

SPONSORED RESEARCH AGREEMENT

This Agreement is between Metropolitan Government of Nashville and Davidson County (“Sponsor”) a municipal government formed pursuant to the laws of Tennessee, and Vanderbilt University (“VU”), an institution of higher education and Tennessee non-profit corporation.

Agreement Number: SRA00000452
Research Program Title: Early Warning Detection for Water Management Systems
Effective Date: This agreement will become effective upon approval by the Metropolitan Council.
Cost: \$248,405.00
Payment Schedule: Monthly vouchers will be sent for reimbursement for two (2) years after the date this agreement is approved by the Metropolitan Council.

The following authorized party representatives have executed this Agreement, including all its terms and conditions effective as of the date of the Effective Date asserted above.

Sponsor
Metropolitan Government
DocuSigned by:
Signature Scott Potter
994E7D0AE02B458
Name Scott Potter
Title Director, Department of Water and Sewerage Services
Date 12/1/2025

Vanderbilt University
Jean M. Mercer
Digitally signed by Jean M. Mercer
Date: 2025.11.25 16:05:15 -06'00'
Signature Jean M. Mercer
Name Jean M. Mercer
Title Senior Assistant Provost for
Sponsored Programs Administration &
Compliance
Date 11/25/2025

Read and Acknowledged:
Signature Meiyi Ma
Name Meiyi Ma
Title Vanderbilt Principal Investigator
Date 11/25/2025

1. DEFINITIONS

As used herein, the following terms shall have the following meanings:

- 1.1 “Affiliate” means any entity which (a) controls at least a fifty percent (50%) interest of one of the Parties; (b) is at least fifty percent (50%) owned by one of the Parties; or (c) is under common control of a third entity which owns at least a fifty percent (50%) interest in one of the Parties.
- 1.2 “Sponsor Project Inventions” means Project Inventions owned solely by Sponsor.
- 1.3 “Joint Project Inventions” means Project Inventions owned jointly by Sponsor and VU.
- 1.4 “Project” means the research project described in the Statement of Work.
- 1.5 “Project Inventions” means the ideas, improvement or other inventions conceived or otherwise created during the Term and in the performance of the Project as well as all patents, patent applications and other forms of intellectual property which claim or otherwise cover such ideas, improvements and inventions.
- 1.6 “Project Participants” means the VU Principal Investigator and those VU employees working under the direction of the VU Principal Investigator in connection with the Project during the Term.
- 1.7 “Statement of Work” means the description of the research provided in Attachment A, which is incorporated herein by reference as if restated here in full.
- 1.8 “Technical Material” means those data, results and reports generated as a result of the Project, but does not include any Project Inventions.
- 1.9 “Term” means until 4/30/2027.
- 1.10 “VU Deliverables” means Technical Materials and VU Confidential Information.
- 1.11 “VU Principal Investigator” means the VU personnel under whose direction the Project will be conducted, namely, Dr. Meiyi Ma, Professor of Computer Science, in the Department of Computer Science at VU.
- 1.12 “VU Project Inventions” means Project Inventions owned solely by VU.

2. PROJECT WORK

- 2.1 The Parties shall perform the Project in accordance with the Statement of Work. VU Principal Investigator will not materially deviate from the Statement of Work without prior written approval from the Sponsor.
- 2.2 In the event that the VU Principal Investigator becomes unable or unwilling to continue the Project, or leaves the employ of VU, VU or Sponsor each have the option to terminate the Project unless a mutually acceptable substitute can be found within a sixty (60) day period following notice to Sponsor of the inability of the VU Principal Investigator to continue the Project.
- 2.3 This Agreement does not limit the freedom of individuals participating in this Statement of Work to engage in any other research.

3. REPORTS

Unless provided otherwise in the Statement of Work, the VU Principal Investigator shall issue a detailed report summarizing the results of the Project, including Project Inventions, if any, to the Sponsor within sixty (60) days after completing the Project.

4. TECHNICAL MATERIAL

All Technical Material conceived and reduced to practice arising out of the performance of the Project shall be jointly owned by the Parties.

5. INTELLECTUAL PROPERTY

- 5.1 Ownership of Project Inventions, if any, shall be determined according to inventorship, which shall be determined according to U.S. law. Each Party shall retain its rights to practice its undivided interest in any Joint Project Inventions or jointly owned Technical Materials without the consent of and without accounting to the other.
- 5.2 Subject to any rights the U.S. Government may have as a result of funding aspects of the Project, VU grants to Sponsor: (a) a non-exclusive, worldwide, sublicensable (but only to Sponsor's Affiliates and contract research organizations working on Sponsor's behalf) license to make, use, have made, and import VU Project Inventions for Sponsor's research purposes only ("Purpose") (For the avoidance of doubt, the Purpose does not include the use of the VU Project Inventions in the making, using or selling of any product offered for commercial sale or the performance of any service offered for commercial sale or use involving human subjects in a clinical trial) and (b) an exclusive option (the "Option") to obtain an exclusive, worldwide license, with the right to grant sublicenses, to make, use, sell, have made, have sold, offer to sell, and import under VU's rights in VU Project Inventions and Joint Project Inventions on terms to be negotiated in good faith between the Parties. Sponsor may exercise the Option by sending written notice to VU at any time within ninety (90) days following the receipt of a written

disclosure from VU describing in detail such VU Project Invention (the "Option Period"). If, at the end of the Option Period, Sponsor has not exercised the Option, or in the event the Parties fail to reach a mutually acceptable licensing arrangement within six (6) months after the Option Period, VU shall be entitled to negotiate with a third party for a license to VU's rights in VU Project Inventions and/or Joint Inventions.

- 5.3 Any patent applications necessary to protect the proprietary positions of the Parties in any of the VU Project Inventions and Joint Project Inventions will be prepared and filed by VU jointly in Sponsor's and VU's names, if a Joint Project Invention, and solely in VU's name if a VU Project Invention with expenses paid by Sponsor during the Option Period (including any associated negotiation period) or until such time as Sponsor notifies VU in writing that it is waiving the Option. During the Option Period and subject to any rights the U.S. Government may have as a result of funding aspects of the Project, if VU elects not to file or maintain an application or patent arising from any VU Project Invention or Joint Project Invention, VU shall promptly notify Sponsor, and Sponsor shall have the right to file or maintain the applications or patents, at Sponsor's expense.
- 5.4 Sponsor hereby grants to VU and VU hereby acknowledges and accepts a fully paid-up, irrevocable, non-exclusive license to use Sponsor Project Inventions for VU's research, education and collaboration purposes.

6. CONFIDENTIALITY

- 6.1 The Parties acknowledge that, prior to and during the Term of this Agreement, the Parties may disclose to one another scientific, technical, business, or other information which is treated by the disclosing Party as confidential (hereinafter referred to as "Confidential Information"). Tennessee Code Annotated § 10-7-504(i) specifies that information which would allow a person to obtain unauthorized access to confidential information or to government property shall be maintained as confidential. "Government property" includes electronic information processing systems, telecommunication systems, or other communications systems of a governmental entity subject to this chapter. Such records include: (A) Plans, security codes, passwords, combinations, or computer programs used to protect electronic information and government property; (B) Information that would identify those areas of structural or operational vulnerability that would permit unlawful disruption to, or interference with, the services provided by a governmental entity; and (C) Information that could be used to disrupt, interfere with, or gain unauthorized access to electronic information or government property. The foregoing listing is not intended to be comprehensive, and any information which Sponsor marks or otherwise designates as anything other than "Public Information" will be deemed and treated as Confidential Information. Confidential Information shall specifically exclude Technical Materials. Both Parties agree that in order to ensure that each Party understands which information is deemed to be confidential, all Confidential Information relating to the Project will be in written form or electronic form and if the Confidential Information is initially disclosed in oral or some other non-written form, it will be confirmed and summarized in writing and clearly within thirty (30) days of disclosure. The receiving Party shall hold such Confidential Information in confidence and shall treat such information in the same

manner as it treats its own confidential information but not less than with a reasonable degree of care. In recognition that VU is a non-commercial, academic institution, Sponsor agrees to limit to the extent possible the delivery of Sponsor Confidential Information to VU. VU retains the right to refuse to accept any such information or data from Sponsor which it does not consider to be essential to the completion of the Project or which it believes to be improperly designated, for any reason, but such refusal shall not eliminate the obligation of the individual making such a determination from treating such information as confidential hereunder where such information has been read by such individual. The Confidential Information provided to the receiving Party will remain the property of the disclosing Party and will be disclosed only to those persons necessary for the performance of this Agreement. To the extent permitted by state law, no indirect or consequential damages or damages based on loss of profits or market share are contemplated or recoverable for breach of confidentiality.

6.2 The obligation of the receiving Party to maintain confidentiality under this Agreement will survive its expiration or termination and will endure for three (3) years from the date of disclosure. Upon the request of Sponsor, VU shall return all information in whatever form in a format chosen by Sponsor. In the event of any unauthorized disclosure or threatened disclosure of Sponsor information, Sponsor is further authorized and entitled to immediately seek and obtain injunctive or other similar relief against VU, including but not limited to emergency and ex parte relief where available.

6.3 Confidential Information shall not include information that:

(i) is already known to the receiving Party prior to the effective date, as evidenced by the receiving Party's records;

(ii) becomes publicly known without the wrongful act or breach of this Agreement by the receiving Party;

(iii) has been or is disclosed to the receiving Party by a third party who was not, or is not, under any obligation of confidence or secrecy to the disclosing Party at the time said third party discloses to the receiving Party, or has the legal right to do so;

(iv) is developed independently by employees of the receiving Party who had no access to or knowledge of the Confidential Information, as evidenced by the receiving Party's records;

(v) is approved for release by written authorization of the disclosing Party;

(vi) is required to be disclosed by law or governmental regulation or to any governmental entity with jurisdiction, provided the receiving Party promptly notifies the disclosing Party as soon as reasonably practical or possible of receipt of the request, and takes reasonable and lawful actions to avoid and/or minimize the extent of such disclosure if requested by the disclosing Party, at the disclosing Party's sole cost and expense.

7. PUBLICATIONS

- 7.1 Sponsor acknowledges that the VU Principal Investigator and other Project Participants have the right and academic duty to publish the Technical Materials and agrees that the VU Principal Investigator and Project Participants will be permitted to present at symposia or professional meetings and to publish in books, journals, and other media of their choosing, any and all Technical Materials. The VU Principal Investigator and other Project Participants will at all times have the first opportunity to publish or present the Technical Materials.
- 7.2 Sponsor will be furnished a copy of any proposed publication or a summary of a presentation containing Technical Materials in advance of submission in the case of publication and rendering in the case of presentation. Sponsor will have thirty (30) days after receipt to review the copy or summary for specific matter which is Sponsor Confidential Information and provide VU with a written request for removal or revision. If such a request is received within the thirty days, the Parties will have an additional thirty (30) days (a total of sixty (60) days) to agree upon removal or revisions to protect the Sponsor Confidential Information. Upon completion of this publication process or, if applicable, confidentiality is specifically waived under Article 6, VU shall proceed with publication. Sponsor shall not encumber publication by VU other than to remove Sponsor Confidential Information.
- 7.3 All papers and presentations reporting Technical Material will contain a statement in a form that is customary and appropriate in scholarly journals or presentations for acknowledging that support for such research was provided by Sponsor.
- 7.4 Sponsor will not have an opportunity to change, alter or redact the contents of any student thesis, dissertation, or presentation thereof.

8. ACCOUNTING AND PAYMENT

- 8.1 **Designation.** This Agreement is designated as: Cost-Reimbursable not to exceed \$248,405.00 ("Cost").
- 8.2 **Cost-Reimbursable Agreement.** If this Agreement is designated as "Cost-Reimbursable," Sponsor will reimburse VU for the cost of completing the Statement of Work. The Parties estimate that the Cost is sufficient to support the Statement of Work, but VU may submit to Sponsor a revised budget requesting additional funds if costs are reasonably projected to exceed the cost to complete the Statement of Work. Sponsor is not liable for any payment in excess of the Cost to complete the Statement of Work except on Sponsor's written agreement. VU has the authority to rebudget costs from time to time, at the discretion of the Principal Investigator, as long as the rebudgeting is consistent with the goals of the Statement of Work.
- 8.3 Sponsor will pay VU in accordance with the Payment Schedule on Page 1.

- 8.4 VU will send all vouchers to Sponsor at: margarethawkins@nashville.gov.
- 8.5 Sponsor will make all payments required hereunder by wire transfer. Sponsor shall obtain wire instructions from or send its ACH enrollment form to the following VU contact:

Jana Blick, Assistant Controller, Research Finance, Vanderbilt University, PMB 401591, 2301 Vanderbilt Place, Nashville, TN 37240-1591; Phone: 615-343-6655; Email Postaward-accounting@vanderbilt.edu.

- 8.6 For purposes of identification each wire or check payment must refer to the Research Program title, the Agreement number, and the name of the Principal Investigator.

9. TERM AND TERMINATION

- 9.1 This Agreement shall become effective on the Effective Date and shall continue in effect for the full duration of the Term unless terminated earlier in accordance with the provisions of this Article. The Parties hereto may, however, extend the Term for additional periods as desired under mutually agreeable terms and conditions.
- 9.2 In the event that either Party hereto shall commit any breach of or default in any such terms or conditions of this Agreement, and shall fail to remedy such default or breach within thirty (30) days after receipt of written notice thereof from the other Party, the Party giving notice may at its option and in addition to other remedies that it may have at law or in equity terminate this Agreement by sending notice of termination in writing by certified mail to the other Party to such effect. Such termination will be effective as of the date of the receipt of such notice. Either Party may terminate this Agreement for convenience upon sixty (60) days written notice.
- 9.3 Upon failure of Sponsor to pay the costs in Article 8 or upon early termination by VU for breach by Sponsor, VU shall have no further obligation under this Agreement, whether to provide VU Deliverables to Sponsor, or otherwise.
- 9.4 Upon termination by Sponsor or by VU for convenience, VU shall cease work on the Project, deliver to Sponsor all work in progress, and return all Sponsor Confidential Information.
- 9.5 Upon termination, Sponsor's sole obligations to VU shall be to return all VU Confidential Information and pay any monies due and owing up to the time of termination for work actually performed and all costs reasonably and properly incurred by VU as of the date that termination is effective, including all non-cancelable obligations reasonably and properly entered into for the purposes of the Project, which may include any non-cancelable Project Participant salaries, fellowships or post-doctoral stipends, and other non-cancelable executory obligations reasonably and properly incurred by VU in furtherance of Project, subject to VU taking reasonably steps to mitigate and minimize such costs.

10. REPRESENTATIONS AND WARRANTIES; LIABILITY.

10.1 VU represents and warrants that:

- (i) it is a corporation organized, existing and in good standing under the laws of Tennessee;
- (ii) it has the authority to enter into this Agreement and that the person signing this Agreement on its behalf has the authority to do so;
- (iii) the making or performance of this Agreement would not violate any separate agreement it has with any other person or entity; and
- (iv) it is not a Party to any agreement or arrangement that would prevent it from performing its duties and fulfilling its obligations to Sponsor under this Agreement.

10.2 Sponsor represents and warrants that:

- (i) it is a metropolitan form of government created pursuant to the laws of Tennessee;
- (ii) it has the authority to enter into this Agreement and that the person signing this Agreement on behalf of Sponsor has the authority to do so;
- (iii) the making or performance of this Agreement would not violate any separate agreement it has with any other person or entity; and
- (iv) it is not a Party to any agreement or arrangement that would prevent it from performing its duties and fulfilling its obligations to VU under this Agreement.

10.3 NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY, EVERYTHING PROVIDED BY VU UNDER THIS AGREEMENT IS UNDERSTOOD TO BE EXPERIMENTAL IN NATURE, MAY HAVE HAZARDOUS PROPERTIES, AND IS PROVIDED WITHOUT ANY WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF ANY THIRD-PARTY PATENT, TRADEMARK, COPYRIGHT OR ANY OTHER THIRD-PARTY RIGHT. VU MAKES NO WARRANTIES REGARDING THE QUALITY, ACCURACY, COMMERCIAL VIABILITY OR ANY OTHER ASPECT OF ITS PERFORMANCE PURSUANT TO THIS AGREEMENT OR REGARDING THE PERFORMANCE, VALIDITY, SAFETY, EFFICACY OR COMMERCIAL VIABILITY OF ANYTHING PROVIDED BY VU UNDER THIS AGREEMENT. IN NO EVENT SHALL VU OR SPONSOR BE LIABLE FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES SUSTAINED BY THE OTHER PARTY TO THIS AGREEMENT, ARISING OUT OF OR IN ANY WAY CONNECTED WITH THIS AGREEMENT, WHETHER IN BREACH OF

CONTRACT, TORT OR OTHERWISE, EVEN IF THE PARTY IS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. EXCEPT FOR THEIR RESPECTIVE INDEMNITY OBLIGATIONS, EACH OF VU'S AND SPONSOR'S AGGREGATE LIABILITY TO THE OTHER UNDER THIS AGREEMENT SHALL NOT EXCEED THE PAYMENTS MADE OR PAYMENTS DUE UNDER THIS AGREEMENT, RESPECTIVELY.

12. INSURANCE

- 12.1 VU will maintain Worker's Compensation insurance or other coverage on its employees as required by Tennessee law and will self-insure or maintain insurance covering its liability under this Agreement.

13. GENERAL PROVISIONS

- 13.1 **Entire Agreement; Amendment.** This Agreement embodies the entire understanding of the Parties and supersedes all other past and present communications and agreements relating to the subject matter. No amendment or modification of this Agreement shall be valid unless made in writing and signed by authorized representatives of both Parties. Notwithstanding the foregoing, any additional terms appearing in a purchase order related to this Agreement, which may or may not incorporate terms and conditions, shall have no legal or other effect on VU, regardless of whether VU signs such purchase order.
- 13.2 **Governing Law, Jurisdiction and Venue.** This Agreement shall be governed by and construed in accordance with the laws of the State of Tennessee, without regard to its rules or procedures involving conflicts of laws. All actions relating to this Agreement shall be brought exclusively in the United States District Court for the Middle District of Tennessee or the Circuit Court of Davidson County, Tennessee, if no federal subject matter jurisdiction exists. The Parties irrevocably waive all present and future objections to personal jurisdiction, forum or venue in such courts.
- 13.3 **Survival.** Each provision of this Agreement that would by its nature or terms survive, shall survive any termination or expiration of this Agreement, regardless of the cause. Such provisions include, without limitation, Sections 6, 7, 9.5, 10, 11, 12, and 13.
- 13.4 **Notices.** Notices pursuant to this Agreement shall be to the following contacts and are effective when sent if sent by a commercial carrier's overnight delivery service or when received if sent otherwise:

To VU: Jean M. Mercer
110 21st Avenue South
Nashville, TN 37203-2408
SPA@vanderbilt.edu
(615) 322-2631

To: Metropolitan Department of Water Services
1600 2nd Avenue North
Nashville, TN 37208
Attn: Maggie Hawkins margaret.hawkins@nashville.gov

- 13.5 **Assignment.** This Agreement is binding upon and inures to the benefit of the Parties and their successors, but this Agreement may not be assigned by either Party without the prior written consent of the other Party.
- 13.6 **Construction.** The recitals and preamble to this Agreement, if any, are hereby incorporated as an integral part of this Agreement as if restated herein in full. Headings are included for convenience and reference only and are not incorporated as an integral part of this Agreement. This Agreement may be executed in any number of counterparts each of which shall be deemed an original and as executed shall constitute one agreement, binding on both Parties, even though both Parties do not sign the same counterpart. The Parties to this Agreement agree that a copy of the original signature (including an electronic copy) may be used for any and all purposes for which the original signature may have been used. The Parties further waive any right to challenge the admissibility or authenticity of this Agreement in a court of law based solely on the absence of an original signature.
- 13.7 **Relationship of the Parties.** Each Party is an independent contractor and not a partner or agent of the other Party. This Agreement will not be interpreted or construed as creating or evidencing any partnership or agency between the Parties or as imposing any partnership or agency obligation or liability upon either Party. Further, neither Party is authorized to, and will not, enter into or incur any agreement, contract, commitment, obligation or liability in the name of or otherwise on behalf of the other Party.
- 13.8 **Severability.** If any provision in this Agreement is held invalid, illegal, or unenforceable in any respect, such holding shall not affect any other provisions of this Agreement, and this Agreement shall be construed as if it had never contained the invalid, illegal, or unenforceable provisions.
- 13.9 **Remedies.** The failure of either Party to insist upon or enforce strict performance by the other Party of any provision of this Agreement, or to exercise any right or remedy under this Agreement will not be interpreted or construed as a waiver or relinquishment of that Party's right to assert or rely upon any such provision, right or remedy in that or any other instance; rather, the same will be and remain in full force and effect. All rights and remedies under this Agreement are cumulative of every other such right or remedy and may be exercised concurrently or separately from time-to-time.
- 13.10 **Use of Names.** Neither Party may use the trademarks or name of the other Party or its employees for any commercial, advertisement, or promotional purposes without the prior written consent of an authorized corporate office of the other.
- 13.11 **Force Majeure.** Neither VU nor Sponsor will be liable for failure of or delay in

performing obligations set forth in this Agreement, and neither will be deemed in breach of its obligations, other than for Payments, if such failure or delay is due to causes reasonably beyond the control of a Party, such as labor disturbances or labor disputes of any kind, accidents, failure of any governmental approval required for full performance, civil disorders or commotions, acts of aggression, acts of God, energy or other conservation measures, explosions, failure of utilities, mechanical breakdowns, material shortages, disease, theft, or other occurrences, and reasonable notice of the delay is provided to the other Party.

- 13.12 **Activities Independent of this Agreement.** To the extent any VU faculty or staff members serve Sponsor in the capacity of consultant, officer, employee, board member, advisor, or otherwise through a personal relationship with Sponsor (a “Consultant”), Sponsor agrees that: (i) such Consultant shall serve the Sponsor in his or her individual capacity, as an independent contractor, and not as an agent, employee or representative of VU; (ii) VU exercises no authority or control over such Consultant while acting in such capacity; (iii) VU receives no benefit from such activity; (iv) neither Sponsor nor the Consultant may use VU resources in the course of such service; (v) VU makes no representations or warranties regarding such service and otherwise assumes no liability or obligation in connection with any such work or service undertaken by such Consultant; and (vi) any breach, error, or omission by a Consultant acting in the capacity set forth in this paragraph shall not be imputed or otherwise attributed to VU, and shall not constitute a breach of this Agreement by VU.
- 13.13 **Further Acts.** Each Party shall, at the reasonable request of the other, execute and deliver to the other such instruments and/or documents and shall take such actions as may be required to more effectively carry out the terms of this Agreement.
- 13.14 **Debarment.** Each party represents that it and its principals are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.
- 13.15 **Impact on Tax-Exempt Status.** VU advises (a) that it is exempt from federal income tax under Section 501(c) (3) of the Internal Revenue Code, (b) that maintenance of such exempt status is of critical importance to VU and to its members, and (c) that VU has entered into this Agreement with the expectation that there will be no adverse impact on its tax exempt status. As such, and if it becomes necessary, the Parties agree to amend, modify or reform this Agreement as necessary (i) in order to ensure that there is no material adverse impact on VU's tax exempt status, and (ii) in a manner that preserves the economic terms of the Agreement as such are set forth in this Agreement.
- 13.16 **Human Subjects Research.** Sponsor acknowledges that VU has a human research protection program (“HRPP”) established in accordance with the principles and standards of the Association for the Accreditation of Human Research Protection Programs (AAHRPP) that is applicable to all research involving human subjects. In furtherance of VU’s HRPP, Sponsor agrees:

- (a) that no research involving human subjects shall be conducted pursuant to this Agreement unless and until such research is reviewed and approved by the VU IRB, and that failure of the VU IRB to approve any research submitted for its review shall not be deemed a breach of this Agreement;
- (b) to notify promptly the Principal Investigator and/ or the VU IRB directly, of (i) non-compliance with applicable laws, particularly those laws related to human research subjects, that could affect the safety or welfare of participating subjects.

[Signatures on front page]

Attachment A**Scope of Work**

AI-Powered Anomaly Detection for Water Service Optimization Efficient water service management requires timely detection of irregularities, such as valve malfunctions, pressure drops, or unexpected usage patterns. Traditional methods often rely on reactive measures, generalized thresholds and post-analysis using simulations, which can result in delays and inefficiencies. We propose to develop an AI-powered anomaly detection system by leveraging historical data analysis, spatial-temporal modeling, and graph neural networks (GNNs) integrated with simulation tools to enhance the reliability and efficiency of water infrastructure management. In particular, the system will analyze temporal-spatial patterns in historical water service data and real-time sensing data, such as pressure levels, flow rates, and consumption metrics, to detect anomalies at a fine granularity. This proposal leverages cutting-edge AI techniques to enhance the resilience and efficiency of water service systems. By starting with a focused case study, we aim to develop a robust, scalable solution that can transform water infrastructure management.