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PART 5: RUNUP2

for transect: CM-134

Station locations shifted by: 0.00 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-134

Incident significant wave height: 2.74 feet

Peak wave period: 4.95 seconds

Mean wave height: 1.72 feet

Local Depth below SWEL: 29.23 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,  $D = 29.23$

Period,  $T = 4.21$

Waveheight,  $H = 1.72$

Deep water wavelength,  $L_0$  (ft)

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

$L_0 = 32.17 \cdot 4.21^2 / 6.28 = 90.74$

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

$C_0 = L_0 / T$

$C_0 = 90.74 / 4.21 = 21.56$

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

$\sigma = 2\pi / T$

$\sigma = 6.28 / 4.21 = 1.49$

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

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

$y = 1.49 \cdot 1.49 \cdot 29.23 / 32.17 = 2.02$

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

$C_{1H} = 20.92$

Shoaling Coefficient  $K_{sH}$

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

$K_{sH} = \sqrt{21.56 / 20.92} = 1.02$

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

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

$H_{0_H} = 1.72 / 1.02 = 1.69$

Deepwater mean wave height: 1.69 feet

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END RUNUP2 CONVERSIONS

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RUNUP2 RESULTS

for transect: CM-134

RUNUP2 SWEL:

8.90

8.90

8.90

8.90

8.90  
8.90  
8.90  
8.90  
8.90

RUNUP2 deepwater mean wave heights:

1.61  
1.61  
1.61  
1.69  
1.69  
1.69  
1.78  
1.78  
1.78

RUNUP2 mean wave periods:

4.00  
4.21  
4.42  
4.00  
4.21  
4.42  
4.00  
4.21  
4.42

RUNUP2 runup above SWEL:

0.01  
0.01  
0.01  
0.01  
0.01  
0.01  
0.01  
0.01  
0.01

RUNUP2 Mean runup height above SWEL: 0.01 feet

RUNUP2 2-percent runup height above SWEL: 0.02 feet

RUNUP2 2-percent runup elevation: 8.92 feet-NAVD88

RUNUP2 Messages:

No Messages

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END RUNUP2 RESULTS

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ACES BEACH RUNUP

Incident significant wave height: 2.74 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 2.37 feet

Peak wave period: 4.95 seconds

Average beach Slope: 1:45.43 (H:V)

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

ACES Beach 2-percent runup height above SWEL: 1.20 feet

ACES Beach 2-percent runup elevation: 10.10 feet-NAVD88

ACES BEACH RUNUP is valid

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

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