
PART 5: RUNUP2

for transect: YK-14

Station locations shifted by: -0.20 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: YK-14

Incident significant wave height: 12.46 feet

Peak wave period: 14.03 seconds

Mean wave height: 7.80 feet

Local Depth below SWEL: 15.66 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, $D = 15.66$

Period, $T = 11.93$

Waveheight, $H = 7.80$

Deep water wavelength, $L0$ (ft)

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

$L0 = 32.17 \cdot 11.93^2 / 6.28 = 728.42$

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

$C0 = L0 / T$

$C0 = 728.42 / 11.93 = 61.07$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 11.93 = 0.53$

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

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

$y = 0.53 \cdot 0.53 \cdot 15.66 / 32.17 = 0.14$

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

$C1H = 21.94$

Shoaling Coefficient KsH

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{61.07 / 21.94} = 1.67$

Deepwater Wave Height $H0_H$ (ft)

$H0_H = H / KsH$

$H0_H = 7.80 / 1.67 = 4.67$

Deepwater mean wave height: 4.67 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: YK-14

RUNUP2 SWEL:

9.20

9.20

9.20

9.20

9.20

9.20

9.20

9.20

9.20

RUNUP2 deepwater mean wave heights:

4.44
4.44
4.44
4.67
4.67
4.67
4.91
4.91
4.91

RUNUP2 mean wave periods:

11.33
11.93
12.52
11.33
11.93
12.52
11.33
11.93
12.52

RUNUP2 runup above SWEL:

5.10
5.63
6.06
5.27
5.79
6.33
5.44
5.93
5.91

RUNUP2 Mean runup height above SWEL: 5.72 feet

RUNUP2 2-percent runup height above SWEL: 12.58 feet

RUNUP2 2-percent runup elevation: 21.78 feet-NAVD88

RUNUP2 Messages:

No Messages

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 12.46 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 6.54 feet

Peak wave period: 14.03 seconds

Average beach Slope: 1:20.78 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 8.44 feet

ACES Beach 2-percent runup elevation: 17.64 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____