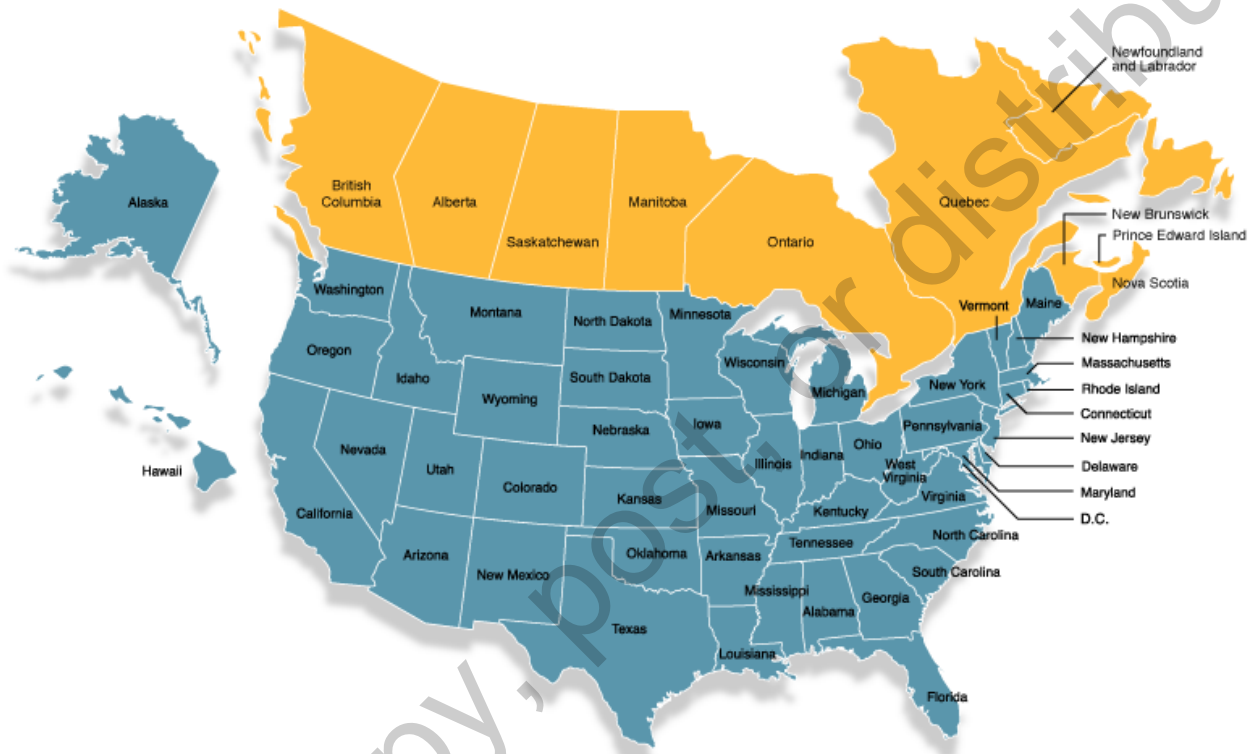


# Appendix 8-1: U.S and Canada Comparative Case: State, Provincial, and Subnational View

## The Political Geography of U.S. Canada Borderline Disasters

Map 1 below shows Canadian provinces and U.S. states with place names for each.

**Map 1: Canadian provinces and U.S. states**



Source: Dun & Bradstreet, First Research, “First Research State and Province Profiles,” copyright 2018 Hoover’s Inc., <http://www.firstresearch.com/state-province-profiles.aspx> (accessed June 12, 2018).

Table 1 below lists U.S. states bordering Canada and their respective Canada bordering counties. Map 1 shows U.S. states and Canadian provinces which abut the International Border. The Yukon Territory has a western border with Alaska and is not shown in Map 1. Provinces and states have been grouped into five provincial-state bloc groups. Blocs are named for their Canadian province or province grouping. This was easier to do than creating a bloc for each of the eleven U.S. states covered in this study. The analysis proceeds by addressing each group separately. In so doing, this study will provide maps, tables, and other information helpful in identifying official disasters of known loss on each side of the International border. All tables in this study were developed as original work by this author.

To follow will be tables of all of the U.S. presidential declarations of major disaster or emergency issued for these states and counties over the period 1994, when NAFTA took effect, through 2013, when the author’s county-level declaration data ends. Interestingly, every one of the counties listed in Table 1 received at least one disaster declaration over the period 1994-2013. This paper contains enlarged U.S.

state-by-state map images identifying U.S. counties bordering on Canada. This should provide a better visualization of where each of these counties are and which Canadian province they share a border with.

**Table 1: U.S. States and Counties Directly Bordering Canada Grouped By Provincial Group**

<b>Provincial Grouping</b>	<b>Number of Counties Bordering Canada</b>	<b>County Names or County Equivalencies</b>
<b>Yukon-British Columbia Group</b>		
Alaska (AK)	1	Yukon-Koyukuk
Washington State (WA)	5	Whatcom, Okanogan, Ferry, Stevens, Pend Oreille
Idaho (ID)	1	Boundary County
Montana (MT) (partial)	2	Lincoln and Flathead
<b>Alberta-Saskatchewan Group</b>		
Montana (MT) (partial)	9	Glacier, Toole, Liberty, Hill, Blaine, Phillips, Valley, Daniels and Sheridan
North Dakota (ND) (partial)	3	Divide, Burke, and Renville
<b>Manitoba Group</b>		
North Dakota (ND) (partial)	5	Bottineau, Rolette, Towner, Cavalier, Pembina
Minnesota (MN) (partial)	2	Kittson and Roseau
<b>Ontario Group</b>		
Minnesota (MN) partial	5	Lake of the Woods, Koochiching, St. Louis, Lake, and Cook
Michigan (MI)	3	Chippewa, St. Claire, Wayne
New York State (partial)	4	Erie, Niagara, Jefferson, and St. Lawrence
<b>Quebec-New Brunswick Group</b>		
New York State (NY) (partial)	2	Franklin (NY) and Clinton
Vermont (VT)	4	Grand Isle, Franklin (VT), Orleans, Essex
New Hampshire (NH)	1	Coos
Maine (ME)	5	Oxford, Franklin (ME), Somerset, Aroostook, Washington

Source: Table 1 assembled by this author.

FEMA funding data covers 1994-2013, but as mentioned, this cost data does not show amounts counties received in FEMA aid, only what the states received under each declaration. The funding shown in this study does break out for each declaration total infrastructure spending (FEMA IS or PA), total human

services spending (FEMA HS or IA), and total spending for these combined and including other administrative costs.

To provide contrast, as well as balance, review of each bloc of states adjacent to a province(s) will open with disaster loss tables covering the province(s) (or territory) based on Public Safety Canada information drawn from the excellent **Canadian Disaster Database (CDD)**.<sup>1</sup> This site allows the user to collect tabular information on each province or territory's disaster losses over time and extends beyond 2013.

The Canadian Disaster Database contains detailed disaster information on more than 1000 natural, technological and conflict events (excluding war) that have happened since 1900 at home or abroad and that have directly affected Canadians. The CDD tracks "significant disaster events" which conform to the Emergency Management Framework for Canada's definition of a "disaster" and which meets one or more of the following criteria:

- 10 or more people killed
- 100 or more people affected/injured/infected/evacuated or homeless
- an **appeal for national**/international assistance
- historical significance
- significant damage/interruption of normal processes such that the community affected cannot recover on its own

"An appeal for national" assistance was bolded (above) to indicate that the cases selected from the database were those that received Disaster Financial Assistance Arrangements (DFAA) aid. As mentioned, cases with no listed damage estimates were excluded from the Canadian province disaster tables, plus relatively low dollar loss cases (less the \$5 million Canadian) were largely omitted from discussion in this study. Funding paid out to Provinces by the Government of Canada under the (DFAA) program was discovered by this researcher during "export" of CDD data to an Excel spreadsheet. That information is included in Canada provincial tables presented in the body of this work.

The CDD database describes where and when a disaster occurred, the number of injuries, evacuations, and fatalities, as well as a rough estimate of the costs. As much as possible, the CDD contains primary data that is valid, current and supported by reliable and traceable sources, including Canadian federal institutions, provincial/territorial governments, non-governmental organizations and media sources. CDD data is updated and reviewed on a semi-annual basis.<sup>2</sup>

This researcher has extracted information on disaster losses within each province bordering the U.S. The Canadian province tables incorporate DFAA data. The total amount of Government of Canada DFAA funds that flowed to each province for incidents occurring between 1994 and 2013 is drawn from CDD downloaded data. Large \$100 million plus disasters routinely exceed per capita loss qualifying deductibles for all provinces such that Canadian DFAA funds are dispensed if sought.

However, Public Safety Canada, like DHS-FEMA, will not allow its federal funds to cover insured losses. Also, some provinces are relatively heavily populated and others less so. This means high population border provinces, like Ontario, Quebec, British Columbia, and Alberta must meet higher deductibles than less populated border provinces (i.e., Saskatchewan, Manitoba, and New Brunswick). Also, while a high population province may be tempted to go after a modest DFAA payout if cost-share conditions are met, however, provincial officials may weigh this against Public Safety Canada reporting requirements

and their administrative costs and conditions. Damage assessment is always cumbersome even if this work is confined to the provincial level, but an additional layer of complexity is added whenever the Canadian federal government becomes involved (a phenomenon that parallels state disaster management relationships with the U.S. Federal Government). The point is that provincial officials may sometimes forgo DFAA funding if they lightly exceeded the federal cost-share threshold and the burden of federal compliance appears to exceed the benefits DFAA funds would provide.

Finally, as the data will show, in rare cases, perhaps in declarations issued by the Premier, Public Safety Canada may be required to waive the full provincial cost share and so furnish 100 percent DFAA help. Again, this parallels the U.S. case in so much as American presidents from Truman through Trump have authority to increase the federal cost share – examples, a 90/10 federal/state for California’s Northridge earthquake of 1994; a 100/0 federal/state for Florida’s Hurricane Andrew of 1992 and New York State’s 9/11 attacks of 2001; and a 100/0 federal/state for Puerto Rico’s Hurricane Maria in 2017.

Canadian and U.S. dollars vary in regards to their respective rates of exchange. This study did not consider “Canadian to U.S.” or “U.S. to Canadian” dollar value differences. At a few points a parenthetical (Can\$) or (US\$) appears in this study, however, it would have been unwieldy to include these inserts at every reference to a dollar amount. Therefore, the reader must understand that all references to Canadian province or territory dollar damage costs or DFAA assistance is in Canadian dollars. Likewise, all references to U.S. federal assistance to disasters or emergencies to U.S. states are in American dollars.

Moreover, most provinces do not have general purpose government counties in the sense that the United States does.<sup>3</sup> Many provinces identify disaster locations by regional district (which for some provinces are county equivalencies), while others refer to municipalities or urbanized areas as key sub-provincial jurisdictions in lieu of counties.

Correspondingly, though the United States has county governments, in a few states counties are not infused with much authority or responsibility. Moreover, in several states, some counties, often in relatively remote and rural areas, are skeletal as government entities. In such cases, their respective state governments augment their limited emergency management capacity.

The U.S. federal government, as explained previously, has a system for dispensing federal disaster assistance to states and counties. Records of presidential serially numbered disaster declarations begin formally in May of 1953. It is possible to observe federal disaster assistance funding for each declaration (always granted to states directly). While there is county level data included in each declaration (locatable with great effort), **it is not possible for unofficial researchers to discover exactly how much disaster assistance went to each county included in any declaration granted to a U.S. state.** In other words, it is possible to identify the counties included in a declaration of major disaster or emergency and what FEMA programs they were eligible for - but identifying how much federal assistance went to each county in a declaration is not possible under current FEMA disclosure rules. Each state could reveal how much federal and state disaster money went to each county under each program, but universally their emergency management agencies do not. Counties could disclose this information as well but whether they choose to do this, how they choose to do it, and where they post this information requires years of research effort given the thousands of counties in the U.S. Table 1 shows that this study considers 52 American counties or county equivalents that border Canada.

In this entire study, how the provinces, states, and their local entities are examined, moves in a WEST TO EAST direction: Alaska to Maine and Yukon-British Columbia to New Brunswick.

Lack of county-level information is a serious limitation in U.S. emergency management and the practice of not divulging this data makes a mockery of American disaster risk analysis and mitigation efforts. If federal disaster relief going to each county under a declaration were revealed, this would provide a much better historical picture of each county's risk vulnerability, experience with disaster, and attendant costs and dollar losses. Admittedly, disaggregating declaration funding information so that federal relief to each of the nation's counties is made public, is difficult to do as an accounting exercise. Such disclosures would be likely to expose flaws and biases in disaster aid: reveal county skill or lack of skill at obtaining federal disaster fund acquisition; divulge that some counties secure disproportionately more funding than others owing to bureaucratic interference and political machinations in dealings with federal and/or state officials; and show that DHS-FEMA fund distribution over counties does not match up well with initial disaster damage assessments, etc. These points would prove to be a political embarrassment for elected and appointed officials tasked with making federal disaster assistance fair, effective, and efficient.

## The Yukon-British Columbia Group

For this and each province group to follow, Canada's provincial disaster losses open the section. Table 2 showing major provincial incidents, including those receiving Public Safety Canada DFAA funding, begins each section. This is followed by a list of U.S. disaster declarations (DRs and Ems) which include one or more border counties. Some declarations encompass other "non-border" counties of a state, but any declaration to a state that did not include one or more border counties was omitted from this study. Unfortunately, as mentioned previously, U.S. FEMA does not make public disaggregated federal relief spending to the county level. The sums shown went to the state government which then passed these monies through to counties included in the presidential declaration.

The American data here is composed of FEMA outlays of disaster relief spending dispensed through presidential declarations. Every declaration applies on a state-by-state basis; declarations do not go to groups of states, nor do they ever go directly to counties or other municipalities without first passing through the respective state government. In contrast, available **Canadian data shows estimated total losses, DFAA payments the province received, province payments to DFAA (under cost share), and provincial departmental payments.** One advantage of the U.S. data is that it reflects an initial decision by the president which is often made on the basis of early post-disaster damage assessment. Eventually, federal funds expended under each declaration are federally audited, giving greater credence and documentation to loss claims and recovery costs. Canada's system considers provincial disaster needs and costs through an elaborate system of graduated thresholds and deductibles. The Canadian Disaster Database reveals federal and provincial post-disaster payments – but may be limited by infrequent updating. Yukon Territory, Province of British Columbia, and State of Alaska are shown on Map 2.

Canada's Yukon Territory and the Province of British Columbia are vast in land area. Map 2 displays both of these jurisdictions. Map 3 shows the Province of British Columbia alone with its regional districts and regions. Below are British Columbia incidents from 1994 to 2014, some of which received DFAA funding. The Yukon-British Columbia group Table 2 presents a list of incidents and more. Only cases with estimated costs (known) of at least \$5 million were included unless lower cost incidents received DFAA

funding. Some of these incidents transpired near the U.S. border and some took place much further inland. Yukon territory cases are not included in the Table 2 as too few received DFAA funding.

**Map 2: Yukon Territory, Province of British Columbia, and State of Alaska**



Source: Yukon Info, <https://www.yukoninfo.com/yukon-southeast-alaska-northern-british-columbia-maps/> (accessed June 13, 2018).

**Table 2: British Columbia Disasters With DFAA Payments, 1994-2014**

EVENT TYPE	PLACE	EVENT START DATE	EVAC- UATED	ESTIMATED TOTAL COST	FEDERAL DFAA PAYMENTS	PROVINCIAL DFAA PAYMENTS	PROVINCIAL DEPT PAYMENTS	DEATHS	INJURED
Storms and Severe Thunde	Salmon Arm BC	08/04/1994	0	\$ 11,155,000	\$ -	\$ -		0	0
Flood	Southeastern British Columbia	06/05/1995	802	\$ 7,155,707	\$ 1,685,853	\$ 5,469,854		0	0
Flood	East Kooteney (Elk River-Watershed) R	06/01/1995	0	\$ 7,155,707	\$ 1,685,853	\$ 5,469,854		0	0
Storms and Severe Thunde	Southern British Columbia	18/03/1997	0	\$ 4,585,262	\$ 653,232	\$ 3,932,030		0	0
Winter Storm	Southwestern British Columbia	29/12/1996	0	\$ 215,339,641	\$ 1,583,282	\$ 5,440,089	\$ 3,821,888	0	0
Flood	Southwestern British Columbia	27/11/1995	230	\$ 18,835,222	\$ 1,915,497	\$ 5,722,996	\$ 11,196,729	0	0
Flood	British Columbia	03/01/1999		\$ 22,426,695	\$ 12,206,998	\$ 10,219,697			
Storm - Unspecified / Othe	Greater Vancouver Area, Southern BC	23/11/1998	0	\$ 14,025,688				0	0
Wildfire	Salmon Arm BC	08/10/1998	7000	\$ 3,036,145				0	0
Flood	Southern British Columbia	05/01/1997	0	\$ 40,114,688	\$ 15,472,238	\$ 10,407,813		0	0
Flood	Peace River area BC	01/06/2001		\$ 20,942,391	\$ 10,691,352	\$ 10,251,039			
Landslide	North Vancouver BC	19/01/2005	300	\$ 4,200,000	\$ 4,200,000			1	1
Flood	Vancouver Island and South-western B	16/10/2003	750	\$ 4,851,046	\$ 4,851,046			2	
Wildfire	Southeastern British Columbia and Sou	01/07/2003	48501	\$ 141,566,277	\$ 141,566,277				
Flood	Prince George BC	10/12/2007	20	\$ 7,500,000	\$ 1,600,000	\$ 5,900,000		0	0
Flood	Terrace, Smithers & Mount Currie BC	05/06/2007	375	\$ 9,600,000	\$ 9,600,000			0	0
Storms and Severe Thunde	Greater Vancouver and Fraser Valley B	06/01/2009	0	\$ 6,900,000	\$ 6,900,000			0	0
Storms and Severe Thunde	Vancouver, Fraser Valley and the Great	06/01/2009	0	\$ 16,500,000	\$ 6,900,000	\$ 9,600,000		0	0
Wildfire	Kelowna, Kamloops and Cariboo BC	18/07/2009	20000	\$ 75,000,000	\$ 58,000,000	\$ 17,000,000		1	0
Wildfire	Williams Lake, Chilcotin, Houston, Burr	28/07/2010		\$ 220,000,000			\$ 220,000,000	2	0
				\$ 850,889,469	\$ 279,511,628	\$ 89,413,372	\$ 235,018,617		

British Columbia's three most costly disasters were for a wildfire in 2010 [\$220 million (Can\$)], a winter storm in December 1996 (\$215 million), and a wildfire in 2003 (\$141 million).<sup>4</sup> The BC disasters with DFAA payments are shown in Table 2, which lists 20 incidents over 1994 through 2010. Compared to many other provinces bordering the U.S., British Columbia was very successful in securing DFAA funds for 16 of those incidents. BC experienced 9 floods, 5 severe storms, 4 wildfires, 1 winter storm, and 1 landslide, with only 2 severe storms and 2 wildfires unsubsidized by DFAA.<sup>5</sup> Thus, Table 2 totals indicate that about 33 percent of BC's total estimated disaster losses, from 1994-2010, were underwritten by DFAA monies. Finally, it is unclear as to why a \$220 million (Can\$) wildfire loss in 2010 received no DFAA funding and instead was shouldered by the Province's departments.

The Yukon-British Columbia group includes the State of Alaska. Within it is the Yukon-Koyukuk area of central Alaska. That area directly borders Canada, and in its Yukon Territory. Alaska's Yukon-Koyukuk was the lone Alaska border county receiving federal relief under a disaster declaration during the period 1994-2013 – for a wildfire in 1999 and a flood in 2009. Neither incident seems to have been shared with Canada's Yukon Territory.



**Map 3: Regional Districts of British Columbia**



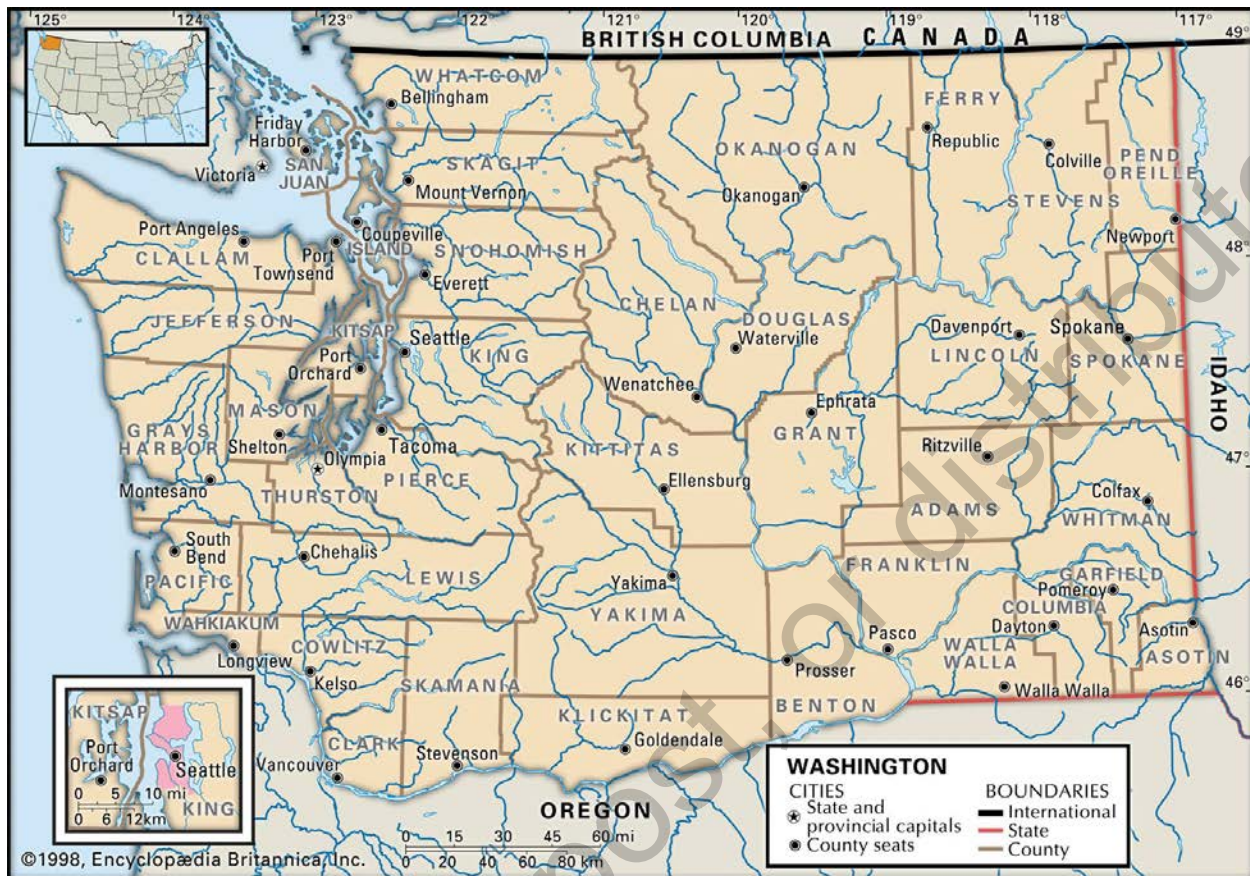
Source: Geography of British Columbia, Wikipedia, <http://enacademic.com/dic.nsf/enwiki/1441695> (accessed June 13, 2018).

Washington State, within the Yukon-British Columbia bloc, has five counties directly on the International Border and each is located south of the Province of British Columbia. Washington State counties connected by land to Canada's, Province of British Columbia are (west to east) Whatcom, Okanogan, Ferry, Stevens, and Pend Oreille. See Map 4.

The State of Idaho and its counties (Map 5) are part of the Yukon-British Columbia Group. Aptly named Boundary County, northern-most on the Canadian border and opposite British Columbia, is Idaho's only county on the International Border.



Map 4: State of Washington with Counties



Washington State counties including those connected by land or bridge to Canada, Province of British Columbia.

Source: [https://www.google.com/search?q=Washington+State+counties+on+Canadian+Border&bih=799&biw=1600&espv=2&source=lnms&tbn=isch&sa=X&ved=0ahUKEwjvY7wII3OAhVMPiYKHdRSByYQ\\_AU1BygC#imgsrc=mfUsh2Vu3kQPwM%3A](https://www.google.com/search?q=Washington+State+counties+on+Canadian+Border&bih=799&biw=1600&espv=2&source=lnms&tbn=isch&sa=X&ved=0ahUKEwjvY7wII3OAhVMPiYKHdRSByYQ_AU1BygC#imgsrc=mfUsh2Vu3kQPwM%3A)

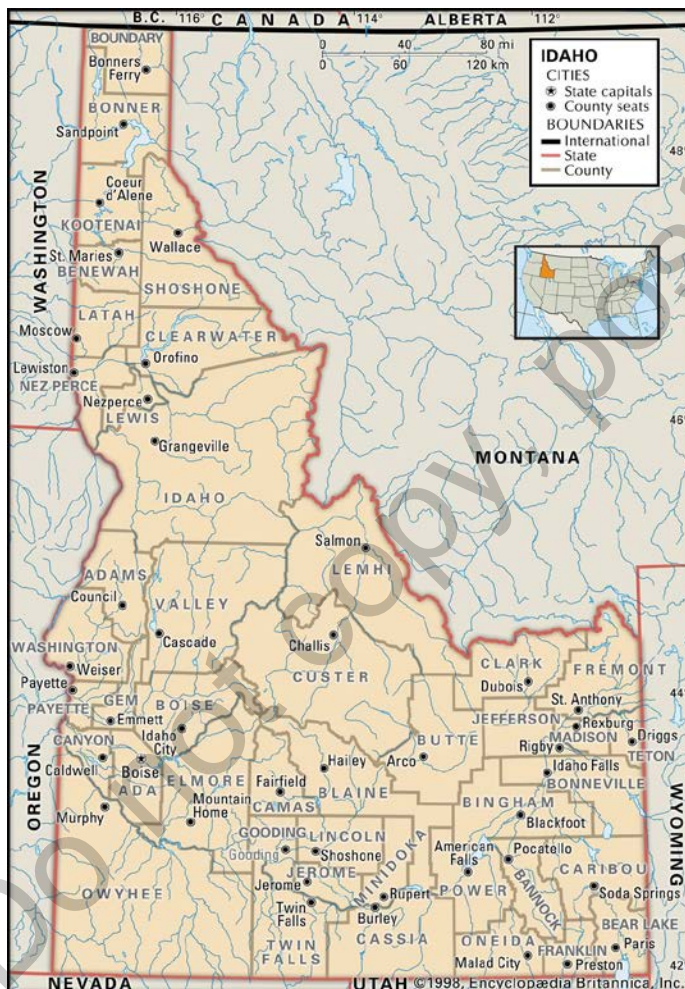
The Yukon-British Columbia group on the U.S side displays presidentially declared disasters for Alaska (1 case) and Washington State (15 cases) which include counties on the Canadian border.

Type is either DR (major disaster declaration) or EM (emergency declaration). Dis Num is the declaration number. State is given as two-letter abbreviation. Declaration date is the date the president issued the declaration for the event. Disaster description is a short description of the event (with some words truncated to fit space available). IS total is the total of FEMA infrastructure assistance provided to the state and local governments included in the declaration. FEMA human services (HS) outlays<sup>6</sup> are also listed.

Most DR's are issued under a 75/25 federal/state & local matching basis, however, in a small fraction of cases the share is 100/0, no state and local match required. FEMA's HS program is Human Services and is composed of:

- Individual and Family Grants (IFG) now Individual and Household Grants
- Temporary Housing Aid
- Mobile Home Housing Aid
- Disaster Unemployment Aid (DUA)
- Inspection Services (paid out to contractors)
- IS Crisis Counseling (subsidizes state administered community mental health counseling)
- RP Crisis Counseling (subsidizes state administered **acute** mental health counseling)
- Legal Services (victim legal aid in after-disaster disputes with landlords, etc.)

Map 5: Map of Idaho Counties And County Seats



Source: Map of US.org, "Maps of Idaho," <https://www.mapofus.org/idaho/> (accessed June 13, 2018).



The author has detailed sub-program (IFG, DUA, IS Crisis, etc.) spending records for each declaration covering HS from 1994 through 2013, but it was not possible to introduce this level of federal relief funding detail in this project.

Table 3: YBC-US contains only Montana declarations that include Lincoln and Flathead counties because those are the only two Montana counties bordering British Columbia. See Map 6. The AS-US Group (Alberta-Saskatchewan) group in the next section contains Montana declarations which include counties on the Saskatchewan border. As a result of this distinction, a few Montana declarations, those containing “both” YBC-US and AS-US bordering counties are double counted, once in the YBC-US group and once again in the AS-US group.

**Map 6: Montana Counties and Adjacent Canadian Provinces**



Note that only Lincoln and Flathead counties in northwest Montana are adjacent to the Province of British Columbia, putting those two counties in the Yukon-British Columbia bloc. The next bloc, Alberta-Saskatchewan, is contiguous with Montana counties of (west to east) Glacier, Toole, Liberty, Hill, Blaine, Phillips, Valley, Daniels, and Sheridan. Source: Map of US.org, <https://www.mapofus.org/montana/> (accessed June 13, 2018).

According to Table 3: YBC-US, for Alaska, Washington State, Idaho and Montana, the U.S. Federal Emergency Management Agency has spent over \$700 million on disaster declarations (major disaster

and emergency types) covering at least one county on the International Border with Canada from 1994 to late 2013. As mentioned, there were two major FEMA program spending categories considered: IS (Infrastructure program) and HS (Human Service program). With a total of about \$411 million in infrastructure spending, this means that over 58% of all U.S.-FEMA disaster spending for AK-WA-ID-MT border county inclusive declarations was for infrastructure repair, rehabilitation, or replacement. Both British Columbia and its adjoining U.S. states frequently suffer disaster from severe storms, flooding, winter storms, seasonal ice melt, high winds, and land- and mud-slides. Two other important disaster agents are also in play: wildfires and earthquake. Both British Columbia and the Yukon Territory periodically suffer the vicissitudes of wildfire, as do Washington State, Idaho, and Montana. Northeastern Washington State experienced the Nisqually Earthquake in 2001, an event that produced \$184 million (USD) in FEMA payouts, of which 44% went for infrastructure coverage. British Columbia, Yukon Territory, and Washington State share a relatively high vulnerability to decimating earthquakes owing to the Cascadia, southern Alaska, and Aleutian regions' frequent seismic activity.

Table 3: YBC-US shows a 1994 flood in Alaska, though the immense size of the jurisdiction affected (as big as the U.S. state of Georgia) and the relatively small zone of damage makes it unlikely that the incident spilled over into the Yukon Territory of Canada.<sup>7</sup> Federal fisheries regulation to protect Salmon in 1994 provided a rare President William J. Clinton declaration to help coastal fishers through disaster unemployment aid. Fisheries closures do not ordinarily warrant federal disaster declarations.

Washington State garnered 15 declarations from 1994 through 2011: 6 for severe storms, 4 for major winter storms, 1 for an ice storm, 1 for flood, and 1 for the 2001 Nisqually Earthquake. In this and many of the tables to follow is a declaration for Hurricane Katrina evacuation. In the aftermath of Katrina President George W. Bush invited every state outside the damage zone to apply for an emergency declaration if the state or its localities incurred expenses in help those fleeing the damage zone resettle. The declaration would reimburse all eligible expenses.

Idaho, with a single county on the Canadian border, received 4 declarations which included this county. Two incidents were for severe storm, 1 for flood, and one for Katrina resettlement reimbursement. Montana, with two counties bordering BC, received 6 declarations: 3 for storms with ice jams, 1 for wildland fire, 1 severe storm, and 1 for Katrina costs

Table 4 is a county-by-county declaration history for Alaska, Washington State, Idaho, and Montana counties which border the Yukon and British Columbia area. The purpose of this county by county exposition is to factually document county-level declaration frequency, timing, and nature of disaster agent.

As said, in this entire study, how the counties are listed, as well as the flow of analysis over Canadian and U.S. jurisdictions, moves in a WEST TO EAST pattern. For U.S. states, special care was taken to select maps which included county borders and name labels. This shows their proximity to Canada and particularly to Canada's neighboring provinces. Consequently, by using the maps and referring to the county-by-county declaration lists, this work furnishes greater context.

**Table 3: YBC-US: Yukon-British Columbia Group - U.S. Declared Disasters that include at least one U.S. border county, for Washington State, Idaho, and Montana, Jan. 1994-Nov. 2013<sup>8</sup>**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1039	AK	09/13/1994	Flooding due to extensive rainfall	\$ 43,898,170	\$ 1,670,061	\$ 56,768,002
DR	1037	WA	8/2/1994	El Nino, Salmon Industry		\$ 6,465,607	\$ 7,370,446
DR	1079	WA	1/3/1996	Severe storms, high winds, flooding	\$ 23,869,428	\$ 4,222,334	\$ 35,379,418
DR	1152	WA	1/7/1997	Severe Ice Storms	\$ 7,283,028		\$ 8,771,579
DR	1159	WA	1/17/1997	Winter storms, flooding, mud & land slides	\$ 58,894,278	\$ 12,256,917	\$ 89,857,134
DR	1172	WA	4/2/1997	heavy rains, snow melt, flooding, land & ice	\$ 5,821,567	\$ 1,091,325	\$ 8,361,772
DR	1182	WA	7/21/1997	Flooding due to Winter storms		\$ 76,546	\$ 305,972
DR	1252	WA	10/5/1998	Flood	\$ 1,614,844		\$ 2,017,617
DR	1361	WA	3/1/2001	Earthquake	\$ 82,815,793	\$ 57,497,526	\$ 184,556,193
DR	1499	WA	11/7/2003	Severe Storms and Flooding	\$ 9,782,068	\$ 2,823,582	\$ 17,435,187
EM	3227	WA	9/7/2005	Hurricane Katrina Evacuation	\$ 1,730,747		\$ 2,382,962
DR	1641	WA	5/17/2006	Severe Storms, flooding, tidal surge, landslides	\$ 6,856,549		\$ 9,726,416
DR	1682	WA	2/14/2007	Severe Winter Storms, Landslides and Mudslides	\$ 31,304,964		\$ 43,032,840
DR	1817	WA	1/30/2009	Severe winter storm, landslides, mudslides	\$ 60,349,185	\$ 11,115,821	\$ 102,721,597
DR	1825	WA	3/2/2009	Severe winter storm and record and near record snow	\$ 29,921,583		\$ 36,914,694
DR	4083	WA	9/25/2012	Severe storm, straight-line winds and flooding	\$ 3,280,149		\$ 5,057,326
DR	1102	ID	2/11/1996	Severe storms and flooding	\$ 15,650,460	\$ 5,224,083	\$ 27,016,851
DR	1154	ID	1/4/1997	Severe Storms, flooding, mud & land slides	\$ 14,628,880	\$ 3,276,922	\$ 25,542,866
DR	1177	ID	6/13/1997	Flooding & Landslides	\$ 8,388,324	\$ 753,631	\$ 11,702,918
EM	3244	ID	9/13/2005	Hurricane Katrina Evacuation	\$ 212,992		\$ 227,156
DR	1105	MT	2/23/1996	Severe storms, flooding & ice jams	\$ 2,015,171		\$ 2,513,429
DR	1113	MT	5/16/1996	Severe storms, flooding, ice jams, soil saturation	\$ 1,585,768		\$ 1,884,438
DR	1183	MT	7/25/1997	Severe storms, ice jams, snowmelt, flooding	\$ 6,067,460		\$ 8,481,737
DR	1340	MT	8/30/2000	Fire		\$ 1,975,943	\$ 3,999,294
EM	3253	MT	9/13/2005	Hurricane Katrina Evacuation	\$ 119,960		\$ 163,712
DR	1996	MT	6/17/2011	Severe storms and flooding	\$ 39,563,675	\$ 6,908,814	\$ 65,962,784
				<b>Totals</b>	<b>\$ 411,756,873</b>	<b>\$ 113,689,051</b>	<b>\$ 701,386,338</b>

Though it may be cumbersome, tables which display the actual declaration history of specific U.S. counties bordering Canada are revealing. County by county declaration records not only spotlight disaster frequency, but they also feature information about the nature of the disaster agent and by inference, the disaster vulnerability of each county.

Table 4's border county declaration history covers the full Washington State northern border, Idaho's lone Boundary County, and two northwestern counties of Montana. *In all county by county declaration tables one needs to remember that at least one border county is included, but so too are some or all non-border counties if they are covered by the declaration.* Washington State's Whatcom County (western) drew 8 declarations: 4 for severe storms and single declarations for the 2001 Nisqually Earthquake, a 2005 coastal storm, a flood, and a fisheries closure issued to dispense disaster unemployment funding.<sup>9</sup>

A **border spanning** winter storm in late 1996 caused \$215 (Can\$) million in loss to British Columbia, while four of Washington States northern border counties experienced the same blizzard and DR 1159 conveyed \$89 (US\$) million to the state for relief. Another transnational disaster took place in January 2009 when severe storms ravaged Greater Vancouver (BC) and the Fraser Valley as well as Whatcom County (WA) under DR 1817. Table 4 reveals that most of declarations that included Washington State's five Canada bordering counties, were for severe storm or flood. Similarly, Idaho's Boundary County and Montana's Lincoln and Flathead counties (all sparsely settled) suffered severe storm damage in the late 1990s, plus Montana's two counties suffered a major wildfire (2000).

In closing this YBC group, note that British Columbia (BC) has an escalating wildfire loss of great proportions. Wildfires of \$141 (Can\$) million in damage struck BC and Alberta in July 2003, and again in July 2010 with a \$220 (Can\$) million loss, and once more in June 2014 inflicting a staggering \$300 million (Can\$) in losses. In contrast, in late August 2000, a declared fire disaster in Montana, involving a border county, triggered about \$4 (U.S.\$) million in FEMA payouts. Care should be taken in interpreting fire disasters in the U.S. Many federal agencies engage with state and county counterpart agencies in combatting wildfires. Wildfires only occasionally win presidential declarations of disaster and ensuing FEMA relief, usually to cover losses to fire-ravaged communities.

There are several anomalous declarations. EM 3253 for example, listed in Table 3 for two Montana counties, as well as EM 3244 for Idaho's Boundary County, say they were for Hurricane Evac. In the aftermath of Hurricane Katrina, President George W. Bush issued emergency declarations to every state outside the damage zone which incurred costs in helping to resettle people who escaped the Katrina damage zone and moved to their respective states. The emergency declarations (separately issued for each state) included every county in the eligible state which could document resettlement costs it and its local governments incurred, including those compiled by school districts and housing authorities, etc. Many county-by-county declaration lists to follow include a Hurricane Katrina evacuation reimbursement.

## Alberta-Saskatchewan Group

The Province of Alberta (AB), though mammoth on its north-south axis, touches only about four counties of Montana, see Map 7.



Map 7: Province of Alberta With Municipal Districts and Rural Municipalities



In the interest of space, a portion of the Alberta's north was cropped off. No municipal areas were shown in the cropped area. Source: Wikipedia, "List of Municipal Districts in Alberta," [https://en.wikipedia.org/wiki/List\\_of\\_municipal\\_districts\\_in\\_Alberta](https://en.wikipedia.org/wiki/List_of_municipal_districts_in_Alberta) (accessed June 13, 2018).

Map 8: Province of Saskatchewan with Localities



Source: NWR Weather, "Saskatchewan Highway and Airport Cams," <http://24.72.24.43/saratoga/wxwebcamsask.php> (accessed June 13, 2018).

Alberta's sub-province local governmental system is comprised of municipal districts and specialized districts, or rural municipalities. The U.S. counties below the extreme bottom edge of Alberta are Glacier, Toole, Liberty, and Hill (partial) counties, of northern Montana.

In the also expansive Province of Saskatchewan (SK), local government is complex. See Map 8. The Province currently has 779 urban, rural and northern municipalities. In southern Saskatchewan there are 755 incorporated municipalities: 459 are urban municipalities. These include: 16 cities; 146 towns; 257 villages; and 40 resort villages. The Province also is home to 296 rural municipalities. In northern Saskatchewan, there are 24 incorporated municipalities: 2 northern towns; 11 northern villages; and 11 northern hamlets. Unlike many other provinces, Saskatchewan does not have counties. Instead, local governance is carried out by eight different types of municipalities: Northern towns, northern villages, northern hamlets, villages, resort villages, towns, cities and rural municipalities. Areas of the north not administered by northern towns and hamlets receive municipal services through provincial initiatives.

**Table 4: Alberta Disasters with Costs 1994-2013**

EVENT TYPE	PLACE	EVENT START DATE	EVAC- UATED	ESTIMATED TOTAL COST	FEDERAL DFAA PAYMENTS	PROVINCIAL DFAA PAYMENTS	PROVINCIAL DEPT PAYMENTS	DEATHS	INJURED
Storms and Severe Thunderstorms	Southern Alberta	18/06/1994	0	\$ 30,969,155			\$ 21,910,155	0	0
Flood	Southern Alberta	06/06/1995	0	\$ 154,623,306	\$ 34,061,897	\$ 9,324,782	\$ 12,672,842	0	0
Storms and Severe Thunderstorms	Edmonton AB	07/04/1995	0	\$ 34,511,612			\$ 18,858,612	0	0
Storms and Severe Thunderstorms	Calgary AB	17/07/1995	0	\$ 74,559,612			\$ 18,858,612	0	0
Drought	Grande Prairie AB	01/01/1996	0	\$ 57,644,492			\$ 100,110	0	0
Flood	Lesser Slave Lake area AB	17/06/1996	922	\$ 18,159,797	\$ 5,693,853	\$ 5,466,769	\$ 6,999,175	0	0
Storms and Severe Thunderstorms	Calgary AB	16/07/1996	0	\$ 103,000,000				0	0
Storms and Severe Thunderstorms	Calgary AB	24/07/1996	0	\$ 87,877,643	\$ -	\$ -		0	0
Flood	Peace River AB	19/04/1997	4000	\$ 47,368,494	\$ 18,664,180	\$ 8,343,702	\$ 20,360,612	0	0
Storms and Severe Thunderstorms	Calgary AB	07/04/1998	0	\$ 65,258,000				0	0
Flood	Clearwater AB	07/04/1999	350	\$ 8,751,452	\$ 2,977,089	\$ 5,774,363		0	0
Tornado	Pine Lake AB	14/07/2000	1000	\$ 3,385,331	\$ 190,216	\$ 3,195,115		12	140
Wildfire	Northern Alberta and Conklin	17/05/2002	1254	\$ 1,300,000			\$ 1,300,000	0	0
Flood	Southern Alberta	06/11/2002	350	\$ 16,054,182	\$ 8,834,091	\$ 7,220,091		0	0
Wildfire	Southeastern British Columbia	07/01/2003	48501	\$ 141,566,277	\$ 141,566,277			0	0
Storms and Severe Thunderstorms	Edmonton AB	07/11/2004	30000	\$ 13,500,000	\$ 13,500,000			0	0
Flood	High River, City of Calgary, City of Edmonton	06/08/2005	7028	\$ 142,100,000	\$ 142,100,000			2	0
Storms and Severe Thunderstorms	Calgary, Edmonton, St. Albert	06/05/2007	0	\$ 18,000,000	\$ 9,100,000	\$ 8,900,000		0	0
Storms and Severe Thunderstorms	Southwest Alberta	21/05/2008	0	\$ 9,400,000	\$ 3,100,000	\$ 6,300,000		0	0
Storms and Severe Thunderstorms	Edmonton area AB	18/07/2009	0	\$ 4,500,000	\$ 400,000	\$ 4,100,000		0	0
Flood	Southern Alberta and Saskatchewan	17/06/2010	2065	\$ 956,350,000			\$ 206,350,000	0	0
Storm - Unspecified / Other	Calgary, Alberta	07/12/2010	0	\$ 400,000,000				0	0
Wildfire	Towns of Slave Lake, High Prairie	05/01/2011	12055	\$ 700,000,000				0	0
Flood	Southern Alberta	19/06/2013	100000	\$ 2,200,000,000	\$ 500,000,000			4	0
				\$ 5,288,879,353	\$ 880,187,603	\$ 58,624,822	\$ 307,410,118		

Saskatchewan suffered several highly destructive and costly disasters over the 20 years of this study. In May of 1995 a wildfire in north central SK produced \$91 million in damage. In May 2007, a flood befell the Red Earth First Nation, a Native American settlement, producing \$125 million in damage. Most startling is a June 2010 flood across southern SK and Alberta that yielded \$956 million in damage. The Saskatchewan Disasters Table 5 indicates that the province experienced 14 costly disasters over the interval 1994-2013. Eight were for flood. As in the Alberta case, only half the incidents in the table were covered by DFAA subsidy. With about \$1.2 billion in total estimated losses for all 24 incidents, DFAA's 12

incidents received about \$164 million. This represents only 13 percent of total losses for the 24 cases, and for the 12 DFAA supported events (total estimated costs of \$59.457 million), the DFAA help is only .27 percent of total estimated loss. Saskatchewan and Alberta experienced a nearly \$1 billion flood (\$956 million) in 2010 but all relief paid out was from provincial departments, none from DFAA. Like Alberta, the increasing number of evacuees for more of these incidents over time is a cause for concern.

**Table 5 Saskatchewan Disasters with DFAA Payments, 1994-2015**

EVENT TYPE	PLACE	EVENT START DATE	EVAC- UATED	ESTIMATED TOTAL COST	FEDERAL DFAA PAYMENTS	PROVINCIAL DFAA PAYMENTS	PROVINCIAL DEPT PAYMENTS	DEATHS	INJURED
Storms and Severe Thunderstorms	Saskatchewan	22/05/1994	0	\$ 9,589,470			\$ 69,470	0	0
Flood	Northeastern Saskatchewan	04/01/1995	0	\$ 7,572,381	\$ 4,784,560	\$ 2,787,821		0	0
Wildfire	North Central Saskatchewan	29/05/1995	3338	\$ 91,585,747			\$ 91,585,747	0	0
Storms and Severe Thunderstorms	Regina SK	26/09/1995	0	\$ 13,353,120	\$ -	\$ -	\$ 235,120	0	0
Flood	South-Central Saskatchewan	30/03/1997	516	\$ 1,319,475			\$ 1,319,475	0	0
Wildfire	La Ronge SK	04/01/1999	40		\$ -	\$ -		0	0
Flood	Southeastern Saskatchewan	04/01/1999	0	\$ 1,717,172	\$ 345,839	\$ 1,371,333		0	0
Tornado	Saskatchewan	21/06/1999	4					0	0
Flood	Vanguard SK	07/03/2000	36	\$ 3,787,294	\$ 1,580,762	\$ 2,206,532		0	0
Flood	Cumberland House, Cree First Nation	23/06/2005	1000	\$ 11,500,000	\$ 11,500,000			0	0
Storms and Severe Thunderstorms	Meadow Lake and Stony Rapids, SK	23/07/2005	0	\$ 3,200,000	\$ 1,100,000	\$ 2,100,000		0	0
Flood	Red Earth SK	13/04/2006	1100	\$ 19,100,000	\$ 19,100,000			0	0
Flood	Red Earth First Nation SK	19/04/2007	700	\$ 125,800,000	\$ 125,800,000			0	0
Flood	Southern Alberta and Saskatchewan	17/06/2010	2065	\$ 956,350,000			\$ 206,350,000	0	0
				\$ 1,244,874,659	\$ 164,211,161	\$ 8,465,686	\$ 299,559,812		

Also notable is that the current Minister of Public Safety Canada, serving since 2015, hails from Saskatchewan.<sup>10</sup>

The Alberta-Saskatchewan Group borders nine counties in Montana and three in North Dakota. Montana (Map 6) and North Dakota (Map 9) identify MT and ND counties on the Canadian border. The Alberta-Saskatchewan group of Table 6: AS-US arrays many costly U.S. disasters impacting counties along the International Border. A \$65 million total FEMA payout went to cover a major flood in Montana which began in May 1996 and covered portions of Toole, Liberty, Blaine, and Phillips counties.

Table 6: AS-US reveals at least three remarkably destructive disasters. An April 1997 flood and winter storm declaration paid out \$393 million to impacted North Dakota counties. Of this total, \$208 million went for infrastructure. In June 1999 a severe storm accompanied by tornados inflicted \$113 million in FEMA payouts. Remember, infrastructure payouts by FEMA usually require (unless the president waives cost-sharing) a 75/25 federal/state & local match. It is reasonable to assume that states and their localities paid at least 25 cents for every 75 cents of FEMA infrastructure subsidy they received, owing to U.S. cost share law. Also, FEMA payouts are often argued at every stage such that states and localities often end up paying considerably more than the 25% matching share. On top of this, states and their localities sometimes dispute the fraction of the matching share each will absorb.

A warning is in order. All amounts listed in Table 6: AS-US are for FEMA disaster assistance. **These U.S amounts should not be interpreted as an indication of total disaster losses or costs.** With the exception of the two declarations paying Montana and North Dakota for Katrina evacuee resettlement reimbursement (100/0 federal/state cost share), all of these declarations were issued under a 75/25 federal/state cost share. As mentioned, it would be safe to add at least 25 percent to the total IS (or PA)



(Infrastructure) total to reflect the state & local match share. Moreover, total costs of these disasters significantly exceed the total of qualifying federal relief payments shown here.<sup>11</sup> Remember this paragraph when inspecting all subsequent U.S. disaster funding tables.

**Map 9 North Dakota with Counties and Cities**



Note that only North Dakota counties of Divide, Burke, and Mohall border Saskatchewan and so are in the Alberta-Saskatchewan bloc. Bottineau, Rolette, Towner, Cavalier, and Pembina counties border Manitoba and so are in the Manitoba bloc. Source Map of US.org, “Maps of North Dakota,” <https://www.mapofus.org/northdakota/> (accessed June 13, 2018).

**Table 6 AS-US: Alberta-Saskatchewan Group - U.S. Declared Disasters that include at least one U.S. border county, across Montana and North Dakota, Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1113	MT	5/16/1996	Severe storms, flooding, i	\$ 1,585,768.00		\$ 1,884,438.00
DR	1183	MT	7/25/1997	Severe storms, ice jams, s	\$ 6,067,460.00		\$ 8,481,737.00
DR	1340	MT	8/30/2000	Fire		\$ 1,975,943.00	\$ 3,999,294.00
DR	1350	MT	12/6/2000	severe winter storms	\$ 2,134,245.00		\$ 2,729,011.00
DR	1424	MT	7/3/2002	Severe storms and floodir	\$ 1,428,869.00		\$ 2,054,026.00
EM	3253	MT	9/13/2005	Hurricane Katrina Evacuat	\$ 119,960.00		\$ 163,712.00
DR	1996	MT	6/17/2011	Severe storms and floodir	\$ 39,563,675.00	\$ 6,908,814.00	\$ 65,962,784.00
DR	4127	MT	7/10/2013	Flooding	\$ 3,441,145.00		\$ 5,300,500.00
DR	1050	ND	5/16/1995	Severe storms, flooding, g	\$ 9,603,861.00	\$ 845,743.00	\$ 17,352,961.00
DR	1157	ND	1/12/1997	Severe winter storms and	\$ 14,684,097.00	\$ 429,239.00	\$ 15,988,096.00
DR	1174	ND	4/7/1997	Severe flooding, severe w	\$ 208,538,688.00	\$ 9,242,200.00	\$ 393,994,318.00
DR	1279	ND	6/8/1999	Severe Storms, Tornadoe:	\$ 50,410,431.00	\$ 42,736,793.00	\$ 113,682,766.00
DR	1334	ND	6/27/2000	Sever storms, flooding an	\$ 44,621,740.00	\$ 28,196,969.00	\$ 91,034,867.00
DR	1353	ND	12/29/2000	Severe winter storms and	\$ 824,448.00		\$ 1,219,409.00
EM	3196	ND	4/2/2004	Snow	\$ 317,518.00		\$ 392,057.00
DR	1515	ND	5/5/2004	Severe Storms, Flooding a	\$ 13,320,867.00		\$ 15,451,442.00
EM	3247	ND	9/13/2005	Hurricane Katrina Evacuat	\$ 24,233.00		\$ 55,265.00
DR	1597	ND	7/22/2005	Severe Storms, Flooding, i	\$ 14,799,376.00		\$ 17,472,588.00
DR	1616	ND	11/15/2005	Severe winter storm	\$ 2,001,526.00		\$ 2,555,096.00
DR	1879	ND	2/26/2010	severe winter storm	\$ 12,773,948.00		\$ 16,589,265.00
DR	1981	ND	5/10/2011	Flooding	\$ 243,702,277.00	\$ 195,508,485.00	\$ 635,113,754.00
DR	1986	ND	5/20/2011	Severe winter storm	\$ 5,934,923.00		\$ 6,607,754.00
Totals					\$ 675,899,055.00	\$ 285,844,186.00	\$ 1,418,085,140.00

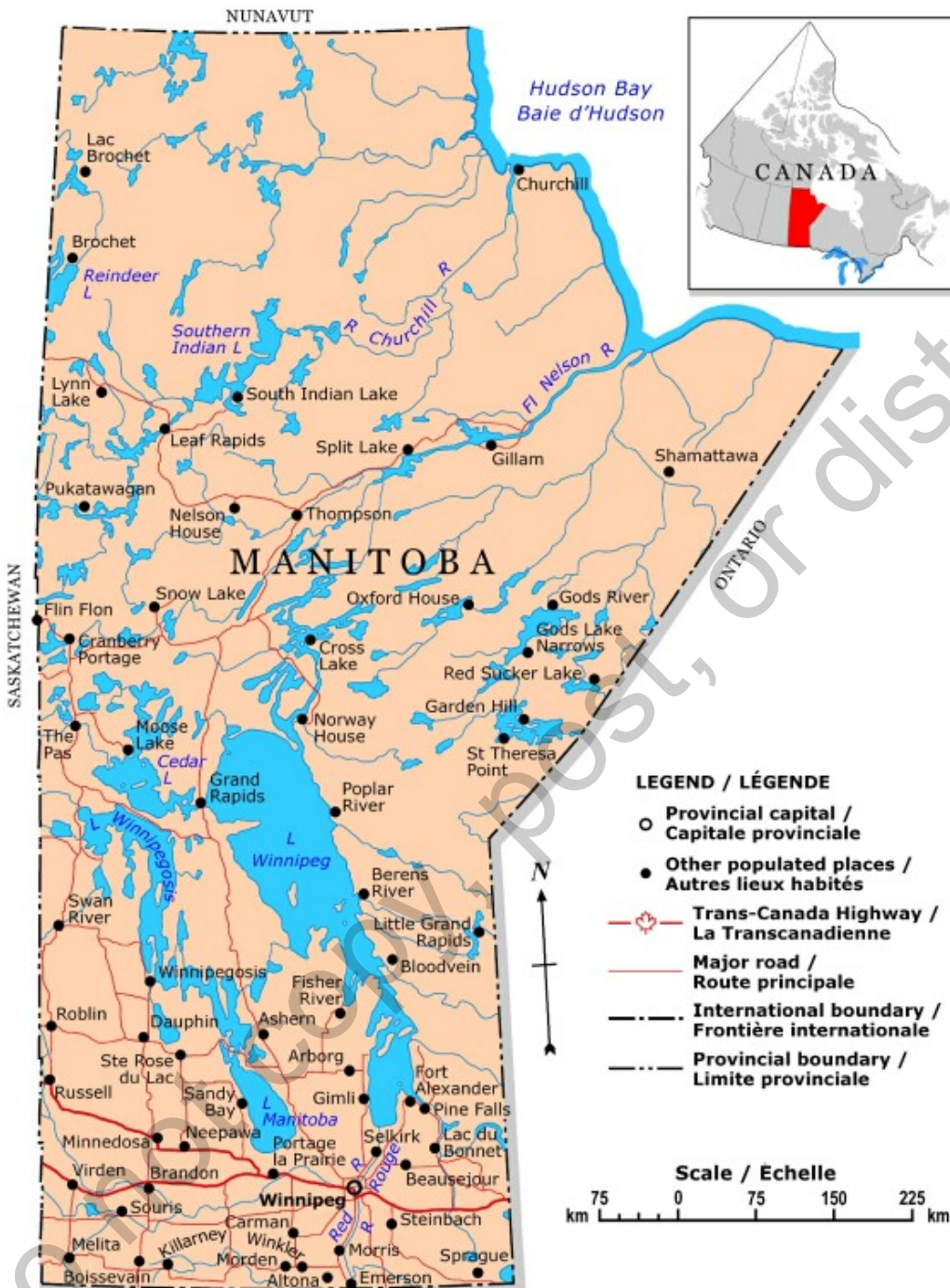
Part of northern North Dakota borders the Province of Manitoba, which is covered in the next section. Therefore, the Red River flood phenomenon impacting eastern North Dakota and western Minnesota, as well as southern Manitoba, will be visited in the next section.

Montana's Glacier, Toole, Liberty, Hill, Blaine, Phillips, Valley, Daniels, and Sheridan counties adjoin Saskatchewan and so belong in the Alberta-Saskatchewan Group. North Dakota counties adjacent to Saskatchewan and therefore in the Alberta-Saskatchewan group include (west to east) Divide, Burke, and Renville. Table 6: AS-US therefore shows declarations issued for all Table 6: AS-US Group bordering counties in Montana and North Dakota, plus other Montana and North Dakota non-border contiguous counties included in the respective declarations.

North Dakota counties in the Manitoba Group also suffered frequent and costly disasters over the period 1994-2013. See Table 9 below. Table 6: AS-US discloses that Montana and North Dakota declarations, which included at minimum one county bordering Alberta or Saskatchewan, produced an impressive \$1.4 billion in FEMA payouts for the 20-year period. Almost half of this total (47%), \$676 million, was for infrastructure. In contrast, FEMA's Human Services outlay total for this set of declarations was \$285 million, or 20% of the total \$1.4 billion.



Map 10: Province of Manitoba



UNITED STATES OF AMERICA  
ÉTATS-UNIS D'AMÉRIQUE

© 2001. Her Majesty the Queen in Right of Canada, Natural Resources Canada.  
Sa Majesté la Reine du chef du Canada, Ressources naturelles Canada.

Source: PopulationData.Net, "Canada – Manitoba," <https://www.populationdata.net/cartes/canada-manitoba/> (accessed June 13, 2018).

## Manitoba Group

Manitoba's 137 municipalities cover only 20% of the province's land mass yet are home to 94% of its population. These municipalities provide local government services to their residents. Moreover, of Manitoba's 137 municipalities, 37 are urban municipalities (10 cities, 25 towns and 2 villages), 98 are rural municipalities and 2 are local government districts. Map 10 shows Manitoba and its municipalities.

The Manitoba Disasters Table 8 below contains 21 incidents of which 5 show an estimated total loss of less than \$5 million. DFAA payments were made under 14 of these cases. These cases were included because each received some DFAA subsidy. Twelve events were for flood and 9 for severe storm. The two most costly disasters were for a 1997 flood (\$498 million Canadian), and a 2011 flood, both along the same three rivers (Red, Souris, and Assiniboine). In the 2011 flood, according to CDD data, Public Safety Canada's DFAA covered 100% of the losses and no Manitoba cost share was imposed.

Findings suggest that since 1996, Manitoba frequently requests and secures sizable DFAA relief funding for its disasters. This may be attributable to the Province's modest population and resulting ease in reaching cost share thresholds. It also may be a function of the Province's style of emergency management and its success in working closely with Public Safety Canada.

It is odd that for a 1999 flood impacting Melita, Manitoba, the Province won DFAA help but for only about 6.7 percent of the total loss. Manitoba departments paid out about \$97 million and the province contributed another \$3 million as DFAA cost share funding, thus producing nearly \$1 billion in provincial payout for a single flood.

Manitoba shares a southern border with North Dakota and Minnesota. North Dakota's Bottineau, Rolette, Towner, Cavalier and Pembina border Manitoba and are therefore within the Manitoba group. North Dakota counties appear in Map 9. ND's Pembina County is on the west bank of the Red River and also on the International Border.

The Manitoba has several stand out cases. Moreover, many of these Manitoba emergencies dovetail with those experienced in North Dakota and Minnesota border county disasters. An April 1996 flood along Minnesota's portions of the Red, Souris, and Pembina rivers, caused \$6.8 million in damage and required the evacuation of 285 people. Only 3 months later a severe storm in Winnipeg produced \$105 million in damages. Spring thaw flooding in April 1997 along the Red, Assiniboine, and Winnipeg rivers yielded almost half billion dollars in damage. In the same interval, several North Dakota counties were covered by DR 1174, which produced \$393 million in FEMA outlays for a flood and winter storm. This is clearly a transnational natural disaster.<sup>12</sup> June 2005 was the time of a \$40 million flood that inundated a slew of rural municipalities in MB. The same event produced North Dakota's DR 1597 and resulted in \$17 million in federal relief.

**Table 7: Manitoba Disasters with DFAA Payments, 1994-2015**

EVENT TYPE	PLACE	EVENT STAR	EVAC-	ESTIMATED	FEDERAL DFAA	PROVINCIAL	PROVINCIAL	DEATHS	INJURED
Manitoba		DATE	UATED	TOTAL	PAYMENTS	DFAA	DEPT		
		day/mo/yr		COST		PAYMENTS	PAYMENTS		
Storms and Severe Thun	Southern Manitoba	18/05/1994	0	\$ 9,074,000	\$ -	\$ -		0	0
Storms and Severe Thun	Southwestern Manitoba	08/01/1994	0	\$ 3,189,873				0	0
Storms and Severe Thun	Southern Manitoba	27/08/1994	0	\$ 14,196,201			\$ 5,346,201	0	0
Flood	Western MB	04/01/1995	100	\$ 4,205,645	\$ 1,816,719	\$ 2,388,926		0	0
Storms and Severe Thun	Southern Alberta	07/10/1995	0	\$ 28,103,000	\$ -	\$ -		0	0
Storms and Severe Thun	Southern Manitoba	30/07/1995	0	\$ 9,018,000	\$ -	\$ -		0	0
Flood	Red River, Souris River, Assiniboine River and P	18/04/1996	285	\$ 6,816,377	\$ 4,430,930	\$ 2,385,447		0	0
Storms and Severe Thun	Winnipeg MB	16/07/1996	0	\$ 105,000,000	\$ -	\$ -		0	0
Flood	Assiniboine, Red and Winnipeg Rivers MB	22/04/1997	25447	\$ 498,513,577	\$ 193,808,836	\$ 23,624,696		0	0
Flood	Melita MB	04/01/1999	0	\$ 109,195,449	\$ 7,292,493	\$ 3,327,956	\$ 97,575,000	0	0
Flood	Southern Manitoba	07/07/2000	0	\$ 2,917,561	\$ 885,581	\$ 2,031,980		0	0
Flood	Southern Manitoba	04/01/2001	0	\$ 16,710,626	\$ 7,045,162	\$ 3,107,992	\$ 768,943	0	0
Flood	Southeast MB	06/11/2002	150	\$ 10,376,248	\$ 3,552,493	\$ 2,954,305	\$ 2,094,671	0	0
Flood	South-Central Manitoba	24/03/2004	1000	\$ 2,302,473	\$ 565,937	\$ 1,736,536			
Flood	Regional municipalities of Daly, Sifton, Blansha	06/02/2005	1300	\$ 40,500,000	\$ 40,500,000			0	
Storms and Severe Thun	Municipalities of Pipestone, Sifton, Cameron, W	22/06/2007	0	\$ 650,000	\$ 650,000			0	0
Storm - Unspecified / Ot	South-Central area of Manitoba (Cartier, Grey,	16/05/2008	0	\$ 450,000	\$ 450,000			0	0
Flood	Roseau River First Nation, Sioux Falls, Peguis Fir	24/03/2009	3000	\$ 40,000,000	\$ 33,500,000	\$ 6,500,000		0	0
Storms and Severe Thun	Winnipeg to Steinbach MB	14/08/2009	0	\$ 50,000,000				0	0
Flood	Winnipeg MB	29/05/2010	619	\$ 2,200,000	\$ 490,000		\$ 1,710,000	0	0
Flood	Assiniboine, Roseau and Red Rivers MB	19/04/2011	2543	\$ 350,000,000	\$ 350,000,000			0	0
				\$ 1,303,419,030	\$ 644,988,151	\$ 48,057,838	\$ 107,494,815		

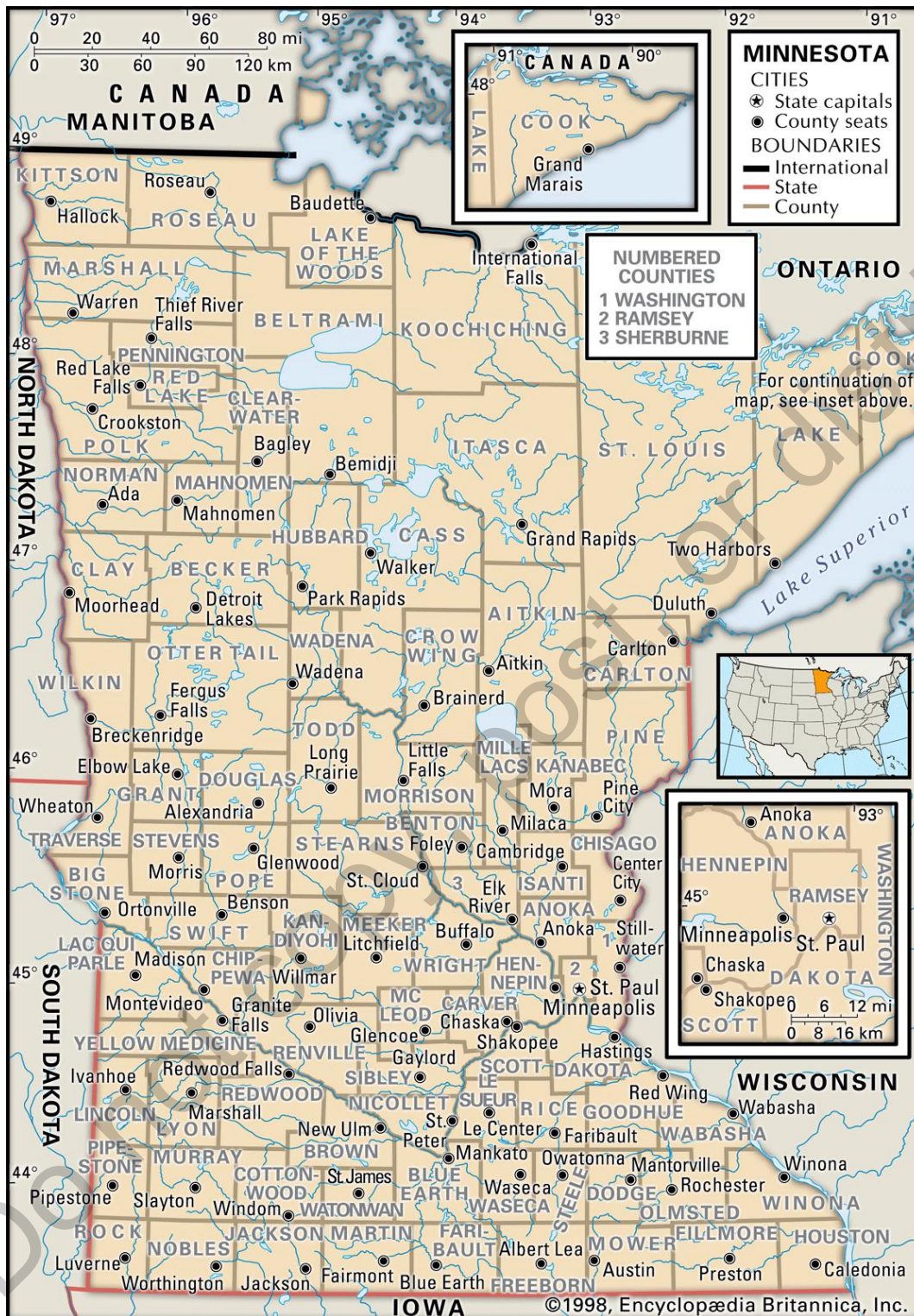
Two MT First Nation communities and several rural municipalities were struck by a \$40 million flood disaster in March 2009. At the same time, DR 1829 generated \$211 million in ND damage for a severe storm with flooding – another border-spanner. About five months later Winnipeg and Steinbeck sustained a \$50 million severe storm. However, the costliest Manitoba disaster in the period came in April 2011 when the Red, Assiniboine, and Roseau rivers overtopped and inflicted \$350 million in damage. Though not as destructive, the same flood triggered DR 1981 yielding \$635 million in ND damage. Curiously, if Canadian losses are added to U.S. disaster relief, this single border spanning event resulted in a combined \$985 million estimated loss total.

For North Dakotans the flood of April-May 2011 was most memorable. The Red River rose to record levels, devastating Grand Forks and its twin city of East Grand Forks, MN. The flood killed 11 people and forced the evacuation of more than 60,000 people from the two cities. Damage to the region's homes, businesses, and farms topped \$5 billion. The Red River had flooded before in 2001, 2006, and 2009. And the 2009 flood nearly equaled the 1997 flood, which had been considered a once-in-100-years event.<sup>13</sup>

In considering North Dakota and Minnesota counties bordering Manitoba, see Map 9 showing North Dakota. Map 11 displays Minnesota, which has several counties bordering Manitoba. Kittson and Roseau are two Minnesota counties bordering Manitoba. Note that Lake of the Woods, Koochiching, St. Louis, Lake, and Cooke are Minnesota counties bordering Ontario Province and so are in the Ontario bloc of states and counties.



Map 11: Minnesota And Counties



Source: Map of US.org, "Maps of Minnesota," <https://www.mapofus.org/minnesota/> (accessed June 13, 2018).

**Table 8: M-US 1: Manitoba Group - U.S. Declared Disasters that include at least one U.S. border county, for North Dakota counties, Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

MANITOBA GROUP								
North Dakota								
Type	Dis Num	State	DeclDate	DisasterDescription	IS Total	HS Total	US Dollars	
DR	1032	ND	7/1/1994	Flooding	\$ 3,385,043	\$ 174,726	\$ 4,462,767	
DR	1050	ND	5/16/1995	Severe storms, flooding, ground	\$ 9,603,861	\$ 845,743	\$ 17,352,961	
DR	1118	ND	6/5/1996	Severe storms, flooding, Ice jan	\$ 9,782,659	\$ 1,879	\$ 13,334,847	
DR	1157	ND	1/12/1997	Severe winter storms and blizz	\$ 14,684,097	\$ 429,239	\$ 15,988,096	
DR	1174	ND	4/7/1997	Severe flooding, severe winter	\$ 208,538,688	\$ 9,242,200	\$ 393,994,318	
DR	1220	ND	6/15/1998	Flooding and ground saturation	\$ 9,466,953	\$ 282,456	\$ 18,513,527	
DR	1279	ND	6/8/1999	Severe Storms, Tornadoes, Sno	\$ 50,410,431	\$ 42,736,793	\$ 113,682,766	
DR	1334	ND	6/27/2000	Sever storms, flooding and grou	\$ 44,621,740	\$ 28,196,969	\$ 91,034,867	
DR	1353	ND	12/29/2000	Severe winter storms and torn	\$ 824,448		\$ 1,219,409	
DR	1376	ND	5/28/2001	Severe storms, flooding and grc	\$ 27,900,790		\$ 36,884,714	
DR	1431	ND	9/10/2002	Severe storms, flooding and tor	\$ 1,169,313		\$ 1,998,294	
EM	3196	ND	4/2/2004	Snow	\$ 317,518		\$ 392,057	
DR	1515	ND	5/5/2004	Severe Storms, Flooding and Gr	\$ 13,320,867		\$ 15,451,442	
DR	1597	ND	7/22/2005	Severe Storms, Flooding, Grou	\$ 14,799,376		\$ 17,472,588	
EM	3247	ND	9/13/2005	Hurricane Katrina Evacuation	\$ 24,233		\$ 55,265	
DR	1616	ND	11/15/2005	Severe winter storm	\$ 2,001,526		\$ 2,555,096	
DR	1645	ND	6/5/2006	Severe Storms, Flooding, and G	\$ 7,801,543		\$ 11,459,867	
DR	1713	ND	7/17/2007	Severe storms and flooding	\$ 3,015,954		\$ 4,633,261	
DR	1829	ND	3/24/2009	Severe winter storm	\$ 124,693,841	\$ 9,877,015	\$ 211,683,825	
DR	1879	ND	2/26/2010	severe winter storm	\$ 12,773,948		\$ 16,589,265	
EM	3309	ND	3/14/2010	Flooding	\$ 4,872,449		\$ 9,471,344	
DR	1907	ND	4/30/2010	Flooding	\$ 24,371,679		\$ 31,882,674	
EM	3318	ND	4/7/2011	Flooding	\$ -		\$ 4,013,888	
DR	1981	ND	5/10/2011	Flooding	\$ 243,702,277	\$ 195,508,485	\$ 635,113,754	
DR	1986	ND	5/20/2011	Severe winter storm	\$ 5,934,923		\$ 6,607,754	
DR	4118	ND	5/29/2013	Flooding	\$ 7,303,386		\$ 10,636,850	
EM	3364	ND	4/26/2013	Flooding	\$ -		\$ 943,288	
DR	4128	ND	7/12/2013	Severe storms and flooding	\$ 11,179,744		\$ 17,454,324	
					\$ 856,501,287	\$ 287,295,505	\$ 1,704,883,108	

**Table 9: M-US 2: Manitoba Group for Minnesota counties bordering Manitoba - U.S. Declared Disasters for Minnesota counties (Kittson and Roseau), Jan. 1994-Nov. 2013.**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
Manitoba Grp							
Minnesota							
DR	1064	MN	8/18/1995	Severe thunderstorms, winds, t	\$ 5,373,194		\$ 6,396,168
DR	1116	MN	6/1/1996	Flooding	\$ 8,654,522		\$ 9,740,850
DR	1158	MN	1/16/1997	Severe winter storm and blizzar	\$ 24,788,641		\$ 25,243,339
DR	1175	MN	4/8/1997	Sever flooding, high winds	\$ 177,244,061	\$ 37,594,466	\$ 262,905,389
DR	1288	MN	8/26/1999	Severe storms, and flooding	\$ 7,801,437		\$ 9,692,926
DR	1333	MN	6/27/2000	Severe storms and flooding	\$ 11,809,332	\$ 5,012,976	\$ 23,303,529
DR	1370	MN	5/16/2001	Severe winter storms, flooding,	\$ 36,389,120	\$ 4,559,731	\$ 52,014,667
DR	1419	MN	6/14/2002	Severe storms, flooding and tor	\$ 28,883,634	\$ 10,572,879	\$ 57,957,845
EM	3242	MN	9/13/2005	Hurricane Katrina Evacuation	\$ 2,470,003		\$ 2,472,385
DR	1648	MN	6/5/2006	Flooding	\$ 7,013,032		\$ 8,787,312
EM	3304	MN	3/26/2009	Severe storms and flooding	\$ 544,795		\$ 2,660,228
DR	1830	MN	4/9/2009	Severe Storms and Flooding	\$ 33,717,772	\$ 2,719,279	\$ 49,862,543
DR	1900	MN	4/18/2010	Flooding	\$ 12,971,687		\$ 18,523,916
EM	3310	MN	3/19/2010	Flooding	\$ -		\$ 1,129,039
DR	1921	MN	7/2/2010	Severe storms, tornadoes, and	\$ 14,971,942		\$ 19,630,381
DR	1982	MN	5/10/2011	Severe storms and flooding	\$ 22,513,663		\$ 30,190,113

## Ontario Group

The Ontario Group involves another massively large Canadian Province and three American states: Minnesota, Michigan, and New York State. This study was premised on the assumption that U.S.-Canada border contact had to be by land or bridge connection, not by water (lake or coastal waters). Minnesota has five counties with an Ontario Province land border. Michigan's connection to Ontario is exclusively by bridges in Upper Peninsula's Chippewa County, and by bridge connections for St. Clair and Wayne counties to the southeast. Western New York State's Erie and Niagara counties have several bridge connections with border checkpoints to and from Canada. NYS Jefferson and St. Lawrence counties enveloping portions of the Adirondack Mountains have both land and bridge connections to Ontario Province of Canada as well.

Map 12 depicts the Province of Ontario but does not show all Ontario municipalities. Care must be taken regarding what the term "county" means in Ontario Province. There are 444 municipalities in Ontario. However, Regions, Counties, Districts and Single-Tier municipalities make up much of Ontario local government.

A regional government is a federation of local, lower tier municipalities within its boundaries. Regions are referred to as "upper tier" municipalities and provide services such as: arterial roads; transit; policing; sewer and water systems; waste disposal; region-wide land use planning and development; as



well as health and social services. Depending on its size and its history, a local municipality may be called a city, a town, or a township or a village. They are also referred to as "lower tier" municipalities when there is another level of municipal government like a county or region involved in providing services to residents.

Map 12: Province of Ontario



Note, Ontario borders part of Minnesota, Michigan (bridge links), and New York State (bridge links). Source: Homer.ca, "Map of Ontario," <http://homer.ca/maps/ontario.htm> (accessed June 13, 2018).

A county government is a federation of the local municipalities within its boundaries. Counties are referred to as "upper tier" municipalities. Counties exist only in southern Ontario. Local municipalities (cities, towns, villages, townships) within counties provide the majority of municipal services to their residents. The services provided by county governments are usually limited to arterial roads, health and social services and county land use planning. Areas may use the term district but these are territorial boundaries that do not serve any municipal government purpose.<sup>14</sup>

As before, the Canadian Disaster Database was helpful in revealing the location of Ontario's disasters, regardless of sub-provincial government type. To get a better geographic fix for Ontario's border with the U.S. states of Minnesota, Michigan and New York State see Map 12.

**Table 10: Ontario Disasters with DFAA Payments, 1994-2015**

EVENT TYPE	PLACE	EVENT START DATE	EVAC- UATED	ESTIMATED TOTAL COST	FEDERAL DFAA PAYMENTS	PROVINCIAL DFAA PAYMENTS	PROVINCIAL DEPT PAYMENTS	DEATHS	INJURED
Flood	Southern ON	16/01/1994	0	\$ 14,299,000	\$ -	\$ -		0	0
Storms and Severe Thunde	Southern ON	28/01/1994	0	\$ 6,799,000	\$ -	\$ -		0	0
Storms and Severe Thunde	Southern ON	28/08/1994	0	\$ 7,876,000	\$ -	\$ -		0	0
Storms and Severe Thunde	Southern Ontario	13/07/1995	0	\$ 56,910,000	\$ -	\$ -		0	0
Storms and Severe Thunde	Hamilton ON	5/10/1995	0	\$ 17,419,000	\$ -	\$ -		0	0
Tornado	Grey County, Wellington and Duffe	20/04/1996	0	\$ 9,404,772			\$ 621,641	0	9
Flood	Ottawa ON	8/8/1996	0	\$ 21,308,000	\$ -	\$ -		0	0
Winter Storm	Ontario to New Brunswick	6/1/1998	17800	\$4,635,720,433	\$ 665,387,416	\$ 42,560,837	\$ 17,661,738	28	945
Flood	Eastern Ontario and Quebec	28/03/1998	3757	\$ 27,741,685	\$ 7,246,824	\$ 14,570,459	\$ 5,924,402	0	0
Winter Storm	Toronto ON	13/01/1999	0	\$ 122,000,000				2	0
Flood	Municipalities of Ignace, Fort Franco	9/6/2002	0	\$ 6,975,854			\$ 6,975,854	0	0
Flood	Attawapiskat ON	19/05/2004	1700	\$ 5,700,000	\$ 5,700,000				
Tornado	Southern Ontario	19/08/2005	0	\$ 500,000,000				0	4
Tornado	Midland ON	23/06/2010	0	\$ 16,000,000			\$ 1,000,000	0	12
Flood	Kashechewan and Fort Albany, Ont	24/03/2012	269	\$ 6,700,000				0	0
Flood	Toronto, Ontario	8/7/2013	0	\$ 940,000,000				0	0
				\$6,394,853,744	\$ 678,334,240	\$ 57,131,296	\$ 32,183,635		

Given its immense population and land area, the Province of Ontario suffered surprisingly few major disasters and an extremely small share of DFAA funding. Ontario is home to 13 million people. This may place the province at a disadvantage in seeking PSC’s DFAA funding. Ontario needs to document very large losses, relative to other provinces, to exceed DFAA cost share thresholds. This is especially so when Ontario is compared with provinces whose populations are 5 million or less. Moreover, Ontario’s residents are concentrated largely in a band from the City of Windsor (opposite Detroit, Michigan) to Ottawa on its eastern border with Quebec.

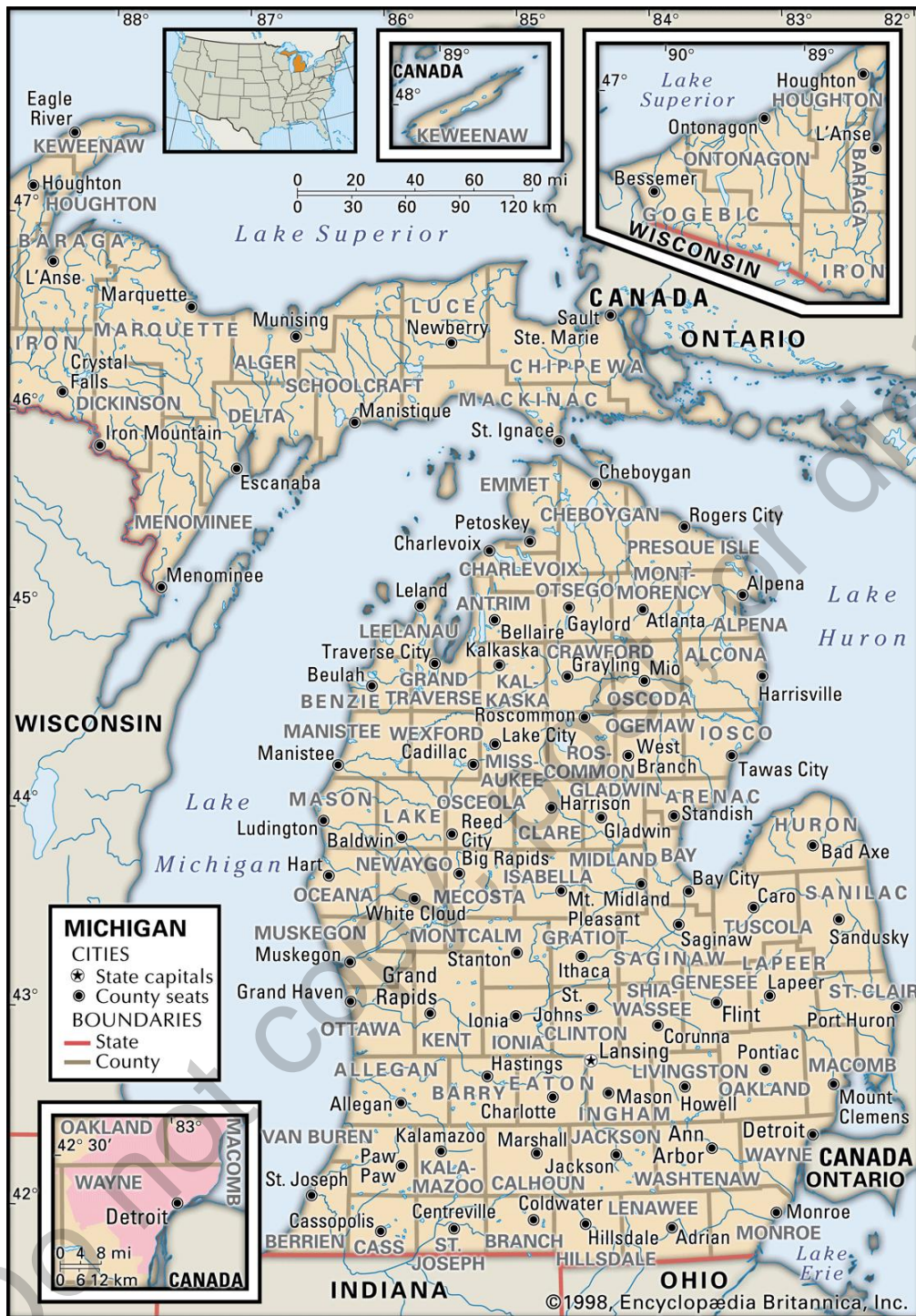
Ontario sustained 16 disasters, each of which exceeded \$5 million in cost.<sup>15</sup> In 1998, Ontario and several of its neighboring provinces on its east, were hit by a catastrophic and protracted winter storm. The blizzard and its effects compelled an estimated 17,800 people to evacuate their homes. Twenty-eight perished and 945 suffered injury, totals highly unusual for Canadian natural disasters. Of the total \$4.6 billion in estimated loss, DFAA paid out \$665 million. Matching share payments of recipient provinces ran to \$42.5 million.

Only two months after the great 1998 winter storm, Ontario received \$7.2 million in DFAA funds for a flood that generated \$27.7 million in loss costs. A flood in May 2004 was Ontario’s third and final DFAA subsidized disaster recovery, but PSC okayed the event for full DFAA funding with no required cost share by the province.

The Ontario DFAA Table 10 reveals that Ontario had only 7 major flood disasters from 1994-2013 along with a series of severe storm emergencies over 1994-1995. Two winter storms, one in 1998 and a second in 1999, were devastating for a major part of Ontario. Finally, a tornado that struck in 1996 caused about \$9.4 million in losses and did not receive DFAA funding.

The Ontario group includes three U.S. states on the International Border. Map 11 shows Minnesota and its Ontario bordering counties while Map 13 displays Michigan and its counties. Map 14 displays New York State and is useful in both Ontario and Quebec-New Brunswick group analysis to follow.

Map 13: Michigan and its Counties



Note that Michigan has three counties with bridge connections to Canada (Ontario Province): Chippewa, St. Clair, and Wayne.

**Table 11: Ont-US 1: Ontario Group – U.S. Declared Disasters that include at least one U.S. border county, for Minnesota counties (Lake of the Woods, Koochiching, St. Louis County, Lake County, and Cook County), Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
Ontario Group							
Minnesota							
DR	1064	MN	8/18/1995	Severe thunderstorms, winds, t	\$ 5,373,194		\$ 6,396,168
DR	1116	MN	6/1/1996	Flooding	\$ 8,654,522		\$ 9,740,850
DR	1158	MN	1/16/1997	Severe winter storm and blizza	\$ 24,788,641		\$ 25,243,339
DR	1175	MN	4/8/1997	Sever flooding, high winds	\$ 177,244,061	\$ 37,594,466	\$ 262,905,389
DR	1283	MN	7/28/1999	Severe storms, and flooding	\$ 11,714,626	\$ 1,641,700	\$ 18,276,893
DR	1370	MN	5/16/2001	Severe winter storms, flooding,	\$ 36,389,120	\$ 4,559,731	\$ 52,014,667
DR	1419	MN	6/14/2002	Severe storms, flooding and tor	\$ 28,883,634	\$ 10,572,879	\$ 57,957,845
EM	3242	MN	9/13/2005	Hurricane Katrina Evacuation	\$ 2,470,003		\$ 2,472,385
DR	1648	MN	6/5/2006	Flooding	\$ 7,013,032		\$ 8,787,312
DR	1772	MN	6/25/2008	Severe Storms and flooding	\$ 6,361,369		\$ 8,854,744
DR	1830	MN	4/9/2009	Severe Storms and Flooding	\$ 33,717,772	\$ 2,719,279	\$ 49,862,543
DR	1900	MN	4/18/2010	Flooding	\$ 12,971,687		\$ 18,523,916
DR	4069	MN	7/6/2012	Severe storms and flooding	\$ 44,062,638		\$ 59,547,368
					\$ 399,644,299	\$ 57,088,055	\$ 580,583,419

Table 11 Ont-US 1 shows that Minnesota counties bordering Ontario Province experienced 12 major disasters and one emergency from 1995 through 2012. Seven were for severe storms and each of those came with flood as a secondary disaster agent. In addition, flood was primary disaster agent in four cases. Two winter storms impacted one or more counties in the set, one in 1997 and one in 2004. The costliest event of Table 11: Ont-US 1 was for an April 1997 flood that caused an eventual \$262 million in FEMA outlays.

Finally, do not ignore total FEMA infrastructure spending for these declarations. FEMA “IS” funding for these 12 events is almost \$400 million, whereas FEMA Human Services (HS) spending totals only \$57 million. Furthermore, all 12 incidents won PA funding while only 5 declarations were approved for HS funding.



**Table 12: Ont-US 2: Ontario Group - U.S. Declared Disasters that include at least one U.S. border county, for Michigan counties (Chippewa, St. Clair, and Wayne counties), Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1028	MI	5/10/1994	Severe deep freeze	\$ 5,047,466		\$ 5,853,490
DR	1128	MI	7/23/1996	Severe storms, flooding, tornados	\$ 4,029,199	\$ 13,733,974	\$ 20,540,839
DR	1181	MI	7/11/1997	Tornadoes, severe storms, high wind	\$ 21,225,605	\$ 13,045,672	\$ 40,718,165
DR	1237	MI	8/5/1998	Severe storms, and high winds	\$ 5,021,431		\$ 5,753,774
EM	3137	MI	1/27/1999	Severe snow storm	\$ 9,292,988		\$ 9,795,815
DR	1346	MI	10/17/2000	Severe storms and flooding		\$ 209,183,055	\$ 246,017,577
EM	3160	MI	1/10/2001	Snow	\$ 9,226,966		\$ 10,681,427
EM	3189	MI	9/23/2003	Power Outage	\$ 4,948,996		\$ 5,730,374
DR	1527	MI	6/30/2004	Severe storms, tornado,		\$ 44,844,241	\$ 52,752,885
EM	3225	MI	9/7/2005	Hurricane Katrina Evacuation	\$ 2,078,365		\$ 2,481,230
					\$ 60,871,016	\$ 280,806,942	\$ 400,325,576

Table 12: Ont-US 2 covers three counties of Michigan - Chippewa [Upper Peninsula], St Clair, and Wayne, the latter two along the waterway connecting Lake Huron to Lake Erie. As pointed out, each of these counties have a bridge connection to Canada and so were included in this study. The table discloses that ten declarations went out covering one or more of these counties over the period 1994 through 2005. Six were major disasters (DRs) and 4 for emergencies (EMs). Five severe storms, two with embedded tornadoes, caused extensive damage. A surprisingly destructive tornado struck in 1997 compiled \$40 million in FEMA payouts with two-thirds for PA and one-third for HS.

A 1994 deep freeze, two snowstorms (1999 and 2001) plus three events with tornado as a secondary disaster force are worth mention. Financially alarming is a \$210 million FEMA payout for a severe storm with flooding in 2000 that was exclusively for human services. This amount eclipses all others in the table. Owing to this massive HS expenditures and three other incidents, FEMA HS funding surges far above FEMA PA funding for this set. This is unusual because FEMA PA funding issued more often than is FEMA HS funding, and PA spending customarily far outpaces HS expenditures.

Honorable mention for Table 12: Ont-US 2 goes to the 2003 summer power outage, which funneled \$5 million FEMA PA dollars to Michigan and its counties.<sup>16</sup>

Map 14 displays New York State and its counties. On its west are Erie and Niagara counties, both with bridge connections of Ontario Province, Canada. In northern NYS, Jefferson and Saint Lawrence counties have bridge links to Ontario Province. NYS Franklin and Clinton counties have a land border with Canada but opposite Quebec Province, and so each of those counties are in the Quebec-New Brunswick bloc ahead.

Map 14: New York State and its Counties



Source: Map of US.org, "Maps of New York State," <https://www.mapofus.org/newyork/> (accessed June 13, 2018).



**Table 13: Ont-US 3: Ontario Group - U.S. Declared Disasters that include at least one U.S. border county, for New York State counties (Erie, Niagara, Jefferson, and St. Lawrence counties), Jan. 1994- Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, PA = total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1095	NY	1/24/1996	Severe storms and flooding	\$ 100,303,561	\$ 17,610,994	\$ 143,062,933
DR	1196	NY	1/10/1998	Severe winter storm	\$ 43,141,823	\$ 15,658,137	\$ 71,461,849
DR	1233	NY	7/7/1998	Severe storms and flooding	\$ 20,059,096	\$ 3,309,385	\$ 26,860,229
EM	3136	NY	1/15/1999	Snow Emergency	\$ 4,673,921		\$ 4,900,786
DR	1335	NY	7/21/2000	Severe storms and flooding	\$ 31,150,187		\$ 37,338,489
EM	3155	NY	10/11/2000	West Nile Virus	\$ 4,668,512		\$ 4,941,606
				9/11 attack funding at bottom			
EM	3170	NY	12/31/2001	Snow	\$ 16,619,808		\$ 16,808,895
DR	1404	NY	3/1/2002	Severe winter storm	\$ 5,920,093		\$ 6,787,249
EM	3186	NY	8/23/2003	Power Outage	\$ 5,419,373		\$ 5,566,531
DR	1534	NY	8/3/2004	Severe Storms and flooding	\$ 19,465,424		\$ 21,166,567
DR	1564	NY	10/1/2004	Severe Storms and Flooding	\$ 16,025,087	\$ 3,310,165	\$ 23,395,351
DR	1589	NY	4/19/2005	Severe Storms and Flooding	\$ 55,153,781	\$ 7,325,754	\$ 72,979,852
EM	3262	NY	9/30/2005	Hurricane Katrina Evacuation	\$ 2,760,836		\$ 3,063,485
EM	3268	NY	10/15/2006	Snowstorm	\$ -		\$ 777,910
DR	1665	NY	10/24/2006	Severe Storms and Flooding	\$ 113,486,177	\$ 9,493,780	\$ 134,577,727
DR	1857	NY	9/1/2009	Severe Storms and Flooding	\$ 49,244,749	\$ 4,653,296	\$ 66,941,966
DR	1993	NY	6/10/2011	Severe storms flooding tornadoes an	\$ 35,712,136		\$ 47,129,094
EM	3351	NY	10/28/2012	Hurricane Sandy	\$ -		\$ 13,306,303
DR	4129	NY	7/12/2013	Severe storms and flooding	\$ 61,044,023		\$ 78,366,713
				totals	\$ 584,848,587	\$ 61,361,511	\$ 779,433,535
DR	1391	NY	9/11/2001	Fires and explosions	\$ 4,717,977,730	\$ 521,106,362	\$ 8,703,246,004

Table 13: Ont-US 3 discloses that declarations including one or more New York State border counties total 19 for the period 1994 through 2013. Of 12 majors (DRs) and 7 emergencies (EMs), 10 were for severe storm with flooding. Snow emergencies transpired in 1999, 2001, 2002, and 2006. The state suffered immense losses from the 9/11 attacks of 2001, but those were concentrated in New York City's Manhattan and surrounding boroughs and counties. FEMA payouts to NYS for 9/11 exceed \$8.7 billion with more than half of that dedicated to FEMA PA funding. The 9/11 case was moved to the bottom of the table outside cases totals because it would skew the totals for natural disaster incidents. Also, NYS counties on the International Border with Canada received very little federal 9/11 money directly.

Hurricane Sandy<sup>17</sup> in 2012 was a massive coastal disaster for NYS which was, and still is, being largely addressed by FEMA and a host of other federal agencies (Housing and Urban Development, Dept. of Transportation, U.S. Army Corps of Engineers, and many more). Regardless, under NYS border county inclusive declarations, the State has been fortunate to receive about \$779 million in non-9/11 disaster aid. Of this, \$584 million came through the FEMA infrastructure repair and replacement program.

As indicated, New York State has Erie and Niagara counties (left center), both of which have bridge connections to Canada. Center right of Map 14, at the eastern end of Lake Ontario are Jefferson (also

with a bridge connection), and St. Lawrence counties. These four counties are within the Ontario Group. At the extreme upper right, Franklin and Clinton counties border the Canadian Province of Quebec and are therefore in the Quebec-New Brunswick Group covered next.

Table 13: Ont-US 3 covers New York State's Erie and Niagara counties, located upstate west and with bridge connection to Ontario Province. Erie, which includes the City of Buffalo and a significant assortment of suburban jurisdictions, earned 15 declarations from 1998 through 2012. Five were for severe storm, five were for snow emergencies. Beyond those the most notable are an August 2003 power outage, which hit neighboring Niagara county as well (but is listed as "Other"), and an emergency declaration for West Nile Virus spraying in 2000.

Less noteworthy is a statewide (all-county) emergency declaration covering Erie and Niagara Katrina resettlement cost reimbursement, and DR 1391, for the 9/11 attack of 2001 (that did not directly affect these counties). Both Erie and Niagara were included in the Hurricane Sandy declaration EM 3351. Niagara County itself drew 16 declarations from 1998 through 2013. Besides Niagara declarations already mentioned in this paragraph, the county received help from 4 snow emergencies and 5 severe storm major disaster declarations. The City of Niagara Falls, NY is connected to its Canadian sister, City of Niagara Falls, by the Rainbow Bridge. Niagara Falls itself is iconic and a very major domestic and international tourist magnet for both municipalities.

Table 13 includes New York State's Jefferson (NY) and St. Lawrence counties. Located at the northeast end of Lake Ontario and with a northern edge along the St. Lawrence River, Jefferson (NY) County is connected to Ontario Province by several bridges. Jefferson experienced 8 declared disasters or emergencies from 1996 through 2005: 2 snow storms (one destructive enough to warrant a major declaration in 1998), 1 flood, 1 severe storm, and 1 in 2000 (EM 3155) to cover West Nile Virus insect spraying costs. Neighboring St. Lawrence County was also part of EM 3155. Jefferson (NY) and St. Lawrence were symbolically part of the statewide 9/11 major disaster declaration in 2001 and both were assisted by EM 3186 for the great power outage of August 2003. Owing to its deep penetration inland, Tropical Storm Sandy caused devastation in parts of St. Lawrence County in October 2012 yielding EM 3351.

## Quebec-New Brunswick Group

Map 15 shows the Provinces of Quebec and Map 16 the Province of New Brunswick, plus the U.S. states it borders, but without interior detail. The Quebec-New Brunswick Group borders four U.S. states: New York State (Map 14), Vermont (Map 17) and New Hampshire (Map 17), and Maine (Map 18).

Regional county municipalities (RCM or MRC) and equivalent territories (TE) are the main sub-provincial governments in the province of Quebec, Canada. The term regional county municipality or RCM (French: municipalité régionale de comté, MRC) is used in Quebec to refer to one of 87 county-like political entities. In some older English translations, they were called county regional municipality.

Regional county municipalities are a supralocal type of regional municipality, and act as the local municipality in unorganized territories within their borders. The system of regional county municipalities was introduced beginning in 1979 to replace the historic counties of Quebec. In most cases, the territory of an RCM corresponds to that of a census division, however there are a few exceptions.<sup>18</sup>

Some local municipalities are outside any regional county municipality.<sup>19</sup> Regional county municipalities (RCM or MRC) and equivalent territories (TE) are used in the province of Quebec, Canada. They are given along with their geographical codes as specified by the Ministry of Municipal Affairs, Regions and Land Occupancy, and the administrative regions to which they belong.

With the New Brunswick Equal Opportunity program in 1966, New Brunswick county councils were abolished. Counties continue to be used as an organizational unit, along with parishes, for registry of real-estate and to some extent taxation thereof. They figure prominently in residents' sense of place and continue as significant threads in the Province's cultural fabric (i.e., most citizens always know which county they are in). They still appear on most maps.

**Map 15: Province of Quebec with Municipalities**



Given Quebec's immense size, it is not possible to show all of the province's regional county municipalities. Also, Quebec's regional county municipalities are responsible for a fairly narrow set of

functions and are not the equivalent of U.S. counties. Source: Geology.com, “Quebec Map,” <https://geology.com/canada/quebec.shtml> (accessed June 13, 2018). It is possible to research each regional county municipality in Quebec one at a time. See Commons.wikipedia.org, “Media in category SVG maps of regional county municipalities in Quebec,” [https://commons.wikimedia.org/wiki/Category:SVG\\_maps\\_of\\_regional\\_county\\_municipalities\\_in\\_Quebec](https://commons.wikimedia.org/wiki/Category:SVG_maps_of_regional_county_municipalities_in_Quebec) (accessed June 13, 2018).

**Map 16: Province of New Brunswick with counties**



Source: Maps of World, “Map of New Brunswick,” <https://www.mapsofworld.com/canada/provinces/new-brunswick-county-map.html> (accessed June 13, 2018).

New Brunswick is the eighth-most populous province in Canada with 751,171 residents as of the 2011 Census. It is the third-smallest province in land area at approximately 71,400 km<sup>2</sup> (27,600 sq. mi). New



Brunswick's 107 municipalities cover only 8.6% of the province's land mass but are home to 65.3% of its population.

Municipalities in New Brunswick may incorporate under the Municipalities Act of 1973 as a city, town, village, regional municipality, or rural community. Municipal governments are led by elected councils and are responsible for the delivery of services such as civic administration, land use planning, emergency measures, policing, road, and garbage collection. New Brunswick has 8 cities, 26 towns, 65 villages, 1 regional municipality, and 7 rural communities. Although rural communities are under the Municipalities Act, the provincial A

**Table 14: Quebec And New Brunswick Disasters With DFAA Payments, 1994-2015**

EVENT TYPE	PLACE	EVENT START DATE	EVAC- UATED	ESTIMATED TOTAL COST	FEDERAL DFAA PAYMENTS	PROVINCIAL DFAA PAYMENTS	PROVINCIAL DEPT PAYMENTS	DEATHS	INJURED
Flood	Plaster Rock NB and Lower St. Lawrence Region	16/04/1994	0	\$ 57,025,698	\$ 1,944,488	\$ 31,903,387	\$ 1,681,761	0	0
Tornado	Aylmer QC	08/04/1994	1000	\$ 7,786,393			\$ 246,393	0	4
Flood	Saguenay River Valley QC	19/07/1996	15825	\$ 300,000,000	\$ 300,000,000			10	0
Flood	Montreal and Mauricie Region QC	11/08/1996	1000	\$ 93,089,380	\$ 3,435,141	\$ 10,709,159		0	0
Winter Storm	Ontario to New Brunswick	01/06/1998	17800	\$ 4,635,720,433	\$ 665,387,416	\$ 42,560,837	\$17,661,738	28	945
Flood	Saint John River NB	03/09/1998	0	\$ 5,636,784	\$ 3,550,846	\$ 2,085,938		0	0
Flood	Eastern Ontario and Quebec	28/03/1998	3757	\$ 27,741,685	\$ 7,246,824	\$ 14,570,459	\$ 5,924,402	0	0
Avalanche	Kangisqualujuaq QC	01/01/1999		\$ 6,400,400	\$ 6,400,000			9	25
Winter Storm	Toronto ON	13/01/1999	0	\$ 122,000,000				2	0
Tornado	Drummondville QC	07/06/1999	200	\$ 43,595,000				1	4
Storms and Severe Thunde	Balmoral and Val d'Amour areas NB	09/07/1999		\$ 1,726,766	\$ 485,625	\$ 1,241,141			
Flood	Maritimes provinces	23/09/1999	90	\$ 4,912,305	\$ 1,834,365	\$ 3,077,940		0	0
Winter Storm	Maritimes provinces	17/01/2000	216	\$ 6,621,462	\$ 3,059,340	\$ 2,773,532	\$ 301,806	0	0
Hurricane / Typhoon / Tro	Edmundston NB	13/08/2004	0	\$ 180,000	\$ 180,000			1	
Flood	Fredericton, Jemseg, Sheffield, Maugerville NB	05/01/2005	160	\$ 2,278,201	\$ 768,644	\$ 1,509,557		0	
Flood	Quebec	31/08/2005		\$ 8,300,000	\$ 8,300,000				
Storms and Severe Thunde	Gaspé QC	15/08/2007	200	\$ 11,600,000	\$ 11,600,000			0	0
Flood	Saint John River NB	30/05/2008	1000	\$ 21,000,000	\$ 21,000,000			0	0
Flood	Saint John, Miramichi and Restigouche rivers NB	04/05/2009	0	\$ 2,000,000	\$ 626,000	\$ 1,374,000		0	0
Tornado	Déleage to Mont-Laurier	08/04/2009	0	\$ 6,000,000				0	0
Flood	New Brunswick and Nova Scotia	13/12/2010	0	\$ 5,000,000	\$ 5,000,000			0	0
Hurricane / Typhoon / Tro	Quebec, New Brunswick, LB, NF, PEI	28/08/2011	300	\$ 137,800,000				2	
Flood	New Brunswick	14/04/2014	1495	\$ 16,000,000			\$16,000,000	0	0
Hurricane / Typhoon / Tro	New Brunswick	07/05/2014	0	\$ 12,500,000			\$12,500,000	0	0
				\$ 5,534,914,507	\$ 1,040,818,689	\$ 111,805,950	\$54,316,100		

Returning to Quebec, one reporter claims that the Province of Quebec has received “the largest chunk of Canadian disaster relief,” since DFAA was launched in 1970.<sup>20</sup> She points to the July 1996 Saguenay River Valley flood, shown in the Quebec and New Brunswick table below, which secured a \$300 million payout (listed as \$245 million in the 2011 article) to Quebec and its damage zones that had zero provincial cost share.<sup>21</sup> Minsky contrasted this disaster with Manitoba’s massive Red River flood of May 1997 (addressed brilliantly by Wachtendorf), when she argues that Manitoba’s flood saw a \$193 million DFAA expenditure.<sup>22</sup>

Minsky claims that from 1970 to 2011, DFAA paid out more than \$1.9 billion of which Quebec received \$855 million. Thus, the Quebec DFAA sum dwarfs British Columbia’s \$238 million, Alberta’s \$165 million, Ontario’s \$141 million, and New Brunswick’s \$50.5 million DFAA relief funding.<sup>23</sup> Minsky defends Quebec’s DFAA record by discussing that Province’s \$535 million in DFAA help after the ice storm of 1998, an amount that covered slightly more than 75% of what Quebec officials had asked for. The same ice storm befell many local governments of Ontario and New Brunswick.<sup>24</sup> This escalated the cost of the event dramatically such that a multi-province total, according to Table 14, yielded \$665 million in DFAA spending.

The Quebec and New Brunswick DFAA Table 14 includes several incidents that were for the Maritime Provinces: Prince Edward Island, Nova Scotia, and New Brunswick. Nonetheless, the table compiles a record of incidents that included Quebec and New Brunswick of \$5.5 billion in estimated damage from 1994-2014, with just over \$1 billion in total DFAA aid.

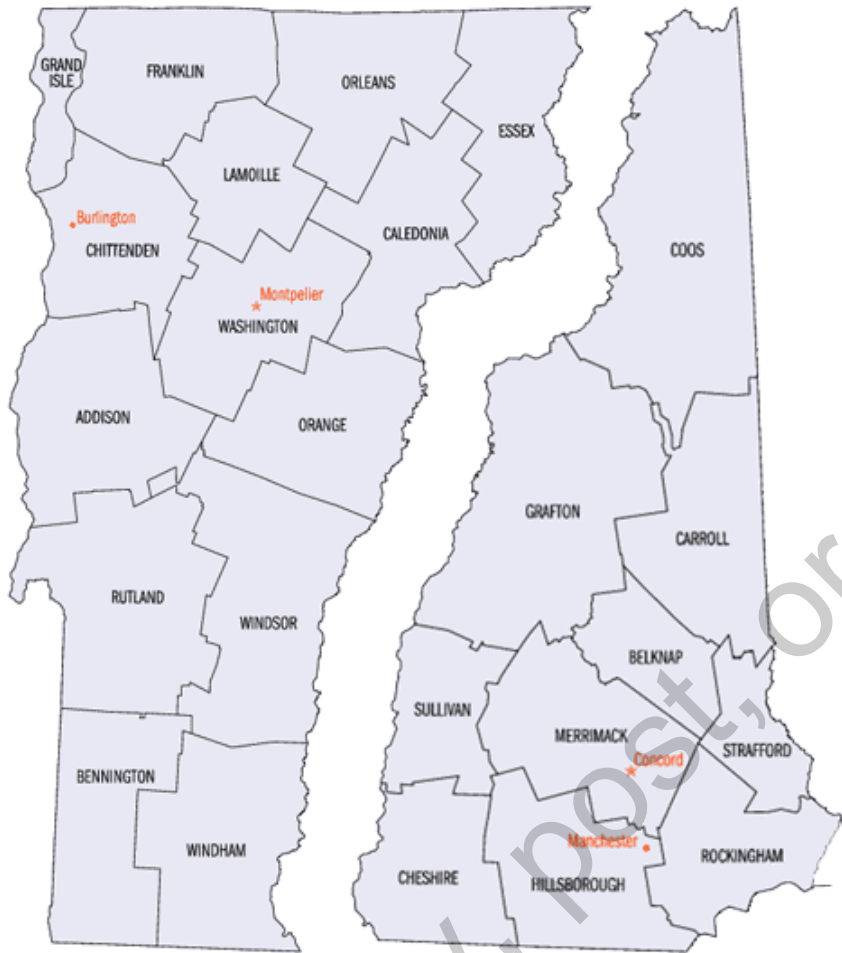
Adjoining the Province of Quebec are two New York State tall peaks area counties, Franklin (NY) and Clinton (see Map 14). One or both of these counties are included in the declaration set below. Table 15: QNB-US 1 showcases New York State's Franklin (NY) and Clinton counties. Franklin (NY) and Clinton both list the 9/11 disaster of 2001 as "fire" (usually listed as "fire and explosions" by FEMA). Franklin County (NY) experienced 14 disasters or emergencies from 1996 through 2013: 3 for flood, 3 for severe storm, 1 for snow, and 2 for hurricane (Irene in 2011 and Sandy in 2102). Interestingly, Franklin (NY) suffered an earthquake in April 2002 strong enough to earn it a major disaster declaration. Also notable is that both Franklin (NY) and Clinton (NY) were included in a major disaster declaration issued by President George W. Bush for West Nile Virus insect control. Unremarkable is both county's inclusion in Katrina resettlement reimbursement of 2005.

Table 15: QNB-US 1 below reports that these counties were in no less than 20 declarations over the period 1996 through 2013. All 20 received FEMA infrastructure funds but only 10 were eligible for FEMA human services program funding. Severe storms, flood, winter storms, and hurricane seem to befall the state and these counties. FEMA PA funding totals outside of 9/11 recovery funding dramatically exceed FEMA HS, or human services, funding in the table.

Vermont and New Hampshire also border Quebec Province, with four Vermont counties and one New Hampshire county. Table 16: QNB-US 2 below displays the U.S. disaster declarations received by Grand Isle, Franklin (VT), Orleans, and Essex counties of Vermont. Coos County of New Hampshire is included in the declaration set in Table 17: QNB-US 3.

Table 16 is a declaration history for Vermont's, Grand Isle, and Franklin (VT) counties. Both counties are in Vermont's extreme northwest and both are astride Quebec Province. Grand Isle was awarded a modest 6 declarations: three for severe storm, one snow emergency and, as will be the case for all four Vermont border counties, 2 for Hurricane Irene in 2011 – one for emergency with a follow-on major declaration for the same event. Franklin County (VT) shows a record of 12 declarations from 1996 through 2011: 2 for flood, 8 for severe storm, and a pair of declarations for Hurricane Irene in 2011.

Map 17: Vermont (left) counties and New Hampshire (right) counties



Source: Search for a Tree Farm, "Vermont and New Hampshire counties," <http://www.nh-vtchristmastree.org/search.php> (accessed June 13, 2018).

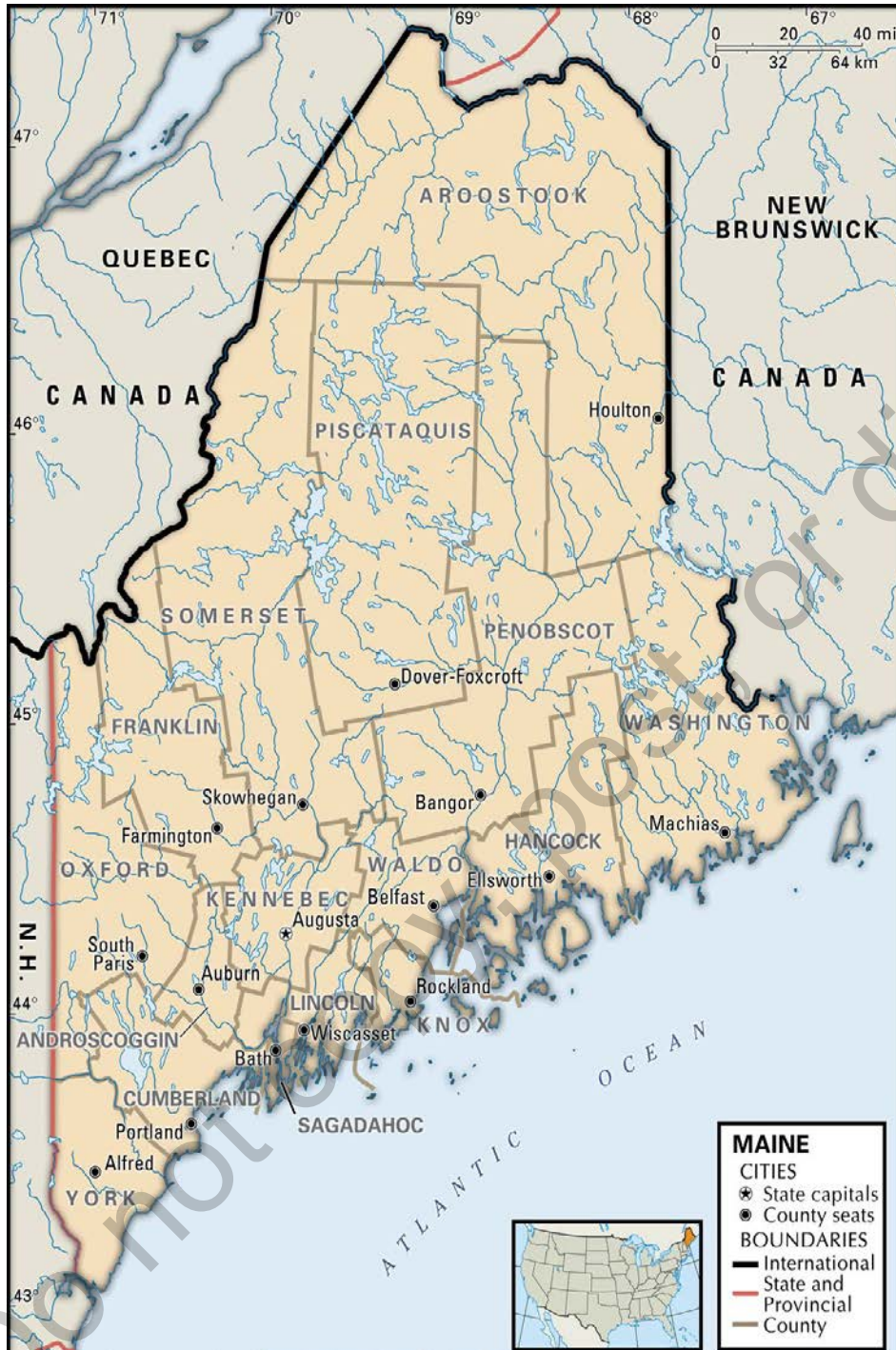
**Table 15: QNB-US 1: Quebec-New Brunswick Group - U.S. Declared Disasters that include at least one U.S. border county, for New York State counties (Franklin and Clinton counties), Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS (or PA) = total FEMA infrastructure payout, total HS (or IA) = FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1095	NY	1/24/1996	Severe storms and flooding	\$ 100,303,561	\$ 17,610,994	\$ 143,062,933
DR	1196	NY	1/10/1998	Severe winter storm	\$ 43,141,823	\$ 15,658,137	\$ 71,461,849
DR	1233	NY	7/7/1998	Severe storms and flooding	\$ 20,059,096	\$ 3,309,385	\$ 26,860,229
EM	3136	NY	1/15/1999	Snow Emergency	\$ 4,673,921		\$ 4,900,786
DR	1335	NY	7/21/2000	Severe storms and flooding	\$ 31,150,187		\$ 37,338,489
EM	3155	NY	10/11/2000	West Nile Virus	\$ 4,668,512		\$ 4,941,606
				9/11 attack funding at bottom			
EM	3170	NY	12/31/2001	Snow	\$ 16,619,808		\$ 16,808,895
DR	1404	NY	3/1/2002	Severe winter storm	\$ 5,920,093		\$ 6,787,249
EM	3186	NY	8/23/2003	Power Outage	\$ 5,419,373		\$ 5,566,531
DR	1534	NY	8/3/2004	Severe Storms and flooding	\$ 19,465,424		\$ 21,166,567
DR	1564	NY	10/1/2004	Severe Storms and Flooding	\$ 16,025,087	\$ 3,310,165	\$ 23,395,351
DR	1589	NY	4/19/2005	Severe Storms and Flooding	\$ 55,153,781	\$ 7,325,754	\$ 72,979,852
EM	3262	NY	9/30/2005	Hurricane Katrina Evacuation	\$ 2,760,836		\$ 3,063,485
EM	3268	NY	10/15/2006	Snowstorm	\$ -		\$ 777,910
DR	1665	NY	10/24/2006	Severe Storms and Flooding	\$ 113,486,177	\$ 9,493,780	\$ 134,577,727
DR	1857	NY	9/1/2009	Severe Storms and Flooding	\$ 49,244,749	\$ 4,653,296	\$ 66,941,966
DR	1993	NY	6/10/2011	Severe storms flooding tornadoes an	\$ 35,712,136		\$ 47,129,094
DR	4020	NY	08/31/2011	Hurricane Irene	\$ 615,128,345	\$ 119,292,763	\$ 936,859,132
EM	3351	NY	10/28/2012	Hurricane Sandy	\$ -		\$ 13,306,303
DR	4129	NY	7/12/2013	Severe storms and flooding	\$ 61,044,023		\$ 78,366,713
				totals	\$ 1,199,976,932	\$ 180,654,274	\$ 1,716,292,667
DR	1391	NY	9/11/2001	Fires and explosions	\$ 4,717,977,730	\$ 521,106,362	\$ 8,703,246,004



Map 18: Maine and its Counties



Source: Map of US.org, "Maps of Maine," <https://www.mapofus.org/maine/> (accessed June 13, 2018)

**Table 16: QNB-US 2: Group - U.S. Declared Disasters that include at least one U.S. border county, for Vermont counties (Grand Isle, Franklin (VT), Orleans, and Essex (VT) counties), Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1063	VT	8/16/1995	Excessive Rainfall, Flooding	\$ 3,302,138	\$ 752,088	\$ 5,561,956
DR	1101	VT	2/13/1996	Ice jams and flooding	\$ 2,553,975		\$ 3,709,686
DR	1184	VT	7/25/1997	Excessive Rainfall, high winds & flood	\$ 5,516,070	\$ 840,831	\$ 9,474,738
DR	1201	VT	1/15/1998	Severe ice storms, rain, high winds, a	\$ 4,456,681	\$ 533,112	\$ 6,975,170
DR	1228	VT	6/30/1998	Severe storms and flooding	\$ 9,012,819	\$ 1,680,377	\$ 15,429,345
DR	1307	VT	11/10/1999	Tropical Storm Floyd	\$ 1,021,850		\$ 2,039,477
EM	3167	VT	4/10/2001	Snow	\$ 1,301,755		\$ 1,438,438
DR	1428	VT	7/12/2002	Severe storms and flooding	\$ 1,798,199	\$ 499,971	\$ 4,027,652
DR	1559	VT	9/23/2004	Severe Storms and flooding	\$ 2,352,914		\$ 3,729,751
DR	1698	VT	5/4/2007	Severe Storms and Flooding	\$ 3,766,159		\$ 4,705,299
DR	1715	VT	8/3/2007	Severe Storms and Flooding	\$ 4,905,985		\$ 7,024,482
DR	1778	VT	7/15/2008	Severe Storms and flooding	\$ 1,086,864		\$ 2,103,653
DR	1784	VT	8/15/2008	Sever storms, a tornado and flooding	\$ 449,483		\$ 870,409
DR	1790	VT	9/12/2008	Severe Storms and Flooding	\$ 4,570,623		\$ 5,818,862
DR	1951	VT	12/22/2010	Severe Storm	\$ 1,577,811		\$ 2,416,946
DR	1995	VT	6/15/2011	Severe storms and flooding	\$ 10,915,412	\$ 1,873,001	\$ 19,767,338
DR	4001	VT	7/8/2011	Severe storms and flooding	\$ 10,586,560	\$ 1,457,882	\$ 14,223,116
EM	3338	VT	8/29/2011	Hurricane Irene	\$ 168,800		\$ 2,154,527
DR	4022	VT	9/1/2011	Tropical Storm Irene	\$ 227,217,037	\$ 27,340,754	\$ 336,018,719
DR	4043	VT	11/8/2011	Severe storms and flooding	\$ 946,367		\$ 1,388,771
DR	4066	VT	6/22/2012	Severe Storm, tornado, and flooding	\$ 1,060,961		\$ 1,437,148
DR	4120	VT	6/13/2013	Severe storms and flooding	\$ 2,003,805		\$ 2,851,808
DR	4140	VT	8/2/2013	Severe storms and flooding	\$ 5,636,041		\$ 8,744,807
				totals	\$ 306,208,309	\$ 34,978,016	\$ 461,912,098

Table 16: QNB-2 lists declarations for Vermont's, Orleans and Essex counties, both of which border Quebec. From 1995 through 2013, Orleans won 13 declarations: 8 for severe storm, 2 for flood, and two for Hurricane Irene, one initially as an emergency and only a few days later, one for a major disaster. Oddly, Orleans has only one for snow emergency; most Vermont to Maine border counties have four or five show emergency declarations each. Essex County collected 11 declarations from 1995-2013: a succession 8 straight were for severe storm (1995-2011), 1 for flood, and two were for Hurricane Irene (one as emergency quickly followed by one as major disaster for the same event).

Table 16: QNB-US 2 collects declarations covering all four Vermont counties for the interval. Severe storms with flooding heavily populates the list with snow, ice jams, and tropical storms adding to the totals. Again, there is a tremendous disparity between FEMA infrastructure spending and FEMA human services spending for these incidents. Only 8 of the 20 on the list conveyed FEMA human service assistance.

Northern New Hampshire projects one county northward that reaches the International Border and Quebec. Table 17: QNB-US 3, reports that Coos County (NH) collected 15 declarations from 1995

through 2012: 5 severe storms, 3 snow emergencies, 2 floods, and 3 for hurricane, excluding Katrina resettlement reimbursement in 2005. Coos was hit by Hurricane Irene in 2011 and the next year by Tropical Storm Sandy (2012), first coming as an emergency declaration and later, after more complete damage assessment a short time later, as a major disaster. For two weeks in December 2008, Coos suffered a severe ice storm for which it won a major disaster declaration in very early 2009.

Table QNB-US 3 provides funding totals for Coos County (NH). With 15 declarations, 8 for DRs and 7 for EMs, severe storms with flooding, severe winter storms and snow emergencies, as well as two tropical storms comprise the description list. A total \$123 million in FEMA funding, of which \$85 million went to PA, is an impressive disaster record for a relatively remote northern New Hampshire county.

**Table 17: QNB-US 3: Quebec-New Brunswick Group - U.S. Declared Disasters that include at least one U.S. border county, for New Hampshire's Coos County, Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1077	NH	1/3/1996	Excessive rainfall, high winds, flooding	\$ 2,107,008		\$ 2,779,750
DR	1199	NH	1/15/1998	Severe ice storms, rain, and high winds	\$ 10,043,664	\$ 237,192	\$ 13,137,887
EM	3166	NH	3/28/2001	Snow	\$ 3,433,252		\$ 3,523,624
EM	3193	NH	1/15/2004	Snow	\$ 2,686,323		\$ 2,945,380
EM	3208	NH	3/30/2005	Snow	\$ 1,099,730		\$ 1,176,101
EM	3258	NH	9/19/2005	Hurricane Katrina Evacuation	\$ 9,887		\$ 10,513
DR	1695	NH	4/27/2007	Severe Storms and Flooding	\$ 25,346,499	\$ 3,596,336	\$ 38,900,945
DR	1787	NH	9/5/2008	Severe storms and flooding	\$ 3,673,097		\$ 4,933,242
EM	3297	NH	12/13/2008	Severe winter storm	\$ -	\$ 35,680	\$ 784,223
DR	1812	NH	1/2/2009	Severe Winter Storm	\$ 14,898,663		\$ 21,286,926
DR	4006	NH	7/22/2011	Severe storms and flooding	\$ 1,226,294		\$ 1,559,146
DR	4026	NH	9/3/2011	Tropical Storm Irene	\$ 18,151,451	\$ 1,281,076	\$ 27,894,440
EM	3344	NH	11/1/2011	Severe Storm	\$ -		\$ 415
EM	3360	NH	10/30/2012	Hurricane Sandy	\$ 643,661		\$ 866,117
DR	4095	NH	11/28/2012	Hurricane Sandy	\$ 2,132,376		\$ 3,137,399
				totals	\$ 85,451,905	\$ 5,150,284	\$ 122,936,108

Maine's Oxford, Franklin, and Somerset counties all border the Province of Quebec. Aroostook County shares its border with the provinces of Quebec and New Brunswick. Maine's Washington County exclusively borders New Brunswick. Table 18: QNB-US 4 shows disaster declarations received by Maine's Oxford, Franklin, and Somerset counties issued from 1994 through 2013 may be observed in Tables 18.

Table 18: QNB-US 4, a declaration history for Maine's Franklin and Somerset counties (both of which border Quebec Province), reveals an impressive list of declarations for both counties. Franklin's (ME) declarations number 17 from 1996-2011 and include 9 severe storms, 5 snow emergencies, 1 for Hurricane Irene in 2011. Both Franklin and Somerset received one for Katrina evacuation resettlement reimbursement in 2005. Somerset has 16 declarations over the interval 1996-2009: 8 for severe storm, 5 for snow emergencies, 1 for flood, and one for Hurricane Floyd in 1999.

Table 18: QNB-US 4 is the accumulated declarations received by Maine’s two Quebec bordering counties with FEMA funding totals.<sup>25</sup> Winter storms and seasonal changes capable of producing disaster damage comprise most of the list for Franklin (ME) and Somerset county declarations. Tropical storm Floyd (1999) and Irene (2011) caused damage in these counties. Only 4 of the 23 declarations listed cover FEMA human services. A succession of winter snow emergencies, and one declared snow disaster, begins in 2001 and runs through 2005. About \$174 million in total went out for all the declarations, with \$117 million dedicated to FEMA infrastructure funding.

**Table 18: QNB-US 4: Quebec-New Brunswick Group - U.S. Declared Disasters that include at least one U.S. border county, for Maine’s Oxford, Franklin (ME), and Somerset counties, Jan. 1994-Nov. 2015<sup>26</sup>**

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1106	ME	3/13/1996	Severe storms, winds, rain, floods, ice jams	\$ 1,657,224		\$ 2,256,490
DR	1114	ME	5/20/1996	Severe storms, mudslides, Inland, coastal	\$ 2,027,462		\$ 2,717,400
DR	1143	ME	10/28/1996	Extreme weather conditions and flooding	\$ 6,831,061	\$ 3,712,554	\$ 13,303,108
DR	1198	ME	1/13/1998	Severe ice storms, rain, and high winds	\$ 36,161,949	\$ 5,971,584	\$ 53,832,542
DR	1232	ME	7/2/1998	Severe storms and flooding	\$ 1,913,877		\$ 2,967,658
DR	1308	ME	11/18/1999	Tropical Storm Floyd	\$ 928,101		\$ 1,628,834
DR	1326	ME	4/28/2000	Severe storms, flooding, and ice jams	\$ 2,202,905		\$ 3,549,488
DR	1371	ME	5/16/2001	Severe winter storms and flooding	\$ 1,183,369		\$ 2,514,467
DR	1468	ME	5/14/2003	Severe Winter Cold and Frost	\$ 1,760,936		\$ 2,780,399
DR	1508	ME	2/5/2004	Snow	\$ 2,426,355		\$ 3,528,322
DR	1591	ME	6/29/2005	Severe Storms, Flooding, Snow Melt and	\$ 7,437,953		\$ 9,543,247
DR	1693	ME	4/25/2007	Severe Storms and Inland and Coastal Flooding	\$ 27,419,022	\$ 2,122,045	\$ 38,050,786
DR	1716	ME	8/8/2007	Severe Storms and Flooding	\$ 1,665,070		\$ 2,285,838
DR	1755	ME	5/9/2008	Severe storms and flooding	\$ 3,086,499	\$ 1,260,248	\$ 9,379,505
DR	1852	ME	7/30/2009	Severe storms, flooding and landslides	\$ 2,930,405		\$ 5,123,260
DR	4032	ME	9/13/2011	Tropical Storm Irene	\$ 1,998,767		\$ 3,143,374
EM	3164	ME	3/20/2001	Snow	\$ 3,404,109		\$ 3,750,377
EM	3190	ME	1/15/2004	Snow	\$ 2,406,696		\$ 2,778,641
EM	3194	ME	1/26/2004	Snow	\$ 1,253,408		\$ 1,423,561
EM	3206	ME	3/14/2005	Snow	\$ 4,131,211		\$ 4,399,031
EM	3209	ME	4/1/2005	Snow	\$ 3,261,707		\$ 3,445,681
EM	3210	ME	4/21/2005	Snow	\$ 1,296,770		\$ 1,476,732
EM	3256	ME	9/19/2005	Hurricane Katrina Evacuation	\$ 51,276		\$ 51,570
				Totals	\$ 117,436,132	\$ 13,066,431	\$ 173,930,311

According Table 19: QNB-US 5, for Maine’s Aroostook county experienced 7 snow storm emergency declarations, 4 severe storms, two floods and one freezing event (2003 ice storm) from 1994 to 2011. Aroostook borders Quebec and New Brunswick provinces. Washington County Maine, sustained from 1998 to 2013, 8 severe storms, 3 snow emergencies, and the 2003 ice storm.<sup>27</sup>

Table 19 QNB-US 5 furnishes FEMA funding data for Maine’s Aroostook and Washington counties. With 19 declarations, including 8 for emergency, Aroostook and Washington (ME) counties show a proclivity for snow emergencies, severe winter storm DR’s, and flooding. Only three DR’s came with FEMA human services funding. With over \$150 million in total FEMA aid, and \$102 million for FEMA infrastructure



help, these two counties have found considerable recovery help for the natural disaster forces they commonly endure.

**Table 19: QNB-US 5: Quebec-New Brunswick Group - U.S. Declared Disasters that include at least one U.S. border county, for Maine’s Aroostook and Washington counties, Jan. 1994-Nov. 2015**

Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

Type	Dis Num	State	Decl Date	Disaster Description	IS Total	HS Total	US Dollars
DR	1029	ME	5/13/1994	Flooding and ice jams	\$ 7,450	\$ 471,449	\$ 926,303
DR	1198	ME	1/13/1998	Severe ice storms, rain, and high winds	\$ 36,161,949	\$ 5,971,584	\$ 53,832,542
DR	1326	ME	4/28/2000	Severe storms, flooding, and ice jams	\$ 2,202,905		\$ 3,549,488
EM	3164	ME	3/20/2001	Snow	\$ 3,404,109		\$ 3,750,377
DR	1371	ME	5/16/2001	Severe winter storms and flooding	\$ 1,183,369		\$ 2,514,467
EM	3174	ME	3/11/2003	Snow	\$ 416,828		\$ 539,817
DR	1468	ME	5/14/2003	Severe Winter Cold and Frost	\$ 1,760,936		\$ 2,780,399
EM	3190	ME	1/15/2004	Snow	\$ 2,406,696		\$ 2,778,641
EM	3194	ME	1/26/2004	Snow	\$ 1,253,408		\$ 1,423,561
EM	3206	ME	3/14/2005	Snow	\$ 4,131,211		\$ 4,399,031
EM	3209	ME	4/1/2005	Snow	\$ 3,261,707		\$ 3,445,681
DR	1591	ME	6/29/2005	Severe Storms, Flooding, Snow Melt and	\$ 7,437,953		\$ 9,543,247
EM	3256	ME	9/19/2005	Hurricane Katrina Evacuation	\$ 51,276		\$ 51,570
EM	3265	ME	2/24/2006	Snow	\$ 566,377		\$ 571,646
DR	1693	ME	4/25/2007	Severe Storms and Inland and Coastal F	\$ 27,419,022	\$ 2,122,045	\$ 38,050,786
DR	1755	ME	5/9/2008	Severe storms and flooding	\$ 3,086,499	\$ 1,260,248	\$ 9,379,505
DR	1852	ME	7/30/2009	Severe storms, flooding and landslides	\$ 2,930,405		\$ 5,123,260
DR	1953	ME	2/1/2011	Severe Storm and Flooding	\$ 1,611,759		\$ 3,018,101
DR	4108	ME	3/25/2013	Sever winter storm, snowstorm and floc	\$ 3,137,453		\$ 4,885,506
					\$ 102,431,312	\$ 9,825,326	\$ 150,563,928

New Brunswick’s disasters with economic losses appeared in the New Brunswick with DFAA Payments in Table 1. In 1998, the Province of News Brunswick, along with huge swaths of Ontario and Quebec provinces, suffered a multi-province loss of \$4.6 billion from a mammoth winter storm. The same winter storm struck upstate New York, Vermont, New Hampshire, and Maine earning each state a disaster declaration conveying federal assistance. A \$57 million flood in 1994 stuck western New Brunswick and part of Quebec’s St. Lawrence region. Hurricane Irene, striking as a tropical storm, caused \$137 million in damage across New Brunswick and areas of Quebec, Newfoundland, Labrador, Nova Scotia, and Prince Edward Island in August 2011. Irene also produced a trail of damage from the mid-Atlantic to upstate New York and New England with ensuing declarations for border counties of NYS, VT, NH and ME.

## Closing

This appendix should be read with the Chapter 8's Case Study of Canada-U.S. Borderline Disasters. While long and involved, this section ambitiously attempted to compare Canadian and U.S. disasters which transpired in provinces and states located on the International Border of the two nations from 1994 to 2013. It also presented cost information demonstrating the disaster assistance systems used by each of the two nations. Care was taken to include maps so that readers might avoid geographic confusion.

Clearly, there are border-spanning disasters for the U.S. and Canada. Hurricane remnants barrel northward across New England and into the Provinces of Ontario and Quebec. Some rivers originating in the U.S. flow north into Canada and pose flood hazards for both nations. Some Canadian rivers flow south into the U.S. and do likewise. Some rivers cross the international border two or three times, such that a flood wreaks havoc in parts of both nations. Wildfires do not honor national boundaries. Wildfires in both Canada and the U.S. have begun to run up hundreds of millions of dollars in damages. It is in the vested interest of both the U.S. and Canada to battle these conflagrations together, particularly when one nation seeks help from the other. Earthquakes do not respect international borders. Washington State and Alaska quakes often impact British Columbia and Yukon areas, and vice versa. Sometimes Canada and the U.S. are struck simultaneously by the same temblor. Coastal storms, Pacific or Atlantic, pose multiple threats to each nation. Not to be overlooked are ice storms, some of which have reached epic proportions in terms of their impact. Already power utility crews stream across the border, under plans, like motorized military divisions when one or the other nation is so impacted. The bond joining Canada and the U.S. continues, even in the realm of disaster management and homeland security.

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<sup>1</sup> See Public Safety Canada, Canadian Disaster Database, at <http://cdd.publicsafety.gc.ca/srchpg-eng.aspx?dynamic=false> (accessed June 11, 2018).

<sup>2</sup> Canadian Disaster Database, Public Safety Canada, at <http://www.publicsafety.gc.ca/cnt/rsrscs/cndn-dsstr-dtbs/index-eng.aspx>

<sup>3</sup> Alaska does not have organized counties but uses boroughs. It also has one large borough divided into Census districts and completely administered by state government.

<sup>4</sup> The source for every Provincial Table showing DFAA payments is the Canadian Disaster Database. All such DFAA data tables reside in the body of this appendix. Also, care should be taken because all dollar figures in Canadian tables are in Canadian dollars and are not adjusted for inflation. Consequently, a 1996 winter storm producing \$215 million (Can\$) in loss, when controlling for inflation, may be almost double the cost of a 2010 wildfire of \$220 million (Can\$).

<sup>5</sup> This researcher does not know whether or not BC failed to seek DFAA in these incidents, or whether the incidents did not meet DFAA threshold of loss requirements. It is reasonable to assume that the later was the case for these four cases.

<sup>6</sup> The term "outlays" is used here connoting that the books have been closed for most of the pre-2010 declarations. If all obligated funds have not been paid out, the term "obligations" is then more accurate.

<sup>7</sup> Alaska has no counties but the State of Alaska uses Standard Metropolitan Statistical Areas.

<sup>8</sup> A warning is in order. All amounts listed in Table 3: YBC-US are FEMA disaster assistance. They should not be interpreted as an indication of total disaster losses or costs. Moreover, total costs of these disasters significantly exceed the total of qualifying federal relief payments shown here. Remember this when inspecting all subsequent U.S. disaster funding tables for northern border U.S. counties.

<sup>9</sup> Major Disaster DR 1037, which went to Washington State in 1994, covered an El Nino event which impacted the Salmon fishing industry. In short, a fisheries closure imposed by the U.S. Commerce Department's National Marine Fisheries Service caused massive temporary unemployment and economic hardship for local fishers and their families. Consequently, President William J. Clinton issued a major disaster declaration, much of it subsidizing augmented disaster unemployment assistance.

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- <sup>10</sup> Canada's Minister of Public Safety and Emergency Preparedness, Ralph Goodale, is the Member of Parliament for the Regina-Wascana. He was first elected to the Parliament of Canada in 1974 at the age of 24, representing the sprawling rural constituency of Assiniboia. In the 1980's, he served as Leader of the provincial Liberal Party, and was elected to the Saskatchewan Legislative Assembly in 1986. Mr. Goodale returned to the House of Commons in 1993 as the M.P. for Wascana, and was subsequently re-elected in 1997, 2000, 2004, 2006, 2008, 2011 and 2015. He served in the federal Cabinet previously as Minister of Agriculture, Minister of Natural Resources, Leader of the Government in the House of Commons, Minister of Public Works and Minister of Finance. Between 2006 and 2015, he served as Opposition House Leader and Deputy Leader of the Liberal Party of Canada. He became Minister of Public Safety in November of 2015. The Honorable Ralph Goodale is the only M.P. to serve in governments led by both Pierre Trudeau and Justin Trudeau.
- <sup>11</sup> Just as in Canada, U.S. law prohibits allowing federal disaster relief to duplicate payouts from insurance claims. Federal dollars can supplement what insurance fails to cover if eligibility conditions are met.
- <sup>12</sup> See Wachtendorf, "When Disasters Defy Borders-," cited previously.
- <sup>13</sup> See Global Warming Effects around the World, at <http://www.climatehotmap.org/global-warming-locations/grand-forks-nd-usa.html> (accessed June 11, 2018).
- <sup>14</sup> Single-tier municipalities checkerboard Ontario. They include separated municipalities that are geographically located within a county (see Map 12) but are not part of the county for the municipal purposes. Single-tier municipalities also include all northern municipalities where there is no upper-tier governance at the District level. Finally, single-tier municipalities include those former county or regional municipalities that have recently been amalgamated into single-tier municipality status. Single-tier municipalities have responsibilities for all local services to their residents. For a list of Ontario municipalities see Wikipedia, "List of municipalities in Ontario," [https://en.wikipedia.org/wiki/List\\_of\\_municipalities\\_in\\_Ontario](https://en.wikipedia.org/wiki/List_of_municipalities_in_Ontario) (accessed June 14, 2018).
- <sup>15</sup> Recall that \$5 million was the minimum total damage cost for cases to be included in this study, unless DFAA funds were conveyed. If DFAA funds went to incidents of less than \$5 million, those cases were included.
- <sup>16</sup> Few realize that under Federal law FEMA is allowed to reimburse both public and private (often investor owned) electric, gas, and water utilities for their disaster caused losses if their generation/distribution grid is in a zone covered by a presidential disaster declaration.
- <sup>17</sup> The author realizes that Sandy was a sub-tropical storm with a massive coastal storm surge and not technically a hurricane. However, common parlance is to refer to it as Hurricane Sandy or Superstorm Sandy.
- <sup>18</sup> RCMs are units of government at the supra-local level. However, not all municipalities belong to an RCM. In order to use RCMs for statistical purposes, some municipalities (mostly Indian reserves) are viewed as belonging to RCMs they do not belong to legally. The possibly enlarged RCMs are called municipalités régionales de comté géographiques (MRCG) as opposed to the legal ones known as municipalités régionales de comté juridiques (MRCJ). The remaining municipalities are grouped into territories equivalent to an RCM (French: territoires équivalents à une MRC) or TEs, which are also considered MRCGs. This way, MRCGs cover the entire territory of Quebec and do not overlap. There are 86 RCMs and 18 TEs in Quebec, for a total of 104 MRCGs. Twelve of the TEs correspond exactly to cities or urban agglomerations, and another two, Québec and La Tuque almost do. The only four exceptional cases are the TEs of Jamésie, Kativik and Eeyou Istchee. These cover large areas with many, mostly small, municipalities.
- <sup>19</sup> This includes some municipalities within urban agglomerations and also some aboriginal lands, such as Indian reserves that are enclaves within the territory of an RCM but not officially part of it. Where complete territorial coverage is desired, for example for the census, the Indian reserve enclaves are added in to create "geographical RCMs", and the urban agglomerations are considered to be "territories equivalent to an RCM."
- <sup>20</sup> Amy Minsky, "Quebec Has Received Largest Chunk of Canadian Disaster Relief," *Postmedia News*, May 13, 2011.
- <sup>21</sup> *Ibid.*, p. 2.
- <sup>22</sup> *Ibid.*
- <sup>23</sup> *Ibid.*
- <sup>24</sup> *Ibid.*, p. 3.
- <sup>25</sup> Aroostook County at the northern tip of Maine borders both Quebec and New Brunswick but for this study was associated with New Brunswick.

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<sup>26</sup> Key: DR=major disaster; EM=emergency. Dis Num is declaration #, State as abbreviation, Declaration Date issued by President, disaster description in brief, IS= total FEMA infrastructure payout, total HS= FEMA human services payout, U.S. Dollars= Total all categories of FEMA funding under the declaration (no control for inflation).

<sup>27</sup> For both counties, the long period between the date of the ice storm declaration (May 2003) and the time of the ice storm calamity itself is attributable to the time it took to compile loss information for FEMA. Such delays are quite common owing to the challenge of documenting both damage and response & recovery costs.

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