

Figure 2. Alamo and Ujalis Creek watersheds.

MUN Use in Segments of New Alamo and Ujalis Creeks
 Solano County, California

Robertson-Bryan, Inc.
 Use Attainability Analysis

watershed and flows into New Alamo Creek adjacent to the city of Vacaville. New Alamo Creek then flows into Ulatis Creek, near Highway 113. Overall, Alamo/New Alamo Creek travels roughly 20 miles before joining Ulatis Creek.

The physical characteristics of the UAA study segments are described in *Use Attainability Analysis for New Alamo Creek and Ulatis Creek, Technical Memorandum No. 1, Hydrological and Physical Characteristics of Alamo Creek, Ulatis Creek, and Cache Slough* (RBI 2007a). The following sections provide a summary characterization.

2.1.1 New Alamo Creek

New Alamo Creek is an engineered channel designed and constructed as part of the Ulatis Creek Watershed Protection and Flood Prevention Project (Ulatis Soil Conservation District et al. 1961) to collect and convey stormwater runoff from surrounding agricultural and urban lands, and runoff from the upper watershed, which flows into it from Alamo Creek. Upon its construction, it also conveyed Easterly WWTP effluent, which began discharging effluent in 1959. It also is used to convey agricultural conveyance and drainage water throughout the irrigation season. During the non-irrigation season, but prior to the start of the winter precipitation season, New Alamo Creek primarily conveys Easterly WWTP effluent and urban runoff.

The channel is characterized by earthen sides in a trapezoidal configuration with 2:1 slopes (horizontal to vertical), riprap protection, and little riparian vegetation (Figure 3). There are two diversion dams within the reach between Old Alamo Creek and Ulatis Creek, which are operated by Solano Irrigation District (Brown-Alamo Diversion Dam) and Maine Prairie Water District (Dam #4). Adjacent land uses are primarily agricultural.

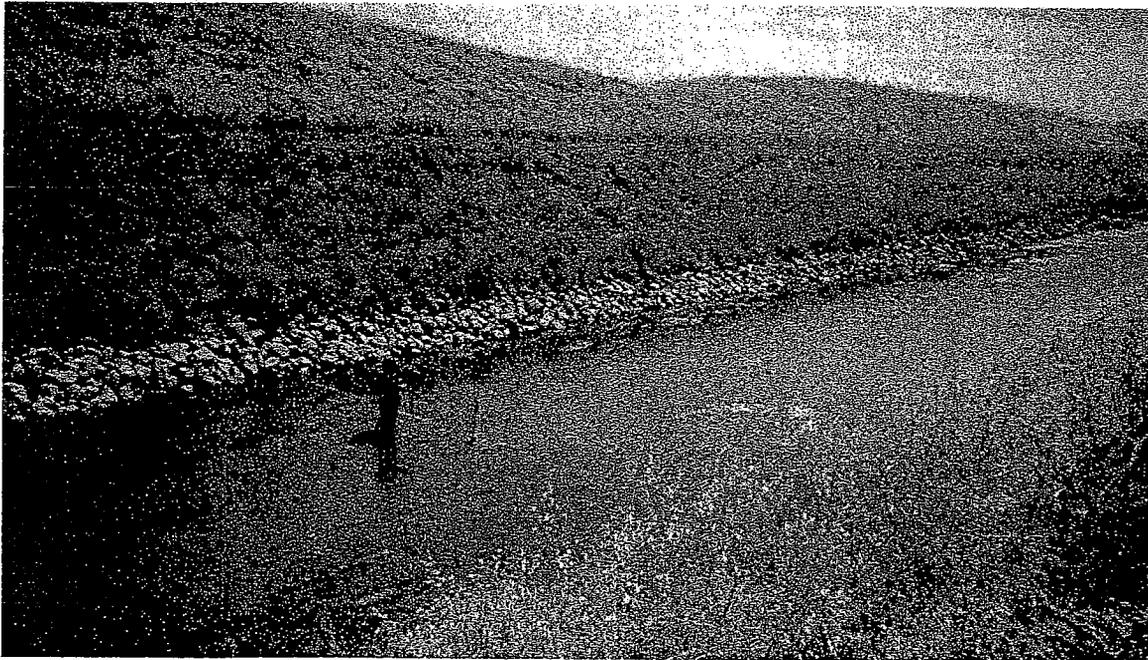


Figure 3. Typical channel configuration of New Alamo Creek.

2.1.2 Ulatis Creek

Ulatis Creek is similar to Alamo/New Alamo Creek in that it originates in the Vaca Mountains and flows through the city of Vacaville and onto the Sacramento Valley floor. New Alamo Creek is a major tributary to the lower segment of Ulatis Creek. The segment of Ulatis Creek between New Alamo Creek and Cache Slough was channelized and its capacity expanded as part of the Ulatis Creek Watershed Protection and Flood Prevention Project. The channel in this segment consists of trapezoidal earthen sides with slopes of 3:1 (horizontal to vertical) and riprap protection placed in areas designated by hydraulic design, and at grade stabilization structures; drainage inlets, flow transitions, and bridges, as well as at inlet areas, to allow local runoff to enter the channels without damaging effects (e.g., erosion), with some riparian vegetation adjacent to the water (**Figure 4**). Maine Prairie Water District operates Dam #3 located shortly downstream of the confluence with New Alamo Creek. During the irrigation season, Maine Prairie Water District tries to minimize flows passing the dam, limiting water passing downstream to leakage, which is approximately 5 cubic feet per second (cfs). Land uses adjacent to the creek also are primarily agricultural.

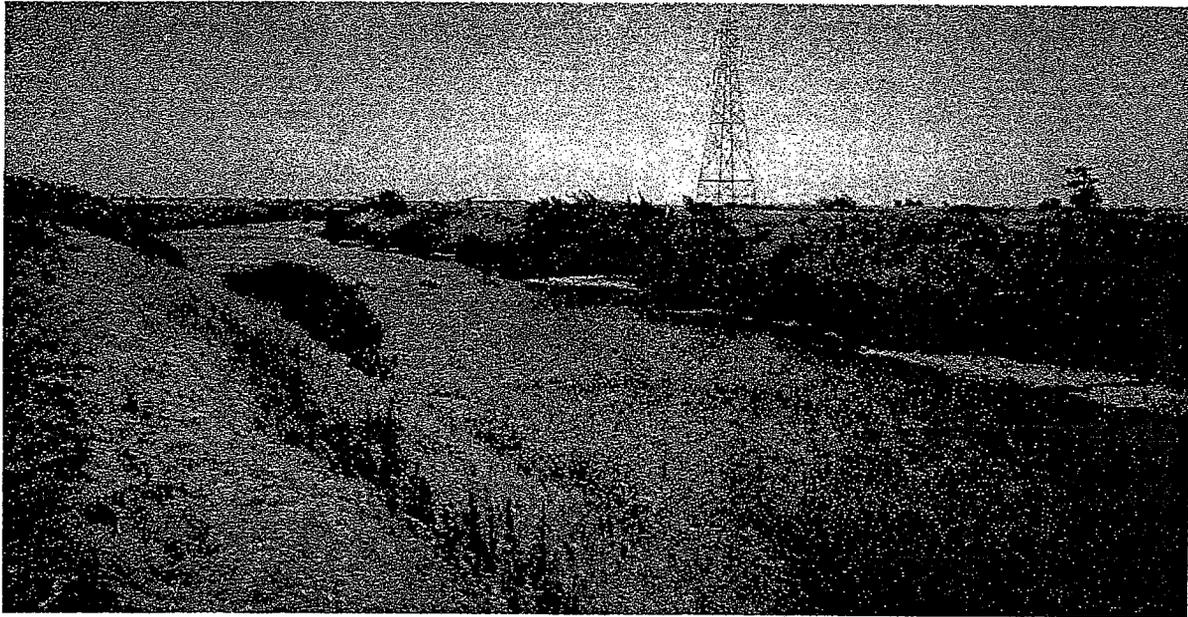


Figure 4. Typical channel configuration of lower Ulatis Creek.

2.1.3 Cache Slough

Cache Slough begins at the terminus of Ulatis Creek, approximately 5.5 miles downstream of the confluence of New Alamo Creek and Ulatis Creek. Cache Slough extends approximately 6 miles downstream from Ulatis Creek to the Sacramento River. The Cache Slough channel changes sharply in character downstream of the confluence with Ulatis Creek, becoming wider; increasing from approximately 300 feet to 1,500 feet because of numerous tributaries entering from the north and east. The change in channel configuration is shown in **Figure 5**; the straightened channel of Ulatis Creek can be clearly distinguished from the more natural channel configuration of Cache Slough.

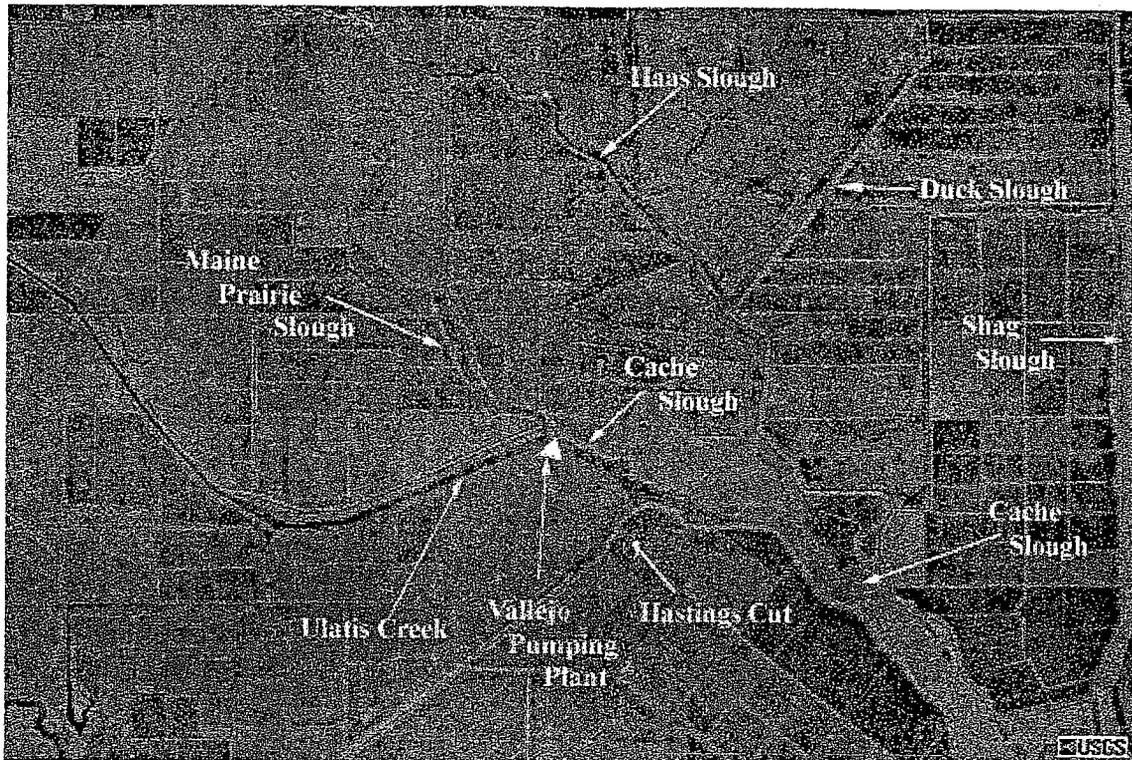


Figure 5. Cache Slough and Ulatis Creek within the Sacramento Valley floor.

Cache Slough, being a tributary to the Sacramento-San Joaquin Delta, is tidally influenced. Flows from Ulatis Creek and other creeks entering Cache Slough are affected by the tidal gradient from the Delta. The Cache Slough channel downstream of the confluence with Ulatis Creek, while confined by levees, has not been straightened and retains some natural structures, such as mid-channel islands and point bar features. While Cache Slough is lined with levees, there is considerably more riparian vegetation along its banks than along Ulatis or Alamo Creek channels. Riparian vegetation is present on numerous in-channel features in Cache Slough.

The City of Vallejo operated an emergency municipal diversion pump station in Cache Slough until 1990 (J. McCall, City of Vacaville, Water Quality Manager, pers. comm., 2007). The City of Vallejo's pump station (Vallejo Pump Station) is no longer in operating condition (Figure 6) nor is it permitted for use by the DHS. The Vallejo Pump Station is located in Cache Slough, about 400 feet downstream of where Ulatis Creek is tributary to Cache Slough (Figure 7 and Figure 8).

2.2 Watershed Climate

The Vacaville area of Solano County averages 25 inches of rainfall per year with most of the precipitation occurring October through April (NCDC 2007). Monthly average air temperatures range from 47°F in the winter to 77°F in the summer, with highs averaging above 90°F in the summer (NCDC 2007). Figure 9 summarizes the monthly average precipitation and air temperatures for the city of Vacaville.

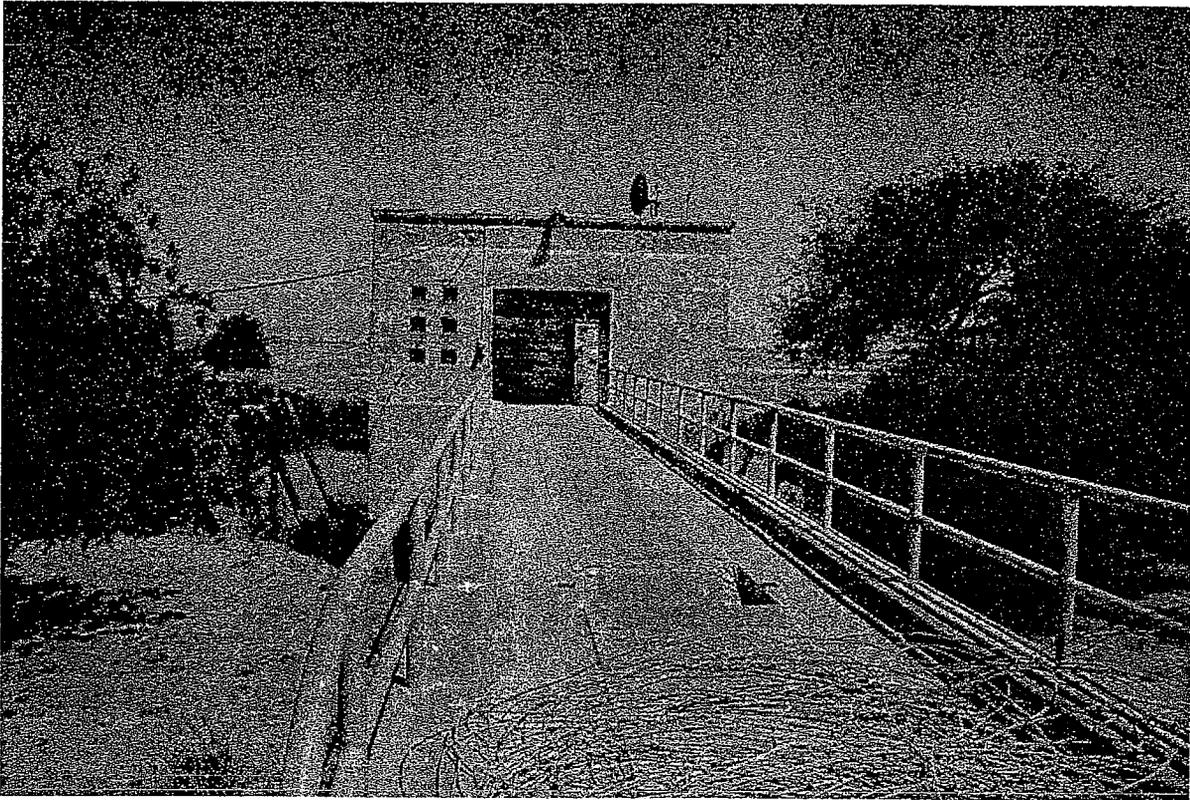


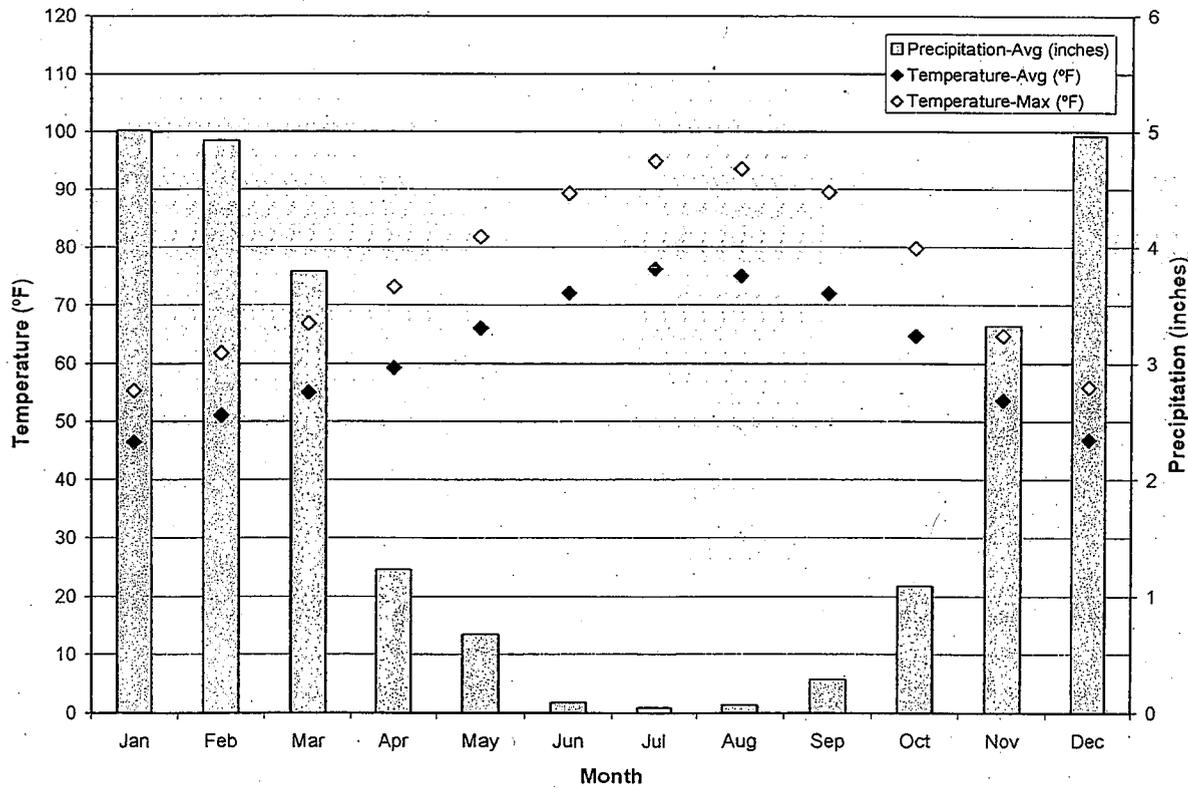
Figure 6. Defunct Vallejo Pump Station in Cache Slough.



Figure 7. Confluence of Ulatis Creek with Cache Slough.



Figure 8. Location of the City of Vallejo's defunct raw water supply pump station.



Source: NCDC 2007.

Figure 9. Maximum and average air temperature and average monthly precipitation for the City of Vacaville from 1971-2007.