



COUNTY OF EL DORADO COMMUNITY DEVELOPMENT AGENCY TRANSPORTATION DIVISION

Rubicon Trail Monitoring Protocol

Introduction

On August 14, 2012, the U.S. Department of Agriculture, Forest Service, granted the County of El Dorado ("County") a Public Road easement ("Easement"), which covers the defined alignment of the Rubicon Trail ("Trail") over the forest service lands in the County (see Exhibits 'A' and 'B' within Easement Document 08/14/2012, 20120040283). Per Exhibit C of this Easement, the County is required to conduct monitoring of the Trail during the wet season to "assess the effectiveness of the Saturated Soil Water Quality Protection Plan ("SSWQPP"); and to meet the County's goals of minimizing Trail erosion, and to reduce and capture contaminants and vehicle-caused sediment." Therefore, this Monitoring Protocol ("Protocol") has been developed to define and document the process that will be followed during the "wet season", which is considered typically from December 1st through June 1st per Exhibit C.

Abbreviations and Definitions

BMP –	"Best Management Practices" as defined within the approved SSWQPP.
ENF -	"Eldorado National Forest"
Saturated Soil -	A condition in which all easily drained voids (pores) between soil particles are temporarily or permanently filled with water. Soils are saturated when the soil has reached its maximum water content where if any more is added certain soil types (e.g. silty-clay, clay) are more prone to rutting from mechanical erosion and there will be surface run-off.
SSWQPP –	"Saturated Soil Water Quality Protection Plan" as approved by the Water Quality Control Board Central Valley Region on January 5, 2012.
Transport of Sediment	When sediment is transported from the Trail to a Type 1 watercourse through the means described in this Protocol.
Type I Watercourse -	Defined as 1) a fish-bearing stream, where fish are always or seasonally present, and includes habitat necessary for spawning and migration; or 2) a watercourse or spring that is consumed as a domestic supply where it is located within an Off-road Highway Vehicle facility or within 100 feet downstream of the facility. A Type I watercourse is perennial (flows year-round) and is often referred to as blue-line drainage because this type of drainage is depicted on the USGS topographic map by a continuous blue line.

Inspection Frequency

The County will complete remote (office) monitoring once a week to determine the need to initiate a site visit to the Trail, or more frequently as may be warranted by changing weather conditions.

The County will complete a field site visit to the Rubicon Trail once a month to assess Trail conditions relative to SSWQPP and document the Trail conditions.

During the spring snow melt time frame (typically April-June), the County will complete a bi-weekly site assessment, as conditions warrant.

Additional Inspections

If the office assessment information warrants the need to visit the site, the County will complete an additional field site visit typically after the forecasted event. Additional inspections will only be initiated for the events that the County determines to be either major precipitation events (forecasted by the National Oceanic and Atmospheric Administration (NOAA) to have 2 inches or greater precipitation in the form of rain within a 12 hour period) or major warming trends (temperature gradients with nighttime lows above freezing (32 degrees Fahrenheit (° F)) and daytime highs above 55 ° F at the Trail location. The purpose of these site visits will be to assess the Trail conditions relative to the SSWQPP and to document the parameters identified within Exhibit C.

Inspection Reports

After each monitoring site visit to the Trail, the County will prepare a summary report documenting the recent weather, observations, and an overall condition assessment of the Trail.

Inspection Protocols

Office (Remote) Monitoring Protocol

The Office Monitoring Protocol will include checking the NOAA website for changes to the local weather pattern which pose a potential threat to Trail conditions relative to the SSWQPP. The County will monitor temperatures at local weather stations (e.g. Loon Lake and South Lake Tahoe) in addition to snowpack data as recorded by the SNOTEL Site nearest to the eastern Trail entrance (Rubicon #2). The links to these data will be posted on the County website.

Field Site Visit Monitoring Assessment

The Field Site Visit Assessment will include, date/time of visit, Trail conditions, and other monitoring parameters which allow the County to determine if the SSWQPP goals are being met or not. When warranted the County will visit the following locations on the Trail: Wentworth Springs Campground, Post Pile grade, Ellis Creek Tie Intersection, Walker Hill, Soup Bowl, Winter Camp, and Little Sluice. If it is determined that conditions at one site warrant a trail closure, then it will not be necessary to visit additional locations. Digital photos with a GPS enabled camera will provide photo documentation of the Trail conditions at the locations visited by the County. The County will measure flow depth, length,

and width using a standard hand tape in areas where stormwater or snow melt is flowing within the traveled way of the Trail. .

The County and ENF will analyze the Field Site Monitoring Assessment within seven (7) calendar days of monitoring. Once the County has received an e-mail notification that ENF has completed its review, the County will note on the assessment report 'Reviewed by [name, title], Forest Service on [date]' and then post the report on the County website.

Methods for determining temporary Trail closure

All of the following field conditions must be met at one of the seven (7) Trail locations to initiate a temporary closure of the Trail:

1. Saturated soil conditions exist within the traveled way and;
2. Water is flowing within the traveled way of the Trail at an amount capable of rinsing contaminants from vehicle components and;
3. Capable of transporting sediment generated from mechanical tire action on the road.

The closure would be for public motorized use that could have the potential for adverse impacts to water quality or active mechanical erosion. An explanation of the monitoring parameters for the three conditions is as follows:

Condition 1: *Saturated soil conditions exist within the traveled way of the seven (7) Trail segments.*

As defined, soils are saturated when the soil has reached its maximum water content where if any more is added there will be surface run-off. For a section of the Trail to be assessed as having a Saturated Soil Condition, the County must observe flow with measureable depths greater than a tenth (0.1) of a foot on the section of the Trail.

Ponding

In areas where ponding is not connected or flowing into a Type 1 watercourses, then Condition 1 will not have been met for this section of the Trail.

Snow Cover

If there is sufficient snow cover over the Trail at the locations visited by the County with minimal and sporadic open patches within the traveled way and no measureable flow is observed through the open patches then this will not be considered a saturated soil condition and Condition 1 will not have been met for this section of the Trail.

Condition 2: *Water is flowing within the traveled way of the Trail at an amount capable of rinsing contaminants from vehicle components at the seven (7) Trail locations.*

The County has selected a measured flow depth of 8" (0.7') to be the minimum depth where rinsing is likely for the standard Rubicon Trail off-road motor vehicle. This is based on the average distance between the undercarriage of the standard

Rubicon Trail off-road motor vehicle (normal tires 33", undercarriage > 12") and the ground surface with typical speeds of 5 mph or less during winter conditions.

In addition, the County will use the following guidance for the overall length of the flow and transport for a point of interest on the Trail in determining the need for a temporary closure:

- If water is flowing at a depth equal or greater than 0.7' within the traveled way of the Trail for lengths greater than 10 feet (the average Trail vehicle length) and is connected or flowing into a Type 1 watercourse, then Condition 2 has been met for this section of the Trail.
- If water is stagnant and not flowing (ponding) at a depth equal or greater than 0.7', within an area that is the size of at least 3 feet wide and 5 feet long ($\frac{1}{2}$ the width and $\frac{1}{2}$ the length of a standard Rubicon Trail off road vehicle), within the traveled way of the Trail and there is a potential for the splash water to flow into a Type I Watercourse, then Condition 2 has been met.
- If the flowing water is conveyed within a Trail channel/ditch and outside the traveled way of the Trail then Condition 2 has not been met.

Condition 3: *Water is flowing on the Trail at an amount capable of transporting sediment generated from mechanical tire action on the road at the seven (7) Trail locations.*

The County has selected a measured flow depth of 4" (0.3') to be the minimum depth where sediment from the Trail, as generated by mechanical tire action, is likely to be transported. This is based on the several years of flow observations and existing Trail conditions such as various undulations, anomalies and small ponding areas along the flowpaths, which decrease the flow energy/velocity and distribute the sediment with reduced concentration.

In addition, the County will use the following guidance for the overall length of the flow and transport for a point of interest on the Trail in determining the need for a temporary closure:

- If water is flowing at a depth greater than 4" (0.3') within the traveled way of the Trail for lengths greater than 10 feet (average Trail vehicle length) with no functioning treatment BMPs at the outlet and is connected or flowing into a Type I watercourse, then Condition 3 has been met for this section of the Trail.
- If the flowing water is conveyed within a Trail channel/ditch and outside the traveled way of the Trail then Condition 3 has not been met.

Initiating Temporary Road Closure

If all three (3) of the above Conditions are met for one of the seven sections of the Trail, the County will implement a temporary closure of the Trail. The closure will remain in

place until the County has determined that the three (3) Conditions are no longer being met.

If conditions are marginal for initiating a temporary closure and remote monitoring of the weather indicates a trend towards meeting conditions for closure, then the county reserves the right to initiate a trail closure without additional field monitoring.

For the duration of the closure, "Road Closed Signs" will be posted near the entrances to the Trail (one on Wentworth Springs Road near the Gerle Adit Quarry and one on Ice House Road past the SMUD power station at Loon Lake). The County will post the date, closure map, and Field Site Visit Monitoring Assessment Report that provides the condition analysis on the County website upon closure approval by the Director of Transportation pursuant to County Resolution 015-2013.

Methods for lifting closure

The County will visit the site periodically over the duration of the closure to determine if the three (3) Trail Conditions continue to exist and provide a Field Site Visit Monitoring Assessment Report within seven (7) days of monitoring with the analysis that lifts the closure. The removal of the closure will be approved by the Director of Transportation.

If conditions are marginal for lifting a closure and remote monitoring of the weather indicates a trend towards meeting conditions for lifting a closure, then the county reserves the right to lift the closure without additional monitoring.