG - NCNCR-ISB, 2007. 1:100,000.
- 1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
- San Vicente Creek Watershed

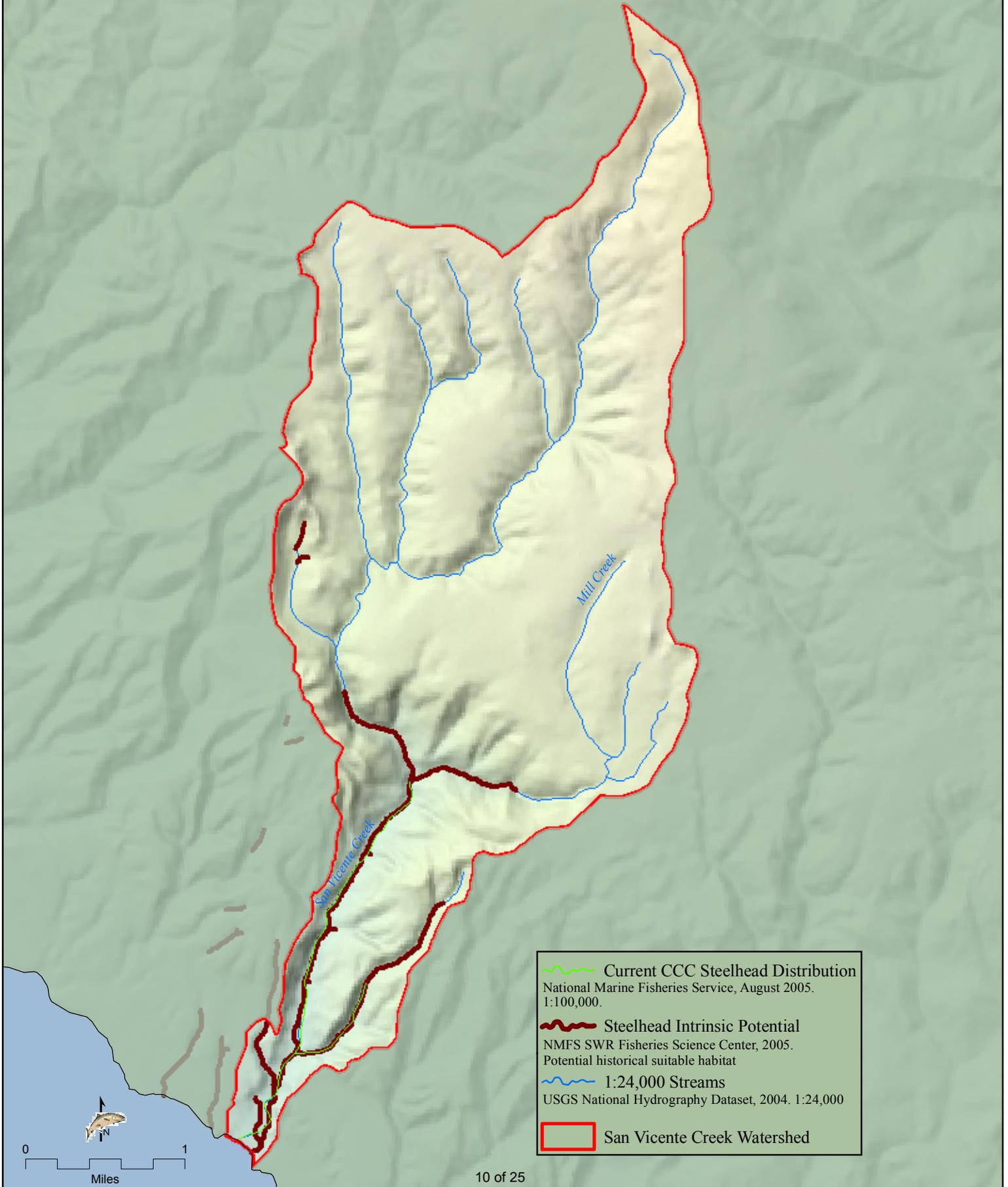




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Steelhead Current vs. Historical





NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Coho Current vs. Historical



-  Current Coho Distribution
CDFG - NCNCR-ISB, 2007. 1:100,000.
-  Coho Intrinsic Potential
NMFS SWR Fisheries Science Center, 2005.
Potential historical suitable habitat
-  1:24,000 Streams
USGS National Hydrography Dataset, 2004.
1:24,000
-  San Vicente Creek Watershed

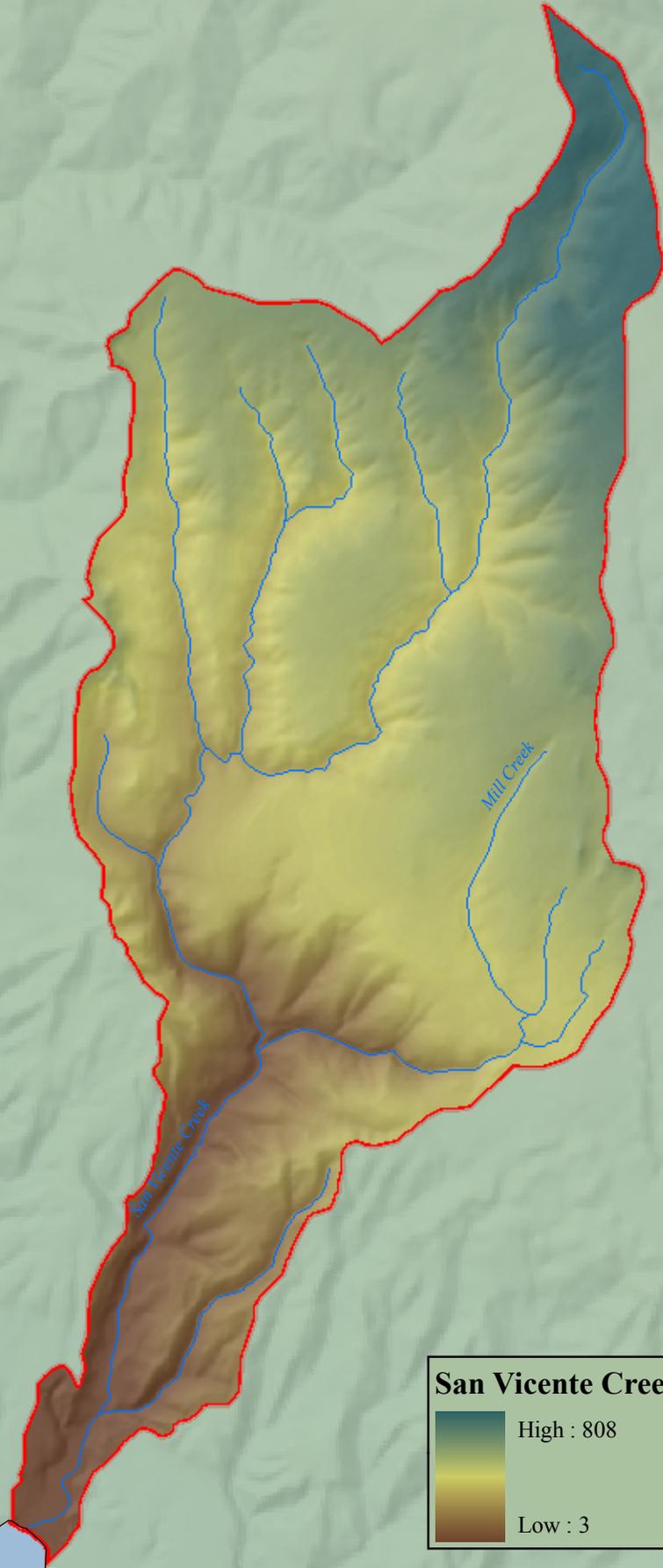




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Elevation



San Vicente Creek Elevation (Meters)

	High : 808	SWR-SCFSC 10 Meter Digital Elevation Model (DEM)
	Low : 3	

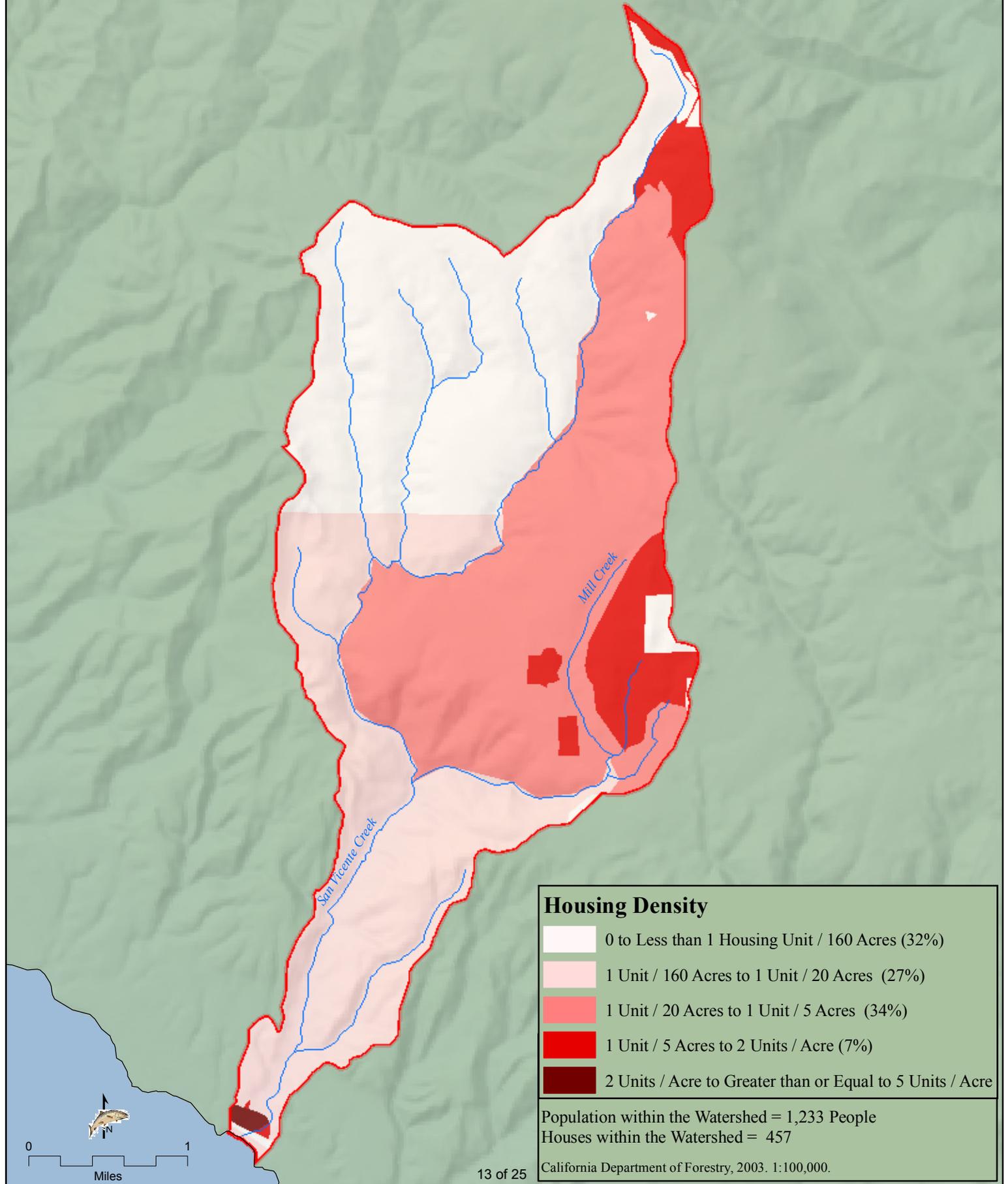




NMFS-SWR-HCD

July 2008

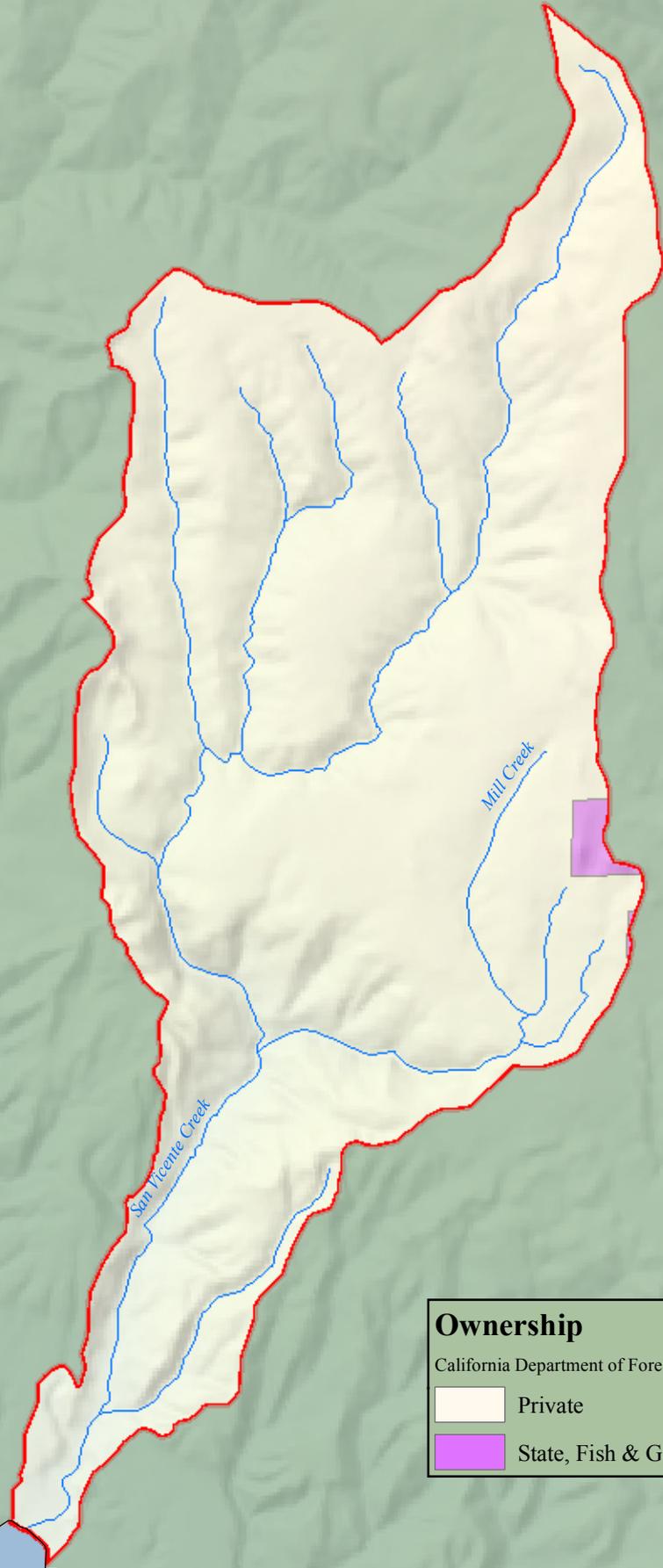
San Vicente Creek Watershed Development





NMFS-SWR-HCD
July 2008

San Vicente Creek Watershed Ownership



Ownership
California Department of Forestry, 1999. 1:100,000.

	Private
	State, Fish & Game

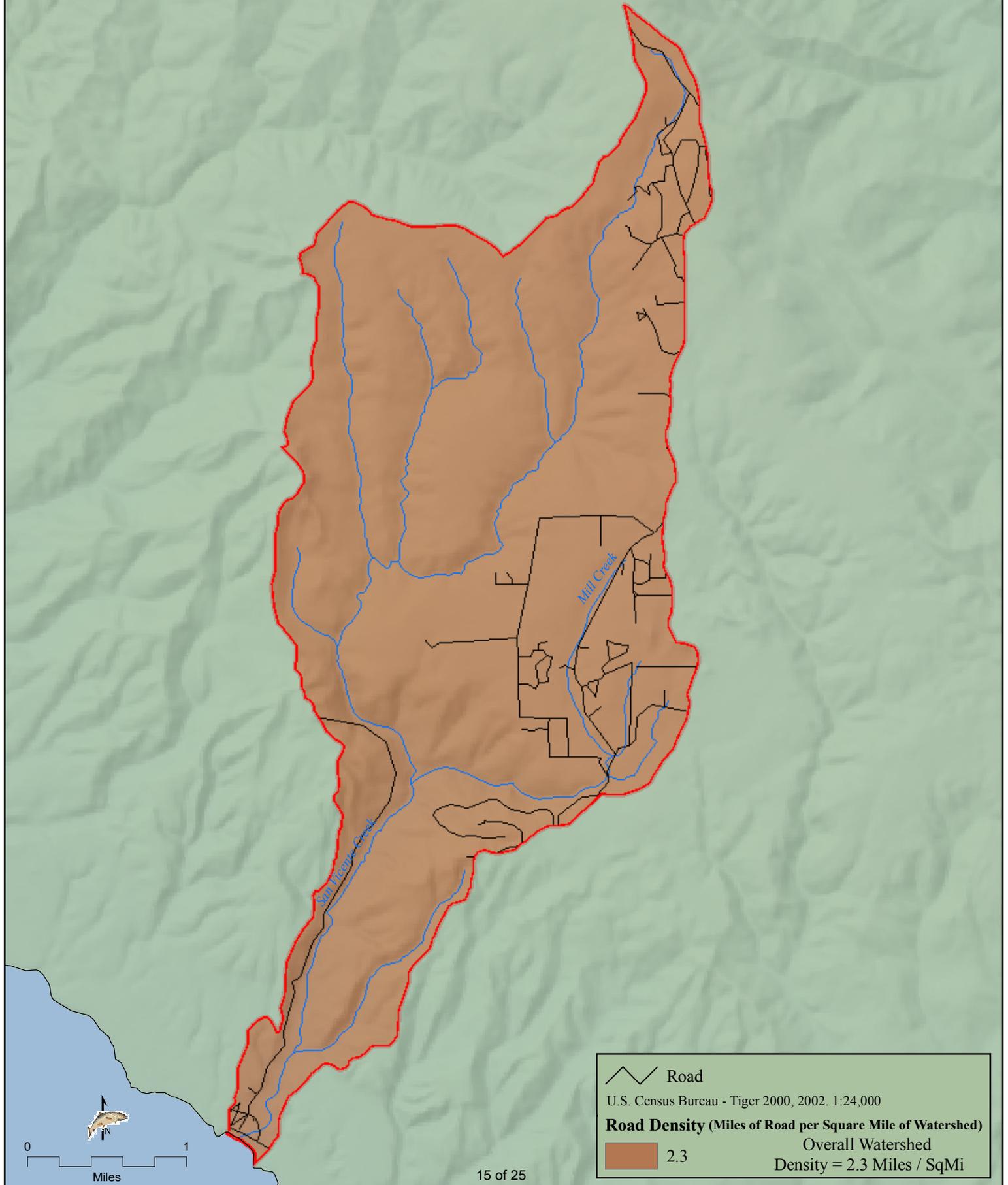




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Road Density

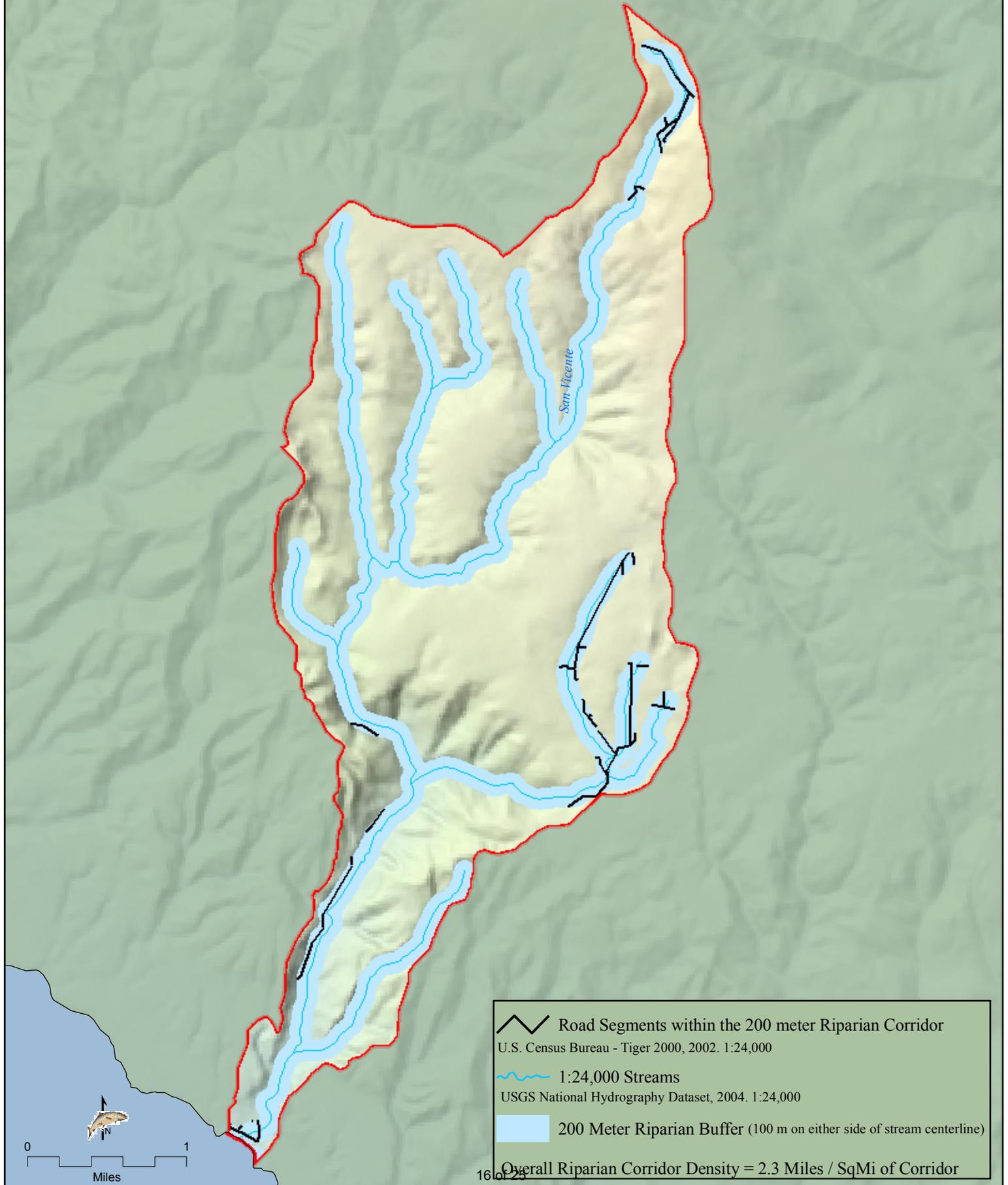




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Road Density in the Riparian Corridor

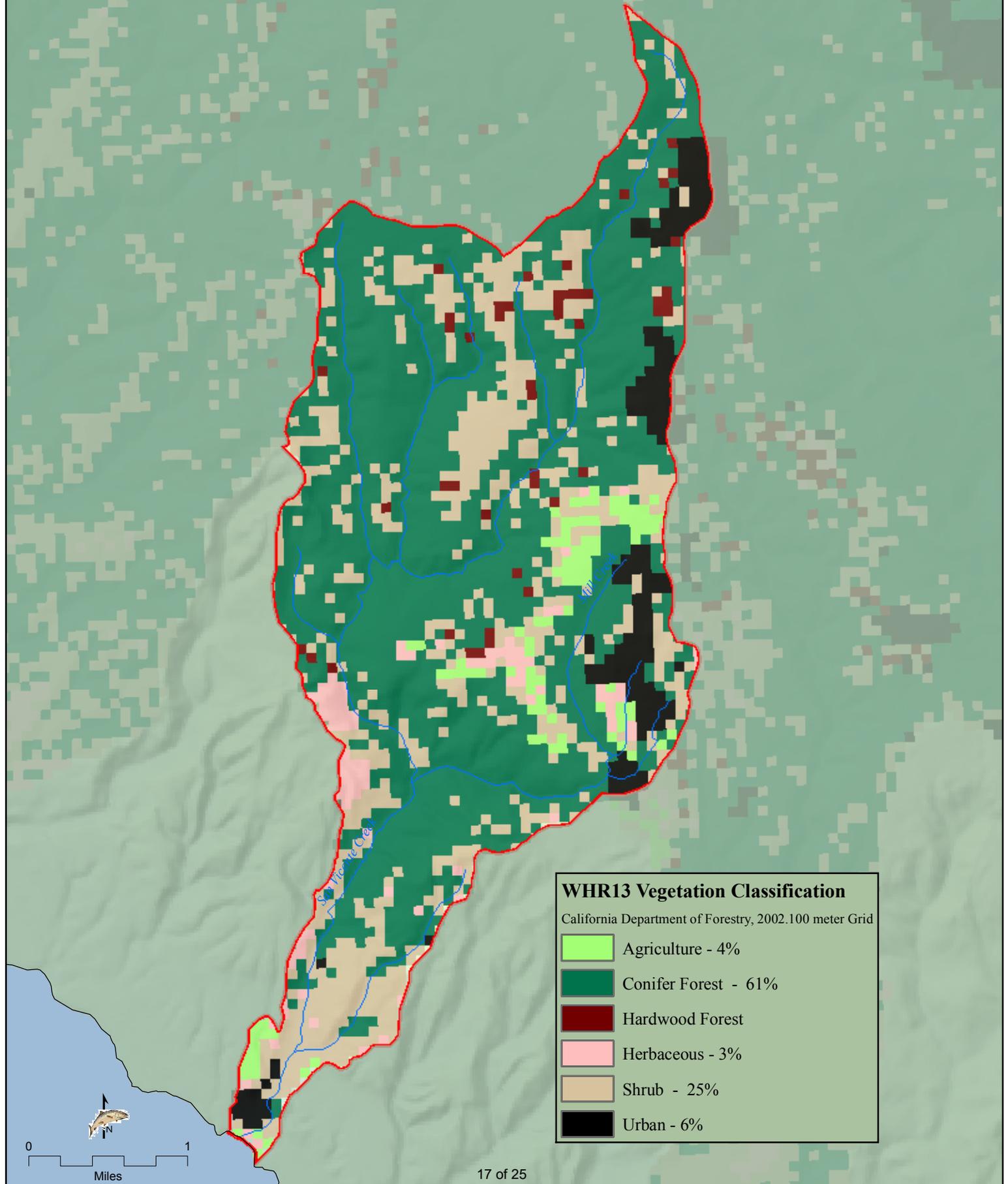




NMFS-SWR-HCD

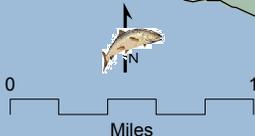
July 2008

San Vicente Creek Watershed Vegetation



WHR13 Vegetation Classification
California Department of Forestry, 2002.100 meter Grid

	Agriculture - 4%
	Conifer Forest - 61%
	Hardwood Forest - 3%
	Herbaceous - 3%
	Shrub - 25%
	Urban - 6%

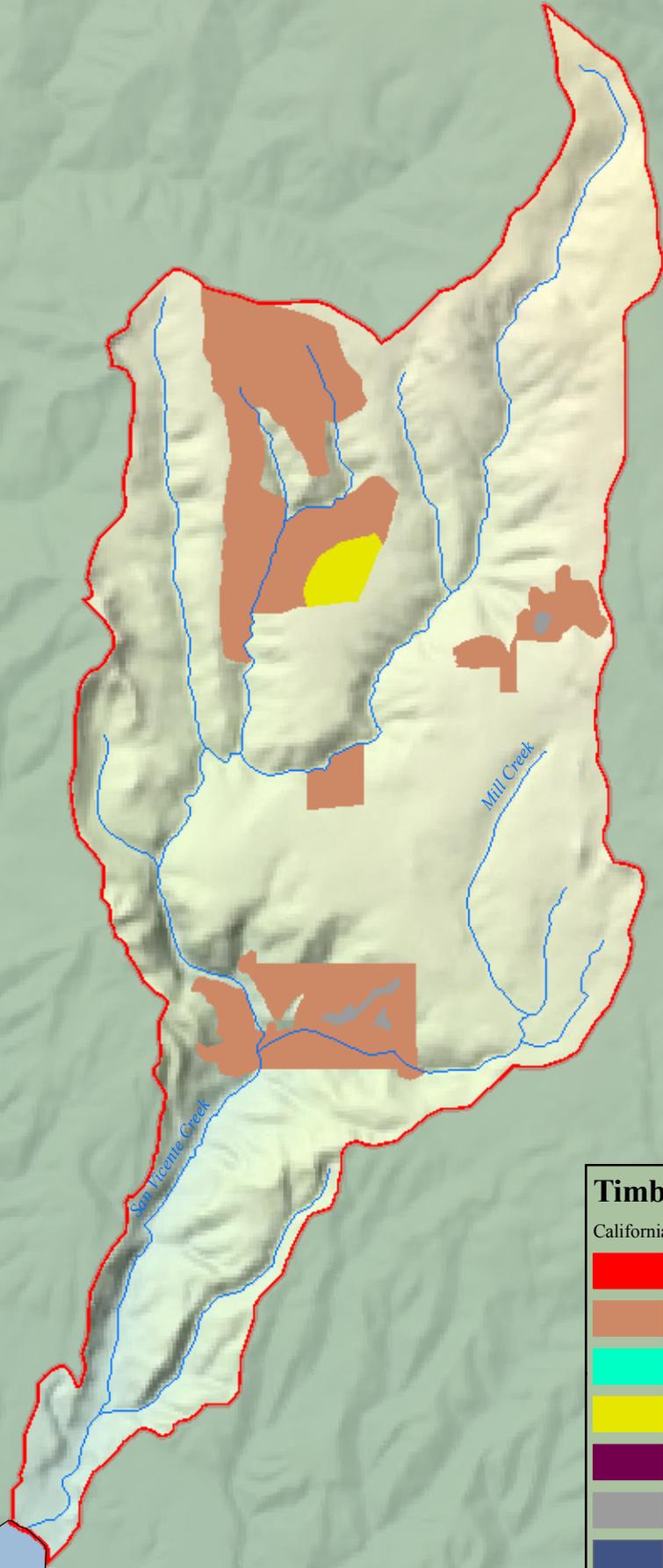




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Timber Harvesting 1994-2006



Timber Harvest Plans 1994-2006

California Department of Forestry, 2006.

-  Clearcut
-  Uneven Age Removal
-  Even age Removal
-  Alternative Prescription
-  Transition
-  Outside THP
-  Not Coded

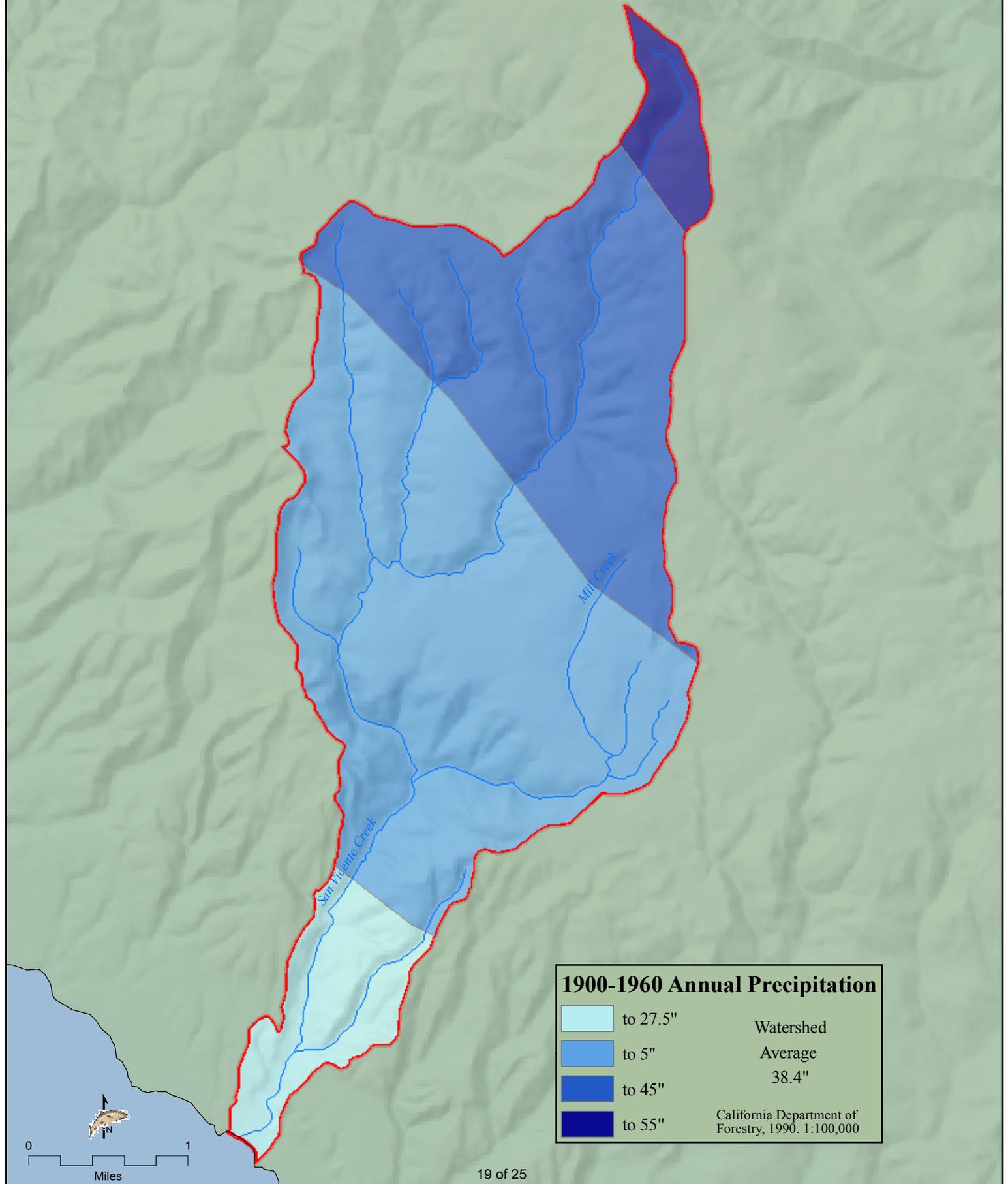




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Precipitation

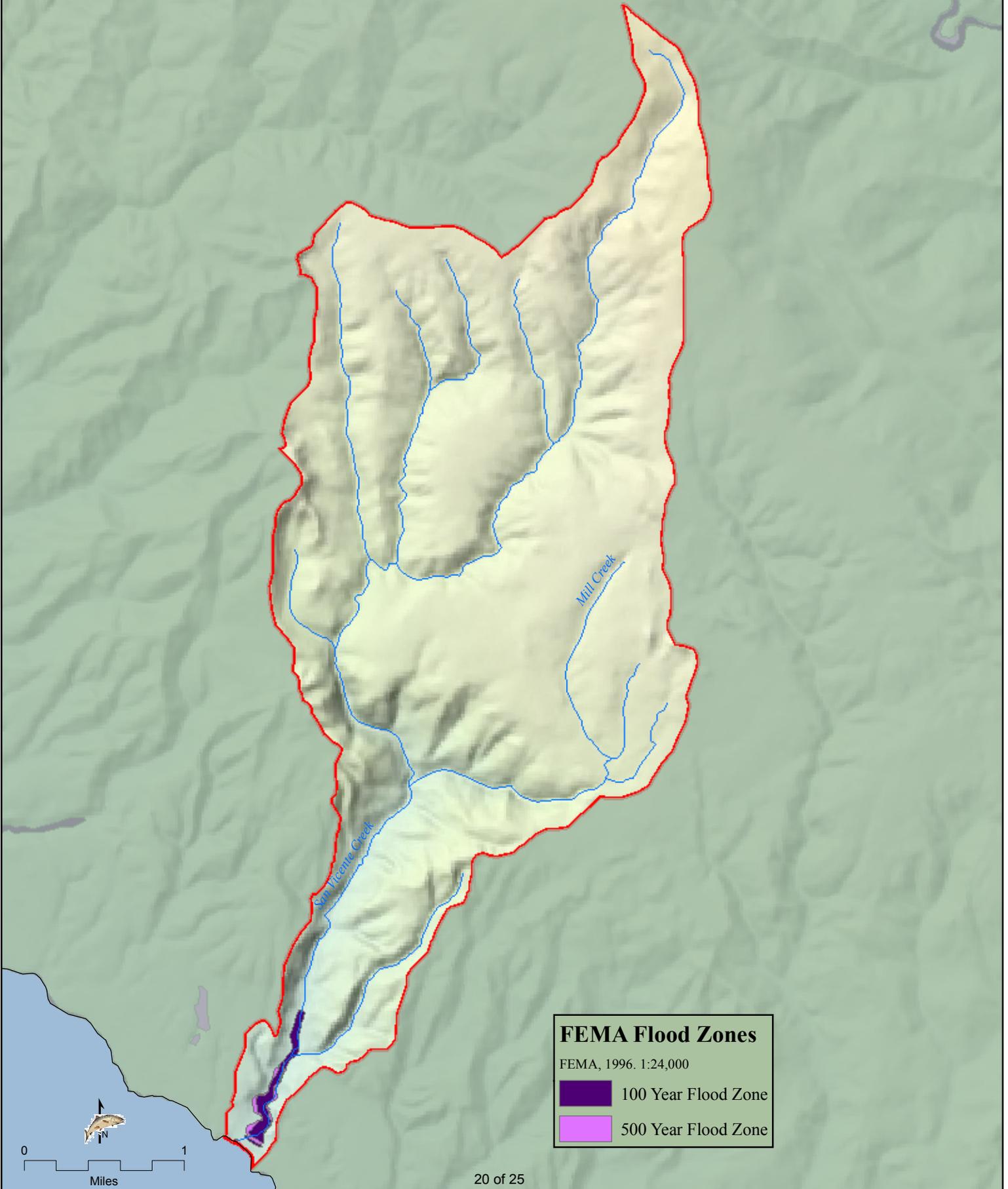




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Flood Zone



FEMA Flood Zones
FEMA, 1996. 1:24,000

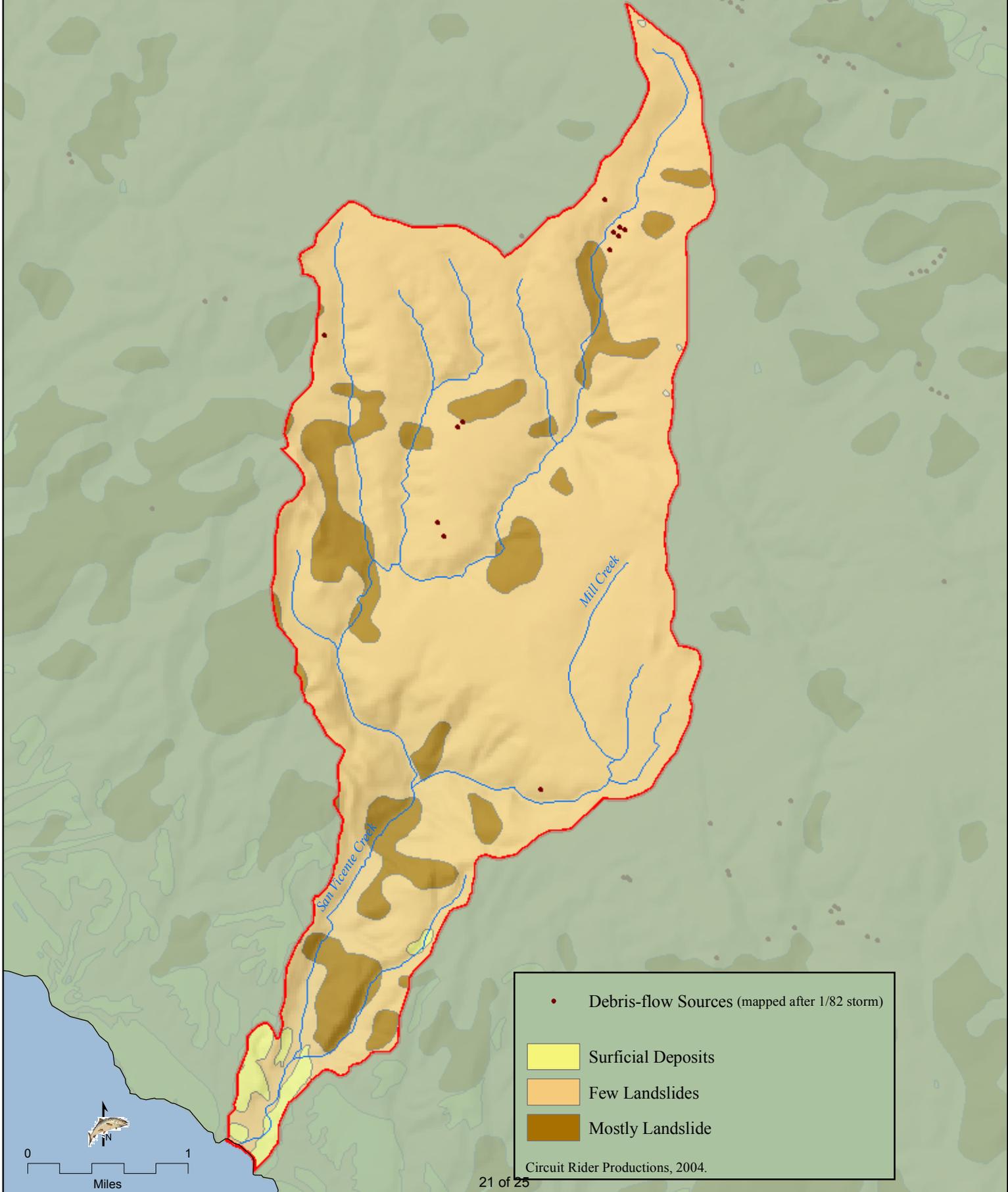
- 100 Year Flood Zone
- 500 Year Flood Zone



NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Geologic Features



• Debris-flow Sources (mapped after 1/82 storm)

Surficial Deposits

Few Landslides

Mostly Landslide

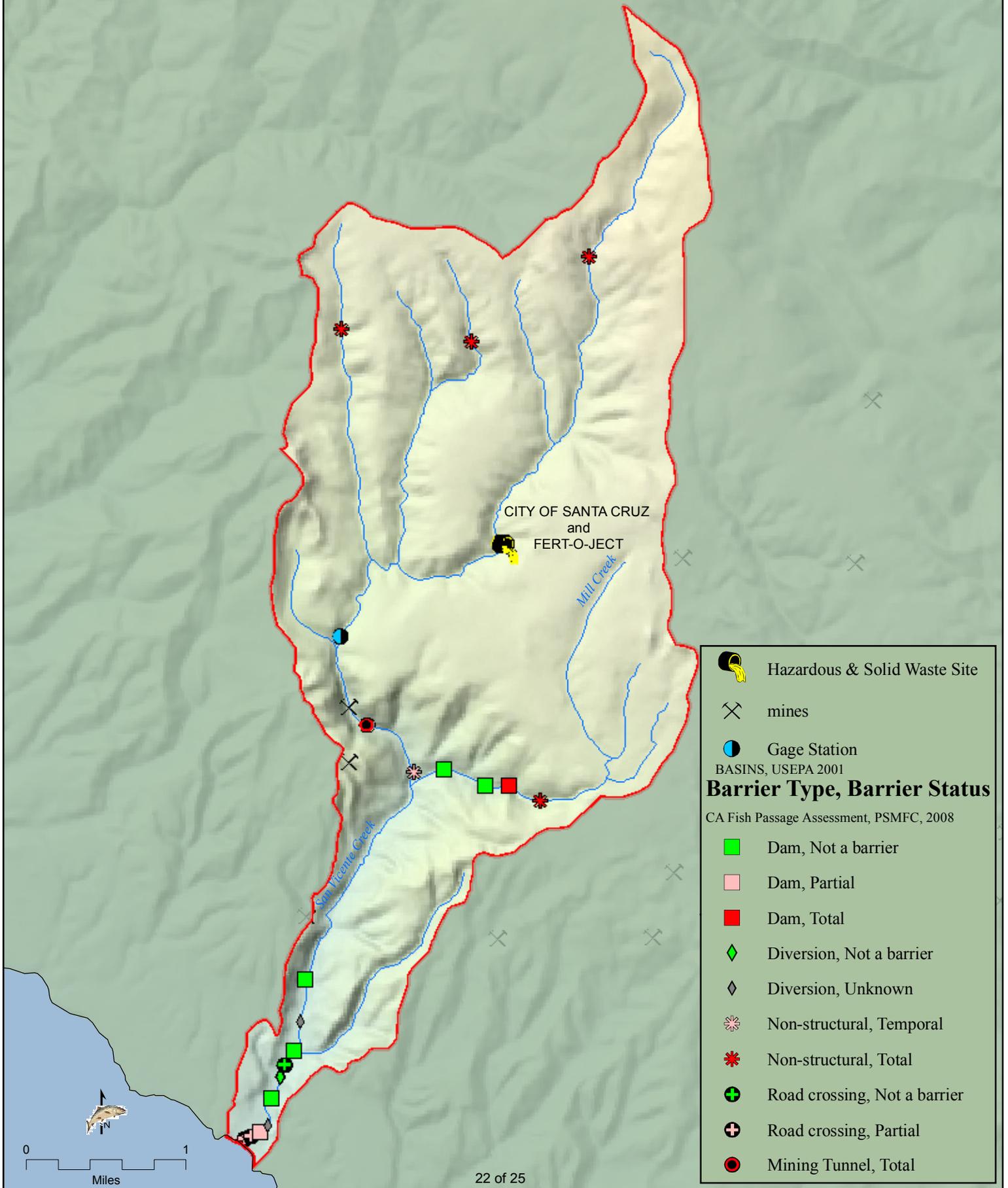
Circuit Rider Productions, 2004.



NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Barriers / Industrial Discharge / Gages

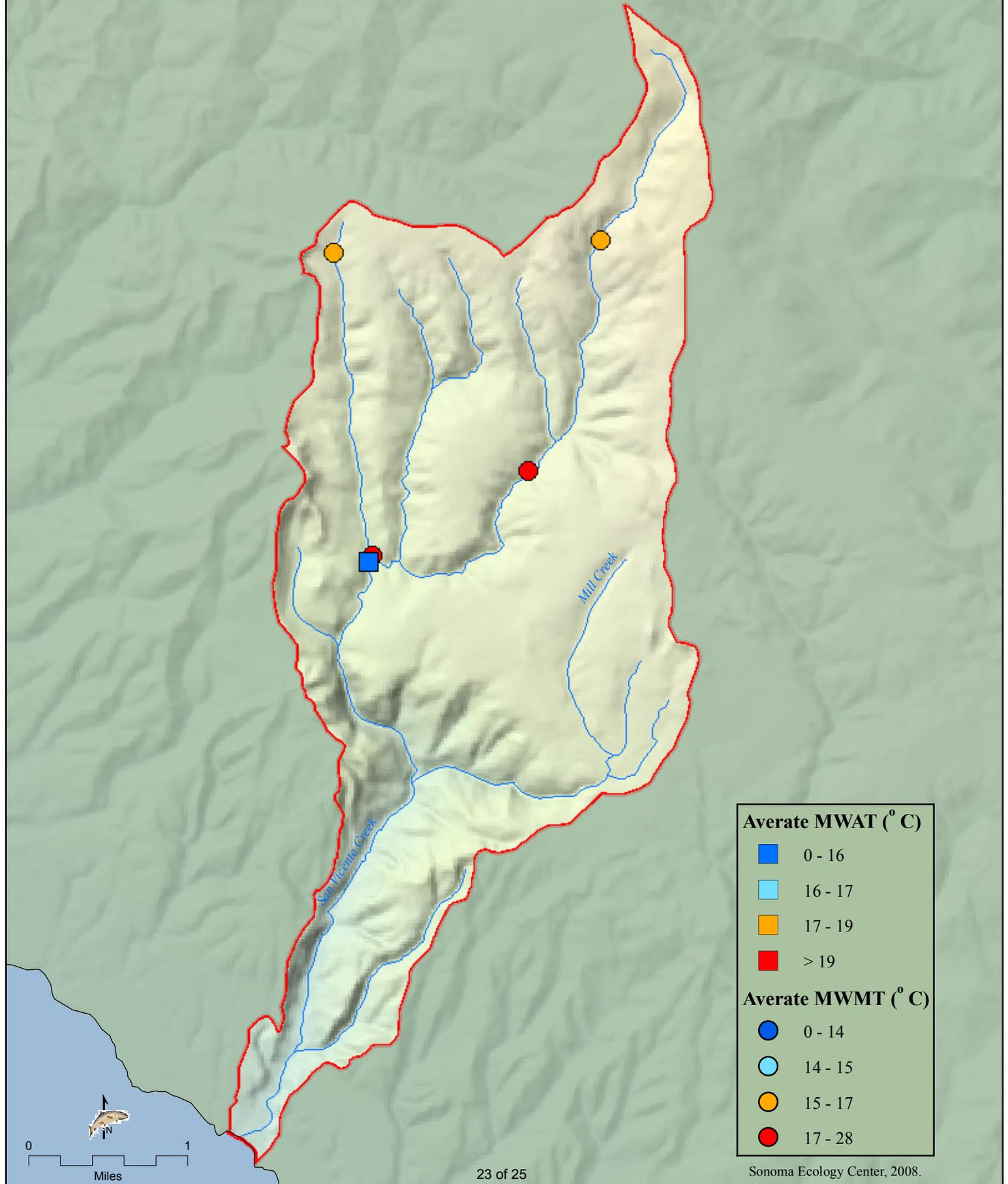




NMFS-SWR-HCD

July 2008

San Vicente Creek Watershed Temperature



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

1806 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_september2008
vector digital data
California Fish Passage Assessment Database
Pacific States Marine Fisheries Commission
September 2006
<http://www.calfish.org/>

Precipitation

California Mean Annual Precipitation Zones, 1900-
1960
Vector digital data
California Department of Forestry and Fire
Protection 1990
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

Spline6
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>

Erodability

Highly Erodible Watersheds
vector digital data
Department of Conservation, Division of Mines and
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/>

Timber Harvesting

thp_(year)
Annual Timber Harvest Plans
vector digital data
California Department of Forestry and Fire
Protection
Santa Rosa, CA
1983-2001

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>

Imagery

naip_1-1_2n_s_ca087_2006_1 (Santa Cruz)
remote-sensing image
raster digital data
National Agriculture Imagery Program (NAIP)
USDA-FSA Aerial Photography Field Office
Salt Lake City, Utah
2004
<http://datagateway.nrcs.usda.gov/GatewayHome.html>

Historic Suitable Habitat (Coho, Chinook, Steelhead)

Intrinsic Potential Model
vector digital data
NOAA Fisheries
Santa Cruz Laboratory, Santa Cruz, CA
2005
<http://swfsc.noaa.gov/>

Forest Industrial Ownership

nwca_own
vector digital data
United States Fish and Wildlife Service
Arcata, CA
2000

Temperature

MWMT_20080117_selected_watersheds
Vector digital data
Sonoma Ecology Center
2008

MWAT_20080117_selected_watersheds
Vector digital data
Sonoma Ecology Center
2008

Geologic Features

Geopoint
vector digital data
Department of Conservation, Division of Mines and
Geology
Minimum Mapping Unit: Approximately 8000
Acres (20,000 Hectares)
1994

Gorge
vector digital data
Department of Conservation, Division of Mines and
Geology
Minimum Mapping Unit: Approximately 8000
Acres (20,000 Hectares)
1994

Records Management System (RMS)

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