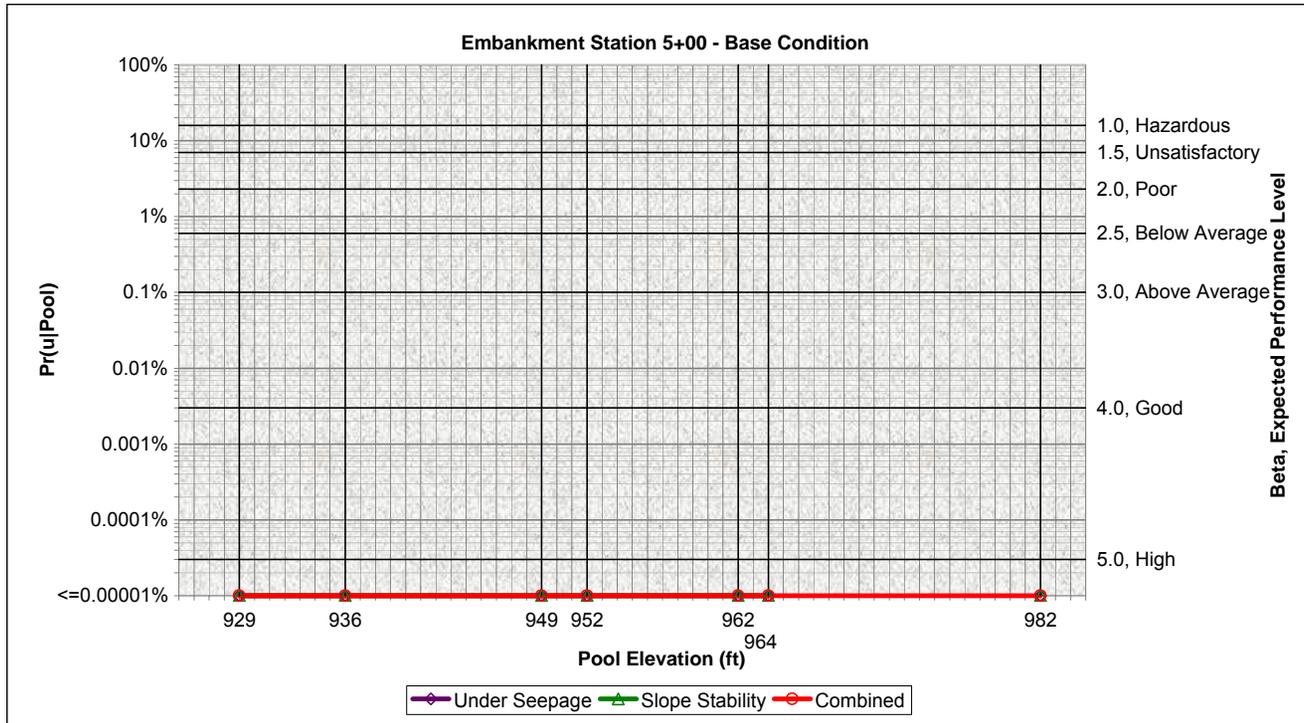


Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 5+00	Pool Elevation (ft)	Potential Failure Modes				Combined Pr(u Pool)
		Under Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00000%	≥ 8.7	0.00000%	5.5	0.00000%
	936	0.00000%	≥ 8.7	0.00000%	5.5	0.00000%
	949	0.00000%	≥ 8.7	0.00000%	5.5	0.00000%
	952	0.00000%	≥ 8.7	0.00000%	5.5	0.00000%
	962	0.00000%	≥ 8.7	0.00000%	5.5	0.00000%
	964	0.00000%	8.7	0.00000%	5.5	0.00000%
	982	0.00000%	13.4	0.00000%	5.5	0.00000%

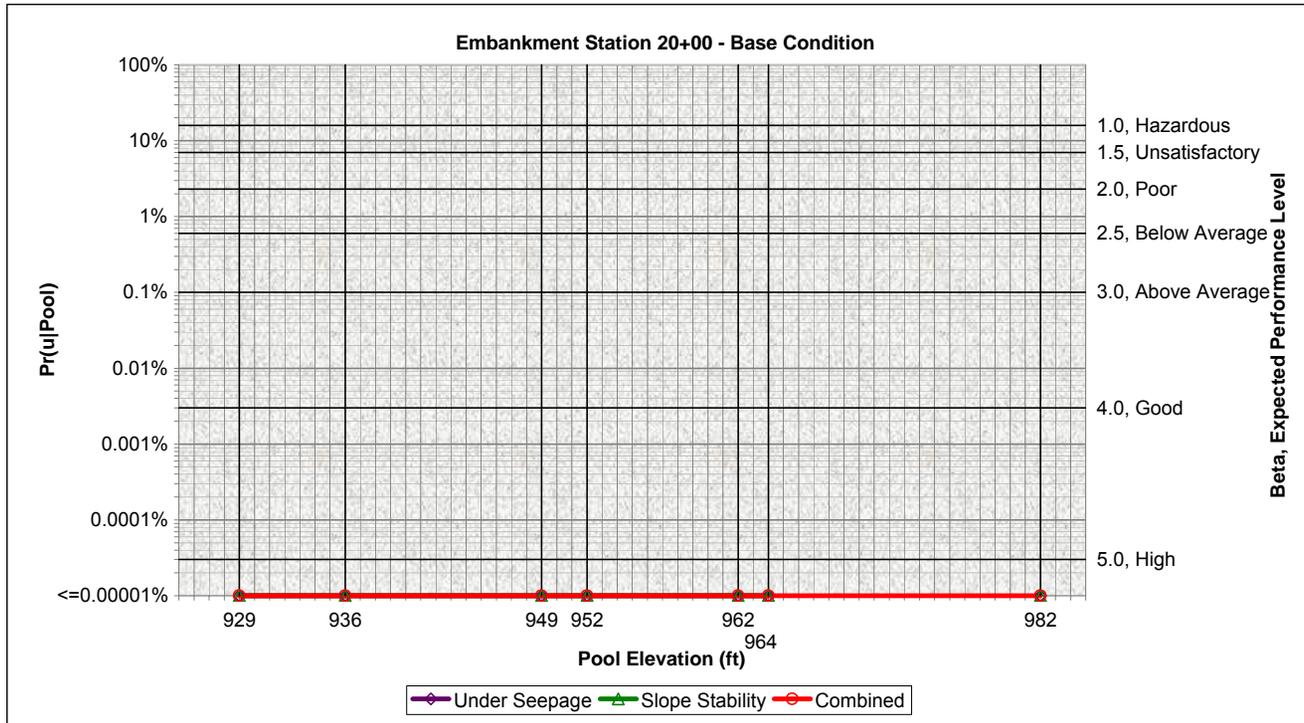


Notes

1. $Pr(u|Pool)$ = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined $Pr(u|Pool)$ = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with $Pr(u)$ values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 20+00	Pool Elevation (ft)	Potential Failure Modes				Combined Pr(u Pool)
		Under Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00000%	≥ 8.6	0.00000%	8.2	0.00000%
	936	0.00000%	≥ 8.6	0.00000%	8.2	0.00000%
	949	0.00000%	≥ 8.6	0.00000%	8.2	0.00000%
	952	0.00000%	≥ 8.6	0.00000%	8.2	0.00000%
	962	0.00000%	≥ 8.6	0.00000%	8.2	0.00000%
	964	0.00000%	≥ 8.6	0.00000%	8.2	0.00000%
	982	0.00000%	8.6	0.00000%	8.2	0.00000%

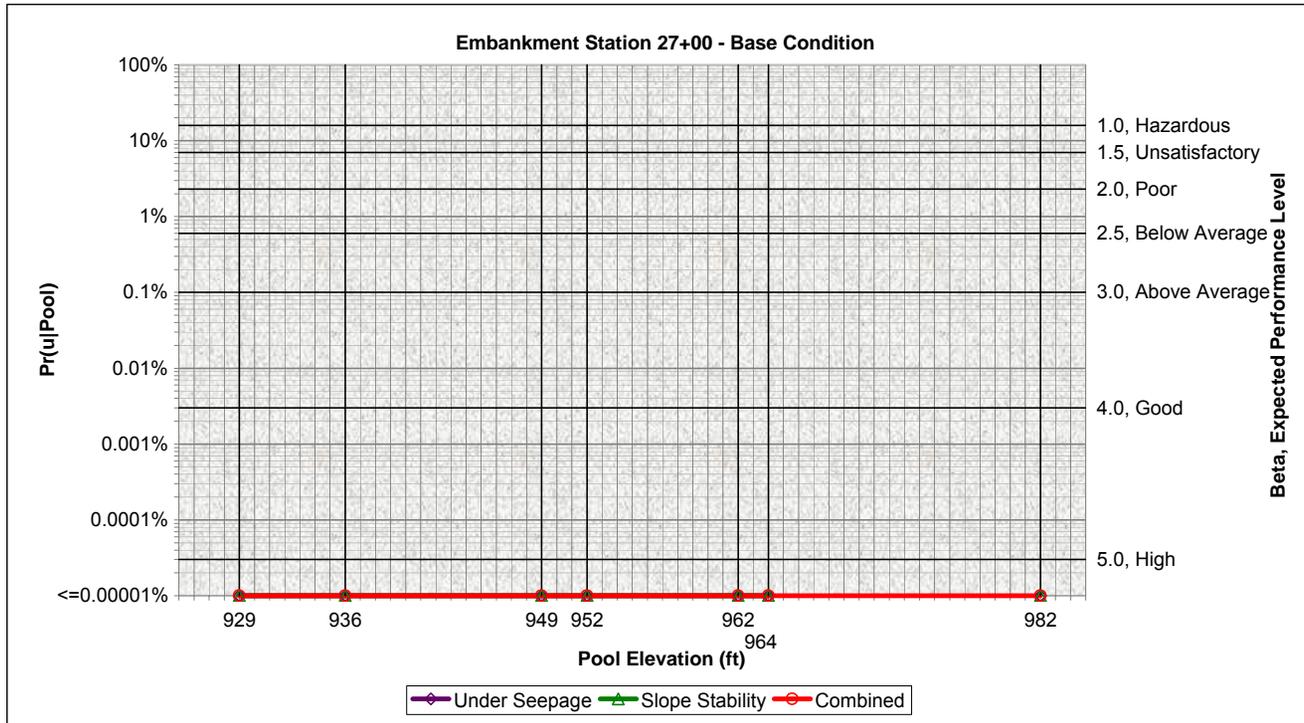


Notes

1. Pr(u|Pool) = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined Pr(u|Pool) = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with Pr(u) values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 27+00	Pool Elevation (ft)	Potential Failure Modes				Combined Pr(u Pool)
		Under Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00000%	≥ 5.9	0.00000%	≥ 7.3	0.00000%
	936	0.00000%	≥ 5.9	0.00000%	≥ 7.3	0.00000%
	949	0.00000%	5.9	0.00000%	≥ 7.3	0.00000%
	952	0.00000%	≥ 5.9	0.00000%	7.3	0.00000%
	962	0.00000%	≥ 5.9	0.00000%	7.0	0.00000%
	964	0.00000%	≥ 5.9	0.00000%	7.0	0.00000%
	982	0.00000%	8.5	0.00000%	8.8	0.00000%

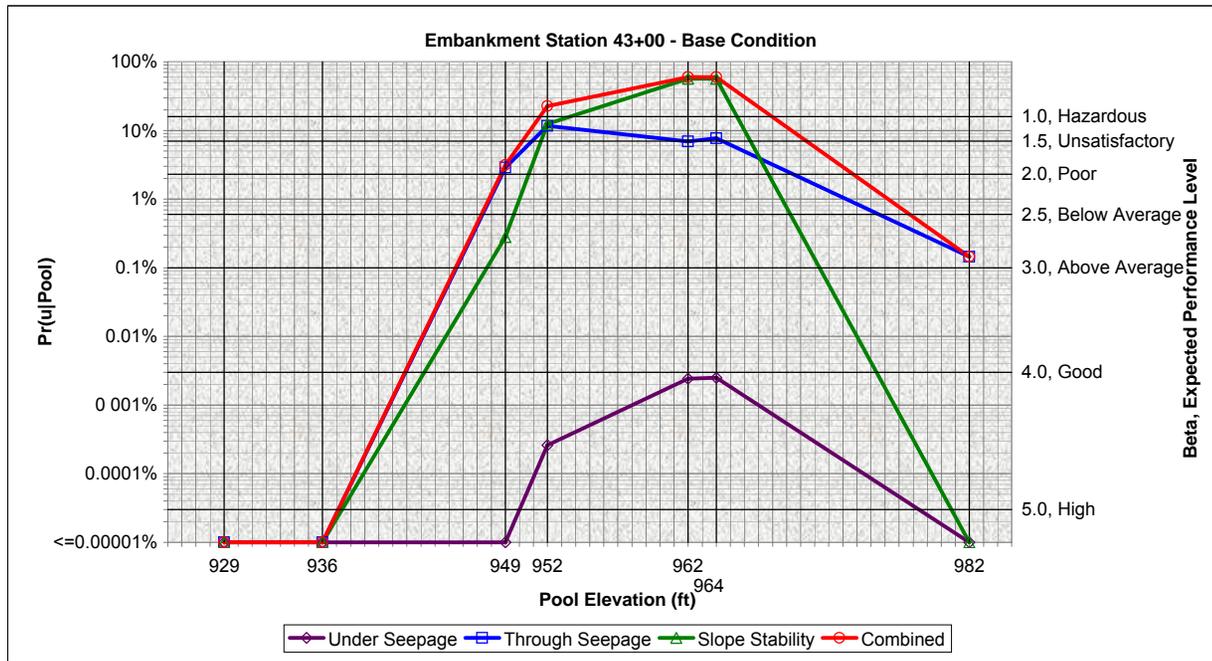


Notes

1. $Pr(u|Pool)$ = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined $Pr(u|Pool)$ = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with $Pr(u)$ values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 43+00	Pool Elevation (ft)	Potential Failure Modes						Combined Pr(u Pool)
		Under Seepage		Through Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00000%	6.6	0.00000%	24.5	0.00000%	3.4	0.00000%
	936	0.00000%	6.1	0.00000%	19.2	0.00000%	3.4	0.00000%
	949	0.00001%	5.3	2.88094%	1.9	0.28000%	2.7	3.15288%
	952	0.00026%	4.6	11.72464%	1.2	12.52000%	1.2	22.77692%
	962	0.00243%	4.1	6.94786%	1.5	56.60000%	-0.2	59.61635%
	964	0.00251%	4.1	7.72084%	1.4	56.60000%	-0.2	59.95185%
	982	0.00000%	6.0	0.14430%	3.0	0.00000%	4.0	0.14430%

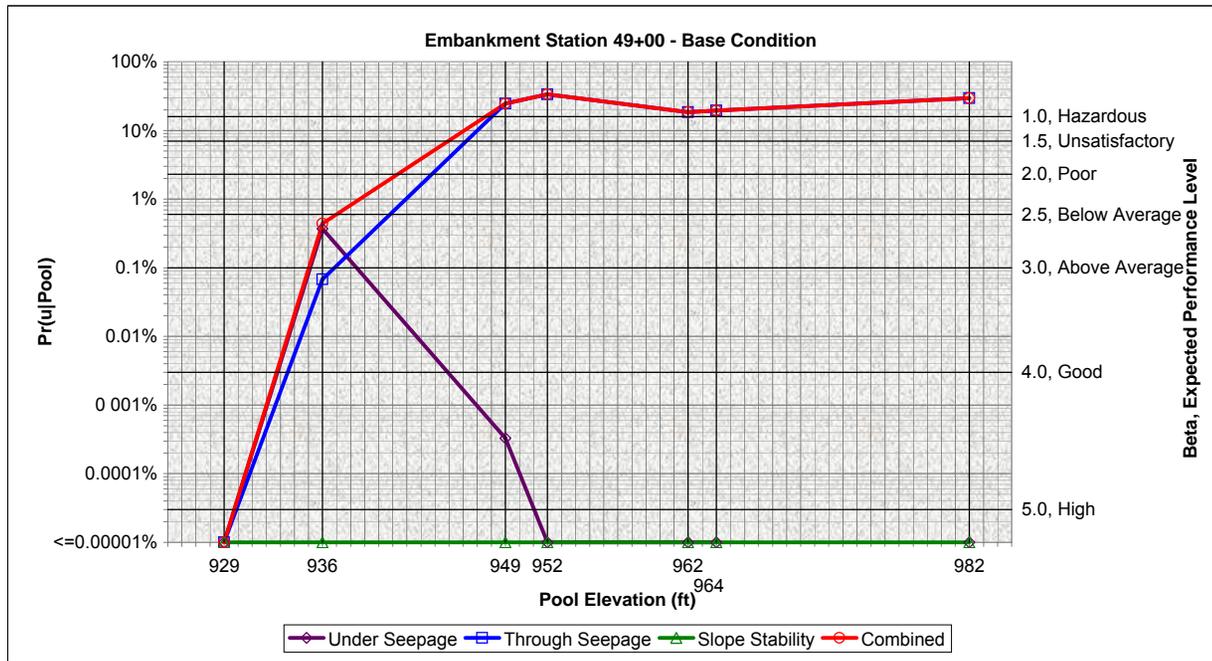


Notes

1. Pr(u|Pool) = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined Pr(u|Pool) = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with Pr(u) values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 49+00	Pool Elevation (ft)	Potential Failure Modes						Combined Pr(u Pool)
		Under Seepage		Through Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00000%	6.8	0.00000%	5.4	0.00000%	3.7	0.00000%
	936	0.37226%	2.7	0.06802%	3.2	0.00000%	3.7	0.44003%
	949	0.00033%	4.5	24.73315%	0.7	0.00000%	3.7	24.73340%
	952	0.00001%	5.2	33.55300%	0.4	0.00000%	3.7	33.55301%
	962	0.00000%	6.1	18.40205%	0.9	0.00000%	3.7	18.40205%
	964	0.00000%	6.0	19.54789%	0.9	0.00000%	3.7	19.54789%
	982	0.00000%	6.9	29.55403%	0.5	0.00000%	6.5	29.55403%

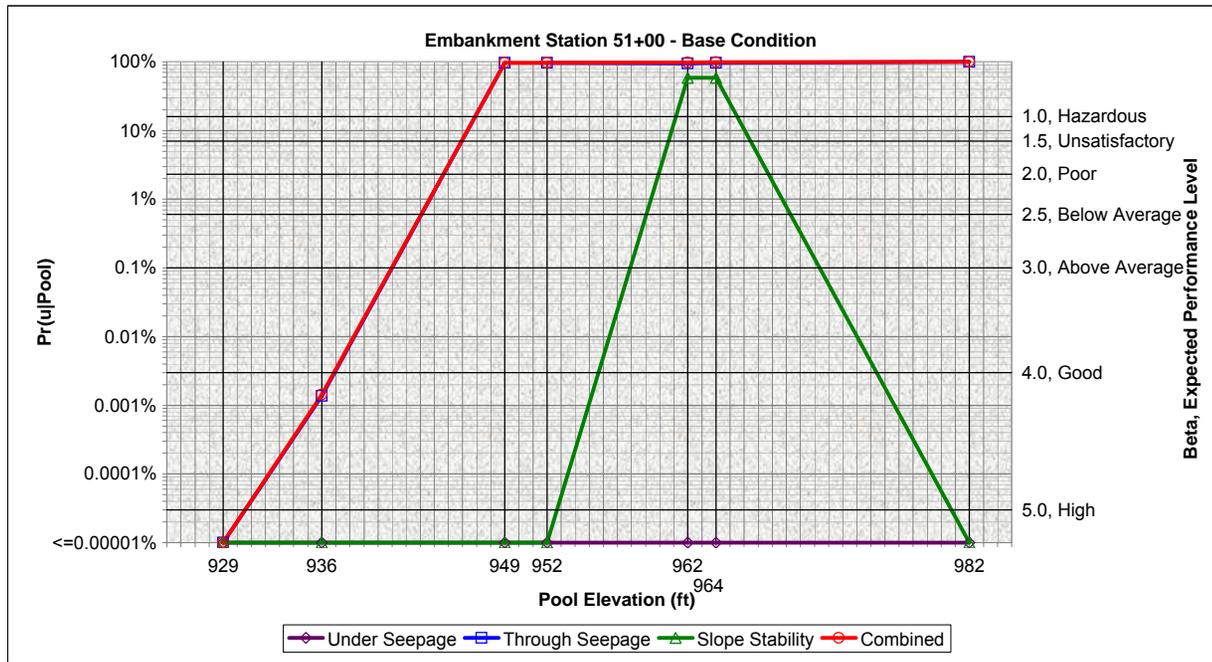


Notes

1. Pr(u|Pool) = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined Pr(u|Pool) = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with Pr(u) values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 51+00	Pool Elevation (ft)	Potential Failure Modes						Combined Pr(u Pool)
		Under Seepage		Through Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00001%	5.1	0.00000%	9.7	0.00000%	3.9	0.00001%
	936	0.00006%	4.9	0.00137%	4.2	0.00000%	3.9	0.00143%
	949	0.00072%	4.3	96.56253%	-1.8	0.00000%	3.9	96.56255%
	952	0.00000%	5.6	96.78644%	-1.9	0.00000%	3.9	96.78644%
	962	0.00000%	5.5	95.15056%	-1.7	58.84000%	-0.2	98.00397%
	964	0.00001%	5.2	96.85808%	-1.9	58.84000%	-0.2	98.70679%
	982	0.00001%	5.2	99.99995%	-4.9	0.00000%	3.8	99.99995%

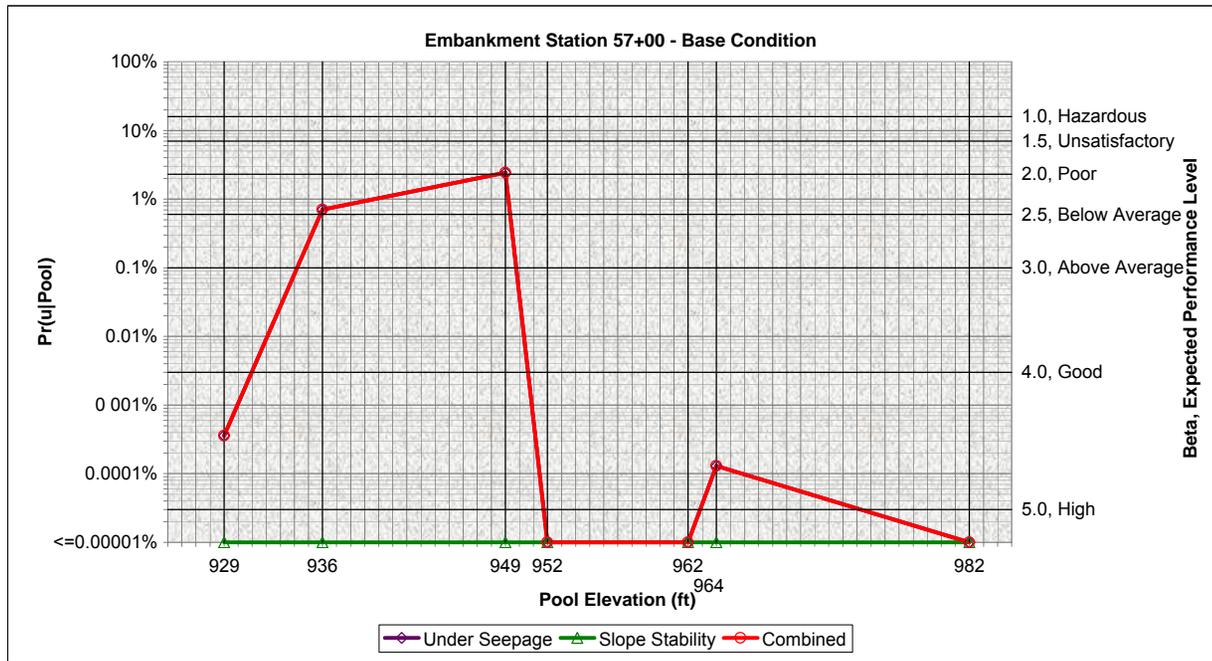


Notes

1. Pr(u|Pool) = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined Pr(u|Pool) = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with Pr(u) values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Station 57+00	Pool Elevation (ft)	Potential Failure Modes				Combined Pr(u Pool)
		Under Seepage		Slope Stability		
		Pr(u Pool)	Beta	Pr(u Pool)	Beta	
	929	0.00036%	4.5	0.00000%	6.7	0.00036%
	936	0.70115%	2.5	0.00000%	6.7	0.70115%
	949	2.43419%	2.0	0.00000%	6.7	2.43419%
	952	0.00001%	5.2	0.00000%	6.7	0.00001%
	962	0.00001%	5.2	0.00000%	7.7	0.00001%
	964	0.00013%	4.7	0.00000%	7.7	0.00013%
	982	0.00000%	5.8	0.00000%	8.4	0.00000%

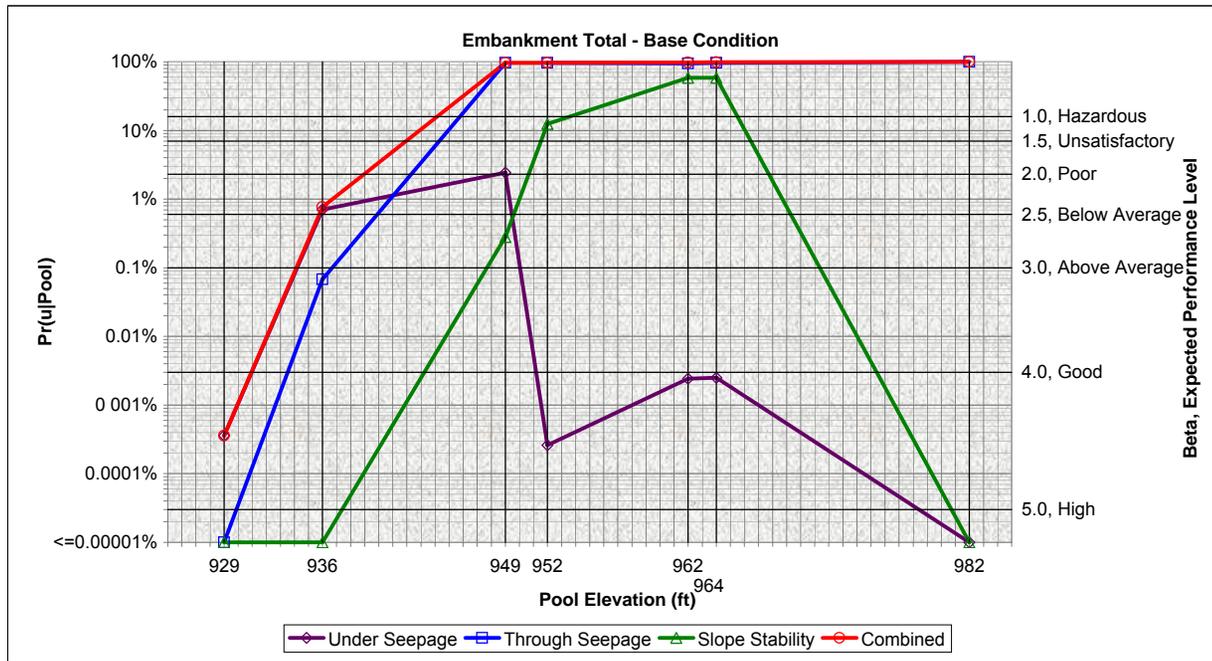


Notes

1. Pr(u|Pool) = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined Pr(u|Pool) = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with Pr(u) values as specified in ETL 1110-2-547 (USACE, 1995)

Bolivar Dam Probabilities of Unsatisfactory Performance - Base Condition

Embankment Total	Pool Elevation (ft)	Potential Failure Modes			Combined Pr(u Pool)
		Under Seepage Pr(u Pool)	Through Seepage Pr(u Pool)	Slope Stability Pr(u Pool)	
	929	0.00036%	0.00000%	0.00000%	0.00036%
	936	0.70115%	0.06802%	0.00000%	0.76869%
	949	2.43419%	96.56253%	0.28000%	96.65560%
	952	0.00026%	96.78644%	12.52000%	97.18879%
	962	0.00243%	95.15056%	58.84000%	98.00402%
	964	0.00251%	96.85808%	58.84000%	98.70682%
	982	0.00001%	99.99995%	0.00000%	99.99995%



Notes

1. Pr(u|Pool) = the probability of unsatisfactory performance due to potential failure modes (under seepage, through seepage, and slope stability) given a pool has occurred
2. Combined Pr(u|Pool) = the combined probability of unsatisfactory performance due to potential failure modes given a pool has occurred
3. The Beta values and Expected Performance Levels are plotted to correlate with Pr(u) values as specified in ETL 1110-2-547 (USACE, 1995)