

**R2021 0211**  
**TASK ORDER**

TASK ORDER: 1778-05 CONSULTANT: W.F. Baird & Associates Ltd Incorporated

ACCOUNT: 1400-600-6107-3401 CONTRACT: R2019-1778  
[Fiscal approval of Budget Availability: see attached BAS ]

PROJECT MANAGER: Jeremy McBryan PHONE: 561-355-4600

CONTRACT MANAGER: Juan Cueto PHONE: 561-233-2431

PROJECT NAME: Modeling to Support an Appeal of FEMA Preliminary Flood Insurance Rate Maps

LOCATION/DISTRICT #: Eastern Palm Beach County / Districts 1, 2, 3, 4, 5 and 7

TASK DESCRIPTION (use additional pages if necessary): The Consultant shall provide professional engineering services to develop technical information for use during future Federal Emergency Management Agency (FEMA) coordination and to support the submittal of an appeal of FEMA's preliminary Flood Insurance Rate Maps (FIRMs) for eastern Palm Beach County, as described in the attached Baird proposal dated January 5, 2021.

DELIVERABLES: See attached scope of work dated January 5, 2021.

TASK ORDER TYPE: FIXED PRICE DUE DATE: 5/28/2021

**TOTAL AMOUNT \$111,790.00**

(Check where appropriate)  
for Contract and Subcontract Amounts:

	Black	Hispanic	Women	Other (specify)	White Male
M/WBE(State) <input type="checkbox"/>	\$ _____	\$ _____	\$ _____	\$ _____	
SBE-M/WBE* <input type="checkbox"/>	\$ _____	\$ _____	\$ _____	\$ _____	
SBE <input type="checkbox"/>	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____

\*certified as both an SBE and a State MBE

CUMULATIVE CONTRACT SBE-M/WBE PARTICIPATION: 11.3%

CONSULTANT REP: G. Thomson DATE: 1/7/21  
Gordon Thomson, Vice President

APPROVED AS TO TERMS AND CONDITIONS:

ERM DIRECTOR: Deborah Drum DATE: 1/8/21  
Deborah Drum

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

ASSISTANT COUNTY ATTORNEY: C. M. Jones DATE: 1/25/21

BOARD OF COUNTY COMMISSIONERS: Dave Kerner DATE: FEB 09 2021  
Dave Kerner, Mayor

Joseph Abruzzo  
Clerk of the Circuit Court & Comptroller  
Palm Beach County  
By: Joseph Abruzzo  
Deputy Clerk



# OEBO SCHEDULE 1

## LIST OF PROPOSED CONTRACTOR/CONSULTANT AND SUBCONTRACTOR/SUBCONSULTANT PARTICIPATION

SOLICITATION/PROJECT/BID NAME: Modeling to Support Appeal to FEMA  
 NAME OF PRIME RESPONDENT/BIDDER: W.F. Baird & Associates Ltd Inc.  
 CONTACT PERSON: Gordon Thomson, P.E.  
 SOLICITATION OPENING/SUBMITTAL DATE: \_\_\_\_\_

SOLICITATION/PROJECT/BID No.: Task Order No. 1778-05  
 ADDRESS: 5014 NW 24th Circle, Boca Raton, FL 33431  
 PHONE NO.: 561-400-7820 E-MAIL: gthomson@baird.com  
 DEPARTMENT: Environmental Resources Management

**PLEASE LIST THE DOLLAR AMOUNT OR PERCENTAGE OF WORK TO BE COMPLETED THE PRIME CONTRACTOR/CONSULTANT ON THIS PROJECT.  
 PLEASE ALSO LIST THE DOLLAR AMOUNT OR PERCENTAGE OF WORK TO BE COMPLETED BY ALL SUBCONTRACTORS /SUBCONSULTANTS  
 ON THE PROJECT.**

Name, Address and Phone Number	( Check all Applicable Categories)			DOLLAR AMOUNT OR PERCENTAGE OF WORK				
	Non-SBE	M/WBE Minority/Women Business	SBE Small Business	Black	Hispanic	Women	Caucasian	Other (Please Specify)
1. W.F. Baird & Associates Ltd Incorporated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	\$111,790	_____
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____	_____
Total							\$111,790	_____
Total Bid Price \$				Total SBE - M/WBE Participation				
<b>111,790.00</b>				<b>\$0.00</b>				

(Please use additional sheets if necessary)

- Note:**
1. The amount listed on this form for a Subcontractor/subconsultant must be supported by price or percentage listed on the properly executed Schedule 2 or attached signed proposal.
  2. Firms may be certified by Palm Beach County as an SBE and/or an M/WBE. If firms are certified as both an SBE and/or M/WBE, please indicate the dollar amount under the appropriate category.
  3. Modification of this form is not permitted and will be rejected upon submittal.

## OEBO LETTER OF INTENT – SCHEDULE 2

A completed Schedule 2 is a binding document between the Prime Contractor/consultant and a Subcontractor/subconsultant (for one tier) and should be treated as such. The Schedule 2 shall contain bolded language indicating that by signing the Schedule 2, both parties recognize this Schedule as a binding document. All subcontractors/subconsultants, including any tiered subcontractors/subconsultants, must properly execute this document. Each properly executed Schedule 2 must be submitted with the bid/proposal.

SOLICITATION/PROJECT NUMBER: Task Order No. 1778-05

SOLICITATION/PROJECT NAME: Modeling to Support an Appeal of FEMA Preliminary Flood Insurance Rate Maps

Name of Prime: W.F. Baird & Associates Ltd Incorporated

**(Check box(s) that apply)**

SBE  WBE  MBE  M/WBE  Non-S/M/WBE Date of Palm Beach County Certification (if applicable): \_\_\_\_\_

The undersigned affirms they are the following (select one from each column):

**Column 1**

**Column 2**

Male  Female

African-American/Black  Asian American  Caucasian American

Hispanic American  Native American

**S/M/WBE PARTICIPATION** – S/M/WBE Primes must document all work to be performed by their own work force on this form. Failure to submit a properly executed Schedule 2 for any S/M/WBE participation may result in that participation not being counted. Specify in detail, the scope of work to be performed or items supplied with the dollar amount and/or percentage for each work item. S/M/WBE credit will only be given for the areas in which the S/M/WBE is certified. A detailed proposal may be attached to a properly executed Schedule 2.

Line Item	Item Description	Unit Price	Qty./Units	Contingencies/ Allowances	Total Price/Percentage
	Professional engineering services				\$111,790.00

The undersigned Subcontractor/subconsultant is prepared to self-perform the above-described work in conjunction with the aforementioned project at the following total price or percentage: \$111,790.00

If the undersigned intends to subcontract any portion of this work to another Subcontractor/subconsultant, please list the business name and the amount below accompanied by a separate properly executed Schedule 2.

\_\_\_\_\_  
Name of 2<sup>nd</sup>/3<sup>rd</sup> tier Subcontractor/subconsultant

Price or Percentage: \_\_\_\_\_

W.F. Baird & Associates Ltd Inc.

Print name of Prime

By: G. Thomson  
Authorized Signature

Gordon Thomson

Print name

Vice President

Title

Date: 1/7/2021

W.F. Baird & Associates Ltd Inc.

Print name of Subcontractor/subconsultant

By: \_\_\_\_\_  
Authorized Signature

Gordon Thomson

Print name

Vice President

Title

Date: 1/7/2021

**BUDGET AVAILABILITY STATEMENT**

**REQUEST DATE: 01/07/2021**      **REQUESTED BY: Jeremy McBryan**      **PHONE: 355-4600**  
**FAX:**

**PROJECT TITLE: Modeling to Support an Appeal of FEMA Preliminary Flood Insurance Rate Maps**  
**PROJECT NO.:**  
ERM Task Order 1778-05

**ORIGINAL CONTRACT AMOUNT: \$111,790**      **BCC**  
**RESOLUTION#:**

**REQUESTED AMOUNT: \$111,790**      **DATE: 01/07/2021**

**CSA or CHANGE ORDER NUMBER:**

**CONSULTANT/CONTRACTOR: WF Baird & Associates**

**PROVIDE A BRIEF STATEMENT OF THE SCOPE OF SERVICES TO BE PROVIDED BY THE CONSULTANT/CONTRACTOR:** Modeling to Support an Appeal of FEMA Preliminary Flood Insurance Rate Maps for Eastern Palm Beach County

**CONSTRUCTION**  
**PROFESSIONAL SERVICES \$111,790**  
**STAFF COSTS\*\***  
**CAPITOL**  
**MISC.**

**TOTAL      \$111,790**

**BUDGET ACCOUNT NUMBER (IF KNOWN)**

**FUND: 1400      DEPT: 600      UNIT: 6107      OBJ: 3401**

**FUNDING SOURCE (CHECK ALL THAT APPLY):**

AD VALOREM  OTHER  FEDERAL/DAVIS BACON

**Building Special Revenue**

**BAS APPROVED BY: \_\_\_\_\_      DATE: 01/07/2021**

**ENCUMBRANCE NUMBER:**

Mr. Jeremy McBryan, PE CFM  
County Water Resources Manager | Palm Beach County  
301 North Olive Avenue, 11th Floor  
West Palm Beach, Florida 33401

via email to [jmcbryan@pbcgov.org](mailto:jmcbryan@pbcgov.org)

**Status: Correspondence**

January 5, 2021

Dear Jeremy,

**Reference # 13134.601**

**RE: PROPOSAL FOR MODELING TO SUPPORT AN APPEAL OF FEMA PRELIMINARY FLOOD INSURANCE RATE MAPS FOR EASTERN PALM BEACH COUNTY**

During a Review and Evaluation of the Federal Emergency Management Agency's (FEMA) Coastal Flood Risk Study (Task Order No. 1778-01), Baird identified several issues related to the accuracy of the modeling that was conducted by FEMA in support of the preparation of preliminary Florida Insurance Study (FIS) reports and Flood Insurance Rate Maps (FIRMs) for eastern Palm Beach County (County). These modeling issues may have resulted in FEMA potentially over-estimating the 1-percent annual chance water surface elevations [i.e. Base Flood Elevations (BFE)] or FEMA assigning a higher hazard flood zone to properties than should be the case.

FEMA allows for a 90-day appeal period for all new or modified flood hazard information shown on FIRMs, including additions or modifications to BFEs, base flood depths, Special Flood Hazard Areas (SFHA), SFHA zone designations, and regulatory floodways for a community. FEMA communicated to the County in November 2020 that the 90-day appeal period will start as early as March 2021.

FEMA provides guidance for the appeal process and specifically discusses the type of appeal that the County could submit ([Criteria for Appeals of Flood Insurance Rate Maps, 2011](#)). The following text is extracted from this guidance.

*Because of the judgments and assumptions that must be made and the limits imposed by cost considerations, the correctness of the BFEs, base flood depths and other flood hazard information is often a matter of degree, rather than absolute. For that reason, appellants who contend that the BFEs, base flood depths, or other flood hazard information is incorrect because better methodologies could have been used, better assumptions could have been made, or better data could have been used, must provide alternative analyses that incorporate such methodologies, assumptions, or data and that quantify their effect on the BFEs, base flood depths or other flood hazard information. FEMA will review the alternative analyses and determine whether they are superior to those used for the flood study, PMR, or*

*LOMR and whether changes to the FIS report and/or FIRM, or LOMR are warranted as a result.*

*Unless appeals are based on indisputable mathematical or measurement errors or the effects of natural physical changes that have occurred in the floodplain, they must be accompanied by all data that FEMA needs to revise the preliminary version of the FIS report and FIRMs. Therefore, appellants should be prepared to perform coastal, hydrologic and hydraulic analyses, to plot new and/or revised Flood Profiles, and to delineate revised SFHA zone and regulatory floodway boundaries as necessary.*

As the above excerpt indicates, the onus is on the appellant (in this case the County) to show that there are errors with the flood hazard information provided on the FIRMs. The County will need to show how, and potentially the extent to which, the issues with FEMA's modeling have resulted in the need to revise and correct the FIRMs due to better data, methodologies and assumptions.

This proposal presents an approach and cost to determine the impact of the key issues that were previously identified and support the County in preparing and submitting an appeal package to FEMA. All deliverables will be provided in both Microsoft Word and PDF formats.

## **Task 1 – Project Management and Work Plan Development**

Baird will attend and facilitate one (1) 2-hour kick-off meeting at County offices in West Palm Beach, Florida within one (1) week of the Notice to Proceed. The objective is to confirm project objectives, review the scope of work and schedule, establish lines of communications for data sharing, review available data and information, and clarify project requirements. Baird will not provide a formal presentation at the kick-off meeting but will prepare an agenda.

Baird will develop a Work Plan outlining key project delivery milestones, coordination objectives, proposed strategies and approaches, and key issues, constraints, requirements, etc.

Baird will hold bi-weekly (once every two weeks) virtual meetings/conference calls with County staff to provide updates on the latest efforts, unless not needed as determined by the County Project Manager.

The cost for this effort is \$6,070.

### **Task 1 Deliverables:**

- 1.1: Baird shall attend and facilitate a Kick-Off Meeting with County staff and prepare and submit a **Kick-Off Meeting Summary** within one (1) week of the Kick-Off Meeting.
- 1.2: Baird shall prepare and submit a **Work Plan** within one (1) week of the Kick-Off Meeting.

## **Task 2 - Inlet Hydraulics Improvements**

The FEMA model is exhibiting unrealistic hydraulic behavior at the inlets that are supposed to be able to convey water from the Lake Worth Lagoon (LWL)/Intracoastal Waterway (ICW) to the Atlantic Ocean. In Baird's opinion, this may be the most important model issue that needs to be resolved. Inadequate representation of the inlet hydraulics may be leading to higher storm surge water level estimations in the LWL/ICW with the following implications:

- a) Poor Model Validation: Baird performed a review of the validation results and showed that the model validation was poor. The issues with inlet conveyance may have a role in this.

- b) Coastal Hazard Analysis: Higher water levels allow higher wave heights to be generated within the LWL/ICW. Near Boynton Inlet, this increase in wave heights renders Wave Height Analysis for Flood Insurance Studies (WHAFIS) modeling useless.
- c) Final 100-year product: Higher water levels lead to higher simulated 1-percent annual chance (aka 100-year) water levels across the County putting more properties in the VE zone, which increases the property insurance rates.

**Steps to take to quantify impact / support an appeal:**

Quantifying the full impact of the unrealistic inlet behavior would require fixing and testing four inlets along coastal Palm Beach County. Once realistic hydrodynamics are achieved, all production model simulations would need to be completed and statistical analysis of the results would need to be carried out to construct new combined frequency curves and a new 1-percent annual chance (aka 100-year) water level raster. The resulting difference could be used to quantify the impact of the conveyance issues currently found in FEMA’s model setup/mesh. This is an extensive undertaking due to the large number of production model simulations and may not be able to be completed prior to the anticipated end of the 90-day appeal period.

As such, Baird is proposing to revise the grid at the Boynton Inlet and Jupiter Inlet and model the two storms that produced the highest water surface elevations around these inlets. Under this approach, only the water surface elevation (WSE) results would be compared for each storm event. The challenge to this approach is to adequately summarize and communicate the extent to which the inlet hydraulic issues and errors in FEMA’s modeling affects the flood hazard information shown on the FIRMs. It is recommended that the County continue to engage FEMA prior to the start of the appeal period to obtain direction on the level of data sufficient to support an appeal.

Baird is proposing to improve the model conceptualizations of the Boynton and Jupiter Inlets and simulate the Hurricane Wilma validation event and Storm 21. Hurricane Wilma is proposed as it is one of the validation storm events. Storm 21 is proposed because it generated the highest WSE in the LWL/ICW. The objective of this task is to determine and document the effects that improved inlet hydraulics has on the flood hazard information provided on the FIRMs.

**Table 1: Task 2 Cost Estimate**

<b>Task</b>	<b>Cost</b>
Task 2A - Develop new model mesh	\$ 7,242
Task 2B - Develop new input files / attributes files	\$ 7,242
Task 2C - Simulate and Post-Process Hurricane Wilma validation event and Storm 21	\$ 9,782
Task 2D - Reporting & Discussion of Results	\$ 5,008
<b>Task 2 Total Cost</b>	<b>\$ 29,274</b>

**Task 2 Deliverables:**

- 2.1: Baird shall prepare and submit an **Inlet Hydraulics Improvements Draft Report** detailing the findings of Task 2 within eight (8) weeks of issuance of a Notice to Proceed.
- Baird will revise the Draft Report based on the County’s comments and submit an **Inlet Hydraulics Improvements Final Report** within one (1) week of receiving comments from the County.

### Task 3 – Wind and Pressure Field Grid Corrections

To make the modeling effort manageable, FEMA separated Florida into different study areas, which is normal and acceptable. Palm Beach County was modeled as part of the South Florida study area, which included Palm Beach, Broward, Miami-Dade, and Monroe Counties. However, the northern 32 miles of Palm Beach County were modeled using only the coarse grid that was used to define the wind and pressure fields more than 40 miles offshore of the other three counties. The other three counties were modeled using a finer grid within 40 miles of the coast. Therefore, central and northern Palm Beach County are not represented to the same level of precision as the other three counties. This might lead to inadequately representing the synthetic storm parameters and impacts to WSE results in Palm Beach County. The validation storms were also simulated by FEMA with the same coarse wind and pressure field grid.

#### Steps to take to quantify impact / support an appeal:

Revise and correct the coarse wind and pressure field grid within central and northern Palm Beach County to match the fine grid used along the coast in the other three Counties. Spatially varying WSE difference plots can then be created for the same storm under the original and corrected grid.

Re-simulate the five validation storms (Hurricanes Andrew, Betsy, David, Georges, and Wilma) and Storm 21 with the corrected wind and pressure field grids. Hurricanes Wilma and David and Storm 21 will be prioritized since Andrew, Betsy, and Georges made landfall in Miami-Dade and Monroe Counties and tide gauges in Palm Beach County did not register significant if any storm surge during these events. It is recommended to include Storm 21 in this analysis as Storm 21 generated the highest modeled WSE within the LWL/ICW.

In addition, Baird is also proposing to simulate the Hurricane Wilma validation event and Storm 21 using corrected wind and pressure field grids (from Task 3) AND improved inlet hydraulics (from Task 2).

**Table 2: Task 3 Cost Estimate**

Task	Cost
Task 3A - Develop revised wind-pressure field grids	\$ 7,242
Task 3B – Simulate and Post-Process the five validation events and Storm 21 with corrected wind and pressure field grids (from Task 3) AND improved inlet hydraulics (from Task 2)	\$ 22,340
Task 3C - Reporting & Discussion of Results	\$ 5,008
<b>Total Cost</b>	<b>\$ 34,590</b>

#### Task 3 Deliverables:

- 3.1: Baird shall prepare and submit a **Wind and Pressure Field Grid Corrections Draft Report** detailing the findings of Task 3 within seven (7) weeks of issuance of a Notice to Proceed
- 3.2: Baird will revise the Draft Report based on the County’s comments and submit a **Wind and Pressure Field Grid Corrections Final Report** within one (1) week of receiving comments from the County.

### Task 4 – Validation Storm Improvements

As discussed in Task 3, three of the five validation storms passed south of Broward County and tide gauges in Palm Beach County barely registered any storm surge. Hurricane Wilma was an exiting storm, which doesn’t provide an ideal storm surge validation model simulation. Hurricanes Frances and Jeanne (which impacted



Palm Beach County in 2004) would provide a better validation analysis. Alternatively, storms used in the East Coast Central Florida (ECCFL) study could be applied and a comparison made to the storm surge modeled at the Martin County/Palm Beach County line.

It is proposed to input wind and pressure fields for Hurricanes Frances and Jeanne. These will be input into the model and then the WSE compared to readily available measured water elevations. This assumes that FEMA will share the OWI (Oceanweather Inc.) wind and pressure fields from the East Central Coast Florida Study. Note: this analysis will use the existing coarse wind-pressure field model grid so that a direct comparison can be made between FEMA’s model and an improved verification due only to validation storm improvements.

The work has been outlined to prioritize the elements that Baird considers to have the greatest impact on the BFE. Baird will not provide recommendations on improving the calibration of FEMA’s model as this will be a significant undertaking. The scope is limited to showing any difference between the observed and modeled water levels.

**Table 3: Task 4 Cost Estimate**

Task	Cost
Task 4A – Development of new wind-pressure fields for Hurricanes Frances and Jeanne (or two other storms from ECCFL study)	\$ 7,242
Task 4B – Validation storm model simulations for Hurricanes Frances and Jeanne (or two other storms from ECCFL study) and post-processing	\$ 9,782
Task 4C - Reporting & Discussion of Results	\$ 5,008
<b>Total Cost</b>	<b>\$ 22,032</b>

**Task 4 Deliverables:**

- 4.1: Baird shall prepare and submit a **Validation Storm Improvements Draft Report** detailing the findings of Task 4. Baird will submit the report within nine (9) weeks of issuance of a Notice to Proceed.
- 4.2: Baird will revise and submit a **Validation Storm Improvements Final Report** within one (1) week of receiving comments from the County.

**Task 5 – FEMA Appeal Assistance**

Baird will assist the County with the FEMA appeal process. This effort will include:

**Appeal Filing Assistance**

Baird will draft an appeal letter identifying the basis for the appeal, summarizing key findings of this effort and providing supporting documentation (reports from Tasks 2 through 4). Baird will assist the County in submitting the appeal as soon as possible following the start of the appeal period. It is anticipated that the County will submit the appeal electronically.

**FEMA Coordination Assistance**

Once FEMA receives the appeal from the County, FEMA will first evaluate the submittal to determine whether the appeal has merit and if the associated data is sufficient to support updating FEMA’s initial modeling effort. It is anticipated that there will be up to two (2) 2-hour conference calls with FEMA to discuss Baird’s methodology, describe the findings of Baird’s modeling effort and determine if and how FEMA can incorporate

Baird's efforts into a subsequent revision. Baird will prepare for, lead, participate in, and develop meeting minutes for these two meetings with FEMA.

Baird will prepare responses to up to two (2) written requests from FEMA for additional information or clarifications. However, performing additional model simulations or post-processing during this portion of the project effort is not included in this proposal. Baird's responses to FEMA's requests will be based on previously performed model simulations that require clarification. Baird will draft the responses for the County's review, revise the responses per County comments, and provide the final responses to the County.

**Coordination with Palm Beach County**

Baird will prepare for, lead, participate in, and develop meeting minutes for three (3) 1-hour meetings/ conference calls with County staff and other municipalities to discuss FEMA's response to the appeal and develop a strategy for the County's response.

Baird will prepare for, lead, participate in, and develop minutes for up to two (2) 1-hour meetings with Palm Beach County Commissioners to update them on the progress with the appeal and implications of FEMA's response.

**Exclusions**

This scope of work does not include the performance of additional modeling efforts during the appeals process above and beyond what is described herein. Additional modeling work may be required based on FEMA's responses and Baird will work with the County to determine whether the response effort is likely to outweigh the response benefit. If additional work is considered beneficial for the County's efforts, Baird will submit a proposal to perform the work.

**Table 4: Task 5 Cost Estimate**

<b>Task</b>	<b>Cost</b>
Task 5A – Appeal Filing Assistance	\$ 7,552
Task 5B – FEMA Coordination Assistance	\$ 8,864
Task 5C – Coordination with Palm Beach County	\$ 3,408
<b>Total Cost</b>	<b>\$ 19,824</b>

**Task 5 Deliverables:**

- 5.1: Baird shall prepare and submit a **Draft Appeal Letter** identifying the basis for the appeal, summarizing key findings of this effort and providing supporting documentation (reports from Tasks 2 through 4) within twelve (12) weeks of issuance of a Notice to Proceed.
- 5.2: Baird shall prepare and submit up to two (2) written **Draft Responses to FEMA** responding to requests from FEMA for additional information or clarifications within two (2) weeks of receiving them.
- 5.3: Baird shall prepare and submit up to two (2) written **Final Responses to FEMA** responding to requests from FEMA for additional information or clarifications within one (1) week of receiving comments from the County.
- 5.4: Baird shall prepare and submit up to five (5) **Meeting Minutes** for meetings/conference calls with County staff, County Commissioners, and other municipalities to discuss FEMA's response, provide progress updates, etc. within one (1) week of each of the meetings.

**Summary**

Baird will assist the County with revising parts of FEMA’s South Florida model to address previously identified issues and will document the anticipated revisions to the model and how these revisions could alter the BFE or flood zones.

Table 5 summarizes the proposed cost. A breakdown of the anticipated hours and rates is attached.

**Table 5: Summary of Costs**

<b>Task</b>	<b>Cost</b>
Task 1 – Project Management and Work Plan Development	\$ 6,070
Task 2 – Inlet Hydraulics Improvements	\$ 29,274
Task 3 – Wind and Pressure Field Grid Corrections	\$ 34,590
Task 4 – Validation Storm Improvements	\$ 22,032
Task 5 – FEMA Appeal Assistance	\$ 19,824
<b>Total Cost</b>	<b>\$ 111,790</b>

We look forward to advancing this effort with the County.

Please call me if you have any questions.

Kind regards,

  
**Gordon Thomson** | Associate Principal  
 Baird & Associates  
 E: gthomson@baird.com  
 M: (561) 400-7820

CC: Onur Kurum

Palm Beach County  
 Appeal of FEMA's Updated FIRMs  
 Exhibit A  
 Date: January 5, 2021

Task No.	Task Description	Baird Labor (hours)									Task Subtotal	Task Total	
		Principal	Senior Prof III	Senior Prof II	Senior Prof I	Staff Prof. III	Staff Prof. II	Staff Prof. I	Senior Tech.	Staff Tech.			Support
1	Project Management & Work Plan Development	1	20			10					2	\$6,070.00	\$6,070.00
2	Inlet Hydraulics Improvements												\$29,274.00
	2A Develop New Model Mesh		2			32	20		4			\$7,242.00	
	2B Develop of new input files / attributes files		2			32	20		4			\$7,242.00	
	2C Test runs – Hurricane Wilma validation event and Storm 21 model run & post processing		2			48	24		4			\$9,782.00	
	2D Reporting & Discussion of Results		4			16	12				8	\$5,008.00	
3	Wind and Pressure Field Grid Corrections												\$34,590.00
	3A Develop revised wind-pressure fields		2			32	20		4			\$7,242.00	
	3B Run and Post-Process the Five Validation Events and Storm #21		8			96	64		4		6	\$22,340.00	
	3C Reporting & Discussion of Results		4			16	12				8	\$5,008.00	
4	Validation Storm Improvements												\$22,032.00
	4A Development of new wind-pressure fields		2			32	20		4			\$7,242.00	
	4B Validation storm runs for Hurricanes Frances and Jeanne and post-processing		2			48	24		4			\$9,782.00	
	4C Reporting & Discussion of Results		4			16	12				8	\$5,008.00	
5	FEMA Appeal Assistance												\$19,824.00
	5A Initial Filing of the Appeal	1	24			12					6	\$7,552.00	
	5B Coordination with FEMA	2	24			24						\$8,864.00	
	5C Coordination with Palm Beach County	1	8			8					4	\$3,408.00	
✓	Subtotal (hours):	5	108	0	0	422	228	0	28	0	42		
✓	Rate Schedule 2019:	\$280	\$215	\$162	\$140	\$131	\$111	\$94	\$100	\$90	\$90		
✓	Subtotal:	\$1,400	\$23,220	\$0	\$0	\$55,282	\$25,308	\$0	\$2,800	\$0	\$3,780		\$111,790.00

2/17

2/17

