Appendix L: Relationship of EMDS Model Results to Green, Yellow, Red Field Surveys

Using the soil erosion risk ratings found in the Soil Resource Inventory (See Chapter 3.02, Table 3.02-8), 82 percent of the Forest has a high to very high erosion hazard. The inherent risk of erosion of the soils within the Tahoe National Forest (TNF) was refined using the Ecosystem Management Decision Support Model (EMDS). The parameters used in the EMDS model to assess soil erosion risk were 1) presence of geo-debris slides, 2) soil erodibility, 3) slope, and 4) precipitation. The EMDS model compared the K factor, percent slope, precipitation, and presence of geodebris slides of each route segment (~300 meters) to all other road and motorized trail segments on the TNF. The result is a relative erosion risk value assigned between 0 (highest risk) and 1 (lowest risk) for each 300 meter segment of every road and motorized trail. The EMDS scores for the length of roads and motorized trails in each HUC6 watershed were averaged to define the potential erosion risks on the watersheds on the TNF. The modeled erosion is generally higher on much of the west slope of the TNF. This is due to the steeply sloping topography of many of the watersheds, the potential presence of geo-debris slides, higher precipitation values, and finer-textured, more erosive soils. The modeled risk is lower on the east-side of the TNF due to coarser textured soils and less steep slopes. Site specific erosion risks for these routes are displayed below.

Table L-1. Relationship of EMDS Model Results to Green, Yellow, Red Field Surveys

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
ARM-13	0.78	WAE	65	33.2-35.8	169.2	2 of 5	0.43	472.3' @0.22 (geodeb - 2); 776' @ 0.56	G	G2, Y2; 0 crossings, erosion - 300'
ARM-2	0.51	MAG	55	24.1-24.8	227.4	0 of 6	0.58	38.7' @0.51; 300' @0.58; 472 @0.62	G	G1, G2; ; 0 xings, erosion last 40'
ARM-3	2.31	ISE	55	20.1-21.1	201.7	0 of 42	0.63	100% 0.61-0.64	G	
ARM-5	0.79	MCG	65	30.8-34.2	194.5	2 of 5	0.43	386.3' @0.20 (2 geodeb); 887.6' @0.55	G	G2, G4, G6; 0 xings
ARM-7	0.7	MCE5	65	14.7-18.0	171.4	0 of 4	0.58	100% @ 0.58	G	G1, G2; 0 xings; dusty
ARS-M2	0.57	HUG	65	41.3-58.8	185	0 of 3	0.54	100% 0.53-0.55	overgrown	
ARS-M3	1.27	DEG	65	35.9-87.8	172.5	7 of 7	0.2	100%0.16-0.21 (7 gedeb)	overgrown	
ARS-M6	0.48	PVG, CUG	75	31.7-32.7	126.9	0 of 3	0.34	100% 0.43-0.49	overgrown	
SV-004		TBE	85	19.7	50	0 of 1	0.43	0.43	G	
SV-005			65	22.0-23.43	54.6	1 of 3	0.62	100% @ 0.62-0.63	Y	Y7, Y2, G7; 3 - int xings; erosion some into 1 xing
SV-P11	1.03	FTE	35	12.2-13.4	150	0 of 6	0.77	100% @ 0.76-0.77	G	G1: 0 xings; very low use musk thistle, tree across route, ripped large boulders in route
SV-p12	0.59	JTE. PBF	23	22.3-29.8	157.75	0 of 4	0.77	100% @ 0.71-0.78	overgrown	Overgrown

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
SV-P13	0.9		24	35.8-40.0	209.19	3 of 5	0.43	855.9 @ 0.26- 0.28 (3 geodeb); 600' @ 0.64-0.69	G	G2; Low use; up to 15% route gradient
SV-P14	0.37	MPC. FME	23	22.8-23.9	228.26	0 of 2	0.66	100% @ 0.61-0.70	G	G2; Low use; near stream, no connectivity; some erosion on steeper parts of route
SV-P14A	0.27	FUE, MPC	23	22.1-22.8	205.3	0 of 2	0.7	100% 0.69-0.72	G	G2, G4; Low use; some erosion 50' on steeper part of route
SV-P18	0.59	TWE	18	24.5-28.1	284.3	0 of 4	0.38	100% @ 0.51	G	G2, G4; Treadwear 0-6" entire route
SV-P19	0.17	WAE	55	39.4	170	0 of 0	0.19	0.19	decomissioned	
SV-P4	1.12		45	15.7-28.5	190.03	0 of 7	0.67	100% 0.66-0.68	Y	Route crosses a perennial stream/old wooden bridge. Rill erosion. Sediment deposition 60% of route.
SV-P5	0.41	TBE	75	23.8-25.3	50	0 of 3	0.53	100% 0.53	G	G7, Y2, Y7; 1 - p & 1- l xing -- connectivity and sediment at both crossings
SV-P6		WAE	55	24.6-26.0	170	0 of 3	0.65	100% 0.65	G	G1; 0 xings
SV-P7E	0.82	WAF, WEE	54	19.7-24.1	160.2	0 of 8	0.67	100% 0.65-0.70	G	G1; 0 xings

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
SV-P7W	0.53	WAE	45	18.3-18.5	170	0 of 3	0.71	100% 0.71	G	G1, G2; 0 xings; overgrown
SV-P8	0.31	CEE	45	20.8	150	0 of 3	0.73	100% 0.73	G	G1. G2, Y7; 1- p xing, erosion & sediment into channel; Little Truckee River Diversion Dam
TKN-J10	0.37	BCG	23	31.0-31.5	150	0 of 2	0.78	100% @ 0.78	G	G2; 1 xing; 20' segment follows natural drainage, 2-3" erosion
TKN-J11	0.86	ULC	18	12.0-17.6	146.3	5 of 5	0.31	100% 0.25-0.34 (6 geodeb)	G	G1, G4; 0 xings; trail incision <6"
TKN-J12	0.69	KME	21	5.9-7.3	206.3	0 of 5	0.72	100% @ 0.71-0.74	G	G7, G4; 1 xing; trail incision <6"; wet?
TKN-J2	0.67	FTE, FRE	23	23.2-32.9	150	0 of 4	0.78	300'@ 0.28; 1084.3	G	G1; 0 xings; access rd 72-1wetland issues
TKN-J3	0.95	FMF2	23	42.0-42.9	150	0 of 2	0.28	100% 0.28	G	G2; 0 xings; access rd 72-1 wetland issues
TKN-J4	3.36	WEE	74	17.5-27.3	129.2	3 of 26	0.44	100% @ 0.48-0.55	Y	G1, G2, G7, Y2, Y4; 3 I xings; some erosion on route, near end 1 @ 800' and 2@ 50'

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
TKN-J5	1.37		75	21.5-33.2	147.6	0 of 11	0.48	100% @ 0.47-0.51	Y	Y1, Y6, G1, G2, G4, G7; 1 - p & 1 - e xings, some erosion leaving tread, sed into intermittent
TKN-J6	0.17		65	26.5	139.4	0 of 0	0.58	0.58	G	G2; 0 xings; route ends ~ 20' from lake
TKN-J9	1.79	XXE	20	15.6-22.7	193.2	0 of 11	0.73	100% @ 0.71-0.78	G	G2, G7, Y7; 3 - I xings, erosion on approaches into channel at 1 xing
TKN-M1	3.5	FUF, TTE	24	13.5-25.4	190.8	0 of 21	0.72	100% @ 0.68-0.75	G	G2, G8; 0 xings; 20' segment 10' wide; erosion 100'
TKN-M2	3.33	ETE	28	11.3-14.4	260.9	0 of 27	0.59	154.1 @ 0.66; 4912.5' @ 0.59-0.60	Y	Y2, Y4, Y7, G1, G2, G4; 3 I xings, sediment into channels; trail incision 6-12"
TKN-M3	2.83	XXE, XXF, XCE	22	15.6-19.7	209.8	0 of 23	0.7	100% @ 0.71-0.72	G	
TKN-Q1	0.92	EUE	28	10.8-13.5	235.4	0 of 8	0.64	524.2' @ 0.59; 959.9' @0.67	G	G2; 0 xings; some erosion near end of route
TKS-11	0.91	TIE, GRG	75	30.6-31.1	172.2	5 of 5	0.21	100% @ 0.18-0.25	G	G2, G7, Y7; 3 xings; some erosion; needs resurvey

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
TKS-M9	2.97	FTE, FUC, FUE	35	10.3-15.8	174.4	0 of 24	0.73	100% @ 0.69-0.76	G	G1; 0 xings; overgrown ?
YRM-M1	0.99	MMRE, MNG, AQB, MMH, WOG	55	33.0-55.2	203.1	0 of 6	0.59	300' @ 0.55; 988.4' @ 0.57-0.59; 300' @ 0.66	R	Trail begins with a wet water crossing of North Yuba River. Steep, currently minimal use, signs of erosion.
YRM-M3	0.27	JYE	75	65.4-72.5	280	0 of 2				G2, G4; 0 xings; beginning of route - erosion & trail incision (0-6") 300'
YRM-M4	0.26	CTE	65	48.6-51.6	193	2 of 2				
YRN-1	1.22	SMG, DDH, MNG, WOG	65	61.5-73.5	163.4	6 of 7	0.22	2634.9' @0.18-0.25; 300' @ 0.52	G	G1, G2; 1 - I crossing (culvert); rocky; erosion 60'; 93-2 rd has hillclimb
YRN-2	1.4	SME	65	29.0-54.3	139	1 0F 12	0.54	178.6' @ 0.20; 1906.7' @ 0.54-0.58; 161.9' @ 0.61	Y	G2, G4, G7, Y2, Y4; 3 - e xings, 1 unstable; erosion; 70% of trail is incised; Resurvey
YRN-4	0.6	DEG, SOE	75	48.7-52.8	155.9	3 0F 4	0.27	662.6' @ 0.19; 300' @ 0.46	G	G1
YRN-5A	0.08	MMRE	75	40.8	200	0 of 1	0.45	0.46	G	G1; accesses campsite
YRN-5B	0.04	MMRE	75	32.6	200	0 of 1	0.46	0.46	G	G1; accesses campsite

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
YRN-5C	0.18	MMRE	75	32	200	0 of 1	0.46	0.5	G	G1; accesses campsite
YRN-6	0.79	HUG, DUF	65	77.8-82.8	183.9	0 of 5	0.51	100% @ 0.51	G	Steep 5-25% slope trail gradient; 85% sideslopes; rill erosion. Geotech.
YRN-7		RDG, SME, HUG	75	43.1-71.0	189.6	2 of 4	0.35	309.9' @ 0.17 (2 geoderib); 580.2' @ 0.44-0.45	G	G2; 0 xings; serpentinitic soils; cobbly; monitor for erosion
YRN-9	0.5	SMG, SME, MNG	75	33.0-38.1	159.1	1 of 3	0.39	228.8' @ 0.19 (1 geodebris); 569.5 @ 0.48	overgrown	
YRN-M3A	2.11	RDG, DUF, MLG, WBF	75	43.3-54.3	191.4	8 0F 13	0.32	1469' @ 0.17-0.19 (6 geodebris); 1500' @ 0.44-0.47	G	
YRS-AF	0.33	GRG	75	28.1-29.1			0.55	530.6 @ 0.55	G	G1; granite slabs, shallow soils, wet areas; lake access
YRS-B10	0.26		65	26.4-27.5	173.9	0 of 2	0.56	423.8' @ 0.56-0.57	G	G4; 0 xings; trail incision 0-6"
YRS-B12	0.12		65	25.8	205.5	0 of 1	0.55	0.55	G	G1; 0 xings
YRS-B5	3.79		65	19.5-25.6	188	0 of 30	0.56	100% @ 0.56-0.57	G	G4; 0 xings; 0-6" trail incision on 75% of route; tread beginning to concentrate water flow
YRS-B7	0.24	MCG	65	27.4-28.0	195	0 of 2	0.56	300' @ 0.56; 82.3' @ 0.55	overgrown	could not find

Route	Length (mi)	Soil MU	EMDS Model Inputs/Outputs						2008 Surveys	
			ppt	Slope Steepness Range	Slope Erode (K factor)	Geodebris	Ave EMDS Erosion TV	EMDS Erosion Risk	2008 Ave GYR	2008 Surveys
YRS-F1	1.07	GRG, RSE, RPE	80	23.9-72.4	132.6	2 0F 11	0.36	1011.8' @ 0.17-0.39; 498.2' @ 0.51-0.53	G	G1, G2; access to campsite 100' from lake; granitic, very cobbly & gravelly soils; minimal sheet erosion near campsite
YRS-SF4	1.05	MCE, IMG, HSF	65	29.0-38.2	164.6	5 0F 6	0.26	1492.5' @ 0.20-0.22 (5 geodebris); 224.2' @ 0.56	G	G2, G7, Y1; 1 - I xing, 1- wet area; minor erosion;
YRS-SF5	3.94	HSE, MCE, IME	65	26.5-34.3	164.8	0 of 24	0.56	300' @ 0.55; 6471.5' @ 0.56-0.57	Y	Y2, (R7- part of Pioneer Trail), G1, G7; 2- I xings, minor erosion in places
YRS-SF6	2.37	MCE5, MCG, HUG, IMG	65	28.5-36.5	184.7	7 of 17	0.37	2010.4 @ 0.19-0.38 (7 geodebris); 1815.9' @ 0.56	R	Y1, R2, G1, G2, G7; 2- I xings, erosion and sediment into streams