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May 15, 2023
GZA RFP No. 01.P000069.24

Mr. Christian Krahforst, Director
Town of Hull
Climate Adaptation and Conservation
253 Atlantic Avenue
Hull, MA 02045

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION
MANAGEMENT

Re: Proposal for Engineering Peer Review Services
Proposed Coastal Bank/Slope Stabilization Project at
51 Harborview Road
Hull, MA

Dear Mr. Krahforst:

At your recent request, GZA GeoEnvironmental, Inc. (GZA) is pleased to submit this proposal to the Town of Hull (“Client”) to provide engineering peer review services. Our work is to be performed in conjunction with the Department of Climate Adaptation and Conservation, reviewing of a proposed coastal bank stabilization project at 51 Harborview Road (“Site/Project”). GZA’s scope of services will primarily focus on the technical aspects of the project design and scope of work. The Project is currently being submitted to the Hull Conservation Commission as a Notice of Intent (NOI) dated December 1, 2022. The NOI Applicant is T.P. Fitzgerald, the property owner of the subject property at 51 Harborview Road, Hull, MA.

FIRM QUALIFICATIONS AND RELATED EXPERIENCE

GZA GeoEnvironmental, Inc. (GZA) is a multidisciplinary consulting firm offering services in the fields of geotechnical and environmental engineering, hazardous waste assessment and remediation, water and wastewater engineering, and construction related services. GZA is headquartered in Norwood, Massachusetts. We employ over 650 engineers, scientists, and technical support staff in 31 offices. Over 100 of these highly qualified staff are located in the Norwood, Massachusetts, office.

Technical expertise, innovation and responsiveness are the “trademarks” of GZA, which have earned us this national recognition. GZA’s technically sophisticated approach, extensive knowledge of geo/civil engineering and environmental services, and pragmatic focus on practical solutions for project evaluation, design, and construction has historically provided our clients with cost-effective solutions to their problems. Throughout GZA’s over 50 years of operation, we have developed several special areas of peer review expertise including:

- Hydrology, Hydraulics and Water Resources Management
- Natural Resource Impact, Risk/Vulnerability and Mitigation Services
- Environmental Monitoring Services
- Drilling and Test Boring Observation Services





GZA's long-standing capabilities in the Coastal/Marine/Waterfront and geo-civil engineering are well suited for coastal shoreline stabilization peer review studies. We have taken our traditional expertise and have successfully adapted our multi-disciplinary capabilities to meet the environmental challenges within sensitive resource area. GZA works directly for Massachusetts communities by providing Ch. 593 Engineering Design Review Services per MGL Ch. 44 Sec. 53G. We have provided similar site engineering services for numerous cities and towns. GZA's Peer Review capabilities are further presented in that attached brochure.

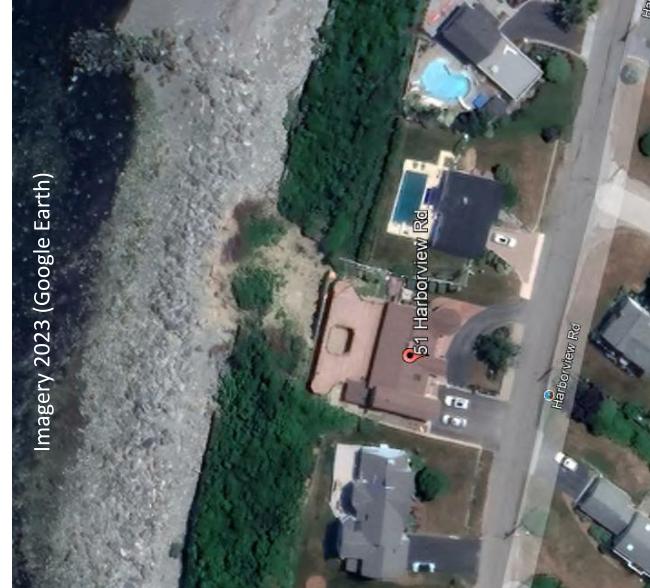
SCOPE OF SERVICES

Based on our initial review of the documents you shared with GZA, we understand that the project site is located at 51 Harborview Road, Hull, MA and the homeowner constructed an Earth Retaining System (ERS) along the outer border of an existing patio based on site photographs and plans provided to GZA by the Town. The coastal bank in front of the ERS experienced a substantial slope failure after some intense rainfall event in September 2021. The slope failure is visible from aerial imagery in Google Earth (below).

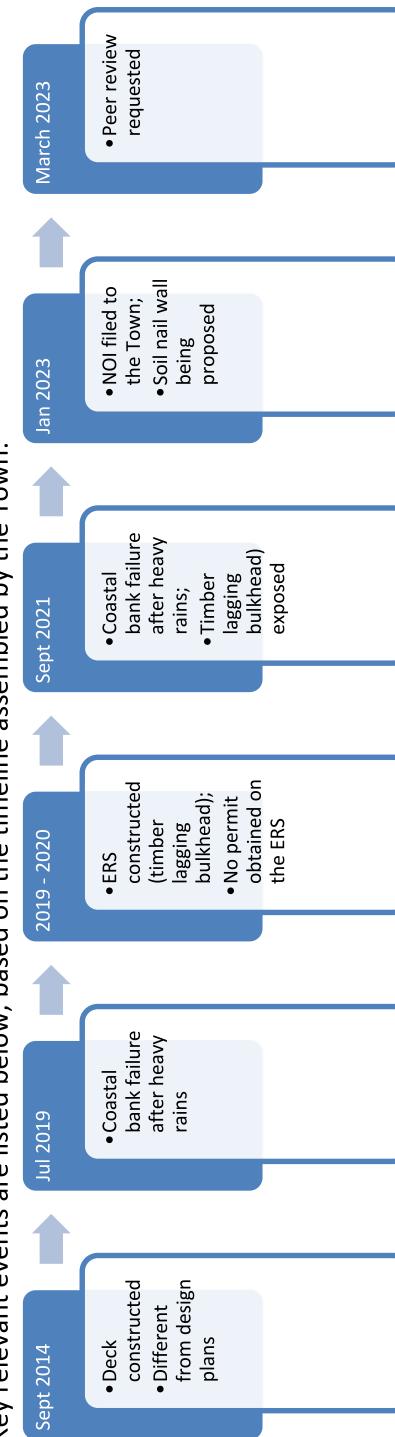
Imagery 2019 (Google Earth)



Imagery 2023 (Google Earth)



Key relevant events are listed below, based on the timeline assembled by the Town:

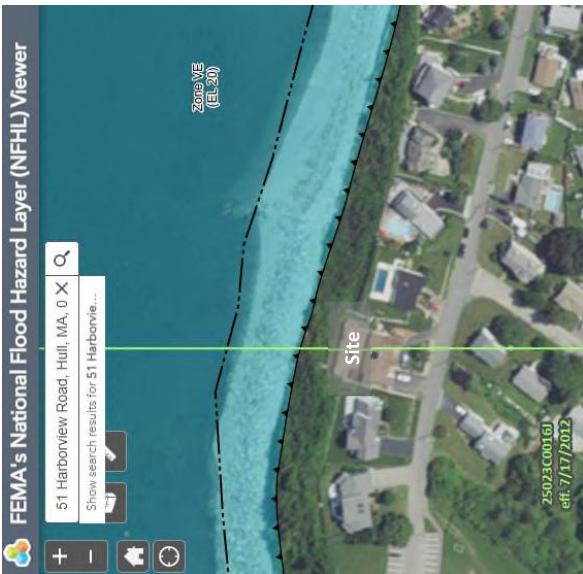




Two Enforcement Orders were issued for non-compliance at this property in 2014 and 2022. Currently, a new soil nail retaining wall system is being proposed to stabilize the slope as a remediation measure. GZA understands that the Town is looking for a peer review of the proposed project, including the original ERS and the new soil nail system. GZA's Review will be based on conditions that presently exist. We will assess short-term and long-term technical merits of the proposed design, and identify any potential issues to proposed approach (e.g., constructability, surface and sub soil wall drainage, long term maintenance considerations, as well as impacts to the coastal bank stability on abutters' properties). Based on the review, GZA will provide recommendations for design improvements if needed.

Based on Federal Emergency Management Agency National Flood Hazard Layer, the coastal bank of concern is located outside the delineated Special Flood Hazard Area. The Limit of Moderate Wave Action (LiMWA) line is located at the toe of the slope (below).

The GZA team will provide an engineering evaluation of the existing ERS and proposed soil nail wall project, which has been brought before the Conservation Commission of Hull. This evaluation will focus on some of the key engineering disciplines typically associated with earth retaining system and site design, namely, slope stability, grading, and drainage. Of particular importance will be the review of the applicant's proposed new soil nail wall system and related surface runoff and groundwater discharge considerations. The review will be based on key reference documents provided to GZA and publicly available information (such as state and local rules and regulations).



GZA may request additional information during the review process. The goal of our work is to provide an opinion as to the effectiveness of the proposed system to provide short-term and long-term stability of the coastal bank, and potential negative impacts to the adjacent sewer main and Town's planning on a future seawall rehabilitation project¹. As appropriate, GZA may provide alternative design recommendations. Please note that no engineering design services are included in this proposal.

Based on our current understanding, GZA will provide the following level of effort:

Task 1: Site Reconnaissance Visit: GZA will make a site visit to the project site to visually evaluate existing conditions, verify key site features, and identify possible failure mechanism(s) of the previously failed slope. Photographs will be taken to document the observed existing conditions of the site. The visit will consist of two GZA

¹ Per GZA's conversation and communications with the Town.





representatives. We assume that site access will be coordinated by and through the Town.

Task 2: Review of existing project documents, including but not necessarily limited to:

- Massachusetts Department of Environmental Protection (DEP) NOI WPA Form 3 (per Massachusetts Wetland Protection Act M.G.L. c. 131, §40) dated 12/1/2022 (with attachments);
- “Slope Stabilization Plan” Drawing C100 dated 11/22/2022, prepared by Civil & Environmental Consultants (CEC), Inc. from Raynham, MA;
- Memorandum regarding “Slope Stabilization DEP File # SE35-1735” dated 2/28/2023, prepared by CEC;
- Letter regarding “Comments on Slope Stabilization Memo DEP File # SE35-1735” dated 3/14/2023, prepared by Environmental Consulting & Restoration (ECR), LLC from Plymouth, MA; and
- “Earth Retaining System” Drawing S-1 dated 11/6/2019, prepared by Antonopoulos Company.
- “51 Harborview Road Relevant Events Timeline” (undated 1-page PDF)
- Massachusetts Department of Environmental Protection (DEP) Order of Conditions WPA Form 5, dated 11/22/2019 (with attachments)
- Letter titled “Response to Commission Inquiries” prepared by Peter S. Rosen, Ph.D., Coastal Geologist, dated 3/23/2023.

Additional information requests from GZA include:

- We also request that the Project Engineer (CEC) provide the Town with any additional engineering computations they may have developed related to the soil nail wall design.
- Updated Drawing C100 with proposed contours in the proposed soil nail wall (shaded) area.
- Information regarding the Municipal Sewer Line (force main) mentioned in the design memorandum dated 2/28/2023 prepared by CEC.
- Documents regarding the proposed seawall rehabilitation/improvement recommendations and/or alternative analysis findings.
- Based on the existing site plan (Drawing C100), we request that a **Cross Section A-A'** be developed (see sketch, right) to better understand the existing and proposed conditions at the site. The cross section should be to scale and contain the following information at a minimum:
 - existing grades (before and after slope failure);
 - relevant subsurface soil conditions if available;
 - existing structures (e.g., desk posts, ERS);
 - proposed groundwater drainage system; and

Location of Requested Cross Section for Review (Base Plan C100)





- the proposed soil nail wall in full height.

Task 3: GZA will prepare a technical memorandum/letter detailing our review results and conclusions based on the assessment of the available information. Our conclusions and profession opinions will focus on the short-term and long-term effectiveness and constructability of the proposed slope stabilization project.

Task 4: GZA will attend up to four (4) 2-hour virtual public meetings. Each meeting will be attended by two (2) GZA representatives. GZA will prepare meeting materials for brief presentations to share GZA's technical opinions and evaluation results from this peer review, when needed.

ANTICIPATED SCHEDULE

Based to the level of effort required to complete the requested scope of work, we will initiate the review process within 2 weeks after notification to proceed by the Town of Hull. We anticipate an approximate 4-week time frame to complete our evaluations and submit our professional opinion letter (memorandum).

BASIS OF BILLINGS

GZA billings will be a lump sum of \$19,600, based on our current understanding of the level of effort to conduct this peer review highlighted above. Breakdowns per task are presented in the table below:

Task	Estimated Labor (Hours)	Estimated Budget
Task 1: Site Reconnaissance Visit	10	\$2,800
Task 2: Existing Documents Review	22	\$5,500
Task 3: Memorandum	16	\$4,000
Task 4: Meetings	28	\$7,300
Total	76	\$19,600

During the course of executing the work, it may be recommended that additional engineering services will be conducted by GZA staff whose billings will be based on actual accrued time billed at each individual's billing rate. Direct expenses will be billed at cost plus with no markup. Actual charges may vary, either upward or downward, depending upon the execution of the work. Client will be notified of any conditions requiring an increase in scope and budget for approval prior to GZA proceeding.





A GZA labor rate schedule is presented in the table below:

Personnel	Title/Responsibility	2023 Municipal Billing Rate (\$/hr)
Russell Morgan, P.E.	Principal-in-Charge	\$280
Bin Wang, P.E., CFM	Project Manager/Lead Reviewer	\$230
Daniel Stapleton, P.E.	Consultant/Reviewer	\$280
Staff Engineer	Technical Support	\$135
Administrative Assistant	Admin Support	\$115

Our billings will include a communication fee, which will be charged at 3.0 percent of labor invoiced for total cost of local, long distance, and cellular phone equipment and connectivity; electronic data communication and transmission; facsimile and document scanning; and USPS postage.

CONDITIONS OF ENGAGEMENT

Conditions of engagement are described in the attached standard Terms and Conditions (08/08-Edition/05-9011).

ACCEPTANCE

This proposal may be accepted by signing in the appropriate spaces and returning one copy to us. Issuance of a purchase order implicitly acknowledges acceptance of the standard Terms and Conditions. This Proposal for Services and Terms and Conditions shall constitute the entire agreement between the parties.

Please contact Bin Wang (Bin.Wang@gza.com) at 781-278-5809 if you have any questions or comments concerning the contents of this proposal.

Very truly yours,

GZA ENVIRONMENTAL, INC.

Bin Wang, P.E., CFM
Senior Consultant

Daniel C. Stapleton, P.E.
Consultant/Reviewer

Russell J. Morgan, P.E.
Senior Principal

Attachments: Terms and Conditions (08/08-Edition/05-9011)

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This Proposal for Services and the Terms and Conditions are hereby accepted and executed by a duly authorized signatory, who by execution hereof, warrants that he/she has full authority to act for, in the name, and on behalf of Client.

TOWN OF HULL

By: _____ Title: _____

Typed Name: _____ Date: _____

