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PART 5: RUNUP2

for transect: CM-137

Station locations shifted by: 0.37 feet from their  
original location to set the shoreline to  
elevation 0 for RUNUP2 input

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RUNUP2 INPUT CONVERSIONS

for transect: CM-137

Incident significant wave height: 4.63 feet

Peak wave period: 9.58 seconds

Mean wave height: 2.90 feet

Local Depth below SWEL: 47.21 feet

Mean wave height deshoaled using Hunt approximation for  
celerity assuming constant wave energy flux.

References: R.G. Dean and R.A. Dalrymple. 2000. Water

Wave Mechanics for Engineers and Scientists. World  
Scientific Publishing Company, River Edge New Jersey

USACE (1985), Direct Methods for Calculating Wavelength, CETN-1-17  
US Army Engineer Waterways Experiment Station Coastal Engineering  
Research Center, Vicksburg, MS

also see Coastal Engineering Manual Part II-3  
for discussion of shoaling coefficient

Depth,  $D = 47.21$

Period,  $T = 8.14$

Waveheight,  $H = 2.90$

Deep water wavelength,  $L_0$  (ft)

$L_0 = g \cdot T^2 / 2\pi$

$L_0 = 32.17 \cdot 8.14^2 / 6.28 = 339.61$

Deep water wave celerity,  $C_0$  (ft/s)

$C_0 = L_0 / T$

$C_0 = 339.61 / 8.14 = 41.70$

Angular frequency,  $\sigma$  (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 8.14 = 0.77$

Hunts (1979) approximation for Celerity  $C_{1H}$  (ft/s) at Depth  $D$  (ft)

$y = \sigma \cdot \sigma \cdot D / g$

$y = 0.77 \cdot 0.77 \cdot 47.21 / 32.17 = 0.87$

$C_{1H} = \sqrt{g \cdot D / (y + 1 / (1 + 0.6522 \cdot y + 0.4622 \cdot y^2 + 0.0864 \cdot y^4 + 0.0675 \cdot y^5))}$

$C_{1H} = 33.28$

Shoaling Coefficient  $K_{sH}$

$K_{sH} = \sqrt{C_0 / C_{1H}}$

$K_{sH} = \sqrt{41.70 / 33.28} = 1.12$

Deepwater Wave Height  $H_{0_H}$  (ft)

$H_{0_H} = H / K_{sH}$

$H_{0_H} = 2.90 / 1.12 = 2.59$

Deepwater mean wave height: 2.59 feet

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END RUNUP2 CONVERSIONS

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RUNUP2 RESULTS

for transect: CM-137

RUNUP2 SWEL:

8.80

8.80

8.80

8.80

8.80  
8.80  
8.80  
8.80  
8.80

RUNUP2 deepwater mean wave heights:

2.46  
2.46  
2.46  
2.59  
2.59  
2.59  
2.72  
2.72  
2.72

RUNUP2 mean wave periods:

7.74  
8.14  
8.55  
7.74  
8.14  
8.55  
7.74  
8.14  
8.55

RUNUP2 runup above SWEL:

1.05  
1.16  
1.25  
1.13  
1.24  
1.35  
1.22  
1.33  
1.47

RUNUP2 Mean runup height above SWEL: 1.24 feet

RUNUP2 2-percent runup height above SWEL: 2.74 feet

RUNUP2 2-percent runup elevation: 11.54 feet-NAVD88

RUNUP2 Messages:

No Messages

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END RUNUP2 RESULTS

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ACES BEACH RUNUP

Incident significant wave height: 4.63 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 3.62 feet

Peak wave period: 9.58 seconds

Average beach Slope: 1:7.60 (H:V)

ACES RUNUP CALCULATED USING 'Aces\_Beach\_Runup.m'

ACES Beach 2-percent runup height above SWEL: 8.98 feet

ACES Beach 2-percent runup elevation: 17.78 feet-NAVD88

ACES BEACH RUNUP is valid

\_\_\_\_\_END ACES BEACH RESULTS\_\_\_\_\_

PART 5 COMPLETE\_\_\_\_\_