

Alamo Creek Watershed

Hydrologic Unit Name	Water Planning Area	Acreage	Flows to	Groundwater Basin(s)	Jurisdictions
Santa Maria HU 12	Huasna Valley WPA 8	56,277 acres	Cuyama River at Twitchell Reservoir	None	County of San Luis Obispo U. S. Forest Service

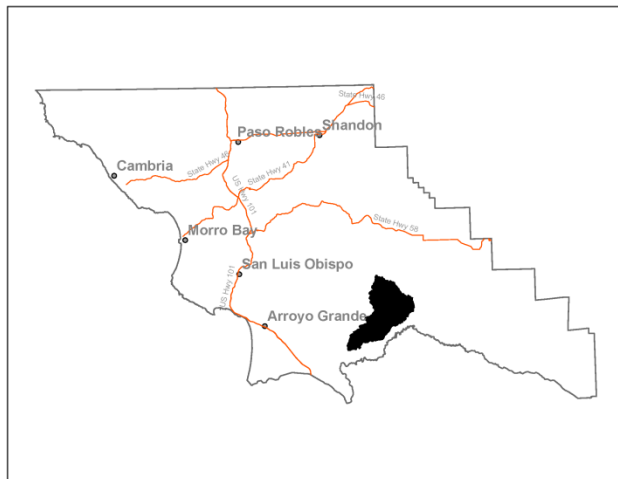


Photo by: N. Smith

Description:

The Alamo Creek Watershed is an inland basin located in southern San Luis Obispo County. The drainage rises to a maximum elevation of approximately 3,800 feet above sea level. Alamo Creek flows to the Cuyama River at Twitchell Reservoir. Twitchell dam is downstream in the Cuyama Watershed, but its presence affects habitats, hydrology, and land use in Alamo Creek Watershed. Major tributary basins with their headwaters in the La Panza Mountain Range: Little Jollo, Sheep, Kennel, Los Machos, and Branch Creeks.

The watershed is dominated by the Los Padres National Forest which permits recreation including camping, hunting, and off-highway vehicle uses. The watershed also has agricultural land uses.



Watershed Plans:

None

Alamo Creek Watershed

Characteristics:

	Physical Setting	
	Rainfall	18 – 25 inches (NRCS, 2010) 17 inches Mean Annual (SLOCountyWater.org, viewed 2013)
	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	<p>Alamo Creek, Branch Creek, Kennel Creek, and Sheep Creek sub watersheds are composed of steep moderately infiltrative early to mid-Tertiary headwaters – category #11.</p> <p>Little Jollo Creek sub watershed is composed of moderately steep to steep pre-quaternary non-infiltrative headwaters – category #9. (Stillwater Sciences, personal communication, 2013)</p> <p>The Alamo Creek watershed is characterized by a Middle to Upper Jurassic island-arc ophiolite and an overlying thick forearc of Upper Jurassic and Cretaceous marine sedimentary rocks resembling those on the west side of the Great Valley of CA. Along the south are Paleocene and Eocene strata which consist mainly of submarine-fan deposits which overlie the Mesozoic succession in the Santa Ynez Mountains and southern San Rafael Mountains. Flanking the Stanley Mountain terrane on the northeast of the watershed is the southern part of the Salinia terrane which is defined by ~95 to ~80 million year old granitic plutons that intrude older metasedimentary rocks of unknown origin and overlying Upper Cretaceous and Paleogene marine and nonmarine forearc strata.</p> <p>The Sur-Nacimiento fault zone marks the northeast edge of the Stanley Mountain terrane. The Paleocene rocks unconformably overlie Upper Cretaceous strata in a shallow syncline near the convergence of the Sur-Nacimiento and East Huasna fault zones. This thin Paleogene sequence is unlike any in the adjacent Huasna syncline southwest of the East Huasna fault zone. The limited extent and thinness of the sequence near upper Pine Creek contrast sharply with the widely distributed, thick Paleocene and lower Eocene submarine-fan sequences northeast of the Sur-Nacimiento fault zone. (Vedder, 1991)</p>
	Hydrology	
	Stream Gages	No; USGS 11137400 Alamo Creek near Nipomo CA (1959 - 1978, discontinued); USGS 11137500 Alamo Creek near Santa Maria CA (1943 - 1962, discontinued). (USGS California Water Science Center, viewed 2013) Last data is from late 1970's.

Alamo Creek Watershed

	Hydrologic Models	<p>Yes; There is a USGS HEC-HMS used to calculate reservoir water surface elevation on Twitchell Dam. (TMA, 2010)</p> <p>Hydrologic model does not include entire watershed.</p>
	Peak Flow	<p>3,120 - 9,020 cfs at USGS 11137400 (USGS, viewed 2013); 2,820 - 3,120 cfs at USGS 11137500 (USGS, viewed 2013)</p> <p>Last data is from late 1970's.</p>
	Base Flow	<p>0 – 3 cfs at USGS 11137400 (USGS, viewed 2013) ; 3 – 6 cfs at USGS 11137500 (USGS, viewed 2013)</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	<p>No sources identified.</p> <p>Though normally dry, wetter winters have seen the [Twitchell] reservoir inundate ...the lower two miles of Alamo Creek, rendering areas below the 652-foot elevation unsuitable for permanent buildings. Upstream portions of these watercourses (and other creeks in the planning area) are potential flood hazard areas during intense or prolonged rainfall. (San Luis Obispo County, Huasna-Lopez Area Plan, 2003)</p> <p>Limited data.</p>
	Biological Setting	
	Vegetation Cover	<p>Primarily buck brush chaparral, with chamise, and blue oak woodland with some non-native annual grassland, venturan coastal sage scrub, coast live oak forest, semi desert chaparral, central coastal scrub, agricultural land, and permanently flooded lacustrine (San Luis Obispo County vegetation, 1990)</p> <p>Forest Service Calveg data from 2002 for this watershed also describe primarily tree and shrub communities, with some grasslands. Shrub types include chamise chaparral and sage scrub. Forest and woodland types include blue oak woodland, coast live oak woodland, foothill woodland with mixed oak and foothill pine, and coulter pine. Willow and mulefat riparian scrub are noted along drainages. (Calveg R5 Zone 6, EvegTile42_97_02, 2007)</p> <p>Limited current spatial data. No alliance level vegetation mapping was available for the entire County. The U.S. Forest Service data is actually based on 2002 aerials.</p>
	Invasive Species	No sources identified.
	Special Status Wildlife and Plants	Coast horned lizards, which are thought to be in decline, have been documented in Alamo Creek and Cuyama Watersheds in the last few years. (Althouse and Meade, 2013)

Alamo Creek Watershed

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 (CNDDDB, viewed August, 2013)

Locations listed refer to USGS 7.5' quadrangle names. Only the portion overlapping the watershed boundary was considered.

Limited by the type of data collected in the CA Natural Diversity Database.

Species	Status	BRANCH MTN	CHIMNEY CANYON	HUASNA PEAK	LA PANZA	LOS MACHOS HILLS	MIRANDA PINE MTN
Animals							
<i>American badger</i>	SSC			x			
California red-legged frog	FT					x	
<i>prairie falcon</i>	Special Animal (Nesting)	x	x	x	x	x	x
<i>two-striped garter snake</i>	SSC					x	
<i>western pond turtle</i>	SSC			x		x	

	Steelhead Streams	No. Santa Maria River is a steelhead stream. Twitchell Dam creates a barrier to access Alamo Creek. (NMFS, 2009)
	Stream Habitat Inventory	None identified.
	Fish Passage Barriers	Bridge with potential passage constraints at Alamo Creek, unknown status, PAD # 736587.00000 (CDFW Passage Assessment Database, viewed 2013)
	Designated Critical Habitat	Yes; Steelhead trout. The Southern California Steelhead Trout Recovery Plan calls out recovery actions related to management of Twitchell Dam. Alamo Creek itself is not identified. (NOAA, 2009)
	Habitat Conservation Plans	No source identified.
	Other Environmental Resources	Los Padres National Forest Limited data.

Alamo Creek Watershed

	Land Use	
	Jurisdictions & Local Communities	County of San Luis Obispo, U.S. Forest Service
	% Urbanized	0% (SLO County LUC)
	% Agricultural	29.5% (SLO County LUC)
	% Other	70.5% (64.45% open space and 6% rural lands) (SLO County LUC)
	Planning Areas	Huasna-Lopez and Shandon-Carrizo
	Potential growth areas	None identified.
	Facilities Present	Twitchell Dam for groundwater recharge and flood protection. (TWM, 2010)
	Commercial Uses	Extractive resource area (SLO County Extractive Resources shapefile)
	Demographics	
	Population	11; No cities or unincorporated communities. (U.S. Census Block, 2010)
	Race and Ethnicity	63.6% white, 36.4% latino, and 0% other (U.S. Census Block, 2010)
	Income	Approximately \$100,000. (U.S. Census Tract, 2010) Census tract crosses multiple watersheds.
	Disadvantaged Communities	None. Approximately 4%. (U.S. Census Tract, 2010) Census tract crosses multiple watersheds.
	Water Supply	
	Water Management Entity	Twitchell Management Authority; individual wells. (TMA, 2010) No other source identified. Limited data.
	Groundwater	Yes; alluvial, Cuyama River Valley and Santa Maria Valley (SLO County Master Water Plan, 2012)
	Surface Water	Yes; Twitchell Reservoir supplies about 20,000 AF of recharge to the Santa Maria Groundwater Basin annually. (SMVWCD, 2010)
	Imported Water	No source identified.
	Recycled/ Desalinated Water	No source identified.
	Infiltration Zones	No source identified.
	Water Budget	No source identified.

Alamo Creek Watershed

	Water Uses	
	Beneficial Uses	<i>Alamo Creek</i> – Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), 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 Resource	No source identified.
	Archeological Resources	There was a Chumash town called Tso at the time of European settlement (SB Museum of Natural History, viewed 2013). Limited data and low priority for this effort.
	Los Padres National Forest	As a part of the Los Padres National Forest, Santa Lucia District the watershed has two campgrounds, an off-highway vehicle area, and is open to general recreation. (U.S. Forest Service Map, 2011)
	Climate Change Considerations	
		See IRWMP, 2014 Section H. Climate Change Limited data and not watershed specific.

Watershed Codes

Cal Water/ DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3312.301206	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Sheep Creek
3312.301207	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Kennel Creek
3312.301205	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Alamo Creek
3312.301204	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Branch Creek
3312.301203	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Little Jollo Creek
3312.301202	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Lower Alamo Creek

Alamo Creek Watershed

Cal Water/ DWR Number	HA	Hydrologic Area Name	HSA	Hydrologic Sub-area Name	SWRCB Number	CDF Super Planning	CDF Watershed Name
3312.301201	3	Cuyama Valley	0	undefined	312.30	Stanley Mtn.	Upper Alamo Creek
3312.301403	3	Cuyama Valley	0	undefined	312.30	Twitchell Reservoir	Upper Twitchell Reservoir

Source: Excerpt from California Interagency Watershed Map of 1999, Calwater 2.2.1 (CA Resource Agency, 2004 Update)

Major Changes in the Watershed

- In 1772, Mission San Luis Obispo was established bringing ranching to the area.
- In 1936, Los Padres National Forest was established.
- In 1958, Twitchell Dam and Reservoir was constructed by the Army Corps of Engineers and the Bureau of Reclamation on behalf of the Santa Barbara County Water Agency. (TMA, 2010) The dam itself is in the Cuyama River Watershed and was constructed primarily for flood control and groundwater recharge.
- In 1997, the Logan Fire burned approximately 49,500 acres, some of which was in the upper watershed. (CDF, Strategic Fire Plan, 2012)
- In 2009, the La Brea Fire burned approximately 336,020 acres of which approximately 15% (50,403 acres) was in the Twitchell Reservoir watersheds. (CDF, Strategic Fire Plan, 2012)

Alamo Creek Watershed

Watershed Health by Major Tributary

Tributary Name	Ephemeral / Perennial	303d Listed/ TMDLs	Pollution Sources NP (non-point) MP (Major Point)	Environmental Flows
Alamo Creek	Perennial	Yes; Fecal Coliform TMDL estimated date of completion 2021. (SWRCB, 2010)	Agriculture, grazing-related, natural sources (SWRCB, 2010)	See Table 3 of Instream Flow Assessment (Stillwater Sciences, 2013)
Sheep Creek	No source identified.	Not assessed.	No source identified.	No source identified.
Kennel Creek	No source identified.	Not assessed.	No source identified.	No source identified.
Branch Creek	No source identified.	Not assessed.	No source identified.	No source identified.
Little Jollo Creek	No source identified.	Not assessed.	No source identified.	No source identified.

Watershed Health by Major Groundwater Basin

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
Cuyama Valley - Cuyama Valley Basin (portion)	10,667 AFY (San Luis Obispo County, Master Water Report, 2012)	Physical limitations. (San Luis Obispo County, Master Water Report, 2012)	No. (San Luis Obispo County, Master Water Report, 2012)	No. (RWQCB, Table 3-8, 2011)
*Santa Maria Valley - Orcutt Sub-basin	Unknown. (San Luis Obispo County, Master Water Report, 2012)	Unknown. (San Luis Obispo County, Master Water Report, 2012)	Unknown. (San Luis Obispo County, Master Water Report, 2012)	Yes. (RWQCB, Table 3-8, 2011)
*Santa Maria Valley – Santa Maria Management Area (SMVMA) (portion)	124,000 -125,100 AFY of groundwater production in the basin. For the portion of the Santa Maria Valley in San Luis Obispo County, dependable yield, was estimated between 11,100	Water quality and water rights. (San Luis Obispo County, Master Water Report, 2012)	Yes for Sulfate and TDS (San Luis Obispo County, Master Water Report, 2012)	Yes for basin. No objective for management area. (RWQCB, Table 3-8, 2011)

Alamo Creek Watershed

Groundwater Basin	Estimated Safe Yield	Water Availability Constraints	Drinking Water Standard Exceedance	Water Quality Objective Exceedance
	AFY and 13,000 AFY prior to the formal establishment of the SMVMA (DWR 2002).			

*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.

Groundwater Quality Description: Sulfate and TDS are the primary constituents of concern within the San Luis Obispo County portion of the SMVMA. TDS concentrations collected in four area wells between 1992 and 1998 ranged from approximately 750 mg/L to 1,300 mg/L, with a median of 1,200 mg/L, which exceeds the State drinking water standard upper limit of 1,000 mg/L. All the sulfate concentrations exceeded the recommended drinking water standard of 250 mg/L and some exceeded the upper limit of 500 mg/L. TDS was up to 800 mg/L greater in the alluvial aquifer, when compared to the underlying Paso Robles Formation aquifers. Nitrates are also a concern in several areas of the valley, although the majority of groundwater sample results in the San Luis Obispo County portion of the valley are below the MCL (DWR 2002).

Primary Issues

Issue	Potential Causes	Referenced from
Sedimentation of Twitchell Reservoir	Natural and upland erosion primarily from Cuyama River	TMA, 2010

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.

Alamo Creek Watershed

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Alamo Creek Watershed

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