

FEHR GRAHAM
ENGINEERING & ENVIRONMENTAL

February 19, 2020

Mr. Vic Kane
City of Oelwein
20 2nd Ave. SW
Oelwein, IA 50662

Re: Proposal for Northeast Sanitary Sewer Collection Report, City of Oelwein

Dear Mr. Kane:

Thank you for the opportunity to provide a proposal for investigation and report preparation relating to portions of the gravity sanitary sewer collection system in the northeast portion of the City of Oelwein.

The focus of the report will be the 4th and 5th Avenue NE corridor between 3rd Street NE and 6th Street NE as there are ongoing sewer back-up issues in homes along this section. At least 8 homes are known to be affected following heavier rainfall events and high ground water conditions.

A secondary focus will be one block areas of 1st and 2nd Avenue NE between 2nd Street NE and 3rd Street NE. Both blocks have had homes with sewer back-up issues, although not as many or severe as the 4th and 5th Avenue NE area.

The gravity main between these two focus areas will be investigated as upgrade of the 4th/5th Avenue NE area may affect the downstream 1st and 2nd Avenue NE areas. The main size in this area will be verified as existing mapping may not be fully accurate for sizing.

A map with areas highlighted is attached to this proposal.

There are several factors expected to figure into the cause of the problem, specifically:

- Existing gravity main size - the streets with backup issues may have 6" diameter mains (verification required). As reference, the current minimum public sanitary sewer main size that can be constructed, per IDNR requirement, is 8" diameter. There may be larger 8" and 10" diameter mains upstream of 4th and 5th Avenue NE which can overwhelm the smaller downstream main, causing water levels to rise and backups to occur.
- Existing gravity main slope and condition - these mains may not have a uniform slope and may have low points throughout, further reducing capacity.
- Inflow and infiltration (I and I) - the large flow seen during and after rainfall events is caused by a combination of infiltration through the joints of the clay sanitary sewer main and service lines, hard connections to downspouts, footing drains, and sump pump connections.

Solutions are expected to include strategies for reducing flow (I and I) in the upstream sections of the gravity collection system, reconstruction and upsizing of existing undersized and poor condition mains to increase flow capacity, and potentially the addition of a separate collector line to bypass the affected residential area.

Smoke testing and video inspection of the gravity mains are recommended investigative methods to determine locations of direct storm water inflow to the sanitary sewer system as well as the interior condition of the mains. The City of Oelwein can provide both of these services, with coordination from Fehr Graham.

Our recommendations will be provided in report format and will include a narrative of existing conditions, deficiencies, and recommended improvements. An Opinion of Probable Cost for the recommended improvements will be included. Funding for recommended improvements is currently unknown, but application for a Community Development Block Grant (CDBG) is expected. The CDBG application process requires an IDNR approved Facility Plan. The report outlined in this proposal will meet the requirements of the Facility Plan and can be used as such.

The following is our outline for services to be provided:

Field Services

The following field services will be provided to gather information necessary to make recommendations for improvements. The location of this work will be the specific areas listed above along with adjacent upstream contributing mains as highlighted on the attached map.

- Survey existing sanitary sewer manhole locations, open and provide measure down depths to pipe inverts for use in determining slope (and capacity) of gravity mains. 25 manholes are planned to be measured with locations indicated on the attached map.
- Verify size of mains by measuring from outside of manhole structure. Work will be coordinated with City of Oelwein staff for assistance if physical access to a manhole is required.
- Provide condition report of sanitary sewer manholes opened.
- Provide recommendation of mains to be smoke tested (by City of Oelwein).
- Provide recommendation on mains to be video inspected (by City of Oelwein).

Report Preparation

A report meeting IDNR requirements for a Facility Plan will be prepared and will include the following:

- Summary of existing conditions including main size, slope, and capacity.
- Review of smoke testing results (provided by City of Oelwein).
- Review of video inspection (provided by City of Oelwein).
- Discussion of strategies for reduction of Inflow and Infiltration.
- Recommended improvements to the gravity sanitary sewer collection system.
- Review of other public infrastructure that may be affected by recommended improvements, such as water main, storm sewer, and street surfacing.
- Opinion of Probable Cost for the proposed improvements.

Information Provided by Others:

We wish to review any improvement plans that may exist for previous projects in the report area.

Exclusions:

The following items are excluded from the initial scope of work. Any or all can be included upon request with written authorization:

- Design and permitting of proposed improvements.
- Exploratory Investigation work to pinpoint inflow or infiltration sources.
- Smoke testing of gravity collection system.
- Video inspection of gravity mains and service lines.
- Dye testing.
- Flow meters, provide and maintain.
- Grant applications.
- CWSRF IUP Application preparation.
- Environmental review.

Schedule:

Field survey of manholes is scheduled to start in the spring of 2020, after snow melt. Smoke testing (by City) is most effective with dry ground conditions, typically July-August. Video inspection of mains (by City) will determine the exact schedule for report completion. A final report is expected by late summer of 2020 with updates provided monthly. A good idea of recommendations will be available following the field survey in the spring.

Compensation:

Payment for the above described work shall be as follows:

- Field Services: Lump sum of \$4,200
- Report Preparation: Lump sum of \$7,700

Fehr Graham's blower for smoke testing would be available for use by the City at minimal usage fee, excluded from the above amount. Cost for smoke cartridges is excluded from the above amount and can be purchased from Fehr Graham at cost or direct from a supplier.

Experience

Fehr Graham has provided sanitary sewer investigative services for many communities in northeast Iowa. A recent project in West Union which included a combination of spot repairs to mains and service lines along with lining of mains in a relatively small area has led to an overall sanitary sewer flow decrease of 30%. The scope of the project was determined from smoke testing and televising of gravity mains.

Summary:

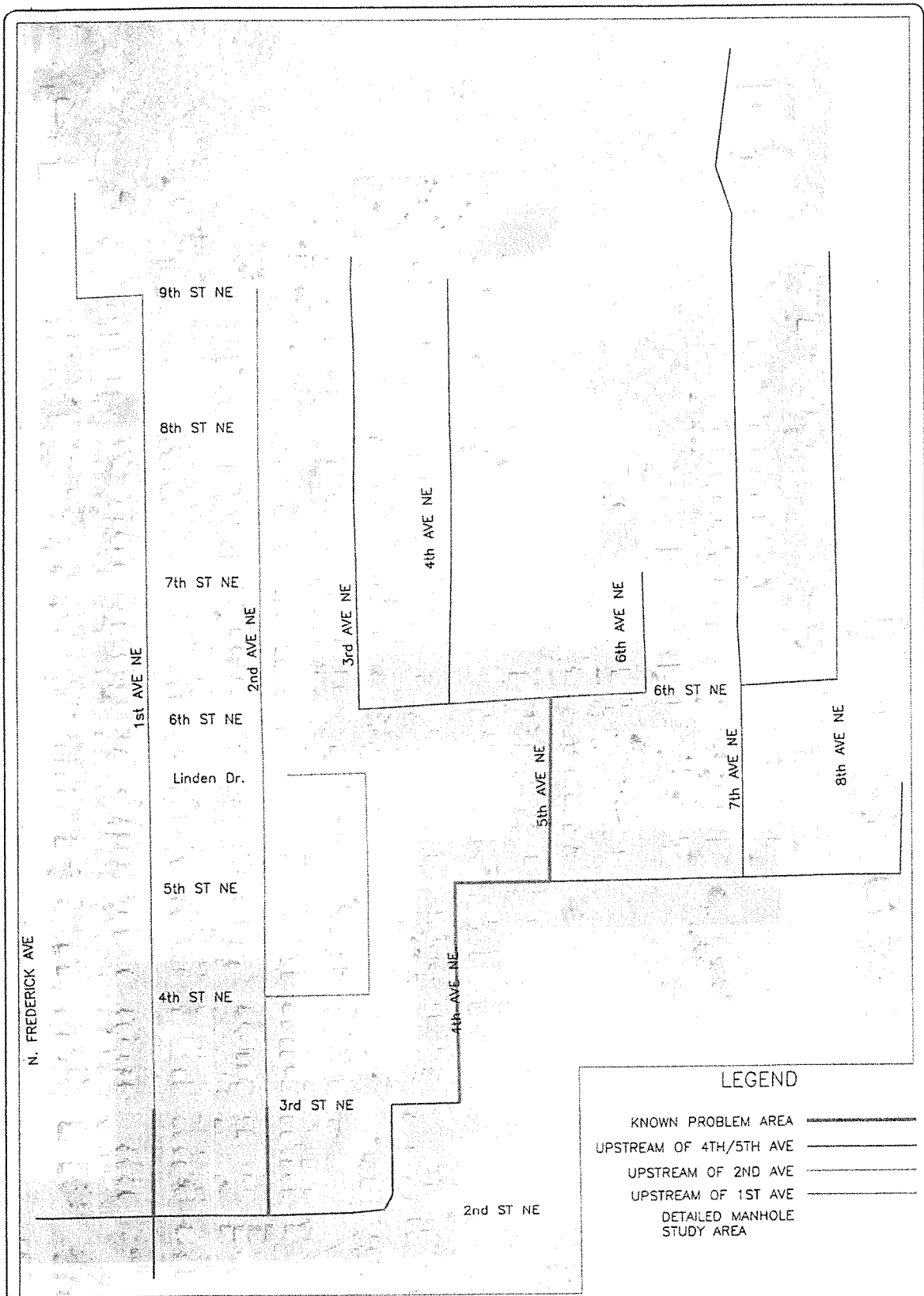
We look forward to putting our knowledge of sanitary sewer collection systems and problem-solving ability to use in improving the infrastructure and, more importantly, the quality of life for the residents of Oelwein.

Please contact us if you have any questions, comments, or need further clarification of any items in this proposal.

Sincerely,

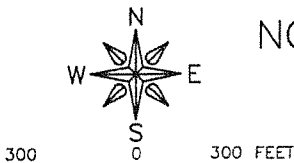
Fehr Graham

Jon Biederman, PE, LSI
Branch Manager



NORTHEAST SANITARY SEWER REPORT AREA CITY OF OELWEIN

February 18, 2020



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