Public Works and Engineering
Committee Report

To: Mayor and Board of Trustees
From: Adam Boeche
For Village Board Meeting of: August 14, 2017
Subject: Stormwater Study

Financial Impact:
This is an unfunded project in response to the recent July 12, 2017 storm event to address localized flooding in a specific neighborhood.
08/14/17 00000000 · Default $34,000.00
Stormwater Study

Attachments:
1. Mundelein Drainage Study Agreement (PDF)

Background
In response to the July flood incident, Public Works and Engineering staff investigated specific sub-tributary areas throughout the Village to determine the worst impacted areas. One specific area was heavily impacted. In order to determine the most feasible solution to the flooding experienced in this area, an extensive hydrologic and hydraulic study is necessary. The scope of work proposed by HR Green includes an analysis that will provide several levels of solutions for the area and the impact that any proposed solution will have to the Seavey Drainage Channel downstream.

HR Green is the most qualified firm to complete this work due to their previous experience in modeling such storm water projects. They have successfully performed numerous projects for the Village, including the design and construction engineering on Phase 1 of the Seavey Drainage Channel Modification project.

Recommendation

Motion to authorize the Village Engineer to sign a professional services agreement with HR Green, Inc., for a
stormwater study and authorize a purchase order in an amount not-to-exceed $34,000.
Simple Scope Short Form Agreement

Project: US45 and Division Street Drainage Study  Project No: 171109
Phase No(s):  
Date: 8/09/2017

Client: Village of Mundelein
Contact: Mr. Bill Emmerich
Title: Village Engineer
Address: 440 East Crystal Street
City/State/Zip: Mundelein, IL  60060
Phone/Fax No. 847.949.3220

The CLIENT agrees to employ HR Green, Inc. (COMPANY) to perform the following services:

See attached Exhibit A

The CLIENT agrees to pay COMPANY for the above scope of services:

Time & Material, Not to Exceed in the amount of $34,887.00.

- Reimbursable Expenses Included
- □ Subconsultant Services Included

Copy To:
- ✔ Accounting

Revised (10-2015)
TERMS AND CONDITIONS

Services provided by COMPANY under this Agreement will be performed in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing at the same time and in the same or similar locality.

Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the CLIENT or the COMPANY. COMPANY’s services under this Agreement are being performed solely for the CLIENT’s benefit, and no other party or entity shall have any claim against COMPANY because of this Agreement or the performance or non-performance of services hereunder. The CLIENT and COMPANY agree to require a similar provision in all contracts with contractors, subcontractors, subconsultants, vendors and other entities involved in this project to carry out the intent of this provision.

In an effort to resolve any conflicts that arise during the design or construction of the project or following the completion of the project, the CLIENT and COMPANY agree that all disputes between them arising out of or relating to this Agreement shall be submitted to non-binding mediation unless the parties mutually agree otherwise. The CLIENT and COMPANY further agree to include a similar mediation provision in all agreements with independent contractors and consultants retained for the project and to require all independent contractors and consultants also to include a similar mediation provision in all agreements with subcontractors, sub-consultants, suppliers or fabricators so retained, thereby providing for mediation as the primary method for dispute resolution between the parties to those agreements.

If litigation arises for purposes of collecting fees or expenses due under this Agreement, the Court in such litigation shall award reasonable costs and expenses, including attorney fees, to the party justly entitled thereto. In awarding attorney fees, the Court shall not be bound by any Court fee schedule, but shall, in the interest of justice, award the full amount of costs, expenses, and attorney fees paid or incurred in good faith.

All reports, plans, specifications, field data, field notes, laboratory test data, calculations, estimates and other documents including all documents on electronic media prepared by COMPANY as instruments of service shall remain the property of COMPANY.

All project documents including, but not limited to, plans and specifications furnished by COMPANY under this project are intended for use on this project only. Any reuse, without specific written verification or adoption by COMPANY, shall be at the CLIENT’s sole risk, and CLIENT shall defend, indemnify and hold harmless COMPANY from all claims, damages and expenses including attorney’s fees arising out of or resulting therefrom.

Under no circumstances shall delivery of electronic files for use by the CLIENT be deemed a sale by the COMPANY, and the COMPANY makes no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall the COMPANY be liable for indirect or consequential damages as a result of the CLIENT’s use or reuse of the electronic files.

Because electronic file information can be easily altered, corrupted, or modified by other parties, either intentionally or inadvertently, without notice or indication, COMPANY reserves the right to remove itself from of its ownership and/or involvement in the material from each electronic medium not held in its possession. CLIENT shall retain copies of the work performed by COMPANY in electronic form only for information and use by CLIENT for the specific purpose for which COMPANY was engaged. Said material shall not be used by CLIENT or transferred to any other party, for use in other projects, additions to this project, or any other purpose for which the material was not strictly intended by COMPANY without COMPANY’s expressed written permission. Any unauthorized use or reuse or modifications of this material shall be at CLIENT’s sole risk. Furthermore, the CLIENT agrees to defend, indemnify, and hold COMPANY harmless from all claims, injuries, damages, losses, expenses, and attorney’s fees arising out of the modification or reuse of these materials.

The CLIENT agrees that the General Contractor is solely responsible for job site safety, and warrants that this intent shall be made evident in the CLIENT’s Agreement with the General Contractor. The CLIENT also agrees that the CLIENT, COMPANY and COMPANY’s consultants shall be indemnified and shall be made additional insureds on the General Contractor’s and all subcontractor’s general liability policies on a primary and non-contributory basis.

The CLIENT shall make no claim for professional negligence, either directly or in a third party claim, against COMPANY unless the CLIENT has first provided COMPANY with a written certification executed by an independent design professional currently practicing in the same discipline as COMPANY and licensed in the State in which the claim arises.

The CLIENT agrees, to the fullest extent permitted by law, to limit the liability of COMPANY and COMPANY’s officers, directors, partners, employees, shareholders, owners and subconsultants to the CLIENT for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, including attorneys’ fees and costs and expert witness fees and costs, so that the total aggregate liability of COMPANY and its officers, directors.
partners, employees, shareholders, owners and subconsultants to all those named shall not exceed $10,000. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

Invoices for COMPANY’s services shall be submitted, on a monthly basis. Invoices shall be due and payable upon receipt. If any invoice is not paid within 15 days, COMPANY may, without waiving any claim or right against the CLIENT, and without liability whatsoever to the CLIENT suspend or terminate the performance of services. The retainer shall be credited on the final invoice. Accounts unpaid 30 days after the invoice date may be subject to a monthly service charge of 1.5% (or the maximum legal rate) on the unpaid balance. In the event any portion of an account remains unpaid 60 days after the billing, COMPANY may institute collection action and the CLIENT shall pay all costs of collection, including reasonable attorney’s fees.

The COMPANY is not a Municipal Advisor registered with the Security and Exchange Commission (SEC) as defined in the Dodd-Frank Wall Street Reform and Consumer Protection Act. When the CLIENT is a municipal entity as defined by said Act, and the CLIENT requires project financing information for the services performed under this AGREEMENT, the CLIENT will provide the COMPANY with a letter detailing who their independent registered municipal advisor is and that the CLIENT will rely on the advice of such advisor. A sample letter can be provided to the CLIENT upon request.

This agreement is approved and accepted by the CLIENT and COMPANY upon both parties signing and dating the agreement. Services will not begin until COMPANY receives a signed agreement. The effective date of the agreement shall be the last date entered below.

VILLAGE OF MUNDELEIN

HR GREEN, INC.

Accepted by: ___________________________  Approved by: ___________________________
Printed/Typed Name: Adam Boeche  Printed/Typed Name: Ajay Jain, PE, CFM
Title: Public Works and Engineering Director  Title: Vice President, Water Resources
Date: ___________________________  Date: August 9, 2017

Revised (10-2015)
EXHIBIT A – SCOPE OF SERVICES
Division Street and Lake Street Drainage Study

BACKGROUND
Lake County received between about 1” and 6” of rain between the hours of 7:00 am on July 11th to 7:00am on July 12th with an overall average of 3.4” +/- 1.4”. The Village of Mundelein received an equivalent of a 50-year to 75-year storm event. Several locations in the Village experienced flooding as a result but of particular concern is the area around Division street and US 45 (Lake Street). A picture after the storm event taken along Division looking east shows the area and extent of flooding which appears to have extended along Division (between Seymour Avenue the east and Lincoln Street to the west) and along Lake Street (between Hammond Street to the north and Crystal Street to the south).

The Village has requested a proposal from HR Green to provide the following professional engineering services:

1. Review the existing stormwater infrastructure system adjacent to the impacted area and determine the system limitations that resulted in the flooding.

2. Evaluate what feasible options may be available to address the flooding in this area and develop concept level engineering design and construction costs.

3. Prepare a technical memorandum documenting the findings and providing recommendations for next steps.
SCOPE OF SERVICES
We propose the study area to extend beyond the impacted area to develop an understanding of existing system and its limitations. The proposed study area is as shown in EXHIBIT B. We propose a two phase approach to providing the requested scope of services as detailed below:

PHASE 1 – EXISTING CONDITIONS ANALYSIS
The following scope of services will be provided:

1. HR Green will obtain GIS shape files of the existing storm sewer and utility atlas from the Village including available attribute data such as rims, inverts and pipe sizes of existing storm sewer network. It is assumed that a detailed survey of the storm sewer system will not be needed. However, limited field survey (approximately one day of pick up field survey) is included to verify questionable or missing data provided by the Village. If upon review of the data provided by the Village, it appears that the scope of field survey will extend beyond the budgeted one day of pick up survey; this work will be considered extra and will be coordinated with the Village prior to work advanced further.

2. HR Green will request and obtain available roadway plans from the Village along Division Street, Hammond Avenue, Crystal Street, Courtland Street, Lincoln Avenue, Lake Avenue, Seymour Avenue and Archer Avenue within the project limits. HR Green will also reach out to IDOT for available plans along Lake Street.

3. HR Green will complete a field drainage investigation which will include a qualitative site assessment of potential drainage issues that led to the recent flooding. This may include but not be limited to review of the existing infrastructure system, high water marks, potential clogging of the inlets and storm sewer pipes, etc.

4. HR Green will review available watershed wide hydrologic model of the Seavey Drainage channel previously completed by others to review the flows at Lake Street compared to FIS flows. It is anticipated that minimal hydrologic modeling will be needed to obtain flows tributary to Lake Street storm sewer system. However, inlet level sub-watershed delineation will be completed within the proposed study area to determine flows to inlets and storm sewer system.

5. HR Green will prepare a hydraulic model of the existing stormwater infrastructure system based on available data provided by the Village, additional pick up field survey and available roadway plans. The hydraulic model will be developed using the XPSWMM two-dimensional (2D) model that can model both underground storm sewer capacity as well as surface flows as water travels overland when the pipes are surcharged. Lake County 2’ topography will be used for overland flow modeling.

6. Based on the results of the hydraulic model, HR Green will prepare the flood inundation maps (showing the location, extent and depth of flooding) in the study area. These results will be calibrated to the July 2017 storm event to verify that the model represents the field
conditions. Once calibrated, we will prepare the resulting flood inundation maps for the 2-yr, 10-yr, 25-yr, 50-yr and 100-yr flood event.

7. Based on above, HR Green will determine and limitations of the existing system such as inlet capacity issues, undersized storm sewer pipes, lack of overland flows within the project limits and from the low lying areas, and/or if there is flooding resulting from the backwater along Seavey Ditch.

8. A senior water resource professional will provide quality assurance/quality control review of the existing conditions model and analysis.

**PROJECT ADMINISTRATION AND PROGRESS MEETING**
This task will include project administration and attending one (1) progress meeting with the Village Staff to discuss the results of the Phase I study. We have also included one (1) meeting with IDOT for coordination along Lake Street and potential funding participation as Lake Street is IDOT jurisdictional road.

**DELIVERABLES FOR PHASE 1**
The following deliverables will be provided to the Village for Phase 1:

- Two (2) hard copies of the annotated map and electronic pdf files showing location, extent and depth of flood inundation for the 2-yr, 10-yr, 25-yr, 50-yr and 100-yr flood event.

- Color coded capacity limitations of the existing stormwater infrastructure system.

**SCHEDULE FOR PHASE 1**
It is anticipated that Phase I will take approximately 30 days from the date of Notice to Proceed and upon receipt of all available data from the Village.

**BUDGET FOR PHASE I**
*We have allocated Time and Material Not to Exceed Budget of $19,532.00 for the Phase I which includes all labor and reimbursable costs.*

**PHASE 2 – PROPOSED CONDITIONS ANALYSIS**
The following scope of services will be provided:

1. HR Green will prepare up to a maximum of three (3) alternates. The alternates will consist of a combination of the following:

- Storm sewer and inlet capacity improvements.
- Storage options to attenuate peak flows and/or mitigate the impacts on increased conveyance under Lake Street.
- Improvements to Seavey Ditch.
HR Green, in consultation with the Village, will develop the above alternates to provide varying levels of service. For example, an alternate may be prepared to provide 10-year level of service with no ponding in the street and no structure impacts for up to a 100-year storm. Similarly, we will review the incremental extent of improvements required to provide a 50-year level of service to provide no ponding in the street and no structure impacts for up to a 100-year storm.

Once the alternates have been conceptualized, HR Green will prepare a hydraulic model for each of the alternates to determine the resulting flood relief and associated infrastructure improvements required.

2. Based on the results of the hydraulic model, HR Green will prepare the “with improvement” flood inundation maps (showing the location, extent and depth of flooding) in the study area. These maps will be prepared for 2-yr, 10-yr, 25-yr, 50-yr and 100-yr flood event so a side by side comparison can be made for existing and proposed conditions. The proposed improvements will be annotated for each of the alternate showing required storm sewer improvement and storage areas.

3. HR Green will prepare a technical memorandum summarizing the existing and proposed conditions analysis, resulting flood inundation exhibits and associated data, recommendations for next steps and concept level engineer’s opinion of probable construction costs.

PROJECT ADMINISTRATION AND PROGRESS MEETING
This task will include project administration and attending one (1) progress meeting with the Village Staff.

DELIVERABLES FOR PHASE 2
The following deliverables will be provided to the Village for Phase 1:

- Two (2) hard copies and electronic pdf file of the Technical Memorandum.

SCHEDULE FOR PHASE 2
It is anticipated that Phase 2 will take approximately 30 days from the date of authorization by the Village to move to Phase 2 study and after the approval of Phase I study.

BUDGET FOR PHASE 2

We have allocated Time and Material Not to Exceed Budget of $15,354.00 for the Phase 2 which includes all labor and reimbursable costs.

TOTAL BUDGET: We have allocated a total Time and Material Not to Exceed Budget of $34,887.00 for both Phase 1 and Phase 2.
Public Works and Engineering
Committee Report

To: Mayor and Board of Trustees
From: Adam Boeche
For: Village Board Meeting of: August 14, 2017
Subject: Sanitary Sewer Flow Monitoring Study

Financial Impact:
This is a budgeted project within the Water/Sewer Enterprise Fund at $50,000. The total cost of the proposal is $117,270, with the overage covered by the elimination of the peracetic acid disinfection project this fiscal year, which was budgeted at $80,000.

08/14/17 UPTOWN SEWER MISC SVCS · 4552-6499 $117,270.00
Flow Monitoring

Attachments:
1. Mundelein - FM Proposal - Fall (PDF)

Background
In conjunction with the storm flooding on July 12, there were a number of sanitary sewer overflows that occurred throughout the Village. To properly investigate how to approach corrective actions in the sanitary sewer infrastructure, a comprehensive analysis must be completed. This is also a requirement set forth as part of the recent IEPA NPDES permit for the water reclamation facility through the Capacity Management Operation and Maintenance Plan that was submitted last year.

There are a limited number of consulting firms that own the required number of flow meter and rain gauges to complete such a project. RJN Group is one such firm and is highly regarded as the most qualified firm to complete this work due to their previous experience in modeling and flow monitoring throughout the regional area.

Recommendation

Motion to approve a purchase order and award a professional services contract to RJN Group Inc., for a
sanitary sewer flow monitoring study in the not-to-exceed amount of $117,270.00 and authorize the Director of Public Works and Engineering to sign the contract.
August 4, 2017

Adam M. Boeche, P.E., CFM
Director of Public Works and Engineering
Village of Mundelein
440 East Crystal Street
Mundelein, Illinois 60060

SUBJECT: PROPOSAL FOR PROFESSIONAL ENGINEERING SERVICES
2017 FALL FLOW MONITORING

Dear Mr. Boeche:

RJN Group, Inc. (RJN) is pleased to submit this proposal to the Village of Mundelein, Illinois (Village) for sanitary sewer flow monitoring and analysis of the Village's sanitary sewer collection system.

PROJECT UNDERSTANDING

In July, 2017, the Village experienced an intense rainfall event amounting to nearly 5.5 inches of rain in under 10 hours. This significant event caused over 20 sanitary sewer backups and overflows throughout the Village. The Village has also noticed increased flows at the wastewater treatment facility during moderate rain events. Finally, there are potential areas of growth within and surrounding the Village that may increase flows in the collection system. This project will be to collect comprehensive dry- and wet-weather flow data throughout the Village and perform an inflow and infiltration analysis to provide the Village with an understanding of where excess wet-weather flow is entering the system and how this increased flow is effecting the collection system.

Flow meter data will be collected at multiple points throughout the Village's system and be used to collect data during dry-weather and wet-weather flow events. A total of 18 flow meters are recommended to provide comprehensive coverage of the Village to analyze wet weather flows and to perform a Village-wide inflow and infiltration assessment. These 18 locations are shown on the attached map.

Four rain gauges will also be installed throughout the Village to capture rainfall data throughout the duration of the project to correlate with wet weather flow data.
PROJECT APPROACH

As an initial step, RJN will perform site investigations on the selected flow meter and rain gauge locations in order to assess the feasibility of obtaining quality data. Sites are evaluated for safety, meter security, as well as flow hydraulics. Site inspection reports are provided to the Village for approval prior to meter and rain gauge installation.

EQUIPMENT

RJN owns hundreds of meters from many different industry-leading manufacturers. After site investigations, RJN will determine the best technology to be used to measure the flow at the selected locations. Flow parameters collected will include, but are not limited to, crown-mounted ultrasonic depth, submerged peak velocity, and submerged pressure depth for redundancy and use in surcharge conditions.

Each meter will be fitted with a telemetry unit that will allow off-site wireless collection of the data. A specialized sector of RJN, the Data Group, will collect the data on a regular basis using these telemetry units.

The rain gauges to be used will be a Texas Instruments tipping bucket with a Telog RG-32 recorder and telemetry unit. This will total the amount of rainfall in inches every five minutes while in operation.

Meter components may need to be replaced at any time. Since the probes are located in the sewers, they are typically the most likely item needing replacement. The meter also includes batteries and desiccant that need to be replaced on a regular basis. As part of this proposal, RJN will provide and install any of these needed items in order for the meters to remain in service and will, in addition, cover the wireless charges for each site.

METER MAINTENANCE AND CALIBRATION

Flow meters and rain gauges require regular maintenance. This proposal includes routine maintenance and any corrective maintenance that may be needed, and is identified by the data analyst during the weekly review cycle. The corrective maintenance is directed by the data analyst that identifies a maintenance need based on the data from the meter. This could be an immediate need where there is a risk of losing data or it could be a “next visit” need such as batteries starting to run low.
The standard calibration schedule for short-term meters (less than 6-month duration) is once at installation, once within two weeks of installation, and every 4-5 weeks thereafter. The calibration includes manual depth and velocity readings taken by the field staff to confirm that the meter is reading to manufacturer’s operating standards. Calibrations and hydraulic confirmations are essential and are used to finalize and post-process the data in order to ensure that the most accurate data is used for performing inflow and infiltration analysis. As part of this proposal, RJN will take full responsibility for all needed maintenance and calibrations.

DATA HANDLING

RJN utilizes a host software support application program for remote wireless flow meter and rain gauge data collection. On a regular basis, all data recorded and stored in the meter is collected by the host system. The system utilizes a client/server architecture to store all project flow and rainfall data. On a regular basis, flow meter measurements are posted to the web site for viewing by authorized parties.

Web module software allows any networked computer (with the appropriate access rights) access to the data stored using a common web browser (e.g., Microsoft Internet Explorer). The web module enables the users to view the data as well as download it in Microsoft Excel format.

The RJN Data Group reviews the flow monitoring and rainfall data at least once per week. The analysis of the data includes the identification of data gaps and hydraulic anomalies and monitors performance issues. Any equipment service needs will be immediately conveyed to the RJN field service crews. The data is processed and edited in accordance with the field confirmations to produce final data sets for each site. The final data is posted when completed.

WET WEATHER DATA ANALYSIS

Once the final data is collected and processed, the local RJN staff will evaluate the data and provide a professional engineering analysis of the results. Hydrographs, storm-specific scattergraphs, and rainfall hyetographs will be developed and discussed in the report. RJN will perform a rainfall regression analysis in order to develop estimated peaking factors for each meter basin. Recommendations on scheduling and budgeting further studies, including SSES inspections or hydraulic modeling will be included in the report. The report will provide recommendations as they relate to the Village’s CMOM program.
PROPOSED SCOPE OF SERVICES

Our proposed scope of services is as follows:

TASK 1 - FLOW MONITORING

1. Provide the rental of flow meter units with, at a minimum, one velocity, and dual depth sensors and telemetry for the duration of the project. Provide the rental of rain gauges with telemetry for the duration of the project.

2. Investigate targeted sites for flow meter and rain gauge installation. Determine the meter sites that are hydraulically suitable for flow monitoring. Prepare Site Investigation Reports for approval by Village.

3. Prepare flow meters and rain gauges for installation. Install meters at approved locations.

4. During installation, calibrate each flow meter by taking manual depth and velocity measurements and comparing with meter readings. Perform tipping tests on rain gauges.

5. Provide standard traffic control measures (portable signs and cones) at each site in or near a roadway. If additional traffic control is needed it will be requested from the Village.

6. Prepare the host system for handling the flow data and posting the data for viewing and access by Village staff. Review the data at least twice per week during the “settling in” period, once per week thereafter, and report any equipment service needs to the field crews.

7. Take a second round of calibration measurements within two weeks of installation. Utilize the calibrations to adjust the data and prepare final data sets.

8. Provide flow meter maintenance as necessary to keep meters in proper operation for the duration of the monitoring period. Calibrate each meter at least one additional time within the flow monitoring period.

9. Procure and install spare parts and replacement equipment, such as batteries, probes, and desiccants, as needed to keep flow meters and rain gauges working and within operating standards.

10. Perform final calibration measurements at each site (for a minimum of four calibrations) and remove the flow meters and rain gauges.

11. Process the collected raw data. Analyze the processed data for wet- and dry-weather flow patterns. Create hydrographs for each meter and determine wet-weather peaking factors at standard storm recurrence and durations for each basin.
12. Perform an inflow and infiltration analysis, including:
   a. Inflow peaking factors;
   b. Regression analysis for peaking factor prediction;
   c. Scattergraphs, hydrographs, and rainfall hyetographs; and
   d. Capacity analysis including an assessment of downstream control and surcharging at each meter location.

13. Include the following for the report:
   e. Details on each flow meter and rain gauge location;
   f. Summary of the flow and rainfall data collected;
   g. General conclusions from the flow metering;
   h. Inflow and Infiltration conclusions, including evidence of downstream control, surcharging, hydraulic bottlenecks, and levels of I/I;
   i. Conclusions regarding overall system operation and capacity during dry weather and rain events;
   j. Recommendations for the next appropriate steps including recommendations for an investigation and rehabilitation program, hydraulic modeling, or other means for inspecting and identifying infiltration and inflow.

**TASK 2 – REPORTING AND PROJECT MANAGEMENT**

1. Prepare and submit up to three copies of a draft report outlining flow monitoring and I/I analysis results and recommendations.

2. Incorporate Village comments and submit up to three copies of the final report. Provide a pdf of the final report and a flash drive containing all digital documents and processed flow-monitoring data.

3. Provide project management services for the duration of the project.

4. Attend up to two meetings with Village staff.

**ITEMS REQUESTED FROM VILLAGE**

We request the following items from the Village:

1. Access to the manholes for site inspections.
2. Traffic control assistance as needed for high traffic areas.
3. Secure sites for four rain gauges. Lift stations, Village buildings including police and fire stations, and schools often make good sites.
4. Water consumption data as available for any large users (>25,000 gallons per day).

5. GIS Geodatabases for the sanitary sewer system.

**SCHEDULE**

The key schedule parameters for this project are as follows:

- The site investigations will begin within two weeks of a notice to proceed.
- Flow meters will be installed within three weeks of site investigations. The flow-monitoring period will begin when the last meter has been installed successfully and will continue for 12 weeks.
- The draft report will be submitted to the Village within three months of the end of the flow-monitoring period.
- The final report will be submitted within three weeks of receipt of Village comments on the draft report.

**PROPOSED FEE**

This scope of services will be invoiced on a unit price and lump sum basis for a total cost of $117,270. The fee is outlined on the following page.
It is our pleasure to submit this proposal to the Village of Mundelein. Please feel free to contact Zach at (630) 818-6689 if you would like to discuss this proposal in detail. We are looking forward to the opportunity to begin working with the Village on this important project.

Sincerely,

RJN Group, Inc.

Zachary J. Matyja, P.E.
Client Manager

Thomas J. Romza, P.E.
Project Manager