

THE HYDROFATHOM WATER MINUTE BASIC LESSON PLAN

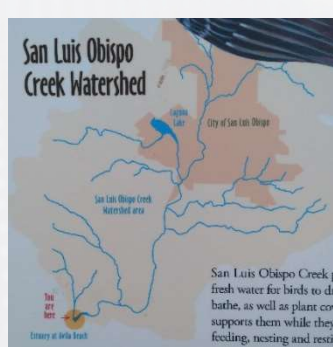




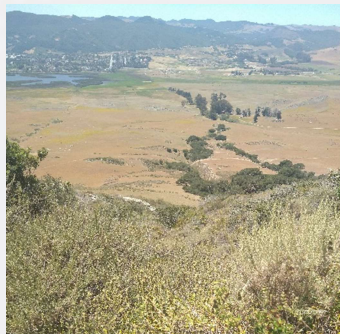
SECTION B – WATERSHEDS

The Water Within

SIZE/TOPOGRAPHY



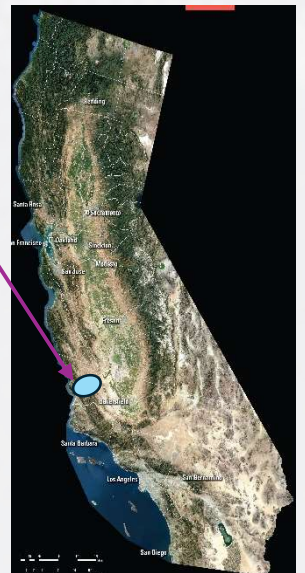
The San Luis Obispo watershed reaches the Pacific Ocean at Avila Beach



The San Luis Obispo Watershed

The graphic at left depicts the watershed of San Luis Obispo Creek, the hometown watershed of HydroFathom and the subject of our first Watershed Video. Our local watershed is of modest size, 84.8 square-miles, shown as the blue dot down on the California map below. Whenever rain falls in the blue dot (we get little snow), the rain slides along the land into the creek which then consolidates the flow into a water flow that reaches the Pacific Ocean at a place named Avila Beach. The watershed lies in the traditional home of the Chumash native-Americans. In the pre-European days, countless Chumash generations sustained themselves along this creek. Other species thrived alongside the Chumash including trout, waterfowl, sea otters, clams, bear, deer, elk and fox. These native species sustained themselves through hundreds of generations along this watershed. The entire city of San Luis Obispo lies in this watershed so any rain that falls in our hometown flows to the ocean a few miles away. The creek runs all year around, even though no rain falls for several months per year. Pre-Industrial age, life depended on year-round natural water supply. San Luis Obispo was such a place. In essence our humble watershed forms an ancient mini ecosystem.

As demonstrated above, a watershed funnels all the water in a certain area to a common point. Over a certain land area, the topography of the Earth determines the watershed for that area. As discussed earlier, water flows downhill. Along a path purely influenced by gravity. It may be hard to judge this descending route by observation, but water traces the path clearly. As previously reviewed, water cannot overcome hills. So, certain geographical areas form watersheds dictated by the topography of the surrounding land. All land that funnels water to the same discharge point lies in the same watershed. Watersheds range in size from a few acres up to 2.4 million square-miles. Often people refer to watersheds as drainage basins. On Earth, land-based life-forms evolved around watersheds. Surprisingly, the modern citizens of San Luis Obispo rely little on their natural water shed for water, instead choosing to import water through an extended water supply chain that leads to other watersheds. By examining the map at the right, one can easily spot the watersheds of the San Jaquin and the Sacramento Rivers, the giant oblong bowl in the middle of the state. This large watershed forms the delta east of San Francisco and also the famous bay where the Golden Gate bridge stands.



The overwhelming source of water in California is snow in the Sierra Nevada Mountains, shown to the right of the map.

**SIZE –INFLUNCES THE AMOUNT OF WATER THAT A WATER
SHED CAN TRAP – THE BIGGER THE BETTER**

**TOPOGRAPHY – DETERMINES WHERE WATER FLOWS WHEN
IT REACHES LAND**

List of the Largest River Drainage Basins in the World

RIVER	OUTLET	SIZE IN SQ. MILES
Amazon River	Atlantic Ocean	2,400,000
Congo River	Atlantic Ocean	1,440,501
Nile River	Mediterranean Sea	1,256,706
Mississippi-Missouri River	Gulf of Mexico	1,236,371
Ob River	Arctic Ocean	1,151,547
Yenisei River	Arctic Ocean	986,255
Lena River	Arctic Ocean	890,638
Niger River	Atlantic Ocean	873,263
Ganges–Brahmaputra	Bay of Bengal	772,000
Amur River	Pacific Ocean	745,160

Source Wikipedia



The Great Salt Lake in U.S.

As the list above demonstrates, most really large watersheds reach the ocean. However, in previous modules, we recounted that some watersheds lead to land entrappings referred to as endorheic basins. In Africa, the largest such basin, the Chad Basin, fills Lake Chad at the junction of Chad, Nigeria, Niger and Cameroon. Like some other endorheic lakes, Lake Chad contains freshwater. The lake provides an important source of freshwater fish for the area. Like many similar lakes, Lake Chad suffers shrinkage due to humans diverting the natural water flow that fills the lake. South America hosts another impressive endorheic lake, Lake Titicaca. Called the highest navigable lake in the world, standing at 12,000 ft. elevation, the lake contains mountain-fed pristine waters and has also been slowly sinking in recent decades, simultaneously suffering growing pollution problems.

The sign pictured below stands on Highway 101 in Central California, just north of San Luis Obispo. HydroFathom often uses this sign as a demarcation point between two watersheds. If water falls just in front of this Cuesta Pass sign, the water lands in the San Luis Obispo Creek watershed. However, just a little behind this sign, past the peak of the of the road, the watershed changes to the Salina River.



Consequently, water falling from this sky, separated by just a few feet, returns to the ocean by two different routes. In front of the green sign, water will slide into the creek, goes steeply downhill and returns to the ocean about 17 miles away. Under the right conditions, the creek route may be completed in one day. Just behind, by the yellow sign, water flows to the Salinas River which runs 140 miles north reaching the Pacific Ocean near Monterey. The longer river trip might take months to complete. The San Luis Obispo creek meets the ocean at Avila Beach and the Salinas River at Salinas River State Beach. These two points lie 148 miles apart. A short summary: rain falling by the green sign flows to the ocean differently than water falling on the yellow sign in back.