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PART 5: RUNUP2

for transect: YK-07

Station locations shifted by: -7.62 feet from their  
original location to set the shoreline to  
elevation 0 for RUNUP2 input

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RUNUP2 INPUT CONVERSIONS

for transect: YK-07

Incident significant wave height: 2.94 feet

Peak wave period: 6.94 seconds

Mean wave height: 1.84 feet

Local Depth below SWEL: 25.38 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,  $D = 25.38$

Period,  $T = 5.90$

Waveheight,  $H = 1.84$

Deep water wavelength,  $L0$  (ft)

$L0 = g \cdot T^2 / 2\pi$

$L0 = 32.17 \cdot 5.90^2 / 6.28 = 178.04$

Deep water wave celerity,  $C0$  (ft/s)

$C0 = L0 / T$

$C0 = 178.04 / 5.90 = 30.19$

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

$\sigma = 2\pi / T$

$\sigma = 6.28 / 5.90 = 1.07$

Hunts (1979) approximation for Celerity  $C1H$  (ft/s) at Depth  $D$  (ft)

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

$y = 1.07 \cdot 1.07 \cdot 25.38 / 32.17 = 0.90$

$C1H = \sqrt{g \cdot D / (y + 1. / (1 + 0.6522 \cdot y + 0.4622 \cdot y^2 + 0.0864 \cdot y^4 + 0.0675 \cdot y^5))}$

$C1H = 24.29$

Shoaling Coefficient  $KsH$

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{30.19 / 24.29} = 1.11$

Deepwater Wave Height  $H0\_H$  (ft)

$H0\_H = H / KsH$

$H0\_H = 1.84 / 1.11 = 1.65$

Deepwater mean wave height: 1.65 feet

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END RUNUP2 CONVERSIONS

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RUNUP2 RESULTS

for transect: YK-07

RUNUP2 SWEL:

9.00

9.00

9.00

9.00

9.00

9.00

9.00

9.00

9.00

RUNUP2 deepwater mean wave heights:

1.57  
1.57  
1.57  
1.65  
1.65  
1.65  
1.73  
1.73  
1.73

RUNUP2 mean wave periods:

5.60  
5.90  
6.19  
5.60  
5.90  
6.19  
5.60  
5.90  
6.19

RUNUP2 runup above SWEL:

4.18  
4.27  
4.36  
4.41  
4.50  
4.58  
4.61  
4.74  
4.82

RUNUP2 Mean runup height above SWEL: 4.50 feet

RUNUP2 2-percent runup height above SWEL: 9.89 feet

RUNUP2 2-percent runup elevation: 18.89 feet-NAVD88

RUNUP2 Messages:

No Messages

\_\_\_\_\_END RUNUP2 RESULTS\_\_\_\_\_

\_\_\_\_\_ACES BEACH RUNUP\_\_\_\_\_

Incident significant wave height: 2.94 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 2.31 feet

Peak wave period: 6.94 seconds

Average beach Slope: 1:19.16 (H:V)

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

ACES Beach 2-percent runup height above SWEL: 2.77 feet

ACES Beach 2-percent runup elevation: 11.77 feet-NAVD88

ACES BEACH RUNUP is valid

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

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