



# Town of Southern Shores

5375 N. Virginia Dare Trail, Southern Shores, NC 27949

Phone 252-261-2394 / Fax 252-255-0876

[www.southernshores-nc.go](http://www.southernshores-nc.go)

JUNE 16, 2020  
COUNCIL WORKSHOP MEETING  
9:00 A.M.-PITTS CENTER

1. Opening
  - A. Call Meeting to Order
  - B. Pledge of Allegiance
  - C. Moment of Silence
  - D. Approval of Agenda
2. General Public Comment (Limit: 3 minutes per speaker)
3. Business Items
  - A. Planning Board Appointments **TAB 1**
  - B. Continued Discussion of Town Engineer Contract **SOQ SUBMITTED-DISTRIBUTED AT PRIOR MEETING**
  - C. Discussion of No Left Turn Weekends **TAB 2**
  - D. Public Hearing-Beach Nourishment **EMAILS WILL BE FORWARDED TO COUNCIL AT CLOSE OF BUSINESS 6/12**
4. Council Comments
5. Adjourn

June 10, 2020

**MEMORANDUM**

**From:** Wes Haskett, Interim Town Manager/Planning Director

**To:** Town Council

**RE:** Planning Board Appointment

Planning Board member Ed Lawler's term will expire on June 30, 2020. He was previously appointed by the Town Council on January 8, 2019 to fill the position formerly held by Glenn Wyder. Mr. Lawler has indicated that he would like to continue serving on the Town Planning Board which would be a three-year term from July 1, 2020 until June 30, 2023. There currently are no applications on file from citizens interested in serving on the Town Planning Board.



From: David Kole <[dkole@southernshores-nc.gov](mailto:dkole@southernshores-nc.gov)>

Sent: Tuesday, June 9, 2020 4:43 PM

To: [council@southernshores-nc.gov](mailto:council@southernshores-nc.gov)

Cc: Wes Haskett <[whaskett@southernshores-nc.gov](mailto:whaskett@southernshores-nc.gov)>; Jonathan Slegel <[jslegel@southernshores-nc.gov](mailto:jslegel@southernshores-nc.gov)>

Subject: Latest Traffic counts

Good evening Mayor, Council Members:

Please see below last week and the prior weeks traffic counts. Looking at last weeks counts for example on Saturday 10,002 vehicles traveled NC12, while 1892 traveled South Dogwood and it appears that 1284 of those vehicles traveled on to Hickory. Sea Oats had 2472 vehicles. The highlighted numbers in RED indicate that the counter had some type of error. While these numbers seem to be high for this time of year, keep in mind that because there is no school and that school is conducted on-line, I believe folks have been locked down for a couple months are now taking advantage and coming to the beach. You will also note that Juniper is included this time, the average number of vehicles on a daily basis is about 700-900 cars every day. This tends to increase a bit in the summer on weekends.

Please let me know if you have any questions or concerns..

Thank you,

David Kole

Traffic Counts May 25 thru May 31, 2020													
	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	274 Wax Myrtle	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina	55 Hickory	
Monday	6,113	7,877	3,508	3,508	814	N/A	278	101	514	189	595	358	
Tuesday	7,115	7,731	4,298	4,298	936	N/A	285	142	564	181	629	305	
Wednesday	6,526	6,623	7,136	7,136	891	N/A	357	124	489	192	629	398	
Thursday	6,853	6,756	7,490	7,490	1064	N/A	427	124	638	187	653	382	
Friday	6,835	7,305	6,708	6,708	1094	90	666	152	892	215	659	413	
Saturday	9,042	8,155	8,871	8,871	1246	41	335	223	822	310	980	671	
Sunday	8,122	7,727	8,816	8,816	1002	15	276	154	675	236	805	480	
Traffic Counts June 1 Thru June 7, 2020													
	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	274 Wax Myrtle	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina	55 Hickory	Juniper
Monday	7,156	6,798	8,729	10,057	957	40	220	113	565	183	732	353	742
Tuesday	7,281	7,125	9,019	9,744	1,009	33	319	124	592	184	717	353	696
Wednesday	6,882	6,476	8,639	9,674	994	50	216	130	548	221	800	381	745
Thursday	7,702	7,218	9,476	10,466	1065	56	211	129	560	200	791	384	772
Friday	8,629	7,994	10,260	11,229	1097	275	272	152	698	235	914	415	849
Saturday	10,419	9,473	10,002	12215	2121	64	626	1123	2472	727	1892	1284	738
Sunday	9,131	8,322	9,984	11,055	1221	7	211	215	660	242	1003	593	81



Traffic Counts for March 30 thru April 5, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	2,467	2,537	3,246	3,833	667	119	69	319	101	481
Tuesday	2,335	2,400	2,818	3,711	640	122	46	283	99	434
Wednesday	1,793	1,838	2,044	2,847	535	N/A	53	214	80	411
Thursday	2,980	2,528	3,697	4,064	666	N/A	70	320	107	470
Friday	2,807	2,279	3,543	3,856	684	87	72	324	105	442
Saturday	1,474	1,301	2,156	2,554	527	111	55	240	90	362
Sunday	1,123	956	1,485	1,788	498	127	54	216	82	367

Traffic Counts for April 6 thru April 12, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	2,542	2,441	3,157	3,789	607	173	63	330	112	456
Tuesday	2,661	2,292	3,208	3,775	625	162	74	348	123	424
Wednesday	2,622	2,366	3,322	3,794	612	163	81	353	126	459
Thursday	2,636	2,332	3,393	3,964	678	166	66	251	107	458
Friday	2,702	2,314	3,526	3,795	653	150	64	240	115	422
Saturday	1,539	1,309	2,157	2,497	528	121	58	229	94	349
Sunday	909	862	1,370	1,533	471	206	64	247	72	356

Traffic Counts for April 13th thru April 19, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	1,560	1,574	1,737	2,431	821	626	112	596	201	607
Tuesday	2,935	2,435	3,491	4,063	682	146	58	248	122	421
Wednesday	2,068	2,086	2,733	3,338	520	125	47	196	87	322
Thursday	2,743	2,283	3,666	4,075	694	124	83	293	109	460
Friday	2,763	2,361	3,779	4,072	724	132	82	338	133	506
Saturday	1,400	1,355	2,042	2327	442	193	49	224	73	324
Sunday	1,357	1,222	1,980	2,065	509	149	57	243	95	348

Traffic Counts for April 20 thru April 26, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	1,839	1,969	2,496	3,003	539	117	49	234	86	305
Tuesday	3,178	2,765	4,053	4,528	777	181	71	293	120	514
Wednesday	3,209	2,705	4,165	4,487	692	159	65	270	113	455
Thursday	3,057	3,005	3,993	4,428	678	221	56	246	108	454
Friday	3,246	2,934	4,208	4,443	787	410	71	301	132	551
Saturday	1,906	1,814	2,470	2,855	527	123	51	215	81	386

Sunday	1,485	1,454	2,134	2,448	497	124	49	216	87	394
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Traffic Counts for April 27 thru May 3, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	2,988	3,116	3,831	4,423	642	149	60	328	86	446
Tuesday	3,431	2,967	4,231	4,658	711	172	66	292	111	490
Wednesday	3,484	3,101	4,555	4,848	794	178	67	263	131	519
Thursday	2,981	2,825	3,927	4,115	776	728	40	485	142	714
Friday	3,886	3,467	4,857	4,954	717	157	56	308	104	484
Saturday	2,493	2,115	3,229	3,478	685	136	64	297	124	472
Sunday	1,868	1,974	1,532	3,162	579	117	60	259	107	422

Traffic Counts for May 4 thru May 10, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	3,576	3,343	4,693	5,271	846	166	69	365	135	526
Tuesday	3,421	3,488	4,510	5,195	713	127	75	320	117	431
Wednesday	3,791	3,479	4,531	5,065	786	190	89	370	119	457
Thursday	4,199	3,839	5,166	5,697	795	185	84	346	127	503
Friday	4,873	4,238	5,931	6,048	863	242	113	450	164	523
Saturday	3,561	3,323	4,456	4,999	690	220	95	402	125	440
Sunday	2,589	2,758	3,327	4,165	605	174	66	299	97	428

Traffic Counts for May 11 thru May 17, 2020

	13th Ave NB	13th Ave SB	Skyline Rd NB	Skyline Rd SB	S Dogwood NB	186 Wax Myrtle	286 Sea Oats	332 Sea Oats	274 Hillcrest	S DW @ Marina
Monday	4,413	4,153	5,556	6,239	866	206	97	428	140	533
Tuesday	4,669	4,329	5,943	6,400	847	182	101	439	152	529
Wednesday	4,784	4,425	6,017	6,439	829	199	91	404	143	543
Thursday	5,114	4,820	6,240	6,870	875	161	106	414	137	565
Friday	5,857	5,135	7,388	7,532	907	190	92	482	168	611
Saturday	6,870	4,495	7,920	6,657	815	209	111	486	187	613
Sunday	5,398	4,935	6,471	6,890	775	199	98	391	167	552

55 Hickory

195

179

132

196

201

164

160

55 Hickory

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218

186

181

198

162

176

55 Hickory

470

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55 Hickory

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55 Hickory

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217

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225

198

55 Hickory

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171

237

250

306

296

180

55 Hickory

269

235

224

248

254

322

252





COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC

4038 MASONBORO LOOP ROAD

WILMINGTON, NC 28409

910-399-1905

June 11, 2020

Wes Haskett  
Interim Town Manager  
Town of Southern Shores  
5375 N. Virginia Dare Trail  
Southern Shores, NC 27949

**Proposal: Design and Environmental Permitting Services, 2022 Beach Nourishment Project**

Dear Mr. Haskett:

Coastal Protection Engineering of North Carolina, Inc. (CPE-NC) is pleased to provide this proposal for professional services to the Town of Southern Shores (TOWN), associated with the design and permitting of the proposed 2022 beach nourishment project. CPE-NC has a special preferred relationship with Coastal Protection Engineering LLC (CPE), and through that relationship, CPE-NC will utilize personnel, resources, and assets of CPE to perform the proposed services. Furthermore, CPE-NC will sub-contract portions of the work to Aptim Environmental & Infrastructure LLC.

Under this proposal, CPE-NC will provide project management, develop environmental documentation and permit application, coordinate with agencies during permitting, conduct beach fill engineering analysis and design, conduct borrow area investigations, determine sediment compatibility and design borrow areas.

The Scope of Professional Services (the Services) is attached to this proposal as Exhibit A. The Work included under Tasks 1, 2, 3, 4 and 5 will be performed for a lump sum fee of \$437,675.75.

**Breakdown of Costs and Schedule of Deliverables:**

Exhibit B includes a breakdown of costs by Task. Some costs associated with Tasks 1, 2, and 3 are being cost shared between the Towns of Duck, Southern Shores, Kitty Hawk, and Kill Devil Hills. In the event that any of the Towns decide not to move forward with the design and permitting of the project, the other 3 Towns' costs would necessarily increase.

Exhibit C provides a list of deliverables, which includes the following:

- Monthly progress reports;
- Major CAMA Permit Application;
- Dept. of the Army Permit Application;
- BOEM Lease Request Packet
- Final Environmental Assessment;



- Final Supplemental Essential Fish Habitat Assessment;
- Engineering Report;
- Borrow Area Design Report

CPE-NC's performance of the proposed Services is conditioned upon negotiation of mutually acceptable contract terms and conditions. In that regard, attached to this proposal is our standard Services Agreement for your consideration as the terms and conditions that will govern our performance of the proposed Services.

If this proposal is acceptable to you, please have the attached Services Agreement signed, and return it to me. CPE-NC will then sign the Services Agreement and return a fully executed copy to you for your records.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Willson", written over a light blue horizontal line.

Ken Willson  
Senior Program Manager  
Coastal Protection Engineering of North Carolina, Inc.

Office: 910-399-1905

Mobile: 910-443-4471

[kwillson@coastalprotectioneng.com](mailto:kwillson@coastalprotectioneng.com)

**COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.**  
**SERVICES AGREEMENT**  
**FIXED PRICE BASIS**

All in accordance with the following terms and conditions.

1. **SCOPE OF SERVICES:** **COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC. ("CPE-NC")** agrees to perform for the undersigned CLIENT, engineering and consulting ("Services") described in the attached Proposal and/or as follows:

**Proposal: Design and Environmental Permitting Services 2022 Beach Nourishment, Town of Southern Shores, North Carolina**

2. **FEES, INVOICES AND PAYMENTS:** The Services will be performed for the lump sum fee of **\$437,675.75 (Four hundred thirty-seven thousand, six hundred seventy-five dollars and seventy-five cents).**

Invoices will be submitted by CPE-NC no more frequently than every month, with payment due upon CLIENT'S receipt of invoice. Payment shall be in U.S. Dollars. CLIENT shall be responsible for payments (without deduction or offset from the total invoice amount) of any and all sales, use, value added, gross receipts, franchise and like taxes, tariffs and duties levied against CPE-NC or its employees by any government or taxing authority. A service charge equal to one-half percent (1/2 %) per month, or the maximum rate permitted by law, whichever is less, will be added to all accounts which remain unpaid for more than thirty (30) calendar days beyond the date of the invoice. Should there be any dispute as payments to be made on a percent complete basis to any portion of an invoice, the undisputed portion shall be promptly paid.

3. **CLIENTS COOPERATION:** To assist CPE-NC in performing the Services, CLIENT shall (i) provide CPE-NC with relevant material, data, and information in its possession pertaining to the specific project or activity, (ii) consult with CPE-

NC when requested, (iii) permit CPE-NC reasonable access to relevant project sites, (iv) ensure reasonable cooperation of CLIENT's employees in CPE-NC's activities, and (v) notify and report to all regulatory agencies as required by such agencies.

4. **CONFIDENTIALITY:** In the course of performing Services, to the extent that CLIENT discloses to CPE-NC, business or technical information that CLIENT clearly marks in writing as confidential or proprietary, CPE-NC will exercise reasonable efforts to avoid the disclosure of such information to others. Likewise, to the extent that CPE-NC discloses to CLIENT, business or technical information that CPE-NC clearly marks in writing as confidential or proprietary, CLIENT will exercise reasonable efforts to avoid the disclosure of such information to others.

Nothing herein is meant to prevent nor shall be interpreted as preventing either party from disclosing and/or using any information or data (i) when the information or data are actually known to the receiving party before being obtained or derived from the transmitting party, (ii) when information or data are generally available to the public without the receiving party's fault at any time before or after it is acquired from the transmitting party; (iii) where the information or data are obtained or acquired in good faith at any time by the receiving party from a third party who has the same in good faith and who is not under any obligation to the transmitting party in respect thereto; (iv) where a written release is obtained by the receiving party from the transmitting party; (v) three (3) years from the date of receipt of such information; or (vi) when required by process of law; or by North Carolina Public Records Law; provided, however, upon service of such process, the recipient thereof shall use reasonable efforts to

notify the other party and afford it an opportunity to resist such process.

5. **DELAYS AND CHANGES IN CONDITIONS:** If CPE-NC is delayed or otherwise in any way hindered or impacted at any time in performing the Services by (i) an act, failure to act or neglect of CLIENT or CLIENT's employees or any third parties; (ii) changes in the scope of the work; (iii) unforeseen, differing or changed circumstances or conditions including differing site conditions, acts of force majeure (such as fires, floods, riots, and strikes); (iv) changes in government acts or regulations; (v) delay authorized by CLIENT and agreed to by CPE-NC; or (vi) any other cause beyond the reasonable control of CPE-NC, then 1) the time for completion of the Services shall be extended based upon the impact of the delay, and 2) CPE-NC shall receive an equitable compensation adjustment. Any such equitable adjustment shall be based on CPE-NC's then current Time and Material Rates, as may be provided in a Rate sheet attached hereto.
6. **INSURANCE:** CPE-NC is presently protected by Worker's Compensation Insurance as required by applicable law and by General Liability and Automobile Liability Insurance (in the amount of \$1,000,000 combined single limit) for bodily injury and property damage. Insurance certificates will be furnished to CLIENT on request. If the CLIENT requires further insurance coverage, CPE-NC will endeavor to obtain said coverage, and CLIENT shall pay any extra costs therefor.
7. **INDEMNITIES:** CPE-NC shall defend, indemnify and hold harmless CLIENT and its officers and employees from and against loss or damage to tangible property, or injury to persons, to the extent arising from the negligent acts or omissions or willful misconduct of CPE-NC, its borrowed servants and their employer and its subcontractors, and their respective employees and agents acting in the course and scope of their employment. CLIENT shall defend, indemnify and save harmless CPE-NC (including its

borrowed servants and their employers and its officers, and employees) from and against, any loss or damage to tangible property, or injury to persons, to the extent arising from the negligent acts or omissions or willful misconduct of CLIENT, its officers and employees.

8. **LIMITATIONS OF LIABILITY:**
- a. GENERAL LIMITATION - CLIENT'S SOLE AND EXCLUSIVE REMEDY FOR ANY ALLEGED BREACH OF WARRANTY BY CPE-NC SHALL BE TO REQUIRE CPE-NC TO RE-PERFORM ANY DEFECTIVE SERVICES. CPE-NC'S LIABILITY AND CLIENT'S REMEDIES FOR ALL CAUSES OF ACTION ARISING HEREUNDER WHETHER BASED IN CONTRACT, WARRANTY, NEGLIGENCE, , OR ANY OTHER CAUSE OF ACTION, SHALL NOT EXCEED EXCEPT FOR THE MUTUAL INDEMNIFICATIONS SET FORTH IN SECTION 7 ABOVE. IN THE CUMULATIVE AGGREGATE (INCLUDING ANY INSURANCE PROCEEDS) WITH RESPECT TO ALL CLAIMS ARISING OUT OF OR RELATED TO THIS AGREEMENT, WHATEVER MINIMUM AMOUNT MAY BE REQUIRED BY LAW OR, IF NONE, THE AMOUNT OF COMPENSATION FOR SUCH SERVICES,
- b. CONSEQUENTIAL DAMAGES: FURTHER AND REGARDLESS OF ANY OTHER PROVISION HEREIN, CPE-NC SHALL NOT BE LIABLE FOR ANY INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFITS, DECLINE IN PROPERTY VALUE, REGULATORY AGENCY FINES, LOST PRODUCTION OR LOSS OF USE) INCURRED BY CLIENT OR FOR WHICH CLIENT MAY BE LIABLE TO ANY THIRD PARTY OCCASIONED BY THE SERVICES OR BY APPLICATION OR USE OF REPORTS OR OTHER WORK PERFORMED HEREUNDER.



9. **GOVERNING LAWS:** This Agreement shall be governed and construed in accordance with the laws of the State of North Carolina.

10. **TERMINATION:** Either party may terminate this Agreement with or without cause upon forty five (45) days' written notice to the other party. Upon such termination, CLIENT shall pay CPE-NC for all Services performed hereunder up to the date of such termination. In addition, if CLIENT terminates, CLIENT shall pay CPE-NC all reasonable costs and expenses incurred by CPE-NC in effecting the termination, including, but not limited to non-cancelable commitments and demobilization costs.

11. **ASSIGNMENT:** Neither CPE-NC nor CLIENT shall assign any right or delegate any duty under this Agreement without the prior written consent of the other, which consent shall not be unreasonably withheld. Notwithstanding the foregoing, CPE-NC may, upon notice to CLIENT, assign, pledge or otherwise hypothecate the cash proceeds and accounts receivable resulting from the performance of any Services or sale of any goods pursuant to this Agreement.

12. **MISCELLANEOUS:**

a. **ENTIRE AGREEMENT, PRECEDENCE, ACCEPTANCE MODIFICATIONS:** The terms and conditions set forth herein constitute the entire understanding of the Parties relating to the provisions of the Services by CPE-NC to the CLIENT. All previous proposals, offers, and other communications relative to the provisions of these Services by CPE-NC, oral or written, are hereby superseded, except to the extent that they have been expressly incorporated by reference herein. In the event of conflict, the three pages of this Agreement shall govern. CLIENT may accept these terms and conditions by execution of this Agreement or by authorizing CPE-NC to begin work. Any modifications or revision of any provisions hereof or any additional provisions contained in any purchase order, acknowledgement or other document issued by the

CLIENT is hereby expressly objected to by CPE-NC and shall not operate to modify the Agreement.

b. **DISPUTES, ATTORNEY FEES** – Any dispute regarding this Agreement or the Services shall be resolved first by exchange of documents by senior management of the parties, who may be assisted by counsel. Any thereafter unresolved disputes shall be litigated in the state whose law governs under Section 9 hereunder. In any litigation, the Prevailing Party shall be entitled to receive, as part of any award or judgment, eighty percent (80%) of its reasonable attorneys' fees and costs incurred in handling the dispute. For these purposes, the "Prevailing Party" shall be the party who obtains a litigation result more favorable to it than its last formal written offer (made at least twenty calendar days prior to the formal trial) to settle such litigation.

c. **WAIVER OF TERMS AND CONDITIONS** - The failure of CPE-NC or CLIENT in any one or more instances to enforce one or more of the terms or conditions of this Agreement or to exercise any right or privilege in the Agreement or the waiver by CPE-NC or CLIENT of any breach of the terms or conditions of this Agreement shall not be construed as thereafter waiving any such terms, conditions, rights, or privileges, and the same shall continue and remain in force and effect as if no such failure to enforce had occurred.

d. **NOTICES** – Any notices required hereunder may be sent by orally confirmed US Mail, courier service (e.g. FedEx), orally confirmed telecopy (fax) or orally confirmed email (further confirmed by US Mail) to the addresses set forth below.

e. **SEVERABILITY AND SURVIVAL** - Each provision of this Agreement is severable from the others. Should any provision of this Agreement be found invalid or unenforceable, such provision shall be ineffective only to the extent required by law, without invalidating the remainder of such provision or the remainder of this Agreement.

Further, to the extent permitted by law, any provision found invalid or unenforceable shall be deemed automatically redrawn to the extent necessary to render it valid and enforceable consistent with the parties' intent. The terms and conditions set forth herein shall survive the termination of this Agreement.

CLIENT and CPE-NC agree to the foregoing **(INCLUDING THE LIMITATIONS ON LIABILITY IN SECTIONS herein)** and have caused this Agreement to be executed by their duly authorized representatives as of the date set forth below.

Executed on June \_\_\_\_\_, 2020

**COASTAL PROTECTION ENGINEERING OF NORTH CAROLINA, INC.**

By (Sign): \_\_\_\_\_

Print Name:     Kenneth Willson    

Title:     President    

Address:     4038 Masonboro Loop Road,    

    Wilmington, North Carolina, 28409    

Phone:     (910) 399-1905    

Fax:     N/A    

E-mail:     kwillson@coastalprotectioneng.com    

**TOWN OF SOUTHERN SHORES, NORTH CAROLINA**

By (Sign): \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

**EXHIBIT A:  
SCOPE OF PROFESSIONAL SERVICES  
TOWN OF SOUTHERN SHORES, NORTH CAROLINA  
DESIGN AND ENVIRONMENTAL PERMITTING SERVICES  
2022 BEACH NOURISHMENT**

Coastal Protection Engineering of North Carolina, Inc. (CPE-NC) will provide engineering, environmental, and geotechnical services to the Town of Southern Shores (TOWN) in support of a beach nourishment project scheduled for 2022. The specific services include project management, environmental documentation and permitting, engineering design, borrow area investigations and design, and a baseline survey of the native beach.

The CPE-NC project manager will be responsible for project administration of the Scope of Work with assistance from other senior staff as appropriate. Administration includes coordination with the client, progress meetings and status updates, budget control, scheduling, planning, internal meetings, managing sub-contractors, and other associated management tasks required to complete the project according to the scope in a timely manner. Five (5) in-person project meetings between CPE-NC and the TOWN are anticipated over the anticipated 12 months to complete this Scope of Work. Four (4) of the meetings are assumed to be multi-Town meetings, for which costs will be shared among the Towns. The fifth meeting is intended to be an update to Town Council to provide project updates and to answer any questions from staff or elected officials. In addition to these meetings, CPE-NC will provide the TOWN with a monthly 1-page summary of activities via e-mail. Costs associated with Project Management have been incorporated into each of the project tasks, which are described in detail below.

**TASK 1: Environmental Documentation and Permitting**

**Sub-Task A: Permitting**

The construction of the beach nourishment project along portions of the TOWN's shoreline will require permits from the Department of the Army (U.S. Corps of Engineers, or USACE) in order to satisfy the National Environmental Policy Act (NEPA). In addition, a Coastal Area Management Act (CAMA) Major Permit will be required by the North Carolina Division of Coastal Management (NC DCM). Major permits are necessary for activities that require other state or Federal permits, for projects that cover more than 20 acres, or for construction covering more than 60,000 square feet. Applications for CAMA Major Permits are reviewed by ten (10) state and four (4) Federal agencies before a decision is made.

The USACE will issue the Department of the Army (DA) permit, but project planning and formulation during the preparation of the environmental documents will also include consultation with other Federal agencies including, but not necessarily limited to, the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Bureau of Ocean and Energy Management (BOEM), and the Environmental Protection Agency (EPA). The lead State agency will be the NC DCM who will issue the CAMA Major Permit, but coordination will involve other State agencies including, but not limited to, the North Carolina Division of Marine Fisheries (NC DMF), North Carolina Wildlife Resources Commission (NC WRC), North Carolina Division of Water Resources, (NC DWR), and North Carolina Division of Water Quality (NC DWQ).

Task 1 includes the development and submittal of the complete Department of Army (DA) Individual Permit (IP) application and the CAMA Major Permit application directly to the respective agencies.

**EXHIBIT A:  
SCOPE OF PROFESSIONAL SERVICES  
TOWN OF SOUTHERN SHORES, NORTH CAROLINA  
DESIGN AND ENVIRONMENTAL PERMITTING SERVICES  
2022 BEACH NOURISHMENT**

The CAMA Major Permit application package will include the required MP-1 and MP-2 forms along with plan drawings and adequate additional information that will serve to satisfy the various divisions and agencies who will review the application. This will include information pertaining to borrow area sediment characteristics, threatened and endangered species (marine and terrestrial), essential fish habitat (EFH), and other natural resources. Similar information will be provided in an IP application to the USACE Regulatory Division. Four (4) hard copies and ten (10) CDs of the CAMA Major Permit application, project drawings, and other attachments will be produced and provided to NC DCM for dissemination to the resource agencies for review. Additionally, four (4) hard copies and four (4) CDs of the DA IP application and attachments will be provided to USACE for review and dissemination to federal resource agencies. A \$400 permit fee will be required to submit the CAMA Major Permit application. This cost is not included in the cost of CPE-NC's proposal and will be requested from the TOWN at the time the application is to be submitted.

The permitting process for both the USACE and NC DCM will facilitate the issuance of additional approvals required by federal and state agencies prior to the implementation beach nourishment project. These include:

- NEPA Compliance
- NC DCM Coastal Area Management Act (CAMA) Major Permit
- NC DWR General Water Quality Certification
- NC State Historic Preservation Office's concurrence
- DA Individual Permit in compliance with Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act
- USFWS and NMFS concurrence with Section 7 of the Endangered Species Act (ESA).
- NMFS concurrence with the Magnuson-Stevens Fishery Conservation and Management Act.
- US EPA concurrence with the Clean Water Act (CWA)

CPE-NC proposes participation in up to two (2) additional meetings with the various agencies/stakeholders during the permit application development and review. Additional coordination with resource agencies/stakeholders will be conducted via telephone and email correspondences as needed. The submittal of the CAMA Major Permit application and DA IP application will serve as project deliverables.

CPE-NC will, in good faith, submit complete DA IP and CAMA Major Permit applications; however, the USACE and/or NC DCM may issue a Request for Additional Information (RAI) in response to these permit applications. Should this occur, an additional task order will be submitted to the Town under a separate Scope of Work to address the specific RAI requirements.



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**Sub-Task B: BOEM Lease Request**

The use of borrow material obtained from within federal waters on the Outer Continental Shelf (OCS) requires the issuance of a lease agreement from BOEM under the auspices of the Outer Continental Shelf Lands Act (OCSLA). It is expected that material for this proposed project will be obtained from Borrow Area A (one of the two areas included in the lease agreement between Dare County and BOEM issued to support the 2017 nourishment event) or a new yet-to-be-defined borrow area in the OCS. A request for a new non-competitive negotiated lease agreement that will allow for the use of borrow material from within federal waters will be developed and submitted to BOEM for their consideration. Elements included in the lease request may include:

1. A detailed description of the proposed project and how it qualifies under Section 8(k) of the OCSLA
2. A description of the proposed borrow area(s) and placement area(s) including digital maps and ESRI shapefiles and metadata depicting the same, navigation features, geologic sampling locations, and any hard or live-bottom benthic habitat
3. Any geological data (such as sediment sample locations and grain size data, core logs, photographs, *etc.*) and geophysical data (such as sub-bottom profiler, marine magnetometer, sidescan sonar, and bathymetric data, *etc.*) used in borrow area selection and design
4. Any other known uses of the OCS or other infrastructure in the borrow area
5. A description of the environmental evaluations and corresponding documents that have been completed or are being prepared for offshore and onshore components of the project, including any NEPA documentation
6. A target date or range of dates when the resources will be needed
7. A description of the person or government entities undertaking the project
8. A list of any permits, licenses, or authorizations required for the project and their current status
9. Any known potential inconsistencies with state or local statutes, regulations, or ordinances
10. The name, title, telephone number, mailing address and email address of any points of contact for any federal agencies, state, or local governments, and contractor(s) with whom the applicant has contracted or intends to contract
11. A statement explaining who authorized the project, and whether it is federally authorized
12. A statement explaining how the project is to be funded, indicating whether it is federally funded in whole or in part

The submittal of the aforementioned information to BOEM will serve as a project deliverable.

**Sub-Task C: Environmental Documentation**

Prior to the 2017 nourishment event, the USACE determined that an Environmental Assessment (EA) was required from each applicant associated with the multi-town cooperative project. In addition, a single “Batched” Biological Assessment (BA) and a single Programmatic Essential Fish Habitat (EFH) assessment covering the proposed action of all four towns was required. An interagency meeting was held on April 29, 2020, to determine the necessary environmental documentation that would meet NEPA requirements and support the permitting approach

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associated with this proposed maintenance project. During that meeting it was determined that a single comprehensive EA covering the actions of all four beach projects could be developed. A new Programmatic EFH would not be required and, rather, the existing Programmatic EFH from the 2017 project could be supplemented with updated information as needed. Finally, it was determined that the proposed project should be covered by the recently revised South Atlantic Regional Biological Opinion (SARBO) and, therefore, a new or supplemental BA would not be necessary. Rather, to ensure compliance with Section 7 of the Endangered Species Act, CPE-NC will coordinate with BOEM and USACE to ensure all relevant information is provided to USFWS and NMFS during their consultation efforts.

CPE-NC does not anticipate the need for field studies to collect any additional environmental data; therefore, this cost proposal does not reflect any additional field studies. In the event such field studies are determined to be necessary, a change order will be requested with a modified Scope of Work. The costs associated with these environmental documents, their scopes provided in greater detail below, have been developed under the assumption that each of the four towns associated with the multi-town cooperative beach nourishment project will cost share the expense equally. It is possible that a resource or regulatory agency will issue a RAI in response to these environmental documents. Should this occur, an additional task order will be submitted to the Town under a separate Scope of Work to address the specific RAI requirements.

A description of the environmental documentation efforts are as follows:

***Environmental Assessment (EA):***

An EA under NEPA is a concise public document that provides sufficient evidence and analysis for determining whether USACE should issue a Finding of No Significant Environmental Impact (FONSI) or prepare an EIS. It is designed to help public officials make decisions that are based on an understanding of the human and physical environmental consequences of the proposed project and take actions, in the location and design of the project, that protect, restore and enhance the environment. The core elements of an EA in 40 CFR § 1508.9:

1. The need for the proposal,
2. Alternatives as required by NEPA § 102(2)(E),
3. The environmental impacts of your proposed action and the alternatives, and
4. The agencies and persons consulted.

CPE-NC will utilize the existing EA developed for the TOWN along with the information drafted in the EAs previously developed for the other towns associated with the 2017 multi-town cooperative project to create a new comprehensive EA that assesses the impacts of the actions proposed by all four towns collectively. This single document will include a description of the specific actions proposed for each of the four towns and will be utilized by the USACE and BOEM to ensure NEPA requirements are met.

A Preliminary Draft EA will be submitted to the USACE Regulatory Division and the BOEM for internal editing. Once all comments from USACE Regulatory have been addressed, a notification

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to the Federal Register will declare the release of the Draft EA to the public. Following a 30-day commenting period, CPE-NC will address all comments received by the USACE. A Final EA will then be developed and released again via an announcement to the Federal Register. Ten (10) printed copies and ten (10) digital copies of the Final EA will be produced and submitted to the USACE and BOEM.

The submittal of the Final EA will serve as a project deliverable.

***Supplemental Programmatic Essential Fish Habitat (EFH) Assessment:*** The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) was enacted by the U.S. Congress to protect marine fish stocks and their habitat, prevent and stop overfishing and minimize bycatch. Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." The MSFCMA requires that EFH be identified for all fish species federally managed by the Fishery Management Councils (FMCs) and NMFS.

CPE-NC will supplement the Programmatic EFH utilized by NMFS for the 2017 multi-town cooperative beach nourishment project with additional information, newly designated EFH constituents (should they exist), and updated biological data relevant to the project area. Furthermore, should new borrow area(s) be delineated, information on those sites will also be included. The Supplemental Programmatic EFH assessment will be submitted by CPE-NC on behalf of the four towns to the USACE and BOEM. The USACE and BOEM will then enter consultation with NMFS Habitat Conservation Division (HCD) who will review the document to ensure it is comprehensive and complete. Once determined that the document is comprehensive and complete, NMFS HCD is anticipated to issue their concurrence to the USACE fulfilling this aspect of the NEPA requirement.

The submittal of the Final Supplemental Programmatic EFH assessment will serve as a project deliverable.

***Biological Assessment (BA):*** As mentioned above, based on communications with USACE and BOEM, it is presumed that due to the issuance of the 2020 SARBO, this project will not require the submittal of a BA. However, under Section 7 of the ESA, federal agencies must consult with USFWS and NMFS Protected Resource Division (PRD) on activities that may affect ESA-listed species. These federal agency consultations are designed to help federal agencies in fulfilling their duty to ensure that their actions do not jeopardize the continued existence of a species or destroy or adversely modify designated critical habitat. As such, to ensure compliance with Section 7 requirements, CPE-NC will facilitate the consultation process between the USACE and BOEM and the federal resource agencies to ensure that they are provided adequate information regarding the anticipated project-related impacts as they pertain to protected species. CPE-NC will also respond to additional data requests by USFWS and NMFS PRD as needed.

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**TASK 2: Engineering and Design**

In 2018 and 2019, CPE-NC conducted a series of studies focused on evaluating storm vulnerability along the Town’s oceanfront shoreline and determining where beach nourishment should be considered. CPE-NC developed a series of project options for consideration by the Town of Southern Shores. In late 2019, the Town requested that CPE-NC also evaluate the amount of “useable” beach in addition to storm vulnerability. In January 2020, CPE-NC provided additional project options for the Town to consider that took into consideration storm vulnerability, useable beach, and measured volumetric change rates. To date, CPE-NC has estimated the average fill density recommended for each of the project options and provided cost estimates.

At present, the Town has yet to decide on a beach nourishment option. Once that decision is made, and in preparation of an anticipated 2022 project, CPE-NC will refine the project design to 1) conduct detailed design analysis focused on finalizing the established beach design, 2) optimize fill distribution along the project area, and 3) update advanced fill quantities based on the latest beach profile data.

Beach Profile Data: CPE-NC has conducted annual monitoring surveys of the Town’s oceanfront beach since 2017. CPE-NC is currently under contract with the Town of Southern Shores to collect beach profile data in June 2020. These data will be used to evaluate the design recommendations described in the following paragraphs.

Beach Fill Performance Evaluation and Modeling. The project design will be based on analyses previously conducted by CPE-NC during the vulnerability and beach management plan development conducted in 2018 and 2019 as well as numerical modeling analysis of future project performance. In the previously conducted engineering assessments conducted by CPE-NC, the storm simulation model SBEACH was used to evaluate vulnerability of existing conditions and to determine the estimated quantity of fill to provide storm damage reduction expected to occur under conditions similar to the design storm (Hurricane Isabel).

It is well known that any beach fill placed along a shoreline will be subject to gradual loss of material due to background erosion, i.e., the observed historic rate of shoreline change in the project area, as well as diffusion losses due to the alongshore spreading of the fill material out of the placement area. This will be the first town wide beach nourishment project for Southern Shores, therefore, diffusion losses from the fill are unknown and will need to be estimated using analytical calculations (i.e. Dean and Yoo, 1992) and advanced numerical modeling.

In order to further evaluate the beach nourishment design alternatives and lateral diffusion losses, we will employ the highly advanced process-based model Delft3D. Delft3D is a world leading 3D modeling suite used to investigate hydrodynamics, sediment transport and morphology (beach and dune erosion) and water quality for coastal environments. The software has proven its capabilities on many coastal engineering projects and coastal research initiatives around the world and has been extensively used in the U.S. to evaluate beach nourishment performance. Our lead numerical modeler, Dr. Lindino Benedet, was one of the first coastal scientists to utilize Delft3D to evaluate

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beach nourishment performance in the U.S. in the early 2000s. Additional details of the model can be found at: <https://oss.deltares.nl/web/delft3d/about>.

In the spirit of collaboration among the four northern Dare County Towns to achieve project cost savings and efficiencies, CPE-NC will develop a regional wave and flow model that can be utilized by all four of the Towns to evaluate project specific engineering alternatives. Existing datasets of bathymetric and topographic data for the project area, coupled with hydrodynamic measurements from the USACE FRF will be the main sources of data for the numerical modeling. A regional flow and wave grid will be developed for the region extending from the northern end of the Town of Duck to the southern end of the Town of Kill Devil Hills project area. The regional Delft3D WAVES and FLOW will be calibrated to wave measurements conducted at the FRF.

The regional grid will provide boundary conditions to the nested detailed modeling grids that will be used to cover project specific areas of investigation for each of the four Towns. The highest resolution for the TOWN project-specific nested grid will be in the areas in the wave breaking zone and beach within the TOWN nourishment project area. The nested morphology model will include the Town of Southern Shores nourishment segment.

After model calibration and following consultation with the TOWN, the Delft3D model will be used to estimate nourishment volume losses for different nourishment designs. We anticipate simulating up to four (4) beach re-nourishment design configurations aimed at optimizing project performance. These alternatives may include variations in nourishment volume density (cy per length of shoreline) and various taper configurations. These alternatives will be simulated using the Delft3D model for periods of one (1) year and five (5) years. The results of the model will be evaluated in terms of annual volumetric losses from the project area.

The Delft3D numerical model developed to support the nourishment project will be a “working model” for the TOWN to be used as a tool over the long-term to evaluate the project and improve project performance. Specifically, the model may be used to evaluate episodic alongshore losses following the impacts of hurricanes and nor’easters. It could also be used to evaluate the potential for dune overtopping and flooding. Furthermore, considering borrow area investigations included in this proposal and likely necessary over the long-term management of the TOWN’s project, new borrow areas identified directly offshore of the project can be modeled to evaluate borrow area impacts to the project or adjacent shorelines and support borrow area permitting efforts.

Storm Vulnerability Analysis. In addition to the Delft3D modeling, conducted to evaluate long term fill volume losses (lateral losses), we will utilize a cross-shore storm response model such as SBeach or C-Shore to evaluate the ability of various beach fill profile designs to mitigate for the predicted impact of the design storm (Hurricane Isabel).

We will utilize the existing cross-shore model calibration conducted by CPE-NC using FRF data in the vicinity of the project area. Production runs of profile response will be conducting using the most recent profile and offshore bathymetric data to a depth of -40 feet for modeling purposes. The

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wave boundary conditions for the cross-shore model will be obtained from the calibrated regional Delft3D model.

The Cross-shore model will be used to evaluate the ability of various beach fill profile designs to mitigate for the predicted impact of the design storm. The beach fill designs will include beach fills with variable width berms and elevations, as well as design profiles that include both berms and variable width and elevation of dunes. Each design profile will be evaluated using the same design storm(s) used for the without project condition.

Advanced Fill Volume Analysis. A key component of a beach fill design is an assessment of periodic nourishment requirements needed to maintain the design profile during the interim period between nourishment events. This quantity of fill placed to maintain the design fill during the interim period between nourishment cycles is referred to as advanced fill.

CPE-NC will evaluate volumetric change rates measured since the 2017 beach nourishment project as well as previously reported historic shoreline and volumetric changes. CPE-NC will also use the results of the numerical modeling to better resolve expected diffusion losses. Through these analyses, volumes for advanced fill will be calculated. These values will be incorporated into the Town's beach maintenance plan to better predict future maintenance costs.

Berm Height Elevation Analysis. The initial beach fill design for the projects constructed at Duck, Southern Shores, Kitty Hawk, and Kill Devil Hills in 2017 called for a variable width berm constructed at +6.0 ft. NAVD88. During construction of the projects, the constructed berm was overtopped during several high-water events. Water that overtopped the berm infiltrated the sand as water levels subsided, and eventually, the wave climate re-shaped the beach profile into a more natural configuration.

CPE-NC will evaluate the various beach profile data sets collected since the projects were constructed in order to evaluate whether the +6.0 ft. NAVD88 elevation is the optimal elevation to construct the berm for the TOWNS proposed project. When a beach project is constructed with a berm elevation that is too low, there is a risk that frequent overtopping of the berm can result in ponding of water on the berm, which can impact recreational users of the beach. Furthermore, if a berm is constructed at too high an elevation, increased and more severe scarping can occur as the profile is evolving in response to wave forces. The analysis will focus on optimizing the berm elevation to minimize both the risk of ponding and the risk of scarping.

Engineering Plans. Once CPE-NC has completed the analyses and established a recommended design, a set of engineering plans will be developed. The plans will include detailed plan view and cross section view drawings of both the borrow areas and the proposed beach fill, including allowable dredge cut depths, berm elevation, berm width, and project extent. These plans will be incorporated into the permitting applications discussed under Task 1.

Engineering Report. CPE-NC will prepare an engineering report that documents the process employed to develop the recommended design. The report will include a description of data used, detailed description of the setup and calibration of the Delft3D model and cross shore model,

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descriptions and results of the various design analyses conducted, and recommended design adaptations.

**TASK 3: Borrow Area Investigations and Design**

As part of the agreement between CPE-NC and the TOWN executed on May 8, 2020, a sand search desktop study was conducted to evaluate the potential presence/absence of sand resources in state and federal waters offshore the Towns of Duck, Southern Shores, Kitty Hawk, and Kill Devil Hills. Based on the information compiled and evaluated, several areas have been identified for further investigation. Available geophysical and geotechnical data in the region indicates that there is a potential sand deposit south of previously defined Area C and north of Kill Devil Hills.

In order to further evaluate these potential sediment resources, CPE-NC will work with our sub-contractor, Aptim Environmental & Infrastructure, LLC (APTIM), to collect additional geophysical and geotechnical data in the area south of Borrow Area C to Kitty Hawk. Exhibit D includes a map showing the location identified for further investigation under Task 3. The Modern Sand Isopach developed by the U.S. Geological Survey (USGS) and historic seismic data and vibracores provide a baseline for the potential sand deposit. CPE-NC will conduct a two-phase survey plan, with Phase 1 consisting of a reconnaissance-level geophysical and geotechnical survey, followed immediately by a Phase 2 design and cultural resource geophysical and geotechnical survey. The investigations will include data acquisition, data processing and interpretation, borrow area design, compatibility analysis, and production of a final geotechnical report.

During the Phase 1 reconnaissance-level geophysical survey, a single-beam echosounder, sidescan sonar, chirp sub-bottom, and magnetometer systems will be used to collect four (4) days of geophysical data on widely-spaced intervals over the entire investigation area. The data will be reviewed in real time to determine the best potential areas to focus the design level investigation and to select up to 15 reconnaissance-level vibracores to be collected within the investigation area. This determination will primarily be based on correlating the historic geotechnical data to the subsurface geophysical data to identify the thickest, coarsest sand deposit possible that is free of incompatible material and obstructions, and that avoids impacts to protected resources. Once vibracore sites have been selected, the geophysical data will be used to conduct a cultural resource clearance of the proposed vibracore locations. At that point, vibracore collection will commence at the cleared locations. Once the Phase 1 vibracores have been collected, the vibracores will be split to evaluate the quality of the sand deposits. Areas to be investigated during Phase 2 (Design Level) will be delineated based on the preliminary evaluation of the Phase 1 vibracores.

The design-level geophysical survey will consist of collecting sidescan sonar, chirp sub-bottom, and magnetometer data at a 30-meter (m) line spacing across the selected area, together with perpendicular tie lines to satisfy the requirements of both borrow area design considerations, as well as cultural resource identification and avoidance criteria. After the completion of the design-level geophysical survey, field operations will transition to geotechnical operations to collect up to 30 vibracores, with one core for up to 23 acres throughout the design-level investigation area.

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Vibracores will be collected to sufficient depths such that they extend at least two feet below the maximum dredge depth (up to 20 ft. long). Vibracores will be sited such that the chirp sub-bottom lines can be used to correlate the area between vibracores for a better understanding of the relationship between compatible and non-compatible sediment layers. In addition, full-swath multi-beam echosounder, at a tighter line spacing to achieve full seafloor coverage, will be collected over the initially delineated borrow area (after design-level investigations are complete) to provide full seafloor elevations.

All sidescan sonar and seismic reflection data will be processed using the SonarWiz.MAP software package developed by Chesapeake Technologies Inc. This software package allows for advanced processing, interpretation, and digital mosaic output and can produce georeferenced HTML's viewable in generic web-browser software programs. SonarWiz.MAP also produces digital geographic information for both sub-bottom and sidescan data that are exportable for incorporation into a GIS database. All sidescan sonar, sub-bottom profile, magnetometer, and bathymetric data collected during the course of the preliminary and design level geophysical survey will be processed and interpreted. In addition, the magnetometer data will be reviewed by a qualified archaeologist for cultural resource interpretation.

Upon completion of field operations, all vibracores will be logged by describing sedimentary properties by layer in terms of layer thickness, color, texture (grain size), composition and presence of clay, silt, gravel, or any other identifying features. The vibracores will be photographed in 2.0 ft. intervals. Sediment samples will be extracted from the vibracores at irregular intervals based on distinct stratigraphic layers in the sediment sequence. The vibracores will then be wrapped and archived. CPE-NC will store cores until the time of construction. After this time, cores may either be relinquished to the client or stored for an additional annual cost of \$25 per core.

The sediment samples will be analyzed to determine color and grain size distribution. During sieve analysis, the wet, dry, and washed Munsell colors will be noted. Sieve analysis of the sediment samples will be performed in accordance with the American Society for Testing and Materials (ASTM) Standard Methods Designation D 422-63 for particle size analysis of soils. This method covers the quantitative determination of the distribution of sand size particles. For sediment finer than the No. 230 sieve (4.0 phi) the ASTM Standard Test Method, Designation D 1140-00 will be followed. Weights retained on each sieve will be recorded cumulatively. Grain size results will be entered into the gINT® software program, which computes the mean and median grain size, sorting, and silt/clay percentages for each sample using the moment method.

Samples will also be tested for carbonate content. Carbonate content will be determined by percent weight using the acid leaching methodology described in "Methods of Study of Sediments" (Twenhofel and Tyler, 1941).

A compatibility analysis will be conducted to match the borrow area(s) and beach for optimum project performance and to satisfy the Technical Standards for Beach Fill Projects (15A NCAC 07H.0312). Composite values for mean grain size, percent silt, percent gravel, and percent carbonate will be calculated for the sediment contained in each borrow area. These composite



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values for the borrow areas will be compared to composite values for the native beach. CPE-NC will determine composite sediment characteristics for the native beach using a combination of samples taken prior to the 2017 beach fill project at the south end of the TOWN and samples to be collected as part of this Scope of Services under Task 4. The results of the analysis of both borrow area and native beach samples will be included along with the results of the compatibility analysis as part of the final geotechnical report.

A preliminary draft geotechnical report will be prepared and submitted to the TOWN in digital format for review and comment. This report will include project results, including bathymetric and isopach (sediment thickness) maps, sub-bottom (seismic) survey profiles, vibrocore logs, vibrocore photographs, granulometric reports, and grain size distribution curves. The TOWN will identify any revisions that may be necessary and provide recommendations for the final draft report. The final draft report will be submitted to state and federal resource agencies. In the event that comments are provided by the resource agencies, CPE-NC will amend the draft report to address those comments. Addressing comments does not include the collection of additional field data. In the event that additional field data is required, CPE-NC will submit a separate proposal for the work.

A final report summarizing the results of the geotechnical investigation will be prepared and submitted to the TOWN as well as to state and federal resource agencies as an addendum to the Final EA.

**Task 4 - Native Sampling**

In order to obtain a state permit from the NC DCM, sediment characterization of both the native beach and borrow area must be conducted to determine if the sand source is compatible with the beach. The Technical Standards for Beach Fill Projects (15A NCAC 07H.0312) defines the requirements of data collection and the procedure in which compatibility will be determined. Characterization of the offshore Borrow Area A was conducted in 2014, and characterization of additions borrow areas proposed for investigation under Task 3 of this Scope of Services, will be completed in a way that satisfies the State Technical Standards. Task 4 of this Scope of Services includes characterization of Southern Shores native beach in accordance with the state Technical Standards.

The North Carolina Coastal Resources Commission is currently evaluating modification to the State Technical Standards for Beach Fill Projects (15A NCAC 07H.0312)(1)(c and d). CPE-NC had developed the following scope based on the proposed changes to the state standards and our understanding that these will be in effect when the NC DCM permits are reviewed. In that regard, CPE-NC will collect 13 samples along five (5) profiles within the proposed project area to characterize the TOWN's native beach. Specifically, samples will be collected along profiles as baseline stations -50+00, -90+00, -130+00, -170+56, and -197+12. Sample distribution along the profiles will include six (6) samples landward and six (6) samples seaward of the mean low water (MLW) line and 1 additional sample at the MLW line. Mechanical sieve analysis will be conducted on each sample and a composite grain size will be calculated for each profile. A

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composite sample for each profile will be prepared by mixing equal parts of samples from each sample location along a profile. The composite sample generated for each profile will be analyzed for calcium carbonate content using an acid digestion process.

Results of the characterization of the native beach will be incorporated into the borrow area design and sediment compatibility report described under Task 3.

**Task 5: Baseline Survey to Quantify 3-Inch Clasts on Native Beach**

Part of the sediment compatibility determination required by the state Standards require the determination of a baseline value for the number of clasts larger than 3-inches in diameter present on the surface of the native beach. Such a survey was not required for the small project constructed in 2017 within the TOWN. The State is currently considering re-adoption of the Standards with several changes including changes to section (1) (h), which deals with quantifying the number of sediments and shell material greater than or equal to 3 inches in diameter. In consultation with NC DCM staff, CPE-NC is under the impression that the proposed 2022 project will have to adhere to the new Standards.

Under Task 5, a survey will be performed of the project area to quantify the number of clasts > 3 inches in diameter present within the survey area. This survey will serve as a baseline and will be duplicated upon completion of the beach nourishment project (under a separate work assignment). This proposal includes the baseline survey to quantify clasts > 3 inches in diameter and does not include any post-construction surveys.

The survey will be conducted along six (6) profiles that include the five (5) that will be sampled under Task 4, and one additional profile along baseline station -10+00, which was sampled in preparation for the 2017 project. At each location, the linear distance between the toe of dune and MLW contour will be determined. Based on this linear distance, an area of approximately 10,000 ft<sup>2</sup> will be established and centered along the profile. All clasts greater than 3 inches in diameter within this area will be counted. The sum of all clasts counted within the areas surveyed at each of the six (6) profiles will be determined and this number will serve as the baseline value for the Standards.

**CAVEATS**

CPE-NC proposes to perform the marine sand search to the industry standard of care and will coordinate the investigations with state and federal regulatory agencies as required. While the regulatory agencies may agree with the scope of the investigations, it is possible that beach compatible sand may not be located, regulatory agencies may not approve the sand source(s) that are located, or regulatory agencies may impose a sand placement QA/QC requirement that would be difficult to meet with the identified sand sources. If any of these situations arise, it may be necessary to locate additional beach compatible sand sources at additional cost. CPE-NC will also make reasonable attempts to determine if other entities are exploring the same sand sources or have authorization (permit or BOEM lease) to use the same sand we intend to investigate. Despite these efforts, it is possible that others may claim the sand that we find, and negotiations and/or

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further exploration may be required if that occurs. Lastly, during the investigations, cultural and/or environmental resources may be found to exist in or near the investigated borrow area that would limit or preclude a portion or all of its use.

CPE-NC will attempt to avoid these issues, but there may be unavoidable circumstances that are beyond the control of CPE-NC and may result in the need for additional services. The TOWN herein recognizes the above referenced risks and agrees to work with CPE-NC to complete the work, which may include contracting for additional services for sand investigations as needed.

**EXHIBIT B:  
BREAKDOWN OF COSTS  
TOWN OF SOUTHERN SHORES, NORTH CAROLINA  
DESIGN AND ENVIRONMENTAL PERMITTING SERVICES  
2022 BEACH NOURISHMENT**

Table 1. Breakdown of the total cost of the Design and Environmental Permitting Services for the proposed 2022 Beach Nourishment Project.

<b>TASK</b>	<b>DESCRIPTION</b>	<b>Cost</b>
1	Environmental Documentation and Permitting	\$70,579.50
2	Engineering and Design	\$141,018.75
3	Borrow Area Investigations and Design	\$201,809.50
4	Survey to Quantify 3-Inch Clasts on Native Beach	\$18,310.00
5	Survey to Quantify 3-Inch Clasts on Native Beach	\$5,958.00
<b>TOTAL:</b>		<b>\$437,675.75</b>

Some costs associated with Task 1, Task 2, and Task 3 are being cost shared between the Towns of Duck, Southern Shores, Kitty Hawk, and Kill Devil Hills. In the event that any of the Towns decide not to move forward with the design and permitting of the project, the other 3 Towns' costs would necessarily increase.

Costs associated with Task 4 are associated with the re-surveying of the beach due to proposed changes in the State Technical Standards for Beach Fill Projects. The changes have not yet been adopted by the NC Coastal Resources Commission but are expected to be adopted by the end of the year. In developing this proposal and consulting with NC Division of Coastal Management Staff, we have been led to believe that communities required to re-survey their beaches due to these rule changes may be eligible for reimbursement of the cost to conduct such surveys. It is less clear as to whether communities that are conducting the survey for the first time for their projects will also be reimbursed. However, it may be possible for the Town to be reimbursed \$5,958 for the completion of this work.

**EXHIBIT C:  
LIST OF DELIVERABLES  
TOWN OF SOUTHERN SHORES, NORTH CAROLINA  
DESIGN AND ENVIRONMENTAL PERMITTING SERVICES  
2022 BEACH NOURISHMENT**

The following items have been identified as deliverables for the completion of this scope of work.

- Monthly progress reports;
- Major CAMA Permit Application;
- Dept. of the Army Permit Application;
- BOEM Lease Request Packet
- Final Environmental Assessment;
- Final Supplemental Essential Fish Habitat Assessment;
- Engineering Report;
- Borrow Area Design Report

A detailed description and an individual schedule for each deliverable are provided below.

Monthly Progress Reports: CPE-NC will provide the Town with a 1 page, summary of the project status via e-mail approximately every 30 days during the course of the anticipated 12-month contract period. The letter will describe activities completed throughout the month and update the anticipated schedule of milestones as appropriate.

Major CAMA Permit Application: The Scope of Work includes the development and submittal of the complete Major CAMA permit application directly to the NC Division of Coastal Management. Barring any unforeseen circumstances, the Major CAMA Permit Application will be provided along with other final deliverables within 6 months following written authorization to proceed.

Dept. of the Army Permit Application: The Scope of Work includes the development and submittal of the Dept. of the Army Individual Permit Application directly to the U.S. Army Corps of Engineers. Barring any unforeseen circumstances, the Dept. of the Army Individual Permit Application will be provided along with other final deliverables within 6 months following written authorization to proceed.

BOEM Lease Request Packet: The Scope of Work includes the development and submittal of a request to BOEM for a new non-competitive negotiated lease agreement that will allow for the use of borrow material from within federal waters. Barring any unforeseen circumstances, the BOEM Lease Request Packet will be provided within 6 months following written authorization to proceed.

Final Environmental Assessment (EA): An EA under NEPA is a concise public document that provides sufficient evidence and analysis for determining whether the U. S. Army Corps of Engineers should issue a Finding of No Significant Environmental Impact (FONSI) or prepare an

**EXHIBIT C:  
LIST OF DELIVERABLES  
TOWN OF SOUTHERN SHORES, NORTH CAROLINA  
DESIGN AND ENVIRONMENTAL PERMITTING SERVICES  
2022 BEACH NOURISHMENT**

Environmental Impact Statement (EIS). It is designed to help public officials make decisions that are based on an understanding of the human and physical environmental consequences of the proposed project and take actions, in the location and design of the project, that protect, restore and enhance the environment. Barring any unforeseen circumstances, the EA will be provided along with other final deliverables within 6 months following written authorization to proceed.

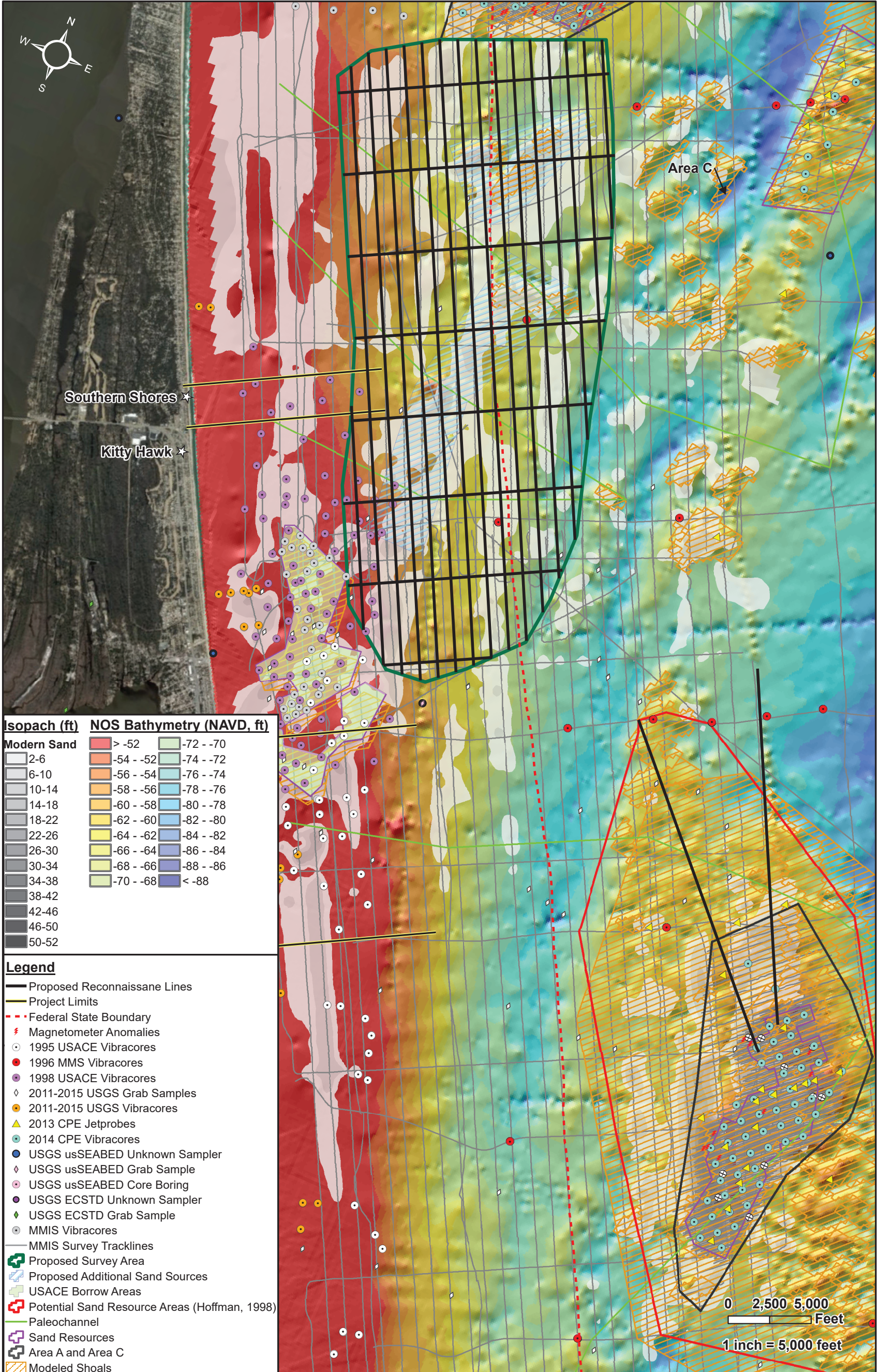
Final Essential Fish Habitat (EFH) Assessment: The EFH assessment is utilized by the National Marine Fisheries Service (NMFS) to ensure that the project will identify and protect important marine and estuarine fish habitat in accordance to the amended Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), which was enacted by the U.S. Congress to protect marine fish stocks and their habitat, prevent and stop overfishing and minimize bycatch. Congress defines Essential Fish Habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." The MSFCMA requires that EFH be identified for all fish species federally managed by the Fishery Management Councils (FMCs) and the NMFS. This document will evaluate the potential impacts to the various essential fish habitats within the designated Permit Area. Barring any unforeseen circumstances, the EFH will be provided along with other final deliverables within 6 months following written authorization to proceed.

Engineering Report: An engineering report will be provided to the Town as an appendix to the Environmental documentation developed to support a permit decision. The engineering report will also serve as a record for the Town of the engineering analysis that were conducted to arrive at the recommended design. This document will be requested in the event the Town were to request FEMA funding for damage repairs. The Engineering Report shall include the results of the beach fill performance modeling, the advanced fill evaluation, the berm height analysis, record of plan formulation, and final description of the proposed beach design. Barring any unforeseen circumstances, the Engineering Report will be provided within 6 months following written authorization to proceed.

Borrow Area Design Report: A borrow area design report will be provided to the Town as an appendix to the Environmental documentation developed to support a permit decision. This report will include project results, including bathymetric and isopach (sediment thickness) maps, a description of the proposed borrow area sediments, maps showing the limits of the borrow areas, results of the sediment compatibility analysis and volume contained within the designed borrow area. The report will also include the following as appendices: sub-bottom (seismic) survey profiles, vibrocore logs, vibrocore photographs, granulometric reports and grain size distribution curves for borrow area and native beach sediment samples. Barring any unforeseen circumstances, the borrow area design report will be provided within 9 months following written authorization to proceed.



EXHIBIT D:  
 MAP OF INVESTIGATION AREA FOR SAND RESOURCE INVESTIGATION  
 TOWN OF SOUTHERN SHORES, NORTH CAROLINA  
 DESIGN AND ENVIRONMENTAL PERMITTING SERVICES  
 2022 BEACH NOURISHMENT





" LPR-Counts "

Traffic Counts for June 8 thru June 14 2020						
	13th Ave NB	13th Ave SB	NC 12 NB Skyline Rd NB	Skyline Rd SB	S Dogwood NB	S Dogwood SB
Monday	7,122	6,612	8,915	10,048	1,053	NR
Tuesday	7,647	6,959	9,692	10,335	1,074	NR
Wednesday	8,345	7,763	10,239	11,047	1,036	152
Thursday	8,279	7,648	10,100	10,974	1,250	526
Friday	7,751	8,265	9,500	11,374	947	423
Saturday	10,727	10,165	9,424	12,873	4,500	49
Sunday	9,098	9,011	8,815	11,559	2742	623



' Radar counters '

# Weekly Report - Vehicle Count

Location: South Dogwood Trail

(Before Country Club/Marina)

Report Period:

06/08/2020 to 06/14/2020

Address: South Dogwood Trail, , North Carolina, USA

Total Vehicle Count:

10593

Speed Limit: From schedule 25 mph

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	3	3	n/a	1	3	7	3	3	5	3	27	30
01:00-02:00	4	2	1	1	2	3	1	2	2	2	26	30
02:00-03:00	1	3	9	2	1	6	2	3	4	3	21	27
03:00-04:00	3	2	4	3	7	5	1	4	3	4	25	33
04:00-05:00	5	1	1	n/a	2	4	7	2	6	3	20	29
05:00-06:00	1	8	4	4	2	1	1	4	1	3	19	28
06:00-07:00	22	13	16	16	11	9	12	16	11	14	23	29
07:00-08:00	38	52	43	54	57	27	32	49	30	43	22	28
08:00-09:00	77	67	86	73	89	48	58	78	53	71	23	28
09:00-10:00	59	88	81	79	61	105	71	74	88	78	23	28
10:00-11:00	86	83	73	79	85	84	91	81	88	83	23	28
11:00-12:00	77	74	76	82	<b>H 200</b>	124	80	102	102	102	22	29
12:00-13:00	<b>H 101</b>	88	95	90	192	143	75	113	109	112	23	29
13:00-14:00	82	65	76	93	96	306	126	82	216	121	25	29
14:00-15:00	75	85	88	74	74	343	238	79	291	140	26	29
15:00-16:00	94	<b>H 98</b>	88	98	86	314	<b>H 319</b>	93	317	157	26	30
16:00-17:00	99	85	93	101	100	<b>H 345</b>	306	96	326	161	25	29
17:00-18:00	85	74	<b>H 100</b>	<b>H 102</b>	86	310	253	89	282	144	25	29
18:00-19:00	66	67	59	73	65	273	127	66	200	104	21	29
19:00-20:00	45	51	49	42	52	236	47	48	142	75	20	27
20:00-21:00	48	18	44	47	29	154	30	37	92	53	24	29
21:00-22:00	19	27	27	20	20	34	20	23	27	24	25	29
22:00-23:00	10	5	11	8	11	14	10	9	12	10	26	30
23:00-24:00	5	4	5	4	6	4	4	5	4	5	27	30
Summary	1105	1063	1129	1146	1337	2899	1914	1158	2411	1515	AVG: 24	AVG: 29

\* H - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.



# Weekly Report - Vehicle Count

"Raday Counters"

Location: **174 South Dogwood Trail** (North of Marina)  
 Address: 174 South Dogwood Trail, , North Carolina, United States of America  
 Speed Limit: From schedule 25 mph

Report Period: 06/08/2020 to 06/14/2020  
 Total Vehicle Count: 7440

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	2	2	n/a	n/a	2	3	n/a	2	3	2	23	27
01:00-02:00	2	2	3	1	n/a	7	n/a	2	7	3	20	28
02:00-03:00	n/a	1	6	n/a	n/a	2	n/a	4	2	3	17	29
03:00-04:00	1	1	n/a	2	7	1	6	3	4	3	15	28
04:00-05:00	2	2	3	3	2	1	2	2	2	2	22	29
05:00-06:00	17	13	9	12	5	8	3	11	6	10	20	26
06:00-07:00	50	42	40	33	21	20	22	37	21	33	19	26
07:00-08:00	38	50	51	48	38	42	36	45	39	43	21	27
08:00-09:00	69	70	48	68	35	72	49	58	61	59	22	27
09:00-10:00	59	65	53	51	59	63	63	57	63	59	21	27
10:00-11:00	54	<b>H 79</b>	54	60	53	89	59	60	74	64	22	27
11:00-12:00	<b>H 74</b>	74	<b>H 68</b>	54	44	124	69	63	97	72	22	27
12:00-13:00	47	60	<b>H 68</b>	53	54	234	83	56	159	86	22	27
13:00-14:00	69	48	56	52	61	290	213	57	252	113	23	27
14:00-15:00	58	68	48	50	51	<b>H 306</b>	273	55	290	122	23	27
15:00-16:00	63	62	64	<b>H 79</b>	<b>H 73</b>	229	<b>H 274</b>	68	252	121	20	26
16:00-17:00	63	53	48	54	51	146	230	54	188	92	18	26
17:00-18:00	58	42	35	49	42	147	91	45	119	66	18	27
18:00-19:00	35	31	37	30	40	143	43	35	93	51	19	27
19:00-20:00	21	16	32	17	25	140	15	22	78	38	22	27
20:00-21:00	16	17	13	14	10	18	13	14	16	14	24	29
21:00-22:00	7	4	10	6	6	8	8	7	8	7	21	27
22:00-23:00	2	2	2	3	3	7	1	2	4	3	24	29
23:00-24:00	1	n/a	n/a	2	1	1	2	1	2	1	23	28
Summary	<b>808</b>	<b>804</b>	<b>748</b>	<b>741</b>	<b>683</b>	<b>2101</b>	<b>1555</b>	<b>760</b>	<b>1840</b>	<b>1067</b>	<b>AVG: 21</b>	<b>AVG: 27</b>

\* H - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.

# Weekly Report - Vehicle Count

Location: Wax Myrtle Trail

Report Period:

06/08/2020 to 06/14/2020

Address: 186 Wax Myrtle Trail, , North Carolina, United States of America

Total Vehicle Count:

2763

Speed Limit: From schedule 25 mph

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	1	n/a	n/a	n/a	n/a	n/a	n/a	1	n/a	1	6	6
01:00-02:00	1	1	7	2	2	n/a	1	3	1	2	20	33
02:00-03:00	1	n/a	4	1	2	2	n/a	2	2	2	17	22
03:00-04:00	3	n/a	n/a	n/a	n/a	n/a	3	3	3	3	15	19
04:00-05:00	2	1	n/a	n/a	n/a	n/a	n/a	2	n/a	2	4	6
05:00-06:00	n/a	1	5	3	11	1	5	5	3	4	6	9
06:00-07:00	27	12	21	10	<b>H 56</b>	11	7	25	9	21	7	15
07:00-08:00	<b>H 41</b>	<b>H 23</b>	15	11	24	20	18	23	19	22	9	17
08:00-09:00	22	20	18	19	18	44	22	19	33	23	11	18
09:00-10:00	16	11	<b>H 27</b>	12	20	40	31	17	36	22	11	19
10:00-11:00	13	17	12	16	8	32	8	13	20	15	14	22
11:00-12:00	25	12	22	11	11	68	10	16	39	23	16	25
12:00-13:00	10	18	22	18	20	<b>H 108</b>	48	18	78	35	17	26
13:00-14:00	13	10	18	7	7	88	133	11	111	39	21	29
14:00-15:00	16	11	5	13	19	101	<b>H 162</b>	13	132	47	19	28
15:00-16:00	17	9	13	8	9	50	71	11	61	25	17	25
16:00-17:00	20	19	12	<b>H 28</b>	14	78	90	19	84	37	16	26
17:00-18:00	18	20	17	13	19	102	42	17	72	33	16	25
18:00-19:00	10	12	6	14	6	84	1	10	43	19	18	27
19:00-20:00	12	7	6	8	6	57	7	8	32	15	15	24
20:00-21:00	1	1	6	11	6	7	5	5	6	5	10	17
21:00-22:00	1	1	1	6	1	n/a	n/a	2	n/a	2	12	26
22:00-23:00	2	n/a	n/a	2	2	2	1	2	2	2	9	22
23:00-24:00	n/a	n/a	n/a	n/a	n/a	14	n/a	n/a	14	14	6	12
<b>Summary</b>	<b>272</b>	<b>206</b>	<b>237</b>	<b>213</b>	<b>261</b>	<b>909</b>	<b>665</b>	<b>245</b>	<b>800</b>	<b>413</b>	<b>AVG: 13</b>	<b>AVG: 21</b>

\* H - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.



# Weekly Report - Vehicle Count

Location: **55 Hickory Trail**  
 Address: **55 Hickory Trail, , North Carolina, United States of America**  
 Speed Limit: **From schedule 25 mph**

Report Period: **06/08/2020 to 06/14/2020**  
 Total Vehicle Count: **4404**

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	n/a	n/a	n/a	n/a	1	2	n/a	1	2	2	22	22
01:00-02:00	n/a	n/a	n/a	1	n/a	n/a	n/a	1	n/a	1	11	11
02:00-03:00	n/a	n/a	5	n/a	n/a	1	1	5	1	2	11	14
03:00-04:00	n/a	n/a	n/a	3	n/a	n/a	2	3	2	3	22	27
04:00-05:00	3	3	3	1	5	4	2	3	3	3	16	25
05:00-06:00	10	8	4	6	4	8	4	6	6	6	19	26
06:00-07:00	21	9	15	18	20	13	18	17	16	16	17	26
07:00-08:00	19	29	25	<b>H 36</b>	14	28	19	25	24	24	20	25
08:00-09:00	<b>H 36</b>	34	27	31	24	43	42	30	43	34	21	26
09:00-10:00	21	<b>H 36</b>	26	33	29	34	30	29	32	30	19	25
10:00-11:00	23	29	33	31	19	57	31	27	44	32	20	26
11:00-12:00	28	<b>H 36</b>	20	20	27	97	33	26	65	37	21	26
12:00-13:00	29	35	<b>H 38</b>	32	<b>H 31</b>	146	53	33	100	52	22	25
13:00-14:00	34	20	35	29	29	H 221	154	29	188	75	23	26
14:00-15:00	27	33	23	27	22	208	H 202	26	205	77	21	25
15:00-16:00	32	21	22	30	27	154	177	26	166	66	17	25
16:00-17:00	28	24	24	22	27	106	133	25	120	52	17	25
17:00-18:00	21	19	23	16	16	124	80	19	102	43	18	25
18:00-19:00	22	20	17	19	24	145	25	20	85	39	14	24
19:00-20:00	15	12	18	17	14	100	12	15	56	27	20	25
20:00-21:00	2	5	8	9	6	15	6	6	11	7	20	25
21:00-22:00	4	1	2	5	5	1	8	3	5	4	19	25
22:00-23:00	2	1	2	1	1	1	n/a	1	1	1	16	25
23:00-24:00	n/a	2	1	1	3	3	n/a	2	3	2	20	25
Summary	377	377	371	388	348	1511	1032	378	1280	635	AVG: 19	AVG: 24

\* **H** - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.

# Weekly Report - Vehicle Count

Location: **274 Hillcrest Drive**  
 Address: **274 Hillcrest Drive, , North Carolina, United States of America**  
 Speed Limit: **From schedule 25 mph**

Report Period: **06/08/2020 to 06/14/2020**  
 Total Vehicle Count: **3098**

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	n/a	n/a	n/a	n/a	n/a	1	n/a	n/a	1	1	24	24
01:00-02:00	n/a	n/a	n/a	3	n/a	1	n/a	3	1	2	17	19
02:00-03:00	2	3	3	3	3	n/a	n/a	3	n/a	3	19	24
03:00-04:00	1	n/a	2	2	n/a	2	n/a	2	2	2	21	27
04:00-05:00	1	n/a	n/a	n/a	1	n/a	2	1	2	1	13	16
05:00-06:00	3	3	1	1	2	4	4	2	4	3	21	24
06:00-07:00	9	7	6	6	<b>H 23</b>	5	6	10	6	9	14	25
07:00-08:00	11	12	19	15	8	23	10	13	17	14	21	24
08:00-09:00	18	20	17	19	12	29	25	17	27	20	21	25
09:00-10:00	20	18	16	13	19	23	21	17	22	19	21	25
10:00-11:00	13	<b>H 25</b>	19	21	11	32	16	18	24	20	22	26
11:00-12:00	19	18	16	12	15	69	26	16	48	25	23	27
12:00-13:00	19	23	25	<b>H 25</b>	21	87	41	23	64	34	23	27
13:00-14:00	18	18	<b>H 27</b>	24	11	109	47	20	78	36	23	27
14:00-15:00	12	17	16	21	18	<b>H 179</b>	137	17	158	57	23	27
15:00-16:00	21	11	12	17	20	148	137	16	143	52	20	26
16:00-17:00	<b>H 23</b>	13	17	18	18	135	<b>H 159</b>	18	147	55	21	26
17:00-18:00	18	14	19	18	10	139	43	16	91	37	22	26
18:00-19:00	13	13	9	11	11	139	11	11	75	30	22	26
19:00-20:00	9	4	13	11	9	98	10	9	54	22	22	25
20:00-21:00	n/a	4	5	2	2	6	4	3	5	4	22	25
21:00-22:00	1	2	4	2	1	n/a	3	2	3	2	22	24
22:00-23:00	n/a	n/a	n/a	n/a	2	1	n/a	2	1	2	22	24
23:00-24:00	n/a	n/a	1	1	1	n/a	n/a	1	n/a	1	20	27
Summary	231	225	247	245	218	1230	702	240	973	451	AVG: 21	AVG: 25

\* H - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.



# Weekly Report - Vehicle Count

Location: **286 Sea Oats Trail**  
 Address: **283 Sea Oats Trail, , North Carolina, United States of America**  
 Speed Limit: **From schedule 25 mph**

Report Period: **06/08/2020 to 06/14/2020**  
 Total Vehicle Count: **3505**

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	n/a	n/a	1	n/a	1	n/a	n/a	1	n/a	1	20	21
01:00-02:00	n/a	n/a	n/a	1	n/a	n/a	n/a	1	n/a	1	16	16
02:00-03:00	n/a	n/a	1	n/a	1	1	n/a	1	1	1	22	26
03:00-04:00	1	n/a	n/a	n/a	n/a	1	n/a	1	1	1	13	17
04:00-05:00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
05:00-06:00	1	n/a	1	2	2	n/a	1	2	1	1	26	30
06:00-07:00	4	5	3	4	2	3	6	4	5	4	20	27
07:00-08:00	7	11	8	12	2	11	7	8	9	8	21	25
08:00-09:00	12	13	6	16	9	20	12	11	16	13	21	27
09:00-10:00	10	<b>H 25</b>	<b>H 19</b>	15	9	20	11	16	16	16	18	25
10:00-11:00	13	11	8	<b>H 18</b>	8	14	11	12	13	12	21	27
11:00-12:00	13	7	12	10	8	43	10	10	27	15	23	29
12:00-13:00	<b>H 16</b>	5	9	12	<b>H 18</b>	198	52	12	125	44	26	31
13:00-14:00	13	9	13	15	10	237	239	12	238	77	26	31
14:00-15:00	13	14	10	7	15	210	<b>H 274</b>	12	242	78	25	30
15:00-16:00	8	9	7	9	15	153	161	10	157	52	24	30
16:00-17:00	11	12	13	14	5	165	193	11	179	59	23	29
17:00-18:00	8	6	10	7	8	273	70	8	172	55	25	30
18:00-19:00	4	4	4	8	7	<b>H 307</b>	6	5	157	49	25	29
19:00-20:00	8	2	7	5	5	57	3	5	30	12	23	29
20:00-21:00	3	7	4	4	1	3	2	4	3	3	20	24
21:00-22:00	2	3	1	1	3	2	3	2	3	2	23	27
22:00-23:00	n/a	1	2	1	1	n/a	n/a	1	n/a	1	18	22
23:00-24:00	n/a	2	1	n/a	n/a	2	n/a	2	2	2	12	12
Summary	147	146	140	161	130	1720	1061	151	1397	507	AVG: 21	AVG: 26

\* H - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.

# Weekly Report - Vehicle Count

Location: **N Sea Oats Trl**  
 Address: **332 Sea Oats Trail, , North Carolina, United States of America**  
 Speed Limit: **From schedule 25 mph**

Report Period: **06/08/2020 to 06/14/2020**  
 Total Vehicle Count: **9112**

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (mph)	85% Speed (mph)
00:00-01:00	4	2	7	4	n/a	3	2	4	3	4	10	17
01:00-02:00	n/a	n/a	1	n/a	2	n/a	n/a	2	n/a	2	16	25
02:00-03:00	n/a	1	n/a	1	n/a	5	n/a	1	5	2	10	21
03:00-04:00	1	1	4	1	1	1	n/a	2	1	2	10	17
04:00-05:00	7	n/a	2	1	5	2	n/a	4	2	3	8	12
05:00-06:00	2	2	4	2	7	5	5	3	5	4	12	21
06:00-07:00	16	19	17	11	10	9	3	15	6	12	8	14
07:00-08:00	31	24	33	21	60	10	21	34	16	29	9	16
08:00-09:00	32	<b>H 53</b>	41	51	37	50	35	43	43	43	10	18
09:00-10:00	49	39	51	60	20	87	51	44	69	51	10	18
10:00-11:00	49	42	55	54	44	95	52	49	74	56	10	18
11:00-12:00	59	39	48	<b>H 78</b>	32	66	41	51	54	52	10	17
12:00-13:00	44	41	50	48	30	142	57	43	100	59	11	19
13:00-14:00	<b>H 61</b>	49	<b>H 60</b>	47	<b>H 79</b>	458	126	59	292	126	11	19
14:00-15:00	58	33	47	48	33	492	409	44	451	160	11	19
15:00-16:00	46	39	48	44	42	391	<b>H 490</b>	44	441	157	11	18
16:00-17:00	38	31	27	34	58	280	329	38	305	114	9	16
17:00-18:00	28	40	45	60	46	385	413	44	399	145	10	16
18:00-19:00	24	39	43	26	36	390	180	34	285	105	10	17
19:00-20:00	29	38	37	29	31	<b>H 521</b>	26	33	274	102	10	16
20:00-21:00	23	17	19	28	23	235	15	22	125	51	9	16
21:00-22:00	8	16	13	14	15	19	6	13	13	13	9	15
22:00-23:00	8	16	4	18	6	10	4	10	7	9	9	14
23:00-24:00	2	6	5	8	4	11	4	5	8	6	9	17
Summary	619	587	661	688	621	3667	2269	641	2978	1307	AVG: 10	AVG: 17

\* **H** - highest value in the column, **bolded H** is highest H value in report

\*\* "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.