



US Army Corps  
of Engineers  
St. Paul District

# Information Paper

## Floodplain Management: Souris River Hydrology and Hydraulics Studies



*Photo shows levee repairs in Minot, North Dakota, following record flooding in 2011.*

### Contact

Terry R. Zien, Project Manager  
(651) 290-5714 (651) 290-5258 (fax)  
[terry.r.zien@usace.army.mil](mailto:terry.r.zien@usace.army.mil)

### Location/Description

The Souris (Mouse) River is located in Saskatchewan and Manitoba, Canada, and North Dakota. The headwaters of the basin comprise several rivers in Saskatchewan that meet near the international border and flow into North Dakota. The Des Lacs River joins the Souris upstream of Minot near Burlington, North Dakota. The Souris River then flows through Sawyer and Velva, North Dakota, before turning back to the north and flowing into Manitoba.

Unprecedented flooding that occurred in summer 2011 revealed a number of very significant knowledge gaps in the hydrology and hydraulics of the Souris River basin. These gaps led to difficulty in dealing with the rising floodwaters as well as planning for wise use of the floodplain in the recovery process. Goals of the study:

- Provide increased knowledge of the hydrology and hydraulics of the Souris River basin;
- Updated system-wide reservoir operation plans;
- Develop computer models that can be used as planning tools; and
- Comprehensive approach to floodplain management.

### Status

Start-up funding of \$100,000 was provided in FY12 under the Operation Watershed/Flood Season Preparation (Public Law 84-99) effort for hydraulic and reservoir modeling in the Canadian portion of the basin. An additional \$100,000 was provided under the Floodplain Management Services program for FY13. This work consisted of a hydrologic basin model of the Des Lacs River. The funding was increased by \$50,000 in July 2013 to perform survey work required for updating the hydraulic models. An additional \$50,000 was provided in FY14 to update the Souris River HEC-RAS hydraulic model to be continuous from border to border in the United States.

Two additional studies were initiated in the first quarter of FY13 at a cost of \$165,000 under the Silver Jackets Pilot Project program: a study of hydro-meteorological instrumentation (rain and flow gages), and a System-Wide Improvement Framework (SWIF) study for the existing Federal flood risk reduction project. A third pilot project for \$120,000 was awarded July 2014 to study non-structural planning and mitigation alternatives in the basin. Two more pilots were awarded in FY15 for \$85,000 to present emergency action plan and non-structural mitigation workshops. An unsteady HEC-RAS model from Minot to Saskatchewan was started and funded, \$50,000 for FY15 and \$50,000 for FY16. Study funds of \$150,000 for FY16 and FY17 are for flood inundation mapping. Additional inundation mapping and potential reservoir system studies are estimated at \$220,000 and \$225,000.

### Authority

The authority for the initial phase of the study was provided under the Flood Control and Coastal Emergency provisions in Public Law 84-99. The next portion of the study is authorized by Section 206 of the 1960 Flood Control Act (Public Law 86-645), as amended.

### Fiscal

The following is a summary of the funds received for the Souris River basin study:

Total estimated project cost:	\$1,315,000
Federal funds to date:	\$870,000
Federal funds required to complete:	\$445,000