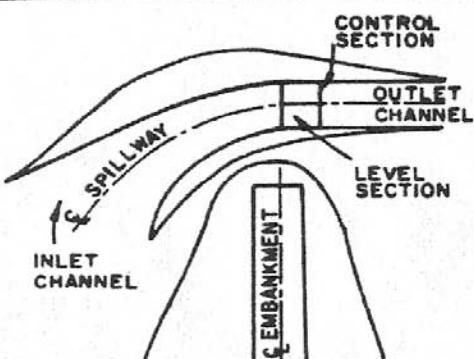
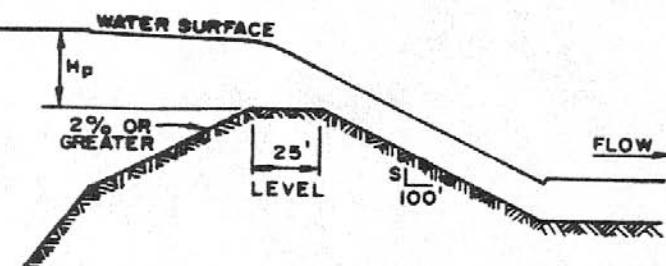


11-54.1

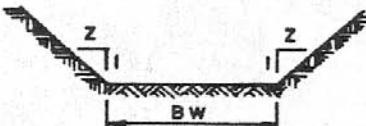
DESIGN DATA FOR VEGATATED SPILLWAYS



PLAN OF EMERGENCY SPILLWAY



PROFILE ALONG E OF VEGETATED SPILLWAY



CROSS SECTION OF VEGETATED SPILLWAY AT CONTROL SECTION

LEGEND

- H_p Difference in Elevation between Crest of Earth Spillway at the Control Section and Water Surface in Reservoir, in Feet.
- BW Bottom Width of Earth Spillway at the Control Section, in Feet.
- Q Total Discharge, in cfs.
- V Velocity, in Feet Per Second, that will exist in Channel below Control Section, at Design Q , if Constructed to Slope (S) that is shown.
- S flattest Slope (S) in %, allowable for Channel below Control Section.
- Z Side Slope Ratio.

Index

<u>Side Slope Ratio</u>	<u>Cover</u>	<u>Retardance</u>	<u>Sheets</u>
3:1	Vegetated	B	2-19
3:1	Vegetated	C-D	20-37

Note: All data noted with an asterisk (*) have supercritical flow. Data in the shaded area has exit velocities in excess of 6 FT/sec. Designs with these designations should be used with caution.

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

S(%)	V(fps)	Hp(ft)	S(%)	BW = 10'			BW = 12'			BW = 14'			BW = 16'			BW = 18'		
				V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)										
1	0.4	1.2	1	0.4	1.1	1	0.4	1.1	1	0.4	1.0	1	0.4	0.9	1	0.4	0.9	0.9
2	0.6	1.1	2	0.5	1.1	2	0.5	1.0	2	0.5	0.9	2	0.5	0.9	2	0.4	0.8	0.8
4	0.7	1.1	4	0.7	1.0	4	0.6	1.0	4	0.6	0.9	4	0.6	0.8	4	0.6	0.8	0.8
5	0.8	1.1	6	0.8	1.0	6	0.7	0.9	6	0.7	0.9	6	0.7	0.8	6	0.6	0.8	0.8
(CPS) 8	0.9	1.1	8	0.9	1.0	8	0.8	0.9	8	0.7	0.9	8	0.7	0.8	8	0.7	0.8	0.8
10	1.0	1.1	10	0.9	1.0	10	0.9	0.9	10	0.8	0.9	10	0.8	0.8	10	0.7	0.8	0.8
12	1.1	1.1	12	1.0	1.0	12	0.9	0.9	12	0.8	0.9	12	0.8	0.8	12	0.8	0.8	0.8
15	1.2	1.1	15	1.1	1.0	15	1.0	0.9	15	0.9	0.9	15	0.9	0.8	15	0.8	0.8	0.8
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	0.7	1.5	1	0.6	1.4	1	0.6	1.3	1	0.5	1.3	1	0.5	1.2	1	0.5	1.2	1.2
2	0.9	1.3	2	0.8	1.3	2	0.8	1.2	2	0.7	1.2	2	0.7	1.1	2	0.6	1.1	1.1
4	1.2	1.3	4	1.1	1.2	4	1.0	1.2	4	0.9	1.1	4	0.8	1.1	4	0.8	1.0	1.0
10	1.4	1.2	6	1.3	1.2	6	1.2	1.1	6	1.1	1.1	6	1.0	1.0	6	0.9	1.0	1.0
(CPS) 8	1.6	1.2	8	1.4	1.2	8	1.3	1.1	8	1.2	1.1	8	1.1	1.1	8	1.0	1.0	1.0
10	1.7	1.2	10	1.6	1.2	10	1.4	1.1	10	1.3	1.1	10	1.1	1.1	10	1.1	1.0	1.0
12	1.9	1.2	12	1.7	1.2	12	1.5	1.1	12	1.3	1.1	12	1.2	1.1	12	1.1	1.0	1.0
15	2.0	1.2	15	1.8	1.2	15	1.6	1.1	15	1.4	1.1	15	1.3	1.1	15	1.2	1.0	1.0
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	0.9	1.6	1	0.9	1.5	1	0.8	1.4	1	0.7	1.4	1	0.7	1.3	1	0.7	1.3	1.3
2	1.2	1.4	2	1.1	1.3	2	1.1	1.3	2	1.0	1.2	2	0.9	1.2	2	0.8	1.2	1.2
4	1.7	1.3	4	1.5	1.3	4	1.4	1.2	4	1.3	1.2	4	1.2	1.1	4	1.1	1.1	1.1
15	6	2.0	1.3	6	1.8	1.3	6	1.6	1.2	6	1.5	1.2	6	1.4	1.1	6	1.3	1.1
(CPS) 8	2.2	1.3	8	2.0	1.2	8	1.8	1.2	8	1.6	1.2	8	1.5	1.1	8	1.4	1.1	1.1
10	2.4	1.3	10	2.1	1.2	10	1.9	1.2	10	1.8	1.2	10	1.6	1.1	10	1.5	1.1	1.1
12	2.5	1.3	12	2.3	1.2	12	2.1	1.2	12	1.9	1.1	12	1.7	1.1	12	1.6	1.1	1.1
15	2.8	1.3	15	2.5	1.2	15	2.2	1.2	15	2.0	1.1	15	1.8	1.1	15	1.7	1.1	1.1

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	0.3	0.8	1	0.3	0.8	1	0.3	0.7	1	0.3	0.7
2	0.4	0.8	2	0.4	0.7	2	0.4	0.7	2	0.4	0.6
4	0.5	0.8	4	0.5	0.7	4	0.5	0.7	4	0.5	0.6
5	0.6	0.8	6	0.6	0.7	6	0.6	0.7	6	0.5	0.6
(CPS)	8	0.7	8	0.6	0.7	8	0.6	0.7	8	0.6	0.6
10	0.7	0.8	10	0.7	0.7	10	0.7	0.7	10	0.6	0.6
12	0.8	0.8	12	0.7	0.7	12	0.7	0.7	12	0.7	0.6
15	0.8	0.8	15	0.8	0.7	15	0.8	0.7	15	0.7	0.6
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	0.5	1.1	1	0.4	1.1	1	0.4	1.0	1	0.4	1.0
2	0.6	1.1	2	0.6	1.0	2	0.5	1.0	2	0.5	0.9
4	0.7	1.0	4	0.7	1.0	4	0.7	1.0	4	0.6	0.9
6	0.8	1.0	6	0.8	1.0	6	0.8	0.9	6	0.7	0.9
(CPS)	8	0.9	8	0.9	1.0	8	0.8	0.9	8	0.8	0.9
10	1.0	1.0	10	1.0	1.0	10	0.9	1.0	10	0.8	0.9
12	1.1	1.0	12	1.0	1.0	12	1.0	0.9	12	0.9	0.9
15	1.1	1.0	15	1.1	1.0	15	1.0	0.9	15	0.9	0.9
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	0.6	1.3	1	0.6	1.2	1	0.5	1.2	1	0.5	1.2
2	0.8	1.2	2	0.7	1.1	2	0.7	1.1	2	0.6	1.1
4	1.0	1.1	4	0.9	1.1	4	1.1	1.0	4	0.8	1.0
6	1.2	1.1	6	1.1	1.1	6	1.0	1.0	6	0.9	1.0
(CPS)	8	1.3	1.1	8	1.2	1.1	8	1.1	1.0	8	1.0
10	1.4	1.1	10	1.3	1.1	10	1.2	1.0	10	1.1	1.0
12	1.5	1.1	12	1.4	1.1	12	1.3	1.2	12	1.1	1.0
15	1.6	1.1	15	1.5	1.1	15	1.4	1.0	15	1.2	1.0

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'			BW = 34'			BW = 36'			BW = 38'			BW = 40'			BW = 42'		
S(%)	V(fps)	Hp(ft)															
1	0.3	0.7	1	0.3	0.6	1	0.3	0.6	1	0.3	0.6	1	0.3	0.6	1	0.3	0.6
2	0.4	0.6	2	0.4	0.6	2	0.4	0.6	2	0.3	0.6	2	0.3	0.6	2	0.3	0.6
4	0.5	0.6	4	0.4	0.6	4	0.4	0.6	4	0.4	0.6	4	0.4	0.6	4	0.4	0.6
5	0.5	0.6	6	0.5	0.6	6	0.5	0.6	6	0.5	0.6	6	0.5	0.6	6	0.5	0.6
(CFS)	8	0.6	8	0.6	8	0.5	0.6	8	0.5	0.6	8	0.5	0.6	8	0.5	0.6	8
10	0.6	0.6	10	0.6	0.6	10	0.6	0.6	10	0.6	0.6	10	0.6	0.6	10	0.6	0.6
12	0.6	0.6	12	0.6	0.6	12	0.6	0.6	12	0.6	0.6	12	0.6	0.6	12	0.6	0.6
15	0.7	0.6	15	0.7	0.6	15	0.7	0.6	15	0.6	0.6	15	0.6	0.6	15	0.6	0.6
1	0.4	0.9	1	0.4	0.9	1	0.4	0.9	1	0.4	0.9	1	0.4	0.9	1	0.4	0.9
2	0.5	0.9	2	0.5	0.9	2	0.5	0.9	2	0.5	0.9	2	0.4	0.8	2	0.4	0.8
4	0.6	0.9	4	0.6	0.8	4	0.6	0.8	4	0.6	0.8	4	0.5	0.8	4	0.5	0.8
10	0.6	0.8	6	0.7	0.8	6	0.6	0.8	6	0.6	0.8	6	0.6	0.8	6	0.6	0.8
(CFS)	8	0.7	8	0.7	0.8	8	0.7	0.8	8	0.7	0.8	8	0.7	0.8	8	0.7	0.8
10	0.8	0.8	10	0.8	0.8	10	0.8	0.8	10	0.8	0.8	10	0.7	0.8	10	0.7	0.8
12	0.8	0.8	12	0.8	0.8	12	0.8	0.8	12	0.8	0.8	12	0.8	0.8	12	0.8	0.8
15	0.9	0.8	15	0.9	0.8	15	0.9	0.8	15	0.9	0.8	15	0.8	0.8	15	0.8	0.8
1	0.5	1.1	1	0.5	1.1	1	0.4	1.1	1	0.4	1.0	1	0.4	1.0	1	0.4	1.0
2	0.6	1.0	2	0.6	1.0	2	0.6	1.0	2	0.5	1.0	2	0.5	1.0	2	0.5	1.0
4	0.7	1.0	4	0.7	1.0	4	0.7	1.0	4	0.7	1.0	4	0.7	1.0	4	0.7	1.0
15	0.8	1.0	6	0.8	1.0	6	0.8	0.9	6	0.8	0.9	6	0.7	0.9	6	0.7	0.9
(CFS)	8	0.9	8	0.9	1.0	8	0.9	0.9	8	0.8	0.9	8	0.8	0.9	8	0.8	0.9
10	1.0	1.0	10	1.0	0.9	10	0.9	0.9	10	0.9	0.9	10	0.9	0.9	10	0.9	0.9
12	1.1	1.0	12	1.0	0.9	12	1.0	0.9	12	1.0	0.9	12	1.0	0.9	12	1.0	0.9
15	1.1	1.0	15	1.1	0.9	15	1.1	0.9	15	1.0	0.9	15	1.0	0.9	15	1.0	0.9

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'				BW = 10'				BW = 12'				BW = 14'				BW = 16'				BW = 18'			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	1.1	1.6	1	1.1	1.6	1	1.0	1.5	1	0.9	1.4	1	0.9	1.4	1	0.8	1.3	1	0.8	1.3			
2	1.5	1.5	2	1.4	1.4	2	1.3	1.4	2	1.2	1.3	2	1.1	1.3	2	1.1	1.2	2	1.1	1.2			
4	2.0	1.4	4	1.9	1.3	4	1.7	1.3	4	1.6	1.2	4	1.5	1.2	4	1.4	1.2	4	1.4	1.2			
6	2.4	1.4	6	2.2	1.3	6	2.0	1.3	6	1.8	1.2	6	1.7	1.2	6	1.6	1.2	6	1.6	1.2			
8	2.7	1.4	8	2.4	1.3	8	2.2	1.3	8	2.0	1.2	8	1.9	1.2	8	1.7	1.1	8	1.7	1.1			
10	2.9	1.4	10	2.6	1.3	10	2.4	1.3	10	2.2	1.2	10	2.0	1.2	10	1.9	1.1	10	1.9	1.1			
12	3.1	1.4	12	2.8	1.3	12	2.6	1.3	12	2.4	1.2	12	2.2	1.2	12	2.0	1.1	12	2.0	1.1			
15	3.4	1.4	15	3.1	1.3	15	2.8	1.3	15	2.5	1.2	15	2.3	1.2	15	2.2	1.1	15	2.2	1.1			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	1.5	1.8	1	1.4	1.7	1	1.3	1.6	1	1.3	1.5	1	1.2	1.5	1	1.1	1.4	1	1.1	1.4			
2	2.0	1.7	2	1.9	1.6	2	1.8	1.5	2	1.6	1.4	2	1.5	1.4	2	1.5	1.3	2	1.5	1.3			
4	2.7	1.6	4	2.5	1.5	4	2.3	1.4	4	2.1	1.4	4	2.0	1.3	4	1.9	1.3	4	1.9	1.3			
6	3.1	1.6	6	2.9	1.5	6	2.6	1.4	6	2.5	1.3	6	2.3	1.3	6	2.2	1.2	6	2.2	1.2			
8	3.5	1.6	8	3.2	1.5	8	2.9	1.4	8	2.7	1.3	8	2.6	1.3	8	2.4	1.2	8	2.4	1.2			
10	3.8	1.6	10	3.5	1.5	10	3.2	1.4	10	3.0	1.3	10	2.8	1.3	10	2.6	1.2	10	2.6	1.2			
12	4.1	1.6	12	3.7	1.5	12	3.4	1.4	12	3.2	1.3	12	2.9	1.3	12	2.7	1.2	12	2.7	1.2			
15*	4.5	1.6	15*	4.1	1.5	15	3.7	1.4	15	3.4	1.3	15	3.2	1.3	15	3.0	1.2	15	3.0	1.2			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	1.8	2.0	1	1.7	1.8	1	1.6	1.7	1	1.5	1.7	1	1.5	1.6	1	1.4	1.5	1	1.4	1.5			
2	2.4	1.8	2	2.3	1.7	2	2.1	1.6	2	2.0	1.5	2	1.9	1.5	2	1.8	1.4	2	1.8	1.4			
4	3.2	1.7	4	3.0	1.6	4	2.8	1.5	4	2.6	1.5	4	2.4	1.4	4	2.3	1.4	4	2.3	1.4			
6	3.8	1.7	6	3.5	1.6	6	3.2	1.5	6	3.0	1.4	6	2.8	1.4	6	2.7	1.3	6	2.7	1.3			
8	4.3	1.7	8	3.9	1.6	8	3.6	1.5	8	3.3	1.4	8	3.1	1.4	8	2.9	1.3	8	2.9	1.3			
10*	4.6	1.7	10	4.3	1.6	10	3.9	1.5	10	3.6	1.4	10	3.4	1.4	10	3.2	1.3	10	3.2	1.3			
12*	5.0	1.7	12*	4.5	1.6	12	4.2	1.5	12	3.9	1.4	12	3.6	1.4	12	3.4	1.3	12	3.4	1.3			
15*	5.4	1.7	15*	4.9	1.6	15*	4.5	1.5	15*	4.2	1.4	15	3.9	1.4	15	3.6	1.3	15	3.6	1.3			

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	0.8	1.3	1	0.7	1.3	1	0.7	1.3	1	0.6	1.2
2	1.0	1.2	2	0.9	1.2	2	0.8	1.1	2	0.8	1.1
4	1.3	1.1	4	1.2	1.1	4	1.1	1.1	4	1.0	1.1
20	6	1.5	1.1	6	1.4	1.1	6	1.2	1.1	6	1.1
(CFS)	6	1.6	1.1	8	1.5	1.1	8	1.3	1.1	8	1.2
10	1.8	1.1	10	1.6	1.1	10	1.5	1.1	10	1.4	1.0
12	1.9	1.1	12	1.7	1.1	12	1.6	1.1	12	1.5	1.0
15	2.0	1.1	15	1.9	1.1	15	1.8	1.1	15	1.7	1.0
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.1	1.4	1	1.0	1.4	1	1.0	1.3	1	0.9	1.3
2	1.4	1.3	2	1.3	1.3	2	1.2	1.2	2	1.1	1.2
4	1.8	1.2	4	1.7	1.2	4	1.6	1.2	4	1.4	1.1
30	6	2.0	1.2	6	1.9	1.2	6	1.8	1.2	6	1.6
(CFS)	8	2.2	1.2	8	2.1	1.2	8	2.0	1.2	8	1.8
10	2.4	1.2	10	2.3	1.2	10	2.1	1.2	10	1.9	1.1
12	2.6	1.2	12	2.4	1.2	12	2.3	1.1	12	2.0	1.1
15	2.8	1.2	15	2.6	1.2	15	2.5	1.1	15	2.3	1.1
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.3	1.5	1	1.3	1.5	1	1.2	1.4	1	1.2	1.4
2	1.7	1.4	2	1.6	1.3	2	1.5	1.3	2	1.4	1.2
4	2.2	1.3	4	2.1	1.3	4	2.0	1.2	4	1.9	1.2
40	6	2.5	1.3	6	2.4	1.3	6	2.3	1.2	6	2.2
(CFS)	8	2.8	1.3	8	2.6	1.3	8	2.5	1.2	8	2.4
10	3.0	1.3	10	2.8	1.3	10	2.7	1.2	10	2.5	1.2
12	3.2	1.3	12	3.0	1.3	12	2.8	1.2	12	2.7	1.2
15	3.4	1.3	15	3.2	1.3	15	3.0	1.2	15	2.9	1.2

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'				BW = 34'				BW = 36'				BW = 38'				BW = 40'			
S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)		
1	0.6	1.2	1	0.6	1.2	1	0.5	1.2	1	0.5	1.1	1	0.5	1.1	1	0.5	1.1	1	
2	0.7	1.1	2	0.7	1.1	2	0.7	1.1	2	0.7	1.1	2	0.6	1.0	2	0.6	1.0	2	
4	0.9	1.0	4	0.9	1.0	4	0.8	1.0	4	0.8	1.0	4	0.8	1.0	4	0.8	1.0	4	
20	6	1.1	1.0	6	1.0	6	0.9	1.0	6	0.9	1.0	6	0.9	1.0	6	0.9	1.0	6	
(CFS)	8	1.2	1.0	8	1.1	8	1.0	1.0	8	1.0	1.0	8	1.0	1.0	8	1.0	1.0	8	
	10	1.2	1.0	10	1.2	10	1.1	1.0	10	1.1	1.0	10	1.0	1.0	10	1.1	1.0	10	
	12	1.3	1.0	12	1.3	12	1.2	1.0	12	1.2	1.0	12	1.2	1.0	12	1.1	1.0	12	
	15	1.4	1.0	15	1.3	15	1.3	1.0	15	1.3	1.0	15	1.2	1.0	15	1.2	1.0	15	
S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)		
1	0.8	1.3	1	0.8	1.2	1	0.8	1.2	1	0.7	1.2	1	0.7	1.2	1	0.7	1.2	1	
2	1.0	1.2	2	1.0	1.1	2	0.9	1.1	2	0.9	1.1	2	0.9	1.1	2	0.9	1.1	2	
4	1.3	1.1	4	1.2	1.1	4	1.2	1.1	4	1.1	1.1	4	1.1	1.1	4	1.1	1.1	4	
30	6	1.5	1.1	6	1.4	6	1.4	1.1	6	1.3	1.1	6	1.3	1.1	6	1.3	1.1	6	
(CFS)	8	1.6	1.1	8	1.6	8	1.5	1.1	8	1.4	1.1	8	1.4	1.1	8	1.4	1.0	8	
	10	1.7	1.1	10	1.7	10	1.6	1.1	10	1.5	1.1	10	1.5	1.0	10	1.5	1.0	10	
	12	1.9	1.1	12	1.8	12	1.7	1.1	12	1.6	1.1	12	1.6	1.0	12	1.6	1.0	12	
	15	2.0	1.1	15	1.9	15	1.8	1.1	15	1.7	1.1	15	1.7	1.0	15	1.7	1.0	15	
S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)	S(%)	V(fps)	H _p (ft)		
1	1.0	1.3	1	1.0	1.3	1	0.9	1.3	1	0.9	1.3	1	0.9	1.3	1	0.9	1.3	1	
2	1.3	1.2	2	1.2	1.2	2	1.2	1.2	2	1.2	1.2	2	1.2	1.2	2	1.1	1.2	2	
4	1.6	1.2	4	1.6	1.1	4	1.5	1.1	4	1.4	1.1	4	1.4	1.1	4	1.4	1.1	4	
40	6	1.9	1.2	6	1.8	6	1.7	1.1	6	1.6	1.1	6	1.6	1.1	6	1.6	1.1	6	
(CFS)	8	2.0	1.1	8	2.0	8	1.9	1.1	8	1.8	1.1	8	1.8	1.1	8	1.7	1.1	8	
	10	2.2	1.1	10	2.1	10	2.0	1.1	10	1.9	1.1	10	1.9	1.0	10	1.9	1.1	10	
	12	2.3	1.1	12	2.2	12	2.1	1.1	12	2.1	1.1	12	2.1	1.1	12	2.0	1.1	12	
	15	2.5	1.1	15	2.4	15	2.3	1.1	15	2.2	1.1	15	2.1	1.1	15	2.1	1.1	15	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'			BW = 10'			BW = 12'			BW = 14'			BW = 16'			BW = 18'			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	2.1	2.1	1	2.0	1.9	1	1.9	1.8	1	1.8	1.8	1	1.7	1.7	1	1.6	1.6	
2	2.8	1.9	2	2.6	1.8	2	2.5	1.7	2	2.3	1.6	2	2.2	1.6	2	2.1	1.5	
4	3.7	1.8	4	3.5	1.7	4	3.3	1.6	4	3.0	1.6	4	2.9	1.5	4	2.7	1.4	
50	6	4.4	6	4.1	1.7	6	3.8	1.6	6	3.5	1.5	6	3.3	1.5	6	3.1	1.4	
(CFS)	8*	4.9	1.8	8	4.5	1.7	8	4.2	1.6	8	3.9	1.5	8	3.7	1.5	8	3.4	1.4
10*	5.3	1.8	10*	4.9	1.7	10	4.6	1.6	10	4.2	1.5	10	4.0	1.5	10	3.7	1.4	
12*	5.7	1.8	12*	5.3	1.7	12*	4.9	1.6	12*	4.5	1.5	12*	4.2	1.5	12*	4.0	1.4	
15*	6.2	1.8	15*	5.7	1.7	15*	5.3	1.6	15*	4.9	1.5	15*	4.6	1.5	15*	4.3	1.4	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	2.3	2.2	1	2.2	2.0	1	2.1	1.9	1	2.0	1.9	1	1.9	1.8	1	1.8	1.7	
2	3.1	2.0	2	3.0	1.9	2	2.8	1.8	2	2.7	1.7	2	2.5	1.6	2	2.4	1.6	
4	4.1	1.9	4	3.9	1.8	4	3.7	1.7	4	3.4	1.6	4	3.2	1.6	4	3.1	1.5	
60	6	4.9	1.9	6	4.6	1.8	6	4.3	1.7	6	4.0	1.6	6	3.7	1.6	6	3.5	1.5
(CFS)	8*	5.5	1.9	8*	5.1	1.8	8	4.7	1.7	8	4.4	1.6	8	4.2	1.6	8	3.9	1.5
10*	5.9	1.9	10*	5.5	1.8	10*	5.1	1.7	10*	4.8	1.6	10	4.5	1.6	10	4.2	1.5	
12*	6.4	1.9	12*	5.9	1.8	12*	5.5	1.7	12*	5.1	1.6	12*	4.8	1.6	12*	4.5	1.5	
15*	6.9	1.9	15*	5.4	1.8	15*	5.9	1.7	15*	5.5	1.6	15*	5.2	1.6	15*	4.9	1.5	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	2.7	2.4	1	2.7	2.2	1	2.5	2.1	1	2.4	2.0	1	2.3	1.9	1	2.2	1.9	
2	3.7	2.2	2	3.5	2.1	2	3.3	2.0	2	3.2	1.9	2	3.0	1.8	2	2.9	1.7	
4	4.9	2.2	4	4.6	2.0	4	4.4	1.9	4	4.1	1.8	4	3.9	1.7	4	3.7	1.7	
80	6*	5.7	2.1	6*	5.4	2.0	6	5.1	1.9	6	4.8	1.8	6	4.5	1.7	6	4.3	1.6
(CFS)	8*	6.4	2.1	8*	6.0	2.0	8*	5.7	1.9	8*	5.3	1.8	8*	5.0	1.7	8	4.7	1.6
10*	7.0	2.1	10*	6.5	2.0	10*	6.1	1.9	10*	5.7	1.8	10*	5.4	1.7	10*	5.1	1.6	
12*	7.5	2.1	12*	7.0	2.0	12*	6.6	1.9	12*	6.2	1.8	12*	5.8	1.7	12*	5.5	1.6	
15*	8.1	2.1	15*	7.6	2.0	15*	7.1	1.9	15*	6.6	1.8	15*	6.3	1.7	15*	5.9	1.6	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.5	1.6	1	1.5	1.5	1	1.4	1.5	1	1.3	1.4
2	2.0	1.5	2	1.9	1.4	2	1.8	1.4	2	1.7	1.3
4	2.5	1.4	4	2.4	1.4	4	2.3	1.3	4	2.2	1.2
50	6	2.9	1.4	6	2.8	1.3	6	2.6	1.3	6	2.4
(CFS)	8	3.2	1.4	8	3.1	1.3	8	2.9	1.3	6	2.4
10	3.5	1.4	10	3.3	1.3	10	3.1	1.3	10	2.8	1.2
12	3.7	1.4	12	3.5	1.3	12	3.3	1.3	12	3.0	1.2
15	4.0	1.4	15	3.8	1.3	15	3.6	1.3	15	3.4	1.2
S(%)		V(fps)		H _p (ft)		S(%)		V(fps)		H _p (ft)	
1	1.7	1.7	1	1.7	1.6	1	1.6	1.6	1	1.5	1.5
2	2.3	1.5	2	2.2	1.5	2	2.1	1.4	2	2.0	1.4
4	2.9	1.5	4	2.8	1.4	4	2.6	1.4	4	2.5	1.4
60	6	3.3	1.5	6	3.2	1.4	6	3.0	1.4	6	2.9
(CFS)	8	3.7	1.4	8	3.5	1.4	8	3.3	1.4	8	3.2
10	4.0	1.4	10	3.8	1.4	10	3.6	1.4	10	3.4	1.3
12	4.2	1.4	12	4.0	1.4	12	3.8	1.4	12	3.6	1.3
15*	4.6	1.4	15*	4.3	1.4	15	4.1	1.4	15	3.9	1.3
S(%)		V(fps)		H _p (ft)		S(%)		V(fps)		H _p (ft)	
1	2.1	1.8	1	2.1	1.7	1	2.0	1.7	1	1.9	1.6
2	2.8	1.7	2	2.6	1.6	2	2.5	1.6	2	2.4	1.5
4	3.5	1.6	4	3.4	1.5	4	3.2	1.5	4	3.1	1.5
80	6	4.1	1.6	6	3.9	1.5	6	3.7	1.5	6	3.5
(CFS)	8	4.5	1.6	8	4.3	1.5	8	4.1	1.5	8	3.9
10*	4.9	1.6	10*	4.6	1.5	10	4.4	1.5	10	4.2	1.4
12*	5.2	1.6	12*	4.9	1.5	12*	4.7	1.5	12*	4.5	1.4
15*	5.6	1.6	15*	5.3	1.5	15*	5.0	1.5	15*	4.8	1.4

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'		BW = 34'		BW = 36'		BW = 38'		BW = 40'		BW = 42'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.2	1.4	1	1.2	1.4	1	1.1	1.3	1	1.1	1.3
2	1.5	1.3	2	1.5	0.3	2	1.4	0.2	2	1.4	1.2
4	1.9	1.2	4	1.9	0.2	4	1.8	0.2	4	1.7	1.2
50	6	2.2	1.2	6	2.1	0.2	6	2.0	0.2	6	1.9
(CPS)	8	2.4	1.2	8	2.3	0.2	8	2.2	0.2	8	2.1
10	2.6	1.2	10	2.5	0.2	10	2.4	0.2	10	2.3	1.1
12	2.8	1.2	12	2.6	0.2	12	2.5	0.2	12	2.4	1.1
15	3.0	1.2	15	2.9	0.2	15	2.7	0.2	15	2.6	1.1
											15
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.4	1.4	1	1.3	1.4	1	1.3	1.4	1	1.2	1.4
2	1.8	1.3	2	1.7	1.3	2	1.6	1.3	2	1.5	1.3
4	2.2	1.3	4	2.1	1.3	4	2.1	1.2	4	1.9	0.2
60	6	2.5	1.3	6	2.4	1.2	6	2.3	1.2	6	2.2
(CPS)	8	2.8	1.3	8	2.7	1.2	8	2.6	1.2	8	2.4
10	3.0	1.3	10	2.9	1.2	10	2.8	1.2	10	2.7	0.2
12	3.2	1.3	12	3.0	1.2	12	2.9	1.2	12	2.8	0.2
15	3.4	1.3	15	3.3	1.2	15	3.1	1.2	15	3.0	0.2
											15
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.7	1.6	1	1.6	1.5	1	1.6	1.5	1	1.5	1.5
2	2.2	1.4	2	2.1	1.4	2	2.0	1.4	2	1.9	1.3
4	2.7	1.4	4	2.6	1.4	4	2.5	1.3	4	2.4	1.3
80	6	3.1	1.4	6	3.0	1.3	6	2.9	1.3	6	2.7
(CPS)	8	3.4	1.4	8	3.3	1.3	8	3.2	1.3	8	3.0
10	3.7	1.4	10	3.5	1.3	10	3.4	1.3	10	3.3	1.3
12	3.9	1.4	12	3.7	1.3	12	3.6	1.3	12	3.5	1.3
15*	4.2	1.4	15	4.0	1.3	15	3.9	1.3	15	3.7	1.3
											15

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'			BW = 10'			BW = 12'			BW = 14'			BW = 16'			BW = 18'		
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	3.1	2.6	1	3.0	2.4	1	2.9	2.3	1	2.8	2.2	1	2.7	2.1	1	2.6	2.0
2	4.1	2.4	2	4.0	2.2	2	3.8	2.1	2	3.6	2.0	2	3.5	1.9	2	3.3	1.8
4	5.4	2.3	4	5.2	2.2	4	5.0	2.1	4	4.7	2.0	4	4.5	1.9	4	4.3	1.8
100	6.4	2.3	6*	6.1	2.2	6*	5.8	2.1	6*	5.5	2.0	6	5.2	1.9	6	4.9	1.8
(CFS) 60*	7.2	2.3	6*	6.8	2.2	6*	6.4	2.1	6*	6.0	2.0	8*	5.7	1.9	8*	5.5	1.8
10*	7.8	2.3	10*	7.4	2.2	10*	7.1	2.1	10*	6.8	2.0	10*	6.2	1.9	10*	5.9	1.8
12*	8.6	2.3	12*	7.9	2.2	12*	7.1	2.1	12*	7.0	2.0	12*	6.6	1.9	12*	6.3	1.8
15*	9.5	2.3	15*	8.6	2.2	15*	8.1	2.1	15*	7.5	2.0	15*	7.2	1.9	15*	6.8	1.8
 			S(%)	V(fps)	Hp(ft)												
1	3.4	2.8	1	3.3	2.6	1	3.2	2.5	1	3.1	2.4	1	3.1	2.2	1	2.9	2.2
2	3.6	2.6	2	4.4	2.5	2	4.3	2.3	2	4.1	2.2	2	4.0	2.1	2	3.8	2.0
4	5.0	2.5	4	5.8	2.4	4	5.6	2.3	4	5.3	2.1	4	5.1	2.0	4	4.9	2.0
125	6*	2.6	6*	6.8	2.4	6*	6.9	2.3	6*	6.2	2.1	6*	5.9	2.0	6*	5.6	2.0
(CFS) 8*	8.0	2.6	8*	7.6	2.4	8*	7.2	2.3	8*	6.8	2.1	8*	7.1	2.0	8*	6.3	2.0
10*	10*	2.3	10*	9.3	2.4	10*	7.9	2.3	10*	7.4	2.1	10*	7.1	2.0	10*	6.8	2.0
12*	12*	2.3	12*	8.4	2.4	12*	8.1	2.3	12*	7.9	2.1	12*	7.5	2.0	12*	7.2	2.0
15*	15*	2.3	15*	9.5	2.4	15*	9.6	2.3	15*	9.6	2.1	15*	8.2	2.0	15*	7.8	2.0
 			S(%)	V(fps)	Hp(ft)												
1	3.7	3.0	1	3.6	2.8	1	3.6	2.6	1	3.5	2.5	1	3.4	2.4	1	3.3	2.3
2	5.0	2.8	2	4.9	2.6	2	4.7	2.5	2	4.6	2.4	2	4.4	2.3	2	4.2	2.2
4*	6.6	2.8	4*	6.3	2.8	4*	6.1	2.7	4	5.9	2.3	4	5.6	2.2	4	5.4	2.1
150	7.2	2.8	6*	7.5	2.6	6*	7.1	2.5	6*	6.8	2.4	6*	6.5	2.3	6*	6.3	2.1
(CFS) 8*	8.7	2.8	8*	8.2	2.8	8*	7.9	2.7	8*	7.7	2.5	8*	7.4	2.4	8*	7.1	2.1

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'			BW = 22'			BW = 24'			BW = 26'			BW = 28'			BW = 30'			
S(%)	V(fps)	Hp(ft)																
1	2.5	1.9	1	2.4	1.9	1	2.3	1.8	1	2.2	1.8	1	2.1	1.7	1	2.1	1.7	
2	3.2	1.8	2	3.1	1.7	2	2.9	1.7	2	2.8	1.6	2	2.7	1.6	2	2.6	1.6	
4	4.1	1.7	4	3.9	1.7	4	3.7	1.6	4	3.6	1.6	4	3.5	1.5	4	3.3	1.5	
100	6	4.7	1.7	6	4.5	1.7	6	4.3	1.6	6	4.1	1.6	6	4.0	1.5	6	3.8	1.5
(CRFS)	8*	5.2	1.7	8*	5.0	1.7	8	4.8	1.6	8	4.5	1.6	8	4.4	1.5	8	4.2	1.5
10*	5.6	1.7	10*	5.4	1.7	10*	5.1	1.6	10*	4.9	1.6	10*	4.7	1.5	10	4.5	1.5	
12*	6.0	1.7	12*	5.7	1.7	12*	5.4	1.6	12*	5.2	1.6	12*	5.0	1.5	12*	4.8	1.5	
15*	6.5	1.7	15*	6.2	1.7	15*	5.9	1.6	15*	5.6	1.6	15*	5.4	1.5	15*	5.1	1.5	
<hr/>																		
S(%)	V(fps)	Hp(ft)																
1	2.8	2.1	1	2.7	2.0	1	2.7	1.9	1	2.6	1.8	1	2.5	1.8	1	2.4	1.8	
2	3.7	1.9	2	3.5	1.9	2	3.4	1.8	2	3.3	1.8	2	3.2	1.7	2	3.1	1.7	
4	4.7	1.9	4	4.5	1.8	4	4.3	1.8	4	4.2	1.7	4	4.0	1.7	4	3.9	1.6	
125	6*	5.4	1.9	6	5.2	1.8	6	5.0	1.7	6	4.8	1.7	6	4.6	1.7	6	4.4	1.6
(CRFS)	8*	6.0	1.9	8*	5.7	1.8	8*	5.5	1.7	8*	5.3	1.7	8*	5.1	1.6	8*	4.9	1.6
10*	6.5	1.9	10*	6.2	1.8	10*	5.9	1.7	10*	5.7	1.7	10*	5.5	1.6	10*	5.2	1.6	
12*	6.9	1.9	12*	6.6	1.8	12*	6.3	1.7	12*	6.0	1.7	12*	5.8	1.6	12*	5.6	1.6	
15*	7.4	1.9	15*	7.1	1.8	15*	6.8	1.7	15*	6.5	1.7	15*	6.2	1.6	15*	5.9	1.6	
<hr/>																		
S(%)	V(fps)	Hp(ft)																
1	3.2	2.2	1	3.1	2.1	1	3.0	2.1	1	2.9	2.0	1	2.8	2.0	1	2.7	1.9	
2	4.1	2.1	2	3.9	2.0	2	3.8	1.9	2	3.7	1.9	2	3.6	1.8	2	3.4	1.8	
4	5.2	2.0	4	5.0	2.0	4	4.8	1.9	4	4.7	1.8	4	4.5	1.8	4	4.4	1.7	
150	6*	6.0	6*	5.8	2.0	6*	5.6	1.9	6*	5.4	1.8	6	5.2	1.8	6	5.0	1.7	
(CRFS)	8*	6.6	6*	6.4	2.0	8*	6.1	1.9	8*	5.9	1.8	8*	5.7	1.8	8*	5.5	1.7	
10*	7.1	2.0	10*	6.9	2.0	10*	6.6	1.9	10*	6.4	1.9	10*	6.1	1.8	10*	5.9	1.7	
12*	7.6	2.0	12*	7.3	2.0	12*	7.0	1.9	12*	6.8	1.9	12*	6.5	1.8	12*	6.3	1.7	
15*	8.2	2.0	15*	7.9	2.0	15*	7.6	1.9	15*	7.3	1.9	15*	7.0	1.8	15*	6.7	1.7	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'		BW = 34'		BW = 36'		BW = 38'		BW = 40'		BW = 40'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	2.0	1.6	1	1.9	1.6	1	1.9	1.6	1	1.8	1.5
2	2.5	1.5	2	2.4	1.5	2	2.4	1.5	2	2.2	1.4
4	3.2	1.4	4	3.1	1.4	4	3.0	1.4	4	2.8	1.4
100	6	3.7	1.4	6	3.5	1.4	6	3.4	1.4	6	3.2
(CFS)	8	4.0	1.4	8	3.9	1.4	8	3.7	1.4	8	3.4
10	4.3	1.4	10	4.2	1.4	10	4.0	1.4	10	3.9	1.4
12*	4.6	1.4	12*	4.4	1.4	12	4.3	1.4	12	4.1	1.4
15*	4.9	1.4	15*	4.7	1.4	15*	4.6	1.4	15*	4.4	1.4
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	2.3	1.8	1	2.3	1.7	1	2.2	1.7	1	2.1	1.6
2	2.9	1.6	2	2.9	1.6	2	2.8	1.6	2	2.7	1.5
4	3.7	1.6	4	3.6	1.5	4	3.5	1.5	4	3.4	1.5
125	6	4.3	1.6	6	4.1	1.5	6	4.0	1.5	6	3.9
(CFS)	8	4.7	1.6	8	4.5	1.5	8	4.4	1.5	8	4.2
10*	5.1	1.6	10*	4.9	1.5	10*	4.7	1.5	10	4.6	1.5
12*	5.3	1.6	12*	5.2	1.5	12*	5.0	1.5	12*	4.8	1.5
15*	5.8	1.6	15*	5.6	1.5	15*	5.4	1.5	15*	5.2	1.5
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	2.6	1.9	1	2.5	1.8	1	2.5	1.8	1	2.4	1.8
2	3.3	1.7	2	3.2	1.7	2	3.1	1.7	2	3.0	1.6
4	4.2	1.7	4	4.1	1.7	4	3.9	1.6	4	3.8	1.6
150	6	4.8	1.7	6	4.7	1.6	6	4.5	1.6	6	4.4
(CFS)	8*	5.3	1.7	8*	5.1	1.6	8*	5.0	1.6	8	4.8
10*	5.7	1.7	10*	5.5	1.6	10*	5.3	1.6	10*	5.2	1.6
12*	6.1	1.7	12*	5.9	1.6	12*	5.7	1.6	12*	5.5	1.6
14*	6.2	1.7	14*	6.3	1.6	14*	6.1	1.6	14*	5.9	1.6

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'				BW = 10'				BW = 12'				BW = 14'				BW = 16'				BW = 18'			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	4.1	3.2	1	4.0	3.0	1	3.8	2.8	1	3.8	2.7	1	3.6	2.6	1	3.5	2.5	1	4.2	2.8			
2	5.3	3.0	2	5.2	2.8	2	5.1	2.7	2	4.9	2.5	2	4.8	2.4	2	4.6	2.3	2	5.5	2.5			
4*	7.0	3.0	4*	6.8	2.8	4*	6.6	2.7	4*	6.3	2.5	4*	6.1	2.4	4*	5.9	2.3	4*	6.8	2.3			
6*	8.4	3.0	6*	8.0	3.0	6*	7.7	2.8	6*	7.4	2.6	6*	7.1	2.5	6*	6.8	2.3	6*	7.8	2.3			
175	(CFS)																						
1	4.3	3.3	1	4.2	3.1	1	4.1	3.0	1	4.0	2.8	1	3.9	2.7	1	3.8	2.6	1	4.2	2.8			
2	5.6	3.2	2	5.5	3.0	2	5.4	2.8	2	5.2	2.7	2	5.1	2.5	2	5.0	2.4	2	5.8	2.4			
4*	7.5	3.1	4*	7.3	2.9	4*	7.0	2.8	4*	6.8	2.6	4*	6.6	2.5	4*	6.3	2.4	4*	7.3	2.4			
6*	8.7	3.1	6*	8.6	2.9	6*	8.2	2.8	6*	7.9	2.6	6*	7.6	2.5	6*	7.3	2.4	6*	8.1	2.4			
200	(CFS)																						
1	4.7	3.6	1	4.6	3.4	1	4.6	3.3	1	4.4	3.1	1	4.4	3.0	1	4.2	2.8	1	4.6	2.8			
2	6.3	3.3	2	6.1	3.3	2	5.9	3.1	2	5.8	2.9	2	5.6	2.8	2*	5.5	2.7	2*	6.1	2.7			
4*	9.2	3.5	4*	9.0	3.3	4*	8.8	3.1	4*	8.5	2.9	4*	8.2	2.8	4*	7.9	2.8	4*	8.5	2.8			
250	(CFS)																						

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	3.4	2.4	1	3.4	2.3	1	3.3	2.2	1	3.2	2.1
2	4.4	2.2	2	4.3	2.1	2	4.2	2.1	2	4.0	2.0
4	5.7	2.2	4	5.5	2.1	4	5.3	2.0	4	5.1	1.9
175	6*	2.5	6*	6*	2.5	6*	6*	2.0	6*	5.9	2.0
(CRS)	9*	7.2	7.2	8*	7.0	8*	6.7	7.0	8*	6.7	7.0
19*	7.6	2.4	10*	7.5	2.1	10*	7.2	2.0	10*	6.7	1.9
12*	8.3	2.2	8.0	8.0	2.1	12*	7.7	2.0	12*	7.2	1.9
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	3.7	2.5	1	3.6	2.4	1	3.5	2.3	1	3.4	2.2
2	4.8	2.3	2	4.6	2.3	2	4.5	2.2	2	4.3	2.0
4*	6.1	2.3	4	5.9	2.2	4	5.7	2.1	4	5.5	2.0
200	6*	7.0	2.3	6*	6.8	2.2	5*	6.6	2.1	6*	6.1
(CRS)	8*	7.6	2.3	8*	7.5	2.2	8*	7.4	2.1	8*	6.8
16*	9.3	2.3	10*	8.1	2.2	10*	7.8	2.1	10*	7.3	2.0
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	4.1	2.7	1	4.0	2.6	1	3.9	2.5	1	3.8	2.4
2	5.3	2.6	2	5.2	2.5	2	5.1	2.4	2	4.9	2.3
4*	6.9	2.6	4*	6.6	2.5	4*	6.5	2.4	4*	6.3	2.3
250	6*	7.9	2.6	6*	7.7	2.5	6*	7.4	2.4	6*	7.0
(CRS)	8*	8.4	2.5	8*	8.2	2.4	8*	7.9	2.3	8*	7.5

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'		BW = 34'		BW = 36'		BW = .38'		BW = 40'		BW =	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	2.9	2.0	1	2.8	1.9	1	2.7	1.9	1	2.7	1.8
2	3.7	1.8	2	3.6	1.8	2	3.5	1.8	2	3.4	1.7
4	4.6	1.8	4	4.5	1.8	4	4.4	1.7	4	4.2	1.7
175	6	5.3	6	5.1	1.7	6	5.0	1.7	6	4.8	1.7
(CFS) 8*	5.8	1.8	8*	5.7	1.7	8*	5.5	1.7	8*	5.3	1.7
17*	6.7	1.8	10*	6.1	1.7	10*	5.9	1.7	10*	5.7	1.7
25*	7.2	1.8	15	6.9	1.7	15	6.7	1.7	15	6.4	1.7
<hr/>											
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	3.1	2.1	1	3.1	2.0	1	3.0	2.0	1	2.9	1.9
2	4.0	1.9	2	3.9	1.9	2	3.8	1.9	2	3.7	1.8
4	5.0	1.9	4	4.9	1.9	4	4.8	1.8	4	4.6	1.8
200	6*	5.8	1.9	6*	5.6	1.9	6*	5.4	1.8	6*	5.3
(CFS) 8*	6.3	1.9	8*	6.1	1.9	8*	6.0	1.8	8*	5.8	1.8
12*	6.8	1.9	10*	6.6	1.9	10*	6.4	1.9	10*	6.2	1.9
12*	7.2	1.9	12*	7.0	1.9	12*	6.8	1.9	12*	6.6	1.9
15*	7.8	1.9	13*	7.6	1.9	13*	7.3	1.9	13*	7.1	1.9
<hr/>											
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	3.6	2.3	1	3.5	2.2	1	3.4	2.2	1	3.3	2.1
2	4.5	2.1	2	4.4	2.1	2	4.3	2.0	2	4.2	2.0
4	5.7	2.1	4	5.6	2.0	4	5.4	2.0	4	5.3	2.0
250	6*	6.6	2.1	6*	6.4	2.0	6*	6.2	2	6*	6.0
(CFS) 8*	7.2	2.1	8*	7.0	2.0	8*	6.8	2.0	8*	6.6	2.0
12*	7.8	2.1	10*	7.5	2.0	10*	7.3	2.0	10*	7.1	2.0
12*	8.3	2.1	12*	8.0	2.0	12*	7.8	2.0	12*	7.6	2.0
<hr/>											

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'		BW = 10'		BW = 12'		BW = 14'		BW = 16'		BW = 18'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	5.1	3.9	1	5.0	3.7	1	4.9	3.5	1	4.8	3.4
2	6.7	3.0	2	6.6	3.6	2	6.5	3.4	2	6.4	3.1
3	8.8	3.8	4*	8.6	3.5	4*	8.4	3.4	4*	8.2	3.1
300 (CRFS)											

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	4.5	3.0	1	4.4	2.9	1	4.3	2.8	1	4.2	2.7
2	5.8	2.8	2	5.7	2.7	2	5.6	2.6	2	5.4	2.5
3	7.3	2.3	4	7.3	2.7	5	7.1	2.6	6	6.9	2.5
4	8.7	2.6	5	9.3	2.1	6	8.2	2.6	7	8.0	2.5
500	6.7	2.6	500	6.4	2.1	500	6.1	2.6	500	5.9	2.4
300 (CFS)											

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE B
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'				BW = 34'				BW = 36'				BW = 38'				BW = 40'			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)		
1	4.0	2.4	1	3.9	2.4	1	3.8	2.3	1	3.7	2.3	1	3.6	2.2					
2	5.0	2.3	2	4.9	2.3	2	4.8	2.2	2	4.7	2.2	2	4.6	2.1					
300	6.4	2.3	3	6.2	2.3	4	6.0	2.2	5	5.9	2.1	4	5.7	2.1					
(CFS)	6.6	2.3	6	6.1	2.2	10	5.9	2.2	16	6.7	2.1	26	6.5	2.1					
	7.0	2.3	8	7.4	2.2	14	7.6	2.2	24	8.4	2.1	40	8.2	2.1					
	7.5	2.3	10	8.0	2.2	19	8.7	2.2	39	9.9	2.1	60	9.7	2.1					
	8.0	2.3	12	8.4	2.2	24	9.2	2.2	54	10.4	2.1	76	10.2	2.1					
	8.5	2.3	14	8.8	2.2	29	9.7	2.2	69	11.0	2.1	92	10.8	2.1					
	9.0	2.3	16	9.4	2.2	34	10.2	2.2	84	11.6	2.1	108	11.4	2.1					
	9.5	2.3	18	10.0	2.2	39	10.7	2.2	99	12.2	2.1	124	12.0	2.1					

DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

S(%)	V(fps)	Hp(ft)	S(%)	BW = 10'			BW = 12'			BW = 14'			BW = 16'			BW = 18'		
				V(fps)	Hp(ft)	S(%)												
1	0.7	0.9	1	0.6	0.9	1	0.5	0.8	1	0.5	0.8	1	0.5	0.7	1	0.5	0.7	1
2	0.9	0.9	2	0.8	0.8	2	0.7	0.8	2	0.6	0.7	2	0.6	0.7	2	0.6	0.7	2
4	1.1	0.8	4	1.0	0.8	4	0.9	0.8	4	0.8	0.7	4	0.8	0.7	4	0.7	0.6	4
5	1.3	0.8	6	1.2	0.8	6	1.0	0.8	6	0.9	0.7	6	0.9	0.7	6	0.8	0.6	6
(CFS) 6	1.5	0.8	8	1.3	0.8	8	1.1	0.8	8	1.0	0.7	8	0.9	0.7	8	0.9	0.6	8
8	1.6	0.8	10	1.4	0.8	10	1.2	0.8	10	1.1	0.7	10	1.0	0.7	10	1.0	0.6	10
10	1.7	0.8	12	1.5	0.8	12	1.3	0.8	12	1.2	0.7	12	1.1	0.7	12	1.0	0.6	12
12	1.8	0.8	15	1.6	0.8	15	1.4	0.8	15	1.2	0.7	15	1.2	0.7	15	1.1	0.6	15
15	1.8	0.8																
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)
1	1.1	1.0	1	1.0	1.0	1	0.9	0.9	1	0.9	0.9	1	0.8	0.9	1	0.7	0.9	1
2	1.5	1.0	2	1.4	0.9	2	1.2	0.9	2	1.1	0.8	2	1.0	0.8	2	0.9	0.8	2
4	1.9	0.9	4	1.8	0.9	4	1.6	0.8	4	1.4	0.8	4	1.3	0.8	4	1.2	0.8	4
6	2.3	0.9	6	2.0	0.9	6	1.8	0.8	6	1.6	0.8	6	1.5	0.8	6	1.4	0.8	6
(CFS) 8	2.5	0.9	8	2.2	0.9	8	2.0	0.8	8	1.8	0.8	8	1.6	0.8	8	1.5	0.8	8
10	2.7	0.9	10	2.4	0.9	10	2.2	0.8	10	1.9	0.8	10	1.8	0.8	10	1.6	0.8	10
12	2.9	0.9	12	2.6	0.9	12	2.3	0.8	12	2.1	0.8	12	1.9	0.8	12	1.7	0.8	12
15	3.1	0.9	15	2.8	0.9	15	2.5	0.8	15	2.2	0.8	15	2.0	0.8	15	1.8	0.8	15
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)
1	1.5	1.1	1	1.4	1.1	1	1.3	1.0	1	1.2	1.0	1	1.1	0.9	1	1.0	0.9	1
2	2.0	1.1	2	1.8	1.0	2	1.7	1.0	2	1.5	0.9	2	1.4	0.9	2	1.3	0.9	2
4	2.6	1.0	4	2.3	1.0	4	2.1	0.9	4	1.9	0.9	4	1.8	0.9	4	1.7	0.8	4
6	3.0	1.0	6	2.7	1.0	6	2.4	0.9	6	2.2	0.9	6	2.1	0.9	6	1.9	0.8	6
(CFS) 8	3.4	1.0	8	3.0	1.0	8	2.7	0.9	8	2.5	0.9	8	2.3	0.8	8	2.1	0.8	8
10	3.7	1.0	10	3.2	1.0	10	2.9	0.9	10	2.7	0.9	10	2.4	0.8	10	2.2	0.8	10
12	3.9	1.0	12*	3.4	1.0	12*	3.1	0.9	12	2.8	0.9	12	2.6	0.8	12	2.4	0.8	12
15	4.2	1.0	15*	3.7	1.0	15	3.3	0.9	15	3.0	0.9	15	2.8	0.8	15	2.6	0.8	15

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'			BW = 22'			BW = 24'			BW = 26'			BW = 28'			BW = 30'			
S(%)	V(fps)	Hp(ft)																
1	0.5	0.7	1	0.4	0.6	1	0.4	0.6	1	0.4	0.6	1	0.4	0.6	1	0.4	0.5	
2	0.6	0.6	2	0.6	0.6	2	0.5	0.6	2	0.5	0.6	2	0.5	0.5	2	0.5	0.5	
4	0.7	0.6	4	0.7	0.6	4	0.7	0.6	4	0.6	0.5	4	0.6	0.5	4	0.6	0.5	
5	0.8	0.6	6	0.8	0.6	6	0.8	0.6	6	0.7	0.5	6	0.7	0.5	6	0.7	0.5	
(CFS)	8	0.9	0.6	8	0.8	0.6	8	0.8	0.6	8	0.8	0.5	8	0.8	0.5	8	0.8	0.5
10	0.9	0.6	10	0.9	0.6	10	0.9	0.6	10	0.9	0.5	10	0.8	0.5	10	0.8	0.5	
12	1.0	0.6	12	1.0	0.6	12	0.9	0.6	12	0.9	0.5	12	0.9	0.5	12	0.9	0.5	
15	1.1	0.6	15	1.0	0.6	15	1.0	0.6	15	1.0	0.5	15	0.9	0.5	15	0.9	0.5	
S(%)	V(fps)	Hp(ft)																
1	0.7	0.8	1	0.7	0.8	1	0.6	0.8	1	0.6	0.8	1	0.5	0.8	1	0.5	0.8	
2	0.9	0.8	2	0.8	0.8	2	0.8	0.8	2	0.7	0.8	2	0.7	0.7	2	0.6	0.7	
4	1.1	0.8	4	1.0	0.7	4	1.0	0.7	4	0.9	0.7	4	0.9	0.7	4	0.8	0.7	
10	6	1.3	6	1.2	0.7	6	1.1	0.7	6	1.0	0.7	6	1.0	0.7	6	0.9	0.7	
(CFS)	8	1.4	0.8	8	1.3	0.7	8	1.2	0.7	8	1.1	0.7	8	1.1	0.7	8	1.0	0.7
10	1.5	0.8	10	1.4	0.7	10	1.3	0.7	10	1.2	0.7	10	1.1	0.7	10	1.1	0.7	
12	1.6	0.8	12	1.5	0.7	12	1.4	0.7	12	1.3	0.7	12	1.2	0.7	12	1.1	0.7	
15	1.7	0.7	15	1.6	0.7	15	1.5	0.7	15	1.4	0.7	15	1.3	0.7	15	1.2	0.7	
S(%)	V(fps)	Hp(ft)																
1	1.0	0.9	1	0.9	0.9	1	0.9	0.9	1	0.8	0.8	1	0.8	0.8	1	0.7	0.8	
2	1.2	0.8	2	1.2	0.8	2	1.1	0.8	2	1.0	0.8	2	1.0	0.8	2	0.9	0.8	
4	1.5	0.8	4	1.4	0.8	4	1.4	0.8	4	1.3	0.8	4	1.2	0.8	4	1.2	0.7	
15	6	1.8	6	1.7	0.8	6	1.6	0.8	6	1.5	0.8	6	1.4	0.8	6	1.3	0.7	
(CFS)	8	1.9	0.8	8	1.8	0.8	8	1.7	0.8	8	1.6	0.8	8	1.5	0.8	8	1.4	0.7
10	2.1	0.8	10	1.9	0.8	10	1.8	0.8	10	1.7	0.8	10	1.6	0.7	10	1.5	0.7	
12	2.2	0.8	12	2.1	0.8	12	1.9	0.8	12	1.8	0.8	12	1.7	0.7	12	1.6	0.7	
15	2.4	0.8	15	2.2	0.8	15	2.1	0.8	15	2.0	0.8	15	1.8	0.7	15	1.7	0.7	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

S(%)	V(fps)	Hp(ft)	S(%)	BW = 34'			BW = 36'			BW = 38'			BW = 40'			BW =			
				V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)											
1	0.4	0.5	1	0.4	0.5	1	0.4	0.5	1	0.4	0.5	1	0.4	0.5	1	0.4	0.5	1	
2	0.5	0.5	2	0.5	0.5	2	0.5	0.5	2	0.5	0.5	2	0.4	0.5	2	0.4	0.5	2	
4	0.6	0.5	4	0.6	0.5	4	0.6	0.5	4	0.6	0.5	4	0.6	0.4	4	0.6	0.4	4	
5	0.7	0.5	6	0.7	0.5	6	0.7	0.5	6	0.6	0.5	6	0.6	0.4	6	0.6	0.4	6	
(CFS) 8	0.7	0.5	8	0.7	0.5	8	0.7	0.5	8	0.7	0.5	8	0.7	0.4	8	0.7	0.4	8	
	10	0.8	0.5	10	0.8	0.5	10	0.8	0.5	10	0.7	0.5	10	0.7	0.4	10	0.7	0.4	10
	12	0.8	0.5	12	0.8	0.5	12	0.8	0.5	12	0.8	0.5	12	0.8	0.4	12	0.8	0.4	12
	15	0.9	0.5	15	0.9	0.5	15	0.9	0.5	15	0.9	0.5	15	0.8	0.4	15	0.8	0.4	15
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)		
				1	0.5	0.7	1	0.5	0.7	1	0.5	0.7	1	0.5	0.7	1	0.5	0.7	1
			2	0.6	0.7	2	0.6	0.7	2	0.6	0.7	2	0.6	0.7	2	0.6	0.6	2	
10	0.8	0.7	4	0.8	0.7	4	0.8	0.7	4	0.7	0.6	4	0.7	0.6	4	0.7	0.6	4	
	6	0.9	0.7	6	0.9	0.7	6	0.9	0.6	6	0.8	0.6	6	0.8	0.6	6	0.8	0.6	6
	(CFS) 8	1.0	0.7	8	0.9	0.7	8	0.9	0.6	8	0.9	0.6	8	0.9	0.6	8	0.9	0.6	8
	10	1.0	0.7	10	1.0	0.7	10	1.0	0.6	10	1.0	0.6	10	1.0	0.6	10	1.0	0.6	10
12	1.1	0.7	12	1.1	0.7	12	1.1	0.7	12	1.0	0.6	12	1.0	0.6	12	1.0	0.6	12	
15	1.2	0.7	15	1.1	0.7	15	1.1	0.7	15	1.1	0.6	15	1.1	0.6	15	1.1	0.6	15	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)		
			1	0.7	0.8	1	0.7	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	
		2	0.9	0.8	2	0.8	0.8	2	0.8	0.7	2	0.8	0.7	2	0.7	0.7	2		
15	4	1.1	0.7	4	1.0	0.7	4	1.0	0.7	4	1.0	0.7	4	0.9	0.7	4	0.9	0.7	4
	6	1.2	0.7	6	1.2	0.7	6	1.1	0.7	6	1.1	0.7	6	1.0	0.7	6	1.0	0.7	6
	(CFS) 8	1.4	0.7	8	1.3	0.7	8	1.2	0.7	8	1.2	0.7	8	1.2	0.7	8	1.1	0.7	8
	10	1.5	0.7	10	1.4	0.7	10	1.3	0.7	10	1.3	0.7	10	1.3	0.7	10	1.2	0.7	10
12	1.5	0.7	12	1.5	0.7	12	1.4	0.7	12	1.4	0.7	12	1.3	0.7	12	1.3	0.7	12	
15	1.7	0.7	15	1.6	0.7	15	1.5	0.7	15	1.5	0.7	15	1.4	0.7	15	1.4	0.7	15	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'				BW = 10'				BW = 12'				BW = 14'				BW = 16'				BW = 18'			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	1.9	1.2	1	1.7	1.1	1	1.6	1.1	1	1.5	0.0	1	1.4	1.0	1	1.3	1.0	1	1.3	1.0			
2	2.4	1.2	2	2.2	1.1	2	2.0	1.0	2	1.9	0.0	2	1.7	0.9	2	1.6	0.9	2	1.6	0.9			
4	3.2	1.1	4	2.9	1.1	4	2.6	1.0	4	2.4	0.0	4	2.2	0.9	4	2.1	0.9	4	2.1	0.9			
20	6	3.7	1.1	6	3.3	1.0	6	3.0	1.0	6	2.8	0.9	6	2.5	0.9	6	2.4	0.9	6	2.4	0.9		
(CFS) 8*	8*	4.1	1.1	8*	3.7	1.0	8	3.3	1.0	8	3.1	0.9	8	2.8	0.9	8	2.6	0.9	8	2.6	0.9		
10*	10*	4.4	1.1	10*	4.0	1.0	10*	3.6	1.0	10	3.3	0.9	10	3.0	0.9	10	2.8	0.9	10	2.8	0.9		
12*	12*	4.7	1.1	12*	4.2	1.0	12*	3.8	1.0	12*	3.5	0.9	12	3.2	0.9	12	3.0	0.9	12	3.0	0.9		
15*	15*	5.1	1.1	15*	4.6	1.0	15*	4.1	1.0	15*	3.8	0.9	15*	3.5	0.9	15*	3.2	0.9	15*	3.2	0.9		
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	2.4	1.4	1	2.2	1.3	1	2.1	1.2	1	1.9	1.2	1	1.8	1.1	1	1.7	1.1	1	1.7	1.1			
2	3.1	1.3	2	2.9	1.2	2	2.7	1.1	2	2.5	1.1	2	2.3	1.0	2	2.2	1.0	2	2.2	1.0			
4	4.1	1.3	4	3.7	1.2	4	3.5	1.1	4	3.2	1.1	4	3.0	1.0	4	2.8	1.0	4	2.8	1.0			
30	6*	4.7	1.3	6*	4.3	1.2	6*	4.0	1.1	6	3.7	1.1	6	3.4	1.0	6	3.2	1.0	6	3.2	1.0		
(CFS) 8*	8*	5.2	1.3	8*	4.8	1.2	8*	4.4	1.1	8*	4.1	1.1	8*	3.8	1.0	8	3.5	1.0	8	3.5	1.0		
10*	10*	5.7	1.3	10*	5.2	1.2	10*	4.8	1.1	10*	4.4	1.1	10*	4.1	1.0	10*	3.8	1.0	10*	3.8	1.0		
12*	12*	6.1	1.3	12*	5.5	1.2	12*	5.1	1.1	12*	4.7	1.1	12*	4.3	1.0	12*	4.0	1.0	12*	4.0	1.0		
15*	15*	6.6	1.3	15*	6.0	1.2	15*	5.4	1.1	15*	5.0	1.1	15*	4.6	1.0	15*	4.3	1.0	15*	4.3	1.0		
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)			
1	2.8	1.5	1	2.7	1.4	1	2.5	1.3	1	2.3	1.3	1	2.2	1.2	1	2.1	1.2	1	2.1	1.2			
2	3.7	1.5	2	3.5	1.4	2	3.2	1.3	2	3.0	1.2	2	2.8	1.1	2	2.7	1.1	2	2.7	1.1			
4*	4.8	1.4	4*	4.5	1.3	4	4.1	1.3	4	3.9	1.2	4	3.6	1.1	4	3.4	1.1	4	3.4	1.1			
40	6*	5.6	1.4	6*	5.1	1.3	6*	4.8	1.3	6*	4.5	1.2	6*	4.2	1.1	6	3.9	1.1	6	3.9	1.1		
(CFS) 8*	8*	6.2	1.4	8*	5.7	1.3	8*	5.3	1.3	8*	4.9	1.2	8*	4.6	1.1	8*	4.3	1.1	8*	4.3	1.1		
10*	10*	6.7	1.4	10*	6.2	1.3	10*	5.7	1.3	10*	5.3	1.2	10*	4.9	1.1	10*	4.6	1.1	10*	4.6	1.1		
12*	12*	7.1	1.4	12*	6.6	1.3	12*	6.1	1.3	12*	5.6	1.2	12*	5.2	1.1	12*	4.9	1.1	12*	4.9	1.1		
15*	15*	7.7	1.4	15*	7.1	1.3	15*	6.5	1.3	15*	6.0	1.2	15*	5.6	1.1	15*	5.3	1.1	15*	5.3	1.1		

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.2	0.9	1	1.1	0.9	1	1.1	0.9	1	1.0	0.9
2	1.5	0.9	2	1.4	0.9	2	1.4	0.8	2	1.3	0.8
4	1.9	0.9	4	1.8	0.8	4	1.7	0.8	4	1.6	0.8
20	6	2.2	0.9	6	2.1	0.8	6	2.0	0.8	6	1.7
(CFS)	8	2.4	0.9	8	2.3	0.8	8	2.1	0.8	8	1.9
10	2.6	0.9	10	2.4	0.8	10	2.3	0.8	10	2.2	0.8
12	2.8	0.9	12	2.6	0.8	12	2.4	0.8	12	2.2	0.8
15	3.0	0.9	15	2.8	0.8	15	2.6	0.8	15	2.3	0.8
<hr/>											
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	1.6	1.0	1	1.5	1.0	1	1.5	1.0	1	1.4	0.9
2	2.1	1.0	2	2.0	1.0	2	1.9	0.9	2	1.8	0.9
4	2.6	1.0	4	2.5	0.9	4	2.3	0.9	4	2.2	0.9
30	6	3.0	1.0	6	2.8	0.9	6	2.7	0.9	6	2.5
(CFS)	8	3.3	1.0	8	3.1	0.9	8	2.9	0.9	8	2.6
10*	3.5	1.0	10	3.3	0.9	10	3.1	0.9	10	3.0	0.9
12*	3.8	1.0	12*	3.5	0.9	12	3.3	0.9	12	3.1	0.9
15*	4.0	1.0	15*	3.8	0.9	15*	3.6	0.9	15	3.4	0.9
<hr/>											
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	2.0	1.1	1	1.9	1.1	1	1.8	1.1	1	1.7	1.0
2	2.5	1.1	2	2.4	1.0	2	2.3	1.0	2	2.2	1.0
4	3.2	1.0	4	3.0	1.0	4	2.9	1.0	4	2.7	1.0
40	6	3.7	1.0	6	3.5	1.0	6	3.3	1.0	6	3.1
(CFS)	8*	4.0	1.0	8*	3.8	1.0	8	3.6	1.0	8	3.4
10*	4.3	1.0	10*	4.1	1.0	10*	3.9	1.0	10*	3.7	1.0
12*	4.6	1.0	12*	4.3	1.0	12*	4.1	1.0	12*	3.9	1.0
15*	5.0	1.0	15*	4.7	1.0	15*	4.4	1.0	15*	4.2	1.0

Exhibit 1-2.1

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'		BW = 34'		BW = 36'		BW = 38'		BW = 40'		BW =	
S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)
1	0.9	0.8	1	0.9	0.8	1	0.8	0.8	1	0.8	1.8
2	1.1	0.8	2	1.1	0.8	2	1.0	0.8	2	0.9	0.8
4	1.4	0.8	4	1.3	0.8	4	1.3	0.8	4	1.2	0.7
20	6	1.6	0.8	6	1.5	0.8	6	1.4	0.8	6	1.3
(CFS)	8	1.7	0.8	8	1.7	0.8	8	1.6	0.8	8	1.5
10	1.9	0.8	10	1.8	0.8	10	1.7	0.7	10	1.6	0.7
12	2.0	0.8	12	1.9	0.8	12	1.8	0.7	12	1.7	0.7
15	2.1	0.8	15	2.0	0.8	15	1.9	0.7	15	1.8	0.7
S (%)		V(fps)		H _p (ft)		S (%)		V(fps)		H _p (ft)	
1	1.2	0.9	1	1.2	0.9	1	1.1	0.9	1	1.1	0.9
2	1.5	0.9	2	1.5	0.8	2	1.4	0.8	2	1.3	0.8
4	1.9	0.8	4	1.8	0.8	4	1.8	0.8	4	1.6	0.8
30	6	2.2	0.8	6	2.1	0.8	6	2.0	0.8	6	1.9
(CFS)	8	2.4	0.8	8	2.3	0.8	8	2.2	0.8	8	2.0
10	2.6	0.8	10	2.5	0.8	10	2.4	0.8	10	2.2	0.8
12	2.7	0.8	12	2.6	0.8	12	2.5	0.8	12	2.3	0.8
15	2.9	0.8	15	2.8	0.8	15	2.7	0.8	15	2.6	0.8
S (%)		V(fps)		H _p (ft)		S (%)		V(fps)		H _p (ft)	
1	1.5	1.0	1	1.5	1.0	1	1.4	0.9	1	1.4	0.9
2	1.9	0.9	2	1.8	0.9	2	1.8	0.9	2	1.7	0.9
4	2.4	0.9	4	2.3	0.9	4	2.2	0.9	4	2.1	0.9
40	6	2.7	0.9	6	2.6	0.9	6	2.5	0.9	6	2.4
(CFS)	8	3.0	0.9	8	2.8	0.9	8	2.7	0.9	8	2.6
10	3.2	0.9	10	3.1	0.9	10	2.9	0.9	10	2.8	0.9
12*	3.4	0.9	12	3.2	0.9	12	3.1	0.9	12	3.0	0.9
15*	3.6	0.9	15*	3.5	0.9	15*	3.3	0.9	15*	3.2	0.9

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'				BW = 10'				BW = 12'				BW = 14'				BW = 16'				BW = 18'			
S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)			
1	3.2	1.7	1	3.0	1.5	1	2.9	1.4	1	2.7	1.4	1	2.6	1.3	1	2.4	1.3	1	2.4	1.3			
2	4.2	1.6	2	3.9	1.5	2*	3.7	1.4	2	3.5	1.3	2	3.3	1.2	2	3.1	1.2	2	3.1	1.2			
4*	5.4	1.6	4*	5.1	1.5	4*	4.7	1.4	4	4.4	1.3	4	4.2	1.2	4	3.9	1.2	4	3.9	1.2			
50	6.5	1.6	6*	5.8	1.5	6*	5.4	1.4	6*	5.1	1.3	6*	4.8	1.2	6*	4.5	1.2	6*	4.5	1.2			
(CPS)	6*	7.0	9*	6.4	1.3	B*	6.0	1.4	8*	5.6	1.3	8*	5.3	1.2	8*	5.0	1.2	8*	5.0	1.2			
10*	7.6	1.6	10*	7.0	1.4	10*	6.5	1.4	10*	6.1	1.3	10*	5.7	1.2	10*	5.3	1.2	10*	5.3	1.2			
12*	8.1	1.6	12*	7.5	1.4	12*	6.9	1.4	12*	6.5	1.3	12*	6.1	1.2	12*	5.7	1.2	12*	5.7	1.2			
S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)			
1	3.5	1.8	1	3.3	1.7	1	3.2	1.6	1	3.0	1.5	1	2.9	1.4	1	2.7	1.3	1	2.7	1.3			
2	4.6	1.7	2	4.3	1.6	2	4.1	1.5	2	3.8	1.4	2	3.7	1.3	2	3.5	1.3	2	3.5	1.3			
4*	5.9	1.7	4*	5.6	1.6	4*	5.2	1.5	4*	4.9	1.4	4*	4.7	1.3	4	4.4	1.3	4	4.4	1.3			
60	6*	6.9	7.1	6*	6.4	7.0	6*	6.0	6*	6*	5.7	1.4	6*	5.4	1.3	6*	5.1	1.3	6*	5.1	1.3		
(CPS)	6*	7.6	8*	7.1	7.6	8*	6.7	7.5	8*	6.3	7.4	8*	5.9	1.3	8*	5.6	1.3	8*	5.6	1.3			
10*	8.3	1.7	10*	7.7	1.6	10*	7.2	1.5	10*	6.8	1.4	10*	6.4	1.3	10*	6.0	1.3	10*	6.0	1.3			
S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)	S (%)	V(fps)	Hp(ft)			
1	3.9	2.0	1	3.8	1.9	1	3.7	1.8	1	3.5	1.7	1	3.4	1.6	1	3.2	1.5	1	3.2	1.5			
2	5.2	2.0	2	5.0	1.8	2	4.7	1.7	2	4.5	1.6	2	4.3	1.5	2	4.1	1.4	2	4.1	1.4			
4*	6.8	2.0	4*	6.1	1.8	4*	5.4	1.7	4*	5.2	1.6	4*	5.0	1.5	4*	4.8	1.4	4*	4.8	1.4			
80	7.9	2.0	8*	7.5	1.8	8*	6.9	1.7	8*	6.6	1.6	8*	6.3	1.5	8*	6.0	1.4	8*	6.0	1.4			
(CPS)	8*	8.3	8*	8.3	1.6	8*	7.7	1.5	8*	7.3	1.4	8*	7.0	1.3	8*	6.6	1.3	8*	6.6	1.3			

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'			BW = 22'			BW = 24'			BW = 26'			BW = 28'			BW = 30'			
S(%)	V(fps)	Hp(ft)																
1	2.3	1.2	1	2.2	1.2	1	2.1	1.1	1	2.0	1.1	1	1.9	1.1	1	1.9	1.1	
2	3.0	1.2	2	2.8	1.1	2	2.7	1.1	2	2.6	1.1	2	2.5	1.0	2	2.3	1.0	
4	3.7	1.1	4	3.5	1.1	4	3.4	1.1	4	3.2	1.0	4	3.1	1.0	4	2.9	1.0	
50	6*	4.3	1.1	6*	4.0	1.1	6	3.8	1.1	6	3.6	1.0	6	3.5	1.0	6	3.3	1.0
(CFS) 8*	4.7	1.1	8*	4.4	1.1	8*	4.2	1.1	8*	4.0	1.0	8*	3.8	1.0	8*	3.7	1.0	
10*	5.0	1.1	10*	4.8	1.1	10*	4.5	1.1	10*	4.3	1.0	10*	4.1	1.0	10*	3.9	1.0	
12*	5.4	1.1	12*	5.0	1.1	12*	4.8	1.1	12*	4.6	1.0	12*	4.4	1.0	12*	4.2	1.0	
15*	5.8	1.1	15*	5.4	1.1	15*	5.2	1.1	15*	4.9	1.0	15*	4.7	1.0	15*	4.5	1.0	
S(%)	V(fps)	Hp(ft)																
1	2.6	1.3	1	2.5	1.2	1	2.4	1.2	1	2.3	1.2	1	2.2	1.1	1	2.1	1.1	
2	3.3	1.2	2	3.2	1.2	2	3.0	1.2	2	2.9	1.1	2	2.8	1.1	2	2.7	1.1	
4	4.2	1.2	4	4.0	1.2	4	3.8	1.1	4	3.6	1.1	4	3.5	1.1	4	3.3	1.0	
60	6*	4.8	1.2	6*	4.6	1.2	6*	4.3	1.1	6*	4.1	1.1	6*	4.0	1.1	6	3.8	1.0
(CFS) 8*	5.3	1.2	8*	5.0	1.2	8*	4.7	1.1	8*	4.5	1.1	8*	4.4	1.1	8*	4.2	1.0	
10*	5.7	1.2	10*	5.4	1.2	10*	5.1	1.1	10*	4.9	1.1	10*	4.7	1.1	10*	4.5	1.0	
12*	6.0	1.2	12*	5.7	1.2	12*	5.4	1.1	12*	5.2	1.1	12*	5.0	1.1	12*	4.7	1.0	
15*	6.5	1.2	15*	6.1	1.2	15*	5.8	1.1	15*	5.6	1.1	15*	5.3	1.1	15*	5.1	1.0	
S(%)	V(fps)	Hp(ft)																
1	3.1	1.4	1	3.0	1.4	1	2.9	1.3	1	2.8	1.3	1	2.7	1.3	1	2.6	1.2	
2	3.9	1.4	2	3.8	1.3	2	3.6	1.3	2	3.5	1.2	2	3.4	1.2	2	3.2	1.2	
4*	5.0	1.4	4*	4.8	1.3	4*	4.6	1.3	4	4.4	1.2	4	4.2	1.2	4	4.0	1.2	
80	6*	5.7	1.4	6*	5.5	1.3	6*	5.2	1.3	6*	5.0	1.2	6*	4.8	1.2	6*	4.6	1.2
(CFS) 8*	6.3	1.4	8*	6.0	1.3	8*	5.7	1.3	8*	5.5	1.2	8*	5.2	1.2	8*	5.0	1.2	
10*	6.9	1.4	10*	6.4	1.3	10*	6.1	1.3	10*	5.9	1.2	10*	5.6	1.2	10*	5.4	1.2	
12*	7.2	1.4	12*	6.8	1.3	12*	6.5	1.3	12*	6.2	1.2	12*	6.0	1.2	12*	5.8	1.2	
15*	7.7	1.4	15*	7.3	1.3	15*	7.0	1.3	15*	6.7	1.2	15*	6.4	1.2	15*	6.2	1.2	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'				BW = 34'				BW = 36'				BW = 38'				BW = 40'					
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	1.8	1.0	1	1.7	1.0	1	1.7	1.0	1	1.6	1.0	1	1.6	1.0	1	1.6	1.0	1	1.6	1.0	
2	2.2	1.0	2	2.2	0.0	2	2.1	0.9	2	2.0	0.9	2	1.9	0.9	2	1.9	0.9	2	1.9	0.9	
4	2.8	1.0	4	2.7	0.9	4	2.6	0.9	4	2.5	0.9	4	2.4	0.9	4	2.4	0.9	4	2.4	0.9	
50	6	3.2	1.0	6	3.1	0.9	6	3.0	0.9	6	2.8	0.9	6	2.7	0.9	6	2.7	0.9	6	2.7	0.9
(CFS)	8	3.5	1.0	8	3.4	0.9	8	3.2	0.9	8	3.1	0.9	8	3.0	0.9	8	3.0	0.9	8	3.0	0.9
10*	3.8	1.0	10*	3.6	0.9	10*	3.5	0.9	10	3.3	0.9	10	3.2	0.9	10	3.2	0.9	10	3.2	0.9	
12*	4.0	1.0	12*	3.8	0.9	12*	3.7	0.9	12*	3.5	0.9	12*	3.4	0.9	12	3.4	0.9	12	3.4	0.9	
15*	4.3	1.0	15*	4.1	0.9	15*	3.9	0.9	15*	3.8	0.9	15*	3.7	0.9	15	3.7	0.9	15	3.7	0.9	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	2.0	1.1	1	2.0	1.1	1	1.9	1.1	1	1.8	1.0	1	1.8	1.0	1	1.8	1.0	1	1.8	1.0	
2	2.6	1.0	2	2.5	1.0	2	2.4	1.0	2	2.3	1.0	2	2.2	1.0	2	2.2	1.0	2	2.2	1.0	
4	3.2	1.0	4	3.1	1.0	4	3.0	1.0	4	2.9	1.0	4	2.8	0.9	4	2.8	0.9	4	2.8	0.9	
60	6	3.7	1.0	6	3.5	1.0	6	3.4	1.0	6	3.3	1.0	6	3.2	0.9	6	3.2	0.9	6	3.2	0.9
(CFS)	8*	4.0	1.0	8*	3.8	1.0	8*	3.7	1.0	8	3.6	1.0	8	3.4	0.9	8	3.4	0.9	8	3.4	0.9
10*	4.3	1.0	10*	4.1	1.0	10*	4.0	1.0	10*	3.8	1.0	10*	3.7	1.0	10	3.7	0.9	10	3.7	0.9	
12*	4.5	1.0	12*	4.4	1.0	12*	4.2	1.0	12*	4.1	1.0	12*	4.0	1.0	12	3.9	0.9	12	3.9	0.9	
15*	4.9	1.0	15*	4.7	1.0	15*	4.5	1.0	15*	4.3	1.0	15*	4.2	1.0	15	4.2	0.9	15	4.2	0.9	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	2.5	1.2	1	2.4	1.2	1	2.3	1.2	1	2.2	1.1	1	2.2	1.1	1	2.2	1.1	1	2.2	1.1	
2	3.1	1.1	2	3.0	1.1	2	2.9	1.1	2	2.8	1.1	2	2.7	1.1	2	2.7	1.1	2	2.7	1.1	
4	3.9	1.1	4	3.8	1.1	4	3.6	1.1	4	3.5	1.1	4	3.4	1.0	4	3.4	1.0	4	3.4	1.0	
80	6*	4.4	1.1	6*	4.3	1.1	6*	4.1	1.1	6*	4.0	1.1	6	3.9	1.0	6	3.9	1.0	6	3.9	1.0
(CFS)	8*	4.8	1.1	8*	4.7	1.1	8*	4.5	1.1	8*	4.4	1.1	8*	4.2	1.0	8	4.2	1.0	8	4.2	1.0
10*	5.2	1.1	10*	5.0	1.1	10*	4.9	1.1	10*	4.7	1.1	10*	4.5	1.0	10	4.5	1.0	10	4.5	1.0	
12*	5.5	1.1	12*	5.3	1.1	12*	5.1	1.1	12*	5.0	1.1	12*	4.9	1.1	12	4.8	1.0	12	4.8	1.0	
15*	5.9	1.1	15*	5.7	1.1	15*	5.5	1.1	15*	5.3	1.1	15*	5.2	1.1	15	5.2	1.0	15	5.2	1.0	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'										BW = 10'										BW = 12'										BW = 14'									
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)							
1	4.4	2.2	1	4.2	2.1	1	4.1	1.9	1	3.9	1.8	1	3.8	1.7	1	3.6	1.7	1	3.6	1.7	2	4.6	1.6	2	4.6	1.6	4*	5.9	1.6										
2	5.7	2.2	2	5.5	2.0	2	5.3	1.9	2	5.0	1.8	2	4.8	1.7	2	4.7	1.7	2	4.7	1.7	3*	6.3	1.7	3*	6.3	1.7	4*	7.0	1.7										
3*	7.5	2.2	3*	7.3	2.0	4*	6.8	1.9	4*	6.4	1.8	4*	6.2	1.7	4*	6.0	1.7	4*	6.0	1.7	5*	7.5	1.6	5*	7.5	1.6	6*	8.0	1.6										
100	3*	9.7	3*	9.3	2.0	5*	7.8	1.9	5*	7.4	1.8	5*	7.0	1.7	5*	6.6	1.7	5*	6.6	1.7	6*	8.4	1.6	6*	8.4	1.6	7*	9.0	1.6										
(CFS)																																							
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)										
1	4.8	2.4	1	4.7	2.3	1	4.5	2.1	1	4.4	2.0	1	4.2	1.9	1	4.1	1.8	1	4.1	1.8	2	5.2	1.8	2	5.2	1.8	4*	6.6	1.8										
2*	6.3	2.4	2*	6.1	2.4	2*	5.9	2.1	2*	5.6	2.0	2	5.4	1.9	2	5.4	1.9	2	5.4	1.9	4*	7.6	1.8	4*	7.6	1.8	5*	8.4	1.8										
4*	8.2	2.4	4*	7.8	2.2	4*	7.5	2.1	4*	7.4	2.0	4*	7.0	1.9	4*	6.9	1.9	4*	6.9	1.9	5*	8.4	1.8	5*	8.4	1.8	6*	9.2	1.8										
125	6*	9.1	6*	9.1	2.2	6*	8.7	2.1	6*	8.3	2.0	6*	7.9	1.9	6*	7.9	1.9	6*	7.9	1.9	7*	9.4	1.8	7*	9.4	1.8	8*	10.2	1.8										
(CFS)																																							
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)										
1	5.1	2.7	1	5.0	2.5	1	4.9	2.3	1	4.7	2.2	1	4.6	2.1	1	4.6	2.1	1	4.5	2.0	2	5.7	1.9	2	5.7	1.9	4*	7.2	1.9										
2*	6.7	2.6	3*	6.6	2.4	2*	6.3	2.3	2*	6.1	2.2	2*	5.9	2.0	2*	5.7	2.0	2*	5.7	2.0	4*	7.8	1.9	4*	7.8	1.9	5*	8.6	1.9										
150	3.8	2.6	4*	3.5	2.4	4*	3.1	2.3	4*	2.9	2.2	4*	2.7	2.0	4*	2.5	2.0	4*	2.5	2.0	5*	3.4	1.9	5*	3.4	1.9	6*	4.3	1.9										
(CFS)																																							

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'			BW = 22'			BW = 24'			BW = 26'			BW = 28'			BW = 30'		
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	3.5	1.6	1	3.4	1.5	1	3.3	1.5	1	3.2	1.4	1	3.0	1.4	1	2.9	1.3
2	4.5	1.5	2	4.3	1.5	2	4.1	1.4	2	4.0	1.4	2	3.8	1.3	2	3.7	1.3
4*	5.6	1.5	4*	5.4	1.5	4*	5.2	1.4	4*	5.0	1.4	4*	4.8	1.3	4*	4.7	1.3
100 (CFS)	7.5	1.5	4*	6.2	1.5	6*	6.0	1.4	6*	5.7	1.4	6*	5.5	1.3	6*	5.3	1.3
100 (CFS)	7.1	1.6	6	6.0	1.5	9	5.7	1.4	8*	5.3	1.4	8*	5.0	1.3	8*	4.8	1.3
125 (CFS)	7.7	1.5	4.9	7.2	1.5	10*	7.0	1.4	10*	6.7	1.4	10*	6.5	1.3	10*	6.2	1.3
125 (CFS)	7.1	1.5	4.9	7.8	1.5	12*	7.4	1.4	12*	7.1	1.4	12*	6.9	1.3	12*	6.6	1.3
150 (CFS)	7.9	1.5	5.9	8.3	1.5	15*	8.0	1.4	15*	7.8	1.4	15*	7.6	1.3	15*	7.4	1.3
1	4.0	1.7	1	3.8	1.7	1	3.7	1.6	1	3.6	1.6	1	3.5	1.5	1	3.4	1.5
2	5.0	1.7	2	4.8	1.6	2	4.7	1.6	2	4.5	1.5	2	4.4	1.5	2	4.2	1.4
4*	6.4	1.7	4*	6.1	1.6	4*	5.9	1.6	4*	5.7	1.5	4*	5.5	1.5	4*	5.3	1.4
125 (CFS)	7.3	1.7	6*	7.0	1.6	6*	6.8	1.5	6*	6.5	1.5	6*	6.3	1.5	6*	6.1	1.4
125 (CFS)	6.0	1.7	8*	7.7	1.6	9*	7.4	1.5	9*	7.1	1.5	9*	6.9	1.4	9*	6.6	1.4
150 (CFS)	7.6	1.7	10*	8.3	1.6	10*	8.0	1.5	10*	7.7	1.5	10*	7.4	1.4	10*	7.1	1.4
150 (CFS)	7.2	1.7	12	12	1.5	15*	12	1.4	15*	11.5	1.4	15*	11.2	1.3	15*	10.9	1.3
1	4.3	1.9	1	4.2	1.8	1	4.1	1.8	1	3.9	1.7	1	3.8	1.6	1	3.7	1.6
2	5.5	1.9	2	5.3	1.8	2	5.2	1.7	2	5.0	1.7	2	4.8	1.6	2	4.7	1.5
4*	7.0	1.9	4*	6.7	1.8	4*	6.5	1.7	4*	6.3	1.6	4*	6.1	1.6	4*	5.9	1.5
150 (CFS)	8.0	1.6	8*	8.5	1.5	8*	8.1	1.4	8*	7.7	1.4	8*	7.3	1.3	8*	6.9	1.3
150 (CFS)	8.0	1.6	8*	8.5	1.5	8*	8.1	1.4	8*	7.7	1.4	8*	7.3	1.3	8*	6.9	1.3
10	10	1.2	12	12	1.2	12	12	1.1	12	12	1.1	12	12	1.0	12	12	1.0
12	12	1.2	12	12	1.2	12	12	1.1	12	12	1.1	12	12	1.0	12	12	1.0
15	15	1.2	15	15	1.2	15	15	1.1	15	15	1.1	15	15	1.0	15	15	1.0

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'				BW = 34'				BW = 36'				BW = 38'				BW = 40'					
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	2.9	1.3	1	2.8	1.3	1	2.7	1.2	1	2.6	1.2	1	2.5	1.2	1	2.5	1.2	1	2.5	1	
2	3.6	1.2	2	3.5	1.2	2	3.4	1.2	2	3.3	1.2	2	3.2	1.1	2	3.2	1.1	2	3.2	2	
4*	4.5	1.2	4	4.3	1.2	4	4.2	1.2	4	4.1	1.2	4	4.0	1.1	4	4.0	1.1	4	4.0	4	
100	6*	5.1	1.2	6*	4.9	1.2	6*	4.8	1.2	6*	4.6	1.2	6*	4.5	1.1	6	4.5	1.1	6	4.5	6
(CFS)	8*	5.6	1.2	8*	5.4	1.2	8*	5.2	1.2	8*	5.1	1.2	8*	4.9	1.1	8	4.9	1.1	8	4.9	8
10*	6.0	1.2	10*	5.8	1.2	10*	5.6	1.2	10*	5.5	1.2	10*	5.3	1.1	10	5.3	1.1	10	5.3	10	
12*	6.4	1.2	12*	6.2	1.2	12*	6.0	1.2	12*	5.8	1.2	12*	5.6	1.1	12	5.6	1.1	12	5.6	12	
15*	6.9	1.2	15*	6.6	1.2	15*	6.4	1.2	15*	6.2	1.2	15*	6.0	1.1	15	6.0	1.1	15	6.0	15	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	3.3	1.4	1	3.2	1.4	1	3.1	1.4	1	3.0	1.3	1	2.9	1.3	1	2.9	1.3	1	2.9	1	
2	4.1	1.4	2	4.0	1.3	2	3.9	1.3	2	3.8	1.3	2	3.7	1.3	2	3.7	1.3	2	3.7	2	
4*	5.1	1.4	4*	5.0	1.3	4*	4.8	1.3	4*	4.7	1.3	4*	4.6	1.2	4	4.6	1.2	4	4.6	4	
125	6*	5.9	1.4	6*	5.7	1.3	6*	5.5	1.3	6*	5.3	1.3	6*	5.2	1.2	6	5.2	1.2	6	5.2	6
(CFS)	8*	6.4	1.4	8*	6.2	1.3	8*	6.0	1.3	8*	5.8	1.3	8*	5.7	1.2	8	5.7	1.2	8	5.7	8
10*	6.9	1.4	10*	6.7	1.3	10*	6.4	1.3	10*	6.2	1.3	10*	6.1	1.2	10	6.1	1.2	10	6.1	10	
12*	7.3	1.4	12*	7.0	1.3	12*	6.9	1.3	12*	6.7	1.3	12*	6.5	1.2	12	6.5	1.2	12	6.5	12	
15*	7.8	1.4	15*	7.6	1.3	15*	7.4	1.3	15*	7.1	1.3	15*	6.9	1.2	15	6.9	1.2	15	6.9	15	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	3.6	1.6	1	3.5	1.5	1	3.4	1.5	1	3.3	1.4	1	3.3	1.4	1	3.3	1.4	1	3.3	1	
2	4.6	1.5	2	4.4	1.5	2	4.3	1.4	2	4.2	1.4	2	4.1	1.4	2	4.1	1.4	2	4.1	2	
4*	5.7	1.5	4*	5.6	1.5	4*	5.4	1.4	4*	5.2	1.4	4*	5.1	1.4	4	5.1	1.4	4	5.1	4	
150	6*	6.5	1.5	6*	6.3	1.5	6*	6.1	1.4	6*	6.0	1.4	6*	5.8	1.4	6	5.8	1.4	6	5.8	6
(CFS)	8*	7.1	1.5	8*	6.9	1.5	8*	6.7	1.4	8*	6.5	1.4	8*	6.3	1.4	8	6.3	1.4	8	6.3	8
10*	7.7	1.5	10*	7.4	1.5	10*	7.2	1.4	10*	7.0	1.4	10*	6.8	1.4	10	6.8	1.4	10	6.8	10	
12*	8.1	1.5	12*	7.9	1.5	12*	7.6	1.4	12*	7.4	1.4	12*	7.2	1.4	12	7.2	1.4	12	7.2	12	
15			15*	8.4	1.5	15*	8.2	1.4	15*	8.0	1.4	15*	7.7	1.4	15	7.7	1.4	15	7.7	15	

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 8'		BW = 10'		BW = 12'		BW = 14'		BW = 16'		BW = 18'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	5.5	2.8	1	5.3	2.7	1	5.3	2.5	1	4.9	2.2
2*	7.2	2.8	2*	7.0	2.6	2*	6.7	2.5	2*	6.4	2.2
4*	9.4	2.8	4*	9.0	2.6	4*	8.6	2.5	4*	8.1	2.2
175 (CFS)											
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	5.7	3.0	1	5.7	2.8	1	5.6	2.7	1	5.4	2.5
2*	7.5	3.0	2*	7.3	2.8	2*	7.1	2.6	2*	6.9	2.4
4*	9.7	3.0	4*	9.4	2.8	4*	9.2	2.6	4*	8.6	2.4
200 (CFS)											
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	6.3	3.3	1	6.2	3.1	1	6.0	3.0	1	5.8	2.7
2*	8.1	3.3	2*	8.0	3.1	2*	7.8	3.0	2*	7.4	2.7
250 (CFS)											

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BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)
1	4.7	2.0	1	4.5	2.0	1	4.4	1.9	1	4.3	1.8
2*	5.9	2.0	2	5.7	1.9	2	5.6	1.8	2	5.4	1.7
175 (CFS)	7.5	2.0	4*	7.3	1.9	4*	7.0	1.8	4*	6.8	1.7
6*	8.6	2.0	6*	8.3	1.8	6*	8.0	1.8	6*	7.8	1.7
12	10	2.0	8	10	2.0	8	10	1.9	8	10	1.7
14	12	2.0	12	12	2.0	12	12	1.9	12	12	1.7
15	15	2.0	15	15	2.0	15	15	1.9	15	15	1.7
BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)
1	5.0	2.2	1	4.8	2.1	1	4.7	2.0	1	4.6	1.9
2*	6.3	2.2	2*	6.1	2.1	2*	6.0	2.0	2*	5.8	1.9
4*	8.0	2.2	4*	7.7	2.1	4*	7.5	2.0	4*	7.3	1.9
6*	10	2.2	6*	9.9	2.1	6*	9.8	2.0	6*	9.7	1.9
10	11	2.2	10	11	2.1	10	11	2.0	10	11	1.9
12	12	2.2	12	12	2.1	12	12	2.0	12	12	1.9
14	15	2.2	15	15	2.1	15	15	2.0	15	15	1.9
BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)	S(8)	V(fps)	Hp(ft)
1	5.5	2.4	1	5.3	2.3	1	5.2	2.3	1	5.1	2.2
2*	7.0	2.4	2*	6.8	2.3	2*	6.6	2.2	2*	6.4	2.1
4*	8.9	2.4	4*	8.4	2.3	4*	8.1	2.2	4*	7.9	2.1
6*	10	2.4	6*	9.6	2.3	6*	9.3	2.2	6*	9.1	2.1
10	12	2.4	12	12	2.3	12	12	2.2	12	12	2.1
12	15	2.4	15	15	2.3	15	15	2.2	15	15	2.1

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'				BW = 34'				BW = 36'				BW = 38'				BW = 40'				BW =				
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	3.9	1.7	1	3.8	1.6	1	3.7	1.6	1	3.7	1.5	1	3.6	1.5	1	3.6	1.5	1	3.6	1.5	1	3.6	1.5	
2*	5.0	1.6	2	4.8	1.6	2	4.7	1.5	2	4.6	1.5	2	4.5	1.5	2	4.5	1.5	2	4.5	1.5	2	4.5	1.5	
3*	6.2	1.6	4*	5.1	1.6	4*	5.9	1.5	4*	5.7	1.5	4*	5.6	1.5	4	5.6	1.5	4	5.6	1.5	4	5.6	1.5	
4*	7.1	1.6	6*	6.3	1.6	6*	8.7	1.5	6*	6.9	1.5	6*	6.4	1.5	6	6.4	1.5	6	6.4	1.5	6	6.4	1.5	
(CFS)	8*	7.8	1.6	8*	7.5	1.6	8*	7.5	1.5	8*	7.1	1.5	8*	7.0	1.5	8	7.0	1.5	8	7.0	1.5	8	7.0	1.5
10*	8.4	1.6	10*	8.1	1.6	10*	10*	1.5	10*	7.7	1.5	10*	7.4	1.5	10	7.4	1.5	10	7.4	1.5	10	7.4	1.5	
12			12			12*	8.3	1.5	12*	8.1	1.5	12*	7.9	1.5	12	7.9	1.5	12	7.9	1.5	12	7.9	1.5	
15			15			15			15			15			15			15			15			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	4.3	1.8	1	4.1	1.7	1	4.0	1.7	1	3.9	1.6	1	3.8	1.6	1	3.8	1.6	1	3.8	1.6	1	3.8	1.6	
2	5.3	1.7	2	5.2	1.7	2	5.1	1.6	2	4.9	1.6	2	4.8	1.6	2	4.8	1.6	2	4.8	1.6	2	4.8	1.6	
4*	6.7	1.7	7*	6.6	1.7	7*	8.3	1.6	7*	6.2	1.6	7*	5.9	1.6	7	5.9	1.6	7	5.9	1.6	7	5.9	1.6	
(CFS)	8*	7.7	1.7	8*	7.4	1.7	8*	7.4	1.6	8*	7.0	1.6	8*	6.7	1.6	8	6.7	1.6	8	6.7	1.6	8	6.7	1.6
200	6*	8.4	3.7	6*	8.1	3.7	6*	8.1	3.7	6*	7.9	3.6	6*	7.6	3.6	6	7.6	3.6	6	7.6	3.6	6	7.6	3.6
(CFS)	10		10			10*	8.5	3.6	10*	8.5	3.6	10*	8.3	3.6	10	8.3	3.6	10	8.3	3.6	10	8.3	3.6	
12			12			12			12			12			12			12			12			
15			15			15			15			15			15			15			15			
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	
1	4.7	2.0	1	4.6	1.9	1	4.5	1.9	1	4.4	1.8	1	4.3	1.8	1	4.3	1.8	1	4.3	1.8	1	4.3	1.8	
2*	5.0	1.9	2*	5.8	1.9	2	5.7	1.8	2	5.6	1.8	2	5.4	1.8	2	5.4	1.8	2	5.4	1.8	2	5.4	1.8	
4*	5.5	1.9	4*	7.3	1.9	4*	9.1	1.8	4*	7.8	1.8	4*	6.8	1.8	4	6.8	1.8	4	6.8	1.8	4	6.8	1.8	
(CFS)	6*	6.5	1.9	6*	8.3	1.9	6*	8.3	1.9	6*	8.0	1.8	6*	7.8	1.8	6	7.8	1.8	6	7.8	1.8	6	7.8	1.8
250	6*	7.5	1.9	6*	10	1.9	6*	10	1.9	6*	9.8	1.8	6*	9.6	1.8	6	9.6	1.8	6	9.6	1.8	6	9.6	1.8
(CFS)	10		10			10			10			10			10			10			10			
12			12			12			12			12			12			12			12			
15			15			15			15			15			15			15			15			

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DESIGN DATA FOR EARTH SPILLWAYS										
RETARDANCE C-D										
SIDE SLOPE 3:1										
LEVEL CREST LENGTH 25'										
BW = 8'		BW = 10'		BW = 12'		BW = 14'		BW = 16'		
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	
7.1	6.5	3.5	7.9	6.5	3.2	6.1	6.2	2.5	7.1	2.8
7.2	8.7	2.6	8.5	8.5	3.2	7.0	7.9	2.9	7.7	2.8
7.3	10.9	2.1	9.4	9.4	4.1	8.2	8.1	4	9.9	2.8
300	6	6	6	6	6	6	6	6	6	6
(CFS)	4	5	6	7	8	9	10	11	12	13
	10	10	10	10	10	10	10	10	10	10
	12	12	12	12	12	12	12	12	12	12
	15	15	15	15	15	15	15	15	15	15

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 20'		BW = 22'		BW = 24'		BW = 26'		BW = 28'		BW = 30'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)
1	5.9	2.7	1	5.8	2.6	1	5.6	2.5	1	5.6	2.4
4	7.5	2.7	2*	7.4	2.8	2*	7.7	2.5	2*	7.8	2.4
6	9.6	2.7	6*	9.3	2.6	6*	9.1	2.5	6*	9.3	2.4
100	6	6	6	6	6	6	6	6	6	6	6
(CFS)											
11	9	3	3	8	3	3	8	3	3	8	3
17	10	3	10	10	3	10	10	3	10	10	3
15	12	3	12	12	3	12	12	3	12	12	3
	15	3	15	15	3	15	15	3	15	15	3

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DESIGN DATA FOR EARTH SPILLWAYS
 RETARDANCE C-D
 SIDE SLOPE 3:1
 LEVEL CREST LENGTH 25'

BW = 32'		BW = 34'		BW = 36'		BW = 38'		BW = 40'	
S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)	V(fps)	Hp(ft)	S(%)
1	5.2	2.2	1	5.1	2.1	1	5.0	2.1	1
2	5.4	2.1	2	5.4	2.1	2	5.4	2.1	2
3	5.6	2.1	3	5.0	2.1	3	4.9	2.0	3
4	6.2	2.1	4	4.4	2.1	4	4.4	2.0	4
5	6.7	2.1	5	3.0	2.1	5	3.0	2.0	5
6	7.2	2.1	6	2.1	2.1	6	2.1	2.0	6
7	8.0	2.1	7	0.9	2.0	7	0.9	2.0	7
8	8.6	2.1	8	0.9	2.0	8	0.9	2.0	8
9	9.0	2.1	9	0.9	2.0	9	0.9	2.0	9
10	10.0	2.1	10	0.9	2.0	10	0.9	2.0	10
11	11.2	2.1	11	1.2	2.1	11	1.2	2.1	11
12	12.2	2.1	12	1.2	2.1	12	1.2	2.1	12
13	13.2	2.1	13	1.2	2.1	13	1.2	2.1	13
14	14.2	2.1	14	1.2	2.1	14	1.2	2.1	14
15	15.2	2.1	15	1.2	2.1	15	1.2	2.1	15