

October 29, 2014

Ms. Tracey A. Balint, PE, Public Utilities Engineer
Department of Public Services
1000 Rochester Hills Dr.
Rochester Hills, MI 48309

RE: MDEQ SAW Grant – Consulting Services
Stormwater Asset Management Plan/Stormwater Management Plan/Wastewater Asset Management Plan

Dear Ms. Balint:

Thank you for the opportunity to assist the City of Rochester Hills with your stormwater and wastewater Asset Management Planning through the SAW Grant program. As requested, we are submitting this proposal to define our services through the duration of your SAW Grant. The scope in this proposal includes all consultant-led activities as defined in the SAW Grant applications submitted by the City on December 2, 2013.

Consultant Team Qualifications

For the purposes of completing this project, Orchard Hiltz & McCliment, Inc. (OHM) is proposing to team with Hubbell, Roth & Clark, Inc. (HRC), hereafter referred to as the “consultant team”. Our companies have a longstanding working relationship and have teamed on numerous stormwater and wastewater projects for municipalities and public agencies across southeast Michigan. Both firms have existing Engineering Services Agreements with the City of Rochester Hills, and a long history working with the City.

OHM has completed a vast array of infrastructure projects throughout the City, including the scoping and submission of the SAW Grant Application, which resulted in the City obtaining up to \$2 million in grant funding towards this project. Similarly, for more than thirty years, HRC has enjoyed a continuous working relationship with the City and has completed numerous projects for both the sanitary and stormwater systems that stemmed from and includes the 1988 Storm Water Master Plan and 1990 Sanitary Sewer Master Plan. HRC also provided engineering services on the majority of Oakland County Drains within the City and completed the 2002 Storm Water Policy Study. Our consultant team offers an unparalleled level of knowledge, experience, and qualifications for a timely and successful completion of the SAW Grant project for the City of Rochester Hills.

We are proposing that our consultant team each utilize our existing Engineering Service Agreements to complete this work and thereby avoid any overhead and markup associated with utilizing a Prime/Sub Consultant or Joint Venture relationship. Although both firms are fully capable of completing the entire scope of this project independently, it is not our intent to duplicate any efforts. Rather, each firm would be assigned specific tasks that are best suited to match the personnel, timing, and wishes of City staff. Based on the consultant team’s combined experience, we will be able to provide a broad measure of Quality Assurance/Quality Control (QA/QC) to assure the best and most cost-effective project is provided to the City of Rochester Hills.

In order to provide coordination with the consultant team, Mr. Greg Kacvinsky from OHM will provide overall project management and oversight. Mr. Kacvinsky has been selected for this role due to his familiarity with the City staff and close involvement in the project application, and experience with stormwater and sanitary sewer systems. This will assure consistency in all aspects of the Stormwater Asset Management Plan, Stormwater Management Plan, and Wastewater Asset Management Plan.

Included with the proposal is an overview of how the consultant team proposes to work together to complete the project. We have also included a brief summary of the key staff that will be assigned to the project, and what their proposed roles will be. Additional information on qualifications and experience of the consultant team are available upon request.

Scope of Services

The Task IDs listed in this proposal are intended to match those tasks in the SAW Grant applications to ease the administrative efforts related to reporting and disbursement requests. Task IDs used in this proposal are as follows:

- Stormwater Asset Management Plan (AMP): Tasks A1-A8
- Stormwater Management Plan (SMP): Tasks S1-S8
- Wastewater Asset Management Plan (AMP): Tasks W1-W8

The letter designations A, S, and W provide a useful distinction between the three primary components of the City's SAW Grant and will enhance the transparency of project invoices for the benefit of the City and the MDEQ SAW Project Manager.

Please note that this scope specifies tasks for which the City will have primary responsibility, based on the cost estimate tables in the SAW Grant applications. Specific tasks where this distinction is made include: Task A1, Task A5, Task W1, and Task W5. Under these tasks, several activities will be performed by City staff, although those costs are still reimbursable under the SAW Grant.

A fee table, included at the end of this proposal, lists the total fees by individual task. OHM and HRC will perform the following tasks as part of our current contracts with the City. While individual firms will take the lead on different components of the SAW Grant, it is intended to be a collaborative effort to effectively utilize the key strengths of each firm based on both technical abilities and local knowledge of the collection systems.

Project Kickoff Meeting

Upon the execution of the SAW Grant Agreement, the consultant team will meet with City staff to organize a formal kickoff meeting. This kickoff meeting will be attended by key project staff listed in this proposal and will be an essential tool to define the following:

- Client communication protocols
- Consultant team communication and project management protocols
- Online collaboration tools for the SAW Grant projects
- Management of GIS data and protocols for submitting new data to City GIS/IT staff
- Project schedule
- Early deliverables and responsible parties for each deliverable

The project kickoff meeting is included in the budgets for Tasks A1, W1, and S1 and will be billed accordingly.

Stormwater Asset Management Plan (Tasks A1-A8)

The effort for the Stormwater Asset Management Plan will be led by OHM to maintain consistency between the two Asset Management Plans. While OHM will be lead on this task, coordination with HRC will be important and their input will be required to provide a uniform product. HRC will also be involved in several key aspects of

the Stormwater AMP, including field survey, condition assessment, hydrologic/hydraulic modeling, managing the sewer televising component, and the Level of Service Analysis.

Task A1 – Inventory

Under this task, the City, along with the consultant team, will obtain additional information on the stormwater collection system. This information will be collected through field survey and evaluating existing record drawings. Specific work efforts include:

- a. The consultant team will collect and review available GIS data on the stormwater collection system, evaluate the existing GIS database for collection system and pump station components, and review attribute tables and determine where additional variables may need to be added. This will include a coordination meeting with the City to determine where known data gaps exist.
- b. The consultant team will survey stormwater collection system components that are not currently part of the existing GIS database. The scope and extent of the survey will be limited to the grant budget of \$40,000, and is intended to augment the existing database to the extent allowable given the grant budget. This survey will include rim elevations and invert elevations, pipe sizes, and pipe connectivity to provide needed data for the hydraulic modeling efforts. This information will help to supplement the existing GIS mapping for the stormwater collection system. The consultant team will provide the survey data to the City for use in updating the GIS geodatabase.
- c. The City will review record drawings to verify pipe age and material. This is necessary for the deterioration forecasting in the Asset Management Plan. It is assumed that this task will require 6-8 weeks of document research for City staff.
- d. The consultant team will review previous documentation on stormwater management planning. According to City staff, no stormwater master planning has been conducted in the last 20 years. However, older documents may provide insight on locations of capital improvement needs.
- e. The City will import all data collected in the above tasks into the City's GIS. This will include survey data, record drawing information, and other information collected during the inventory process. During this task, the GIS attribute tables will be enhanced to facilitate future data sharing with the City's Asset Management software. This includes attributes and fields necessary for future field inspection and work order generation.

Task A2 – Condition Assessment

Under this task the consultant team will assess the condition of manholes (MACP inspections), will conduct field inspections of the sewer inlets (curb inlets and catch basins) to verify the condition of this infrastructure component, and will prepare an Asset Management Plan report. Specific work efforts include:

- a. The consultant team will complete a MACP-compliant inspection of approximately 60% of the City's storm manholes (about 500 manholes). Although this is a high percentage of the City-owned system, this represents only about 6%-7% of the total storm sewer drainage system within the City limits (90% of the storm sewer system is owned by entities other than the City). This effort will include interior imaging and GIS-based coding of manhole defects. This information will be imported into the City's GIS.
- b. The consultant team will perform curb inlet and catch basin inspections (about 400-500 structures). The overall condition of the structure will be documented and added to the City's GIS database.
- c. The consultant team will prepare an Asset Management Plan (AMP) report. This report will include a holistic evaluation of all stormwater assets evaluated in preceding and subsequent tasks in this Work Plan. The AMP will include the following:

- i. Import CCTV and MH inspection ratings into the storm sewer GIS database. Use these ratings to establish a Risk of Failure variable to be assigned to each component.
- ii. Work with City staff to determine appropriate characteristics to use to establish a Consequence of Failure variable. Characteristics may include: population served, roadway traffic impacted during system repair, potential for flooding, etc.
- iii. Using the Risk/Consequence factors, establish a priority ranking (“Criticality Index”) to be used to develop a list of repair/replacement/rehab needs.
- iv. Using the roadway (PASER) and sanitary sewer pipe ratings (as developed from the City’s proposed Wastewater Asset Management Plan), use GIS to determine where coincidental high priority areas exist and add these to the list of Early Action Projects to be added to the Capital Improvement Plan.
- v. Develop a Deterioration Forecasting Model based on current pipe condition, depth, material, and age. This will be used to forecast system repair/rehab/replacement needs.
- vi. Provide recommendations for future (ongoing) system inspection needs, including CCTV and manhole inspections (i.e. total sewer length per year, based on a recommended system percentage).
- vii. Prepare a written report that summarizes the asset evaluation. This report will provide the basis for system cost scenarios to be used in Task 7 (Rate Study)

Task A3 – Metering / Modeling

This task includes temporary flow metering and hydrologic and hydraulic modeling of the stormwater collection system to identify hydraulic deficiencies and future capital improvement needs. The design event flood depths as calculated in the Stormwater Management Plan (separate scope) will be used to establish boundary conditions for this analysis. Specific work efforts include:

- a. The consultant team will identify flow metering locations. Flow metering will occur where hydrologic/hydraulic modeling is anticipated and where validation of modeling data is desired.
- b. The consultant team will install flow meters at selected locations. The type of hardware used will depend on application (manhole vs. bridge/culvert) and the long-term goal of the City with respect to permanent use of meters. The engineer’s estimate for this grant application assumes 3 flow meters for a 6-month flow metering period. Rain data will be obtained from existing OCWRC rain gages (COSDS metering network) and, if the City receives the Wastewater AMP Grant, the temporary rain gage from that effort will be used for additional data.
- c. The consultant team will perform hydrologic modeling of the primary components of the stormwater collection system, generally focusing on drainage areas exceeding ½ square mile and pipes sizes of 24-inch diameter and larger. Exceptions may be made in locations where there are known drainage problems. There are 36 defined drainage districts within the City of Rochester Hills. Based on the information obtained during the public involvement component of Task 6 (Level of Service), prioritize the districts for a hydrologic/hydraulic modeling effort. It is assumed that approximately 16-18 districts will be selected for additional analysis. EPA SWMM will be used for this task. Calculate peak flow rates for 2-, 10-, 25-, 50-, and 100-year recurrence interval events. Calibrate the runoff response to meter data where available.
- d. The consultant team will perform hydraulic modeling of the collection system using EPA SWMM. The hydraulic model will focus on larger diameter storm sewers, generally exceeding 24-inch diameter. The consultant team will run the model against design event flow rates and determine where hydraulic surcharge is expected and will prepare a Technical Memorandum summarizing the modeling effort and including key findings and recommendations. This will serve as the basis for developing a Capital Improvement Plan (under Task 6, Level of Service).

Task A4 – AM / GIS Investments

The City will purchase AM / GIS hardware as part of the Wastewater Asset Management Plan Grant. There are no consultant fees related to this task.

Task A5 – Cleaning and Televising (PACP)

Under this task, the consultant team will coordinate with a televising/cleaning contractor to clean and inspect the condition of the City's stormwater collection system. Specific tasks include:

- a. A sewer cleaning/CCTV contractor will clean and televise approximately 150,000 lineal feet of the City's storm sewer. This represents about 60% of the City-owned component of the collection system (about 6.5% of the total drainage system within City limits). The televising effort will focus only on those sewers that are older than 20 years. PACP methodology will be used for all televising.
- b. The consultant team will review televising-only options (i.e. no cleaning) for components of the storm sewer system that do not require cleaning. This will be done in order to minimize unnecessary cleaning expenses.
- c. The consultant team will coordinate directly with the cleaning/CCTV contractor to oversee the PACP coding during the first 1-2 weeks of sewer televising effort to ensure that the data will be compatible with the City's GIS/CMMS and will be usable for the Asset Management Plan.
- d. The consultant team will perform contract administration for the cleaning/CCTV contractor. This work will include: preparation of RFP documents and specifications for sewer cleaning televising work, review of bids, and selection of contractor. This work will also consist of coordination with the contractor to ensure that PACP coding meets the standards needed to populate the City's GIS and to develop a criticality index for the Asset Management Plan component.
- e. The City will transfer PACP data to the City's stormwater GIS geodatabase. This task includes QA/QC overview of the field-generated PACP data. Other efforts include:
 - i. The consultant team will test the data to ensure compatibility with the criticality index and system prioritization tool (Asset Management Plan).

Task A6 – Level of Service

Under this task, the consultant team will review appropriate Level of Service (LOS) goals with City staff and interested public representatives and prepare a Capital Improvement Plan based on the stated goals. Specific tasks include:

- a. The consultant team will develop an online survey tool, such as SurveyMonkey, to solicit City-wide feedback on drainage-related issues. The consultant team will geocode the results of the survey (in addition to the feedback from the public meetings in subtask b) to create a problem area map. This map will be used to determine the appropriate areas for additional modeling/analysis.
- b. The consultant team will prepare for and attend City Council Work Sessions to discuss desired Levels of Service (LOS) for the City's stormwater collection system. These meetings will be used to discuss the cost-benefit of system improvements, focusing on flood control. The consultant team will coordinate a public meeting to educate the customers on the cost associated with maintaining the stormwater collection system, obtain customer input regarding their concerns and satisfaction and outline the City's goals to the public.

- i. As part of this effort, it will be necessary to address future maintenance and capital needs for privately-owned and HOA-owned sewers. As the City of Rochester Hills owns only about 10% of the storm sewer system within its GIS database, providing an adequate Level of Service in the future will depend on resources directed towards sewers that are not under the direct jurisdiction of the City. Potential options to be explored include:
 - City/Owner sewer maintenance agreements
 - Conversion of privately- and HOA-owned sewers to City ownership (specifically, those sewers in the right-of-way)
 - Establishment of a Stormwater User Fee/Tax to cover City-wide maintenance needs (see Task 7), including privately- and HOA-owned storm sewers and detention ponds
- c. Develop Capital Improvement Plan (CIP)
 - i. Using the data from the hydraulic modeling effort and the initial output from the Asset Management Plan, the consultant team will develop a 5-10 year CIP to address the more critical projects. Prepare planning-level construction cost estimates. Projects may include:
 - General system rehabilitation projects (structural repair of pipes, inlets, and manholes)
 - Flood control projects (sewer enlargement, inlet capacity enhancements, etc.)

Task A7 – Rate Study

This task will focus on reviewing options for developing a dedicated funding source for stormwater infrastructure. The steps below culminate in a Stormwater Funding Feasibility Study, which compares traditional funding sources (i.e. taxes and Special Assessments) to other available mechanisms, such as stormwater user fees (a/k/a stormwater utilities). The consultant team will implement the following tasks:

- a. Existing Stormwater Cost Analysis:
 - i. Review all existing capital and O&M costs related to the City's storm sewer assets.
 - ii. Include a consideration for identified costs as determined from the Stormwater Management Plan effort.
 - iii. Identify annual funding needs based on CIP and AMP.
- b. Develop a 10-year cash flow analysis to address the needs identified above.
- c. Develop a preliminary Rate Model for a stormwater utility option. This rate model will be based on parcel data and aerial photography, and will be used to estimate potential billing units by zoning classification. The Rate Model can be used to evaluate various revenue schemes and determine approximate billing rates for key rate payers as well as single-family residential customers.
- d. Identify key ratepayers (using the Rate Model) and meet individually with them to discuss the potential user fee and how it would impact their property(ies). This is a crucial step in receiving buy-in from the rate-paying base prior to implementation of a user fee.
- e. Establish a Stormwater Advisory Group (12-16 members), comprised of key ratepayers and other stakeholders.
 - i. Meet 5-6 times.
 - ii. The group will become familiarized with the City's stormwater infrastructure and will learn about the current needs and funding issues.
 - iii. The group will explore funding options and discuss program priorities.

- iv. The group will develop non-binding policy recommendations to the City Council on appropriate stormwater funding and will help to set a path toward a ballot referendum* on the stormwater fee/tax option.
- f. Prepare the Stormwater Funding Feasibility Study. This document will summarize all the steps taken in Task 7 and will provide revenue options for the City. Key components include:
 - i. Existing program costs
 - ii. Future program needs (as identified by this Asset Management Plan)
 - iii. Revenue options (taxes, Special Assessments, user fees, etc.)
 - iv. Recommendations for stormwater fee credits (for implementing stormwater BMPs)
 - v. Recommendations for treatment of non-City-owned assets (i.e. HOA-owned storm sewers and detention ponds)
 - vi. Scope and Fee Estimate for Revenue Implementation, including fee estimates for PR-related services necessary to prepare for a ballot referendum*.

** Based on the Jackson decision making their Stormwater User Fee an “illegal tax”, it is assumed that any dedicated funding structure for stormwater will need to go through a referendum in order to satisfy the Headlee Amendment and prevent legal challenges. The actual strategy toward revenue development may depend on whether enabling legislation (a law specifically allowing for the establishment of stormwater user fees) is introduced and passed by the Michigan Legislature.*

Task A8 – Grant Application and Grant Administration

Under this task, OHM will prepare a SAW Grant application and perform the grant administration tasks through the duration of the project. Specific tasks include:

- a. Grant application costs are covered under the Wastewater Asset Management Plan grant application.
- b. OHM will provide required documentation throughout the duration of the SAW Grant program. This will include Requests for Disbursement and documents necessary to close out the grant.

Stormwater Management Plan (Tasks S1-S8)

The effort for the Stormwater Management Plan will be led by HRC. HRC will provide the lead on streambank and culvert assessments, modeling of selected stream reaches, local ordinance updates, and MS4 permit updates, while OHM will act as the lead consultant on the detention basin inventory and inspections, and the capital improvement plan.

Task S1 - Identify Baseline Conditions

- a. The public meetings and survey data collected as part of the Stormwater AMP will be used to provide information on existing problem areas and expected Level of Service (LOS) for the City’s system of open drainage channels and detention ponds. The consultant team will collect and review existing information, including:
 - i. Oakland County GIS contour information
 - ii. Most recent aerial imagery
 - iii. Existing drainage area information (delineations, key features) from the Clinton River Watershed Council, the Alliance of Rouge Communities (ARC), and the OCWRC
 - iv. Review the proposed scope of work under the ARC’s Stormwater Management Plan (SMP) and coordinate with the ARC to ensure the components of this SMP are not redundant to the ARC’s efforts (assuming both Rochester Hills and the ARC both receive the SAW SMP Grant).

Task S2 – Streambank / Culvert Condition Assessment

The consultant team will perform the following tasks:

- a. Identify key drainage courses (including OCWRC Drains) that have a significant impact on the City's stormwater assets. It has been confirmed that the OCWRC will not be submitting SAW Grant Stormwater Management Plan Grant applications for any of the open drains targeted in this scope.
- b. Perform Streambank Inventories for identified drainage courses (assumed total length of 8-10 stream miles). The identified drainage courses will be confirmed during the public involvement effort under Task 6 (Level of Service) in the Stormwater Asset Management Plan.
- c. Establish a rating system for inventoried drainage courses (Unified Stream Assessment or similar).
- d. Identify sedimentation / erosion/scour at bridges and culverts along the channel reaches assigned for the Streambank Inventories.
- e. Confirm dimensions, materials, and overall conditions of culverts within the reach selected for the Streambank Inventory. Pipe condition ratings for culverts will be based on FHWA criteria. This evaluation will include presence of sediment buildup or other debris that may reduce the intended hydraulic capacity.
- f. The following stream data will be transferred to the City's GIS database:
 - i. Streambank condition rating
 - ii. Photos of severe erosion areas, hydraulic blockages, dry weather illicit discharges (if encountered), and all bridges and culverts along the studied reaches
 - iii. Pipe condition rating for culverts

Task S3 – Detention Pond Rating System (Public and Private Detention Ponds)

The consultant team will perform the following tasks:

- a. Develop a rating system for stormwater detention ponds, focusing on the following attributes:
 - i. Shoreline erosion (wet ponds only)
 - ii. Excessive sedimentation (dry and wet ponds)
 - iii. Outlet structure condition (is it plugged or otherwise modified in a way that would impact discharge rates?)
 - iv. Berm / emergency overflow weir
- b. Perform a visual inspection of a sampling of detention ponds, including a mix of publicly- and privately-owned detention basins. Assume 25 detention basins will be included in this inspection effort. Calculate a condition rating for:
 - i. Pond
 - ii. Primary Outlet Structure
 - iii. Emergency Overflow Structure
- c. Research as-built drawings for existing detention ponds to extract key data for the GIS database, including pond age, design high water level, available freeboard, and outlet type, size, and configuration. It is assumed that the City will provide as-built drawings as requested by the consultant team.

Task S4 – Hydrologic / Hydraulic Modeling

The consultant team will perform the following tasks:

- a. Quantify the response of existing drainageways and hydraulic structures to wet weather events. This includes hydrologic and hydraulic modeling of open channels, bridges, culverts, selected detention ponds, and floodplains. This effort will be conducted in concert with the closed system hydraulic

modeling performed as part of the Stormwater Asset Management Plan (separate component of this grant application).

- b. The results from this effort can be used by the City to prioritize future projects to address hydraulic deficiencies and can also be used to verify where hydraulic conditions may present water quality problems (via channel erosion and increased sediment pollution). Specific efforts include:
 - i. Incorporate the open channel hydraulic analysis into the hydrologic/hydraulic model created as part of the AMP. This will tie the two models (open and closed systems) together for a more comprehensive and coherent City-wide model.
 - ii. Identify areas of known concern based on the hydraulic modeling effort, including:
 - Hydraulic deficiencies that may cause flooding
 - Reaches with excessive flow velocities and erosion potential (stormwater quality concern).

Task S5 – Water Quality Considerations

The City of Rochester Hills drains to the Clinton River and Rouge River watersheds. In addition to the stormwater conveyance needs identified above, this task will focus on specific opportunities to address previously-documented water quality concerns in the headwaters of the Main Branch of the Rouge River, as well as the following subwatersheds within the Clinton River Watershed: Clinton Main, Red Run, Stony Creek, and Paint Creek. The consultant team will perform the following tasks:

- a. Define key areas of stormwater pollutant concern. This will be accomplished through discussions with City staff, review of regulatory documents on local industrial NPDES stormwater permits, and review of land use records.
- b. Prepare a planning document on recommended structural and non-structural BMPs to address water quality concerns. The Rouge River and Clinton River watersheds experiences water quality problems largely related to increased runoff volume from urban development, which accelerates the process of channel erosion. Proposed BMPs will focus on recommendations in the Rouge River and Clinton River Watershed Plans, including
 - i. Reduce unnatural sediment transport through streambank stabilization and site-specific BMPs
 - ii. Retrofit urban areas to encourage infiltration and reduce annual runoff volumes
 - iii. Update local stormwater guidelines to favor Low Impact Development design techniques for new development and redevelopment

Task S6 – MS4 Program / Ordinance Updates

The consultant team will perform the following tasks:

- a. Review existing MS4 permit and local stormwater ordinances. Review components that will need to be updated to meet new MDEQ rules.
- b. Develop a policy memorandum with recommended MS4 permit and ordinance updates. Potential topics to be included:
 - i. Stormwater quality considerations (in the context of new MDEQ MS4 requirements)
 - ii. Flood control (ordinance only)
 - iii. Updates to reflect latest rainfall statistics (NOAA Atlas 14 vs. TP 40)
 - iv. Water quality design (first flush and 2-year) for new development and redevelopment
 - v. Tracking and enforcing public/private BMP maintenance
 - vi. Development vs. redevelopment
- c. Organize up to two public meetings (including coordination with local developers) to discuss the potential rule changes. Coordinate with City staff prior to documenting recommended changes.

Task S7 – Capital Improvement Plan (CIP)

The consultant team will perform the following tasks:

- a. Develop a set of capital improvement projects for each deficiency or problem area. In some instances, multiple options for each deficiency may be developed.
 - i. Modeling and/or calculations will be provided to verify the projects will function as intended.
 - ii. Develop planning-level opinions of project cost for recommended projects.
 - iii. Prioritize projects for short-term (i.e. 3-5 year schedule) and long-term (5-10 year schedule).
 - iv. Coordinate the CIP with the Stormwater Asset Management Plan in order to provide a system-wide calculation for stormwater infrastructure investment needs.

Task S8 –Grant Administration

Under this task, OHM will perform the grant administration tasks through the duration of the project. Specific tasks include:

- a. OHM will provide required documentation throughout the duration of the SAW Grant program. This will include quarterly reports, reimbursement requests, and documents necessary to close out the grant.

Wastewater Asset Management Plan (Tasks W1-W8)

The effort for the Wastewater Asset Management Plan will be led by OHM. While OHM will be lead on this task, coordination with HRC will be important and their input will be required to provide a uniform product. Furthermore, HRC will be the primary consultant in performing field survey work and managing the sewer televising program.

Task W1 – Inventory

Under this task, the City and consultant team will obtain additional information on the wastewater collection system, including information on pump stations. This information will be collected through field survey and evaluating existing record drawings. Specific work efforts include:

- a. The consultant team will collect and review available GIS data on the wastewater collection system. Evaluate the existing GIS database for collection system and pump station components. Review the attribute tables and determine where additional variables may need to be added. This will include a coordination meeting with the City to determine where known data gaps exist.
- b. The consultant team will survey the wastewater collection system components that are not currently part of the existing GIS database. The scope and extent of the survey will be limited to the grant budget of \$25,000, and is intended to augment the existing database to the extent allowable given the grant budget. This will likely include rim elevations and invert elevations to provide needed data for the hydraulic modeling efforts. This information will help to supplement the existing GIS mapping for the collection system.
- c. The City will review record drawings to verify pipe age and material. This is necessary for the deterioration forecasting in the Asset Management Plan. It is assumed that this task will require 6-8 weeks of document research by City staff.
- d. The consultant team will inventory the City's existing wastewater pump stations. This will

include all pump station facilities, including hardware, SCADA systems, buildings, site appurtenances, related components. This effort will be limited to a basic inventory for GIS database purposes. This effort will not include inspection of pump station components for wear, functionality, or any structural evaluation.

- e. The City will import all data collected in the above tasks into the City's GIS. This will include survey data, record drawing information, pump station inventories, and other information collected during the inventory process. During this task, the GIS attribute tables will be enhanced to facilitate future data sharing with the City's Asset Management software, Lucity. This includes attributes and fields necessary for future field inspection and work order generation. This task will be performed by City staff (force account labor).

Task W2 – Condition Assessment

Under this task, the consultant team will assess the condition of manholes (MACP inspections) and will conduct field inspections of the collection system to confirm key inflow/infiltration sources. Specific work efforts include:

- a. The consultant team will perform a MACP-compliant inspection of approximately 10% of the City's manholes (about 800 manholes). This effort will include interior imaging and GIS-based coding of manhole defects. This information will be imported into the City's GIS.
- b. The consultant team will perform smoke testing in areas with known elevated wet weather flow response.
- c. The consultant team will prepare an Asset Management Plan (AMP) report. This report will include a holistic evaluation of all wastewater assets evaluated in preceding and subsequent tasks in this Work Plan. The AMP will include the following key subtasks:
 - i. Import CCTV and MH inspection ratings into sanitary sewer GIS database. Use these ratings to establish a Risk of Failure variable to be assigned to each component.
 - ii. Work with City staff to determine appropriate characteristics to use to establish a Consequence of Failure variable. Characteristics may include: population served, roadway traffic impacted during system repair, potential for basement backup, etc.
 - iii. Using the Risk/Consequence factors, establish a priority ranking ("Criticality Index") to be used to develop a list of repair/replacement/rehab needs.
 - iv. Using the roadway (PASER) and storm sewer pipe ratings, use GIS to determine where coincidental high priority areas exist and add these to the list of Early Action Projects to be added to the Capital Improvement Plan.
 - v. Develop a Deterioration Forecasting Model based on current pipe condition, depth, material, and age. This will be used to forecast system repair/rehab/replacement needs.
 - vi. Provide recommendations for future (ongoing) system inspection needs, including CCTV and manhole inspections (i.e. total sewer length per year, based on a recommended system percentage).
 - vii. Prepare a written report that summarizes the asset evaluation. This report will provide the basis for system cost scenarios to be used in Task 7 (Rate Study)

Task W3 – Metering / Modeling

Under this task, the consultant team will determine a strategy for temporary flow metering. This will allow the consultant team to develop hydrologic/hydraulic models of the wastewater collection system, thereby identifying hydraulic bottlenecks and future capital improvement needs. Specific work efforts include:

- a. The consultant team will evaluate and confirm locations for flow meters. Meters will be placed

along collector sewers in areas with known elevated wet weather flow response (COSDS Meter Districts 1100, 1093, 1025, and 1095) as well as up to two additional locations as determined during the initial evaluation.

- b. The consultant team will perform flow metering. This will consist of a 6-month temporary metering program with approximately six (6) rented meters and 1 rain gauge. Existing rain gauges and flow meters owned by the OCWRC (on the COSDS interceptor sewer) can be used to supplement the temporary meter data where necessary.
- c. The consultant team will perform hydrologic modeling of the collection system. Calibrate and validate meter data to achieve a best fit to observed conditions. Calculate flow rates for design event and recurrence interval flows.
- d. The consultant team will perform hydraulic modeling of the collection system using EPA SWMM. The hydraulic model will consist of collector sewers. Run the model against design event flow rates and determine where hydraulic surcharge is expected.

Task W4 – AM / GIS Investments

Under this task, the City will evaluate and purchase hardware, software, and training to fulfill its goals to develop an Asset Management Plan. There are no consultant fees related to this task.

Task W5 – Cleaning and Televising (PACP)

Under this task, the consultant team will work with a televising/cleaning contractor to clean and inspect the condition of a portion of the City's wastewater collection system. The data will be extrapolated to the remainder of the system. Specific tasks include:

- a. The consultant team will work with the City to procure a contractor to perform cleaning and televising of approximately 180,000 lineal feet of the City's sanitary sewer. The televising effort will focus only on those sewers that are older than 20 years and have not been televised or lined within the same time period. PACP methodology will be used for all televising. The consultant team will coordinate directly with the cleaning/CCTV contractor to oversee the PACP coding during the first 1-2 weeks of sewer televising effort to ensure that the data will be compatible with the City's GIS/CMMS and will be usable for the Asset Management Plan.
- b. The consultant team will perform contract administration for the cleaning/CCTV contract, including: preparation of RFP documents and specifications for sewer cleaning televising work, review of bids, and selection of a contractor. This work will also consist of coordination with the contractor to ensure that PACP coding meets the standards needed to populate the City's GIS and to develop a criticality index for the Asset Management Plan component.
- c. The City will transfer PACP data to the City's wastewater GIS geodatabase. This task includes consultant QA/QC overview of the field-generated PACP data. Other efforts include:
 - i. The consultant team will test the data to ensure compatibility with the criticality index and system prioritization tool (Asset Management Plan).

Task W6 – Level of Service

Under this task, the consultant team will review appropriate Level of Service (LOS) goals with City staff and interested public representatives and prepare a Capital Improvement Plan based on the stated goals. The consultant team will perform the following tasks:

- a. Prepare for and attend up to three (3) City Council Work Sessions to discuss desired Levels of Service (LOS) for the wastewater collection system. These meetings will be used to discuss the cost-benefit of system rehabilitation and capital projects.

- b. Develop Capital Improvement Plan (CIP)
 - i. Using the data from the hydraulic modeling effort and the initial output from the Asset Management Plan, develop a 5-10 year CIP to address the more critical projects. Prepare planning-level construction cost estimates.
 - Include pump/motor/structural depreciation costs and anticipated SCADA upgrades at the pump stations to the CIP.
 - Include additional system rehabilitation needs identified in the SSES efforts.
 - Include sewer upgrades necessary to store/convey wet weather flows (as determined during the flow monitoring and hydraulic modeling efforts).

Task W7 – Rate Study

Under this task, the consultant team will review the existing sewer revenue structure and plan for long-term sustainability of the sewer fund in the context of the Asset Management Plan. This task includes assistance from an outside financial consultant to perform a financial analysis for developing a strategic business plan designed to sustain the utility in the most efficient and cost-effective manner. The consultant team will perform the following tasks:

- a. Determine existing wastewater program expenditures (under existing O&M strategies and staffing levels).
 - i. The consultant team will obtain and review historical audited and budgeted O & M information. This will include financial reports, 3 year audits, customer data, current rate structure, current and proposed budgets and fund balances.
- b. Develop a 10-year Cash Flow Analysis.
 - i. A cash balance policy will be developed so that a proper fund balance is maintained. This includes a lower and upper recommended limit.
- c. Prepare a Funding Structure Analysis.
 - i. Review OCWRC contractual obligations (COSDS).
 - ii. Rates and charges will be reviewed and compared to the draft CIP program by the financial consultant to determine if there are sufficient revenues to cover expenses. This will include an analysis of replacement costs and adequacy of replacement cost funding reserves and practices.
 - iii. Based on the information obtained, a “test year” will be developed that reflects baseline operating costs. The customer base will be reviewed, including the number of billable customers and volumetric sales. Verification will be performed by comparing the current rate structure to the “test year” revenue. A determination of anticipated changes to operating costs will be discussed with City staff.
 - iv. Based on information provided by the City and by reviewing population trends, customer base and O&M costs will be projected for the forecasted period. This includes any trending in cost as well as inflation. Existing debt will be evaluated and included in the forecast.
 - v. The estimated annual asset investment cost will be separated into cash funding and debt financing. Options will be provided for debt financing including possibilities for state or federal grant and loans.
- d. Develop a Long-Term Wastewater Rate Plan.
 - i. Evaluate the revenue structure necessary to maintain an adequate Level of Service.
 - ii. If needed, rate modifications will be developed from the following potential scenarios: changes to ordinances, changes to future O&M needs, replacement reserves, debt service, future cash and financing asset investment, and maintenance of a recommended cash balance.

Task W8 – Grant Application and Grant Administration

Under this task, OHM will prepare a SAW Grant application and perform the grant administration tasks through the duration of the project. Specific tasks include:

- a. Develop the SAW Grant scope. This task includes meetings with City staff, evaluation of existing GIS data, study of existing wastewater system reports, and preparation of a Work Plan and estimated cost for the Asset Management Plan.
- b. Provide required documentation throughout the duration of the SAW Grant program. This will include Requests for Disbursement and documents necessary to close out the grant.

Assumptions and Responsibilities

The responsibilities of the client include but are not limited to the following:

- Responsibilities as specifically outlined in the tasks above.
- The client will provide all requested GIS data to the consultant team.
- The client will provide force account labor worksheets and vendor receipts to OHM for MDEQ Requests for Disbursement.

Cost Summary

The consultant team will perform the services in this proposal for a not-to-exceed fee of \$1,318,921.00. We propose that the City execute Project Agreements with each of the Consultants directly, avoiding any additional cost mark-ups to the City. For the purposes of the City preparing Engineering Service Contracts at this time we estimate that the total not-to-exceed fees will be as follows:

- OHM: \$861,921.00 (includes a \$40,000 allowance for a financial consultant)
- HRC: \$457,000.00

A breakdown of the total fees by task is included in this proposal.

Project Schedule

This proposal includes a schedule to complete all SAW Grant tasks within three years of the execution of the SAW Grant Agreement (assumed to be on or about October 31, 2014). The schedule is based on the assumption that the City would prefer to focus first on the stormwater components, as those efforts will be 90% reimbursable and because there is no dedicated funding source for stormwater infrastructure. As such, the Wastewater Asset Management Plan would be performed in 2016-2017 and would receive a 75% reimbursement. The consultant team will adjust the schedule based on feedback received at the project kickoff meeting.

OHM and HRC are excited to work together with the City of Rochester Hills in developing a useful set of tools to evaluate, prioritize, and define long-term funding needs for its stormwater and wastewater infrastructure.

Sincerely,
OHM Advisors Inc.



Rhett Gronevelt, P.E.
Principal

Hubbell, Roth & Clark, Inc.



Daniel Mitchell, P.E.
Principal

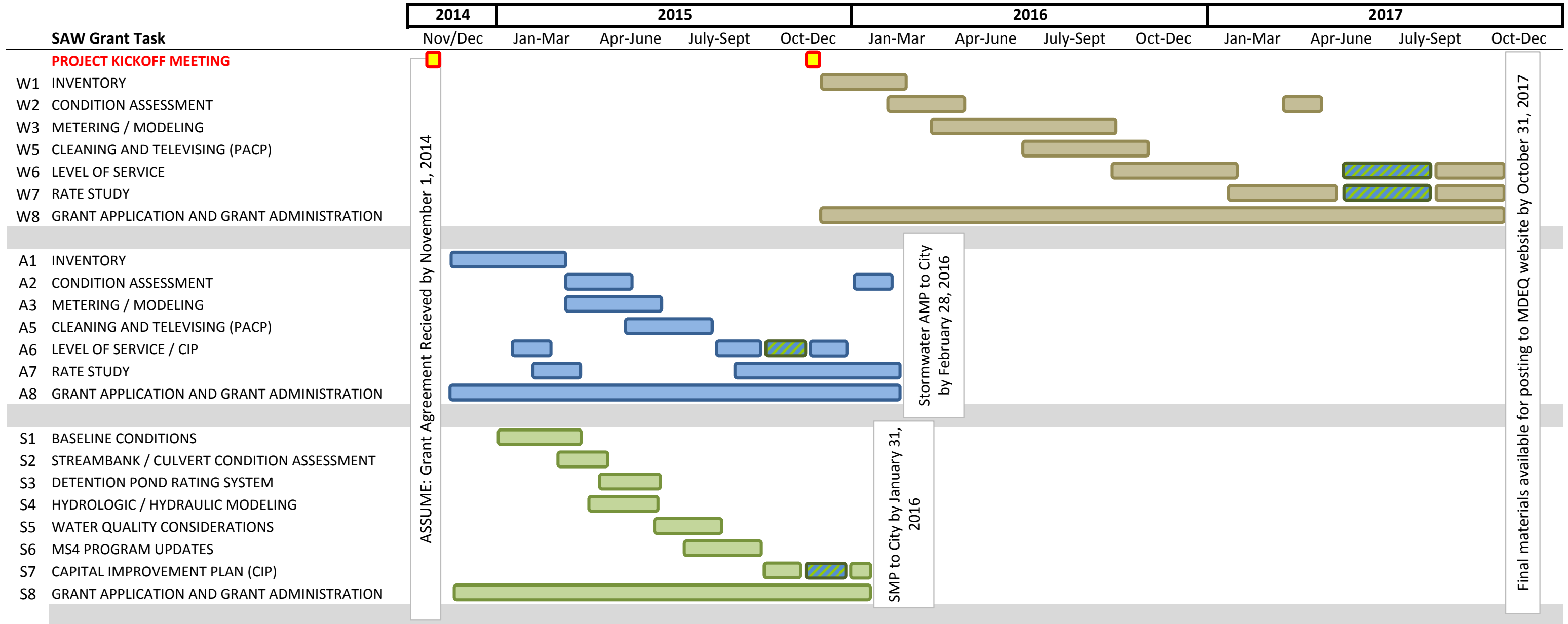
cc: Allan Schneck, P.E., Director of Public Services

SAW Grant Fee Summary City of Rochester Hills

Task ID	Task Description	Total Fee*
A1	Inventory	\$ 55,000
A2	Condition Assessment	\$ 140,000
A3	Metering/Modeling	\$ 130,000
A4	GIS/AM Investments	\$ -
A5	Cleaning/Televising	\$ 19,747
A6	Level of Service	\$ 60,000
A7	Rate Study	\$ 101,000
A8	Other: Grant Application & Administration	\$ 10,000
Subtotal - Stormwater AMP		\$ 515,747
S1	Baseline Conditions	\$ 5,719
S2	Streambank / Culvert Condition Assessment	\$ 70,500
S3	Detention Pond Rating System	\$ 55,000
S4	Hydrologic / Hydraulic Modeling	\$ 23,000
S5	Water Quality Considerations	\$ 12,000
S6	MS4 Program Updates	\$ 26,000
S7	Capital Improvement Plan (CIP)	\$ 12,000
S8	Other: Grant Administration	\$ 5,000
Subtotal - Stormwater Management Plan		\$ 209,219
W1	Inventory	\$ 43,000
W2	Condition Assessment	\$ 220,000
W3	Metering/Modeling	\$ 195,000
W4	GIS/AM Investments	\$ -
W5	Cleaning/Televising	\$ 23,000
W6	Level of Service	\$ 44,000
W7	Rate Study	\$ 48,955
W8	Other: Grant Application & Administration	\$ 20,000
Subtotal - Wastewater AMP		\$ 593,955
TOTAL - SAW Grant Services		\$ 1,318,921

* Total Fee inclusive of all OHM/HRC fees and subconsultant fees, including fees for a financial consultant and Lucity implementation consultant

Proposed SAW Grant Schedule City of Rochester Hills




ASSUME: Grant Agreement Received by November 1, 2014

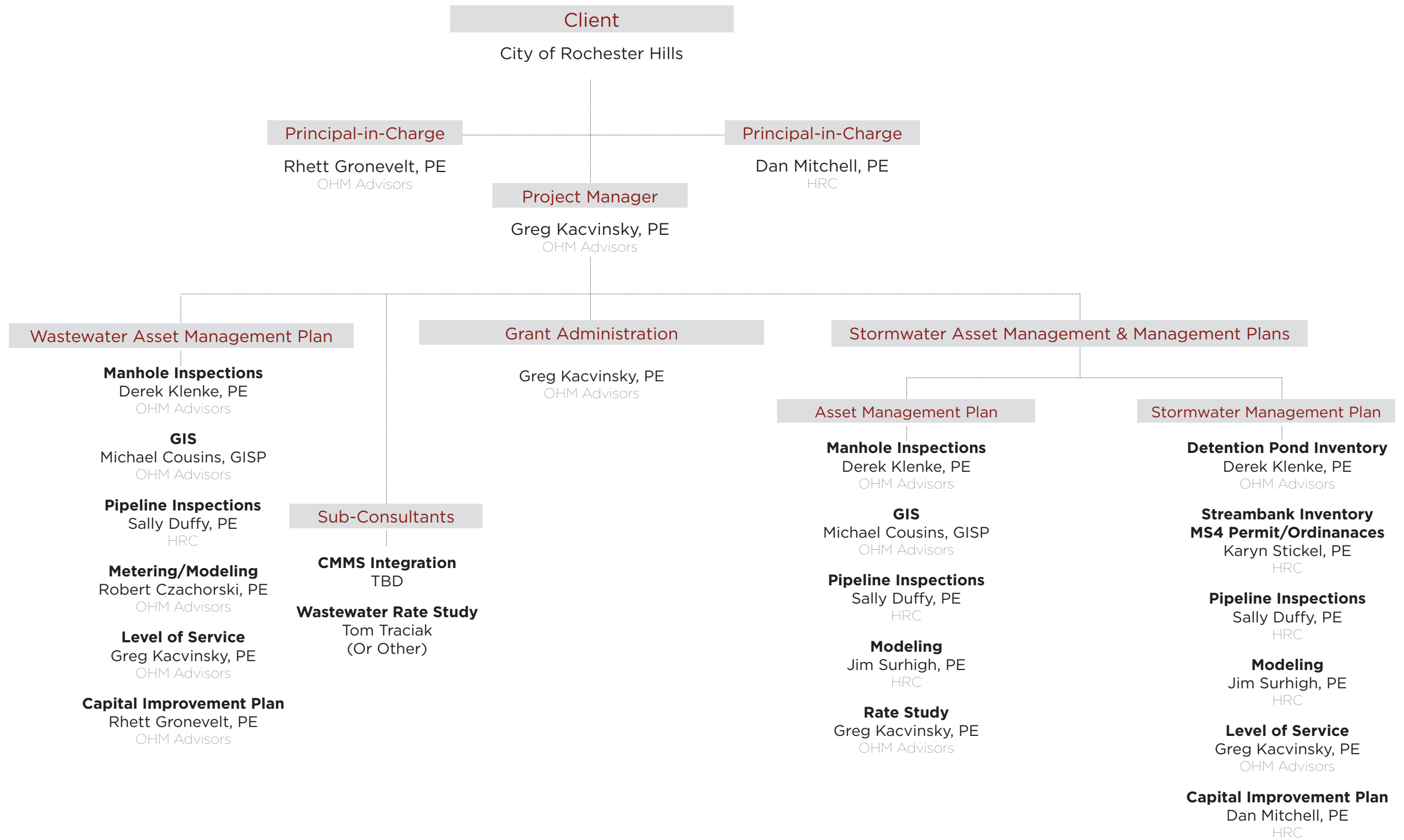
Stormwater AMP to City by February 28, 2016

SMP to City by January 31, 2016

Final materials available for posting to MDEQ website by October 31, 2017

 = City of Rochester Hills review of CIPs and Reports

City of Rochester Hills SAW Grant Project



Key Personnel

Greg Kacvinsky, PE | OHM Advisors Project Manager

Responsibilities & Experience:

- Serve as Project Manager for the City's SAW Grant program, coordinating the various components and assuring the City's goals and objectives are met.
- Head the development of Stormwater Funding Feasibility Study.
- 20 years of experience in stormwater and wastewater infrastructure consulting, including master planning, asset management planning, and stormwater utility planning/implementation.
- Worked closely with City staff team to develop the Work Plan and SAW Grant application.
- Experience with multiple Stormwater and Wastewater SAW Asset Management Plans (ongoing).

Rhett Gronevelt, PE | OHM Advisors Principal-in-Charge

Responsibilities & Experience:

- Perform QA/QC review of project deliverables and provide input towards the overall direction of the project team to assure that City's needs are met.
- Confirm the commitment of the team's resources to complete the projects.
- Principal-in-Charge of Rochester Hills account for OHM Advisors.
- Working with several municipalities on implementation and use of Computerized Maintenance Management Software (CMMS).

Daniel Mitchell, PE | HRC Principal-in-Charge

Responsibilities & Experience:

- Serve as a QA/QC reviewer of project deliverables and will provide input towards the overall direction of the project team to assure that City's needs are met.
- Principal-in-Charge of Rochester Hills account for HRC.
- Project management experience for numerous storm and sanitary sewer projects including those completed through the Office of the OCWRC and the 2002 Stormwater Policy Study.

Karyn Stickel, PE | HRC Project Manager

Responsibilities & Experience:

- Provide technical oversight for HRC team and coordinate with the OHM Advisors Project Manager.
- Over 13 years of civil and environmental consulting experience.
- Manages HRC's Asset Management Department.
- Certificate of Training in Asset Management CTAM 100 & 200 (Indiana University/Purdue University Institute) and participated in the MDEQ SAW Subcommittee which developed guidance for the Stormwater Management Plan.

Derek Klenke, PE | OHM Advisors Field Service Lead

Responsibilities & Experience:

- Oversee the completion of MACP-compliant manhole inspections for the stormwater and wastewater collection systems.
- Install and maintain temporary flow meters for the wastewater collection system.
- Over 10 years of experience in the physical evaluation of collection system infrastructure, including pipeline/manhole inspections, flow meter installation, and field data collection.
- PACP/MACP Certified (NASSCO).
- Certified for Confined Space Entry.

Robert Czachorski, PE | OHM Advisors Senior Engineer, Modeling Lead

Responsibilities & Experience:

- Provide technical leadership for the development of a flow metering program for the wastewater collection system.
- Oversee the development of the hydrologic and hydraulic models for the wastewater collection system.
- Develop the Capital Improvement Plan for the wastewater collection system.
- Over 20 years of experience with collection system analysis, metering, modeling, and capital improvement planning.

Michael Cousins, GISP | OHM Advisors GIS Manager

Responsibilities & Experience:

- Coordinate the use, development, and delivery of all data with the City's IT/GIS team.
- Confirm the consistency of GIS data collection and management between the stormwater and wastewater databases.
- Oversee the development and refinement of tablet-based field data collection applications to facilitate the components of the Asset Management Plans.
- Develop a revised geodatabase structure for the stormwater and wastewater collection systems and coordinate with City staff to ensure consistency with local needs.
- Over 7 years of experience with GIS data platform design and development for numerous communities throughout the United States.

Sally Duffy, PE | HRC Senior Project Engineer, Asset Management Lead

Responsibilities & Experience:

- Manage the data collection and geodatabase updates to accommodate the cleaning and televising contracts (PACP) for stormwater and wastewater.
- Over 20 years of experience in process and civil engineering.
- Certificate of Training in Asset Management CTAM 100 & 200 (Indiana University/Purdue University Institute) and co-chairs the MWEA/AWWA Asset Management Committee.
- Experience with multiple Stormwater and Wastewater SAW Asset Management Plans (ongoing).

Jim Surhigh, PE | HRC Senior Project Engineer, Modeling Lead

Responsibilities & Experience:

- Complete all hydraulic and hydrologic modeling associated with the Stormwater Management Plan and Stormwater Asset Management Plan.
- Over 20 years of experience in civil engineering and modeling.
- Numerous engineering drainage studies and sanitary/stormwater system designs, including hydraulic/hydrologic modeling for the City of Rochester Hills.