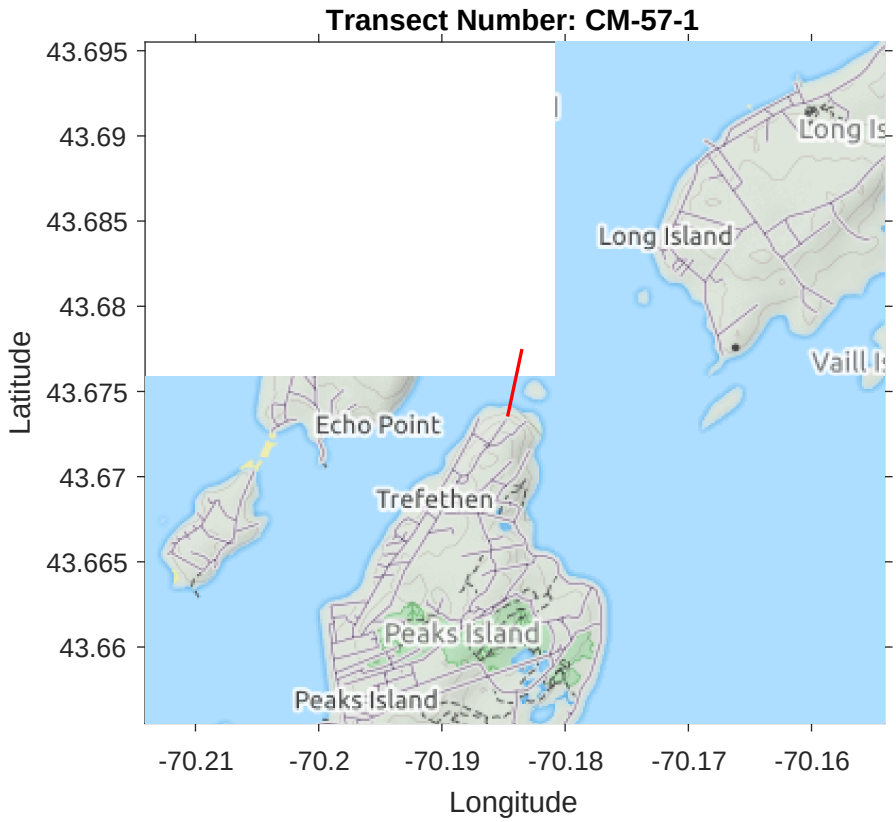
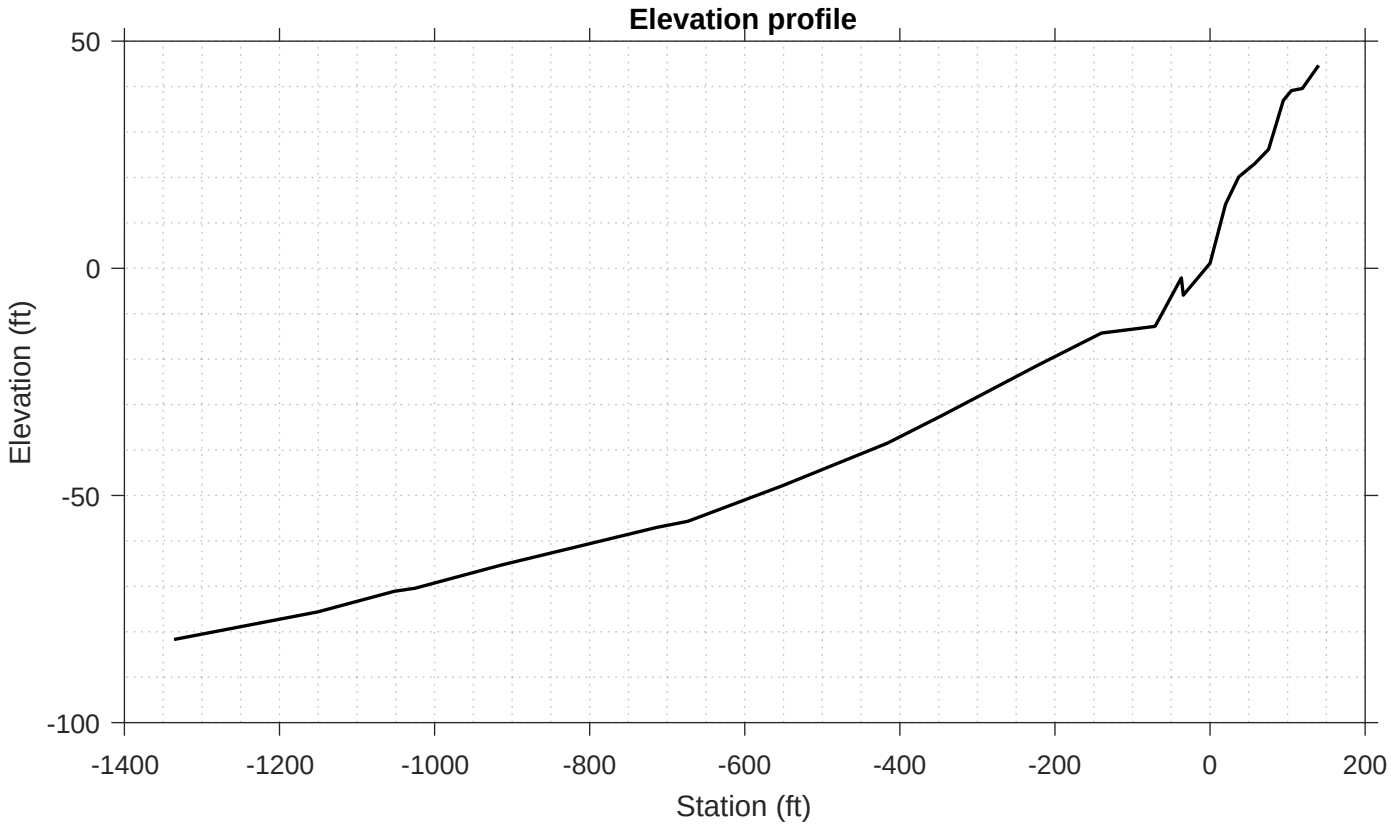

Transect Number: CM-57-1
43.695
43.69
43.685
43.68
43.675
43.67
43.665
43.66
Latitude
Long Island
Echo Point
Trefethen
Peaks Island
Peaks Island
-70.21
-70.2
-70.19
-70.18
-70.17
-70.16
Longitude


Elevation profile
50
0
-50
-100
Elevation (ft)
-1400
-1200
-1000
-800
-600
-400
-200
0
200
Station (ft)

DATA LOG FOR TRANSECT ID: CM-57-1

PART 1: USER INPUT

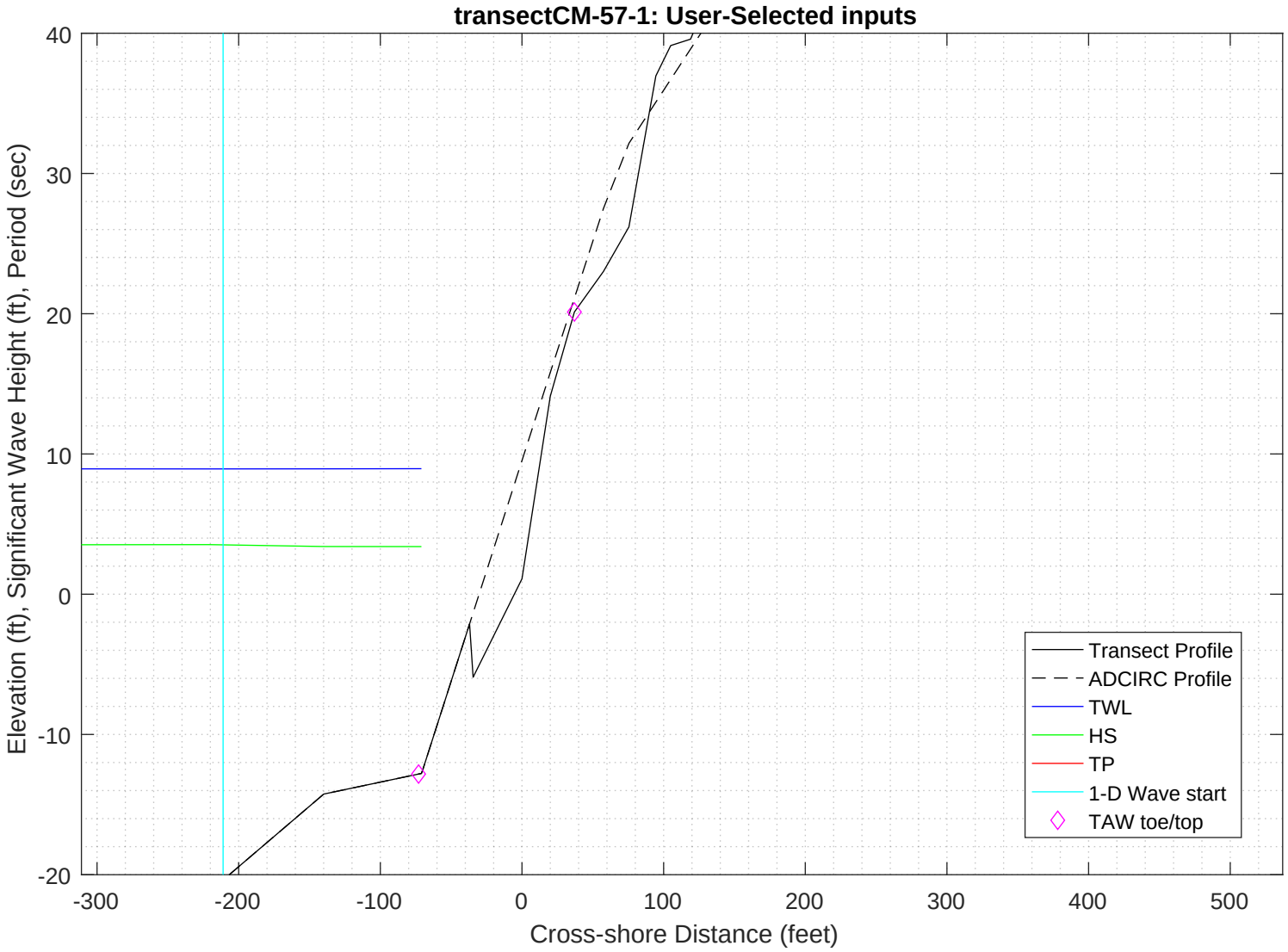
SWAN 1-D / WHAFIS input

station: -211 ft
LON: -70.1844 deg E
LAT: 43.6745 deg N
Bottom ELEV: -20.3769 ft-NAVD88
TWL: 8.9341 ft-NAVD88
HS: 3.5195 ft
TP: NaN sec
Wave Direction bin: 270 deg CCW from East (90 deg sector)
Transect Direction: 253.5074 deg CCW from East

TAW/RUNUP input

toe sta: -73 ft
toe elev: -12.8231 ft-NAVD88
top sta: 37 ft
top elev: 20.1214 ft-NAVD88
Wave and water level conditions at toe to be calculated in SWAN 1-D

PART 1 COMPLETE


transectCM-57-1: User-Selected inputs
Elevation (ft), Significant Wave Height (ft), Period (sec)
Cross-shore Distance (feet)
40
30
20
10
0
-10
-20
-300
-200
-100
0
100
200
300
400
500
Transect Profile
ADCIRC Profile
TWL
HS
TP
1-D Wave start
TAW toe/top

_____
PART 2: SWAN 1-D

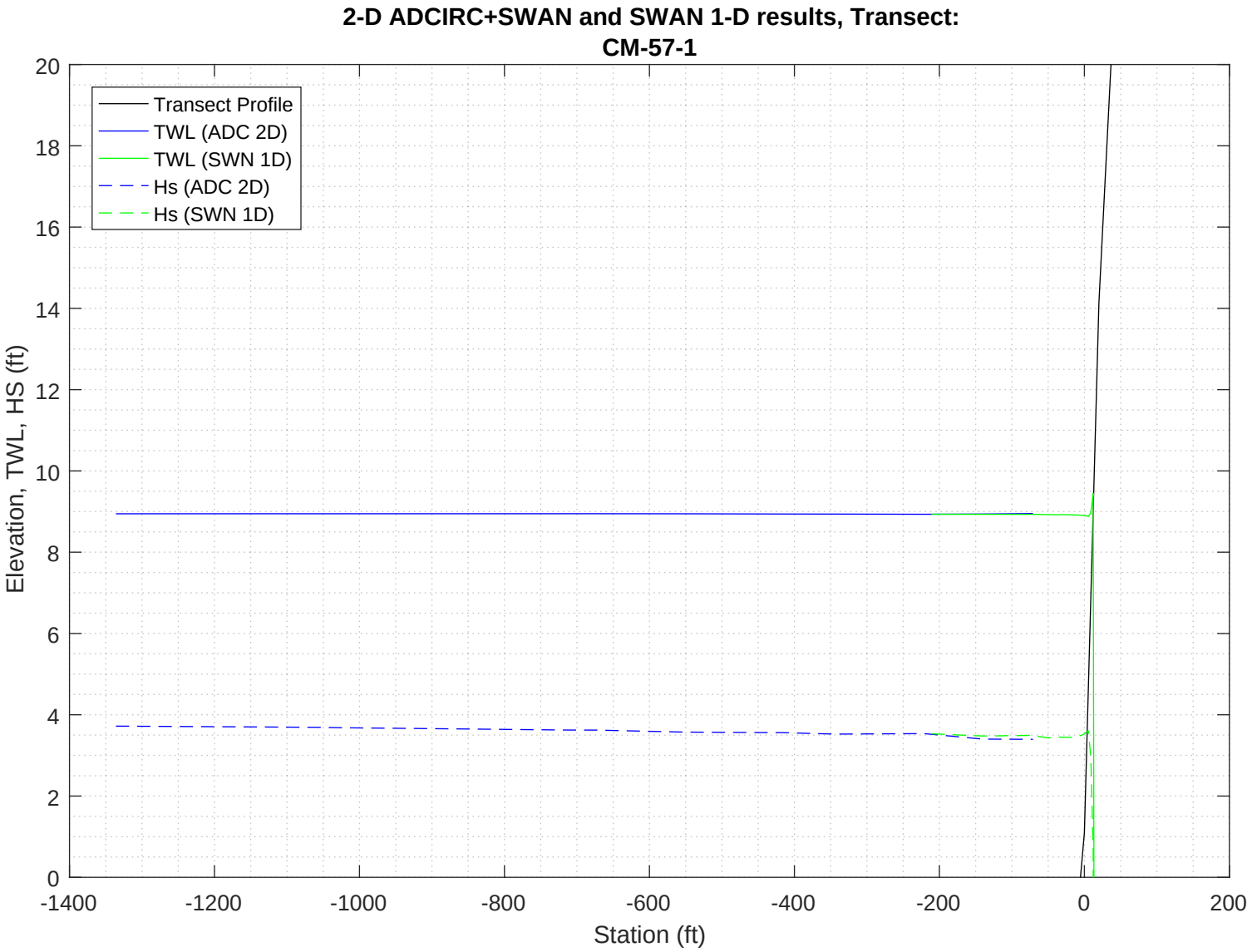
swan input grid name: 2_swan/gridfiles/CM-57-1zmeters_xmeters.grd
swan file name: 2_swan/swanfiles/CM-57-1.swn
swan output name: 2_swan/swanfiles/CM-57-1.dat

Boundary Conditions:
    TWL- 2.7231 meters
    HS- 1.0728 meters
    PER- 4.7 seconds

Batch File: 2_swan/swanfiles/runswan.dat

SWAN maximum additional wave setup: 0.51165 feet
SWAN output at toe:
    SETUP- -0.002769 feet
    HS-   3.4921 feet
    PER-   4.6289 seconds

PART 2 COMPLETE_____


2-D ADCIRC+SWAN and SWAN 1-D results, Transect:
CM-57-1
Transect Profile
TWL (ADC 2D)
TWL (SWN 1D)
Hs (ADC 2D)
Hs (SWN 1D)
Elevation, TWL, HS (ft)
Station (ft)
20
18
16
14
12
10
8
6
4
2
0
-1400
-1200
-1000
-800
-600
-400
-200
0
200

1

```
                    Execution started at 20200416.132457


                    ---------------------------------------
                                    SWAN
                    SIMULATION OF WAVES IN NEAR SHORE AREAS
                             VERSION NUMBER 41.20A
                    ---------------------------------------


 PROJECT '2018FemaAppeal' '1'
    '100-year Wind and Wave conditions'
 ! -- SET commands ------------------------------------------------------
  SET DEPMIN=0.01 MAXMES=999 MAXERR=3 PWTAIL=4
  SET LEVEL 0
  SET CARTESIAN
 ! -- MODE commands -----------------------------------------------------
  MODE STATIONARY ONED
 !-- COORDINATES commands-----------------------------------------------
 COORDINATES CART
 !
 !  --  computational (CGRID) grid commands -------------------------------------
 !                                   xlenc=length of grid in meters
 !  mxc = number of mesh cells (one less than number of grid points)
 !CGRID REGular [xpc]  [ypc]  [alpc]  [xlenc]   [ylenc]  [mxc]  [myc] &
 !      [ CIRcle|SECtor[dir1] [dir2] ] [mdc] [flow] [fhigh] [msc]
  CGRID REGULAR   0      0       0      70       0.   70     0    &
        CIRCLE                          36    0.03    0.8     30
 Resolution in sigma-space: df/f =  0.1157
 ! -- READgrid ---- not used in 1-D mode ----------------------------------
 ! -- INPgrid commands  -------------------------------------------------------
 !INPgrid BOTtom REGular [xpinp] [ypinp] [alpinp] [mxinp] [myinp] [dxinp] [dyinp]
 !
  INPGRID BOTTOM REGULAR    0       0        0      70   0      1       1
 !READinp BOTtom [fac]  'fname1'  [idla]  [nhedf]  [FREe|FORmat[form]|UNFormatted]
  READ    BOTTOM   -1. '../gridfiles/CM-57-1zmeters_xmeters.grd'    1      0       FREE
 !-------------------------------------------------------------------------
 ! -- WIND [vel] [dir]
 WIND      25.1  0
 ! -- BOUnd SHAPespec
 BOUND SHAPE JONSWAP 3.3  PEAK DSPR POWER
 ! -- BOUndspec
 ! BOU SIDE W CCW CON FILE 'swanspec.txt' 1
 BOUN SIDE W CCW CONSTANT PAR   1.0728     4.7     0  2
 !-- BOUndnest1  - optional for boundary from parent run
 !-- BOUndnest2
 !-- BOUndnest3
 !-- INITial -- usest to specify initial values
 !
```

```
!---------------- P H Y S I C S ------------------------
!-- GEN1 [cf10] [cf20] [cf30] [cf40] [edm1pm] [cdrag] [umin] [cfpm]
!-- GEN2 [cf10] [cf20] [cf30] [cf40] [cf50] [cf60] [edm1pm] [cdrag] [umin] [cfpm]
    GEN3 KOMEN
!   whitecapping ( on by default)
!-- WCAPping KOMen [cds2] [stpm] [powst] [delta] [powk]
    WCAP KOM
!   quadruplet wave interactions
!-- QUADrupl [iquad] [lambda] [Cn14] [Csh1] [Csh2]
! -- BREaking CONstant [alpha] [gamma]
     BREAK    CON       1.      0.73
!-- FRICtion JONswap CONstant [cfjon]
    FRIC     JONSWAP CON       0.038
!-- TRIad [itriad] [trfac] [cutfr]   [a]  [b]  [urcrit] [urslim]
! TRIAD        1      0.65    2.5    0.95 -0.75  0.2       0.01
  TRIAD
!-- VEGEtation [height] [diamtr] [nstems] [drag]
!-- MUD [layer] [rhom] [viscm]
!- LIMiter [ursell] [qb] deactivates quadruplets with Ursell number exceeds ursell
!-- OBSTacle -- not in 1-D
!-- SETUP [supcor]
   SETUP    0
!
! ----------------- N U M E R I C S -----------------------------
!
!-- PROP  can use BBST or GSE instead of default
! -- NUMeric -- lots of options
!     NUM ACCUR npnts=100. stat 30
     NUMeric STOPC
!
! -------------------O U T P U T ------------------------------
!
!OUTPut OPTIons "comment' (TABLE [field]) (BLOck [ndec] [len]) (SPEC [ndec])
 OUTPUT OPTIONS '%' TABLE 16
 $BLOCK 9 1000 SPEC 8
!CURve 'sname' [xp1] [yp1] <[int]   [xp]   [yp] >
 CURVE 'curve' 0     0      70  70    0
!TABLe 'sname' < HEADer|NOHEADer|INDexed > 'fname' <output parameters> (output time)
 Table 'curve'   HEADER 'CM-57-1.dat' XP YP HSIGN TPS RTP TMM10 DIR &
 DSPR DEPTH SETUP
!QUANTITY XP hexp=99999
!
!-----------------------------------------------
 COMPUTE STATIONARY
------------------------------------------------------------------
                 COMPUTATIONAL PART OF SWAN
------------------------------------------------------------------
```

```
One-dimensional mode of SWAN is activated
Gridresolution       : MXC              71 MYC              1
                     : MCGRD            72
                     : MSC              31 MDC             36
                     : MTC               1
                     : NSTATC            0 ITERMX          50
Propagation flags    : ITFRE             1 IREFR            1
Source term flags    : IBOT              1 ISURF            1
                     : IWCAP             1 IWIND            3
                     : ITRIAD            1 IQUAD            2
                     : IVEG              0 ITURBV           0
                     : IMUD              0
Spatial step         : DX       0.1000E+01 DY      0.1000E+01
Spectral bin         : df/f     0.1157E+00 DDIR    0.1000E+02
Physical constants   : GRAV     0.9810E+01 RHO     0.1025E+04
Wind input           : WSPEED   0.2510E+02 DIR     0.0000E+00
Tail parameters      : E(f)     0.4000E+01 E(k)    0.2500E+01
                     : A(f)     0.5000E+01 A(k)    0.3000E+01
Accuracy parameters  : DREL     0.1000E-01 NPNTS   0.9950E+02
                     : DHABS    0.0000E+00 CURVAT  0.5000E-02
                     : GRWMX    0.1000E+00
Drying/flooding      : LEVEL    0.0000E+00 DEPMIN  0.1000E-01
The Cartesian convention for wind and wave directions is used
Scheme for geographic propagation is SORDUP
Scheme geogr. space  : PROPSC            2 ICMAX            7
Scheme spectral space: CSS      0.5000E+00 CDD     0.5000E+00
Current is off
Quadruplets          : IQUAD             2
                     : LAMBDA   0.2500E+00 CNL4    0.3000E+08
                     : CSH1     0.5500E+01 CSH2    0.8330E+00
                     : CSH3    -0.1250E+01
Maximum Ursell nr for Snl4 :    0.1000E+02
Triads               : ITRIAD            1 TRFAC   0.8000E+00
                     : CUTFR    0.2500E+01 URCRI   0.2000E+00
Minimum Ursell nr for Snl3 :    0.1000E-01
JONSWAP (‘73)        : GAMMA    0.3800E-01
Vegetation is off
Turbulence is off
Fluid mud is off
W-cap Komen (‘84)    : EMPCOF (CDS2):   0.2360E-04
W-cap Komen (‘84)    : APM (STPM)   :   0.3020E-02
W-cap Komen (‘84)    : POWST        :   0.2000E+01
W-cap Komen (‘84)    : DELTA        :   0.1000E+01
W-cap Komen (‘84)    : POWK         :   0.1000E+01
Wind drag is fit
Snyder/Komen wind input
Battjes&Janssen (‘78): ALPHA    0.1000E+01 GAMMA   0.7300E+00
Set-up               : SUPCOR   0.0000E+00
Diffraction is off
Janssen (‘89,‘90)    : ALPHA    0.1000E-01 KAPPA   0.4100E+00
Janssen (‘89,‘90)    : RHOA     0.1280E+01 RHOW    0.1025E+04

1st and 2nd gen. wind: CF10     0.1880E+03 CF20    0.5900E+00
                     : CF30     0.1200E+00 CF40    0.2500E+03
                     : CF50     0.2300E-02 CF60   -0.2230E+00
                     : CF70     0.0000E+00 CF80   -0.5600E+00
                     : RHOAW    0.1249E-02 EDMLPM  0.3600E-02
                     : CDRAG    0.1230E-02 UMIN    0.1000E+01
                     : LIM_PM   0.1300E+00

 ---------------------------------------------------------------
 First guess by 2nd generation model flags for first iteration:
 ITER       1 GRWMX      0.1000E+23 ALFA       0.0000E+00
 IWIND      2 IWCAP      0 IQUAD      0
 ITRIAD     1 IBOT       1 ISURF      1
 IVEG       0 ITURBV     0 IMUD       0
 ---------------------------------------------------------------
iteration    1; sweep 1
iteration    1; sweep 2
iteration    1; sweep 3
iteration    1; sweep 4
not possible to compute, first iteration

 ---------------------------------------------------------------
 Options given by user are activated for proceeding calculation:
 ITER       2 GRWMX      0.1000E+00 ALFA       0.0000E+00
 IWIND      3 IWCAP      1 IQUAD      2
 ITRIAD     1 IBOT       1 ISURF      1
 IVEG       0 ITURBV     0 IMUD       0
 ---------------------------------------------------------------
iteration    2; sweep 1
iteration    2; sweep 2
iteration    2; sweep 3
iteration    2; sweep 4
accuracy OK in  27.54 % of wet grid points ( 99.50 % required)

iteration    3; sweep 1
iteration    3; sweep 2
iteration    3; sweep 3
```

```
iteration    3; sweep 4
accuracy OK in   1.45 % of wet grid points ( 99.50 % required)

iteration    4; sweep 1
iteration    4; sweep 2
iteration    4; sweep 3
iteration    4; sweep 4
accuracy OK in  31.89 % of wet grid points ( 99.50 % required)

iteration    5; sweep 1
iteration    5; sweep 2
iteration    5; sweep 3
iteration    5; sweep 4
accuracy OK in  97.11 % of wet grid points ( 99.50 % required)

iteration    6; sweep 1
iteration    6; sweep 2
iteration    6; sweep 3
iteration    6; sweep 4
accuracy OK in  97.11 % of wet grid points ( 99.50 % required)

iteration    7; sweep 1
iteration    7; sweep 2
iteration    7; sweep 3
iteration    7; sweep 4
accuracy OK in  97.11 % of wet grid points ( 99.50 % required)

iteration    8; sweep 1
iteration    8; sweep 2
iteration    8; sweep 3
iteration    8; sweep 4
accuracy OK in  98.56 % of wet grid points ( 99.50 % required)

iteration    9; sweep 1
iteration    9; sweep 2
iteration    9; sweep 3
iteration    9; sweep 4
accuracy OK in  98.56 % of wet grid points ( 99.50 % required)

iteration   10; sweep 1
iteration   10; sweep 2
iteration   10; sweep 3
iteration   10; sweep 4
accuracy OK in  98.56 % of wet grid points ( 99.50 % required)

iteration   11; sweep 1
iteration   11; sweep 2
iteration   11; sweep 3
iteration   11; sweep 4
accuracy OK in  98.56 % of wet grid points ( 99.50 % required)

iteration   12; sweep 1
iteration   12; sweep 2
iteration   12; sweep 3
iteration   12; sweep 4
accuracy OK in 100.00 % of wet grid points ( 99.50 % required)


STOP
```

%
%
% Run:1 Table:curve SWAN version:41.20A
%
% Xp Yp Hsig TPsmoo RTpeak Tm_10 Dir Dspr Depth Setup
% [m] [m] [m] [sec] [sec] [sec] [degr] [degr] [m] [m]
%

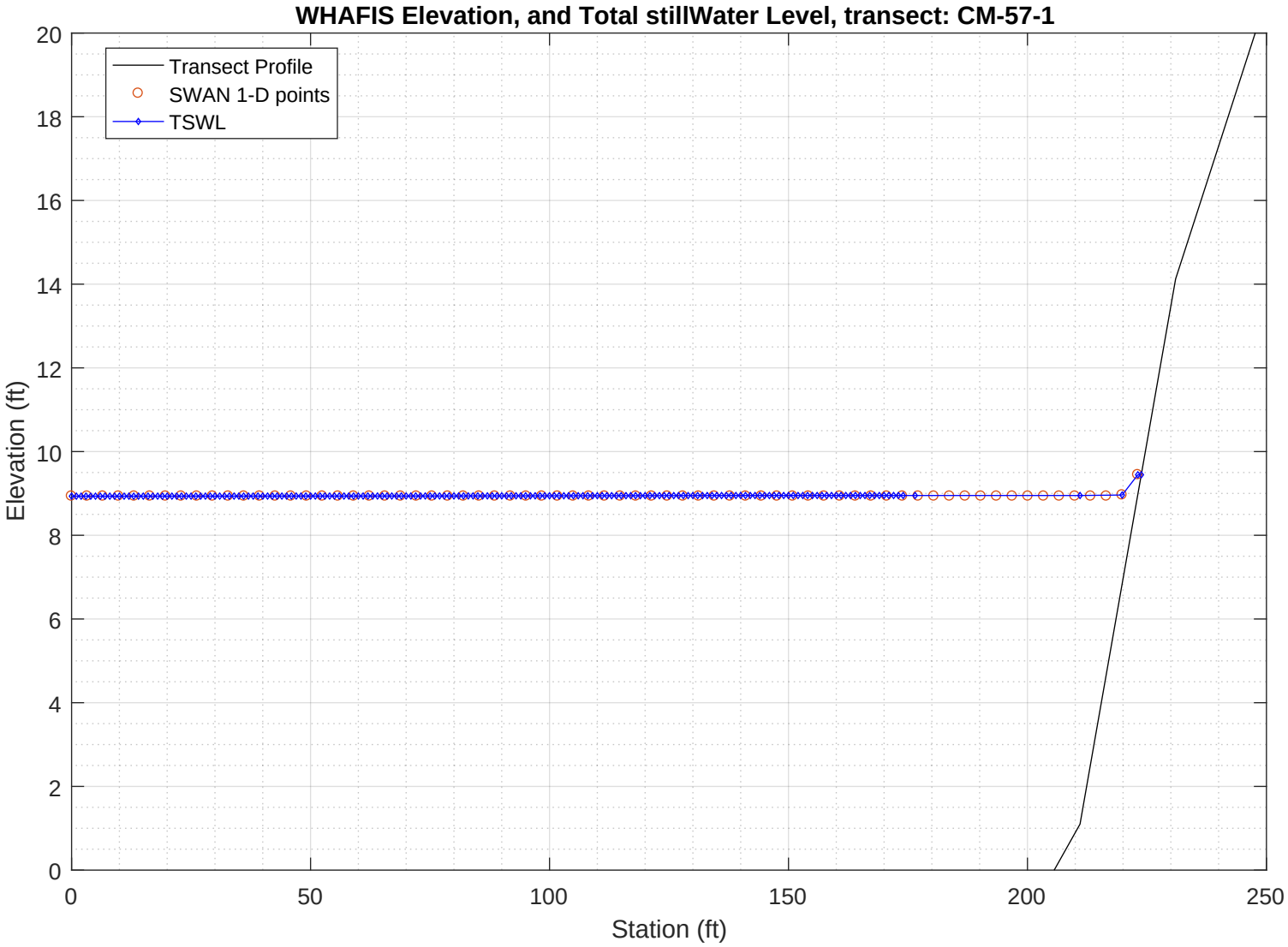
Xp [m]	Yp [m]	Hsig [m]	TPsmoo [sec]	RTpeak [sec]	Tm_10 [sec]	Dir [degr]	Dspr [degr]	Depth [m]	Setup [m]
0.	0.	1.07651	4.6270	4.6483	4.2395	0.000	31.5381	8.9300	0.000000
1.	0.	1.07578	4.6270	4.6483	4.2375	0.000	31.4486	8.8500	-0.000019
2.	0.	1.07497	4.6270	4.6483	4.2354	0.000	31.3613	8.7600	-0.000040
3.	0.	1.07425	4.6270	4.6483	4.2333	0.000	31.2750	8.6799	-0.000060
4.	0.	1.07342	4.6270	4.6483	4.2313	0.000	31.1905	8.5899	-0.000082
5.	0.	1.07261	4.6270	4.6483	4.2292	0.000	31.1155	8.4999	-0.000105
6.	0.	1.07189	4.6270	4.6483	4.2272	0.000	31.0409	8.4199	-0.000125
7.	0.	1.07106	4.6270	4.6483	4.2251	0.000	30.9636	8.3299	-0.000149
8.	0.	1.07025	4.6271	4.6483	4.2231	0.000	30.8886	8.2398	-0.000173
9.	0.	1.06952	4.6271	4.6483	4.2211	0.000	30.8128	8.1598	-0.000196
10.	0.	1.06872	4.6271	4.6483	4.2191	0.000	30.7359	8.0698	-0.000222
11.	0.	1.06800	4.6272	4.6483	4.2172	0.000	30.6577	7.9898	-0.000246
12.	0.	1.06719	4.6273	4.6483	4.2152	0.000	30.5750	7.8997	-0.000273
13.	0.	1.06639	4.6273	4.6483	4.2133	0.000	30.4940	7.8097	-0.000302
14.	0.	1.06569	4.6274	4.6483	4.2113	0.000	30.4122	7.7297	-0.000328
15.	0.	1.06489	4.6275	4.6483	4.2094	0.000	30.3258	7.6396	-0.000359
16.	0.	1.06412	4.6276	4.6483	4.2075	0.000	30.2403	7.5496	-0.000390
17.	0.	1.06343	4.6277	4.6483	4.2057	0.000	30.1541	7.4696	-0.000419
18.	0.	1.06267	4.6278	4.6483	4.2039	0.000	30.0667	7.3795	-0.000452
19.	0.	1.06200	4.6279	4.6483	4.2020	0.000	29.9778	7.2995	-0.000483
20.	0.	1.06123	4.6281	4.6483	4.2002	0.000	29.8841	7.2095	-0.000519
21.	0.	1.06053	4.6282	4.6483	4.1985	0.000	29.7989	7.1194	-0.000556
22.	0.	1.06024	4.6283	4.6483	4.1969	0.000	29.7426	7.0594	-0.000582
23.	0.	1.06038	4.6283	4.6483	4.1954	0.000	29.7103	7.0394	-0.000594
24.	0.	1.06058	4.6283	4.6483	4.1938	0.000	29.6859	7.0194	-0.000605
25.	0.	1.06077	4.6284	4.6483	4.1923	0.000	29.6604	6.9994	-0.000617
26.	0.	1.06089	4.6284	4.6483	4.1908	0.000	29.6344	6.9694	-0.000633
27.	0.	1.06111	4.6284	4.6483	4.1892	0.000	29.6121	6.9494	-0.000645
28.	0.	1.06134	4.6284	4.6483	4.1877	0.000	29.5910	6.9293	-0.000657
29.	0.	1.06157	4.6285	4.6483	4.1861	0.000	29.5702	6.9093	-0.000669
30.	0.	1.06180	4.6285	4.6483	4.1846	0.000	29.5495	6.8893	-0.000681
31.	0.	1.06204	4.6285	4.6483	4.1830	0.000	29.5290	6.8693	-0.000693
32.	0.	1.06226	4.6285	4.6483	4.1815	0.001	29.5054	6.8493	-0.000705
33.	0.	1.06241	4.6286	4.6483	4.1799	0.001	29.4806	6.8193	-0.000722
34.	0.	1.06265	4.6286	4.6483	4.1784	0.001	29.4590	6.7993	-0.000735
35.	0.	1.06289	4.6286	4.6483	4.1768	0.001	29.4385	6.7793	-0.000747
36.	0.	1.06315	4.6287	4.6483	4.1752	0.001	29.4183	6.7592	-0.000760
37.	0.	1.06340	4.6287	4.6483	4.1737	0.001	29.3982	6.7392	-0.000773
38.	0.	1.06365	4.6287	4.6483	4.1721	0.001	29.3781	6.7192	-0.000786
39.	0.	1.06391	4.6288	4.6483	4.1705	0.001	29.3581	6.6992	-0.000799
40.	0.	1.06415	4.6288	4.6483	4.1689	0.002	29.3343	6.6792	-0.000812
41.	0.	1.06431	4.6289	4.6483	4.1673	0.002	29.3093	6.6492	-0.000830
42.	0.	1.06438	4.6289	4.6483	4.1655	0.002	29.2570	6.6292	-0.000844
43.	0.	1.06320	4.6291	4.6483	4.1635	0.002	29.0756	6.5291	-0.000896
44.	0.	1.06015	4.6299	4.6483	4.1624	0.002	28.7770	6.2089	-0.001065
45.	0.	1.05701	4.6307	4.6483	4.1617	0.003	28.4169	5.8987	-0.001252
46.	0.	1.05402	4.6315	4.6483	4.1617	0.003	28.0249	5.5785	-0.001473
47.	0.	1.05132	4.6324	4.6483	4.1625	0.003	27.6025	5.2683	-0.001722
48.	0.	1.04901	4.6334	4.6483	4.1645	0.003	27.1549	4.9480	-0.002022
49.	0.	1.04732	4.6345	4.6483	4.1676	0.004	26.6983	4.6376	-0.002365
50.	0.	1.04636	4.6357	4.6483	4.1722	0.004	26.2354	4.3172	-0.002785
51.	0.	1.04634	4.6368	4.6483	4.1781	0.004	25.7923	4.0067	-0.003276
52.	0.	1.04764	4.6380	4.6483	4.1857	0.005	25.3383	3.6861	-0.003897
53.	0.	1.05493	4.6392	4.6483	4.1954	0.005	25.8992	3.3754	-0.004603
54.	0.	1.05116	4.6349	4.6483	4.1601	0.005	26.9724	4.4874	-0.002631
55.	0.	1.05093	4.6356	4.6483	4.1627	0.005	26.6419	4.2771	-0.002901
56.	0.	1.05063	4.6364	4.6483	4.1655	0.006	26.2560	4.0768	-0.003209
57.	0.	1.05024	4.6372	4.6483	4.1688	0.006	25.7491	3.8764	-0.003560
58.	0.	1.05038	4.6380	4.6483	4.1729	0.006	25.2321	3.6660	-0.003980
59.	0.	1.05110	4.6388	4.6483	4.1769	0.006	24.6987	3.4656	-0.004443

60.	0.	1.05262	4.6396	4.6483	4.1805	0.006	24.1354	3.2650	-0.004981
61.	0.	1.05544	4.6405	4.6483	4.1828	0.006	23.5571	3.0544	-0.005640
62.	0.	1.05948	4.6413	4.6483	4.1806	0.007	22.9607	2.8536	-0.006379
63.	0.	1.06517	4.6420	4.6483	4.1709	0.007	22.3210	2.6528	-0.007247
64.	0.	1.07174	4.6429	4.6483	4.1494	0.007	21.2941	2.4417	-0.008324
65.	0.	1.08828	4.6457	4.6483	4.1037	359.965	19.4181	1.9285	-0.011550
66.	0.	1.09912	4.6516	4.6483	3.9387	359.900	16.5937	1.2735	-0.016534
67.	0.	0.90228	4.6629	4.6483	3.7801	358.723	16.8584	0.6486	0.008621
68.	0.	0.22075	6.2983	6.4550	4.4359	359.420	24.0858	0.1460	0.155952
69.	0.	-9.00000	-9.0000	-9.0000	-9.0000	-999.000	-9.0000	-99.0000	-9.000000
70.	0.	-9.00000	-9.0000	-9.0000	-9.0000	-999.000	-9.0000	-99.0000	-9.000000

PART 3: WHAFIS

WHAFIS input: CM-57-1.dat
WHAFIS output: CM-57-1.out

PART 3 COMPLETE


WHAFIS Elevation, and Total stillWater Level, transect: CM-57-1
Transect Profile
SWAN 1-D points
TSWL
Elevation (ft)
Station (ft)
0
2
4
6
8
10
12
14
16
18
20
0
50
100
150
200
250

WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (WHAFIS VERSION 4.0G, 08_2007)
Executed on: Thu Apr 16 13:27:11 2020
Input file: C:\FEMA-TransectAnalysis\LOMR-TransectAnalysis-Portland\3_whafis\whafis4\CM-57-1.dat
Output file: C:\FEMA-TransectAnalysis\LOMR-TransectAnalysis-Portland\3_whafis\whafis4\CM-57-1.out

header

THIS IS A 100-YEAR CASE
THE FOLLOWING NON-DEFAULT WIND SPEEDS ARE BEING USED
WINDIF 56.14 WINDOF 56.14 WINDVH 60.00

PART1 INPUT

IE	0.000	-20.376	1.000	1.000	8.934	5.631	4.700	56.140	0.086	0.000
OF	1.000	-20.290	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
OF	2.000	-20.204	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
OF	3.000	-20.118	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
OF	4.000	-20.032	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
OF	5.000	-19.946	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
OF	6.000	-19.859	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
OF	7.000	-19.773	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	8.000	-19.687	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	9.000	-19.601	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	10.000	-19.514	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	11.000	-19.428	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	12.000	-19.342	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	13.000	-19.255	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	14.000	-19.169	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	15.000	-19.083	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	16.000	-18.997	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	17.000	-18.911	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	18.000	-18.824	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	19.000	-18.738	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
OF	20.000	-18.652	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	21.000	-18.566	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	22.000	-18.480	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	23.000	-18.393	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	24.000	-18.307	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	25.000	-18.221	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	26.000	-18.135	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	27.000	-18.048	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	28.000	-17.962	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	29.000	-17.876	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	30.000	-17.790	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	31.000	-17.703	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	32.000	-17.617	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	33.000	-17.531	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	34.000	-17.445	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	35.000	-17.359	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
OF	36.000	-17.272	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	37.000	-17.186	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	38.000	-17.100	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	39.000	-17.014	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	40.000	-16.928	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	41.000	-16.841	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	42.000	-16.755	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	43.000	-16.669	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	44.000	-16.583	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	45.000	-16.496	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	46.000	-16.410	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	47.000	-16.324	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	48.000	-16.238	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	49.000	-16.151	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
OF	50.000	-16.065	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	51.000	-15.979	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	52.000	-15.893	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	53.000	-15.807	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	54.000	-15.720	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	55.000	-15.634	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	56.000	-15.548	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	57.000	-15.462	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	58.000	-15.376	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	59.000	-15.289	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	60.000	-15.203	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	61.000	-15.117	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	62.000	-15.030	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	63.000	-14.944	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
OF	64.000	-14.858	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	65.000	-14.772	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	66.000	-14.686	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	67.000	-14.599	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	68.000	-14.513	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	69.000	-14.427	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	70.000	-14.341	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
OF	71.000	-14.255	0.000	8.939	0.000	0.000	0.000	0.000	0.056	0.000
OF	72.000	-14.230	0.000	8.939	0.000	0.000	0.000	0.000	0.023	0.000
OF	73.000	-14.209	0.000	8.939	0.000	0.000	0.000	0.000	0.022	0.000
OF	74.000	-14.187	0.000	8.939	0.000	0.000	0.000	0.000	0.022	0.000
OF	75.000	-14.166	0.000	8.940	0.000	0.000	0.000	0.000	0.021	0.000
OF	76.000	-14.145	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
OF	77.000	-14.123	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
OF	78.000	-14.102	0.000	8.940	0.000	0.000	0.000	0.000	0.021	0.000
OF	79.000	-14.081	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
OF	80.000	-14.059	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
OF	81.000	-14.038	0.000	8.941	0.000	0.000	0.000	0.000	0.021	0.000
OF	82.000	-14.017	0.000	8.941	0.000	0.000	0.000	0.000	0.021	0.000
OF	83.000	-13.996	0.000	8.941	0.000	0.000	0.000	0.000	0.022	0.000
OF	84.000	-13.974	0.000	8.941	0.000	0.000	0.000	0.000	0.022	0.000
OF	85.000	-13.953	0.000	8.941	0.000	0.000	0.000	0.000	0.021	0.000
OF	86.000	-13.932	0.000	8.941	0.000	0.000	0.000	0.000	0.022	0.000
OF	87.000	-13.910	0.000	8.942	0.000	0.000	0.000	0.000	0.022	0.000
OF	88.000	-13.889	0.000	8.942	0.000	0.000	0.000	0.000	0.021	0.000
OF	89.000	-13.868	0.000	8.942	0.000	0.000	0.000	0.000	0.022	0.000
OF	90.000	-13.846	0.000	8.942	0.000	0.000	0.000	0.000	0.022	0.000
OF	91.000	-13.825	0.000	8.942	0.000	0.000	0.000	0.000	0.021	0.000
OF	92.000	-13.804	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000

OF	93.000	-13.782	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
OF	94.000	-13.761	0.000	8.943	0.000	0.000	0.000	0.000	0.021	0.000
OF	95.000	-13.740	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
OF	96.000	-13.718	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
OF	97.000	-13.697	0.000	8.943	0.000	0.000	0.000	0.000	0.021	0.000
OF	98.000	-13.676	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
OF	99.000	-13.654	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
OF	100.000	-13.633	0.000	8.944	0.000	0.000	0.000	0.000	0.021	0.000
OF	101.000	-13.612	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
OF	102.000	-13.590	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
OF	103.000	-13.569	0.000	8.944	0.000	0.000	0.000	0.000	0.021	0.000
OF	104.000	-13.548	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
OF	105.000	-13.526	0.000	8.945	0.000	0.000	0.000	0.000	0.022	0.000
OF	106.000	-13.505	0.000	8.945	0.000	0.000	0.000	0.000	0.021	0.000
OF	107.000	-13.484	0.000	8.945	0.000	0.000	0.000	0.000	0.022	0.000
OF	108.000	-13.462	0.000	8.945	0.000	0.000	0.000	0.000	0.022	0.000
OF	109.000	-13.441	0.000	8.945	0.000	0.000	0.000	0.000	0.021	0.000
OF	110.000	-13.420	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
OF	111.000	-13.398	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
OF	112.000	-13.377	0.000	8.946	0.000	0.000	0.000	0.000	0.021	0.000
OF	113.000	-13.356	0.000	8.946	0.000	0.000	0.000	0.000	0.021	0.000
OF	114.000	-13.335	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
OF	115.000	-13.313	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
OF	116.000	-13.292	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
OF	117.000	-13.270	0.000	8.947	0.000	0.000	0.000	0.000	0.022	0.000
OF	118.000	-13.249	0.000	8.947	0.000	0.000	0.000	0.000	0.021	0.000
OF	119.000	-13.228	0.000	8.947	0.000	0.000	0.000	0.000	0.021	0.000
OF	120.000	-13.207	0.000	8.947	0.000	0.000	0.000	0.000	0.022	0.000
OF	121.000	-13.185	0.000	8.947	0.000	0.000	0.000	0.000	0.022	0.000
OF	122.000	-13.164	0.000	8.948	0.000	0.000	0.000	0.000	0.021	0.000
OF	123.000	-13.143	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
OF	124.000	-13.121	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
OF	125.000	-13.100	0.000	8.948	0.000	0.000	0.000	0.000	0.021	0.000
OF	126.000	-13.079	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
OF	127.000	-13.057	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
OF	128.000	-13.036	0.000	8.949	0.000	0.000	0.000	0.000	0.021	0.000
OF	129.000	-13.015	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
OF	130.000	-12.993	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
OF	131.000	-12.972	0.000	8.949	0.000	0.000	0.000	0.000	0.021	0.000
OF	132.000	-12.951	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
OF	133.000	-12.929	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
OF	134.000	-12.908	0.000	8.950	0.000	0.000	0.000	0.000	0.021	0.000
OF	135.000	-12.887	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
OF	136.000	-12.865	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
OF	137.000	-12.844	0.000	8.950	0.000	0.000	0.000	0.000	0.021	0.000
OF	138.000	-12.823	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
OF	139.000	-12.801	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
OF	140.000	-12.780	0.000	8.951	0.000	0.000	0.000	0.000	0.148	0.000
OF	141.000	-12.504	0.000	8.951	0.000	0.000	0.000	0.000	0.296	0.000
OF	142.000	-12.188	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	143.000	-11.874	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
OF	144.000	-11.560	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	145.000	-11.244	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	146.000	-10.930	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	147.000	-10.615	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	148.000	-10.301	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	149.000	-9.986	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	150.000	-9.671	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
OF	151.000	-9.357	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	152.000	-9.041	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	153.000	-8.727	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
OF	154.000	-8.412	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
OF	155.000	-8.098	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	156.000	-7.782	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	157.000	-7.468	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	158.000	-7.154	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	159.000	-6.838	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	160.000	-6.523	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	161.000	-6.209	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	162.000	-5.895	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	163.000	-5.579	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	164.000	-5.265	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
OF	165.000	-4.950	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	166.000	-4.635	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	167.000	-4.320	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	168.000	-4.006	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	169.000	-3.691	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	170.000	-3.376	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	171.000	-3.061	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	172.000	-2.747	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	173.000	-2.431	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
OF	174.000	-2.117	0.000	8.951	0.000	0.000	0.000	0.000	-0.996	0.000
OF	176.500	-5.919	0.000	8.951	0.000	0.000	0.000	0.000	0.087	0.000
IF	211.000	1.099	0.000	8.951	0.000	0.000	0.000	0.000	0.295	0.000
IF	219.800	6.840	0.000	8.962	0.000	0.000	0.000	0.000	0.651	0.000
IF	223.100	8.977	0.000	9.446	0.000	0.000	0.000	0.000	0.651	0.000
IF	223.800	9.446	0.000	9.446	0.000	0.000	0.000	0.000	0.670	0.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

	END STATION	END ELEVATION	FETCH LENGTH	SURGE ELEV 10-YEAR	SURGE ELEV 100-YEAR	INITIAL WAVE HEIGHT	INITIAL W. PERIOD		BOTTOM SLOPE	AVERAGE A-ZONES
IE	0.000	-20.376	1.000	1.000	8.934	5.631	4.700	56.140	0.086	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	1.000	-20.290	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	2.000	-20.204	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	3.000	-20.118	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	4.000	-20.032	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	5.000	-19.946	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	6.000	-19.859	0.000	8.934	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	7.000	-19.773	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	8.000	-19.687	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	9.000	-19.601	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	10.000	-19.514	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	11.000	-19.428	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	12.000	-19.342	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	13.000	-19.255	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	14.000	-19.169	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	15.000	-19.083	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	16.000	-18.997	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	17.000	-18.911	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	18.000	-18.824	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	19.000	-18.738	0.000	8.935	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	20.000	-18.652	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	21.000	-18.566	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	22.000	-18.480	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	23.000	-18.393	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	24.000	-18.307	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	25.000	-18.221	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	26.000	-18.135	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	27.000	-18.048	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	28.000	-17.962	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	29.000	-17.876	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	30.000	-17.790	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	31.000	-17.703	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	32.000	-17.617	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	33.000	-17.531	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	34.000	-17.445	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	35.000	-17.359	0.000	8.936	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	36.000	-17.272	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	37.000	-17.186	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	38.000	-17.100	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	39.000	-17.014	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	40.000	-16.928	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	41.000	-16.841	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	42.000	-16.755	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	43.000	-16.669	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	44.000	-16.583	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	45.000	-16.496	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	46.000	-16.410	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	47.000	-16.324	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	48.000	-16.238	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	49.000	-16.151	0.000	8.937	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	50.000	-16.065	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	51.000	-15.979	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	52.000	-15.893	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	53.000	-15.807	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	54.000	-15.720	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	55.000	-15.634	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	56.000	-15.548	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	57.000	-15.462	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	58.000	-15.376	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	59.000	-15.289	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	60.000	-15.203	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	61.000	-15.117	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	62.000	-15.030	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	63.000	-14.944	0.000	8.938	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	64.000	-14.858	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	65.000	-14.772	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	66.000	-14.686	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	67.000	-14.599	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	68.000	-14.513	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	69.000	-14.427	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	70.000	-14.341	0.000	8.939	0.000	0.000	0.000	0.000	0.086	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	71.000	-14.255	0.000	8.939	0.000	0.000	0.000	0.000	0.056	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	72.000	-14.230	0.000	8.939	0.000	0.000	0.000	0.000	0.023	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	73.000	-14.209	0.000	8.939	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	74.000	-14.187	0.000	8.939	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	75.000	-14.166	0.000	8.940	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	76.000	-14.145	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	77.000	-14.123	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	78.000	-14.102	0.000	8.940	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	79.000	-14.081	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	80.000	-14.059	0.000	8.940	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	81.000	-14.038	0.000	8.941	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	82.000	-14.017	0.000	8.941	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	83.000	-13.996	0.000	8.941	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	84.000	-13.974	0.000	8.941	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	85.000	-13.953	0.000	8.941	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	86.000	-13.932	0.000	8.941	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	87.000	-13.910	0.000	8.942	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	88.000	-13.889	0.000	8.942	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	89.000	-13.868	0.000	8.942	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	90.000	-13.846	0.000	8.942	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	91.000	-13.825	0.000	8.942	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	92.000	-13.804	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	93.000	-13.782	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	94.000	-13.761	0.000	8.943	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	95.000	-13.740	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	96.000	-13.718	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	97.000	-13.697	0.000	8.943	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	98.000	-13.676	0.000	8.943	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	99.000	-13.654	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	100.000	-13.633	0.000	8.944	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	101.000	-13.612	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	102.000	-13.590	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	103.000	-13.569	0.000	8.944	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	104.000	-13.548	0.000	8.944	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	105.000	-13.526	0.000	8.945	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	106.000	-13.505	0.000	8.945	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	107.000	-13.484	0.000	8.945	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	108.000	-13.462	0.000	8.945	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	109.000	-13.441	0.000	8.945	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	110.000	-13.420	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	111.000	-13.398	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	112.000	-13.377	0.000	8.946	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	113.000	-13.356	0.000	8.946	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	114.000	-13.335	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	115.000	-13.313	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	116.000	-13.292	0.000	8.946	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	117.000	-13.270	0.000	8.947	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	118.000	-13.249	0.000	8.947	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	119.000	-13.228	0.000	8.947	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	120.000	-13.207	0.000	8.947	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	121.000	-13.185	0.000	8.947	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	122.000	-13.164	0.000	8.948	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	123.000	-13.143	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	124.000	-13.121	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	125.000	-13.100	0.000	8.948	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	126.000	-13.079	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	127.000	-13.057	0.000	8.948	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	128.000	-13.036	0.000	8.949	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	129.000	-13.015	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	130.000	-12.993	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	131.000	-12.972	0.000	8.949	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	132.000	-12.951	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	133.000	-12.929	0.000	8.949	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	134.000	-12.908	0.000	8.950	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	135.000	-12.887	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	136.000	-12.865	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	137.000	-12.844	0.000	8.950	0.000	0.000	0.000	0.000	0.021	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	138.000	-12.823	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	139.000	-12.801	0.000	8.950	0.000	0.000	0.000	0.000	0.022	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	140.000	-12.780	0.000	8.951	0.000	0.000	0.000	0.000	0.148	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	141.000	-12.504	0.000	8.951	0.000	0.000	0.000	0.000	0.296	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	142.000	-12.188	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	143.000	-11.874	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	144.000	-11.560	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	145.000	-11.244	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	146.000	-10.930	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	147.000	-10.615	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	148.000	-10.301	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	149.000	-9.986	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	150.000	-9.671	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	151.000	-9.357	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	152.000	-9.041	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	153.000	-8.727	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	154.000	-8.412	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	155.000	-8.098	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	156.000	-7.782	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	157.000	-7.468	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	158.000	-7.154	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	159.000	-6.838	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	160.000	-6.523	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	161.000	-6.209	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	162.000	-5.895	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	163.000	-5.579	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	164.000	-5.265	0.000	8.951	0.000	0.000	0.000	0.000	0.314	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	165.000	-4.950	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	166.000	-4.635	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	167.000	-4.320	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	168.000	-4.006	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	169.000	-3.691	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	170.000	-3.376	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	171.000	-3.061	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	172.000	-2.747	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	173.000	-2.431	0.000	8.951	0.000	0.000	0.000	0.000	0.315	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	174.000	-2.117	0.000	8.951	0.000	0.000	0.000	0.000	-0.996	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
OF	176.500	-5.919	0.000	8.951	0.000	0.000	0.000	0.000	0.087	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	211.000	1.099	0.000	8.951	0.000	0.000	0.000	0.000	0.295	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	219.800	6.840	0.000	8.962	0.000	0.000	0.000	0.000	0.651	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	223.100	8.977	0.000	9.446	0.000	0.000	0.000	0.000	0.651	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR					SLOPE	A-ZONES
IF	223.800	9.446	0.000	9.446	0.000	0.000	0.000	0.000	0.670	0.000

----------END OF TRANSECT----------

NOTE:
SURGE ELEVATION INCLUDES CONTRIBUTIONS FROM ASTRONOMICAL AND STORM TIDES.

1

PART2: CONTROLLING WAVE HEIGHTS, SPECTRAL PEAK WAVE PERIOD, AND WAVE CREST ELEVATIONS

	LOCATION	CONTROLLING WAVE HEIGHT	SPECTRAL PEAK WAVE PERIOD	WAVE CREST ELEVATION
IE	0.00	5.63	4.70	12.88
OF	1.00	5.63	4.70	12.87
OF	2.00	5.63	4.70	12.87
OF	3.00	5.63	4.70	12.87
OF	4.00	5.62	4.70	12.87
OF	5.00	5.62	4.70	12.87
OF	6.00	5.62	4.70	12.87
OF	7.00	5.62	4.70	12.87
OF	8.00	5.62	4.70	12.87
OF	9.00	5.62	4.70	12.87
OF	10.00	5.62	4.70	12.87
OF	11.00	5.61	4.70	12.86
OF	12.00	5.61	4.70	12.86
OF	13.00	5.61	4.70	12.86
OF	14.00	5.61	4.70	12.86
OF	15.00	5.61	4.70	12.86
OF	16.00	5.61	4.70	12.86
OF	17.00	5.60	4.70	12.86
OF	18.00	5.60	4.70	12.86
OF	19.00	5.60	4.70	12.86
OF	20.00	5.60	4.70	12.86
OF	21.00	5.60	4.70	12.85
OF	22.00	5.60	4.70	12.85
OF	23.00	5.60	4.70	12.85
OF	24.00	5.59	4.70	12.85
OF	25.00	5.59	4.70	12.85
OF	26.00	5.59	4.70	12.85
OF	27.00	5.59	4.70	12.85
OF	28.00	5.59	4.70	12.85
OF	29.00	5.59	4.70	12.85
OF	30.00	5.58	4.70	12.85
OF	31.00	5.58	4.70	12.84
OF	32.00	5.58	4.70	12.84
OF	33.00	5.58	4.70	12.84
OF	34.00	5.58	4.70	12.84
OF	35.00	5.58	4.70	12.84
OF	36.00	5.58	4.70	12.84
OF	37.00	5.57	4.70	12.84
OF	38.00	5.57	4.70	12.84
OF	39.00	5.57	4.70	12.84
OF	40.00	5.57	4.70	12.84
OF	41.00	5.57	4.70	12.84
OF	42.00	5.57	4.70	12.83
OF	43.00	5.57	4.70	12.83
OF	44.00	5.56	4.70	12.83
OF	45.00	5.56	4.70	12.83
OF	46.00	5.56	4.70	12.83
OF	47.00	5.56	4.70	12.83
OF	48.00	5.56	4.70	12.83
OF	49.00	5.56	4.70	12.83
OF	50.00	5.56	4.70	12.83
OF	51.00	5.56	4.70	12.83
OF	52.00	5.55	4.70	12.83
OF	53.00	5.55	4.70	12.82
OF	54.00	5.55	4.70	12.82
OF	55.00	5.55	4.70	12.82
OF	56.00	5.55	4.70	12.82
OF	57.00	5.55	4.70	12.82
OF	58.00	5.55	4.70	12.82
OF	59.00	5.55	4.70	12.82
OF	60.00	5.54	4.70	12.82
OF	61.00	5.54	4.70	12.82
OF	62.00	5.54	4.70	12.82
OF	63.00	5.54	4.70	12.82
OF	64.00	5.54	4.70	12.82
OF	65.00	5.54	4.70	12.82
OF	66.00	5.54	4.70	12.82
OF	67.00	5.54	4.70	12.81
OF	68.00	5.54	4.70	12.81
OF	69.00	5.53	4.70	12.81
OF	70.00	5.53	4.70	12.81
OF	71.00	5.53	4.70	12.81
OF	72.00	5.53	4.70	12.81
OF	73.00	5.53	4.70	12.81
OF	74.00	5.53	4.70	12.81
OF	75.00	5.53	4.70	12.81
OF	76.00	5.53	4.70	12.81

OF	77.00	5.53	4.70	12.81
OF	78.00	5.53	4.70	12.81
OF	79.00	5.53	4.70	12.81
OF	80.00	5.53	4.70	12.81
OF	81.00	5.53	4.70	12.81
OF	82.00	5.53	4.70	12.81
OF	83.00	5.53	4.70	12.81
OF	84.00	5.53	4.70	12.81
OF	85.00	5.53	4.70	12.81
OF	86.00	5.53	4.70	12.81
OF	87.00	5.53	4.70	12.81
OF	88.00	5.53	4.70	12.81
OF	89.00	5.53	4.70	12.81
OF	90.00	5.53	4.70	12.81
OF	91.00	5.53	4.70	12.81
OF	92.00	5.53	4.70	12.81
OF	93.00	5.53	4.70	12.81
OF	94.00	5.53	4.70	12.81
OF	95.00	5.53	4.70	12.81
OF	96.00	5.53	4.70	12.81
OF	97.00	5.53	4.70	12.81
OF	98.00	5.53	4.70	12.81
OF	99.00	5.53	4.70	12.82
OF	100.00	5.53	4.70	12.82
OF	101.00	5.53	4.70	12.82
OF	102.00	5.53	4.70	12.82
OF	103.00	5.53	4.70	12.82
OF	104.00	5.53	4.70	12.82
OF	105.00	5.53	4.70	12.82
OF	106.00	5.53	4.70	12.82
OF	107.00	5.53	4.70	12.82
OF	108.00	5.53	4.70	12.82
OF	109.00	5.53	4.70	12.82
OF	110.00	5.53	4.70	12.82
OF	111.00	5.53	4.70	12.82
OF	112.00	5.53	4.70	12.82
OF	113.00	5.53	4.70	12.82
OF	114.00	5.53	4.70	12.82
OF	115.00	5.53	4.70	12.82
OF	116.00	5.53	4.70	12.82
OF	117.00	5.53	4.70	12.82
OF	118.00	5.53	4.70	12.82
OF	119.00	5.53	4.70	12.82
OF	120.00	5.53	4.70	12.82
OF	121.00	5.53	4.70	12.82
OF	122.00	5.53	4.70	12.82
OF	123.00	5.53	4.70	12.82
OF	124.00	5.53	4.70	12.82
OF	125.00	5.53	4.71	12.82
OF	126.00	5.53	4.71	12.82
OF	127.00	5.53	4.71	12.82
OF	128.00	5.53	4.71	12.82
OF	129.00	5.53	4.71	12.82
OF	130.00	5.53	4.71	12.82
OF	131.00	5.53	4.71	12.82
OF	132.00	5.53	4.71	12.82
OF	133.00	5.53	4.71	12.82
OF	134.00	5.53	4.71	12.82
OF	135.00	5.53	4.71	12.82
OF	136.00	5.53	4.71	12.82
OF	137.00	5.53	4.71	12.82
OF	138.00	5.53	4.71	12.82
OF	139.00	5.53	4.71	12.82
OF	140.00	5.53	4.71	12.82
OF	141.00	5.53	4.71	12.82
OF	142.00	5.52	4.71	12.82
OF	143.00	5.52	4.71	12.82
OF	144.00	5.52	4.71	12.81
OF	145.00	5.52	4.71	12.81
OF	146.00	5.52	4.71	12.81
OF	147.00	5.52	4.71	12.81
OF	148.00	5.52	4.71	12.81
OF	149.00	5.52	4.71	12.81
OF	150.00	5.52	4.71	12.81
OF	151.00	5.52	4.71	12.81
OF	152.00	5.52	4.71	12.81
OF	153.00	5.52	4.71	12.82
OF	154.00	5.52	4.71	12.82
OF	155.00	5.53	4.71	12.82
OF	156.00	5.53	4.71	12.82
OF	157.00	5.54	4.71	12.83
OF	158.00	5.54	4.71	12.83
OF	159.00	5.55	4.71	12.83
OF	160.00	5.55	4.71	12.84
OF	161.00	5.56	4.71	12.84
OF	162.00	5.57	4.71	12.85
OF	163.00	5.58	4.71	12.86
OF	164.00	5.59	4.71	12.86
OF	165.00	5.60	4.71	12.87
OF	166.00	5.61	4.71	12.88
OF	167.00	5.63	4.71	12.89
OF	168.00	5.64	4.71	12.90
OF	169.00	5.66	4.71	12.91
OF	170.00	5.68	4.71	12.92
OF	171.00	5.70	4.71	12.94
OF	172.00	5.72	4.71	12.95
OF	173.00	5.74	4.71	12.97
OF	174.00	5.76	4.71	12.98
OF	176.50	5.57	4.71	12.85
IF	211.00	5.50	4.71	12.80
IF	219.80	1.61	4.71	10.09
IF	223.10	0.36	4.71	9.70

IF 223.80 0.01 4.71 9.45

PART3 LOCATION OF AREAS ABOVE 100-YEAR SURGE

NO AREAS ABOVE 100-YEAR SURGE IN THIS TRANSECT

PART4 LOCATION OF SURGE CHANGES

STATION	10-YEAR SURGE	100-YEAR SURGE
7.00	1.00	8.94
20.00	1.00	8.94
36.00	1.00	8.94
50.00	1.00	8.94
64.00	1.00	8.94
75.00	1.00	8.94
81.00	1.00	8.94
87.00	1.00	8.94
92.00	1.00	8.94
99.00	1.00	8.94
105.00	1.00	8.94
110.00	1.00	8.95
117.00	1.00	8.95
122.00	1.00	8.95
128.00	1.00	8.95
134.00	1.00	8.95
140.00	1.00	8.95
219.80	1.00	8.96
223.10	1.00	9.45

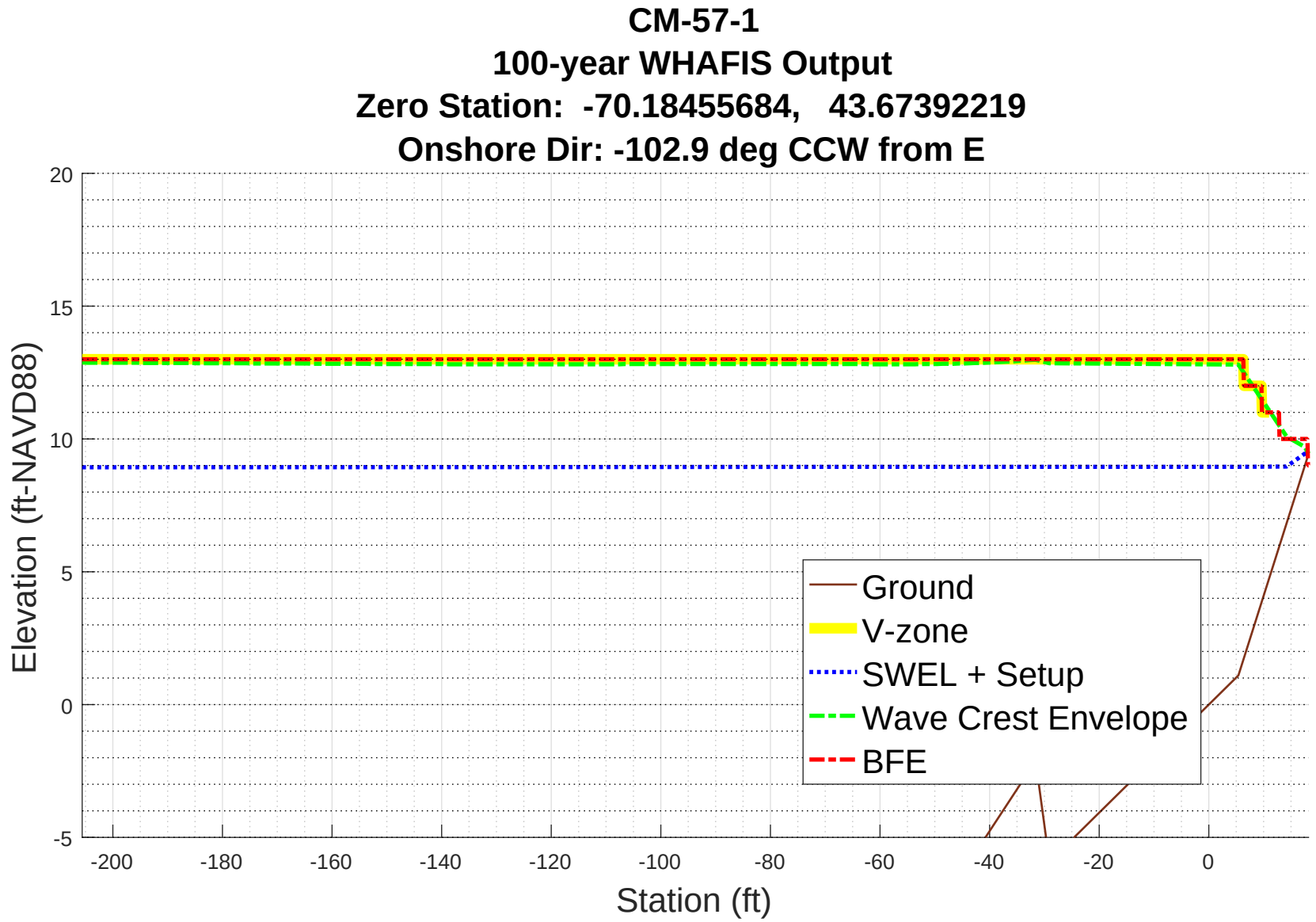
PART5 LOCATION OF V ZONES

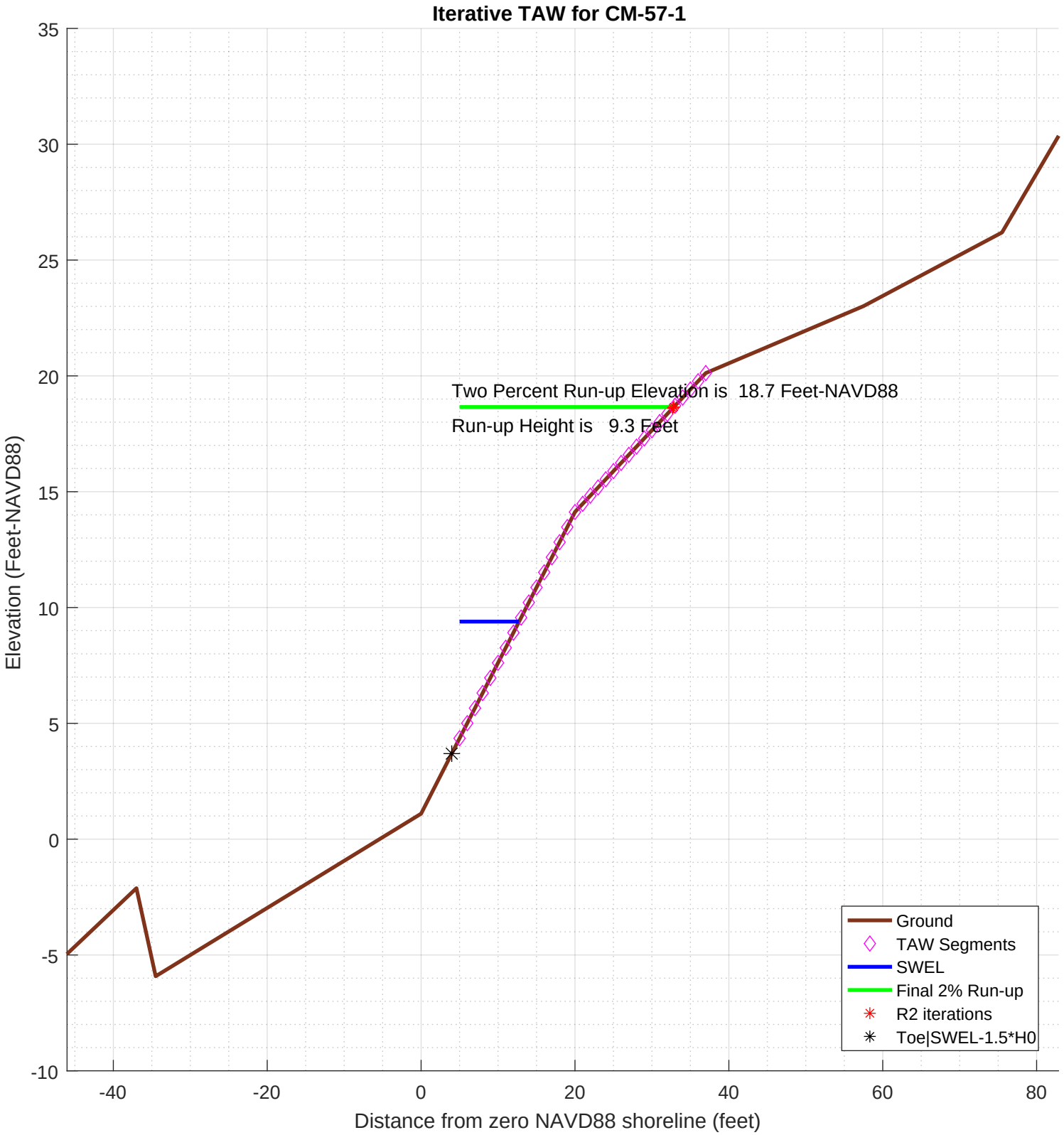
STATION OF GUTTER	LOCATION OF ZONE
216.65	WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF
0.00	12.88	V22 EL=13	120
6.00	12.87	V22 EL=13	120
7.00	12.87	V22 EL=13	120
19.00	12.86	V22 EL=13	120
20.00	12.86	V22 EL=13	120
35.00	12.84	V22 EL=13	120
36.00	12.84	V22 EL=13	120
49.00	12.83	V22 EL=13	120
50.00	12.83	V22 EL=13	120
63.00	12.82	V22 EL=13	120
64.00	12.82	V22 EL=13	120
74.00	12.81	V22 EL=13	120
75.00	12.81	V22 EL=13	120
80.00	12.81	V22 EL=13	120
81.00	12.81	V22 EL=13	120
86.00	12.81	V22 EL=13	120
87.00	12.81	V22 EL=13	120
91.00	12.81	V22 EL=13	120
92.00	12.81	V22 EL=13	120
98.00	12.81	V22 EL=13	120
99.00	12.82	V22 EL=13	120
104.00	12.82	V22 EL=13	120
105.00	12.82	V22 EL=13	120
109.00	12.82	V22 EL=13	120
110.00	12.82	V22 EL=13	120
116.00	12.82	V22 EL=13	120
117.00	12.82	V22 EL=13	120
121.00	12.82	V22 EL=13	120
122.00	12.82	V22 EL=13	120
127.00	12.82	V22 EL=13	120
128.00	12.82	V22 EL=13	120
133.00	12.82	V22 EL=13	120
134.00	12.82	V22 EL=13	120
139.00	12.82	V22 EL=13	120
140.00	12.82	V22 EL=13	120
211.00	12.80	V22 EL=13	120
211.98	12.50		

```
                                                          V22  EL=12     120
                                215.22          11.50
                                                          V22  EL=11     120
                                216.65          11.06
                                                          A18  EL=11      90
                                218.46          10.50
                                                          A18  EL=10      90
                                219.80          10.09
                                                          A18  EL=10      90
                                223.10           9.70
                                                          A18  EL=10      90
                                223.66           9.50
                                                          A18  EL= 9      90
                                223.80           9.45
                                     ZONE TERMINATED AT END OF TRANSECT
                                     PART 7   POSTSCRIPT NOTES
                           PS#  1   START(404524.3377,4836399.8865)
                           PS#  2   END(404506.0031,4836320.1278)
-1.000000e+00
```


CM-57-1
100-year WHAFIS Output
Zero Station: -70.18455684, 43.67392219
Onshore Dir: -102.9 deg CCW from E
Elevation (ft-NAVD88)
Station (ft)
20
15
10
5
0
-5
-200
-180
-160
-140
-120
-100
-80
-60
-40
-20
0
Ground
V-zone
SWEL + Setup
Wave Crest Envelope
BFE


Iterative TAW for CM-57-1
Two Percent Run-up Elevation is 18.7 Feet-NAVD88
Run-up Height is 9.3 Feet
Elevation (Feet-NAVD88)
Distance from zero NAVD88 shoreline (feet)
35
30
25
20
15
10
5
0
-5
-10
-40
-20
0
20
40
60
80
Ground
TAW Segments
SWEL
Final 2% Run-up
R2 iterations
Toe|SWEL-1.5*H0

```
diary on         % begin recording

% FEMA appeal for The Town of Harpswell, Cumberland county, Maine
% TRANSECT ID: CM-57-1
% calculation by SJH, Ransom Consulting, Inc. 16-Apr-2020
% 100-year wave runup using TAW methodology
% including berm and weighted average with foreshore if necessary
%
% chk nld 20200220
%
% This script assumes that the incident wave conditions provided
% as input in the configuration section below are the
% appropriate values located at the end of the foreshore
% or toe of the slope on which the run-up is being calculated
% the script does not attempt to apply a depth limit or any other
% transformation to the incident wave conditions other than
% conversion of the peak wave period to the spectral mean wave
% as recommended in the references below
%
% references:
%
% Van der Meer, J.W., 2002. Technical Report Wave Run-up and
% Wave Overtopping at Dikes. TAW Technical Advisory Committee on
% Flood Defence, The Netherlands.
%
% FEMA. 2007,  Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update
%
%
%

%-----------------------------------------------------------------------
% CONFIG
%-----------------------------------------------------------------------
fname='inpfiles/CM-57-1sta_ele_include.csv';   % file with station, elevation, include
                                    % third colunm is 0 for excluded points
imgname='logfiles/CM-57-1-runup';
SWEL=8.9341;  % 100-yr still water level including wave setup.
H0=3.4921;    % significant wave height at toe of structure
Tp=4.6289;    % peak period, 1/fma,
T0=Tp/1.1;

gamma_berm=1;   % this may get changed automatically below
gamma_rough=0.8;
gamma_beta=1;
gamma_perm=1;

setupAtToe=-0.002769;
maxSetup=0.51165;   % only used in case of berm/shallow foreshore weighted average

plotTitle='Iterative TAW for CM-57-1'

plotTitle =

Iterative TAW for CM-57-1



% END CONFIG
%------------------------------

SWEL=SWEL+setupAtToe

SWEL =

                  8.931331

SWEL_fore=SWEL+maxSetup

SWEL_fore =

                  9.442981



% FIND WAVELENGTH USING DEEPWATER DISPERSION RELATION
% using English units
L0=32.15/(2*pi)*T0^2

L0 =

          90.6089996880873


% Find Hb (Munk, 1949)
%Hb=H0/(3.3*(H0/L0)^(1/3))
%Db=-Hb/.78+SWEL;  % depth at breaking

% The toe elevation here is only used to determine the average
% structure slope, it is not used to depth limit the wave height.
% Any depth limiting or other modification of the wave height
```

```
% to make it consitent with TAW guidance should be performed
% prior to the input of the significant wave height given above.
Ztoe=SWEL-1.5*H0

Ztoe =

                  3.693181


% read the transect
[sta,dep,inc] = textread(fname,'%n%n%n%*[^\n]','delimiter',',','headerlines',0);

% remove unselected points
k=find(inc==0);
sta(k)=[];
dep(k)=[];

sta_org=sta;  % used for plotting purposes
dep_org=dep;


% initial guess at maximum run-up elevation to estimate slope
Z2=SWEL+1.5*H0

Z2 =

                 14.169481


% determine station at the max runup and -1.5*H0 (i.e. the toe)
top_sta=-999;
toe_sta=-999;
for kk=1:length(sta)-1
    if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1)))    % here is the intersection of z2 with profile
       top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
    end
    if  ((Ztoe > dep(kk)) & (Ztoe <= dep(kk+1)))    % here is the intersection of Ztoe with profile
       toe_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Ztoe)
    end
end

toe_sta =

          3.98328281478888


top_sta =

          20.1288737963701

% check to make sure we got them, if not extend the end slopes outward
S=diff(dep)./diff(sta);
if toe_sta==-999
   dy=dep(1)-Ztoe;
   toe_sta=sta(1)-dy/S(1)
end
if top_sta==-999
   dy=Z2-dep(end);
   top_sta=sta(end)+dy/S(end)
end

% just so the reader can tell the values aren't -999 anymore
top_sta

top_sta =

          20.1288737963701

toe_sta

toe_sta =

          3.98328281478888




% check for case where the toe of slope is below SWL-1.5*H0
% in this case interpolate setup from the setupAtToe(really setup as first station), and the max setup
% also un-include points seaward of SWL-1.5*H0
if Ztoe > dep(1)
   dd=SWEL_fore-dep;
   k=find(dd<0,1); % k is index of first land point
   staAtSWL=interp1(dep(k-1:k),sta(k-1:k),SWEL_fore);
   dsta=staAtSWL-sta(1);
   dsetup=maxSetup-setupAtToe;
   dsetdsta=dsetup/dsta;
   setup=setupAtToe+dsetdsta*(toe_sta-sta(1));
   sprintf('-!!- Location of SWEL-1.5*H0 is %4.1f ft landward of toe of slope',dsta)
   sprintf('-!!- Setup is interpolated between setup at toe of slope and max setup')
```

```
   sprintf('-!!-       setup is adjusted to %4.2f feet',setup)
   SWEL=SWEL-setupAtToe+setup;
   sprintf('-!!-       SWEL is adjusted to %4.2f feet',SWEL)
   k=find(dep < SWEL-1.5*H0)
   sta(k)=[];
   dep(k)=[];
else
   sprintf('-!!- The User has selected a starting point that is %4.2f feet above the elevation of SWEL-1.5H0\n',dep(1
   sprintf('-!!- This may be reasonable for some cases.  However the user may want to consider:\n')
   sprintf('-!!-   1) Selecting a starting point that is at or below %4.2f feet elevation, or\n', Ztoe)
   sprintf('-!!-   2) Reducing the incident wave height to a depth limited condition.\n')
end

ans =

-!!- Location of SWEL-1.5*H0 is 85.8 ft landward of toe of slope


ans =

-!!- Setup is interpolated between setup at toe of slope and max setup


ans =

-!!-       setup is adjusted to 0.46 feet


ans =

-!!-       SWEL is adjusted to 9.39 feet


k =

     1
     2
     3
     4
     5
     6
     7
     8
     9
    10
    11
    12
    13
    14
    15
    16
    17
    18
    19
    20
    21
    22
    23
    24
    25
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    27
    28
    29
    30
    31
    32
    33
    34
    35
    36
    37
    38
    39
    40
    41
    42
    43
    44
    45
    46
    47
    48
    49
    50
    51
    52
    53
    54
    55
```

```
% now iterate converge on a runup elevation
tol=0.01;  % convergence criteria
R2del=999;
R2_new=3*H0; %initial guess
R2=R2_new;
iter=0;
R2_all=[];
topStaAll=[];
Berm_Segs=[];
TAW_ALWAYS_VALID=1;
while(abs(R2del) > tol && iter <= 25)
    iter=iter+1;
    sprintf ('!----------------- STARTING ITERATION %d -----------------!',iter)
    % elevation of toe of slope
    Ztoe
    % station of toe slope (relative to 0-NAVD88 shoreline
    toe_sta
    % station of top of slope/extent of 2% run-up
    top_sta
    % elevation of top of slope/extent of 2% run-up
    Z2
    % incident significant wave height
    H0
    % incident spectral peak wave period
    Tp
    % incident spectral mean wave period
    T0

    R2=R2_new
    Z2=R2+SWEL
    % determine slope for this iteration
    top_sta=-999;
    for kk=1:length(sta)-1
       if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1)))    % here is the intersection of z2 with profile
          top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
          break;
       end
    end
    if top_sta==-999
       dy=Z2-dep(end);
       top_sta=sta(end)+dy/S(end)
    end

    % get the length of the slope (not accounting for berm)
    Lslope=top_sta-toe_sta

    % loop over profile segments to determine berm factor
    % re-calculate influence of depth of berm based on this run-up elevation
    % check for berm, berm width, berm height
    berm_width=0;
    rdh_sum=0;
    Berm_Segs=[];
    Berm_Heights=[];
    for kk=1:length(sta)-1
       ddep=dep(kk+1)-dep(kk);
       dsta=sta(kk+1)-sta(kk);
       s=ddep/dsta;
       if  (s < 1/15)     % count it as a berm if slope is flatter than 1:15 (see TAW manual)
          sprintf ('Berm Factor Calculation: Iteration %d, Profile Segment: %d',iter,kk)
          berm_width=berm_width+dsta;   % tally the width of all berm segments
          % compute the rdh for this segment and weight it by the segment length
          dh=SWEL-(dep(kk)+dep(kk+1))/2
          if  dh < 0
```

```
          chi=R2;
      else
          chi=2* H0;
      end
      if (dh <= R2 & dh >=-2*H0)
         rdh=(0.5-0.5*cos(3.14159*dh/chi)) ;
      else
         rdh=1;
      end
      rdh_sum=rdh_sum + rdh * dsta
      Berm_Segs=[Berm_Segs, kk];
      Berm_Heights=[Berm_Heights, (dep(kk)+dep(kk+1))/2];
   end
   if dep(kk) >= Z2  % jump out of loop if we reached limit of run-up for this iteration
      break
   end
end
sprintf ('!------- End Berm Factor Calculation, Iter: %d ---------!',iter)
berm_width
rB=berm_width/Lslope
if (berm_width > 0)
   rdh_mean=rdh_sum/berm_width
else
   rdh_mean=1
end
gamma_berm=1- rB * (1-rdh_mean)
if gamma_berm > 1
   gamma_berm=1
end
if gamma_berm < 0.6
   gamma_berm =0.6
end
% Iribarren number
slope=(Z2-Ztoe)/(Lslope-berm_width)
Irb=(slope/(sqrt(H0/L0)))
% runup height
gamma_berm
gamma_perm
gamma_beta
gamma_rough
gamma=gamma_berm*gamma_perm*gamma_beta*gamma_rough
% check validity
TAW_VALID=1;
if (Irb*gamma_berm < 0.5 | Irb*gamma_berm > 10 )
   sprintf('!!! - - Iribaren number: %6.2f is outside the valid range (0.5-10), TAW NOT VALID - - !!!\n', Irb*gam
   TAW_VALID=0;
else
   sprintf('!!! - - Iribaren number: %6.2f is in the valid range (0.5-10), TAW RECOMMENDED - - !!!\n', Irb*gamma_
end
islope=1/slope;
if (slope < 1/8 | slope > 1)
   sprintf('!!! - - slope: 1:%3.1f V:H is outside the valid range (1:8 - 1:1), TAW NOT VALID - - !!!\n', islope)
   TAW_VALID=0;
else
   sprintf('!!! - - slope: 1:%3.1f V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!\n', islope)
end
if TAW_VALID == 0
   TAW_ALWAYS_VALID=0;
end

if (Irb*gamma_berm < 1.8)
   R2_new=gamma*H0*1.77*Irb
else
   R2_new=gamma*H0*(4.3-(1.6/sqrt(Irb)))
end
% check to see if we need to evaluate a shallow foreshore
if berm_width > 0.25 * L0;
   disp ('!   Berm_width is greater than 1/4 wave length')
   disp ('!   Runup will be weighted average with foreshore calculation assuming depth limited wave height on ber
   % do the foreshore calculation
   fore_H0=0.78*(SWEL_fore-min(Berm_Heights))
   % get upper slope
   fore_toe_sta=-999;
   fore_toe_dep=-999;
   for kk=length(dep)-1:-1:1
      ddep=dep(kk+1)-dep(kk);
      dsta=sta(kk+1)-sta(kk);
      s=ddep/dsta;
      if s < 1/15
         break
      end
      fore_toe_sta=sta(kk);
      fore_toe_dep=dep(kk);
      upper_slope=(Z2-fore_toe_dep)/(top_sta-fore_toe_sta)
   end
   fore_Irb=upper_slope/(sqrt(fore_H0/L0));
   fore_gamma=gamma_perm*gamma_beta*gamma_rough;
   if (fore_Irb < 1.8)
      fore_R2=fore_gamma*fore_H0*1.77*fore_Irb;
   else
```

```
            fore_R2=fore_gamma*fore_H0*(4.3-(1.6/sqrt(fore_Irb)));
         end
         if berm_width >= L0
            R2_new=fore_R2
            disp ('berm is wider than one wavelength, use full shallow foreshore solution');
         else
            w2=(berm_width-0.25*L0)/(0.75*L0)
            w1=1-w2
            R2_new=w2*fore_R2 + w1*R2_new
         end
      end % end berm width check
      % convergence criterion
      R2del=abs(R2-R2_new)
      R2_all(iter)=R2_new;
      % get the new top station (for plot purposes)
      Z2=R2_new+SWEL
      top_sta=-999;
      for kk=1:length(sta)-1
         if ((Z2 > dep(kk)) & (Z2 <= dep(kk+1)))    % here is the intersection of z2 with profile
            top_sta=interp1(dep(kk:kk+1),sta(kk:kk+1),Z2)
            break;
         end
      end
      if top_sta==-999
         dy=Z2-dep(end);
         top_sta=sta(end)+dy/S(end);
      end
      topStaAll(iter)=top_sta;
end
ans =
!----------------- STARTING ITERATION 1 -----------------!
Ztoe =
                    3.693181
toe_sta =
          3.98328281478888
top_sta =
          20.1288737963701
Z2 =
                  14.169481
H0 =
                     3.4921
Tp =
                     4.6289
T0 =
          4.20809090909091
R2 =
                    10.4763
Z2 =
          19.8691232594291
top_sta =
          36.2849262003111
Lslope =
          32.3016433855222
ans =
!------- End Berm Factor Calculation, Iter: 1 ---------!
berm_width =
     0
rB =
     0
rdh_mean =
     1
gamma_berm =
     1
slope =
         0.500777686954445
Irb =
          2.55086398387982
gamma_berm =
     1
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
                         0.8
gamma =
                         0.8
ans =
!!! - - Iribaren number:   2.55 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:2.0 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
          9.21414563601113
R2del =
          1.26215436398887
Z2 =
          18.6069688954403
top_sta =
           32.707256490291
ans =
```

```
!----------------- STARTING ITERATION 2 -----------------!
Ztoe =
                3.693181
toe_sta =
          3.98328281478888
top_sta =
           32.707256490291
Z2 =
          18.6069688954403
H0 =
                   3.4921
Tp =
                   4.6289
T0 =
          4.20809090909091
R2 =
          9.21414563601113
Z2 =
          18.6069688954403
top_sta =
           32.707256490291
Lslope =
          28.7239736755021
ans =
!------- End Berm Factor Calculation, Iter: 2 ---------!
berm_width =
     0
rB =
     0
rdh_mean =
     1
gamma_berm =
     1
slope =
         0.519210470804736
Irb =
            2.6447569940343
gamma_berm =
     1
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
                       0.8
gamma =
                       0.8
ans =
!!! - - Iribaren number:   2.64 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:1.9 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
          9.26427328867568
R2del =
        0.0501276526645462
Z2 =
          18.6570965481048
top_sta =
          32.8493469093386
ans =
!----------------- STARTING ITERATION 3 -----------------!
Ztoe =
                3.693181
toe_sta =
          3.98328281478888
top_sta =
          32.8493469093386
Z2 =
          18.6570965481048
H0 =
                   3.4921
Tp =
                   4.6289
T0 =
          4.20809090909091
R2 =
          9.26427328867568
Z2 =
          18.6570965481048
top_sta =
          32.8493469093386
Lslope =
          28.8660640945497
ans =
!------- End Berm Factor Calculation, Iter: 3 ---------!
berm_width =
     0
rB =
     0
rdh_mean =
```

```
     1
gamma_berm =
     1
slope =
        0.518391267305827
Irb =
         2.64058413099492
gamma_berm =
     1
gamma_perm =
     1
gamma_beta =
     1
gamma_rough =
                       0.8
gamma =
                       0.8
ans =
!!! - - Iribaren number:   2.64 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!
ans =
!!! - - slope: 1:1.9 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!
R2_new =
         9.26210240573921
R2del =
       0.00217088293646839
Z2 =
         18.6549256651684
top_sta =
         32.8431933862879
% final 2% runup elevation
Z2=R2_new+SWEL
Z2 =
         18.6549256651684
diary off
-1.000000e+00
```

_____
PART 5: RUNUP2

for transect: CM-57-1

Station locations shifted by: -5.40 feet from their
original location to set the shoreline to
elevation 0 for RUNUP2 input

_____RUNUP2 INPUT CONVERSIONS_____
for transect: CM-57-1

Incident significant wave height: 3.52 feet

Peak wave period: 4.70 seconds

Mean wave height: 2.20 feet

Local Depth below SWEL: 29.31 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 = 29.31
Period, T = 4.00
Waveheight, H = 2.20
Deep water wavelength, L0 (ft)
L0 = g*T*T/twopi
L0 = 32.17*4.00*4.00/6.28 = 81.73
Deep water wave celerity, C0 (ft/s)
C0 = L0/T
C0 = 81.73/4.00 = 20.46
Angular frequency, sigma (rad/s)
sigma = twopi/T
sigma = 6.28/4.00 = 1.57
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
y = sigma.*sigma.*D./g
y = 1.57*1.57*29.31/32.17 = 2.25
C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
C1H = 20.06
Shoaling Coefficient KsH
KsH = sqrt(C0/C1H)
KsH = sqrt(20.46/20.06) = 1.01
Deepwater Wave Height H0_H (ft)
H0_H = H/KsH
H0_H = 2.20/1.01 = 2.18

Deepwater mean wave height: 2.18 feet

_____END RUNUP2 CONVERSIONS_____

_____RUNUP2 RESULTS_____
for transect: CM-57-1

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:
2.07
2.07
2.07
2.18
2.18
2.18
2.29
2.29
2.29

RUNUP2 mean wave periods:
3.80
4.00
4.19
3.80
4.00
4.19
3.80
4.00
4.19

RUNUP2 runup above SWEL:
3.34
3.40
3.45
3.50
3.55
3.60
3.64
3.69
3.76

RUNUP2 Mean runup height above SWEL: 3.55 feet

RUNUP2 2-percent runup height above SWEL: 7.81 feet

RUNUP2 2-percent runup elevation: 16.71 feet-NAVD88

RUNUP2 Messages:
No Messages

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 3.52 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: 3.48 feet

Peak wave period: 4.70 seconds

Average beach Slope: 1:6.12 (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

```
# 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 =     3.48
Wave Period,                        T  =     4.70
Beach Slope,                        S  =    0.163

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 = [ 7.6,  6.2,   5.6,    4.6,    2.9]

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

ACES Beach 2-percent runup height above SWEL: 6.16 feet

ACES Beach 2-percent runup elevation: 15.06 feet-NAVD88

ACES BEACH RUNUP is valid

_____________END ACES BEACH RESULTS_____________________

PART 5 COMPLETE_____________________________________________
```

```
  FEMA                                                  sjh           job 2
  RUNUP2 transect: CM-57-1                                              1
3.00
  -20.38 -205.6 0.8
  -16.58 -161.6 0.8
  -14.77 -140.6 0.8
  -14.25 -134.6 0.8
  -14.23 -133.6 0.8
  -12.78 -65.6  0.8
  -12.50 -64.6  0.8
  -11.24 -60.6  0.8
  -10.30 -57.6  0.8
  -9.04 -53.6  0.8
  -8.10 -50.6  0.8
  -6.84 -46.6  0.8
  -5.89 -43.6  0.8
  -4.63 -39.6  0.8
  -3.69 -36.6  0.8
  -2.12 -31.6  0.8
  -2.12 -29.1  0.8
  1.10  5.4    0.8
  14.12 25.4   0.8
1 20.12 42.4   0.8
 8.9   2.07  3.80
 8.9   2.07  4.00
 8.9   2.07  4.19
 8.9   2.18  3.80
 8.9   2.18  4.00
 8.9   2.18  4.19
 8.9   2.29  3.80
 8.9   2.29  4.00
 8.9   2.29  4.19
```

****

CROSS SECTION PROFILE

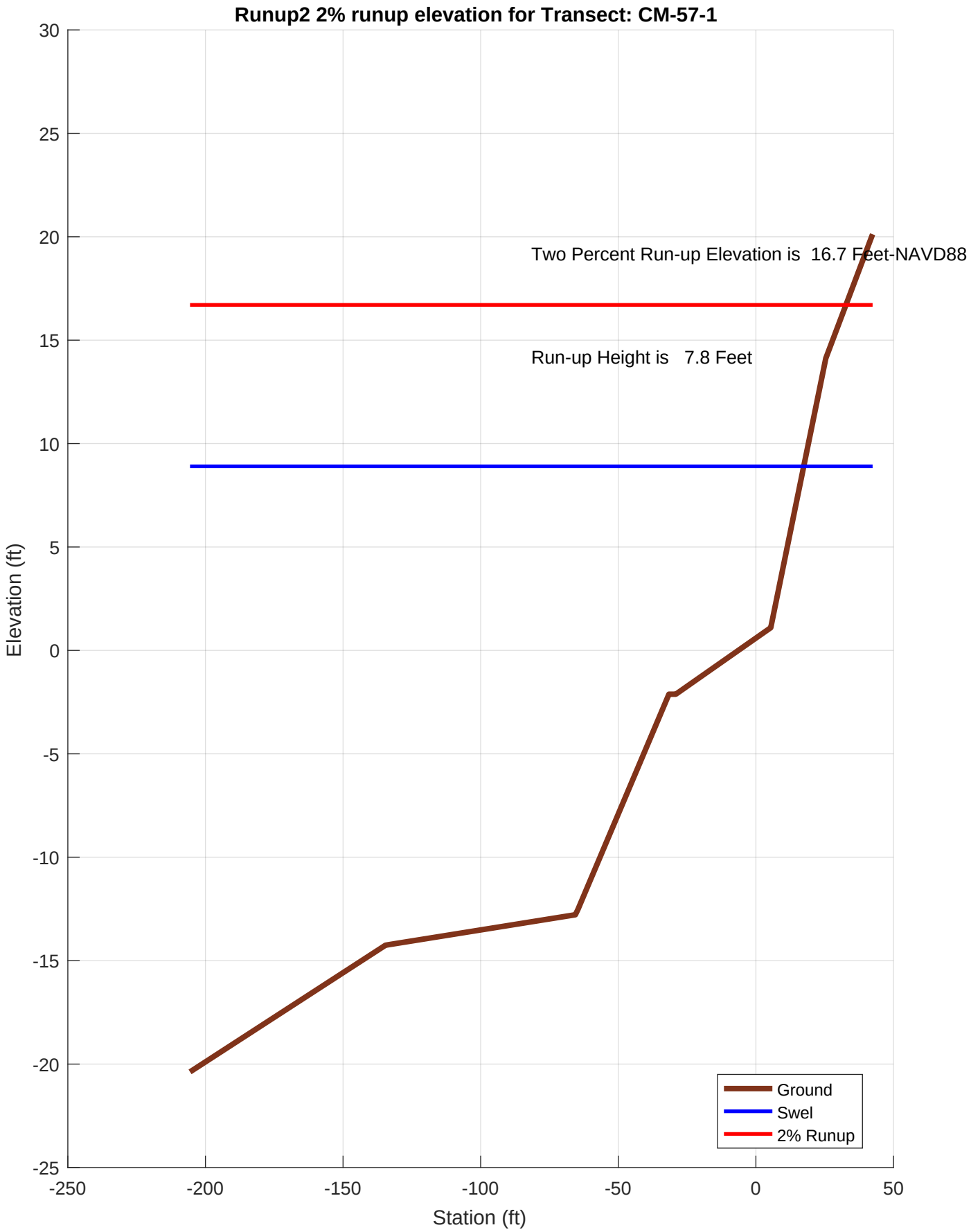
	LENGTH	ELEV.	SLOPE	ROUGHNESS
1	-205.0	-20.3		
			.00	.80
2	-161.0	-16.5		
			11.67	.80
3	-140.0	-14.7		
			12.00	.80
4	-134.0	-14.2		
			FLAT	.80
5	-133.0	-14.2		
			44.93	.80
6	-65.6	-12.7		
			5.00	.80
7	-64.6	-12.5		
			3.08	.80
8	-60.6	-11.2		
			3.33	.80
9	-57.6	-10.3		
			3.17	.80
10	-53.6	-9.0		
			3.19	.80
11	-50.6	-8.1		
			3.17	.80
12	-46.6	-6.8		
			3.16	.80
13	-43.6	-5.9		
			3.17	.80
14	-39.6	-4.6		
			3.19	.80
15	-36.6	-3.7		
			3.18	.80
16	-31.6	-2.1		
			FLAT	.80
17	-29.1	-2.1		
			10.71	.80
18	5.4	1.1		
			1.54	.80
19	25.4	14.1		
			2.83	.80
20	42.4	20.1		

LAST SLOPE 3.00 LAST ROUGHNESS .80

****

OUTPUT TABLE

INPUT PARAMETERS			RUNUP RESULTS			
WATER LEVEL ABOVE DATUM (FT.)	DEEP WATER WAVE HEIGHT (FT.)	WAVE PERIOD (SEC.)	BREAKING SLOPE NUMBER	RUNUP SLOPE NUMBER	RUNUP ABOVE WATER LEVEL (FT.)	BREAKER DEPTH (FT.)
8.90	2.07	3.80	11	18	3.34	2.63
8.90	2.07	4.00	11	18	3.40	2.63
8.90	2.07	4.19	11	18	3.45	2.65
8.90	2.18	3.80	11	18	3.50	2.77
8.90	2.18	4.00	11	18	3.55	2.77
8.90	2.18	4.19	11	18	3.60	2.78
8.90	2.29	3.80	11	18	3.64	2.91
8.90	2.29	4.00	11	18	3.69	2.91
8.90	2.29	4.19	11	18	3.76	2.91


Runup2 2% runup elevation for Transect: CM-57-1
Two Percent Run-up Elevation is 16.7 Feet-NAVD88
Run-up Height is 7.8 Feet
Ground
Swel
2% Runup
Elevation (ft)
Station (ft)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-250
-200
-150
-100
-50
0
50