Ordinance# 2004-09

AGREEMENT BETWEEN CLIENT AND ENGINEER

FOR PROFESSIONAL SERVICES

THIS AGREEMENT is made on the 9th day of April, 2004, by and between the City of Shoreacre, a municipality of the State of Texas, hereinafter called CLIENT, and Moffatt & Nichol Engineers a California corporation, hereinafter called ENGINEER, for the following Project:

Bayfront Erosion Study

The CLIENT and ENGINEER for mutual consideration hereinafter set forth, agree as set forth below and as provided in the attached Standard Clauses:

1.0 ENGINEER'S SERVICES

The ENGINEER shall perform professional services in connection with the Project, as set forth below and contained within this Agreement:

Services provided shall be in accordance with ENGINEER'S proposal for above referenced project dated February 26, 2004 and the schedule provided in the City of Shoreacres Request for Proposals No. 04-01.

2.0 ENGINEER'S CHARGES

In accordance with this Agreement, the ENGINEER shall provide professional services for which the CLIENT shall compensate ENGINEER as follows:

Charges shall be a lump sum fee in accordance with ENGINEER'S proposal for above referenced project dated February 26, 2004. The ENGINEER will bill and the CLIENT will pay the lump sum amount upon full completion of the project by the Engineer and acceptance by the Client. If the project lasts more than sixty calendar days then the ENGINEER may submit for partial payment based on an estimation made by the ENGINEER and accepted by the CLIENT of the percentage of work completed. Section 2.0 of the attached Standard Clauses will not apply to this contract, because reimbursable expenses are included in the lump sum charge.

3.O INSURANCE AND LIABILITY PROVISIONS

3.1 The ENGINEER shall acquire and maintain statutory workmen's compensation insurance coverage, employer's liability, comprehensive general liability insurance coverage and professional liability insurance coverage.

3.2 The CLIENT agrees to limit the ENGINEER's liability to the CLIENT and to all Construction Contractors and Subcontractors on the Project, due to the ENGINEER's professional negligent acts, errors or omissions, such that the total aggregate liability of the ENGINEER to those named shall not exceed the ENGINEER's total fee for services rendered on this Project.

4.0 NOTICES

Any notices, addressed to the CLIENT at City of Shoreacres, 601 Shoreacres Blvd., Shoreacres, Texas 77571, and to the ENGINEER at P.O. Box 22648, Long Beach, California, 90801-5648, and depositing same in the U.S. Postal Service. When so given, such notice shall be given from the time of mailing the same.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement which is in effect as of the day and year first above written when signed by both parties.

MOFFATT & NICHOL ENGINEERS

By

Title Vice President

Date 04/09/04

CLIENT

By Nancy R. Edmonson

Title Mayor

Date 4/7/04

AGREEMENT BETWEEN CLIENT AND ENGINEER
STANDARD CLAUSES

1.0 CLIENT'S RESPONSIBILITY

The CLIENT shall, unless otherwise provided for in this Agreement, at no cost to the ENGINEER:

1.1 Guarantee full and free access for the ENGINEER to enter upon all property required for the performance of the ENGINEER's services.

1.2 Give prompt written notice to the ENGINEER whenever the CLIENT observes or otherwise becomes aware of any defect in the Project or other event which may substantially affect the ENGINEER's performance of services under this Agreement.

2.0 REIMBURSABLE EXPENSES

Reimbursable Expenses are in addition to ENGINEER's compensation for services performed on an Hourly Rate basis and include expenditures made by the ENGINEER, his employees or his consultants in the interest of the Project.

3.0 PAYMENTS TO THE ENGINEER

3.1 Progress payments shall be made in proportion to services rendered and as indicated within this Agreement and shall be due and owing upon the ENGINEER's submittal of any invoice. Past due amounts owed shall include a late payment Finance Charge which will be computed at the periodic rate of 1% per month, which is an Annual Percentage Rate of 12%, and will be applied to any unpaid balance 30 days after the date of the original invoice.

3.2 The ENGINEER may, upon seven days written notice, suspend services if CLIENT fails to make payments.

3.3 No deductions shall be made from the ENGINEER's compensation on account of penalty or other sums withheld from payments to Contractors.

3.4 Hourly Rates and Reimbursable Expenses shall be subject to periodic revision as stated on the Rate Schedule. In the event revisions are made during the lifetime of this Agreement, the increased or decreased Hourly Rates and Reimbursable Expenses shall apply to all remaining compensation for services performed by the ENGINEER when such rates provide the basis for the ENGINEER's compensation.

3.5 If the Project is delayed or if the ENGINEER's services for the Project are delayed or suspended for more than three months for reasons beyond the ENGINEER's control, the ENGINEER may, after giving seven days written notice to the CLIENT, terminate this Agreement and the CLIENT shall compensate the ENGINEER in accordance with the termination provision contained hereinafter in this Agreement.

4.0 GENERAL PROVISIONS

4.1 All Drawings, Specifications and other work data of the ENGINEER for this Project are instruments of service for this Project only and shall remain the property of the ENGINEER whether the Project is completed or not. The CLIENT shall not reuse any of the ENGINEER's instruments of service on extensions of this Project or on any other project without the prior written permission of the ENGINEER. Any unauthorized reuse shall be at the CLIENT's risk and the CLIENT agrees to defend, indemnify and hold harmless the ENGINEER from all claims, damages, and expenses including attorney's fees arising out of such unauthorized reuse of the ENGINEER's instruments of service by the CLIENT OR BY OTHERS ACTING THROUGH THE CLIENT.

4.2 Neither the CLIENT nor the ENGINEER shall delegate his duties under this Agreement without the written consent of the other.

4.3 This Agreement may be terminated by either party by seven days written notice in the event of substantial failure to perform in accordance with the terms of this Agreement by the other party through no fault of the terminating party. If this Agreement is terminated, the ENGINEER shall be paid for services performed to the termination notice date including Reimbursable Expenses due plus Termination Expenses. Termination Expenses are defined as Reimbursable Expenses directly attributable to termination.

4.4 This Agreement represents the entire and integrated agreement between the CLIENT and the ENGINEER and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the CLIENT and the ENGINEER.

4.5 This Agreement shall be governed by the laws of the State of Texas.

4.6 Should litigation occur between the two parties relating to the provisions of this Agreement, all litigation expenses, collection expenses, witness fees, court costs and attorney's fees incurred by the prevailing party shall be paid by the non-prevailing party to the prevailing party.

4.7 Neither Party shall hold the other responsible for damages or delay in performance caused by acts of God, strikes, lockouts, accidents, or other events beyond the control of the other or the other's employees and agents.

4.8 In the event any provisions of this Agreement shall be held to be invalid and unenforceable, the remaining provisions shall be valid and binding upon the parties. One or more waivers by either party of any provision, term, condition or covenant shall not be construed by the other party as a waiver of a subsequent breach of the same by the other party.

4.9 The ENGINEER is not responsible for design and construction review services relating to the Contractor's safety precautions or to means, methods, techniques, sequences, or procedures required for the Contractor to perform his work. Omitted services include but are not limited to shoring, scaffolding, underpinning temporary retainment of excavations and any erection methods and temporary bracing.

4.10 The ENGINEER intends to render his services under this Agreement in accordance with generally accepted professional practices for the intended use of the Project and makes no warranty either express or implied.

4.11 Any estimate of construction costs prepared by the ENGINEER represents his judgment as a design professional and is supplied for the general guidance of the CLIENT. Since the ENGINEER has no control over the cost of labor and material, or over competitive bidding or market conditions, the ENGINEER does not guarantee the accuracy of such estimates as compared to Contractor bids or actual cost to the CLIENT.

4.12 CLIENT agrees, to the fullest extent permitted by law, to indemnify and hold the ENGINEER harmless from any damage, liability or cost (including reasonable attorney's fees and costs of defense) to the extent caused by CLIENTS negligent acts, errors, or omissions in the performance of the SCOPE OF WORK covered by this AGREEMENT and anyone for whom the CLIENT is legally liable.

MOFFATT & NICHOL
ENGINEERS

February 26, 2004

Ms. Shari Tait
City Secretary
City of Shoreacres
601 Shoreacres Boulevard
Shoreacres, Texas 77571

Dear Ms. Tait:

Moffatt and Nichol Engineers, Inc. (M&NE) is pleased to have this opportunity to submit a proposal to the City of Shoreacres for a Bayfront Erosion Study in response to the Request for Proposals No. 04-01. With nearly sixty years of corporate background in the fields of coastal and marine engineering, M&NE is well suited to execute the tasks described in the request for proposals. We propose to perform the study as outlined in this letter.

Introduction and Personnel

As a member of Houston Yacht Club and frequent visitor to the City of Shoreacres over the last decade, I often enjoy the unique experience offered by Shoreacres' bayfront park along Miramar Drive. I have also observed numerous ship wakes, high tides, and strong storms batter the shoreline. The Miramar Drive park is one of the few public access points to Galveston Bay in Harris County. As such the park is a valuable resource to the City of Shoreacres including its residents, visitors, and the surrounding communities. While the concrete rip-rap placed along this shoreline to prevent erosion has been somewhat successful as a means of shore protection, it does not compliment the scenic and recreational opportunities which this shoreline might provide the community. The existing rip-rap also appears to be insufficient to withstand strong storms which occasionally strike this area. With this in mind, M&NE would like to work with the City of Shoreacres, neighboring residents, and the greater community in assessing the erosion problem, developing potential solutions to the problem, and seeking funding sources for these solutions.

As mentioned above, M&NE has nearly sixty years of experience in the field of coastal engineering. The company was formed in 1945 and has specialized in waterfront engineering since its beginning, earning us an international reputation for excellence in the field. Information on M&NE and past projects of a similar nature are attached to this proposal.

The work will be led by myself, Larry A. Wise, P.E. (M&NE billing code Engineer I), I am a registered professional engineer (P.E.) in the State of Texas and have more than nine years of experience in coastal and environmental engineering. My experience includes working with the Texas General Land Office on several Coastal Erosion Planning and Response Act (CEPRA) projects since the beginning of the program in 2000. I have successfully led projects, both large and small, for various clients from conception through permitting, design, and construction. Dr. Paul Tschirky (M&NE billing code Engineer I) of M&NE will also assist this project in assessing the causes of erosion and developing solutions. Dr. Tschirky has worked towards

11011 Richmond Avenue, Suite 200, Houston, Texas 77042 (713) 977-7372 Fax (713) 977-7379

finding solutions to coastal erosion problems in several unique areas around the world. M&NE will be assisted in this project by Mr. Sid Bouse, RPLS, LSLS (Coastal Surveying billing code LSLS) of Coastal Surveying of Texas, Inc. Mr. Bouse is a registered professional land surveyor (RPLS) and licensed state land surveyor (LSLS) in the State of Texas. Mr. Bouse has been involved with surveying coastal areas of Texas, particularly in the Houston-Galveston area, more than 18 years. Mr. Bouse has performed many coastal boundary surveys in the region and is one of the few surveyors in the area licensed to perform these specialized surveys. Resumes for the key personnel for the proposed work are attached for your consideration. Also attached are current billing rate sheets for both M&NE and Coastal Surveying of Texas.

Scope of Work

M&NE proposes to execute the Bayfront Erosion Study according to the following tasks.

Task 1: Background Documentation

M&NE will locate historic maps and aerial photographs to document the erosion along the Shoreacres Bayfront in recent decades. M&NE will obtain any readily available historic surveys depicting the shoreline in the vicinity. M&NE will obtain publicly available aerial photographs from the Texas General Land Office (TGLO), Texas Natural Resources Information System (TNRIS), Texas Bureau of Economic Geology (BEG), US Geological Survey (USGS), or other available sources. Photos dating as far back as possible will be obtained. The photos will be electronically scanned and georeferenced using available landmarks. Shorelines from these photos will be digitized and erosion rates will be estimated.

In addition to maps and aerial photographs, other background information will also be gathered. This information will include publicly available information on historic subsidence in the area, any readily available information on the design and construction of the existing concrete rip-rap shore protection, any readily available information on other past erosion control efforts at the site, past bathymetric surveys of the area, and past studies of shoreline erosion in the Upper Galveston Bay area.

Task 2: Surveying

M&NE will subcontract surveying services for the proposed project to Coastal Surveying of Texas. These surveys will include both upland and submerged parts of the project area. The upland surveys will include across-shore transects showing typical elevations for the upper limits of the existing rip-rap, typical elevations landward of the rip-rap, and the distances from the rip-rap to Miramar Drive. Any upland features, such as the fishing pier, or anomalies, such as scour holes, will also be included in the surveys. The offshore (bathymetric) surveys will extend outward from the shoreline to a depth of approximately 7 to 8 feet of water. The bathymetric survey will consist of across-shore transects aligned with the upland transects. In the northern (steeper) part of the survey the transects may extend further offshore than the 8 foot depth, while in the southern (milder slope) part of the survey the transects may stop short of 8 foot depth. Any anomalous offshore conditions that might contribute to erosion or otherwise be hazards

(such as abandoned, submerged piles) which are located during the field work will also be documented.

A coastal boundary survey documenting the boundary between State submerged lands and upland properties will also be performed. The coastal boundary survey is required by state law prior to any shoreline erosion response measures which might affect the location of this boundary. The coastal boundary survey may require temporary installation of a tide gage in the vicinity; it is assumed that the City can provide secure access to the fishing pier or Houston Yacht Club for installation of the gage if required.

All survey data obtained will be provided to the City in both hardcopy drawings and electronically. The hardcopy upland and bathymetric surveys will be sealed by a registered professional land surveyor and the hardcopy coastal boundary survey will be sealed by a licensed state land surveyor. It is assumed that the City will provide any and all documents necessary to identify the ownership, location, and condition of the property to be surveyed including, but not limited to, deeds, maps and title information. It is assumed that the City will provide the written authorization of the owner to enter upon the subject property (and adjacent properties as necessary) for the purpose of conducting surveyor's work thereon.

Task 3: Identifying Potential Solutions

After obtaining background information on the bayfront erosion problem and current surveys of the area, M&NE will briefly assess the causes of erosion and develop potential solutions to the problem. A brief assessment of the causes of erosion will include a listing of possible causes of erosion and an opinion of whether they are believed to be primary or secondary factors in the erosion problem. A preliminary, conceptual level analysis of potential wind-driven wave heights under various day-to-day and storm conditions will also be performed.

With an understanding of probable causes of the erosion problem and hydrodynamic forces on the shoreline, M&NE will develop a list of potential solutions to the erosion problem. These solutions may include "hard structures" such as bulkhead and/or revetments, offshore structures such as breakwaters, "soft solutions" such as beach and/or wetland restorations, or combinations. Each potential solution will include a sketch illustrating the concept. A preliminary list of pros and cons for each alternative will also be developed.

After developing a list of possible solutions, M&NE proposes to assist the City of Shoreacres in conducting a public workshop to discuss the problem and the potential solutions. It is assumed that this workshop will be organized and advertised by the City. This workshop will provide an opportunity for the City and M&NE to gather information from nearby residents and community members on their criteria for a successful project. The workshop will also provide an opportunity to hear of potential solutions from those nearby residents most familiar with the problem, to garner public support for the project, and to provide awareness of the alternatives being considered. (Note that prior public coordination is generally viewed favorably by agencies issuing grants for erosion response projects.) Based on the results of the workshop, along with

input from the City staff, M&NE will develop screening criteria to assess the potential alternatives.

Using the screening criteria developed above, M&NE will narrow the field of potential alternatives to two preferred alternatives. More detailed sketches of the preferred alternatives will be developed. A brief analysis of the permit-ability, construct-ability, effectiveness, and durability of both alternatives will be performed. A conceptual level assessment of probable construction costs for each alternative will also be provided. A list of potential funding sources for each alternative will also be developed along with a potential timeline for implementation of the project.

All of the work performed in project will be summarized in a written report to the City. The report will include an executive summary with an implementation timeline and conceptual level budgetary costs. The report will be provided in hardcopy and electronic formats. In addition, M&NE will make one presentation of the results of the study at a City Council meeting or another meeting of the City's choice.

Schedule

M&NE proposes to use the schedule provided in the request for proposals. However, it is noted that the project execution is dependent upon survey field work which is very sensitive to weather conditions.

Budget

M&NE proposes to perform the work described above for a lump sum fee of $20,000. The estimated costs are broken down by task and subcontractor as follows:

Task	M&NE	Coastal Surveying of Texas
1: Background Documentation	$3,000	
2: Surveying		$9,500
3: Identifying Potential Solutions	$7,500	

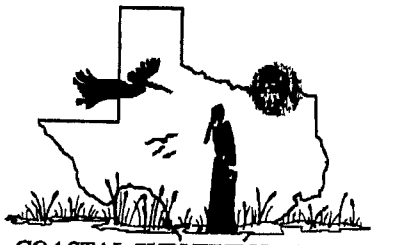
M&NE is pleased to have this opportunity to submit a proposal to assist the City of Shoreacres in assessing the causes of bayfront erosion and developing solutions to the problem. We hope you will find the above description of work and budget along with the attached information meet your needs for this project. If this proposal and the attached standard contract terms and conditions are acceptable to the City, please sign in the space provided below and return to M&NE or provide us directions on how you would like to finalize the contract. If you have any questions on the information in this proposal, please do not hesitate to contact me by telephone at (713) 977-7372 or by email at lwise@moffattnichol.com.

Sincerely,

MOFFATT & NICHOL ENGINEERS

Larry A. Wise, P.E.
Coastal and Marine Engineer

Attachments:
(1) M&NE Corporate Experience
(2) Coastal Surveying of Texas Corporate Experience
(3) Resume for Mr. Larry A. Wise, P.E.
(4) Resume for Dr. Paul Tschirky
(5) Resume for Mr. Sid Bouse, RPLS, LSLS
(6) Billing Rate Sheet for M&NE
(7) Billing Rate Sheet & Proposal for Coastal Surveying of Texas



COASTAL SURVEYING OF TEXAS

Our parent company- Hall & Johnson, Surveyors was founded in the City of Galveston in 1949 by Jack A. Hall. Mr. Hall was an Engineer, Attorney, Land Surveyor and Licensed State Land Surveyor. This firm has been a constant presence in the development of Galveston Island and surrounding areas by conducting boundary surveys, platting subdivisions, preparing topographic surveys, locating utilities and rights of ways and other services related to the surveying profession for over 54 years.

The current owner, Andrew Johnson, Jr., RPLS, renamed Hall & Johnson, Surveyors to Coastal Surveying of Texas. Sidney Bouse, RPLS, LSLS joined the company in 1995 and Patrick A. Jordan, RPLS joined CST in 2001. The staff includes secretaries, field personnel and CAD drafters. We have worked for the City of Galveston, Galveston County Engineering Department, UTMB, Sealy-Smith Foundation, Mitchell Development, Galveston County Drainage District No. 2, Turner, Collie and Braden Engineers, Shiner Moseley and Associates, Inc, Halff and Associates, Claunch and Miller, Inc., Richard Bruce, LSLS on area State boundary projects as well as with firms from Texas and Louisiana on Corps of Engineers projects, Texas Parks and Wildlife, the Houston Audubon Society, Local Banks, Title Companies and Realtors.

We perform Coastal Boundary surveys in accordance with the Natural Resources Code for preservation and restoration projects under the regulation of Texas General Land Office as well as wetland delineation surveys for the U. S. Corps of Engineers.

Our firm is currently growing and expanding. We own and utilize Trimble GPS equipment and software, Topcon GPS Equipment and software, Sokkia and Topcon Total Stations, TDS data collection software and Auto Cad and Softdesk drafting programs.

Coastal Surveying of Texas (Formerly: Hall, Johnson & Bouse, Surveyors) has served Galveston for over 50 years and has the equipment, expertise and experience to provide professional land surveying services for all surveying and engineering projects and have qualified personnel available to complete the project proposed and to meet your time schedules.

409 740 1517
(Fax) 409 740 0377
E-mail sid@surveygalveston.com.
Office location is 8017 Harborside Drive, Galveston, Texas.
Office hours are Monday-Friday, 8:00 A. M. to 5:00 P. M.

LARRY A. WISE, P.E.
Coastal Engineer

EDUCATION:

Graduate Studies in Coastal Engineering, University of Florida, 1999
M.S., Civil Engineering majoring in Ocean Engineering, Oregon State University, 1999
B.S., Civil Engineering with Environmental Specialization, Texas A&M University, 1994

REGISTRATION:

Professional Engineer: Texas, Louisiana, and Florida

EXPERIENCE:

- Work directly with clients to provide design, consulting, and construction oversight services.
- Prepare and manage scope of work, permitting, budget, construction oversight, public involvement, and schedule for proposed and contracted projects.
- Perform design life analyses, alternatives analyses, conceptual design, monitoring surveys, and cost estimating for projects.
- Scope of projects includes: beach nourishment; habitat restoration; shoreline protection; ecotourism development; dredging; scour protection; computer modeling.
- Recent work includes: $40 million shore protection feasibility analysis in Louisiana; $2 million West Galveston Island beach nourishment.
- Work closely with: U.S. Army Corps of Engineers; U.S. Fish and Wildlife Service; Louisiana Department of Natural Resources; Texas General Land Office; Texas Parks and Wildlife Department; Galveston County; Houston-Galveston Area Council; City of Seabrook; City of Galveston; City of Corpus Christi; Town of South Padre Island; and many private industries.
- Design and produce coastal modeling for beach nourishment, inlet management, and coastal structures projects. Models and modeling tools used include: REFDIF1; SBEACH; EDUNE; GENESIS; SMS; BMAP; ACES; and Surfer. Use FORTRAN programming language to develop new modeling tools and link existing models.
- Created numerical wave force models for A-Jacks concrete armor units using MATLAB software.
- Verified numerical model results using small scale physical model tests.
- Designed and managed construction oversight for large-scale groundwater recovery systems.
- Designed industrial wastewater treatment systems and groundwater and soil sampling plans.
- Prepared air permit applications, building and fire code reviews, storm water permit applications, NPDES permit applications, and other regulatory permit applications.

PROFESSIONAL AFFILIATIONS:

American Society of Civil Engineers
American Shore and Beach Preservation Association
Association of Coastal Engineers
Texas Shore and Beach Association

PUBLICATION:

Wise, L.A., T.N. McLellan, and M. Byrnes (*in press*) "Feasibility Analysis of Shore Protection Alternatives for Rockefeller Wildlife Refuge in the Chenier Plain of Southwestern Louisiana (USA)," *Intl. Conf. On Coastal Structure '03*, ASCE, Portland, Oregon

Tedesco, J.W., W.G. McDougal, D. Bloomquist, L.A. Wise (2003) "Response of concrete armor units to wave-induced hydrodynamic loads," *Computers and Structures*, Pergamon

Wise, L.A. and W.G. McDougal, (1999) "Modeling Wave Forces on A-Jacks Armor Units," *Intl. Conf. on Coastal Structures '99*, Balkema, Santander, Spain

Wise, L.A. (1999) "GIS in Coastal Engineering and Science: an Annotated Bibliography," *http://larry.wise.home.mindspring.com/coastGIS.html*

Wise, L.A. (2002) "Coastal and Ocean Engineering Links." *http://larry.wise.home.mindspring.com*

PAUL A. TSCHIRKY, Ph.D.
Lead Coastal Engineer

REGISTRATION:

Professional Engineer: Ontario, Canada (#90424029)

EDUCATION:

Ph.D., Civil Engineering (Coastal Engineering), Queen's University, Kingston, Ontario, Canada, 2000.
B.S., Civil Engineering (Honors), Queen's University, Kingston, Ontario, Canada, 1994.

EXPERIENCE:

Dr. Tschirky recently joined M&N bringing detailed knowledge in physical oceanography, coastal engineering and shore protection. This experience includes numerical and physical modeling of coastal and riverine processes as well as field data collection and laboratory investigations. His graduate coastal engineering studies included hydrodynamics of coasts and estuaries, physical limnology and oceanography, fluid mechanics, design of coastal structures, and finite element analysis. In addition to numerical modeling of coastal and riverine processes, his numerical modeling experience has involved finite element analysis of structures and structural components. Since joining M&N, he has used the MIKE21 computer model - a two-dimensional, finite-difference model that is unique because it solves for wave-induced currents as well as metocean transformations, hydrodynamic and sediment transport solutions to coastal processes analyses. Representative project experience includes:

West Niger Delta Gas Study, Nigeria. Coastal Engineer for development of MIKE21 NSW (near-shore spectral wave) model of wave refraction/shoaling to assess wave climate at various locations along the coast as part of site screening study for location of a gas processing/LNG facility.

Camisea LNG Export Terminal, Peru. Physical oceanographer responsible for the transformation of offshore metocean data (wind and waves) to project site to determine berth availability and the need for a breakwater. Also performed hydrodynamic and sedimentation studies to determine dredging feasibility.

Sebyar River Discharge Analysis, Tangguh, Indonesia. Coastal Engineer for sedimentation study using MIKE21 to determine potential effects of Sebyar River sediment discharges on and characterize sediment transport at the site of a proposed offshore oil platform.

Gas Storage and Export Facility, Luanda, Angola. Developed hydrodynamic model of tidal currents (MIKE21 HD) and sediment transport to estimate sedimentation at proposed gas storage/ export facility location. Project involved a dredged basin for berthing adjacent to the facility and sedimentation study examined future dredging requirements. In addition, used SBEACH numerical model to examine potential erosion of nearby cliffs and its contributions to site sedimentation

PAUL A. TSCHIRKY, Ph.D.
Lead Coastal Engineer

EXPERIENCE (continued):

Mooring Analysis, Berths B15-B26, Pearl Harbor, HI. Coastal Engineer for mooring analysis of wharf as part of berth structural improvements. Determined mooring line loads for various Navy ship classes and mooring line configurations. Ships ranged from surface combatants (560 feet long) to auxilary vessels (250 ft long).

Pipeline Trenching Analysis, Tangguh, Indonesia. Developed sedimentation modeling to estimate trench infilling using MIKE21 ST (Sediment Transport).

SELECTED PUBLICATIONS:

Tschirky, P.A. and Hall, K.R. (2001). "A Field Investigation on Wave Height Reduction by Bulrushes", Proceedings Canadian Coastal Conference 2001, Quebec, Canada, pp. 409-424.

Tschirky, P.A., Hall, K.R. and Turcke, D.J. (2000). "Wave Attenuation by Emergent Wetland Vegetation", 27th International Conference on Coastal Engineering, ASCE, Sydney, Australia, pp. 865-877.

Tschirky, P.A., Hall, K.R. and Turcke, D.J. (1999). "Leading to a Rational Design of Wetlands...A Field Study of a Shoreline Wetland", Proceedings of the 1999 Canadian Coastal Conference, Victoria, British Columbia, Vol. 1, pp. 315-327.

Hall, K.R., Tschirky, P.A., McCutcheon, E. and Turcke, D.J. (1999) "Energy Dissipation and Unidirectional Flow Through Wetland Vegetation", Proceedings of the 1999 Canadian Coastal Conference, Victoria, British Columbia, Vol. 1, pp. 329-343.

Hall, K.R., Tschirky, P.A., and Turcke, D.J. (1998). "Coastal Wetland Stability and Shore Protection", Journal of Coastal Research, Special Issue No. 26, pp. 96-101.

Tschirky, P.A., Hall, K.R., and Turcke, D.J. (1998). "Wetland Wave Attenuation and Shore Protection", Proceedings of Water Resources Engineering '98, Memphis, ASCE, Vol. 1, pp. 598-603

Tschirky, P.A., Turcke, D.J., and Hall, K.R. (1998). "Sustainability: Developments in Coastal Engineering", Proceedings of CSCE 5th Environmental Specialty Conference, Vol. II, pp. 271-280.

Tschirky, P.A., Hall, K.R., and Turcke, D.J. (1997). "Integrated Shore Protection", Proceedings of CSCE 13th Hydrotechnical Conference, Vol. 3, pp. 71-80.

PROFESSIONAL AFFILIATIONS:

Professional Engineers Ontario, Canada

Sidney Bouse, R.P.L.S. 5287, L.S.L.S.

P.O. Box 877
Galveston, Texas 77553
409-740-1517

EDUCATION

1981 BS, Texas A&M, College Station, Texas
Annual Continuing Education Classes since 1997
In-house GPS training including RTK instruction, Post-processing and Post-processing to NGS Guidelines

WORK HISTORY

1985 Operator, Kahla Construction, Crystal Beach, Texas
1986-1987 Party Chief, Hall- Johnson, Surveyors-Survey and Elevation field work in Galveston and Bolivar Peninsula, Texas
1988 Owner-operator, Bouse Construction, Crystal Beach, Texas-site work and subdivision development.
1995-Present Manager-Partner, Coastal Surveying of Texas (Formerly: Hall, Johnson & Bouse, Surveyors)
January 1999 Registered Professional Land Surveyor
June 2002 Licensed State Land Surveyor

-State Boundary Line Surveys-

(A) Galveston County: Samuel Parr Survey A-162, Trimble and Lindsey Survey of Galveston Island, Galveston County (2 projects), Stephen F. Austin No. 4 A-4, Alexander Edgar Survey, A-62, Alexander Edgar Survey, A-61, Frank Passano Survey, A-166, German Emigration Co., A-73, German Emigration Co., A-74, John Andrews Survey, A-23, George Hodges Survey, A-120, Elias Stone Survey, A-188, W. M. Hudson Survey, A-81, Nicholas Fitzsimmons, A- 66, Martin Dunman Survey, A-53,
(B) Brazoria County: Frederick J. Calvit, A-51, Branch T. Archer, A-9, Stephen F. Austin, A-28 and John G. Mc Neel, A-335
(C) Chambers County: Edward T. Branch Survey, A-40

ORGANIZATIONS

Member of Texas Society of Professional Surveyors
Board of Directors Galveston County Fair and Rodeo 1995-2001
Board of Directors Bolivar Peninsula Water Supply Corporation 1998-2001
Chairman Administrative Council- Bay Vue United Methodist Church, Crystal Beach, Texas

COASTAL SURVEYING OF TEXAS
8017 HARBORSIDE DRIVE
GALVESTON, TX. 77553
PH (409) 740-1517
FAX (409) 740-0377
www.surveygalveston.com

"SERVING GALVESTON COUNTY OVER 50 YEARS"

February 24, 2004

Larry Wise
Moffatt and Nichol Engineers, Inc
lwise@moffattnichol.com.

Re: City of Shoreacres Bayfront Erosion Study- RFP No. 04-01

Dear Larry,

In accordance with our conversations, we offer the following proposal.
These surveys will include both upland and submerged parts of the project area. The upland surveys will include across-shore transects showing typical elevations for the upper limits of the existing rip-rap, typical elevations landward of the rip-rap, and the distances from the rip-rap to Miramar Drive. Any upland features, such as the fishing pier, or anomalies, such as scour holes, will also be included in the surveys. The offshore (bathymetric) surveys will extend outward from the shoreline to a depth of approximately 7 to 8 feet of water. The bathymetric survey will consist of across-shore transects aligned with the upland transects. In the northern (steeper) part of the survey the transects may extend further offshore than the 8 foot depth, while in the southern (milder slope) part of the survey the transects may stop short of 8 foot depth. Any anomalous offshore conditions that might contribute to erosion or otherwise be hazards (such as abandoned, submerged piles) which are located during the field work will also be documented.
A coastal boundary survey documenting the boundary between State submerged lands and upland properties will also be performed. The coastal boundary survey is required by state law prior to any shoreline erosion response measures which might affect the location of this boundary. The coastal boundary survey may require temporary installation of a tide gage in the vicinity; it is assumed that the City can provide secure access to the fishing pier or Houston Yacht Club for installation of the gage if required.

All survey data obtained will be provided to the City in both hardcopy drawings and electronically. The hardcopy upland and bathymetric surveys will be sealed by a registered professional land surveyor and the hardcopy coastal boundary survey will be sealed by a licensed state land surveyor.

1. **PROPERTY DESCRIPTION**
Portions of Shoreacres as discussed with Larry Wise.

2. **DOCUMENTS PROVIDED BY CLIENT**
Client agrees to provide surveyor with any and all documents necessary to identify the ownership, location and condition of the property to be surveyed. Including, but not limited to, deeds, maps and title information. Client agrees to obtain for surveyor if necessary, the written authorization of the owner to enter upon the subject property (and adjacent properties as necessary) for the purpose of conducting surveyor's work thereon.

3. **SCOPE OF SERVICES/PROFESSIONAL FEES**
A.) FEES
Client agrees to compensate Surveyor for said services according to the following schedule.

TOTAL $9,580.00.

4. **DELAYS**
Surveyor is not responsible for delays caused by activities or factors beyond Surveyor's control, including, but not limited to, delays caused by acts of nature, accidents, acts of war or terrorism and failure to perform or faulty performance by client or others, including contractors or governmental agencies.

MOFFATT & NICHOL
ENGINEERS

RATE SCHEDULE FOR PROFESSIONAL SERVICES

Effective July 1, 2003 Until Revised

	CLASSIFICATION	HOURLY RATES
PROFESSIONALS	Supervisory Engineer/Scientist	$ 155.00
	Senior Engineer/Scientist	$ 145.00
	Engineer/Scientist III	$ 130.00
	Engineer/Scientist II	$ 118.00
	Engineer/Scientist I	$ 100.00
	Staff Engineer/Scientist	$ 82.00
TECHNICIANS	Senior Technician	$ 116.00
	Designer	$ 110.00
	CADD II	$ 90.00
	CADD I	$ 72.00
CLERICAL	Word Processing	$ 65.00
	General Clerical	$ 59.00
SPECIAL	Principal Engineer/Scientist	$ 180.00
	Court Appearances	$ 250.00

REIMBURSABLE EXPENSES (Unless Otherwise Provided in Written Agreement)

Subcontracts or Outside Services		Cost +15%
Reproductions	-In House	
	Mylar Plots (B/W)	$2.00/SF
	Color Plots	$4.00/SF
	Vellum Plots (B/W)	$1.00/SF
	Bond Plots (B/W)	$0.50/SF
	Drawing Reproduction	Cost +15%
	Document Reproduction	$0.10/sheet
	-Outside Reproduction	Cost +15%
Travel	Company Auto	$0.345/mile
	Rental Vehicle	Cost
	Airfare	Cost
	Meals and Lodging	Cost

5. **STANDARDS & SPECIFICATIONS**

All professional land survey services shall be completed in accordance with the Texas Board of Professional Land Surveying Practices Act and General Rules of Procedures and Practices, current revision.

6. **BILLING and PAYMENT**

All professional services provided by SURVEYOR shall be invoiced with completion of each phase stated above and will be Due and Payable at time of delivery of the completed work. Payments received after 30 day will be charged a 10% **LATE FEE.**

7. **DELIVERY OF WORK PRODUCT**

The product shall be delivered in the form of 3 signed and sealed blueline prints reflecting the service provided and 1 AutoCAD 2000 dwg data file.

8. **ADDITIONAL SERVICES**

In the event additional services, not within the scope of services provided for herein, are requested by client of surveyor, the following hourly rates shall apply unless a separate fee proposal has been submitted by surveyor and approved by client prior to the additional services being undertaken.

Hourly rates to be applied under this agreement are as follows:

Crew Hour Rate w/GPS Survey System	$225.00 per hour
Crew Hour Rate w/Total Station - Data Collection	$155.00 per hour
Survey Technician - Data Reduction / Drafting	$ 65.00 per hour
Project Manager	$ 85.00 per hour
RPLS	$125.00 per hour
LSLS	$200.00 per hour

Should this proposal meet with your approval, please sign and return 1 copy for my records. Receipt of your signed copy shall serve to initiate our services and will represent our full and complete agreement for the services to be provided and the fees to be paid. A FAX copy of your signed agreement will be acceptable to place this work into our schedule.

I appreciate this opportunity to address your professional land survey requirements and look forward to working with you on this project. Should you have any questions regarding this proposal, please call.

Respectfully Submitted,

Sidney Bouse
Registered Professional
Land Surveyor No. 5287

APPROVED:

_____
Larry Wise
Moffatt and Nichol Engineers, Inc.

/sdb/r1
Shoreacres 04-0240.doc

Date:_____

CITY OF SHOREACRES

REQUEST FOR PROPOSALS

BAYFRONT EROSION STUDY

PROPOSAL NO. 04-01

Sealed proposals, addressed to Shari Tait, City Secretary, City of Shoreacres, 601 Shoreacres Blvd., Shoreacres, Texas, 77571 will be received until 5:00 p.m., February 26, 2004.

Specifications or questions may be obtained from the office of the City Secretary at the above address, telephone (281) 471-2244.

Until the final award of the contract, The City of Shoreacres reserves the right to reject any and all proposals, to waive irregularities or technicalities, to re-advertise, to proceed to the work otherwise when in the best interests of the City, or to choose the proposal most advantageous to the City.

The City of Shoreacres is exempt from all Federal and State taxes; therefore, please do not include these taxes in your proposal.

Shari Tait
City Secretary

City of Shoreacres
Request for Proposals
Bayfront Erosion Study
Issue Date: January 30, 2004

Problem Statement

Shoreacres is a small city on Galveston Bay with a population of about 1,600 citizens in about 650 single-family homes. Shoreacres is also home to the Houston Yacht Club, with over 500 members from all over the greater Houston area. Almost unique along Galveston Bay, most of the Shoreacres waterfront is public, providing bay access to residents and visitors. The one-half mile bayfront is lined with park land—ranging from about 30 feet wide at its narrowest points to 150 feet wide at its widest—owned by the City. One small section of the bayfront (about 100 feet long) is lined with shell and sand beach; the rest of the shoreline is lined with concrete rip rap.

Unfortunately, the coastline has been eroding for years and we have lost about half of the park land to the Bay over the past 50 years. Coastal subsidence has probably been the greatest cause of the erosion. The shoreline is currently lined with unsecured concrete rip rap. The rip rap was first brought to the waterfront in the 1970s and is replenished only as the City has had miscellaneous concrete donated. The rip rap has helped some with decreasing erosion from typical wave action; it has not, however, been effective in stemming erosion caused by tropical storms and hurricanes. The high tides associated with tropical storms and hurricanes quickly inundate the rip rap, and the land is eroded away from behind the concrete.

The City of Shoreacres was recently awarded a grant from the Coastal Coordination Council in its Grant Cycle 8 to conduct a study of the erosion problem. With the results of this study, the City hopes to then secure additional grant funds to implement whatever erosion control solutions that may be recommended.

Scope of Work

Task 1: Background Documentation

Using historic photographs and maps (obtained by the contractor from the General Land Office, NASA, the City, or other sources), the contractor shall document the erosion of the Shoreacres Bayfront over the past 50 years. The contractor should also document, in general, the causes of the erosion and the strategies used in the past for erosion control.

Task 2: Surveying

The contractor shall execute a coastal boundary survey of the Shoreacres waterfront using a Licensed State Land Surveyor. The survey should also include a map of the seafloor surface and anomalies that may help determine localized scouring influences. The seafloor survey would extend to a water depth contour of approximately 7 or 8 feet to an area just offshore of the existing fishing pier. Due to varying depths, the seafloor map may extend further than the pier in the area south of the pier (where the water is shallower) and not as far as the pier in the area north of the pier (where the water is deeper).

Task 3: Potential Solutions

The contractor should recommend at least two potential solutions to the erosion problem. The recommendations could include hard structures (bulkheads), beach replenishment, secured rip rap, or other proven solutions. The recommendations may be different for different portions of the waterfront. The recommendations should include order of magnitude costs, a discussion of the pros and cons of each proposal, and potential funding sources for implementation of the recommended solutions..

Contracting Process

Schedule

Key dates include:

Proposals Due: Thursday, February 26, 2004 at Shoreacres City Hall, 601 Shoreacres Boulevard, Shoreacres, Texas 77571

Six Weeks After Contract Execution – Submission of draft final report for review by Mayor and Council
Eight Weeks After Contract Execution – Presentation of the draft final report at Shoreacres City Council meeting
Ten Weeks After Contract Execution – Submission of final report

Budget

The City of Shoreacres has budgeted a maximum of $20,000 for this study, with $12,000 of that budget provided by the Coastal Coordination Council's Cycle 8 grant. The proposal should include a breakdown of the estimated cost by task and by subcontractor (if any). The proposal should also list key staff expected to be used on the project along with their fully loaded billing rates.

Selection Process

The selection committee will consist of the Mayor, one alderman, and the Public Works director. The selection committee will recommend a contractor to City Council, which will make the final decision.

Proposal Format

Contractors should submit three copies of the proposal. Facsimile and email proposals will not be accepted. Proposals should include a scope of work, budget (as detailed in the Budget section above), billing rates, firm qualifications, and resumes for key staff to be used on the project. The qualifications should include examples of similar projects completed by the firm and by the identified key staff. Any questions about this Request for Proposal should be directed to Shari Tait, City Secretary, at 281-471-2244.