REQUEST FOR PROPOSALS FOR ENGINEERING SERVICES:

Machias Advanced Mitigation Flood Protection

The Town of Machias is soliciting proposals for engineering services to assemble specific pre-engineering and design build information with designs for a flood protection structure. This project is being funded with a Federal Emergency Management Agency (FEMA) Advanced Assistance Grant in combination with a MDOT Small Harbor Improvement Program (SHIP) Grant which will provide the matching funds, in addition to in-kind contributions from the Town of Machias. All engineering services shall be in conformance with the standards and requirements of FEMA and MDOT.

1. Project Description

The structure will protect the Machias downtown, civic and regional infrastructure, and the area surrounding the wastewater treatment plant. The design alternative selected will meet Base Flood Elevation +4 feet and provide at minimum a 50-year structural life span. Baker Design Consultants provided the Town with a report, titled “Downtown Resilience and Renewal Preliminary Engineering Study.” The report provides a conceptual design for a flood protection seawall system that protects critical infrastructure and removes the downtown area flood hazard area designation. The design elevation was determined following a comprehensive review of recent and historical flooding of the downtown, consideration of regional model predictions for Sea Level Rise, the need to protect critical infrastructure (Wastewater Treatment plant) and a Town goal for seawall protection system certification. Advance Assistance will allow for the design to be taken to the next level to achieve the main objectives identified below:

1. Complete the Field Investigation necessary to move the design forward.
2. Undertake an assessment of environmental impacts by wetland scientists and wildlife biologists.
3. Complete an investigation of subsurface conditions to obtain the parameters necessary to analyze groundwater infiltration, bearing capacity and settlement to mitigate seawall structure behavior and performance.
4. Review the presence and extent of historical cribwork structures that were constructed to define the waterfront.
5. Evaluate the existing Stormwater and Wastewater Treatment Facility piping network to determine requirements to upgrade collection, storage and outfall infrastructure with consideration of a perimeter seawall.
6. Determine the design basis for a pump system to operate in conjunction with the seawall in periods of flooding.
7. Complete seawall and walkway alignment optimization to achieve regulatory requirements for avoidance and minimization of resource impacts and to support stable embankment construction that addresses existing coastal erosion.
8. Review the impact of new construction with local property owners to convey an understanding of the benefits of seawall (flood protection, coastal erosion control, shorefront walkway).
9. Identity impacts to property frontage and Right of Way acquisition.
10. Meet with Local, State and Federal regulatory representatives to discuss regulatory permit requirements for the project.
11. File applications with property owner and stakeholder support.
12. Prepare Design Build bid documents and support grant applications for a future construction phase.

These documents, together with project permits provide the parameters needed for final design and construction of the seawall system. The Design Build method of project delivery will allow the
successful team to tailor the project to respective equipment and personnel expertise to achieve a certified seawall system.

2. Downtown Machias

The Machias village center lies at the head of tide for the Machias River estuary. The Town is working to revitalize the downtown by improving waterfront access while making it more resilient to storm surges and sea level rise. This is a multi-year effort and will involve significant changes to transportation infrastructure, water treatment, landscaping, and shoreline stabilization. Storm surge inundation modeling completed in 2014 indicates that downtown Machias faces the highest risk of flooding of any coastal embayment in Washington County.

The image on the right depicts models flooding under conditions of a Category 1 Hurricane hitting Machias Bay with associated storm surge at Mean Tide. Significant portions of the Machias downtown including portions of the wastewater treatment plant are flooded in this plausible scenario.

Since the 2014 Climate Vulnerability Assessment was released, the Federal Emergency Management Agency (FEMA) has issued updated Flood Insurance Rate Maps (FIRM) based on updated coastal flood hazard analyses and the same LiDAR data used to generate the storm surge inundation models created in 2014. The new FIRM increases the coastal Base Flood Elevation (BFE) for Downtown Machias and places several downtown properties which were not in the Special Flood Hazard Area (SFHA) on the previous FIRM\(^1\) into the 1% annual chance SFHA. While there is always fine tuning to be done in any mapping exercise, the flood hazards faced by the central village area of Machias are significant. The economic impacts of the present flood risk will be felt almost immediately, and property owners in Machias are compelled to purchase flood insurance through the National Flood Insurance Program. Furthermore, with rising sea levels, these risks and associated economic impacts are only expected to increase in the future.

Partners include the Town of Machias, FEMA, MEMA, MDOT, WCCOG, UMM-GIS, the Machias Downtown Revitalization Committee and downtown businesses. The WCCOG-UMM-GIS partnership developed the county-wide Climate Vulnerability Assessment. In addition to providing online access to Machias-specific storm surge inundation model output (link in Footnote 1 below), the WCCOG-UMM-GIS partnership has prepared online maps depicting the previous and new flood zones to enable property owners to see how the changes affect their property.

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3. Stakeholders

Stakeholders in this project include local businesses, civic institutions, and wastewater treatment plant rate payers in downtown Machias. Travelers, freight deliveries to businesses, and commuters on US Route 1 are also at risk from projected flooding as Route 1 traverses the downtown and continues east across the Machias dike that separates Middle River from the Machias River. In addition, the shellfish harvesters in Machiasport face closure of their clam flats whenever the Machias wastewater treatment plant experiences a Sanitary Sewer Overflow (SSO) or an uncontrolled wastewater release. Even a short-term closure of the clam flats can result in hundreds of thousands of dollars in lost revenue to the local economy. Downtown flooding may also impact emergency response and management access in Machias and beyond, particularly if Route 1 is flooded.

The geographic scope of this proposal is the center of the Town of Machias. The Machias Comprehensive Plan was found consistent on April 12, 2007 and adopted September 25, 2007. The Comprehensive Plan describes flooding events over the past century, and natural resources policies recommend that the Town ensure their Floodplain Management Ordinance is kept up to date. The new Floodplain Management Ordinance was adopted by the Town on June 13, 2017 and recommends that all new development be located out of floodplains. In addition, both the Comprehensive Plan and the Machias Downtown Plan recommends a focus on downtown revitalization based on tourism with an emphasis on the historic and scenic waterfront. Both plans are currently being reviewed and updated. This is the perfect opportunity to ensure a consistent vision and long-term plans. The updated plans are expected to be completed and adopted by June 2021. Finally, protection of the wastewater treatment plant from coastal flooding supports several significant capital investments in wastewater infrastructure by the Town of Machias over the past decade. Each proposed task of this project is consistent with and would offer measurable results in realizing the Machias Comprehensive Plan.

4. Scope of Services

The Town will retain an engineering firm with the Advance Assistance funds which will allow for the design to be advanced to the next level to achieve the main objectives identified:

1. Complete the Field Investigation necessary to move the design forward.

2. Undertake an assessment of environmental impacts by wetland scientists and wildlife biologists.

3. Complete an investigation of subsurface conditions to obtain the parameters necessary to analyze groundwater infiltration, bearing capacity and settlement to mitigate seawall structure behavior and performance.

4. Review the presence and extent of historical cribwork structures that were constructed to define the waterfront.

5. Evaluate the existing Stormwater and Wastewater Treatment Facility piping network to determine requirements to upgrade collection, storage and outfall infrastructure with consideration of a perimeter seawall.

6. Determine the design basis for a pump system to operate in conjunction with the seawall in periods of flooding.

7. Complete seawall and walkway alignment optimization to achieve regulatory requirements for avoidance and minimization of resource impacts and to support stable embankment construction that addresses existing coastal erosion.
8. Review the impact of new construction with local property owners to convey an understanding of the benefits of seawall (flood protection, coastal erosion control, shorefront walkway).

9. Identity impacts to property frontage and Right of Way acquisition. Meet with Local, State and Federal regulatory representatives to discuss regulatory permit requirements for the project. File applications with property owner and stakeholder support.


These documents, together with project permits provide the parameters needed for final design and construction of the seawall system. The Design-Build method of project delivery will allow the successful team to tailor the project to respective equipment and personnel expertise to achieve a certified seawall system.

5. Project Background

Describe the process for implementing this planning activity, including the following plan development requirements: 1) participation of agencies, stakeholders and the public; 2) hazard identification and risk/vulnerability assessment; 3) mitigation strategy; 4) plan adoption; and 5) plan maintenance:

This Advance Assistance request will allow Machias to build upon the recently completed concept design for a flood protection system and coastal walkway presented in a report entitled Downtown Resilience and Renewal Preliminary Engineering Study prepared for the Town of Machias by Baker Design Consultants. The concept design was developed with the benefit of public participation and feedback, a detailed inundation study of building damage during flood event scenarios, an updated topographic survey (via drone) and careful consideration of earlier reports and studies completed in the Machias area. Implementation plan: 1) Participation of agencies, stakeholders and the public. Both the Maine Emergency Management Agency (MEMA) and FEMA have visited the site in October of 2019 and helped in the proper preparation of this Advance Assistance application. Also, the feasibility study (Downtown Resilience and Renewal Preliminary Engineering Study prepared for the Town of Machias, attached below) was developed with advice and participation of the Maine Geological Survey, the Maine Department of Transportation, the Washington County EMA, the Maine Downtown Center, and several local officials (Town Manager, Fire Chief, Public Works Director, Sewage Treatment Plant Director). In addition, multiple affected business owners and the Machias Downtown Revitalization Committee were involved in the project. We have identified several other agencies with whom we will consult as part of the mitigation strategy including the US Army Corps of Engineers, the Maine Department of Environmental Protection, Marine Resources, and the Maine Coastal Program. 2) Hazard Identification and Risk/Vulnerability Assessment. These features of the Machias downtown area are well established by the Maine Coastal Program funded a feasibility analysis which was completed in 2018-2019 in which our engineering and design contractors describe the present and future flood risk (Sept 18, 2018 Ransom memo), an analysis of flood protection measures under 3 sea level rise scenarios (Downtown Resilience and Renewal Preliminary Engineering Study prepared for the Town of Machias), and an economic analysis of the protection afforded by various flood protection measures (research by Dr. Tora Johnson, University of Maine at Machias GIS Service Center and Laboratory).

3) Mitigation Strategy. The mitigation strategy recommended by the conclusions reached in the assessments listed in #2 is a flood protection structure that will protect the downtown and the wastewater treatment plant from a Base Flood Elevation (BFE)+4 flood event. Advance Assistance is requested to complete additional fieldwork and design development to optimize the project footprint as highlighted at the start of this section. This information will be the basis for discussions with local properties on the need for Right of Way acquisition and will establish the parameters needed to develop a fully engineered design. The Downtown area that will be protected by the proposed seawall system will benefit from a seawall system that protects
current businesses and critical infrastructure (Wastewater Treatment Plant) from current and future flood events. The seawall construction will also address existing coastal erosion associated with sections of unstable shore and will incorporate a public waterfront walkway that will connect with an existing trail network for the enjoyment of the public. The sum of the improvements will serve to increase the economic vitality and interest in the downtown area. 4) Plan Adoption- The Plan will be adopted as the funds are obtained to implement its recommendations, namely construction of the flood protection barrier, pedestrian walkway and associated pumping and stormwater management structures. 5) Plan Maintenance: The Plan and its recommended structure will include a maintenance plan for the life of the structures anticipated to be 50+ years.

6. Additional Information:

A report entitled "Downtown Resilience and Renewal Preliminary Engineering Study" was prepared for the Town of Machias by Baker Design Consultants (BDC). The report outlines the engineering and research that generated a concept design for a seawall system to protect the Downtown. The body of reference material is listed in the report. The BDC report was funded by a 2018 Coastal Communities grant from the Maine Coastal Program. It provides a survey of existing conditions, an assessment of flood risk under a range of current and future conditions, an assessment of possible damages (incorporating the depth damage analysis described in the following paragraph from Dr. Tora Johnson), and preliminary cost estimates for flood protection measures. Depth damage assessments were developed in collaboration with Dr. Tora Johnson and her students at the University of Maine at Machias GIS Service Center and Laboratory (UMM-GIS). To weigh costs of alternative designs against risks, UMM-GIS gathered best available data on flood impacts and applied best practices for mapping and science communication to estimate potential impacts for a variety of flood scenarios. The approach involved co-production of knowledge, focus on local priorities and vulnerabilities, and scaling maps and economic information to local needs. UMM-GIS found inundation at the base flood elevation (BFE = 10.7 feet) could cause $700,000 in damage and take two months for recovery with relatively minor ecosystem impacts. The Town had experienced two floods near BFE in recent years. With floods two or more feet above BFE (increasingly likely due to climate change) potential impacts rise dramatically: BFE plus two feet could cost $8 million with six months recovery. BFE plus 4 feet could cost $17 million with 11 months recovery and major impacts on shellfisheries. Finally, as part of the Coastal Communities grant, the town conducted extensive outreach activities to determine public interest and concern with the design of the flood protection structure. This outreach included a targeted survey of downtown business owners, two public meetings, two meetings with the Machias Historical Society, and several interviews with individuals who are contributing to an assemblage of oral histories. This outreach and the meetings of the Machias Resilience Committee are part of downtown revitalization efforts that will not only protect the downtown from future flooding but incorporate a waterfront walkway into the structure, improve the existing boat launch, and ensure that landowners are aware of the benefits to be derived from a FEMA certified structure that interprets and celebrates the past while ensuring safety into the future. Going forward, with Advance Assistance funding, we will assemble site specific evaluations of fill and subsurface geology, continue one-on-one contact with affected landowners, determine hydrologic and habitat assessment of downstream and across channel potential for living shoreline techniques (note that UMM-GIS students will be assembling living shoreline suitability for all of Machias Bay in a Winter 2019 GIS Remote Sensing course), knowledge of state and federal regulatory structures, and technical expertise in application of this information into refined cost estimates.

The Town of Machias needs to integrate resilience planning with downtown revitalization efforts. The Machias Downtown Revitalization Committee is working on several fronts to support downtown businesses, improve the safety of pedestrians, and capitalize on the tremendous and under-utilized asset of the Machias River that tumbles over Bad Little Falls in the center of the village. There are photographs from less than a hundred years ago showing the water and land side activities of lumber movement from the upper watershed, sawmills at the dam at Bad Little Falls, and then docks loading services directly onto ships at the wharves.
These wharves flanked the waterfront along the downtown and could again be integrated with a riverwalk and seawall that has the 3-fold purpose of providing resilience to flooding, improving pedestrian safety, and enhancing economic development opportunity from tourism.

The Washington County Council of Governments (WCCOG) will develop a plan that coordinates previous downtown revitalization efforts with historic waterfront use and the latest information in climate resilience. Itemized tasks to include:

a) Coordinate riverwalk and flood protection plans and design to ensure consistency with the Machias Comprehensive Plan and Machias Downtown Revitalization Plan

b) Provide the historic photographs and oral histories of activities along wharves in downtown Machias and assist with the design and development of historic storyboards and murals.

c) Hold public meetings to obtain resident and property owner interest in the flood protection and riverwalk improvements and design. Keep all groups informed of proposed ideas and suggestions throughout the development.

d) Prepare report of outreach and research with recommendations for capital improvements integrated with the design and technical feasibility conclusions that is the subject and product of this RFP.

e) Project Management

The engineering firm chosen as part of this RFP process will integrate their tasks and work plan with those undertaken by the UMM-GIS Service Center and the Washington County Council of Governments (WCCOG) to avoid duplication of effort and to provide expertise in the modification and down-scaling of national models to the rural conditions found in Machias.

Both the design work and the quantification of economic impacts will include consideration of the point at which the cost of investing in any improvements may become prohibitive, and alternative land-use approaches might be employed. This will include consideration of a range of options such as managed retreat and on-site accommodation as detailed in the resources provided by DACF.

The Town of Machias has appointed WCCOG as the project manager and created a Project Oversight Committee. The Project Manager (WCCOG) shall be responsible for:

Review RFP's for Engineering Services assist with review of Engineering Proposal submission(s), Engineering Firm interviews, selection of Lead Consultant Program Coordination/Management, Grant Monitoring, Drawdown Requests, Quarterly Report Preparation, for FEMA/MEMA or other Agencies as required. Be the liaison between all partners and interested parties. Provide project oversight, co-ordination and participate in public meetings including all partners, interested parties, and regulatory agencies. Work with MDOT and The Project Engineer relating to options and strategies for the repair of the Machias Dike. Integrate all plans and strategies for a flood protection and Riverwalk project into the Comprehensive Plan and the Machias Downtown Plan. Prepare a report of all the outreach and research activities in digital and paper format that is integrated with the design and technical conclusions of the project.

The Project Oversight Committee is composed of the following individuals and parties:

- Representatives of downtown Machias Revitalization Committee; Machias chamber of Commerce and properties identified in the recent issues FIRMs as being potentially affected by flooding associated with a 1% storm
- Selectman
- Town Manager
- Planning Board Member
- County EMA Director
- Representative of the WCCOG
- Wastewater Treatment Plant Director Regional Economic Development Non-profit Public Works Director
- Representative of the Maine Geological Survey

Representative from Oliver Associates

The selected engineering consultant will be responsible for the following work tasks:

- Field Investigation; Coastal Wetland Assessment, Field Investigation Geotechnical Investigation of subsurface conditions along seawall; Geotechnical Engineers Field Investigation; Survey Control and Seawall Alignment

- Refinement from Concept Design, Design Development; Seawall Footprint

- Assessment/Optimization Design Development: Shorefront Walkway/Waterfront Access- Interface with Town & Maine DOT Interface with Flood Protection System Boat Ramp Design (SHIP Grant Program)

- Design Development: Design Development: Value Engineering and Cost Benefit Analysis; Stormwater/WWTP: Assessment; Existing Network Infrastructure Consultant Services- Civil Engineers Stormwater/WWTP Pump System and Outfall Locations; Civil and Sanitary Engineers ROW Acquisition; Landowner Outreach/Education;

- Real Estate Professional ROW Acquisition; Easement Negotiation, Real Estate Professional

- Regulatory Permitting; Local State and Federal Environmental Permits;

- Construction Phase Preparation: Design Build Documents, Preparation of Construction Grant Documents

Other work tasks completed in conjunction with partners include the:

- Boat Ramp Design (SHIP Grant Program) will be overseen by Town Management and completed with support from Public Works; and the Living Shoreline Opportunity Evaluation will be done by University Maine (Machias) Students & Faculty;

- Participate in and communicate with the Project Advisory Committee as draft products are developed and in response to questions raised at Advisory Committee and public meetings.

- Build upon the recently completed concept design for a flood protection system and coastal walkway presented in a report entitled Downtown Resilience and Renewal Preliminary Engineering Study prepared for the Town of Machias by Baker Design Consultants.
- Coordinate with Maine DOT on entire project specifically geotechnical conditions under Route I through Downtown and under the Machias dike.

- Complete a feasibility report that will allow the Town of Machias to pursue funding to complete the seawall construction. Report to include:

  The engineering consultant will report directly to the Project Manager, who will keep the Committee up to date by providing status reports and a project schedule. The Project Manager will provide the engineering consultant with feedback from the Committee. The engineering consultant will periodically meet with the Committee to review progress and discuss potential changes in the scope of work to address new conditions or significant findings. Any reports with details on individual buildings or properties will be provided confidentially to the property owners.

  Upon receipt of the summary report and discussion by the Committee of its findings, the Committee will host a public informational meeting to which all owners of vulnerable property, local news outlets, local officials and the general public will be invited to attend. The engineering consultant will also attend the meeting to review the recommendations and answer questions. Following this public meeting, the report and recommendations may be updated to reflect comments made at the public meeting.

I. Project Schedule

The Committee will work with the selected consultant to develop an agreed upon project schedule. It is expected that the consultant will begin work in April of 2020 with field work to be completed in the spring/summer of 2021 and the project completed by February 15, 2022.

II. Maximum Award Amount:

The maximum award amount for the above scope of engineering services will be $185,000.00.

III. Contacts for Consultant

Project Manager and Main Point of Contact: Jarod Farn-Guilette, Washington County Council of Governments


GIS Services: Tora Johnson, Director, University of Machias GJS Laboratory and Service Center

Town Manager: Christina Therrien

IV. Responses to RFP

Responses must include the following:

- the firm's legal name, address, and telephone number.

- the qualifications of the professional personnel to be assigned to the project demonstrating their knowledge and experience in completing the tasks identified in the RFP; special attention should be given to demonstrating knowledge and experience of waterfront structures.

- knowledge of FEMA flood regulations and the federal flood insurance program.

- capacity to meet time and project budget requirements.

- present and projected workload for key project staff.
related experience on similar projects including the name and phone number of a local official knowledgeable of the firms work.

proposed project approach, costs and schedule for activities to be performed.

V. Proposals Evaluation

Engineering proposals will be evaluated according to the following factors:

Overall quality of the proposal 20%
Overall understanding of the project and project approach 20%
Staff qualifications 10%
Experience with the design of hard or soft structures and techniques to mitigate flooding damage 20%
Experience with coastal and marine structural engineering 20%
Cost or amount of work offered in exchange for maximum award amount 10%

VI. Selection Criteria

The selection of a firm or firms to be interviewed will be based on the evaluation of the written responses, if deemed necessary. The Town of Machias reserves the right to select a firm directly from the written proposals without an interview. Interviews, if held, will be at the Machias Town Office within 3 weeks of the proposal submission deadline. The award will be made to the most qualified firm whose proposal is deemed most advantageous to the overall proposed project; all factors considered. Unsuccessful firms will be notified as soon as possible.

This solicitation is being offered in accordance with federal and Maine state requirements governing the procurement of professional services. Accordingly, The Town of Machias reserves the right to negotiate an agreement with the selected firm based on fair and reasonable compensation for the scope of work and services proposed as well as the right to reject any and all responses deemed unqualified, unsatisfactory, or inappropriate. Questions and responses should be directed to:

Christina Therrien, Town Manager or Jarod Farn-Guilette
Town of Machias
PO Box 418, Maine 04654 Washington County Council of Government
Voice: (207) 255-6621 11 Church Street, Calais, Maine 04619
Voice: (207) 454-0465
Email: townmanager@machiasme.org Email: jfguilette@wccog.net

VII. Proposal Submission Deadline

Two (2) physical copies of the proposal must be received by 4:00 PM on March 27, 2020 at the Machias Town Office, PO Box 418, Machias, ME 04654. Please indicate: "RE: FEMA Pre-mitigation RFP" on the outside of the response package. Please transmit one copy in PDF format electronically to town manager @ machiasme.org and to jfguilette@wccog.net by the same deadline.