

# Souris River Basin Reservoir System for Water Supply and Flood Control

US Army  
Corps of Engineers

Ferris W Chamberlin, P.E.  
Chief, Water Management  
And  
Elizabeth A Nelsen, P.E.  
Regulator, Lake Darling Project



US Army Corps of Engineers  
**BUILDING STRONG®**



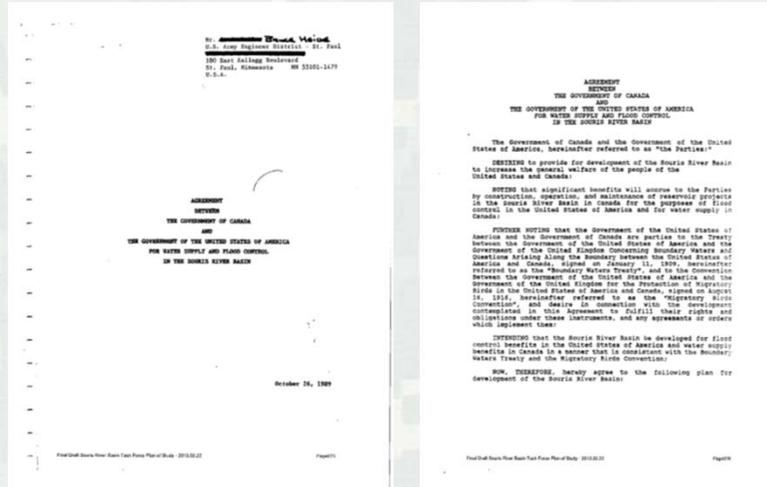
## Lake Darling Dam



**BUILDING STRONG®**



# The 1989 International Agreement



## Who Regulates Lake Darling?

Lake Darling Runoff Conditions Required to Trigger the International Agreement	
Best Estimate for the Maximum 30-day Volume at “Sherwood Crossing (unregulated)” OR	$\geq 216\,110 \text{ dam}^3$ (175,200 acre-ft)
Best Estimate of the “Local Runoff” Maximum 30-day Volume at Sherwood Crossing	$\geq 37\,000 \text{ dam}^3$ (30,000 acre-ft)

Flood operation will cease when flood volumes have been discharged from all reservoirs and streamflows are at or below 500 cfs at Minot 4NW

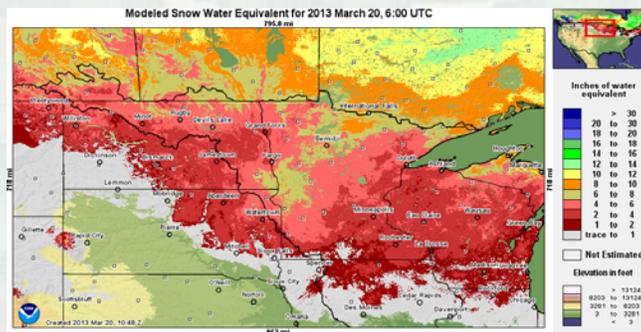


# Fall Drawdowns

- The three reservoirs with flood control storage are drawn down by Feb 1 each year regardless of basin conditions.
  - ▶ Rafferty – 1 meter
  - ▶ Alameda – 1 meter
  - ▶ Lake Darling – 1 foot



# Winter – How Much Snow?



Airborne Snow Survey Program



# Spring Forecasts

February 1, 2013  
Runoff Forecast for the  
Souris River Basin

Forecast Location	30-Day Runoff Volume (dam <sup>3</sup> x 10 <sup>3</sup> )	90-Day Runoff Volume (dam <sup>3</sup> x 10 <sup>3</sup> )		Peak Flow (m <sup>3</sup> /s)	Event Return Period
	Best Estimate	90 % Confidence	Best Estimate		
Long Creek Near Noonan	13	5	15	20	1:2
Inflow into Rafferty Reservoir	10	4	12		1:2
Diversion to Rafferty Reservoir	6	3	8	20	1:2
Inflow into Alameda Reservoir	10	3	11	20	1:2
Local Runoff	13		15	10	1:2
Sherwood Crossing (Projected)	10		15	20	1:2
Sherwood Crossing (Natural)	45		50		
Sherwood Crossing (Unregulated)	50		53		

○ = flood triggers      ○ = sets drawdown elevations

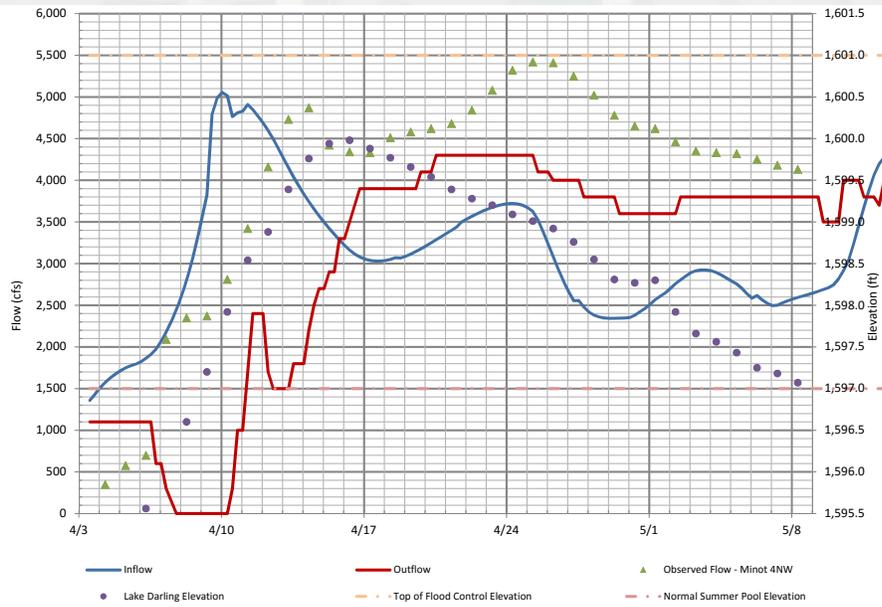
**BUILDING STRONG®**

## Late Winter/Early Spring Drawdown

- All reservoirs are targeted to reach their determined drawdown elevations prior to spring runoff
- Canadian Reservoirs are limited to differing maximum controlled flows at Sherwood Crossing and Lake Darling reservoir is limited to differing maximum controlled flows at Minot 4NW.
- Lake Darling's target will always be greater than the Canadian Reservoirs' target.



## Lake Darling Snow Melt



## What Can We Do?



**BUILDING STRONG®**

Questions?

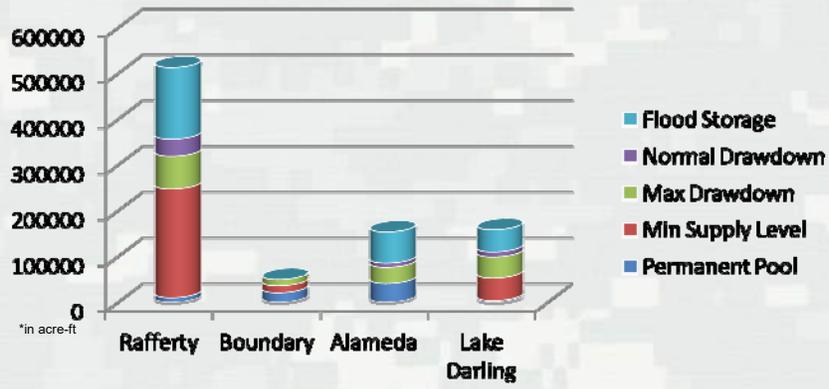


**BUILDING STRONG®**



**BUILDING STRONG®**

# Flood Control Storage



BUILDING STRONG®