

1849

RED

Summer

This flood on the Red was produced by one of the most unusual and best-chronicled summer precipitation episodes in the central Great Plains region. It was not unique, however, and may be compared with the summers of 1806, 1825, 1827, 1850, 1851, and perhaps 1860.

The unusual nature of the early spring and summer weather in the Missouri-Kansas-Nebraska region was analysed by Parker (1964) and Lawson (1974, 1975), based on the accounts left by some 30,000 '49er gold rush migrants on the Oregon Trail.

Parker, W., 1964. Wading to California: The influence of the Forty-Niners on the notion of the Great American Desert. *Great Plains Journal*, v. 3, 35-43.

Lawson, M.P., 1974. *The Climate of the Great American Desert*. University of Nebraska Press, Lincoln, Nebraska.

Lawson, M.P., 1975. Meteorological experiences of the Forty-Niners crossing the Great American Desert. *Weatherwise*, v. 28, 250-53, 271.

These writers showed that the spring of 1849 in the vicinity of the assembly points near St. Louis was unusually cold and late and marked by exceptional rainstorms in May which inundated the plains and greatly swelled the rivers. Rainfall in April and May at Fort Kearny (south-central Nebraska) had exceedence probabilities of only about 1%; at Saint Louis Arsenal and other eastern Oregon Trail sites, precipitation exceedence probabilities were 1% or less from June through August and most stations recorded 200-300% normal precipitation in at least one of these months.

These analyses were extended 1000 km northward into the Red River basin by Blair and Rannie (1994) and Rannie and Blair (1995), based on the accounts of the Woods/Pope Expedition from Fort Snelling (Minneapolis/St. Paul) to Pembina and archival sources from the Red River Settlement.

Blair, D. and W.F.Rannie, 1994. "Wading to Pembina": Spring and summer weather in the valley of the Red River of the North and some climatic implications. *Great Plains Research*, v. 4 (1), 3-26.

Rannie, W.F. and D. Blair, 1995. Historic and recent analogues for the extreme 1993 summer precipitation in the North American mid-continent. *Weather*, v. 50 (6), 193-200.

Spring was also late in the Red River Settlement and the ice in the Red River did not break up until May 7.

April 18: At present there is no appearance of the ice going. Horses and oxen, as well as people, still cross the river upon the ice. It may be two or three weeks before the river is open. (J. Smithhurst Journal [at Indian Settlement], PAM MG7 B2 CMS A97)

April 25: It has been snowing and drifting all day and everything looks...much like winter... (ibid)

April 30: today, tho' the last day of April, was like one from January...The Ice is still upon the River, not the voice of one singing bird is heard. (Robert James Journal, PAM MG7 B2 CMS A92)

May 7: Ice first began to drift out so that we at length see open water and canoes crossing the river... (Smithhurst Journal, op. cit.)

The weather improved markedly for the first two weeks of May but deteriorated again in late May.

May 21: The ground is again covered with snow... (ibid)

May 22: Still snow. (ibid)

Temperatures rose soon after but June (and the rest of the summer) were astonishingly wet. The most detailed accounts are provided by the diaries of Captain Samuel Woods and Lieutenant John Pope on the Woods Expedition from Fort Snelling to Pembina. The company left Fort Snelling on June 6 and was immediately confronted by widespread, almost continuous, and frequently heavy, rainfall.

June 6-11: Our starting was unpropitious; the rains commencing on the 4th continued intermittingly until our arrival at Sunk Rapids on the 11th... The rains having fallen so steadily and for so many days. the earth was so saturated with water, that the thickly-matted turf of the prairie would not support the weight of the wagons... The [Sauk River] was much swollen by the heavy rains, and was wide and deep. (Woods, 1850. Report of Major Wood [sic] relative to his expedition to Pembina Settlement and the condition of affairs on the North-Western frontier of the Territory of Minnesota. United States House of Representatives Executive Document No. 51, 31st Congress, 1st Session, p. 10)

June 20: Having awaited the drying of the prairies until the 16th of June, we determined on that day to commence our march for the Red River...we reached a small lake tributary to the Crow River on the 20th of June. The rain falling incessantly... (Pope, J., 1850. The report of an exploration of the Territory of Minnesota. United States Senate Executive Document No. 42, 31st Congress, 1st Session, p. 18)

June 27-July 3: The heavy and incessant rains since the 4th of June had so saturated the prairies... that it was found absolutely necessary to halt for a few days...From...the continuous heavy rains for several weeks previous, the rich black soil of the prairies had become perfectly saturated and many were under the impression that the whole country was swampy, but I was informed by the guides that such a season had not been known for 20 years, and that they had never seen the country in such condition before. (Pope, op. cit, p. 18-19)

July 6: We resumed our march on the 6th of July, but found the prairies so bad from the drenching rains that had just fallen, we were scarcely able to get along. Little drains that usually contain no water, were now almost swimming, and these occurring every mile or two, with the miry conditions of the ground, rendered our march slow and exhausting to our trains. (Woods, op. cit., p. 13)

July 15: The high waters in these rivers [Maple, Rush, Sheyenne] compelled us to depart greatly from the Red River, and we had thus approached very near the dividing ridge between the Red River and Upper Sheyenne. (Pope, op. cit., p. 24)

July 17: Starting at 12 M, over a level prairie on which the water stood from two inches to two feet deep almost the entire way, and after going about fourteen miles, we reached Maple river, which Mr. Kittson had bridged; but the water being much higher now than when he crossed it, the bridge had disappeared... There had been such torrents of rain about this time that the little branches that ordinarily furnish barely a sufficiency of water to allay the thirst of a travelling train were now swimming...About eight miles from Rush river we came upon a little prairie stream much swollen and deep. (Woods, op. cit., p. 16)

Reverend Alonzo Bernard described identical conditions travelling northward from Fort Snelling to Red Lake Mission in mid-June.

[The roads] were inundated at frequent intervals by floods resulting from the melting snow, farther north and the recent heavy showers...the team becoming mired in the deep mud, an unavoidable delay was caused; and a situation ensued which the rain, now descending in torrents, was not well calculated to relieve. (Schell, Rev. J.P., 1911. In the Ojibway Country. A Story of Early Missions on the Minnesota Frontier. Chas. E. Lee, Publisher, Walhalla, N.D., p. 110)

When the Woods Expedition reached Pembina on August 1, they found the Red River apparently out of its banks.

August 1: ...having been out since the 6th of June, -we arrived at Pembina, and found the Red river and the Pembina river with about twenty feet rise in them, and overflowing their banks. (Woods, op. cit., p. 18)

High water and the possibility of flooding had been a source of concern since mid-June.

June 17: The water of the [Red] river [at Pembina], which is rising rapidly, makes us fearful; a part of the seed put in the low ground is going to be ruined. (Belcourt, G.A. Letter to Reverend C.F.Cazeau, Secetaire de l'Archeveque de Quebec, date Pimbina [sic], Riv. Rouge, Territoire de Minnesota, 17 juin, 1849. Belcourt Papers, Correspondence 1846-1857, p.1,328, Minnesota Historical Society, Minneapolis)

June 26: The water is extraordinarily high...all the rivers are inundated, they say that Pembina is drowned and it is believable from the height of the water here. there is already grain in the water and it doesn't seem to have decided to lower yet...it rains often and without doubt much more copiously upstream than here. (Msg. J.N.Provencher, Bishop of the Northwest, to Msg. I. Bourget, Bishop of Montreal, dated St. Boniface, 26 June, 1949, PAM MG7 D1)

June 27: The convoy has left and the water is extremely high. They say that Pembina is drowned; it is not possible to ride on the prairie and the water rises continually. Much wheat perishes because it rains often...M. Belcourt writes me that the wheat [at Pembina] is almost drowned and the soldiers are stopped by the water he thinks...It is very difficult to communicate except by canoe. (J.N.Provencher, Bishop of the North-West, St. Boniface, Red River, to Monseigneur P.-F. Turgeon, Bishop of Sidyme, Quebec, 27 June, 1849, in Lettres de Monseigneur Joseph-Norbert Provencher, Premier Eveque de Saint-Boniface, Bulletin de la Societe Historique de Saint-Boniface, vol.III, 1913, Imprimerie du Manitoba, Saint-Boniface, Manitoba, p. 271)

The heavy rains appear to have continued through much of August.

August 8: The ground [around the fort] was one swamp with the incessant rains. (James Journal, op. cit.)

August 15: The almost incessant rains and the condition of the country prevented us from responding to this politeness [an invitation to visit Fort Garry from Pembina]. (Woods, op. cit., p. 20)

Unable to travel from Pembina to Fort Garry, Woods set out to explore Pembina Mountain, 50 km to the west.

August 14: ...travelled nearly due west for about 8 miles and found the prairie so horribly bad that I turned back...I had a guide who has lived in this country thirty-four years...[who] said, after seeing the condition of this route, it would be useless to attempt any other. Our horses mired over nearly the whole of the distance. (Woods, op. cit. p. 19)

August 26: I waited [at Pembina] from the 1st to the 26th of August hoping the country would dry sufficiently for me to pass over it, but was disappointed. The improvement of the prairie by a few successive clear days, a hard rain would restore to their previous impassable condition. (Woods, op. cit., p. 19)

At the end of August, Provencher wrote

The water has been so high all summer that there was no way to communicate with Pembina except by water...A company [Woods' Dragoons] visited his [Belcourt's] post and they had to leave because there was no appearance of a harvest at Pembina; the water covered the fields. (Letter from J.N.Provencher to Monseigneur I. Bourget, Bishop of Montreal, dated St. Boniface, June 26, 1849, PAM MG7 D1)

The flood ended in the latter half of August.

August 26: When the expedition first reached Pembina [August 1], the incessant rains for weeks previous had caused all the rivers to overflow their banks; but when I embarked to ascend the Red River [August 26], it had subsided into its usual channel. (Pope, op. cit., p. 34-35)

ANTECEDENT CONDITIONS:

This flood was produced by excessive rainfall after the snowmelt period. The preceding winter seems to have been unremarkable and the breakup, although very late, seems not to have produced unusual water levels in the Red River.

STATE OF ASSINIBOINE:

No information exists about the Assiniboine basin in the summer of 1849.

SUGGESTED MAGNITUDE:

The Red was overbank at Pembina but apparently not in the Red River Settlement. A discharge somewhat smaller than 1948 seems appropriate.

Flooding of the Red River in July or August as far downstream as Pembina or below is a highly unusual occurrence- the modern (1916-1990) discharge record at Emerson indicates that bankfull discharge in these months has a 20th Century exceedance probability of less than 1%.

1850

RED

Spring, Summer

This event had characteristics almost identical to the 1849 summer flood, beginning with a remarkably late spring followed by heavy rainfall and flooding in June and July.

April 30: We have now got to the end of April and the river still solid and snow upon the ground. (Journal of J. Smithhurst [at Indian Settlement], PAM MG7 B2 CMS A97)

April 30: The River began to clear. (Robert James' Journal, PAM MG7 B2 CMS A92)

May 4: This day the ice in the river broke. (Smithhurst Journal, op. cit.)

May 24: The rain poured down in torrents for several hours last night and it has rained more or less all day so that the plains are deluged with water. The river is also excessively high and the current strong. (ibid)

May 25: I took my small boat and four strong men [to the Fort] but such was the force of the current that we did not get the 8 miles till near 1 o'clock [from 8 o'clock]. Had we not turned out of the main river occasionally and gone up creeks and over the overflowed plains and in one instance dragging the Boat over a point of land we should have been much longer. (ibid)

June 15: Great crops last year [1849] there will be none [this year] in consequence of high water. The water got in to my kitchen garden and M.? was obliged to leave his house all Pembina under water. (Letter, Andrew McDermot, Red River to G.M.Cary, London, Ontario, dated June 15, 1850, in Cary Papers, PAM MG2 C3)

July 4: Je voulais aller aussitot apres le careme au lac Rouge, mais une abondance d'eau extraordinaire a forme entre le lac Rouge et Pembina une barriere infranchissable... Mais ce deluge a mis obstacle aux resolutions qu'avoient prises les habitants de Pembina de semer beaucoup, car tous leur champs ont ete submerges et le sont encore. La maison d'ecole, l'eglise et le presbytere sont les seules batisses ou l'eau ne soit pas entre...[at Pembina]. (Letter, G.A.Belcourt to Messire Chs. F. Cazeau, Secret. de l'Archev. de Quebec, dated St. Joseph de la Montagne de Pembina, Territoire de Minnesota, E.U., 4 juillet 1850, Belcourt (Georges Antoine) Papers, Correspondence 1846-1857, Minnesota Historical Society, 1328.

July 17: L'eau a fait du dommage, elle a submerge toutes les terres un peu basses, des champs ensementes ont ete noyes, d'autres n'ont pas etes semes par la crainte d'une pareil sort; l'eau a monte jusqu'a la fin de mai...Je n'ai rien perdu par l'eau ainsi que les Soeurs. Mr. Belcourt n'a pas ete noye dans sa maison, mais le pays l'a ete, pas un grain a ete seme. (Letter, J.N.Provencher, Ev. du Nord-Ouest, to Monsieur C.F. Cazeau, Secretaire du Diocese de Quebec, dated St. Boniface, 17 juillet 1850, in Belcourt (George Antoine) Papers, Correspondence 1846-1857, p. 1328, Minnesota Historical Society)

August 7: Harvest will be unknown among the Canadian Settlers...their fields being overflowed in the spring. (Letter, Robert James to the Secretary of the Church Missionary Society, London, dated Aug. 7, 1850, at Grand Rapids, Red River, in Robert James Journal, op. cit.)

September 17: From the extraordinary height of the waters of the Red River last spring many of the most fertile fields were overflowing and the inundation having been more extensive in that District of the Settlement occupied by the Hunters than [here] farms have, in many instances, been nearly unproductive. (Letter, John Black [Fort Garry] to Arch. Barclay [London], dated Fort Garry, Red River, 17 Sept. 1850, in HBCA London Correspondence from Winnipeg A11/95 1829-1853 #368)

The waters remained high into September, although they had fallen below flood stage.

Late September: There had been a flood that summer, but the waters had gone before the time we came across the plains. It was late in September we arrived in St. Boniface. (Sister Laurent quoted in Healey, op. cit., p. 110)

A particularly useful account which illustrates the magnitude of the flood was given by Harriet Cowan in an interview many years later. Mrs. Cowan travelled north to the Red River Settlement in June (the precise date isn't given).

In coming from St. Louis in the spring of 1850 James Sinclair brought a number of wagons and heavy horses to be used in crossing the plains from Red River to Oregon. "I remember that on the way from Galesboro," said Mrs. Cowan, in telling of that journey, "we saw at Galena in Illinois a railway track which had just been built-the first I ever saw...As we came northward through Minnesota we found a great deal of the country flooded, and we had to come by a different route from the one we had travelled two years before. At Red Lake River, and again and again in order to cross other rivers and streams, rafts had to be made with branches of trees and the wheels of the Red River carts tied together...At Pembina the water extended two miles out from the hill where Mr. Kittson had built his house. We stayed there four days, and then Mr. Kittson sent us in boats to Fort Garry. The expanse of water over which we voyaged from Pembina was in places eight miles wide. At night we had to tie up the boats to the trees...On account of the flood in 1850 James Sinclair had to give up his plan of taking his family to Oregon that year. The start could not be made early enough." (Harriet Cowan quoted in Healey, W.J., 1923. Women of Red River. The Women's Club, Winnipeg, Manitoba, p. 29-30)

ANTECEDENT CONDITIONS:

Water levels were still very high late in the previous summer (1849) and it is assumed that the antecedent moisture status of the basin at freezeup was extremely high. Winter began in mid-November and seems not to have been remarkable, although few entries have survived from November to April. As was noted at the beginning of the flood description, spring was late.

STATE OF ASSINIBOINE:

No information exists about conditions in the Assiniboine basin in 1850.

SUGGESTED MAGNITUDE:

The great magnitude of this flood is indicated by Harriet Cowan's description of the

expanse of water as being “in places eight miles wide,” by Provencher’s description of the “impassable barrier” of water between the Red River Settlement and Pembina, and by the reports of flooding of fields in the vicinity of the Settlement. The widening of the flooded area south of the Forks, characteristic of 1950-magnitude floods, is indicated by Provencher’s statement and John Black’s comment that “inundation (was) more extensive in that District of the Settlement occupied by the Hunters than (in the vicinities of the Forks and downstream),” and by James’ opinion that “harvest will be unknown among the Canadian settlers...”

This flood, then, seems to have been at least as great as that of 1950.

Statements in subsequent years confirm the extreme nature of this flood.

September 12, 1851: ...no farming whatever being done [at Pembina in 1851] on account of the annual floods in the valley of the Red River, for three years past [1849, 1850, 1851]- the waters having risen to the height of thirty-one and thirty-three feet above low-water mark, flooding all the country, and inundating the houses at this place [Pembina] to the depth of two and three feet. Mr. Kittson was obliged to leave the post at this place last spring [1850], and take up his residence for a month upon the surrounding highlands. These floods, should they continue, will prove a serious drawback to the settlement of this valley, the half-breeds being loath to be swept off annually. Mr. Kittson had some six thousand rails swept off from his place last year. (Bond, J. Wesley, 1857. Minnesota and its Resources to which are appended Camp-Fire Sketches. Keen & Lee, Chicago, p. 276)

During the great flood of 1852, Dr. William Cowan used the 1850 flood as a reference point during the rising phase.

May 5, 1852: River has risen same as night before nearly 2 7/8. boat from Pembina reported very high water higher than in spring 1850... (Diaries of Dr. Willam Cowan, PAM MG2 C15 M154)

1851

RED

Summer

This flood, the third "summer" flood in succession, is more poorly documented by observers in the Red River Settlement than the 1850 event but seems to have been somewhat smaller.

In contrast to the two previous years, spring seems to have arrived early.

March 31: I started [to the Bishop's] but was compelled again to return. The water was covered by a thin ice, not sufficient to bear the horse & he was in danger of cutting his legs at every step. (Robert James Journal, PAM MG7 B2 A92)

April 2: The River broke this evening & again we saw open water. It was feared the spring had come too early to continue, & today the weather became much colder. The ground was again covered with snow after being clear some time. (ibid)

The first mention of high water follows apparently heavy rain in July.

July 15: voila bientot quinze jours qu'il pleut, l'eau monte et montera, la recolte qui est probablement trop belle n'est pas avancee, et sansdoute que cette abondance d'eau va lui nuire beaucoup... (Letter, Bishop Provencher, Bishop of the Northwest, to Msg. I. Bourget, Bishop of Montreal, dated St. Boniface of the Red River, 15 July, 1851, PAM MG7 D1)

July 21: Les pluies abondantes ont fait dommage aux grains. L'eau monte toujours et pourrait detruire la recolte dans les terres peu elevees; deja c'est la cas a la Prairie du Cheval Blanc. (Letter, J.N. Provencher, Eveque du Nord-Ouest, St. Boniface de la Riviere Rouge, to L'Archeveque du Quebec, 21 Juillet, 1851, in Lettres de Monseigneur Joseph-Noerbert Provencher, Premier Eveque de Saint-Boniface, Bulletin de la Societe Historique de Saint-Boniface, vol. III, 1913, Imprimerie du Manitoba, Saint-Boniface, Manitoba, p. 279)

Most of the other evidence for high water and flood is indirect or after-the-fact. Perhaps the strongest indications of a remarkably wet summer come from reports of exceptional floods in the valley of the Minnesota River, southwest of the upper Red River basin.

May 25: Left St. Louis in the steamer Diana Vernon for Tully but on arriving at Hannibal discovered that the water had risen to an unprecedented height having overflowed its banks & spreading over the praries [sic] & bottom lands had in some places swelled to fifteen miles in width where it usually is but one. (Frank B. Mayer in Heilbron, B.L. [ed.], 1932. With Pen and Pencil on the Frontier in 1851: The Diary and Sketches of Frank Blackwell Mayer. The Minnesota Historical Society, Saint Paul, p.76)

July 7: This is an unusually rainy season & we are almost daily visited by storms of wind & rain, the severest came at midnight and broke our dreams by its terrific howl. For two hours the lightning flashed continuously...torrents of rain...The accumulated streams descended from the hills...[on the

lower Minnesota near Traverse de Sioux, date approximate]. (ibid, p. 174,177)

July 14: Our progress being up stream & in opposition to a strong current our arms were fully employed, what with polling, paddling & portaging, wading thro' sloughs & pushing the canoe thro the tangled bushes & grape vines, for we passed thro forests which are usually ten feet above the river bank, we had a fair example of voyaging by the time we arrived at the foot of the opposite bluffs...The river enlarged to ten times its natural size & covering meadows & skirts of timber usually high above its banks, extended to the foot of the hills on the opposite side [on lower Minnesota River]. (ibid, 185-186)

mid-July: The [Minnesota] river was then higher than it has been for years. (ibid, p. 190)

August 30: ...the great floods of the west have reached the valley of the Minnesota River...The valley of the Minnesota has been overflowed three times in succession since last spring. tradition gives no account of such an event. Four bands of the Sioux planted in the valley of the Minnesota river; their corn-fields were all swept away; a fifth lost part of their corn-fields. (Parker, D.D. The Recollections of Philander Prescott, Frontiersman of the Old Northwest 1819-1862. University of Nebraska Press, Lincoln, Nebraska, p. 216)

August 31: The summer of 1851 came, which brought great changes and prepared the way for others. It was one of the very wet summers in Minnesota, when the streams were flooded all the summer through. In making our trip for provisions in the spring, we were detained at the crossing of one stream for almost a week...The Minnesota was very high, spreading its waters over all the low bottom contiguous to the mission premises [Lac qui Parle]. (Riggs, S.R., 1880. Mary and I: Forty Years with the Sioux. Congregational House, Boston, p. 139)

More direct observations about the state of the Red River conditions are given by late-summer visits to Pembina by John Black and J. Wesley Bond.

September 11: Arrived at Pembina...we came to a halt and reconnoitred, standing almost glued fast in the stickly, tenacious mud caused by the rains and overflow of the Red and Pembina Rivers for three years past. (John Black in Bryce, G., 1898. John Black, The Apostle of Red River. William Briggs, Toronto, p. 39)

September 17: After Sunday was past for two days the weather was bad, but on Wednesday, 17th, the day was fine...[They set off]...Everywhere were to be seen traces of the high water which had prevailed for several years, and marks upon the trees thirty feet above the water were seen where in spring the freshets had reached. (ibid, p. 40)

September 12: ...no farming whatever being done [at Pembina], on account of the annual floods in the valley of the Red River, for three years past [1849, 1850, 1851] - the waters having risen to the height of thirty-one and thirty-three feet above low-water mark, flooding all the country, and inundating the houses at this place to the depth of two and three feet. Mr. Kittson was obliged to leave the post at this place last spring, and take up his residence for a month upon the surrounding highlands. These floods, should they continue, will prove a serious drawback to the settlement of this valley, the half-breeds being loath to put in crops when they are liable to be swept off annually. Mr. Kittson had some six thousand rails swept off from his place last year. (Bond, J. Wesley, 1857. Minnesota and Its Resources to which are appended Camp-Fire Sketches. Keen & Lee, Chicago, p. 276)

September 25: [Harvest] usually takes place here [Pembina] about the 20th August, and is a full month later this year than common, the season having been very cold and wet up to the 17th August, up to which time fears were entertained for the loss of the whole crops. The weather fortunately changed, and for a month was very warm and fine. (ibid, p. 325)

ANTECEDENT CONDITIONS:

As in the 1850 flood, it can be assumed that the moisture status of the basin at freezeup in the previous fall (1850) was extremely high. Autumn seems not to have been particularly severe, nor the winter early. The rivers did not freeze over until the third week of November, somewhat later than usual.

November 18: The ice is drifting down the River in large pieces denoting the intensity of the frost. It will be fast in a few days. (James Journal, op. cit.)

Little information is available for the winter period but again there is no indication of particularly severe conditions. James reported mild weather beginning in early March, with a strong thaw in mid-March and an early beginning to breakup.

March 16: A lovely day. The roads almost impassable from the rapid thaw. (ibid)

March 19: ...to my surprise I found the Plains with so little snow upon them that after wretched travelling [in the cariole] I did not reach the cottage. (ibid)

March 20: Had intended to see the Bishop today, but was informed of the unsafe state of the River, large openings have appeared in several places. (ibid)

March 24: Mounted my horse to visit the Bishop. I expected the plains would be one pool & found both snow & water deep. I persevered at walking pace beyond Middle Church when a tremendous drift crossing the road interrupted my progress. (ibid)

The subsequent breakup is noted at the beginning of the flood description above.

STATE OF THE ASSINIBOINE:

There are no direct references to the Assiniboine but Provencher implies that the water was high and overbank at White Horse Plain.

July 21: L'eau monte toujours et pourrait detruire la recolte dans les terres peu elevees; deja c'est la cas a la Prairie du Cheval Blanc. (Provencher, op. cit.)

SUGGESTED MAGNITUDE:

The extent of flooding at Pembina, flooding of low ground in the Red River Settlement and the very high contribution of the Assiniboine suggests a flood greater than 1948 and possibly as large as 1966.

1852

RED, ASSINIBOINE

Spring

The 1852 flood, the second largest and best documented of the historical floods, is especially interesting because its estimated discharge and peak stage were approximated by those of 1997. The very large amount of information about the flood is reported in detail in the Red River Basin Investigation Report:

Canada Department of Resources and Development, 1953. Report into Measures for the Reduction of the Flood Hazard in the Greater Winnipeg Area: Appendix B, History of Floods on the Red River, Red River Basin Investigation, Water Resources Division, 106 p.

The summary below is principally taken from notes prepared by David Anderson, the Bishop of Rupert's Land.

April 23: ...river rose 14 inches last night. Ice still fast and people crossing. (Diaries of Dr. William Cowan, PAM MG2 C15 M154)

April 25-May 1: The ice partially broken up, rendered it unsafe to cross the river. A few however, came over in the morning... Large masses of ice passed during the evening and the following day. The water had risen much, even before the ice gave way, and continued doing so during the week, there being no outlet for it yet towards the lake. The rise was sometimes a foot or a foot and a half, in 24 hours. (Anderson, D., Notes of the Flood at Red River, 1852, by the Bishop of Rupert's Land, 1852. PAM MG7 B2 CMS A83)

April 26: [Ice] on main river started about ½ past 8, and clear water as far as visible up and down. Assiniboine fast... (ibid)

April 27: ...both rivers pretty clear of ice, small river has fallen a little... (ibid)

May 3: [We] were encouraged by the very slight rise during the night, but from 10 AM till 2 PM the waters gained so fast, as to lead to very painful forebodings. Some houses opposite to us were already abandoned, their inmates tenting on the little knolls behind. We hear of one settler taking a bateau right through his house, another with a boat at his door. From the Fort we hear that more than fifty deserted houses may be seen. Since the melting of the snow the weather has been remarkably fine with a strong drying wind. (ibid)

May 4: Rode up to the Fort- the sight very distressing. The bridges are all giving way... (ibid)

May 5: Towards night heavy rain commenced, the first since the breaking up of the ice. (ibid)

May 7: ...In every direction there are processions of cattle, horses, and carts going to the Little Mountain...One stable drifts down the river. (ibid)

May 9: We had heard over night that the waters were stationary at Pembina; but the great rise in the night dispelled such a pleasing idea...The pathway to the Church was open but only just so; the waters had entered one corner of the churchyard, and had the service been three hours longer, we

could not have gone over dry sod...Some came over their cornfields in the large boat...Others were ferried across the creek where my bridge was many feet under water...South wind is bringing down a prodigious amount of water...The Red River opened for itself fresh channels into the Assiniboine above the junction, so that from Pembina to our settlement was a broad lake... (ibid)

May 10: Another beautiful morning, but the rise in the night greater than any previous one. The water was now in the granary and store, and I was some time standing in the water... They were distressed at finding us so surrounded with the waters. Their accounts were most painful. The barn of Emilien, the largest farmer among the Canadians, had floated away; they reported, also, the loss of many other houses... (ibid)

May 11: The rise in the night rather less; the platform was now floating; my garden, the last dry spot, was now under water, and the churchyard...was also covered. (ibid)

May 12: ...The rise in the night had been very great, and the wind was strong from the south-east. This caused a violent current against the house, which we could hardly stem on our return. (ibid)

May 13: After a most tempestuous night, a bright morning; the wind falling but still considerable. The rise much as before... (ibid)

May 15: The cold of the previous day had almost prepared us to expect the snow and sleet which fell this morning and continued for some hours- a most wintry aspect for the middle of May. Nearly thirty had slept under the roof...An evident decrease in the rise of the water... (ibid)

May 15: From 7 A.M. yesterday to the same hour today the rise has been 6 ½ inches - Snowing & blowing from the north, very cold. At 10 P.M. no increase the water has been stationary since morning. (Winnipeg Journal, HBCA B.235/a/15 1851-54)

May 16: From last night till noon today the rise has only been 5/8ths of an inch. (ibid)

May 17: Since yesterday morning till this the rise has been about 10 inches, that being now the depth on the house floor. On the store floor it is 13 inches deep. The Pembina boat returned. Heard from Mr. Setter there that the water has been 6 feet 2 ins. deep around the house but that up to the 14th it had been 1 foot 4 ins. a very favourable symptom for us here. (ibid)

May 19: [At Indian Reserve near Selkirk] All was energy around; we seemed to have passed to another atmosphere. ploughing was going on on both sides of the river...those whose land was dry feeling the necessity of cultivating on a larger scale. (Anderson Journal, op. cit.)

May 19: Since yesterday the water has been stationary. (Winnipeg Journal, op. cit.)

May 21: The river still stationary. The height on the whole is certainly not so great as in the former flood, perhaps by about 18 inches, but as the channel of the river is deeper and broader, and the creeks very much enlarged, there may be an equal volume of water. Delighted to find that the water had sunk an inch in my own house... The river was like that of a vast lake studded with houses, of many of which the projecting gable was the only part visible... (Anderson Journal, op. cit.)

May 22: W S.W. water subsided about 2 inches since yesterday morning...cloudless. (Winnipeg Journal, op. cit.)

May 23: Water fallen two inches since yesterday. (ibid)

May 24: Strange sights met our eyes as we proceeded. Some of the bridges we saw four miles below their former locality, and on the opposite side of the river...A barn had been tied to a strong tree, to secure it, but it eventually floated off. The houses, many of them standing up to their eaves in water... Here [at Parks Creek] the current, from being confined within narrow limits became more

impetuous...The rapidity of the current almost made one giddy to look at it, it was running at the rate of eight or ten miles an hour. (Anderson, op. cit.)

May 24: W NE warm river falling about same rate...water has subsided very much to day. (Cowan Diary, op. cit.)

May 25: The breadth of the whole expanse was supposed to be, in some places, twelve miles... (Anderson, op. cit.)

May 26: Went down to our house in the morning; gratified to find only twenty inches of water, instead of forty, in our rooms. (ibid)

May 26: Water still falling gradually. off the house floor today after being there 11 days. Sounded the channel of the river today; Red River 47 feet and Assiniboine 42. (Winnipeg Journal, op. cit.)

May 28: W SE. light breeze...sky overcast. water still falling about same rate...5 PM raining blowing fresh. N.E. cold. (Cowan Diary, op. cit.)

May 29: The water continues to fall. (Winnipeg Journal, op. cit.)

May 31: Water still falling and more rapidly. (ibid)

June 3: ...the land is fast reappearing. The chief fear now is the slip of the bank; many houses are supported and propped up, lest the earth should launch forward and carry them away. (Anderson, op. cit.)

ANTECEDENT CONDITIONS:

Relatively little direct information exists about conditions in the basin during the fall and winter preceding the flood. It can be assumed that the moisture status was extreme after the summer flood and heavy rainfall of the preceding summer. Bond reported warm dry weather at Red River Settlement and Pembina through September and into early October.

Thereafter, there is virtually no commentary until the following entries by Black in late March:

March 27: Up to this date this month has been the most snowy of the whole winter. (Extracts from Mr. Black's Private Journal in Winnipeg Journal, HBCA B.235/a/15 1851-54)

April 1: During the whole of last month the weather has been very stormy with a great deal of snow- and today there is little appearance of spring-indeed less, as regards temperature & the quantity of snow on the ground, than there was a month ago. The snow is now very deep and if we have a sudden thaw there will be a great deal of water on the ground. (ibid)

On April 25th, David Anderson reported

the winter had been unusually fine until the end of February, but through the whole of March a great deal of snow had fallen, which seemed sufficiently to account for the present rise. (Anderson, op. cit.)

Thawing weather came very gradually in the last week of April (Cowan Diaries, op. cit.) and river breakup did not occur until after the water was already rising.

April 15: Weather rather chilly, thaw goes on very gradually freezing at night. Some fears of a flood not without some ground. (Black's Private Journal, op. cit.)

April 22: 6 AM W S.E. Ther. 28E Clear...noon W E Ther 49E Cloudless...Saw 6 geese river rising very fast. Ice unmoved...high water. (Cowan Diaries, op. cit.)

April 23: 6 AM W S.E. Ther 32E Bright...noon W S.E. Ther 44E...10 PM W E Ther . 34E...river rose 14 inches last night. Ice still fast and people crossing. (ibid)

April 24: 6 AM. W E. Ther.34E. no rain but sky dark and threatening. river rose last night about 2 inches ice unmoved...Ice has moved this evening in both rivers...river rising...noon W E. Ther. 51E...10 PM W N.E, Ther. 32E. (ibid)

STATE OF ASSINIBOINE:

The Assiniboine basin apparently experienced severe conditions like those on the Red River. Reverend Abraham Cowley reported overbank conditions and apparently extensive inundation between Portage la Prairie and White Horse Plain.

May 22: Reached Portage la Prairie; Here the people have been flooded out of their houses & we learn that the RR Settlement is also overflowed. (Journal of Abraham Cowley, PAM MG7 B2 CMS M154)

May 24: Left Portage la Prairie & descended the river till nearly sun set when finding a favourable place we encamped. It has become difficult to land when one wishes the banks being generally overflowed. (ibid)

May 25: Reached White Horse Plain much of it is overflowed learned more particulars of R. River flood it is I fear very extensive and destructive. (ibid)

Prior to artificial dyking in this century, the natural channel capacity along this reach was about 15,000 cfs. However, the Assiniboine at Portage la Prairie flows across a gentle alluvial fan which slopes away from the river both to the north and south. For flooding to cover a significant area to a notable depth, discharge must have been greatly in excess of this. Given the severity of the event in the Red River basin, and the clear indication that the Assiniboine was also high, it is not unreasonable to assume a discharge in the 1974 and 1976 range, i.e. 30,000 - 50,000 cfs.

MAGNITUDE:

The hydrograph of the flood has been reconstructed from various diaries (Canada Department of Resources and Development, 1953, op. cit.) Peak discharge for the combined Red and Assiniboine flow below the Forks was calculated as 165,000 cfs,

1857

RED

Spring

A flood in 1857 is referred to in several comments by local observers but there is little actual description of the event itself. It began with a remarkably late spring which is of interest in itself.

April 28: The journey down [to the Indian Settlement] was still on the frozen river but there being much water on the surface from the melted snow the ride was far from pleasant. Nor do I think that it will be very safe in a few days as already during the short time in which it has been thawing the flowing in of the snow water from the land has cut & carved out innumerable slices rendering it a little treacherous along shore. There was a little open water opposite the school house. (Journal of Abraham Cowley, PAM MG7 B2 CMS A89)

April 30: The thaw has so far prevailed as to enable us to remove a little turf...The season for sowing our seeds will be short indeed the winter being so protracted. Although much snow has been thawed on the land near the houses yet far out they tell me winter still holds its sway and even here people have been hauling hay upon the frozen river with oxen & hay frames just as in the depth of Winter. (ibid)

May 2: Sent John Beads an ox load of hay, the ox hauled it across the river on the ice this morning. Went myself over the ice. (ibid)

May 6: River broken. Land on the bank in good order, that further up the field still wet. (ibid)

May 8: Very wintery weather frost & snow & quite a gale. (ibid)

May 9: ...we had near a foot deep of snow this morning it was drifting and snowing so much since last night and the ice passing us thick since last week I never seen the like of so much ice going down the river, the water very high rising still it is just where the old oven was we will be getting afraid if it rises much higher we were as busy this whole week pulling up our wood out of the water and we are not done yet-We have not begun to plough yet though it is so late of the year... (Letter, Jemima Ross [Colony Gardens] to James Ross [Toronto], PAM RFC 207)

May 9: I left home about 10 o'clock and did not reach there [St. John's] till 4 in the afternoon a distance of 13 miles. I never had such a journey. It had been thawing all the former part of the week which made the roads like a Lake, last night the wind changed to the North which immediately brought frost & snow this continued all day. The surface of the road was just a crust of snow & ice...The wind blew furiously bringing with it snow & sleet or rather particles of ice for it literally cut my face. (Journal of William Kirkby, PAM MG7 B2 CMS A92)

May 13: ...Did a little in the garden the heat very great the Snow must soon disappear. (ibid)

The first speculation and reports about an actual flood were by Abraham Cowley.

May 12: The season for sowing is so far gone that although the land is very wet we must plough...The water here has risen to such a height that I imagine the country about the Bishop's is nearly under water. Large quantities of drift wood is being daily carried down by the stream indicating the the river has overflown its banks somewhere. (Cowley Journal, op. cit.)

May 14: ...Heard that many of the low farms above are flooded & that the Scotch people have fled from their houses & I am inclined to believe it as the water here is so high. (ibid)

May 15: Water still rising... (ibid)

May 16: The snow has nearly disappeared another warm day will melt it all no doubt & then perhaps the temperature will be more uniform...Owing to the very wet state of the land farming operations have been more difficult this year. (ibid)

Spring: Unfortunately, the high water of this season flooded up the posts [of a bridge installation across Riviere Sale], and undid all the labour of erection. (Minutes of Council of Assiniboia, June 25, 1857, quoted in Oliver, E.H., 1914. *The Canadian North-West: Its Early Development and Legislative Records*. Publications of the Canadian Archives, No. 9, Government Printing Bureau, Ottawa, p. 424)

The water in the Red seems to have remained high through June and into July.

June 28: Owing to the very melancholy state of the weather & the great difficulty of crossing the river in a storm we had very few at church today. (Cowley Journal, op. cit.)

July 25: In the early part of this evening we examined the banks of the river [near Pembina], and found that they were raised about 42 feet above the surface of the water. The drift timber is lying plentifully upon flats or hollows, at an elevation of 35 feet, which shows the great extent to which this river must be flooded during the spring freshets. Several times the waters have flooded the fort, and a mark on the gate post indicates where the water had reached during the last great flood of the river, and which is at an elevation of 52 feet where the water stood four feet deep in the courtyard of the establishment...Red River itself is at this time flooded about five feet above its usual level, the depth of water now being 14 or 15 feet. (Spry, I.M. (ed.), 1968. *The Papers of the Palliser Expedition, 1857-1860*. The Champlain Society, Toronto, Ontario, p. 100)

The last mention of the high water is a comment by John Bunn.

August 10: ...high water and a late Spring all but deprived us of a prospect of a crop-and now that our prospects have exceeded our utmost expectations- we are in hourly dread of a visitation from a plague of Locusts which, having completed the destruction of Minnesota, are within 20 Miles of the Settlement... (Letter, John Bunn [Red River] to William Bayley [Westminster], quoted in Bayley, D., 1969. *A Londoner in Rupert's Land: Thomas Bunn of the Hudson's Bay Company*. Moore & Tillyer, Chichester, England, and Peguis Publishers, Winnipeg, Manitoba, p. 96)

ANTECEDENT CONDITIONS:

Freezeup occurred on November 3 (Cowley Journal, op.cit.). Snow was reported on numerous days through November and December and seems to have accumulated to a substantial depth by late December.

December 24: The snow was exceedingly deep in the open plains, but the day was mild. (Kirkby Journal, op. cit.)

By early March, the snow cover was described as deep enough to cause some apprehension of a flood.

March 9: The winter very cold the snow is very deep; There is an old woman prophesied that there would be another flood...What shall we do if there should be another flood? (Letter, Jemima Ross [Colony Gardens] to James Ross [Toronto], PAM RFC 205)

Thawing conditions arrived soon after this entry and removed much of the snow cover.

March 16: Still as wet as yesterday. The snow is melting down to pools of water & the ground is becoming quite bare & soft...The spring has never been known to set in so early as this before. (Kirby Journal, op. cit.)

March 23: ...a very difficult job [the men hauling stones] had to get on & off the river on account of the great rise in the water which the thaw has made. (ibid)

March 30: The general thaw seems to have commenced in earnest it has been raining considerably today & very much of the snow is already melted by the warmth of the past week. (Cowley Journal, op. cit.)

By early April, however, cold winter conditions had returned and remained until late in the month, producing the late spring referred to at the beginning of the flood description.

April 4: An exceedingly rough & boisterous day. The snow & drift were so bad that one had the greatest difficulty in standing against it. (Kirby Journal, op. cit.)

April 8: We have had a severe winter-Still frosty Still much snow-River still sound. (Letter, Rev. John Black [The Manse, Red River] to James Ross [Toronto], PAM RFC 210)

April 12: The weather this morning was very winterly wind high with snow & cold... (Cowley Journal, op. cit.)

April 13: A good deal of snow has fallen today. (ibid)

April 24: The great change in the temperature of the atmosphere may perhaps induce many [to go out]. The thaw seems to be very general & the snow is melting away very rapidly. Ducks were flying about the fields today. (ibid)

STATE OF THE ASSINIBOINE:

There is no information relating to conditions in the Assiniboine basin.

SUGGESTED MAGNITUDE:

There is little evidence to indicate the size of this event, other than Cowley's statements on May 12 and 14 that the area near the Bishop's must be nearly under water and that the low farms are flooded and "the Scotch people have fled from their houses." Apparently, minimum flood stage was reached but no extensive overflow occurred, suggesting a discharge comparable to 1948 or somewhat smaller.

1860

Miller and Frink (1984) list 1860 as a major flood year (Table 4), citing Upham (1895), but this seems unlikely, or at least was of sufficiently small magnitude to have not affected the Red in Manitoba.

The spring of 1860 was relatively early and marked by very low water in the Red River Settlement:

April 14: The snow is nearly all away, and there is every prospect of the river being free of ice in a few days. The final disruption commenced about a week ago. The water has been rising for a long time past, and navigation may speedily be resumed. The season has been so far advanced as to enable farmers to commence ploughing the new ground...We are informed on the authority of parties lately arrived from Georgetown-at the mouth of the Buffalo river-that there are indications of the main river being unusually low this season. They say that to the south the snow has been almost entirely melted and that many of the creeks which supply the river are already dry; notwithstanding which the water is below the average depth. Their statement as to the absence of snow is confirmed by the fact that as early as last month they were able to travel from Georgetown to within a short distance of Pembina by means of oxen and carts. But we hope they may be mistaken in regard to the shallowness of the water. (The Nor'Wester Newspaper)

April 18, 1860: River opens by dissolving the ice, the water being very low there has been too little strength of current to remove it a very unusual case. (Journal of Abraham Cowley, PAM MG7 B2 CMS A87)

April 28: The ice has disappeared before the advancing heat of summer. The far-famed Red River of the North glides sluggishly at our feet...Distance does indeed lend enchantment to the view of high muddy banks and low muddy water. For the last fifteen or twenty years, the river has not been lower at this season than it is at present. The quiet flow of ice contrasted strongly with the customary rush, crash and splash of former years. How the steamboat is to discharge her important duties this year we cannot imagine. (Nor'Wester, op.cit.)

May 14: [American travellers] repeat the universal story regarding the shallowness of the water, of which three or four detentions on sand-bars afforded them practical illustration...Of late, the weather has not been so pleasant as the fitness of the opening spring had led us to expect. For the season, the winds have been cold, and since we last wrote on this topic, we have been visited by two or three smart snow storms. Agricultural operations, however, do not seem to have been greatly retarded. Nearly all the cereal crops are in the ground, and if the seed has not been nourished by sunshine and rain, neither has it been injured by cold. (ibid)

Rain fell on several days in the latter half of May and June was a very wet month, causing the river to rise.

June 14: On all hands it is admitted that a season more favourable than the present for the growth of the wheat crop has never been known in Red River. Showers are plentiful and sunshine abundant...The river continues to rise rapidly though for the season it is unusually low. (ibid)

June 17: Owing to the very wet weather [the attendance at church was small]. A very great quantity of water has fallen, the valley in our field was so filled with water that it produced quite a rapid current. (Journal of Abraham Cowley, PAM MG7 B2 CMS A87)

June 28: The present has been a very rainy month. We have had showers throughout at short

intervals. The first week rain was very much required, and was welcome, even in the second; but farmers think that during the last fortnight we could have dispensed with it advantageously for sunshine and clear sky...The water has risen steadily during the present month, and is now higher than at any time previous this year...If the rain continues, there will be abundance of water for the Anson Northrup...At present she has enough and to spare...[The passage of the Canadian mail] through the Lake of the Woods detained them three days, owing to a heavy gale of wind which prevailed, and against which they could not make head in their boats. They found much of the subsequent portion of their route almost impassable-the streams being all swollen into little rivers by the late rains, and the morasses so flooded with water that their men frequently sunk therein up to their breasts... (Nor'Wester, op. cit.)

Rain continued to be reported through July and into August.

July 14: In our last, we stated that the month of June was more than unusually rainy. By the close of the month there was more rain than was necessary for healthy vegetation. The first half of July, we regret to say, has been a continuance in an aggravated form of the same wet season...If we have as frequent rains for the next fortnight, very serious damage will be done to our farming interests... (ibid)

July 28: Mr. McVicar [carrying mail from Fort William and Fort Francis] found the rivers greatly swollen by the heavy rains, and he and his party were compelled to swim several of them with the mail bags on their backs...Per contra the river is falling all the way from Georgetown to Fort Garry. (ibid)

August 28: On the whole, the weather has been favourable during the last ten days. Contrasted with the previous storms of rain, we might almost say it has been quite dry...On arriving at Georgetown with the boat last trip we found the water so low (averaging a little over two feet from Sand Hill river to that point and still falling, that we concluded...to load the barge and run down with it, hoping that on our return there might be a rise in the river. (ibid)

August 31: I hear many people say that they never remember such a summer for rain, it is indeed been wonderful all through...22nd Still verry rainy weather...24th some rain every day... (Diaries of Samuel Taylor at Red River Settlement, PAM MG2 C13)

Upham (1895) gave no basis for listing 1860 as a flood year. Although the summer appears to have been sufficiently rainy to produce high water levels in smaller tributaries, and cause the Red to rise from low spring levels throughout much of the June and early July period, there is no indication that the Red River was near overbank stage.

1861

RED

Spring

This is acknowledged to be the third largest historical flood, although it is less well-documented than the 1826 and 1852 events.

April 15: ...this last winter has been more than average in length and in quantity of snow, but not in severity...The roads are in a dreadful state at present and very few people are to be seen moving about. The abundant snow has resulted in lakes and swamps the whole country over. Vegetation is just beginning to sprout, ducks and geese are being welcomed on all hands; creeks are pouring their volumes into the river, and the signs of the times generally make us feel that spring is upon us. (Nor'Wester Newspaper)

There must have been some apprehension of a serious potential for flooding because the April 15 Nor'Wester also contained a description of the 1826 flood.

April 30: 1st rather a rainy day...5th plenty of water on the ground...6th plenty of water...and raining a little mostly all day we have not seen the sun this two or 3 days back...7th verry soft and snowing thick, some geese seen up at the Rapids...[9th] found the water so deep that we had to just come back [from cutting fencing]...it began to snow thick soon after dinner on the 13th...the 14th was a fine clear day wind N.N.W. all day...the River began to break up in the evening of...the 15th but soon stopped over the night...19th a pretty day...20th a fine day...21st a fine warm day wind south...25th--the water is high now and plenty of wood going down every day, and many people left their houses now owing to the high-water. Water is still rising this 30th...a verry wet rainy spring the like has not been seen this many years back. (Diaries of Samuel Taylor at Red River Settlement, PAM MG2 C13)

May 1: The general flood which is overspreading the country will necessitate a temporary suspension in the publication of The Nor'Wester. If the waters continue to rise any longer, we shall be compelled to migrate with the multitude to distant ridges and enjoy the red man's life for some weeks. Should they recede we shall continue uninterruptedly, but there may be difficulty in the delivery as nearly all the bridges are swept away. (Nor'Wester, op. cit.)

The Report on Investigations Into Measures for the Reduction of the Flood Hazard in the Greater Winnipeg Area contained the following extract from the Nor'Wester:

As we write, the waters of the Red River have almost rolled in at our doors; and there is every indication that we are on the eve of a great flood...The unusually large quantity of snow which fell during the winter has entirely disappeared within the past fortnight. The creeks have all swollen to the size of rivers; and the main river has received from this source and from its numerous larger tributaries such copious supplies that since ever the ice commenced to break up, the channel has been constantly widening and deepening until the waters have all but overlapped even the highest portion of the banks....As early as a fortnight ago, the main river broke bounds at many points in this Settlement and elsewhere. At Georgetown, it completely inundated the inhabitants--greatly deranging the plans and workshops of the enterprising owners of the Anson Northrup, and floating the pioneer craft herself a long distance into the woods, where she got entangled with some twenty feet of water under her. In the Company's warehouse, there were, on the 14th inst., three feet of water; but,

fortunately, the goods were all saved from damage. The water was not rising so quickly at this date; but, according to accounts forwarded to Governor Mactavish by Mr. A.H.Murray, no dry land was visible from that place, except a small ridge, on which the Company's cattle were feeding. From Breckinridge to Georgetown, the whole country was reported to be submerged; and between the latter place and this settlement, the land was fast disappearing. The water in the Company's store at Pembina was two feet deep on the 23rd ult. Ten miles this side Pembina, Mr. Hugh Cameron...had been driven from home by the waters; and at last accounts, the house itself had floated off.

Throughout a very great section of our own infant colony, the overflowing of the river has caused much confusion and distress. Stealthily and steadily, day after day, the waters rose...Six and sometimes twelve inches of rise between sundown and sunrise, brought matters to a crisis with very many before long. The river was at their doors--in their dwellings. Then they fled from house to house--still hoping the waters would abate. Fourteen days passed in this way, with no change save the increasing imminency of a general flood which might, probably be greater and more ruinous than any of its predecessors. The creek bridges were all swept away, so that travelling on horseback, or on foot, became difficult and dangerous...Bye and bye, numbers of the good peoples themselves were in full march for the same destination [Stony Mountain]...

Thus far the change to the natural features of the landscape adjoining the river is a very marked one. Familiar headlands have wholly disappeared, and before us rolls a river broad, and wide, and deep, as the Mississippi at Galena...

On the "American side" of the river, Kittson, Cavalier, Marion and the other settlers were flooded out by the 23rd ult. The main river--which had a week before invaded the habitations and stores of August Schubert, A.R.Gerrald-- all in fact who had perched themselves upon the Point--had at this climbed above the eaves of Thibeault's house, and left nothing of the barn discernible except the ridge pole...On the east bank of the Red River, all the buildings in the neighbourhood of St. Boniface, at least, are surrounded by water...The Riviere la Seine, or German River, along which some of them were settled, has now formed a junction with the main river, making the latter in some parts more than half a mile wide...Many fields...are now covered with six to eight feet of water and the tops of some portions of the fencing are barely to be seen...(Nor'Wester, op. cit., May 1)

On June 1, the Nor'Wester added the following information, including an intriguing commentary on the changing channel capacity of the Red.

In our last, we mentioned that a general flood was imminent. We can now say that it has come and gone. It fell far short of former floods in quantity of water and consequent destructiveness, but was still sufficient to cause much loss of property and much suffering. The upper part of the Settlement extending from around Fort Garry, along the Red River to Pointe Coupe suffered the most. That district being generally of a lower level than the parts below Fort Garry (if we except Point Douglas) was therefore under a greater depth of water...

On the point of land opposite Fort Garry...there has been considerable loss. Schubert's establishment is gone, Jerrold's is gone; and a great deal of moveable property belonging to Mulligan, Harkness, McDougal and others...

Point Douglas has been all but rendered worthless. Bouvette lost two buildings, and two of the three left are upset. The two additions to Gaudrie's dwelling were torn off: the main building is much shattered...When we add that all the fencing is away, and that the best of the soil has been washed off by a terrible cross-current it will be admitted that Point Douglas is hopelessly thrown back. The current which sweeps across its base is so irresistible that we verily believe if a drain had been dug from Neil MacDonald's to Klynes just before the flood, the historic Point Douglas would now be an island. The eastern corner of Fort Garry was in water. The Convent and College of St. Boniface were in water a foot deep. The flooding extended downwards to about St. Paul's Church, and showed how remarkably level was the intervening district up to Fort Garry. There was not at most a foot or

two difference between any two points...

There was a steady rise of water until ...the 8th of May, when the first pause was observed...the very next day, a fall of one-inch marked its ebb. In a week, it once more slipped into the customary channel, and stray parties could then be seen every day wending their way back from distant ridges...

We do not think that the country below Fort Garry will ever be flooded again, for experience shows clearly that each successive flood has indicated far less depth on the plains than its predecessors--a fact fully accounted for by the rapid widening of the river channel. There may be the same volume of water in each flood, or very nearly so, and the ever-increasing width of the river will explain the disparity of depth on the main land. (Nor'Wester, June 1, op. cit.)

The combination of the flood and rain in June left large amounts of surface water standing on the prairie long after the flood itself was over.

July 1: We have had very rainy weather during the past three weeks...We have had but very little warm weather, so far. The spring has been a long, raw, and disagreeable one. Very few will be able to commence haymaking at the usual date, July 20, on account of the immense lakes still covering the back pastures. (ibid)

ANTECEDENT CONDITIONS:

The previous summer had been very wet, causing the Red River to rise in June and July. Rainy weather continued into the early fall and it is likely that the basin was well-saturated at the onset of freezing temperatures which began early in November.

November 15: Indian summer is gone. Not the slightest trace or resemblance remaining of that lovely season. It lasted eighteen days. October closed delightfully and right auspicious was the first of November; but, how different the second! Dark, cloudy, and cold, with pelting rain all day, followed by snow which fell unremittingly for 24 hours! The wind was north and piercing enough for December or January. The cold weather which thus set in, as it were, in a day has continued ever since. The ice set fast, partially on the morning of Guy Fawkes' day. The ground is entirely covered with snow... (ibid)

Milder temperatures in November removed this snowfall and delayed complete freezeup of the river until November 19. Accumulation of significant snowpack did not begin until a heavy snowfall on November 28.

Cold and mild conditions alternated for the remainder of the winter and snow was frequent, particularly in March. According to Samuel Taylor and The Nor'Wester Newspaper, the snowpack was deep by the beginning of the melt season.

March: ...6th a fine day...snowing thick upon the 12th there is now a great quantity of snow upon the ground...16th a cold windy day clear...17th was a cold day south wind...18th snowing thick and south wind, snowing thick on the 19th...22nd cold windy weather...24th snowing it is as winter like yet as it was any time in winter, and the snow is very deep...31st...a fine day soft walking...30th was the beginning of the first soft weather. (Taylor Diaries, op. cit.)

April 15: ... this last winter has been more than average in length and in quantity of snow, but not in severity...The abundant snow has resulted in lakes and swamps the whole country over."

(Nor'Wester, April 15. op. cit.)

Despite the Nor'Wester's comment about the length of winter, however, spring was not late. Thawing conditions began at the end of March and the snowmelt water was augmented by much precipitation in April, as the water was beginning to rise.

April: 1st rather a rainy day...5th plenty of water on the ground...6th plenty of water...and raining a little mostly all day we have not seen the sun this two or 3 days back...7th very soft and snowing thick...it began to snow thick soon after dinner on the 13th...Water still rising this 30th...a very wet rainy spring the like has not been seen this many years back. (Taylor Diaries, op. cit.)

A further indication that rain prior to and during the flood was a significant factor is the comment by Governor Mactavish after the peak:

May 16: ...Many...have lost heavily and will yet suffer more as it will be late in the season before they can sow their lands, up to this time in this respect those whose lands were flooded are not much behind those whose lands were above water as the spring has been so wet and inclement that there has been very little farming done. (Letter, W. Mactavish, Acting Governor of Rupert's Land, to Thomas Fraser, Secretary of Hudson's Bay Company, dated at Fort Garry, May 16, 1861, HBCA A.11/96, fo. 569d)

STATE OF THE ASSINIBOINE:

On April 17, the Fort Pelly Journal noted that "the water in the river [was] very high" (HBCA, Fort Pelly Journal Sect. B, 1861-62 mfm 475). This is the only mention of the state of the river among daily entries through the entire flood period and beyond. It is concluded that the Assiniboine was probably within its banks during the 1861 flood on the Red.

SUGGESTED MAGNITUDE:

Peak discharge was estimated by the Red River Basin Investigation to have been 125,000 cfs.

1867

A single reference, by Walter Traill at Fort Qu'Appelle, quoted in his memoirs, suggests that there was a significant flood in the summer of 1867.

A week of August remains [at Fort Qu'Appelle] and surely it is very early to have cold weather. The summer season is very short. On the twenty-ninth of May, our boats all stopped at Fairfield because of ice. We have had little warm weather in June, with snow on the thirteenth on my boat trip to Fort Ellice. We have had a miserable wet summer with rain that has done a great deal of damage to crops in Red River Settlement where a large part of the French Settlement has been completely flooded, and many of their houses carried away. (Walter Traill, in Atwood, M., 1970. In Rupert's Land: Memoirs of Walter Traill. McLelland & Stewart, Toronto, p. 86)

It is difficult to understand this comment since there is no indication from those at the Settlement that water levels were abnormal from breakup onward. It is concluded that Traill must have been misinformed.

1869

RED

There is some slight evidence of minor flooding in the spring and summer in the upper Red River basin.

April 17: We are informed that the Red River has overflowed its banks at Fort Abercrombie and that things up there are afloat generally. Very shortly after the river is clear of ice we may look for the flat-boats...The snow had disappeared from our plains on the 17 inst., and the rivers are rapidly breaking up. (Nor'Wester Newspaper, April 17)

By the end of April, however, concerns were being expressed about the possibility of low water.

April 26: the steamboat came up and got nearly all hands to work to get her lading on board so that the delay should be as little as possible as the river seems to be falling rapidly. (Hudson's Bay Company Journal, 26 April, 1869, quoted in Ingram, G., Industrial and Agricultural Activities at Lower Fort Garry, Canadian Historic Sites, Occasional Papers in Archeology and History, No. 4, p. 68)

The river isn't mentioned again until mid-August:

August 17: ...river said to have risen. (Diaries of Dr. William Cowan, PAM MG2 C15 M154)

In mid-September, the Nor'Wester newspaper reported

September 13: A late and pleasant autumn is anticipated to make up for our unusually cool summer...There has been heavy rains somewhere up the country. The Red River has risen during the inst. week some two feet, and we learn that almost all the bridges which crossed the small streams between this and Georgetown have been carried away. (Nor'Wester, Sept, 13, 1869)

Neither of these events had any impact in Manitoba and it is concluded that if flooding occurred, it was minor and restricted to the southernmost sections of the river.