

Attachment F – Supporting Narrative for Upslope, Channel and Habitat-associated Criteria (1-9) Rating Rationale

Klamath National Forest's Northern Province Category 1 Watersheds which meet "management-constrained" criteria

Clear Creek

General: Seventy (70) percent of the watershed is in congressionally designated wilderness, most of which encompasses the headwaters. Less than 1% of this watershed is in non-public ownership. Past management has consisted of timber harvest and associated road construction; several natural origin wildfires have occurred. There are no significant water impoundments or diversions in this watershed.

Sediment: Forest Models¹ estimating accelerated mass wasting and soil erosion from timber harvest, roads, and wildfire account for a 47% and 84% increase above background respectively in sediment production, both relatively low levels.

Nutrients: The watershed is naturally nutrient poor based on underlying geology and soils, which accounts in part for its exceptionally clear waters. There is no significant agriculture based sources of nutrients in this watershed.

Temperature: Continuous water temperature measurements are available from the lower mainstem of Clear Creek for several years. From October 1993 – September 1995, the highest recorded instantaneous peak temperatures were in August (68.5, 68.7, 71.1 degrees F) with daily means and average 7 day maximum temperatures not exceeding 70 degrees F².

Information Sources: Estimated sediment production and disturbance to water runoff patterns was generated from GIS based data sources of high quality and resolution. Indicators of floodplain connectivity, water quality, water quantity, stream vegetation, channel stability and aquatic integrity were supported by stream inventories, temperature data, watershed analysis and professional judgement.

Grider Creek

General: Sixteen (16) percent of the watershed is in congressionally designated wilderness, most of which encompasses the headwaters. Nearly all the remaining lands (80%) within the Grider watershed are allocated to Late Successional Reserves which limits management activities to actions which promote old-growth habitat. Less than 1% of this watershed is in non-public ownership. Past management has consisted of timber harvest and associated road construction; several natural origin wildfires have occurred.

There are no significant water impoundments and only minor diversions on private lands in this watershed.

Sediment: Forest Models¹ estimating accelerated mass wasting and soil erosion from timber harvest, roads, and wildfire account for a 92% and 247% increase above background respectively in sediment production. Most of this modeled increase is concentrated in one 7th field drainage (Rancheria Creek).

Nutrients: The watershed is naturally nutrient poor based on underlying geology and soils, which accounts in part for its exceptionally clear waters. There is no significant agriculture based sources of nutrients in this watershed.

Temperature: Point measurements of water temperature are available from the lower reaches of Grider Creek for the 1989 field season. The average of 17 afternoon water temperature measurements was 64 degrees F.

Information Sources: Estimated sediment production and disturbance to water runoff patterns was generated from GIS based data sources of high quality and resolution. Indicators of floodplain connectivity, water quality, water quantity, stream vegetation, channel stability and aquatic integrity were supported by stream inventories, limited temperature data, watershed analysis and professional judgement.

North Fork Salmon

General: Forty-two (42) percent of the watershed is in congressionally designated wilderness, most of which encompasses the headwaters. An additional 25 % of the lands are managed as Late-Successional Reserves which limits management activities to actions which promote old-growth habitat. Approximately 1% of this watershed is in non-public ownership. Past management has consisted of mining, timber harvest, and associated road construction; several natural origin wildfires have occurred. There are no significant water impoundments and only minor diversions in this watershed.

Sediment: Forest Models¹ estimating accelerated mass wasting and soil erosion from timber harvest, roads, and wildfire account for a 126% and 145% increase above background respectively in sediment production. Most of this modeled sediment increase is associated with the intense wildfires in 1977 and 1987. The watersheds are generally inherently resilient to natural and man-caused disturbances due to the relatively high stream power and numerous bedrock bedded channels.

Nutrients: The watershed is naturally nutrient poor based on underlying geology and soils, which accounts in part for its exceptionally clear waters. There is no significant agriculture based sources of nutrients in this watershed.

Temperature: Continuous water temperature measurements are available from the lower mainstem of North Fork Salmon and many tributaries for several years. Water

temperatures in the lower mainstem during late-July and August are often sub-optimal for anadromous salmonids using a 70 degree F threshold³. However, limited mortality and decreased condition in adult salmonids holding during July and August is generally restricted to drought years. Based upon available reference temperatures in similar watersheds exhibiting nearly no management disturbance (Wooley Creek), existing temperatures may be within the range expected for this geographic area.

Information Sources: Estimated sediment production and disturbance to water runoff patterns was generated from GIS based data sources of high quality and resolution. Indicators of floodplain connectivity, water quality, water quantity, stream vegetation, channel stability and aquatic integrity were supported by stream inventories, administrative studies, continuous temperature data, watershed analysis and professional judgement.

Thompson

General: Seventy-five (75) percent of the watershed is in Late Successional Reserves which limits management activities to actions which promote old-growth habitat. Approximately 1% of this watershed is in non-public ownership. Past management has consisted of timber harvest and associated road construction; several natural origin wildfires have occurred. There are no significant water impoundments and only minor diversions on private lands in this watershed.

Sediment: Forest Models¹ estimating accelerated mass wasting and soil erosion from timber harvest, roads, and wildfire account for a 86% and 265% increase above background respectively in sediment production. Most of this modeled increase is concentrated in one 7th field drainage (Mill/Slide Creek).

Nutrients: The watershed is naturally nutrient poor based on underlying geology and soils, which accounts in part for its exceptionally clear waters. There is no significant agriculture based sources of nutrients in this watershed.

Temperature: Point measurements of water temperature are available from the lower reaches of Thompson Creek for the 1989 filed season. The average of 20 afternoon water temperature measurements was 61 degrees F.

Information Sources: Estimated sediment production and disturbance to water runoff patterns was generated from GIS based data sources of high quality and resolution. Indicators of floodplain connectivity, water quality, water quantity, stream vegetation, channel stability and aquatic integrity were supported by stream inventories, limited temperature data, watershed analysis and professional judgement.

Upper South Fork Salmon

General: Forty (40) percent of the watershed is in congressionally designated wilderness, most of which encompasses the headwaters. An additional 25 % of the lands are managed as Late-Successional Reserves which limits management activities to actions which promote old-growth habitat. Approximately 1% of this watershed is in non-public ownership. Past management has consisted of mining, timber harvest, and associated road construction; several natural origin wildfires have occurred. There are no significant water impoundments and only minor diversions in this watershed.

Sediment: Forest Models¹ estimating accelerated mass wasting and soil erosion from timber harvest, roads, and wildfire account for a 49% and 217% increase above background respectively in sediment production. Most of this modeled sediment increase is associated with roads and considerable effort is currently being directed towards road decommissioning and controlling road related sediment in this watershed. The watersheds are generally inherently resilient to natural and man-caused disturbances due to the relatively high stream power and numerous bedrock bedded channels.

Nutrients: The watershed is naturally nutrient poor based on underlying geology and soils, which accounts in part for its exceptionally clear waters. There is no significant agriculture based sources of nutrients in this watershed.

Temperature: Continuous water temperature measurements are available from the lower mainstem of South Fork Salmon and many tributaries for several years. Water temperatures in the upper mainstem during late-July and August are sometimes sub-optimal for anadromous salmonids using a 70 degree F threshold^{3,4}. However, limited mortality and decreased condition in adult salmonids holding during July and August is generally restricted to drought years and reaches lower in the Salmon River basin. Past hydrologic mining practices in the watershed may have an effect in elevating water temperatures on mainstem reaches. However, based upon available reference temperatures in similar watersheds exhibiting nearly no management disturbance (Wooley Creek), existing temperatures may be within the range expected for this geographic area.

Information Sources: Estimated sediment production and disturbance to water runoff patterns was generated from GIS based data sources of high quality and resolution. Indicators of floodplain connectivity, water quality, water quantity, stream vegetation, channel stability and aquatic integrity were supported by stream inventories, administrative studies, continuous temperature data, watershed analysis and professional judgement.

Wooley

General: Ninty-five (95) percent of the watershed is in congressionally designated wilderness, most of which encompasses the headwaters. An additional 3 % of the lands are managed as Late-Successional Reserves which limits management activities to actions which promote old-growth habitat. Less than 1% of this watershed is in non-

public ownership. Past management has consisted of very limited mining, timber harvest, and associated road construction; several wildfires have occurred. There are no significant water impoundments or diversions in this watershed.

Sediment: Forest Models¹ estimating accelerated mass wasting and soil erosion from timber harvest, roads, and wildfire account for a 48% and 66% increase above background respectively in sediment production. The watersheds are generally inherently resilient to natural and man-caused disturbances due to the relatively high stream power and numerous bedrock bedded channels.

Nutrients: The watershed is naturally nutrient poor based on underlying geology and soils, which accounts in part for its exceptionally clear waters. There is no significant agriculture based sources of nutrients in this watershed.

Temperature: Continuous water temperature measurements are available from the lower mainstem of Wooley Creek and many tributaries for several years. Water temperatures in the mainstem during late-July and August from October 1991 – September 1993 showed instantaneous peaks of 68.2 and 66.9 degrees F, with an average 7 maximum of 66.6 degrees F.

Information Sources: Estimated sediment production and disturbance to water runoff patterns was generated from GIS based data sources of high quality and resolution. Indicators of floodplain connectivity, water quality, water quantity, stream vegetation, channel stability and aquatic integrity were supported by stream inventories, administrative studies, continuous temperature data, and professional judgement.

1/ Elder, Don R. 1998. Cumulative watershed effects from Three Models Applied to 249 Seventh Field Watersheds on the West-side of the Klamath NF: unpublished, USDA Forest Service, Klamath NF, Yreka, CA

2/ USDA Forest Service. 1996. Clear Creek Watershed Analysis. Happy Camp RD. Klamath NF, Yreka, CA.

3/ USDA Forest Service. 1994. Upper South Fork of the Salmon River Ecosystem Analysis. Salmon River RD. Klamath NF, Yreka, CA.

4/ Olson, Alan D. and Orion Dix. 1993. Lower Salmon River sub-basin Fish Habitat Condition and Utilization 1990/1991. Klamath NF, Yreka, CA.