

controller operating the line observed a SCADA system indication of a loss of suction and discharge pressure at the Deer River pump station. (See figure 2.) At 2:13 a.m., the Floodwood pump station suction pressures began dropping, and then audible and visual alarms were received for an invalid suction pressure. The controller initially suspected an inaccurate pressure transmitter at Floodwood, because the suction pressure had gone to zero. Subsequently, he noticed that the discharge pressure for Floodwood was also dropping and realized that he had an abnormal condition. The controller showed the shift coordinator the situation, and, suspecting a possible leak, they agreed at 2:14 a.m. to shut the pipeline down. At 2:15 a.m., the controller initiated closure of the pipeline injection valve at the Clearbrook Terminal and began shutting down pumps and remotely closed valves to isolate the suspected leak. The upstream valve at Deer River and the downstream sectionalizing valve at milepost (MP) 1017.9 were remotely closed by 2:21 a.m., which isolated the ruptured section. All remotely controlled valves on the pipeline from Clearbrook to Superior Terminal were closed by 2:32 a.m.

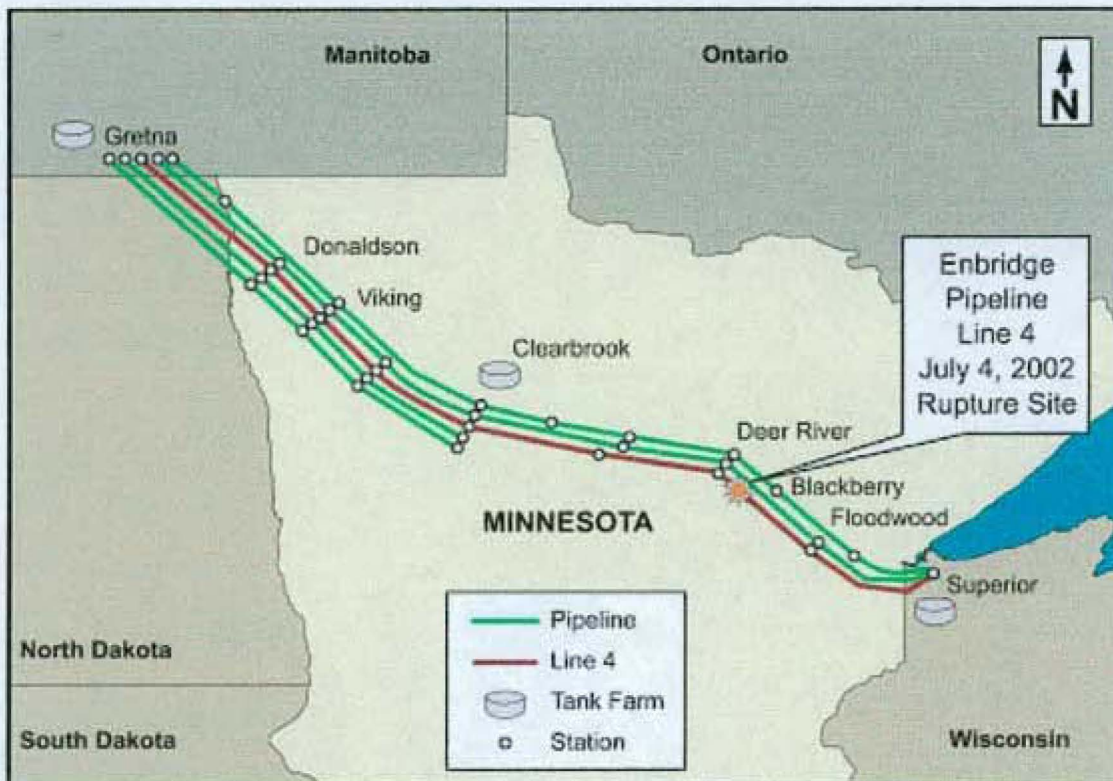


Figure 2. Enbridge pipeline facilities and rupture site.

About 2:25 a.m., the Enbridge control center notified the Deer River and Floodwood police departments of the suspected leak, and about 2:30 a.m., Enbridge field personnel were notified. About 5:20 a.m., Enbridge field personnel dispatched to investigate along the pipeline right-of-way detected the odor of crude oil in a marshy area near Blackwater Creek and manually closed the closest valve to the failure. This valve was near MP 1007.32, about 4 1/2 miles downstream (east) of the rupture