

Recommendations For The Root River

Section 12 Summary

12.1 Summary of Economic Damages

The North Branch of the Root River and Hale Creek, the East Branch of the Root River, Crayfish Creek and the Caledonia Branch, Whitnall Park Creek, 104th Street Branch, and Tess Corners Creek were evaluated for performance under (1995) existing and future (2020) land use conditions. The number of properties and structures flooded during a

100-year flood event was estimated, along with the total economic damages resulting from this flooding.

Summarized in **Table 12-1** are the expected flood damages in the Root River watershed for a 100-year event under existing conditions. The flood damages for 2020 land use conditions are shown in **Table 12-2**. The total flood damages for a 100-year flood event for 2020 development conditions is estimated to be \$824,000.

Table 12-1
Summary of Flood Damages in the Root River Watershed Under Existing Conditions

	Storm Event Recurrence Interval				Average Annual Damages
	100-year	50-year	10-year	2-year	
Number of Flooded Properties	53	42	12	4	-
Number of Flooded Structures	27	19	14	1	-
Associated Damage	\$48,140	\$32,175	\$13,280	\$1,280	\$5,640
Structural Damage	\$430,740	\$278,975	\$176,390	\$9,170	\$63,180
Contents Damage	\$144,050	\$70,720	\$53,165	\$3,990	\$20,860
Emergency Services	\$32,305	\$20,925	\$13,230	\$690	\$4,740
Total	\$655,230	\$441,810	\$256,160	\$15,130	\$94,215

Table 12-2
Summary of Flood Damages in the Root River Watershed Under 2020 Conditions

	Storm Event Recurrence Interval				Average Annual Damages
	100-year	50-year	10-year	2-year	
Number of Flooded Properties	57	44	24	4	-
Number of Flooded Structures	31	19	13	2	-
Associated Damage	\$52,615	\$34,750	\$15,215	\$1,700	\$6,345
Structural Damage	\$548,030	\$298,695	\$195,665	\$15,660	\$71,755
Contents Damage	\$182,450	\$119,700	\$63,010	\$7,215	\$24,690
Emergency Services	\$41,100	\$22,400	\$14,475	\$1,175	\$5,380
Total	\$824,200	\$475,550	\$288,560	\$25,750	\$108,120

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12.2 Summary of Recommendations

The recommendations for the Root River watershed were developed through a series of meetings between the MMSD and the major stakeholders in the watershed. This process included a number of meetings over a 12-month period and involved input and feedback from Milwaukee County, the local communities, SEWRPC, and WDNR. The result of this process was a general consensus on the direction the MMSD should take to address the major watercourse problems in the watershed.

The recommendations presented in this document and summarized in **Table 12-3** reflect the actions that should be taken by the MMSD and the communities in the watershed to address the flooding problems in the Root River watershed.

12.3 Phase II Considerations

During the development of this Watercourse Management Plan, several issues were identified that should be addressed in Phase II, Advanced Planning. This additional work includes more detailed investigation and the collection of additional data to refine and verify the results. The issues identified include:

- During the April 29, 1999 Stakeholder meeting, the City of West Allis expressed the views that: (1) Their most important flooding problem is located north of Lincoln Avenue and is caused by low storm sewers; and (2) Any proposed alternative that does not solve the low storm sewer issue would not be an

acceptable solution to the city. Additionally, the city raised the possibility of installing separate box culverts to isolate the flow from the area north of Lincoln Avenue and east of Hwy. 100 from the neighborhood affected by flooding north of Lincoln Avenue. Currently, flow from both areas passes through a single culvert into Hale Creek and may be contributing to local flooding problems. It was also suggested that a 100-foot right-of-way owned by the city that is located between Hale Creek and the baseball fields at Nathan Hale High School be considered as a possible storage area.

Based on this input, CDM recommends the development of a new alternative during Phase II that would be a derivative of the previously proposed Alternative 4 for the West Allis Problem Area. To solve the low storm sewer issue, this new alternative should revise the proposed channel expansion, consider floodproofing the homes in the floodplain instead of floodplain widening, utilize the 100-foot right-of-way near Nathan Hale High School, and explore the possible separation of box culverts to isolate the flow from the separate regions north of Lincoln Avenue.

- While not a priority of MMSD because no structural flooding problems were identified, at the request of the stakeholders, CDM evaluated a potential solution to alleviate the drainage problems in the Crayfish Creek and Caledonia Branch subwatershed. This solution should be evaluated further during Phase II.

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Table 12-3 Summary Recommendations for the Root River Watershed	
	Estimated Capital Cost
<p>Overall Recommendations</p> <ul style="list-style-type: none"> ▪ Implement watershed-wide stormwater management regulations to control increases in stormwater runoff from development (new development storage and significant re-development). ▪ Preserve existing natural storage found in wetlands, floodplains and low and internally drained areas. 	Non-MMSD Cost
<p>East Branch of Root River</p> <ul style="list-style-type: none"> ▪ Evaluate the floodproofing or buyout of 11 structures. 	\$1,120,000
<p>Tess Corners Creek</p> <ul style="list-style-type: none"> ▪ No structural recommendations. 	None
<p>104th Street Branch</p> <ul style="list-style-type: none"> ▪ No structural recommendations. 	None
<p>Crayfish/ Caledonia Creek</p> <ul style="list-style-type: none"> ▪ No structural recommendations. 	None
<p>Lower North Branch of Root River</p> <ul style="list-style-type: none"> ▪ Evaluate the floodproofing or buyout of 1 house and 1 commercial structure. 	\$158,000 – \$528,000
<p>Whitnall Park Creek – Consider two alternatives</p> <ul style="list-style-type: none"> ▪ Evaluate the floodproofing or buyout of 11 structures. ▪ Evaluate the feasibility of two different conveyance alternatives featuring channel lowering and the construction of an overflow conduit. 	\$1,190,000 \$3,780,000 - \$6,000,000
<p>West Allis – Consider two alternatives</p> <ul style="list-style-type: none"> ▪ Evaluate the buyout or floodproofing of 12 structures on the North Branch of the Root River and Hale Creek, combined with a storm sewer diversion for Hale Creek. ▪ Develop a new alternative based on Alternative 4 that includes a revised channel expansion, the floodproofing of homes in the floodplain instead of floodplain widening, the utilization of a 100-foot right-of-way near Nathan Hale High School for storage, and the installation of separate box culverts to isolate flow north of Lincoln Avenue. 	\$14,500,000 <i>To be determined during Phase II</i>

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12.4 Additional Considerations

In addition to Phase II considerations, an effective stormwater management plan for the Root River watershed should address:

- Roadway overtopping throughout the Root River watershed. A number of roadways throughout the Root River watershed were identified that are projected to overtop during either a 10 or 50-year flood event based on 2020 land use development conditions. While this Watercourse Management Plan attempted to solve the overtopping problem at these locations in conjunction with its primary purpose of developing solutions to structural flooding, the ultimate responsibility for damages resulting from roadway overtopping lies with the governing jurisdiction responsible for the roadway.
- Preservation of existing floodplain and wetland areas, especially along the North Branch of the Root River to conserve existing natural storage of floodwater to preserve existing flow and stages.
- Control of future flow increases through adoption of effective stormwater management controls on new development.

12.5 Implementation

Pending MMSD Commission approval, the MMSD intends to move forward on these recommendations. It is envisioned that Advanced Planning, design and construction will continue over the next three years. Additional concept development and coordination will be required to finalize these recommendations. The District intends to move forward to implement appropriate

solutions under its jurisdiction and reduce the risk of major flood damage in the future.

12.6 Phase II Advanced Planning Update

MMSD moved forward with Phase II Advanced Planning, based on the recommendations made in this plan (Phase I). In September 2000, MMSD published the *Root River Watercourse Management Plan Advance Planning Analysis and Design Services Interim Executive Summary*, which presents a summary of the problems, results and recommendations for flood management along the Root River and its tributaries and the status of the selected flood control alternatives that were moved into the advanced planning phase. Brief overviews of the Phase II findings to date follow.

12.6.1 Watershed Analysis and Results

Phase II includes an update of the hydrologic and hydraulic models, confirmation surveying and detailed floodplain mapping. These efforts have been completed and resulted in revisions to the number of flooded structures. Based on the Phase II results, the number of properties flooded by the 100-year event (2020 land use conditions) are: 45 properties in Upper North Branch of Root River subwatershed, 57 properties in Whitnall Park Creek subwatershed, 5 properties in the East Branch of Root River subwatershed (not including 18 mobile homes that are in 100-year floodplain, but above the 100-year water surface), and 2 properties in the lower North Branch of Root River.

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12.6.2 Upper North Branch of the Root River Flood Control Alternative

Phase II further analyzed the two alternatives from Phase I, as well as two new alternatives developed in Phase II. Consensus from the stakeholders was achieved on a final alternative that was developed from components of the various alternatives that had been considered. This final preferred alternative includes:

- Bridge Modifications at National Ave.
- Pump Station North of Lincoln Avenue on Hale Creek .
- Potential Detention storage in New Berlin.
- Potential Buyouts along Root River Parkway.

This alternative must be reviewed and receive MMSD Commission Approval before final design may commence.

12.6.3 Whitnall Park Creek Flood Control Alternative

The local stakeholders have agreed to a proposed plan that was subsequently approved by the Commission. The proposed improvements include:

- North Branch Whitnall Park Creek**
- Enclosing roadside ditch
 - 4-acre detention pond
 - Lowering the floodplain

- Lower floodplain along 250-foot reach
- Stabilize head cut approximately 165 feet upstream of confluence with North Branch
- Possible acquisition of one property within floodplain
- Acquisition of four properties for construction implementation

Northwest Branch Whitnall Park Creek

- Acquire seven residences impacted by 100-year storm
- Floodproof 2 condominium buildings

Main Branch of Whitnall Park Creek

- Floodproof six commercial structures

12.6.4 East Branch and Lower North Branch Root River Flood Control Alternative

The stakeholders in these subwatersheds have agreed that acquisition of the seven affected residential structures is the only viable flood control alternative for the project area.