
PART 5: RUNUP2

for transect: YK-76F

Station locations shifted by: -35.00 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS

for transect: YK-76F

Incident significant wave height: 18.61 feet

Peak wave period: 14.03 seconds

Mean wave height: 11.65 feet

Local Depth below SWEL: 31.40 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, $D = 31.40$

Period, $T = 11.93$

Waveheight, $H = 11.65$

Deep water wavelength, L_0 (ft)

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

$L_0 = 32.17 \cdot 11.93^2 / 6.28 = 728.24$

Deep water wave celerity, C_0 (ft/s)

$C_0 = L_0 / T$

$C_0 = 728.24 / 11.93 = 61.07$

Angular frequency, σ (rad/s)

$\sigma = 2\pi / T$

$\sigma = 6.28 / 11.93 = 0.53$

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

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

$y = 0.53 \cdot 0.53 \cdot 31.40 / 32.17 = 0.27$

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

$C_{1H} = 30.35$

Shoaling Coefficient K_{sH}

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

$K_{sH} = \sqrt{61.07 / 30.35} = 1.42$

Deepwater Wave Height H_{0_H} (ft)

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

$H_{0_H} = 11.65 / 1.42 = 8.21$

Deepwater mean wave height: 8.21 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS

for transect: YK-76F

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:

7.80
7.80
7.80
8.21
8.21
8.21
8.62
8.62
8.62

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:

1.48
1.48
1.44
1.48
1.56
1.56
1.55
1.59
1.72

RUNUP2 Mean runup height above SWEL: 1.54 feet

RUNUP2 2-percent runup height above SWEL: 3.39 feet

RUNUP2 2-percent runup elevation: 12.29 feet-NAVD88

RUNUP2 Messages:

No Messages

END RUNUP2 RESULTS

ACES BEACH RUNUP

Incident significant wave height: 18.61 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 11.50 feet

Peak wave period: 14.03 seconds

Average beach Slope: 1:47.47 (H:V)

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 6.75 feet

ACES Beach 2-percent runup elevation: 15.65 feet-NAVD88

ACES BEACH RUNUP is valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____