
PART 5: RUNUP2

for transect: CM-151

Station locations shifted by: -0.46 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-151

Incident significant wave height: 2.96 feet

Peak wave period: 8.65 seconds

Mean wave height: 1.86 feet

Local Depth below SWEL: 27.28 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, $D = 27.28$

Period, $T = 7.35$

Waveheight, $H = 1.86$

Deep water wavelength, L_0 (ft)

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

$L_0 = 32.17 \cdot 7.35^2 / 6.28 = 276.85$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 276.85 / 7.35 = 37.65$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 7.35 = 0.85$

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

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

$y = 0.85 \cdot 0.85 \cdot 27.28 / 32.17 = 0.62$

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

$C_{1H} = 26.56$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{37.65 / 26.56} = 1.19$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 1.86 / 1.19 = 1.56$

Deepwater mean wave height: 1.56 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-151

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:

1.48
1.48
1.48
1.56
1.56
1.56
1.64
1.64
1.64

RUNUP2 mean wave periods:

6.99
7.35
7.72
6.99
7.35
7.72
6.99
7.35
7.72

RUNUP2 runup above SWEL:

4.36
4.41
4.49
4.61
4.58
4.67
4.78
4.83
4.90

RUNUP2 Mean runup height above SWEL: 4.63 feet

RUNUP2 2-percent runup height above SWEL: 10.18 feet

RUNUP2 2-percent runup elevation: 19.08 feet-NAVD88

RUNUP2 Messages:

Nonfatal Error, Check Output

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 2.96 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 2.18 feet

Peak wave period: 8.65 seconds

Average beach Slope: 1:12.34 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 4.27 feet

ACES Beach 2-percent runup elevation: 13.17 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____