APPENDIX J – WATERSHEDS ON NATIONAL FOREST SYSTEM LANDS MOST SENSITIVE TO ANTHROPOGENIC DISTURBANCE

Watersheds on National Forest Lands Most Sensitive to Anthropogenic Disturbances

The discussion of relative sensitivity of each cluster to anthropogenic disturbances focuses only on physical characteristics of rivers. The rationale for assigning sensitivity depends primarily on gradient and flow regime and to a lesser extent on sediment supply. Sediment sensitivity depends primarily on gradient and sediment supply and to a lesser extent on flow regime. Most streams on National Forest lands are high-gradient streams, and consequently are assigned the lowest sensitivity to changes in water and sediment delivery. The channel bed and banks of these stream segments are composed of very coarse sediment that is less likely to experience a substantial change in mobility as a result of either a decrease or increase in water supply. These reaches also usually pass excess sediment downstream fairly efficiently and, if sediment-starved, are less likely to have channel erosion than lower-gradient stream segments.

Low-gradient streams are typically assigned the highest sensitivity to changes in water and sediment yield. The materials forming the channel bed and banks in these stream segments are likely to be the most mobile of all the gradient categories, and thus most likely to be eroded in response to increased flow or reduced sediment load. Eroded materials can be deposited in response to reduced flow or increased sediment load (Winters et al., 2006a).

The watersheds that were determined to be the most sensitive to anthropogenic disturbance are at low to mid-elevations and occur in mixed rain-snow precipitation regimes or rainfall-dominated regimes. These watersheds are in riparian clusters 4r and 6r. The watersheds with more than 20% of their area within the San Juan National Forest were included in the table.

Table J-1 - Watersheds on National Forest lands most sensitive to anthropogenic disturbances

HUC 6	HUC 6 Name	Cluster
140801070104	Chicken Creek	4r
140300020305	Beaver Creek-Trail Canyon	4r
140300020404	Stapleton Valley	4r
140300020407	House Creek	4r
140300020604	Dolores Canyon-Lake Canyon	4r
140801010304	Upper Pagosa Springs	4r
140801010504	Navajo River-Weisel Flat	4r
140801010507	Coyote Creek	4r
140801020501	Yellow Yacket Creek	4r
140300020403	Middle Lost Canyon	4r
140300020406	Upper Dolores River-Italian Creek	4r
140801010406	Lower Rio Blanco-San Juan River	4r
140300020408	McPhee Reservoir-Dolores River	4r
140300020601	Dolores River-Salter Canyon	4r
140801010306	Mill Creek	4r
140801010404	Middle Rio Blanco	4r
140300020306	McPhee Reservoir-Beaver Creek Inlet	4r
140300020402	Spruce Water Canyon	4r
140300020603	Dolores Canyon-Cabin Creek	4r
140300020507	Dawson Draw	4r
140300020509	Pine Arroyo	4r
140300020602	Narraguinnep Canyon Natural Area	4r
140801010602	Montezuma Creek	4r
140801011704	Upper Spring Creek	6r
140801020302	Lower Devil Creek	6r
140801020502	Piedra River-Stollsteimer	6r
140801011703	Ute Creek	6r
140801020404	Middle Stollsteimer Creek	6r
140801020405	Lower Stollsteimer Creek	6r
140801010601	San Juan River-Trujillo	6r
140300020506	Brumley Valley	6r
140300020511	Disappointment Valley-Wild Horse Reservoir	6r
140801020503	Piedra River-Navajo Reservoir Inlet	6r

(Winters, D., Cooper, D., Lee, N., Poff, N., Rahel, F., Staley, D., and E. Wohl, 2006. Aquatic, riparian and wetland ecosystem assessment for the San Juan National Forest. Report 1 of 3: Introduction and ecological driver analysis. Denver, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Region.)

Cluster 4r – The watersheds in cluster 4r are driven by a predominantly mixed precipitation hydroclimatic regime. The largely high-gradient streams in this cluster are typically underlain by non-calcareous lithology of a non-igneous origin. This cluster is dominated by high-gradient streams with a mixed snowmelt and rainfall flow regime that produces moderate to high yields of both coarse and fine sediment. The rain- and snow-driven conditions would produce a significant amount of sediment if exposed during periods of increased runoff. Cluster 4r watersheds are mainly at mid-elevations. A mixture of stream gradients is present. Cluster 4r is somewhat sensitive to changes in the thermal regime. Anthropogenic disturbance that increases sediment production would be detrimental to fish populations and riparian communities in this cluster.

Cluster 6r – The majority of the watersheds in cluster 6 are driven by a rainfall hydroclimatic regime with a smaller area driven by a mixed regime. The streams in this cluster are underlain by rock units formed by predominantly non-igneous processes that produce moderate to high yields of both coarse and fine sediment. This cluster is influenced dramatically by sediment produced upstream in other watersheds. Sediment deposition could influence stream-bank stability and over-widen channels where deposition occurs. Braiding of the stream channel could be realized in low-gradient channels where deposition occurs from upstream. This area has a predominantly rain-driven hydrologic regime and erosive parent material. This cluster is sensitive to anthropogenic activities that alter the surface and subsurface hydrology.