

Preliminary Historical Investigation of East Concrete and Crofoot Addition Flood Levels

11/17/2007

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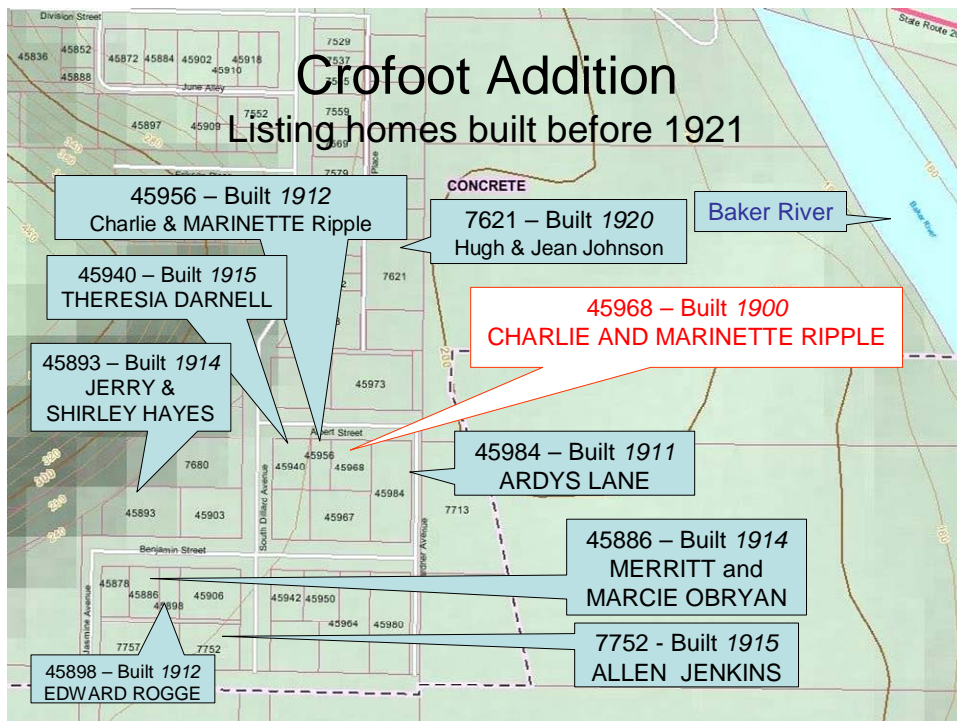
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Bart Freedman sent me the recent e-mail correspondence on old houses in Concrete. I must say I'm impressed with the way you (and Josef presumably) put this together. This is potentially useful in a number of respects, but being of a somewhat skeptical nature, I have a couple of questions:

Answers will be in blue text:

I can't tell anything from the photo showing river silt from 2003. Is there a distinct high water line from that event? **Yes.** Under the homes on Albert Street you can find distinct water level marks from the 2003 event.

Other considerations aside, this could be helpful in calibrating a hydraulic model upstream from The Dalles. Do you have any information on any other building in that same vicinity flooded in 2003? On the Lewis River after the 1996 flood, we found good flood marks in things like basement closets that people may not bother repainting. **Yes.**



We interviewed the following residents on Saturday November 17, 2007:

First, I have not been able to get in touch with Mr. or Mrs. Ripple who it turns out not only owns the most important structure in Crofoot (45968 Albert St., built in 1900), but also owns the house next door (45956). That house is currently being rented by a Mr. Tom Shope. Mr. Shope does not really seem to know much about the history of Crofoot flooding. However, he did state that

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he had seen a HUD document that listed the house as being built in 1940. We should follow-up with the Skagit County Tax Assessor (where all the dates of construction were obtained from) as to the accuracy of their records. My experience with appraisals/loan documents is that if substantial improvements are/have been made that impact the value of the house substantially they use the most recent value as the day the house was constructed. For whatever reason the Assessor still list the house as being built in 1912. Mr. Shope was very cooperative and agreed to be visited by the “scientific crew” at a later date. His wife is usually home all the time during the day.



45968 Albert Street
Skagit County Assessor -- Built in 1912



Crawl space under the house. Notice river silt on ledge to the left.

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One of the main problems with using this house might be that at some point in time the exhaust duct pipe for the clothes dryer had come undone (or was not hooked up at all) as you can find lint dust on the upper rafters and the pipe installation appeared to be brand new. Further investigation as to the duct pipe installation is warranted upon a future visit with the Shope's. At this visit, no apparent watermarks were observed on the upper rafters. Mr. Shope did say that the flood waters in 2003 did make it up to the base of the stop sign post at the end of the road, intersection South Dillard Avenue and Albert Street.



Floodwaters in 2003 made it to base of Stop Sign post.



45893 Benjamin Street – Assessor Records show construction 1912.

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Occupants are renters who recently moved in and know nothing about local flood history.

Also interviewed occupants of 45886 Benjamin Street – Assessor Records 1914 (failed to get picture of house). Occupants were renters who used to live in Hamilton and moved to this location after 2003 flood event. Know nothing about where floodwaters were in 2003 only that it was not inside this house.



45898 Benjamin Street – Assessor Records Built 1912

Mrs. Rogge stated that in 2003 she had 4 feet of water in her backyard and under her house. We did not inspect the area under her house or the backyard as she was leaving for an appointment and did not have time to talk. However, she is more than willing to let us come back later and conduct whatever kind of inspection we need to do. To the best of her “limited knowledge,” the house has never had water in it before. There has been no evidence of any river silt in her walls or floors. In my opinion, this would be a great house to use as a test house because we have a very cooperative homeowner, the floodwaters in 2003 were 4 feet deep AND the fact that the house was built in 1912 just 3 years after the 1909 flood event. Why would anyone build a house just 4.5 to 5 feet off the ground when according to Stewart this area would have had at least 10 more feet of water on it in 1909, just three years before this house was built? (2003 event 166,000 cfs vs 1909 event 260,000 cfs).

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7752 S. Dillard Avenue – Tax Assessor Records Built 1915

Allen Jenkins, owner, stated that the floodwaters in 2003 came up to the step he is standing on above. He was also here in the 1995-flood event, which according to his words, “*was not nearly as serious as the 2003 event.*” He recently remodeled the basement and did not see any flood marks or silt above the 2003 event. Would have interviewed him longer but he was on his way to visit his son in Harborview who had been involved in a serious work related accident.

In my experience, when people talk about depths of water in houses they often don't worry about basements being full of water. They usually refer to the main floor level. Your photo of the silt mark is annotated as being "beneath deck" and in your e-mail you note that this is clearly more than the 14 inches of depth mentioned in 1921 in the Concrete Herald. This may be a dumb question, but do we know whether the Concrete Herald is talking about water in people's basements or water in their living space?

Simple answer – No. Common sense answer – Yes. Malcolm, my personal experience (both being in floods and investigating flood depths) has been that if the water does not get in the living area they just talk about how deep the water was. When people would ask me how bad the floodwaters were on my old farm in the Nookachamps in 1975, I would tell them if was 4-5 feet deep. The verbiage used in the discussions above, none of which had waters inside the living areas, all talk about how deep the water was under the house. However, given the verbiage used by Dwelley to the effect that **"there was little or very little damage"** I would think that the water was only in the below first floor grade of the houses. Anytime there is water inside the living quarters that is significant damage and I am sure he would have wrote about it if not for the damage but for the extraordinary depth the flood waters would have been (at least 4 to 5 feet deeper then 2003). **((2003 flood event 166,000 cfs vs. 1921 flood event 240,000 cfs))**. Again I reemphasize the verbiage above, at least 8 of the homes were built within a relatively short period of time after the 1909 flood event **(Stewart – 260,000 cfs)**. I say again, why would anyone build those kind of houses, just a few feet off the ground, when the locals, if Stewart's

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figures are anywhere near to being correct, would have had knowledge that the “new homes” would have had several feet of water in them just a few short years before? Clearly, they knew the area was subject to flooding as all the homes in that time span are raised up off the ground. But none of them to the level of the 1897 or 1909 flood events.

If any of the homes would have had 14” of water in the living space, I promise you that would have created significant damage and Mr. Dwelley, the editor of the Concrete Herald, would have written about it. Instead he wrote:

“About three o’clock in the afternoon it went over the banks in Crofoot addition and the residents of that part of town began to move out ... The waters also crept up around some of the dwellings in East Concrete, and some of the residents moved out for the night. **In Crofoot addition** only three residences remained above the high water mark, **the water being to a depth of an inch to 14 inches in the others.** No particular damage was done, except for small articles outside being washed away, and the job of cleaning out the mud left by the flood. ... **In East Concrete practically no damage was done.**” Dec. 17, 1921 *Concrete Herald*
“Skagit River Goes On Wild Rampage; Light Damage Here”

Back to damages, remember what Mr. Slipper in Hamilton said in his declaration,

“The reason I remember this is because my mother and father had just installed hardwood floors the year before and they were very worried that the 2 inches of floodwater were going to hurt the floors. **Because the floodwater was only in the house for a little over an hour or two, the hardwood floors were not damaged.** They talked about this from time to time during my childhood. (See Declaration of Fred W. Slipper)

While I’m on the subject of Hamilton for a quick moment I would like to offer you the following information my son Josef found for us the other day with respect to buildings being moved in Hamilton:

First, there is the verbiage once again contained in the Slipper Declaration:

The house was originally built in 1887 and moved to this location, 584 Maple Street, in 1902. At this location it only had floodwater in it during the December 1921 flood. At no time previous nor subsequent to that date did it have floodwaters in it until the November, 1990 floods. (*Emphasis added*) (See Declaration of Fred W. Slipper)

By the turn of the century, the Slipper brothers came to the same realization of many early loggers on the river: work in the woods was hard and grueling. Hamilton was growing and needed more retail stores. And by then, **the town had started moving north from the river.** The original town, like Sauk upriver and Sedro downriver, had been devastated by a series of **floods between 1894-98.** Eloise Knapp recalls in Carol Bates's Hamilton 1991 Centennial book that her mother's family lived close to the river in Hamilton and severe floods brought the

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river up to their bedroom windows on the second floor. Indians came with canoes and helped rescue families from top floors. Around 1900, John moved his Eagle Shingle Company headquarters up to the northwest corner of Maple and Cumberland and started a hardware business, which took off like wildfire.
<http://www.geocities.com/skagitjournalupriver/SlipperSprinkle1.html>



This 1908 photo of the Jacobino family home, the Yellowstone bar that they owned and a hotel with balcony between, shows structures built on Water street in the 1890 period. That was the main street for businesses in Hamilton until the monster floods of 1894, 1896 and 1897 destroyed many of the buildings and chased many business owners up to Maple street, the present downtown main street. Part of Water Street is now under water.

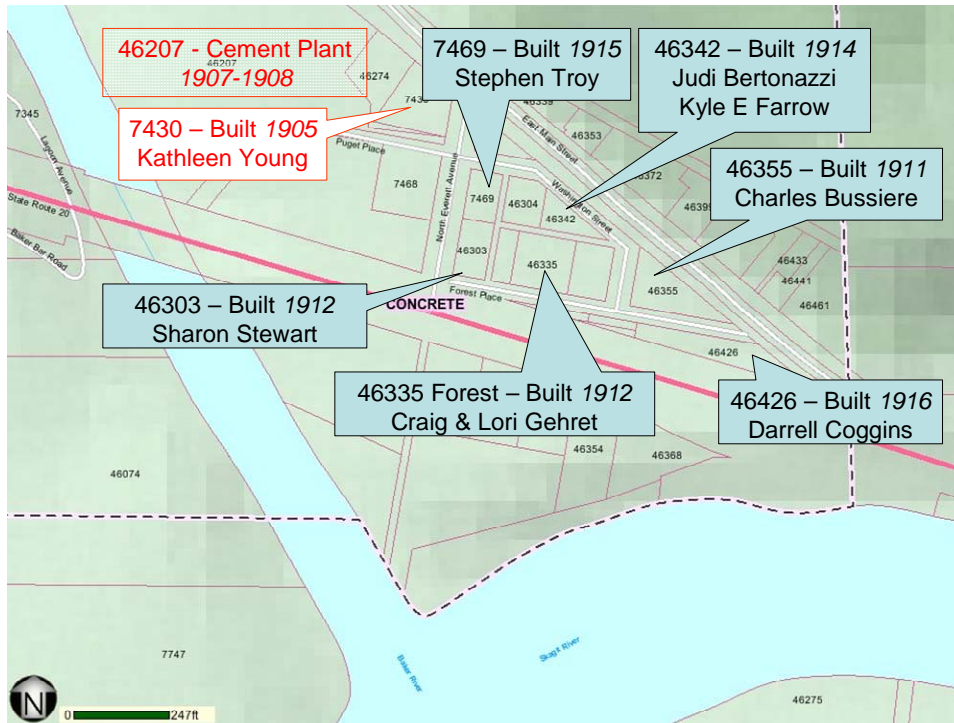
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According to Stewart the 1897 flood – carried 270,000 cfs. If that is true then every square inch of Hamilton would have been covered with water far and above what the post 1897 flood events experienced, certainly more than what Slipper and Smith houses were built at. Yet the Smith house only had water in it during the 1995 flood event and the Slipper house only 1 or 2 inches during the 1921 event. The same question now raises itself in the Crofoot addition. WHY would they have built at levels below then what they saw in 1897 or 1909? The people of Skagit County might have a reputation of not being the brightest bulbs on the Christmas tree or even the sharpest knives in the drawer, but they were not stupid. Nobody, after experiencing the kind of flood events Stewart said went through the Hamilton and the Crofoot addition would have built below those levels.

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I assume you have a source for determining the age of buildings. Do you know anything about the age of the houses south and east of the cement plant and north of Hwy 20?

Our source of information for when buildings were built was the Skagit County Tax Assessor. The buildings you are inquiring about are known locally as “EAST CONCRETE” and are shown on the map below:



46335 Forest Place

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We only conducted two interviews of homeowners in East Concrete. The first and perhaps most important was with Lori Gehret, the current owner of 46335 Forest Place. According to the Assessor records, the house was constructed in 1912. She only purchased the house 2 years ago and knows nothing about the local history of the house. However, Annie Bussiere, local resident/historian/former editor Concrete Herald who took over from Chuck Dwelley, owner of Annie's Pizza, told us that the house was originally owned by the Stokes family.

Mildred Stokes-Gardinier was raised in this house. Mildred and her husband, Dick Gardinier, were both raised in East Concrete in the early days and later married and took over ownership of the house. Unfortunately, both of the Gardinier's have passed. However, Annie Bussiere told us that the Gardiniers told her that they once had floodwater up to the floor of their house. Since the house was built in 1912, the only flood that could have done that would have been the 1921 flood of which Chuck Dwelley wrote: **"In East Concrete practically no damage was done."**

Now clearly, if it were up to the floor, it would have filled the basement. This raises an interesting question. Why would anyone, just three years after the 1909 flood, put in a basement with windows in it? Lori Gehret did tell us that her neighbors next door did say that the area flooded in 2003 not from the Skagit or Baker Rivers but from "intense run-off from the hill behind her." Several of the homes in East Concrete are raised up off the ground, suggesting that the old timers knew the area flooded from the Skagit and Baker Rivers. We interviewed Mrs. Gehret's neighbor, Sharon Stewart.



46303 Forest Place – Constructed 1912

Sharon Stewart just moved into the above residence in 2003. She confirmed that during that flood event they had about 4 feet of water in this location, however it was not from the Baker or Skagit Rivers. There is some kind of a "sump pump" structure just down the street and during that "storm event" the sump pump failed and the water backed up "into this hole in the ground". The water in this area was from the "intense run-off from the hill behind" the homes. Other than

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the 2003 event no one we talked to remembered any “floodwaters” in the 1990 or 1995 events when the sump pump did not fail.

This raises another interesting scenario for us. The hills behind East Concrete are more likely than not Glacial Moraines as several alpine glaciers traversed this area thousands of years ago from Mt. Baker. These moraines are heavily laden with clay, which can and have created landslides in the Concrete area during intense rain events. I have no idea to what extent the runoff from these hills would have influenced Stewarts highwater marks in the area but evidently a considerable amount of water runs off these hills. Given the height of these homes clearly at one time this area was subject to flooding from the Baker/Skagit Rivers as the below newspaper articles strongly suggest.

In the interest of adding to this research I decided to query the 1,000 plus historical newspaper articles for mentions of either Crofoot or East Concrete. Below are the results of that query:

The Skagit at this point was bank full and the low ground in East Concrete was overflowed, but Crofoot's addition on the west side of the Baker escaped the flood by two feet. Here the river lacked from eight to 10 feet of being up to the flood mark of 1921, but near Mt. Vernon and at other points in the lower valley, it is reported that the river came within two feet of reaching the 1921 mark. 2/14/24 C.H. This was an undocumented flood event that neither USGS or the Corps has any record of. See 2/14/24 MVDH, 2/14/24 Argus, on this flood. River at Concrete was 8 to 10 feet less than 1921 flood.

When the river began to drop Saturday night, it still lacked six to eight feet of being up to the record level of 1921, but it was high enough to cause some worry among the residents of Crofoot's addition and East Concrete. Low-lying gardens on the east side were covered but Crofoot was not even dampened. The Baker River dam held back the flood waters of the Baker for over 24 hours, and then only a comparatively small amount of the stream came over the dam. Had this stream been added to the water already in the Skagit, Crofoot would have been flooded by Friday night and the communities of the lower valley suffered much damage. 3/3/32 C.H. USGS says the flow and height of this flood was 147,000 cfs (39.99 ft) at Concrete. Assuming USGS got it right in 1932, then this article would support the USGS figure of the 1921 flood of height elevation of 47.6 at the Dalles.

At Concrete the river backed up into the fields in east Concrete and reached the McDaniel, Gradinler (sic--Gardinier) and Gregory homes before it stopped rising. It has been many years since this area was flooded. Crofoot addition had water up within a few inches of the bank, but no homes were touched. Edgar Gates' barn was isolated by a virtual river. 12/1/49 C.H. USGS has the flow and gage readings as 154,000 cfs Concrete (40.8). In 2003 we reportedly had 166,000 cfs at 42.2 ft. and it resulted in 4 feet of water in portions of Crofoot. Imagine what 260,000 cfs, 49.1 (1909), 220,000 cfs, 45.7 (1917) and 240,000 cfs, 47.6 (1921) would have done. If Stewarts flows are correct then there should be evidence of water in all the pre-1921 homes in Crofoot. If we find nothing in any of the homes then Stewart's figures are questionable at best.

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The slide, one of the largest ever known in this vicinity, started at the top of the hill north of East Concrete and crashed down through almost the center of that part of town. Three homes were in its path, those of Dudley I. Green, E. M. Buchanan, and C. E. Hutchnison. All were reduced to kindling wood, and with the exception of the Green home, practically every article in the house was a total loss. ... 11/23/32 C.H.

What the above articles show us is that East Concrete was indeed subject to flooding from the Baker/Skagit in years past and if we can find evidence of flooding inside the homes in Crofoot then the Stewart levels will gain some validity. In my opinion the three best candidates for this kind of Paleohydrology work would be 45968 and 45956 Albert Street and 45898 Benjamin Street.

Changing subject, I have also taken a look at you proposal for modeling the 1990 and 1995 floods sans development. I need to put some more thought in to that, but there is a question here - you say that the levees in 1909, 1917 and 1921 all failed at about 32 feet. 32 feet where and to what datum and how do you know this anyway?

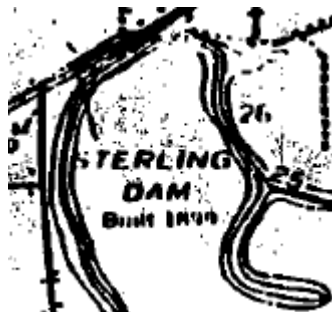
As for the levee break locations they are documented in WSP 1527, 1961 Stewart/Bodhaine report at the very end. The 32 feet reference would be at the current Mt. Vernon gage. I base that on the below newspaper article. In 1921 the gage was located either on the Riverside Bridge or at the Moose Lodge (there was one at both locations), irrelevant as they are very close together. Downtown Mt. Vernon is at approximately 24-foot elevation (city hall). There is an 8-foot drop in elevation from the current gage to downtown Mt. Vernon. There is a 12-foot drop in elevation from the SW gage to the current gage. All of this confirms the highly kept secret that water flows downhill. As far as what datum was used I have always assumed it was NGVD 29 as I believe that is based on sea level which makes so much more sense then what they have changed it to now.

The river continued to rise until it **reached a mark of 24 feet 10 inches**, or **two inches below that set in 1909**. This was late Monday night. Then came reports of a **break in the dike in Burlington** and soon after the dike at **Conway** south of here broke. Both these towns were flooded. About 4:30 Tuesday morning, **the dike** near Charles Wiles place, **a short distance west from Riverside Bridge** and on the south bank of the river went through. Within a few hours the flats between the bridge and Mt. Vernon were covered with several feet of water. **Other breaks occurred at intervals south of Mt. Vernon at Pritchard's, two below the Sheriffs place and two on the north fork.** With the breaking of the dikes the river began to drop slightly. . . . **Pioneers recall that only once have the flood waters of the Skagit reached the downtown streets of Mt. Vernon and this was in 1897.** Other floods have occurred in 1906, 1909, 1911, and January,

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1918.¹ [12/15/21 Argus](#) 24 ft 10 inches would be approx. 32 ft 10 inches at the current gage. "Two inches below 1909 flood."

A few hours before the river had broken through the dike at Kimble's bend, carrying away about three hundred feet of dike. Soon thereafter the report was received that the river had broken through at Sterling's bend, and that Burlington was flooded, and the Olympia marsh, just north of that city, submerged. . . . At six o'clock Monday night the river had risen to a point fully as high if not a little in excess of the high water point of the preceding Tuesday. At that time the river was within two and a half or three feet from the top of the dike. . . . At ten o'clock Tuesday morning the west side was under two or three feet of water, and people who live in one story cottages were all safely domiciled with their neighbors who live in two story houses. . . . Burlington had hoped to escape the flood. Its hopes were cruelly shattered, when the dike broke at Sterling bend and a mountain of water came rushing down the Skagit valley and quickly inundated them. The fact that Burlington is by no means immune from the ravages of flood was demonstrated with crushing truth when the waters of the Skagit rolled over that ambitious and growing town last Tuesday. . . . In the entire district south of Mt. Vernon the only spot of any extent that was protected against an overflow is reported to have been on the island between the north and the south fork of the river at Fir. . . . The point of danger is at Sterling bend Although the safeguard of a huge restraining wall had been built at that point, it proved inadequate to turn the unusual volume of water that demanded an outlet, and that gave way and a mighty volume of water poured through over the flats into Burlington. [12/3/09 Argus](#) The "huge restraining wall" referenced above can be located on the map accompanying the Stewart/Bodhaine WSP 1527 report and is called The Sterling Dam. That structure is still there today located at the intersection of Highway 20 and Holtcamp Road. It appears to the passerby as just a mound of dirt with blackberries and Cedar trees growing out of it. Walk around behind it and you can see the old channel of the Skagit River. Settlers reportedly built this structure with buckets and wheelbarrows. Dike District 12 currently owns this property.



Water Supply Paper 1527

Also, do you know anything about the height of the levees back then, and do you have any information on levee failures in 1897?

¹ This is a mistake. It should be December 1917. Also downtown Mt. Vernon went underwater in 1894 (See [10/21/1895 The Skagit News.](#))

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All I have on the 1897 (also through in 1896 flood) is below.

. . . Six hundred feet of the Great Northern railroad track between the bridge and Burlington were washed out, . . . The protection pier at the Great Northern bridge was knocked out and that structure was in great danger of being washed away. . . . Two big breaks in the levee on the west side occurred. One near F.C. Ward's place, the other at D. Storr's place. The whole west side including West Mt. Vernon, is a lake. [11/16/1896 TSN](#)

During the year 1896 no less than three floods occurred in the Skagit River, due to the conditions above described. These occurred in January, June, and November. The flood of January reached a stage of 22 feet above low water on the gauge on the Great Northern Railroad Bridge, 6 miles above Mt. Vernon; the flood of June reached a stage of 20 feet, and that of November a stage of nearly 24 feet on the same gauge. The elevation of the river bank in the vicinity is 21 feet above low water, so that during two of the floods in 1896 the river overflowed its banks above Mt. Vernon. Protection from these overflows is one of the principal objects which the residents of the Skagit Valley desire to have accomplished by the improvement of the river. (**Source: Report of Capt. Harry Taylor, Corps of Engineers, December 11, 1897**)

On the 18th and 19th of November (1897)² the Skagit River was visited by the greatest freshet in the history of the river (at least in the view of the settlers of that time). It has been claimed that had the different mouths of the river been opened up the waters of this freshet would not have risen as high as in previous years and that they would have run off much sooner than they actually did. . . . The town which suffered the most in proportion to its size of any on the Skagit River was the town of Hamilton, which is so far up the river that no possible opening of the mouths of the river could have had any effect on the height of the water at that place. From the extent of the floods and the damage caused in other places, it is very evident that no amount of opening out of the mouths of the Skagit River would have prevented the floods in this river. As a matter of fact the most disastrous breaks in the dikes of the Skagit River were in the vicinity of Mt. Vernon, some 12 miles from the mouth of the river and too far to derive any benefit from the opening of the mouths of the river, and the higher up the river one goes the greater the freshet appears to have been. At Sauk River, 68 miles from the mouth, the water reached a stage of 6 feet 8 inches above the freshet of November, 1896; at Lyman, 32 miles below Sauk River, it was 2 feet 9 inches above last years flood; at Sedro, 8 miles below Lyman, it was 1 foot 6 inches, while in the vicinity of Mt. Vernon it was but about 10 inches above last year's flood. (**Source: Report of Capt. Harry Taylor, Corps of Engineers, December 11, 1897**)

On Wednesday morning a very warm Chinook wind commended to blow which increased in force until evening, when it was almost a gale. This hot wind blowing directly on the snow which had been creeping down the hills for the last few weeks, cut it away with the rapidity of fire, and resulted in a raging torrent rushing down the valley of the Skagit on its way to the sea. The rise did not commence until Wednesday evening, as it usually takes from twelve to fourteen hours for the effects of a Chinook to make their appearance, and the same time to cease. By Thursday the river was still raising but still within the banks. During the night, however the water came with increased force, and early on Friday morning the alarm was whistled from the electric light plant which called for help only to find the water pouring over the levees in all directions. Some efforts were made to raise the levees and keep ahead of the water, but it came so fast that they were useless. . . . In the southern part of the city, the very lowest quarter, a great break occurred in the

² Notice what a short period of time between the 1897 flood event and when Captain Taylors report came out. The Corps certainly doesn't do that anymore.

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levee, caused by the water pouring over the top, which swept everything before it with irresistible force. . . . After the flood Kincaid Street presented a sight that was dismal in the extreme, being washed out and lined with debris from one end to the other. All other parts of the city were in nearly as bad condition. . . . From Conway to salt water, the flood poured over the top of the levee the entire distance on the east side of the river. On the west side of the river several small breaks occurred letting through large volumes of water. But little damage was caused however. . . . The Great Northern coast line was overflowed as usual, but not so badly damaged as it was last year. The first train from the south came in today. A jam formed against the bridge at the Davis place, and came near taking it out. As it was the protection piers were knocked out, and the rails on the bridge were sprung fully 18 inches. [11/22/1897 The Skagit News Herald \("TSN-H"\)](#)

With respect to the heights of the levees I would refer you to the following:

The levees in 1935 were quite a bit smaller than they are today. In fact, in 1952 the levees "varied from 5 to 10 feet high". (*Source: Corps of Engineers Report on Survey for Flood Control of Skagit River and Tributaries, February 21, 1952*)

The bottomland along the lower part of the Skagit River was formerly covered with a body of very large and fine cedar trees. The mills on Puget Sound formed a ready market for the timber, which was cut into logs and shingle bolts. These conditions early attracted settlers to the Skagit River bottom. As the land was cleared of the timber it was found to be exceedingly rich and fertile, but much of it, however, was marshy and swampy. The money obtained from the cutting of the timber was used for clearing the land and protecting it with dikes. **At first it was necessary only to build low dikes,** as the floods did not attain a great height in the lower river. (*Source: Report of Capt. Harry Taylor, Corps of Engineers, December 11, 1897*)

Finally, do you have anything in your collection of documents about the NPRR trestle being replaced by an embankment? I get the impression that in 1897 the railroad was on a trestle right the way across the floodplain and that sometime between 1897 and 1908 it was replaced by a fill embankment.

We queried all our documents and with the exception of the verbiage contained in the 1918 Stewart Report we couldn't find anything about the railroad trestle. We also went to the library and checked out all the historical books concerning the railroads and didn't find anything in them either concerning this subject.

The Northern Pacific Railway some time between 1897 and 1909 displaced trestle work with earth embankment on both sides of the river. The trestle extended from the hills on the left side to the Sedro-Woolley yards, so that the earth embankment materially changed the stage-discharge relation above and below the railway crossing, although it probably did not affect that relation greatly at the crossing. **Stewart July 1918 Skagit River Flood Report - Retyped (Page 7)**

Sorry to pepper you with questions. There's no hurry on a response.

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Malcolm

It is my pleasure to serve Malcolm. I only hope that some of this is helpful to you in solving this dilemma. If there is anything else you think we could do to assist you please do not hesitate to ask.

Larry and Josef