



Big Salmon Creek Watershed

Area	Hydrologic Units	Calwater Subbasins ---	(Planning Watersheds)
8,499 Acres	18010108	1113400005	Big Salmon Creek (8499 Acres)
3,439 Hectares	4th Field HUC		
13 Square Miles	1113		
Location		4th Field Calwater	
Mendocino County			

Species Potential	Miles of Streams with Species Present
Northern California Steelhead North-Central Coastal Diversity Stratum - Potentially Independent Population	<u>Steelhead</u> 12 NOAA Fisheries, Critical Habitat Redesignation, 2005
Central California Coast Coho Lost Coast-Navarro Point Diversity Stratum - Dependent Population	<u>Coho</u> 9 CDFG, Coho Distribution, May 2007
California Coastal Chinook Central Coastal Diversity Stratum - Dependent Independent Population	<u>Chinook</u> 0 NOAA Fisheries, Critical Habitat Redesignation, 2005

Critical Habitat	
Northern California Steelhead	12 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)
California Coastal Chinook	0 Miles of Stream

Coho Intrinsic Potential	
Km of Historical Coho IP (21.5 C mask)	17
% of IP (21.5 C Mask) with Current Coho Distribution	67%
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.	

Miles of Waterway ^A	Miles	Number of Dams ^C
Naturally Occurring Waterways		0
Intermittent Stream	13	
Perennial Stream	15	

^CPassage Assessment Database, Pacific States Marine Fisheries Commission, 2005

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

USGS Gaging Stations ^B	Number of Barriers ^C
	8
	0 Dams
	7 Diversions (Unknown Barrier Status)
	1 Natural Barrier (Chutes, Falls, Log Jams, etc.)
^C Passage Assessment Database, Pacific States Marine Fisheries Commission, 2006	



Average Annual **Precipitation**^E

44.8"

Average Annual **Precipitation Range**^E

40 - 55"

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

Roads ^A	(US Census Bureau (TIGER))	Miles
Roads in Watershed		
Primary Road / Highway		0
Secondary and connecting road, state highways		0
Local, neighborhood, and rural road, city street, unseparated		31
Vehicular trail, 4WD		4
Driveway or service road		2
Total Miles		

Road Density	(US Census Bureau (TIGER))	
Miles of Roads per SqMi of Watershed		2.9
Miles of Roads per SqMi of 100m Riparian Buffer*		2.2

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

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

Roads ^{A1}	(Timber Harvest Plans)	Miles
Roads in Watershed		
Abandoned Seasonal		2
Bridge		
Existing Permanent (rocked)		11
Existing Seasonal		77
Existing Temporary & 4WD		
Proposed Permanent (rocked)		
Proposed Seasonal		2
Proposed Temporary & 4WD		0
Reconstructed Seasonal		
Secondary Road (2-3 lanes)		5

Road Density	(Timber Harvest Plans)	
Miles of Roads per SqMi of Watershed		7.3
Miles of Roads per SqMi of 100m Riparian Buffer*		6.1

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

^{A1}California Department of Forestry, Timber Harvest Plans for Albion Watershed, 2006

Slope ^D	Acres	Percent of watershed
Lands of 0-2 percent slope	515	6%
Lands of 2-4 percent slope	778	9%
Lands of 4-10 percent slope	1,095	13%
Lands of 10-15 percent slope	603	7%
Lands of 15-30 percent slope	1,603	19%
Lands of 30-60 percent slope	3,061	36%
Lands of 60-100 percent slope	831	10%
Lands of > 100 percent slope	11	0%

Elevation Range	3 - 1214 ft.	1 - 370 m
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^DSlope derived from USGS 10 meter Digital Elevation Models (DEM's)

Vegetation^G	Acres	Percent of watershed
Annual grassland	576	7%
Barren	5	0%
Conifer Forest		
Closed Cone-Pine-Cypress	544	6%
Montane Hardwood-Conifer	25	0%
Redwood	6,034	71%
Hardwood Forest		
Montane Hardwood	334	4%
Montane Riparian	161	2%
Shrub	803	9%

^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 5	8,499	100%

^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**]

Land Ownership^H	Acres	Percent of watershed
Private	8,594	100%

^HManagement Landscape, CA Department of Forestry, 2002

Area Under a Timber Harvest Plan^A past 10 years	Area Under a Timber Harvest Plan^A past 20 years
1,701 20% of watershed	4,094 49% of watershed

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

Population^I	Housing^I
Total Population within the watershed -- 473 People	Total Housing Units within the watershed -- 271 Houses
	Housing Density
	0 to Less than 1 Housing Unit / 160 Acres 32%
	1 Unit / 160 Acres to 1 Unit / 20 Acres 35%
	1 Unit / 20 Acres to 1 Unit / 5 Acres 32%
	1 Unit / 5 Acres to 2 Units / Acre 1%
	2 Units / Acres to Greater than or Equal to 5 Units / Acre

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



Big Salmon 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		5					689					
	S P M D			10									
	Total		5	10				689					704
Seedling	S P M D												
	Total												0
Sapling	S				5								
	P			274	10								
	M			121	27								
	D			514	40								
	Total			909	82								991
Pole	S			2	15								
	P			148	12								
	M			143	52								
	D			1297	222								
	Total			1590	301								1891
Small Tree	S			12	10								
	P			77	10								
	M			91	10								
	D			677	84			781					
	Total			857	114			781					1752
Medium/Large Tree	S			12	2								
	P			314									
	M			156									
	D			2414									
	Total			2896	2								2898
Multi Layered	D			353									
	Total			353									353
Grand Total by Species Type			5	6615	499			689	781				8589

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		0%					8%					
	S P M D												
	Total		0%	0%	0%			8%					8%
Seedling	S P M D												
	Total												0%
Sapling	S				0%								
	P			3%	0%								
	M			1%	0%								
	D			6%	0%								
	Total			11%	1%								12%
Pole	S			0%	0%								
	P			2%	0%								
	M			2%	1%								
	D			15%	3%								
	Total			19%	4%								22%
Small Tree	S			0%	0%								
	P			1%	0%								
	M			1%	0%								
	D			8%	1%			9%					
	Total			10%	1%			9%					20%
Medium/Large Tree	S			0%	0%								
	P			4%									
	M			2%									
	D			28%									
	Total			34%	0%								34%
Multi Layered	D			4%									
	Total			4%									4%
Grand Total by Species Type			0%	77%	6%		8%	9%					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%

Big Salmon 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							42.0					
	S P M D			2.5									
	Total			2.5				42.0					44
Seedling	S P M D												
	Total												0
Sapling	S P M D			14.8		4.9							
	Total			138.4		14.8							153
Pole	S P M D			49.4	12.4	4.9							
	Total			496.7	126.0								623
Small Tree	S P M D			4.9	2.5								
	Total			318.8	29.7				####				692
Medium/Large Tree	S P M D			7.4									
	Total			607.9									608
Multi Layered	D			131.0									
	Total			131.0									131
Grand Total by Species Type			0	1695	0	171	0	42	343	0	0	0	2251

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							2%					
	S P M D			0%									
	Total			0%				2%					2%
Seedling	S P M D												
	Total												0%
Sapling	S P M D			1%		0%	0%						
	Total			6%		1%							7%
Pole	S P M D			2%	1%	0%	0%						
	Total			22%	6%								28%
Small Tree	S P M D			0%	0%	1%			15%				
	Total			14%	1%	1%		15%					31%
Medium/Large Tree	S P M D			0%		0%							
	Total			27%									27%
Multi Layered	D			6%									
	Total			6%									6%
Grand Total by Species Type			0%	75%	0%	8%	0%	2%	15%	0%	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%

Big Salmon Creek Watershed



Fort Bragg

Caspar

Mendocino

Little River

Albion

Eik

Manchester

Comptche

Philo

Boonville

Willits

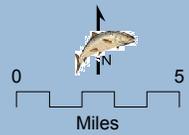
Redwood Valley

Calpella

Ukiah

Potter Valley

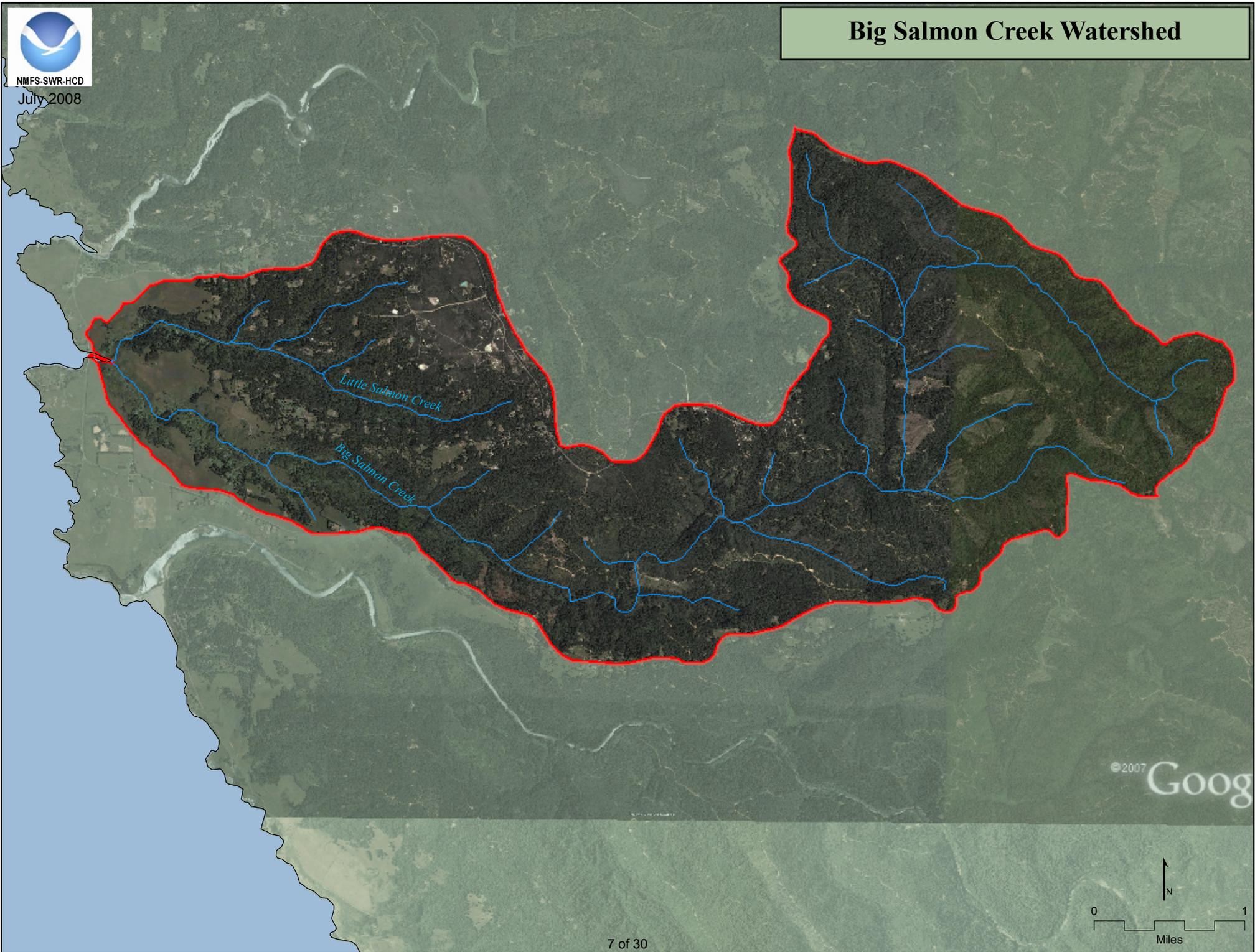
Hopland



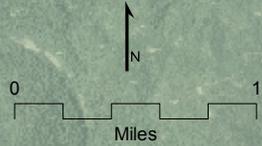


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Big Salmon Creek Watershed



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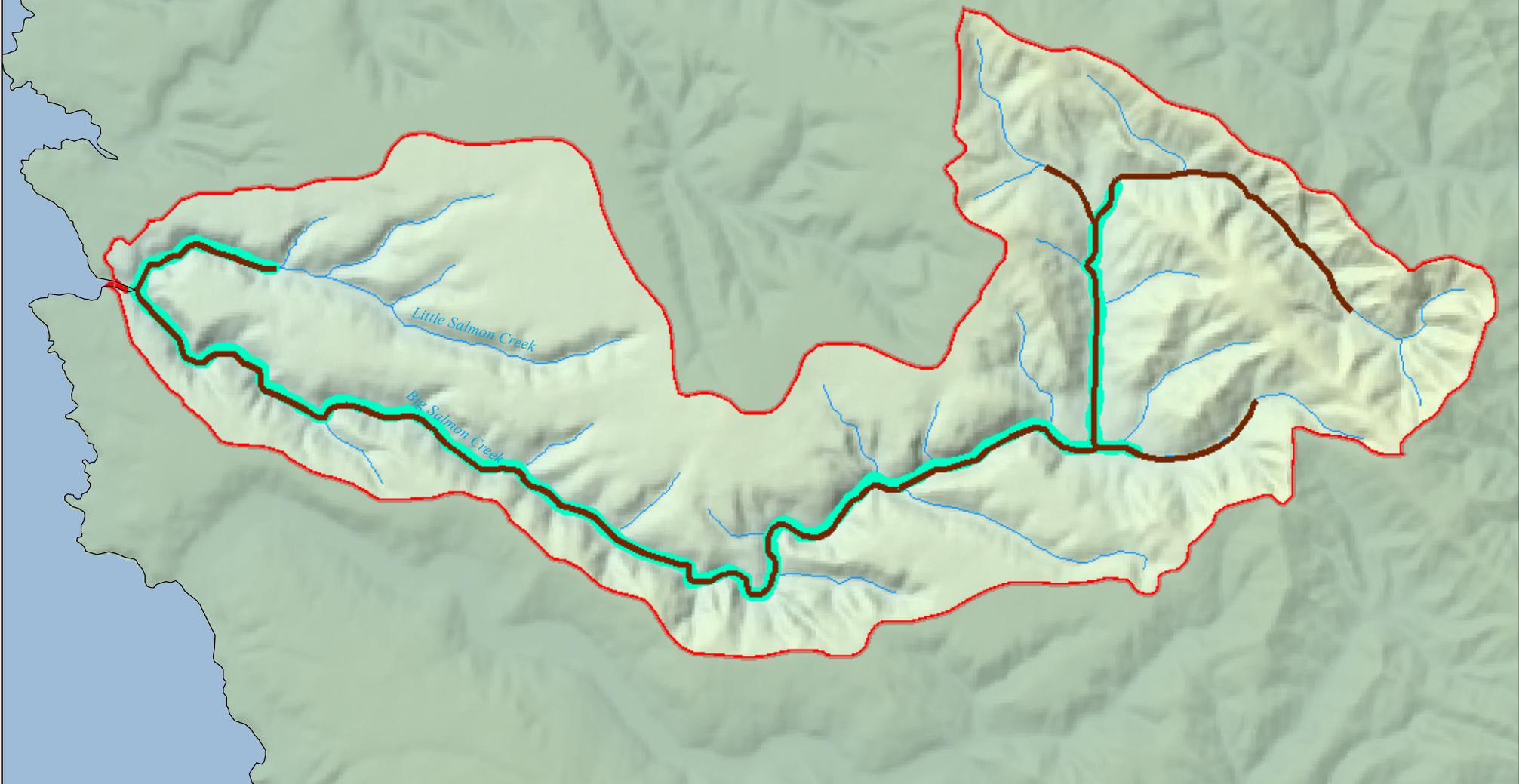
Big Salmon Creek Watershed CalWater Planning Watersheds



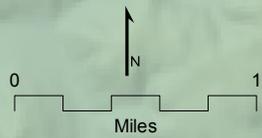


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Big Salmon Creek Watershed Fish Distribution and Critical Habitat



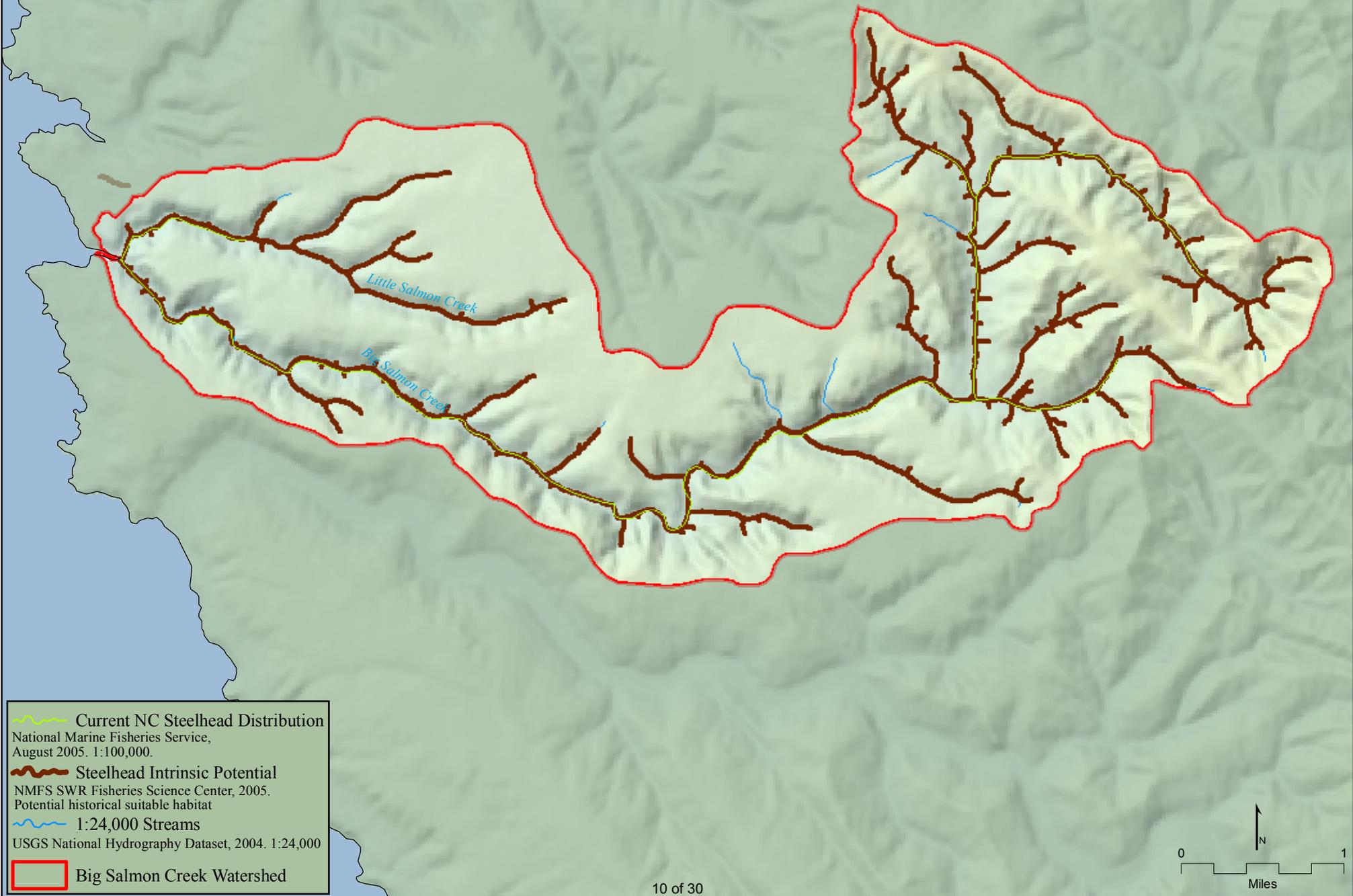
-  NC Steelhead Distribution and Critical Habitat
National Marine Fisheries Service, August 2005. 1:100,000.
-  Coho Distribution
CDFG - NCNCR-ISB, 2007. 1:100,000.
-  1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
-  Big Salmon Creek Watershed





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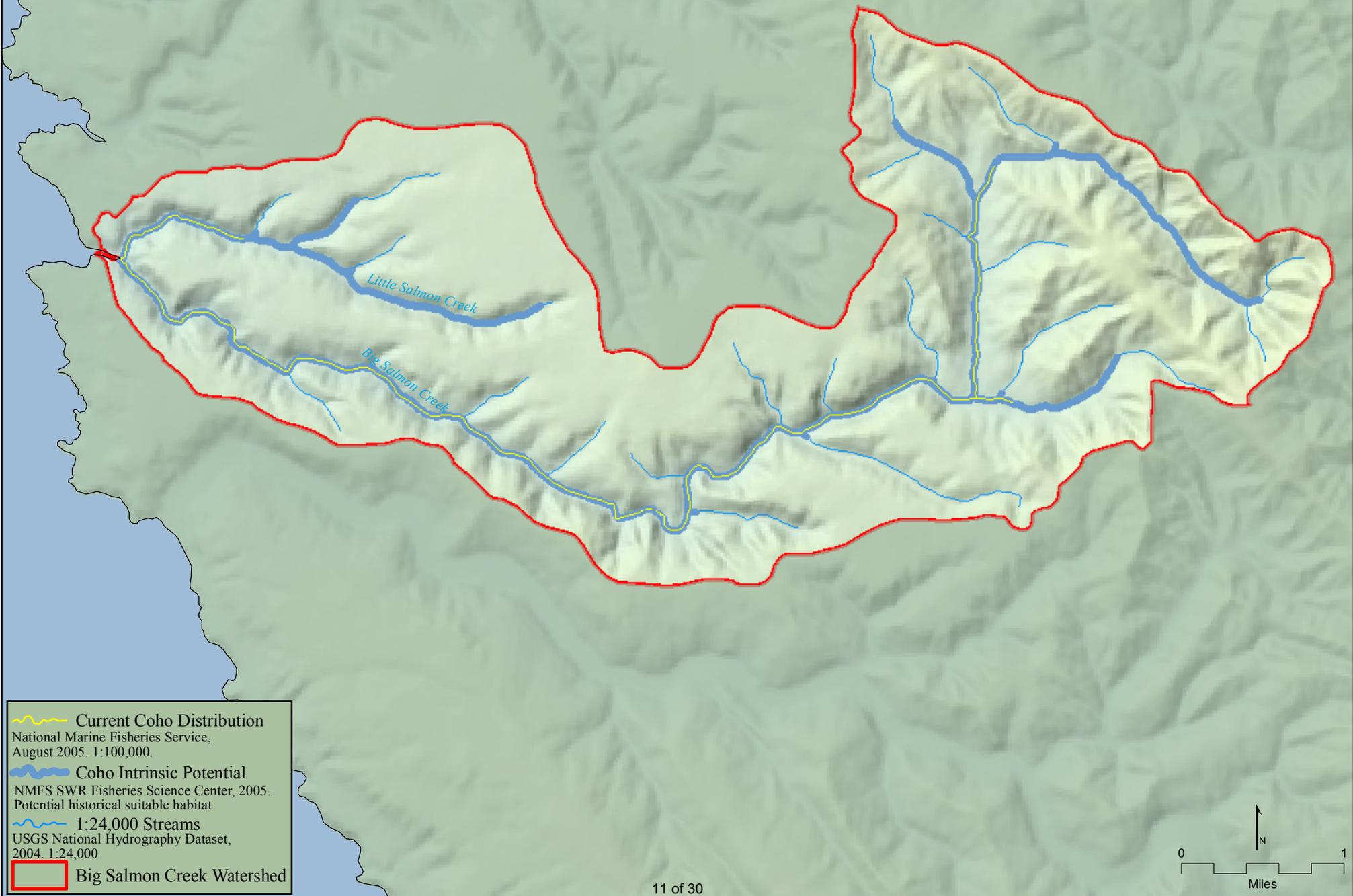
Big Salmon Creek Watershed Steelhead Current vs. Historical





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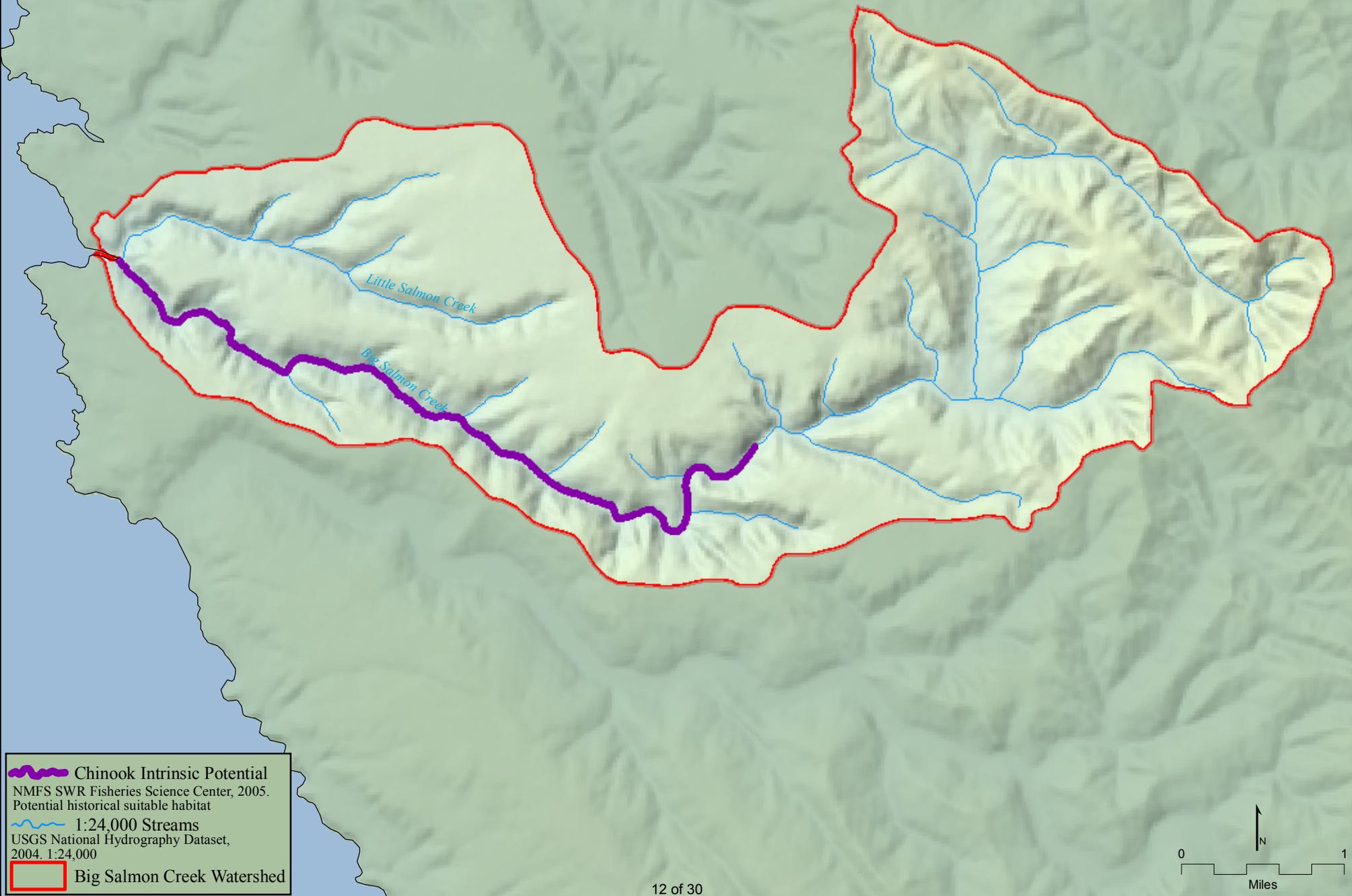
Big Salmon Creek Watershed Coho Current vs. Historical





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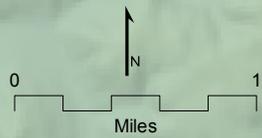
Big Salmon Creek Watershed Chinook Current vs. Historical



 Chinook Intrinsic Potential
NMFS SWR Fisheries Science Center, 2005.
Potential historical suitable habitat

 1:24,000 Streams
USGS National Hydrography Dataset,
2004. 1:24,000

 Big Salmon Creek Watershed



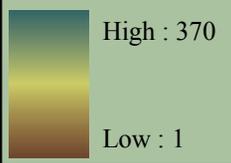


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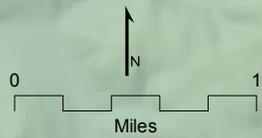
Big Salmon Creek Watershed Elevation



Big Salmon Creek Elevation (Meters)



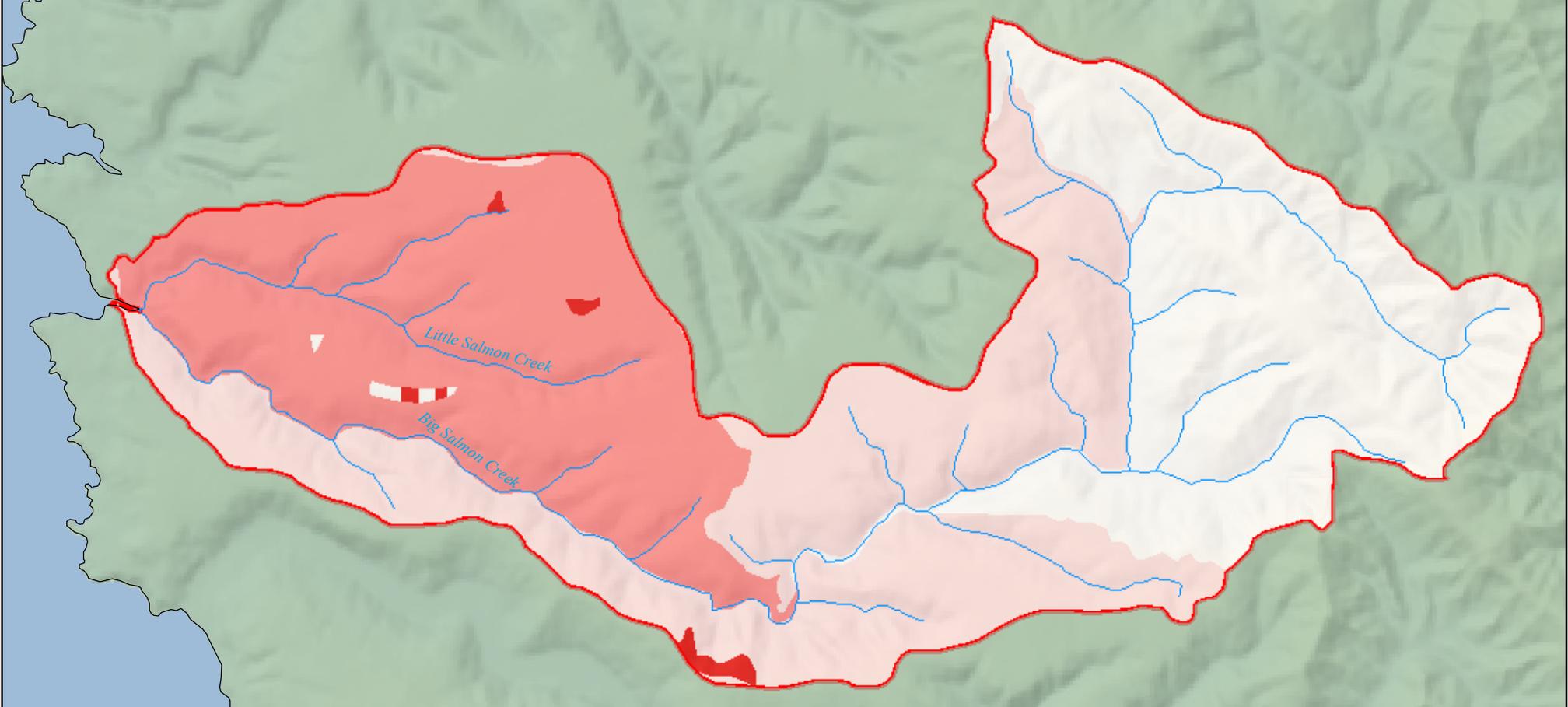
SWR-SCFSC
10 Meter Digital
Elevation
Model (DEM)





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Big Salmon Creek Watershed Development

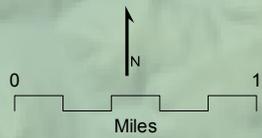


Housing Density

- 0 to Less than 1 Housing Unit / 160 Acres (91%)
- 1 Unit / 160 Acres to 1 Unit / 20 Acres (6%)
- 1 Unit / 20 Acres to 1 Unit / 5 Acres (1%)
- 1 Unit / 5 Acres to 2 Units / Acre (1%)
- 2 Units / Acre to Greater than or Equal to 5 Units / Acre

Population within the Watershed = 473 People
Houses within the Watershed = 271

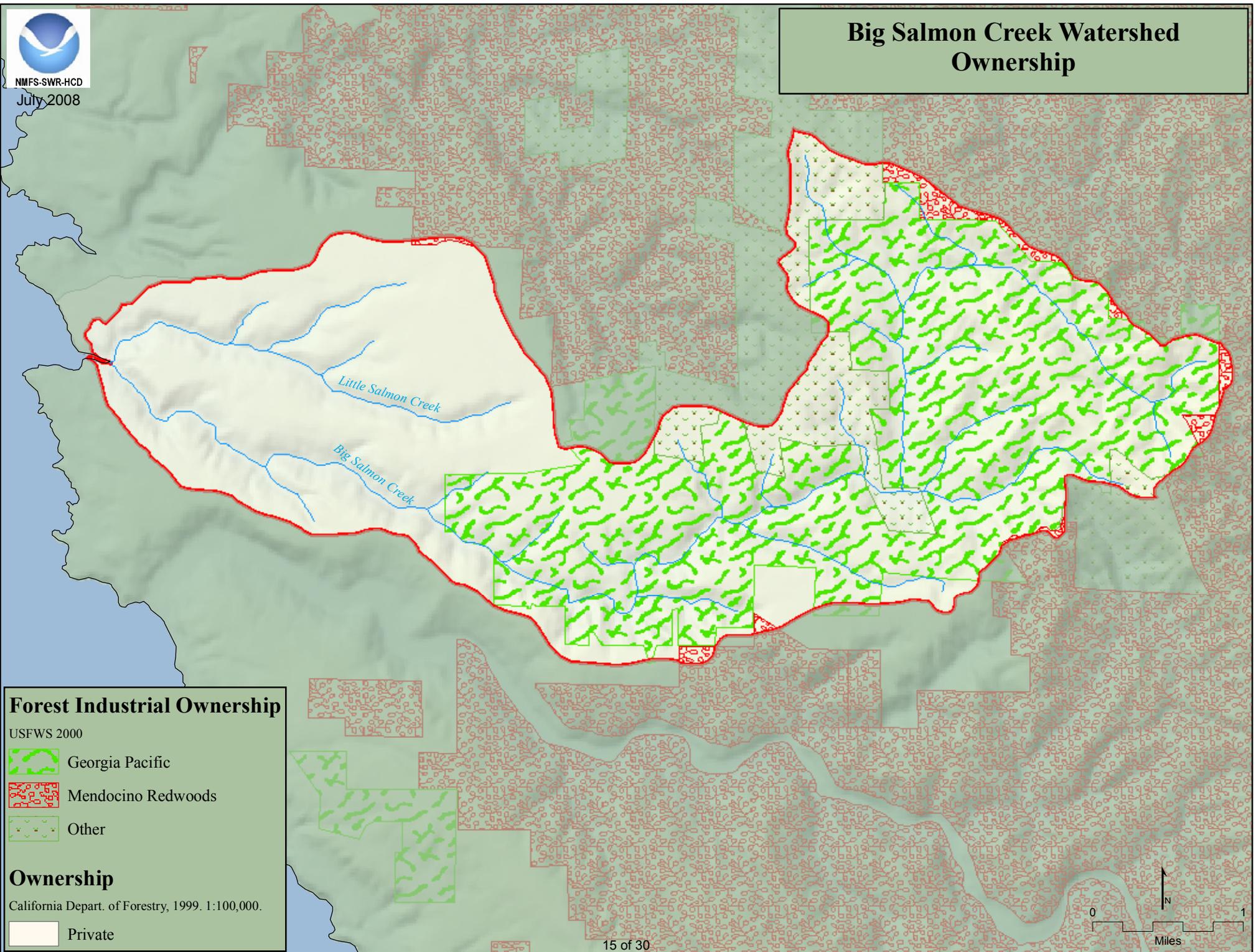
California Department of Forestry, 2003. 1:100,000.





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Big Salmon Creek Watershed Ownership





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Big Salmon Creek Watershed Road Density

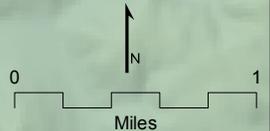


 Road

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

Road Density (Miles of Road per Square Mile of Watershed)

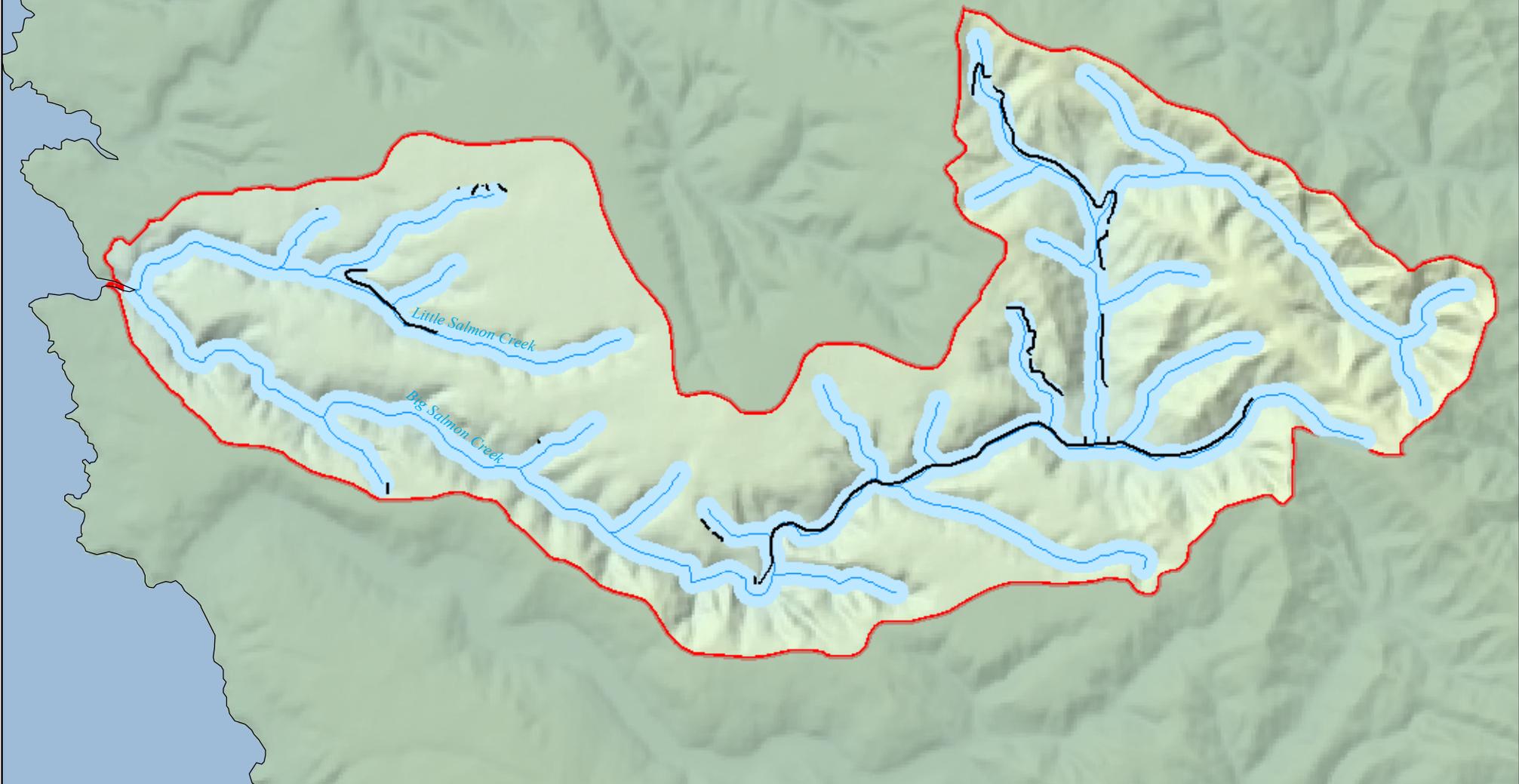
 Watershed Density 2.9 Miles / Square Mile



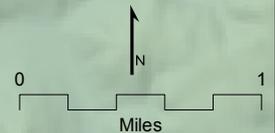


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Big Salmon Creek Watershed Road Density in the Riparian Corridor



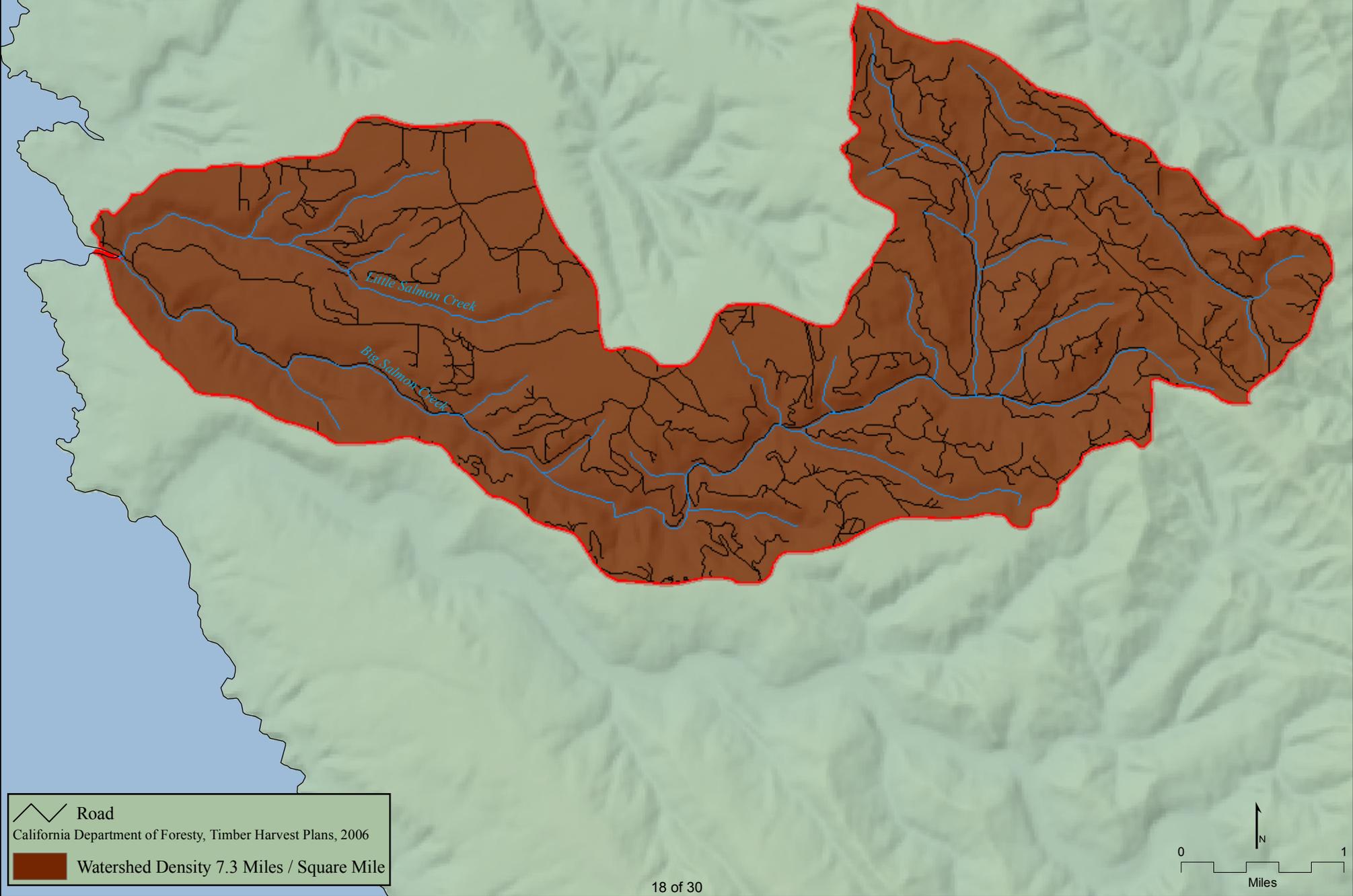
-  Road Segments within the 200 meter Riparian Corridor
U.S. Census Bureau - Tiger 2000, 2002. 1:24,000
 -  1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
 -  200 Meter Riparian Buffer (100 m on either side of stream centerline)
- Overall Riparian Corridor Density = 2.2 Miles / SqMi of Corridor





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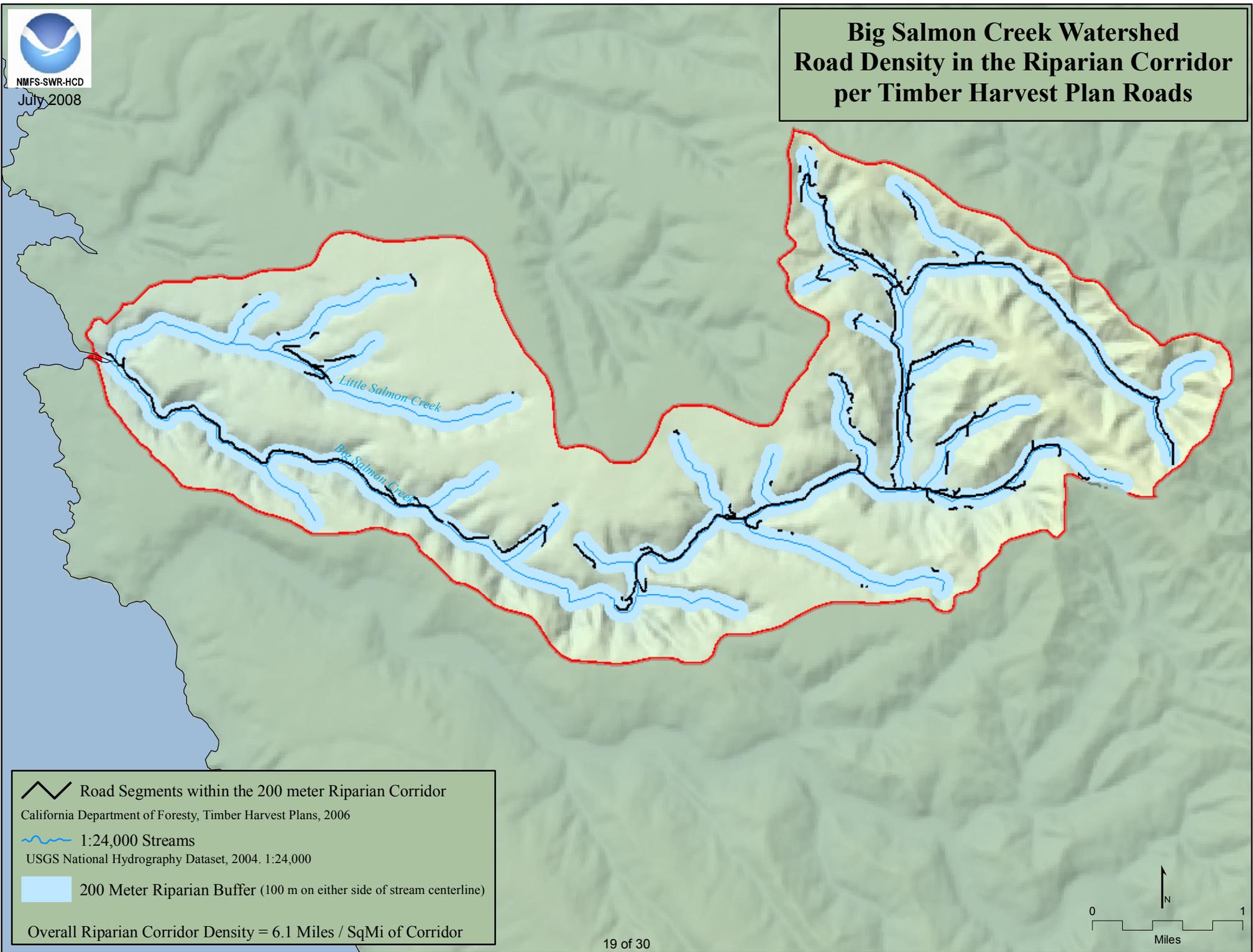
Big Salmon Creek Watershed Road Density per Timber Harvest Plan Roads



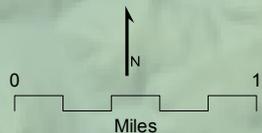


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Big Salmon Creek Watershed Road Density in the Riparian Corridor per Timber Harvest Plan Roads



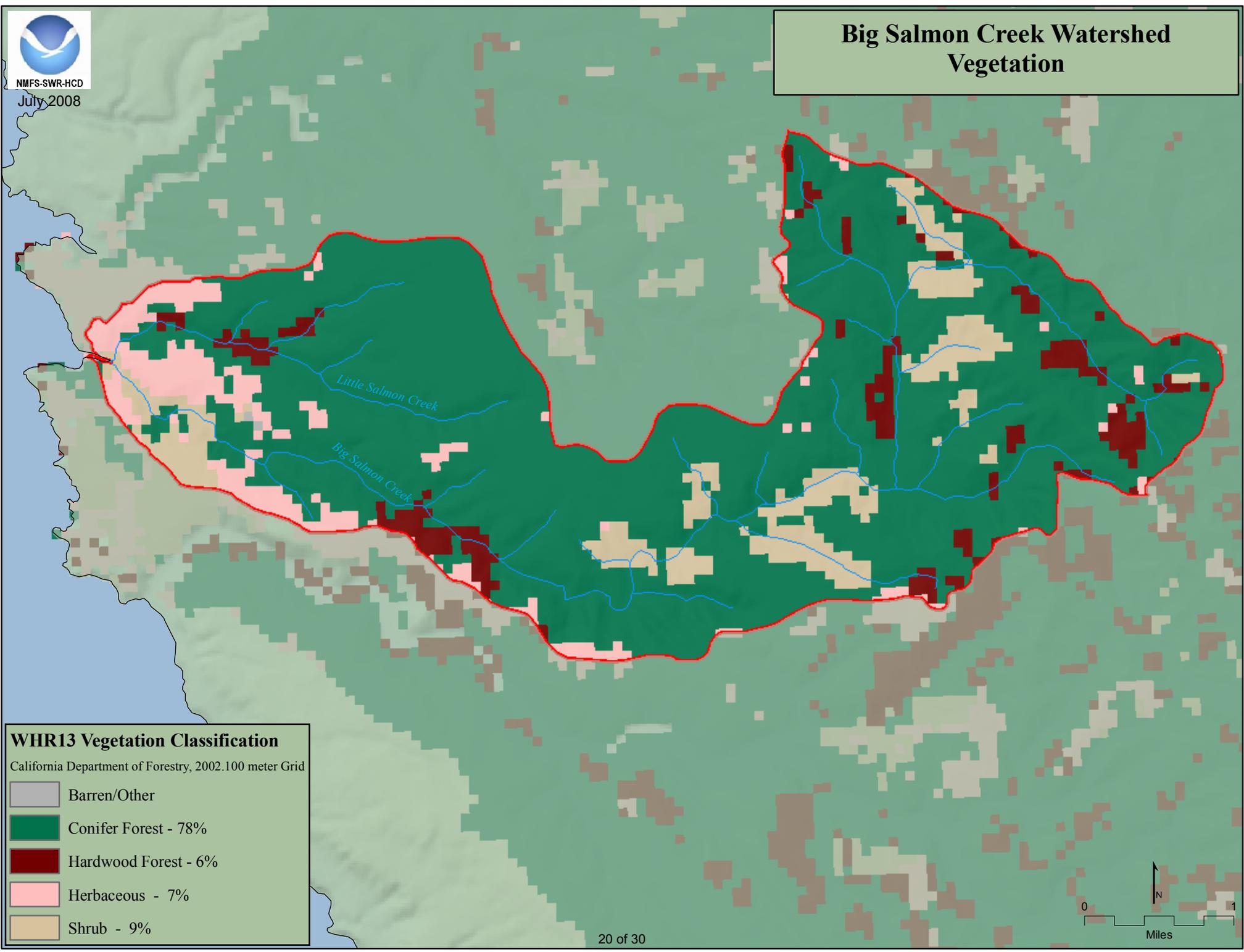
-  Road Segments within the 200 meter Riparian Corridor
California Department of Forestry, Timber Harvest Plans, 2006
 -  1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000
 -  200 Meter Riparian Buffer (100 m on either side of stream centerline)
- Overall Riparian Corridor Density = 6.1 Miles / SqMi of Corridor





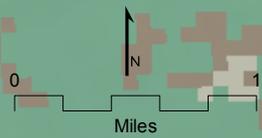
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Big Salmon Creek Watershed Vegetation



WHR13 Vegetation Classification
California Department of Forestry, 2002.100 meter Grid

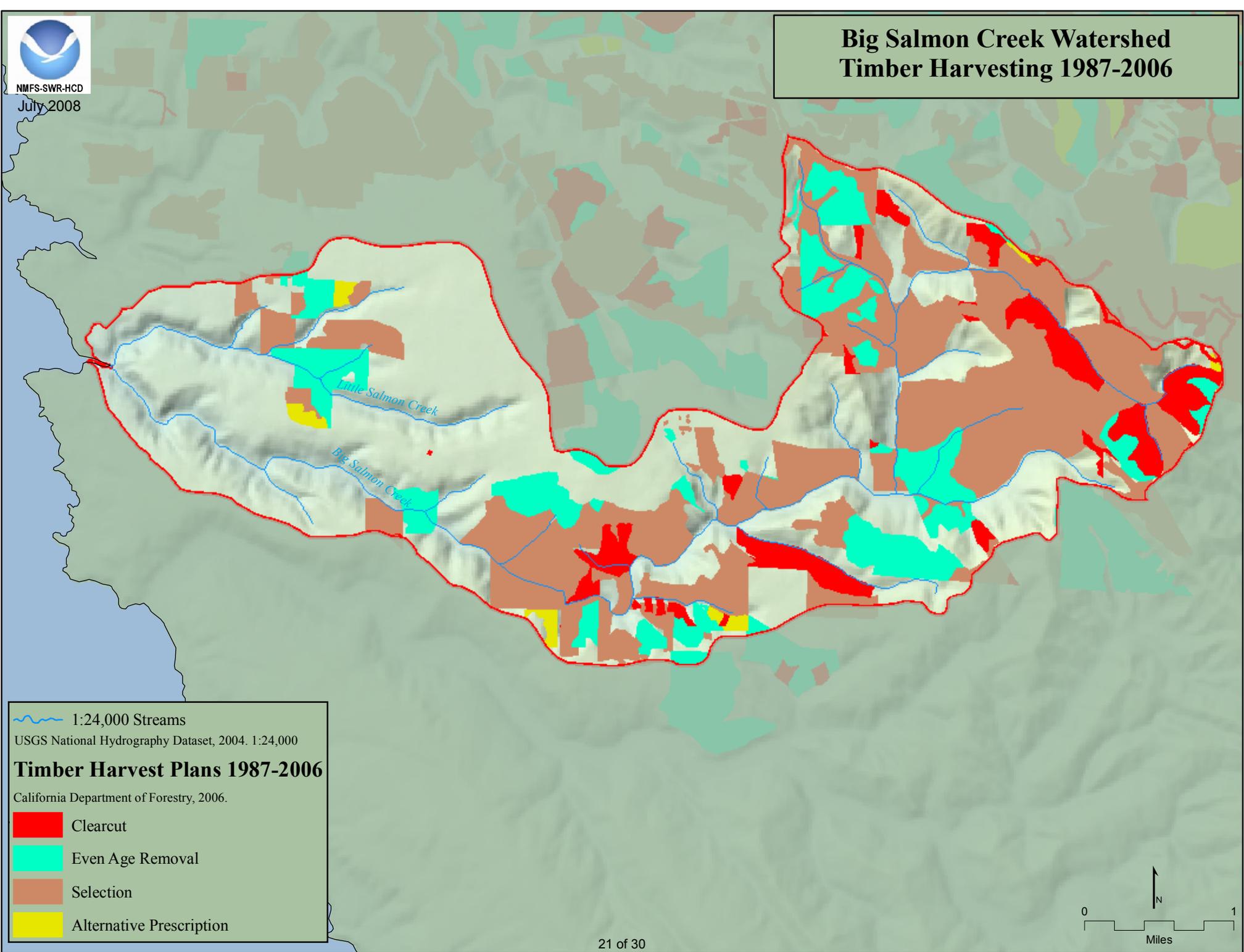
	Barren/Other
	Conifer Forest - 78%
	Hardwood Forest - 6%
	Herbaceous - 7%
	Shrub - 9%





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Big Salmon Creek Watershed Timber Harvesting 1987-2006

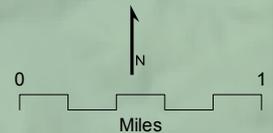


 1:24,000 Streams
USGS National Hydrography Dataset, 2004. 1:24,000

Timber Harvest Plans 1987-2006

California Department of Forestry, 2006.

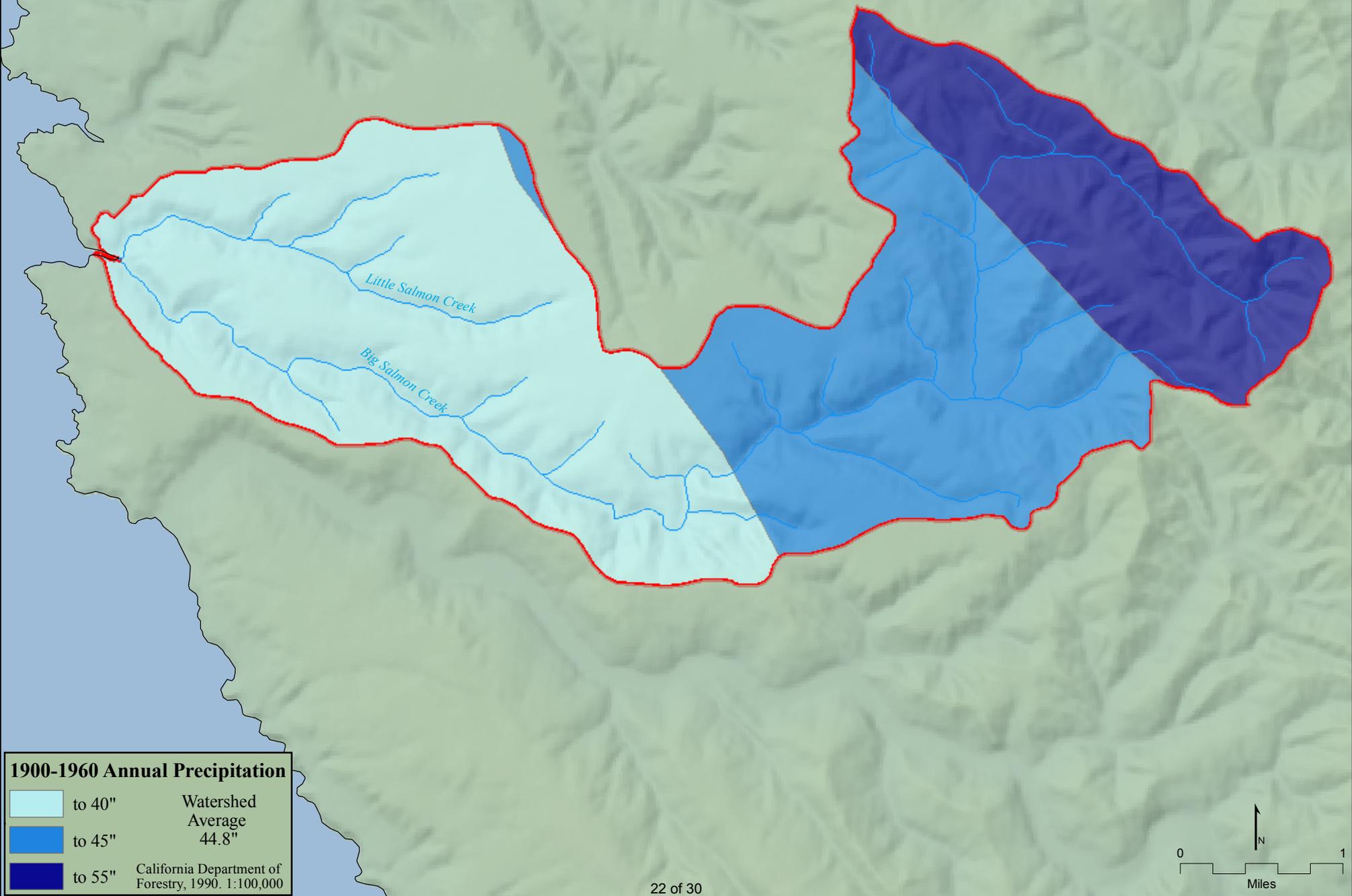
-  Clearcut
-  Even Age Removal
-  Selection
-  Alternative Prescription





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Big Salmon Creek Watershed Precipitation

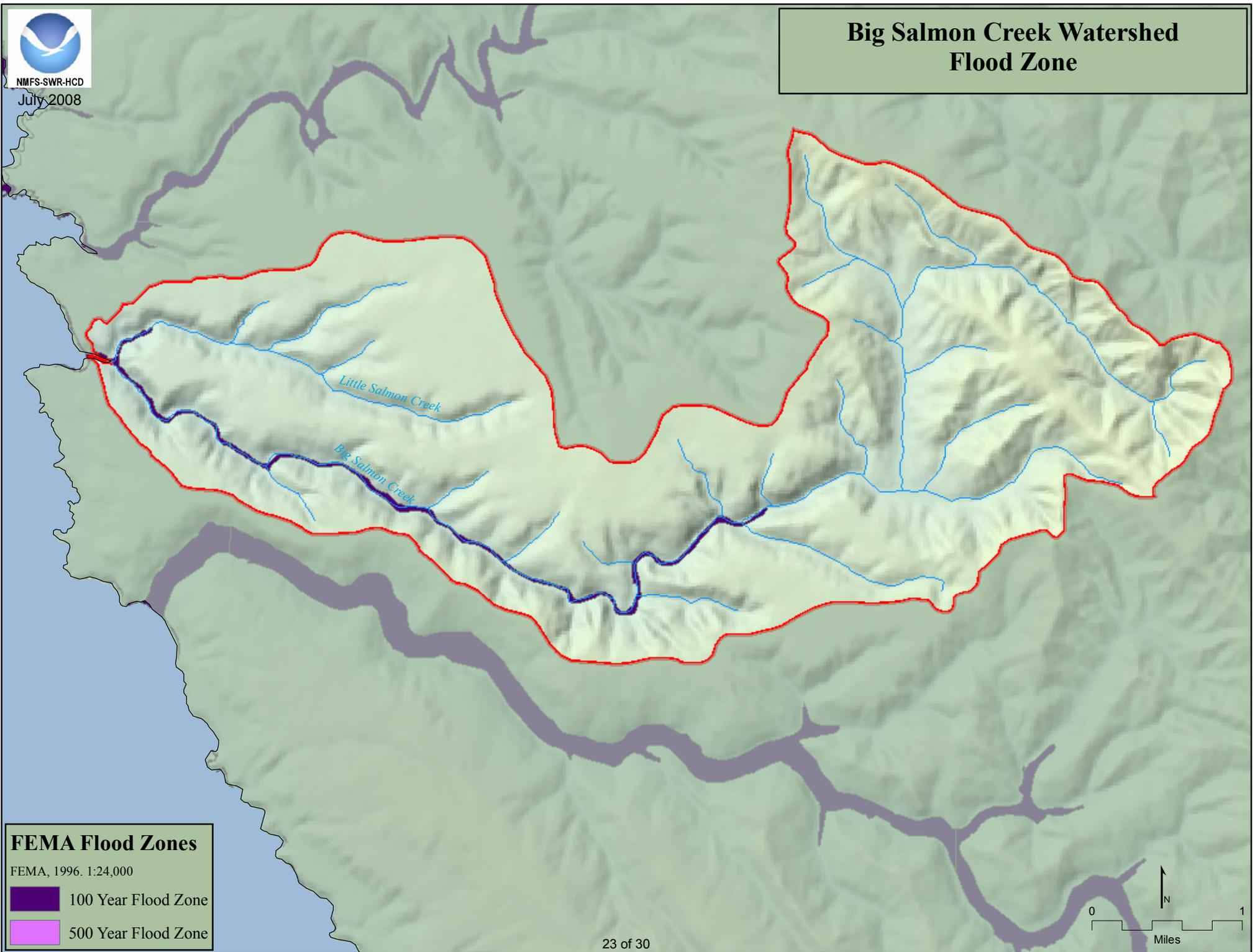




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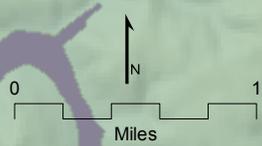
Big Salmon Creek Watershed Flood Zone



FEMA Flood Zones

FEMA, 1996. 1:24,000

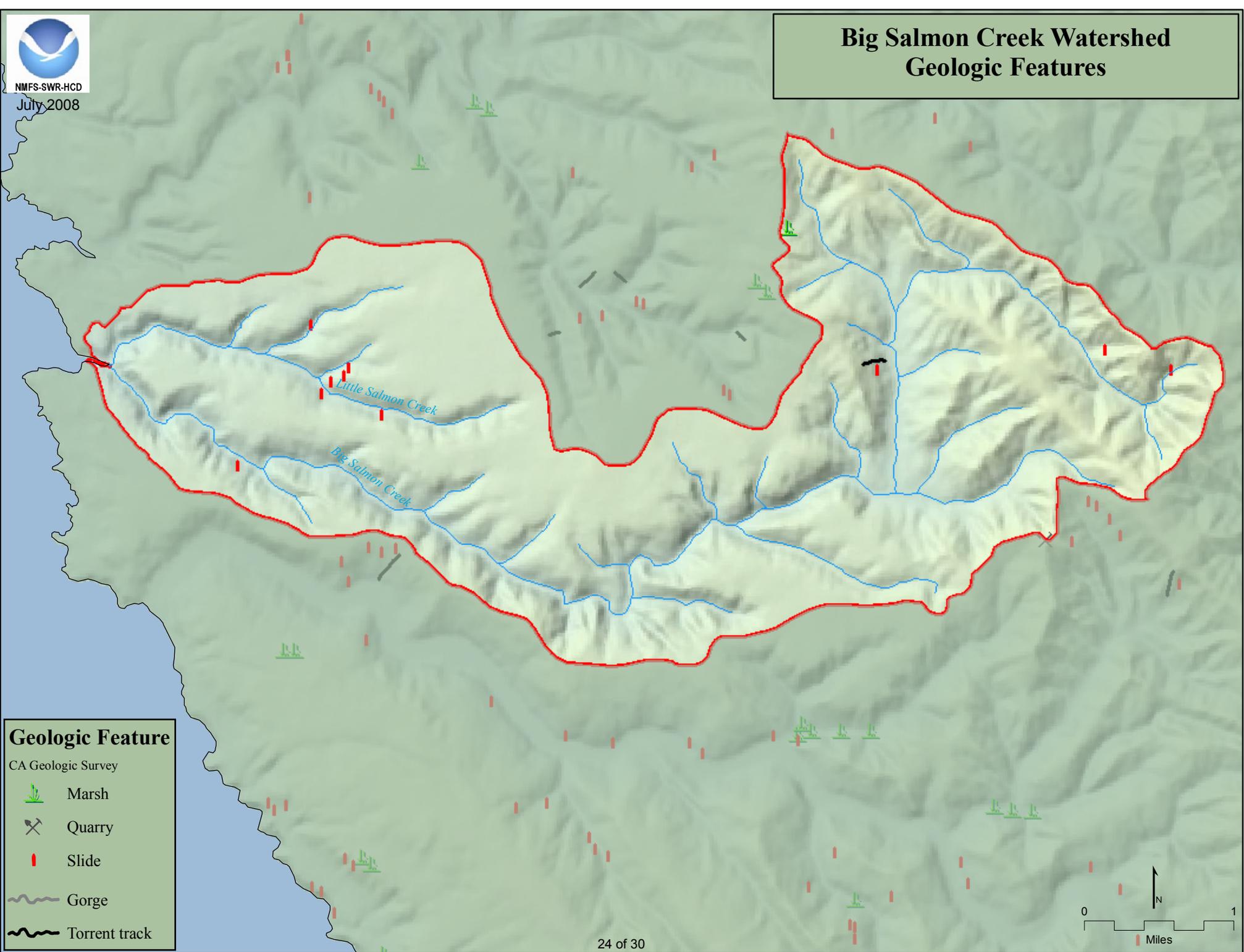
-  100 Year Flood Zone
-  500 Year Flood Zone





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Big Salmon Creek Watershed Geologic Features



Geologic Feature

CA Geologic Survey



Marsh



Quarry



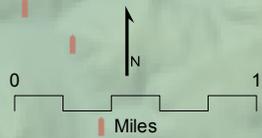
Slide



Gorge



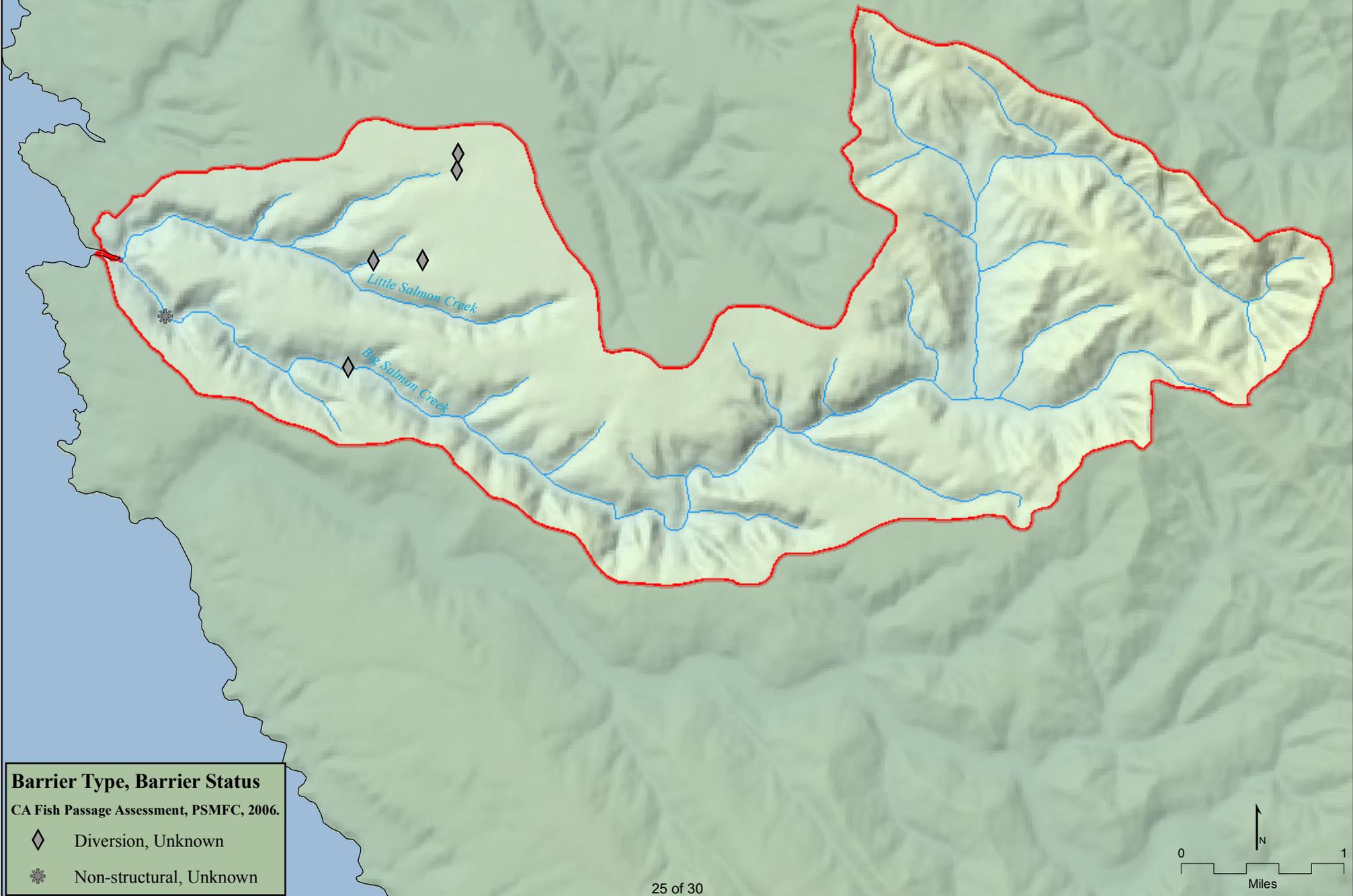
Torrent track





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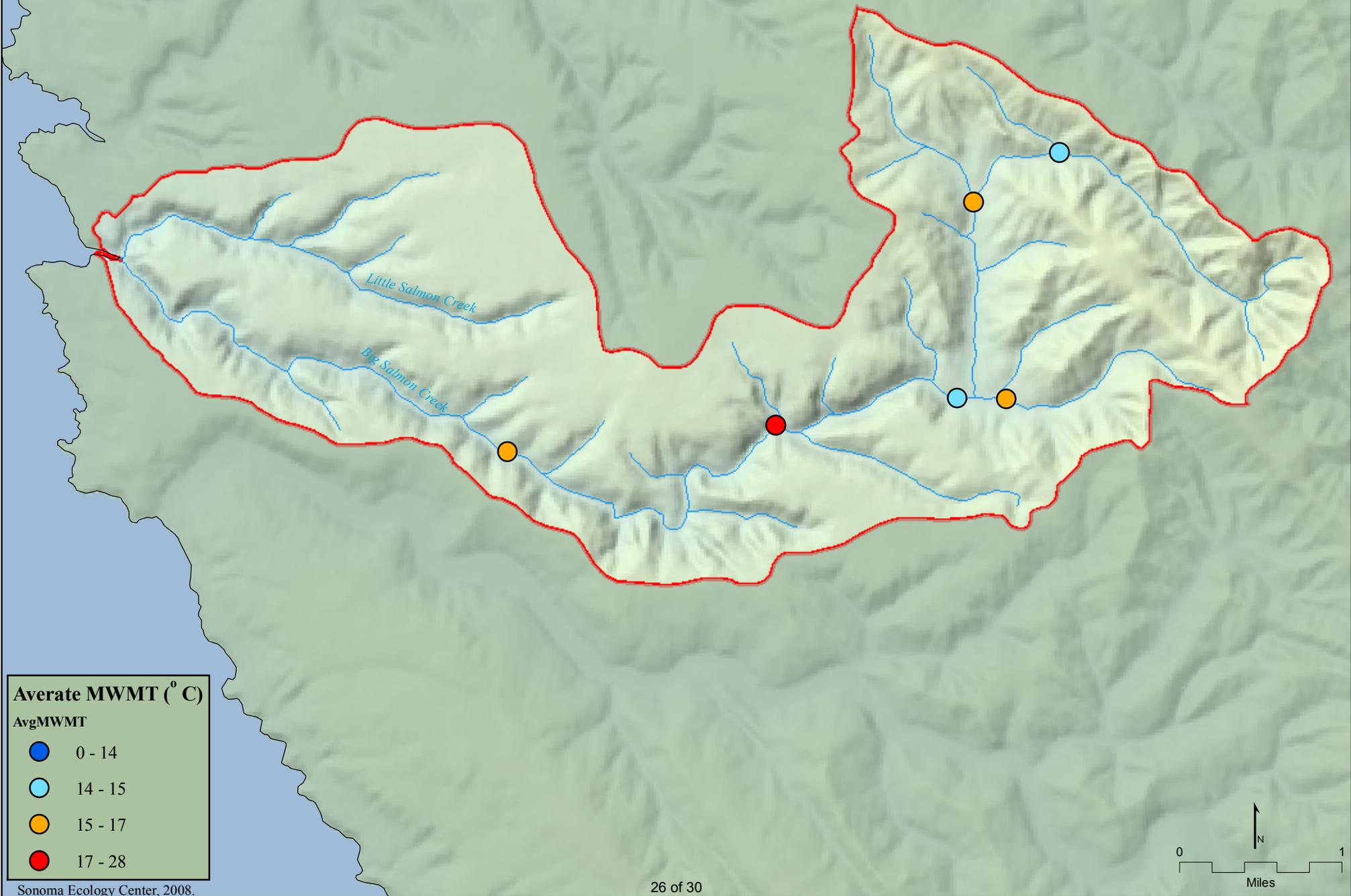
Big Salmon Creek Watershed Barriers





NMFS-SWR-HCD
July 2008

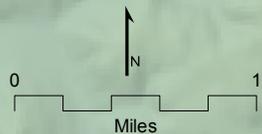
Big Salmon Creek Watershed In-stream Temperature



Average MWMT (°C)

AvgMWMT

- Blue circle: 0 - 14
- Light blue circle: 14 - 15
- Yellow circle: 15 - 17
- Red circle: 17 - 28

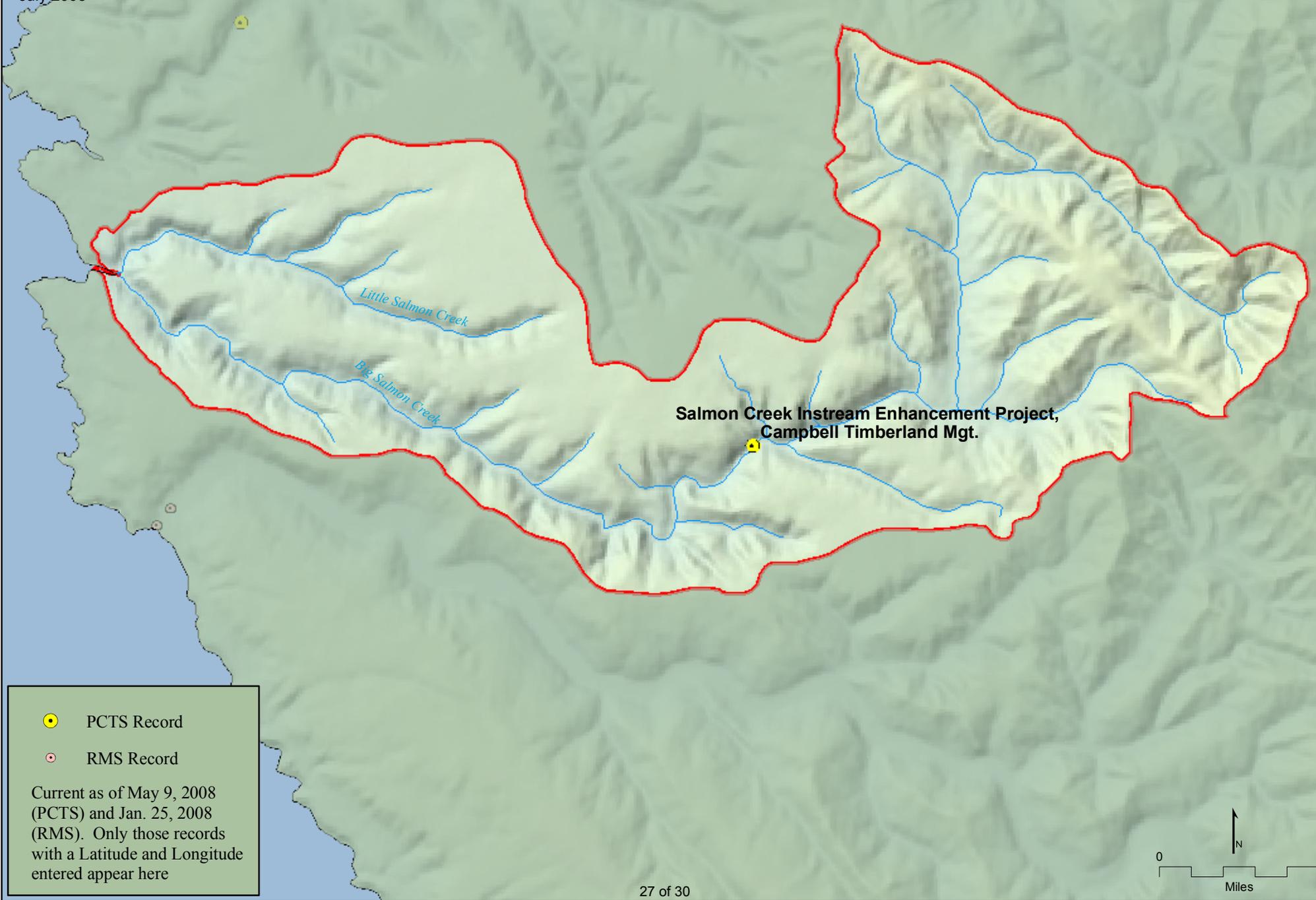




NMFS-SWR-HCD

July 2008

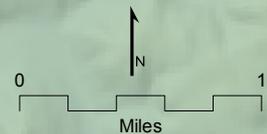
Big Salmon Creek Watershed Public Consultation Tracking System



● PCTS Record

○ RMS Record

Current as of May 9, 2008 (PCTS) and Jan. 25, 2008 (RMS). Only those records with a Latitude and Longitude entered appear here



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/>

NC_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>

CC_Chinook_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

CC_Chinook_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>

NC_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

1801 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)

R1_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 Protection 1990

1:100,000

<http://frap.cdf.ca.gov/data/frapgisdata/select.asp>

Roads

roads

vector digital data

Timber Harvest Plans

California Department of Forestry and Fire Protection

1:24,000

2006

TGRR00

vector digital data

Roads

United States Census Bureau

1:100000

2000

<http://www.census.gov/geo/www/tiger/>

Elevation

Dem_1_utm_f

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

Google Maps

remote-sensing image

raster digital data

2008

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

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