

**PROFESSIONAL SERVICES AGREEMENT BETWEEN  
HUBBELL, ROTH, & CLARK, INC.  
AND THE CITY OF ANN ARBOR  
FOR  
WWTP & Lift Stations Asset Management Program, RFP # 20-12**

This agreement ("Agreement") is between the City of Ann Arbor, a Michigan municipal corporation, having its offices at 301 E. Huron St. Ann Arbor, Michigan 48104 ("City"), and Hubbell, Roth, & Clark, Inc. (HRC) ("Contractor"), a Michigan Corporation with its address at 555 Hulet Drive, Bloomfield Hills, Michigan. City and Contractor are referred to collectively herein as the "Parties." The Parties agree as follows:

**I. DEFINITIONS**

Administering Service Area/Unit means Public Services Area.

Contract Administrator means Christopher Englert, acting personally or through any assistants authorized by the Administrator/Manager of the Administering Service Area/Unit.

Deliverables means all Plans, Specifications, Reports, Recommendations, and other materials developed for and delivered to City by Contractor under this Agreement.

Project means WWTP & Lift Stations Asset Management Program.

**II. DURATION**

Contractor shall commence performance on \_\_\_\_\_, 20\_\_\_\_ ("Commencement Date"). This Agreement shall remain in effect until satisfactory completion of the Services specified below unless terminated as provided for in Article XI. The terms and conditions of this Agreement shall apply to the earlier of the Effective Date or Commencement Date.

**III. SERVICES**

A. The Contractor agrees to provide Professional Engineering Services ("Services") in connection with the Project as described in Exhibit A. The City retains the right to make changes to the quantities of service within the general scope of the Agreement at any time by a written order. If the changes add to or deduct from the extent of the services, the compensation shall be adjusted accordingly. All such changes shall be executed under the conditions of the original Agreement.

- B. Quality of Services under this Agreement shall be of the level of quality performed by persons regularly rendering this type of service. Determination of acceptable quality shall be made solely by the Contract Administrator.
- C. The Contractor shall perform its Services for the Project in compliance with all statutory, regulatory, and contractual requirements now or hereafter in effect as may be applicable to the rights and obligations set forth in the Agreement. The Contractor shall also comply with and be subject to the City of Ann Arbor policies applicable to independent contractors.
- D. The Contractor may rely upon the accuracy of reports and surveys provided to it by the City (if any) except when defects should have been apparent to a reasonably competent professional or when it has actual notice of any defects in the reports and surveys.

#### **IV. INDEPENDENT CONTRACTOR**

The Parties agree that at all times and for all purposes under the terms of this Agreement each Party's relationship to any other Party shall be that of an independent contractor. Each Party will be solely responsible for the acts of its own employees, agents, and servants. No liability, right, or benefit arising out of any employer/employee relationship, either express or implied, shall arise or accrue to any Party as a result of this Agreement.

Contractor does not have any authority to execute any contract or agreement on behalf of the City, and is not granted any authority to assume or create any obligation or liability on the City's behalf, or to bind the City in any way.

#### **V. COMPENSATION OF CONTRACTOR**

- A. The Contractor shall be paid in the manner set forth in Exhibit B. Payment shall be made monthly, unless another payment term is specified in Exhibit B, following receipt of invoices submitted by the Contractor, and approved by the Contract Administrator.
- B. The Contractor will be compensated for Services performed in addition to the Services described in Article III, only when the scope of and compensation for those additional Services have received prior written approval of the Contract Administrator.
- C. The Contractor shall keep complete records of work performed (e.g. tasks performed, hours allocated, etc.) so that the City may verify invoices submitted by the Contractor. Such records shall be made available to the City upon request and submitted in summary form with each invoice.

#### **VI. INSURANCE/INDEMNIFICATION**

- A. The Contractor shall procure and maintain from the Effective Date or Commencement Date of this Agreement (whichever is earlier) through the conclusion of this Agreement, such insurance policies, including those set forth in Exhibit C, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Agreement; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of work under this Agreement, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the policies and endorsements required by Exhibit C. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).
- B. Any insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.
- C. To the fullest extent permitted by law, Contractor shall indemnify, defend, and hold the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses, including attorney's fees, resulting or alleged to result, from any acts or omissions by Contractor or its employees and agents occurring in the performance of or breach in this Agreement, except to the extent that any suit, claim, judgment or expense are finally judicially determined to have resulted from the City's negligence or willful misconduct or its failure to comply with any of its material obligations set forth in this Agreement.

## VII. COMPLIANCE REQUIREMENTS

- A. Nondiscrimination. The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of the Ann Arbor City Code and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

- B. Living Wage. If the Contractor is a “covered employer” as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a “living wage,” as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

### **VIII. WARRANTIES BY THE CONTRACTOR**

- A. The Contractor warrants that the quality of its Services under this Agreement shall conform to the level of quality performed by persons regularly rendering this type of service.
- B. The Contractor warrants that it has all the skills, experience, and professional licenses (if applicable) necessary to perform the Services pursuant to this Agreement.
- C. The Contractor warrants that it has available, or will engage, at its own expense, sufficient trained employees to provide the Services pursuant to this Agreement.
- D. The Contractor warrants that it has no personal or financial interest in the Project other than the fee it is to receive under this Agreement. The Contractor further certifies that it shall not acquire any such interest, direct or indirect, which would conflict in any manner with the performance of the Services it is to provide pursuant to this Agreement. Further Contractor agrees and certifies that it does not and will not employ or engage any person with a personal or financial interest in this Agreement.
- E. The Contractor warrants that it is not, and shall not become overdue or in default to the City for any contract, debt, or any other obligation to the City including real and personal property taxes. Further Contractor agrees that the City shall have the right to set off any such debt against compensation awarded for Services under this Agreement.
- F. The Contractor warrants that its proposal for services was made in good faith, it arrived at the costs of its proposal independently, without consultation, communication or agreement, for the purpose of restricting completion as to any matter relating to such fees with any competitor for these Services; and no attempt has been made or shall be made by the Contractor to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition.

- G. The person signing this Agreement on behalf of Contractor represents and warrants that she/he has express authority to sign this Agreement for Contractor and agrees to hold the City harmless for any costs or consequences of the absence of actual authority to sign.

**IX. OBLIGATIONS OF THE CITY**

- A. The City agrees to give the Contractor access to the Project area and other City-owned properties as required to perform the necessary Services under this Agreement.
- B. The City shall notify the Contractor of any defects in the Services of which the Contract Administrator has actual notice.

**X. ASSIGNMENT**

- A. The Contractor shall not subcontract or assign any portion of any right or obligation under this Agreement without prior written consent from the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under the Agreement unless specifically released from the requirement, in writing, by the City.
- B. The Contractor shall retain the right to pledge payment(s) due and payable under this Agreement to third parties.

**XI. TERMINATION OF AGREEMENT**

- A. If either party is in breach of this Agreement for a period of fifteen (15) days following receipt of notice from the non-breaching party with respect to a breach, the non-breaching party may pursue any remedies available to it against the breaching party under applicable law, including but not limited to, the right to terminate this Agreement without further notice. The waiver of any breach by any party to this Agreement shall not waive any subsequent breach by any party.
- B. The City may terminate this Agreement, on at least thirty (30) days advance notice, for any reason, including convenience, without incurring any penalty, expense or liability to Contractor, except the obligation to pay for Services actually performed under the Agreement before the termination date.
- C. Contractor acknowledges that, if this Agreement extends for several fiscal years, continuation of this Agreement is subject to appropriation of funds for this Project. If funds to enable the City to effect continued payment under this Agreement are not appropriated or otherwise made available, the City shall have the right to terminate this Agreement without penalty at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of termination to Contractor. The Contract Administrator shall give Contractor

written notice of such non-appropriation within thirty (30) days after it receives notice of such non-appropriation.

- D. The provisions of Articles VI and VIII shall survive the expiration or earlier termination of this Agreement for any reason. The expiration or termination of this Agreement, for any reason, shall not release either party from any obligation or liability to the other party, including any payment obligation that has already accrued and Contractor's obligation to deliver all Deliverables due as of the date of termination of the Agreement.

## **XII. REMEDIES**

- A. This Agreement does not, and is not intended to, impair, divest, delegate or contravene any constitutional, statutory and/or other legal right, privilege, power, obligation, duty or immunity of the Parties.
- B. All rights and remedies provided in this Agreement are cumulative and not exclusive, and the exercise by either party of any right or remedy does not preclude the exercise of any other rights or remedies that may now or subsequently be available at law, in equity, by statute, in any agreement between the parties or otherwise.
- C. Absent a written waiver, no act, failure, or delay by a Party to pursue or enforce any rights or remedies under this Agreement shall constitute a waiver of those rights with regard to any existing or subsequent breach of this Agreement. No waiver of any term, condition, or provision of this Agreement, whether by conduct or otherwise, in one or more instances, shall be deemed or construed as a continuing waiver of any term, condition, or provision of this Agreement. No waiver by either Party shall subsequently effect its right to require strict performance of this Agreement.

## **XIII. NOTICE**

All notices and submissions required under this Agreement shall be delivered to the respective party in the manner described herein to the address stated below or such other address as either party may designate by prior written notice to the other. Notices given under this Agreement shall be in writing and shall be personally delivered, sent by next day express delivery service, certified mail, or first class U.S. mail postage prepaid, and addressed to the person listed below. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; (2) the next business day when notice is sent next day express delivery service or personal delivery; or (3) three days after mailing first class or certified U.S. mail.

If Notice is sent to the CONTRACTOR, it shall be addressed and sent to:

HRC, Inc.  
Charles E. Hart, Vice President  
555 Hulet Drive  
Bloomfield Hills, Michigan 48302

If Notice is sent to the CITY, it shall be addressed and sent to:

City of Ann Arbor  
Craig Hupy, Public Services Administrator  
301 E. Huron St.  
Ann Arbor, Michigan 48104

With a copy to: The City of Ann Arbor  
ATTN: Office of the City Attorney  
301 East Huron Street, 3<sup>rd</sup> Floor  
Ann Arbor, Michigan 48104

#### **XIV. CHOICE OF LAW AND FORUM**

This Agreement will be governed and controlled in all respects by the laws of the State of Michigan, including interpretation, enforceability, validity and construction, excepting the principles of conflicts of law. The parties submit to the jurisdiction and venue of the Circuit Court for Washtenaw County, State of Michigan, or, if original jurisdiction can be established, the United States District Court for the Eastern District of Michigan, Southern Division, with respect to any action arising, directly or indirectly, out of this Agreement or the performance or breach of this Agreement. The parties stipulate that the venues referenced in this Agreement are convenient and waive any claim of non-convenience.

#### **XV. OWNERSHIP OF DOCUMENTS**

Upon completion or termination of this Agreement, all documents (i.e., Deliverables) prepared by or obtained by the Contractor as provided under the terms of this Agreement shall be delivered to and become the property of the City. Original basic survey notes, sketches, charts, drawings, partially completed drawings, computations, quantities and other data shall remain in the possession of the Contractor as instruments of service unless specifically incorporated in a deliverable, but shall be made available, upon request, to the City without restriction or limitation on their use. The City acknowledges that the documents are prepared only for the Project. Prior to completion of the contracted Services the City shall have a recognized proprietary interest in the work product of the Contractor.

#### **XVI. CONFLICTS OF INTEREST OR REPRESENTATION**

Contractor certifies it has no financial interest in the Services to be provided under this Agreement other than the compensation specified herein. Contractor further certifies that it presently has no personal or financial interest, and shall not acquire any such interest, direct or indirect, which would conflict in any manner with its performance of the Services under this Agreement.

Contractor agrees to advise the City if Contractor has been or is retained to handle any matter in

which its representation is adverse to the City. The City's prospective consent to the Contractor's representation of a client in matters adverse to the City, as identified above, will not apply in any instance where, as the result of Contractor's representation, the Contractor has obtained sensitive, proprietary or otherwise confidential information of a non-public nature that, if known to another client of the Contractor, could be used in any such other matter by the other client to the material disadvantage of the City. Each matter will be reviewed on a case by case basis.

## **XVII. SEVERABILITY OF PROVISIONS**

Whenever possible, each provision of this Agreement will be interpreted in a manner as to be effective and valid under applicable law. However, if any provision of this Agreement or the application of any provision to any party or circumstance will be prohibited by or invalid under applicable law, that provision will be ineffective to the extent of the prohibition or invalidity without invalidating the remainder of the provisions of this Agreement or the application of the provision to other parties and circumstances.

## **XVIII. EXTENT OF AGREEMENT**

This Agreement, together Exhibits A, B, and C, constitutes the entire understanding between the City and the Contractor with respect to the subject matter of the Agreement and it supersedes, unless otherwise incorporated by reference herein, all prior representations, negotiations, agreements or understandings whether written or oral. Neither party has relied on any prior representations, of any kind or nature, in entering into this Agreement. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Agreement, regardless of the other party's failure to object to such form. This Agreement shall be binding on and shall inure to the benefit of the parties to this Agreement and their permitted successors and permitted assigns and nothing in this Agreement, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Agreement. This Agreement may only be altered, amended or modified by written amendment signed by the Contractor and the City. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to be one and the same agreement.

## **XIX. ELECTRONIC TRANSACTION**

The parties agree that signatures on this Agreement may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Agreement. This Agreement may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

## **XX. EFFECTIVE DATE**

This Agreement will become effective when all parties have signed it. The Effective Date of this Agreement will be the date this Agreement is signed by the last party to sign it.

**[REMAINDER OF PAGE LEFT BLANK; SIGNATURE PAGE FOLLOWS]**





**FOR CONTRACTOR**

By \_\_\_\_\_  
Charles E. Hart  
Its: Vice President

Date: \_\_\_\_\_

**FOR THE CITY OF ANN ARBOR**

By \_\_\_\_\_  
Christopher Taylor, Mayor

By \_\_\_\_\_  
Jacqueline Beaudry, City Clerk

Date: \_\_\_\_\_

**Approved as to substance**

\_\_\_\_\_  
Craig A. Hupy, PE, Service Area  
Administrator

\_\_\_\_\_  
Tom Crawford, Interim City Administrator

**Approved as to form and content**

\_\_\_\_\_  
Stephen K. Postema, City Attorney

**EXHIBIT A  
SCOPE OF SERVICES**

# C. Proposed Work Plan

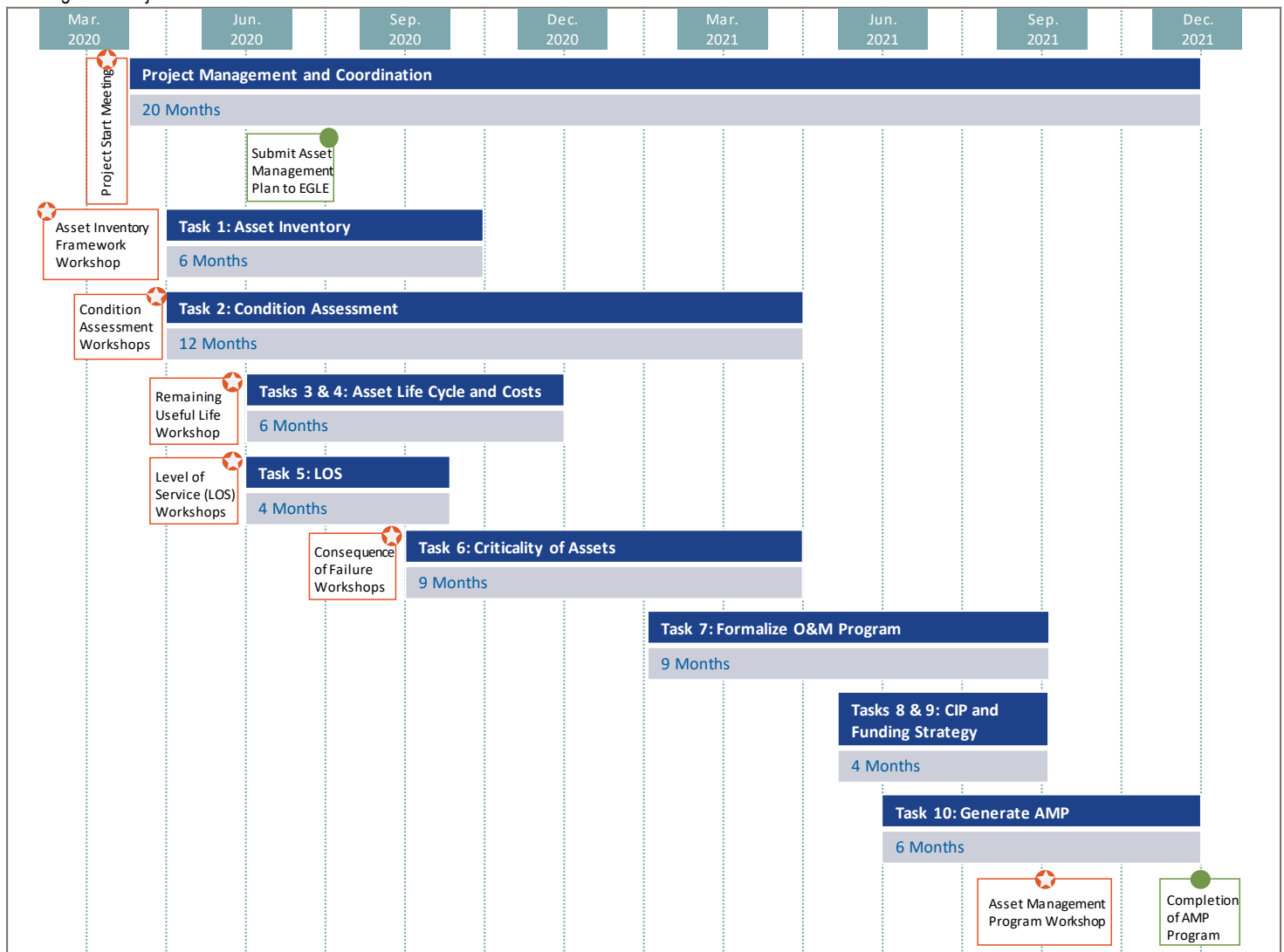
## PART I, PROJECT MANAGEMENT AND COORDINATION TASKS

The Project Management tasks will include oversight of the entire project to assure that the asset management plan and program implementation are being completed on time, on budget, and per Michigan Department of Environment, Great Lakes, and Energy (EGLE) Asset Management Plan (AMP) requirements. The overall project management will be guided by communication, collaboration, and coordination with the team and WWTP staff. The following outlines the key Project Management Tasks that we propose as part of our work plan:

1. **Project Kickoff Meeting.** The purpose of this meeting will be to introduce all members of the team and to clarify and refine all scoping items and establish communications with WWTP staff.
2. **Monthly Progress Meetings.** For purposes of this proposal, we assume that the project team will conduct monthly project meetings with WWTP staff to discuss asset information, deliverables, project status, and assure that the project is on track to meet all deadlines. Depending on the topics to be discussed at the meeting, different staff will attend, but we anticipate two WWTP staff members at each meeting, with additional staff occasionally attending progress meetings and workshops for specific work items. We anticipate approximately 20 monthly meetings.
3. **Specialized Workshops.** The development of an asset management program is different than a typical design engineering project. For the Program to be accepted, utilized, and sustainable, it is important to achieve buy-in from staff, management, and stakeholders at all levels. It takes time to change the culture and mindset of an established organization. For these reasons, we propose that several workshops be held so that stakeholders are actively engaged in the Program's development process. We anticipate approximately 10 workshops.
4. **Communication and Coordination with City.** We anticipate that our local staff will communicate in person during many tasks, particularly for the inventory and condition assessment portions of the work. Additional communication will generally occur via phone and email, with meeting agendas, meeting minutes, and documents typically being sent electronically via email. We can also set up an electronic project site at no additional cost for more direct delivery of documents and information. Depending on more familiar technology and preferred by the City staff, example software tools could include Microsoft Teams, Skype, Dropbox, Basecamp.
5. **Compatibility with City Standards, Goals, Objectives, and Working Relationship with Staff.** HRC has performed several projects recently with the City and has a good understanding of the City's standards, goals, and objectives as it relates to providing services to its residents and to protect the environment. We have previously worked with some of the Wastewater Treatment Services Unit (WWTSU) staff and look forward to providing them with tools that will help them sustain the WWTP and lift station assets cost-effectively as well as communicate their funding needs to the Systems Planning Unit, City administrators, regulators, and the public.

6. **Deliverables.** The project team will gather all information as outlined in the Plan Development Tasks below and prepare a final AMP submittal to EGLE by the July 1, 2020 deadline. A draft will be provided to the City no later than June 15, 2020. We will then receive the City's comments on the draft and revise and submit the final plan before July 1, 2020. All deliverables will be provided in PDF and native electronic formats for commonly available software packages (MS Word, AutoCAD® 2015.) Additional deliverables for the implementation of the Program will likely include data and some integration and assistance in programming the City's CMMS. Our preference would be that the data be collected for direct input into the City's software, but if this is not possible or desired, any data will be turned over to the City using external hard drives in formats accessible by the intended program. Reports and technical memorandums are generated with the goal of providing the minimum in a very accessible and concise format and in a way that allows for future updating.
7. **Schedule.** Please refer to the attached schedule, as shown in **Figure 2**, which identifies the project's required completion dates of July 1, 2020, for the EGLE AMP Plan submittal and the City's required Program completion date of December 31, 2021. Estimated durations and completion dates for intermediate tasks are also identified.

Figure 2. Project Schedule



## PART II, PLAN DEVELOPMENT TASKS

### Plan Development Background

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) added asset management requirements to their NPDES permit requirements to ensure that wastewater facilities and systems achieve the goals of effective performance, adequate funding, and adequate operator staffing and training. Asset management is a planning process to ensure that financial resources are available to operate, maintain, rehabilitate, and replace facility and system assets most cost-effectively while managing overall risk. It is centered on a framework of answering the following five core questions:

- What assets are owned, and what condition are they in?
- What is the required sustainable level of service?
- Which assets and resources are critical to sustained performance?
- What are the assets' life-cycle costs and anticipated replacement schedule?
- What is the best long-term funding strategy for sustaining overall operation while meeting the required level of service?

We understand the City is required to submit an asset management "Plan" (Plan) to EGLE staff by July 1, 2020. The Plan is to provide a schedule for the development and implementation of an asset management "Program." The Plan requires the permittee to describe how the five questions above will be addressed, and a description of the current state of the system, compliance status, inclusion of any elements of the Program that may already be available, such as system maps and inventory lists, and a schedule for when the permittee will implement the Program. The permit generally requires the overall timeline for implementing the Program to be within 3 to 5 years, but we understand the City would like the Program completed by December 31, 2021.

Once the Plan is developed, it will be submitted for EGLE review and implemented upon approval. The overall asset management Program is considered a dynamic program that continually evolves as the system continues to age, work is performed, and service goals change. Therefore, EGLE also requires submission of reports annually that summarize the current status of the asset management program and any changes made to the system or changed funding needs over the last year.

HRC has worked with numerous clients to develop asset management Plans and Programs as part of the NPDES permit requirements, drinking water system rules, and as part of EGLE's Stormwater, Asset Management, and Wastewater program. We have found that most systems are already doing at least some aspects of asset management, but perhaps in a less formalized way. Each system also has different resources available, different needs, and different goals when implementing a more formalized asset management Program. For that reason, our proposal has been prepared to allow for flexibility and refining the scope and individual task budgets after the kickoff meeting with the City.

For this proposal, we understand that the scope includes only asset management services for the equipment and facilities at the Wastewater Treatment Plant (WWTP) and five of the City's remote pumping station sites, which we understand are also maintained by WWTP staff. We understand the City will provide all collection system data for the plan. Maintaining and refining the computerized maintenance management system (CMMS) data has become essential as the need to operate better, maintain, and sustain existing infrastructure is increasingly recognized. These kinds of software applications leverage critical facility data to increase reliability, provide better control and process improvement, and retain institutional knowledge. The CMMS will be used at the tactical and strategic levels to assist with optimizing the Operations and Maintenance (O&M) Program and developing the required Capital Improvement Program.

## Plan Development Tasks

### Develop the minimum elements of the “Plan” required to be submitted by July 1, 2020

Prepare a document that outlines and addresses the requirements of the typical asset management language incorporated into NPDES permits for major WWTP dischargers in Michigan. This submittal will incorporate some basic asset data that is typically available at a utility. Development of the Plan for the Program will include some work described in the 10 Tasks identified in the Proposal, but in a more preliminary way than is needed for the final implementation of the Program.

Our focus will be to satisfy the minimum requirements required by EGLE for this submittal and include any elements that are already available. Also, the Plan will outline the framework of the proposed program for review and approval by EGLE. We will develop the Plan per EGLE guidance documents and their review checklist.

The Plan requirements generally include:

1. **System Map.** As noted previously, we assume the City will provide all required collection system documents for submittal of the Plan to EGLE, but HRC will provide a map showing the location of the WWTP and the remote lift stations and force mains per the requirements of the permit.
2. **Asset Inventory.** We understand that the City of Ann Arbor has an existing inventory for its WWTP and Lift Stations. This information will be reviewed and evaluated to ensure the existing data provides a comprehensive inventory including unique asset identifier, description, asset, and class type, location, age (in-service date), and material at a minimum for the initial Plan submittal. Additional inventory data, including legacy identifier (tag number), manufacturer, model number, serial number, design capacity, level of redundancy, useful life, replacement cost, business risk, etc. will continue to be developed and refined during implementation of the Program, but a summary of the existing asset inventory data and a description of the general framework proposed to be developed as part the Program will be included in the Plan. Our approach for developing this framework is further described in Task 1 of Part III.
3. **Asset Condition.** The Plan submittal includes reporting a summary of the condition of the assets, if known, and to describe the proposed framework that will ultimately be used and sustained for reporting asset condition. For the initial Plan submittal, we propose to provide a summary of each asset’s age versus anticipated useful life. The Plan will also include a brief description of the framework proposed for condition assessment that will be completed as the Program is implemented. Our approach for developing this framework is further described in Task 2 of Part III.
4. **Level of Service (LOS).** The HRC Team will work with the City to determine if there are any currently available mission statements, visions, or other guiding documents that could be included in this initial Plan submittal. The HRC Team will work with City to identify relevant LOS requirements and develop an initial list of LOS performance measures to include in the Plan submittal for review and approval by EGLE. This LOS framework will then be further developed as part of Task 5 described in Part III.
5. **Asset Risk.** We are assuming the City has not yet developed a risk framework, such as generating a probability of failure and consequence of failure so that an overall business risk evaluation can be made for each asset. Therefore, for this Plan submittal, we will provide a summary of the proposed framework that will be used to determine risk for EGLE’s review and approval. The risk framework will continue to be refined during the implementation of the asset management Program. Our approach for developing this framework is described in Task 6 of Part III.
6. **Staffing Analysis.** HRC will use the Northeast WEF computer program, or comparable tool to complete basic analysis of and provide a preliminary estimate of staffing needs for inclusion in the Plan submittal to EGLE. We will indicate that the analysis will be reviewed and updated during the Program development to reflect any recommendations made related to operation and maintenance optimization during the Program implementation.
7. **Operation, Maintenance & Replacement (OM&R) Budget and Rate Sufficiency.** HRC will review the City of Ann Arbor Water and Sewer Cost of Service study’s final report, which we understand was completed in June of 2018, to demonstrate to EGLE whether revenues were sufficient to meet current expenses. HRC will work with the City to update the costs and revenues to match the most recent budget information and present a basic summary of revenues versus

expenses. In our experience, the OM&R rate sufficiency submittal EGLE requires in the Plan submittal is a very basic review and is not required to include any planned capital and debt retirement costs, so almost all communities are able to meet the sufficiency criteria. However, if the City does show a revenue deficiency, HRC will work with the City to provide a proposed schedule of rate adjustments if required.

8. **Capital Improvement Planning (CIP).** A summary of any currently proposed CIP projects can be included in the Plan submittal to EGLE. We would assume this would include the CIP projects already identified in the Master Plan, such as the WWTP Facilities Renovation Project. We would include language to reinforce that all listed CIP projects are preliminary and could be modified or re-prioritized as the overall Program is implemented.

## PART III, PROGRAM DEVELOPMENT AND IMPLEMENTATION TASKS

The work described previously in Part II will satisfy the requirements for the City to submit a Plan by the July 1, 2020 deadline. The work described in the following text will provide a framework for an ongoing, sustainable asset management Program. It will include further developing the overall asset management framework and implementing the Program.

### Task 1: Asset Inventory

Asset inventory data currently available in the existing CMMS will be reviewed to develop a gap analysis for potentially missing assets and related attribution. This review will allow the HRC Team to better understand any existing data standards and protocols and the level of maturity of the asset inventory. The Team then proposes the following next steps:

- Establish asset inventory framework
  - Conduct Asset Inventory Framework Workshop with key staff
  - Define what is considered an asset for AMP purposes and CMMS purposes
  - Establish hierarchy and asset parent-child dependencies
  - Conduct a workshop with key stakeholders to develop asset types based on attributes required for risk analysis, including failure modes, typical useful life, inspection frequency, rehabilitation strategy, and change triggers
  - Determine required asset attribution
- Asset attribution
  - Review existing data attribution and research and populate additional attributes as required. Note that we understand that the inventory of the WWTP and lift stations has been reported to be nearly complete, and therefore our costs assume this effort would include collecting a limited number of assets that are missing and populating the additional required attribution for all assets.
  - Develop electronic forms and templates for capturing desired attributes
  - Provide mobile tools to collect required data.\* We will provide field training for any WWTP staff as desired to see the collection methods, and typically would want one staff member to accompany our Team to assist in the collection of data to better capture any institutional knowledge.
  - Migrate/connect existing data to CMMS software.\*

\*Possible mobile data collection methods include using an existing interface within the CMMS for adding new assets or modifying existing asset data (if this mobile capability exists within the City's system) or assisting the City with creating the required interface directly within the CMMS. However, if the City's version of Cityworks does not allow for the mobile collection of data, Collector for ArcGIS is recommended to quickly collect field data using mobile devices, including photographs and spatial data. This method has the capability to back-populate data into ESRI ArcGIS and CMMS databases, and evaluation of the future implementation of mobile data collection tools could be considered. Workflows and standards will be developed to ensure that the asset inventory will remain current as new assets are added to the system, are retired, or undergo major rehabilitation.



## Task 2: Condition Assessment

### Failure Modes

At any given time, there are four major failure modes acting upon an asset. These are defined in **Error! Reference source not found. 3**.

Table 3. Major Failure Modes and Their Definitions

Failure Mode	Definition
Physical Mortality	Physical degradation of an asset reduces performance below an acceptable level
Capacity	The volume of demand exceeds the design capacity
Financial Efficiency	Operations and maintenance costs exceed that of feasible alternatives
Levels of Service	Functional requirements exceed specified performance criteria of the asset (e.g., the treatment technology used for the removal of a pollutant no longer removes enough of the pollutant to meet permit requirements)

While all four major failure modes may be acting on an asset at any given time, the asset will experience failure due to only one failure mode, referred to as the imminent failure mode. Our approach identifies the imminent failure mode and recommends corrective action to intervene before the asset's failure. Generally, unless the external environmental demands change, the imminent failure mode is physical mortality. As a result, the failure mode of physical mortality is used predominantly for long term asset renewal decision making. Therefore, an asset's physical condition is the predominant factor for estimating the remaining useful life of an asset. The remaining failure modes are more closely aligned with performance and will be included in the performance evaluation included in this task.

This task will focus on developing condition assessment protocols for the City's WWTP and lift station assets. The written Level 2 condition assessment protocols will be utilized in on-site field inspections as described in **Table 5**. All assets in the asset register will be assigned a condition rating score from 1 to 5, an example of which is shown in **Table 4**. The 1 to 5 rating translates directly to a 1 to 5 probability of failure (POF) score that will be used in the risk analysis in Task 6.

Table 4. Example Condition Rating Descriptions

Condition Score	Definition	Description	POF
1	Very Good	Sound physical condition to meet current standards. Operable and well maintained. The asset is likely to perform acceptably with routine maintenance for 10 years or more. No work required.	1
2	Good	Acceptable physical condition but not designed to the current standard. The asset shows minor wear. Deterioration has minimal impact on asset performance. Minimal short-term failure risk but the potential for deterioration or reduced performance in medium-term (5 to 10 years). Only minor work required (if any).	2
3	Moderate/ Fair	Functionally sound plant and components but showing some wear with minor failures and some diminished efficiency. Minor components or isolated sections of the asset require replacement or repair, but asset still functions safely at an acceptable level of service. Work required but still serviceable. For example, bearing and gland wear becoming evident and some corrosion present.	3
4	Poor	Plant and components function but require a high level of maintenance to remain operational. Likely to cause a noticeable deterioration in performance in the short-term. No immediate risk to health or safety but work required to ensure asset remains safe. Substantial work required in short-term, asset barely serviceable.	4
5	Very Poor	Failed or failure imminent. Asset effective life exceeded, and significant maintenance costs incurred. A high risk of breakdowns with a serious impact on the component. No life expectancy. Health and safety hazards exist, which present a possible risk to public safety, or assets cannot be serviced/operated without risk to personnel. Major work or replacement.	5

Generally, Asset Management's best practice provides for three levels of asset condition assessment, as described in **Table 5**. The condition score is used to inform the asset's probability of failure (POF) based on its physical condition. As the consequence of failure and the overall risk associated with an asset increases, a higher level of assessment may be warranted. This allows time, effort, and money for condition assessments to be prioritized and focused on assets that have the highest risk. All WWTP and lift station assets will receive a Level 1 desktop analysis via consultant facilitated workshops. A maximum of 500 assets is assumed for this task.

Table 5. Levels of Condition Assessment

Condition Assessment Level	Accuracy	Comments
Level 1	Low	Desktop analysis based on staff knowledge, work order history, and asset age. No actual visual inspection of the asset.
Level 2	Moderate	Field inspection or visual assessment of the asset in operation and scored according to a defined and standardized scoring protocol.
Level 3	High	Application of inspection technologies such as infrared scanning, vibration monitoring, or other technologies.

Additional assets will be selected for Level 2 condition assessment based on risk, criticality, or staff knowledge. An example Level 2 condition assessment rating is shown below in **Figure 3**.

Figure 3. Example Level 2 Condition Assessment Rating Table

**Conventional Pumps**

Included: Dry well & line shaft pumps      Centrifugal pumps      Vertical multi-stage booster pumps      Screw pumps

Aspect	Distress Mode	Rating 1	Rating 2	Rating 3	Rating 4	Rating 5	
<b>CONDITION ASSESSMENT</b>							
<b>A</b>	<b>Structure Appearance</b>	Leakage	Appears as new.	Minimal moisture on seals/joints.	Water dripping from seals/joints.	Water pooling on floor	
<b>B</b>		Shaft, Supports, Bearing Deterioration	Shaft & supports sound - no shaft distortion or deterioration evident.	Minor shaft/ support deterioration evident, no impact on the structural strength or function.	Shaft distortion or bearing/housing wear evident, little impact on structural integrity or function.	Shaft distortion or bearing/housing wear evident and has impacted on asset integrity or function.	Significant shaft distortion or bearing/housing wear evident, high probability of fracture or failure.
<b>C</b>	<b>Use</b>	Motor Hours Run*	< 10,000	> 10,000	> 50,000	> 100,000	
<b>D</b>	<b>Symptoms</b>	Vibration / oscillation	No unusual vibration / oscillation detectable	Minor vibration / oscillation detected	Moderate vibration / oscillation	Considerable vibration / oscillation (wristwatch shakes)	
<b>E</b>		Temperature	No unusual temperature detected	Minimal heat from casing using hand	Heat detected by hand	Heat detected by hand is uncomfortable	Heat too high to assess by hand
<b>F</b>		Noise	No unusual noises detected.	Slight whine/rattle detected.	Moderate whine/rattle detected, easily heard over pump noise.	Loud whine/rattle.	Disturbingly loud operation/vibrations.

Notes: \*Motor hours run and corresponding condition rating will depend on the type of pump and the application the pump is used for (i.e. thickened sludge conveyance versus influent wastewater).

The HRC Team will conduct a workshop with the City of Ann Arbor’s staff to review Level 1, Level 2, and Level 3 condition assessment protocols for vertical assets. For the purpose of this proposal, we assume there are currently no assets that require an extensive level of condition assessment similar to a Level 3. However, budget and scope may be able to be revised as necessary if a particular asset’s risk warrants that level of assessment.

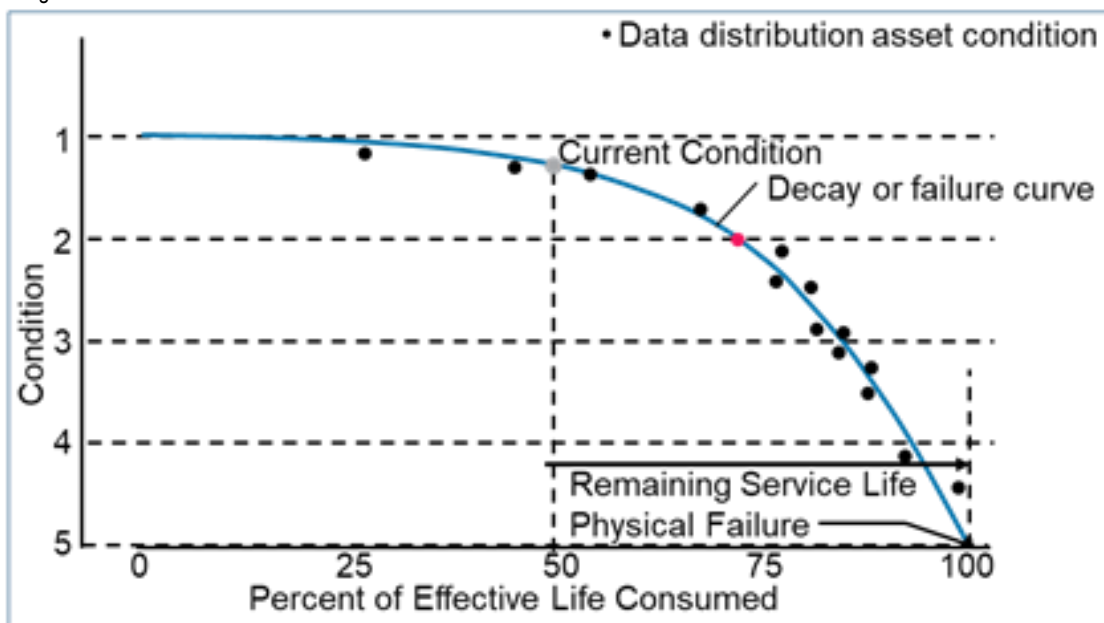
The HRC Team will:

- Review the City's existing condition assessment data and methodology used for assigning the existing condition scores.
- Develop a plan for obtaining necessary condition assessment data.
  - Provide guidance on which level of condition assessment is appropriate for which assets based on risk, a consequence of failure, parts availability, or other factors.
  - Develop standard procedures, associated forms, and templates for completing Level 2 condition assessments of WWTP and lift station assets by asset type. Identify responsible staff for completing each of the three levels of condition assessment (desktop, visual, and advanced).
  - Include procedures for capturing condition assessment data in Cityworks.
- Perform Level 2 condition assessment.
  - The HRC team, accompanied by City staff, will perform site visits to perform inspections of WWTP and lift station assets in the vertical asset register using the Level 2 condition assessment templates and protocols developed as part of this task. A maximum of 100 assets is assumed for this task.
- Rate the performance of the system's assets. Where appropriate, we will utilize standard benchmarking tools such as AWWA's Qualseve. Other asset performance assessments will be based on criteria developed around the four failure modes as described previously.
- Document decisions and established processes in a Technical Memorandum.

### Task 3 Determine Remaining Life of the Assets

After installation, every asset starts deteriorating through a combination of many factors, including its manufacture, operating environment, and degree of internal and external stresses. The decay of an asset follows a profile similar to the decay curve in **Figure 4** that shows a typical deterioration of condition over an asset's life. Once a relationship between condition/performance and asset age is established, an asset's current condition can be used to estimate useful life consumed and the probability of failure (POF).

Figure 4. Relating Condition to Percent Life Consumed



The condition data gathered in the previous tasks will be utilized to provide a revised estimate of remaining useful life, which will be focused on the physical condition of the asset. It is important to understand how to manage the assets, which are beyond their expected useful life based on rule-of-thumb estimates, particularly for wastewater facilities. The HRC Team has evaluated useful life at several facilities and has many standard estimate tables available to use as a starting estimate.

However, the typically available useful life estimates for certain assets are very general and are often used at a high level for an initial estimate if condition data are not available. Once condition data are obtained, the expected remaining useful life needs to be adjusted. Also, various utilities have information related to conditions specific to their systems that can be better understood by interviewing existing staff.

The HRC Team will work with City staff to develop a consensus approach to assessing the remaining useful life (RUL). The process will be discussed at an Asset Remaining Useful Life workshop where the HRC Team will present various approaches to estimating the RUL including positives and negatives of each approach. The results will be documented in a Technical Memorandum. Once consensus is reached on the methodology, the HRC Team will develop revised RUL values for each asset, which will be used in Tasks 4, 6, and 8.

## Task 4 Analysis of Life Cycle and Replacement Cost of Assets

The following data will generally be collected in other project tasks and will be used for the analysis of the life cycle for each asset type and estimating future replacement costs:

- The equipment installation date is part of the baseline asset data, which would be collected as part of Task 1.
- Baseline equipment replacement costs for vertical assets are typically estimated during the asset inventory portion of the work for vertical assets so that it would be completed as part of Task 1. The team would review the 2015 Water and Wastewater Capital Cost Recovery Study for initial values and make any recommendations for changes or refinement of data.
- Equipment effective useful life would be determined using the condition assessment portion of Task 2, which impacts the “Remaining Useful Life” (RUL) developed in Task 3.
- Replacement costs would be determined at the asset level, which then can also be “rolled up” to determine the value at the system, process, or site level.
- Costs for repair, renewal, and replacement of the assets would be determined and available for later steps, such as the O&M program recommendations and the CIP.

The analysis of life cycle and replacement costs will also incorporate the following concepts, in addition to the baseline attributes and RUL estimate, to ensure that the useful life of assets are maximized, and the Plan can be regularly updated into future fiscal planning cycles:

- Including an asset attribute that reflects the operating environment, which may be used to adjust anticipated useful life estimates for a particular asset within its type/class due to triggers associated with operating environment, material handled, and installation factors. An example of this would be the asset type of “Plug Valve,” which may have a baseline useful life of 20 years. The 20-year life represents the expected useful life for a plug valve installed inside the dry well of a building with proper heating and ventilation controls. Triggers or flags may be added as a field to the asset specification to represent adjustments to reflect it being installed below ground in a vault, in a classified area which may have corrosive gasses, or in an area where the valve will be submerged. Plug valves in any of these areas may have a useful life adjusted by 25% or 50% to reflect the differing environment than the baseline assumption.

- Integrating condition scoring with the CMMS to allow for the continuing assessment of the asset's condition in future years. Typically, the condition field is updated in the CMMS through the use of inspection work orders that are performed by operators on some reoccurring schedule. Changes in condition may also be captured during corrective and/or emergency work orders on an asset.
- Leveraging performance data from within the CMMS, which is typically based on a count and total cost of the number of corrective and/or emergency work orders associated with the particular asset over a given period of time.
- For critical assets (COF of 4 or 5,) the primary way to reduce the overall risk can only be reduced by keeping the probability of failure low, which may require increasing the frequency or type of maintenance or providing additional redundancy. Assets with the lowest criticality (COF of 1) may have a "run to fail" strategy, but an estimate of when that failure is expected to occur would be used to ensure the budget is available when that failure is expected to occur.
- To meet the reporting desired by EGLE as part of the WWTP's NPDES permit, a primary deliverable this task includes an estimated replacement schedule for a 20-year cycle for all WWTP and lift station assets.

## Task 5 Determine Target Levels of Service for Assets

One of the key elements of an asset management program is to define the levels of service (LOS) that customers, end-users, and key stakeholders experience. LOS describes the outcomes that a utility expects to achieve in providing services to its customers. LOS connects the strategic direction of the utility to the performance requirements established within the various parts of the organization. A LOS framework identifies the metrics that have the most significant and direct impact on service delivery to customers and stakeholders. It also enables utility organizations to track trends, report progress against targets, and make critical adjustments when necessary.

The HRC Team will work with City to identify relevant LOS requirements and develop an initial list of LOS performance measures, associated short term targets, and long-term goals across all asset types based on data currently available. Our team will perform a gap analysis to measure the City's current performance, identify gaps, and recommend improvement projects to close the gaps. LOS performance measures will focus on:

- Compliance with applicable State, Federal, and other regulatory requirements
- Protection of public health and safety
- Ratepayer and other stakeholder expectations
- Maintenance-related key performance indicators (KPIs)
- The City's strategic plan (if available)

## Task 6 Determine Criticality of Systems' Assets (Risk of Failure)

### Consequence of Failure

Consequence of Failure (COF) is often referred to as "criticality" and these terms (COF and criticality) are frequently used interchangeably. Asset COF is evaluated based on estimating the social, financial, and environmental/regulatory impacts of asset failure as shown in **Table 6**. These three broad categories of the consequence of failure are often referred to as the Triple Bottom Line (TBL) and go beyond simply assessing the direct financial consequences of an asset's failure (e.g., cost to repair or resource impacts).

Working with the City, the HRC Team will develop a consequence of failure scoring matrix based on our experience with similar water and wastewater utilities. As no two organizations are alike, the COF scoring system will be customized for the City. The COF framework will incorporate any existing preferences for scoring and weightings of the TBL categories currently used by the City.

Table 6. Triple Bottom Line Categories and Elements

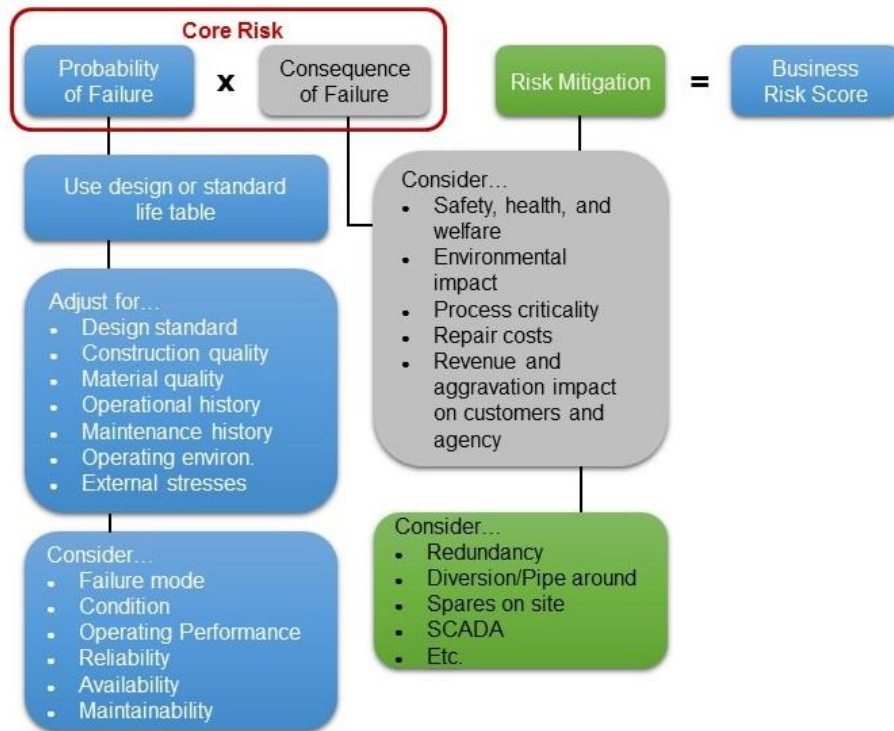
TBL Categories	Consequence of Failure Elements
<b>Social/Community</b>	Public Image, Customers Affected/Loss of Service, Health and Safety
<b>Financial</b>	Financial Impact (total cost to fix and mitigate the failure including indirect costs), Operational/Resource Impacts
<b>Environmental/Regulatory</b>	Examples include overflows, basement backups, regulatory (permit) compliance considerations

Our team will work with the City via consultant-led workshops to refine the COF scoring matrix and assign COF scores to WWTP and lift station assets.

### Business Risk Exposure

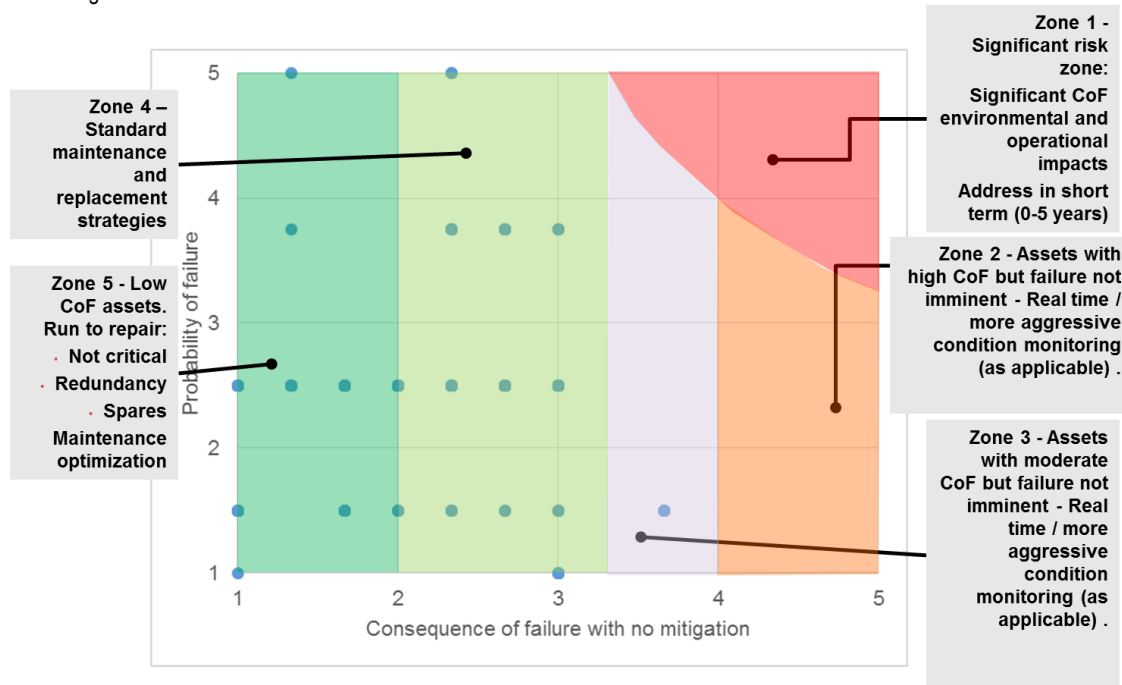
Utilizing the probability of failure (POF) results from Task 2, and the consequence of failure (COF) results from this task, the HRC Team proposes to develop a Business Risk Exposure (BRE) profile for all WWTP and lift station assets. BRE is an advanced asset management methodology used to focus management teams on high-risk assets and issues. The BRE for an asset is the product of the asset’s COF and POF, adjusted for any risk mitigation measures currently in place, such as redundancy. **Figure 5** is a schematic representation of the key variables of BRE with components that address each variable.

Figure 5. Business Risk Exposure Calculation



Core Risk is defined as the product of the COF and the POF without adjusting for any available risk mitigation factors, as shown in **Figure 6**. Under our approach, once the core risk has been calculated as a baseline measurement, risk mitigation and management strategies can be developed that can reduce the level of risk, in turn impacting the level and cost of service. Core Risk is the metric used to assign assets to risk management zones. Risk management zones and recommended strategies for each zone are illustrated in **Table 5**. The risk management zone establishes the initial prioritization consideration (prioritization bucket) for immediate asset investment needs such as condition assessment, repair, rehabilitation, or replacement (i.e., a snapshot of current needs). Additional prioritization of immediate asset interventions within individual risk management zones is accomplished by sorting BRE.

Figure 6. Risk Management Zones



As shown in **Table 5**, there are five risk management zones and associated high-level strategies. Zone 1 includes the highest risk assets, and Zone 5 consists of the assets with the lowest COF ratings.

### Task 7 Formalize Optimal Operations and Maintenance (O&M) Program

As part of the overall asset management Program implementation, existing O&M procedures and processes will be reviewed to ensure work is prioritized in alignment with the overall Program goals to reduce risk and overall life cycle costs. In addition, a template will be developed to allow for estimating expenditures each year for reporting as part of NPDES requirements and to guide future funding strategies. This task will also include the following additional work items:

- **Staffing Analysis.** As indicated in Part II, the EGLE Plan submittal will consist of a preliminary analysis of the required staffing levels using the City’s existing O&M manual recommendations (if available) and updating those using a program such as the Northeast WEF computer program. As the Program continues through its implementation, this initial estimate can be revisited and refined using the additional data available after the Plan was submitted.
- **Recommendations for Maintenance Strategies.** This will include assembling and reviewing existing O&M procedures used by the City and making recommendations for changes to maintenance methods to reduce risk and life cycle costs. Recommendations will include those to move from calendar-based maintenance to frequencies based on the actual operation. This process will also review existing CMMS work orders to ensure they are useable by operators and



capture required attributes and data needed for risk evaluation, determining remaining useful life, and measuring key performance indicators.

- **Identification of Intervention Strategies.** The intervention strategy determines how the asset condition and consequence data will be used to ensure the asset class/type is remediated when the probability of failure and/or overall risk is above an acceptable level. Depending on the asset type/class, the intervention may simply be replacement if it is not cost-effective to repair or rehabilitate the asset. For other asset types/classes, there may never be a complete replacement, but rather ongoing planned rehabilitations.
- **Development of an Operation and Maintenance Master Plan.** This will include a review of existing O&M-related documentation and identifying any gaps. It will compile recommended data management and asset maintenance and intervention strategies into a summary report.

## Task 8 Formalize Optimal Capital Improvement Program (CIP)

The asset inventory, condition, risk and remaining useful life data that are collected as part of other tasks in this project will produce the building blocks for an organized, long-term, and efficient CIP program. Once the base data is collected, it must be evaluated and distilled into a format that can be used to identify and implement future tasks, be they regular maintenance or capital improvements. Task 7, Formalizing the O&M Program, will help organize regular maintenance activities or straightforward replacement projects, while Task 8 will focus on larger, more complex capital projects. The resulting CIP will provide a holistic evaluation of all of the WWTP and lift station facilities focusing on both condition and process-related improvements. While the document will have up to a 20-year planning period, recommended improvements will be categorized in five-year periods, providing the most detail for projects in the initial five-year period, and will include an approach for prioritizing projects. The work will specifically include:

- Review existing CIP reports/plans and update and refine using business risk evaluation criteria established in previous tasks.
- Consolidate required work items into logical projects with anticipated costs, priority, and year of funding.
- Provide CIP in a format that allows for updating in future fiscal cycles and reporting as required to EGLE.

## Task 9 Recommend Sustainable Funding Strategy

Task 9 will build on all of the previous tasks to establish future system funding needs so they may be compared to anticipated revenue projections and identify any potential gaps. This task will guide making a recommendation for future spending priorities between operations and maintenance, repairs and refurbishment, replacement, and any proposed expansion projects. This task will include:

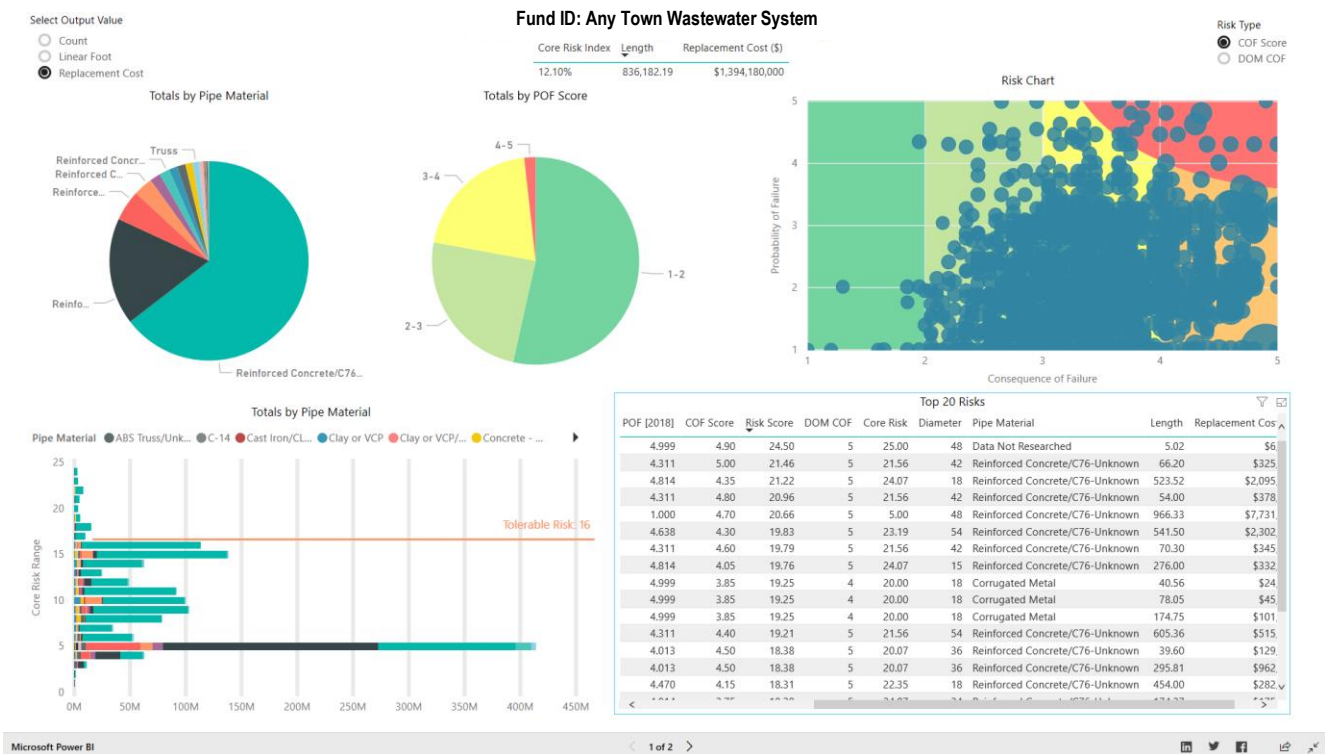
- Provide estimated expenditures required for maintenance and corrective action for the following year and assist with reporting tools to summarize costs from past year using data collected through the CMMS.
- Provide anticipated annual operational and maintenance costs and recommended CIP funding needs and implementation schedule to Systems Planning Unit and Financial and Administrative Services area to determine impacts on existing funding strategies. Refine recommendations to align with funding, financing, and affordability goals.
- Review possible grants and low-interest financing options that may be available for consideration, such as the Clean Water State Revolving Fund Green Principal Forgiveness grant.

## Task 10 Generate Asset Management Program

This task represents the culmination of all the previous tasks into a program of asset management strategies and actions for the City of Ann Arbor WWTP and lift stations. Final deliverables will include the data collected and programmed into the CMMS as part of the Program, recommended operational strategies and workflow documents, and a summary of recommended funding needs and prioritized projects. While much of this data will be housed in the City's GIS and CMMS databases and other systems, it is important to have a final document that can summarize and “tell the story” to a wide set of stakeholders and interested parties.

The HRC Team has extensive experience in using various tools and dashboards to provide visualization reports of large amounts of data to support informed decisions by utilities to better operate and maintain their assets. One available tool we have used is Microsoft's Power BI, which is functional and also easy to use. It is a platform to inform and visualize system risk, funding requirements, individual asset risk, and track key performance indicators. These dashboards, as shown in **Figure 7**, can be used to communicate with internal staff, decision-makers, and the public. They can also be leveraged to drive continuous improvement for the Program. They allow staff to track program progress and to direct change as needed using leading and lagging indicators.

Figure 7. Power BI Example Dashboard



The final program documents will also include documentation of standard procedures to summarize the O&M protocols for each asset class. Standards for ongoing data collection and management will also be documented to ensure staff is collecting the right data in the right way to allow for integration into the overall program to produce the needed information for tracking of KPIs and decision making. As indicated previously, individual tasks such as the CIP will be delivered in a format that allows for updating of reports with ongoing data collection and periodic re-evaluation of needs and recommendations.

## **EXHIBIT B COMPENSATION**

### General

Contractor shall be paid for those Services performed pursuant to this Agreement inclusive of all reimbursable expenses (if applicable), in accordance with the terms and conditions herein. The Compensation Schedule below/attached states nature and amount of compensation the Contractor may charge the City:



## D. Fee Proposal

Hubbell, Roth & Clark, Inc. (HRC) has included the following spreadsheet summary of our proposed hours by task and staff. HRC will utilize additional support staff and proposes to invoice all staff based on direct labor costs with a 2.0 multiplier added for overhead and profit. HRC's rates shown are estimated rates for 2020 by person for the purpose of estimating the fee proposal.

HRC will apply a 5% markup on subconsultant expenses as noted in the cost spreadsheet.

Costs for HRC's subconsultant, GHD, are detailed in their fee spreadsheet following the summary spreadsheet.

Costs are based on the information in the RFP, and the assumptions as outlined in our Work Plan.

Task	Hubbell, Roth & Clark (HRC)									Total Hours
	Chuck Hart	Karyn Stickel	Tim Sullivan	Aaron Uranga	Sally Duffy	Jeremy Jarinski	Chris Ross	Admin. Assistant	Staff Engineers	
<b>Project Management Tasks</b>										
Meetings (Kickoff, Monthly Progress & Misc.)	10	80		4	80			20		194
Monthly Reports & Project Management	20	40		4	80			20		164
<b>Task 1 Asset Inventory</b>										
Asset Inventory Framework Workshop #1 and Prep		8			8	8		8		32
Asset Inventory Framework Workshop #2 and Prep		8			8	8		8		32
Review existing data and determine inventory framework		2			10	10	10			32
Research additional data needs		2			10		40			52
Create and integrate electronic forms for inventory		2			10	20	10			42
<b>Task 2 Condition Assessment</b>										
Condition Assessment Workshop #1 and prep		4			4		4			12
Condition Assessment Workshop #2 and prep		4			4		4			12
Condition Assessment Workshop #3 and prep		4			4		4			12
Level 2 Condition Assessments					20	20	20			60
Condition Assessment Plan		4		4	4		4			16
<b>Task 3 Determine Remaining Life of Assets</b>										
Remaining Useful Life Workshop #1 and prep		4			4		4	8		20
Determine approach and RUL and document		4			50		20	8		82
<b>Task 4 Analysis of Life Cycle and Replacement Costs of Assets</b>										
Collect baseline replacement costs		2			8		25		4	39
Estimate renewal and repair costs		2	4		8		25		4	43
Review & update CMMS for repair reporting		2			8		40		4	54
Create replacement schedule for NPDES reporting		2	4		8		40		4	58
<b>Task 5 Determine Target Levels of Service for Assets</b>										
LOS Workshop #1 and prep		4			4					8
LOS Workshop #2 and prep		4			4					8
Perform LOS Gap Analysis		4			4					8
Levels of Service Technical Memorandum		2		4	2					8
<b>Task 6 Determine Criticality of Systems' Assets (Risk of Failure)</b>										
COF Workshop #1 and prep		4			4					8
COF Workshop #2 and prep		4			4					8
Perform Risk Modeling		4		4	4					12
<b>Task 7 Formalize Optimal O&amp;M Program</b>										
Staffing Analysis (preliminary and final)			2		10		10			22
Review & recommend maintenance strategies		2	10		10					22
Identification of intervention strategies		2	10		10					22
Development of O&M Master Plan	4	2	40	4	20			8		78
<b>Task 8 Formalize Optimal Capital Improvement Program</b>										
Review existing CIP and update/refine with new data	4	4	4	4	10		10		10	46
Consolidate work items into logical projects and prioritize		4	10		10		10		10	44
Provide CIP in format for updating and reporting		2	10		10		10	10		42
<b>Task 9 Establish Sustainable Funding Strategy</b>										
Provide estimated expenditures for O&M using CMMS		2	40	4	10		4		4	64
Estimate upcoming O&M and CIP funding needs		2	40	4	10		4		4	64
Review possible grant and/or financing opportunities		2	4		10		4	8		28
<b>Task 10 Generate Asset Management Program</b>										
Submit EGLE "Plan" for compliance with NPDES permit		2			40		40			82
Compile AMP Program into concise report	4	8		20	40	4	40			116
Deliverables and dashboard reporting		4		4	24		20	20		72
<b>TOTAL HOURS</b>	<b>42</b>	<b>236</b>	<b>178</b>	<b>60</b>	<b>568</b>	<b>70</b>	<b>402</b>	<b>118</b>	<b>44</b>	<b>1,718</b>
Hourly Rate	\$ 51.00	\$ 50.00	\$ 61.50	\$ 50.00	\$ 47.00	\$ 33.00	\$ 33.00	\$ 26.00	\$ 34.00	
Direct Costs	\$ 2,142.00	\$ 11,800.00	\$ 10,947.00	\$ 3,000.00	\$ 26,696.00	\$ 2,310.00	\$ 13,266.00	\$ 3,068.00	\$ 1,496.00	

HRC Direct Costs	\$ 74,725.00
Indirect Costs/Overhead & Profit @ 2.00x	\$ 149,450.00
Total HRC Costs	\$ 224,175.00
Total GHD Subcontracted Costs - Attached	\$ 157,520.00
HRC Subcontractor Expense Markup (5%)	\$ 7,900.00
<b>TOTAL BASE COSTS</b>	<b>\$ 389,595.00</b>

**WWTP & Lift Stations Asset Management Program**

City of Ann Arbor

RFP No. 20-12

Task	SUBCONTRACTOR HOURS AND COSTS: GHD										Total Hours
	Gage Muckleroy	Dan Schechter	Charlie Card	Bon Munro	John Stulken	Kathleen Zynda	Jennifer Dustin	William Kramer	Ritzi Salaam	Hours	
<b>Project Management Tasks</b>											
Meetings (Kick-off, Monthly Progress & Misc)	4	12	4								20
Monthly Reports & Project Management		20									20
<b>Task 2 Condition Assessment</b>											
Condition Assessment Workshop #1 and prep	2	4	6		6						18
Condition Assessment Workshop #2 and prep	2	4	6		6						18
Condition Assessment Workshop #3 and prep	2	4	6		6						18
Level 2 Condition Assessments		20						100	100		220
Condition Assessment Plan	2	10	40	16	20	20					108
Qualserve Performance Benchmarking Analysis	8	8	8	4	4		4				36
<b>Task 5 Determine Target Levels of Service for Assets</b>											
LOS Workshop #1 and prep	6	4	6								16
LOS Workshop #2 and prep	6	4	6								16
Perform LOS Gap Analysis	4	16	16								36
Levels of Service Technical Memorandum	4	2	24				10				40
<b>Task 6 Determine Criticality of Systems' Assets (Risk of Failure)</b>											
COF Workshop #1 and prep	4	4	12								20
COF Workshop #2 and prep	4	4	12								20
Perform Risk Modeling	4		40		20		60				124
											0
<b>TOTAL HOURS</b>	<b>52</b>	<b>116</b>	<b>186</b>	<b>20</b>	<b>62</b>	<b>20</b>	<b>74</b>	<b>100</b>	<b>100</b>		<b>730</b>
Hourly Rate	\$ 260.00	\$ 200.00	\$ 205.00	\$ 245.00	\$ 175.00	\$ 205.00	\$ 150.00	\$ 200.00	\$ 160.00		
Direct Costs	\$13,520.00	\$23,200.00	\$38,130.00	\$ 4,900.00	\$10,850.00	\$ 4,100.00	\$11,100.00	\$20,000.00	\$16,000.00		

\$ 141,800.00

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\$ 141,800.00

Travel Expenses \$ 12,800.00

\$ 2,920.00

**\$ 157,520.00**

**EXHIBIT C  
INSURANCE REQUIREMENTS**

From the earlier of the Effective Date or the Commencement Date of this Agreement, and continuing without interruption during the term of this Agreement, Contractor shall have, at a minimum, the following insurance, including all endorsements necessary for Contractor to have or provide the required coverage.

A. The Contractor shall have insurance that meets the following minimum requirements:

1. Professional Liability Insurance or Errors and Omissions Insurance protecting the Contractor and its employees in an amount not less than \$1,000,000.

2. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

Bodily Injury by Accident - \$500,000 each accident  
Bodily Injury by Disease - \$500,000 each employee  
Bodily Injury by Disease - \$500,000 each policy limit

3. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 04 13 or current equivalent. The City of Ann Arbor shall be an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the following minimum limits of liability are required:

\$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined
\$2,000,000	Per Project General Aggregate
\$1,000,000	Personal and Advertising Injury

4. Motor Vehicle Liability Insurance equivalent to, as a minimum, Insurance Services Office form CA 00 01 10 13 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be \$1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

5. Umbrella/Excess Liability Insurance shall be provided to apply in excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of \$1,000,000.

- B. Insurance required under A.3 and A.4 above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City for any insurance listed herein.
- C. Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and unqualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company; name(s), email address(es), and address(es) of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions, which may be approved by the City in its sole discretion; (c) that the policy conforms to the requirements specified. Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. If any of the above coverages expire by their terms during the term of this Agreement, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.