

8.0 CITY OF CHASKA

The City of Chaska is located north of the Minnesota River in Carver County, between the cities of Carver and Chanhassen. The city is home to East Chaska Creek and Courthouse Lake, a state-designated trout water.

The 2008 gully inventory identified 31 total sites within the City of Chaska. Upon review of the 2008 Inventory, 14 sites were removed from the 2020 gully condition assessment because they were located outside of the LMRWD boundary (**Figure 81**). In 2020, the field team evaluated 60 sites in total, including three N/A sites and one inaccessible location (**Figure 82**). Nine of the sites surveyed during the 2020 study were later found to fall outside the LMRWD's boundary, and are not included in the high-priority site rankings.

8.1 Previous Restoration Efforts

The City of Chaska also assessed several creeks and ravines located throughout the city with the development of its 2015 Surface Water Management Plan. Several locations on Chaska Creek were identified for ravine restoration, as well as protection of Seminary Fen (Stantec 2015).

The City of Chaska completed a two-phase Seminary Fen restoration and stabilization project. Phase 1, completed in 2009, involved the restoration of a wetland outlet to address the rate of flow in the ravine. Phase 2, completed in 2016 and funded by the LMRWD, involved stabilizing the eroding slopes of the approximately 2,150 feet of ravine to reduce the transport of sediment to the Seminary Fen wetland.

In 2020 and in partnership with the City of Chaska, the LMRWD is in the process of completing an 1,800-foot stretch of bank restoration along East Chaska Creek, downstream of Crosstown Boulevard.

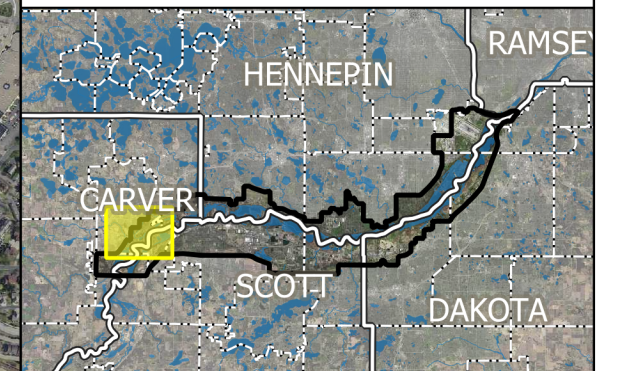
**Figure 81:
Chaska 2008
Inventory Locations**



LEGEND

- 2008 Gully Inventory Waypoints
 - Inside LMRWD
 - Outside LMRWD Boundary
 - ✗ Non-Applicable Points
 - Outside Chaska
 - ◆ MnDNR Spring Inventory
 - ◇ Calcareous Fens
 - Public Waters
 - Public Waterbodies
- LMRWD Overlay Districts
 - High Value Resource Area Overlay District
 - Steep Slopes Overlay District [SSOD]
- Political Boundaries
 - ▭ Chaska
 - ▭ LMRWD Boundary
 - ▭ Cities, Townships, Unincorporated Areas
 - ▭ County Boundaries

LMRWD Watershed Location Map



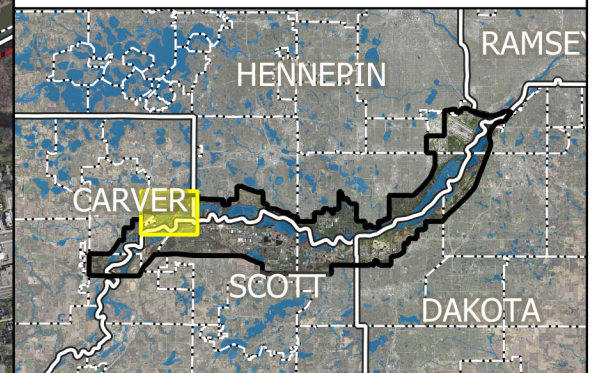
**Figure 82:
Chaska 2020 Survey
Locations**



LEGEND

- ▲ 2020 Pipe Outfall Surveys
- ◆ 2020 Combination Surveys
- 2020 Gully Surveys
- ⊗ 2020 Inaccessible Waypoints
- ⊗ 2020 Non-Applicable Waypoints
- ◆ MnDNR Spring Inventory
- ◆ Calcareous Fens
- Public Waters
- Public Waterbodies
- LMRWD Overlay Districts
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LMRWD Watershed Location Map



8.2 Field Survey Discussion

The area presented neither difficult access conditions nor issues with private property access. Similar to the neighboring Carver and Chanhassen, most water in the area came from groundwater. Groundwater seeps were noted in many locations.

Overall, the field team found a high concentration of pipes within the LMRWD Chaska boundary, most of them in the downtown area. The field team found pipe outfalls of various types along a section of stream parallel to Chaska Boulevard and along another section of stream next to East 5th Street. The field team also noted additional pipe outfalls along the trail south of Falls Curve Road.

Gullies were in four general areas within the LMRWD. The field team recorded two gullies along Clay Hole Lake, two along the stream through downtown Chaska, three along a trail near Seminary Fen, and four others within the Minnesota River floodplain. With no vegetation to hold the soil in place, the gullies in the floodplains eroded actively. Near Seminary Fen, groundwater seeps contributed to instability.

8.3 Findings

In Chaska, water in the area came from groundwater which flowed through small tributaries of the Minnesota River. Groundwater seeps were noted, especially near Seminary Fen. East Creek, which flows through downtown Chaska, contained most of the pipe outfalls. Pipe outfalls ranged from subsurface drainage pipes to large, aproned concrete and metal pipes. The field team also noted five additional pipe outfalls along the trail south of Falls Curve Road, near Seminary Fen. The team noted that four of the pipe outfalls will require maintenance soon (**Figure 83**).

Most of the sites in Chaska are located near Seminary Fen, East Creek, Clay Hole Lake, and Chaska Creek. Most of the sites found had low and moderate erosion potential (**Figure 84**). Many of the gullies near Seminary Fen were tied to drainage pipes, with three discharging into an inlet that ultimately drains towards Seminary Fen, and one forming from a hanging outfall pipe. In Seminary Fen, groundwater seeps form baseflow into the channel, which contributes to the gully formation and instability in the region. For the sites along East Creek and Chaska Creek, finger gullies or incised channels were commonly seen on the valley walls of the creeks. Several sites were portions of the stream channels that were found to be badly incised and eroding. Around the floodplains of the two creeks, a lack of vegetation to hold the soil in place allowed the gullies to erode actively.

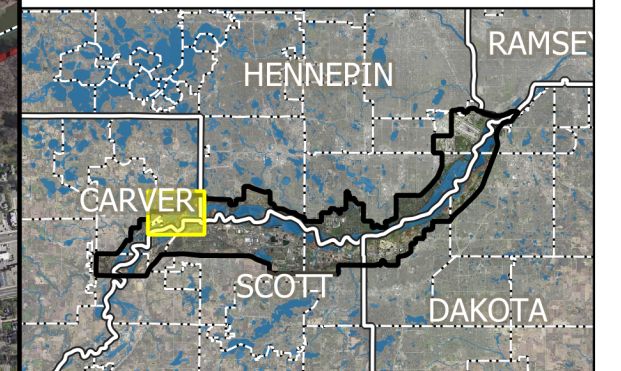
**Figure 83:
Chaska 2020 Pipe
Outfall Conditions**



LEGEND

- 2020 Pipe Outfalls
- ▲ Needs Immediate Attention
 - △ Potential/Future Repair Needed
 - Good Condition/No Repair Needed
 - ◆ MnDNR Spring Inventory
 - ◇ Calcareous Fens
 - Public Waters
 - Public Waterbodies
- LMRWD Overlay Districts
- High Value Resource Area Overlay District
 - Steep Slopes Overlay District [SSOD]
- Political Boundaries
- ▭ Chaska
 - ▭ LMRWD Boundary
 - ▭ Cities, Townships, Unincorporated Areas
 - ▭ County Boundaries

LMRWD Watershed Location Map



8.4 Chaska Gully Progression

Using 2008 Inventory data, only four gullies in Chaska could be benchmarked. The changes in erosion potential are detailed in **Table 8-1**, which shows the overall number of sites in each erosion potential category in 2008 and 2020. In 2020, the number of sites in all erosion progression categories have increased since 2008.

Table 8-1: City of Chaska Gully Erosion Potential Summary

	2008 Benchmark Condition	2020 Condition
High Erosion Potential	3	6
Moderate Erosion Potential	1	9
Low Erosion Potential	0	4
	4	19

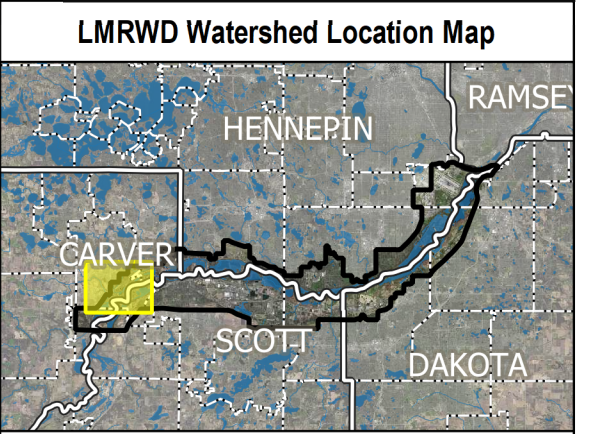
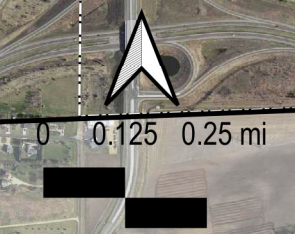
To better assess the erosion progression of an individual site, changes in erosion potential are mapped in **Figure 85**. Two previously benchmarked sites experienced a reduction in erosion potential. Priority was placed on sites that remained high or on newly identified sites that were found to have high erosion potential. The sites rated as less severe in 2020 than in 2008 can be linked to the limited information provided from the 2008 Inventory for benchmarking conditions. The more appropriate ranking of the sites in the 2020 study may be attributed in part to improved data collection rather than any significant progressive change in conditions.

**Figure 85:
Chaska Erosion
Progression and HPRs**



LEGEND

- High Priority Region
- Erosion Progression (2008 --> 2020)**
- Low --> High
- Moderate --> High
- High --> High
- New Site High
- Low --> Moderate
- Moderate --> Moderate
- New Site Moderate
- Low --> Low
- New Site Low
- Improved
- Non-Gully
- Public Waters
- Public Waterbodies
- High Value Resource Area Overlay District
- Steep Slopes Overlay District
- Chaska
- LMRWD Boundary
- Cities, Townships, Unincorporated Areas
- County Boundaries

8.5 Chaska High-Priority Sites and Regions

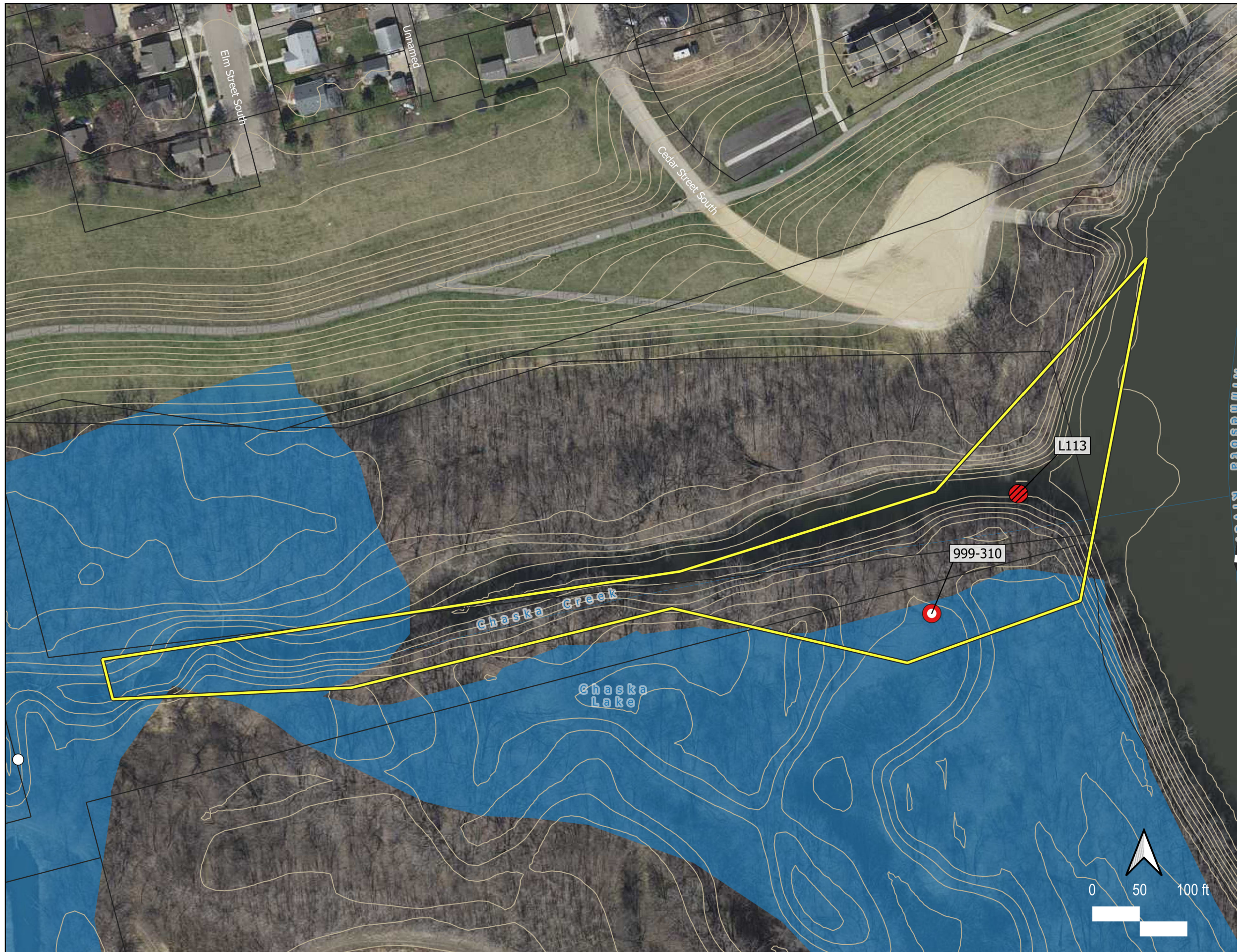
In the City of Chaska, two stand-alone High-Priority Sites and one High-Priority Region were identified (**Figure 85**). The two stand-alone sites that are not along Chaska Creek were found to be inside of the Steep Slopes Overlay District. No seeps were noted at any of the high-priority sites or regions, but the Minnesota Spring Inventory provides evidence of springs in area surrounding 999-005. The high-priority site and regions are described below:

- **HPR 24** is a reach of Chaska Creek around its delta with the Minnesota River. It contains two gullies that constitute the region.
- High-Priority Sites 999-035 and 999-005 are not grouped within a HPR because they do not share any geographic proximity or characteristics with other high-priority sites. The two locations are discussed and treated individually.

8.5.1 HPR 24

From our review of the field data collected, Chaska contained only one HPR at the delta of the Chaska Creek with the Minnesota River (**Figure 86**). The HPR contained Points L113 and L509, one in the channel of Chaska Creek and the other an offshoot finger gully that drains into the creek. Both gullies had a medium depth, but varied in width, length, slopes, and shape. Gully L509 was a narrow, medium length and sized gully with a steep channel gradient. Gully L113 was a long, medium-sized, wide gully with a flat channel gradient. Water was present in both channels, representing a consistent source of erosive power for the region. Commonly, the gullies in the region have bare banks and channel bottoms. L509 was observed to have fine-grained cohesive sediment as its predominant material and a trapezoidal channel shape. L113 was observed to have sand as its predominant material and a U-shaped channel. Water was present at the time of the visit for both sites. A low level of fast-moving water was seen at L509, and a full amount of fast-moving water was observed at L113. No seeps were observed in this region at the time of the visit.

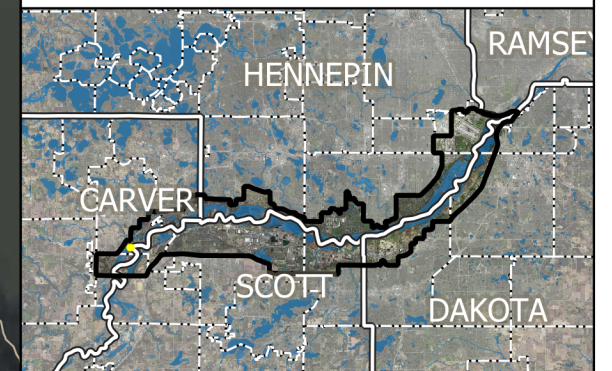
**Figure 86:
Chaska High-Priority
Region No. 24**



LEGEND

- High Priority Region
- High Priority Sites
 - Low --> High
 - Moderate --> High
 - ▨ High --> High
 - ⊙ New Site High
- Other 2020 Locations
 - Surveyed Gully
 - △ Surveyed Pipe Outfall
 - Carver Co. 2-ft Contours
 - ◆ MnDNR Spring Inventory
 - Public Waters
 - Public Waterbodies
 - High Value Resource Area Overlay District
 - ▨ Steep Slopes Overlay District
 - Chaska
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LMRWD Watershed Location Map



Common problem indicators in the region were incision and slumping. Site L509 also exhibited degradation, leaning trees, and undercut banks at the time of the visit. The apparent cause for the region was found to be channel incision. It was also noted at L509 that other apparent causes for its formation included slope and lack of any vegetation. It was determined in the field that the stream channel at point L113 would continue to erode severely if left unchecked.

In 2008, the survey documented L113 as severe incision and erosion of the banks of Chaska Creek and noted the sediment delta at its confluence with the Minnesota River. The benchmarking study completed in 2020 ranked it as having high erosion potential based on the visual evidence provided from the 2008 inventory. In 2020, the field team also observed severe channel incision and erosion and confirmed the presence of the sediment delta at L113. The team concurred with the high erosion potential ranking.

Figure 87 shows a side-by-side comparison of conditions observed in both studies. **Figure 87a** shows the upstream view of L113's channel taken in 2008, highlighting the severe incision and erosion along its valley wall. **Figure 87b** shows an upstream view of the channel taken in 2020, highlighting similar severe incision and erosion along the valley wall as was observed in 2008. Gully L509 was not documented in the 2008 inventory, and therefore, a prior benchmarking condition could not be assigned to it.

Figure 87. Photo 'a' is an upstream view of L113's channel taken in 2008; Photo b is an upstream view of L113's channel taken in 2020



8.5.2 Gully 999-035

Gully 999-035 is a newly identified gully found during the 2020 study. It is a stand-alone gully site located on the north side of Clay Hole Lake. It is a medium-sized, narrow gully that had no water present in the channel at the time of the visit. Additionally, no seeps were noted at the time of the visit. 999-035 was observed to have a flat channel gradient, with a V-shaped channel. The gully was found to have a bare channel bottom with some vegetation noted along its banks. Sand was the predominant gully material at this site.

The problem indicators seen at 999-035 when visited include loss of bank vegetation, incision, slumping, undercut banks, and leaning trees. **Figure 88** shows a downstream view of 999-035's channel, depicting the incision, leaning trees, and undercut banks observed in the field during the 2020 study. No apparent causes were clearly delineated at this site, and dense buckthorn canopy was the suggested culprit. This site was not evaluated in the 2008 Inventory; therefore, no benchmarking conditions can be attributed to it for erosion progression or comparison.

Figure 88. Downstream view of 999-035's channel taken in 2020.



8.5.2.1 Gully Site 999-005

Gully Site 999-005 is a newly identified gully located on the valley wall overlooking the north side of Seminary Fen. It was found in the field to be a short, medium-sized gully with a steep channel gradient. A low amount of fast-moving water was present at the time of the visit to the gully, with a high-intensity rainfall occurring in the previous 24 hours. No seeps were noted at the time of the visit.

The problem indicators observed at 999-005 were incision, degradation, and loss of bank vegetation. The apparent cause of the gully was determined to be an existing residential drainage pipe causing severe downstream erosion. **Figure 89** shows the residential drainage pipe and its discharge area forming the head cut of the gully. As this is a newly identified site, this gully was not evaluated in 2008; therefore, no benchmarked condition can be assigned to it.

Figure 89. Upstream view of Gully 999-005's channel taken in 2020, residential drain pipe is circled in red.

