
PART 5: RUNUP2

for transect: YK-05

Station locations shifted by: -3.09 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: YK-05

Incident significant wave height: 3.25 feet

Peak wave period: 6.26 seconds

Mean wave height: 2.04 feet

Local Depth below SWEL: 37.86 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, $D = 37.86$

Period, $T = 5.32$

Waveheight, $H = 2.04$

Deep water wavelength, L_0 (ft)

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

$L_0 = 32.17 \cdot 5.32^2 / 6.28 = 145.06$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 145.06 / 5.32 = 27.25$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 5.32 = 1.18$

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

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

$y = 1.18 \cdot 1.18 \cdot 37.86 / 32.17 = 1.64$

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

$C_{1H} = 25.65$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{27.25 / 25.65} = 1.03$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 2.04 / 1.03 = 1.98$

Deepwater mean wave height: 1.98 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: YK-05

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:

1.88
1.88
1.88
1.98
1.98
1.98
2.08
2.08
2.08

RUNUP2 mean wave periods:

5.06
5.32
5.59
5.06
5.32
5.59
5.06
5.32
5.59

RUNUP2 runup above SWEL:

5.33
5.49
5.66
5.66
5.85
6.01
5.96
6.14
6.34

RUNUP2 Mean runup height above SWEL: 5.83 feet

RUNUP2 2-percent runup height above SWEL: 12.82 feet

RUNUP2 2-percent runup elevation: 21.82 feet-NAVD88

RUNUP2 Messages:

No Messages

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 3.25 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 2.77 feet

Peak wave period: 6.26 seconds

Average beach Slope: 1:4.40 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 8.23 feet

ACES Beach 2-percent runup elevation: 17.23 feet-NAVD88

!!!ACES BEACH RUNUP is NOT valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____