TAB 1

Feasibility Report and Environmental Assessment

Roseau, Minnesota

Flood Damage Reduction Project
Roseau River

St. Paul District, Corps of Engineers
Feasibility Study

August 2006

Study Authority

The Roseau River subbasin is a part of the Red River of the North basin. The Red River Reconnaissance Study was authorized by a 30 September 1974 resolution of the Senate Committee on Public Works:

> RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, That the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review reports on the Red River of the North Drainage Basin, Minnesota, South Dakota and North Dakota, submitted in House Document Numbered 185, 81st Congress, 1st Session, and prior reports, with a view to determining if the recommendations contained therein should be modified at this time, with particular reference to flood control, water supply, waste water management and allied purposes.

The fiscal year (FY) 2001 Energy and Water Development Appropriations Act (Public Law 106-377) provided funds to conduct the Section 905(b) (WRDA 1986) analysis.

Additional funding to prepare and evaluate the Federal interest specific to a potential Roseau River flood damage reduction project was provided through the Continuing Authorities Program (CAP) in FY 2002 and FY 2003. These funds were used to conduct the June 2003 Section 205 Federal interest study (FIS) for Roseau and adjacent lands, consistent with Section 205 of the 1948 Flood Control Act.

Based on recommendations contained in the section 905(b) analysis, the city of Roseau and the Federal Government entered into a feasibility cost share agreement. The feasibility study was initiated in September 2003 (Note: the non-Federal sponsor and Federal Government each pay 50 percent of the feasibility study cost).

The Federal Water Project Recreation Act of 1965 (Public Law 89-72), as amended, requires an agency to fully consider recreational features that may be associated with Federal flood damage reduction projects.

Report Purpose and Scope

The St. Paul District has completed this feasibility report and associated environmental assessment as a formal decision document. This report documents plan formulation studies conducted by the St. Paul District in close cooperation with the city of Roseau, the Roseau River Watershed District, and the State of Minnesota.

The purpose of this report has been to collect and evaluate pertinent engineering, economic, social, and environmental information about current conditions in the study area to define a feasible and implementable Federal flood damage reduction project that would provide permanent flood protection for Roseau. To accomplish this purpose, an array of possible flood damage reduction plans was considered and screened to define alternative remedial actions for possible implementation in the study area.

Study Area

The "study/project area" for this feasibility report focuses on the city of Roseau and the surrounding area (see project location in figure 1). The Roseau River cuts the city in two, and then flows north toward Canada. Roseau is located 10 miles south of Canada and 65 miles east of North Dakota. The Roseau area economy depends on Polaris Industries, Inc. (employing over 2,100), and the agricultural opportunities present in the Red River Valley.

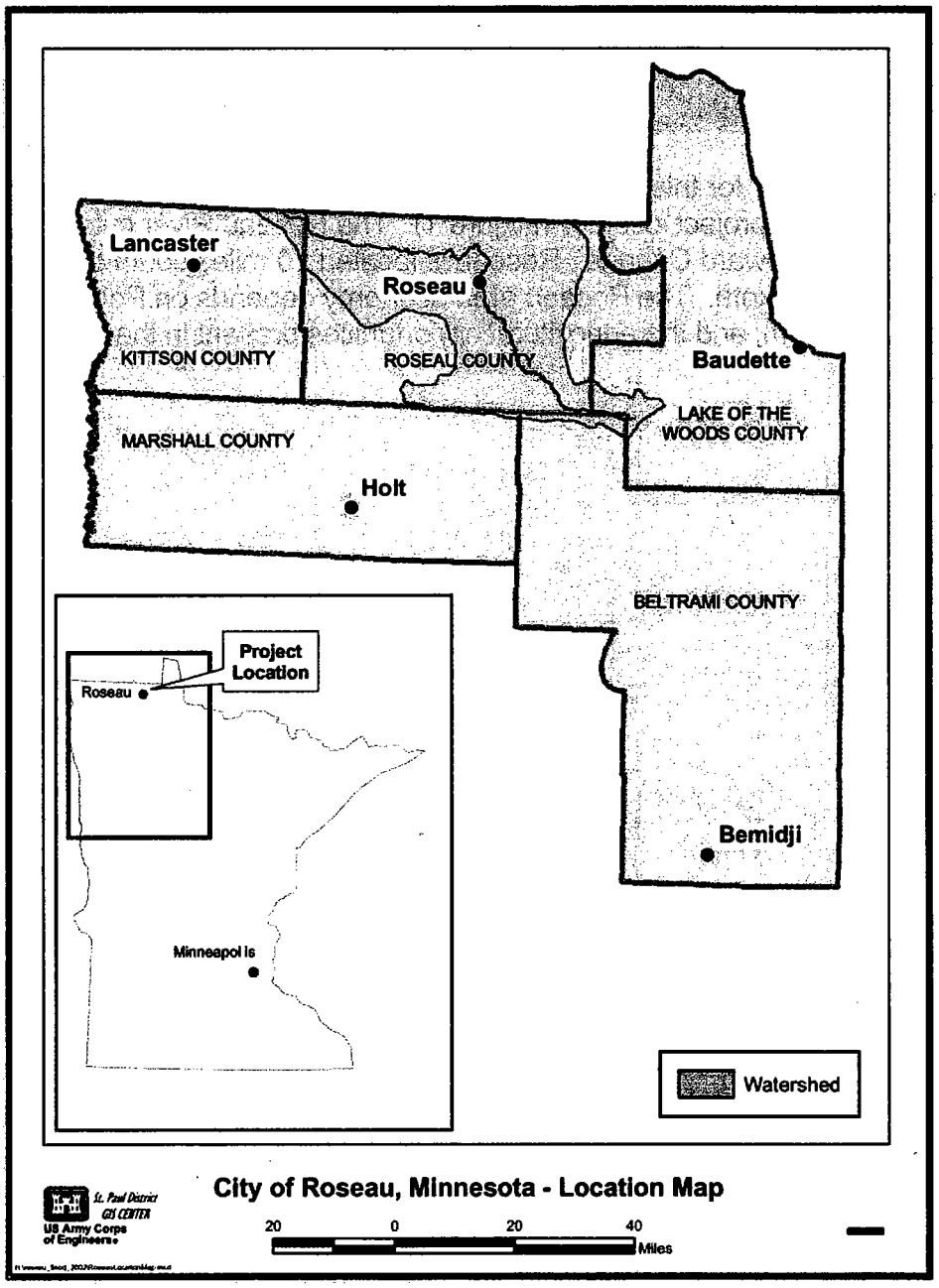

Figure 1. Roseau Project Location Map

Summary Description of Flooding History

Throughout the community's early history, floods were simply endured, with little organized effort made to combat the waters of the Roseau River. Floodwaters frequently inundate large areas of the Red River Valley during the spring snowmelt, and the Roseau River is particularly susceptible following heavy summer rains. As a result, private residences, businesses, and public resources are subject to heavy damage. Over time, as the areas along the rivers have become more developed, significant amounts of money have been spent on temporary flood protection, and, when floods occur, on flood damage repair and cleanup.

Roseau lies in the dry lakebed of Glacial Lake Agassiz. The region is very flat, which results in floodwaters covering thousands of acres of land once the riverbanks are overtopped. The extreme sensitivity of the area means that mere inches can be the difference between being dry or wet. Roseau has experienced many floods, the most notable in 2002 when virtually the entire city was affected. Other major floods occurred in 1896, 1916, 1938, 1942, 1947, 1950, 1966, 1979, 1985, 1996, 1997, 2004, and 2006. As can be seen by historical dates, flooding in Roseau is not a one-time problem but a consistent problem that has occurred regularly over time.

Prior Studies, Reports, and Projects

The Corps of Engineers and other regional, State, and local entities have conducted numerous studies relevant to this planning report, including studies in the Roseau area and studies that have been done on the Red River and its tributaries. Following is a brief list of the literature most relevant to this study:

- *Alternatives Screening Report, Letter Report - Roseau, Minnesota, Flood Control Feasibility Study, April 2005.* Indicated which alternatives made it to the final screening and presented the selected alternative, which was the east diversion.

- *Section 905(b) Analysis Roseau River Subbasin – Roseau, Minnesota, Local Flood Protection, August 2003.* Determined that sufficient indications of a cost-effective engineering solution to the flood problems in Roseau existed and recommended the start of the feasibility study.

- *Phase I Environmental Site Assessment Report, Roseau River Diversion Feasibility Study Area, Roseau, Minnesota, May 2005.* Determined that further assessments would be needed for the in-town levee alternatives, with minimal assessments needed for the east diversion plan.

- *Section 22 Study, City of Roseau and Upstream Reaches on the Roseau River, Roseau County Minnesota, December 2004.*

- *Section 205, Federal Interest Milestone Report, Initial Appraisal Report, Corps of Engineers, June 2003.*

- *Hay Creek Section 206 – Ecosystem Restoration Report/Environmental Assessment, November 2003.*

- *West Interceptor - Roseau County.* In progress.

- *Section 905(b) (WRDA 1986) Analysis, Red River Basin; Minnesota, North Dakota, South Dakota, September 2001.*

- *Red River Basin Board Inventory Process, Final Reports, 2000.*

- *Red River Valley Water Supply Study, Phase II Report, Bureau of Reclamation, 1998.*

- *Red River Basin Flood Damage Reduction Work Group Agreement, 1998.*

- *The Next Flood: Getting Prepared, Final Report of the International Red River Basin Task Force, 2000.*

- *Final Report of the International Flood Mitigation Initiative for the Red River Basin, December 2000.*

- *Environmental Impact Study of Flood Control Impoundments in Northwestern Minnesota, July 1996.*

- *Water Resources Engineering/Planning Program for the Red River of the North Basin in Minnesota, 1984.*

- *Souris-Red-Rainy River Basins Comprehensive Study, 1972.*

- *Red River of the North Reconnaissance Report, December 1980.*

- *Flood Insurance Studies, Federal Emergency Management Agency.*

Overview of Project Plan Formulation

National and Local Planning Goals

National planning goals and procedures are administered consistently throughout the country. Principles were established by public law, and guidance is defined in specific Corps-wide planning regulations known as the "Planning Guidance Notebook" (Engineering Regulation 1105-2-100).

Local design procedures and criteria were also provided to the Corps design team for integration into the project design. Local standards for road design and public utility designs were integrated into the project designs.

The study team tried to take advantage of any secondary opportunities that a flood damage reduction project might offer (for example, recreation and associated incidental benefits such as ecosystem restoration and aesthetic development).

To be an implementable federal project, the project must have the support of the non-Federal sponsor(s) and a demonstrated Federal interest in implementing the plan. To obtain Federal funding for a flood damage reduction project, the plan formulation process must adhere to laws, policies, and regulations that define the planning and design process to be followed and establish specific design criteria and requirements. These criteria and requirements establish consistent standards for project designs and implementation/construction and assure that the project features will perform reliably.

General Planning Process Used

To effectively formulate a feasible flood damage reduction project and assess its effects, a full array of potential flood damage reduction strategies and associated specific plans must be considered. Plan comparison evaluations are done initially at a low level of detail through an FIS or reconnaissance study. These initial efforts focus on determining if it is likely that a feasible plan in the Federal and local interest exists. If Federal and local interest is found, studies in a greater level of detail are completed during the feasibility study. Flood damage reduction plans found to be economically feasible, environmentally feasible, and socially acceptable are evaluated further in a progressive screening process until a single NED plan can be defined and documented. This NED plan is the plan that has the greatest net benefits and is the plan that the Federal Government is most supportive of constructing. One exception to this process is when the non-Federal sponsors identify an LPP. An LPP is an economically feasible plan that is selected by the non-Federal Sponsor. If it is more expensive than the NED plan, it may require higher non-Federal cost sharing to implement. The non-Federal sponsor may also request betterments that may be integrated into the project construction once a Federal project is justified. These betterments can include

construction features that provide greater capacity or are of a higher than required quality. Betterments are designed and constructed with 100 percent non-Federal funding.

Public and interagency involvement, scoping, and product reviews are sought throughout the process to keep the public informed and to receive and incorporate pertinent ideas and concerns. Potentially-affected landowners and other stakeholders are also involved in the plan formulation process to try to find a project design that reasonably minimizes project related impact and can be supported from a general public perspective.

Existing Conditions

The city of Roseau is located in rural northern Minnesota. The city continues to go against national trends and is a thriving small town growing 15 percent between 1990 and 2000. This growth is supported by the city's heavy reliance on manufacturing and agriculture in the region. The impacts of agriculture are visible in the Roseau areas as land use in the region has changed from 52 percent wetlands and 31 percent forest to its present condition of 6 percent forest, 43 percent wetland, and 40 percent cultivated land.

The project area is located on and near the Roseau River, a tributary of the Red River of the North. Prior to settlement, wetlands and forests were the dominant vegetation types in the Roseau River watershed. As agriculture and the associated wetland drainage developed in the area, wetlands and forested areas decreased. The remaining areas of permanent wetlands are concentrated primarily in the northern portions of the county. Many agricultural fields provide temporary flooded wetland habitat during high runoff events, primarily occurring in the spring.

The project area has a diverse fauna, which is in part a result of the presence of nearby State wildlife management areas and State forests. The Roseau River supports both game and nongame fish species, but diversity, abundance, and geographic occurrence are largely dependent on existing barriers, water quality issues and winterkill caused by low flows. Three federally listed threatened species are in the area: bald eagle, Canada lynx, and gray wolf.

The area immediately outside of Roseau consists mainly of farmed lands, with the occasional small pockets of woodlands and wetlands providing minimal habitat value. The land use in the region makes the diverse population of wildlife surprising. This diversity is primarily the result of the presence of publicly-owned natural resource areas scattered along the fringes of the watershed.

This portion of Minnesota contains numerous cultural resources indicating continual human occupation for approximately 12,000 years. Cultural resource sites within the region exist on a variety of landforms, including uplands, terraces, and glacial beach ridges. Precontact cultural resources include lithic and artifact scatters, burial mounds,

and cemeteries. Historic cultural resources include Euro-American structural ruins, standing structures and roads. The general project area has been surveyed during several previous flood control studies of the Roseau River. Although no sites were identified in the area proposed for this project, both pre- and post-contact sites were located in adjacent areas.

The City of Roseau has a number of small parks and recreational facilities that are aimed toward team sports. However, the area is lacking passive and family-orientated recreational resources such as walking and biking trails. The use of snowmobiles and all-terrain vehicles is popular in the Roseau area, although there is only a loose network of state funded snowmobile trails with no all-terrain vehicle trails. During the summer anglers frequent the Roseau River and the dam in town for its game fish species.

Flooding has been a regular occurrence in Roseau. Over the past 10 years, the city of Roseau has fought eight major floods, most recently in 2006. Enhancing the problem is that the Roseau area is very flat, and once waters exceed the banks of the Roseau River flooding can span out for miles. In the river's immediate path is the city of Roseau, which can quickly be inundated because of the flashiness of the river. The river is prone to flooding during the spring, when snow melts, and in the summer following rainfall events. The city currently relies on a series of temporary emergency levees and heroic responses, which, in the past, have been too slow due to the flashiness of the river.

Future without Project Conditions

If no flood damage reduction measures are implemented, flooding and damage to large portions of the city of Roseau and surrounding areas will continue to occur and the city will remain in the 100-year floodplain. Growth in Roseau is expected to continue with population estimates nearly doubling over the next 50 years. As the area continues to grow and develop, emergency service costs will increase from spring and rainfall caused floods. The city will continue to rely on heroic responses and poorly maintained temporary emergency levees as the primary line of defense against future flood events.

At some point, catastrophic flood damages will occur in Roseau (similar to the 2002 Roseau River flood). When that future event occurs, the potential for loss of life exists and the probability is high that many structures will be significantly damaged. This event will result in high public costs as part of the emergency response and buyouts. Another catastrophic flood in Roseau would be a local nightmare that would devastate the community, fiscally and socially.

Continued flooding would have substantial negative effects on public health and safety in the community. There will be continued potential for loss of life and property damage attributable to the effects of flooding. In addition, the exposure of emergency and clean-up personnel to sewage and other contaminants introduced into the environment during

a flood place them at risk. Continued flooding will result in decreased levels of community cohesion and hinder further community growth and development due to the continued threat of flooding in the City of Roseau.

Land use and habitat, quantity and quality, in and surrounding Roseau will remain the same as the current condition. That is, agriculture is expected to continue as the predominant adjacent land use. Future development is expected to occur within agricultural areas - in and surrounding the city. In addition, agricultural fields will continue to contain occasional pockets of woodlands and wetlands providing minimal habitat value. Riparian habitat along the river would continue to be narrow bands along the length of the river being disturbed by in-town levees. In the City of Roseau, the Roseau River will continue to be isolated from the floodplain by temporary levees from the south edge of town to the city's northern boundary. The river would continue to provide habitat for game and non-game fish species, but diversity, abundance, and geographic occurrence would continue to be dependent on existing barriers, water quality issues and winterkill caused by low flows.