

The History of Floods on the San Lorenzo River in the City of Santa Cruz

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From "The Big Flood-California 1955" by the California Disaster Office

CONTENTS

Introduction and Early History

Floods and Flood Control on the San Lorenzo River in the City of Santa Cruz

Table of Floods: Recorded Floods on the San Lorenzo River in the City of Santa Cruz

Degree of Damage and Public Reaction to Floods

Bibliography

Introduction and Early History

18 Floods on the San Lorenzo River in 10 Decades

The downtown area of the City of Santa Cruz has been located in the floodplain of the San Lorenzo River since the 1860's. This has been made apparent to Santa Cruzans many times between 1862 and 1982, when the river has flooded or threatened to flood parts of the town. There were more than 18 incidents described as "floods" between 1862 and 1958, though these recorded floods have varied in severity from minor inconveniences to major disasters for the city. A table of the dates and levels of these floods is included, as is an article on flood control, and the bibliography of the sources for these articles.

Santa Cruz on Dec. 23, 1955, as the "Christmas Flood" of 1955 recedes. The Riverside Avenue Bridge is in the upper right center, and Beach Hill is on the right. Note the sand island in the lower reach of the San Lorenzo River, removed during construction of the levees, 1958-59. Note also the trees lining the river channel, and the buildings on both banks where the levees are today.



From "The Big Flood-California 1955"

Earliest Recorded History of Floods: Mission Santa Cruz, 1791-1799

The San Lorenzo River was named by the Portola Expedition on Oct. 17, 1769, and was an important part of what made the future site of Santa Cruz attractive for the founding of a mission. The expedition of 1769 found the river to be two to three feet deep and "18 varas" or about 50 feet wide on that October day. The site was officially chosen for a mission in 1774, and the mission was established late in 1791. A temporary church and several other buildings were quickly built but, "...it was soon found that the new establishment was too near the river and had to be rebuilt on higher land." The cornerstone of a new church (the historically known mission chapel of 1793-1850's) was "laid on higher land" on Feb. 27, 1793. The exact site of that first, temporary church is unknown today, but to be threatened by the river, it must have been either close to the edge of Mission Hill, or below it. (An 1853 map of Santa Cruz shows the river channel almost striking the bluff, where North Pacific Ave. is today.)

But the Mission's troubles with the river did not end with relocation to higher ground in 1793. The new church and its outbuildings, such as the flour mill, were damaged by heavy rains in 1796, 1797 and 1799. But more importantly for this history, the lower lands between Mission Hill and Beach Hill, used by the mission for growing crops, were flooded by the river in early 1798. From the combination of rain and flood damage suffered by the mission in its first decade, Santa Cruz became known as a "hard luck" mission. ¹

Possible floods, 1799-1852

The only record (that I have yet found) of floods on the San Lorenzo River from 1799 to 1862 is an article that appeared in the *Pacific Sentinel* on Dec. 23, 1871. This article states that,

A flood occurred in the year 1822, when the water covered all the lowlands and rose to a greater height than ever before. Had the country been settled then as now the disaster would have been very great. The next memorable flood occurred in 1832, the water not reaching the extreme heights of ten years before, but still covering the low lands to a great extent. In 1842, there occurred another great flood, not unlike that of '32. The pioneer settlers of California remember distinctly the flood of 1852, and it is not necessary to dwell upon the particulars. The last great flood occurred in the winter of 1862...The winter of 1872 is supposed to complete the circle again, premising that a flood will occur every ten years.

Ironically, it was later on the very day that this article appeared, Dec. 23, 1871, that another major flood struck Santa Cruz. Generally, every year that ends in a "2" has not brought a flood, but the early groping for some sensible pattern of the recurrence of such natural events is understandable, and can be seen as a progenitor of the later system of classifying floods as being 10-year, 50-year or 100-year events. The idea that flooding occurs on a completely predictable basis was not proven out over the next 120 years, and in the absence of any verifying sources, the exact dates and severity of floods between the 1790's and the 1860's must remain uncertain. But it is likely that noticeable floods occurred in Santa Cruz, before heavy development of the floodplain, and the 1871 article provides some evidence of this. (The 1852 and 1862 floods mentioned are found in other newspaper articles from 1862.)

Development of Santa Cruz onto the Floodplain, and the Flood of 1862

Between 1791 and the 1840's, the Mission (and later Town of Santa Cruz) and the civil settlement at the Villa de Branciforte were located outside of the floodplain, on the tops of the bluffs to the west and east of the river. As the population of the area grew in the late Mexican and early American periods, buildings other than mills or farm structures began to be built in the space available between the bluffs. A visitor commented in 1841-42, "In the space which separates the Mission from the Villa de Branciforte are being built new houses, which in due time will no doubt make an important city."² Elihu Anthony built the first brick structure below Mission Hill in 1849, hugging the base of the hill, right where North Pacific Ave. runs next to the town clock today.³

Gradually, more houses were built in the lower lands, and the business district shifted down onto the "flats" as well. The intersection of Water, Willow (Pacific) and Main (Front) Streets became the "lower plaza," and the Mission plaza the "upper." Symbolizing the shift of the town to its present center was the decision in 1866 to locate the new county courthouse on Cooper St. rather than on Mission Hill. (See the article, "History of the Santa Cruz Courthouse" by

Margaret Souza.) As the center of town moved down onto the flats, it also moved entirely onto the floodplain of the San Lorenzo River.

The first serious flood to hit the growing town was in the winter of 1861-62, and it was a shock to residents, as bridges and mills upstream were destroyed, buildings built on the banks of the river within the city were washed out to sea (one barn allegedly went to sea in an upright position), and water ran against the base of Mission Hill and eroded 30 feet of it away.⁴ This flood was different from later floods in that more damage resulted from erosion, both at the north end of town and down at the "Cathcart Orchard" than from actual inundation. The water level was described later as being comparable with 1871, or about 16 feet, and thus the flooding of what we now call downtown was not that widespread. (Of course, neither was the downtown at that time, which was concentrated in a few blocks near the lower plaza.)

The river did not follow its present course to the north of town, and there was a curve in the channel that directed high water at the bank near the town's north edge, near the base of Mission Hill. After the 1862 flood, it was claimed that the river was "several hundred feet nearer to the town" than it had been before. While damage from inundation and moving water laden with debris were to characterize later floods, the flood of 1862 raised fears about the loss of land underneath the buildings, land which was valuable for expansion of the town.

Changes in the River's Course, 1850's to Present

The river's approximate course north of downtown in the 1850's and 1860's was much nearer to the base of Mission Hill. Most of the town of Santa Cruz from the early 1850's was concentrated near the Lower Plaza, very near to the bulkhead built after 1862. Information on the course of the river in the 1850's is taken from an 1853 map of Santa Cruz by A.D. Bache. River Street follows the old course of the channel closely where it rounds the north end of Mission Hill.



The response to this flood by townspeople was the earliest form of flood control: they built a bulkhead to stabilize the river bank near the plaza (at the site of today's Bulkhead St.), they began work to change the river channel so that it would run past Mission Hill and not straight at

it, and property owners on the lower part of Willow (Pacific) began to fill their lots, in order to raise the grade and prevent the San Lorenzo from crossing through their land on the way to Neary's Lagoon. (The land on lower Pacific, and in other parts of downtown has been raised four feet or more from its natural grade by such filling.) One last feature of the flood of 1862 was that there were no bridges across the river yet, thus no bridges to be damaged or to trap debris and raise the water level behind them.

Repeated Flooding of Santa Cruz: 1871-1958

Subsequent floods, beginning in 1871, found bridges in the river channel, and damaged them or built logjams behind them. There were also more buildings near the river that could be flooded, although these were not right on the river's banks. Such things changed the perceptions of floods after 1862. But generally, all subsequent floods sent river water into the same areas. The water usually left the riverbanks in one of two places, either at the foot of Pacific Ave. on the west bank (at today's Laurel/Broadway St. bridge) or at the foot of Broadway on the east bank. Lower Pacific was frequently flooded (1862, 1878, 1881, 1890, 1895, 1907, 1911, 1940, 1941, 1955) with a few inches to a few feet of water. The Broadway/Barson Tract/Riverside/May St. area on the east bank flooded frequently as well, with one to three feet of water (1871, 1907, 1938, 1940, 1941, 1955). The area near Paradise Park (and the Powder Mill) would be cut off and flooded (1862, 1881, 1938, 1940, 1941, 1955) and the east bank near Branciforte Creek and now-gone Garfield St. (the site of San Lorenzo Park) would flood next (1878, 1889, 1907, 1911, 1940, 1941, 1955, 1982).

High water levels would often flood the basements of buildings on Pacific Ave. (1871, 1878, 1880, 1890, 1940, 1955) and if the water was especially high, it would run up Soquel Ave., and flow down Pacific Ave. from a few inches to a few feet deep (1878, 1890, 1955). This water could reach several blocks west of Pacific Ave., and combined with rain water unable to drain to the river, would reach the Chestnut/Center/Church St. area (1889, 1890, 1940, 1941, 1955).

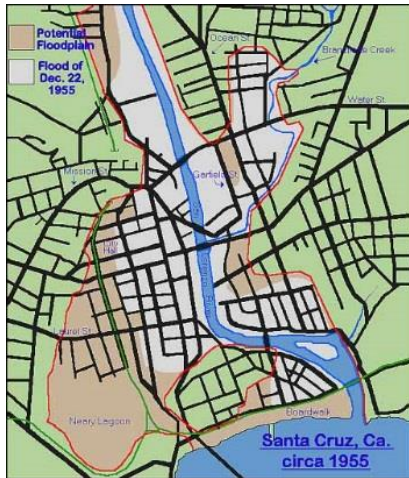
The highest floodwaters also hit hard at the North Pacific or Bulkhead area, as anywhere from a foot of water (1871, 1880, 1890, 1907) to a large portion of the river's flow (1955) would take this route, in the late 19th century flowing "over the bulkhead." The upper River St. area near the tannery would also be flooded on occasion (1862, 1907, 1940, 1955) as would the low-lying Josephine St. and El Rio Mobile Home Park (1940, 1941, 1955, 1958).

Bridges across the river would be frequently damaged by floods (1871, 1881, 1890, 1931, 1938, 1940, 1941, 1955, 1982). Wooden bridges were more vulnerable than concrete ones, as damage to bridges was universal in the 19th century, and often limited to the surviving wooden footbridges at Cooper St. and Ocean St. in the early 20th century. But concrete bridges could suffer as well. The footings of the unfinished Highway One Bridge and the Riverside Avenue Bridge were damaged in 1955, and the older half of the Soquel Avenue Bridge was undermined, collapsing two lanes in 1982.

One area which flooded repeatedly, and from which residents were often evacuated by boat, no longer exists. The newspapers of 1878, 1880, 1889 and 1890 refer to the "island" in the river, which had houses on it. This was not the sand island in the lower reaches of the river, but was further upstream, and was also referred to as the "Midway Plaisance" or just the Midway. This island was "a raised patch of ground in the marshy lowlands of the San Lorenzo River...To reach the island pedestrians had to cross by a foot bridge from the end of Cooper St."(5) This would today be approximately the location of the parking lot of Long's Drugs, the Galleria, or the UA Theaters on River St., and the island feature (like the sand island further down the river) disappeared with the redevelopment project that followed the 1955 flood.

The "Christmas Flood" of 1955

The costliest, deadliest, and most well-known flood in the history of Santa Cruz was on Dec. 22, 1955. Much is written about this event in other places, and it is remembered well by many local people. The river moved well out of its banks on both sides, and flowed down Pacific Ave. at a depth of three to four feet. Water reached the steps of city hall on Center St., and was over eight feet deep in places on the east side of Front St. At the time, this was called a 100-year flood, but is generally called a 40-year flood today. (The same can be said for the storm of 1982.) But the water level was unquestionably higher in 1955 than in any other historic flood. Nine people were killed in Santa Cruz, two of these in their house on Garfield St. Water flow had reached the maximum possible at the Riverside Avenue Bridge, and the river had begun to back up behind it as the flood peaked. Had this peak occurred at high tide, the level of water could have been higher, and the damage to Santa Cruz would have been even worse.



Map (c) 1997 Daniel McMahon. Information on street locations, the extent of the floodplain and the 1955 flood are from maps created by the city's Department of Engineering, published in *San Lorenzo River Flood, December 22, 1955*, by the Flood Control Committee of the Santa Cruz Chamber of Commerce, 1956.

Floodplain and Area Flooded on December 23, 1955

The San Lorenzo River Since 1958

Since April 1958, the river has only come close to topping the levees in the city a single time, on January 4, 1982. There was some flooding along Branciforte Creek that day, and the benchland below the County Government Center filled with water. When one half of the Soquel Ave. bridge was undermined and collapsed, it took a large part of the telephone lines to the eastside of Santa Cruz with it. The water level measured at the Water Street Bridge in 1982 was 18 feet above sea level, which is second only to 1955's 20.8 feet. The measurement of flow at the Big Trees gauge in Felton was very close to that of 1955, and clearly greater than the large flood of 1940. And yet the levees held, if only by a thin margin, and there was not a recurrence of the widespread flooding that the City of Santa Cruz had seen so many times between 1862 and 1958.

Photograph taken by Daniel McMahon on Jan. 5, 1982. It is taken from the top of the levee on the west bank of the river, downstream from the Soquel Avenue Bridge. The water in the river had already receded from the day before.



Soquel Avenue Bridge, January 5, 1982

Citations

1. *Story of the Mission Santa Cruz*, pp.68-78, pp.188-195. The 1853 map can be seen in *Santa Cruz County Place Names* between pages 79 and 80.
2. *Story of the Mission Santa Cruz*, De Mofras, on p.359.
3. This structure was replaced by the "Anthony Block" which was moved to extend Pacific Avenue in the late 1920's. *SC Sentinel*, 1927 and *Parade of the Past*, 24.
4. *Pacific Sentinel*, Jan. 17, 1862, p.2, c.1. "The bluff above Mr. E. Anthony's which, from its formation kept the current of the stream from washing the bank next to the town, has been gradually falling in until now about thirty feet is gone." This was a major storm for all of California, and flooded the Capitol building in Sacramento.
5. *The Sidewalk Companion to Santa Cruz Architecture* p. 195.

Floods and Flood Control on the San Lorenzo River in the City of Santa Cruz

Characteristics of Floods on the San Lorenzo River

The San Lorenzo River drains a watershed of approximately 138 square miles, and drops from an elevation of 2900 ft. to sea level in its 22 mile length. (The first 2000 ft. drop occurs in the first three miles.) To quote from an Army Corps of Engineers report of 1982, "Historically, the San Lorenzo River has frequently flooded and caused substantial damages. Peak flows occur when a short-duration, intense storm follows a longer period of heavy rainfall which saturates the soil." These peak flows do not last very long, generally no longer than 18 to 36 hours. Damage from floods is caused as much by the force of moving water and debris as by inundation, as is seen clearly in the photograph below of the 1955 flood on Pacific Ave.¹

This photograph shows the flood tide running down Pacific Ave. on Dec. 23, 1955. Photo taken by Ed Webber. Provided courtesy of Daniel McMahon. (Available at Covello and Covello Photography.)



Floodwater on Pacific Avenue near Soquel Avenue, December 23, 1955

Most of downtown Santa Cruz, and many neighborhoods on the east side of the river lay in the floodplain, generally below the 20 ft. elevation point. These areas are largely surrounded by bluffs, which rise to the top of an upraised marine terrace that is from 60 to 100 ft. in elevation, and which is thought to be about 100,000 years old. Beach Hill is in the center of the floodplain, at the terminus of the river, and is approx. 55 ft. in elevation at its highest. The river only runs against the bluffs in two places today, at the back of Beach Hill (under Laurel St. Extension) and at the east side of the river mouth. There is some evidence that the river has taken different routes across the floodplain in geological time than the route it has been known to (generally) follow since 1769. To quote Margaret Koch,

When the Santa Cruz Civic Auditorium was under construction in 1941, test borings revealed that the San Lorenzo River originally had run around the foot of Mission Hill instead of its present course, and Neary's Lagoon is probably a remnant of the river's ancient bed.²

Flood Control: The 19th Century through the 1950's

Beginning with the bulkhead erected north of the downtown in the 1860's, Santa Cruzans have sought some measure of protection from high river levels, especially when several floods

occurred within a few years (1889 and 1890, 1938, 1940 and 1941). As far back as 1871, editorials in one local paper were calling for a bulkhead that would run the length of the river, and that could limit erosion and prevent the river from overflowing its banks. Funding for a flood control project was provided by the U.S. Congress in the mid 1950's, and while this project was being planned, the flood of December 1955 occurred. The project was scaled up as a result, and construction began in 1958. The San Lorenzo River's levees were designed by the U.S. Army Corps of Engineers, and constructed by the Granite Construction Company.

One more flood occurred before completion of the levees, in April 1958, but many of the buildings that would have been damaged had been torn down to make space for the levees. A redevelopment area was also created, to reclaim the "wrecked areas" from 1955, and this would ultimately include the elimination of several streets (such as Garfield and Eagle Streets), the rerouting of other streets, and the building of San Lorenzo Park, the shopping center on Front St. (Longs, etc.), and the banks and parking structures near the Veteran's Memorial building. A new county government center was added to the area set aside for San Lorenzo Park as well. But the major part of the project was the construction of the levees. All homes and trees adjacent to the river in the city were removed, including Santa Cruz's last Chinatown, adjacent to Front St. A channel from 150 feet to 200 feet wide, and theoretically 25 feet deep was constructed, and this channel was designed to contain a "100 year" flood.



Flood of April, 1958 Reaches Front Street – Photo by Ed Webber, Provided Courtesy of Daniel McMahon

The floodwaters of April 1958 reached Front St., behind the St. George Hotel. Many of the buildings that would have been flooded had been removed in preparation for the construction of levees, as is the case with the flooded foundations of buildings on the now-gone Eagle St., behind the Post Office. The recent experience of the flood of 1955 had also left citizens, merchants and public officials well prepared for dealing with river flooding in 1958.

Problems with the Flood Control Project: 1970's and 1980's

By the 1970's, it became apparent that a tremendous amount of silt was accumulating in the channel, and the cost of removing this silt was higher than the city of Santa Cruz felt it could afford, especially as a huge quantity would need to be removed just to reach a level where maintenance of the river's capacity could take place. Dire predictions were made about the capacity of the silt-filled channel, but the storm of 1982 brought a welcome surprise. Much of the silt and sediment in the channel was moved out of the river with the floodwaters, and the levees were able to contain an estimated 33,000 c.f.s of water in the city. (The figure for 1955, the highest known flood, was 39,000 c.f.s.) Only this "scour effect" saved the levees from failing and inundating the city, but the level of protection offered was still not equivalent to the 100-

year level, which is mandated for both continued development within the floodplain, and for insurance coverage.

In addition, the 1958-59 flood control levees had transformed the river from a tree-lined and very scenic part of town, to a sterile drainage ditch. The siltation of the channel and the lack of deep pools of water, coupled with low summer river flows and a lack of shade on the water (once provided by trees on the banks) had decimated fish populations in the river. Fishing in the San Lorenzo had been incredibly popular until the 1960's, and trout and salmon were routinely caught in the city and in the San Lorenzo Valley. In contrast, the river contained by the high levees was barren of most wildlife, the fish populations declined, and the levees separated the two sides of town visually as well.

This aerial view shows the sterility of the river channel within the city, before many bushes or grasses had returned to the channel. The new County Government Center is under construction, as is the Laurel/Broadway Street Bridge.



San Lorenzo River Flood Control Project, circa 1967 - Photo by Ed Webber, Provided Courtesy of Daniel McMahon

Present Flood Control Plans and the Future of the River

New studies by the Army Corps of Engineers undertaken in the 1980's agreed with local earth scientists that the flood protection was inadequate, and that constant dredging of the riverbed was an expensive and impractical solution. But in light of the high degree of scour of sediment shown in the 1982 flood, the situation was not as bad as had been feared in the late 1970's.

The Corps found that the major impediment to water flow in the river was certain bridges, specifically the upper part of the Water Street Bridge, and the Riverside Avenue Bridge. (Both of these have since been replaced, the Water Street Bridge only being finished the week that this article is being written.) And additional flood protection can be gained by constructing short walls atop the levees, from 1 to 3 feet high, and these would still allow for some vegetation to grow within the river channel, which will benefit wildlife, fish populations, and the river's scenic and recreational attributes.

In 1987, the City of Santa Cruz issued the *San Lorenzo River Design Concept Plan*, which contained the elements previously described to enhance the flood protection and environmental quality of the river, and to enhance the visual and recreational value of the river in town. Work has begun with the rebuilding of the Water St. and Riverside Ave. bridges, and hopefully it will continue in the next few years to achieve the twin goals of ensuring adequate flood protection for a 100-year event, and restoring some of the aesthetic qualities the river possessed before 1959. The scenic and recreational parts of the plan involve the construction of amphitheaters, the improvement of access from town, walkways along the river, and the

encouragement of recreation-oriented businesses in the proximity of the river. Plans also call for the planting of trees both atop and within the levees, in a design that will enhance the beauty of the river and provide the shade necessary for vigorous fish life, while not causing problems at times of peak water flow.

If better flood protection and simultaneous restoration of the river's ecology and recreational potential seem like difficult or unobtainable goals, it is good to remember that citizens of Santa Cruz have been calling for and working toward protection from floods since the 1860's. The historic record of floods in Santa Cruz before 1959 contrasts markedly with the lack of floods since. Only the storm of Jan. 4, 1982 came close (very close) to topping the levees, and the quantity of water in the river was comparable to the quantity of water that caused the "Christmas Flood" of December, 1955. (See the Table of Floods.)

A reading of the history of a town developing in a floodplain, and struggling to cope with the floods of 120 years suggests that there is a relationship between the river and the city, and that this has always been a changing relationship. Some balance can hopefully be found between the protection of the City of Santa Cruz from the San Lorenzo River, and the protection of the natural aspects of the river from the city.

Citations

1. Information in this paragraph is from *The San Lorenzo River Watershed Management Plan*, p. 93, *Report on the Floods of 4-6 January 1982 in the San Francisco and Monterey Bay Areas*, p. 10, and *Flood Control Failure: San Lorenzo River, California*, p. 407.
2. This intriguing report is from *Parade of the Past*, p. 204. More information on the geology of the downtown basin would be welcome. A test boring in the early 1990's at the Buick/Toyota/Kinko's building on Laurel Street at Pacific Avenue showed sandy soil, deposited by the river, to a depth of over 50 feet, when the drilling stopped. It would be interesting to know the depth and extent of river-deposited soil, and what other paths the river has taken through the downtown basin in the last 100,000 years.

Table of Floods:
Recorded floods on the San Lorenzo River in the City Santa Cruz

Year	Date	Extent
1852	unknown	Said to be 3 feet lower than 1862 flood.
1862	Jan. 11	est. 16 ft. above sea level at Water St. Said to be equal to the height of the 1871 flood, though more destructive due to erosion.
1871	Dec. 23	16.03 ft. at the Water St. bridge.
1878	Feb. 14	14.61 ft.
1880	Apr. 21	15.11 ft.
1881	Jan. 29	15.41 ft.
1889	Dec. 8	14.31 ft.
1890	Jan. 25	16.35 ft.
1895	Jan. 4	16.00 ft. (est.)
1907	Mar. 27	15.74 ft.
1911	Jan. 14	14.69 ft. at Water St.
1931	Dec. 28	Unknown. Sand island in river submerged.
1938	Jan. 31	Unknown. Called "Worst Flood in 15 Years."
1940	Feb. 27	17.41 ft. at Water St., 24,000 c.f.s. at Felton.
1941	Feb. 9	15.30 ft. at Water St., 15,500 c.f.s. at Felton
1945	Feb. 1	15.70 ft. at Water St.
1955	Dec. 23	20.8 ft. at Water St., initially reported as 28,800 c.f.s. at Felton, later reported as 30,400 c.f.s. Estimated at 39,000 c.f.s. below Branciforte Creek in Santa Cruz, where 3/4 of 100-year flood plain (410 acres) inundated.
1958	Apr. 2	"...past the 14 foot flood stage" at Water St., 17,200 c.f.s. Felton, 18,500 c.f.s. Santa Cruz.
1982	Jan. 4	18.0 ft. at Water St., 29,700 c.f.s at Felton, 33,000 c.f.s. in Santa Cruz, below Branciforte Creek.

Notes

The primary sources for this table are contemporary newspaper accounts and figures in city, county, state and federal literature on the river, floods, and flood control.

It is difficult to compare flood levels and volumes from year to year; measurements have not always been taken in the same places, and are often reported incorrectly after several years. Traditionally, the elevation figures for floods are taken at the Water Street Bridge, and expressed in feet above sea level. Measurements of the volume of water in the river (in cubic feet per second, or c.f.s.) have been taken near Big Trees in Felton since 1937. Some flow measurements have been taken in the city in the last 40 years, but generally the flow figures for Santa Cruz are estimates.

Degree of Damage and Public Reaction to Floods

In addition to quantitative measurements, (see Table of Floods) the public reaction as found in newspaper stories is another good way to compare the levels and severity of different floods. While this is a very subjective body of information, some of the details gleaned from contemporary accounts are quite interesting, and give a more immediate perspective than city, county, state and federal literature on floods and flood control.

Jan. 11, 1862: Severe. The river ate lots of land, and destroyed many buildings. (There were many buildings closer to the river in 1862 than would later be the case.) The "bulkhead" at today's Bulkhead Street was built after this flood, to prevent water flowing down Main and Willow Streets (Front St. and Pacific Ave.). There were attempts to alter the course of the river as well, which at that time ran very close to the bluff below the mission, where North Pacific Ave. is today. 1862 became the legendary flood for late 19th and early 20th century Santa Cruz oldtimers, yet the correct date is often listed incorrectly in the newspapers after 1871.

Dec. 23, 1871: Fairly serious. "Considerable loss and inconvenience." First mention of bridge damage, as bridges had spanned the San Lorenzo since the last flood in 1862. Water levels compared to 1862, but damage estimated at half as much.

Feb. 14, 1878: Not very serious. Little discussion in paper.

Apr. 21, 1880: Severe rains, but flood taken very lightly. "Farmers were happy as ducks, few being of the opinion that this storm had caused them any serious damage." (SC Sentinel, 4/24/80, p.3, c.6)

Jan. 29, 1881: Moderate. "...the damages sustained in this city last week, all from the detritus and 'slickens'..." were mostly to the bridges, of which none failed. (SC Sentinel, 2/ /81, p3, c.1)

Feb. 08, 1889: Moderate. People were on the bridges, watching the river "...mindless of the danger." (SC Sentinel, 12/10/89, p. 3, c. 4)

Jan. 25, 1890: Severe flood. River was "Highest Yet Known." Water was deep but "Damage Resulting Will Not Be Very Great." The rail bridge at the mouth of the river is believed to have made this flood much worse, by backing up water behind a debris dam collected against the pilings. The failure of the rail bridge was immediately followed by a drop in the flood's level. (The practice of using pilings to span the river was stopped after this flood.) This flood was well remembered for 40 to 50 years. (SC Sentinel, 1/25/90, p.1, c.7)

Jan. 4, 1895: Extensive flooding of downtown areas, but no sense of panic. "Cellars, Yards and Lots Covered With Water -- Railroad Bridge Dislodged -- Pacific Av. Looked Like a Lake" Water went over the bulkhead in the North Pacific area, filled the "burned out district" on Front St., and crossed Pacific Ave. at Laurel. The article on this flood (SC Sentinel, Jan. 5, 1895, p.1, c.2) is very detailed about the progress of the flood water, and very interesting.

Mar. 27, 1907: Fairly serious. "Highest Water in This City in Years Causes Considerable Alarm Along River." (SC Sentinel, 3/24/07, p.1, c.1) Flood control a topic for several years in editorials. (eg.: SC Sentinel, Jan. 6, 1909, p.2)

Jan. 14, 1911: Very light reaction. Call for "River Bulkhead" on front page, but largest headline was "Chickens Excited Along the San Lorenzo." (Article discusses flood's effect on poultry. SC Sentinel, 1/15/11, p.1., c.7, p.3, c.3)

Dec. 28, 1931: Moderate. Worst flooding seems to have been in lower area of river, along East Cliff Drive. "Island on the River Was Out Of Sight Sunday" and "the Chutes" at the Boardwalk were surrounded by water. This flood may be the one referred to in the newspapers in 1940 as the 1927 flood, as the 1931 description is consistent with the photographs of "1927" printed in 1940. This flood is notable as being the first one where a photograph was published in the newspaper at the time it occurred.

Jan. 31, 1938: Moderate reaction. Headlines called this the "Highest Floods in 15 Years" and there was some flooding of low-lying neighborhoods, primarily in the Barson Tract, near East Cliff Drive and Ocean St. Homes in that area were flooded as "River Rampages Through City Streets." But most of the damage was to the two wooden footbridges, one at Cooper St., and the other at Ocean St. Total damage to bridges was \$1000, and there was some damage to the end of the Boardwalk as well. Numerous photographs of flooded areas were published in the newspaper. (SC Sentinel, 2/1/38, p.1)

Feb. 27, 1940: Very severe. Banner headline was "San Lorenzo On Worst Rampage of Century." "100 routed from homes by torrent." (SC Sentinel, 2/28/40, p.1)

Feb. 9, 1941: Moderate flood, but exasperated reaction as "Third Flood In Four Years Hits City Property." Calls for flood control. (SC Sentinel, 2/11/41, p. 1)

Feb. 1, 1945: Light reaction. "River's Flood Peak Believed Past Despite Continued Rain." The river "...threatened to inundate parts of Santa Cruz..." but only limited flooding occurred. (SC Sentinel, 2/2/45, p.1)

Dec. 22, 1955: Beyond severe. Papers indicated near panic on Friday morning, as "City Braces for New Flood." 9 lives were lost, and many people were missing right after the flood. There was talk of rehabilitation of "Wrecked Area." This was the highest historic flood, filling 410 acres of lowlands outside of the river channel. The 1955 flood is deeply etched in the community memory, and the water marks were evident on many older buildings downtown in the late 1960's. The flood control project was being planned at this time, and was enlarged as a result of this flood. In this storm, 90 percent of the damage in the county occurred within the city, and ran into the millions of dollars. (SC Sentinel, 12/23/55, p.1 and following days.)

Apr. 2, 1958: Moderate. Fairly high water, but the damage was limited, as many buildings that would have been flooded had been torn down as the flood control project progressed. Water flooded lower the lower Ocean St. area, and flowed along Front St., reaching the back of businesses on Pacific Ave. The recent experience of 1955 had led merchants along Front and

Pacific to empty their basements of merchandise, and the police, city government and rescue workers were well equipped and out in force.

Jan. 4, 1982: Severe storm, as "Killer Flood Ravages Area." **But no major flooding occurred in the City of Santa Cruz.** All the people killed in S.C. County were in areas outside the city. Water rose to within two feet of the top of the levees at some places, and there was flooding of homes along Branciforte Creek, and of the benchland below the County Building. The older half (1923) of the Soquel Ave. bridge collapsed due to scouring and undermining of the footings. In contrast to 1955, 90 percent of the 1982 storm damage in S.C. County was outside of the city. (SC Sentinel, 1/5/82, p.1)

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