

Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.

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Untrained River Mouths**



Timber Training Wall at mouth of Aptos Creek

River or creeks don't always go where we would like. The residents of The Island in Rio Del Mar, just east of the mouth of Aptos Creek, have become acutely aware of this over the past two winters. The Santa Cruz Main Beach has also had its problems with the path of the San Lorenzo River as it crosses the beach, particularly when it decides to head west and creates a big pond along the back beach. Most beach visitors would rather put their towel on nice dry sand rather than in a pond.

As our central coast rivers and streams meander across the beach, heading towards the sea, the littoral drift of sand along the shoreline influences their direction of flow. From Half Moon Bay all the way to Moss Landing, waves from the

northwest generally drive the beach sand downcoast, south or east depending upon just where you are.

This littoral transport of sand acts like a huge bulldozer on the beach, moving about 300,000 cubic yard a year, or 30,000 dump truck loads, along the shoreline. Most of the time, this persistent flow of sand deflects or pushes the stream mouths downcoast. Waddell Creek, Scott Creek, Soquel Creek, and the Pajaro River are all normally deflected south or eastward. The Pajaro River often flows as far as a mile south behind a sand bar before it finally reaches the ocean.

A careful observer or long term beach visitor will notice that this isn't always the case, however. During the winter months, when these streams are flowing at high velocities, they usually have enough power to blast their way through any sand flow or sand bar and enter the ocean directly.

There are also periods when stream flow is very low and waves may approach from the south and drive sand back upcoast. Under these conditions the same streams may be deflected upcoast. There are times when Scott Creek, for example, hugs the north side of its pocket beach. The Pajaro Dunes development was built right at the north side of the Pajaro River mouth and a timber bulkhead was constructed to keep the river from eating into the development should it decide to flow north.

What about the other streams? The San Lorenzo River is trapped up against San Lorenzo Point so it really can't be deflected downcoast. Most of the time it flows quietly seaward along this narrow peninsula.

During dry summers, which we may be seeing more often, the littoral drift of sand often forms a dam across the trickle of water. The San Lorenzo backs up, and over time, will form a pond that may be over two miles long and stretch all the way to the Highway 1 Bridge. As the elevation of the pond slowly rises, the water will follow the lowest path, which may be west in front of the Boardwalk, leaving much of the city's most popular beach underwater.

The same process often takes place in the late summer and early fall in Rio Del Mar. Aptos Creek is reduced to a trickle, the littoral sand bulldozer forms a dam and the creek backs up, creating a pond extending for hundreds of feet along the back beach, usually in both directions.

The residents of The Island, southeast of the mouth of Aptos Creek have a more serious problem to contend with. The natural tendency here has always been for the mouth of the creek to head southeast along the beach, pushed along by the sand moving down coast.

This was recognized decades ago, before the first development took place along the beach. Originally, the area along Aptos Creek between the bluffs, now known as the Rio Del Mar flats, was a big lagoon. During the summer months, when sand dammed the creek mouth, the water backed up and flooded most of this area. When the creek ran through to the ocean, it flowed up against the eastern bluff, pushed that direction by sand flow coming downcoast from Santa Cruz and points north.

These natural conditions were all changed in 1926 when the Peninsula Properties Company channeled the creek with concrete walls and pushed it up against the opposite or west side of the lagoon. With the creek now constrained, fill from the eastern bluff and the cutting of Cliff Drive up the bluff, was used to bury the lagoon with about seven feet of fill. A subdivision, the Rio del Mar flats, was then laid out.

In 1928 the company built a concrete dam across the mouth of the creek between the two concrete retaining walls, creating what was advertised as the largest fresh water swimming pool in the world! Two years later, however, during the winter of 1930-31, a storm destroyed the dam and eliminated the world's largest and shortest-lived fresh water swimming pool.

At the same time the creek was channelized, a timber training wall was constructed on the east side of the creek as it crossed the beach in an effort to keep it from heading downcoast. The wall was a double row of pilings that extended about 150 feet onto the beach and is still in place today, although a little worn over the subsequent 86 years. There is a gap between the two rows of piling that may have been initially filled with rock, but rock also has been added along the south side in recent years.

The problem that downcoast beach homeowners have been dealing with is the desire of Aptos Creek to flow where it has always flowed, east or downcoast. It usually turns east as soon as it gets to the end of the bulkhead. In the winter months the creek has been eroding a channel along the beach directly in front of the homes on The Island. The 25 homes here are built on the beach but seaward of Beach Drive, so they are an island of sorts. Although their homes were built literally on

beach sand, owners are understandably concerned, for both their protective riprap being undermined, and ultimately their foundations being damaged.

I am appreciative of my good friend and local historian, Sandy Lydon, for providing the information on the history of the development of the Rio del Mar flats.

All of Gary Griggs columns are now posted on the Seymour Marine Discovery Center website at <http://www2.ucsc.edu/seymourcenter/>