PART 5: RUNUP2

for transect: YK-99-1

Station locations shifted by: -3.36 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

RUNUP2 INPUT CONVERSIONS
for transect: YK-99-1

Incident significant wave height: 2.04 feet

Peak wave period: 7.94 seconds

Mean wave height: 1.28 feet

Local Depth below SWEL: 10.76 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 Jersy

USACE (1985), Direct Methods for Calculating Wavelength, CETN-1-17
US Army Engineer Waterways Experiment Station Coastel Engineering
Research Center, Vicksburg, MS

also see Coastal Engineering Manual Part II-3
for discussion of shoaling coefficient

Depth, D = 10.76
Period, T = 6.75
Waveheight, H = 1.28
Deep water wavelength, L0 (ft)
L0 = g*T*T/twopi
L0 = 32.17*6.75*6.75/6.28 = 233.53
Deep water wave celerity, C0 (ft/s)
C0 = L0/T
C0 = 233.53/6.75 = 34.58
Angular frequency, sigma (rad/s)
sigma = twopi/T
sigma = 6.28/6.75 = 0.93
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
y = sigma.*sigma.*D./g
y = 0.93*0.93*10.76/32.17 = 0.29
C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
C1H = 17.71
Shoaling Coefficient KsH
KsH = sqrt(C0/C1H)
KsH = sqrt(34.58/17.71) = 1.40
Deepwater Wave Height H0_H (ft)
H0_H = H/KsH
H0_H = 1.28/1.40 = 0.91

Deepwater mean wave height: 0.91 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS
for transect: YK-99-1

RUNUP2 SWEL:
9.40
9.40
9.40
9.40

9.40
9.40
9.40
9.40
9.40

RUNUP2 deepwater mean wave heights:
0.87
0.87
0.87
0.91
0.91
0.91
0.96
0.96
0.96

RUNUP2 mean wave periods:
6.42
6.75
7.09
6.42
6.75
7.09
6.42
6.75
7.09

RUNUP2 runup above SWEL:
0.14
0.16
0.18
0.15
0.16
0.18
0.16
0.18
0.19

RUNUP2 Mean runup height above SWEL: 0.17 feet

RUNUP2 2-percent runup height above SWEL: 0.37 feet

RUNUP2 2-percent runup elevation: 9.77 feet-NAVD88

RUNUP2 Messages:
Nonfatal Error, Check Output

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 2.04 feet

Significant wave height is mean wave height divided by 0.626
Reference: D.2.8.1.2.1 Atlanic and Gulf of Mexico G&S Feb. 2007

Deepwater significant wave height: 1.46 feet

Peak wave period: 7.94 seconds

Average beach Slope: 1:22.42 (H:V)

ACES IRREGULAR WAVE RUNUP ON BEACHES

Reference:
Leenknecht, David A., Andre Szuwaiski, and Ann Sherlock. 1992.
"Automated Coastal Engineering System Technical Reference",
Coastal Engineering Research Center, Department of the Army

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# Waterways Experiments Station, Corps of Eniggneers, 3909 Halls
# Ferry Road, Vicksburg, Mississippi 39180-6199.

INPUTS:

Acceleration Due to Gravity,        g  =   32.174
Deepwater Significant Wave height,  Hs =     1.46
Wave Period,                        T  =     7.94
Beach Slope,                        S  =    0.045

EQUATIONS:

Runup,           R   = Hs * a * Irb^b
Iribarren,       Irb = S/sqrt(Hs/L0)
Wavelength,      L0  = g * T^2 / 2 / pi

COEFFICIENTS:
(Mase, H. 1989, "Random Wave Runup Height on Gentle Slopes,"
j. Waterway, Port, Coastal and Ocean Engineering Division,
ASCE, Vol 115, No. 5, pp 649-661.)

               [Rmax,  R2%, R-1/3, R-1/10, R-mean]
          a = [2.32, 1.86,  1.70,   1.38,   0.88]
          b = [0.77, 0.71,  0.71,   0.70,   0.69]

RESULTS:

       RUNUP = [ 2.5,  2.0,   1.9,    1.5,    1.0]

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 2.03 feet

ACES Beach 2-percent runup elevation: 11.43 feet-NAVD88

ACES BEACH RUNUP is valid

_____________END ACES BEACH RESULTS_____________________

PART 5 COMPLETE_____________________________________________
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