



July 1, 2025

Mr. Ben Croy, P.E.
City Engineer
City of Novi, Department of Public Works
26300 Lee Begole Drive
Novi, MI 48375

**RE: Scope of Design Services
 Water System Master Plan and AWIA Update**

Dear Mr. Croy:

Per your request, the following outlines our proposed scope of services and fee for the preparation of a Water System Master Plan for the City of Novi (City). The Water System Master Plan will incorporate the components of a Water Reliability Study, General Plan, and Asset Management Plan. There are many elements common in these documents. Completing these together will result in a more efficient inventory and robust Capital Improvement Plan (CIP). This plan will address the requirements of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Safe Water Drinking Act (Act 399).

Additionally, the City has requested OHM to assess drinking water system components more in-depth than the typical Water Master Plan elements and to include specific items in the analyses including:

- An operational and capacity analysis of the West Park Storage Tank and Booster Station
- Incorporate and expand on recent analyses of the Island Lake Pump Station and pressure district
- Extended period simulations for average day and maximum day demands for analyses of water age and system operations
- Consider the need and impacts of a new GLWA supply feed in the Northeast corner of the City
- Include the potential City West development near Grand River Avenue and Beck Road in future modeling scenarios
- Consider a new emergency connection with the City of Farmington Hills near 13 Mile Road

The City has also requested that OHM update the documents needed for compliance with America's Water Infrastructure Act of 2018 (AWIA). Under AWIA, the City is required by the United States Environmental Protection Agency (EPA) to update its Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP) every five years. The City previously developed and certified its RRA and ERP to the EPA in December 2020 and June 2021, respectively, thus these documents are nearing their time for renewal.

It is understood that the City desires to comply with the aforementioned regulatory requirements and update its hydraulic model. The hydraulic model will be used to efficiently address anticipated development and Act 399 permits within its service area. The Water Master Plan will ultimately be used by the City to address high-priority asset needs that are critical to the City's infrastructure performance, hydraulic capacity, and planning for future capital and operating expenditures. This proposal contains the proposed scope of services, schedule, and fee to develop a Water System Master Plan, perform additional system analyses as requested, and update the RRA and ERP documents by their due dates to maintain compliance with EGLE and EPA requirements.



PROJECT UNDERSTANDING

The Water Master Plan will address several EGLE required items. The Water Reliability Study focuses on planning for current and future water system demands. It addresses items listed under Part 12, Reliability, R 325.11203 and R 325.11204 of Act 399. The General Plan includes the hydraulic analysis of the system and addresses Part 16, R 325.11604 through R 325.11606. The Asset Management Plan (AMP) addresses new requirements under Part 16, R 325.11606. An AMP includes condition assessment, failure risk analysis, and revenue structure to look at life-cycle costs of system operation, maintenance, and infrastructure repair or replacement.

The Reliability Study focuses on planning items including population and water demands for three separate planning periods (existing, 5-year, and 20-year). Average day, maximum day, and peak hour water demands must be calculated for the three planning periods and fire protection needs must be identified. The Reliability Study also documents the capacities of the existing water source, pumping capacity, and storage and compares those capacities to the existing and future needs of the system. In the case of the City, the Reliability Study will evaluate the ability of the Great Lakes Water Authority (GLWA) to provide enough water volume at contract pressures to provide for the needs of the system.

The General Plan includes the hydraulic analysis of the system, the AMP, and the CIP. The hydraulic analysis must include creation of pressure maps for the various water demand conditions for the three planning periods. Additionally, fire protection needs must be identified, and available fire protection must be presented. A comprehensive map of the system showing service boundaries, location of water system components, water main size, material, age, and the location of hydrants and valves must be provided. The final component of the General Plan is the CIP. The CIP must identify necessary system improvements for the 5-year and 20-year planning periods.

An AMP addresses the following components:

- Details of the system used to maintain **inventory** of assets
- Description of the methodology to assess **criticality** considering likelihood and consequence of failure (proximity to lead service lines (LSLs) must now be considered)
- Statement of **level of service** goals
- A 5-year and 20-year **capital improvements plan** which will address hydraulic deficiencies identified in the hydraulic analysis as well as condition deficiencies identified in the AMP analysis.
- Summary of the **revenue structure** and rate methodology to provide sufficient resources to implement the AMP.

In addition to the Water Master Plan, we understand that the City desires to comply with the requirements of the America's Water Infrastructure Act of 2018 (AWIA), which involve updating its RRA and ERP. The RRA and the subsequent ERP will be developed per the requirements of Section 2013 of AWIA and other applicable Sections and requirements that are necessary but not specifically referenced herein, as required by AWIA. OHM will act in the capacity of an advisor as the City develops its RRA and ERP. The final certification and eventual execution of these Plans lies within the sole discretion of the City.

Per the AWIA requirements, utilities that serve between 50,000 and 99,999 customers, which includes the City, were required to initially certify their RRA documents to the EPA by December 31, 2020, and their ERP documents by June 30, 2021, or six months following certification of their RRA. OHM previously assisted the City in developing and certifying its RRA document to the EPA in December 2020. The City then developed and certified its ERP document to the EPA six months later, in June 2021, as required by AWIA. It is then required to update the RRA and ERP documents every five years and re-certify them to the EPA. Thus, the City's updated RRA must be certified to the EPA by December 31, 2025, and the updated ERP must be certified by June 30, 2026, or within six months following certification of the RRA, whichever is sooner.



The City receives its water through five GLWA master meter connections. These connections serve four pressure districts: the High, Intermediate, Low, and Island Lake pressure districts. The City's pressure districts are separated by pump stations, pressure reducing valves, closed valves, and check valves. Each GLWA connection has an underground vault with a flow meter.

SCOPE OF SERVICES

The objective of OHM Advisors' proposed scope of services is to prepare a plan with the aforementioned requirements as it relates to the City's water system. The following scope of services is proposed for the City's consideration:

Task 1: Project Initiation and Data Review

Under this task, OHM will initiate the project and obtain necessary information to proceed with the analysis. Specific work efforts include:

- ▶ Organize and attend an in-person kick-off meeting with City staff to review project goals, objectives, and project schedule.
- ▶ Obtain necessary updated planning information to perform population projections and water demand calculations.
- ▶ Confirm desired fire protection rates and zoning information.
- ▶ Obtain the latest GIS information from the City and review updates to the water system, including lead service line information.
- ▶ Review status of the water system data and identify required information to be updated.

Task 2: Risk Assessment

The City's horizontal asset inventory will be updated based on the GIS database. We propose to use existing GIS as the repository for the asset assessment. Under this task, the City will also be asked to review and update (as needed) the inventory and assessment of vertical assets compiled during the 2020 Water Master Plan project. The assessment portion of this task will utilize new, existing, and historic water system information to approximate infrastructure condition (in lieu of actual field condition testing). We propose to complete the following work associated with Task 2:

- ▶ Review City-provided water main break data since the last AMP was completed. We assume the break data includes date of break and location.
- ▶ Review the 2020 consequence of failure/criticality assessment with the City. Update the criticality criteria with lead service line information.
- ▶ Perform approximation on potential remaining useful life of water main infrastructure given the water mains' age, material of construction, break history, and maintenance history.
- ▶ Review updates to the vertical asset inventory and condition assessment.

As part of this task, asset risk calculations will be updated by identifying asset probability of failure (based on asset condition) as well as consequence of failure (based on qualitative or quantitative information, such as potential service disruption impacts). As part of this task, we also propose to review the existing critical asset information with the City and update as needed for incorporation into the risk assessment. This includes locations such as schools, City Hall, the police station, industrial users, the downtown area, *etc.* OHM will use a combination of GIS and spreadsheets (Microsoft Excel format) to perform the calculations and analysis.

Please note that R 325.11606 requires that the presence of LSLs be a factor for prioritizing asset criticality which was not required during the previous Water Master Plan update.



Task 3: Planning and Demand Projections

Under this task, OHM will evaluate and analyze updated population and consumption data. OHM, with the assistance of City staff, will compile updated planning data that will be used in creation of water system demand projections. Under this task, OHM will assemble, evaluate, and analyze water demand and water system capacities to determine the sufficiency of the water system to meet existing and future needs. OHM will use existing data to determine the City's peak hour demands. Five year and 20-year demands will be estimated based upon population projections while also accounting for planned developments such as the City West development near Grand River Avenue and Beck Road. Maximum day and peak hour peaking factors based on existing conditions will be utilized. It will also be necessary to analyze water billing records to determine water loss within the system, to provide a breakdown of water use by different customer classes, and to identify the top water users in the system to distribute water demands accurately within the hydraulic model. We assume that billing record data will be available for these calculations.

Specific work efforts include the following:

- Compile and report planning data as required by the provisions in Act 399. These items include the following:
 - a. Current, 5-year, and 20-year populations based upon SEMCOG population projections and City input.
 - b. Number of service connections and annual usage totals for each customer class as determined by the public water supply.
- Compile and report the collected water consumption data (current, 5-year, and 20-year planning periods) as required by the provisions in Act 399 using information from the City's SCADA and GLWA Wholesale Automated Meter Reading Portal (WAMR). These items include the following:
 - a. Present and projected average daily demands.
 - b. Present and projected maximum daily demands.
 - c. Present and projected peak hourly demands.
 - d. Present and projected fire flow demands.
 - e. Basis for demand projections.
 - f. Monthly and annual water purchase and consumption.
- Determine diurnal demand use patterns for average day and maximum day demands
- Determine if the system has adequate supply, transmission, pumpage capacity, and storage capacity under existing and future scenarios.
- Analyze non-revenue water.
- Meet in-person with the City to review results from Task 2 and Task 3.

Task 4: Hydraulic Model Build

OHM proposes to build a new hydraulic model using the City's latest GIS data. Water main will be imported to the model, and initial roughness values will be determined based on the pipes' age, diameter, and material. Updated water demands, operating criteria, and elevation data will be input into the water model to simulate pressures and available fire protection under current conditions. Operational criteria will be obtained from the City. It is important that these operating set points be properly input into the water system model. The model will then be calibrated based on hydrant flow testing performed as part of this project. OHM will provide suggested hydrants for testing and will assist the City with the flow tests. It is anticipated that approximately 16 to 20 test locations will be selected. Two days of field work for hydrant flow testing are included in this proposal. Water demand scenarios for average day, maximum day, and peak hour for existing, 5-year, and 20-year planning periods will be updated in the hydraulic model under this task utilizing the data gathered during Task 3.

As part of the General Plan requirements, maps displaying the water service district boundaries will be provided along with a map displaying water main size, material, and age. Hydrants and valves and other water system components will also be included on the maps.



Specific work efforts include the following:

- ▶ Work with the City to update water system GIS data if necessary for model incorporation.
- ▶ Build a new hydraulic model of the City's existing water model.
- ▶ Populate water demand scenarios for average day, maximum day, and peak hour for existing, 5-year, and 20-year planning periods in the model.
- ▶ Populate demand patterns for average day and maximum day demands.
- ▶ Input operational settings.
- ▶ Identify 16-20 hydrant flow test locations and assist City with hydrant testing. Two days of field work are anticipated for this effort.
 - Following hydrant testing, SCADA data downloads will be requested from the City to assess system conditions during the testing period including demands, tank levels, pump settings, etc.
- ▶ Calibrate model.
- ▶ Develop General Plan map.

Task 5: Hydraulic Analysis

Once the model has been updated and calibrated, it will be used to determine anticipated system pressures during average day, maximum day, and peak hour demands for existing conditions. Existing available fire protection during a maximum day demand period will also be shown. Deficiencies in pressure or areas of fire protection concern will be identified for existing conditions. EGGLE requires that a minimum pressure of 35 psi be maintained throughout the system during normal demand conditions, including peak hour demands. The model will also be used to assess system pressure and available fire protection for the 5-year and 20-year planning periods.

OHM will meet with City staff after areas of concern from the existing conditions model are identified. Proposed water system improvements to fix existing pressure concerns (either too low or too high) and to improve desired fire protection will be initially based on existing conditions. Once the hydraulic-driven improvements are identified and agreed upon with the City, the model will be updated to include those improvements and the 5-year and 20-year future water demand scenarios will be modeled. If other hydraulic-driven improvements are needed based on these future scenarios, they will be noted and presented. Once the hydraulic-driven system improvements have been identified and incorporated in the water model, the pressure maps and fire protection maps will be updated for the existing, 5-year, and 20-year future projections, as required.

Analyses will also include an evaluation of the West Park Storage and Booster Station, the Island Lake Booster Station and Island Lake Pressure District, a potential new GLWA feed in the northeast corner of the City, and a potential new emergency connection with the City of Farmington Hills.

Specific work efforts include the following:

- ▶ Perform model analyses for average day, maximum day, and peak hour demand scenarios for existing, 5-year, and 20-year planning periods.
- ▶ Perform fire protection model analyses for existing, 5-year, and 20-year planning periods.
- ▶ Perform an average day extended period simulation for an estimation of water age in the system.
- ▶ Perform a maximum day extended period simulation for an operational analysis of the system.
- ▶ Identify capital improvements needed to address pressure or fire protection concerns for the three planning periods.
- ▶ Meet in-person with the City to review system deficiencies and recommended capital improvements.
- ▶ Perform modeling of future scenarios with finalized system improvements.
- ▶ Develop maps summarizing the model results.
- ▶ Make results available in a format compatible with the City's existing GIS dashboard.



Task 6: Level of Service and Revenue Structure

We propose to assist the City with updating their Level of Service Goals. The level of service helps define the way that staff and water system stakeholders (residents, board, *etc.*) want the utility to perform over the long term. As part of this effort, we propose to review the previous approach for the development of level of service goals (including service criteria, performance indicators, and targeted level of service) and stakeholder involvement. This work will be completed in collaboration with City staff.

Development of a revenue structure is required by the Rule. This proposal assumes that the City will use results from recent financial analyses to perform this assessment. Therefore, only minimal effort is proposed as part of this task, which relates to assisting City finance staff (or their designee) with questions and performing revisions on the proposed, prioritized CIP upon City request.

Task 7: Capital Improvement Plan

Under this task, a Capital Improvement Plan (CIP) will be developed based upon the recommendations from the AMP, hydraulic analyses, and input from the City on corresponding projects. Water system CIP projects will consider hydraulic issues identified during Task 5, condition analysis findings from Task 2, and City-directed desired projects for the 5-year and 20-year planning horizons. A map showing proposed projects will be created and cost opinions will be developed. The map layers of CIP items will be provided in a format compatible with the City's existing GIS dashboard.

Task 8: Development of Water Master Plan Report

As part of this task, a Water Master Plan Report will be generated for the City for submission to EGLE, including the findings, results, and conclusions from the above-outlined tasks. OHM will meet with the City to review the findings and recommendations from the Water Master Plan report.

Specific work efforts include the following:

- Develop a draft written Water Master Plan report summarizing the findings, results, and conclusions.
- Meet with the City to review the draft report.
- Finalize the written report to reflect comments received and submit an electronic copy in PDF format to the City for submission to EGLE.

Task 9: Risk and Resilience Assessment Update

There are several voluntary consensus standards and resources for Risk and Resilience planning available through the EPA, Department of Homeland Security, and professional organizations. The EPA's Voluntary Self-Assessment Tool (VSAT), which is based on AWWA's J100-10 Risk and Resilience Management of Water and Wastewater Systems, and the AWWA Water Sector Cybersecurity Risk Management Tool were designed to satisfy the RRA requirements.

The RRA must address the following:

- The risk to the system from malevolent acts and natural hazards;
- the resilience of the pipes and constructed conveyances, physical barriers, source water, water collection and intake, pretreatment, treatment, storage and distribution facilities, electronic, computer, or other automated systems (including the security of such systems) which are utilized by the system;
- the monitoring practices of the system;
- the financial infrastructure of the system;
- the use, storage, or handling of various chemicals by the system; and
- the operation and maintenance of the system.

Although the EPA does not require water systems to use specific designated standards, methods, or tools to conduct the RRA required under AWIA Section 2013, OHM will utilize the AWWA G430 Security Practices for Operation



and Management and AWWA J100-10(R13) Risk and Resilience Management of Water and Wastewater Systems as guides. OHM will complete the RRA through a series of workshops and online tools. OHM will utilize the EPA's VSAT Tool to quantify the system's risk of and resilience to malevolent acts, natural hazards, and other threats. It should be noted that since the development of the City's RRA in 2020, a new version of the VSAT tool has been developed that contains new threats and updated costs associated with the financial impact analysis, so an updated analysis utilizing the new version of the VSAT tool will be required. AWWA's Water Sector Cybersecurity Risk Management Tool will also be used to assist the City in complying with the cybersecurity provisions in AWIA.

Specific work efforts include the following:

- Review background information from the 2020 RRA report.
- Facilitate up to four (4) 2-hour workshops to review information, identify and pair critical assets and threats, and calculate risks using the updated VSAT Tool.
- Facilitate up to two (2) 2-hour workshops to complete the AWWA Cybersecurity Tool.
- Develop RRA report and review with the City.
- Assist City with certification of the RRA to the EPA.

These RRA efforts are proposed to be completed by December 5, 2025 to allow sufficient time for the City to certify its completion of the RRA to the EPA by the December 31, 2025 deadline. As a reminder, the RRA report itself should not be submitted to the EPA as part of the certification process as it is for internal use only.

Task 10: Emergency Response Plan Update

Similar to the RRA, the City must also review and update its ERP at least once every five years (and within six months of the RRA update) and certify completion to the EPA. The water system ERP is required to describe strategies, resources, plans, and procedures the utility can use to prepare for and respond to an incident, natural or man-made, that threatens life, property, or the environment. Incidents can range from small water main breaks or localized flooding to large scale natural disasters or system contamination, among other examples.

The ERP should include:

- Strategies and resources to improve the resilience of the system, including the physical security and cybersecurity of the system.
- Plans and procedures that can be implemented, and identification of equipment that can be utilized, in the event of a malevolent act or natural hazard that threatens the ability of the community water system to deliver safe drinking water.
- Actions, procedures, and equipment which can obviate or significantly lessen the impact of a malevolent act or natural hazard on the public health and the safety and supply of drinking water.
- Strategies that can be used to aid in the detection of malevolent acts or natural hazards that threaten the security or resilience of the system.

It is understood that the City has an existing FEMA-approved ERP for City operations that addresses disaster preparedness and continuity of operations during an emergency. This ERP was updated to meet AWIA requirements in 2020. As part of this effort, OHM will work with the City to update outdated components of the ERP and to ensure the ERP includes the necessary components to comply with AWIA requirements.

Specific work efforts include the following:

- Review the City's existing ERP and identify updates necessary to comply with AWIA requirements.
- Facilitate up to two (2) 2-hour workshops to update the ERP. The purpose of these meetings will be to review and identify the potential responses and available resources to address the recognized risks from the RRA.
- Update the ERP report and review with the City.
- Assist City with certification of the ERP to the EPA.



These ERP efforts are proposed to be completed by June 5, 2026 to allow sufficient time for the City to certify its completion of the ERP to the EPA by the June 30, 2026 deadline. It should be noted that the ERP certification is due within six months of certification of the RRA or by June 30, 2026, whichever is sooner. As such, the ERP may need to be certified to the EPA before June 30, 2026 depending on the date on which the RRA is certified to the EPA. As a reminder, the ERP report itself should not be submitted to the EPA as part of the certification process as it is for internal use only.

SCHEDULE

Assuming authorization by July 1, 2025, OHM Advisors proposes to submit the final Water Master Plan report deliverable to the City and EGLE no later than March 31, 2026. OHM also proposes to submit the final RRA report to the City no later than December 5, 2025 to allow sufficient time for the City to certify its completion of the RRA to the EPA by the December 31, 2025 deadline. Similarly, OHM proposes to submit the final ERP report to the City no later than June 5, 2026 to allow sufficient time for the City to certify its completion of the ERP to the EPA by the June 30, 2026 deadline (or within six months of the RRA certification). These project durations are based on timely responses from the City when information requests are verbally or formally submitted. As outlined in the Scope of Services, ongoing involvement is needed from the City to maintain task progress and schedule.

ASSUMPTIONS

The following summarizes our assumptions associated with this proposal:

- The City will provide operating criteria necessary for model analysis.
- The City will provide current GIS data for the water system and update the water system GIS data as necessary for model and AMP incorporation.
- The City will provide its revenue structure and recent financial analysis.
- The City will perform hydrant flow testing with assistance from OHM Advisors' field staff.
- The City will provide its RRA and ERP documents and associated AWIA materials that were developed in 2020.
- In the event any additional services are required by OHM Advisors, an addendum to the supplemental engineering agreement will be submitted for your approval prior to performing said services. The following tasks are not included in this proposal but can be provided on a time-and-materials basis upon the request of the City:
 - Additional field verification or assistance.
 - Vertical asset condition assessment.
 - GIS data collection or updates to existing GIS data.

FEE

The proposed fee for the above work is one hundred forty thousand seven hundred dollars (\$140,700.00). The costs are derived based on the anticipated number of staff hours at the standard contract rates of \$125/hour for Engineer and \$175/hour for Senior Engineer. The summary of anticipated hours and costs are included in the following table:

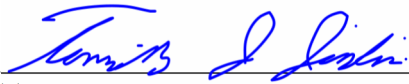


Task	Engineer		Senior Engineer		Estimated Cost
	Hours	Hourly Rate	Hours	Hourly Rate	
Task 1 – Project Initiation and Data Review	24	\$125.00	8	\$175.00	\$4,400.00
Task 2 – Asset Inventory and Risk Assessment	50	\$125.00	26	\$175.00	\$10,800.00
Task 3 – Planning and Demand Projections	100	\$125.00	40	\$175.00	\$19,500.00
Task 4 – Hydraulic Model Build	110	\$125.00	50	\$175.00	\$22,500.00
Task 5 – Hydraulic Analysis	170	\$125.00	60	\$175.00	\$31,750.00
Task 6 – Level of Service and Revenue Structure	10	\$125.00	4	\$175.00	\$1,950.00
Task 7 – Capital Improvement Plan	64	\$125.00	30	\$175.00	\$13,250.00
Task 8 – Development of Water Master Plan Report	80	\$125.00	32	\$175.00	\$15,600.00
Task 9 – Risk and Resilience Assessment	76	\$125.00	28	\$175.00	\$14,400.00
Task 10 – Emergency Response Plan	30	\$125.00	16	\$175.00	\$6,550.00
	714		294		\$140,700.00

Thank you for the opportunity to be of service. If you have any questions or require additional information, please contact us. We look forward to working with you on this project.

Sincerely,
OHM Advisors

Authorization to Proceed


 Timothy J. Juidici, P.E.
 Principal-in Charge

 Signature Date

 Printed Name Title

cc: Seth Swanson, OHM
 Susan Knepper, OHM
 File