



AGENDA REPORT
August 21, 2018

**Authorization to Upgrade the Federal Emergency Management Agency
(FEMA) Flood Model for North Merritt Island (NMI) - District 2**

SUBJECT:

Authorization for NRM to upgrade the FEMA flood model for NMI; to advertise a Request for Qualifications (RFQ) for Engineering Services; to establish a Selection and Negotiating Committee; to allow the County Manager to execute contracts, task orders and work orders necessary to complete the upgrade, upon review by the County Attorney's Office and Risk Management; and for any Budget Change Requests associated with this action.

FISCAL IMPACT:

- \$150,000 for surveying services; to be conducted by Brevard County Public Works Surveying and Mapping and funded by reducing FY 18/19 road resurfacing in District 2.
- \$150,000 in FY18/19 and \$150,000 in FY19/20 from Fund 1112, District 2 stormwater revenues, resulting in the delay of several capital improvement projects in District 2.

DEPT/OFFICE:

Natural Resources Management

REQUESTED ACTION:

It is requested that the Board authorize NRM to upgrade the FEMA flood model for NMI. As part of this flood study, NRM further requests authorization for the following:

- Solicit Request for Qualifications (RFQ) for professional engineering services to conduct modelling, and produce a results report and Geographic Information System (GIS) files.
- Establish a Selection and Negotiating Committee, consisting of the NRM, Public Works, and Planning and Development Directors, or their designees, who will review, score, rank, negotiate and select professional engineering consultant to provide services.
- Authorize the County Manager to execute contracts, task orders and work orders necessary to complete the Flood Model upon review by the County Attorney's Office

and Risk Management.

- Authorize the County Manager to execute Budget Change Requests associated with these actions.

SUMMARY EXPLANATION and BACKGROUND:

Historically, Brevard County has documented increasing flooding impacts in the NMI area due to tropical storms and hurricanes. Homes experience interior flood damage, septic systems become submerged, sections of major roads become impassable, and many agricultural properties and private residential lots are inaccessible for days. Water levels from major storms threaten, and can envelope, dozens of homes and lots where many residents keep horses and other livestock. Barns, sheds, and similar accessory structures are vulnerable to flood damage. Properties containing citrus groves and other agricultural lands become submerged and inaccessible, and the use of agricultural pumps is often ineffective. Recovery to pre-storm water level conditions can take days to weeks, despite the use of fixed and portable pumps.

Recommendation 7 of the draft North Merritt Island Small Area Study (SAS) is that Brevard County should significantly improve the current FEMA stormwater model for NMI. The drainage study results would be documented in a final report and pertinent Geographic Information System (GIS) files. The floodplains for the various recurrence interval storms would be delineated by the drainage model results. Recommendation 7 further suggests that the resulting stormwater model be used to demonstrate whether proposed development would pose any adverse flooding impact to off-site properties or streets. Additional details about the proposed upgrade of the FEMA Flood Model for NMI are attached.

At the August 2 and 15, 2018 meetings of the County Commission, there was discussion about initiating the flood modelling study recommended in the draft Small Area Study. Staff was directed to bring back potential schedule and costs for Board consideration.

The anticipated schedule to complete the survey inventory is 9-12 months. The drainage model and final report will require an estimated additional nine months. In total, 18-21 months are needed to complete the study. The cost of this effort is estimated as \$450,000. The first \$150,000 is for collecting survey of existing drainage infrastructure. An additional \$300,000 is for using that survey information to update the FEMA Flood Model for NMI, produce updated floodplain maps, and provide a final report as well as working documents to be used by developers and development review staff to prevent new development from increasing drainage impacts to this vulnerable area of the County.

ATTACHMENTS:

Description

- **Draft NMI SAS - Recommendation 7**



Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

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August 22, 2018

MEMORANDUM

TO: Virginia Barker, Natural Resources Management Director

RE: Item I.1., Authorization to Upgrade the Federal Emergency Management Agency (FEMA) Flood Model for North Merritt Island (NMI)

The Board of County Commissioners, in regular session on August 21, 2018, authorized you to upgrade the FEMA flood model for NMI, as part of the flood study; authorized solicitation of Request for Qualifications (RFQ) for professional engineering services to conduct modelling, and producing an results report and Geographic Information System (GIS) files; approved establishing a Selection and Negotiation Committee, consisting of you, Public Works Director, Planning and Development Director, or his or her designees, who will review, score, rank, and negotiation and select professional engineering consultant to provide services; authorized the County Manager to execute contracts, task orders, and work orders necessary to complete the Flood Model upon review by the County Attorney's Office and Risk Management; and authorized the County Manager to execute budget change requests associated with these actions.

Your continued cooperation is greatly appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Rowe, Deputy Clerk

/ds

cc: Committee Members
County Manager
Finance
Budget

NORTH MERRITT ISLAND SMALL AREA STUDY

Utilities & Natural Resources

Recommendation 7: Brevard County should significantly improve the current Federal Emergency Management Agency (FEMA) stormwater model for North Merritt Island. This stormwater model could then be used to demonstrate whether proposed development would pose any adverse flooding impact on neighbors or streets.

STAFF RESPONSE, NATURAL RESOURCES:

NMI Drainage Study Description, Cost Estimate, and Schedule (8/15/2018)

The current stormwater model for North Merritt Island is useful for approximating flood plain elevations and the areal extent of flooding; however, the model is based on large-scale overview data and lacks fine-scale site details and groundwater interactions with the surface water stormwater and wetland systems. The existing model is not an ideal diagnostic tool for determining the impacts of small changes to the NMI stormwater system, such as smaller residential and commercial development.

Including additional details from undeveloped areas and existing subdivision stormwater systems would significantly improve the precision of the model for commercial projects and small subdivisions. Additional surveying and data collection is necessary to include the details for smaller channels and culverts as well as flow obstructions. Groundwater modeling would account for the impacts of high and low water tables on the stormwater systems.

Additional precision in the model would also allow the county to plan and evaluate proposed improvements and select more cost-effective projects with better final results. Furthermore, updates to the current model could incorporate software updates that allow the floodplains of multiple events to be easily mapped and shown. The additional mapping tools would enable the County, residents, and developers to more easily visualize the extent of flooding under various rainfall scenarios and the impacts of projects on those extents.

Increasing the accuracy of the drainage model would also assist developers and their engineering consultants in enhancing subdivision and commercial development designs as it would allow them to make changes to their on-site stormwater management system to adequately accommodate the required stormwater runoff volume needed to eliminate additional drainage impacts to other properties within the basin. This advance effort would create the opportunity for the developers to address potential impacts from their projects early during plan formulation, ahead of full permitting, to avoid the need for adjustments and extensive modifications late in the design and permitting process. A more detailed drainage model for NMI would also provide documentation in the event of disputes regarding the impact of a project.

The estimated cost to upgrade the Federal Emergency Management Agency (FEMA) flood model to the level of detail needed for the 13,100 acre NMI drainage study area is \$450,000 (\$150,000 for surveying and mapping and \$300,000 for the stormwater modeling). Since the proposed services exceed \$200,000 per policy BCC-26 for Consultant's Competitive Negotiation Act (CCNA), Request for Qualifications (RFQ) will be required; whereas, the advertisement and negotiation process may take up to 6 months. The anticipated schedule to complete the survey inventory is 9-12 months, which could initiate as early as mid-September 2018, and the drainage model and final report will require an estimated additional 9 months for a total estimated schedule of 18-21 months for submittal of the final report and drainage model. The stormwater inventory surveying tasks will be conducted by Brevard County Surveying and Mapping to obtain additional infrastructure data not previously captured in the FEMA model. Information from existing and permitted as-built surveys for numerous subdivisions, parks, Road and Bridge roadway projects, and Stormwater Capital Improvement Projects (CIP) will be included within the stormwater inventory for the NMI drainage model. The upgraded two-dimensional surface and groundwater stormwater model would include various storm event simulations: the mean annual; 10 year, 24-hour; 25-year, 24-hour; and

NORTH MERRITT ISLAND SMALL AREA STUDY

100-year, 24-hour in addition to multiple scenarios for variable tailwater conditions within the Indian River Lagoon and likewise, for seasonal high and low groundwater table elevation changes. The model would reflect future phased CIPs (i.e. the Hall Road Pump Station, the W. Hall Road Pipe Capacity Improvements, and the W. Crisafulli/Church Rd. Drainage Improvements) in addition to simulating the current conditions and stormwater infrastructure. The information and results would be documented in a final report and pertinent Geographic Information System (GIS) files. The flood plains for the various recurrence interval storms would be delineated by the drainage model results.

The use of the updated stormwater model to ensure development does not negatively impact other properties; infrastructure or the public would assist County staff with the application of existing county codes and ordinances and would assist developers with demonstrating compliance with existing county codes and ordinances. The use of the model for demonstration of project impacts could contribute to significantly improved stormwater management on North Merritt Island without requiring revisions to county ordinances. Therefore, the use of the model for development and project planning could commence once the upgraded model is reviewed and accepted by the County.

DRAFT



**Classified Ad Receipt
(For Info Only - NOT A BILL)**

Customer: B.O.C.C. COUNTY MANAGER'S OFF
Address: 2725 JUDGE FRAN JAMIESON WAY
MELBOURNE FL 32940
USA

Ad No.: 0003112173
Pymt Method Invoice
Net Amt: \$132.40

Run Times: 1

No. of Affidavits: 1

Run Dates: 08/22/18

Text of Ad:

AD#3112173, 8/22/2018
LEGAL NOTICE OF PUBLIC MEETING

SEPTEMBER 11, 2018 - Tuesday
5:30 p.m. Meeting of The Board of
County Commissioners, Governing Board
of the Brevard Mosquito Control District;
Governing Board of the Barefoot Bay
Water and Sewer District, 2725 Judge
Fran Jamieson Way, Commission Room,
Building C, Viera, FL, 32940. Contact 633-
2056.

RESOLUTION NO. 18-_____

RESOLUTION OF THE BOARD OF COUN-
TY COMMISSIONERS ADOPTING A
SCHEDULE OF RATES AND CHARGES FOR
THE HAZ-MAT SPECIAL OPERATIONS
TEAM, STANDBY RESPONSE, FIRE PRE-
VENTION AND INSPECTION RATES, IM-
POSED AGAINST ALL IMPROVED REAL
PROPERTY WITHIN THE BENEFIT AREA
OF BREVARD COUNTY FOR THE FISCAL
YEAR BEGINNING OCTOBER 1, 2018.

If a person desires to appeal any decision
made by this commission with respect to
any matter considered at this meeting or
hearing, such a person will need a re-
cord of this proceeding and that, for
such purposes, such person may need to
ensure that a verbatim record of this
proceeding is made, at his/her own ex-
pense, which record includes testimony
and evidence upon which any such ap-
peal is to be based.

The needs of the hearing and/or visually
impaired persons shall be met if the
department sponsoring the
meeting/hearing is presented with such
a request no later than 48 hours prior to
the meeting.