
PART 5: RUNUP2

for transect: CM-122-1

Station locations shifted by: -0.69 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: CM-122-1

Incident significant wave height: 2.12 feet

Peak wave period: 4.98 seconds

Mean wave height: 1.33 feet

Local Depth below SWEL: 18.91 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, $D = 18.91$

Period, $T = 4.24$

Waveheight, $H = 1.33$

Deep water wavelength, L_0 (ft)

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

$L_0 = 32.17 \cdot 4.24^2 / 6.28 = 91.84$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 91.84 / 4.24 = 21.69$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 4.24 = 1.48$

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

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

$y = 1.48 \cdot 1.48 \cdot 18.91 / 32.17 = 1.29$

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

$C_{1H} = 19.40$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{21.69 / 19.40} = 1.06$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 1.33 / 1.06 = 1.26$

Deepwater mean wave height: 1.26 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: CM-122-1

RUNUP2 SWEL:

9.10

9.10

9.10

9.10

9.10
9.10
9.10
9.10
9.10

RUNUP2 deepwater mean wave heights:

1.19
1.19
1.19
1.26
1.26
1.26
1.32
1.32
1.32

RUNUP2 mean wave periods:

4.02
4.24
4.45
4.02
4.24
4.45
4.02
4.24
4.45

RUNUP2 runup above SWEL:

1.46
1.49
1.52
1.28
1.29
1.31
1.12
1.14
1.14

RUNUP2 Mean runup height above SWEL: 1.31 feet

RUNUP2 2-percent runup height above SWEL: 2.87 feet

RUNUP2 2-percent runup elevation: 11.97 feet-NAVD88

RUNUP2 Messages:

No Messages

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 2.12 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 1.76 feet

Peak wave period: 4.98 seconds

Average beach Slope: 1:36.03 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 1.17 feet

ACES Beach 2-percent runup elevation: 10.27 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____