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PART 5: RUNUP2

for transect: CM-96-1

Station locations shifted by: -1.72 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

_____RUNUP2 INPUT CONVERSIONS_____
for transect: CM-96-1

Incident significant wave height: 2.58 feet

Peak wave period: 4.72 seconds

Mean wave height: 1.61 feet

Local Depth below SWEL: 17.69 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 = 17.69
Period, T = 4.01
Waveheight, H = 1.61
Deep water wavelength, L0 (ft)
L0 = g*T*T/twopi
L0 = 32.17*4.01*4.01/6.28 = 82.45
Deep water wave celerity, C0 (ft/s)
C0 = L0/T
C0 = 82.45/4.01 = 20.55
Angular frequency, sigma (rad/s)
sigma = twopi/T
sigma = 6.28/4.01 = 1.57
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
y = sigma.*sigma.*D./g
y = 1.57*1.57*17.69/32.17 = 1.35
C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
C1H = 18.57
Shoaling Coefficient KsH
KsH = sqrt(C0/C1H)
KsH = sqrt(20.55/18.57) = 1.05
Deepwater Wave Height H0_H (ft)
H0_H = H/KsH
H0_H = 1.61/1.05 = 1.53

Deepwater mean wave height: 1.53 feet

_____END RUNUP2 CONVERSIONS_____

_____RUNUP2 RESULTS_____
for transect: CM-96-1

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:
1.46
1.46
1.46
1.53
1.53
1.53
1.61
1.61
1.61

RUNUP2 mean wave periods:
3.81
4.01
4.21
3.81
4.01
4.21
3.81
4.01
4.21

RUNUP2 runup above SWEL:
2.06
2.21
2.37
2.06
2.22
2.37
2.07
2.21
2.38

RUNUP2 Mean runup height above SWEL: 2.22 feet

RUNUP2 2-percent runup height above SWEL: 4.88 feet

RUNUP2 2-percent runup elevation: 13.78 feet-NAVD88

RUNUP2 Messages:
No Messages

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 2.58 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: 2.45 feet

Peak wave period: 4.72 seconds

Average beach Slope: 1:9.68 (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 =     2.45
Wave Period,                        T  =     4.72
Beach Slope,                        S  =    0.103

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 = [ 4.3,  3.6,   3.3,    2.6,    1.7]

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 3.56 feet

ACES Beach 2-percent runup elevation: 12.46 feet-NAVD88

ACES BEACH RUNUP is valid

_____________END ACES BEACH RESULTS_____________________

PART 5 COMPLETE_____________________________________________
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