

Building a Better World

RE: 2021 Street and Utility Improvement<br>Project (Circle Drive Area)<br>Feasibility Report<br>Montgomery, Minnesota<br>SEH No. MONTC 1547064.00

Honorable Mayor and
Members of the City Council
City of Montgomery
201 Ash Avenue SW
Montgomery, MN 56069

Dear Mayor and Council Members:
Pursuant to your request, Short Elliott Hendrickson Inc. $\left(\mathrm{SEH}^{\circledR}\right)$ is submitting this Engineer's Feasibility Report for the 2021 Street and Utility Improvement Project. The proposed project would include street and utility improvements to the following:

1. West Circle Drive from Hickory Avenue to North Circle Drive.
2. Hillcrest Drive from Inner Drive to North Circle Drive.
3. East Circle Drive from Hickory Avenue to North Circle Drive.
4. Inner Drive from W Circle Drive to E Circle Drive.
5. North Circle Drive from dead end cul-de-sac to East Circle Drive.
6. Rogers Drive from Hickory Avenue to dead end.
7. Hickory Avenue from West Circle Drive/1 ${ }^{\text {st }}$ Street NE to $5^{\text {th }}$ Street NE.

The project includes consideration of bituminous overlay on a few select streets and full street reconstruction in most of the remaining project area. The project will also include the rehabilitation and reconstruction of city utilities: storm sewer, sanitary sewer, and water main, concrete curb and gutter replacement and rehabilitation, turf restoration, and miscellaneous items required to properly complete the improvements. The project also reviewed the stormwater management in the area and includes consideration of the construction of stormwater ponds in the area. This report includes a narrative describing the proposed improvements, estimated costs, estimated project funding and figures showing the proposed work.

Having considered several aspects of items included for construction of this project, and having discussed the project in detail with City Staff and the Public Works Advisory Board, it is our opinion from an engineering perspective that the proposed improvement project as presented within this report is necessary, cost effective, and feasible.

An on-line "virtual" neighborhood meeting was held May 21, 2020. A Public Hearing should be held as soon as possible, either at the July 20, 2020, regular council meeting or at a special meeting to be held during the week of July $6^{\text {th }}$.

Honorable Mayor and
Members of the City Council
June 15, 2020
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Thank you for the opportunity to work with you on this important project. I am available to answer any question you may have.

Sincerely,
SHORT ELLIOTT HENDRICKSON INC.


Christopher M. Cavett, PE
Project Manager
(Lic. MN)
jb
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# Feasibility Report 

2021 Street and Utility Improvement Project Montgomery, Minnesota

## SEH No. MONTC 154706

June 15, 2020

I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of


Christopher M. Cavett, PE

Date: June 15, 2020 License No.: 24719

Reviewed By: Doug Scott, PE
Date: June 15, 2020

Short Elliott Hendrickson Inc.
11 Civic Center Plaza, Suite 200
Mankato, MN 56001-7710
507.388.1989

## Executive Summary

## Background

The City of Montgomery Public Work Advisory Board has developed a Capital Improvements Plan (CIP) to address future street improvements as well pavement preservation projects such as seal coating and mill and overlay improvements. The streets identified in this study were selected based on age and pavement condition, as well as due to problems and conditions of the aging underground utilities in the neighborhood.

On February 18, 2020, the City Council authorized SEH to prepare this feasibility report. The feasibility report outlines the scope of the project, the probable costs, the funding options, and the potential assessment amounts to the benefiting properties. Due to the COVID-19 situation, an earlier neighborhood meeting was canceled and an on-line "virtual" neighborhood meeting was held May 21, 2020, for property owners along the proposed streets. There were approximately 20 households (17\%) of the approximate 120 properties in the project area.

## Project Scope

The proposed scope of the project includes:

- West Circle Drive from Hickory Avenue to North Circle Drive.
- Hillcrest Drive from Inner Drive to North Circle Drive.
- East Circle Drive from Hickory Avenue to North Circle Drive.
- Inner Drive from West Circle Drive to East Circle Drive.
- North Circle Drive from dead end cul-de-sac to East Circle Drive.
- Rogers Drive from Hickory Avenue to dead end.
- Hickory Avenue from West Circle Drive/1 ${ }^{\text {st }}$ Street NE to $5^{\text {th }}$ Street NE.

Existing utilities will be partially replaced as part of the project. Some portions of the sanitary sewer were constructed in the 1970s using PVC pipe and based off of televising, do not need to be replaced. In 2005, approximately 700 feet of sanitary sewer was also reconstructed on North Circle Drive as part of project to increase pipe capacity. Portions of the system constructed in the early1960's, are made of vitrified clay pipe (VCP) and need replacing. Water mains are believed to be cast iron or ductile iron and are quickly deteriorating leading to many water main breaks. The entire water system under the subject streets being fully reconstructed is proposed to be replaced.

As much of the proposed project area drains directly onto the golf course and there are known stormwater impacts to the golf course it is proposed to excavate out an existing pond as sediment over the last 50 years has filled in much of the pond decreasing its effectiveness to store stormwater and regulate flow rates. With this excavation other measures are proposed which are detailed more in Appendix-B (Golf Course Stormwater Study). The storm system within the fully reconstructed streets will also be replaced to achieve the recommended standards for stormwater management. A stormwater pond is also proposed to be located in a city-owned green space within North Side Park. This pond serves to better manage the high rate of runoff associated with the MiTek Steel property and Kocina property.

No major utility work will be done in the mill and overlay areas. Only minor improvements will be made to rehabilitate the storm sewer system. No sanitary or water work has been identified.

## Executive Summary (continued)

Detailed cost estimates are included in Appendix A. The cost estimates include budget amounts for construction cost and project related costs, such as contingency ( 10 percent), as well as project related costs (administrative, legal, and engineering) (22 percent), is outline below:

| Street Improvements | \$3,085,040 | 65.0\% |
| :---: | :---: | :---: |
| Stormwater Improvements | \$617,380 | 13.0\% |
| Sanitary Improvements | \$346,510 | 7.3\% |
| Water System Improvements | \$700,040 | 14.7\% |
| Totals | \$4,749,000 | 100.0\% |

The Estimated Project Funding is outlined below:

| Sanitary Sewer Utility Fund | \$289,206 | 6.1\% |
| :---: | :---: | :---: |
| Water Utility Fund | \$572,891 | 12.1\% |
| Stormwater Utility Fund | \$617,380 | 13.0\% |
| Assessments | \$953,072 | 20.1\% |
| City Wide General Debt Service | \$2,316,451 | 48.8\% |
| Total | \$4,749,000 | 100.0\% |
| stimated Project Funding Contribution: |  |  |
| Neighborhood Contribution | \$953,072 | 20.1\% |
| City Wide Contribution | \$3,795,928 | 79.9\% |
| Total | \$4,749,000 | 100.0\% |

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## Feasibility Report

## 2021 Street and Utility Improvement Project

## Prepared for City of Montgomery, Minnesota

## 1 Introduction/Background <br> 1.1 Introduction/Background

The City of Montgomery Public Work Advisory Board has developed a Capital Improvements Plan (CIP) adopted by the City Council to address future street and utility improvements as well pavement preservation projects such as seal coating and mill and overlay improvements. The streets identified in the Capital Improvements Plan (CIP) and outlined in this study were selected based on, age, pavement condition, and deteriorating underground utility conditions. Many water main breaks along North Circle Drive and Hickory Avenue in the past 20 years have also contributed to the need to replace the water infrastructure in this neighborhood. Localized street flooding has resulted in a need to make revisions to the stormwater management in the area.

On February 18, 2020, the City Council authorized SEH to prepare this feasibility report. The feasibility report outlines the scope of the project, the probable costs, the funding options, and the potential assessment amounts to the benefiting properties.

A virtual neighborhood meeting was held on May 21, 2020, for property owners along the proposed streets. There were approximately 20 of 120 property owners present. At the meeting, preliminary drawings, project costs and assessment information were presented.

## 2 Proposed Schedule

| Task |  |
| :--- | :--- |
| Council Orders Preparation of a Feasibility Study * | February 18, 2020* |
| Informational Letters sent out to the Neighborhood | February 2020 |
| Preliminary Area Stormwater Management Plan <br> Study | February-April 2020 |
| Field Surveying and Field Investigations | March-April, 2020 |
| Report Progress Review meeting with City Staff | April 17, 2020 |
| Hold Neighborhood Meeting \#1 | May 21, 2020 |
| Draft Report to City Staff for Review | June 10, 2020 |
| Finalize Feasibility Report | June 11, 2020 |
| Present Feasibility Report; Council Calls for Hearing <br> on Improvement * | June 15, 2020* |
| Publish Notice of Hearing on Improvement | TBD based on selected Public <br> Hearing Date |


|  | Task | Date |
| :---: | :---: | :---: |
|  | Public Hearing; Council Authorizes Preparation of Plans and Specifications* | July 20, 2020, or Special Meeting week of July $6^{\text {th }}$ |
|  | Final Design/Construction \& Bidding Documents | July-October 2020 |
|  | Present Final Plans and Specifications; Council Authorizes Advertisement for Bids * | December 21, 2020* |
|  | Advertise for Bids | Advertise on QuestCDN in December 2020 <br> Paper: Thursday, January 7 \& 14, 2021. <br> (Submit to paper December 22, 2020) |
|  | Council Declares Cost to be Assessed, Orders Preparation of Assessment Roll, and Calls for Hearing on Proposed Assessments * | December 21, 2020* |
|  | Publish Notice of Hearing on Proposed Assessments | Thursday, January 28, 2021 (Submit to paper Monday, January 25, 2021) |
|  | Bid Opening | Friday, February 5, 2021 |
|  | Council Receives Bids and Considers Award of Bid; Council Holds Assessment Hearing and Adopts Assessments * | February 15, 2021* |
|  | Construction | April-November 2021 |
|  | Assessments Due On or Before | October 31, 2021 |
|  | Assessments Levied to County | November 2021 |
|  | *Items requiring Council Action/Resolution |  |
| $3$ | Project Recommendations |  |
| $3.1$ | Sanitary Sewer <br> The existing Sanitary Sewer system within the project (VCP) and polyvinyl chloride Pipe (PVC). The pipe seg cracks, and root intrusion and have been identified to b infiltration of clear water into the sanitary sewer system Circle Drive neighborhood. The oldest plat (Sunset Vie sanitary sewer in this plat was constructed of VCP (clay) Hillcrest Drive, as well as the easterly half of North Circ sanitary sewer mains on older Hickory Avenue. <br> The PVC sanitary sewer mains in the rest of the Circle more recently with the newer 1975 plat (Westwood Add good condition and are not proposed to be replaced. Th sanitary sewer Improvements at the west and east end to increase pipe capacity needs as a result of developm developments. <br> In areas where the sanitary sewer main is to be replaced need replacement. Replacement of residential sanitary diameter PVC SDR 35 pipe between the proposed san existing sanitary sewer service at the property line. | ea consists of both vitrified clay pipe ents that are VCP have open joints, replaced to reduce the inflow and There were three subdivision plats in the Addition) dates back to 1961. The and includes all of East Circle and and Inner Circle Drives. There are no <br> rive neighborhood were constructed ion). The PVC sanitary sewers are in ere were also two recent localized of North Circle Drive in 2005 and 2006 ent in the Stoneridge and Countryridge <br> , the sanitary sewer services will also ervices will be constructed of 4 inch tary main and the connection to the |

## 3.2 <br> Water Distribution System

Information on the City's water distribution system map gathered during the CIP process shows that existing water mains within the project area were constructed concurrently with the sanitary sewer and are mostly 6 inch diameter ductile iron mains with 6 inch diameter ductile iron hydrant leads. Throughout the Circle Drive neighborhood and on Hickory Avenue, multiple water main breaks have occurred over the years. The locations of the breaks were provided by City staff and are illustrated with an " $X$ " in Appendix $C$. The large number of water main breaks can be an indicator many variables; age, condition, soils and original construction of the water main in this neighborhood and is the leading factor for replacing all the water main within the Circle Drive neighborhood and on Hickory Avenue.

For the sake of fire flow capacity, it is accepted engineering practice to replace the majority of the 6 inch water mains with 8 inch water mains, except in the case of short dead-end runs (cul-de-sac) where a smaller 6 inch water main may be more appropriate. The cost differential between 6 inch mains and 8 inch water mains is relatively minimal.

In areas where water main will be replaced, water services will also need to be replaced. Replacement of residential water services will be constructed of 1 inch diameter HDPE pipe between the proposed water main and the connection to the existing water service at the property line with a new curb stop shutoff valve. At this time, there are no specific commercial or industrial water service replacements known, but they will be reviewed during the preparation of construction documents by contacting the owners of commercial, institutional and multi-family properties to determine if there is a need for a water service greater than 1 inch.

### 3.3 Stormwater Management

There are two existing storm outlets in the Circle Drive neighborhood; the first from North Circle Drive outlets directly to the golf course, and the second outlets west from Inner Drive to the railroad right-of-way and flows north onto the golf course. Proposed storm sewer will be installed to provide drain inlets at most intersections to reduce overland flow and improve street drainage. To minimize erosion near the railroad tracks, the second storm sewer outlet will be eliminated, and will be rerouted north along West Circle Drive and combined with the main outlet to the golf course. Storm sewer piping and inlets will be sized to better manage stormwater runoff.

A stormwater management study was also completed as part of this feasibility study to evaluate the drainage from the neighborhood and to understand opportunities to mitigate flooding on North Circle Drive as well as evaluate stormwater management through the golf course (see Appendix B). SEH and City staff have met with a representative of the golf course and provided them a copy of the stormwater management plan. In short, to better manage stormwater draining onto the golf course, it is proposed to expand the existing stormwater pond on the golf course. This subject "Pond A" lies directly north of the neighborhood. A representative of the golf course owner was receptive the plan and report. A formal easement over this pond unknown at this time and would need to be formalized as part of this project.

In addition to the neighborhood and golf course stormwater study, we also completed a preliminary evaluation of options to better manage storm runoff from the MiTek (United Steel) and Kocina properties. Much of the watershed draining to the intersection of Hickory Avenue and Rogers Drive comes from these two properties, which are extremely large impervious areas. The runoff from these areas quickly inundate the undersized storm sewer on Rogers Drive and

Hickory Avenue. This results in backup and water bubbling up from the catch basins. Three options could be explored to better manage stormwater in the subwateshed:

1. Consider redirecting this subwatershed to the east along Hickory Avenue to Deer Trail and into the stormwater pond adjacent to the wetland. The current storm sewer in Deer Trail is undersized to add this entire subwatershed, and it would be cost prohibited to reconstruct portions of Deer Trail and Hickory Avenue, since they were originally constructed in 2001.
2. Upsize the storm sewer along Hickory Avenue with the intention of reconstructing $2^{\text {nd }}$ Street in the near future and the upsized pipes in $2^{\text {nd }}$ Street from Hickory Avenue to Lexington Avenue. Upsizing the storm sewer along Hickory Avenue and eventually down $2^{\text {nd }}$ Street helps mitigate some issues at the top of this watershed (Rogers Drive area), but pushes the problems further downstream where there is currently already a bottleneck in the storm sewer system.
3. Construct a pond or ponds within the North Side Park property and/or other properties along Hickory Avenue. The option of constructing ponding near Hickory Avenue appears to be the best tool to manage the runoff as well as be a cost effective option to reduce some of the future storm sewer pipe sizing south of Hickory Avenue. To decrease the size of a North Side Park pond, it is highly encouraged to look at the MiTek property and consider discussions with MiTek to consider the construction of a small stormwater pond in the very southwest corner of their property where an abandon house sits today. A small pond at this location will not fully solve the high runoff flows, but it will help delay the flows from being introduced to the storm sewer, which will help decrease the size of a pond in the park and future downstream storm sewer pipe sizes.
It is recommended that any pond construction on the golf course be considered as a separate construction contract to be bid out and constructed this fall or early winter. It is also recommended, based on likely size of a pond construction contract, that select contractors approved by the golf course be solicited for bids to construct and restore the disturbed areas.

### 3.4 Streets

Information about the streets show that East Circle Drive, Hillcrest Drive, and portions of Inner Drive and North Circle Drive were platted in 1959 and likely originally constructed then in the early 1960's. West Circle Drive and the remainder portions of North Circle Drive and Inner Drive were platted in 1975 and likely constructed then in the late 1970's. From test pits conducted by City staff, the road section was found to be approximately 3 inches of bituminous on top of 6 inches of aggregate base. Further test pits will be conducted in final design as well. A section of trench pavement North Circle Drive west of West Circle Drive was repaved when the sanitary sewer was replaced in 2005. That area has a 5 inch bituminous pavement on top of 12 inches of aggregate base. There likely have been overlays and "skin patches" in various areas over the years which at this point are failing. The pavement exhibits several signs of failure from cracking to missing pavement as shown in the picture below.


West Circle Drive, Hillcrest Drive, East Circle Drive, Inner Drive, North Circle Drive, and portions of Hickory Avenue are proposed for a full reconstruction which will include the complete removal of existing street section, excavation and additional subcut excavation (where needed), and regrade and realignment of street. The new street section will be constructed with geotextile fabric at the bottom of the street section, placement of 18 inches of a sand subdrainage section, followed by 8 inches of aggregate base, and then finished with 4 inches of bituminous pavement, B618 curb and gutter, and turf restoration. (See pavement typical section, Figure 4.)

A 6 inch drain tile is proposed to be installed at the back of curb to drain subsurface water from the street subgrade section. A sump pump service line with a lawn sump basin would be extended from the drain tile lines to the residential properties for homeowners to connect their groundwater sump pumps. The installation of a line from the house sump pump to the lawn sump basin would be the responsibility of the homeowner.

Rogers Drive (from Hickory Avenue to the golf course cul-de-sac) and Hickory Avenue (4 ${ }^{\text {th }}$ Street to $5^{\text {th }}$ Street) are only proposed to be milled and overlaid. The pavement, curb, and utilities are in better condition than the other portions of this project and do not need to be fully reconstructed. Two inches of pavement will be milled and then replaced with 2 inches of overlaid bituminous pavement. Minor curb replacement will also occur where there are localized settlements, usually from trench settlement. These locations will be determined in the final design process.

The east block of Hickory Avenue from $5^{\text {th }}$ Street to Deer Trail is not recommended for improvement at this time. That east block of Hickory Avenue was constructed at the same time as Deer Trail and it is recommended that any improvements to that section of Hickory Avenue be included with a future Deer Trail project.

### 3.4.1 Street Widths and Locations

The existing and proposed widths are listed in the table below and illustrated on Figure 2 and 3. Final locations of the street within the right-of-way (ROW) may be adjusted during the final design to best fit the adjacent topography and driveways.

Table 1 - Existing and Proposed Street Widths

| Street | From | To | Row <br> Width | Existing <br> Width | Proposed <br> Width |
| :---: | :---: | :---: | :---: | :---: | :---: |
| W Circle Drive | Hickory <br> Avenue | N Circle <br> Drive | $60^{\prime}$ | $36^{\prime}$ | $30^{\prime}$ |
| Hillcrest Drive | Inner Drive | N Circle <br> Drive | $60^{\prime}$ | $30^{\prime}$ | $30^{\prime}$ |
| E Circle Drive | Hickory <br> Avenue | N Circle <br> Drive | $60^{\prime}$ | $30^{\prime}$ | $30^{\prime}$ |
| Inner Drive | W Circle Drive | E Circle <br> Drive | $60^{\prime}$ | $30^{\prime}-36^{\prime}$ | $30^{\prime}$ |
| N Circle Drive | Cul-de-sac | E Circle <br> Drive | $60^{\prime}$ | $30^{\prime}-36^{\prime}$ | $30^{\prime}$ |
| Rogers Drive | Hickory <br> Avenue | Dead End | $66^{\prime}$ | $40^{\prime}$ | $40^{\prime}$ |
| Hickory Avenue | W Circle Drive | $5^{\text {th }}$ Street NE | $66^{\prime}$ | $41^{\prime}$ | $32^{\prime}-41^{\prime}$ |

### 3.5 Parking

The proposed 30 foot wide streets will accommodate parking on both sides of the street and allow traffic to function smoothly in a low volume residential neighborhood. Parking along the overlay segments of Hickory Avenue and Rogers Drive will remained unchanged as parallel parking on both sides will still allow free flow traffic.

## Sidewalks/Trails

There are currently no existing sidewalks along any of subject streets in this proposed project area. However, to provide better neighborhood connectivity to North Side Park sidewalks are proposed in strategic locations along the north side of Hickory Avenue, between West Circle Drive and Rogers Drive and along the a portion of west side of Rogers Drive from Hickory Avenue to North Side Park. The street side sidewalks are proposed to be a 6 foot wide concrete with a typical boulevard width of 6 feet between the curb and the sidewalk that functions as a safety buffer and provides a location for snow storage.

In addition, a 6-foot wide off-street sidewalk is proposed to be constructed within a plated pedestrian right-of-way located between 709 and 801 West Circle drive and would extend from West Circle Drive into North Side Park. To properly construct the walk at that location, it would require temporary grading easements from the adjacent properties.

These sidewalk segments are proposed as an initial step in the Parks Comprehensive Plan to connect the park with the surrounding neighborhoods.

## 3.7 <br> Driveways and Alleys

Driveway and alley entrances along the project streets will be reconstructed to fit the new street, typically between 5 feet and 10 feet behind the proposed curb and gutter. It is recommended that a 5 foot concrete apron be provided at each driveways with the remainder reconstructed with material similar to their existing condition (aggregate, bituminous, or concrete).

## 3.8 <br> Private Utilities

Though not part of the street project, existing private utilities will be affected by the improvements. Conflicts with both underground utilities and power poles are anticipated. Private utilities will be contacted early on in the design process and will be required to relocate if they are conflicting with the City's proposed work. In addition, private utilities will often consider replacement of older infrastructure as much of the area will already be disturbed due to the street improvements.

### 3.9 Trees

There are numerous old trees within the Circle Drive Area and many located close to the streets. Trees will be reviewed in more detail as part of the final design process and will be considered for removal where necessary. Tree removal would take place in late winter or early spring prior to the street and utility construction. At this time, no tree replacement would be proposed as part of the bid project. However, during the 2017 project, the City provided replacement trees to properties that lost boulevard trees during the street project and who wished to plant a replacement tree outside of the public right-of-way on their property.

## 4 Rights-of-Way/Easements

All streets within the project will fit within the public rights-of-way, which are typically 60 feet wide. The exceptions are Rogers Drive and Hickory Avenue which have a 66 foot wide right-of-way.

Public managed pond(s) on golf course or MiTek properties would require formal drainage and utility easements. A pond within the park would not require and easement or property acquisition, but might require formal acceptance by City Council and Park Board.

As the project proceeds into detailed final design, there may be additional permanent easements and/or temporary easements that maybe identified. We will be contacting affected property owners on a case by case basis, as needed.

## 5 Required Permits and Approvals

- Minnesota Department of Health (MDH) (Water Main Improvements)
- Minnesota Pollution Control Agency (MPCA) (NPDES General Stormwater Permit)


## Cost Estimates and Project Financing

The costs quoted herein are estimates only. The actual cost of the work would be determined through the public bidding process and a reconciliation of all project related costs. Detailed cost estimates are included in Appendix- A. The cost estimates include budget amounts for
construction cost and project related costs, such as contingency (10 percent), as well as administrative, legal, fiscal and engineering (22 percent).

The Estimated Project Costs are Proposed Financing are summarized below (see Appendix A):

## Estimated Project Costs

| Improvement | Project Cost |
| :--- | ---: |
| Sanitary Sewer Improvements | $\$ 346,510$ |
| Water Main Improvements | $\$ 700,040$ |
| Storm Sewer and Ponding Improvements | $\$ 617,380$ |
| Street Improvements | $\$ 3,085,040$ |
| Total Estimated Project Cost* | $\$ 4,749,000$ |

*The estimated project cost includes estimated construction costs, plus a 10 percent contingency, plus 22 percent for project related soft costs (i.e., administrative, engineering, legal, and fiscal costs). Construction costs will be revised as the project moves forward into the final design phase (Engineer's Estimate).

## Estimated Project Financing

| Source | Funding | \% of Total |
| :--- | :---: | :---: |
| Sanitary Sewer Utility | $\$ 289,206$ | $6.1 \%$ |
| Water Utility | $\$ 572,891$ | $12.1 \%$ |
| Stormwater Utility | $\$ 617,380$ | $13.0 \%$ |
| Assessments | $\$ 953,072$ | $20.1 \%$ |
| General Debt Service | $\$ 2,316,451$ | $48.8 \%$ |
| Total Estimated Project Costs | $\mathbf{\$ 4 , 7 4 9 , 0 0 0}$ | $\mathbf{1 0 0 \%}$ |


| Source | Funding | \% of Total |
| :--- | :---: | :---: |
| Neighborhood Contribution <br> (Assessments) | $\$ 953,072$ | $20.1 \%$ |
| City-Wide Contribution* | $\$ 3,795,928$ | $79.9 \%$ |
| Total Estimated Project Cost | $\$ 4,749,000$ | $\mathbf{1 0 0 \%}$ |
| *City-Wide Contribution includes Sanitary Sewer, Water and Stormwater Utility funds and General Debt Service. |  |  |

## Proposed Assessments

Based on the City of Montgomery's Assessment Policy for Street and Utility Improvements, the project will be funded in part through assessments to the benefiting properties with the balance of costs paid from sewer, water, and environmental utility funds, as well as general tax levy. The assessment policy was presented to residents during the May 21, 2020, neighborhood meeting as well as the general magnitude of the assessments.

NOTE: The recommended assessment rates presented in this report are the assessment rates presented at the neighborhood meeting as "DRAFT" pending City Council approval. The proposed change in the assessment rates from the 2020 project to the 2021 project represent a $2.5 \%$ inflationary increase.

The City Council should formally accept the proposed 2021 assessment rates if they are in agreement with the proposed assessment rates.

### 7.1 Street Assessments

The recommended 2021 assessment rates presented in this report are:

- \$7,027.80 per Unit residential full street reconstruction
- $\$ 112.44$ per Front-Foot Industrial full street reconstruction
- $\$ 1,621.80$ per Unit residential mill and overlay
- $\$ 21.62$ per Front-Foot multi-family or commercial mill and overlay front footage
- $\$ 25.95$ per Front-Foot Industrial mill and overlay front footage


### 7.2 Water and Sewer Service Assessments

The recommended assessment for residential water service is:

- \$1,297.44 per unit

The recommended assessment for residential sanitary sewer service is:

- \$1,081.20 per unit

At this time, there are no expected commercial or industrial assessments for water or sanitary sewer services as they are not anticipated for replacement.

A detailed estimate of probable assessments is shown in the Appendix D.

## 8 Summary and Recommendations

From the results of the feasibility study and preliminary investigations, it can be concluded that:

1. The project is feasible as it relates to general engineering principles, practices, and construction procedures as it has been presented in this report.
2. The project is necessary to maintain the city's infrastructure.
3. The project is cost-effective when all related costs are considered - public and private.
4. The project is included in the adopted Capital Improvements Plan (CIP) which recommended the respective improvements to the streets and utilities in the project area.
We recommend the following:
5. Accept this feasibility report and order a public hearing to be held as soon as possible.
6. After holding the public hearing, the city council should consider ordering the improvement and authorizing the preparation of plans and specifications.
7. The cost of the improvements will be recovered through assessments to the benefitted properties and through various other city contributions.
8. The City of Montgomery City Council should approve the Assessment Rates as presented in this report.

## 9 Standard of Care

The conclusions and recommendations contained in this report were arrived at in accordance with generally accepted professional engineering practice at this time and location. Other than this, no warranty is implied or intended.
jb

## Figures

Figure 1 - Project Location Map - Overall
Figure 2 - Project Location Map - West (Circle Drive Neighborhood Figure 3 - Project Location Map - East (Hickory Avenue and Rogers Drive)

Figure 4 - Typical Section





INSET A

1.5" PLANT MIXED BITUMINOUS WEARING COURSE SPEC. 2360 (SPWEA240B)
TACK COAT (MNDOT SPEC. 2357)
2.5" PLANT MIXED BITUMINOUS NON-WEARING COURSE SPEC. 2360 (SPNWB230B)
8" CLASS 5 AGGREGATE BASE, SPEC. 2211
18" SELECT GRANULAR BORROW, SUBBASE SPEC. 3149.2B1 GEOTEXTILE FABRIC, TYPE 5, SPEC. 3733

12" SUBGRADE PREPARATION-MNDOT 2112

INSET B


## Appendix A

Construction Cost Estimates and Funding

ENGINEER'S PRELIMINARY ESTIMATE OF PROBABLE COSTS
2021 STREET AND UTILITY IMPROVEMENT PROJECT (CIRCLE DRIVE AREA)
MONTGOMERY, MINNESOTA
SEH NO. MONTC 154706
JUNE 15, 2020

| BID ITEM NUMBER | MNDOT <br> SPEC REF. | ITEM | UNIT | ESTIMATED QUANTITY | ESTIMATED PRICE | TOTAL <br> PRICE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Street, Curb and Gutter, Drainage Pipe, Driveways \& Walks |  |  |  |  |  |  |
| 1 | 2021.501 | MOBILIZATION | LUMP SUM | 1.00 | \$200,000.00 | \$200,000 |
| 2 | 2101.524 | CLEARING | TREE | 72.00 | \$500.00 | \$36,000 |
| 3 | 2101.524 | GRUBBING | TREE | 72.00 | \$300.00 | \$21,600 |
| 4 | 2104.502 | REMOVE SEWER MANHOLE | EACH | 23.00 | \$300.00 | \$6,900 |
| 5 | 2104.503 | REMOVE CURB \& GUTTER | LIN FT | 13,540.00 | \$3.50 | \$47,390 |
| 6 | 2104.504 | REMOVE BITUMINOUS PAVEMENT | SQ YD | 22,470.00 | \$2.65 | \$59,546 |
| 7 | 2104.504 | REMOVE DRIVEWAY PAVEMENT | SQ YD | 1,904.00 | \$3.00 | \$5,712 |
| 8 | 2104.503 | SAWING BIT PAVEMENT (FULL DEPTH) | LIN FT | 180.00 | \$3.00 | \$540 |
| 9 | 2104.503 | SAWING CONCRETE PAVEMENT (FULL DEPTH) | LIN FT | 50.00 | \$4.50 | \$225 |
| 10 | 2104.502 | SALVAGE SIGN | EACH | 27.00 | \$35.00 | \$945 |
| 11 | 2105.502 | SALVAGE MAILBOX | EACH | 28.00 | \$36.00 | \$1,008 |
| 12 | 2105.507 | COMMON EXCAVATION (EV) (P) | CU YD | 21,422.50 | \$12.00 | \$257,070 |
| 13 | 2105.507 | SELECT GRANULAR BORROW (CV) (P) | CU YD | 12,853.50 | \$15.00 | \$192,803 |
| 14 | 2105.604 | GEOTEXTILE FABRIC, TYPE V | SQ YD | 25,707.00 | \$1.50 | \$38,561 |
| 15 | 2106.507 | SUBGRADE EXCAVATION | CU YD | 2,100.00 | \$10.00 | \$21,000 |
| 16 | 2118.507 | AGGREGATE SURFACING CLASS 5 (CV) (P) | CU YD | 100.00 | \$14.00 | \$1,400 |
| 17 | 2123.510 | INVESTIGATIVE EXPLORATION | HOUR | 11.00 | \$500.00 | \$5,500 |
| 18 | 2123.610 | STREET SWEEPER (WITH PICKUP BROOM) | HOUR | 10.00 | \$135.00 | \$1,350 |
| 19 | 2130.523 | WATER (FOR DUST CONTROL) | MGAL | 60.00 | \$55.00 | \$3,300 |
| 20 | 2130.523 | WATER (FOR TURF ESTABLISHMENT) | MGAL | 34.00 | \$47.00 | \$1,598 |
| 21 | 2211.507 | AGGREGATE BASE CLASS 5 (CV) (P) | CU YD | 5,712.67 | \$25.00 | \$142,817 |
| 22 | 2232.504 | MILL BITUMINOUS SURFACE | SQ YD | 8,960.00 | \$2.00 | \$17,920 |
| 23 | 2331.603 | SAWED/SEALED JOINT (BITUMINOUS) | LIN FT | 5,255.53 | \$3.00 | \$15,767 |
| 24 | 2357.506 | BITUMINOUS MATERIAL FOR TACK COAT | GALLON | 2,859.02 | \$4.00 | \$11,436 |
| 25 | 2360.509 | TYPE SP 9.5 WEARING COURSE MIX (2,B) | TON | 2,854.32 | \$80.00 | \$228,346 |
| 26 | 2360.509 | TYPE SP 9.5 NON WEAR COURSE MIX (2,B) | TON | 2,965.33 | \$75.00 | \$222,400 |
| 27 | 2451.507 | GRANULAR BACKFILL (LV) | CU YD | 2,100.00 | \$15.00 | \$31,500 |
| 28 | 2502.503 | 6" PERF. PVC PIPE DRAIN | LIN FT | 12,890.0 | \$9.00 | \$116,010 |
| 29 | 2502.602 | 6" PVC PIPE DRAIN CLEAN OUT | EACH | 4.0 | \$350.00 | \$1,400 |
| 30 | 2502.602 | LAWN SUMP CATCH BASIN (TOTAL UNIT) | EACH | 102.0 | \$175.00 | \$17,850 |
| 31 | 2506.602 | ADJUST FRAMERING AND CASTING | EACH | 18.00 | \$430.00 | \$7,740 |
| 32 | 2521.518 | 4" CONCRETE WALK W/4" AGGREGATE BASE | SQ FT | 8,120.00 | \$6.75 | \$54,810 |
| 33 | 2521.518 | 6" CONCRETE WALK W/4" AGGREGATE BASE (PEDESTRIAN RAMP) | SQ FT | 1,000.00 | \$11.00 | \$11,000 |
| 34 | 2531.503 | CONCRETE CURB \& GUTTER DESIGN B618 | LIN FT | 13,330.00 | \$21.00 | \$279,930 |
| 35 | 2531.507 | CONCRETE DRIVEWAY PAVEMENT 7" | SQ YD | 2,618.00 | \$68.00 | \$178,024 |
| 36 | 2531.618 | TRUNCATED DOMES | SQ FT | 132.00 | \$60.00 | \$7,920 |
| 37 | 2540.602 | INSTALL MAILBOX SUPPORT (SINGLE) | EACH | 28.00 | \$120.00 | \$3,360 |
| 38 | 2563.901 | TRAFFIC CONTROL | LUMP SUM | 1.00 | \$12,000.00 | \$12,000 |
| 39 | 2564.531 | SIGN PANELS TYPE C | SQ FT | 100.00 | \$35.00 | \$3,500 |
| 40 | 2573.502 | SILT FENCE, TYPE HI | LIN FT | 500.00 | \$2.50 | \$1,250 |
| 41 | 2573.533 | SEDIMENT CONTROL LOG | LIN FT | 500.00 | \$4.00 | \$2,000 |
| 42 | 2575.604 | TURF ESTABLISHMENT | SQ YD | 14,840.00 | \$1.50 | \$22,260 |
| 43 | 2575.607 | SELECT TOPSOIL BORROW (CV) | CU YD | 1,670.00 | \$25.00 | \$41,750 |
| 44 | 2575.504 | WEED SPRAYING | SQ YD | 7,420.00 | \$0.25 | \$1,855 |
| 45 | 2575.504 | OVERSEEDING | SQ YD | 3,710.00 | \$0.50 | \$1,855 |
| Street, Curb and Gutter, Drainage Pipe, Driveways Subtotal |  |  |  |  |  | \$2,337,145 |


| Storm Sewer |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 46 | 2104.502 | REMOVE STORM MANHOLE OR CATCH BASIN | EACH | 32.0 | \$275.00 | \$8,800 |
| 47 | 2104.503 | REMOVE STORM SEWER PIPE | LIN FT | 3,040.0 | \$10.00 | \$30,400 |
| 48 | 2503.502 | 30" RC PIPE APRON | EACH | 1.0 | \$800.00 | \$800 |
| 49 | 2503.503 | 12" RC PIPE SEWER DES 3006 CL V | LIN FT | 570.0 | \$36.00 | \$20,520 |
| 50 | 2503.503 | $15 " \mathrm{RC}$ PIPE SEWER DES 3006 CL V | LIN FT | 250.0 | \$39.00 | \$9,750 |
| 51 | 2503.503 | 18 " RC PIPE SEWER DES 3006 CL III | LIN FT | 1,670.0 | \$41.00 | \$68,470 |
| 52 | 2503.503 | 24" RC PIPE SEWER DES 3006 CL III | LIN FT | 1,270.0 | \$52.00 | \$66,040 |
| 53 | 2503.503 | 30" RC PIPE SEWER DES 3006 CL III | LIN FT | 495.0 | \$60.00 | \$29,700 |


| BID ITEM <br> NUMBER | MNDOT SPEC REF. | ITEM | UNIT | ESTIMATED QUANTITY | ESTIMATED PRICE | TOTAL PRICE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 54 | 2503.602 | CONNECT TO EXISTING STORM SEWER | EACH | 2.0 | \$750.00 | \$1,500 |
| 55 | 2505.502 | CONST DRAINAGE STRUCTURE SPECIAL | EACH | 1.0 | \$250.00 | \$250 |
| 56 | 2506.503 | CONST DRAINAGE STRUCTURE CATCH BASIN TYPE 477 | LIN FT | 68.0 | \$200.00 | \$13,600 |
| 57 | 2506.503 | CONST DRAINAGE STRUCTURE DESIGN 48-4020 | LIN FT | 102.0 | \$250.00 | \$25,500 |
| 58 | 2506.503 | CONST DRAINAGE STRUCTURE DESIGN 60-4020 | LIN FT | 24.0 | \$400.00 | \$9,600 |
| 59 | 2506.601 | CONSTRUCT STORM POND \#1 (GOLF COURSE POND A) | LUMP SUM | 1.0 | \$ 94,000.00 | \$94,000 |
| 60 | 2506.601 | CONSTRUCT STORM POND \#2 (PARK POND) | LUMP SUM | 1.0 | \$ 49,000.00 | \$49,000 |
| 61 | 2506.502 | CASTING ASSEMBLY. NEENAH R-1642 | EACH | 4.0 | \$650.00 | \$2,600 |
| 62 | 2506.502 | CASTING ASSEMBLY, NEENAH R-3067-V | EACH | 41.0 | \$700.00 | \$28,700 |
| 63 | 2511.509 | RIPRAP CLASS III | TON | 25.0 | $\$ 75.00$ | \$1,875 |
| 64 | 2573.502 | STORM DRAIN INLET PROTECTION | EACH | 44.0 | \$150.00 | \$6,600 |
| Storm Sewer Subtotal |  |  |  |  |  | \$467,705 |


| Sanitary Sewer |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 65 | 2104.502 | REMOVE SANITARY MANHOLE | EACH | 13.0 | \$375.00 | \$4,875 |
| 66 | 2451.609 | CRUSHED ROCK (PIPE FOUNDATION) MNDOT 3149.2 H | TON | 210.6 | \$25.00 | \$5,265 |
| 67 | 2503.601 | SANITARY SEWER BYPASS PUMPING | LUMP SUM | 1.0 | \$5,000.00 | \$5,000 |
| 68 | 2503.602 | 8" X 4" PVC WYE, SDR 26 | EACH | 42.0 | \$250.00 | \$10,500 |
| 69 | 2503.602 | 10" X 4" PVC WYE, SDR 26 | EACH | 13.0 | \$250.00 | \$3,250 |
| 70 | 2503.602 | CONNECT TO EXISTING SANITARY SEWER | EACH | 1.0 | \$750.00 | \$750 |
| 71 | 2503.603 | 4" PVC SDR 26 SANITARY SEWER SERVICE PIPE | LIN FT | 1,680.0 | \$25.00 | \$42,000 |
| 72 | 2503.603 | 8" PVC PIPE SEWER | LIN FT | 2,380.0 | \$44.00 | \$104,720 |
| 73 | 2503.603 | 10" PVC PIPE SEWER | LIN FT | 710.0 | \$50.00 | \$35,500 |
| 74 | 2503.603 | CONSTRUCT OUTSIDE DROP | LIN FT | 5.0 | \$275.00 | \$1,375 |
| 75 | 2503.603 | VIDEO INSPECTION MAINLINE (POST INSTALLATION | LIN FT | 3,090.0 | \$1.30 | \$4,017 |
| 76 | 2503.603 | VIDEO INSPECTION SEWER SERVICES (SANITARY) | LIN FT | 1,680.0 | \$1.30 | \$2,184 |
| 77 | 2506.602 | EXTERNAL MANHOLE SEAL (SANITARY) | EACH | 13.0 | \$190.00 | \$2,470 |
| 78 | 2506.502 | CASTING ASSEMBLY, NEENAH R-1642 W/ CONCEALED PICKHOLES (ADJUSTMENT RINGS, FRAME AND LID) | EACH | 13.0 | \$650.00 | \$8,450 |
| 79 | 2506.502 | ADJUST FRAME \& RING CASTING | EACH | 13.0 | \$275.00 | \$3,575 |
| 80 | 2506.603 | CONSTRUCT SANITARY MANHOLE DESIGN 4007 | LIN FT | 127.0 | \$225.00 | \$28,575 |
| Sanitary Sewer Subtotal |  |  |  |  |  | \$262,506 |



| BID ITEM <br> NUMBER | MNDOT <br> SPEC <br> REF. | ITEM | UNIT | ESTIMATED <br> QUANTITY | ESTIMATED <br> PRICE |
| ---: | :---: | ---: | ---: | ---: | ---: |


| Street Improvements | \$3,085,040 | 65.0\% |
| :---: | :---: | :---: |
| Storm Improvements | \$617,380 | 13.0\% |
| Sanitary Sewer Improvements | \$346,510 | 7.3\% |
| Water System Improvements | \$700,040 | 14.7\% |
| Total | \$4,749,000 | 100.0\% |
| Estimated Street Assessments: | \$ 768,619 | 16.2\% |
| :Estimated Sanitary Sewer Assessments: | \$57,304 | 1.2\% |
| Estimated Water Service Assessments: | \$127,149 | 2.7\% |
| Storm Water Utility Fund: | \$617,380 | 13.0\% |
| Sanitary Sewer Utility Fund: | \$289,206 | 6.1\% |
| Water Utility Fund: | \$572,891 | 12.1\% |
| City Wide General Debt Service: | \$2,316,451 | 48.8\% |
|  | \$4,749,000 | 100.0\% |
| Assessments: | \$953,072 | 20.1\% |
| City Wide Contribution: | \$3,795,928 | 79.9\% |
|  | \$4,749,000 | 100.0\% |

## Appendix B

Golf Course Stormwater Study

## TO:

Chris Cavett, PE
FROM:

DATE:
RE:

Preliminary Stormwater Management Study for Circle Drive Area Improvements
SEH No. 15470614.00

## BACKGROUND

SEH is currently working with the City of Montgomery (City) on feasibility study for a street and utility improvement project for the Circle Drive Area. Much of the stormwater runoff from the project area flows through the Montgomery National Golf Club where there are known stormwater issues including frequent flooding of the fairways of holes 2,4 , and 8 . In addition to the flooding on the golf course, drainage issues on North Circle Drive have also been observed following large rainfall events. The photo below was provided by a resident after a June 2019 rainfall event. The photo shows flooding at the west end of North Circle Drive, and the open area between the houses at 97 and 99 North Circle Drive acting as an overflow swale for the street flooding.


Photo 1. North Circle Drive flooding following June 2019 rainfall event.
Concurrent with the street and utility improvement project work, SEH has conducted a preliminary stormwater management study of the project area to better understand the existing drainage patterns, identify stormwater issues, and evaluate several potential options for reducing flooding on North Circle Drive and within the golf course. Figure 1 is attached to show the general project area and locations of known flooding issues. This memorandum has been prepared to summarize this work.

## FEL INVESTIGATION \& DATA COLECTION

On April 21, 2020, SEH conducted a field investigation of the North Circle Drive project area including the Montgomery National Golf Club. During this field investigation, observations were made regarding drainage patterns and watershed boundaries, information was collected regarding ongoing flooding issues, and opportunities for increasing stormwater storage were identified. Photos from the site visit which were taken for the purposes of this preliminary stormwater management study are included as an attachment to this report.

During the field investigation, it was observed that significant sediment accumulation has occurred in the low area immediately north of North Circle Drive. In particular, the area immediately downstream of the existing storm sewer outfall (between 97 and 99 N . Circle Drive) was approximately 1.5 ft to 2 ft higher than the invert of the storm sewer pipe. This is likely restricting the drainage capacity of the storm sewer pipe and may be leading to the street flooding on North Circle Drive. The low area immediately north of North Circle Drive provides additional storage to the stormwater pond on hole 6, and the sediment accumulating within this low area is reducing the stormwater storage of the basin.

Survey data of critical stormwater features was collected by SEH for use in this study. This data included storm sewer and culvert data as well as topographic data around existing ponds and low areas. To supplement the limited survey data, LiDAR data of the project area and contributing watersheds was obtained from the MnDNR through the MnTOPO application. Soil information was gathered using the USGS web soil survey online database. Rainfall data was collected from NOAA's Atlas 14 precipitation frequency data server. All of this information was used to develop the hydrologic model described in the following section.

## HYDROLOGIC ANALYSIS

## Existing Conditions

Prior to analyzing any proposed options which are intended to minimize flooding in the Circle Drive area and within the golf course, a HydroCAD model of the existing conditions was first developed to use as a baseline. Primary ponding areas were identified within the study area and watersheds contributing runoff to those ponding areas were delineated using the LiDAR data collected from the MnDNR. These existing primary ponding areas and the delineated watersheds are shown on attached Figure 2. As shown on Figure 2, the runoff from the Circle Drive neighborhood flows north through the golf course into a large wetland north of the golf course. That wetland flows through culverts crossing $4^{\text {th }}$ Street NW, the railroad, and MN-21 before converging with another stream and flowing north.

To develop the HydroCAD model, the ponding areas and overland flow routes were defined using a combination of survey data and LiDAR data. The pipes connecting the ponds were modeled using survey data collected by SEH. The rainfall event associated with the flooding shown on Photo 1 was simulated to confirm the modeling results were reasonable. Based on available rainfall data, it is estimated that approximately 2 inches of rain fell over a 4-6 hour period on June 23-24, 2019. When this rainfall event was simulated in the HydroCAD model, a high water level of 1047.4 resulted. This correlates to a street flooding depth of approximately 0.5 ft , which agrees with the apparent depth of water in Photo 1. The HydroCAD model results also indicated that the low areas crossing the fairways of holes 2,4 and 8 were also inundated during this event.

In addition to the June 2019 rainfall event, the 2-, 10-, and 100-year rainfall events were also simulated. Appendix $A$ is attached to provide a summary of the high water levels associated with these events.

## Proposed Scenarios

The primary goals of the proposed scenarios are to minimize the flood risk for North Circle Drive and through holes 2, 4 and 8 of the golf course. The following proposed scenarios were evaluated using the HydroCAD model, and the proposed ponding areas are shown on Figure 3:

1. Expand Pond A (in drainage area 3) immediately north of Circle Drive. The pond expansion was modeled assuming that the low area immediately south and southwest of the existing pond could be excavated to
create a larger wet pond with additional storage. The outlet leaving the pond was also assumed to be increased to better convey stormwater downstream.
2. Expand Pond $B$ (in drainage area 5) which is downstream in golf course. For Pond $B$, we can expand the wet pond to the east in the area that is currently mowed to increase the available storage volume. Because of the challenges associated with introducing a new pipe outlet from this pond to the wetland, or increasing the size of the existing pipe outlet, the analysis was based on the existing outlet configuration.
3. Combine scenarios 1 and 2.
4. Add new Ponds $C$ and $D$ (in drainage area 8) as shown on concept drawings provided by the golf course architect.
5. Combine scenarios 3 and 4.

With all of the proposed scenarios described above, it was assumed that the storm sewer system which drains
 pipe between North Circle Drive is an 18" pipe with an essentially flat grade. To convey the 10-year runoff for the contributing area, this pipe should be increased to a 30 " or 36 " pipe and a positive grade should be introduced to minimize sediment deposition within the pipe. This improvement alone is expected to significantly reduce the flooding potential within North Circle Drive, and removal of the sediment accumulated at the outlet of the pipe will further improve the drainage.

## WEILAND CONSIDERATIONS

The proposed storm water management improvements may require modification to wetlands within the golf course, or at a minimum work near wetlands to provide additional storm water storage. Work within or near wetlands requires additional evaluation, and likely permitting, as part of the proposed work. For this reason, a wetland delineation will be required as part of detailed design of the proposed improvements. An initial investigation will complete a Level 2 wetland delineation, which will identify the legal boundary of wetland habitat. A Wetland Delineation Report will also be prepared, and submitted to Le Sueur County and the U.S. Army Corps of Engineers for review and approval. The wetland delineation report will also review the history of the wetlands, and request information regarding the jurisdiction of the wetlands. To ensure that enough of the area is covered to meet the project needs, the wetland delineation will include the initial two wetlands on the course, and the drainage way to the north. The boundaries will be mapped in the field using GPS, and included in project plans.

It is assumed that wetland impacts will occur as part of the proposed pond expansions, which will require permitting. Wetland impacts can be a result of filling, excavation, or alteration of hydrology. It is presumed that the project will have a net gain in hydrology, and potentially more wetland than is present now. If this is an accurate assumption, no mitigation would be needed, although the project design may need to be modified to ensure this. The wetland specialist will work with the design team to identify impacts and achieve a project that can be permitted. To the extent possible, work will be completed within non-wetland areas. Once the design has been completed, a wetland permit application will be submitted, seeking permission to complete the proposed work. This process may take several months, depending on the extent and type of wetland impacts.

## RESULTS

The modeling results are included as Appendix A to this memorandum.
Because of the increased pipe size for the storm sewer leaving Circle Drive, all scenarios show a significant reduction in the HWLs of the low point of Circle Drive. It is recommended that when this storm sewer is replaced with a larger pipe, the low area at the discharge end of the pipe be cleared out to remove the existing accumulated sediment. Sump structures are recommended within the storm sewer system to capture coarse sediment upstream and minimize the sediment that is discharged into the existing low area between the storm sewer and the golf course pond.

Since increasing the pipe size of the storm sewer results in greater flows flowing from $N$. Circle Drive into the golf course, it is recommended that Pond A (immediately north of North Circle Drive) be expanded too. Expanding this pond to provide additional stormwater storage is expected to offset the increased flows into the golf course from the City's drainage system, and result in a slight decrease in the peak water elevations within Pond A. This decrease in peak water elevations is also attributed to the larger pond outlet modeled. This is shown in the results for Scenarios 1, 3, and 5 for all rainfall events evaluated, but the greatest benefits are expected for the 2year and smaller events.

Increasing the storage in Pond $B$ (Scenarios 2, 3, and 5) has limited benefits unless the outlet of this pond is reconstructed to increase the capacity. As this time, it is assumed that the outlet of this pond will not be reconstructed due to the two primary factors: (1) if a new outlet is constructed to connect this pond directly to the ditch within the wetland north of the golf course, it would require an easement to be obtained across the private property, and (2) if the existing outlet to the downstream pond is replaced, the costs will be significant given the depth and length of pipe needed to make this connection.

Introducing new ponds C and D provides essentially no benefit to the pond high water levels as shown in the attached results for Scenario 4.

In general, the pond expansions analyzed provide minimal reductions in high water levels for the flood-prone areas within the golf course.

EWB/REP
Attachments
c: Doug Scott (SEH)
x:IkolmImontcl15470615-final-dsgn|50-final-dsgn|50-hydrolmemolworking docslcircle drive stormwater tech memo_20may2020.docx





Photo1 Low area between 97 and 99 N. Circle Drive. This area serves as an overflow for flooding within the street.


Photo 2 Downstream end of storm sewer draining N. Circle Drive. Ground surrounding storm sewer pipe is approximately 1.5' to 2' higher than pipe invert, causing a submerged condition.


Photo3 Existing pond immediately north of $N$. Circle Drive. In the foreground, there is additional low area which may be expanded to increase stormwater storage.


Photo4 Low area north of N. Circle Drive which may be expanded to increase stormwater storage.

Appendix A

| 2-yr Storm Event |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Modeled Pond ID | Existing HWL | Scenario \#1 HWL (Expand Pond A) |  | Scenario \#2 HWL (Expand Pond B) |  | Scenario \#3 HWL (Expand Ponds A \& B) |  | Scenario \#4 HWL (Introduce Ponds C \& D) |  | Scenario \#5 HWL <br> (Scenario $3+4$ ) |  |
|  |  | Elevation | Difference | Elevation | Difference | Elevation | Difference | Elevation | Difference | Elevation | Difference |
| Circle Dr. Low Pt. | 1047.44 | 1045.28 | -2.16 | 1045.28 | -2.16 | 1045.28 | -2.16 | 1045.28 | -2.16 | 1045.28 | -2.16 |
| Pond A | 1044.28 | 1043.90 | -0.38 | 1044.29 | 0.01 | 1043.90 | -0.38 | 1044.29 | 0.01 | 1043.90 | -0.38 |
| Pond B | 1042.29 | 1042.28 | -0.01 | 1042.24 | -0.05 | 1042.23 | -0.06 | 1042.29 | 0.00 | 1042.23 | -0.06 |
| Pond in Drainage Area 7 | 1041.83 | 1041.83 | 0.00 | 1041.83 | 0.00 | 1041.83 | 0.00 | 1041.83 | 0.00 | 1041.83 | 0.00 |
| Wetland in Drainage Area 8 | 1040.23 | 1040.20 | -0.03 | 1040.12 | -0.11 | 1040.12 | -0.11 | 1040.12 | -0.11 | 1040.08 | -0.15 |
| Ponds C \& D |  |  |  |  |  |  |  | 1040.96 |  | 1040.35 |  |


| 10-yr Storm Event |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Modeled Pond ID | $\begin{gathered} \text { Existing } \\ \text { HWL } \end{gathered}$ | Scenario \#1 HWL (Expand Pond A) |  | Scenario \#2 HWL(Expand Pond B) |  | Scenario \#3 HWL(Expand Ponds A \& B) |  | Scenario \#4 HWL(Introduce Ponds C \& D) |  | Scenario \#5 HWL(Scenario 3 + 4) |  |
|  |  | Elevation | Difference | Elevation | Difference | Elevation | Difference | Elevation | Difference | Elevation | Difference |
| Circle Dr. Low Pt. | 1047.81 | 1046.36 | -1.45 | 1046.36 | -1.45 | 1046.36 | -1.45 | 1046.36 | -1.45 | 1046.36 | -1.45 |
| Pond A | 1044.42 | 1044.35 | -0.07 | 1044.44 | 0.02 | 1044.35 | -0.07 | 1044.44 | 0.02 | 1044.35 | -0.07 |
| Pond B | 1042.55 | 1042.48 | -0.07 | 1042.45 | -0.10 | 1042.37 | -0.18 | 1042.55 | 0.00 | 1042.37 | -0.18 |
| Pond in Drainage Area 7 | 1042.07 | 1042.07 | 0.00 | 1042.07 | 0.00 | 1042.07 | 0.00 | 1042.07 | 0.00 | 1042.07 | 0.00 |
| Wetland in Drainage Area 8 | 1041.11 | 1041.09 | -0.02 | 1041.02 | -0.09 | 1041.00 | -0.11 | 1041.05 | -0.06 | 1040.93 | -0.18 |
| Ponds C \& D |  |  |  |  |  |  |  | 1041.45 |  | 1041.22 |  |


| 100-yr Storm Event |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Modeled Pond ID | Existing <br> HWL | Scenario \#1 HWL (Expand Pond A) |  | Scenario \#2 HWL(Expand Pond B) |  | Scenario \#3 HWL (Expand Ponds A \& B) |  | Scenario \#4 HWL(Introduce Ponds C \& D) |  | Scenario \#5 HWL(Scenario 3 + 4) |  |
|  |  | Elevation | Difference | Elevation | Difference | Elevation | Difference | Elevation | Difference | Elevation | Difference |
| Circle Dr. Low Pt. | 1048.27 | 1047.70 | -0.57 | 1047.70 | -0.57 | 1047.70 | -0.57 | 1047.70 | -0.57 | 1047.70 | -0.57 |
| Pond A | 1044.62 | 1044.59 | -0.03 | 1044.62 | 0.00 | 1044.59 | -0.03 | 1044.62 | 0.00 | 1044.59 | -0.03 |
| Pond B | 1042.85 | 1042.85 | 0.00 | 1042.84 | -0.01 | 1042.81 | -0.04 | 1042.86 | 0.01 | 1042.81 | -0.04 |
| Pond in Drainage Area 7 | 1042.65 | 1042.64 | -0.01 | 1042.59 | -0.06 | 1042.58 | -0.07 | 1042.59 | -0.06 | 1042.52 | -0.13 |
| Wetland in Drainage Area 8 | 1042.65 | 1042.64 | -0.01 | 1042.59 | -0.06 | 1042.58 | -0.07 | 1042.59 | -0.06 | 1042.52 | -0.13 |
| Ponds C \& D |  |  |  |  |  |  |  | 1042.59 |  | 1042.52 |  |

## ** Pond Location Reference Key **

A = Golf Course Pond immediately north of the N. Circle Dr. Cul-de-sac
B = Golf Course Pond along Hole 4
$C \& D=$ Proposed Ponds that located along Holes 2 and 8

## Appendix C

Circle Drive Neighborhood Water Main Break Location Map



## Appendix D

Preliminary Assessments
D-1 - Assessment Policy Map
D-2 - Proposed Assessment Rates
D-3 - Parcel Maps
D-4 - Preliminary Assessment Roll


AREA OF STREET CONSTRUCTION


|  | C' X RATE | D' X RATE | E'XRATE |
| :---: | :---: | :---: | :---: |
|  | COMMERCIAL, INDUSTRIAL, OR MULTI-FAMILY | COMMERCIAL, INDUSTRIAL, OR MULTI-FAMILY | COMMERCIAL, INDUSTRIAL, OR MULTI-FAMILY |

RESIDENTIAL BASE RATE (UNIT) 75' (AVERAGE RESIDENTIAL LOT WIDTH

RESIDENTIAL BASE RATE (UNIT) 75' (AVERAGE RESIDENTIAL LOT WIDTH
= FRONT FOOT RATE (COMMERCIAL/MULTI-FAMILY RATE)

X 1.2 = FRONT FOOT RATE (INDUSTRIAL RATE)

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COMMERCIAL/MULTI-FAMILY RATE = INDUSTRIAL RATE =

COMMERCIAL MULTI-FAMILY

# PROPOSED ASSESSMENT RATES <br> 2021 STREET AND UTILITY IMPROVEMENT PROJECT <br> MONTGOMERY, MINNESOTA <br> SEH NO. MONTC 154706 

JUNE 15, 2020

| Item | Estimated <br> Assessment Rate |
| :--- | :--- |
| Residential Full Street Reconstruction | $\$ 7,027.80$ per Unit |
| Industrial Full Street Reconstruction | $\$ 112.44$ per Front Foot |
| Residential Mill and Overlay | $\$ 1,621.80$ per Unit |
| Multi-Family or Commercial Mill and Overlay | $\$ 21.62$ per Front Foot |
| Industrial Mill and Overlay | $\$ 25.95$ per Front Foot |
| Residential Water Service | $\$ 1,297.44$ per Unit |
| Residential Sanitary Sewer Service | $\$ 1,082.20$ per Unit |




|  | Momemener | Owner rame 2 |  |  | ${ }_{\text {MoNicouner }}^{\text {cily }}$ |  | Legal Sect－03 Twp－111 Range－023 9．63 AC BEG AT CENTER OF SEC，TH W ON CL 837 FT TO NE CENTER OF SEC，TH W ON CL 837 FT TO NE COR OF LOT 5 ，BLOCK 1 SUNSET VIEW ADDN TH N33 FT，E 100 FT，N 150 FT，E 94 FT 3 IN NE＇LY TO PT 94 FT 3 IN E OF LAST GIVEN PT \＆ 207 FT N OF C．L．TH N 489.5 FT，E TO E LINE OF NW $1 / 4$, TH S 696.5 FT TO BEG |  | Residential／Domestic Water Service Assess． ＠$\$ 1,297.44$ Per Unit |  |  | Residential Reconstructed Street Unit | $\begin{array}{\|c\|} \text { Residential } \\ \text { Reconstructed } \\ \text { Street Assess. @ } \\ \$ 7,027.80 \text { Per Unit } \\ \hline 0 \end{array}$ | $\begin{gathered} \text { Industrial } \\ \text { Reconstructed } \\ \text { Street Unit (FF) } \end{gathered}$ |  | Residential Mill \＆ Overlay Street Unit | $\begin{gathered} \text { Residential Mill \& } \\ \text { Overlay Street } \\ \text { Assess. @ \$1621.80 } \\ \text { Per Unit } \\ \hline \$ 0.00 \end{gathered}$ |  |  | $\begin{gathered} \text { Commercial / Multi- } \\ \text { Family (R-3) Mill \& } \\ \text { Overlay Street Unit } \\ \text { (FF) } \end{gathered}$ |  | Toal Assessment |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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| 228010050 | IUss |  | Circe orn | racle orn | TGOMEX | MN 50068 | WESTWOOD 2ND ADDN Block－001 LOT 5 LESS TRIANGULAR PORTIONS IN SOUTH＇LY COR IN NW COR \＆TRIANGULAR PORTION IN SE COR OF LOT 4 |  | 51.27 .44 |  | 50.0 |  | 57，027．00 |  |  |  | soov |  | s000 |  | s000 | 88，32324 |
| 201．055 | marvin w wonora |  | ${ }_{\text {sob Cracle br }}$ | Triangle parcel W of 806 Circle Dr W（PID <br> 22．800．0290） | Monroomer | MN 5009 | WESTWOOD 2ND ADDN TRIANGULAR <br> PORTION OF LOT 5 LYING S OF THE W＇LY EXTENSION OF THE N＇LY LINE OF LOT 5 ，BLK EX ENSION OF THE |  |  |  | s000 |  |  |  | s000 |  | s000 |  | s．00 |  | 5000 |  |
| ${ }^{22881.0080}$ |  |  |  | 100 CIRCLE DR N （North Park \＆Well \＃3） | Montooner | MN ${ }_{\text {M }}^{\text {S0089 }}$ | WESTWOOD 2ND ADDN Lot－006 Block－001 Sect－03 Twp－111 Range－023 7．30 AC 6.96 AC IN N $1 / 2$ OF NE $1 / 4$ OF SW $1 / 4$（NORTH PARK \＆ |  |  |  |  |  |  |  |  |  |  |  | S5000 |  | ${ }_{\text {Somo }}^{\text {som }}$ | S8．3．352． 50. |
| 999070 | arro of movicon |  | 201 AStave Sm | 749 ROGERS DR （New Water Tower） | montoomer | MN 5008 |  |  |  |  |  |  |  |  |  |  | 5000 |  | 5000 |  | s000 |  |
|  |  | torals |  |  |  |  |  | ${ }^{\circ}$ | s27， $1,4.12$ | ${ }^{53}$ | S57，303600 | ${ }^{101}$ | Svoc2a3，${ }^{\text {a }}$ | ${ }^{625}$ | 8，027．50 | ${ }^{3.5}$ | s5，678．30 | ． 5 | S4，0，760， | 5 |  | ssa，3，7202 |
|  | Commexitiper eaean |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | locontim． |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



## Buildinga Beter World for All of Us

Sustainable buildings, sound infrastructure, safe transportation systems, clean water, renewable energy and a balanced environment. Building a Better World for All of Us communicates a company-wide commitment to act in the best interests of our clients and the world around us.

We're confident in our ability to balance these requirements.

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