For the analysis it was assumed that 98% percent of the population would decide to evacuate upon receiving the warning of imminent levee failure. Those who remain are subject to a fatality rate which depends on the depth of flooding at their structure. The fatality rates used are shown in Table 2 below. Based on this information, an estimated LOL was calculated for various flood events.

Fatality Rates	
for those remaining in their homes	
0' - 2'	0
2' - 13'	0.0002
13' - 15'	0.12
>15'	0.91

Table 2. Fatality Rates used in analysis

Event	Estimated PAR	Reamining After Evacuation	Estimated LOL
10yr	858	17	1
20yr	1501	30	1
50yr	2177	44	2
100yr	18050	361	4
200yr	64670	1293	8
500yr	133403	2668	12

Table 3. Estimated Loss of Life in Fargo-Moorhead (anticipated failure w/ evacuation order)

Note that PAR & LOL was determined for various flood events, including smaller, more frequent events. Considering the fact that the area has successfully contained floods in excess of the 100-year magnitude, an evacuation would not likely be ordered for these events. The PAR is calculated for the all events to highlight the increased level of risk for larger floods as compared to smaller floods.

Unexpected Failure

In the case of an unexpected failure, the potential for loss of life is significantly greater than for the case of an anticipated failure. As warning time is greatly diminished, the potential for loss of life applies of the entire population that lives within the ultimate inundated area. An unexpected failure could occur during a relatively frequent event and cause significant LOL due to the lack of adequate warning.

To determine a worst case LOL for unexpected failure, 0% evacuation is assumed and the same fatality rates based on depth at individual structures that were used for the anticipated failure scenario are applied. To assume 0% evacuation is to assume that the entire city floods immediately with no warning and no time to attempt to evacuate. In the event of an actual unexpected failure, the arrival of flood waters at an individual structure will depend on proximity to the breach, the size of the levee breach, available storage capacity of the area behind the levees, and topography of the protected area. In the case of Fargo, a large north-to-south ridge would tend to delay or meter floodwaters that cross it. Embankments at Main Avenue, Interstate 94, Interstate 29, and the railroad lines