2. Flood problems and opportunities

(a) The primary problem identified by stakeholders was flooding. Average annual flood damages in the Fargo-Moorhead metropolitan area are estimated at more than $22 million (Fargo-Moorhead and Upstream Feasibility Study, Phase 1 report, Corps of Engineers, September 2005). The Fargo-Moorhead metropolitan area has a relatively high risk of flooding. The highest river stages usually occur as a result of spring snowmelt, but summer rainfall events have also caused significant flood damages. The Red River of the North has exceeded the National Weather Service flood stage of 17 feet in 49 of the past 105 years, and every year from 1993 through 2007. The study area is between the Wild Rice River, the Sheyenne River, and the Red River of the North; interbasin flows complicate the hydrology of the region and contribute to extensive flooding.

(b) Fargo and Moorhead have become accustomed to dealing with flooding. Sufficient time is usually available to prepare for flood fighting because winter snowfall can be monitored to predict unusual spring runoff. Both communities have well documented standard operating procedures for flood fights. Both communities avoided major flood damages in the historic flood of 1997 by either raising existing levees or building temporary barriers. Since the 1997 flood, both communities have implemented mitigation measures, including acquisition of almost 100 floodplain homes, raising and stabilizing existing levees, installing permanent pump stations, and improving storm sewer lift stations and the sanitary sewer system. Although emergency measures have been very successful, they may also contribute to an unwarranted sense of security that does not reflect the true flood risk in the area.

(c) The record-setting Red River of the North flood stage in 1997 at Fargo was 39.6 feet on the Fargo gage. The current FEMA 100-year flood stage on the Fargo gage is 38.3 feet, but the revised 100-year stage is expected to be approximately 1 foot higher. (Modeling conducted by the Corps of Engineers indicates that the actual 1-percent-chance stage could be as much as 2.5 feet higher than the current FEMA figure.) Fargo's current line of protection has top elevations that vary from a stage of 30 feet to 42 feet, but several reaches are at or below 37 feet. The Second Street area near City Hall has only a 30-feet level of protection, and emergency levees have been built there eight times since 1969. Many places along the line of protection rely on private sandbag levees during a major flood event. The city has a list of several "low elevation" properties adjacent to the river that it would like to buy to install higher flood protection; these properties are bought as they come onto the market. Newer developments in the southern part of the study area have been elevated above the anticipated floodplain elevation, but the city infrastructure (roads, sewers, etc.) is still at risk. The cities of Briarwood, Frontier and Prairie Rose, North Dakota, are also at risk of flooding from the Wild Rice and Red Rivers.

(d) The area north and northwest of Fargo is also susceptible to flooding from both the Sheyenne and Red Rivers. The West Fargo diversion of the Sheyenne River Flood Control Project, completed in 1993, prevented breakout flows from the Sheyenne River from flooding Fargo and West Fargo in 1997. Measures would be needed to