

Cumulative Watershed Effects

Motorized Travel Management

Stanislaus National Forest

Methodology and Summary of the CWE Analysis

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CUMULATIVE WATERSHED EFFECTS

The process for analyzing cumulative watershed effects (CWE) consisted of two steps: (1) an office evaluation which consisted of determining the risk of cumulative effects using a predictive model and researching watershed history, and (2) field evaluation of streamcourse indicators of cumulative effects.

Step 1, the risk of cumulative effects, is evaluated using the Forest Service equivalent roaded acreage (ERA) methodology (USDA Forest Service, 1988). ERA values are calculated using a computer model developed on the Stanislaus National Forest (USDA Forest Service, 2003). The ERA model is intended to predict risk of cumulative effects, not actual effects. As such, it is an initial screen for focusing field evaluation priorities.

Understanding watershed history (i.e., past management activities, hydrologic events, wildfire) is important to build a temporal context of past impacts, current condition and potential future effects. Analysis of this information is essential to help predict effects of future management activities on water quality and watershed condition.

Step 2, field evaluation, is necessary for validating the modeled ERA prediction with actual and expected future field conditions. Project-related water quality parameters and watershed condition attributes are evaluated via in-stream and near-stream condition indicators. This evaluation is essential to help interpret cumulative effects of past projects and potential cumulative effects given proposed activities and other reasonably foreseeable future activities.

CWE Excel Model Description

The Excel Model is designed with formulas to calculate the percent Equivalent Roaded Acres (ERA). The Annual ERA value is calculated using a linear decay of the ERA coefficient. The basic equation is:

$$ERA = Acres * (ERACoef - ((Year - Activity\ Year) / Recovery) * ERACoef)$$

However, if the activity is in the future, no ERA will be calculated until the first year of the activity. Also, if Year-Activity Year is greater than or equal to the Recovery, then the Annual ERA is zero because the recovery time has been exceeded. Hence the inclusion of an IF functions in the Annual ERA equation.

The CWE Excel Model is made up of a minimum of five worksheets described below;

1. Summary sheet: is a summary table of percent ERA.
 - a. Header Information: Should be filled out on the Summary worksheet, the information will be carried out through each worksheet.
 - b. Annual percent ERA per feature (%ERA=Total ERA/Watershed Size).
 - Proposed Action
 - Other Current and Future Activities
 - Previous Activities
 - Constant Features
 - c. Annual percent ERA per alternative (%ERA=Total ERA/Watershed Size).
 - Proposed Action
 - No Action

Note: more alternative worksheets can be added to workbook.

2. Proposed Action sheet: All “Proposed Action” (activity) disturbances. This would include each type of disturbance (e.g., thin, shred, herbicide, burning etc.), the acres of disturbance by analysis watershed and each year the disturbance will be implemented. You will need to input the ERA Coefficient and Recovery Period for each—see ERA Coefficients and Recovery Periods for explanation of each.
3. Other Current and Future Activities sheet: All other activities current and proposed 5 years into the future (FS and PVT) that will be implemented within the watersheds that the Proposed Project will be implemented.
4. Previous Activities sheet: All disturbances (FS and PVT) that occurred within the analysis watersheds in the 10 years prior to the first implementation of the Proposed Action.
5. Constant Features sheet: All permanent features in the analysis watersheds that equal 1 ERA. For example, roads, trails, existing landings, building sites, campgrounds, dispersed recreation sites, administrative sites, ski areas, etc.

CWE Excel Model Summaries

Summary results of the CWE analysis are shown below for each of the 10 watersheds modeled for this project. Worksheets developed to build the analysis are too numerous to include here and are available upon request

Table 1 Deer Creek

Project Name: Travel Management Watershed Name: Deer Creek Size (acres): 5549 Watershed Number: 18040010040203 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
Annual % ERA per Feature										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Current/Future Activities (ALT1)	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13
No Action (ALT2)	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.51	-0.51	-0.51	-0.51	-0.51	-0.51	-0.51	-0.51	-0.51	-0.51
Recreation (ALT4)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Current/Future Activities (ALT4)	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09
Resources (ALT5)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Current/Future Activities (ALT5)	-0.46	-0.46	-0.46	-0.46	-0.46	-0.46	-0.46	-0.46	-0.46	-0.46
Other Current/Future Activities	0.12	0.23	0.24	0.09	1.86	1.80	1.60	1.36	1.36	1.04
Previous Activities	0.97	0.69	0.47	0.37	0.28	0.19	0.09	0.00	0.00	0.00
Constant Features	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
Annual % ERA per Alternative										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	2.26	2.09	1.87	1.63	3.30	3.15	2.86	2.53	2.53	2.21
No Action (ALT2)	2.82	2.65	2.44	2.20	3.87	3.71	3.42	3.09	3.09	2.77
Cross Country Prohibited (ALT3)	1.75	1.58	1.36	1.13	2.80	2.64	2.35	2.02	2.02	1.70
Recreation (ALT4)	2.31	2.14	1.92	1.68	3.35	3.20	2.91	2.58	2.58	2.26
Resources (ALT5)	1.81	1.64	1.42	1.19	2.86	2.70	2.41	2.08	2.08	1.76

Table 2 Upper Rose Creek

Project Name: Travel Management Watershed Name: Upper Rose Creek Size (acres): 7359 Watershed Number: 18040010030501 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
Annual % ERA per Feature										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Current/Future Activities (ALT1)	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
No Action (ALT2)	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33
Recreation (ALT4)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Current/Future Activities (ALT4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Resources (ALT5)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Current/Future Activities (ALT5)	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21
Other Current/Future Activities	0.93	1.76	1.70	1.89	1.77	1.21	0.83	0.65	0.46	0.28
Previous Activities	1.52	1.39	1.26	1.14	1.01	0.88	0.75	0.63	0.50	0.39
Constant Features	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Annual % ERA per Alternative										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	3.14	3.84	3.65	3.72	3.47	2.78	2.28	1.97	1.65	1.36
No Action (ALT2)	3.41	4.12	3.93	3.99	3.74	3.06	2.56	2.24	1.93	1.63
Cross Country Prohibited (ALT3)	2.72	3.42	3.23	3.30	3.05	2.36	1.86	1.55	1.23	0.94
Recreation (ALT4)	3.15	3.86	3.67	3.73	3.48	2.79	2.29	1.98	1.67	1.37
Resources (ALT5)	2.88	3.59	3.40	3.46	3.21	2.52	2.02	1.71	1.40	1.10

Table 3 Fraser Flat-Lower South Fork Stanislaus River

Project Name: Travel Management Watershed Name: Fraser Flat-Lower South Fork Stanislaus River Size (acres): 7479 Watershed Number: 18040010040201 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
Annual % ERA per Feature										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Current/Future Activities (ALT1)	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08
No Action (ALT2)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18
Recreation (ALT4)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Current/Future Activities (ALT4)	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Resources (ALT5)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Current/Future Activities (ALT5)	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11
Other Current/Future Activities	2.80	2.38	3.73	3.36	2.88	2.36	2.30	1.60	0.90	0.57
Previous Activities	1.03	0.68	0.57	0.47	0.36	0.26	0.15	0.07	0.00	0.00
Constant Features	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Annual % ERA per Alternative										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	5.03	4.25	5.50	5.02	4.44	3.81	3.65	2.87	2.10	1.77
No Action (ALT2)	5.23	4.45	5.70	5.22	4.64	4.01	3.85	3.07	2.30	1.97
Cross Country Prohibited (ALT3)	4.87	4.10	5.34	4.86	4.28	3.66	3.50	2.71	1.94	1.61
Recreation (ALT4)	5.10	4.33	5.57	5.09	4.51	3.89	3.73	2.94	2.17	1.84
Resources (ALT5)	4.98	4.20	5.45	4.97	4.38	3.76	3.60	2.81	2.04	1.72

Table 4 Lyons Reservoir-Lower South Fork Stanislaus river

Project Name: Travel Management Watershed Name: Lyons Reservoir-Lower South Fork Stanislaus River Size (acres): 7115 Watershed Number: 18040010040202 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Current/Future Activities (ALT1)	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09
No Action (ALT2)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21	-0.21
Recreation (ALT4)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Current/Future Activities (ALT4)	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07
Resources (ALT5)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Current/Future Activities (ALT5)	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15
Other Current/Future Activities	0.49	0.30	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Previous Activities	4.75	6.56	5.69	4.83	3.96	3.10	2.23	1.59	0.94	0.53
Constant Features	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	6.48	8.10	6.96	6.06	5.20	4.33	3.47	2.82	2.17	1.77
No Action (ALT2)	6.78	8.40	7.25	6.36	5.50	4.63	3.77	3.12	2.47	2.06
Cross Country Prohibited (ALT3)	6.31	7.93	6.79	5.89	5.03	4.17	3.30	2.65	2.00	1.60
Recreation (ALT4)	6.51	8.13	6.98	6.09	5.23	4.36	3.50	2.85	2.20	1.79
Resources (ALT5)	6.39	8.01	6.86	5.97	5.11	4.24	3.38	2.73	2.08	1.67

Table 5 Wrights Creek

Project Name: Travel Management Watershed Name: Wrights Creek Size (acres): 3820 Watershed Number: 1804009050103 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Current/Future Activities (ALT1)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
No Action (ALT2)	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.28	-0.28	-0.28	-0.28	-0.28	-0.28	-0.28	-0.28	-0.28	-0.28
Recreation (ALT4)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Current/Future Activities (ALT4)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Resources (ALT5)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Current/Future Activities (ALT5)	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24
Other Current/Future Activities	0.00	0.00	0.00	0.63	1.28	1.15	1.01	1.02	0.80	0.59
Previous Activities	2.52	2.20	1.89	1.58	1.27	1.01	0.76	0.51	0.25	0.00
Constant Features	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	3.75	3.44	3.13	3.44	3.78	3.39	3.00	2.76	2.29	1.82
No Action (ALT2)	3.95	3.64	3.32	3.64	3.98	3.59	3.20	2.95	2.49	2.02
Cross Country Prohibited (ALT3)	3.32	3.01	2.70	3.01	3.36	2.97	2.57	2.33	1.86	1.40
Recreation (ALT4)	3.75	3.44	3.13	3.44	3.78	3.39	3.00	2.76	2.29	1.82
Resources (ALT5)	3.38	3.07	2.75	3.07	3.41	3.02	2.63	2.39	1.92	1.45

Table 6 Hull Creek

Project Name: Travel Management Watershed Name: Hull Creek Size (acres): 9567 Watershed Number: 18040009050202 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Current/Future Activities (ALT1)	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08
No Action (ALT2)	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26
Recreation (ALT4)	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Current/Future Activities (ALT4)	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
Resources (ALT5)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Current/Future Activities (ALT5)	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24	-0.24
Other Current/Future Activities	1.06	2.00	2.79	2.85	2.57	1.97	1.42	1.13	0.84	0.55
Previous Activities	0.00	1.97	1.77	1.57	1.38	1.18	0.98	0.79	0.59	0.39
Constant Features	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	2.62	5.53	6.11	5.98	5.50	4.70	3.95	3.47	2.98	2.50
No Action (ALT2)	2.85	5.76	6.35	6.21	5.73	4.93	4.19	3.70	3.22	2.73
Cross Country Prohibited (ALT3)	2.31	5.21	5.80	5.67	5.19	4.39	3.64	3.16	2.67	2.19
Recreation (ALT4)	2.68	5.58	6.17	6.04	5.56	4.76	4.01	3.53	3.04	2.56
Resources (ALT5)	2.33	5.24	5.83	5.70	5.22	4.42	3.67	3.19	2.70	2.22

Table 7 Two Mile Creek

Project Name: Travel Management Watershed Name: Two Mile Creek Size (acres): 4057 Watershed Number: 18040009050201 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Current/Future Activities (ALT1)	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19
No Action (ALT2)	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44
Recreation (ALT4)	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Current/Future Activities (ALT4)	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Resources (ALT5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT5)	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44
Other Current/Future Activities	1.68	3.19	3.08	3.43	3.21	2.19	1.51	1.18	0.84	0.50
Previous Activities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant Features	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	2.67	4.18	4.07	4.42	4.20	3.18	2.50	2.17	1.83	1.49
No Action (ALT2)	3.17	4.69	4.57	4.92	4.70	3.68	3.01	2.67	2.33	2.00
Cross Country Prohibited (ALT3)	2.22	3.73	3.62	3.96	3.75	2.73	2.05	1.72	1.38	1.04
Recreation (ALT4)	2.94	4.45	4.34	4.68	4.46	3.45	2.77	2.43	2.10	1.76
Resources (ALT5)	2.23	3.74	3.63	3.97	3.75	2.73	2.06	1.72	1.39	1.05

Table 8 Trout Creek

Project Name: Travel Management Watershed Name: Trout Creek Size (acres): 4876 Watershed Number: 18040009050104 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Current/Future Activities (ALT1)	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
No Action (ALT2)	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25
Recreation (ALT4)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Current/Future Activities (ALT4)	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Resources (ALT5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT5)	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25
Other Current/Future Activities	0.01	0.01	3.57	3.47	3.07	2.61	3.10	2.25	1.42	1.07
Previous Activities	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00
Constant Features	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	1.71	1.71	5.27	5.16	4.76	4.30	4.78	3.94	3.10	2.74
No Action (ALT2)	1.90	1.90	5.46	5.35	4.95	4.49	4.97	4.13	3.29	2.93
Cross Country Prohibited (ALT3)	1.34	1.35	4.90	4.80	4.40	3.93	4.42	3.57	2.74	2.38
Recreation (ALT4)	1.74	1.74	5.30	5.19	4.79	4.33	4.81	3.96	3.13	2.77
Resources (ALT5)	1.35	1.35	4.91	4.80	4.40	3.93	4.42	3.57	2.74	2.38

Table 9 Main Stem West Clavey River

Project Name: Travel Management Watershed Name: Main Stem West Clavey River Size (acres): 8047 Watershed Number: 180400090502040 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Current/Future Activities (ALT1)	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
No Action (ALT2)	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14
Recreation (ALT4)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Current/Future Activities (ALT4)	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Resources (ALT5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT5)	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14	-0.14
Other Current/Future Activities	0.89	1.65	1.59	1.74	1.60	1.09	0.78	0.60	0.43	0.26
Previous Activities	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant Features	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	1.90	2.66	2.60	2.75	2.61	2.10	1.79	1.62	1.44	1.27
No Action (ALT2)	2.06	2.82	2.76	2.91	2.77	2.27	1.95	1.78	1.60	1.43
Cross Country Prohibited (ALT3)	1.75	2.51	2.44	2.59	2.45	1.95	1.63	1.46	1.29	1.11
Recreation (ALT4)	1.93	2.68	2.62	2.77	2.63	2.13	1.81	1.64	1.47	1.29
Resources (ALT5)	1.75	2.51	2.44	2.59	2.45	1.95	1.64	1.46	1.29	1.12

Table 10 Moore Creek-Upper North fork Merced River

Project Name: Travel Management Watershed Name: Moore Creek-Upper North Fork Merced River Size (acres): 5901 Watershed Number: 18040008050201 Threshold of Concern: 12-14 % ERA Date: 11/4/2008										
SUMMARY TABLE OF % ERA										
	Annual % ERA per Feature									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Current/Future Activities (ALT1)	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
No Action (ALT2)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Cross Country Prohibited (ALT3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT3)	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15
Recreation (ALT4)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Current/Future Activities (ALT4)	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Resources (ALT5)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current/Future Activities (ALT5)	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15
Other Current/Future Activities	0.39	0.58	0.61	0.52	0.20	0.01	0.01	0.01	0.00	0.00
Previous Activities	0.92	0.59	0.45	0.36	0.27	0.22	0.16	0.11	0.05	0.00
Constant Features	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29
	Annual % ERA per Alternative									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Proposed Action (ALT1)	3.67	3.53	3.42	3.24	2.82	2.58	2.52	2.47	2.41	2.36
No Action (ALT2)	3.80	3.66	3.55	3.37	2.95	2.71	2.66	2.60	2.54	2.49
Cross Country Prohibited (ALT3)	3.45	3.31	3.20	3.02	2.60	2.37	2.31	2.25	2.20	2.14
Recreation (ALT4)	3.68	3.54	3.43	3.25	2.83	2.60	2.54	2.48	2.42	2.37
Resources (ALT5)	3.45	3.31	3.20	3.02	2.60	2.37	2.31	2.25	2.20	2.14