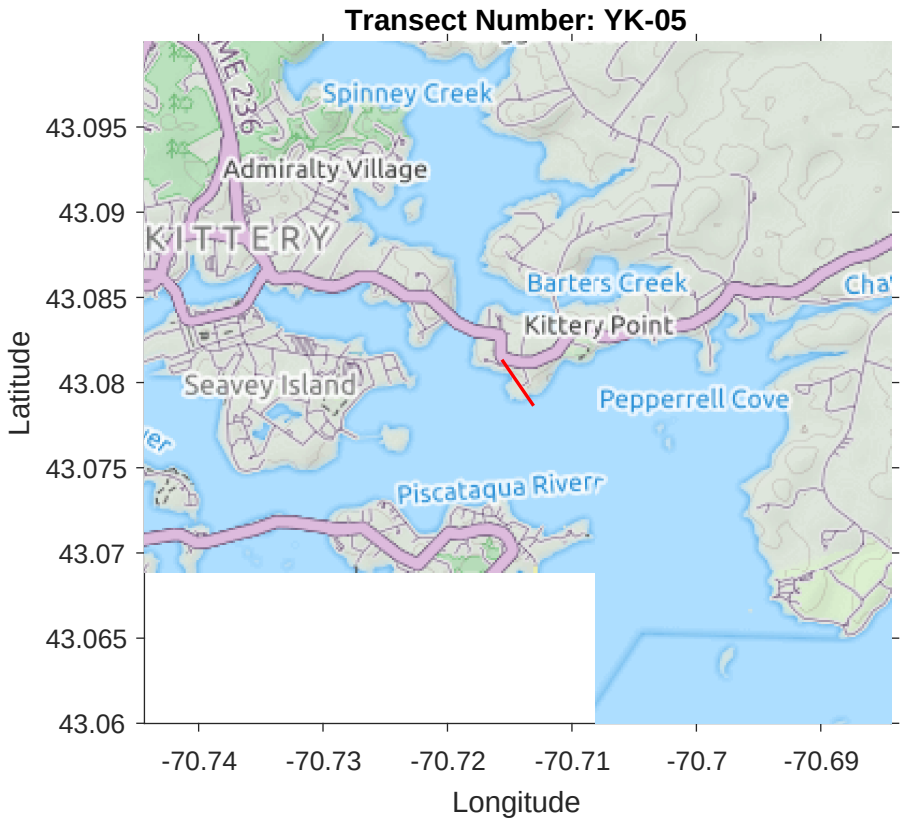
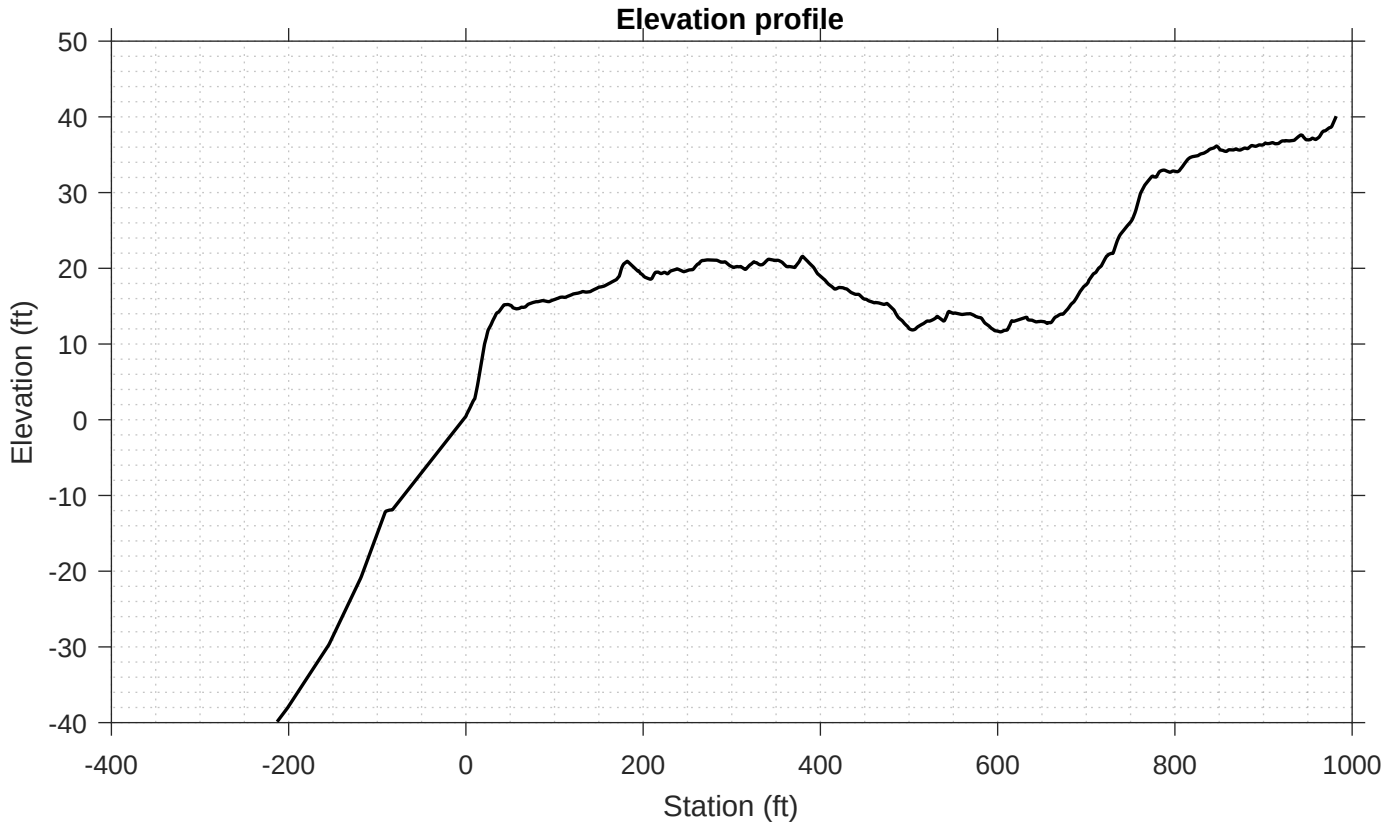

Transect Number: YK-05
Spinney Creek
Admiralty Village
K I T T E R Y
Barters Creek
Kittery Point
Seavey Island
Pepperrell Cove
Piscataqua Riverr
43.095
43.09
43.085
43.08
43.075
43.07
43.065
43.06
Latitude
-70.74
-70.73
-70.72
-70.71
-70.7
-70.69
Longitude


Elevation profile
50
40
30
20
10
0
-10
-20
-30
-40
Elevation (ft)
-400
-200
0
200
400
600
800
1000
Station (ft)

DATA LOG FOR TRANSECT ID: YK-05

PART 1: USER INPUT

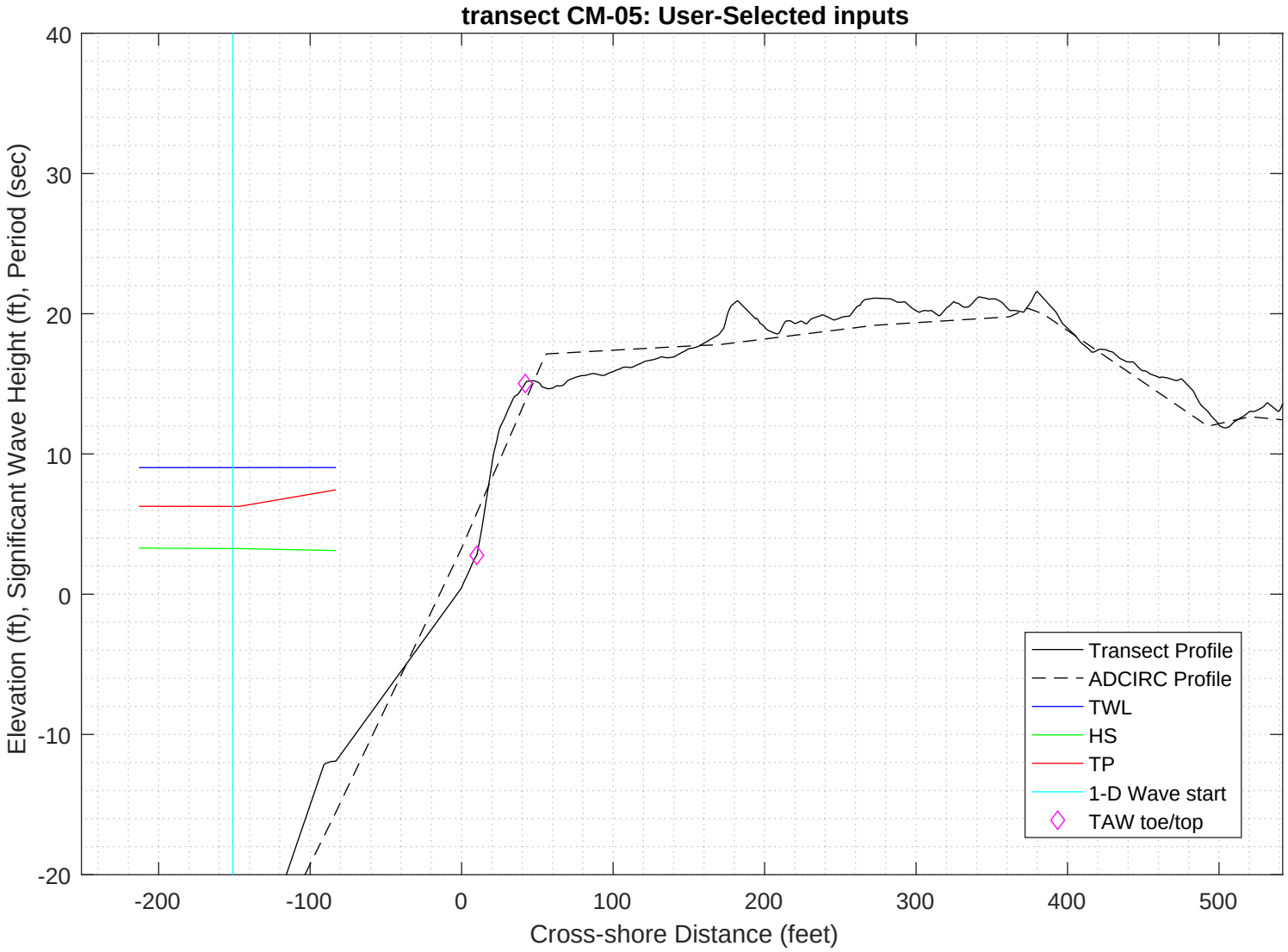
SWAN 1-D / WHAFIS input

station: -151 ft
LON: -70.7132 deg E
LAT: 43.0788 deg N
Bottom ELEV: -28.829 ft-NAVD88
TWL: 9.0268 ft-NAVD88
HS: 3.2539 ft
TP: 6.2617 sec
Wave Direction bin: 135 deg CCW from East (90 deg sector)
Transect Direction: 133.2631 deg CCW from East

TAW/RUNUP input

toe sta: 10 ft
toe elev: 2.774 ft-NAVD88
top sta: 42 ft
top elev: 15.0282 ft-NAVD88
Wave and water level conditions at toe to be calculated in SWAN 1-D

PART 1 COMPLETE


transect CM-05: User-Selected inputs
Elevation (ft), Significant Wave Height (ft), Period (sec)
Cross-shore Distance (feet)
40
30
20
10
0
-10
-20
-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

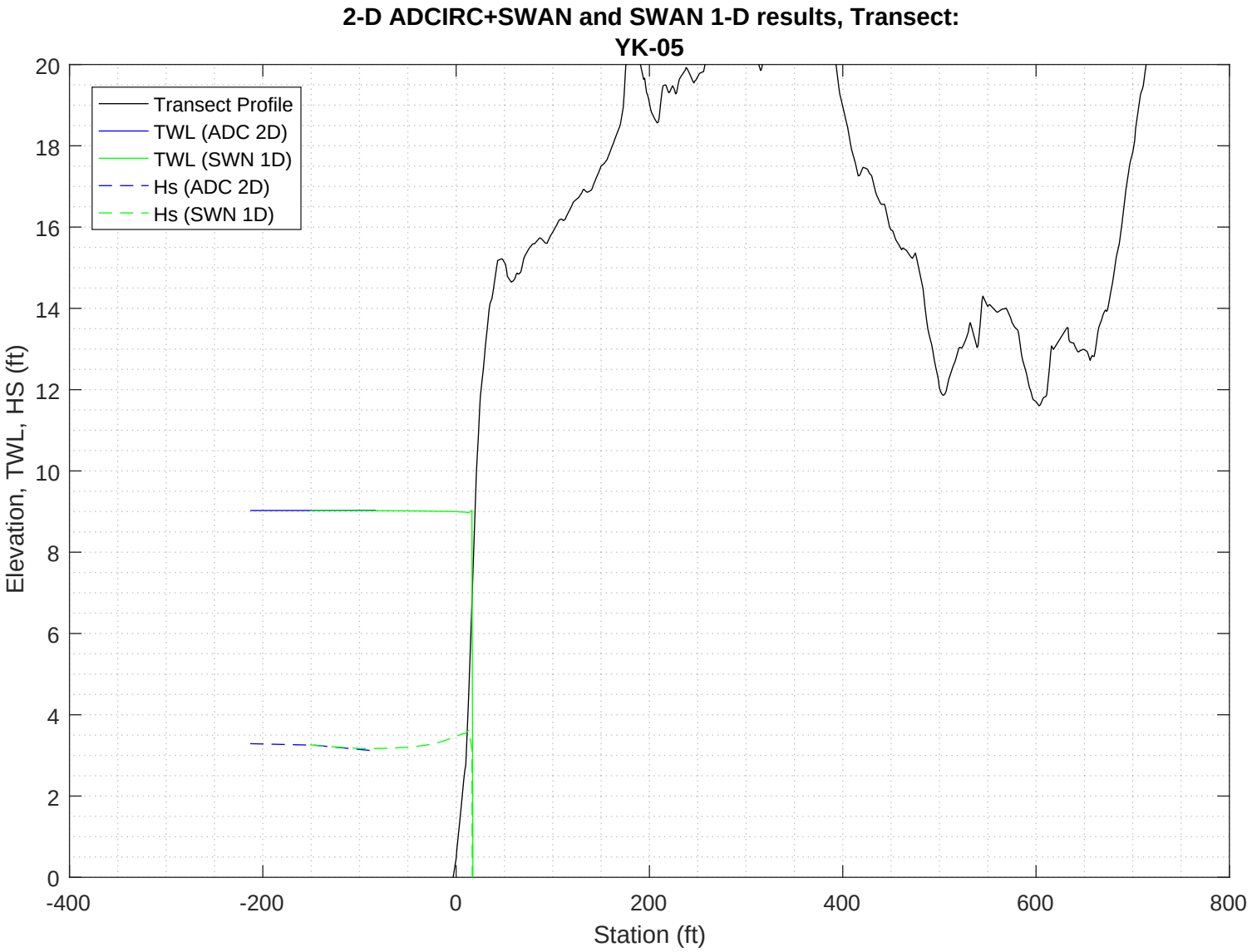
swan input grid name: 2_swan/gridfiles/YK-05zmeters_xmeters.grd
swan file name: 2_swan/swanfiles/YK-05.swn
swan output name: 2_swan/swanfiles/YK-05.dat

Boundary Conditions:
    TWL- 2.7514 meters
    HS- 0.9918 meters
    PER- 6.2617 seconds

Batch File: 2_swan/swanfiles/runswan.dat

SWAN maximum additional wave setup: 0.0028839 feet
SWAN output at toe:
    SETUP- -0.040102 feet
    HS-   3.5425 feet
    PER-   6.337 seconds

PART 2 COMPLETE


2-D ADCIRC+SWAN and SWAN 1-D results, Transect:
YK-05
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
-400
-200
0
200
400
600
800

1

Execution started at 20200206.151503

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      52       0.   52     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      52   0      1       1
!READinp BOTtom [fac]  'fname1'  [idla]  [nhedf]  [FREe|FORmat[form]|UNFormatted]
 READ    BOTTOM   -1. '../gridfiles/YK-05zmeters_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   0.9918     6.2617     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      52  52    0
 !TABLe 'sname' < HEADer|NOHEADer|INDexed > 'fname' <output parameters> (output time)
  Table 'curve'   HEADER 'YK-05.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              53 MYC              1
                      : MCGRD            54
                      : 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  90.39 % 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   1.93 % 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  88.47 % 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  98.08 % 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 100.00 % of wet grid points ( 99.50 % required)


STOP
```

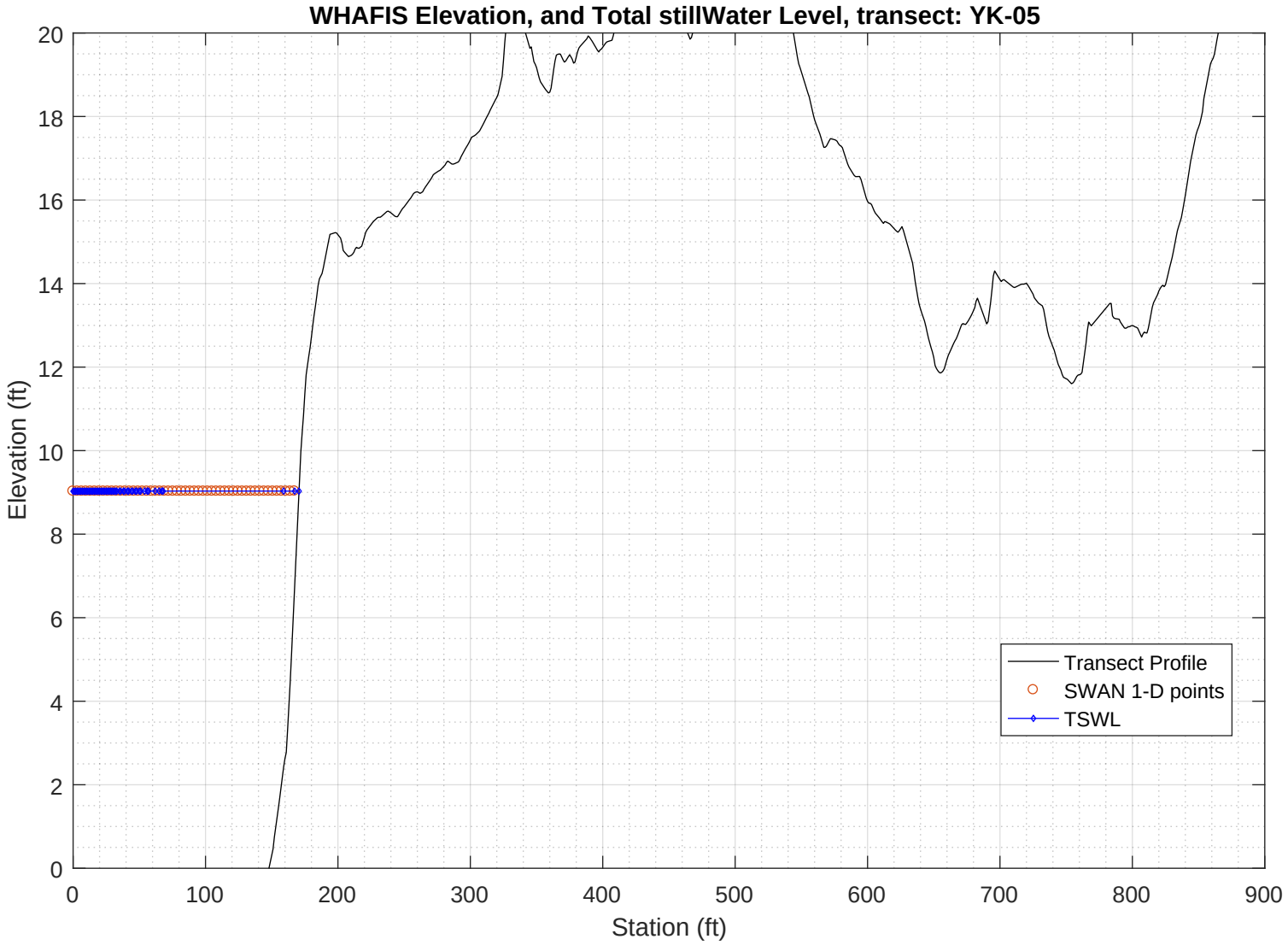
%
%
% Run:1 Table:curve SWAN version:41.20A
%

Xp [m]	Yp [m]	Hsig [m]	TPsmoo [sec]	RTpeak [sec]	Tm_10 [sec]	Dir [degr]	Dspr [degr]	Depth [m]	Setup [m]
0.	0.	0.99401	6.2867	6.4550	5.6589	360.000	31.5059	11.5400	0.000000
1.	0.	0.99167	6.2872	6.4550	5.6570	360.000	31.2014	11.2900	-0.000035
2.	0.	0.98946	6.2876	6.4550	5.6554	360.000	30.9374	11.0499	-0.000070
3.	0.	0.98729	6.2882	6.4550	5.6540	360.000	30.6917	10.7999	-0.000108
4.	0.	0.98522	6.2887	6.4550	5.6528	360.000	30.4421	10.5599	-0.000147
5.	0.	0.98321	6.2894	6.4550	5.6519	360.000	30.1867	10.3098	-0.000190
6.	0.	0.98132	6.2900	6.4550	5.6512	360.000	29.9254	10.0698	-0.000235
7.	0.	0.97949	6.2907	6.4550	5.6509	360.000	29.6584	9.8197	-0.000285
8.	0.	0.97778	6.2915	6.4550	5.6508	360.000	29.3852	9.5797	-0.000336
9.	0.	0.97614	6.2923	6.4550	5.6510	360.000	29.1062	9.3296	-0.000394
10.	0.	0.97449	6.2931	6.4550	5.6515	360.000	28.8086	9.0795	-0.000455
11.	0.	0.97277	6.2941	6.4550	5.6529	360.000	28.4799	8.7695	-0.000537
12.	0.	0.97115	6.2952	6.4550	5.6548	360.000	28.1375	8.4494	-0.000629
13.	0.	0.96969	6.2963	6.4550	5.6571	360.000	27.7746	8.1393	-0.000727
14.	0.	0.96841	6.2974	6.4550	5.6600	360.000	27.3914	7.8192	-0.000840
15.	0.	0.96739	6.2986	6.4550	5.6636	360.000	26.9900	7.4990	-0.000964
16.	0.	0.96662	6.2998	6.4550	5.6675	360.000	26.5714	7.1889	-0.001099
17.	0.	0.96619	6.3011	6.4550	5.6723	360.000	26.1304	6.8687	-0.001255
18.	0.	0.96648	6.3024	6.4550	5.6779	360.000	25.7594	6.5486	-0.001429
19.	0.	0.96669	6.3030	6.4550	5.6799	360.000	25.5626	6.4085	-0.001513
20.	0.	0.96659	6.3031	6.4550	5.6791	360.000	25.4675	6.3885	-0.001527
21.	0.	0.96657	6.3033	6.4550	5.6790	360.000	25.3406	6.3384	-0.001561
22.	0.	0.96703	6.3039	6.4550	5.6815	360.000	25.1501	6.1883	-0.001658
23.	0.	0.96752	6.3045	6.4550	5.6841	360.000	24.9410	6.0382	-0.001762
24.	0.	0.96810	6.3051	6.4550	5.6868	0.000	24.7216	5.8881	-0.001872
25.	0.	0.96879	6.3057	6.4550	5.6896	0.000	24.4929	5.7380	-0.001989
26.	0.	0.96965	6.3064	6.4550	5.6921	0.000	24.2553	5.5879	-0.002115
27.	0.	0.97072	6.3070	6.4550	5.6943	0.000	24.0174	5.4377	-0.002250
28.	0.	0.97183	6.3076	6.4550	5.6963	0.000	23.7753	5.2976	-0.002385
29.	0.	0.97324	6.3083	6.4550	5.6984	0.000	23.5210	5.1475	-0.002539
30.	0.	0.97484	6.3089	6.4550	5.7002	360.000	23.2573	4.9973	-0.002706
31.	0.	0.97666	6.3096	6.4550	5.7019	360.000	22.9844	4.8471	-0.002885
32.	0.	0.97874	6.3102	6.4550	5.7034	360.000	22.7049	4.6969	-0.003080
33.	0.	0.98107	6.3109	6.4550	5.7045	360.000	22.4183	4.5467	-0.003291
34.	0.	0.98372	6.3116	6.4550	5.7047	360.000	22.1248	4.3965	-0.003520
35.	0.	0.98672	6.3123	6.4550	5.7042	360.000	21.8244	4.2462	-0.003769
36.	0.	0.99013	6.3130	6.4550	5.7024	360.000	21.5293	4.0960	-0.004041
37.	0.	0.99371	6.3137	6.4550	5.6986	360.000	21.2359	3.9557	-0.004318
38.	0.	0.99803	6.3144	6.4550	5.6931	360.000	20.9275	3.8054	-0.004643
39.	0.	1.00294	6.3152	6.4550	5.6847	359.999	20.6146	3.6550	-0.005002
40.	0.	1.00851	6.3161	6.4550	5.6724	359.999	20.2879	3.5046	-0.005400
41.	0.	1.01486	6.3170	6.4550	5.6553	359.999	19.9527	3.3542	-0.005845
42.	0.	1.02205	6.3181	6.4550	5.6325	0.000	19.6094	3.2037	-0.006343
43.	0.	1.03020	6.3193	6.4550	5.6027	0.002	19.2519	3.0531	-0.006905
44.	0.	1.03893	6.3208	6.4550	5.5670	359.999	18.8872	2.9025	-0.007524
45.	0.	1.04749	6.3225	6.4550	5.5278	359.984	18.5357	2.7518	-0.008175
46.	0.	1.05501	6.3245	6.4550	5.4832	359.958	18.0983	2.6112	-0.008806
47.	0.	1.06640	6.3278	6.4550	5.4416	359.902	17.5233	2.3599	-0.010052
48.	0.	1.07649	6.3319	6.4550	5.3804	359.881	16.9233	2.1187	-0.011328
49.	0.	1.07975	6.3370	6.4550	5.3036	359.786	15.9894	1.9078	-0.012223
50.	0.	1.10366	6.3450	6.4550	5.1694	359.790	14.0672	1.3627	-0.017273
51.	0.	0.96144	6.3625	6.4550	5.0927	359.430	14.5215	0.6909	0.000879
52.	0.	-9.00000	-9.0000	-9.0000	-9.0000	-999.000	-9.0000	-99.0000	-9.000000

PART 3: WHAFIS

WHAFIS input: YK-05.dat
WHAFIS output: YK-05.out

PART 3 COMPLETE


WHAFIS Elevation, and Total stillWater Level, transect: YK-05
Elevation (ft)
Station (ft)
0
2
4
6
8
10
12
14
16
18
20
0
100
200
300
400
500
600
700
800
900
Transect Profile
SWAN 1-D points
TSWL

WAVE HEIGHT COMPUTATIONS FOR FLOOD INSURANCE STUDIES (WHAFIS VERSION 4.0G, 08_2007)
Executed on: Thu Feb 6 16:14:34 2020
Input file: C:\Users\shayward\Desktop\Kittery\T2\3_whafis\whafis4\YK-05.dat
Output file: C:\Users\shayward\Desktop\Kittery\T2\3_whafis\whafis4\YK-05.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	-28.829	1.000	1.000	9.027	5.206	6.262	56.140	0.246	0.000
OF	1.000	-28.583	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	2.000	-28.338	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	3.000	-28.093	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	4.000	-27.848	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	5.000	-27.603	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	6.000	-27.358	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	7.000	-27.113	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	8.000	-26.868	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	9.000	-26.623	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	10.000	-26.378	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	11.000	-26.132	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	12.000	-25.887	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	13.000	-25.642	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	14.000	-25.397	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
OF	15.000	-25.152	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	16.000	-24.907	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	17.000	-24.662	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	18.000	-24.417	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	19.000	-24.172	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	20.000	-23.927	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	21.000	-23.681	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	22.000	-23.436	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	23.000	-23.191	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	24.000	-22.946	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	25.000	-22.701	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	26.000	-22.456	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	27.000	-22.211	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	28.000	-21.966	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	29.000	-21.721	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	30.000	-21.476	0.000	9.028	0.000	0.000	0.000	0.000	0.245	0.000
OF	31.000	-21.230	0.000	9.029	0.000	0.000	0.000	0.000	0.245	0.000
OF	32.000	-20.985	0.000	9.029	0.000	0.000	0.000	0.000	0.258	0.000
OF	33.000	-20.714	0.000	9.029	0.000	0.000	0.000	0.000	0.301	0.000
OF	35.000	-20.081	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	36.000	-19.765	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	38.000	-19.133	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	39.000	-18.817	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	41.000	-18.185	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	42.000	-17.869	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	44.000	-17.237	0.000	9.029	0.000	0.000	0.000	0.000	0.316	0.000
OF	45.000	-16.920	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	47.000	-16.288	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	48.000	-15.972	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	50.000	-15.340	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	51.000	-15.024	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	54.000	-14.076	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	56.000	-13.443	0.000	9.030	0.000	0.000	0.000	0.000	0.316	0.000
OF	57.000	-13.127	0.000	9.030	0.000	0.000	0.000	0.000	0.236	0.000
OF	62.000	-12.029	0.000	9.031	0.000	0.000	0.000	0.000	0.150	0.000
OF	65.000	-11.928	0.000	9.031	0.000	0.000	0.000	0.000	0.024	0.000
OF	67.000	-11.909	0.000	9.031	0.000	0.000	0.000	0.000	0.009	0.000
OF	68.000	-11.900	0.000	9.031	0.000	0.000	0.000	0.000	0.156	0.000
IF	159.000	2.425	0.000	9.031	0.000	0.000	0.000	0.000	0.188	0.000
IF	167.300	6.749	0.000	9.030	0.000	0.000	0.000	0.000	0.569	0.000
IF	170.600	9.030	0.000	9.030	0.000	0.000	0.000	0.000	0.691	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	-28.829	1.000	1.000	9.027	5.206	6.262	56.140	0.246	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	1.000	-28.583	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	2.000	-28.338	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	3.000	-28.093	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	4.000	-27.848	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	5.000	-27.603	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	6.000	-27.358	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	7.000	-27.113	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	8.000	-26.868	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	9.000	-26.623	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	10.000	-26.378	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	11.000	-26.132	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	12.000	-25.887	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	13.000	-25.642	0.000	9.027	0.000	0.000	0.000	0.000	0.245	0.000
	END	END	NEW SURGE	NEW SURGE					BOTTOM	AVERAGE

	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	14.000	-25.397	0.000	9.027	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	15.000	-25.152	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	16.000	-24.907	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	17.000	-24.662	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	18.000	-24.417	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	19.000	-24.172	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	20.000	-23.927	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	21.000	-23.681	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	22.000	-23.436	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	23.000	-23.191	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	24.000	-22.946	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	25.000	-22.701	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	26.000	-22.456	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	27.000	-22.211	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	28.000	-21.966	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	29.000	-21.721	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	30.000	-21.476	0.000	9.028	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	31.000	-21.230	0.000	9.029	0.000	0.000	0.000	0.000		0.245	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	32.000	-20.985	0.000	9.029	0.000	0.000	0.000	0.000		0.258	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	33.000	-20.714	0.000	9.029	0.000	0.000	0.000	0.000		0.301	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	35.000	-20.081	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	36.000	-19.765	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	38.000	-19.133	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	39.000	-18.817	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	41.000	-18.185	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	42.000	-17.869	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	44.000	-17.237	0.000	9.029	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	45.000	-16.920	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	47.000	-16.288	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	48.000	-15.972	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	50.000	-15.340	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	51.000	-15.024	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	54.000	-14.076	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	56.000	-13.443	0.000	9.030	0.000	0.000	0.000	0.000		0.316	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	57.000	-13.127	0.000	9.030	0.000	0.000	0.000	0.000		0.236	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	62.000	-12.029	0.000	9.031	0.000	0.000	0.000	0.000		0.150	0.000
	END	END	NEW SURGE	NEW SURGE						BOTTOM	AVERAGE
	STATION	ELEVATION	10-YEAR	100-YEAR						SLOPE	A-ZONES
OF	65.000	-11.928	0.000	9.031	0.000	0.000	0.000	0.000		0.024	0.000

	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	67.000	-11.909	0.000	9.031	0.000	0.000	0.000	0.000	0.009	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
OF	68.000	-11.900	0.000	9.031	0.000	0.000	0.000	0.000	0.156	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
IF	159.000	2.425	0.000	9.031	0.000	0.000	0.000	0.000	0.188	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
IF	167.300	6.749	0.000	9.030	0.000	0.000	0.000	0.000	0.569	0.000
	END STATION	END ELEVATION	NEW SURGE 10-YEAR	NEW SURGE 100-YEAR					BOTTOM SLOPE	AVERAGE A-ZONES
IF	170.600	9.030	0.000	9.030	0.000	0.000	0.000	0.000	0.691	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	5.21	6.26	12.67
OF	1.00	5.21	6.26	12.67
OF	2.00	5.20	6.26	12.67
OF	3.00	5.20	6.26	12.67
OF	4.00	5.20	6.26	12.67
OF	5.00	5.20	6.26	12.67
OF	6.00	5.20	6.26	12.67
OF	7.00	5.20	6.26	12.67
OF	8.00	5.20	6.26	12.67
OF	9.00	5.20	6.26	12.67
OF	10.00	5.20	6.26	12.67
OF	11.00	5.20	6.26	12.67
OF	12.00	5.20	6.26	12.67
OF	13.00	5.20	6.26	12.67
OF	14.00	5.20	6.26	12.67
OF	15.00	5.20	6.26	12.67
OF	16.00	5.20	6.26	12.67
OF	17.00	5.20	6.26	12.67
OF	18.00	5.20	6.26	12.67
OF	19.00	5.20	6.26	12.67
OF	20.00	5.20	6.26	12.67
OF	21.00	5.20	6.26	12.67
OF	22.00	5.20	6.26	12.67
OF	23.00	5.20	6.26	12.67
OF	24.00	5.20	6.26	12.67
OF	25.00	5.20	6.26	12.67
OF	26.00	5.21	6.26	12.67
OF	27.00	5.21	6.26	12.67
OF	28.00	5.21	6.26	12.67
OF	29.00	5.21	6.26	12.67
OF	30.00	5.21	6.26	12.68
OF	31.00	5.21	6.26	12.68
OF	32.00	5.21	6.26	12.68
OF	33.00	5.22	6.26	12.68
OF	35.00	5.22	6.26	12.68
OF	36.00	5.22	6.26	12.69
OF	38.00	5.23	6.26	12.69
OF	39.00	5.23	6.26	12.69
OF	41.00	5.24	6.26	12.70
OF	42.00	5.25	6.26	12.70
OF	44.00	5.26	6.26	12.71
OF	45.00	5.26	6.26	12.71
OF	47.00	5.27	6.26	12.72
OF	48.00	5.28	6.26	12.72
OF	50.00	5.29	6.26	12.73
OF	51.00	5.30	6.26	12.74
OF	54.00	5.32	6.26	12.76
OF	56.00	5.34	6.26	12.77
OF	57.00	5.35	6.26	12.77
OF	62.00	5.38	6.26	12.80
OF	65.00	5.39	6.26	12.80
OF	67.00	5.39	6.26	12.80
OF	68.00	5.39	6.26	12.80
IF	159.00	4.90	6.26	12.46
IF	167.30	1.75	6.26	10.25
IF	170.60	0.01	6.26	9.04

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
15.00	1.00	9.03
31.00	1.00	9.03
45.00	1.00	9.03
62.00	1.00	9.03
167.30	1.00	9.03

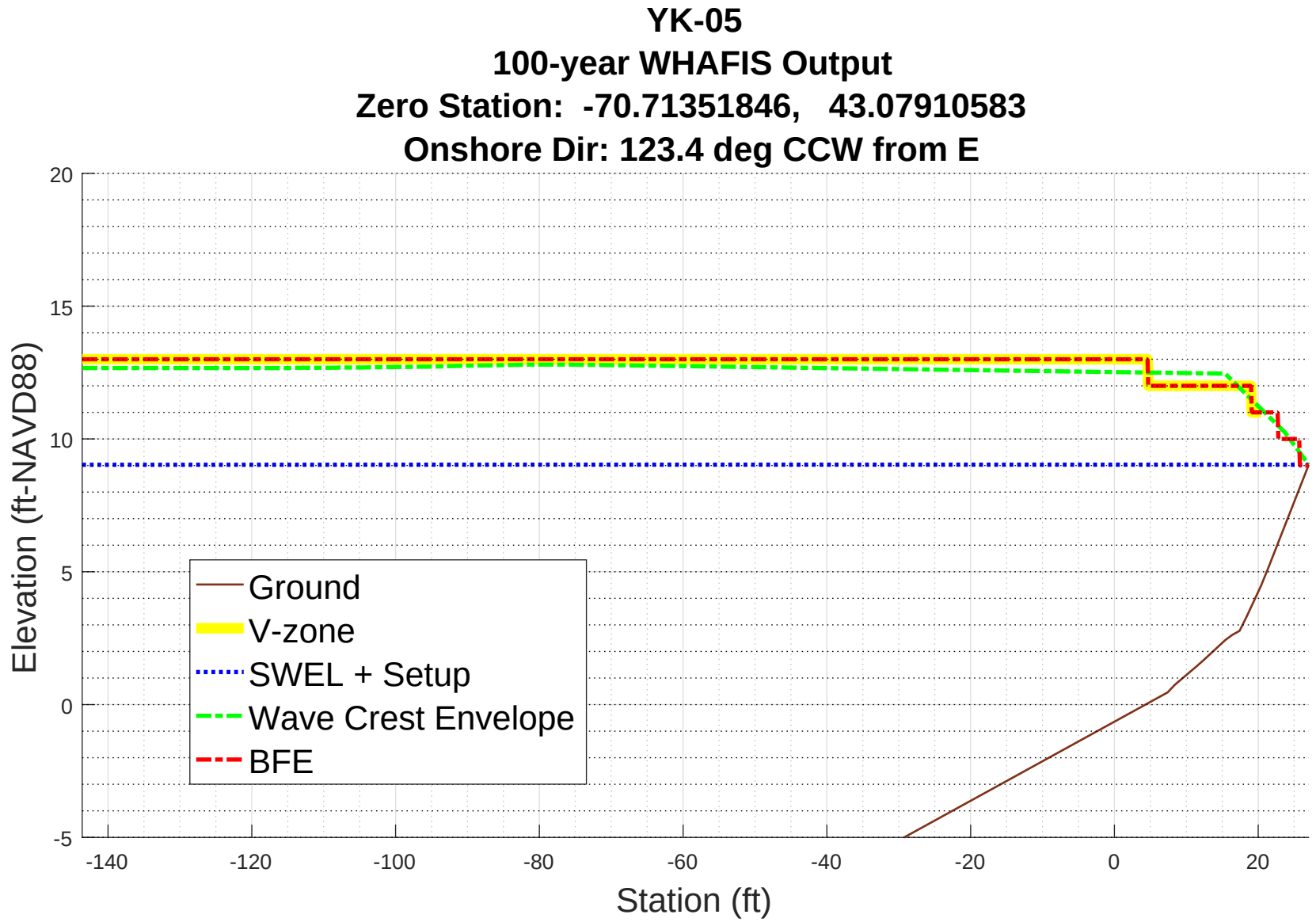
PART5 LOCATION OF V ZONES

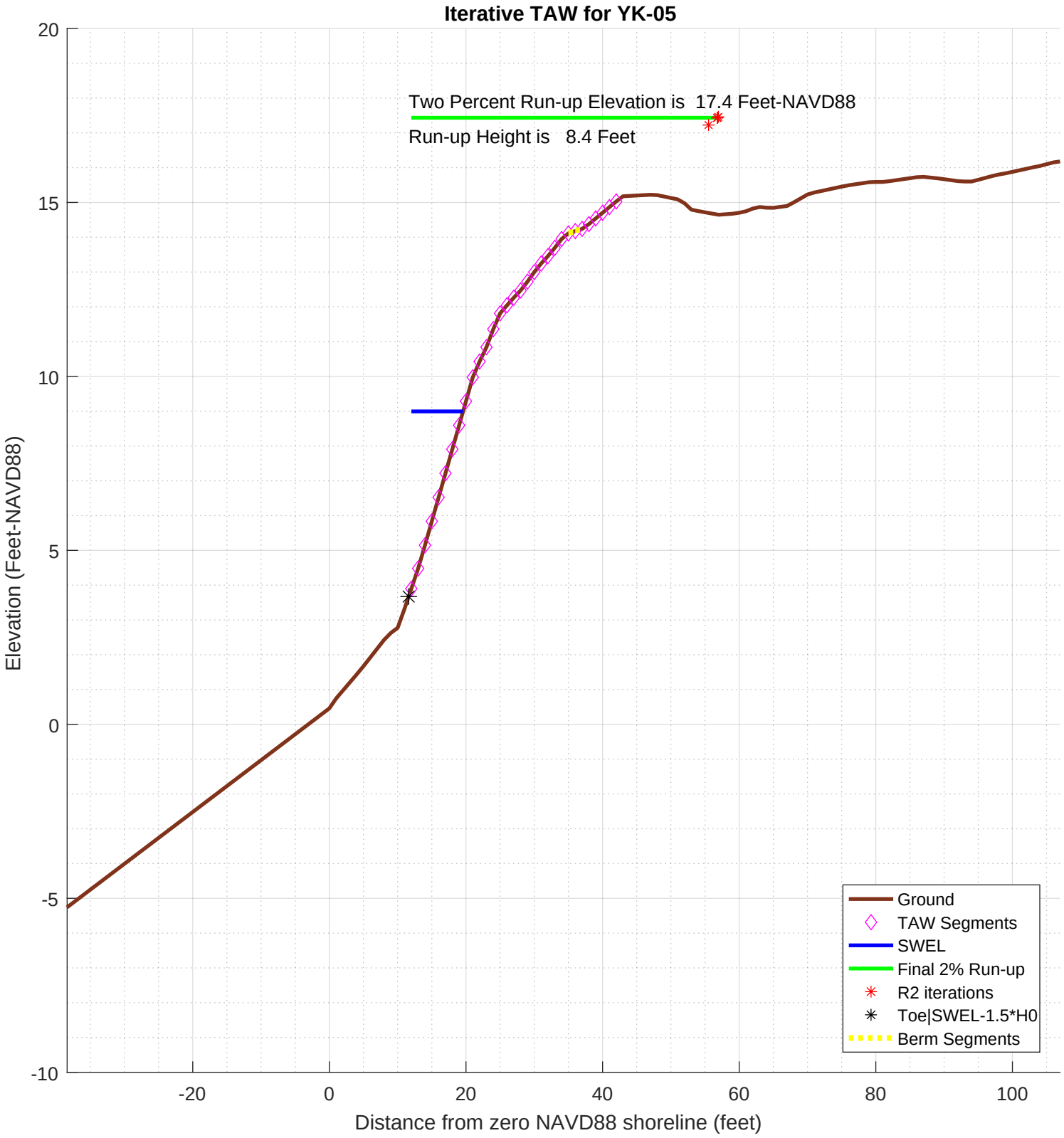
STATION OF GUTTER	LOCATION OF ZONE
164.00	WINDWARD

PART6 NUMBERED A ZONES AND V ZONES

STATION OF GUTTER	ELEVATION	ZONE DESIGNATION	FHF
0.00	12.67		
		V22 EL=13	120
14.00	12.67		
		V22 EL=13	120
15.00	12.67		
		V22 EL=13	120
30.00	12.68		
		V22 EL=13	120
31.00	12.68		
		V22 EL=13	120
44.00	12.71		
		V22 EL=13	120
45.00	12.71		
		V22 EL=13	120
57.00	12.77		
		V22 EL=13	120
62.00	12.80		

```
                                                                V22  EL=13     120
                                148.23          12.50
                                                                V22  EL=12     120
                                159.00          12.46
                                                                V22  EL=12     120
                                162.61          11.50
                                                                V22  EL=11     120
                                164.00          11.13
                                                                A18  EL=11      90
                                166.37          10.50
                                                                A18  EL=10      90
                                167.30          10.25
                                                                A18  EL=10      90
                                169.34           9.50
                                                                A18  EL= 9      90
                                170.60           9.04
                                     ZONE TERMINATED AT END OF TRANSECT
                                     PART 7   POSTSCRIPT NOTES
                           PS#  1   START(360535.9213,4770987.724)
                           PS#  2   END(360385.9926,4771214.8466)
-1.000000e+00
```


YK-05
100-year WHAFIS Output
Zero Station: -70.71351846, 43.07910583
Onshore Dir: 123.4 deg CCW from E
Elevation (ft-NAVD88)
Station (ft)
20
15
10
5
0
-5
-140
-120
-100
-80
-60
-40
-20
0
20
Ground
V-zone
SWEL + Setup
Wave Crest Envelope
BFE


Iterative TAW for YK-05
Two Percent Run-up Elevation is 17.4 Feet-NAVD88
Run-up Height is 8.4 Feet
Elevation (Feet-NAVD88)
Distance from zero NAVD88 shoreline (feet)
20
15
10
5
0
-5
-10
-20
0
20
40
60
80
100
Ground
TAW Segments
SWEL
Final 2% Run-up
R2 iterations
Toe|SWEL-1.5*H0
Berm Segments

```
diary on         % begin recording

% FEMA appeal for The Town of Harpswell, Cumberland county, Maine
% TRANSECT ID: YK-05
% calculation by SJH, Ransom Consulting, Inc. 06-Feb-2020
% 100-year wave runup using TAW methodology
% including berm and weighted average with foreshore if necessary
%
% chk nld 20181015
%
% 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/YK-05sta_ele_include.csv';   % file with station, elevation, include
                                        % third colunm is 0 for excluded points
imgname='logfiles/YK-05-runup';
SWEL=9.0268;  % 100-yr still water level including wave setup.
H0=3.5425;    % significant wave height at toe of structure
Tp=6.337;    % peak period, 1/fma,
T0=Tp/1.1;

gamma_berm=0.98213;   % this may get changed automatically below
gamma_rough=0.75;
gamma_beta=1;
gamma_perm=1;

setupAtToe=-0.040102;
maxSetup=0.0028839;   % only used in case of berm/shallow foreshore weighted average

plotTitle='Iterative TAW for YK-05'

plotTitle =

Iterative TAW for YK-05



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

SWEL=SWEL+setupAtToe

SWEL =

                  8.986698

SWEL_fore=SWEL+maxSetup

SWEL_fore =

                 8.9895819



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

L0 =

          169.817777542363


% 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 =
```

```
                  3.672948


% 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 =

                 14.300448


% 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 =

          11.6106776745786


top_sta =

          37.4384359160029

% 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 =

          37.4384359160029

toe_sta

toe_sta =

          11.6106776745786



% 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',de
   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  9.6 ft landward of toe of slope


ans =

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


ans =

-!!-       setup is adjusted to -0.03 feet


ans =

-!!-       SWEL is adjusted to 8.99 feet


k =

     1
     2



% now iterate converge on a runup elevation
tol=0.001;  % 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*
   TAW_VALID=0;
else
   sprintf('!!! - - Iribaren number: %6.2f is in the valid range (0.5-10), TAW RECOMMENDED - - !!!\n', Irb*gam
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', islop
   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
   % 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 =

                  3.672948


toe_sta =

          11.6106776745786


top_sta =

          37.4384359160029


Z2 =

                 14.300448


H0 =

                    3.5425


Tp =

                     6.337


T0 =

          5.76090909090909


R2 =

                   10.6275


Z2 =

          19.6214318644647


top_sta =

          70.2660422428596


Lslope =

           58.655364568281


ans =

Berm Factor Calculation: Iteration 1, Profile Segment: 24


dh =

         -5.14946813553532
```

```
rdh_sum =
         0.475727240324892

ans =
Berm Factor Calculation: Iteration 1, Profile Segment: 25

dh =
         -5.21381813553532

rdh_sum =
         0.960958320952088

ans =
!------- End Berm Factor Calculation, Iter: 1 ---------!

berm_width =
     2

rB =
        0.0340974779497243

rdh_mean =
         0.480479160476044

gamma_berm =
          0.98228564962991

slope =
         0.281499977733681

Irb =
          1.94901423819125

gamma_berm =
          0.98228564962991

gamma_perm =
     1

gamma_beta =
     1

gamma_rough =
                     0.75

gamma =
         0.736714237222432

ans =
!!! - - Iribaren number:   1.91 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!


ans =
!!! - - slope: 1:3.6 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!


R2_new =
          8.23114946187324
```

```
R2del =
          2.39635053812676

Z2 =
          17.2250813263379

ans =
!----------------- STARTING ITERATION 2 -----------------!

Ztoe =
                  3.672948

toe_sta =
          11.6106776745786

top_sta =
           55.519269700541

Z2 =
          17.2250813263379

H0 =
                    3.5425

Tp =
                     6.337

T0 =
          5.76090909090909

R2 =
          8.23114946187324

Z2 =
          17.2250813263379

top_sta =
           55.519269700541

Lslope =
          43.9085920259624

ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 24

dh =
         -5.14946813553532

rdh_sum =
         0.692222097484545

ans =
Berm Factor Calculation: Iteration 2, Profile Segment: 25

dh =
         -5.21381813553532
```

```
rdh_sum =
          1.39572158279274

ans =
!------- End Berm Factor Calculation, Iter: 2 ---------!

berm_width =
     2

rB =
        0.0455491717615867

rdh_mean =
         0.697860791396368

gamma_berm =
         0.986237809291403

slope =
         0.323373625101563

Irb =
          2.23893374575942

gamma_berm =
         0.986237809291403

gamma_perm =
     1

gamma_beta =
     1

gamma_rough =
                     0.75

gamma =
         0.739678356968552

ans =
!!! - - Iribaren number:   2.21 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!


ans =
!!! - - slope: 1:3.1 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!


R2_new =
          8.46543871363766

R2del =
         0.234289251764425

Z2 =
          17.4593705781023

ans =
!----------------- STARTING ITERATION 3 -----------------!
```

```
Ztoe =
                  3.672948

toe_sta =
          11.6106776745786

top_sta =
          56.9610497113991

Z2 =
          17.4593705781023

H0 =
                    3.5425

Tp =
                     6.337

T0 =
          5.76090909090909

R2 =
          8.46543871363766

Z2 =
          17.4593705781023

top_sta =
          56.9610497113991

Lslope =
          45.3503720368205

ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 24

dh =
         -5.14946813553532

rdh_sum =
         0.666843125112442

ans =
Berm Factor Calculation: Iteration 3, Profile Segment: 25

dh =
         -5.21381813553532

rdh_sum =
          1.34489362697038

ans =
!------- End Berm Factor Calculation, Iter: 3 ---------!

berm_width =
     2
```

```
rB =
        0.0441010715055695

rdh_mean =
         0.67244681348519

gamma_berm =
         0.985554553499633

slope =
         0.318023166361585

Irb =
         2.20188891062648

gamma_berm =
         0.985554553499633

gamma_perm =
     1

gamma_beta =
     1

gamma_rough =
                     0.75

gamma =
         0.739165915124725

ans =
!!! - - Iribaren number:   2.17 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!


ans =
!!! - - slope: 1:3.1 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!


R2_new =
         8.43611879326975

R2del =
        0.0293199203679073

Z2 =
         17.4300506577344

ans =
!----------------- STARTING ITERATION 4 -----------------!

Ztoe =
                 3.672948

toe_sta =
         11.6106776745786

top_sta =
         56.7806194322119
```

```
Z2 =
          17.4300506577344

H0 =
                    3.5425

Tp =
                     6.337

T0 =
          5.76090909090909

R2 =
          8.43611879326975

Z2 =
          17.4300506577344

top_sta =
          56.7806194322119

Lslope =
          45.1699417576333

ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 24

dh =
         -5.14946813553532

rdh_sum =
         0.669969958416942

ans =
Berm Factor Calculation: Iteration 4, Profile Segment: 25

dh =
         -5.21381813553532

rdh_sum =
          1.35115837256487

ans =
!------- End Berm Factor Calculation, Iter: 4 ---------!

berm_width =
     2

rB =
        0.0442772322074561

rdh_mean =
         0.675579186282436

gamma_berm =
         0.985635544298096
```

```
slope =
         0.318673180866682

Irb =
          2.20638939952764

gamma_berm =
         0.985635544298096

gamma_perm =
     1

gamma_beta =
     1

gamma_rough =
                      0.75

gamma =
         0.739226658223572

ans =
!!! - - Iribaren number:   2.17 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!


ans =
!!! - - slope: 1:3.1 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!


R2_new =
          8.43969329239713

R2del =
       0.00357449912737451

Z2 =
          17.4336251568618

ans =
!----------------- STARTING ITERATION 5 -----------------!

Ztoe =
                  3.672948

toe_sta =
          11.6106776745786

top_sta =
          56.8026163499189

Z2 =
          17.4336251568618

H0 =
                    3.5425

Tp =
                     6.337
```

```
T0 =
          5.76090909090909

R2 =
          8.43969329239713

Z2 =
          17.4336251568618

top_sta =
          56.8026163499189

Lslope =
          45.1919386753402

ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 24

dh =
         -5.14946813553532

rdh_sum =
         0.669587991433597

ans =
Berm Factor Calculation: Iteration 5, Profile Segment: 25

dh =
         -5.21381813553532

rdh_sum =
          1.35039312106405

ans =
!------- End Berm Factor Calculation, Iter: 5 ---------!

berm_width =
     2

rB =
        0.0442556805178914

rdh_mean =
         0.675196560532024

gamma_berm =
         0.985625602751793

slope =
          0.31859364452928

Irb =
          2.20583871581072

gamma_berm =
         0.985625602751793
```

```
gamma_perm =

     1

gamma_beta =

     1

gamma_rough =

                     0.75

gamma =

         0.739219202063845

ans =

!!! - - Iribaren number:   2.17 is in the valid range (0.5-10), TAW RECOMMENDED - - !!!


ans =

!!! - - slope: 1:3.1 V:H is in the valid range (1:8 - 1:1), TAW RECOMMENDED - - !!!


R2_new =

          8.43925609246532

R2del =

      0.000437199931813126

Z2 =

            17.43318795693

% final 2% runup elevation
Z2=R2_new+SWEL

Z2 =

            17.43318795693

diary off
```

PART 5: RUNUP2

for transect: YK-05

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

RUNUP2 INPUT CONVERSIONS
for transect: YK-05

Incident significant wave height: 3.25 feet

Peak wave period: 6.26 seconds

Mean wave height: 2.04 feet

Local Depth below SWEL: 37.86 feet

Mean wave height deshoaled using Hunt approximation for
celerity assuming constant wave energy flux.
References: R.G. Dean and R.A. Dalrymple. 2000. Water

Wave Mechanics for Engineers and Scientists. World
Scientific Publishing Company, River Edge New 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

Deep water wavelength, L0 (m)
L0 = g*T*T/twopi
L0 = 32.17*5.32*5.32/6.28 = 145.06
Deep water wave celerity, C0 (ft/s)
C0 = L0/T
C0 = 145.06/5.32 = 27.25
Angular frequency, sigma (rad/s)
sigma = twopi/T
sigma = 6.28/5.32 = 1.18
Hunts (1979) approximation for Celerity C1H (ft/s) at Depth D (ft)
y = sigma.*sigma.*D./g
y = 1.18*1.18*37.86/32.17 = 1.64
C1H = sqrt(g.*D./(y+1./(1 + 0.6522.*y + 0.4622.*y.^2 + 0.0864.*y.^4 +0.0675.*y.^5)))
C1H = 25.65
Shoaling Coefficient KsH
KsH = sqrt(C0/C1H)
KsH = sqrt(27.25/25.65) = 1.03
Deepwater Wave Height H0_H (ft)
H0_H = H/KsH
H0_H = 2.04/1.03 = 1.98

Deepwater mean wave height: 1.98 feet

END RUNUP2 CONVERSIONS

RUNUP2 RESULTS
for transect: YK-05

RUNUP2 SWEL:
9.00
9.00
9.00
9.00
9.00
9.00
9.00
9.00
9.00

RUNUP2 deepwater mean wave heights:
1.88

1.88
1.88
1.98
1.98
1.98
2.08
2.08
2.08

RUNUP2 mean wave periods:
5.06
5.32
5.59
5.06
5.32
5.59
5.06
5.32
5.59

RUNUP2 runup above SWEL:
5.33
5.49
5.66
5.66
5.85
6.01
5.96
6.14
6.34

RUNUP2 Mean runup height above SWEL: 5.83 feet

RUNUP2 2-percent runup height above SWEL: 12.82 feet

RUNUP2 2-percent runup elevation: 21.82 feet-NAVD88

RUNUP2 Messages:
No Messages

_____END RUNUP2 RESULTS_____

_____ACES BEACH RUNUP_____

Incident significant wave height: 3.25 feet

Significant wave height deshoaled using Hunt equation

Deepwater significant wave height: 2.77 feet

Peak wave period: 6.26 seconds

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

ACES RUNUP CALCULATED USING 'Aces_Beach_Runup.m'

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

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

!!!ACES BEACH RUNUP is NOT valid

_____END ACES BEACH RESULTS_____

PART 5 COMPLETE_____

```
  FEMA                                                  sjh           job 2
  RUNUP2 transect: YK-05                                                  1
8.00
  -28.83 -147.9 1.0
  -20.99 -115.9 1.0
  -20.71 -114.9 1.0
  -12.18 -87.9  1.0
  -12.06 -86.9  1.0
  -11.93 -82.9  1.0
  -11.90 -79.9  1.0
  0.46  3.1    1.0
  0.75  4.1    1.0
  1.67  8.1    1.0
  2.43  11.1   1.0
  2.77  13.1   1.0
  4.48  16.1   1.0
  9.98  24.1   1.0
  10.84 26.1   1.0
  11.81 28.1   1.0
  12.47 31.1   1.0
  13.95 37.1   1.0
  14.24 40.1   1.0
1 15.03 45.1   1.0
 9.0   1.88  5.06
 9.0   1.88  5.32
 9.0   1.88  5.59
 9.0   1.98  5.06
 9.0   1.98  5.32
 9.0   1.98  5.59
 9.0   2.08  5.06
 9.0   2.08  5.32
 9.0   2.08  5.59
```

****

CROSS SECTION PROFILE

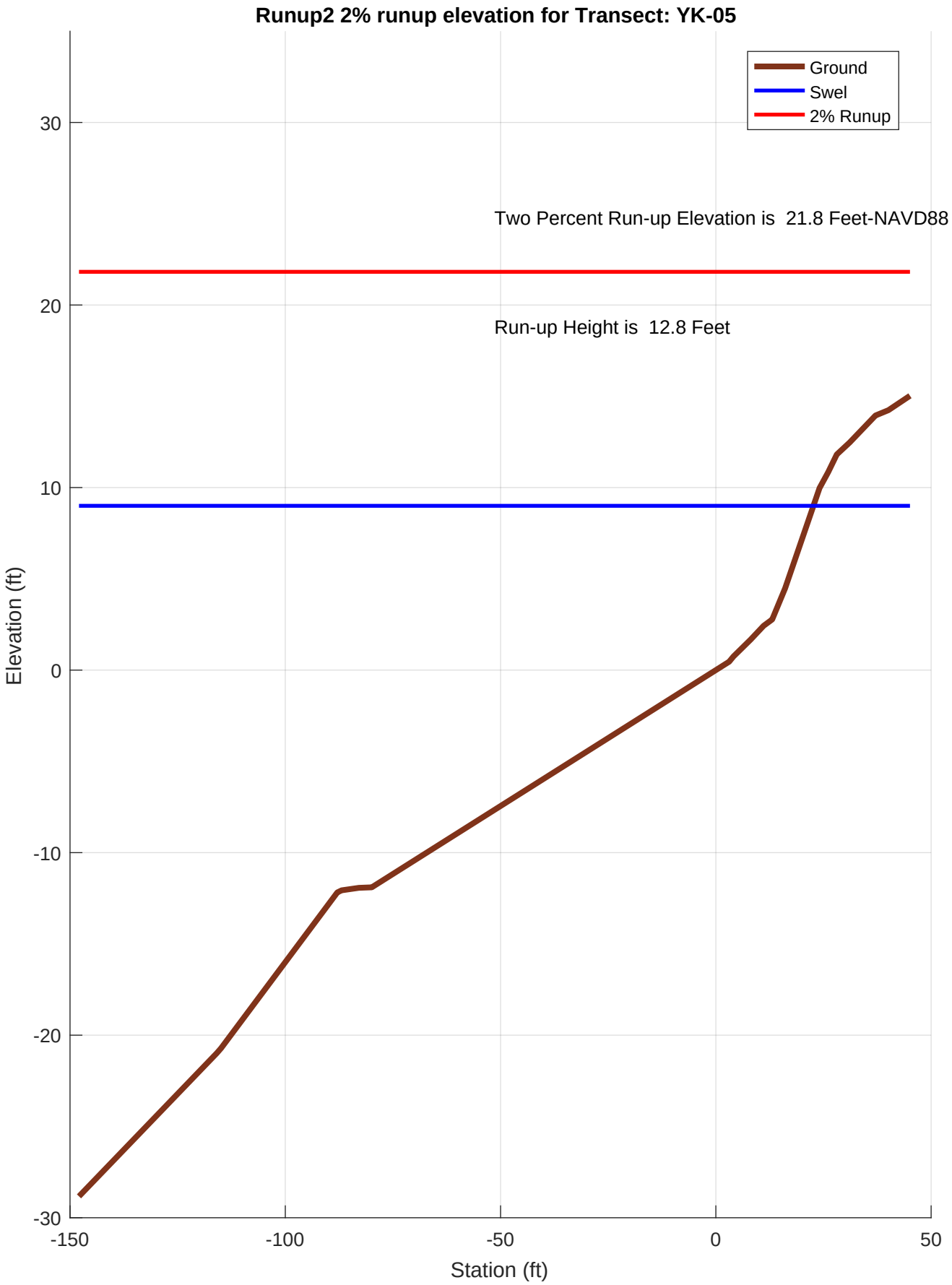
	LENGTH	ELEV.	SLOPE	ROUGHNESS
1	-147.0	-28.8		
			.00	1.00
2	-115.0	-20.9		
			5.00	1.00
3	-114.0	-20.7		
			3.03	1.00
4	-87.9	-12.1		
			10.00	1.00
5	-86.9	-12.0		
			40.00	1.00
6	-82.9	-11.9		
			FLAT	1.00
7	-79.9	-11.9		
			6.72	1.00
8	3.1	.5		
			3.45	1.00
9	4.1	.8		
			4.35	1.00
10	8.1	1.7		
			3.95	1.00
11	11.1	2.4		
			5.88	1.00
12	13.1	2.8		
			1.75	1.00
13	16.1	4.5		
			1.45	1.00
14	24.1	10.0		
			2.33	1.00
15	26.1	10.9		
			2.06	1.00
16	28.1	11.8		
			4.55	1.00
17	31.1	12.5		
			4.05	1.00
18	37.1	14.0		
			10.34	1.00
19	40.1	14.3		
			6.33	1.00
20	45.1	15.0		

LAST SLOPE 8.00 LAST ROUGHNESS 1.00

****

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.)
9.00	1.88	5.06	11	19	5.33	2.56
9.00	1.88	5.32	11	19	5.49	2.60
9.00	1.88	5.59	11	19	5.66	2.64
9.00	1.98	5.06	11	19	5.66	2.68
9.00	1.98	5.32	11	19	5.85	2.72
9.00	1.98	5.59	11	19	6.01	2.76
9.00	2.08	5.06	11	19	5.96	2.79
9.00	2.08	5.32	11	20	6.14	2.83
9.00	2.08	5.59	11	20	6.34	2.87


Runup2 2% runup elevation for Transect: YK-05
Ground
Swel
2% Runup
Two Percent Run-up Elevation is 21.8 Feet-NAVD88
Run-up Height is 12.8 Feet
Elevation (ft)
Station (ft)
30
20
10
0
-10
-20
-30
-150
-100
-50
0
50