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Feasibility Report on
Mailand-McKnight Road Gully Erosion

Cities of Maplewood and St. Paul, Ramsey County

Prepared for
Ramsey-Washington Metro Watershed District

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1.0 Introduction

The Ramsey Washington Metro Watershed District (District) became involved in an intercommunity stormwater issue at Mailand and McKnight Roads at the request of Terry Noonan of Ramsey County Public Works. Prior to this contact, the Ramsey Soil and Water Conservation District manager, Tom Petersen, had been approached by landowners in the area seeking help with gully erosion and sediment deposition on their properties. Although all the properties lie west of McKnight Road, in St. Paul, the majority of the drainage area is in Maplewood. (Figures 1 and 2.)

This report summarizes the issue, discusses potential solutions and makes recommendations for repair and flow mitigation.

2.0 Background and Drainage Patterns

Historic airphotos show that the land in the study area was partly agricultural and sparsely populated in 1953. In 1974, it was undergoing development, with earth being moved and road networks developing north of Mailand and east of McKnight. By 1985, the lots contiguous to McKnight Road appear much as they do today and, by 2002, areas further east, including Dorland Road, were also fully developed.

According to landowner Patty McDonald, her father-in-law, Ted Anderson, noticed drainage changes in the area in 1977, and the beginning of what will henceforth be referred to as the Mailand gully or "the channel." (Anderson purchased 2191 Mailand Road in the late-1950s.)

Three drainage areas drain into Mailand gully, as shown in Figure 2. Water enters the channel in two ways: (1) overland (from adjacent land and from McKnight Road overflows that proceed down a driveway at 461 McKnight); and (2) from a pipe that collects runoff from the upstream drainage areas and outlets in the side/back yard of 451 McKnight. (Figure 3.)

The pipe outlet dates from 1965, when Ramsey County installed a 24-inch corrugated metal pipe to convey street drainage entering catch basins along McKnight Road as well as drainage from the wooded wetland northeast of McKnight and Mailand. (NOTE: Catch basins are the boxlike below-grade structures that collect stormwater runoff entering through grates or other openings along street curbs.)

In subsequent years, the City of Maplewood constructed storm sewer pipes eastward along Mailand Road and throughout the residential area immediately east of the wetland. Both these pipe systems contribute flow to the channel. The Mailand Road storm sewer was approved for connection to the county pipe below McKnight Road in 1977.

Approximately 8.3 acres drain to the wooded wetland northeast of the McKnight and Mailand intersection. (Figure 2). The wetland, drained by a 12-inch corrugated metal pipe that connects to the McKnight Road storm sewer system, has the capacity to store 0.5 acre-feet of water without overtopping onto McKnight. A 1974 study for the City of Maplewood by Barr Engineering Company estimated that approximately 12 acres of land would drain to the wetland and recommended that the wetland be designed to accommodate 2 acre-feet of flood storage. Although less land than planned drains to the wetland, the available storage and/or discharge capacity is still inadequate to prevent the

wetland from overtopping, even during relatively small rainfalls. All water that overtops the wetland basin flows over McKnight Road, down the driveway at 461 McKnight Road and into the channel.

The 10.1-acre area that contributes overland flow to the channel is evenly split between mown residential lawns with canopy trees and undeveloped natural areas. McKnight Road residential lots slope steeply to the west, to a lower area dominated by old field (former farmland, now open herbaceous land dominated by non-native plants) and ecologically degraded woods. All runoff from this area drains to the channel.