

Paul Lin & Associates

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63800

September 4, 2014

Mr. Scott Fraser
FEMA Coordinator
CITY OF KEY WEST
3140 Flagler Avenue
Key West, FL 33040

RE: FEMA'S FLOOD MAP REVISION FOR THE PROPERTY, 1315 WHITEHEAD STREET, KEY WEST, MONROE COUNTY, FLORIDA

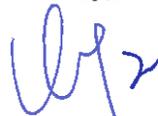
Dear Mr. Fraser:

Enclosed please find a FEMA Letter of Map Revision (LOMR) Application for the above referenced property at 1315 Whitehead Street, Key West for your review and approval. Specifically, we propose to change the FEMA flood zone within the subject property from VE flood zones to an AE10 zone. The proposed revision is based on the findings, following FEMA's guidelines and methodology using the site-specific topographic data. The results of the Wave Height Analysis and the supporting data are included in this LOMR application for your review. The existing and proposed flood zones at the project site are presented in Figures 2 and 4.

Please review and approve this LOMR application. Upon approval, please sign the attached signature sheets (total 2 copies) in the place as marked so we can submit the LOMR application to FEMA office for their review and approval. Please return the signed sheets to us using the enclosed, pre-stamped envelope.

We greatly appreciate your assistance in this matter. Please feel free to contact us if you have any questions.

Sincerely,



Paul C. Lin, Ph.D., P.E.
President

Enclosures

cc: Trepanier & Associates

FEMA Letter of Map Revision (LOMR) Application

Residential Property:

**1315 Whitehead Street
Key West, Florida**

Prepared for:

Trepanier & Associates
1421 First Street
Key West, FL 33040

and

The City of Key West
3140 Flagler Avenue
Key West, Florida 33040

Prepared by:

Paul Lin, Ph.D., P.E.
12386 S.W. 82 Avenue
Miami, Florida 33156

September 1, 2014

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LOMR Application MT-2 Form

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Coastal Analysis Form (Form 4)

Appendix A: Project Description and Summary

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Figure 3 – Certified Topographic Work Map

Figure 4 – Annotated Flood Insurance Rate Map (Scale: 1"=500')

Appendix B: Revised WHAFIS Wave Height Analysis - Input/Output Files (3 Transects)

U.S. DEPARTMENT OF HOMELAND SECURITY
 FEDERAL EMERGENCY MANAGEMENT AGENCY
OVERVIEW & CONCURRENCE FORM

*O.M.B No. 1660-0016
 Expires February 28, 2014*

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

- CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
120168	City of Key West	FL	12087C	1516K	02/18/05

2. a. Flooding Source: Atlantic Ocean

- b. Types of Flooding: Riverine Coastal Shallow Flooding (e.g., Zones AO and AH)
 Alluvial fan Lakes Other (Attach Description)

3. Project Name/Identifier: 1315 Whitehead Street

4. FEMA zone designations affected: VE (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

- Physical Change Improved Methodology/Data Regulatory Floodway Revision Base Map Changes
 Coastal Analysis Hydraulic Analysis Hydrologic Analysis Corrections
 Weir-Dam Changes Levee Certification Alluvial Fan Analysis Natural Changes
 New Topographic Data Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

- Structures: Channelization Levee/Floodwall Bridge/Culvert
 Dam Fill Other (Attach Description)

6. Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

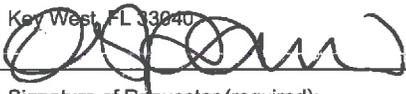
C. REVIEW FEE

Has the review fee for the appropriate request category been included? Yes Fee amount: \$ _____
 No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtml for Fee Amounts and Exemptions.

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

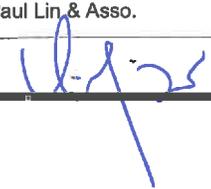
Name: Mr. Owen Trepanier		Company: Trepanier & Associates	
Mailing Address: 1421 First Street Key West, FL 33040		Daytime Telephone No.: 305-293-8983	Fax No.:
Signature of Requester (required): 		E-Mail Address: owen@owentrepanier.com	
		Date:	8/29/14

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Mr. Scott Fraser, FEMA Coordinator & <i>FLOODPLAIN ADMINISTRATOR</i>		Community Name: City of Key West, FL	
Mailing Address: <i>P.O. Box 1409</i> 3140 Flagler Avenue Key West, FL 33040 <i>KEY WEST, FL 33041-4215</i>		Daytime Telephone No.: 305-809-3810	Fax No.: 305-809-3978
Community Official's Signature (required): 		E-Mail Address: sfraser@keywestcity.com	
		Date:	08 SEP 2014

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Paul Lin, Ph.D., P.E.		License No.: P.E. 42636	Expiration Date: 02/28/2015
Company Name: Paul Lin & Asso.		Telephone No.: 305-969-2177	Fax No.:
Signature: 		Date: 9/3/14	E-Mail Address: Paul_Lin@bellsouth.net

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)

Required if ...

- | | |
|--|---|
| <input type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations |
| <input type="checkbox"/> Riverine Structures Form (Form 3) | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input checked="" type="checkbox"/> Coastal Analysis Form (Form 4) | New or revised coastal elevations |
| <input type="checkbox"/> Coastal Structures Form (Form 5) | Addition/revision of coastal structure |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6) | Flood control measures on alluvial fans |



COASTAL ANALYSIS FORM

PAPERWORK REDUCTION ACT

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DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Atlantic Ocean

Note: Fill out one form for each flooding source studied.

A. COASTLINE TO BE REVISED

Describe limits of study area: A rectangular-shaped area that extends maximum 200' inland from shoreline

B. EFFECTIVE FIS

The area being revised in the effective FIS was studied by detailed methods using (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Storm surge modeling | <input type="checkbox"/> Wave setup computations |
| <input checked="" type="checkbox"/> Wave height computations | <input type="checkbox"/> Wave runup computations |
| <input type="checkbox"/> Wave overtopping computations | <input type="checkbox"/> Dune erosion computations |
| <input type="checkbox"/> Primary Frontal Dune Assessment | <input type="checkbox"/> N/A (area not studied by detailed methods) |

C. REVISED ANALYSIS

1. Number of transects in revised analysis: 3

2. Information used to prepare the revision (check all that apply):

- | | |
|---|--|
| <input type="checkbox"/> Wave setup analyses (complete Items 3, 4, and 5 below) | <input type="checkbox"/> Wave overtopping assessment (complete Items 4 and 5) |
| <input type="checkbox"/> Stillwater elevation determinations (complete Item 3) | <input checked="" type="checkbox"/> More detailed topographic information (complete Section E) |
| <input type="checkbox"/> Erosion considerations (complete Item 4) | <input type="checkbox"/> Shore protection structures (attach completed Coastal Structures Form - Form 5) |
| <input type="checkbox"/> Wave runup analysis (complete Items 4 and 5) | <input type="checkbox"/> Primary frontal dune assessment (complete Item 5) |
| <input checked="" type="checkbox"/> Wave height analysis (complete Items 4 and 5) | <input type="checkbox"/> Other, attach basis of revision request with explanation |

3. Stillwater Elevation Determination

a. How were stillwater elevations determined?

- Gage analysis (If revised gage analysis was used, provide copies of gage data and revised analysis.)
- Storm surge analysis
- Other (Describe): from FEMA Transect No. 2 in Monroe County FIS (2005)

b. Specify what datum was used in the calculations: NGVD 1929

If not the FIS datum, have the calculations been adjusted to the FIS datum? Yes No Conversion factor: _____

c. Was the storm surge analysis revised? Yes No

d. If a new storm surge model was used, attach a detailed description of the differences between the current and the revised analyses, and why the revised analysis should replace the current analysis.

C. REVISED ANALYSIS (continued)

e. If wave setup was computed, attach a description of methodology used.
Amount of wave setup added to stillwater elevation: _____ feet

4. Revised Analysis (i.e., erosion, wave height, wave runup, primary frontal dune, and wave overtopping)

If DHS-FEMA procedures were utilized to perform the revision, attach a detailed description of differences between the current and the revised analyses, and why the revised analysis should replace the current analysis.

If DHS-FEMA procedures were not utilized to perform the revision, provide full documentation on methodology and/or models used; including operational program, detailed differences between methodology and/or models utilized and DHS-FEMA's methodology and/or models. Also, attach an explanation of why new methodology and/or models should replace current methodology and/or models.

If revision reflects more detailed topographic information and fill has been/will be placed in a V Zone, and is not protected from erosion by a shore protection structure, provide a detailed description of how the fill has been treated in the revised analysis.

5. Wave Runup, Wave Height, And Wave Overtopping Analysis

Wave height analyses along a transect are greatly affected by starting wave conditions that propagate inland. Wave runup and overtopping analyses are typically considered when wave heights and/or wave runup are close to or greater than the crest of shore protection structures or natural land forms.

a. Was an analysis performed to determine starting wave height and period for input into WHAFIS?

If Yes, attach an explanation of the method utilized. If No, explain why these analyses were not performed.

Yes No

b. Was wave setup included in wave height analysis and removed for erosion and wave runup analyses?

Yes No

c. Was an overtopping analysis performed for any coastal shore protection structures or natural land forms that may be overtopped?

Yes No

If Yes, attach an explanation of the methodology utilized and describe in detail the results of the analysis.
If overtopping was not analyzed, attach an explanation for why these analyses were not performed.

D. RESULTS

- 1. Stillwater storm surge elevation: +7.6 feet NGVD Datum
 - 2. Wave setup: n/a feet
 - 3. Starting deep-water significant wave condition:
height: n/a period: 13
 - 4. Maximum wave height elevation: +11.8' @shore feet
 - 5. Maximum wave runup elevation: n/a feet
 - 6. Estimated amount of maximum overtopping: n/a cfs/feet
 - 7. Has this revision changed the Limit of Moderate Wave Action (LiMWA)? Yes No N/A
 - 8. The areas designated as coastal high hazard areas (V Zones) have:
 increased decreased both
- Attach a description where they have increased and/or decreased.

- 9. As a result of the revised analyses, the V Zone location has shifted a maximum of 96 feet seaward and 0 feet landward of its existing position.
 - 10. Does this revision reflect the location of the primary frontal dune?
 Yes No
 - 11. The Base Flood Elevations have:
 increased decreased
 - a. What was the greatest increase? n/a feet
 - b. What was the greatest decrease? n/a feet
 - 12. The special flood hazard area has:
 increased decreased both
- Attach a description where it has increased or decreased.

E. MAPPING REQUIREMENTS

A certified topographic map must be submitted showing the following information (where applicable): effective, existing conditions, and proposed conditions 1%-annual-chance floodplain boundaries, revised shoreline due to either erosion or accretion, location and alignment of all transects, correct location and alignment of any structures, current community easements and boundaries, boundary of the requester's property, certification of a professional engineer registered in the subject State, location and description of reference marks, and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the existing or proposed conditions floodplain boundaries to be shown on the revised FIRM must tie-in with the effective floodplain boundaries. Please attach a copy of the current FIRM annotated to show the revised 1%-annual-chance floodplain boundaries that tie-in with effective 1%-annual-chance floodplain boundaries along the entire extent of the area of revision.

Project Description and Summary

Project Description and Summary

1. Site Characteristics: The subject property is located at 1315 Whitehead Street, Key West, Monroe County and a minimum of 146 feet from the Atlantic Ocean shoreline (Figures 1 and 2). The rectangular-shaped subject property measures 100.0 feet and 197.8 feet in a street-parallel and street-perpendicular direction, respectively, as illustrated in Figure 2. There is existing riprap lying along the Atlantic Ocean shoreline. According to the survey conducted by Frederick Hildebrandt on June 23, 2005, the grade at the subject property was relatively uniform with elevations ranging from +3.7 to +5.1 feet NGVD (National Geodetic Vertical Datum of 1929). The primary flooding source occurs from the Atlantic Ocean, as delineated by FEMA's Transect No. 2 with a 100-year stillwater elevation of +7.6 feet NGVD, as reported by the FEMA Monroe County Flood Insurance Study (FIS).

From the current FEMA's FIRM (No. 12087C1516K, Feb. 2005), the project area is bisected by two (2) VE flood zones ("Coastal High Hazard Area") with base flood elevations ranging from 10 to 12 feet NGVD as shown in Figure 2. These flood zone designations were determined by FEMA based on interpretation of the results of their wave height analysis along Transect No. 2 as documented in the FIS (2005).

2. Purpose of Reanalysis: Observation of the existing site conditions as shown in Figure 3 (topographic workmap) reveals potential improvement of the current FIRM flood zones due to its relatively high upland topographic elevations. The purpose of this reanalysis is to establish a more accurate delineation of the flood zones within the project area based on the existing site-specific conditions.

3. Wave Height Reanalysis and Map Revision: A numerical reanalysis was performed using the established FEMA methodology with the site-specific topographic data. This analysis was based on the FEMA two-dimensional WHAFIS model (*Wave Height Analysis for Flood Insurance Studies*). The analysis was conducted following 3 new revised transect lines (Transect-A, -B and -C) extending from the Atlantic Ocean shoreline through the subject property in a shore perpendicular direction, as shown in Figure 3. Along those revised transects, the elevations and station distances obtained from the topographic survey are presented in Figure 3. The WHAFIS

model was run following those 3 new shore-perpendicular transects starting at the shoreline using the FIS reported 100-year stillwater elevation of +7.6 feet NGVD (FEMA Transect No.2) and site-specific topographic data.

4. WHAFIS Model Results:

The results of the revised WHAFIS model reanalysis demonstrate that with consideration of the site-specific topographic data, the revised AE/VE floodplain boundary along the new transects would shift a maximum of 96 feet seaward from its current location (Figures 3 and 4). Under the revised flood zone, a portion of the subject property will lie within the new AE10 flood zone. The revised WHAFIS model input and output files supporting this reanalysis are presented in Appendix-B.

References:

FEMA (2005), *Flood Insurance Study, Monroe County, Florida, and Incorporated Areas* (Flood Insurance Study Number 12087CV000A) Federal Emergency Management Agency, Mitigation Directorate, 500 C Street, Washington D.C.

FEMA (2003), *Guidelines and Specifications for Flood Hazard Mapping Partners; Appendix D - Guidance for Coastal Flooding Analyses and Mapping*, Federal Emergency Management Agency, Mitigation Directorate, 500 C Street, Washington D.C.

FEMA (2000), *Coastal Construction Manual (FEMA 55)* Federal Emergency Management Agency, Mitigation Directorate, 500 C Street, Washington D.C.

FEMA (1995), *Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping*, Federal Emergency Management Agency, Mitigation Directorate, 500 C Street, Washington D.C.

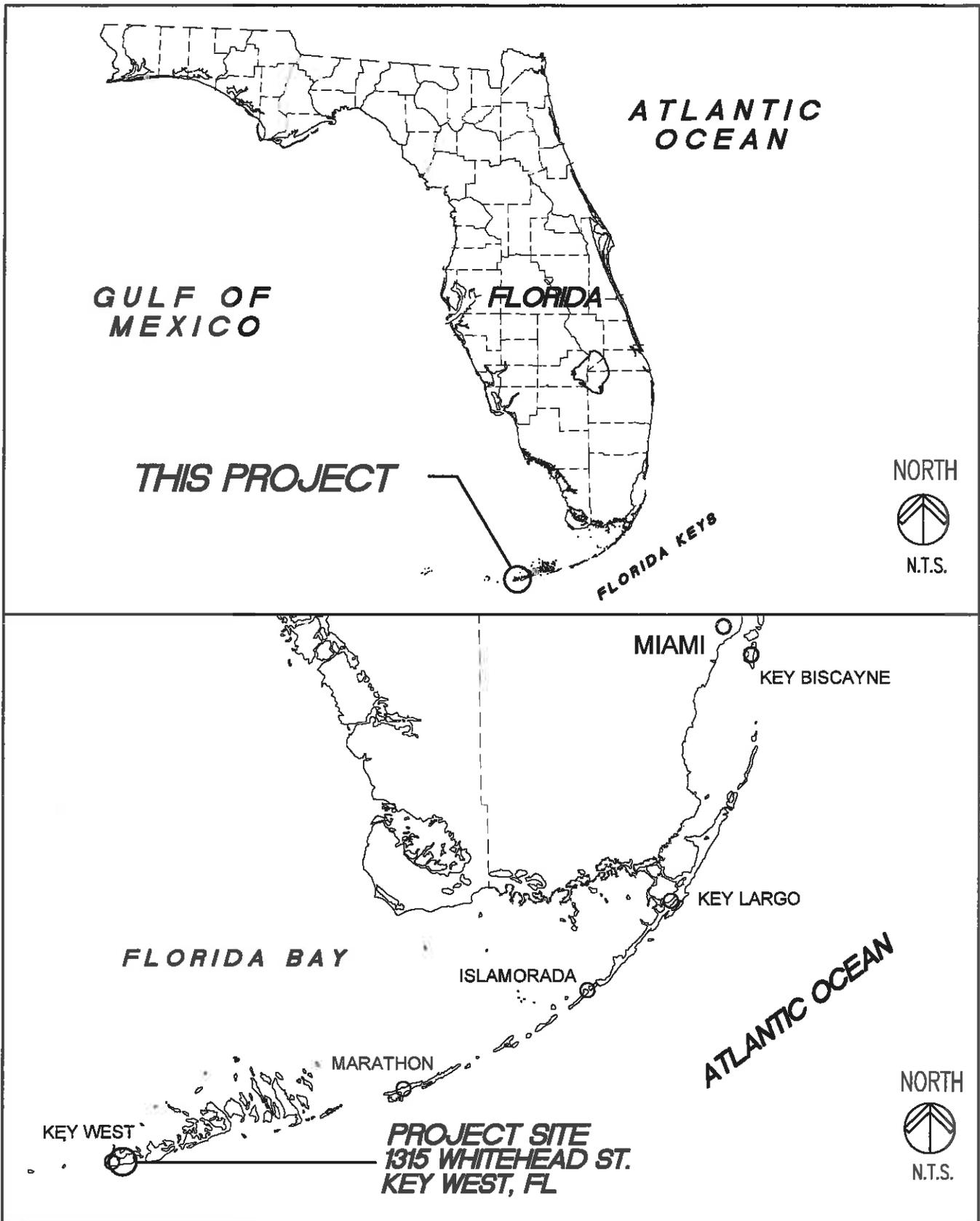


FIGURE 1
LOCATION MAP



FIGURE 2
EXISTING FEMA FLOOD ZONES

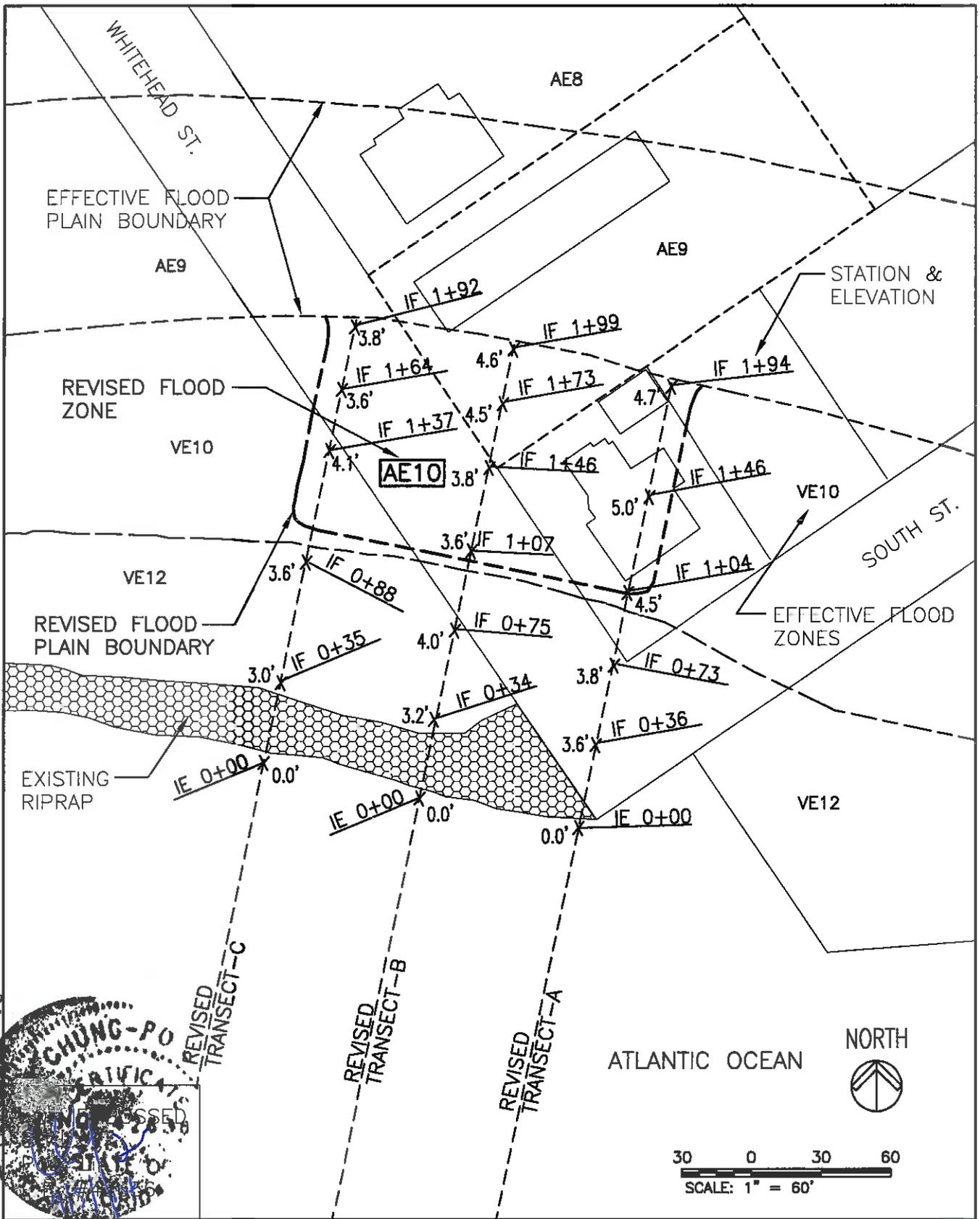


FIGURE 3
 CERTIFIED TOPOGRAPHIC WORKMAP



FIGURE 4
ANNOTATED FLOOD INSURANCE RATE MAP

**Revised WHAFIS Wave Height Analysis
Input / Output Files for 3 Transects**

1 *** THE FOLLOWING MESSAGES ARE THE RESULTS FROM THE 100-YR ELEVATION INTERPOLATION FOR THE TRANSECT:
 #63800:1315 whitehead St. (FEMA transect #2),REVISED TRANS.-A: 08/22/2014

OUTPUTA
 WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (VERSION 3.0, 9_88)
 #63800:1315 whitehead St. (FEMA transect #2),REVISED TRANS.-A: 08/22/2014

		PART I INPUT											
IE	END STATION ELEVATION	END ELEVATION	FETCH LENGTH	SURGE 10-YEAR	ELEV SURGE 100-YEAR	ELEV SURGE 100-YEAR	WAVE HEIGHT	INITIAL HEIGHT	INITIAL PERIOD	INITIAL W. PERIOD	BOTTOM SLOPE	AVERAGE A-ZONES	
IF	36.000	36.000	.000	24.000	.000	7.600	.000	7.600	.000	13.000	.000	.100	
IF	73.000	36.000	3.600	.000	7.600	.000	.000	.000	.000	.000	.000	.052	
IF	104.000	73.000	3.800	.000	7.600	.000	.000	.000	.000	.000	.000	.013	
IF	146.000	104.000	4.500	.000	7.600	.000	.000	.000	.000	.000	.000	.016	
IF	194.000	146.000	5.000	.000	7.600	.000	.000	.000	.000	.000	.000	.002	
IF	194.000	194.000	4.700	.000	7.600	.000	.000	.000	.000	.000	.000	-.006	
ET	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
IE	36.000	36.000	24.000	.000	7.600	.000	.000	13.000	.000	.000	.100	.000	
IF	73.000	36.000	3.600	.000	7.600	.000	.000	.000	.000	.000	.052	.000	
IF	104.000	73.000	3.800	.000	7.600	.000	.000	.000	.000	.000	.013	.000	
IF	146.000	104.000	4.500	.000	7.600	.000	.000	.000	.000	.000	.016	.000	
IF	194.000	146.000	5.000	.000	7.600	.000	.000	.000	.000	.000	.002	.000	
IF	194.000	194.000	4.700	.000	7.600	.000	.000	.000	.000	.000	-.006	.000	
ET	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

-----END OF TRANSECT-----

NOTE:
 SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

OUTPUTA

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL
PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
IE	.00	13.00	11.69
IF	36.00	13.00	9.77
IF	73.00	13.00	9.66
IF	104.00	13.00	9.28
IF	146.00	13.00	9.01
IF	194.00	13.00	9.07

TRANSMITTED WAVE HEIGHT AT LAST FETCH OR OBSTRUCTION = 2.10 WHICH EXCEEDS 0.5.

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE
NO AREAS ABOVE 100-YEAR SURGE IN THIS TRANSECT

PART4 LOCATION OF SURGE CHANGES
STATION 10-YEAR SURGE 100-YEAR SURGE
NO SURGE CHANGES IN THIS TRANSECT

PART5 LOCATION OF V ZONES
STATION OF GUTTER LOCATION OF ZONE
59.43 WINDWARD

PART6 NUMBERED A ZONES AND V ZONES
STATION OF GUTTER ELEVATION ZONE DESIGNATION FHF
.00 11.69 V22 EL=12 120
3.61 11.50 V22 EL=11 120

OUTPUTA

22.31	10.50	V22 EL=10	120
59.43	9.70	A18 EL=10	90
86.18	9.50	A18 EL= 9	90
194.00	9.07		

ZONE TERMINATED AT END OF TRANSECT

1 *** THE FOLLOWING MESSAGES ARE THE RESULTS FROM THE 100-YR ELEVATION INTERPOLATION FOR THE TRANSECT:
 OUTPUTB
 #63800:1315 Whitehead St. (FEMA transect #2), REVISED TRANS.-B: 08/22/2014

WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (VERSION 3.0, 9_88)
 #63800:1315 Whitehead St. (FEMA transect #2), REVISED TRANS.-B: 08/22/2014

IE	END STATION	ELEVATION	END	FETCH LENGTH	SURGE ELEV 10-YEAR	SURGE ELEV 100-YEAR	INITIAL WAVE HEIGHT	INITIAL W. PERIOD	BOTTOM SLOPE	AVERAGE A-ZONES
IF	34.000	34.000	.000	3.200	.000	7.600	7.600	.000	.094	.000
IF	75.000	75.000	.000	4.000	.000	7.600	.000	.000	.053	.000
IF	107.000	107.000	.000	3.600	.000	7.600	.000	.000	.005	.000
IF	146.000	146.000	.000	3.800	.000	7.600	.000	.000	.003	.000
IF	173.000	173.000	.000	4.500	.000	7.600	.000	.000	.014	.000
IF	199.000	199.000	.000	4.600	.000	7.600	.000	.000	.015	.000
ET		.000	.000	.000	.000	.000	.000	.000	.004	.000
									.000	.000

IE	END STATION	ELEVATION	END	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR	INITIAL WAVE HEIGHT	INITIAL W. PERIOD	BOTTOM SLOPE	AVERAGE A-ZONES
IF	34.000	34.000	3.200	.000	7.600	.000	.000	.094	.000
IF	75.000	75.000	4.000	.000	7.600	.000	.000	.053	.000
IF	107.000	107.000	3.600	.000	7.600	.000	.000	.005	.000
IF	146.000	146.000	3.800	.000	7.600	.000	.000	.003	.000
IF	173.000	173.000	4.500	.000	7.600	.000	.000	.014	.000
IF	199.000	199.000	4.600	.000	7.600	.000	.000	.015	.000
								.004	.000
								.000	.000

NOTE:

1 SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL
PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL WAVE PERIOD	WAVE CREST ELEVATION
IE .00	5.85	13.00	11.69
IF 34.00	3.40	13.00	9.98
IF 75.00	2.79	13.00	9.55
IF 107.00	2.88	13.00	9.62
IF 146.00	2.85	13.00	9.60
IF 173.00	2.40	13.00	9.28
IF 199.00	2.33	13.00	9.23

TRANSMITTED WAVE HEIGHT AT LAST FETCH OR OBSTRUCTION = 2.33 WHICH EXCEEDS 0.5.

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE
NO AREAS ABOVE 100-YEAR SURGE IN THIS TRANSECT

PART4 LOCATION OF SURGE CHANGES

STATION	10-YEAR SURGE	100-YEAR SURGE
	NO SURGE CHANGES IN THIS TRANSECT	

PART5 LOCATION OF V ZONES

STATION OF GUTTER	LOCATION OF ZONE
60.98	WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF

.00				
	OUTPUTB			
	11.69			
		V22 EL=12	120	
3.84	11.50			
		V22 EL=11	120	
23.72	10.50			
		V22 EL=10	120	
60.98	9.70			
		A19 EL=10	95	
154.25	9.50			
		A19 EL= 9	95	
199.00	9.23			

ZONE TERMINATED AT END OF TRANSECT

1 *** THE FOLLOWING MESSAGES ARE THE RESULTS FROM THE 100-YR ELEVATION INTERPOLATION FOR THE TRANSECT:
 1 #63800:1315 whitehead St. (FEMA transect #2),REVISED TRANS.-C: 08/22/2014

WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (VERSION 3.0, 9_88)
 #63800:1315 whitehead St. (FEMA transect #2),REVISED TRANS.-C: 08/22/2014

		PART1 INPUT											
IE	IF	END STATION ELEVATION	END ELEVATION	FETCH LENGTH	SURGE ELEV 10-YEAR	SURGE ELEV 100-YEAR	SURGE ELEV 100-YEAR WAVE HEIGHT	INITIAL W. PERIOD	INITIAL W. PERIOD	BOTTOM SLOPE	AVERAGE A-ZONES		
				.000	24.000	.000	7.600	.000	13.000	.000	.086	.000	
		35.000	35.000	3.000	.000	7.600	.000	.000	.000	.000	.041	.000	
		88.000	88.000	3.600	.000	7.600	.000	.000	.000	.000	.011	.000	
		137.000	137.000	4.100	.000	7.600	.000	.000	.000	.000	.000	.000	
		164.000	164.000	3.600	.000	7.600	.000	.000	.000	.000	.000	.000	
		192.000	192.000	3.800	.000	7.600	.000	.000	.000	.000	.007	.000	
	ET		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

IE	IF	END STATION ELEVATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR	NEW SURGE 100-YEAR WAVE HEIGHT	INITIAL W. PERIOD	BOTTOM SLOPE	AVERAGE A-ZONES
				.000	7.600	.000	.000	.086	.000
		35.000	3.000	.000	7.600	.000	.000	.041	.000
		88.000	3.600	.000	7.600	.000	.000	.011	.000
		137.000	4.100	.000	7.600	.000	.000	.000	.000
		164.000	3.600	.000	7.600	.000	.000	.000	.000
		192.000	3.800	.000	7.600	.000	.000	.007	.000

-----END OF TRANSECT-----

NOTE:
 SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

OUTPUTC

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL
PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL WAVE PERIOD	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
IE	.00	5.85	13.00	11.69
IF	35.00	3.56	13.00	10.09
IF	88.00	3.10	13.00	9.77
IF	137.00	2.71	13.00	9.50
IF	164.00	2.82	13.00	9.57
IF	192.00	2.79	13.00	9.55

TRANSMITTED WAVE HEIGHT AT LAST FETCH OR OBSTRUCTION = 2.79 WHICH EXCEEDS 0.5.

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE
NO AREAS ABOVE 100-YEAR SURGE IN THIS TRANSECT

PART4 LOCATION OF SURGE CHANGES

STATION	10-YEAR SURGE	100-YEAR SURGE
	NO SURGE CHANGES IN THIS TRANSECT	

PART5 LOCATION OF V ZONES

STATION OF GUTTER	LOCATION OF ZONE
100.41	WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF
.00	11.69		
4.21	11.50	V22	EL=12 120
		V22	EL=11 120

OUTPUTC

26.06	10.50			
100.41	9.70	V22	EL=10	120
136.80	9.50	A19	EL=10	95
137.40	9.50	A19	EL= 9	95
192.00	9.55	A19	EL=10	95

ZONE TERMINATED AT END OF TRANSECT