
PART 5: RUNUP2

for transect: CM-150

Station locations shifted by: 0.26 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-150

Incident significant wave height: 7.30 feet

Peak wave period: 13.55 seconds

Mean wave height: 4.57 feet

Local Depth below SWEL: 18.02 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, $D = 18.02$

Period, $T = 11.52$

Waveheight, $H = 4.57$

Deep water wavelength, $L0$ (ft)

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

$L0 = 32.17 \cdot 11.52^2 / 6.28 = 679.03$

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

$C0 = L0 / T$

$C0 = 679.03 / 11.52 = 58.97$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 11.52 = 0.55$

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

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

$y = 0.55 \cdot 0.55 \cdot 18.02 / 32.17 = 0.17$

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

$C1H = 23.41$

Shoaling Coefficient KsH

$KsH = \sqrt{C0 / C1H}$

$KsH = \sqrt{58.97 / 23.41} = 1.59$

Deepwater Wave Height $H0_H$ (ft)

$H0_H = H / KsH$

$H0_H = 4.57 / 1.59 = 2.88$

Deepwater mean wave height: 2.88 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-150

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:

2.74
2.74
2.74
2.88
2.88
2.88
3.02
3.02
3.02

RUNUP2 mean wave periods:

10.94
11.52
12.09
10.94
11.52
12.09
10.94
11.52
12.09

RUNUP2 runup above SWEL:

12.10
12.22
12.40
12.54
12.68
12.78
13.00
13.13
13.25

RUNUP2 Mean runup height above SWEL: 12.68 feet

RUNUP2 2-percent runup height above SWEL: 27.89 feet

RUNUP2 2-percent runup elevation: 36.79 feet-NAVD88

RUNUP2 Messages:

Nonfatal Error, Check Output

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 7.30 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 4.03 feet

Peak wave period: 13.55 seconds

Average beach Slope: 1:34.22 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 4.23 feet

ACES Beach 2-percent runup elevation: 13.13 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____