

# Letter of intent (LOI)

Interested parties should submit a Letter of Intent (LOI) on or before February 28, 2023 for each individual proposal. Letter of intent should include applicant contact information and seven questions about proposed study. More details about SAM study selection process, eligibility and funding availability can be found in SAM REF guidelines in SAM Effectiveness webpage.

The respondent's email ([ddeleon@cityoftacoma.org](mailto:ddeleon@cityoftacoma.org)) was recorded on submission of this form.

## Applicant contact information

Applicant Full Name \*

Dana de Leon

Organization \*

City of Tacoma

Phone number \*

2533129744

## Proposed Study Information

1. Proposed Study Title \*

Application of Continuous Monitoring and Adaptive Control for Water Quality and Flood Control

2. Which topic(s) from the SWG's priority list do you propose to address? \*

The proposed study topic should be in the SWG's priority list

Applied research of #19. Research and compile examples of innovative stormwater management – use of technology tools

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3. Select type of project being proposed \*

- Survey
- Literature Review & Synthesis
- Environmental Sampling Study
- Other

#### 4. Short Description of the Proposed Study \*

250 word limit: describe how results will assess effectiveness and advance regional understanding and permittees' implementation of specific stormwater management approaches

Continuous Monitoring and Adaptive Control (CMAC) of stormwater infrastructure has been an accepted practice by the Washington State Department of Ecology and implemented in various locations (e.g. King County, City of Redmond and Bellevue). CMAC has been primarily deployed to improve hydromodification of existing stormwater infrastructure, but has the potential to help communities with additional flood mitigation and water quality, addressing environmental justice and climate resilience as co-benefits.

The City of Tacoma is currently working on developing a stormwater system hydraulic model for the Flett Creek Watershed stormwater system to better understand existing baseline hydraulic conditions. This project will use this existing baseline model and add CMAC to 6 large stormwater holding basins in the Flett Creek Watershed to understand the potential for water quality and flood mitigation improvements and improve climate resilience in an area with environmental justice concerns.

This research will evaluate the efficacy of CMAC via H&H pond optimization modeling. The study will focus on the following:

- Water quality benefits of pond optimization (e.g., TSS and nutrient removal)
- Improvements to operations of older regional ponds to reduce wide-spread flooding and downstream impacts (e.g. wet weather capture and flow based metrics)
- Maximizing pond function to address existing and future development conditions
- Cost benefit analysis (optimization vs new stormwater facility construction)
- Co-benefit analysis for environmental justice and climate resilience

This project will assess the effectiveness and advance regional understanding on the use of CMAC to retrofit existing stormwater infrastructure for flood mitigation, water quality and climate resilience.

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## 5. What type information will be collected or analyzed for this proposed study? \*

If existing permittees' data are needed, specify the type, and the expected timing of a request for existing information from Permittees.

1. Compilation of CMAC flood control studies and applications from other communities in the U.S., including Washington.
2. Hydraulic model of existing conditions from the City of Tacoma.
3. Modeling and simulation analysis – model simulations with a SWMM output file and graphic representation of the results. The graphic output will include the following for both passive (i.e. existing) to CMAC event metrics:
  - Water elevation
  - Controlled valve settings
  - Controlled flow (i.e via orifice or pump)
  - Total outflow
  - Coordinated release
4. Budgetary cost estimates for comparison of CMAC retrofits vs. storage expansion (i.e., dredging or new construction).
5. City of Tacoma Equity Index Map (GIS basis) and 2030 Climate Action Plan (i.e., targets, resilience and climate justice metrics)
6. City of Tacoma Stormwater Management Manual and Regional Stormwater Facilities Program document

## 6. What are the anticipated measurable outcomes and key deliverables that will be produced by the proposed study, and how will they be used by Permittees and the Washington State Department of Ecology? \*

Measurable outcomes:

- Estimated water quality improvements (e.g., TSS and nutrient removal) for CMAC on regional stormwater facilities (holding ponds) and systems
- Estimated wet weather capture and flow based metrics for CMAC on regional stormwater facilities (holding ponds) and systems
- Increased stormwater treatment capacity for Minimum Requirement #6 Stormwater Treatment In-Lieu of constructing stormwater treatment facilities per City of Tacoma's Stormwater Management Manual
- Increased flow control capacity for Minimum Requirement #7 Flow Control: In-Lieu of construction flow control facilities per City of Tacoma's Stormwater Management Manual

Deliverables: Report documenting the potential for CMAC to achieve quantity and quality optimization for future stormwater infrastructure improvements and capital investments. Report will also include In-lieu of analysis, cost benefit and co-benefit analyses.

7. Permittees or agencies you are proposing to coordinate with (provide staff names and contact information, if known) \*

Enter "NA" if not applicable.

The City of Tacoma will coordinate with the City of Redmond and King County on lessons learned from previous deployments and ongoing operations and maintenance of CMAC.

Dana de Leon, PE, Principal Engineer, City of Tacoma ESSE  
ddeleon@cityoftacoma.org  
253-312-9744

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