

# Cuyama River Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Santa Maria HU 12	Cuyama Valley WPA 9 Huasna Valley WPA 8	140,408 acres in County; 729,600 acres total	Santa Maria River	Cuyama Valley; Santa Maria Valley	County of San Luis Obispo Los Padres National Forest

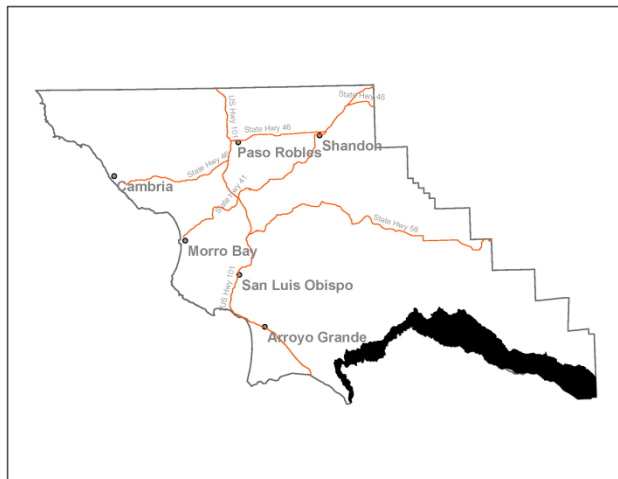


### Description:

The Cuyama River Watershed starts in Ventura County. The river generally flows northward, and then in a westerly direction to a point of confluence with the Sisquoc River near the town of Garey where it joins the Santa Maria River. The San Luis Obispo County line approximately follows the Cuyama River. A portion of the northern tributaries and part of the Cuyama River are within the southwestern part of San Luis Obispo County. The northern tributaries rise to a maximum elevation of almost 4,950 feet above sea level at Caliente Mountain with their headwaters in the La Panza and Caliente Mountain Ranges.

Twitchell Reservoir is near the downstream end of the Cuyama River Watershed, formed behind Twitchell Dam.

The watershed is dominated by rural and agricultural land uses including ranches, orchards, vineyards and row crops. Other land uses include oil and gas production, Los Padres National Forest and Bureau of Land Management lands.



### Watershed Plans:

None.

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## Characteristics:

	Physical Setting	
	Rainfall	7 – 24 inches in County 7 – 30 inches for entire watershed (NRCS Precip 1981-2010)
	Air Temperature	Summer Range (August 1981-2010): 50°- 82° F Winter Range (December 1981-2010): 36°- 66° F At Twitchell Dam, CA. (NOAA National Climatic Data Center, viewed 2013)
	Geology Description	The Chimney Canyon sub watershed consists of steep pre- quaternary non-infiltrative headwaters and a steep moderately infiltrative early to mid-Tertiary valley – category #5.  The Buckhorn Canyon sub watershed consists of moderately steep to steep pre-quaternary non-infiltrative headwaters – category #9. (Bell, personal communication, 2013)  The Cuyama Valley was formed by a down faulted block that is bordered on the north by the Morales and Whiterock faults, and on the south by the South Cuyama and Ozena faults. The basin has been filled with continental deposits resulting from the active faults that border the valley to the north and south, and by alluvium deposited by the Cuyama River. These deposits coupled with the semi-arid climate of the region have created a wide distribution of soil types (Roehrdanz, et al, 2009 ).
	Hydrology	
	Stream Gage	Yes; USGS 11136800 Cuyama River below Buckhorn Canyon (1959- 2007, discontinued); USGS 11138100 Cuyama River below Twitchell Dam (1959-1983, discontinued).  Limited data.
	Hydrology Models	Yes; There is a USGS HEC-HMS used to calculate reservoir water surface elevation on Twitchell Dam. (TMA, 2010)  Hydrologic model does not include entire watershed.
	Peak Flow	17,800 - 26,200 cubic feet per second occurred at the USGS 11136800 Cuyama River below Buckhorn Canyon, near Santa Maria (TMA, 2010).  The Cuyama River is characterized as “flashy” with relatively rapid response to rainfall and little or no flow in its reaches during the summer months. The annual mean flow is approximately 27.8 cfs, however during the 1998 floods flow rates reached 26,200 cfs (SB County Water Agency, 2000).

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	Base Flow	<p>Average flow of only 18 cfs at the Cuyama River near Santa Maria River gage just above Twitchell Reservoir (USGS 11137000) for the period 1941–1962 (Stillwater Sciences, 2012)</p> <p>It is unknown if these gages were placed to accurately capture base flows. Many gages are placed as alert systems and only capture peak flows.</p>
	Flood Reports	Yes; Twitchell Project Manual (TMA, 2010); Floods in Cuyama Valley, California (USGS, 1998)
	<b>Biological Setting</b>	
	Vegetation Cover	<p>Primarily sage scrub and salt brush scrub with some chaparral (chamise, semi-desert, buckbrush), non-native grassland, blue oak woodland, coast live oak forest, orchard or vineyard and agricultural lands. (SLO County, vegetation shapefile, 1990)</p> <p>Annual grasslands, chaparral and scrub habitats, blue oak woodlands and pinyon-juniper woodlands dominate the area, but rare habitats such as saltbush scrub, alkaline marshes, and riparian forests are also present. (Roehrdanz, et al, 2009) Willow, cottonwood, mulefat, tamarisk, and arrowweed are present in riparian habitat along the river (Althouse and Meade, Inc, 2013).</p> <p>Limited spatial data. No alliance level vegetation mapping was available for the entire County.</p>
	Invasive Species	No source identified.
	Special Status Wildlife and Plants	<p>Key: FE - Federal endangered, FT - Federal threatened, SE - State endangered, ST - State threatened, SSC - State Species of Special Concern; FP- Fully Protected, SA – Special Animal, CRPR – CA rare plant rank, CALS – California Lichen Society, (CNDDDB, viewed August, 2013)</p> <p>Locations listed refer to USGS 7.5’ quadrangle names. Only the portion overlapping the watershed boundary was considered.</p> <p>Limited by the type of data collected in the CA Natural Diversity Database.</p>

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Common Name	Status	BALLINGER CANYON	BRANCH MTN	CALIENTE MTN	CHIMINEAS RANCH	CHIMNEY CANYON	CUYAMA	CUYAMA PEAK	ELKHORN HILLS	HUASNA PEAK	MIRANDA PINE MTN	NEW CUYAMA	PAINTED ROCK	PEAK MTN	TAYLOR CANYON	TWITCHELL DAM	WELLS RANCH	
<b>Animals</b>																		
American badger	SSC					x	x			x						x		
blunt-nosed leopard lizard	FE; SE; FP	x					x	x				x						
California condor	FE; SE	x																
California red-legged frog	FT															x	x	
coast horned lizard	SSC				x							x					x	
giant kangaroo rat	FE; SE	x	x			x						x		x	x			
Kern primrose sphinx moth	FT	x	x			x	x	x				x		x			x	
long-eared owl	SSC																x	
longhorn fairy shrimp	FE		x	x							x						x	
Nelson's antelope squirrel	ST	x					x					x						
prairie falcon	SA (Nesting)	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	
San Joaquin kit fox	FE; ST	x	x			x					x	x		x	x			
San Joaquin whipsnake	SSC																x	
silvery legless lizard	SSC											x						
Swainson's hawk	ST						x	x				x						
tricolored blackbird	SSC (Nesting)						x										x	
Tulare grasshopper mouse	SSC																x	
two-striped garter snake	SSC					x					x							
vernal pool fairy shrimp	FT		x									x						
western pond turtle	SSC											x		x				
western spadefoot	SSC																x	
<b>Plants</b>																		
woven-sporred lichen	CALS Listed																	x

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Blakley's spineflower	CRPR 1B.3											x	x				
California jewel-flower	FE; SE; CRPR 1B.1	x					x					x					
Hoover's eriastrum	Federally Delisted; CRPR 4.2						x										
Jared's pepper-grass	CRPR 1B.2																x
Kern mallow	FE; CRPR 1B.1	x	x				x	x								x	
La Panza mariposa-lily	CRPR 1B.3				x	x										x	
Lemmon's jewel-flower	CRPR 1B.2	x			x		x	x				x				x	
Lost Hills crownscale	CRPR 1B.2						x		x			x					x
Miles' milk-vetch	CRPR 1B.2																x
Munz's tidy-tips	CRPR 1B.2						x										
oval-leaved snapdragon	CRPR 4.2			x	x												x
pale-yellow layia	CRPR 1B.1	x		x			x										x
Parish's checker-bloom	SR; CRPR 1B.2														x		
round-leaved filaree	CRPR 1B.1			x	x												x
San Gabriel manzanita	CRPR 1B.2										x			x	x		
San Joaquin woolly-threads	FE; CRPR 1B.2	x		x			x					x					x
showy golden madia	CRPR 1B.1				x		x					x					x
stinkbells	CRPR 4.2			x			x										x
umbrella larkspur	CRPR 1B.3				x	x											x
Steelhead Streams	No. Santa Maria River is a steelhead stream. Twitchell Dam creates a barrier to access. (NMFS, 2009)																
Stream Habitat Inventory	No source identified.																
Fish Passage Barriers	Bridge with potential passage constraints at the Cuyama River, Status Unknown, PAD # 736548.00000; Alamo Creek Bridge with																

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		potential passage constraints, Status Unknown, PAD # 736590.00000; Bridge with potential passage constraints at the Cuyama River, Status unknown, PAD # 736651.00000; Culvert at Hwy 166 and Cuyama River, Status Unknown, PAD #736667.00000; Twitchell Dam at the Cuyama River, Total Barrier, PAD #718831.00000; Road Crossing at the Cuyama River, Partial Barrier, PAD # 723386.00000 (CDFW Passage Assessment Database, 2013).
	Designated Critical Habitat	None. (USFWS Critical Habitat Portal, viewed 2013)
	Habitat Conservation Plans	No source identified.
	Other Environmental Resources	Los Padres National Forest, Carrizo National Monument, The Nature Conservancy has identified the Cuyama Valley as a potential priority region due to its ecological richness, rare plant communities, and its potential to function as a wildlife corridor between the conserved lands of the Carrizo Plain National Monument and Los Padres National Forest.
	<b>Land Use</b>	
	Jurisdictions & Local Communities	County of San Luis Obispo.
	% Urbanized	0% in County (SLO County LUC)
	% Agricultural	44% in County (SLO County LUC)
	% Other	56% (12.47% open space and 43.48% rural lands) in County (SLO County LUC)
	Planning Areas	Shandon-Carrizo, Los Padres, Huasna-Lopez, South County Inland
	Potential growth areas	No source identified.
	Facilities Present	Twitchell Dam  Limited data.
	Commercial Uses	Agriculture  Limited data.
	<b>Demographics</b>	
	Population	128 (U.S. Census Block, 2010)
	Race and Ethnicity	21.9% Caucasian (28), 76.6% Latino (98), and 0.8% Other. (U.S. Census Block, 2010)
	Income	MHI \$60,676 (U.S. Census Tract 127.02, 2010)  Census tracts are very large crossing multiple watersheds.
	Disadvantaged Communities	No; 7% of individuals are below poverty (U.S. Census Tract 127.02, 2010)  Census tracts are very large crossing multiple watersheds.

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	Water Supply	
	Water Management Entities	Twitchell Management Authority  Limited data.
	Groundwater	Yes; alluvial, Cuyama Valley, Santa Maria Valley (SLO County, 2012)
	Surface Water	Yes; Twitchell Dam recharges the Santa Maria Valley groundwater basin. (TMA, 2010)
	Imported Water	No source identified.
	Recycled/Desalinated Water	No source identified.
	Infiltration Zones	Seepage of river flows through the river bed along the Santa Maria River and along the lower reaches of the Cuyama and Sisquoc Rivers is the primary source of recharge to the Santa Maria Groundwater Basin. Percolation of river flows through unconsolidated, permeable alluvial deposits account for approximately 75-85% of the average annual recharge to the groundwater basin. A significant portion of the groundwater recharge attributable to river bed seepage is due to the operation of the Twitchell Dam. (SLO County & SB County, 1998)  Limited data.
	Water Budget	A water budget was developed for the Cuyama Valley that acknowledges limited data (Roehrdanz, et. al, 2009). The County of Santa Barbara and U.S Geological Society is developing the <i>Geohydrology and Water Availability of the Cuyama Valley, California</i> , expected to be completed in 2014.  Limited data.
	Water Uses	
	Beneficial Uses	<i>Cuyama River, upstream of Twitchell Reservoir</i> – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Ground Water Recharge (GWR), Freshwater Replenishment (FRSH), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Commercial and Sport Fishing (COMM), Warm Fresh Water Habitat (WARM), Cold Fresh Water Habitat (COLD) , Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), Spawning, Reproduction, and/or Early Development (SPWN). (RWQCB, 2011)
	Other Unique Characteristics	
	Historic Resources	No source identified.
	Archeological Resources	There were Chumash towns called Wenexe’l and Sxaliwilimu’ at the time of European settlement (SB Museum of Natural History,

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		viewed 2013).
	Other	Limited data and low priority for this effort. No source identified.
	<b>Climate Change Considerations</b>	
		See IRWMP, 2014 Section H. Climate Change  Limited data and not watershed specific.

## Watershed Codes

Calwater/ DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-area Name	SWRCB Number	CDF Super Planning Watershed Name	CDF Watershed Name
3312.301006	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Carrizo Canyon
3312.301009	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Brown Canyon
3312.301002	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Moon Canyon
3312.301003	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Taylor Canyon
3312.301004	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Miranda Canyon
3312.301007	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Sycamore Creek
3312.301008	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Gypsum Canyon
3312.301010	3	Cuyama Valley	0	undefined	312.30	Gifford Spring	Pearson Spring
3312.301101	3	Cuyama Valley	0	undefined	312.30	Porter Peak	Rice Ranch
3312.301105	3	Cuyama Valley	0	undefined	312.30	Porter Peak	Buckhorn Canyon
3312.301106	3	Cuyama Valley	0	undefined	312.30	Porter Peak	Clear Creek
3312.300902	3	Cuyama Valley	0	undefined	312.30	Chalk Mtn.	Lower Aliso Canyon
3312.300905	3	Cuyama Valley	0	undefined	312.30	Chalk Mtn.	Post Canyon
3312.300907	3	Cuyama Valley	0	undefined	312.30	Chalk Mtn.	Lower Schoolhouse Canyon
3312.300908	3	Cuyama Valley	0	undefined	312.30	Chalk Mtn.	Morales Canyon



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Calwater/ DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-area Name	SWRCB Number	CDF Super Planning Watershed Name	CDF Watershed Name
3312.300909	3	Cuyama Valley	0	undefined	312.30	Chalk Mtn.	Morales Canyon Oil Field
3312.301403	3	Cuyama Valley	0	undefined	312.30	Twitchell Reservoir	Upper Twitchell Reservoir
3312.301404	3	Cuyama Valley	0	undefined	312.30	Twitchell Reservoir	Chimney Canyon
3312.301405	3	Cuyama Valley	0	undefined	312.30	Twitchell Reservoir	Canada de los Coches
3312.301406	3	Cuyama Valley	0	undefined	312.30	Twitchell Reservoir	Mouth of Cuyama River
3312.300804	3	Cuyama Valley	0	undefined	312.30	New Cuyama	Sulfur Canyon
3312.300803	3	Cuyama Valley	0	undefined	312.30	New Cuyama	Padrones Canyon
3312.300802	3	Cuyama Valley	0	undefined	312.30	New Cuyama	Quail Canyon
3312.300805	3	Cuyama Valley	0	undefined	312.30	New Cuyama	New River
3312.300801	3	Cuyama Valley	0	undefined	312.30	New Cuyama	Stubblefield Road
Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)							

## ***Major Changes in the Watershed***

- In 1958, Twitchell Dam and Reservoir was constructed by the U.S. Army Corps of Engineers and the Bureau of Reclamation on behalf of the Santa Barbara County Water Agency. (TMA, 2010)

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## Watershed Health by Major Tributary

Tributary Name	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources NP (non-point) MP (Major Point)	Environmental Flows
Cuyama River (above Twitchell Reservoir)	Ephemeral	Yes on 303d list for Boron, Chloride, Electrical Conductivity, Fecal Coliform, pH, Sodium.  TMDL estimated date of completion 2021. (SWRCB, 2010)	Agriculture, grazing-related, municipal point sources, natural , resource extraction (SWRCB, 2010)	Table 3 of Instream Flow Assesment (Stillwater Sciences, 2013)

## Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Cuyama Valley Basin	9,000 - 13,000 AFY (San Luis Obispo County, Master Water Report, 2012)	Physical Limitations. (San Luis Obispo County, Master Water Report, 2012)  DWR identifies it as in “critical condition of overdraft” (Roehrdanz, et al., 2009).	Yes (San Luis Obispo County, Master Water Report, 2012)	No. (RWQCB, Table 3-8, 2011)
Santa Maria Valley Basin	Adjudicated. (San Luis Obispo County, Master Water Report, 2012)			Yes. (RWQCB, Table 3-8, 2011)

\*Note: The Santa Maria Valley Groundwater Basin has been adjudicated. In 2005, the Superior Court of California entered a Judgment for a basin-wide groundwater litigation case that defined three basin management areas. These management areas are the Northern Cities Management Area (NCMA), the Nipomo Mesa Management Area (NMMA), and the Santa Maria Valley Management Area (SMVMA), which are used herein for planning by the County of San Luis Obispo. The Judgment incorporated a Stipulated Settlement which was made binding by the Court on the signatories, with a declaratory judgment and physical solution adjudged and decreed in the Judgment after Trial, dated January 25, 2008.

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*Groundwater Quality Description:* Analyses of water from three public supply wells show an average TDS content of 858 mg/L and a range from 755 to 1,000 mg/L. USGS analyses show TDS content as high as 1,750 mg/L. Because of constant cycling and evaporation of irrigation water in the basin, water quality has been deteriorating (DWR 2003; SBCWA 1996; SBCWA 2001). Groundwater near the Caliente Range has high salinity, which has been attributed to seepage out of the basement marine rocks. Nitrate content reached 400 mg/L in some shallow wells (DWR 2003; County of Santa Barbara Planning and Development Department, 1994). (SLO County, 2012)

## Primary Issues

Issue	Potential Causes	Referenced from
Sedimentation of Twitchell Reservoir	Natural and upland erosion	TMA, 2010
Groundwater Supplies	Natural, water extraction	Roehrdanz, et al., 2009

The issues described above are in no way an exhaustive list but were identified by entities working in the watershed. Additional research would be needed to flush out all the issues facing the watershed. Issues were vetted by the community to various degrees based on the individual document. There was no countywide vetting process to identify the relative priority of each issue.

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