McKIM&CREED

ENGINEERS

SURVEYORS

PLANNERS

April 22, 2024 241547

David Ryan, PE
Town Engineer
Town of Nags Head
PO Box 99
Nags Head, NC 27959

Re: Town of Nags Head – Beach Monitoring Surveys, Summer 2024

David,

McKim & Creed would like to present our proposal for professional surveying services in connection with the referenced project. We understand the scope of work will be identical as the work we performed between 2020 to 2023. Our Scope of work is based on performing a beach monitoring profile survey this summer for the base bid and 3 options.

We understand the profiles generally begin at the landward toe of the primary dune or historic baseline and extend across the dunes and beach face to distance of approximately three thousand five hundred feet or -30 ft NAVD 88, whichever is achieved first.

This project includes 174 beach profile monitoring lines; Base bid includes 126, Option 1 includes 13, Option 2 include 14, Option 3 includes 21 lines.

There are approximately 32 profile lines (1030+00 to 1290+00) located within the boundaries of The Cape Hatteras National Seashore. We will require assistance from the Town of Nags Head to contact and secure access through this area.

In the event of a Post-Storm survey, we can mobilize within 48 hours or as soon as safely possible with a minimum of one land crew and one hydrographic survey crew.

243 North Front Street

Wilmington, NC 28401

910.343.1048

Fax 910.251.8282

www.mckimcreed.com

Scope of Work

- All survey work will be performed to the Standards of Practice for Land Surveying in North Carolina.
- Hydrographic surveys will be performed to meet or exceed the minimum performance standards for the Corps of Engineers Hydrographic Surveys, USACE specifications manual EM 1110-2-1003.
- Horizontal data will be referenced to NC Grid NAD83/2011 or to existing control datum and Vertical datum will be NAVD88.
- Conduct a coordination meeting with the Town of Nags Head and Moffatt & Nichol prior to beginning work. We will maintain open communication in addition to weekly project progress reports and updates.
- Over land data will be captured using Trimble R8/R10 dual frequency GNSS receivers beginning at the Landward toe of the Primary dune and extend out to the surf zone at wading depth (wading will occur at low tide). Land survey crews will have survey grade GNSS receivers mounted on fixed height rover poles that are equipped with topo shoes (flat rod tips that do not sink in the sand). The data collectors are clamped onto the pole; the system is lightweight and ideal for one person. To move up and down the beach efficiently, we will use Side by Side utility vehicles (Kawasaki Mule). Crew trucks are painted with our company logo, field crews wear highly visible orange/yellow shirts and vests.
- Hydrographic surveys will be collected from -30 ft NAVD88 to the surf zone (during the high tide cycle) to achieve overlapping data as weather/sea conditions allow. Our survey vessels range from 22' to 28' in length and are equipped with Inertial Navigation systems that include survey grade dual frequency sonar, IMU, VRS RTK GNSS and sound velocity probes, all of which compensates for heave, pitch, roll, heading and the speed of sound, to calculate position and depth. Prior to beginning work, we perform a bar check to ensure the accuracy of our sonar and we perform sound velocity checks periodically during the survey.
- We will provide the following deliverables:
    - AutoCAD Civil 3D file.
    - XYZ files of the Land, Wade, and Hydro data
    - Signed and Sealed PDF of Final Survey Data Set on Title Block
    - Survey Report detailing the project understanding, planning, methods and procedures used, communication between teams, QA/QC checks and final results..
    - Digital text file with (alongshore) Station and/or Profile ID, coordinates X,Y,Z, and Distance to Baseline (DBL).
    - Digital text file in BMAP direct import format.

- ESRI GIS format floating-point grid or TIN file of the Digital Elevation Model (DEM, surface file), with one combined surface made from all the survey data (on land and underwater).
- Mean High Water (MHW) contour extracted from the DEM, in ESRI GIS shapefile or geodatabase.

Accuracy

- Land: The integrated GNSS system (Trimble R8) that we use is rated at a precision of .02' horizontal and .05' vertically. Based on the conditions and stability of the sand, we can provide an accuracy of 0.1' horizontally and less than 0.2' vertically.
- Hydro: Our equipment is well within the requirements of the USACE Hydrographic Survey Standards. Our soundings will be accurate to within 3' horizontal and 0.25' vertically.

Schedule

We estimate approximately 3-4 weeks to collect all data sets. We can provide the final deliveries and reports within 2-3 weeks of completion of field work.

For services described in the above Scope of Work, the lump sum fee will be **$69,000.00** *(Sixty-nine thousand dollars)* inclusive of reimbursable expenses. The option fees are based on performing them at the same time as the base bid.

Base Bid (126 profiles) ……. $50,830.00
Option 1 (13 profiles) ……..$4,750.00
Option 2 (14 profiles) ……. $5,100.00
Option 3 (21 profiles) ……. $7,570.00
Total……... $68,250.00

Post-storm survey……. $68,250.00 per event
(Includes same scope of work and detail of the annual survey)

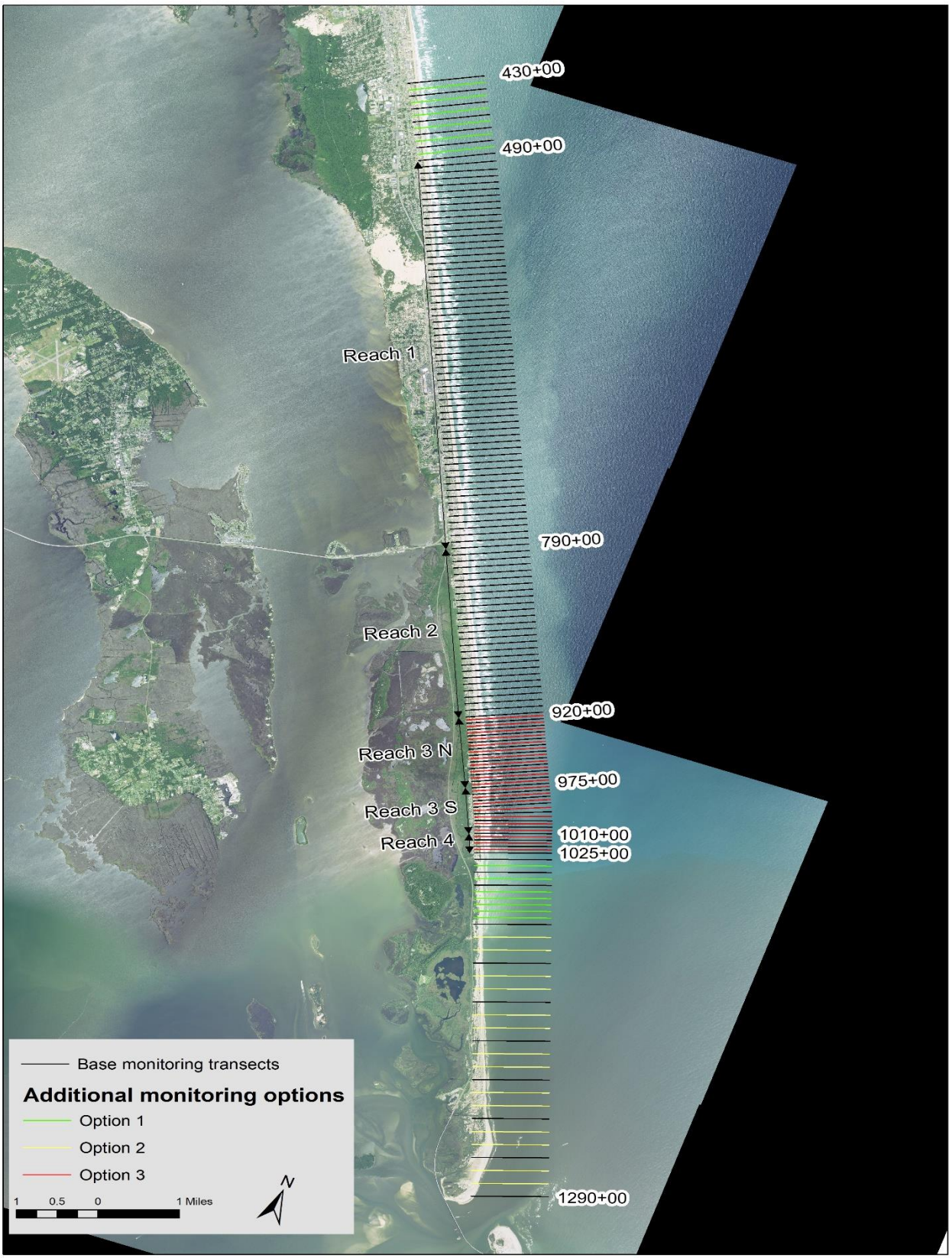
This proposal is submitted contingent upon the negotiation of a contract with mutually acceptable terms and conditions prior to the commencement of any work.-

We appreciate the opportunity to provide this proposal to you and look forward to working on the project with you.

Sincerely,

McKIM & CREED, INC.

Jared Lambert
Hydrographic Division Manager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Base monitoring transects
Additional monitoring options
Option 1
Option 2
Option 3
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