

RECLAMATION

Managing Water in the West

Yurok Tribe Sociocultural/Socioeconomics Effects Analysis Technical Report

**For the Secretarial Determination on Whether to Remove
Four Dams on the Klamath River in California and Oregon**



**U.S. Department of the Interior
Bureau of Reclamation
Technical Service Center
Denver, Colorado**

July 2012

Mission Statements

The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Acronyms and Abbreviations

ADA	American Diabetes Association
AHA	American Heart Association
BIA	Bureau of Indian Affairs
CDC	Center for Disease Control
CEQA	California Environmental Quality Act
DHA	docosahexaenoic acid
DOI	U.S. Department of the Interior
EIS/EIR	environmental impact statement/environmental impact report
EPA	eicosapentaenoic acid
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
HHS	Health and Human Services
IGD	Iron Gate Dam
IHS	Indian Health Service
KBRA	Klamath Basin Restoration Agreement
KHP	Klamath Hydroelectric Project
KHSA	Klamath Hydroelectric Settlement Agreement
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
UB	Upper Basin
UKB	Upper Klamath Basin
UKL	Upper Klamath Lake
UKR	Upper Klamath River
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
YIR	Yurok Indian Reservation

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1.1 INTRODUCTION

After years of negotiations, on February 18, 2010, Klamath Basin stakeholders agreed that removing four hydroelectric dams on the Klamath River, restoring habitat, and reintroducing salmon in the Upper Klamath Basin would be the best method for managing Basin water, fish, and other resources to resolve ongoing water supply and quality problems, drought issues, fish kills, and other multiple-use challenges. Two agreements were drafted; the Klamath Hydroelectric Settlement Agreement (KHSA) and Klamath Basin Restoration Agreement (KBRA).¹

Implementation of the KHSA would remove Iron Gate, J.C. Boyle, Copco 1 and Copco 2 hydroelectric dams that prevent coho salmon, Chinook salmon, steelhead, and Pacific lamprey anadromous species from migrating through the lower Klamath River and above Iron Gate Dam to Upper Klamath Basin habitat. The KBRA specifies salmon, steelhead, and lamprey reintroduction and habitat improvement programs in the Upper Klamath Basin that are expected to benefit all native fisheries in the entire Klamath River and some ocean fisheries. The KBRA benefits would occur in large part through water management agreements that would provide more reliable water supplies for irrigation in agricultural communities and fish habitat in the National Wildlife Refuges. Although the KHSA and KBRA are separate agreements, the success of each agreement depends on mutual implementation which is the assumption throughout this technical report. The agreements specify that actions would occur during the next 50 years, with dam removal beginning in 2020, and most KBRA actions beginning in 2012, provided approval is granted to proceed from the Secretary of the Interior since implementation must be determined to be in the public interest.

This technical report is supporting socioeconomic documentation focused on the Yurok Tribe that will be used to assist the Secretary of the Interior in making a determination whether to proceed with implementing the KHSA and KBRA. There are similar individual socioeconomic technical reports for other Basin Tribes, including the Klamath Tribes, Karuk Tribe, Hoopa Valley Tribe, and Resighini Rancheria. The tribal technical reports are supporting documentation for the *Draft Klamath Dam Removal Overview Report for the Secretary of the Interior: An Assessment of Science and Technical Information*, (SDOR) (DOI, et al., January 23, 2012) (final forthcoming), and the *Klamath Facilities Removal Public Draft Environmental Impact Statement/Environmental Impact Report* (Klamath EIS/EIR), (DOI, et al., September 2011) (final forthcoming), that evaluated impacts of the KHSA and KBRA.

¹ Signatories in the KHSA and KBRA included the States of California and Oregon, the Klamath Tribes, Karuk Tribe, Yurok Tribe, and representatives of more than 50 organizations, including counties, irrigators, conservation and fishing groups, and others.

Methodology primarily included issue identification from meetings with the Yurok Tribe, materials provided by the Tribe, information from the FERC record, and other sources listed in the bibliography.² Members of the Economics Subteam attended meetings with the Yurok Tribe concerning potential trust resource, socioeconomic, and contemporary cultural impacts on April 23, 2010 (conference call), August 30, 2010 (socioeconomics only), and January 26, 2011 (trust resources government to government). A report from the Yurok Tribe was a central resource: *Yurok and the Klamath River: Yurok Historical Context and Data for Assessing Current Conditions and the Effects of the proposed Klamath Restoration Project on Yurok Tribal Trust Assets and Yurok Resources of Cultural and Religious Significance*. (Sloan, February 2011). Year 2000 (and 2010 when available or appropriate) Bureau of the Census data was analyzed for most of the economic and demographic conclusions.

This document is divided into two main sections; affected environment and environmental consequences.

2.1 AFFECTED ENVIRONMENT

The first part of this section discusses Yurok Tribal history, followed by the present conditions portion organized by the following indicators: Fisheries, economic conditions (primarily income and employment), and health. Tribal trust resources were analyzed in two reports: *Current Effects of PacifiCorp Dams on Indian Trust Resources and Cultural Values: Background Technical Report Informing the Secretarial Determination Overview Report*, (DOI, June 2011a), and *Current Effects of PacifiCorp Dams on Indian Trust Resources and Cultural Values*; and *Potential Effects of Implementing the KHSA and KBRA on Indian Trust Resources and Cultural Values* (DOI, June 2011b).³ Trust resource aspects are mentioned in this report when applicable.

The Yurok Tribe gained Federal recognition relatively recently in 1991, is the largest federally recognized tribe in California with about 5,600 members, and has Federally protected trust fishing and water rights.⁴ The Yurok Tribe has a reserved water right to water in the Klamath River to support the harvest of fishes that the Yurok require to maintain a moderate standard of living (DOI,

² The FERC record here refers to all public documents relating to the (FERC) relicensing process for PacifiCorp's Klamath Hydroelectric Project 2082, inclusive of the J.C. Boyle, Copco 1, Copco 2 and Iron Gate dams, and particularly documents that described tribal impacts.

³ Prepared for BIA by North State Resources, Inc.

⁴ The BIA reported that the Yurok Tribe has about 5,600 members (BIA, June 2011a).

June 2011a, 2011b). Although the Tribe has commercial fishing rights, low fish stocks have meant Tribal members have had to rely primarily on subsistence fishing rights.

The Yurok Reservation consists of a strip of land roughly 44 miles long and 2 miles wide, or 1 mile on each side, running through a very remote area with steep slopes above the lower Klamath River from about Weitchpec to the town of Klamath and on through to the estuary (figures 2-1.1 and 2.1-2). The Yurok Reservation is located within a small portion of the total Yurok aboriginal lands or ancestral territory, and due to unfortunate historical events, it has a sizeable portion of private land within the exterior boundaries.

Below are sections of the Preamble of the Yurok Tribe Constitution that identify the Tribe's socioeconomic and sociocultural perspective and priorities:

Our people have always lived on this sacred and wondrous land along the Pacific Coast and inland on the Klamath River, since the Spirit People, *Wo'ge'* made things ready for us and the Creator, *Ko-won-no-ekc-on Ne ka-nup-ceo*, placed us here. From the beginning, we have followed all the laws of the Creator, which became the whole fabric of our tribal sovereignty. In times past and now Yurok people bless the deep river, the tall redwood trees, the rocks, the mounds, and the trails. We pray for the health of all the animals, and prudently harvest and manage the great salmon runs and herds of deer and elk. We never waste and use every bit of the salmon, deer, elk, sturgeon, eels, seaweed, mussels, candlefish, otters, sea lions, seals, whales, and other ocean and river animals..." (Sloan, February 2011, p.3).

Concerning the affected Yurok environment and socioeconomic conditions, the Tribe described its area consisting of the ancestral territory which was described as economically disadvantaged with problems of food insecurity. The Tribe believes it has endured disproportionate socioeconomic costs of the KHP:

"For the Yurok Tribe, the affected environment is the Tribe's ancestral territory as well as those areas within the external boundaries of the YIR... The economic conditions on the Reservations in the downstream subregion are significantly worse compared to those in the downstream counties; likewise, Tribes suffer significantly greater poverty and food insecurity than the surrounding non-Indian communities in the downstream subregion. Thus, economically disadvantaged Native American communities have born the disproportionate socioeconomic costs of the Project resulting in the decline of the fishery and the decline or loss of numerous traditional cultural species resulting from altered riparian conditions caused by the Klamath Hydroelectric Project dams and current conditions." (Sloan, February 2011, pp. 83-84).

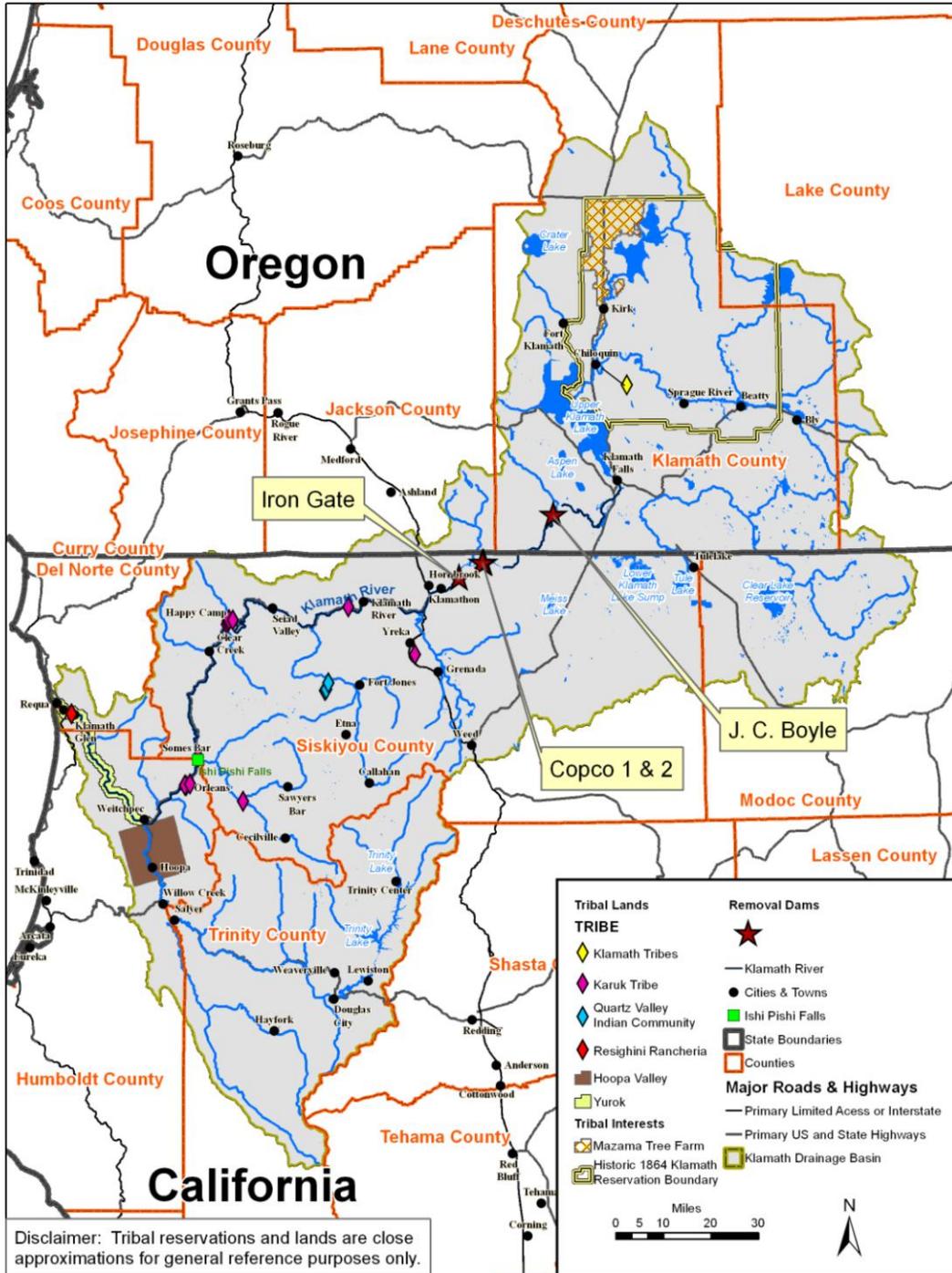


Figure 2.1-2.—Present day Tribal lands.

Indeed, unemployment and poverty rates are higher than for the general population which has made a subsistence lifestyle important. The BIA Labor Force Report reported Yurok served area Indian unemployment at 74 percent in 2005. The 2000 Census data showed 12.9 percent unemployed on the Yurok Reservation, and the rate was higher for the Indian population at 17.2. Based on Census data, the Yurok Reservation had some of the highest unemployment rates in the area, with the exception of the town of Klamath and Klamath area; however, many Yurok and some Resighini Tribal members live in and around the town of Klamath. The Yurok Reservation and surrounding area unemployment rates were about double those of Del Norte and Humboldt counties, and about three times the California rate. Similarly, Yurok Reservation poverty rates were higher than surrounding areas, and in most cases were double other rates with greater disparities for Indian area populations. The Yurok Tribe conducted research that indicates that poverty rates are much higher, and estimated that food insecurity among its Tribal members living throughout the ancestral territory is about three times the rates of the counties (Census, 2000; Sloan, 2011).

Concerning subsistence and commercial fishing, acquiring salmon has been difficult due to declining anadromous fish stocks since construction of Copco 1— problems exacerbated by construction of Iron Gate Dam in 1962 when populations declined further, particularly spring-run Chinook, and water quality became noticeably worse.

2.1.1 Yurok Tribal History

History explains current socioeconomic, sociocultural, and related conditions for any population, as is the case for the Yurok Tribe. Federal and California State Indian policies, development, and settlement drastically reduced Yurok aboriginal or ancestral lands from the area shown in figure 2.1-1 to roughly 5,700 acres today.⁵ Additionally, subsistence fishing has diminished largely as a result of the dams and commercial fishing has been severely limited as well which has meant that the Tribe has not been able to fully exercise Federal trust fishing rights.(B.I.A., June 2011a and June 2011b).

Klamath Basin Tribes are located in the southernmost area of the northwestern ‘salmon culture’ that stretches north to Alaska, along with its trade network. The Yurok were historically known as the Pohlik-la, Ner-er-er, Petch-ik-lah and Klamath River Indians. The Yurok describe their past as extending thousands of years prior to non-indigenous contact with about 72 ancestral village sites, and Yurok people continue to live on about 44 village sites along the Klamath and

⁵ Acreage estimate from BIA, 2011a.

Lower Trinity Rivers today. Other village sites are located along part of the coastline south of the Klamath River estuary in present-day Del Norte and Humboldt Counties in northwestern California.

The Yurok Tribe thrived as a salmon culture with supplemental hunting and gathering in their aboriginal territory until Euro-American contact. A general timeline of major events and milestones are broadly summarized in attachment 1. The Spanish were the first explorers to Yurok territory as early as the 1500s, according to the Tribal accounts, and many more in the early 1700s, followed by fur trappers and traders in the early 1800s. Gold-seekers and miners surged into the area around 1850 and had a negative effect on the Yurok Tribe, as did the associated Federal military actions and State Indian policies, followed shortly by settlers and ranchers. Conflicts with Euroamericans, then large-volume salmon canneries, KHP dams, other development, and a State ban on Yurok fishing for decades made maintaining a traditional lifestyle and their salmon culture challenging (DOI, June 2011a).⁶ As a result of corruption, confusion, and neglect when treaties were written, the Yurok Tribe ultimately was forced to engage in court battles to affirm legal and open use of their federally recognized rights to fish which placed it at a significant disadvantage from the 1930s to the 1970s.

This section discusses the most relevant aspects of Yurok Tribal history up to the present, including over-arching socioeconomic and sociocultural changes in salmon cultural practices and traditional food uses that were central through Yurok aboriginal times, reservation era, Copco Dam construction, pre-Yurok Government/Iron Gate Dam, and Tribal Federal recognition period.

2.1.1.1 Aboriginal Period (Pre-1850 Conditions)

The Yurok word for fish indicated their vital importance for survival:

“...the Yurok word ‘*ne po y*’, “that which is eaten.” ‘*Ne po y*’ denotes more than ‘fish’, but also includes connotations of Yurok reverence for a creature that provides sustenance to a people and way of life. Thus, *ne po y* reflects the Yurok reverence for a creature of the river and an explicit recognition that it sustains their people and way of life.” (Sloan, February 2011, p. 38).

The Yurok people lived in many small villages in three major regions that they still refer to in present times in their ancestral lands that shared a common culture, but did not necessarily view themselves as a single tribe; the upper region of the Klamath River (the Petch-ik-lah people), lower region of the Klamath River

⁶ Heizer, R.F. Sturtevant, W. 1978. pp. 701-704.

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(Pohlik-la people), and the coast (Nr'r'nr people). The three groups have come to be known as the Yurok, which is the Karuk name meaning 'downriver.' (Sloan, February 2011, p. 7).

Yurok Tribal members and others have described Yurok existence and the importance of the Klamath River fishery and cultural, social, and economic roles it played:

“The Yurok Tribe, its history, culture, identity, spirituality and economic survival have always relied upon the Klamath River. The dependence and interdependence of the Yurok on the River and its resources cannot be overstated. It has always been and remains the central feature in Yurok life, ceremony and traditions. Reliance on the Klamath River fishery is not simply for economics, but most importantly for subsistence and cultural survival. Prior to the arrival of non-Indians into the region, the Yurok Tribe was considered one of the most prosperous and wealthy tribes in the area. This wealth was a result of an abundant year-round fishery that provided the basis for the entire Klamath River tribal economic system. Fish were traded and sold to neighboring tribes for a range of resources used in daily and ceremonial life. Abundant food provided by the year-round fishery allowed for the development of a highly developed social and economic system that was reinforced through a highly structured ceremonial and cultural cycle that still persists today.” (Sloan, February 2011, p. 3).

2.1.1.1.1 Aboriginal/Ancestral Territory

Yurok ancestral territory included about 54 known villages along the Klamath River and additional villages along about 90 miles of the coast line, as depicted by Sloan in figure 2.1-1 (Sloan, February 2011, p. 6). The Yurok believe they were created in their ancestral lands.(Sturtevant, et. al., 1978).

2.1.1.1.2 Socioeconomic Aspects

Socioeconomically, the River provided the Yurok with many runs of fish, particularly salmon, and riparian vegetation for basketry and other cultural uses and as traditional food sources. The Yurok had an economy with currencies and were part of a regional trade network.

As with other Tribes in the Northwest Culture, the Yurok Tribe placed a high value on wealth and had a complex, stratified social structure as well as an economy replete with several forms of currency, primarily dentalia, with prices and fees for most activities and goods in its society (Pilling, et al., 1978; Sloan, February 2011). For example, there were (and still are) family rights to fishing spots, and if the 'laws' were not honored, payment would be required as governed by rules or laws.

Resource management has been of great importance to the Yurok people as it ensured continuance of everything they relied upon. The Yurok used a wide range of resource management techniques, many of which are retained today, including such fishing-specific management methods as weirs, scaffolds, platforms, and associated ceremonies:

“Because of the rivers' importance, one of the Tribe's highest priorities is to protect and preserve the resources of the rivers, and in particular, to restore the anadromous fish runs to levels that can sustain Yurok people. When the original Klamath Reservation was established in 1855, the rivers were filled with abundant stocks of salmon, steelhead, eulachon, lamprey, and green sturgeon. Today, the abundance of fish in the Klamath River and its tributaries are only a small fraction of their historic levels. Many species of fish have gone extinct, many other species, such as fall Chinook, are in serious trouble. Nonetheless, anadromous fish continue to form the core of the Yurok Tribal fishery.” (Sloan, February 2011, p. 4).

2.1.1.1.2.1 Fishery Species, Runs, and Fishing Methods

The Klamath River has been the lifeline for salmon, a Yurok staple:

“Salmon, or nepū'i, meaning “that which is eaten” is one of the primary food sources for the Yurok, the other being acorns. Salmon is obtained during the annual runs by erecting a fish weir across the river, which provides salmon for people in surrounding villages. One location where fish weirs are erected include near the village of Kepel.” (Sloan, February 2011, p. 8).

An abundance of shellfish, salmon, sturgeon, eel, candlefish (or eulachon), surf fish, deer, elk, sea lion, and acorns allowed sedentary living and fish were caught using various methods. Salmon and lamprey were dried and lamprey were prized for their grease (Pilling, 1978, p. 137):

“Fish were taken with dip nets, seines, set gill nets, and harpoons. The dip net, or lifting net, was let down from a scaffold built out over the water, nearly always at an eddy or back water. Here the fishermen sat on a block or small stool, holding the bone button of the string which closed the entrance to the cone-shaped net stretched out in the current. This net was hung from the bottom of a long A-shaped frame with a bottom crossbar. The whole was hauled out as soon as a pull on the cord had enclosed a salmon, which was then hit on the head with a club. A single night's operation sometimes produced a hundred salmon. At other times, a man would sit for half a day without netting one. Lampreys were much prized by the Yurok for their grease. They, as well as sturgeon, were taken in the same manner, but with a net of a different mesh. Both

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salmon and lampreys were split for drying. Most of the fish were smoked and packed in old baskets as strips or slabs. Surf fish were sundried whole and hung from poles in rows. A long net was sometimes set for sturgeon....The salmon harpoon had a slender shaft, sometimes in excess of 20 feet in length.” (N.P.S., accessed February 2011, pp. 8-9).

“Landing, lifting, flat, and cylindrical nets are used to take a variety of fish. Trap baskets are used to catch eels. Mesh size was determined by the size of fish taken. Some nets were equipped with trigger mechanisms that trapped incoming fish. River & ocean going boats, nets hooks, lines, rope, sinkers, bait, harpoons, clubs fishing baskets and carrying baskets are just some of the technological adaptations employed by the Yurok to assist in the taking of fish.” (Sloan, February 2011, p. 39).

Spring Chinook was the most important run of fish, as early anthropologists observed:

“The particular importance of Spring Chinook salmon for tribes in the region is noted by early anthropologists (e.g., Gunther 1926; Rostland, 1959). Swezey and Heizer note that, ‘Those native populations to whom anadromous fish were either the most important or a major staple in the food economy almost exclusively inhabited river drainages in which the spring salmon run occurred... With the exception of the coastal streams south of the Klamath, it appears that the most important and productive fishing areas in native California were those which could rely upon an assured and abundant early spring run of king salmon (1993, 304-305).’ (Norgaard, November 2005, p. 32).

2.1.1.1.2.2 *Redistribution and Trade*

Despite social stratification and the emphasis on wealth, Yurok culture placed a high value on sharing as a social responsibility:

“As the fishers in their village, it was important for the eelers to give away most of their harvest to other community members, especially elders.” (Lewis, 2009, p. 20).

Trade in the region was an important cultural, social, and economic activity for which the Yurok and regional tribes used currencies:

“The extensive trade network in the Northwest culture was well established prior to Euroamerican contact, and allowed for alliances among tribes and supported socioeconomic societal structures as well as an exchange of goods. One of the primary indicators of trade and exchange both on the River, and up the coast, was the importance of shell money, or dentalia in Yurok society. Yurok men would often have a special tattoo on their forearm for the sole purpose of measuring lengths of dentalium. These shells are indicative of wide trade and

exchange because they originated offshore of Vancouver Island. The use of dentalia as currency on the Klamath River beyond Yurok territory indicates the trade networks along the river were quite extensive (Davis 1963:7). Other common trade goods exchanged between Yurok and their upriver neighbors, the Karuk and the Shasta included obsidian, coastal shells such as Olivella, clam, mussel and abalone, tobacco seeds, juniper beads, white deerskins, woodpecker scalps, sugar pine nuts, elk antler, baskets, redwood canoes, acorns, salt, and seaweed (Davis 1963:49-50).” (Sloan, February 2011, pp. 38, 42).

Although most people today consider aboriginal plant use, including basketry, to be primarily cultural, it was (and remain to a large extent) as much economic in nature because they were necessities for daily life and were among goods, like salmon, that could be traded. Basketry, bow and arrow making, and many other food and cultural uses of lower Klamath River plants were and still are vital to Yurok people. For example, it is known that after a flood, willow-root basket materials are best gathered in a straight narrow section of the river where a flood’s raging waters have scoured the roots:

“The river is also lined with numerous gathering areas associated with plants adapted to flow levels of the river. Various plants are used as food and material to make ceremonial regalia, baskets, cloths, houses, boats, nets, and other everyday household utensils. For example it is well known that a specific type of willow root is best gathered in long narrow stretches of the river where the rivers scouring effect exposes the material sought. There are also places along the river where weavers traditionally meet to avoid the hot summer sun and weave together. A wide variety of plants, for food, materials, and medicines were gathered along the riparian zone of the Klamath. Numerous species of berries grew along the banks of the River. Plants and roots used for basketry were collected along the River and along tributaries. Plants used for medicines and ceremonies grew along the riparian zone and were gathered for specific purposes by medicine women and ceremonialists (Curtis 1924). Resource areas used for gathering plants for food and materials were often owned by families or individuals. Driftwood along the river, root-gathering areas, seed gathering areas, tobacco plots were resources that were owned by families and individuals (Pilling 1978:147)... According to Mead, Yurok used over 13 species of plants in basketry, both in the construction and design of a basket. Four plants were used as dyes for basket materials (Mead 1971:64). Mead further identifies six different stems, and kinds of roots, and one type of leaf used in Yurok basketry (Mead 1971:66). Many of these roots and stems were gathered within the floodplain of the River, along the shore or from the exposed banks.” (Sloan, February 2011, pp. 35-41).

2.1.1.1.3 Sociocultural Aspects

Yurok culture has always had the Klamath River the central element:

“Practically every function of the Yurok way of life is associated to the river: The origination of fish, proper methods for taking fish, how the river is to flow, death passage ceremonies, locations for fish dams and ceremonies all reflect the bond between the river and the Yurok people. It is essential that the river be maintained at a level that provides relevance to the young Yurok mind that hears these stories... [For example] Several stories with translated titles such as, “Origin of Death” and “Death and Purification,” indicate the location of eighteen rocks along the Klamath River which are central to the death purification ceremony of the *Woge*. Specifically, when the Yurok transport a corpse along the River they must speak to the *Woge* spirits that live in these rocks.” (Sloan, February 2011, pp. 30-33).

Klamath Basin tribes have held ceremonies for centuries around the timing of two runs of Chinook salmon: Spring and fall run. The World Renewal, or Deerskin Ceremony with first salmon ceremonies as components celebrated the return of Spring Chinook salmon that were performed in coordination with the upriver Karuk Tribe. Celebration of the spring-run salmon was important for Yurok people and their culture, but it also played a critical role in fisheries management by ensuring that sufficient numbers of spawning spring-run Chinook salmon made it up the River to spawn. Ceremonies surrounding arrival of the salmon were conducted around April when the Spring Chinook first appeared at the mouth of the Klamath. The Jump Dance Ceremony was held to support and heal ailing children. The Cappell Dam was of most importance because it signified the beginning of the dance cycle and First Salmon Ceremony. Yurok ceremony and fishing locations occurred in particular villages along the Klamath River and coast (figure ____):

“Although there were villages all along the river and coast, a village of great importance would have several other villages in close proximity in a concentrated area. An example of this is at the confluence of the Klamath and Trinity Rivers where there were three villages, which in the 1850s had a population of about 200 (Bearss, 1969:1). The largest of these three villages was We’itspus, meaning “confluence.” This village was of extreme importance because it held a World Renewal Ceremony, also known as the White Deerskin Dance. This is one of several important ceremonial dances in the Yurok religion because its purpose is to renew or maintain the health of the world. The location of the village of We’itspus is on the north bank of the Klamath River and directly across from We’itspus, on the other side of the river was the village of Rlrgr. Similarly in the middle course of the river is the village of Pecwan, located just downstream of Pecwan Creek from where the creek flows into the Klamath River. This is a village of great importance and wealth because Pecwan was a location for another major ceremony, the

Jump Dance, which continues to be performed there today. The other villages in close proximity to Pecwan moving downstream on the northern bank are Qo'tep, Woxtek, and Woxhkero. The final example of a concentration of villages is at the mouth of the Klamath River. On the northern slope of the hill ascending above the mouth is the largest Yurok settlement of Re'kwoi. In 1852, Re'kwoi had 116 residents and is another location for a Jump Dance (Bearss 1969:2). Just across the river on the southern side is the village of Welkwa. This village is the site of the annual Salmon Ceremony, which is performed to remove the effect of the taboo on the run of spring salmon (Waterman 1920:228." (Sloan, February 2011, p. 8).

An early anthropologist, Kroeber, documented the importance of salmon and the Klamath River to Yurok culture, in their religious beliefs, and fishing methods and observances:

“The anthropologist Alfred Kroeber traveled throughout the Yurok’s territory in the early 1900’s interviewing Yurok people and documenting the tribe’s way of life. Of the 169 stories which Mr. Kroeber presents in his book *Yurok Myths* (Kroeber 1978), 77 make direct reference to the river. Among those stories, there are tales of the construction of the fish dams, locations and origins of ceremonies held along the river, bad places in the river, where the first salmon was created, what one must do with salmon caught at certain locations, how the river came to flow the way it does, and death passage on the river. Much of Yurok knowledge and belief about the river and its resources are held in their stories...as recorded by Kroeber (1978), tells of how the reverence for fish and creator provided the Yurok not only with abundance of salmon, a place for salmon and people to inhabit (the River), that explains the proper etiquette and moral responsibilities of salmon and people. The story *The Salmon and Koowetsik* depicts the [reason for and] location of where the first salmon originated (Kroeber 1978).” (Sloan, February 2011, pp. 29-31).

The First Salmon Ceremony occurred in early spring which signaled the beginning of the fishing season and construction of the fish dam at Cappell:

“The Cappell Dam was of utmost importance because it signified the beginning of the dance cycle [and Spring Chinook run]. Many stories center around the fish dam and the importance of proper ceremony and medicine in its construction and the taking of fish.” (Sloan, February 2011, p. 32).

“In the early Spring, the first salmon to enter the Klamath River was speared and ritually eaten by medicine men. This event traditionally signified the beginning of the fishing season for the Yurok. The ritual also marked the scheduling of the construction of the fish dam at Cappell located thirty-three miles from the river’s mouth on the Pacific. The fish

dam was constructed in conjunction with ceremony and sanctified the taking, distribution and consumption of salmon. Salmon are ritually managed to assure that the Yurok people are all provided for, that up-river people are assured a percentage of the fishery and that enough fish are allowed to re-populate the species. While there still remains a general reverence for salmon, without proper ceremony a strong belief prevails that the salmon will not return in sufficient numbers. All other ceremonies were scheduled after the fish dam construction ceremony took place. The Yurok have many ceremonies in common with the Hupa such as the Jump ceremony and the White Deerskin ceremony. An integrated part of the White Deerskin Ceremony is the Boat Dance Ceremony. The River is central to all these ceremonies.” (Sloan, February 2011, p. 45).

2.1.1.1.4 Aboriginal Diet

The Yurok diet consisted primarily of game animals, acorns, most surf and Klamath River species, particularly salmon, and included edible riverine plants. Norgaard’s research found that salmon consumption was estimated to be about 1.2 pounds per day per person and comprised about half of the Karuk diet, and the same assumption is made for the Yurok people for the purposes of this analysis as an estimate:

“Salmon is estimated to have made up to close to 50% of the energy and total protein in the pre-contact diet of the Karuk (Hewes 1973).” (p. 2).
“It has been estimated that the Karuk people historically consumed about 450 pounds of salmon per person per year or 1.2 pounds per day.”
(Norgaard, November 2005, p. 13).

Yurok Tribal research indicated that salmon and other species fisheries were abundant and assumed to be consumed in large amounts on average, and were managed efficiently to assure continued abundance:

“Despite variations in the size of the semi-annual runs, in times past, the tribes could typically procure enough salmon for their people. The abundance of fish once supported by the region’s rivers is well documented, with stories that recount the challenge of fording the Trinity, and even Klamath River, because the salmon runs were so thick. It is estimated that prior to non-Indian settlement along California’s North Coast, the region’s Indians consumed over 2 million pounds of salmon annually from runs which are believed to have exceeded ½ a million fish (EIS Indian Fishing Regulations, 1985). Fishing by the Hupa and Yurok had one of the highest yield-to-effort ratios (i.e. was the most efficient) of any subsistence undertaking in all of North America (Swezey & Heizer, 1977). This was due not only to the abundance of fish, but the various fishing techniques developed by both tribes (USFWS et al 2000)... The continual bounty of salmon (as well as steelhead, sturgeon, lamprey and other fish species) available to the

region's tribes prior to European settlement, has not been attributed to sparse human population or poor fishing technology, but management. These cultures have always recognized the potential humans have for damaging ecosystems." (Sloan, February 2011, p. 54).

Today's elders recall traditional foods that their grandparents taught them and their parents about, including those to be kept on hand as important rations, and with knowledge of the higher nutritional value; they urge Yuroks of today to continue the practices:

"Traditional foods like smoked salmon, seaweed and swamp tea make great safety provisions because they have a high nutritional value and keep well. Raymond Mattz, Yurok elder. (Yurok Tribe, March 2011).

Prior to the KHP and other development, salmon and steelhead began their runs at the estuary and up the Klamath River in consistent, predictable species-distinguishable pulses throughout the year, and quotes below show that this occurred, but the spring-run was already being affected—about 13 years after construction of Copco Dam:

"The major run was that of the spring salmon. Snyder quotes from G.R. Field: 'As the run of winter steelheads ceases, about March 30, spring Salmon begin to come. A few enter the Klamath in the later part of February, but the run really starts in March and slackens or almost entirely passes by the last of May. These fish average about 11 pounds in weight and are indistinguishable from those which come later, except that the eggs are always immature. These spring salmon may be caught in the smaller streams fed by melting snow at the headwaters of Salmon River during the month of May (Snyder, p.19). Spring salmon are said to have lingered in the vicinity of spawning beds until they mature and then spawn with the fish of later runs. They were also known as "silvers" due to their bright colors that gradually become indistinguishable from the coloration of other migrations in the period prior to spawning, having matured in the vicinity of the spawning beds.' By the time of Snyder's writing in 1931, the spring run had declined from being the major run to the point that he characterizes it as being of "relatively little economic importance" (Salter, 2003, pp. 13-14)

Initial lamprey runs for the season occurred before and during initial salmon season, around February, and was an abundant, important nutritional food, particularly for the elderly; lamprey also meant food security. It remains nutritionally important today, especially for elders.(Lewis, 2009, p. 19).

2.1.1.2 Reservation Period (about 1850 – 1910)

Between about 1850 and 1910, the Yurok people were engaged in, or recovering as best they could from war with Euroamericans, disease, and outside pressures to assimilate into mainstream society. The aboriginal Yurok population was estimated at 2,500 in 1770, which dropped to about 700 by the end of this period due to conflicts with non-Indians and disease (Kroeber, 1925, p. 888) (Heizer, 1978, pp. 701-704) (Greacen, May 1997). By the end of this period, mining became less profitable, miners declined in numbers, but canneries were established near the mouth of the Klamath River and the Yurok were opposed to non-Indians taking salmon.

Western education in the form of boarding schools was imposed on Yurok children beginning in the late 1850s at Fort Terwer and Wauk-ell until the 1860s when the Fort and Agency were washed away in a large flood. Yurok children, sent to live at the Hoopa Valley Reservation, continued to be taught by missionaries who often abused Yurok children when they spoke Yurok and attempted to practice cultural and ceremonial traditions. In the late 1800s, children were sent to boarding schools in Chemawa in Oregon and Sherman Institute in Riverside, California. Use of the Yurok language decreased dramatically by the early 1900s (less than 40 years) when it was near extinction. It took another 70 years for the Yurok people to bring back their language (Yurok Tribe, 2007, pp. 9-11).

“Today, many elders look back on this period in time as a horrifying experience because they lost their connection to their families, and their culture. Over time the use of boarding schools declined and day schools were established on the Yurok Reservation....The fact that they were at day schools did not eliminate the constant pressure to forget their language and culture...Eventually, Indian children were granted permission to enroll in public schools. Although they were granted access, many faced harsh prejudice and stereotypes. These hardships plagued Indian students for generations, and are major factors in the decline of the Yurok language and traditional ways. The younger generations of Yurok who survived these eras became strong advocates (as elders) for cultural revitalization. The Tribe continues to increase the number of language classes taught on and off the Reservation, at local schools for young learners and at community classes.” (Yurok Tribe, 2007, pp. 9-11).

In terms of selecting land for area tribes, the Yurok Tribe emphasized an example when the importance of salmon and the river was recognized in history:

“The United States’ original recognition of the central importance of rivers and fish to the Indian people of the Klamath-Trinity region is exemplified by the very shape and location of the lands first set aside for their reservations. The Secretary of Interior’s own instructions at the time

were, ‘to select these reservations from such tracts of land adapted as to soil, climate, water privileges, and timber, to the comfortable and permanent accommodation of the Indians.’ In 1855, Indian Agent S. Whipple’s, when speaking of the Yurok, noted that ‘The river is abundantly supplied with Salmon. A fine large fish quite easily taken by the Indians and which is very properly regarded by the Indian as his staff of life.’” (Sloan, February 2011, p. 10).

2.1.1.2.1 Treaties

It was between 1851 and 1852 that 18 treaties were negotiated with various California tribes, including the Karuk, Hoopa, and Yurok, for the purpose of avoiding further conflicts and that promised over 7 million acres of land which angered non-native Californians to the extent that the treaties were never ratified:

“The treaty-making venture of 1851-1852 carried out by McKee, Wozencraft, and Barbour was intended to reduce the Indian-White confrontation on the California frontier, [primarily]..either in the gold-mining regions...or along the main lines of communication. The treaty commissioners were unable to do more than promise the Indians they made treaties with that the government would soon establish a reservation where they would be fed [and] protected...promises that were never honored...Much of this wantonly destroyed humanity and a great deal more of native culture would have survived if the California Indians had been protected on the reserves stipulated in the 18 treaties. But with the failure of the U.S. Senate to ratify the very treaties that they had authorized, the California Indians...were helpless (Heizer and Almquist, 1971:23-64, 120-137). In the history of California Indians no other single event (that is ‘nonevent’) had a more rapid destructive effect on their population and culture than the about-face that the Senate made between authorizing President Fillmore on September 30, 1850, to make treaties and its failure on July 8, 1852, to ratify those treaties.” (Heizer, et al, 1978, p. 704).

Although there has been a great deal of confusion about which tribe was party to which treaty pertaining to various geographic areas, of the 18 treaties, the Yurok were parties to an 1851 Treaty with the Poh-lik-lah or Lower Klamath, Etc., (also known as Treaty Q) signed between the U.S. Government and Klamath River Indians under the direction of McKee (attachment 2a).

2.1.1.2.2 Executive Orders (EO)

Although the 18 treaties were not ratified, issues concerning non-Indian and Indian conflicts and welfare remained, so in 1853 and 1855, Congress authorized the President to set aside seven ‘military reservations’ for all California Indians with the intention of providing them houses and a means of livelihood through farming and raising cattle (Heizer, et.al., 1978).

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One of the seven ‘military’ reservations was the Klamath River Reservation (not to be confused with the Klamath Reservation in Oregon) created in 1855 (attachment 2b). It was a strip of territory that began at the Pacific Ocean and extended one mile in width on each side of the Klamath River for a distance of about 20 miles. The Klamath River Reservation was created from a small portion of Yurok aboriginal territory, however it was the intent of the Federal Government to move regional Indians to the Reservation. Ultimately only some Yurok and Tolowa were actually moved, and the forced relocation of Yurok families was described by the Tribe as traumatic (Yurok Tribe, 2007; Heizer, et al., p. 704; DOI, June 2011a).

The Yurok Tribe’s historical perspective emphasizes the acknowledgement at the time of the vital importance of the Klamath River, its fisheries, and surrounding vegetation to the Tribe:

[In a letter] “. . .to the Commissioner of Indian Affairs by Special Agent Whipple, the first Indian Agent on the Klamath River Reserve. [he] clearly describes several aspects of Yurok land use and their relationship to the River. In recommending the reservation boundaries extend five miles away from the River, Whipple recognized the Yurok use of the entire watershed associated with the River. He also describes the Lower Klamath as the best salmon fishing grounds in northern California. Whipple describes large alluvial terraces along the floodplain of the River that were used to gather a wide variety of plants, roots, and berries for food and supplies (Whipple 1855).” (Sloan, February 2011, p. 10).

In 1864, the Hoopa Valley Reservation was established for the Hoopa Valley Tribe, the Karuk Tribe, and some others. It was a 12 mile square bisected by 15 miles of the Klamath River. A June 23, 1876 EO formally defined the Hoopa Valley Reservation borders (attachments 2c and 2d).

An October 16, 1891 E.O. was signed by the President that ‘extended’ the Hoopa Valley Reservation. As a result of the 1864 Act, the 1876 E.O. and the 1891 E.O. laws, the Yurok Tribe lived with the Hoopa Valley Tribe on what was considered the Hoopa Reservation until 1988 when the Hoopa-Yurok Settlement Act designated the separate ‘strip’ as the Yurok Reservation (attachment 2e). However, throughout all land control changes, Yurok people continued to predominantly occupy ‘the strip,’ as opposed to Hoopa Tribal members, but non-Indians gained much of the land that displaced some Yuroks.

2.1.1.2.3 Socioeconomic Conditions

A myriad of historical events in the view of the Tribe precluded the Yurok people from having their own reservation and centralized government until 1988; the Klamath River Reservation was intended for other tribes (although, largely, that did not occur) in addition to the Yurok Tribe and shortly after it was established,

an extreme flood event in 1861 destroyed the military post which was then abandoned. Additionally, non-Indians believed that the Klamath River Reservation was no longer an Indian reservation, in part because the Federal Government intended to dispose of reservations established prior to the 1864 Act. Furthermore, the Yurok people did not view themselves as a single unit that would have a central government since Yurok social structure was decentralized. (Yurok Tribe, 2007, p. 12-13).

The General Allotment Act of 1887 (and Act of 1892) declared all unallotted land to be public land available for homesteading, (Tiller, 2005; Yurok Tribe, 2007). The Yurok Tribe described the consequences of losing their lands, which included paying taxes and the incursion of timber interests that led to the checkerboard pattern of ownership that has remained largely unchanged up to the present:

“This act [1887] authorized any unallotted lands to be put out to public domain for sale or settled in accordance with the existing federal laws...Of the estimated 55,000 acres of Yurok Reservation land, less than 30,000 acres were allotted to Indian people living on the Reservation. The majority of the remaining acres were turned over to public domain. In the following years, Indian land ownership consistently declined. As lands were taken out of allotment and placed into fee patent, Indian people struggled with the burden of paying taxes and maintaining their family home sites. In some instances allotments were exchanged for employment opportunities, while other lands were outright swindled by settlers. The allotment era ended in 1934 with the passage of the Indian Reorganization Act. By this time...many of the lands had already been removed from Indian control and held privately by timber interests.” (Yurok Tribe, 2007, p. 14).

Another description of the authority and processes for land transfers and purchases that led to the loss of Indian land within the reservation:

“On June 25, 1892, President Harrison signed a bill passed by Congress to open the reservation for non-Indian settlement. The bill declared all surplus lands open to settlers, “reserving to the Indians only such land as they require for village purposes” (McBeth, 1950:48; Bearss, 1969). The process of assigning Indian allotments within the reservation took two years. After decades of conflict, the Klamath Indian Reservation was legally opened up for non-Indian settlement on May 21, 1894 for homesteading (McBeth 1950:48; Bearss 1969). As a result, many Yurok people were displaced from their traditional villages along the Klamath River. Many Yurok relocated to the Hoopa Valley Indian Reservation and continue to live there today.” (Sloan, February 2011, p. 12).

In 1879, the military attempted to remove settlers and end illegal fishing, but without success. A cannery was developed at the mouth of the Klamath River that began harvesting salmon that the Yurok and other tribes relied upon

(Greacen, May 1997; Most, 2006). Yurok fishermen worked in a Requa cannery in the 1890s which signaled a partial shift for some Yurok from an entirely subsistence lifestyle to a wage based economy (Greacen, May 1997). Sloan described the Yurok role and view of non-Indian commercial fisheries and canneries:

“The first non-Indian commercial fishery for Klamath and Trinity chinook was established in 1876 on the lower Klamath River. The first cannery was started at Requa in the late 1880's. While non-Indian settlement and commercial fishing in the region began to erode the Yurok's ability to live in their traditional ways, they adapted as best as they could to the new economic opportunities that were created (Bearss 1969). The canneries themselves were not owned by the tribes; however, all of the fish reaching the canneries was being supplied by Indians since they were the only ones permitted access to the in-river fishery.” (Sloan, February 2011).

2.1.1.3 Copco Dams Period (About 1911 – 1934)

As natural resources became less available, a subsistence lifestyle gradually became more difficult:

“By 1916 when Lucy Thompson wrote *To the American Indian, Reminiscences of a Yurok Woman*, the cultural landscape was covered by the white man's frame houses, clothes, economy and regulation (Lang, 1991). In the 1930s, forest practices prohibited traditional Yurok land management techniques...as a result, availability of edible bulbs, wild sunflower, nuts, and other plants declined....All Indian commercial fishing, including subsistence gill-netting was banned in 1934.” (Greacen, May 1997, pp. 17-18).

By the time of Snyder's writing in 1931, the spring run had declined from being a major run to the point that he characterized it as being of “relatively little economic importance,” and timing of runs appears to have shifted:

“The spring migration has now lost its economic importance and seems to have almost entirely disappeared. It was formerly connected at its waning period with the summer run. The fish of the spring run enter the river during its flood height of very cold water, and pass up stream under the same conditions, while the summer migration starts as the winter and spring floods subside, most of its fishes passing upstream during a minimum flow of water... (Snyder, p.23). (p. 13).” (Salter, 2003).

Although it is difficult to point precisely to the time when the spring-run Chinook stock was sufficiently low that first salmon religious practices and ceremonies would have no longer been feasible for the Yurok people, purportedly the last

ceremony was held at the mouth of the Klamath in the 1860s, presumably due to the extreme cultural and socioeconomic upheaval brought about by land taken and conflicts with settlers and the military. Even if the Tribe had wanted to revive the First Salmon Ceremony sometime following the 1860s, it would have been challenging or impossible since a non-Indian commercial fishery opened at the mouth of the Klamath as early as 1876, and by 1933 the Lower Klamath fishery was closed by the California Department of Fish and Game as a result of over fishing by recreational fisheries and canneries. The First Salmon Ceremony was important for social, resource management, cultural, and subsistence reasons, and many members of the Yurok Tribe continued the ceremony with the Karuk:

“[There was] continuity between the culture of the Yurok and coming up here to the First Salmon Ceremonies and communication between the tribes to assure that the fish would be healthy.” (Salter, 2003).

In terms of salmon canneries, Indians were heavily employed in the industry that Sloan described as peaking around 1912 and was a time period when stocks were fished to the limits:

“The peak of salmon canning on the Klamath took place in 1912 - 1915. In 1912 it is estimated that 141,000 salmon were canned. Local Indians were not only employed to harvest the fish but also performed most of the work at the canneries. With little regulation or coordination of in-River and particularly, ocean fishing activities, the Klamath and Trinity River stocks were fished to the limit during the first several decades of the 20th century.” (Sloan, February 2011).

By 1933, low fish stocks prompted fishery restrictions and cannery closures:

“In 1933, the State of California, opting to halt the precipitous decline of both rivers’ fisheries as a result of fishing, mining, logging, and farming, banned the use of gill-nets on the lower 20 miles of the Klamath (even for subsistence fishing), closed the canneries and prohibited the sale of river-caught salmon. This had severe implications for the tribes, as they were increasingly dependent on the economic opportunities provided by their fishery resources.” (Sloan, February 2011).

Klamath River Indians were banned from commercial fishing and gill-netting. Contemporary Yurok elders recall the 1930s as a time when most Yurok people who had not moved away to cities (or who were off at war) had to continue a subsistence lifestyle to survive, in part due to the Depression, and as a result, much of their fishing traditions remained, including sharing the catch with others in need; although they had to fish in fear of being caught. Despite the continuation of fishing, traditional annual and biannual ceremonies and dances temporarily ceased by the late 1930s (Most, 2006, p.96; Yurok Tribe, 2007,

p. 18-19, 20). Another reason cultural practices ceased during the first part of the 1900s was that about 90 percent of Yurok men (and some women) served in World Wars I and/or II (Yurok Tribe, March 2011).

2.1.1.4 Pre-Tribal Government and Effects of Iron Gate Dam (about 1935 – 1987)

During the early part of this period, Indians were still not allowed to fish by the State, and the timber industry was one of the few major employment sectors for Yurok people:

“...the forest industry accounted for more than 90 percent of the products extracted from or made in Del Norte County during the prosperous postwar years, when housing developments were rising across the country.” (Most, p.103).

Concerning the treaties of the 1850s, despite the views of many that the 18 unratified treaties were not legally binding, California Indians were allowed, under H.R. 491, to sue the Federal Government for compensation promised by the 18 unratified treaties, and the suit was settled in 1944 in their favor. However, much of the compensation went towards attorney fees, was so widely distributed that individual amounts in most cases were of little consequence, and many who should have received compensation could not be located (Stewart, et. al., 1978, pp. 705-709).

In the 1950s, many Indians were “...encouraged to sell their allotments through questionable and forced fee patents...” which meant about 60 percent of the lands were sold to logging companies that did a booming business after World War II. By 1960, timber companies consumed an estimated 90 percent of the original redwood forest in Yurok ancestral territory (Yurok Tribe, 2007, p. 21).

The Trinity River Act of 1955 allowed construction of the Trinity River Dam on the Klamath River’s largest tributary. By 1958, revenues from unallotted trust timberlands in the Hoopa Square were dispersed in per capita payments only to Hoopa Tribal members, which was later determined to be an unfair process for distributing proceeds for the Yurok Tribe, decided in a series of Jessie Short cases. The first Jessie Short case was filed in 1963 on behalf of 16 Yuroks which grew to 3,222 plaintiffs years later. In *Jessie Short et al. v. The United States* (1973), the court ruled that Yurok land was an extension of the Hoopa Valley Reservation which meant that Yurok Tribal members were entitled to equal rights to income from timber sales on allotted trust lands (attachment 3) (Yurok Tribe, 2007, pp. 21-22).

2.1.1.4.1 Subsistence Fisheries, Hydrograph, and Water Quality Changes

It was primarily during this time period (Iron Gate Dam was constructed in 1962) that Yurok people noticed significant changes; the numbers of fish in the River declined, water quality declined, the timing of water releases changed. The changes were particularly apparent for upriver Karuk Tribal members as many described changes in aesthetic qualities, including hydrograph changes that stranded fry and ammocetes. As another example, Lewis found that many Tribal members who had been away from the area and returned after Iron Gate Dam was built noticed a decline in water quality:

“Many people who left the area for a period, upon returning, noticed a dramatic change in the river, noting stagnant, slower flows, strong odors, dirtier water, more moss and algae, and higher temperatures. Those who used to swim in the main-stem river refuse to now because of the decline in water quality.” (Lewis, 2009, p. 25).

2.1.1.4.2 Socioeconomic Conditions

Yurok Tribal fishing rights were affirmed as a Federally protected trust right in a number of cases in the late 1960s and throughout the 1970s that eventually allowed the Yuroks to legally and openly fish on what was then the Hoopa Valley Reservation. By the 1970s, it was the fishing ban for Yuroks and other Indians that created conflicts that escalated when a Yurok fisherman, Raymond Mattz was arrested and decided to challenge State jurisdiction over Yurok fishing rights. The result was a legal battle that was brought before the U.S. Supreme Court that resulted in a 1973 ruling that re-affirmed Yurok fishing rights. In 1977, the lower Klamath was re-opened for gill net subsistence and commercial fishing for Indians. In 1978, the Department of the Interior placed a “Conservation Moratorium” on the Indian commercial fishery, and it was closed until 1987 when the moratorium was lifted due to new allocation agreements and predictions of an increase in salmon.(B.I.A. June 2011a).

Some of the most important cases included:

- 1966, *Elser v. Gill Net Number One* held that Yurok Indians were enrolled members of a recognized tribe that had tribal rights which exempted them from State regulation on the Yurok Reservation.
- 1973, *Mattz v. Arnett* was filed in response to the State’s attempt to regulate Indian fishermen on the Klamath River; the court ruled that the reservation was considered Indian Country and therefore the State had no fishing regulation jurisdiction. (*Mattz v. Arnett*, 412 U.S. 481).

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- 1976, *Arnett v. 5 Gill Nets* held that the State lacked jurisdiction to regulate Indian fishing on the reservation and that Yuroks had a right to commercial fishing practices (Yurok Tribe, 2007, pp. 21-22).
- 1978, the USFWS placed a moratorium on commercial gill net fishing on the Klamath which began the ‘fish wars’ between the Yurok and Federal Government, and by 1994 the Yurok Tribe assumed management of its fisheries from the BIA and USFWS (Yurok Tribe, 2007).

2.1.1.4.3 Sociocultural Conditions

As in the experience of most regional tribes, Yurok knowledge and beliefs survived destruction of their villages, relocation and/or loss of traditional lands, boarding schools, assimilation policies, and banning of ceremonies, albeit barely:

“The late 1970s and 80s were a time when the revitalization effort soared in the local areas. The Jump Dance returned to Pek-won in 1984, a War Dance demonstration was held in the late 1980s, and communities came together to support the revitalization of Brush Dances along the river and the coast. In the year 2000, the White Deerskin Dance was held again at the village of Weych-pues....With the help of many elders (who have since passed on)...Young people who were eager to learn Yurok traditions did so and....Yurok traditional ceremonies have continued. (Yurok Tribe, 2007, p. 12).

An author that analyzed Klamath Basin history offered reasons why many tribes, including the Yurok, experienced a cultural revival during the 1970s:

“Relocation legislation brought Indians from reservations across the country into cities, including Oakland and Los Angeles...living in poverty and relying on each other...[and] exposed to mass media as never before and inspired by the Civil Rights movement, many Indians rejected pressures to assimilate...such events as the fish-ins in Puget Sound and the occupation of Alcatraz.... (Most, p. 162).

Other reasons included the feeling of loss by a generation that had been sent to boarding schools. In the early 1970s, there was a major revival of basketmaking, and vestiges of Yurok peyerk (a high status individual or medicine men and women) (Sturtevant, et. al., 1978, p. 150). The Jump Dance was reinitiated in Pek-won in 1984 (Yurok, 2007, p. 12).

2.1.1.4.4 Traditional Diet

Upriver, for the Karuk Tribe, Norgaard found that the loss of Spring Chinook, the most important run of fish for the Karuk people, accounts for the drastic decline in fish consumption for people in their early 30s; they recall seeing and eating a

lot of Spring Chinook as children and now essentially no one catches and eats them (Norgaard, November 2005, p. 33). Other accounts based on research of Karuk and Yurok fishermen described the ample supplies of lamprey around the same time period compared to those of today:

“Just over 45 years ago, the lampreys were still so thick that crews were sent in to unclog the creeks because they had no flows. Up and down the river, tales are told of a biomass so great that lampreys were poisoned in those creeks, as well as the dams where they were caught up in the turbines... The elders have no recollection of ever going eeling and not catching lampreys. ..The baskets were so heavy with lampreys that they had to position the boat and pull the basket up at an angle.” (Lewis, p. 19).

2.1.1.5 Self Governance and Self Determination (1988 – Present)

The October 31, 1988 Hoopa-Yurok Settlement Act (P.L. 100-580,102 Stat. 2924) divided the Hoopa Reservation into a Yurok Reservation portion and the Hoopa Reservation area and required the Yurok to form a tribal government. In 1991 an Interim Yurok Government Council was formed with an enrollment of 2,954 Tribal members, and in 1993 the Yurok Constitution was approved. In 1994, the Yurok Tribe assumed management of its fisheries program from the B.I.A. and the Fish and Wildlife Service. The Yurok cultural revival continued with the reinstatement of the biannual White Deerskin Dance at Weych-pues in 2000. The Yurok Tribe is now the largest Tribe in California with roughly 5,600 enrolled members (Yurok Tribe, 2007, p. 15, 23; February 2011; BIA., June 2011a, 2011b).

Since its inception, the Yurok Tribe has become a complex governmental organization serving roughly 5,600 geographically dispersed members with an annual operating budget consisting of grants and contracts. Tribal government consists of an elected nine member tribal council with a chairperson, vice-chair, secretary, and treasurer. (Tiller, 2005; DOI, June 2011a). The timber industry began slowing in the 1980s recession and the spotted owl issue came to a peak in 1991 (Most, 2006, p. 181).

Although the Yurok Tribe was allowed to resume fishing in 1987, stocks began declining rapidly which has severely limited subsistence and commercial fishing. Since 1990, tribal commercial harvests have been marginal and have not provided a comfortable standard of living as originally envisioned for the Yurok in the Hoopa-Yurok Settlement Act. The Ninth Circuit Court of Appeals confirmed that the executive orders that created the Yurok Reservation vested the Yurok Tribe with “federally reserved fishing rights.” *Parravano v. Masten*, 70 F.3d 539, 541 (9th Cir. 1995), cert, denied, 518 U.S. 1016 (1996). The same court aptly

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observed that the salmon fishery of the Yurok Tribe is “not much less necessary to the existence of the Indians than the atmosphere they breathed.” (*Blake v. Arnett*, supra, at 909) (DOI, June 2011a, 2011b).

The Yurok and Hoopa Tribes emphasize that in 1993, the Solicitor of the Department of the Interior determined that the Yurok and Hoopa Valley tribes are entitled to a sufficient quantity of fish to support a moderate standard of living, or 50 percent of the Klamath fishery harvest in any given year, whichever is less. (Holt et. al., 1990, p. 98-109; DOI, June 2011a). Increasingly over the decades however, tribal subsistence fishing has been severely limited, and commercial operations mostly non-existent due to low numbers of fish. This has had a significant impact on the economic situation of the Tribe:

“Once the Moratorium was lifted in 1987, the tribes increased their fishing in accordance with stock abundance projections made in that year and the following two years, 1988 and 1989. More recently, tribal subsistence fishing has been severely limited, and commercial operations mostly non-existent, due to low numbers of fish. This has had a significant impact on the economic situation of the tribes. In 1993, the Department of the Interior concluded that the Pacific Fishery Management Council’s ocean harvest regulations had not met fishery conservation requirements and thus adversely impacted the tribes’ in-river fisheries. During that same year, Interior’s Solicitors’ office reaffirmed the fishing rights of the tribes and fixed their share of the harvestable Klamath-Trinity basin salmon fishery at an amount, sufficient to support a moderate standard of living or 50% ...” (Sloan, February 2011, pp. 51-52).

Despite Federal recognition and cultural revitalization, the Yurok continued to see fisheries declines, and in some of the species considered most resilient. Lewis (2009) found that all Karuk and Yurok fishermen he interviewed noticed that Pacific lamprey populations began to decline rapidly in the 1960s:

“One...[tribal member] recalled that the last time he had seen a full smokehouse was more than 45 years ago. Nowadays, most smokehouses are smaller and hold only about 100 lampreys, but even that size is difficult to fill in a whole season...Participants remember that in the 1980s, an eeler was lucky to catch 50 - 100 lampreys, which was considered a lot. By the 1990s, they were lucky to harvest any.” (Lewis, 2009, p. 20).

2.1.2 Present Conditions

“Klamath River fish are irreplaceable to the Yurok Tribe's culture, religion and economy. From time immemorial, Yurok people have depended on the Klamath River. The River is central to Yurok society by providing food,

transportation, commercial trade, and numerous other activities essential to Yurok life. Throughout history and today, the identity of the Yurok people has been intricately woven into natural environment including the Klamath Basin watershed. Tribal religious and ceremonial practices focus on the health of the world; the Klamath River and its fisheries are a priority. The Yurok Tribe's obligation to protect the fishery has always been understood by Yurok people." (Sloan, February 2011, p. 3).

"It is important to note that the Yurok Tribe refused to take a financial settlement for this loss [2002 fish kills] of an irreplaceable resource, consistent with a Yurok philosophy of refusing to assign a dollar value to a resource that is irreplaceable." (Sloan, February 2011, p. 14).

Politically, Federal recognition and organization of a formal Yurok Tribal Government have been a step forward for the Yurok Tribe from an economic, social, and cultural standpoint. Despite gains, the Tribe remains at a disadvantage primarily from losing ancestral territories and the inability to legally exercise fishing rights for much of its recent history, ever-declining anadromous fish populations and runs, and worsening water quality that has contributed to declines in nearly all aquatic species used for subsistence and cultural purposes. Poverty and unemployment rates remain high and median incomes low, particularly in areas along and up the river that are not near the estuary. Although the Yurok Tribe has experienced a cultural revival and was able to reinstate most ceremonies, the Tribe has not been able to reinitiate the First Salmon Ceremony at the correct time of year because there is no spring-run Chinook salmon. Furthermore, declining fisheries have contributed to higher diabetes, heart disease, obesity, mortality, and disability rates.

Yurok Tribal lands and services are particularly spread out in the remote stretch of about 30 miles around Weitchpec southward along the River with very limited basic services, including telecommunications and electricity. As an example of an injustice of the KHP, a sizeable portion of the Yurok Tribal members' households do not have electric utility service and instead rely on generators. However, since it is assumed that either leaving hydroelectric dams or removing them (No Action or Action Alternative) would not affect the current lack of adequate electric service, the issue was not analyzed in this report.

The main Tribal headquarters are located in the town of Klamath with other offices in Weitchpec and Eureka Cutten. Yurok language classes are held each week at tribal offices which is another expression of the desire of the Yurok people to retain Yurok culture to the extent possible. Johnsons Village is another population center on the YIR. Yurok is a Self Governance Tribe and has many departments and operates numerous programs. The Yurok Tribal Fisheries Program is one of the largest and most comprehensive of the tribes in the Klamath Basin that is divided into four divisions that manage Yurok harvest and conduct monitoring, research, and restoration activities in four main areas of the YIR.

Some of the other Yurok Tribal departments include Planning and Community Development, Social Services, Education, Environmental (includes water quality protection), Self Governance, and Forestry among others.

2.1.2.1 Subsistence and Commercial Fisheries

“When the original Klamath Reservation was established in 1855, the rivers were filled with abundant stocks of salmon, steelhead, eulachon, lamprey, and green sturgeon. Today, the abundance of fish in the Klamath River and its tributaries are only a small fraction of their historic levels. Many species of fish have gone extinct, many other species, such as fall Chinook, are in serious trouble. Nonetheless, anadromous fish continue to form the core of the Yurok Tribal fishery. The Yurok Tribe is pursuing its fishery restoration goals through a fish management and regulatory program, participation in various forums to reach long term solutions to Basin problems and when necessary, litigation. The Tribe has devoted a large share of scarce funding resources to budgets for fishery management and regulation. The Tribe has enacted a fisheries ordinance to ensure that the fishery is managed responsibly and in a sustainable manner and has a long standing record of resource protection.” (Sloan, February 2011, p. 4).

The Yurok Tribe operates a limited commercial fishery and a recreation or tourist fishery for fall Chinook, discussed at the end of this section; however, the description of subsistence fishery conditions also apply to commercial stocks, except that the commercial fishery is much more limited in amounts of time for use, species, fishing methods, and similar parameters.⁷ The KHP has reduced fish populations directly by blocking migration. The four dams cause poor water quality (including temperatures and hydrograph) that also contribute to low fish populations and human health warnings, and is aesthetically unappealing (often described as ‘pea soup’).

Concerning the roles of subsistence and commercial fishing, the Yurok Tribe found that subsistence fishing was of greater importance to its members and was practiced more than commercial fishing; sharing fishing remains a strong cultural practice:

“Fish plays a variety of roles in Yurok households. According to respondents, 86% use fish as food, 72% share fish with friends and family, for 34% fish fills ceremonial and religious roles and in 45% of households fish is part of cultural and social activities. In contrast,

⁷ The recreation section 3.20 in the Klamath EIS/EIR (DOI, September 2011), p. 3.20-25 discusses how angling in the lower Klamath River has declined due to lower fish populations which has prompted stricter limits and adversely affected guide, resort, and sport fishery businesses.

21% of households report using fish in barter or trade and only 16% of households sell fish. This underscores the important *meanings* of fish for the Tribe. The Klamath River Hydroelectric Project has altered the river in ways that are destructive for all parts of Yurok life.” (Sloan, February 2011, p. 103).

It should be noted that Klamath Basin conditions contributing to low fish populations, water quality problems, and Tribal social, cultural, and economic conditions and goals are acknowledged and summarized in the KBRA (most relevant pages are in attachment 4c). In addition, the Yurok Tribe summarized some of the most important socioeconomic issues and analysis relative to the hydroelectric dams and the health of the river in comments to FERC in 2007, excerpt below, and in 2010 comments (most relevant pages are in attachment 5):

“Loss of an abundant and reliable subsistence harvest compounds the extremely high levels of food insecurity experienced within these Yurok communities.” (Yurok Tribe, November 28, 2006). [and] “Historically, Yurok People were able to harvest fish from the Klamath River all year-round. People harvested fall Chinook and Coho salmon during the late summer/fall; steelhead, lamprey and candle fish during the winter and spring Chinook, sturgeon and lamprey during the spring and summer. The decline in these and other river species means that the Yurok People can no longer sustain themselves from the river on a year-round basis. In any community where 80% of the people lack basic food security this loss is ruinous. For the Yurok People who are recovering from more than one hundred years of cultural genocide the loss is catastrophic. Any assessment of the impact of the current conditions on the Yurok Tribe, the federal government’s trust responsibility and any impacts of current conditions on tribal trust resources must consider these facts.” (Sloan, February 2011, p. 95).

2.1.2.1.1 Socioeconomic Conditions

The Yurok Tribe has a federally protected right sufficient to support a moderate standard of living or 50 percent of the total available harvest⁸:

“...federally protected right to the fishery resource sufficient to support a moderate standard of living or 50 percent of the total available harvest of Klamath-Trinity basin salmon, whichever is less. 50 CFR part 661.” (Yurok Tribe, 2006).

Low fish stocks have affected the Yurok Tribal trust fishing rights as the ability for members to provide for their families has been negatively impacted, as well as other trust resources:

⁸ Additional detail about Yurok reserved fishing and water rights can be found in BIA technical reports (June 2011a and June 2011b).

“Numerous Yurok Trust Resources exist within the Klamath Basin and many are directly associated with the Klamath River ecosystem. These resources include fish and aquatic species: various species of salmon, pacific lamprey, sturgeon, candlefish, freshwater mussels, steelhead trout, amphibians and others. Additional resources include the water itself, waterfowl, plants and medicines, and numerous Traditional Cultural Properties including fishing places, prayer places, gathering places and cultural activity areas. All of these resources are resources of cultural and religious significance to the Tribe and its members. All of these resources are Trust Resources and must be protected by the federal government as part of its Trust Responsibility to the Tribe and its members.. It is the opinion of the Yurok Tribe that the current conditions (i.e.: the current operations of the Klamath Hydroelectric Project and its dams) result in adverse and devastating impacts on these irreplaceable Yurok Trust Resources.” (Sloan, February 2011, p. 5).

For example, in Spring 2011, the Tribe closed the spring Chinook and green sturgeon fisheries for three days per week during the season and adopted regulations making it illegal to sell or purchase spring Chinook (Yurok Tribe, April 2011, p. 4).

2.1.2.1.1.1 Fishing Methods, Locations, and Species

“[development generally, including the hydroelectric dams]...resulted in extirpation of numerous runs and species of culturally significant anadromous and riverine species that were relied upon by Yurok and other tribes. Today, Candlefish [or eulachon] (once an important subsistence food) no longer exist in the Klamath River. Coho Salmon and Green Sturgeon are on the Endangered Species list. Pacific Lamprey have experienced dramatic decreases and Chinook Salmon have declined to such numbers that only a short commercial fishing season can be practiced for the fall run, and all other runs have diminished to the extent that they are no longer viable for economic harvest.” (Sloan, February 2011, p. 5).

In terms of the importance of salmon, Sloan highlighted case law and historical facts, including the statement that the fisheries have been vitally important, including the role of salmon in the Tribe’s social, religious, and economic well-being:

“The Supreme Court in *U.S. v. Winans*, 198 U.S. 371, 381 (1905) recognized the primary importance of salmon to these tribes when they concluded that access to the fisheries was “not much less necessary to the existence of the Indians than the atmosphere they breathed” (Kroeber, 1960). The abundance of salmon has always been an important measure of tribal well-being -- where feasting is not simply an exercise in eating, but has deep rooted connections to the vitality of the Earth and a traditional connotation of community health (Gunther, 1926). The

timing and cycle of many tribal societal, religious and economic activities were made to closely coincide with the seasonal and geographic variations in fish runs, particularly the arrival of the first salmon (USFWS et al 2000).” (Sloan, February 2011, pp. 53-54).

The Yurok Tribe has maintained the traditional ownership-social structure for fishing places:

“Ownership of existing fishing places was an economic matter, allowing for sale, trade or inheritance. This strict management of fishing places guaranteed the value and the viability of existing fishing places owned by individuals, groups, or families (Bearss 1969:3). A fishing place can be a place where there is good river access, a deep hole, or good back eddy allows for fish to rest on the way up-river. Fishing places are designated fishing areas on the river, a pool, a rock, and eddy. Often times large projecting river rocks both provide such a place for fish and a place where Yurok fishermen can build scaffolds that allow for the establishment of fish netting areas. Some fishing places are abandoned during times when the productivity of a particular place was poor (Waterman 1920:219). Yurok people still recognize this traditional form of resource management and use on the River. Families and individuals continue to use and own rights to fishing places on the River. An entire traditional etiquette and jurisprudence has been developed to regulate the orderly taking of fish...’Most Indian people had fishing spots. They have a right to fish, sometimes it’s handed down through relations. You can give a fishing place to someone else...Tradition gives people the right to do things. They can say this is what we’ve done for years and years. Tracing back generations and generations, this is what makes us strong culturally. Hold onto the old ways. Stick with family fishing holes’ (Yurok Elder Glenn Moore Sr. 2003).” (Sloan, February 2011, p. 47).

Yurok Tribal fishing management still enforces traditional regulations and family rights continue to determine who has access to the Tribal fisheries at certain locations (the following excerpt was also printed in a spring 2011 edition of the online Tribal newspaper):

“The Creator placed Yurok people and fish together for reasons of balance and longevity. The Yurok have a responsibility for assuring the fish get up the River. These reasons are codified as Indian Law, first instructions from the Creator to the Yurok People. When the Law is not followed, the balance is not maintained and the fish do not return, the River dries up and the Yurok people dwindle away. Traditional Yurok Fishing Law is as follows:

1. Know your family relations. Know where you are related along the river. Know the River and its locations, particularly the village name that your family is from.

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2. Not every Yurok family had/has a fishing place right.
3. Every Yurok has a fishing place right through permission.
4. Permission is gained by asking and being granted the right, with terms and conditions.
5. Permission given once is not permission given forever.
6. One standard condition is to offer some fish caught at the place where permission was granted.
7. Some fishing places are “open” and anyone can fish there. They are open on a first-come, first-serve basis. If someone is fishing in an open place then the latecomer informs the first party that they want to fish, and then they politely wait a day unless they have already caught enough fish, then they should make ready to leave. It is polite for the first party to provide some fish to those waiting.
8. No fighting on the River, particularly no fighting over fishing places. The River is a place to show respect.
9. Do not waste fish; do not take more than what is needed. It is not what the River will do for you, it is what you will do for the River.
10. Drift netting can occur anywhere as long as it doesn't disturb anyone else's fishing place or net set. (Yurok Culture Committee 2003).” (Sloan, February 2011).

Despite Yurok management efforts, there are not enough fish to distribute and trade. The Yurok Tribe relied, and to the extent possible, still relies primarily on the following species and would like all of them to be available in sufficient numbers for subsistence fishing in the future: Spring- and fall-run Chinook Salmon, coho salmon, steelhead trout, bull trout, sturgeon, candlefish (or eulachon), and Pacific lamprey eel. The Yurok also collected, and still collect to the extent possible, freshwater mussels or clams for consumption and for other cultural uses. (Yurok Tribe, April 2011). Yurok eel fishermen use baskets on the River:

“Up river, fishermen use funnel-shaped, handcrafted baskets to catch the eels. The baskets are made from year-old hazel trees. When hazel is a year the skin adheres to the sticks, making it a more durable, which is essential for baskets that are put in the river. The highly effective baskets are still used today.” (Yurok Tribe, January 2011).

The Yurok Tribe has had to reduce or eliminate fishing seasons in most years due to low fish populations and/or concerns about low stocks. For example, in Spring 2011, the Tribe closed the spring Chinook and green sturgeon fisheries for

three days per week during the season, in addition to some other measures, out of concerns about poor habitat conditions. The Tribe equates the reduction or elimination of fishing seasons and poor water quality as denied access to a subsistence lifestyle and Tribal culture and religion:

“Denied access to the river and the salmon is tantamount to denied access to essential cultural and spiritual resources. In these circumstances, poor water quality and unhealthy conditions constitute denied access. [survey] Respondents have indicated that poor water quality has had a detrimental affect on many aspects of their lives not just during the 2005 cyanobacterial bloom but various times during the past five years...” (Sloan, February 2011, p. 104).

2.1.2.1.1.2 *Quality of Subsistence Fisheries: Water Quality, Hydrograph, and Channel Habitat*

The Yurok Tribe directed comments, in the form of an analysis of water quality impacts from the dams, to the FERC concerning coverage of issues the Tribe considered to be inadequate in the FERC draft environmental impact statement for hydropower relicensing (FERC Project No. 2082-027).

The descriptions of the effects of the dams described by the Tribe and Tribal members in survey interviews and comments to FERC are supported by the expert panel reports and all related conclusions in the Klamath EIS/EIR and supporting background technical documents, the SDOR analysis, as well as reviews of data and conclusions by the DOI (DOI, September 2011; DOI, June 2011b).

Additional Yurok Tribal comments and review of water quality problems are in attachment 6a and a copy of one of the health advisories is in attachment 6b. Poor water quality and the altered hydrograph were found to have adversely affected the Tribe’s trust resources (Ibid).

In the Yurok Tribal comments, the Tribe described toxic algae problems and impacts that included the need for the Tribe, Karuk Tribe, and others to post health advisories that often equate to a reduction or an almost complete cessation of Yurok subsistence and commercial fishing with devastating consequences:

“The failure to use this information [Kann 2006, Kann and Corum 2006] may explain the DEIS’ failure to recognize the potential seriousness of the Microcystis problem in the Klamath River downstream of Iron Gate Dam all the way to the estuary, and the role of KHP structures and operations in the basinwide distribution and abundance of Microcystis....densities [of microcystis cells] frequently exceeded 10,000 cells/mL with several measurements exceeding 40,000 cells/mL...the level currently adopted by the State of Oregon, Humboldt County Health Department and the Yurok and Karuk Tribes

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for public health advisories...the highest Microcystis cell counts in 2005 were detected in mid-September, during the critical period of salmon migration and high cultural and recreation use of the river. While monitoring and warning notices would restrain fishermen from fishing during periods when toxic algae advisories were in place, the coincident timing of these advisories would likely result in the loss of all or most of the fishing season. While this might simply be an annoyance to a recreational fisherman, it would be devastating to the tribal subsistence and commercial fisheries. Monitoring obviously fails to prevent migrating salmon from entering the river and does nothing to reduce their exposure to high toxin concentrations. The Yurok Tribe (Fetcho 2006) has detected microcystin in the livers of adult steelhead in the lower Klamath River. Monitoring alone is clearly an inadequate response...attendant consequences for human health and fish health [should be analyzed]. By providing ideal habitat for, and producing algal blooms, Iron Gate and Copco Reservoirs have dramatically increased the amount of Microcystis in the lower Klamath River.” (Yurok Tribe, 2006, pp. 14-16).

“Over the years, the river got smaller and smaller. The color has gradually gotten darker. At first, (60’s, 70’s, 80’s) the Klamath only looked unhealthy at the end of summer. Now the River always looks too dark in color and low. At the end of summer now, the Klamath looks dark, low, slow, dirty, slimy and too unhealthy to get into or eat anything coming from it. We used to be able to tell which salmon were not from the mouth, because they would sometimes have a muddy taste. Now I don’t eat any salmon that aren’t from the mouth for fear of eating toxins and diseased fish.’ (Yurok Tribal Member Survey Respondent 2006)”
‘If something is not done to improve the river water temp – there will be no fish. As a people we are still dancing, without the fish there will be no ceremonies. Without the ceremonies we will be NO MORE. Something is going to have to be done about the dams on the Klamath and Trinity Rivers. Especially the Klamath River. Fish will not travel in hot water – the old holes where fish could find cool water, have filled in giving the fish no place to go – but belly up. I heard Calvin Rube speak before the Senate Committee 45 years ago. He said that we (younger generation) would see fish kills, because of the water temp., which would also cause algae to grow – making river unhealthy.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 70).

During low water years or when too little water comes from Iron Gate, the river lacks enough force to reach the ocean and smolts (juvenile salmon) may get stranded waiting for high tides to breach the barrier of sand before going to the ocean – mature salmon returning from the ocean to spawn need tidal surges to carry them to the river (Most, 2006).

Similarly, upstream, Karuk Tribal members have described current conditions as they relate to historic conditions for water quality, fluctuations, and how the

changes have affected River habitat--all changes that have adversely impacted fish populations. Effects of hydroelectric operations, 'ramping' cause what some Karuk people referred to as 'invisible fish kills.' Karuk Tribal Fisheries crews have found large ammocoete kills when rescuing stranded fish from pools. A Karuk fisherman provided a similar explanation of adverse ramping effects on lamprey (Lewis, 2009, p. 25). Lewis' research found that beginning in the 1990s there were essentially no lamprey compared to conditions prior to around the 1960s.

2.1.2.1.2 Subsistence Fisheries and Sociocultural Conditions

"Our people come together from many villages to perform ceremonial construction of our fish dams, *Lohg-en*. Our traditional ceremonies -- the Deerskin Dance, Doctor Dance, Jump Dance, Brush Dance, Kick Dance, Flower Dance and others -- have always drawn hundreds, and sometimes thousands, of Yuroks and members of neighboring tribes together for renewal, healing, and prayer." (Sloan, February 2011, p. 25).

"Traditional food is at the very heart of culture continuity...[and its absence] leads to further social disruption. When elders die young they are not available to pass information...on to the youngest generations. Denied access to traditional foods must be understood in the broader context of cultural genocide," (Norgaard, November 2005, p. 68).

Sociocultural impacts of the KHP include direct effects of dams blocking passage as well as water quality impacts that have served to reduce or eliminate species critical for ceremonies. Most traditional ceremonies surrounding salmon and the Klamath River are still practiced today. The First Salmon Ceremony marks the arrival of the spring-run Chinook which cannot be practiced traditionally since the spring-run Chinook Salmon have essentially disappeared. The timing of the First Salmon Ceremony has had to be modified and declining fish stocks, particularly the Spring Chinook run, has impacted the Tribes' ability to pass fishing on as a religious and cultural value to future generations. Health concerns and health effects from contact with the water during ceremonies are discussed in the Health section.

The Klamath River is integral to Yurok culture and the water supply, hydrograph, and quality affect Yurok religious ceremonies and other cultural activities are described further by the Tribe in attachment 6a, which includes, among other uses, drinking, cooking, and ceremonial bathing in River water.

The importance of the Klamath River, and therefore the health of the River, to Yurok subsistence needs, identity, and culture was described by the Tribe:

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“At its most basic level, the River has always been a source for food and other necessities of daily life. The River also provides basket materials, fish net materials, and a means of transportation. Even rocks from the river are used by Yurok people...The Yurok River is traveled during religious ceremonies and in recreational activities, it is integral to the Yurok language and its oral tradition and truly represents the binding force of their community...Residency, natural and cultural resource sites, ceremonial practices, oral history, transportation routes, economic and sociological resources, indeed the Yurok identity, are all intricately woven into the ecosystems of the Klamath and Trinity Rivers.” (Sloan, 2011, p. 55).

Despite challenges in continuing Yurok culture, the Yurok language has been revitalized in modern times with Tribally-sponsored classes, and the language manifests the central, vital importance of the River and salmon:

Language analysis can show the long-term values and emphasis of a people. For example while there is no specific name word for the Klamath River, the word for ‘river’ is *la yoh*, and translates as “to run” in reference to liquids. Another word for river, *?ume?wo* is in reference to the fish dams that are placed across the river. The English word ‘salmon’, denoting several types of anadromous fish does not readily translate into the Yurok word ‘*ne po y*’, “that which is eaten.” ‘*Ne po y*’ denotes more than ‘fish’, but also includes connotations of Yurok reverence for a creature that provides sustenance to a people and way of life. Thus, *ne po y* reflects the Yurok reverence for a creature of the river and an explicit recognition that it sustains their people and way of life. Yurok places are sometimes named after the way the river moves in a particular stretch.” (Sloan, February 2011).

The trend that primarily began in the 1970s of the Tribe’s ability to begin bringing back traditional ceremonies and expand and strengthen the traditional lifestyle continues today, and often requires immersion in the river:

“Yurok culture has recently had a resurgence of the traditional stick games, a ceremonial sport that combines aspects of wrestling and lacrosse. The playing fields are constructed on sandy beaches along the river during the summer months and often in conjunction with the Brush dance ceremony. Aspects of all Yurok ceremonies require interaction and even immersion in the River and require high water quality to be practiced with integrity and also the health and wellbeing of ceremonial practitioners.” (Sloan, February 2011, p. 43).

Ceremonies remain vitally important to current generations as a way of coping with the disconnect between their traditional past and the present. Low or non-existent fisheries limit the transfer of cultural, traditional knowledge from generation to generation:

“Providing for your elders is a demonstration of respect and a primary responsibility for a Yurok or Karuk person; yet the older people say that they hardly receive lampreys anymore because no one has any to bring them. One elder only received six lampreys last year while another had not had any in the past 15 years [a Karuk elder].” (Lewis, 2009, pp. 20-21).

2.1.2.1.3 Social Conditions

Klamath Basin Tribes have experienced a diminished ability to practice a traditional lifestyle, particularly fishing for subsistence as a result of the hydroelectric dams and other development, resulting in a loss of cultural identity (but not of cultural values), social trauma, and ‘cultural genocide’ (Yurok Tribe, January 2011). The Yurok Tribe believes that the solution is restoration of the river, fisheries, and water quality that would strengthen their traditions and social conditions.

The significance of the loss of Tribal identity associated with resources no longer available and resulting social conditions from the loss were described further in the DOI report that also cited Norgaard:

“When a people’s identity and cultural practices are closely associated with a species that no longer thrives, a sense of connection and belonging is lost [Norgaard, Chapter 5, 2005]. Young people feel this loss of belonging especially intensely...When tribal celebrations require that the tribe and visitors feast on salmon and no salmon is to be found... it is disheartening to have to make a trip into town to purchase imported fish from a grocery chain store. The results can be depression, alienation, and withdrawal...creating a malaise that lingers among the people subject to these conditions.” (DOI, June 2011a, pp. 1-7).

Grief resulting from the loss of most of their aboriginal territory and ability to openly exercise fishing rights for a long period, along with associated cultural disruption has led, in most cases, to symptoms of social trauma that has left a legacy over generations that most Indians and Tribes across the nation continue to struggle with today. This syndrome has been described by social workers Brave Heart and DeBruyn as an ‘Indian holocaust’ and has resulted in symptoms of social dysfunction:

“[most] American Indians and Alaska Natives are plagued by high rates of suicide, homicide, accidental deaths, domestic violence...and alcoholism as well as other social problems... We suggest that these social ills are primarily the product of a legacy of chronic trauma and unresolved grief across generations, (Brave Heart and DeBruyn 1998, p. 60).” (Norgaard, 2005, p. 65).

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As Norgaard described, there has been a diminishment of social and cultural relationships between generations as a result of historical events and declining salmon stocks and changes fish-run timing, which have contributed to some signs of social dysfunction. In terms of holding on to cultural traditions, there were generations of Yurok people who had to risk violations and imprisonment to fish and continue forms of a traditional lifestyle in their aboriginal territory.

Direct and indirect mortality rates caused by social and cultural disruption (and more recently also the lack of healthy foods) compound cultural challenges by taking elders (the Tribes' 'intellectual capital'), away too soon as they are the primary means through which social and cultural lifestyles and values are transmitted to following generations.

Despite cultural challenges of the past, one of the signs of cultural revitalization has been the resurgence of learning and using the Yurok Language, which in many ways is synonymous with culture:

“There is a strong interest from our ceremonial people to start using more Yurok words and phrases during dance time. Specifically because our language contains the Yurok worldview,’ Canez said...’You can’t have culture, without language.’ It was predicted that the Yurok Language would be extinct by 2010. However, the number of speakers of the Yurok language has grown like wildfire over the past five years largely due to the hard work of the Yurok Tribe’s Education Department and the Yurok Elder Wisdom Preservation Project and the many teachers in our community. Yurok is taught at many of the local high schools and elementary schools as well as the Tribe’s Head Start and Early Head Start. There are also community language classes taught in the evenings in Humboldt and Del Norte Counties.” (Yurok Tribe, January 2011).

2.1.2.1.4 Subsistence Fisheries and Traditional Diet

Declines in all subsistence fisheries species (not only salmon and steelhead), including lamprey and others have had a negative effect on Yurok health, particularly for the inland Yurok Reservation people. Particularly in the upper regions of the lower Klamath on the Yurok Reservation, water quality has had an indirect effect of limiting consumption of traditional foods as many Yurok people are afraid of consuming aquatic species from the River because of bioaccumulation concerns.

Richard Myers, Yurok Tribal Council Member, described the importance of salmon to Yurok subsistence needs:

“It’s the number one food source, you can put it on the table, and it’s something that comes right from the River. You don’t have to go to Safeway to get it or no where else. It’s a gift from the Creator. We share it with our people.”

The reduction in Chinook salmon and other fisheries stocks have impacted the Yurok Tribe’s fish and lamprey consumption. In addition, fresh produce and other grocery supplies are scarce and expensive in the area:

“‘We are in a food desert.’ The closest grocery store to Klamath is more than an hour round-trip, not including shopping time. More than 90 percent of the vegetables and fruits have to be shipped in from out of the region, making prices higher and quality lower. There is also an extremely high rate of diabetes in the area...” (Yurok Tribe, March 2011, p. 3).

In a 2006 Yurok Tribal health survey, Tribal elders described the importance of salmon and other species, as well as other important River-edible and basket-making plants:

“‘The Klamath River has provided the River Yurok people with food salmon, eels, candle fish, sturgeon and also transportation, eels, roots for basket materials and also willow sticks for basket materials.’ (Yurok Tribal Member Survey Respondent, 2006). ‘I grew up and lived in and around the Yurok Reservation (ceremonial – social – cultural) for the first 31 years of my life. I have hunted with my family for deer and other wildlife, all of my life. I have gathered everything: acorns, berries, teas, plants/medicine mushrooms, all the resources I have used throughout my life time, Basked materials – ferns, willow, Redwood and spruce roots, bear grass, hazel stick, mosses, chitum bark. Salmon is our family’s life blood – it provides (food) nourishment all year round. We fresh canned, smoked and canned smoked fish, even the heads and tails, heart and other inner parts are eaten. The backbone is dried and used for soup in the winter. Fish guts used to fertilize (food) gardens. The Redwood trees that grow on my family allotments depend on the Klamath River for water. The Klamath River is the heart and veins of our watershed – the web of life on which the tribe depends and for what we are, Yurok! Down River People! It is what our circle is: What we live, we eat, and sing songs about.’” (Sloan, February 2011, p.56).

Yurok people believe eels are high in protein and healthy fat and are a wintertime subsistence food:

“Eels are high in protein and healthy fat, and were historically and are still today, a wintertime subsistence food for Yurok people. Eels are traditionally smoked or cooked in an open-pit barbeque.” (Yurok Tribe, January 2011).

To the Yurok, sturgeon is another important nutritional food source with associated cultural purposes:

“Kah-Kah (sturgeon), which can grow nearly ten feet, is an important food source for Yurok people. The boneless, firm meat is packed with protein and contains beneficial fats. However, Yuroks have known for millennia that sturgeon eggs or roe is where the most nutritional benefits can be found. For instance, eating a fifth of a pound will give more than the recommended daily intake of the muscle building vitamin b-12, more than half your daily need of bone builder vitamin D and more than a third of riboflavin, which staves off illness. It contains an enormous amount of important minerals...Sturgeon roe also has some of the highest quality protein...” “The fish also has other uses. The spinal cord can be made into a soup that is tasty and have a medicinal value. The sturgeon’s bladder can be chewed into a paste, which makes a strong adhesive...typically used for attaching arrow heat tips and the sharp part of a traditional eel hook. One of the ways Yurok honor the fish is to weave the design on its flanks onto baskets and caps.” (Yurok Tribe, March 2011)

2.1.2.1.5 Commercial Fishery

The Yurok Tribal commercial fishery has consisted only of a minimal fall Chinook harvest in 4 of the past 15 years. The Tribe views the inability to engage in commercial fishing most or even half of the time as mainly attributable to effects of the KHP:

“Declining fish stocks have affected all aspects of Yurok life. All the species on which Yurok People depend upon are in decline; largely because of effects the Klamath River Hydro-electric Project has had upon the fishery resource...the Yurok Tribe has had only minimal levels of fall Chinook commercial harvest during four of the past fifteen years. During the remaining 11 years the Yurok Tribal Council determined that the projected abundance of Klamath fall Chinook was insufficient to support a commercial fishery. For the past 15 years, the Yurok Tribe has also forgone commercial harvest of species other than fall-run Chinook (with the exception of minimal numbers of spring Chinook that were harvested during the beginning of the fall Chinook fishery). The Yurok Tribal Council has chosen not to have any commercial fisheries for other species such as spring-run Chinook salmon, Coho salmon, steelhead, lamprey, eulachon and sturgeon because of their concern regarding the status of these other species.” (Sloan, February 2011, p. 87).

Fish camps have been part of the commercial fishery since 1987 when Yurok commercial fishing was allowed to resume and the description shows the amount of work involved and social and cultural factors, in addition to the more obvious economic factors:

“Fish camps on the Klamath River are necessary in order for Indian fishers to take advantage of their fishing rights at the mouth of the River during the commercial fishing season. Many Yurok travel from upriver villages to participate in the annual commercial fishing season. Fish camps are temporary campsites where families stay during this time. Fish camps are places for people to gather, socialize, share stories, and prepare for the next day’s catch (Perry 1988:14). When Indian commercial fishing resumed on the Klamath in 1987, Indian fishing could only occur between 7:00 pm to 7:00 am. This meant nets had to be checked, and fishers had to stay up all night in order to pull in nets and clean and prepare their catch. Once 7:00 am came around, Indian fishers had to remove their nets to allow for recreational fishing. When the night’s work was complete, Indian fishers would sleep during the day and then prepare for the next night’s work (Perry 1988:14-15). Yurok fish camps on the Klamath continue to be both a social and economic enterprise. Fish camps are temporary camps that are used annually for the purpose of commercial and subsistence fishing on the river. They are strong indicators of a river-based economy. During the salmon runs on the river, these places are utilized by individuals and families. Yurok fish camps are primarily located near the most productive fishing locations, such as Dad’s Fish Camp on the south bank, near the mouth of the River (Bearss 1969:14).” (Sloan, February 2011, p. 49).

2.1.2.2 Economic Conditions

Following the gold rush, the economy of the region shifted from a mining to fisheries-based economy with a large timber industry that peaked in the mid-1900s, declined in the 1970s and 1980s and remained slow in the early 1990s. Once the Yurok Tribe lost most of its aboriginal territory, many members were forced to rely on employment in canneries and then the timber industry.

The 1988 Hoopa-Yurok Settlement Act set aside a portion of the Hoopa Valley Reservation exclusively for the Yurok people and called for the creation of a Yurok Government, formed in 1991. Although the Tribe lost most of its ancestral land, had to struggle for Yurok fishing rights and a share of timber interests from the Hoopa Valley Indian Reservation, it has begun the relatively recent process of establishing its own economy. Largely because of the loss of land, assimilation pressures, inability to legally practice subsistence fishing for decades, and other challenges described in the Tribal History section of this document, it is estimated that between 50 and 85 percent of the Yurok people are in poverty and about 70 percent of the Yurok Reservation has no access to basic telephone or electricity services, especially along the River in the Weitchpec and Pecwan Districts. According to the Yurok Tribe, poverty rates average as high as 80 percent on the Reservation, particularly in the Weitchpec and Pecwan Districts, which are along the River in the upper portion of the Reservation. (Yurok Tribe, accessed November 2010).

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The Tribe actively manages its fisheries, and proactively restricts or closes fisheries when necessary in the hopes of maintaining fisheries for its future generations. For example, the Tribe closed the spring Chinook and green sturgeon fisheries in spring of 2011 for three days per week out of concerns about poor habitat conditions, which in turn concerned the Tribe about its members' socioeconomic welfare:

“Closing the fishery is never an easy decision for our Council,” said Thomas O’Rourke Sr., Yurok Tribal Chairman. “Our people depend upon these fish to feed their families. However, it was decided to make this sacrifice to provide for our great grandchildren and beyond.”
(Yurok Tribe, April 2011, p. 4).

The Yurok Tribal commercial fishery has been limited by the Yurok Tribal Government to only fall-run Chinook in 4 of the past 15 years. The Tribe operates a tribal guide fishery (with certification requirements), and fish caught are counted against the reserve quota. Non-tribal anglers must receive a Tribal permit, fish with a Tribal guide, and adhere to California Department of Fish and Game regulations regarding gear restrictions and bag limits.

In terms of a socioeconomic and demographic analysis of the Yurok Tribe and YIR, the Tribe did an analysis (attachment 5), and emphasized that about 75 percent of the population is American Indian with a high growth rate based on Census data analysis; important points it views as necessary to consider when examining effects of the hydroelectric dams:

“The 2000 Census data on demography, race and ethnicity for the downstream Reservations (Yurok Indian Reservation or YIR and Hoopa Valley Indian Reservation or HVIR)... 75 % of the population living within these lands is designated by the 2000 U.S. Census as ‘American Indian alone or in combination with one or more other races.’
Population growth rates for the region are also distinct; based on data from the 1990 and 2000 US Census, the population of the two reservations grew by an average of 46%--a significantly higher growth rate than those cited for the downstream subregion within the DEIS.”
(Yurok Tribe, November 28, 2006; Sloan, February 2011).

In order to address the economic needs of its membership, the Tribe opened Pem-Mey Fuel Mart in Klamath which has a few gaming machines. The Tribe is moving forward with plans to build a hotel and casino off Highway 101 in Klamath across from the Yurok Tribal Headquarters, largely to create jobs and provide secondary entrepreneurial business ownership opportunities in fishing and tourism related fields:

“Currently, the unemployment rate on the Yurok Reservation is over 30 percent and an even larger percentage of the local population live below the poverty level, according to the 2009 Department of Labor

statistics. The unemployment rates for Del Norte County and State of California are less than half of that on Reservation. Estimates for the unemployment rates on the upper [portion of the] Reservation are closer to 85 percent....'The hotel and tribal gaming facility will help the Tribe address our high unemployment rate and give a much needed boost to the local economy,' O'Rourke Sr. [Yurok Chairman] said. A hotel and casino will promote other businesses in the area and give tribal members an opportunity to start their own businesses, such as guide service, eco-tours, jet boat tours and more." (Yurok Tribe, Yurok news, February 2011).

About 85 percent of the YIR is non-Indian controlled. Despite challenging socioeconomic conditions, the Yurok Tribe employs over 200 people, and is a self governance Tribe. The Tribe described the fundamentals of its socioeconomic conditions as being a relatively new government that is an important contributor to local employment, the largest tribe in California with a growing population, and is pursuing economic development opportunities (for example, a casino, hotel, fish processing plant, and others), has some of the largest natural resources and fisheries programs in the State, yet remains focused on the River:

"Under re-organization the Yurok tribe has emerged as the largest tribe in California, with over 5,600 enrolled tribal members, and over 200 tribal government employees. The Yurok Tribe has a growing tribal population and is actively pursuing economic development and resource management both on the reservation and Yurok ancestral lands. The Yurok Tribe has a Natural Resources Department with the largest governmental fisheries program in the state of California. Other programs include the Yurok Tribe Watershed Restoration Program, devoted to restoring fish habitat, the Yurok Tribe Environmental Program, devoted to establishing and monitoring clean air, water, and land, and the Yurok Tribe Culture Department devoted to preserving Yurok culture. These departments assist the Tribal Council in its work to protect and maintain Yurok values as articulated in the Preamble Objectives of the Yurok Constitution (Yurok Tribe 1993). The River continues to be the foundation of Yurok culture, economy, and tradition." (Sloan, February 2011, p. 16).

Indeed, the Yurok Tribe has a "Tribal Park Concept Plan" (August 2005) that contemplates acquiring additional land, transferring some existing land, and developing eco-tourism opportunities, including campgrounds and a Yurok museum and cultural center, especially centered along and at the mouth of the Klamath River; although it stresses the importance of proper management given it's important cultural and spiritual significance.(Yurok Tribe, August 2005, p. 10). Authors of the plan note that low fish stocks are expected to be a limiting factor, and although unstated, it is assumed that water quality would be a potential problem as well.

2.1.2.2.1 Unemployment, Income, and Poverty Rates

The Yurok Tribal Government employs over 200 people. Historically, other large employment sectors over the past century were canneries, regional agriculture (hops and lily bulbs), fishing and tourism/recreation, and timber industries, all of which gradually declined, resulting in relatively high unemployment rates (Tiller, 2005).

A 2005 BIA labor force report showed 4,912 enrolled Tribal members (year 2011 enrollment is over 5,600), and about 2,847 Indians on or near the Yurok Reservation eligible for BIA services, and of those, about 74 percent were unemployed. (B.I.A., 2005).⁹ In comparison, the 2001 BIA Labor Force Report showed 4,466 enrolled Yurok Tribal members and an unemployment rate of 74 percent.

Census 2000 data for the Yurok Reservation showed a high (relative to other Census area percentages) unemployment rate of 17.2 percent, a low median household income and per capita income, especially for the Indian population, with roughly 40 percent of the population in poverty. Most families (67%) with a female householder, no husband present with children were below the poverty level on the Reservation (table 2.1-1), especially those with children under 5 years old (73%).¹⁰ Unemployment was at least double and in some cases two and a half times higher for the Indian population on the Reservation than for the total area, county, and State populations. The Tribe underscored its high unemployment rate compared to the counties (also in attachment 5):

“Employment data for 2001 from the BIA¹¹ indicate that the unemployment rate is 75% for Yurok and 40% for Hoopa Tribal Members. Comparable data for the downstream three counties in 2001 are much lower; Humboldt and Del Norte and Curry County Oregon having 6%, 8.1% and 6.9% unemployment respectively.¹² Likewise, there is significant disparity in the median per capita income between the downstream Reservations and the counties in the downstream subregion.” (Sloan, February 2011, pp. 86-87).

Concerning high poverty and unemployment rates, the subsistence fishing-income connection was analyzed by Norgaard for the Karuk Tribe, which is applicable to this analysis, and was found to have a high value:

⁹ 5,600 figure from Sloan, February 2011 and DOI, BIA, June 2011.

¹⁰ “One race alone” Census category; not “two or more races” category. An explanation of what is included in the poverty thresholds and the dollar amounts according to family size for the 2000 Census is included in attachment 7c.

¹¹ Unemployment figures for Tribes (not reservation) BIA 2001 F. Doka Jr. pers. com.

¹² 2001 Unemployment figures for counties Bureau of Labor Statistics .<http://www.bls.gov/lau/#tables>

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Table 2.1-1.—Census 2000 unemployment, income, and poverty

Geographic areas	Census unemployment (%)	BIA unemployment (%)¹³	Median household income	Per capita income	Poverty status (%)	Poverty – families, female householder, no husband, children under 5 (%)	Poverty – families, female householder, no husband, children under 18 (%)
Yurok Reservation	12.9	–	20,592	10,881	32.8	73.1	66.7
Indian	17.2	74	15,500	6,839	39.7	41.7	50.0
Del Norte County	4.9	–	29,642	14,573	20.2	71.4	52.7
Indian	7.7	–	21,369	9,638	25.8	62.5	55.3
Klamath CCD	7.6	–	31,953	17,739	14.5	46.2	56.1
Indian	14.8	–	24,444	9,182	11.6	22.2	18.2
Klamath CDP	9.0	–	29,231	13,660	15.2	46.2	37.9
Indian	18.0	–	26,250	8,161	14.0	22.2	18.2
Crescent City CCD	4.5	–	29,268	14,157	20.7	74.9	52.6
Indian	3.1	–	19,750	10,019	32.0	72.4	69.2
Humboldt County	5.3	–	31,226	17,203	19.5	61.0	44.6
Indian	12.0	–	25,281	11,532	31.0	64.0	54.5
Trinity-Klamath CCD	9.4	–	24,297	12,979	27.8	59.4	59.1
Indian	14.8	–	21,360	9,407	36.9	64.8	60.1
California	4.3	–	47,493	22,711	14.2	44.0	32.5
Indian	6.8	–	36,547	15,226	21.9	52.6	42.9

Notes: American Indian and Alaska Native Census data is “Indian alone” as opposed to Indians alone or in combination with other races since that is the only option for Census sample data. BIA figure is for 2005, and for further information, including definitions, see attachment 7c. CDP is a city/town, CCD is a larger area around a CDP.

“Cost replacement analysis conducted in the Spring of 2005 puts the cost of purchasing salmon at over \$4,000 per [Karuk] tribal member per year (Stercho, 2005).” (Norgaard, 2005, p. 59).

Year 2000 Census poverty rates for the Yurok Reservation were 33 percent (40 percent for the Indian only population), and the Yurok Tribe estimated a food insecurity rate almost three times that of the counties in 2002 (also in attachment 5):

¹³ Based on 2005 BIA data, not 2000 Census data.

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“...food security continues to pose a significant problem for Tribal members. As defined by Harrison et al. in their 2002 UCLA Health Policy Research Brief, families and households in California are food insecure if their income is <200% of the federal poverty level¹⁴.

According to the 2000 US Census, the average size of a Yurok family or household is three persons. If we assume that the ‘average’ Yurok family or household in 2006 also consisted of three people, the federal poverty level for that family/household in 2006 is \$16,600¹⁵ and 200% of the poverty level for an ‘average’ Yurok family/household is \$33,200. By the definition of food insecurity used by Harrison et al. (2002) 57% of Yurok families/households lack basic food security. Respondents living within the Ancestral Territory are even more at risk: *80% lack basic food security*. The 2000 Census reports that 68% of individuals living on the YIR were below 200% of the Federal Poverty Level in 1999, the survey data suggest that poverty, and with it, food insecurity has increased within the Ancestral Territory during the six years since the census was performed. How do Tribal Members compare with the general population living within the Ancestral Territory? The UCLA study analyzed Del Norte and Humboldt Counties, together and found that, as of 2002, 32% of residents were food insecure... The prevalence of hunger and food insecurity among Yurok Tribal Members residing within the Yurok Ancestral Territory in 2006 is almost three times that reported for the general population of Humboldt and Del Norte Counties in 2002.” (Sloan, February 2011, p. 93).

Overall, at 12.9 percent unemployed on the Reservation, 17.2 percent for the Indian population in the year 2000 census, the Yurok Reservation had one of the highest unemployment rates in the area, with the exception of the town of Klamath and Klamath area; however, many Yurok and some Resighini Tribal members live in and around Klamath. Reservation and surrounding area Indian unemployment rates averaged twice that of the counties, and about three times the California rate. Census 2005 to 2009 American Community Survey estimates show that unemployment may have eased slightly, but poverty rates may have increased in Klamath CCD, and especially in Klamath CDP, and otherwise remained essentially unchanged compared to year 2000 (attachment 7b). Evaluations of the data (i.e., 2000 and 2010) are not necessarily directly comparable between censuses for the sample economic data since some methodologies during the decade have changed and Indian-only data was not available for the 2005 to 2009 timeframe.

¹⁴ Harrison, G.G. C.A. Disogra, G. Manalo-Leclair, J. Aguayo, W. Yen. 2002. Over 2.2 Million Low-Income California Adults Are Food Insecure; 658,000 Suffer Hunger. Policy Brief, UCLA Center for Health Policy Research, November 2002. Available online at <http://www.healthpolicy.ucla.edu/pubs/files/FoodInsecurity.pdf>.

¹⁵ Federal Register, Vol. 71, No. 15, January 24, 2006, pp. 3848-3849.

2.1.2.2.2 *Employment by Occupation*

On the Yurok Reservation, the year 2000 Census showed that most were employed in management occupations at about 27.6 percent, and about 12.6 percent were employed in fisheries, forestry (and presumably little farming) occupations, which was about 3 times higher than the county percentages, shown in table 2.1-2. The next highest percentage employed in fisheries, forestry, and farming was 10.5 percent in the town of Klamath, in large part because about half or more of it is on the YIR. Tiller reported that “almost half of the people [on the YIR] (47 percent) are government workers,” with the remainder employed in the private sector or self employed (Tiller, 2005, p. 507).

Table 2.1-2.—Census 2000 percentages of workforce by occupation

Geographic areas	Management	Services	Sales and office...	Farming, fishing, and forestry	Construction, extraction...	Production, transportation...
Yurok Reservation	27.6	21.8	14.1	12.6	13.2	10.7
Indian	36.8	16.7	13.2	9.6	7.9	15.8
Del Norte County	24.3	31.5	21.7	4.3	8.8	9.4
Indian	33.7	16.8	23.2	9.5	7.4	9.5
Klamath CCD	30.0	25.5	25.0	6.4	7.8	5.3
Indian	33.7	16.8	23.2	9.5	7.4	9.5
Klamath CDP	26.6	23.3	15.2	10.5	14.3	9.7
Indian	38.5	18.5	9.2	9.2	10.8	13.8
Crescent CCD	23.8	32.9	21.6	3.3	8.7	9.7
Indian	23.2	42.1	12.1	0.0	12.5	10.0
Humboldt County	31.5	19.6	24.9	2.6	8.8	12.6
Indian	26.0	24.3	23.3	5.2	7.9	13.3
Trinity-Klamath CCD	35.0	20.1	19.6	4.3	12.1	8.9
Indian	32.8	19.3	22.3	7.0	11.2	7.5
California	36.0	14.8	26.8	1.3	8.4	12.7
Indian	28.3	18.2	27.1	1.4	10.9	14.1

Notes: Full category titles: Management, professional, and related occupations; service occupations; sales and office occupations; farming, fishing, and forestry occupations; construction, extraction, and maintenance occupations; production, transportation, and material moving occupations. For more information, including definitions, see attachment 6.

2.1.2.2.3 *Demographics*

Around 1770, it was estimated that there were about 2,500 Yurok people, a number that declined to about 700 by 1910 as a result of Euroamerican conflicts, diseases, and related factors (Kroeber, 1925, p. 883). The 1990 population

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declined by about 22 percent from 1990 to 2000. In 2010, the Census counted 1,238 people on the Yurok Reservation, which was an increase of about 11 percent from the 2000 Census, and the Indian population increased about 22 percent as shown in table 2.1-3.

Table 2.1-3.—1990, 2000, and 2010 Census population

Geographic areas	1990	2000	1990 - 2000 Change (%)	2010	2000 - 2010 Change (%)
Yurok Reservation	1,343	1,103	-21.8	1,238	10.9
Indian	494	499	1.0	637	21.7
Percent	36.8	45.2		51.5	
American Indian Alone or in Combination with Other Races	na	538	na	712	24.4
Percent	na	48.8	--	57.5	--
Del Norte County	23,460	27,507	14.7	28,610	3.9
Indian	1,494	1,770	15.6	2,244	21.1
Percent	6.4	6.4		7.8	
Klamath CCD	1,411	1,203	-17.3	1,373	12.4
Indian	286	348	17.8	447	22.2
Percent	20.3	28.9	--	32.6	--
Klamath CDP	827	651	-27.0	779	16.4
Indian	176	223	21.1	325	31.4
Percent	21.3	34.3	--	41.7	--
Crescent City CCD	19,366	22,531	14.0	23,582	4.5
Indian	993	1,192	16.7	1,513	21.2
Percent	5.1	5.3	--	6.4	--
Humboldt County	119,118	126,518	5.8	134,623	6.0
Indian	6,568	7,241	9.3	7,726	6.3
Percent	5.5	5.7	--	5.7	--
Trinity-Klamath CCD	4,885	5,437	10.2	na	Na
Indian	2,314	2,835	18.4	na	Na
Percent	47.4	52.1	--	na	--
California	29,760,021	33,871,648	12.1	37,253,956	9.1
Indian	242,164	333,346	27.4	362,801	8.1
Percent	0.8	1.0	--	1.0	--

Sources: Reservation data from table 2. Race and Hispanic Origin 1990. Social and Economic Characteristics. Table DP-1 General Population and Housing Characteristics 1990. Table DP-1 Profile of General Demographic Characteristics: 2000. Table QT-PL Race, Hispanic or Latino, Age, and Housing Occupancy: 2010 Census Redistricting Data Summary File. Table P2 Hispanic or Latino, and Not Hispanic or Latino by Race 2010 Census Redistricting Data. Table GCT-PL1 Race and Hispanic or Latino - State -- County Subdivision 2010 Census Redistricting Data Summary File.

The Indian population in the town of Klamath and surrounding area increased in the range of about 20 to 30 percent between the 2000 and 2010 Censuses. The Yurok Tribe had a 2011 enrollment of over 5,600 members which included those who also live elsewhere (and many return often to fish, be with family members, participate in cultural events and ceremonies, and for other reasons). The Tribe explained much of the reason for the gap between the Reservation population counted in the 2010 (and previous) Census and the higher enrollment number as Tribal members needing to leave the area for employment and better income:

“Preliminary analyses of household income data from the *Healthy River, Healthy People, Traditional Foods Survey* are broadly congruent with census data for the Reservation and the Tribe. Data from both the Tribe’s Survey and the 2000 US Census indicate that Yurok Tribal members living in Humboldt & Del Norte Counties suffer significantly greater poverty and unemployment compared to the populations of the three counties taken as a whole. A greater proportion of Yurok Tribal Members living within the Ancestral Territory earn less than \$10,000 per annum compared to the three counties in the downstream subregion taken as a whole ($G=10.25$, $p<0.01$) (Fig. 8). Significant economic disparities also exist between Tribal Members who remain within the Ancestral Territory and those who reside outside of the Ancestral Territory ($G=23.69$, $p<0.005$) (Fig. 9). The data presented here support the common assertion by Tribal Members that they are forced by economic circumstances to move away from home.” [however] Regardless of where they live, the majority of respondents consider the Ancestral Territory in general, and the Klamath River in particular, home. It has been less than two hundred years since the Yurok Tribe was displaced from the Ancestral Territory and the Yurok continue to rely on the Klamath River and its abundant resources for their cultural, spiritual, economic, and political survival and for their prosperity and wellbeing and so the Klamath River is home.” (Sloan, February 2011 [also in attachment 5], p. 91).

In terms of the commercial fishery, the Tribe found that there have been such negative economic impacts as loss of income, increased food expenses, loss of barter and trade income, and other socioeconomic stresses and issues. The greatest adverse impacts were on Tribal members within the ancestral territory and for those who receive food assistance (attachment 5):

“Fish are not commodities and their importance cannot be quantified using the usual economic measures; however the loss of these traditional resources, the closures and reduced harvests of the Tribal Commercial Fishery have had an economic impact on Tribal Members. As might be expected, the survey data suggest that the hardships associated the Commercial Fishery closures have had a greater impact on respondents living within the Ancestral Territory than those living elsewhere and in some cases these losses have disproportionately affected those respondents who receive food assistances. Tribal Members who choose

to remain within the Ancestral Territory experience higher levels of poverty and food insecurity than Tribal Members who live elsewhere. In spite of these conditions, Tribal Members choose to live in the Ancestral Territories because their culture and identity are inextricably bound to these lands and resources, and specifically the Klamath River. Economically forced relocation is perceived as another of the inequalities visited on the Tribe as a result of denied access to traditional resources, particularly the resources of the river.” (Sloan, February 2011, p. 102).

2.1.2.2.3.1 Race and Ethnicity

In the year 2010, the American Indian population comprised nearly 60 percent of the total population, an increase from roughly half in the year 2000 (shown in table 2.1-4). The largest proportion of Indian population was in the Trinity-Klamath CCD at over 55 percent (2000 census); however, most of it is comprised primarily of Hupa Tribal members. The town of Klamath (Klamath CDP) had the next highest percentage of Indian population at about half in 2010. Since Klamath CDP comprises most of the population for Klamath CCD, it was the next highest proportion of Indian population (based on 2000 Census).¹⁶

2.1.2.2.3.2 Median Age and Population Growth

The Indian population median age in 2000 was 32.4 years of age on the YIR which was generally 5 to 10 years younger than the surrounding areas general population (shown in table 2.1-5). The difference is likely due to a moderately high birth rate; however, the Reservation median age is older than most Indian reservations. The reason the Reservation population is slightly older than most others may be because much of the land is non-Indian owned or controlled. Furthermore, most younger Tribal members often must leave for education and job opportunities, but many likely return at a later age for health care and other Tribal services. The Tribe has grown fairly rapidly as shown by the increases in enrollment, therefore it could be assumed that much of the growth is occurring off-Reservation -- much of the growth within the nearby ancestral territory where members still actively come to the YIR to fish and attend ceremonies (Sloan, February 2011). Based on a 2005 BIA Labor Force Report, it was estimated that roughly 40 percent of Tribal members live on or around (ancestral territory) Reservation lands (BIA Labor Force Report, 2005). Year 2010 data was reviewed where available and was found to be about the same as the 2000 Census figures.

¹⁶ Percentages calculated were based on the primary race category “alone or in combination with one or more other races,” which is one option in the Bureau of Census data possibilities in its race and ethnicity data for years 2000 and 2010.

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Table 2.1-4.—Census 2000 and 2010 race and ethnicity percentages of total population

	Total population	Non-Hispanic					Hispanic
		White (%)	African American (%)	American Indian (%)	Asian and Pacific Isl. (%)	Other races (%)	Hispanic or Latino (%)
Yurok Reservation							
2010	1,238	46.9	0.5	57.5	1.2	1.1	12.0
2000	1,103	50	0	45.7	2.9	1.0	5.3
Del Norte County							
2010	28,610	77.9	3.9	10.9	4.5	7.6	17.8
2000	27,507	81.8	5.0	9.1	3.4	1.0	14
Klamath CCD							
2010	1,373	63.4	1.5	39.1	1.3	3.7	11.4
2000	1,203	65.8	2.4	30	1.2	0	9.4
Klamath CDP							
2010	779	56.6	0.4	48.9	1.5	1.2	11.6
2000	651	61.1	0	36.2	1.8	1.0	5.9
Crescent CCD							
2010	23,582	78.5	4.5	9.3	5.2	7.2	18.3
2000	22,531	81.7	6.0	7.9	3.8	0.6	14.1
Humboldt County							
2010	134,623	86.6	2.0	8.9	3.9	4.5	9.8
2000	126,518	88.8	1.4	8.3	2.7	3.5	6.5
Trinity-Klamath CCD							
2010	na	Na	na	Na	na	Na	na
2000	5,437	45.5	0.7	55.3	1.5	1.7	4.7
California							
2010	37,253,956	61.6	7.2	1.9	15.7	18.9	37.6
2000	33,871,648	63.4	7.4	1.9	13.0	19.4	32.4

Source: Census tables P1 and P10. Each race category includes that race alone or in combination with other races, and for more information and definitions, see attachment 6. CCD data in California for 2010 was not yet available.

Table 2.1-5.—Census 2000 median age

Geographic areas	Total population median age			Indian population median age		
	Total	Male	Female	Total	Male	Female
Yurok Reservation	40.1	39.6	40.4	32.4	27.6	34.5
Del Norte County	36.4	35.1	38.6	26.3	25.4	27.8
Klamath CCD	39.6	38.3	41.8	30.3	27.3	32.2
Klamath CDP	41.3	40.5	43.1	23.5	21.0	33.5
Crescent City CCD	35.5	34.3	37.5	24.8	24.6	25.5
Humboldt County	36.3	35.0	37.6	26.5	25.0	28.0
Trinity-Klamath CCD	35.5	35.8	35.3	24.7	22.9	26.1
California	33.3	32.2	34.4	29.3	28.5	30.1

Source: 2000 Census, tables PCT4.

2.1.2.2.4 Barter System

Concerning the ancient and contemporary regional barter system, salmon has remained an important socioeconomic factor for Tribal members, which has become more limited over the years as salmon runs and stocks decline. During a meeting with the Yurok Tribe, a member described the economic importance of the substitution income provided by trade and, in the example he provided, it helps with such large expenses as purchasing school clothes for children.

Over time, salmon has increased in value as supplies continue to decline:

“Indians have been catching salmon for trade with other tribes since time immemorial.¹⁷ Trade enabled them to acquire food, raw materials, and manufactured goods....Food preservation methods were developed which allowed fish to be stored throughout the year and transported over great distances. It was tribal custom to take fish for food and commerce efficiently and without damaging the continued existence of the species. Today still, salmon continues to represent an important economic resource for the Klamath River tribes (USFWS, et al., 2000).” (Sloan, February 2011, p. 55).

Norgaard described how the barter system and subsistence fishing elevated the Karuk people economically, which also applies to the Yurok:

“Although salmon was not bought and sold as part of a cash economy, the presence of this food meant that people didn’t need to spend money

¹⁷ *U.S. v. McCovey* reaffirmed Yurok Fisherman’s rights to sell fish off the reservation.

buying other foods at the grocery store or be forced to rely on government commodities, as is now the case.” (Norgaard, November 2005, p. 60).

The Yurok Tribe included a section about bartering salmon in “Yurok Tribe 2011 Fall Harvest Management Plan” regulations in terms of maximum numbers and other requirements and specified that bartering applies only to subsistence and not commercial fishing.

2.1.2.2.5 Redistribution

Redistribution of wealth, in this case, of fish to Tribal members and families, particularly dependent portions of the population, remains an important socioeconomic activity that is an expression of socioeconomic cultural values; however, low fish populations limit the ability of Tribal members to continue this practice, and the Tribe has formalized the cultural value of redistribution of wealth in the form of a Tribally-sanctioned program. The Yurok Tribe began the “Fish for Elders Program” in 2009 to help ensure that elders continue to receive as much fish as possible and to boost fishermen employment by purchasing fish from Tribal members for the Program (Yurok Today, August 2009, p. 12).

2.1.2.2.6 Land Base and Uses

The Yurok ancestral territory includes the Pacific Coast for a distance north and south of the estuary and up the lower Klamath River. However, the area was reduced for the Reservation in a series of steps described in the Tribal History section of this document. By about 1887, the General Allotment Act made all unallotted lands public for homesteading, and essentially all Yurok land was declared public and much of it was later privately held by timber interests. The Yurok Tribe seeks to regain control of its Reservation and ancestral lands. (Yurok Tribe, 2007, p.14)(Sloan, February 2011). By about 1934 when the allotment era ended, much of the Reservation land had already been removed from Indian control and held privately by timber interests. Today, Simpson Timber Company is a major landowner from the mouth of the Trinity River to the mouth of the Klamath, and it operates a tree farm where redwoods once stood: “Much of this stretch is roadless, and tourists take scenic jetboat rides along the lower river...When salmon are running, sportfishers flock there like seabirds.” (Most, 2006, p. xii).

The YIR is divided into seven districts: Orick, South, Requa, East, North, Pecwan, and Weitchpec (ancestral village names are shown in figure 2.1-1).

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- Orick District includes ancestral lands downriver from the Pecwan District and south of the center line of the Klamath River with the villages: Turip, Wohkel, Otwego, Wetkwau, Osegen, Espau, Sikwets, Orek, Keihkem, Ma'ats, Opuyweg, Tsurau, Sumeg and Metskwo.
- South District includes land south of the ancestral lands and east of the coastline.
- Requa District includes ancestral lands downriver from the Pecwan District, and includes ancestral villages of Tlemekwetl, Stawen, Sa'aitl, Ho'pau, Omenok, Amenok, Tmeri, Rekwoi, and Omen.
- East District is all land east of the ancestral lands.
- North District includes land north of the ancestral lands and east of the coastline.
- Pecwan includes ancestral lands downriver, including Coon Creek on the Klamath River from the Weitchpec District with ancestral villages Merip, Wa'asel, Ke'p-el, Murekw, Himetl, Kohtskuls, Keihkes, Meta, Sregon, Yohter, Pekwan, Kolotep, Wohtek, Wohkero, Serper, Ayotl, Nagetl, Erner.
- Weitchpec District includes ancestral lands upriver of Coon Creek on the Klamath River with ancestral villages Otsepor, Lo'olego, Weych-pues, Pekwututl, Ertlerger, Wahsekw, Kenek, Tsetskwi, and Kenekpul.

Although the entire Yurok Reservation has been impacted by the KHP, the Weitchpec and Pecwan Districts include Yuroks most directly impacted by water quality and other issues, also in part because more elders live in those Districts and the poverty rate is higher in the area (Greacen, May 1997). Two other districts downriver are impacted more directly as well: The Requa District is further downriver from the Pecwan District and the Orick District consists primarily of the estuary region down part of the coastline area.

Much of the Tribe's lands are timberlands managed by its natural resources department (Tiller, 2005,p. 506). The Tribe recently purchased 22,237 acres from Green Diamond Resource Company in Humboldt County. The land is part of the Yurok ancestral territory that it plans to manage sustainably for clean water and forest health that will also benefit salmon. The land purchased doubles the Tribal land base:

“The Yurok's sustainable forestry management approach will protect salmon, improve water quality and restore meadows that traditionally supported subsistence hunting and gathering. The Tribe will work to

further enhance three tributaries to the lower Klamath River that flow through the property: Pecwan, Ke'pel and Weitchpec Creeks. These creeks provide vital cold water and spawning grounds for the many anadromous Klamath fish species.”

Yurok purchase and management of the land is supported by the State Water Resources Control Board. The additional land will support Yurok culture in part because the Klamath River flows through Weitchpec, Pecwan Creek is important for the Jump Dance, and it will support subsistence fishing and other cultural activities:

“The Yurok Tribe has long sought to regain this ancestral territory to rejuvenate traditional cultural practices, including subsistence fishing, hunting, gathering, and basket-weaving.” (Yurok Tribe, April 2011, p. 3). “This purchase is phase 1 of a 47,000acre land purchase agreement with Green Diamond Resources Company. The Phase II is a 25,000 acre tract in the Blue Creek watershed, the most pristine in the Klamath River basin. Blue Creek contains prime spawning and rearing habitat for coho and Chinook salmon as well as steelhead. It also provides a substantial cold water refuge for the fall Chinook run and other fish which always have to contend with artificially warm water conditions. Additionally, some of the Tribe’s most sacred sites are located within its watershed.” (Yurok Tribe, January 2011).

2.1.2.3 Health

Health effects include impacts of the KHP on fish populations and availability, and water quality problems which have caused direct and indirect health effects. The connection between higher diabetes, heart disease, obesity, and mortality rates and diminishing quantities of traditional foods, particularly salmon, was documented for the Karuk Tribe in a November 2005 report by Norgaard in *Effects of Altered Diet on the Health of the Karuk People*. Indications from the Yurok Tribe and other factors show that the Yurok Tribe has a similar experience, especially since the Tribe has documented the fact that current fish stocks do not meet existing subsistence needs. Additionally, water quality problems have caused a drop in consumption of traditional aquatic foods, especially around the periods when health advisories have been posted.(Sloan, February 2011).

Yurok health services are provided by United Indian Health Service in Arcata and six clinics: Elk Valley Clinic in Crescent City; Fortuna Health Center in Fortuna; Howonqet Health Center in Smith River, Klamath Health Center in Klamath; Weitchpec Health Center in Weitchpec Route; and Libby Nix Community Center in Hoopa. The Tribe has plans to construct a Reservation-based health clinic (Tiller, 2005, p. 508).

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The Yurok Tribe has experienced an increase in obesity, diabetes and heart disease rates that coincided with the declining availability of traditional foods, particularly salmon, and that has contributed to higher disability and mortality rates, some of which was documented in a survey by the Yurok Tribe's *Healthy River, Healthy People, Traditional Foods Survey*, (Sloan, February 2011).¹⁸ The extreme poverty and remoteness of much of the Yurok Reservation has created the need for Tribal members to rely heavily on USDA commodity foods that are connected with poor nutrition and associated health problems:

“...estimates of food insecurity correlate well with the results of the survey regarding food assistance programs. Survey results indicate that 31% of the 305 respondents who answered the survey questions regarding food security receive some form of food assistance on a regular basis (compared to 57% classified as food insecure above), with the majority of aide going to respondents living within the Ancestral Territory... This document uses respondents' reports of participation in the federal food assistance programs (Food Stamps, WIC and Commodity Supplemental Foods Program) as a surrogate variable for low income status since eligibility is directly linked to income (130%-185% of the federal poverty level). Because all individuals who are eligible for food assistance do not apply, the numbers used here undoubtedly underestimate the number of low income households within our pool of respondents. Harrison *et al.* (2002) report that, of income eligible persons in California who report hunger, less than 20% of adults participate in the Food Stamp Program and only 66% of hungry, eligible, pregnant women participate in WIC.” (Sloan, February 2011, p. 94).

The decline in salmon availability and other traditional foods have contributed to high diabetes rates, and perhaps other diseases (as Norgaard found when analyzing the Karuk disease rates and change from a traditional diet to one that included more processed foods):

“Dependence on food assistance and lack of traditional foods have been implicated in the development of a range of medical conditions.¹⁹²⁰ Preliminary results from the *Healthy River, Healthy People, Traditional Foods Survey* suggest that similar patterns may exist within the Yurok Tribe. For example, the prevalence of diabetes among survey respondents 65 years and older is significantly greater among those who receive food assistance than those who do not.... In contrast, the

¹⁸ In 2006 the Yurok Tribe circulated a survey to determine the impact of the deteriorating health of the Klamath River on the health and wellbeing of Tribal Members. The *Survey* collected data on access to traditional resources, economic status, medical conditions and the influence of water quality on Tribal Members health and wellbeing.(Sloan, February 2011, p. 90-91).

¹⁹ Dillinger, Teresa L. et al. 1999. Feast or famine? Supplemental food programs and their impacts on two American Indian communities in California. *Intl. J. Food Sci and Nutr.* 50:173-187.

²⁰ Norgaard K. 2005. The Effects of altered diet on the health of the Karuk People. A Report prepared for the Karuk Tribe of California

prevalence of obesity, hypertension and heart disease and other related disorders show no significant differences between those who receive food assistance and those who do not. The prevalence of diabetes among American Indians and Alaska Natives is 2.3 times greater than that of non-Hispanic Whites and as of 2002, diabetes prevalence for American Indian and Alaska Natives as a whole was 15.3%. Yurok Tribal Members report comparable levels of diabetes by and large, although they do report higher levels of diabetes among younger (25-30 year olds) and older (65 and older) age classes compared to the diabetes levels reported for American Indian and Alaska Natives as a whole (Fig. 13)²¹. Further research is needed to determine if these differences are significant and to determine the underlying factors associated with these high[er]-than-average rates of diabetes among Yurok Tribal Members. Comments concerning the prevalence and incidence of diabetes within the FERC EIS indicate a lack of familiarity with the medical literature: Native American populations experience a disproportionately higher prevalence of diabetes than the overall US population. Contrary to statements within the FERC EIS, the increased prevalence and incidence of diabetes among the Native American population is statistically and epidemiologically distinct from that in the general US population... These preliminary findings suggest that further investigation into the health affects associated with loss of traditional foods and other river-based resources is warranted.” (Sloan, February 2011, pp. 95-96).

In addition to the decline in salmon and other subsistence fisheries, health concerns and impacts have resulted from poor Klamath River water quality, and include basketry-material gathering and use or processing of materials that occur in or near the Klamath River. A critical part of Yurok Tribal ceremonies involves drinking River water and bathing in the Klamath River which poses important health concerns. There have been serious health advisory warnings upstream at Iron Gate Dam and Copco Reservoirs (attachments 6a and 6b), discussed at the end of this 2.1.2.3 Health section.

2.1.2.3.1 Traditional Foods

Norgaard and the Northwest Portland Area Indian Health Board documented and described a tremendous shift in the Indian diet for the Karuk Tribe and other salmon-based tribes in the Portland area from one of traditional foods (hunting, fishing, and gathering) to an increased reliance on purchased food and Federal food program commodities which have been notorious for providing limited choices of foods with a large amount of bad fats and long shelf-lives (i.e., white flour, cheese, canned high fat meats, etc.) (Northwest Portland Area Indian Health Board, accessed August 2010).

²¹ Acton, K.J. et al., 2003. Diabetes prevalence among American Indians and Alaska Natives and the overall population—United States, 1994-2002. *Morbidity and Mortality Weekly Report*, August 1, 2003, 52(30): 702-04.

The decline in the availability of Yurok traditional foods, primarily salmon, other fish, eels, other traditional foods, and extreme poverty shifted the Yurok diet beginning as early as the 1930s with dams and over fishing, which accelerated in the 1970s with construction of IGD, contributing to higher obesity, diabetes, and heart disease rates. Research on the Karuk Tribe experience, which applies to a large extent to the Yurok, Norgaard found that as traditional food consumption has declined, the time and energy spent finding, securing, processing, and physically transporting traditional foods has contributed to a more sedentary lifestyle that contributes to diabetes, heart disease, and obesity (Norgaard, November 2005). The Tribe conducted a survey of members concerning lifetime consumptions patterns that documented diet changes:

“Because long-term data on fish numbers in the Klamath River do not exist for the periods prior to the construction of the first dams, respondents were asked about lifetime consumption patterns as way to document changes in the availability of particular species to Tribal Members over time. Where comparing respondents’ diets growing up as a function of age, reported consumption of Coho, Lamprey and Candlefish declined significantly...A similar trend exists for Spring Chinook, Steelhead, Fall Chinook, and Sturgeon. To determine whether decreased consumption was a reflection of changing tastes, respondents were asked to identify the reasons they consumed less salmon. For respondents residing within the Ancestral Territory the most influential factor was reduced fish populations, whereas those living outside the Ancestral Territory cited lack of access and distance from the Klamath River as the major factors responsible for reduced salmon consumption by other Tribal Members.” (Sloan, February 2011, p. 99).

2.1.2.3.2 Trust Responsibility and Health Care

In terms of trust responsibility, the Federal Government is required to provide health services to Federally recognized Tribes by the trust doctrine (Cherokee Nation v. Georgia, 30 U.S. 1, 1831) and the Indian Health Care Improvement Act, (P.L. 94-437), as reauthorized March 2010, to ensure health care parity and a standard of living for Indians comparable to non-Indian society (attachments 8a and 8b).

2.1.2.3.3 Mortality Rates

Mortality rates increase from higher diabetes and heart disease rates. American Indians are twice as likely as Caucasian adults to have diabetes. If current trends continue, one in three Americans will develop diabetes in their lifetime and will lose, on average, 10 to 15 years of life. Diabetes was the sixth leading cause of death nationally in 2006 and overall, the risk of death among people with diabetes is about twice that of non-diabetics, (CDC, accessed September 2010).

In terms of prevention and treatment, recent studies show that lifestyle (including diet) changes can prevent or delay the onset of type II diabetes among people at high risk. For example, prediabetics can reduce the rate of onset type II diabetes by 58 percent by losing 5-7 percent of their weight and exercising at least about 2 hours per week, (CDC, accessed September 2010).

2.1.2.3.4 Heart Disease

Heart disease is the leading cause of death and morbidity for American Indians, as well as the general population. Several medical conditions and lifestyle choices put people at a higher risk for heart disease, including: high cholesterol (high 'bad' fats and low 'good' fats, like omega 3 fatty acids found in salmon), high blood pressure, diabetes, overweight/obesity, poor diet, and three other factors. Five of the eight factors either are diet-related or are closely tied to diet.

The American Heart Association (AHA) recommends eating fish at least twice a week (every day for those with heart disease), particularly fatty fish like salmon which are high in two kinds of omega-3 fatty acids: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which have demonstrated benefits for reducing heart disease. Omega 3 fatty acids have been found to help with other such diseases as diabetes (Norgaard, 2005) (American Heart Association, accessed September 2010). Spring Chinook salmon were particularly important:

“Of the many fish species...the Spring Chinook salmon have historically been the most important...Spring Chinook had the highest volume of fish, a reliable run, higher fat content, was in the best physical condition, tasted better, and came in the Spring, a critical time for food...The particular importance of Spring Chinook salmon for tribes in the region is noted by early anthropologists (e.g. Gunther 1926, Rostland 1959).”
(Norgaard, November 2005, p. 32).

2.1.2.3.5 Diabetes

Diabetes is a major contributor to morbidity and is the fourth leading cause of death among all American Indians. According to an analysis of Karuk Tribal medical records, which is assumed to be similar for Yurok, diabetes rates are about 21 percent (nearly four times the national average), and 70 percent of Tribal members over age 60 reported having diabetes (Norgaard, 2005, pp. 39-40).

In terms of prevention and treatment, recent studies show that lifestyle changes can prevent or delay the onset of type II diabetes among people at high risk. For example, prediabetics can reduce the rate of onset type II diabetes by 58 percent by losing 5-7 percent of their weight and exercising at least about 2 hours per week, (CDC, accessed September 2010).

In addition, from a socioeconomic standpoint Norgaard found that diabetes is costly in several respects:

“Diabetes is a costly disease not only in terms of medical care costs but also in terms of human costs. Of patients with Type II diabetes, 20 percent develop kidney disease, 45 percent develop cardiovascular related diseases and 50 percent suffer from hypertension. And the rates for these conditions are even higher for American Indian people (Joe and Young, 1993, p. 3).” (Norgaard, 2005, p. 39).

The Norgaard report also noted that nerve damage resulting from high blood glucose levels often leads to amputations and/or infections, and that the CDC reported additional such complications as blindness, disability, decreased quality of life and premature death that affect Indians disproportionately (Norgaard, 2005, p. 39, 47).

2.1.2.3.6 Obesity

Obesity is strongly related to altered diet and is frequently a cause of the increase in the incidence of diabetes (Norgaard, November 2005, p. 44). Nutrition is an important factor in obesity, and being overweight is a leading contributor to heart disease and the most prevalent form of diabetes, type II. Relatively small weight losses are associated with large decreases in risks associated with developing and managing heart disease and diabetes (American Heart Association, September 2010).

A study of California childhood obesity found that some racial groups had declining rates of obesity, but for American Indian girls, obesity rates increased while rates for their male counterparts saw no change to a modest decline. Because of the serious health consequences and increasing rates of obesity, childhood weight data will be collected by IHS for 2010 reports on Indian Country health. Traditional foods require physical activity and are low calorie and more specifically, a daily portion of fish is recommended by the American Heart Association for people with heart disease, and at least two to three times per week as a preventative measure.

Obesity is the leading contributor to the onset of type II diabetes, and rates for children have been increasing. In “Disparities in Peaks, Plateaus, and Declines in Prevalence of High BMI Among Adolescents,” it was found that there was a decline in obesity prevalence for California’s Caucasian and Asian youth since 2005, but a continuation of increases for American Indian girls and remained about the same for American Indian boys (only the top percentile group had a

decline). Data was analyzed from 2001 to 2008 (Madsen, K.A., et. al., August 16, 2010). The trends may indicate greater disparities over time, particularly for the severely obese.

2.1.2.3.7 Diet and Nutrition

The Subsistence Fishery part of the Present Conditions section of this document discussed the estimated quantities of salmon historically consumed (about 1.5 pounds per person per day) by Tribal members and the relatively low levels of today assumed to be similar for Yurok people. This section discusses details of the nutritional value of fish, especially salmon, the link with diseases, and the USDA Commodity Food Program.

2.1.2.3.7.1 Omega-3 Fatty Acids and Fish

A daily portion of fish is recommended by the American Heart Association (AHA) for people with heart disease, and at least two to three times per week as a preventative measure, primarily for the omega 3 fatty acids which are highest in wild salmon, (AHA Web site accessed November 2010). Norgaard researched and described some of the omega 3 benefits:

“Omega-3 fatty acids have been linked with a number of significant health benefits including reduced risk of heart attacks, strokes and Alzheimer, prevention of osteoporosis, a diabetic treatment, improved mental health and improved brain development in infants...A number of studies indicate beneficial effects of omega-3 fatty acids on various forms of depression...(Bruinsma 2000, Hibbeln 1998).“ (Norgaard, 2005, pp. 50-51).

2.1.2.3.7.2 Shift from Traditional to Western Diet and Disease

Assuming the Yurok people experience conditions similar to their upstream neighbors, Norgaard’s report analyzed Karuk Tribal survey results in which members stated that overweight, diabetes, and heart disease were relatively new and coincided with the shift from a traditional to a Western diet. For example, 66 percent of Karuk members surveyed reported that diabetes appeared in their families for the first time since 1970, which is when salmon runs declined significantly in the lower Klamath River reach. More specifically, Norgaard found that the correlation was strongest with the disappearance of spring Chinook salmon. Norgaard listed numerous studies in which a Western diet was introduced to American Indian Tribes and other native groups and within a month or so, they began to experience diabetes, and in some cases, heart disease as well (Norgaard, 2005, p. 51-53), and a primary example has been the U.S. Department of Agriculture’s (USDA) commodity food program.

2.1.2.3.7.3 *USDA Commodity Food Program*

The commodity food program distributes food to Indian reservations, and has been comprised mainly of high sugar/simple carbohydrates, low fiber, highly processed foods that are often high in ‘bad’ fats. Commodity food programs appear to be linked to obesity among Indians:

“Significant concern has been expressed about commodity foods distributed to Indian people as a cause of obesity (USDA Food and Nutrition Service 1991) since the use of this program is high among Indian populations. Other studies have discussed the poor availability of high fiber, low fat foods in commodity food programs and called for change in these programs (Burhansstipanov and Dresser, 1994).” (Norgaard, 2005, p. 46).

2.1.2.3.8 *Social Conditions: Food Insecurity, Poverty, Stress, and Health Implications*

In addition to the high degree of trauma and stress from losing much of their culture, land, fish, and barter economy, in addition to experiencing high disease and mortality rates, and many important associated factors, Yurok Tribal members have the added stress of meeting basic needs. Previous sections of this document discussed high poverty rates that indicate many families are food insecure and/or have difficulty in meeting other basic needs. Norgaard’s research and observations for the Karuk Tribe revealed the social and psychological stress associated with food insecurity when she stated that: “Difficulty in meeting basic needs results in overwhelming physical and psychological stress,” which can directly and indirectly compound existing health conditions (Norgaard, 2005, p. 57).

2.1.2.3.9 *Health Care Costs*

This section discusses higher health care costs nationwide resulting from heart disease, diabetes, and obesity.

2.1.2.3.9.1 *Heart Disease Costs*

In 2010, heart disease will cost the United States \$316.4 billion, and includes the cost of health care services, medications, and lost productivity. Since 1998, the CDC has funded state health departments' efforts to reduce the number of people with heart disease and stroke. Health departments in 41 states and the District of Columbia currently receive funding. The program stresses policy and education to promote heart-healthy and stroke-free living and working conditions (CDC, accessed September 2010).

Large amounts of Federal funding are allocated for direct services to Tribes for diabetes and heart disease, and for research and education programs specific to American Indians designed to reduce the high rates of heart disease and diabetes. Direct costs of the top diseases and causes of death have been monetized for the general population and are included in this section. In terms of indirect costs, there are numerous Federal programs that are researching these problems and educational programs expressing the benefits of a traditional diet, or of the need to eat foods that happen to be part of a traditional diet such as that of the Yurok Tribe. For example, the CDC's Native Diabetes Wellness Program (NDWP) has recognized the need and importance of trying to influence diet choices to curb the diabetes epidemic by using culturally sensitive information and education of Indian children.

2.1.2.3.9.2 Diabetes Costs

The prevalence of diabetes has continued to grow with the total reaching 17.5 million by 2007. Medical costs for people diagnosed with diabetes are about 2.3 times higher than the rest of the population. Total costs (direct and indirect) of diabetes was estimated to be \$174 billion, with direct medical costs at about \$116 billion and indirect costs (disability, work loss, premature death) at \$58 billion nationwide (2007 dollars). Hospital inpatient care was the largest percentage of costs at about half, medication and supplies were about 12 percent, prescriptions 11 percent, and physician office visits about 9 percent. In terms of direct medical costs, annual excess expenditures for the diabetic population was found to be \$3,808 for people under 45 years old, \$5,094 for people ages 45-64, and \$9,713 for people over age 65. The report noted that "the actual national burden of diabetes is likely to exceed the \$174 billion estimate because it omits the social cost of intangibles such as pain and suffering, care provided by nonpaid caregivers, excess medical costs for health care expenditure categories such as health care system administrative costs, over-the-counter medications, clinician training programs, and research and infrastructure development." (ADA, accessed October 2010).

2.1.2.3.9.3 Obesity Costs

Recent, national estimated cost of obesity totaled about \$147 billion (2008 dollars) (Finkelstein, E.A., et al., 2009). Researchers investigated the average annual increase in medical spending associated with obesity, and found it to be 37.4 percent, or about \$732 more per patient (2002 dollars) (Finkelstein, Fiebelkorn, and Wang, 2003). Research results were similar in a 2002 study that found obese adults annually incur about \$395, or 36 percent higher medical expenditures than normal-weight adults under age 65 (Sturm, March/April 2002).

2.1.2.3.10 Water Quality Concerns

There have been health warnings about water quality problems in Iron Gate and Copco reservoirs which concern and affect Tribal members for fishing, ceremonies, swimming, gathering basketry materials, and engaging in other uses of the Klamath River by Tribal members.

Water quality concerns affect or potentially affect Yurok health in several ways:

- Direct contact with the River water for ceremonies, fishing, swimming, gathering basketry or other materials, and similar activities.
- Concerns about consumption of potentially contaminated fish species.
- Avoidance or reduced reliance on traditional foods as a result of concerns about contaminated fisheries. Impacts of not having access to (or in this case, avoiding) sufficient amounts of fish, lamprey, and shellfish were discussed in the first part of this Health section.

The Yurok Tribe views the water quality problems in the Klamath River as one largely of environmental justice, proposed that Basin Tribes work with the State Water Resources Control Board on an “Environmental Justice Pilot Project,” and identified beneficial uses common to Basin Tribes that are adversely affected, including (attachment 6a contains the full description of Yurok water quality concerns):

“Beneficial uses...include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. An essential part of a water quality control plan is an assessment of the beneficial uses, which are to be designated and protected... Water quality standards are adopted to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act... Beneficial uses...of particular importance to Klamath Basin Tribes include but are not limited to: Native American Culture, uses of water that support the cultural and/or traditional rights of indigenous people such as subsistence fishing and shellfish gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses. Subsistence Fishing, uses of water that support subsistence fishing.” (Sloan, February 2011, p. 58). (Sloan, February 2011, pp. 57-58).

It is important to note that the Yurok Tribe’s Environmental Program is sampling frequently to enable it to better inform its members of potential health threats:

“The Yurok Tribe’s Environmental Program has received funding since 2009 from PacifiCorp to perform water quality monitoring. This funding has allowed YTEP to increase its sampling frequency to inform the Tribal community of the toxic algae conditions in the Klamath River within the Yurok.” (Yurok Tribe, 2011).

The Yurok Tribe conducted the *Healthy River, Healthy People, Traditional Foods Survey* in which respondents indicated that poor water quality has had a detrimental effect on various activities, and not only during the 2005 cyanobacterial bloom, but various times from about 2000 to 2005, as shown in attachment 6a, (Sloan, February 2011, p. 105). The categories of River water uses that were most curtailed included fishing, bathing, drinking, and recreational uses. The same pattern and similar degrees of change were found for the proportion of respondents who changed their use of the Klamath River in 2005 in response to the Microcystin Public Health Notice for the Klamath River (Sloan, February 2011, p. 105); Sloan’s report described the issue as one of denied access to the River and salmon, resulting in denied access to spiritual and cultural resources:

“Denied access to the river and the salmon is tantamount to denied access to essential cultural and spiritual resources. In these circumstances, poor water quality and unhealthy conditions constitute denied access. Respondents have indicated that poor water quality has had a detrimental effect on many aspects of their lives not just during the 2005 cyanobacterial bloom but various times during the past five years.” (Sloan, February 2011, p. 104).

The Yurok Tribe described plans for Tribal involvement in water monitoring and how water quality is primarily a problem in five categories: Ceremonial uses (12 categories); activities (11 categories), basketry (four categories), jewelry (one category), and subsistence (8 categories), including pathways of exposure for each (attachment 6a). (Sloan, February 2011, pp. 57-69).

2.1.2.3.10.1 Direct Klamath River Water Contact/Consumption

Ceremonies and ceremonial leaders are adversely affected by the need to commune directly with the Klamath River water, a problem described by the Yurok Tribe in attachment 6a. Upriver, Karuk Tribal members described instances of open sores becoming infected when swimming in the River. (Salter, 2003). Similar to the Karuk Tribe, the Yurok are concerned that Iron Gate and Copco Reservoirs are responsible for the high levels of cyanobacteria, which produce microcystin toxins (blue-green algae, or *Microcystis Aeruginosa*), that lead to massive blooms downriver. The Karuk Tribal analysis showed that the blue green algae and toxins supplied by the reservoirs “...persisted and occasionally re-grew down river, and was detected in the Klamath River estuary (Kann 2006).” The Karuk Tribe has had similar experiences with toxic algae

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effects and stated that the hydroelectric dams and reservoirs create taste and odor compounds in the Klamath River that adversely impact recreational and subsistence fisheries (Karuk Tribe, December 1, 2006).

The Yurok Tribe stated that they practice ceremonial bathing and the importance of aesthetics for ceremonial uses:

“Ceremonial bathing in the River and its tributary creeks is a requirement for some of the participants. Ceremonialists also prepare themselves by listening to the River’s sounds.” (Sloan, February 2011, p. 45).

Recreation analyses for the Klamath EIS/EIR and SDOR described present conditions as they relate to recreation and human health, and additional information includes a copy of the health advisory notice that was posted at the reservoirs (attachment 6b):

“In response to the [PacifiCorp recreation visitor] survey question ‘Has water quality ever affected your visit to the Klamath River area?’ approximately two-thirds of recreational users of the subject reservoirs had negative perceptions of water quality, commenting on its color, turbidity, and odor. The source of visitor concerns was primarily the brown, foamy water in free-flowing reaches and regular, extensive algae blooms that occur throughout the reservoirs. Visitors reported that the algae produces bad odors, fouls fishing lines, and reduces the area available for fishing, swimming, and wading (FERC 2007).” (DOI, September 2011 p. 3.20-21).

In another section of the analysis, public health effects were described that extend to the lower Klamath River:

“As discussed in Section 3.2, Water Quality, concentrations of chlorophyll-a and *Microcystis aeruginosa* have exceeded World Health Organization guidelines for protection from adverse effects in recent years, in both Copco 2 and Iron Gate reservoirs, as well as reaches of the Klamath River downstream of Iron Gate Dam. In 2005 and 2008, the NCRWQCB, Karuk Tribe, USEPA and other local, state, and federal agencies issued a warning to residents and recreational users of the river to use caution when near these algal blooms due to possible health effects of exposure to *Microcystis aeruginosa* and its microcystin toxin. Effects range from mild, non-life threatening skin conditions to permanent organ impairment and death, depending upon exposure time and intensity (FERC 2007). As identified in comments received during the scoping period for this EIS/EIR, these water quality issues and public health warnings have resulted in reduced recreational activity in affected river segments in recent years.” (Ibid p. 3.20-24).

As another example of Klamath River vegetation practical (i.e., basketry) and ceremonial uses, the Yurok Tribe produces high quality bows and arrows used for hunting and in ceremonies, a tradition that continues today. Making the bow requires gathering equisetum or horsetail found in the wetland areas on the Klamath River and tributaries (Yurok Tribe, Yurok News, February 2011).

2.1.2.3.10.2 Aquatic Plant, Fish/Shellfish Species, and Water Consumption

The Yurok Tribe has concerns about the safety of consuming fish and other species from the Klamath River. Basketry materials, edible plants, medicinal plants, and other uses have been a concern in terms of water quality for consumption and processing:

“Many of the items made and used in Yurok Ceremonies come from the River environment. Baskets made of plant materials collected at the water’s edge are used to hold food and ceremonial medicine. Acorns, cooked in the baskets, are converted to a nourishing mush that is rendered by placing several hot rocks (cooking rocks), gathered off of specific river bars, into the acorn flour and water that is placed into the baskets. Regalia that adorn the ceremonialists is constructed out of various plant and animal products that the riverine environment provides.” (Sloan, February 2011, p. 45).

Fish tissue and shellfish consumption health advisories for toxins in aquatic life due to high blue-green algae bloom toxin levels emanating from the reservoirs were issued for areas in the hydroelectric reach and downstream, including Iron Gate Dam, each summer from 2007 to 2010:

“In 2007, a *M. aeruginosa* bloom prompted a Yurok Tribe health advisory along multiple affected reaches in the Klamath River (Kann 2007a 2007d); 85 percent of fish and mussel tissue samples collected during July through September 2007 in the Klamath River, including Iron Gate and Copco 1 Reservoirs, exhibited microcystin bioaccumulation (Kann 2008). Results indicated that all of the WHO total daily intake guideline values were exceeded, including several observations of values exceeding acute total daily intake thresholds (Kann 2008). In a retrospective letter to PacifiCorp (August 6, 2008), the California OEHHA stated that they “would have recommended against consuming mussels from the affected section of the Klamath River, and yellow perch from Iron Gate and Copco Reservoirs, because their average concentrations exceeded 26 nanograms per gram (ng/g),” which is the OEHHA upper bound of advisory tissue levels fish or shellfish consumption (for a single serving per week based on 8 ounces uncooked fish). Data from 2007 also indicate microcystin bioaccumulation in juvenile salmonids reared in Iron

Gate hatchery (Kann 2008; see Section 3.3.3.3 Habitat Attributes Expected to be Affected by the Project - Water Quality - Algal Toxins for a discussion of algal toxins as related to fish health). Additional public health advisories were issued in 2009 and 2010 in Copco 1 and Iron Gate Reservoirs, as well as downstream locations in the Klamath River (including locations on the Yurok Reservation), for microcystin levels in ambient and/or freshwater mussel tissue (Kann et al. 2010a, Kann et al. 2010b, Fetcho 2010).”(Klamath EIS/EIR Appendix C, p. 58).

[And]

“Although concentrations of both *M. aeruginosa* and microcystin toxin in the Klamath River downstream of the Hydroelectric Reach are lower relative to the reservoirs (Figure C-32), WHO guidelines for exposure to microcystin (i.e., < 4 µg/L) have been exceeded downstream of Iron Gate Dam on numerous occasions (Kann 2004, Kann and Corum 2009, Kann et al. 2010a, Fetcho 2010), including late-summer/early-fall *M. aeruginosa* blooms in September 2007, 2009, and 2010 from Iron Gate Dam (RM 190.1) to the mouth of the Klamath River (RM 0.0). Health Advisories were posted along this reach of the Klamath River (Iron Gate Dam to Shasta River in 2009 and 2010, due to elevated microcystis cell counts and/or microcystin concentrations in river water. Available data indicate that algal blooms in Iron Gate and Copco Reservoirs have been responsible for the public health exceedances in the lower river (Kann and Corum 2009). Additionally, data from 2007 indicate microcystin bioaccumulation in juvenile salmonids reared in Iron Gate hatchery (Kann 2008) and, in 2010, algal toxins were found in salmonid tissues collected near Happy Camp (Kann et al. 2011) (see Section 3.3.3.3 Habitat Attributes Expected to be Affected by the Project - Water Quality - Algal Toxins for a discussion of algal toxins as related to fish health).”(Ibid, p. C-60 to C-61).

3.1 ENVIRONMENTAL CONSEQUENCES

This section compares the No Action Alternative, or existing conditions projected into the future (dams in) and Action Alternative that includes implementation of the KHSA and KBRA.²² A comparison of impacts between the two alternatives is summarized in table 3.1-1.

²² The two agreements have language specifying their interdependence as a condition of execution.

Table 3.1-1.—Yurok Tribe impacts summary table

Indicators	No Action	Dam Removal
<p>KHSA 1. Introduction, 1.2, Purpose of the Settlement, Dam (“Facilities”) Removal and Section 3, Affirmative Determination (Note: It is assumed that the KHSA and KBRA would both be implemented; however, for analysis purposes, only the most significant, relevant portions of the KBRA were examined individually).</p>		
Fisheries	<p>Continuation of insufficient quantities of fall-run Chinook available for commercial purposes for about 11 months of the year, and continued unavailability of spring-run Chinook and other species for commercial purposes year-round. Continuation of limited anadromous fish, especially salmon, available for subsistence. Increasingly limited opportunities to practice a traditional lifestyle and support ceremonies that center on a salmon culture and require a healthy river. Trust fishing rights less protected. Limited salmon for barter. Continuation of unnatural hydrograph that contributes to algae toxins, higher summer water temperatures, and other water quality conditions that adversely affect the fisheries, health of the river, and traditional uses.</p>	<p>More fall-run Chinook salmon would likely be available for commercial purposes for longer durations during the year, and additional species, including spring-run Chinook, may be available for commercial purposes. Improved availability of anadromous species, especially salmon, for subsistence 2020 to 2060. Greater opportunities to continue practicing a traditional lifestyle and support of ceremonies that center on a salmon culture and require a healthy river. Trust fishing rights better protected. More salmon for barter. Over the long run, a more natural hydrograph would improve algae toxins, water temperatures, and other water quality conditions that adversely affect fisheries, health of the river, and traditional uses.</p>
Employment and Income	<p>Limited opportunities to improve high poverty, unemployment, and low median income conditions with additional commercial and subsistence fishing and barter. Limited potential for improved social conditions related to poverty. Water quality problems would likely continue to limit the Tribe’s ability to develop recreation/tourism.</p>	<p>Opportunity for tribal members to improve high poverty, unemployment, and low median income conditions with additional commercial and subsistence fishing and barter between about 2020 and 2060. Potential to improve high unemployment, poverty, and low median income conditions directly or indirectly from dam deconstruction around 2020. Potential for improved social conditions related to poverty. Water quality improvements would provide opportunities to develop planned recreation/tourism.</p>

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Table 3.1-1.—Yurok Tribe impacts summary table

Indicators	No Action	Dam Removal
Health	Limited opportunity to alleviate high diabetes, heart disease, and obesity rate trends with associated high costs, disability, and mortality rates. Continued reliance on commodity/processed foods. Some degree of poor water quality conditions and hydrograph are expected to continue with potential associated health concerns and negative effects on cultural practices and lifestyle.	From about 2020 to 2060, opportunity for improvement in diabetes, heart disease, and obesity rate trends and associated high costs, disability rates, and mortality rates. Reduced reliance on commodity foods and other processed foods. Improved water quality and hydrograph would reduce or eliminate associated health concerns and have a positive effect on cultural practices and lifestyle.
KBRA Part VII. Tribal Program, 32. Tribal Participation in Fisheries and Other Programs		
Fisheries	No change from current opportunities for participation in resource management.	Program funds for fishery management and conservation roles would occur between about 2012 and 2021, enhancing tribal participation, fisheries, identity, social conditions, and self determination.
Employment and Income	Limited opportunities for additional tribal income and economic development support that could improve unemployment, poverty rates, and income levels.	Program funds for fishery management and conservation roles would occur between about 2012 and 2021, which could improve high unemployment and poverty rates, including funds provided for an economic development study that would likely result in a strengthened Tribal economy.
Health	Limited opportunity to change high diabetes, heart disease, and obesity rate trends and associated high costs, disability, and mortality rates. Continued reliance on commodity/processed foods.	Additional fisheries management support would enhance tribal participation, fisheries, cultural identity, and social conditions, encouraging more fish consumption and less reliance on commodity/processed foods.

In terms of the action alternative, execution of the KHSA would remove Iron Gate, J.C. Boyle, Copco 1 and Copco 2 hydroelectric dams that prevent coho salmon, Chinook salmon, steelhead, and Pacific lamprey anadromous species from migrating above Iron Gate Dam to Upper Klamath Basin habitat.

The goals of the KBRA are to restore and maintain ecological functionality and connectivity of historic fish habitats and re-establish and maintain naturally sustainable fish populations, including harvest opportunities. The KBRA Fisheries Program will, among other actions, provide for reintroduction of anadromous species above the current site of Iron Gate Dam, including tributaries to Upper Klamath Lake. It would emphasize strategies and actions to restore and maintain a properly functioning Upper Klamath Lake and River processes and conditions, while also striving to maintain or enhance economic stability of adjacent landowners. In addition, it would prioritize habitat restoration and monitoring actions to ensure the greatest return on expenditures. Both agreements include measures that would improve water quality, particularly the KHSA dam removal which would greatly reduce toxic algae accumulation in the four reservoirs, especially Iron Gate and the Copco dams. Under implementation, an increase in the amount and availability of fish is expected to restore much of the cultural, social, economic, and health deterioration of the past and would enhance the trust responsibility for Yurok economic, social, and health support.

3.1.1 No Action: Potential Impacts without the KHSA and KBRA

Expert panel, biological subgroup draft Synthesis report, draft EIS/EIR, and DOI report information (June 2011a and b) were used for drawing conclusions about potential impacts to species.²³

In the Tribe's comments to FERC about the draft environmental impact statement for hydropower license (FERC Project No. 2082-027, or FERC record), the Yurok Tribe summarized the adverse trust, socioeconomic, cultural impacts, and environmental justice impacts of no action:

“...the Yurok People...have born the disproportionate costs of the Project in the loss of many tribal trust resources, tribal trust species, cultural, traditional ceremonial resources, traditional subsistence resources, and other significant tribal trust resources on which the Yurok Tribe relies for its survival, restoration, and recovery from more than

²³ Hamilton, et al. November 23, 2010, Synthesis of the effects to fish species of two management scenarios for the Secretarial Determination on removal of the lower four dams on the Klamath River, Final Draft

one hundred years of cultural genocide, racism, oppression, and injustice that continues to affect the Tribe through the present-day.” (Yurok Tribe, November 28, 2006, p. 59).

3.1.1.1 Subsistence and Commercial Fisheries

“The Yurok Tribe’s message is that there is a continuing and substantial impact to the Yurok Tribe’s fisheries and other resources. That impact has dire social and economic consequences on the lives of Tribal members, their families and Tribal communities.” (Sloan, February 2011, p. 118).

“The Ach (the People) are river people. Have been since time began. If the river dies, we are no more. Without salmon in the river, I don’t believe our culture can survive.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 7).

[Concerning the 2002 fish kill] “Never in our time have we, the elders of the Yurok Culture Committee, seen such a mass destruction of our salmon resource.’ (October 2, 2002).” (Sloan, February 2011, p. 14).

“As a kid there were abundant salmon because you could see the salmon thick in the river from the bridges. You had to row your boat out to rocks that you can walk out to now.....In my lifetime I have watched the salmon, sturgeon, and eels become depleted. Salmon, eels, and sturgeon were our main food. We ate one of the three daily. We only ate meat on payday. The rest of the week we ate fish. Now we get fish only occasionally. This year we have not had any fish. My children may not have any salmon in the future.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 99).

According to the biological subgroup report the Klamath Basin was once the third-largest producer of salmon in the United States (Institute for Fisheries Resources 2006) that produced large runs of steelhead, Chinook salmon, coho salmon, green sturgeon, eulachon, coastal cutthroat trout, and Pacific lamprey (Hamilton, et al., 2010, p. 11).

Historically, most species were used for subsistence as early observers and elder Tribal members have recounted, and the Tribe depends on these species presently if they are available, and if not available, the Tribe would like them to become available again or exist in greater abundance: Spring- and fall-run Chinook Salmon, coho salmon, steelhead, Pacific lamprey, trout, green sturgeon and eulachon (Sloan, February 2011; DOI, June 2011a). Spring- and fall-run Chinook are central components of multiple ceremonies that include the World Renewal Ceremony (also known as the White Deerskin Ceremony) and building a dam in the spring in which the First Salmon Ceremony is a vital component; most of

which can no longer be practiced or in some cases have been moved back to the fall for lack of a spring Chinook run. Lamprey is another important species, as are sturgeon, and have important nutrients, particularly for the elders. Other traditional food species include fresh water clam or mussel and candlefish or eulachon. (DOI, June 2011a). Some riparian vegetation is also used as subsistence foods or medicine.

Table 3.1-2 summarizes projected current conditions (no action) without KHSA and KBRA actions. The variety and plentitude of fish species in the lower Klamath River was a large part of the Tribe’s seasonal round, food security, and culture that has gradually declined over passing decades beginning with Copco 1 Dam, but especially since IGD was constructed around 1962. Yurok Tribal members described the changes they have experienced in subsistence fishing with the dams, particularly IGD over several generations:

“The construction of dams on the Klamath and the Trinity Rivers had a big impact on the River and its annual flow. Walt stated that a significant decline in fish population was evident after the construction of the dams (Walt McCovey Jr., 2003,” [Yurok Tribal elder]. (Sloan, February 2011, p. 123).

Table 3.1-2.—Summary of No Action Alternative conditions by species

Coho salmon (threatened)	Significant impact on essential fish habitat and continuation of downward trend.
Spring Chinook salmon	Significant impact on essential fish habitat and continuation of low levels, possibly become extinct.
Fall Chinook salmon	Significant impact on essential fish habitat and continuation of downward trend.
Pacific lamprey	Trends range from little change in current low levels to a decline.
Steelhead trout	Some uncertainty.
Green Sturgeon (threatened)	Some uncertainty.
Candlefish or Eulachon (threatened as of March 2010)	Remain essentially absent with chance of slight improvement.
Longfin Smelt	Since smelt occur in the estuary and a great deal of mixing occurs, water quality problems are expected to be relatively insignificant.
Crayfish	No change.
Mussels or Freshwater Clams	No change.
Riparian vegetation used for food, ceremonial, and other subsistence purposes	No change—poor hydrograph (affecting quantity and quality of plants) and water quality/bioaccumulation concerns would persist.

Sources: See attachment 9.

Under No Action, or conditions without the KHSA and KBRA, one of the most important species to the Tribe, spring run Chinook would continue to be essentially unavailable and others are in danger of going below harvest levels or would continue to be unavailable or potentially unsafe due to water quality problems — all of which have significant economic, social, cultural, and trust responsibility impacts, as described by the Tribe:²⁴

“Historically, Yurok People were able to harvest fish from the Klamath River all year-round. People harvested fall Chinook and Coho salmon during the late summer/fall; steelhead, lamprey and candle fish during the winter and spring Chinook, sturgeon and lamprey during the spring and summer. The decline in these and other river species means that the Yurok People can no longer sustain themselves from the river on a year-round basis. In any community where 80% of the people lack basic food security this loss is ruinous. For the Yurok People who are recovering from more than one hundred years of cultural genocide the loss is catastrophic. Any assessment of the impact of the current conditions on the Yurok Tribe, the federal government’s trust responsibility and any impacts of current conditions on tribal trust resources must consider these facts.” (Sloan, February 2011, p. 95).

3.1.1.1.1 Subsistence Fisheries

Spring run Chinook salmon would continue to be essentially absent and could become extinct, and fall-run Chinook salmon populations would continue to decline. Spring Chinook are particularly important because they come relatively early in the seasonal round and are highest in fat content, similar to Pacific Lamprey, and like other Klamath Basin Tribes, salmon is estimated to traditionally comprise up to about half of the Yurok diet. (Norgaard, 2005). The Yurok Tribe is concerned that there would be future fish kills, and that no dollar value could be placed on such losses:

“It is important to note that the Yurok Tribe refused to take a financial settlement for this loss [2002 fish kills] of an irreplaceable resource, consistent with a Yurok philosophy of refusing to assign a dollar value to a resource that is irreplaceable.” (Sloan, February 2011, p. 14).

Fall run Chinook, and possibly Pacific Lamprey and steelhead, would continue a downward trend and Tribal members have documented the fact that these primary remaining sources of high quality subsistence foods do not meet the needs of the current population and the Yurok Tribe is spending a large part of its budget on fisheries management in attempts to enhance habitat and stocks:

²⁴ The Federal Government has a trust responsibility to support the health, economic, and social welfare of federally recognized tribes. For additional trust information, see the trust section of the Klamath Settlement EIS/EIR and BIA, June 2011a, June 2011b.

“Because of the rivers' importance, one of the Tribe's highest priorities is to protect and preserve the resources of the rivers, and in particular, to restore the anadromous fish runs to levels that can sustain Yurok people. When the original Klamath Reservation was established in 1855, the rivers were filled with abundant stocks of salmon, steelhead, eulachon, lamprey, and green sturgeon. Today, the abundance of fish in the Klamath River and its tributaries are only a small fraction of their historic levels. Many species of fish have gone extinct, many other species, such as fall Chinook, are in serious trouble. Nonetheless, anadromous fish continue to form the core of the Yurok Tribal fishery. The Yurok Tribe is pursuing its fishery restoration goals through a fish management and regulatory program, participation in various forums to reach long term solutions to Basin problems and when necessary, litigation. The Tribe has devoted a large share of scarce funding resources to budgets for fishery management and regulation. The Tribe has enacted a fisheries ordinance to ensure that the fishery is managed responsibly and in a sustainable manner and has a longstanding record of resource protection. The Tribe's fisheries department is well respected and recognized as a knowledgeable and experienced fisheries entity in the Klamath Basin. The Yurok Tribal Council and the Tribal members they represent are well known for taking and supporting responsible actions to protect fisheries resources.” (Sloan, February 2011, p. 118).

In addition to adverse Chinook salmon impacts, coho salmon is expected to remain threatened and continue declining. Various species of lamprey are important to Yurok Tribal members, as discussed in the Historic and Present Conditions Sections, and projected trends range from essentially no change from current low levels to declines. Steelhead trout were, and remain another important fishery that is likely to decline under No Action. Green sturgeon, another traditional subsistence species, is expected to remain at low levels. Eulachon stocks are projected to remain essentially absent or improve slightly given existing water quality restoration efforts. Yurok Tribal members have been concerned about impacts to mussels in terms of water quality impacts, health, and consumption. The Klamath EIS/EIR stated that there would be a less than significant impact on species such as crayfish and mussels.

Overall economic, social, cultural, and health resource impacts of having insufficient fish runs and stocks available for traditional uses would continue past trends. The Yurok Tribe had a subsistence lifestyle that was sharply affected beginning in the late 1960s and 1970s when IGD exacerbated hydrograph and water quality problems along the River. The hydrograph became increasingly unnatural, stranding fry and changing the River channel that compromised fish and vegetation habitat along the River banks. Water temperatures have risen, contributing to fish runs shifting later into the season that resulted in more fish disease and mortality. Additionally, the proliferation of blue algae toxins cultured by the hydroelectric reservoirs has contributed to declining fish populations and

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drapes fishing nets which lowers fishing success. Existing water quality trends would be expected to continue to some (DOI, September 2011; expert panel reports).

One Tribal elder described the changes in salmon, eel, and sturgeon populations and the hydrograph that he has seen which are trends expected to continue:

“As a kid there were abundant salmon because you could see the salmon thick in the river from the bridges. You had to row your boat out to rocks that you can walk out to now. Before I went to Vietnam in 1967 the River was high; when I came back after the Dam was built the water had dropped. In my lifetime I have watched the salmon, sturgeon, and eels become depleted. Salmon, eels, and sturgeon were our main food. We ate one of the three daily. We only ate meat on payday. The rest of the week we ate fish. Now we get fish only occasionally. This year we have not had any fish. My children may not have any salmon in the future.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 111).

During the same time period, the Yurok Tribe experienced a cultural revitalization that has gained momentum up to the present. Declining (or potentially disappearing) spring and fall run Chinook could, at some point in the project period, make practicing Yurok religious ceremonies more difficult or essentially impossible. The Tribe’s social, cultural and economic gains would be expected to slow, stall, and possibly decline as remaining key fish species continue to decline or are lost forever.

Yurok religious and ceremonial practices and way of life could be in jeopardy if present trends continue as Yurok people focus on the health of the River and its fish and aquatic species which comprise most of the Yurok world:

“Klamath River fish are irreplaceable to the Yurok Tribe's culture, religion and economy. From time immemorial, Yurok people have depended on the Klamath River and all of its streams and tributaries. The River is central to Yurok society by providing food, transportation, commercial trade, and numerous other activities essential to Yurok life. Throughout history and today, the identity of the Yurok people has been intricately woven into natural environment including the Klamath Basin watershed. Tribal religious and ceremonial practices focus on the health of the world; the Klamath River and its fisheries are a priority. The Yurok Tribe’s obligation to protect the fishery has always been understood by Yurok people.” (Sloan, February 2011, p. 118).
[and]

“When we do our Jump Dance we are praying for these things to return to abundance state. The Yurok people cannot survive without fish, acorns, language, and ceremonies.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 111).

The Yurok cultural revitalization would be hindered by an unnatural hydrograph that affects the growth and supplies of vegetation for cultural uses:

“Willows, alders, ferns and other cultural plants used for basketry and medicines were traditionally harvested along the river bar where the materials were considered to be of highest quality for use. Decreased flows have impaired and adversely impacted many traditional gathering areas due to low flows, less scouring, and build up of gravel and cobbles along the Lower Klamath. Traditional users still access these areas for these plants and materials, but the availability of suitable materials has declined since the dams were constructed.” (Sloan, February 2011, p. 44).

Yurok religious practices and world view are adversely impacted by an unhealthy river caused largely by an unnatural hydrograph and poor aesthetics from water quality problems resulting from the hydroelectric dams:

“The Brush Dance held in many of the traditional village sites along the Klamath River, requires the proper scenic river qualities and the availability of river resources. As a brush dance unfolds over a four day period it attests to the wealth that the riverine environment provides. Baskets made of plant materials collected at the water’s edge are used to hold food and ceremonial medicine. Acorns, cooked in the baskets, are converted into a nourishing mush that is rendered by placing special hot rocks gathered off of specific river bars into the acorn flour and water placed in the baskets. Regalia that adorns the dancers are constructed out of the various plant and animal products that the riverine environment provides. Ceremonial bathing in the River and its tributary creeks is a requirement for some Dance participants. Ceremonialists also prepare themselves by listening to the River’s sounds. While many guests today arrive by car, many more arrive by the traditional transportation method: boats.

[concerning death] “Just as children coming into the Yurok world are introduced in various ways to the rivers and the culture that surrounds their people’s riverine way of life, so do the elderly depart from this world via the river and its features. Rocks located in the Klamath and Trinity Rivers and at their edges are seen as spirit people who guide Yurok knowledge concerning proper burial procedures. The deceased’s last worldly journey is a boat ride up-river. At each of eighteen rocks from the mouth up to Slate Creek and up the Trinity, various burial rites and proscriptions are observed to assure the best departure for the deceased as well as those that remain in this world. There are several rocks in the mid-section of the rivers that contain rare petroglyphs giving

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instructions from the Creator to the Yurok people. One such instruction is a warning that when the rivers stop flowing it will mark the end of the Yurok world. Accordingly, some elders have prophesized that the manipulation of flows by damming represents the beginning of the end for the Yurok.” (Sloan, February 2011).

The trust responsibility of the U.S. Government to provide protection of water rights and fishing rights, in addition to the overall health, social, economic, and welfare of the Yurok Tribe would continue to be weak under the No Action Alternative as described by the Tribe and DOI trust analysis (June 2011a; June 2011b)(Yurok Tribal description in attachment 3).

Additionally, a DOI analysis concerning (trust protected reserved water rights) water resources described adverse impacts from the dams on hydrology, water temperature, suspended and bedload sediment, nutrients, dissolved oxygen, pH, algal toxins and chlorophylls, inorganic and organic contaminants, and the following summary impact statement:

“The Yurok Tribe has a reserved right to water in the Klamath River to support the harvest of fishes that the Yurok require to maintain a moderate standard of living. Hydrology and water quality throughout the Klamath River are important for supporting the aquatic ecosystems on which these fishes rely.” (DOI, June 2011b, pp. 3-5).

Concerning aquatic resources, the DOI analysis described adverse impacts from the dams on (trust protected reserved fishing rights) anadromous fish, habitat, water temperature, suspended and bedload sediments, other water quality components, disease and parasites, estuarine fish, and aquatic invertebrates (i.e., freshwater mussels, crustaceans, mollusks, and others), (p. 3-9 to 3-14) with the following summary impact statement:

“Aquatic resources in the Klamath River basin are currently considered to be in poor condition relative to historic conditions. Fish, both anadromous and native resident, are considered to have low populations, and some have been listed under the ESA and CESA. Various environmental conditions can have strong effects on the survival of aquatic resources in the Klamath River that are important to the Yurok Tribe.” (DOI, June 2011b).

The Yurok Tribe described the quantification of its fishing rights as a result of the 1988 Hoopa Yurok Settlement Act and the resulting expectation that the allocation would allow for economic opportunities, which have not occurred to the extent that was intended due to low Klamath River fish stocks:

“The Yurok Tribe dependence upon Klamath River fish is supported by Tribal harvest information. Since the passage of the Hoopa Yurok Settlement Act in 1988, the Yurok Tribe harvest of Klamath River fall

Chinook represents approximately 87% of the 50% Tribal allocation... In terms of the overall allocation of Klamath River fall Chinook, comprised of Tribal and non-Tribal fishing groups, the allocation of fall Chinook for the Yurok Tribe is the largest single allocation of any group, Tribal or non-Tribal, harvesting Klamath River fall Chinook. The Tribe's allocation is 80% of the Tribal allocation or 40% of the total allocation of harvestable surplus of Klamath fish. The Tribe's dependence on Klamath River fish and the expectation that the Tribe would have significant economic opportunities from the fishery was identified by Congress during passage of the 1988 Hoopa Yurok Settlement Act. Unfortunately, the lack of Klamath River fish has prevented the Yurok Tribe from realizing the benefits of the Klamath fishery as intended by Congress. The legislative history confirms that Congress intended to vest in the Tribe property rights to the fishery on the Klamath River. The Committee noted that the Act 'will also establish and confirm the property interests of the Yurok Tribe in the Extension, including its interest in the fishery. Senate Report No. 564, 100 Cong., 2d sess. (1988).'" (Sloan, February 2011, pp. 118-119).

No action would mean a continuation of an impaired sense of Tribal identity and social trauma that began about 150 years ago with loss of their traditional territory and again about 40 years ago when fish runs began a dramatic decline, particularly spring-run Chinook, and diabetes, heart disease, and associated disability and mortality rates rose dramatically. Water quality began declining and water fluctuations were often frequent and dramatic which served to diminish other River-based traditional uses. With reduced fish populations, an unnatural hydrograph, and related factors that threaten tribal cultures, Norgaard and others describe the consequence as 'cultural genocide.'

Social values and methods for achieving economic well-being have been transmitted to successive generations by teaching and practicing concepts of redistribution of wealth (fish) to extended family and dependent populations within the community, which would continue to be adversely impacted, particularly for the children, because what is largely unavailable cannot be used or redistributed (and an unnatural hydrograph interferes with ceremonies as well):

"When a people's identity and cultural practices are closely associated with a species that no longer thrives, a sense of connection and belonging is lost [Norgaard, Chapter 5, 2005]. Young people feel this loss of belonging especially intensely... When tribal celebrations require that the tribe and visitors feast on salmon and no salmon is to be found... it is disheartening to have to make a trip into town to purchase imported fish from a grocery chain store [or consider substituting other species]. The results can be depression, alienation, and withdrawal... creating a malaise that lingers among the people subject to these conditions." (DOI, June 2011a, pp 1-7).

Adverse cultural and social impacts would include problems stemming from the continuation of impaired Tribal and cultural identity. The Yurok have many ceremonies in common with the Karuk and Hoopa, such as the Jump Ceremony, White Deerskin or World Renewal Ceremony (which includes the Boat Dance Ceremony). Ritual bathing in the River is a necessary component for them all. The World Renewal Ceremony (or White Deerskin Ceremony) with the First Salmon Ceremony as a crucial initial component, would not have the potential of being reinstated in the Spring with the first salmon run as had traditionally been done for centuries. In addition to its cultural and religious significance, the Yurok World Renewal Ceremonies, including the First Salmon Ceremony (constructing Cappell Dam) served an important resource management role:

“The elaborate ceremony called the First Salmon Ceremony marked the passing of the first spring Chinook salmon up the Klamath River. This migrating salmon was allowed to pass all the way up the Klamath River to its spawning ground...Eating this first migrating salmon of the year...[was] considered taboo,” (Waterman and Kroeber, 1938).” (DOI, DOI, June 2011).

“The Yurok World Renewal Ceremonies, recently completed at the time of the [DOI] consultation meeting, were provided as an example of how Yurok understand and pray for the integrity of such ecosystems. Furthermore, in the past, the Yurok were not inclined to leave their territory; now, an inability to meet subsistence needs from the fishery, a perception that the rivers are dirty, and a general malaise have [been a contributing factor driving] younger members to leave the area to find work and community.” (DOI, p. 3-12, June 2011).

The regional barter system that was a thriving economy prior to European contact would continue to be adversely affected as Yurok Tribal members would continue to have insufficient salmon supplies to trade.

3.1.1.1.2 Commercial Fishery

Declining Chinook salmon populations have meant that there have been no spring-run Chinook harvests in the spring and relatively minimal fall Chinook harvests, depending on the year, and the Tribe has voluntarily avoided commercial fishing for other species in the interest of preserving them for future generations:

“...the Yurok Tribe has had only minimal levels of fall Chinook commercial harvest during four of the past fifteen years. During the remaining 11 years the Yurok Tribal Council determined that the projected abundance of Klamath fall Chinook was insufficient to support a commercial fishery. For the past 15 years, the Yurok Tribe has also forgone commercial harvest of species other than fall-run Chinook (with the exception of minimal numbers of spring Chinook that were harvested

during the beginning of the fall Chinook fishery). The Yurok Tribal Council has chosen not to have any commercial fisheries for other species such as spring-run Chinook salmon, Coho salmon, steelhead, lamprey, eulachon and sturgeon because of their concern regarding the status of these other species.

3.1.1.2 Employment and Income

Concerning the subsistence and commercial fisheries, the Yurok Tribe is concerned that there would be future fish kills and no dollar value could be placed on such losses:

“It is important to note that the Yurok Tribe refused to take a financial settlement for this loss of an irreplaceable resource, consistent with a Yurok philosophy of refusing to assign a dollar value to a resource that is irreplaceable.” (Sloan, February 2011, p. 14).

The trend of declining varieties and populations of fish for subsistence fishing to supplement low incomes, improve poverty levels, for barter, and to boost the Tribal economy overall would remain unchanged for a growing Tribal population (members often come home from off-reservation residences, in part to fish). Fishing has been considered an essential component of a family’s security which would continue to be threatened under no action and has considerable social and health implications as food insecurity is stressful (Norgaard, 2005).

The Yurok Reservation and surrounding areas where many Tribal members live are projected to continue to have high unemployment and poverty rates and low incomes compared with surrounding non-Indian populations and the counties and the State. Yurok Reservation unemployment was about two to three times that of most surrounding areas, the counties, and State, per capital income was about half that of the county, and about half the population was in poverty (which is double that of the county and three times that of the State). Additionally, most families with a female head of household, no husband present, with children under 18 years of age were in poverty. The Tribe has noted that the social, cultural, and economic disparities created by the KHP are disproportionate impacts, and therefore are also considered environmental justice issues:

“The Yurok Tribe has not even received the benefit of electricity generated from the Project, yet the Project has severely impacted the reservation economy, which relied upon the River primarily for food, and less as a commercial and recreational fishery. The lack of ability to make a living wage on the YIR has led to a Yurok diaspora, or displacement into surrounding areas or further in search of economic stability, yet Yurok who leave often return or wish to return to live on the reservation, if only they could make a living.” (Sloan, February 2011, p. 109).

Low fish stocks and poor water quality threaten opportunities for improving high unemployment and low income levels with such ventures as the proposed eco-tourism businesses currently proposed by the Tribe. The main industry in the region has been timber-based which remains weak, and Tribal members tend to be at a disadvantage in terms of education, training, and discrimination for other relatively few area jobs. Potential for improved social conditions related to poverty is limited. For these reasons, the development and growth of Tribal education, job training, and employment programs has been important. However, Tribal economic development, encouraged by the Federal policy of self governance, would continue to be constrained by the lack of abundant resources (i.e., timber, fish, clean water, etc.), and limited amounts of land owned by the Tribe, including a lack of sufficient funds for business development. Poor water quality conditions may continue to make investments in local recreation/tourism, to the extent that the Tribe would consider optimal, unlikely since River-based recreation has been declining in large part because of health advisories (one example includes attachment 6b, but there have been newspaper articles and other advisories).

3.1.1.3 Health

“The River is the lifeline of the tribe. It needs to be clean and full so the salmon can come back and nourish the people. The salmon is like the miner’s “canary” – if it is sick or dying it is a sign that our people are sick and dying too. If it is abundant and thriving – so are the people. It is the responsibility of the tribe and other government agencies to ensure this life line is healthy and abundant for the future generation.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 110).

“There seem to be only memories of long and not so long ago when the fish were so plentiful to our kitchen tables or just catching, cleaning, hanging 20 fish in one day. Now it seems like you can go fishing all day or just to catch the tides and you come back home with 1 or 2 fish and moss and mud and plenty of sticks in your net. Not too many of us who traditionally live on eating sticks...I was a little girl my uncles used to bring the fish to Gram’s house and we would spend all day hanging that fish and she would can it up and even share a jar or 2 for a gift every once in a while, now we can barely feed Gram and our own mouths and spirits. Maybe we need to feed our elders and children – let them acquire a taste for that good real “CANDY” as Gram used to call it. When good fish used to run plentiful, Gram would make baked fish, fried fish, salmon patties, dried fish, canned fish, kippered fish. Cooked on sticks and even fish soup. Now we have to go buy a fish at the local market or eat burgers, pizza, Mexican food, hamburger helper, or any of the other processed foods full of all that stuff our elders wouldn’t have dreamed of eating 20 to 30 years ago...When we have ceremonies and cultural

gatherings we should not only be thankful for what we put in our mouth and cherish every bite, but pray for that fish to come back again and make us strong and keep our elders healthy and make our children healthy too...We should ask that our fish and berries be made plentiful again. Let our youth and little Indian babies experience the love we have for the fish too and learn to harvest it...We are and always will be the fish people. May we be the ones the fish come back to.' (Yurok Tribal Member Survey Respondent 2006)." (Sloan, February 2011, p. 110).

A no action scenario would be continuing high rates of diabetes, heart disease, and related diseases with high mortality rates. The relatively heavy reliance on commodity foods may continue. Higher disease rates are correlated with higher costs to the Tribe and Federal Government and are inconsistent with the intent of the Federal trust responsibility to Federally recognized tribes in providing social, economic, and health well being. Poor water quality creates health concerns and problems, and contributes to traditional food-avoidance.

Trends, documented by Norgaard, began with a shift from a traditional diet resulting largely from declining salmon populations that accelerated during the 1970s when the spring run Chinook essentially disappeared. Changes were described as dramatic and correlated with the appearance of diabetes and other disease rate (Norgaard, 2005). The decline in traditional food available in the Yurok Tribal diet has had adverse effects as it was largely replaced by USDA commodity foods which are highly processed, high sugar and fat foods that many tribes have had to rely on to help feed their people given high unemployment and poverty rates. Norgaard found that omega-3 fatty acids, abundant in salmon (especially spring Chinook), have been linked with a number of significant health benefits, including:²⁵

“...reduced risk of heart attacks, strokes and Alzheimer, prevention of osteoporosis, a diabetic treatment, improved mental health and improved brain development in infants...[and] beneficial effects ...on various forms of depression...(Bruinsma 2000; Hibbeln 1998).” (Norgaard, 2005, pp. 50-51).

The diet shift resulted in high heart disease, diabetes, and obesity rates with associated high direct and indirect social and monetary costs and higher mortality rates. Tribal health problems are compounded by food insecurity and other poverty-related stress. Diabetes in particular tends to have a higher rate of complications that result in disability. High disease rates and associated social and cultural costs would include a continuation of high rates of premature disabilities and death in older age groups that limit ‘intellectual capital;’ the ability of elders to pass along Tribal culture and social structure to younger generations. The types of high economic costs estimated for the national

²⁵ The American Heart Association recommends consuming fish, especially salmon, at least two to three times a week as a preventative measure for heart disease and obesity.

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population are about \$316 billion annually in 2010 dollars for heart disease, \$174 billion annually in 2007 dollars for diabetes, and about 36 percent more health care expenses for obese people would continue with a no action scenario.

A lack of sufficient fish supplies has profound health effects. All Yurok religious and world-views, including ceremonies, are adversely affected by non-existent and diminishing fish runs, poor water quality, and an unnatural hydrograph. Over the past 50 years various Tribal members have attested to the fact that the large, rapid fluctuations in water flows often strand large numbers of fry and ammocoetes.

It is important to note that the Yurok Tribe's Environmental Program is sampling frequently to enable it to better inform its members of potential health threats, and the effort would likely continue provided adequate funding would continue to be available:

“The Yurok Tribe's Environmental Program has received funding since 2009 from PacifiCorp to perform water quality monitoring. This funding has allowed YTEP to increase its sampling frequency to inform the Tribal community of the toxic algae conditions in the Klamath River within the Yurok.” (Yurok Tribe 2011).

Although existing efforts are expected to improve water quality (full implementation of Oregon and California TMDLs) eventually (likely decades), the extent is not clear and algal blooms may still be present, especially Iron Gate Dam:

“Continued impoundment of water at the Four Facilities could result in short-term and long-term seasonal (April through October) increases in algal-derived (organic) suspended material in the reservoirs in the Hydroelectric Reach and transport into the Klamath River downstream of Iron Gate Dam. Under existing conditions, concentrations of summer and fall (June–October) algal-derived (organic) suspended material in the Klamath immediately downstream of Iron Gate Dam tend to be less than 5–8 mg/L, reflecting the dams' capacity to intercept and retain suspended material. Much of the algal-derived (organic) suspended material retained behind the Project dams is a result of in-reservoir algal production, as the majority (although not all) of the algal material transported downstream from Upper Klamath Lake appears to be intercepted in the Keno Impoundment (see Appendix C for more detail). However, some of the seasonal algal production that occurs in Copco 1 and Iron Gate Reservoirs is transported downstream to the Klamath River, as evidenced by chlorophyll-*a* patterns, and to a lesser degree TSS patterns, in the river from Iron Gate Dam to the Klamath Estuary (see Appendix C for more detail). While the transport occurs, TSS levels are still relatively low. This pattern would continue to occur under the No Action/No Project Alternative.” (DOI, September 2011, p. 57).

Recreation water contact health advisories are likely to continue during mid to late summer months for microcystis aeruginosa, or blue-green algae toxins. Water quality would continue to be a health concern in the River for Tribal members' contact with the water for ceremonial bathing, traditional fishing, medicinal, edible, and other plant gathering/processing uses as well as direct and indirect ingestion. Yurok Tribal members (including children) would likely continue to risk adverse health consequences from direct River contact for such ceremonial uses as bathing in the River (traditionally included drinking the water), fishing, and gathering plants as traditional foods, for ceremonial and regalia purposes, and basketry materials.²⁶

“All four [Jump Dance, White Deerskin Dance, Brush Dance, and Boat Dance], and ceremonies must be conducted in close proximity to the River and the cultural and ceremonial significance of these Ceremonies are linked directly to the River and include practices within the Ceremony that require direct exposure to the River, including bathing and drinking of River water. The First Salmon ceremony and the Cappell Fish Dam are currently not practiced but there is interest within the ceremonial community in restoring all Yurok Ceremonies. The Yurok ritual of taking the deceased up river to the death purification rocks is still practiced for those Yurok buried in the traditional fashion. Yurok culture has recently had a resurgence of the traditional stick games, a ceremonial sport that combines aspects of wrestling and lacrosse. The playing fields are constructed on sandy beaches along the river during the summer months and often in conjunction with the Brush dance ceremony. Aspects of all Yurok ceremonies require interaction and even immersion in the River and require high water quality to be practiced with integrity and also the health and wellbeing of ceremonial practitioners.” (Sloan, February 2011, p. 43).

Additionally, water quality concerns would continue to affect gathering and consumption of edible plants, shellfish (primarily mussels), and fish. Processing basketry, fish, and other traditional foods and cultural materials would continue to be a human health concern. Algae would continue to interfere with fishing success as it accumulates quickly on fishing nets. Fear of water quality-related warnings and poor aesthetics of River water have compounded the diminishment of a traditional diet that contributes to high disease rates.

²⁶ The Brush Dance is a community gathering to support an ailing child, and is still held in many of the traditional village sites along the River, and requires a pristine River for the setting and resources. Often people still arrive/depart by boat on the River. (DOI, BIA, June 2011, p. 3-6).

3.1.2 Action Alternative: Potential Impacts of the KHSA and KBRA

The Yurok Tribe summarized issues and impacts it viewed as important with Klamath River restoration when commenting on the FERC draft environmental impact statement for hydropower license (FERC Project No. 2082-02):

“Restoration of the Klamath River, its species and its fishery is an appropriate first step to begin to mitigate the decades of trauma and injustice inflicted upon Klamath River tribes, and the Yurok Tribe in particular. In fact, the Klamath Watershed is one of the few areas where that which was taken from the Yurok people can be restored. Klamath River and Basin Tribes have historically paid, and continue to pay the highest, and most adverse social, cultural, and economic costs for the Project.” (Yurok Tribe, November 28, 2006).

In order to more thoroughly evaluate impacts related to each of the most significant and relevant components of the KHSA and KBRA to the Yurok Tribe, this section is divided into the most significant components even though the KHSA and all KBRA parts would be implemented as a comprehensive action:

- KHSA, 1.2 Purpose of the settlement, dam (facilities) removal
- KBRA Part VII. Tribal Program 32. Tribal participation in fisheries and other programs

Although other sections of the KBRA are not specifically analyzed, it is assumed that all KBRA actions would contribute to improved fish habitat, water quality, and fish populations.²⁷

Overall, if the KHSA and KBRA were implemented, conditions measured by the indicators; subsistence fisheries, employment and income, and health are projected to improve, as described in the following sections and summarized in table 3.1-1.

Impacts would be positive for all species in the long run (sometime soon after 2021 and possibly not fully for all species until 2025), which is a significant improvement since the Tribe places a high value on the return of conditions closer to the historic, healthy, diverse ecosystem the lower Klamath River and Estuary once were. For this reason, any resurgence in the spring run Chinook in the lower Klamath River reach that has not occurred since about the 1930s is perceived as a significant benefit regardless of whether all fisheries would be at harvestable

²⁷ One of the most significant is described in section 18.2 Restore Upper Klamath Lake Water Storage and reconnect historic lake bed, 18.2.1 Williamson River Delta, 18.2.2 Agency Lake Ranch and Barnes Ranch, 18.2.3, Wood River Wetland Restoration Project.

levels. Clearly the Yurok Tribe still views its people as a fishing culture despite all the obstacles of the past and present, and as such, would like all species available again; a Tribal member described the Yurok viewpoint:

“Subsequent management decisions regarding commercial fisheries, the establishment and abolition of canneries, and the construction of a series of dams in the upper basin have had a cumulative impact on tribal society, economy, culture and traditional lifeways. The Yurok Tribe had no say in these decisions when they occurred, yet have born the disproportionate burden of the ecological and socio-economic impacts of these management decisions over time. During the Reservation Era, the Termination Era and prior to the Self-Determination Era the Tribe has suffered the consequences of these short-sighted management decisions by state and federal managers and agencies with regards to the Klamath River and its resources. These management decisions have resulted in extirpation of numerous runs and species of culturally significant anadromous and riverine species that were relied upon by Yurok and other tribes. Today, Candlefish (once an important subsistence food) no longer exist in the Klamath River. Coho Salmon and Green Sturgeon are on the Endangered Species list. Pacific Lamprey have experienced dramatic decreases and Chinook Salmon have declined to such numbers that only a short commercial fishing season can be practiced for the fall run, and all other runs have diminished to the extent that they are no longer viable for economic harvest.” (Sloan, February 2011, pp. 4-5).

Therefore, it is assumed that more fishing opportunities would lead to the practice of a traditional lifestyle on a greater scale than is currently taking place which would strengthen social ties and economic stability. Additionally, it is important to note that although this analysis focuses mainly on subsistence and commercial fisheries, the fact that the Action Alternative would mean preservation of some species that are projected to possibly become extinct under No Action is critically important to the Tribe.

The variety and plentitude of fish species in the Basin was a large part of the Tribes’ seasonal round and food security that has gradually declined over passing decades, beginning with construction of Copco 1 and 2, and particularly IGD in 1962. Historically, most native lower Klamath River species were used for subsistence, however the Yurok Tribe depended heavily on spring and fall run Chinook, steelhead, eulachon, sturgeon, and lamprey. Table 3.1-3 summarizes impacts by species and additional detail is in attachment 9.

3.1.2.1 KHSA, 1.2 Purpose of the Settlement, Dam (Facilities) Removal

“The River is the lifeline of the Indian people. We depend on the fish, depend on eels, sturgeon. In his lifetime, as an Indian person, going to

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Table 3.1-3.—Summary of action alternative conditions by species

Coho salmon (threatened)	Below IGD, significant negative short term impacts and long term effect range from marginal to beneficial. UB, uncertain whether they would reoccupy the area.
Spring Chinook salmon	Below IGD, minimal short run impacts (about 2020) due to dam removal sediment, positive long run effects (roughly 2021-2060). UB, Spring Chinook could be reoccupy, but not at historic levels.
Fall Chinook salmon	Negative short run impacts (around 2020) due to dam removal sediment, especially in the lower Klamath. Positive long run effects (about 2021-2060). Fall Chinook would reoccupy the UB, possibly substantial increase, particularly helpful in years when production is low.
Pacific lamprey	Below IGD, around 2020-2025/30 decline due to dam removal sediment. Long run (about 2025/30 -2060), population would increase up to 10%. Potential to occupy UB, but uncertain.
Steelhead trout	Below IGD, short term adverse sediment impacts (approximately 2020-2026), and long term increased numbers, possibly substantial. UB, reestablish and increase, possibly substantial.
Green Sturgeon (threatened)	Negative short term effects, beneficial in the long term.
Candlefish or Eulachon (threatened)	Since species is essentially absent in California, there would be minimal impacts, but area would experience minimal short term adverse dam removal sediment impacts, beneficial in the long term.
Longfin Smelt	Short term minimal adverse effects, long term benefit.
Crayfish	Short term minimal adverse effects, long term benefit.
Mussels or Freshwater Clams	Short- to mid-term significant adverse impacts with long term benefits.
Riparian vegetation used for food, ceremonial, and other subsistence purposes	Expected to increase in the long run.

Sources: See attachment 9.

school, come out to our freedom. River is medicine...[a person] can feel lousy...and go out on the River and come back feeling good. Gives strength, knowing this is mine; this is where I live, where I'm born. This is where my roots are.' (Yurok Elder Walt McCovey Jr., 2003).” (Sloan, February 2011, p. 43).

Dam removal would benefit Yurok Tribal subsistence fisheries and ceremonies, potentially improve socioeconomic conditions and health status, and provide greater protection of trust fishing and water rights:

“All the natural resources associated with the Klamath River have cultural significance to Yurok People. The fish, aquatic life, water and numerous riparian plant and riverine species are relied upon for a range of uses: subsistence, economic, ceremonial, medicinal and recreational. All are aspects of Yurok culture and lifeways. Most of these traditional practices are still practiced today, even if by a fewer number of Yurok than in pre-Contact times.” (Sloan, February 2011).

3.1.2.1.1 Subsistence and Commercial Fisheries

“While others live within the riverscape, travel through it, fish in it and hunt in it, only the tribes have an intimate cultural connection to the riverscape going back to time immemorial. Only to the tribes is the riverscape the core of their cultural identity. Maintaining and reinforcing this association is particularly important today, as the tribes work to reestablish their traditional belief systems and ways of life.” (from King, T.F. 2004. *First Salmon*. Prepared for Klamath River Intertribal Fish and Water Commission. (Sloan, February 2011, p. 103).

The trust responsibility of the U.S. Government to protect fishing and water rights, in addition to the overall health, social, economic, and welfare of the Yurok Tribe would be strengthened, as described by the Tribe, DOI trust analysis (June 2011a; June 2011b)(Yurok Tribal description in attachment 3), and as described in the Present Conditions and No Action sections of this document.

In addition to fish passage benefits to the anadromous species, water quality would begin to improve rapidly, and likely to a greater extent than under no action which would benefit species and Tribal fishing and water rights:

“The Yurok Tribe has a reserved right to water in the Klamath River to support the harvest of fishes that the Yurok require to maintain a moderate standard of living. Hydrology and water quality throughout the Klamath River are important for supporting the aquatic ecosystems on which these fishes rely.” (DOI, June 2011b, pp. 3-5).

The Yurok Tribal *Healthy River, Healthy People, Traditional Foods Survey* found that passing a traditional lifestyle on to the next generation depends on the ability to have children participate in traditional activities, which in turn requires a healthy river for sufficient fisheries, aquatic species, and plants:

“Preliminary analyses of survey data indicate that a greater proportion of individuals who participate in traditional activities as children are more likely to continue those activities as adults. A similar pattern exists when those who live within the Ancestral Territory are compared to those who live elsewhere. In 2006, respondents who lived within the Ancestral Territory participated in traditional activities in significantly greater numbers than Tribal Members who lived elsewhere Territory.” (Sloan,

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February 2011, p. 103). [and] ‘I am trying to teach my children how to fish on the River and have been very disappointed with the numbers of fish available. I do believe that a lot of traditional foods are being lost and becoming unavailable. Beach fishing is almost impossible to gather surf fish, clams and others. Gathering herbs for teas is becoming a lost art. There is very little if any big game available for food which could provide a lot for the people. Salmon is really the only thing we have left and it is hurting.’ (Yurok Tribal Member Survey Respondent 2006).” (Sloan, February 2011, p. 71).

Dam removal would begin in 2020, and there would be adverse short term impacts to Klamath River species below Iron Gate Dam resulting from the release of sediment that has accumulated for decades in the four reservoirs that would impair water quality downstream. However, within about five years or less of dam removal, populations of spring- and fall-run Chinook, steelhead, lamprey, sturgeon, trout, and eucelone are expected to improve, in large part because of additional habitat and improved water quality.

In the Yurok *Healthy River, Healthy People, Traditional Foods Survey*, responses showed that if additional subsistence or commercial harvest was available, most indicated that they would engage in subsistence fishing, and those interested in commercial fishing constituted a smaller percentage and were generally only in the ancestral areas as opposed to outside the area:

“Respondents were asked whether they would increase subsistence and/or commercial harvest if fish were more abundant. In all cases, the majority of respondents indicated that they would increase subsistence fishing if the fish resource were more abundant. A significantly smaller number of individuals indicated that they would be interested in commercial harvests given increased resource availability.. Interest in increased subsistence activity transcends geography: the majority of respondents living within and outside the Ancestral Territory indicated that they would increase subsistence activities in response to increased fish abundance...” (Sloan, February 2011, pp. 100-101).

The Yurok Tribe would like to be able to reinstate the First Salmon Ceremony at the proper time of year with Spring-run Chinook and have enough salmon to celebrate its other ceremonies with corresponding religious and cultural views. The low fish stocks and unnatural hydrograph also affect Yurok participation in Karuk and Hoopa ceremonies as well:

“There was a constant struggle to keep the world balanced upon the water. ‘Knowing that this would be so, before they left the *wo’gey* [Creator] instructed certain people in what to do to put the world back in balance when the weight of human violations grew too great for it.’ (Buckley 2002:214). These instructions are the world renewal ceremonies that are held between villages on ceremonial grounds of

Yurok, Karuk and Hupa alike. It is a common culture and a common ceremonial cycle that connect the people along the River in the past, present and future (Buckley 2002). Traditional Yurok Ceremonies included the First Salmon Ceremony, The Cappell Fish Dam Ceremony, the Brush Dance Ceremony, the White Deerskin and Boat Dance Ceremonies, and the Jump Dance Ceremony. Of these Ceremonies the Brush Dance Ceremony, the White Deerskin and Boat Dance Ceremonies, and the Jump Dance Ceremony are still practiced today. There is growing interest within the tribal community to restore all traditional Yurok ceremonies as part of cultural revival and cultural restoration efforts undertaken to heal the spiritual, social and psychological trauma experienced during the past 160 years.” (Sloan, February 2011, p. 44).

Positive subsistence and commercial fishing impacts of dam removal would include:

- Culturally, the First Salmon Ceremony would have the potential of being reinstated at the proper time of the year with the first run of salmon, spring Chinook, would again become available in sufficient numbers to hold the Ceremony, and possibly eventual harvest. The Jump Dance, Boat Dance, White Deerskin Dance and Brush Dance Ceremonies and associated cultural values and social interactions (i.e., community celebrations) that revolve around salmon and community gatherings would be possible, or continue to be possible.
- Potential social and economic gains and cultural revitalization would be supported through potentially harvestable levels of spring-run Chinook and improved harvest levels of fall-run Chinook, steelhead, lamprey, and most other fish species traditionally used.
- The regional barter system could be revitalized for the Yurok Tribe since Tribal members have sufficient salmon supplies for trade/barter for game or other food and goods with other tribes.
- A traditional lifestyle, social values, and methods for achieving economic well-being could continue to be transmitted to successive generations by teaching and practicing concepts of survival through fishing.
- Additional opportunities for elders to teach youth how to catch salmon, lamprey, steelhead, sturgeon, and other species, and be socially responsible by giving away a portion of their catch, usually to elders.

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- Youth could continue to learn to catch salmon, steelhead, lamprey, and other species for elders and others. Tribal identity would improve and there would likely be a greater sense of what it means to be Yurok for youth and other Tribal members that would lead to some degree of improvement in social trauma and overall socioeconomic conditions (depression, substance abuse, and others).
- Water quality would improve more rapidly than under no action which would benefit aquatic species.

Water quality would improve, particularly toxic algae levels, MSAE, which would minimize the incidence of fish disease and mortality, contributing to an increased harvestable stock, easing concerns related to human health fish consumption and contact with water, and no longer interfering with fishing success when algae accumulates on dip nets:

“A healthy river is required for a healthy Tribe, as articulated by multiple respondents in the Yurok Tribe’s 2006 Healthy River, Healthy People Traditional Foods Survey (Yurok Tribe Environmental Program 2006). Water quality issues on the Klamath River, including toxic algal blooms, have severely impacted many Yurok activities on and around the River, with many respondents indicating they stayed away from the River the summers of 2005-2010 out of concerns over public health warnings on recurring annual toxic algal blooms within the watershed...Gathering of basketry plants and medicine plants is done along the shores, requiring one to wade in the river while following the shoreline. Similarly fishing, accessing fishing places, gillnetting, and dipnetting expose fishers to splashing water and frequent immersion. Eeling is done from the shoreline near areas of high, splashing water and rapid currents. In all cases the possibility and frequency of exposure to River water is extremely high. As a result,...Tribal members remain very concerned about the toxic algae and other persistent toxins that may be entering the watershed from upstream sources. Degrading water quality not only has a disproportionate adverse impact on downstream tribes and tribal trust resources, but also on cultural activities. The River plays a central role in Yurok ceremonial life and as such water quality and quantity have a direct and significant impact on Yurok ceremonial and religious practices. (Sloan, February 2011, p. 46).

A more natural hydrograph would decrease or eliminate the stranding of fry and ammocoetes, improve the timing of runs so that they align more closely to traditional seasons and natural timing for Tribal ceremonies, and fish runs would be expected to last longer, resulting in greater subsistence fishing opportunities.

3.1.2.1.2 Employment and Income

“This traditional life and culture continues today, in spite of the economic, social and cultural dislocation that the Tribe has experienced over the past 150 years. Yurok People continue to live, pray, practice, fish, and rely upon the Klamath River. The Yurok culture or Tribal Members’ desire to continue a traditional way of life persist, but the loss of economic viability as a result of dramatically declining fish populations threatens the ability of the Yurok Tribe to continue practicing their traditions.” (Sloan, February 2011, p. 84).

“Historically, Yurok People were able to harvest fish from the Klamath River all year-round. People harvested fall Chinook and Coho salmon during the late summer/fall; steelhead, lamprey and candle fish during the winter and spring Chinook, sturgeon and lamprey during the spring and summer. The decline in these and other river species means that the Yurok People can no longer sustain themselves from the river on a year-round basis. In any community where 80% of the people lack basic food security this loss is ruinous. For the Yurok People who are recovering from more than one hundred years of cultural genocide the loss is catastrophic.” (Sloan, February 2011, p. 95).

Beginning around 2021, dam deconstruction could directly and/or indirectly improve employment and incomes. Increases in fishery populations, particularly salmon and steelhead have the potential to:

- Improve income, poverty, and food insecurity problems since there would be more salmon for subsistence and barter and additional salmon stocks for commercial fishing.
- Enhance the functioning of the existing Tribal redistribution of wealth (fish) to extended family and dependent populations, primarily elders, within the community to better support dependent Tribal members through the existing “Fish for Elders Program.”
- Water quality improvements, together with improved fish populations, have the potential to increase recreation and tourism opportunities (i.e., tribal fishing guides, rafting guides, indirect effects, etc.) and related individual and/or Tribal endeavors already planned by the Yurok Tribal Government (described in the Present Conditions section), which could increase employment and income above no action levels (attachment 5).

3.1.2.1.3 Health

There would be an increase in salmon, particularly spring-run Chinook, which is considered one of the best foods for preventing heart disease (spring-run is higher in fat), and ranks high in the same regard for diabetes and obesity. Pacific

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Lamprey populations are expected to increase, and is considered to be particularly nutritious for elders (DOI, June 2011; Lewis, 2009). In sum, all species are projected to remain stable or increase in the long run.

Using the Karuk Tribe as an example of Yurok conditions overall, in Norgaard's report (2005), Karuk Tribal members stated that diabetes and heart disease were relatively new and coincided with the shift from a traditional to a Western diet. For example, 66 percent of Karuk members surveyed reported that diabetes appeared in their families for the first time around 1970, which is when salmon runs declined significantly in the lower Klamath River reach. More specifically, Norgaard found that the correlation was strongest with the disappearance of Spring Chinook salmon:

“Spring Chinook was the most important source of salmon in the Karuk diet in terms of both volume and nutritional quality...self-reported information about when consumption of Spring Chinook salmon stopped or became an insignificant food source and when diabetes first appeared in Karuk families shows almost a perfect match, with the rise in diabetes following the loss of Spring Chinook in the diet.” (Norgaard, 2005, p. 39-53).

Yurok Tribal members appear to suffer disproportionately high rates of diabetes, and positive effects of increased salmon, other fish species, and lamprey populations available for consumption would be reduced rates of some of the highest incidences of disease. Potential improvements would likely be greatest for the elderly population since, proportionately, they tend to be more consistently supplied with salmon and lamprey when available and have higher rates of disease compare to the rest of the Tribal population. Potential health improvements could include:

- Less reliance on USDA commodity foods and other processed foods.
- Lower diabetes rates and associated costs
- Reduced heart disease rates and associated costs.
- Lower disability rates especially associated with diabetes, but also those that arise from heart disease and all associated costs.
- Less interrelated compounding effects between these diseases and associated costs.
- Reduced in mortality rates, particularly for elders and associated social and cultural costs and a lower likelihood for premature disabilities and death to limit the process of elders passing along Tribal culture and social structure to younger generations.

- Reduced occurrence of other illnesses, including depression, Alzheimers, and osteoporosis (Norgaard, 2005, p. 50-51).
- Improved health conditions, reinforcing "...the federal trust responsibility to uphold treaty responsibilities for health care to Indians..." (IHS Fact Sheets, accessed September 2010).
- Fewer health problems that result from food-insecurity and associated poverty-related stress.

Klamath River water quality improvements are expected to ease health concerns for ceremonial uses, fishing, recreation, and many other uses:

"The Klamath River has always been the central feature of Yurok identity, cultural, spiritual and economic life. Integral to that relationship is water quality. Traditional Yurok ceremonial activities require high water quality due to ritual practices requiring immersion and even ingestion of Klamath River water. A healthy river is required for a healthy Tribe, as articulated by multiple respondents in the Yurok Tribe's 2006 Healthy River, Healthy People Traditional Foods Survey (Yurok Tribe Environmental Program 2006). Water quality issues on the Klamath River, including toxic algal blooms, have severely impacted many Yurok activities on and around the River, with many respondents indicating they stayed away from the River the summers of 2005-2010 out of concerns over public health warnings on recurring annual toxic algal blooms within the watershed. Water from the River is central to many traditional Yurok activities and ceremonies. Gathering of basketry plants and medicine plants is done along the shores, requiring one to wade in the river while following the shoreline. Similarly fishing, accessing fishing places, gillnetting, and dipnetting expose fishers to splashing water and frequent immersion. Eeling is done from the shoreline near areas of high, splashing water and rapid currents. In all cases the possibility and frequency of exposure to River water is extremely high. As a result, Native American people who utilize the River for harvesting or gathering resources have a higher risk of exposure to any toxins in the water than many other users of the same watershed. Tribal members remain very concerned about the toxic algae and other persistent toxins that may be entering the watershed from upstream sources. Degrading water quality not only has a disproportionate adverse impact on downstream tribes and tribal trust resources, but also on cultural activities. The River plays a central role in Yurok ceremonial life and as such water quality and quantity have a direct and significant impact on Yurok ceremonial and religious practices." (Sloan, February 2011, p. 46).

Reduced levels of toxic algae (*microcystis aeruginosa*) would minimize human health concerns about skin contact with the water, particularly for children and pets which are at a greater risk (attachment 6b):

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“Dam removal is expected to result in long-term improvements in water quality, notably decreased prevalence of *microcystin* (see Section 3.2, Water Quality). As discussed in Section 3.2, Water Quality and 3.20.3.2 above, *microcystin* has been associated with public health risks for recreational bathing waters and health warnings issued in 2005 and 2008 by the USEPA and other agencies warned recreation visitors to use caution due to potential health effects. In addition, about two-thirds of recreation visitors to the subject reservoirs had negative perceptions of water quality, stating concerns of bad odors and algae blooms, which restrict areas available for fishing, swimming and wading. These adverse effects related to water quality negatively influenced the quality of the recreational experience for visitors and also resulted in safety risks to the recreational visitors. Because existing conditions for water-contact-based recreational activities are considered adverse due to water quality, improved water quality conditions would result in long-term beneficial effects.” (DOI, September 2011, p 3.20-40).

A recreation analysis found that riparian vegetation would benefit which, overall, would be expected to benefit Tribal use and consumption of traditional plant foods:

“Dam removal could result in changes to riparian vegetation compared with conditions present when the California Klamath River component was designated as National WSRs. Removal of the Four Facilities would result in a more natural riparian vegetative community immediately downstream of Iron Gate Dam due to sediment deposition and scour and gravel transport. Improved riparian vegetation would increase the presence and scenic variety of the vegetation within the WSR. This would likely increase overall scenic riparian vegetation aspects of scenic quality over conditions present at the California WSR’s 1981 date of designation and result in long-term beneficial effects.” (DOI, September 2011, p. 3.20-50).

The Yurok explain cultural and religious uses of the water that illustrates why water quality and health of the river is critical for cultural and consumptive uses (attachment 6a):

“Many of the items made and used in Yurok Ceremonies come from the River environment. Baskets made of plant materials collected at the water’s edge are used to hold food and ceremonial medicine. Acorns, cooked in the baskets, are converted to a nourishing mush that is rendered by placing several hot rocks (cooking rocks), gathered off of specific river bars, into the acorn flour and water that is placed into the baskets. Regalia that adorn the ceremonialists is constructed out of various plant and animal products that the riverine environment provides.

Ceremonial bathing in the River and its tributary creeks is a requirement for some of the participants. Ceremonialists also prepare themselves by listening to the River's sounds." (Sloan, February 2011, p. 44).

3.1.2.2 KBRA Part VII. Tribal Program 32. Tribal Participation in Fisheries and Other Programs

3.1.2.2.1 Subsistence and Commercial Fisheries

Program funds for fishery management and conservation roles would be distributed to the Tribe between about 2012 and 2021, enhancing Tribal participation, fisheries, identity, social conditions, and self determination. Through funded Tribal participation, Tribal fisheries would improve and contribute to the benefits described under the subsistence and commercial fisheries portions of the KHSA and KBRA sections in this Action Alternative section. Funding and participation provided by the KBRA Tribal Program would strengthen the Tribes' existing fish management efforts and support the overall goals of Tribal self-determination and self governance.²⁸

3.1.2.2.2 Employment and Income

The KBRA Program funds for fishery management and conservation roles and economic development would occur soon after 2012. Tribal funding and participation would directly and possibly indirectly improve Tribal employment and incomes, and habitat improvements would increase anadromous and non-anadromous fish (and mussel) populations; together these would:

- Potentially improve income, poverty, and food insecurity problems since there would likely be more direct Tribal fisheries/natural resources employment that would result in more anadromous and resident fish for subsistence in the lower Klamath River for what appears to be a growing population.
- Support Yurok Tribal economic development by providing funding for an economic development study/plan that would contribute to a strengthened tribal economy that may improve employment, income, and poverty levels.

²⁸ President Nixon adopted a policy of 'tribal self-determination,' followed by Congress' enactment of the Indian Self-Determination and Education Assistance Act of 1975 which enabled tribes to assume administration of Federal programs for the benefit of their members through contracts. The Tribal Self-Governance Act of 1994 extended the concept to many other Federal programs with the option of autonomous program operations, and the Karuk Tribe is a Self Governance Tribe, operating a number of programs.

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- Improve the functioning of the existing Tribal redistribution of wealth (fish) system (existing Yurok Tribe “Fish for Elders Program”) to extended family and dependent populations within the community to better support dependent Tribal members.
- Provide support for existing and potential plans for recreation and tourism business opportunities (discussed under Present Conditions, Economics section) and related individual and/or tribal endeavors that may increase employment and income.

3.1.2.2.3 Health

Participation in fisheries management and conservation activities would enhance Tribal participation for its Federally-recognized fisheries, fisheries production, commercial fishery, and subsistence fishing, cultural identity, and social conditions that could encourage more fish consumption and less reliance on commodity food. Health benefits could include those described under the KHSA in this Action Alternative section.

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Attachments

- 1 The Yurok Historical Timeline
- 2 Yurok Treaties (unratified) and Executive Orders. Klamath River Reservation and Hoopa Valley Reservation Depictions
- 3 Yurok Tribe: Indian Trust Rights, Responsibilities, and Resources
- 4a KBRA Part I, General Provisions, 1.2. General Recitals, Section 1.2.3. Sustainable Tribal Communities
- 4b KBRA Part VII. Tribal Program
- 4c KBRA Part III Fisheries Program, Section 9 beginning with 9.2. Program Elements, Section 10, Fisheries Restoration Plan, and Section 11 Fisheries
- 5 Yurok Tribe: Socioeconomic Analysis, Priorities, Needs, and Issues
- 6a Yurok Tribe: Water Quality Problems
- 6b Health Advisory
- 7a Bureau of the Census Maps
- 7b Bureau of the Census 5-Year Average 2005–2009 Unemployment, Income, and Poverty Estimates for the Yurok Tribe Area
- 7c Bureau of the Census Definitions
- 7d Bureau of Indian Affairs Labor Force Report Definitions
- 8a Indian Health Care Improvement Act Made Permanent by Health Care Reform Legislation
- 8b 90 Stat. 1400 1976
- 9 Yurok Tribe Subsistence and Commercial Species Impacts

Attachment 1

The Yurok Historical Timeline

Attachment 1

The Yurok Tribe Historical Timeline

Era or Event	Year	Description
<i>Pre-European Contact</i>		Elaborate economies with barter and extensive trade networks among regional tribes and ceremonies that centered on the Klamath River and all that depended on it as central. The Yurok Tribe depended heavily on salmon and other anadromous species and resident fish year round in and around the lower Klamath River, estuary, and a small segment of the coast.
<i>Missionaries</i>	1500s-1846	Spanish missionaries explore area on and off and later used Indian slave labor to build missions and begin claiming lands.
<i>Reservations Established</i>	1812-1870	Treaties between Indians and England were over when England lost the war of 1812 and treaties were made between the U.S. and tribes, increasingly used to accommodate rapid settlement.
<i>Explorers</i>	1828	Jedediah Smith came to Yurok territory.
<i>Trust Relationship Established</i>	1831	<i>Cherokee Nation v. Georgia</i> case established the guardian-ward, or trust relationship between the U.S. and Indian tribes, or “domestic dependent nations.”
<i>Gold Rush</i>	1849	Miners and prospectors began to arrive in the Klamath Basin in search of gold.
<i>Reservation Period - Treaties</i>	1851	Klamath River Peace Treaty, California Treaty Q, was signed by some Yurok members at Camp Klamath. The treaty was never ratified.
<i>Reservation Period - EO Reservation Period - EO</i>	1855	Klamath River (military) Reservation (not to be confused with the Klamath Reservation in Oregon) created by executive order, intended for Yurok and other area tribes.
	1857	Fort Terwer was established at Terwer Creek to keep peace between the Indians and the growing number of miners and traders trying to move onto Reservation.
	1864	Hoopa Valley Reservation created by executive order, intended for Hoopa, Karuk, and some other area tribes.
<i>First Salmon Ceremony Ceased</i>	1860s	The last First Salmon Ceremony happened at Wehl-kwew. The ceremony was conducted every spring at the mouth of the Klamath River.
<i>Missionaries</i>	1865	Reservation schools were established under Christian organizations in 1865.
<i>Reservation Period - EO First Commercial Fishery</i>	1876	Executive order makes Hoopa Valley Reservation borders official.
		Despite Yurok protests, the first non-Indian commercial fishery is opened at the mouth of the Klamath.
<i>Assimilation - Boarding Schools</i>	1878	Off-reservation boarding schools were established to assimilate and educate Indian children away from their homelands and families.
	1883	The Code of Indian Offenses, which the courts implemented, outlawed many traditional Indian ceremonies and practices.
<i>Four Military Reservations</i>	1884	Congress authorizes President to establish four Indian Reservations, one of which was the Hoopa Valley Reservation where many Yurok and other local Indians were sent to live.
<i>Reservation Period -EO</i>	1891	Executive order connects Klamath Reservation and Hoopa Valley Reservation to create a larger Hoopa Valley Reservation.

Era or Event	Year	Description
<i>Allotments,- Assimilation, and Land Loss</i>	1892	Congress enacted legislation allotting lands of the former Klamath River Military Reservation to Yuroks. Under the Dawes Act, Congress allowed for 'surplus' land on the Reservation to be sold to the general public.
	1893	Indian allotments were granted to the Tribe on the Klamath River Military Reservation for three traditional villages (Rek-woy, Hop-ew, and Saa) totaling 70 acres.
	1887-1934	Dawes Act (25 U.S.C. 31) et seq. divided reservations into parcels to encourage individual Indians to become farmers, and leftover land was given to non-Indians. Indian-held lands declined from 138 million acres to 48 million.
<i>Assimilation- Boarding Schools</i>	1900s	Forced boarding school attendance ended and day schools on reservations begin.
<i>Allotments,- Assimilation, and Land Loss</i>	1910	Many Indians deemed 'incompetent' and 307 allotment parcels were sold.
<i>White Deerskin Dance ceased until 2000</i>	1912	The land White Deerskin Dance occurred at Weych-pues before it was revitalized in 2000.
<i>Allotments,- Assimilation, and Land Loss</i>	1917	Commissioner of Indian Affairs 'Policy of Greater Liberalism' took many allotments out of trust status, hence subject to taxation by Humboldt and Del Norte Counties; soon the allottees began losing allotments for non-payment of back taxes.
<i>Development, Copco 1</i>	1910	Copco 1 construction began, blocking salmon and other anadromous species' migration to the Upper Klamath Basin.
<i>Disease</i>	1912	Flu epidemic.
<i>Development, Copco 2</i>	1925	Copco 2 Dam constructed without fish ladders for salmon passage up the Klamath River to Klamath Tribal areas.
<i>Allotments,- Assimilation, and Land Loss</i>		Another large group of allotments were taken out of trust status.
<i>Disease</i>	1920s-30s	TB epidemic.
<i>Allotments,- Assimilation, and Land Loss</i>	1931	With creation of the Redwood National Forest, the USFS targeted reservation lands, including 780 acres of the Klamath River Military Reserve and 2,110 acres of Indian allotments.
<i>Trust Fishing Rights</i>	1934	Klamath River Indians were banned from commercial fishing and gill-netting. Despite the ban, Yurok people continued to fish, but did so under the threat of being arrested and jailed.
<i>Self Governance Period</i>	1934-1953	Indian Reorganization Act (IRA) ended allotments and encouraged tribal self government through tribal constitutions and protected/expanded some tribal land bases.
<i>Jump Dance ceased until 1980s</i>	1939	Last Jump Dance held in Pek-won before it was revitalized in the 1980s.
<i>Assimilation</i>	1940s-50s	BIA relocation programs meant a sudden loss of some tribal members to cities.
<i>WWII</i>	1940s	Relatively large proportion of men away at war made continuing ceremonies difficult during this time period.
<i>Allotments,- Assimilation, and Land Loss</i>	1953	Many Indians in the region were encouraged to sell their allotments through questionable and forced fee patents, resulting in at least 60% of the lands taken out of trust status and sold to logging companies which were booming after WWII.

Era or Event	Year	Description
<i>Cash Settlement – Trust Responsibility</i>	1940s-1970s	From 1946 to 1978, Congress moved to resolve remaining 102 docket cases transferred to the U.S. Claims Court: Indian claims for compensation for lands ceded under treaties. The Karuk Tribe was given funds for 1851 ceded lands in the ungratified (ineffective) treaties.
<i>Termination and Relocation Programs</i>	1954-1966	Congress passed statutes terminating the Federal relationship with 109 Indian tribes and over 11,400 individuals lost “recognized” Indian status. About 1.5 million acres of Indian land were taken out of trust. At about the same time, relocation programs encouraged Indians to leave reservations for cities.
<i>Development, Trinity River Dam</i>	1955	The Trinity River Act allowed the construction of the Trinity River Dam. The Trinity is the Klamath River’s largest tributary.
<i>Development, J.C. Boyle</i>	1958	JC Boyle hydroelectric dam constructed, blocking salmon passage up the Klamath River to Klamath Tribal areas.
<i>Trust Hoopa Timber</i>		Revenues from unallotted trust timberlands in the Hoopa Square were dispersed in per capita payments to Hoopa Tribal members only (later determined to be erroneous in the Jesse Short case).
<i>Development, Iron Gate Dam</i>	1962	Iron Gate Dam constructed without fish ladders for salmon passage up the Klamath River to Klamath Tribal areas.
<i>Trust (timber)</i> Jessie Short v. U.S.	1963	<i>Jessie Short v. U.S.</i> filed March 27, 1963 on behalf of 16 Yurok Indians asserted that Yurok Tribal members should share proceeds from the selling of Hoopa Reservation timber.
<i>Severe Flood</i>	1964	Worst flood in recorded history wiping out the town of Klamath.
<i>Trust (fishing rights)</i> Elser v. Gill Net Number One	1966	<i>Elser v. Gill Net Number One</i> held that Yurok Indians (Grover Reed and Dewey George) were enrolled members of a federally recognized tribe and had recognized tribal rights, thereby meeting the tribal roll requirements which exempted them from provisions of the Fish and Game Code and the State of California had no right to regulate Yurok gill net fishing on the Reservation.
<i>Trust Responsibility: health care</i>	1976	The Indian Health Care Improvement Act, 25 U.S.C. 1601, was passed “reflecting the Federal Government’s trust responsibility to provide economic and social services necessary to ensure a standard of living for Indians comparable to non-Indian society.”
<i>Indian Self Determination Act</i>	1975	The Act enabled tribes to operate federally run tribal programs. Overall, widespread implementation was relatively slow, with most activity beginning in the 1990s.
<i>Cultural Resources</i>	1970	The Northwest Indian Cemetery Protective Association formed to protect burial grounds and sacred sites and Yurok leadership worked toward protecting cultural and ceremonial sites in Yurok Ancestral Territory.
Cultural Revitalization	1970s	

Era or Event	Year	Description
<i>Trust (timber)</i> Jessie Short v. U.S. (Short I)	1973	<i>Jessie Short et al. v. U.S.</i> concluded that the Reservation was not a separate entity, but actually an extension of the Hoopa Valley Reservation and therefore Yurok Tribal Members were entitled to equal rights to income from timber sales on allotted trust lands.
<i>Trust (fishing rights)</i> Mattz v. Arnett		<i>Mattz v. Arnett</i> upheld that the Reservation was still considered “Indian Country” therefore the State of California had no jurisdiction.
<i>Trust (fishing rights)</i> Arnett v. 5 Gill Nets	1976	The court ruled that the State of California lacked jurisdiction to regulate Indian fishing on the Reservation and that Yurok Indians had a right to commercial fishing practices which affirmed federally protected fishing rights for Yurok commercial fishers.
<i>Beginning of ‘fish wars’</i>	1978	The USFWS implemented a moratorium on commercial gill net fishing on the Klamath River, starting what is known as the ‘fish wars’ between the Yurok and Federal Government.
<i>Jump Dance revitalized</i>	1984	The Jump Dance was revitalized in Pek-won. The dance is held every other year.
Hoopa-Yurok Settlement Act	1988	The Hoopa-Yurok Settlement Act partitioned the former joint reservation and recognized and established traditional Yurok Indian homelands as the Yurok Reservation.
Federal Recognition	1993	The Yurok Tribe was formally organized and adopted a Constitution under its inherent powers of self-governance.
Self Governance - fisheries	1994	The Yurok Tribe assumed responsibility over the management of its fisheries from the BIA and USFWS.
Trinity Program	2000	Trinity ROD signed providing increased Trinity River flow, channel rehabilitation, sediment management, and watershed protection activities to address degraded fisheries habitat that resulted from the Central Valley Project’s (CVP) Trinity River Division in the early 1960s.
White Deerskin Dance revitalized		The White Deerskin Dance is revitalized in Weych-pues. The dance is held every other year.
Development, Fish Kill	2002	Over 60,000 migrating adult salmon died in September on their way up the Klamath River to spawn. Diseases caused by low flows and high temperatures were responsible which cause unprecedented devastation to the Yurok fishery.
Concluded Hoopa-Yurok Settlement Act	2007	The Yurok Tribe concluded its portion of the Hoopa-Yurok Settlement Act and received its portion of the funds.
KHSA and KBRA	2010	Tribe signs KHSA and KBRA.
Self Governance and Self Determination	Beyond 2010	The Yurok Tribe believes that the KHSA and KBRA would improve the health of the Klamath River, especially fish availability and water quality that would in turn help improve the social, cultural, economic, and physical health of Karuk people. Tribal emphasis has been on improving social and economic conditions, in part through the continued strengthening of Yurok cultural practices. The Tribe is planning a fish processing facility, a health clinic, and a Tribal Park that would include eco-tourism.

Timeline adapted from *Yurok Tribe: Pue-lik-lo, Pey-cheek-lo, Ner-er-ner*, 2007. 190 Klamath Blvd., Klamath, California 95548.

Attachment 2

Yurok Treaties (unratified) and Executive Orders. Klamath River
Reservation and Hoopa Valley Reservation Depictions

PART IV.—TREATY WITH THE POHLIK OR LOWER KLAMATH, ETC., 1851. 1117

In testimony whereof, the parties have hereunto signed their names and affixed their seals this eighteenth day of September, in the year of our Lord one thousand eight hundred and fifty-one.

O. M. WOZENCRAFT,
United States Indian Agent.

For and in behalf of the Cu-lu:	MI-ON-QUISH, his x mark. [SEAL.]
For and in behalf of the Yas-si:	SAN-TEA-GO, his x mark. [SEAL.]
For and in behalf of the Loc-lum-ne:	POL-TUCK, his x mark. [SEAL.]
For and in behalf of the Wo-pum-nes:	HIN-COY-E, his x mark. [SEAL.]
	MAT-TAS, his x mark. [SEAL.]
	HOL-LOH, his x mark. [SEAL.]
	BOY-ER, his x mark. [SEAL.]

Signed, sealed and delivered, after being fully explained, in presence of—
FLAVEL BELCHER.
J. B. MCKINNIE.
WILLIAM RHOAD.

TREATY WITH THE POHLIK OR LOWER KLAMATH, ETC., 1851.

TREATY MADE AND CONCLUDED AT CAMP KLAMATH, AT THE JUNCTION OF KLAMATH AND TRINITY RIVERS, STATE OF CALIFORNIA, OCTOBER 6, 1851, BETWEEN REDICK MCKEE, INDIAN AGENT ON THE PART OF THE UNITED STATES, AND THE CHIEFS, CAPTAINS AND HEAD MEN OF THE POHLIK OR LOWER KLAMATH, &C., TRIBES OF INDIANS.

A treaty of peace and friendship made and concluded at Camp Klamath, at ^{October 6, 1851.} the junction of the Klamath and Trinity rivers, between Redick ^{Unratified} McKee, one of the Indian agents specially appointed to make treaties with the various Indian tribes in California, on the part of the United States, and the chiefs, captains, and head men of the tribes or bands of Indians now in council at this camp, representing the Poh-lik or lower Klamath, the Peh-tsick or upper Klamath, and the Hoo-pah or Trinity river Indians; containing also stipulations preliminary to future measures to be recommended for adoption, on the part of the United States.

ARTICLE 1. The said tribes or bands acknowledge themselves, jointly and severally under the exclusive jurisdiction, authority and protection of the United States; and hereby bind themselves to refrain hereafter from the commission of all acts of hostility or aggression towards the government or citizens thereof, and to live on terms of peace and friendship among themselves, and with all other Indian tribes which are now or may hereafter come under the protection of the United States.

ART. 2. Lest the peace and friendship established between the United States and the said tribes should be interrupted by the misconduct of individuals, it is expressly agreed that, for injuries received on either side, no private revenge or retaliation shall take place or be attempted; but instead thereof, complaints shall be made by the party aggrieved to the other, through the Indian agent of the United States in their district, whose duty it shall be to investigate, and, if practicable, adjust the difficulty; or, in case of acts of violence being committed upon the person or property of a citizen of the United States by an Indian or Indians belonging to or harbored by either of said tribes or bands, the party or parties charged with the commission of the crime shall be promptly delivered up when demanded, to the civil authorities of the State of California for trial; and in case the crime has been committed by a citizen or citizens of the United States upon the person or property of an Indian or Indians of either of said tribes, the agent shall take all proper measures to bring the offender or offenders to trial in the same way.

ART. 3. The said tribes or bands hereby jointly and severally relinquish, cede, and forever quit claim to the United States, all their right, title, claim or interest of any kind which they or either of them have to lands or soil in California.

ART. 4. To promote the settlement and improvement of said tribes or bands, it is hereby stipulated and agreed, on the part of the United States, that the following tract or district of land shall be appropriated and set apart as an Indian reservation, and the use and possession thereof forever guaranteed to the said tribes, their successors, and to such other tribes as the United States may hereafter remove from other parts of the valleys of the Trinity or Klamath rivers, or the country adjacent, and settle thereupon, to wit: commencing at the mouth of a stream called John's creek, emptying into Trinity river on the north side thereof, about fourteen miles above this camp; thence running up the middle of the same with its windings, to a distance of five miles; thence north to the summit of the dividing ridge between the waters of the Trinity and Klamath rivers; thence northwestwardly in a straight line to a point on said Klamath river opposite the lower end of what is now known as "Red Cap's" bar; thence due west to the summit of the first ridge lying beyond the Klamath river; thence southwestwardly along the summit of said ridge to a point due north of the mouth of Pine creek; thence south to the mouth of Sand creek; thence up Pine creek with its windings, to a point due south of the place of beginning; and thence north to said place of beginning. The said reservation including, by estimation, a tract twenty miles in length by twelve miles in width, and containing in all six or seven square miles of farming land. It is, however, understood and agreed that the United States reserves the right of way over said lands, and of using for farming purposes any quantity thereof not exceeding one thousand acres; also the right to establish such military posts, erect such buildings, and make such improvements for the accommodation of their agent and other officers or servants as the President may direct; also that said tribes or bands shall never sell or alienate their right or claim to any part thereof, except to the United States, nor shall they ever lease to or permit white men to settle, work or trade upon any part thereof without the written permission of the United States Indian agent for the district.

ART. 5. It is further stipulated and agreed that the said tribes or bands shall, within three years from the date hereof, or sooner, if thereto required by the United States, remove to and settle upon said reservation; and that whenever said removal and settlement shall be ordered by the United States or made by said tribes, such farmers, mechanics, and school-teachers to instruct them in the language, arts, and agriculture of the whites as the President may deem expedient and proper, shall be assigned, provided for, and settled among them, so as to place the Indians on said reservation in a situation as favorable for their improvement (being in like manner supplied with facilities for farming, stock-raising, &c.,) as by the treaty of Lu-pi-yu-ma on the 20th day of August, 1851, is stipulated to be assigned to and provided for the *Clear Lake Indians*. It is understood, however, that if upon examination by the Indian agent it is found that any of the articles or supplies provided in said treaty for the *Clear Lake Indians* shall be unnecessary for or unsuited to the Indians on the Trinity and Klamath, the President may in his discretion withhold the same, and invest the value thereof in other and more suitable goods. And it is further expressly agreed and understood that if either of said tribes or bands, or other Indians harbored by them shall be guilty of theft, robbery or murder, either upon the persons and property of Indians or whites, the United States may exclude such tribe or band from all the benefits of this treaty.

ART. 6. As early as convenient after the ratification of this treaty by the President and Senate, the United States will deliver to the said Klamath and Trinity Indians, through their agent, during each of the years 1852 and 1853, viz: five hundred pairs two and a half point Mackinaw blankets, five hundred pairs strong cotton pantaloons, five hundred cotton (hickory) shirts, five hundred red flannel shirts, five hundred strong cotton or linsey gowns, three thousand yards of calico, three thousand yards of four-fourths brown sheetings, thirty pounds Scotch thread, five thousand needles, six dozen pairs scissors, two gross thimbles, ten pounds pins, ten dozen nine-inch flat files, thirty-five dozen large size butcher knives, ten mattocks, one hundred garden or corn hoes, two hundred chopping axes, handled, common size, two hundred chopping axes, handled, small size; one hundred sheetiron camp kettles, large size; one hundred sheet-iron camp kettles, second size.

It is understood, however, that the agent shall use a sound discretion as to the time when, and the tribes or persons to whom the said goods shall be distributed, having reference to their peaceful disposition and good conduct.

ART. 7. In consideration of the premises, the United States, in addition to the numerous presents of beef, bread, sugar, blankets, shirts, &c., &c., made to said tribes at this camp, will, within sixty days from the date hereof, furnish them free of charge at the ferry of C. W. Durkee, in Klamath river, to enable them to rebuild the houses recently destroyed by the whites, with four dozen chopping axes, handled, ten sacks of hard bread, and four bullocks, sixteen pairs heavy blankets, to be distributed among them by said Durkee, according to their respective losses.

ART. 8. These articles to be binding upon the contracting parties when ratified by the President and Senate of the United States.

In testimony whereof the parties have hereunto signed their names and affixed their seals this sixth day of October, anno Domini 1851.

[SEAL.]

REDICK MCKEE,

United States Indian Agent for California.

For and in behalf of the Wetch-peck tribe, living at mouth of Trinity:

WUCK-UG-GRA, his x mark. [SEAL.]

WA-PE-SHAW, his x mark. [SEAL.]

SA-SA-MICH, his x mark. [SEAL.]

EN-QUA or AMOS, his x mark. [SEAL.]

For and in behalf of Wuh-si tribe, living three miles below mouth of Trinity river:

MO-RU-KUS, his x mark. [SEAL.]

For and in behalf of the Cap-pel tribe:

MAH-ON, his x mark. [SEAL.]

For and in behalf of the Mor-ri-ahs:

MAH-ON, his x mark. [SEAL.]

WUS-SUR, his x mark. [SEAL.]

UP-PER-GASH, his x mark. [SEAL.]

For and in behalf of the Ser-a-goines:

UP-LA-GO-PUS, his x mark. [SEAL.]

MOO-ROO-KUS, his x mark. [SEAL.]

SA-ET-MA-GEHL, his x mark. [SEAL.]

For and in behalf of the Pak-wan tribe:

CAP-PEL-LA-WAH, his x mark. [SEAL.]

For and in behalf of the Ut-cha-pah tribe, living near the mouth of Bluff creek:

E-NE-NUCK, his x mark. [SEAL.]

MOW-WEIGHT, his x mark. [SEAL.]

For and in behalf of the Up-pa-goines, living near "Red Cap's" bar, on Klamath river:

KEE-CHAP, his x mark. [SEAL.]

RED CAP or MIK-KU-REE his x mark. [SEAL.]

For and in behalf of the Sa-von-ra tribe:

SA-VON-RA, his x mark. [SEAL.]

UP-PA-GRAH, his x mark. [SEAL.]

EX-FIN-E-PAH, his x mark. [SEAL.]

For and in behalf of Cham-ma-ko-nee tribe:

KA-TOP-KO-RISH, his x mark. [SEAL.]

For and in behalf of the Coc-ko-man tribe:

PA-NA-MO-NEE, his x mark. [SEAL.]

For and in behalf of the Chee-nah tribe, living ten miles below mouth of Salmon river:

AK-KA-REE-TA, his x mark. [SEAL.]

For and in behalf of the Hoo-pahs or Trinity river Indians, residing in twelve rancherias or villages:

Principal chief, AH-ROOK-KOS, his x mark.	[SEAL.]
TE-NAS-TE-AH or JOHN, his x mark.	[SEAL.]
MET-POOKA-TA-MAH, his x mark.	[SEAL.]
NIC-A-WA-EN-NA, his x mark.	[SEAL.]
WASH-TEN, his x mark.	[SEAL.]

Signed, sealed and delivered, after being duly explained, in presence of—

JOHN MCKEE, <i>Secretary.</i>	
C. W. DURKEE, } <i>Interpreters.</i>	
GEORGE GIBBS, }	
H. W. WESSELLS, Brevet Major, U. S. A., commanding escort	
WALTER VAN DYKE, }	
GEO. W. ELLSWORTH, }	} <i>Interpreters.</i>
MORRIS S. THOMPSON, }	
WALTER McDONALD, }	

A TREATY SUPPLEMENTARY TO THE FOREGOING TREATY

The undersigned chiefs, captains and head men of the Si-wah, Op-pe-o, He-ko-neck and In-neck tribes or bands of Indians, residing at and near to the mouth of the Cor-a-tem or Salmon river, having had the terms and stipulations of the foregoing treaty, concluded at Durkee's ferry on the 6th instant, fully explained to them by Redick McKee, Indian agent of the United States, having expressed an earnest desire to become parties to the said treaty in all its articles and stipulations, it is therefore agreed by and between the said agent and the said chiefs, &c., that the said bands be and hereby are admitted as parties to the same, and to the advantages thereof, and become bound by the stipulations therein contained as fully in all respects as if they had been parties thereto originally.

In testimony whereof the parties have hereunto signed their names and affixed their seals at Camp Cor-a-tem, near mouth of Salmon river, this twelfth day of October, anno Domini, 1851.

[SEAL.]

REDICK MCKEE,
United States Indian Agent

For and in behalf of the Si-wah band:

ESSE-PISH-I-A, his x mark.	[SEAL.]
RES-SOW, his x mark.	[SEAL.]
CHEE-FEE-CHA, his x mark.	[SEAL.]
PI-RA-TEEM, his x mark.	[SEAL.]

For and in behalf of the Op-pe-o band:

CA-POR-U-PUCK, his x mark.	[SEAL.]
PEEK-NEETS, his x mark.	[SEAL.]

For and in behalf of the He-ko-neck band:

YAH-FEE-PAH, his x mark.	
HON-A-PUCK-IF-MA, his x mark.	[SEAL.]

For and in behalf of the In-neck band:

SISH-KAH, his x mark.	[SEAL.]
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Signed, sealed and delivered after the foregoing treaty of 6th instant, and this addenda had been fully explained in presence of—

JOHN MCKEE, <i>Secretary.</i>
C. W. DURKEE, <i>Interpreter</i>
GEORGE GIBBS,
H. W. WESSELLS, <i>Brevet Major U. S. A., commanding escort</i>
JOHN S. GRIFFIN, <i>Assistant Surgeon U. S. A.</i>
WALTER McDONALD.

Klamath River Reserve.

DEPARTMENT OF THE INTERIOR,
Office of Indian Affairs, November 10, 1855.

SIR: Referring to your communication of the 8th of August last to the Acting Commissioner of Indian Affairs, advising him of the approval by the President of the United States of the recommendation of the Department that it was expedient to expend the money appropriated on the 3rd of March last for removing the Indians in California to two additional military reservations, I have the honor now to make the following report:

On the 15th of August last the Acting Commissioner inclosed a copy of your letter of the 8th of that month to the superintendent of Indian affairs in California, with directions to select these reservations from such "tracts of land adapted as to soil, climate, water-privileges, and timber, to the comfortable and permanent accommodation of the Indians, which tracts should be unincumbered by old Spanish grants or claims of recent white settlers," limiting the dimensions of the reserves to within 25,000 acres each, and to report to this office a description of their geographical position in relation to streams, mountain ranges, and county lines, etc., and indicating the same upon a map. A copy of that letter is herewith, marked A. By the last mail from California, I have received from Superintendent Thomas I. Henley a report upon this subject, dated the 4th ultimo (a copy of which is herewith, marked B), by which it appears he recommends as one of the reservations aforesaid "a strip of territory one mile in width on each side of the (Klamath) river, for a distance of 20 miles." The superintendent remarks upon the character of the country selected, and incloses an extract from a report (also herewith, marked C) to him of the 19th of June last, by Mr. S. G. Whipple, which contains in some detail a description of the country selected, habits and usages of the Indians, etc., but no map is furnished.

It will be observed from this report of the superintendent that he has deemed it important to continue the employ of an agent and to prepare for raising a crop in order to assure the Indians of the good faith of the Government and to preserve the peace of the country. Considering the great distance of this reserve from the seat of Government and the length of time it necessarily requires to communicate with an agency at the Klamath, it is desirable that some definite action be taken, if practicable, before the sailing of the next steamer, to leave New York on the 20th instant.

I, therefore, beg leave to ask your attention to the subject, and if you shall be of the opinion from the representations made by the superintendent in California and Mr. Whipple that the selection at the mouth of the Klamath River is a judicious and proper one, that it be laid before the President of the United States for his approval, but with the provision, however, that upon a survey of the tract selected that a sufficient quantity be cut off from the upper end of the proposed reserve to bring it within the limitation of 25,000 acres, authorized by the act of 3d March last.

I also inclose herewith a copy of another letter from Superintendent Henley, of 4th ultimo (marked D), in which he states, in relation to the other reserve, that it is intended to locate it "between the headwaters of Russian River and Cape Mendocino." In reference to both of these proposed reserves, and as connected with the means to be used to maintain peaceable relations with the Indians, the superintendent is of opinion that it is of great importance to provide for crops, and that to do so an agent in each instance is necessary. As this last-named selection has not been defined by any specific boundaries, and no sufficient description is given as to soil, climate, and suitability for Indian purposes, to enable the Department to determine the matter under-

standingly, of course nothing definite can now be done. But it may not be improper to consider the subject in connection with the general intent as to the particular locality in which it is proposed to make the location.

The reserve proposed on the Klamath River and Pacific coast does not appear from the map of the State of California to be very far removed from Cape Mendocino, or a point between that and Russian River; and as provision is made only for two reserves in the State other than those already in operation, the question arises whether it should not be situated farther in the interior, or perhaps eastern part of the State, than the point referred to. The Noome Lacke Reserve is situated in one of the Sacramento valleys, at about the latitude of 40 degrees north and 122 degrees of longitude west, about the center of that portion of the State north of the port of San Francisco. As, therefore, the proposed Klamath Reserve, being northwest from the Noome Lacke Reservation, would appear to be adapted to the convenient use of the Indians in that direction, the question is suggested whether the other reserve should not be located farther east and north, say on the tributaries of either Pitt or Feather Rivers. As in the case of the proposed reserve of the Klamath, I am desirous of obtaining your opinion and that of the President of the United States, with such decision as may be arrived at under the circumstances, in season to communicate the same by the next California mail, for the government of the action of superintendent Henley.

Very respectfully, your obedient servant,

GEO. W. MANYPENNY,
Commissioner.

Hon. R. McCLELLAND,
Secretary of the Interior.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., November 12, 1855.

SIR: I have the honor to submit herewith the report from the Commissioner of Indian Affairs of the 10th instant, and its accompanying papers, having relation to two of the reservations in California for Indian purposes, authorized by the act of 3d March last.

The precise limits of but one of the reservations, viz, a strip of territory commencing at the Pacific Ocean and extending 1 mile in width on each side of the Klamath River, are given, no sufficient data being furnished to justify any definite action on the other.

I recommend your approval of the proposed Klamath Reservation, with the provision, however, that upon a survey of the tract a sufficient quantity be cut off from the upper end thereof to bring it within the limit of 25,000 acres authorized by law.

Respectfully, your obedient servant,

R. McCLELLAND,
Secretary.

The PRESIDENT.

Let the reservation be made, as proposed.

FRANKLIN PIERCE.

NOVEMBER 16, 1855.

Mendocino Reserve.

DEPARTMENT OF THE INTERIOR,
Office of Indian Affairs, April 16, 1856.

SIR: Referring to the report I had the honor to submit for your consideration on the 10th of November last, relative to the establishment

Yuma Reserve.

(For order relating to Yuma Reserve in ARIZONA, see California, post page 831.)

CALIFORNIA.

Hoopa Valley Reserve.

[Occupied by Hunsatung, Hupa, Klamath River, Miskeet, Redwood, Saiaz, Sermolton, and Tishlanaton tribes; area, 156 square miles; established by act of April 8, 1864 (13 Stat., 39), and Executive orders.]

By virtue of power vested in me by an act of Congress approved April 8, 1864, and acting under instructions from the Interior Department, dated at Washington City, D. C., April 26, 1864, concerning the location of four tracts of land for Indian reservations in the State of California, I do hereby proclaim and make known to all concerned that I have this day located an Indian reservation, to be known and called by the name and title of the Hoopa Valley Reservation, said reservation being situated on the Trinity River, in Klamath County, California, to be described by such metes and bounds as may hereafter be established by order of the Interior Department, subject to the approval of the President of the United States. Settlers in Hoopa Valley are hereby notified not to make any further improvements upon their places, as they will be appraised and purchased as soon as the Interior Department may direct.

AUSTIN WILEY,

Superintendent Indian Affairs for the State of California.

FORT GASTON, CAL., August 21, 1864.

EXECUTIVE MANSION, June 23, 1876.

It is hereby ordered that the south and west boundaries and that portion of the north boundary west of Trinity River surveyed, in 1875, by C. T. Bissel, and the courses and distances of the east boundary, and that portion of the north boundary east of Trinity River reported but not surveyed by him, viz: "Beginning at the southeast corner of the reservation at a post set in mound of rocks, marked 'H. V. R., No. 3'; thence south $17\frac{1}{2}$ degrees west, 905.15 chains, to southeast corner of reservation; thence south $72\frac{1}{2}$ degrees west, 480 chains, to the mouth of Trinity River," be, and hereby are, declared to be the exterior boundaries of Hoopa Valley Indian Reservation, and the land embraced therein, an area of 89,572.43 acres, be, and hereby is, withdrawn from public sale, and set apart for Indian purposes, as one of the Indian reservations authorized to be set apart, in California, by act of Congress approved April 8, 1864. (13 Stats., p. 39.)

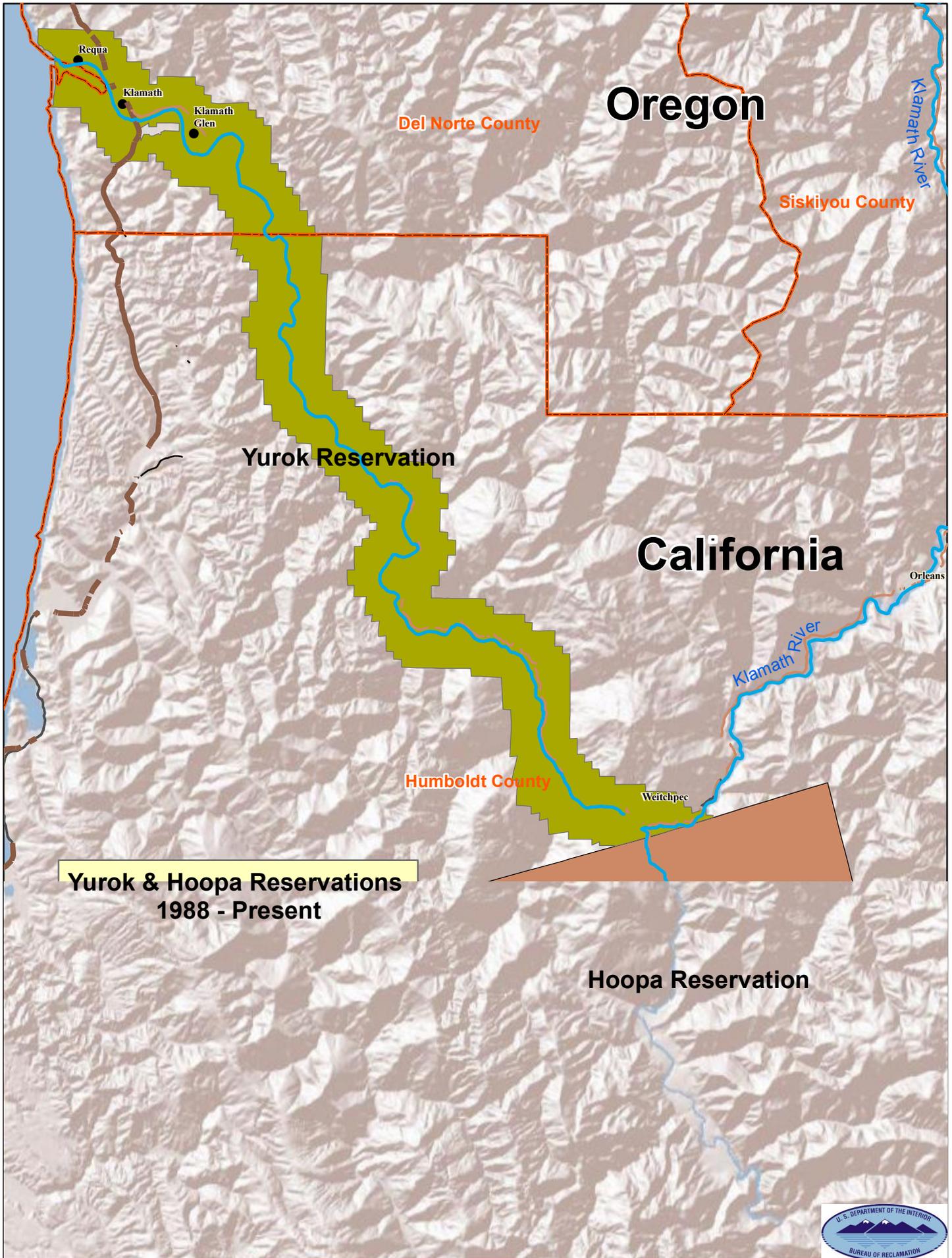
U. S. GRANT.

EXECUTIVE MANSION, October 16, 1891.

It is hereby ordered that the limits of the Hoopa Valley Reservation in the state of California, a reservation duly set apart for Indian purposes, as one of the Indian reservations authorized to be set apart, in said State, by Act of Congress approved April 8, 1864, (13 Stats., 39), be and the same are hereby extended so as to include a tract of country one mile in width on each side of the Klamath River, and extending from the present limits of the said Hoopa Valley reservation to the Pacific Ocean; *Provided, however,* That any tract or tracts included within the above described boundaries to which valid rights have attached under the laws of the United States are hereby excluded from the reservation as hereby extended.

BENJ. HARRISON.





Attachment 3

Yurok Tribe: Indian Trust Rights, Responsibilities, and Resources

(1996). The same court has aptly observed that the salmon fishery of the Yurok Tribe is "not much less necessary to the existence of the Indians than the atmosphere they breathed." *Blake v. Arnett, supra*, at 909. The Solicitor of the Department of the Interior has determined that the Yurok Tribe is entitled to a sufficient quantity of fish to support a moderate standard of living, or 50% of the Klamath fishery harvest in any given year, whichever is less. Memorandum from Solicitor to Secretary of the Interior, No. M-36979, October 4, 1993. The right includes fishing for subsistence, commercial and cultural purposes. As the court in *Parravano* noted, the purpose of the Yurok Reservation was to enable the Yurok people to continue their fishing way of life. The River and its fish are undeniably the cultural heart of the Yurok people.

In 1969, the State of California's jurisdiction over Indian fishing was challenged in court by Raymond Mattz a Yurok fisherman who had his gill nets taken from him by State officials when he tried to fish on the lower Klamath. Mr. Mattz asserted that as an enrolled member of the Yurok Tribe, State law does not apply since he was fishing in "Indian Country". While he lost his case in two lower courts, the Supreme Court reversed the decision in *Mattz v. Arnett*, 412 US 481 in 1973 (See Appendix B).

Nonetheless, it was not until 1977, that the Department of Interior reaffirmed the right of Indians of the reservations to sell fish and reopened the lower Klamath to Indian gill-net subsistence and commercial fishing. Interior's action was based in large part on the First District Court's decision in *Arnett v. 5 Gill Nets* that effectively overturned state regulation of on-Reservation Indian fishing. Shortly thereafter, in August of 1978, Interior placed a "Conservation Moratorium" on the Indian commercial fishery (in an effort to satisfy spawner escapement goals in the Klamath River drainage during anticipated low run years).

In 1977 and early 1978 more than 140 Indian fishermen sold salmon harvested from the Klamath River (includes Trinity River stock). Following implementation of the Moratorium a relatively small number of Indian's continued to sell fish, claiming the Moratorium infringed upon their fishing rights and unfairly and inequitably allocated the Rivers' fishery resources between ocean-based and Indian fisheries. This led to several armed confrontations (USFWS et al 2000).

During the nine years that Indian in-river commercial fishing was restricted for "conservation" purposes, 1978 through 1986, both in-river and off-shore non-Indian fishermen landed an average of 140,130 Klamath origin chinook per year for commercial and recreational purposes, while the Indians harvested an average of 20,660 chinook annually (Pierce, 1990).

Once the Moratorium was lifted in 1987, the tribes increased their fishing in accordance with stock abundance projections made in that year and the following two years, 1988 and 1989. More recently, tribal subsistence fishing has been severely limited, and commercial operations mostly non-existent, due to low numbers of fish. This has had a significant impact on the economic situation of the tribes. In 1993, the Department of the Interior concluded that the Pacific Fishery Management Council's ocean harvest

regulations had not met fishery conservation requirements and thus adversely impacted the tribes' in-river fisheries. During that same year, Interior's Solicitor's office reaffirmed the fishing rights of the tribes and fixed their share of the harvestable Klamath-Trinity basin salmon fishery at an amount, sufficient to support a moderate standard of living or 50% (Solicitor 1993) (See Appendix C).

Ocean commercial fisherman subsequently sued the Secretaries of Commerce and Interior claiming that the Solicitor's decision had forced them to reduce their harvest, and thus, that their harvest rights under the Magnuson Fishery Management and Conservation Act had been violated. This suit was settled in 1995, when the U.S. 9th Circuit Court of Appeals ruled in Commerce's favor, finding that under the Magnuson Act the government can implement regulations which affect coastal fishing if the objective is to meet the purposes of other applicable law, such as its trustee obligation to protect tribal fishing rights.

Salmon, steelhead, sturgeon and lamprey that spawn and migrate up the Klamath river, pass through the Yurok Reservation and are harvested in tribal fisheries. The fishing traditions of these tribes stem from practices that far predate the arrival of non-Indians. Accordingly, when the U.S. established what are today the Hoopa Valley and Yurok Indian Reservations on the Trinity and lower Klamath Rivers, it reserved for the benefit of the Indian tribes of those reservations a right to the fish resources in the rivers running through them (Whipple, Cannery, 1933). The U.S. has long recognized the right of the tribes of the Klamath-Trinity basin to fish. To protect those rights, the Federal Government has a responsibility to ensure that sufficient fish are produced and available to meet certain of its trust obligations to the respective tribes (USFWS et al 2000).

Today, the reserved fishing right includes the right to harvest quantities of fish that the Indians require to maintain a moderate standard of living. It is a vested property right held in trust by the United States for the benefit of the Indians that has been acknowledged and confirmed by the executive, legislative and judiciary branches of the Federal Government in a number of authorities including: 1) Opinion of the Solicitor of the Department of the Interior (Opinion M-36979 (October 4, 1993, see Appendix); 2) The Central Valley Project Improvement Act, Public Law 102-575 3406 (b) (23); and 3) *Parravano v. Babbitt and Brown*, 837 F. Supp. 1034 (N.D. Calif. 1993); 861 F. Supp. 914 (N.D. Calif. 1994); affirmed 70 F.3d 539 (9th Cir. 1995); cert. Denied 1996 WL 79843 116 S.Ct 2546 (June 24, 1996). It cannot be supplanted by state or Federal regulation.

The above referenced 1993 Solicitor's opinion: 1) reaffirm the historic and legal basis of the reserved fishing rights of the tribes of the Klamath-Trinity region, 2) acknowledge the Federal Government's cognizance of the importance of fish to these Indians at the time it first established reservations on their behalf, 3) fixes the tribes' salmonid fishing rights at 50% of the harvestable surplus of salmonid stocks, 4) recognizes that under the current depleted condition of the fishery, a 50% allocation does not adequately meet the tribes' needs, and 5) argues that it is the degree of the Hoopa Valley and Yurok dependence on fisheries at the time their reservation's were first created or expanded, and not the tribes'

VIII. Tribal Trust and Potentially Impacted Trust Assets

“The River is the lifeline of the tribe. It needs to be clean and full so the salmon can come back and nourish the people. The salmon is like the miner’s “canary” – if it is sick or dying it is a sign that our people are sick and dying too. If it is abundant and thriving – so are the people. It is the responsibility of the tribe and other government agencies to ensure this life line is healthy and abundant for the future generation.”

(Yurok Tribal Member Survey Respondent 2006)

“There seem to be only memories of long and not so long ago when the fish were so plentiful to our kitchen tables or just catching, cleaning, hanging 20 fish in one day. Now it seems like you can go fishing all day or just to catch the tides and you come back home with 1 or 2 fish and moss and mud and plenty of sticks in your net. Not too many of us who traditionally live on eating sticks. None of the boys bring eels to you anymore cause they caught so many they don’t know what to do with them. When your drifting at the mouth, you have to fight the sealions for one fish and sometimes he even takes the belly. The sealions chase you for a fish if you clean it too close to the waters edge. When I was a little girl my uncles used to bring the fish to Gram’s house and we would spend all day hanging that fish and she would can it up and even share a jar or 2 for a gift every once in a while, now we can barely feed Gram and our own mouths and spirits.

Maybe we need to feed our elders and children – let them acquire a taste for that good real “CANDY” as Gram used to call it. When good fish used to run plentiful, Gram would make baked fish, fried fish, salmon patties, dried fish, canned fish, kippered fish. Cooked on sticks and even fish soup. Now we have to go buy a fish at the local market or eat burgers, pizza, Mexican food, hamburger helper, or any of the other processed foods full of all that stuff our elders wouldn’t have dreamed of eating 20 to 30 years ago – Our elders don’t even know what some of that stuff is.

When we have ceremonies and cultural gatherings we should not only be thankful for what we put in our mouth and cherish every bite, but pray for that fish to come back again and make us strong and keep our elders healthy and make our children healthy too with its strong vibrations. – We should ask that our fish and berries be made plentiful again. Let our youth and little Indian babies experience the love we have for the fish too and learn to harvest it the way Gram used to and feed us dried fish in the winter with her hot baked “Injun” Bread and jam. We are and always will be the fish people. May we be the ones the fish come back to.”

(Yurok Tribal Member Survey Respondent 2006)

“As a kid there were abundant salmon because you could see the salmon thick in the river from the bridges. You had to row your boat out to rocks that you can walk out to now. Before I went to Vietnam in 1967 the River was high; when I came back after the Dam was built the water had dropped. In my lifetime I have watched the salmon, sturgeon, and eels become depleted. Salmon, eels, and sturgeon were our main food. We ate one of the three daily. We only ate meat on payday. The rest of the week we ate fish. Now we get fish only occasionally. This year we have not had any fish. My children may not have any salmon in the future.”

(Yurok Tribal Member Survey Respondent 2006)

“My Yurok elders have always talked about the loss our natural resources and how this impacts our life way. The Tribe itself, the employees need to understand and advocate for both (ceremony and natural resources). When we do our Jump Dance we are praying for these things to return to abundance state. The Yurok people cannot survive without fish, acorns, language, and ceremonies.”

(Yurok Tribal Member Survey Respondent 2006)

The Yurok have always inhabited California’s northwestern coastline from Little River to Damnation Creek. Yurok Ancestral Territory also extends along the Klamath River from the mouth of the river up past the Klamath – Trinity confluence to Slate Creek. Yurok Territory continues six miles up the Trinity River. The Yurok language (and the neighboring Wiyot language) is affiliated with the Algonquin linguistic stock. Algonquin languages are primarily spoken by Tribes residing in the Great Lakes and New England areas. While the Yurok language is spoken fluently by several dozen Yurok people, a Tribal language program is in place to increase the fluency of its tribal members. Traditional subsistence animal species include salmon, ocean fish, sturgeon, sea lion, whale, elk, deer and duck. Acorns, berries, bulbs and grass seed are staple plant foods.

Yurok life is defined by extended families affiliated with villages and represented by head spokespersons. Ceremonial wealth and rights to subsistence resource areas determine familial standing within Yurok social structure. Yurok are recognized for their skills making redwood canoes, weaving fine baskets, highly stylized art forms, hunting, and specifically riverine salmon fishing. The ancient traditions are continued through contemporary times.

The traditional homeland of the Yurok Tribe extends from the Pacific Ocean along the lower Klamath River and into the Trinity River Basin. While Yurok culture and tradition centers on the Klamath River, their people have always lived along the lower Trinity and depended on its fish, water and other resources. The traditional and present territories of the Karuk and Klamath (Oregon) Tribes are located along the upper Klamath River, above the River’s confluence with the Trinity. Both these tribes also depend on the

resources of the Trinity River, primarily as it influences the Klamath River ecosystem (USFWS et al 2000).

Natural resources hold significant cultural, ceremonial, spiritual and other non-economic values for all the Indian tribes of the Klamath region (the term cultural refers to the cultural anthropology of the tribes not their archaeologically significant artifacts and monuments which are addressed elsewhere in this document). Thus, standard economic methods of accounting and valuation cannot adequately measure the consequences of any action that may affect these tribes' trust assets. In fact, in previous EIS analysis processes, representatives of the Klamath River tribal governments have voiced concern over the utility and validity of attempts to quantify and express the benefits of natural resources, such as salmon, to their people in economic or dollar terms. Accordingly, the trust analysis does not focus simply on economics; instead, it evaluates the anticipated impacts of the Restoration in terms that are more meaningful and of primary importance to the potentially affected tribes. Specifically, the trust section endeavors to characterize the fundamental role of the region's rivers and river health in tribal history. It is in this context that the Restoration alternatives are evaluated in terms of their anticipated impact on the health of the Klamath River (USFWS et al 2000).

Healthy alluvial river ecosystems are ultimately the resource of greatest importance to the region's tribes. Continued tribal access to many trust resources such as fish, wildlife, water and plants depends on the condition of the rivers which transect their lands. Riverine health itself is a function of many fluvial and geomorphic attributes, including rates of sediment loading, flow variability, channel migration and riparian plant life-cycles, among others. Therefore, it is necessary to evaluate the influence the proposed project may have on these physical attributes of the Klamath River to understand the potential tribal trust impacts.

Trust Responsibility

From their earliest contact with the Indians of North America, the European powers and the United States have dealt with Indians on a government to government, or tribal basis. In principle, all treaties, statutes, and executive orders implementing Federal Indian policy are premised upon this political relationship.

From 1787 to 1871, the United States entered into hundreds of treaties with Indian nations in which Indian tribes gave up land in exchange for reservations, safety, and the well being of their people. The Supreme Court has held that treaties create a trust relationship between the Federal Government and Indian tribes. This relationship is "marked by peculiar and cardinal distinctions which exist nowhere else" and "resembles that of a ward to his guardian". The U. S. has a "duty of protection" toward the Indians. [See: *Cherokee Nation v. Georgia*, 30 U.S. 1 (1831); *Worcester v. Georgia*, 31 U.S. 515 (1832); *U.S. v. Kagama*, 118 U.S. 375, 384 (1886); *Seminole Nation v. U.S.*, 316 U.S. 286 (1942)]. In *U.S. v. Mitchell* [463 U.S. 206, 225 (1983)], the Supreme Court reaffirmed the principle of "the undisputed existence of a general trust relationship

between the United States and the Indian people.” The Federal Government’s obligation to honor the trust relationship and to fulfill its treaty commitments is the trust responsibility. The Federal Government has extended the trust responsibility through federal statutes, agreements, and executive orders. These documents can create trust obligations in the same way that a treaty does. [See *Antoine v. Washington*, 420 U.S. 194 (1975) and *Oneida Indian Nation v. County of Oneida*, 414 U.S. 661 (1974); *U.S. v. Mitchell*, 463 U.S. 206, 225 (1983)]. The trust responsibility imposes an independent obligation upon the Federal Government to remain loyal to Indians and to advance their interests, including their interest in self-government. [See: *Manchester Band of Pomo Indians v. U.S.*, 363 F. Supp. 1238 (N.D. Cal. 1973)]. The American Indian Policy Review Commission’s, *Final Report* stated “The purpose behind the trust doctrine is and always has been to ensure the survival and welfare of Indian tribes and people. This includes an obligation to provide those services required to protect and enhance Indian lands, resources, and self-governance, and also includes those economic and social programs which are necessary to raise the standard of living and social well-being of the Indian people to a level comparable to the non-Indian society” (USFWS et al 2000).

Indian Natural and Cultural Resources

The Trust Doctrine requires, in part, that Indian tribes have continued access to natural resources if they are to preserve their cultural and traditional ways of life. Therefore, in order to fully characterize the potential impacts of any action that may affect a tribe’s trust resources, it is necessary to examine the role of those resources in tribal cultures and societies.

Like all peoples, Native Americans depend on natural resources for the necessities of life, food, housing, and clothing. However, tribes have not traditionally regarded those resources simply as commodities to be bought, sold, or indiscriminately exploited. “The landscape itself...is seen as sacred and quivering with life. It is inscribed with meaning regarding the origins and unity of all life, rather than seen as mere property to be partitioned legally into commercial real-estate holdings” (USFWS et al 2000).

When non-Indians first began settling in North America, what they perceived as a wild and uninhabited land, had in many places been managed and utilized by Indian people. Over the millennia, many Native American peoples observed and learned to recognize, rely upon, and even emulate natural processes as part of their ceremonial and religious ways-of-life. In this manner, they enhanced the richness and productivity of the land and other resources on which they depended, and developed an intimate connection to the order and cycles of the natural world (Salter, 1996). The spiritual and practical environmental knowledge they amassed over time was passed orally from one generation to the next through story and language, and includes many what are today considered highly refined and enlightened techniques for eco-system management (USFWS et al 2000).

The significance of the Native American reliance on and veneration for nature is evident in all facets of their cultures, traditions, religions, and resource management. Consequently, increasing resource scarcity over the last century and a half has had a profound effect on Indian tribes. Tribal cultures across North America, such as those of the Klamath-Trinity region, are no longer in a position to fully embrace their traditional ways of life (USFWS et al 2000). This is not to suggest that Indian culture has disappeared. Rather, that the declining availability of resources critical to Native American traditional and spiritual practices has rendered some of those resources even more precious as a means of sustaining their cultures and made additional losses of their resource base increasingly difficult to accept (USFWS et al 2000).

Any tribal trust impact analysis must focus on the potential affect on the health of the Klamath River, as the River's overall health is a primary factor determining not only the availability of fish, but many trust assets including water, wildlife, and vegetation. Thus, increased numbers of chinook salmon and Pacific lamprey, just as other trust assets, represents an expected beneficial by-product of riverine health. The potential tribal trust impacts were not evaluated on a trust asset by trust asset basis because such an analysis would not only require a level of effort well beyond the scope of the EIS but it is unlikely to produce scientifically valid results or results readily interperable with respect to the overall implications for the region's tribes and the U.S.'s trust responsibility to those tribes (USFWS et al 2000)..

In the case of tribal trust resources however, a focus on present and future conditions may fail to adequately represent the true nature of the potential impacts on the region's tribes and its implications for the U.S.'s trust responsibility to those tribes. As the Tribal Trust -- *Existing Conditions* must evaluate the cultures, traditions, religions, languages and perspectives of the Indian tribes of the Klamath-Trinity region that are rooted to the area's once healthy rivers and the associated abundance of salmon, elk, vegetation, and other natural resources. Thus, while the tribes' access to natural resources and their socio-economic and cultural situations under existing and projected environmental conditions are relevant to the analysis of tribal trust impacts, it is far more meaningful to consider the impacts in the context of the tribes' traditional reliance upon rivers as well as the once pristine condition of those rivers relative to their currently degraded state.

Tribal Trust Resources

In his 2004 analysis, anthropologist Thomas King concluded:

Another law that is pertinent to tribal use of the Klamath Riverscape is the American Indian Religious Freedom Act (AIRFA), which articulates a policy of respect for and protection of tribal rights to the practice of traditional religion. Although AIRFA provides little direction about how agencies are to carry out this policy, it has generally been interpreted to require consultation with tribes when planning actions that might affect religious practice, and actions to avoid impact to such practice where feasible.

The tribes obviously use the Klamath River, its water, its fish, and other elements of the Klamath Riverscape for religious purposes. It is not at all too much to say that the river is central to the tribes' religious practice. The Klamath Hydroelectric Project and other projects in the Klamath Basin have changed the river, and continue to change it, in ways that are deleterious to tribal religious practice. They do this by altering the quality of the river's water, which is traditionally used for purification rituals. They do this by altering the habits and habitats of the fish that play central roles in religious belief. They do this by causing the erosion of locations where key spiritual activities must take place. They do this by fundamentally altering the character of the river as an environment in which people can touch the immortal.

Under AIRFA, FERC and other Federal agencies are obligated to consult with the tribes and try to make decisions about actions affecting the river in such a way as to avoid doing further injury to religious practice. The logic of AIRFA would also suggest that FERC should seriously consider doing what it can to undo damage done in the past, in order to help the tribes regain the ability to practice their religion in traditional ways.

Effects on Indian Sacred Sites

Executive Order 13007 directs Federal agencies to try to avoid physical impact to "Indian sacred sites" on Federal and Indian land, and to avoid blocking tribal access to such sites. Sites like *Paniminik*, owned by the Karuk Tribe and recognized as a place of great spiritual importance, qualify as such sites; there may be sites meeting the executive order's definition on other tribal land or on land managed by the Forest Service, Bureau of Land Management, or Bureau of Reclamation. A site need not be eligible for the National Register to be a "sacred site" in terms of the executive order. FERC²⁰ and other agencies need to consider this possibility in making decisions about the Klamath Hydroelectric Project and other actions along the river.

Trust Responsibility for the Riverscape

Beyond the requirements of any specific law or executive order, the federal government has a broad trust responsibility toward federally recognized Indian tribes, derived from the Constitution, a great many treaties, laws and policies extending back to the earliest days of the nation, and a massive corpus of case law. The trust responsibility has most recently been articulated in a government-wide manner in Executive Order 13175.

²⁰ The applicability of executive orders to independent agencies like FERC is uncertain, but FERC's *Tribal Policy Statement* promulgated July 23, 2003 includes Executive Order 13175 among its authorities, suggesting that FERC views itself as obligated to be responsive to such orders.

Attachment 4

- 4a KBRA Part I, General Provisions, 1.2. General Recitals,
Section 1.2.3. Sustainable Tribal Communities
- 4b KBRA Part VII. Tribal Program
- 4c KBRA Part III Fisheries Program, Section 9 beginning with
9.2. Program Elements, Section 11 Fisheries

Attachment 4a

KBRA Part I, General Provisions, 1.2. General Recitals, Section 1.2.3.
Sustainable Tribal Communities

National Marine Fisheries Service;
United States Department of Agriculture, Forest Service; and
United States Department of the Interior, including Bureau of Indian
Affairs, Bureau of Land Management, Bureau of Reclamation, and Fish
and Wildlife Service.

Prior to any Federal agency becoming a Party to this Agreement as described above, whenever this Agreement attributes an action to a Federal agency, that attribution states an expectation of the Non-Federal Parties, rather than an obligation of the Federal agency under this Agreement.

1.1.3. Addition of Other Parties

Sixty days after the Effective Date, other entities may subsequently become Parties by following the procedures established in Section 7.2.2.

1.2. General Recitals

1.2.1. Klamath Hydroelectric Project

The Klamath Hydroelectric Project (FERC No. 2082), located on the Klamath River and its tributaries, blocks the upstream passage of anadromous and other fish at River Mile 195 and has other adverse impacts as a result of flow regulation. The Klamath Hydroelectric Settlement Agreement (Hydroelectric Settlement) establishes a process for potential Facilities Removal and operation of the Hydroelectric Project until that time.

1.2.2. Klamath Reclamation Project and Other Irrigation Deliveries

The Parties enter into this Agreement to resolve longstanding disputes between them regarding the amounts, timing, and other conditions of diversion and delivery of water for irrigation, National Wildlife Refuges, and related uses within the Klamath Reclamation Project and by non-federal entities in the Upper Klamath Basin regarding flows and lake levels that support Fish Species and wildlife. The resolution achieved here is intended to protect the sustainability of the agricultural uses and communities along with public and trust resources.

1.2.3. Sustainable Tribal Communities

Tribes have lived in the Klamath River Basin since time immemorial and are expected to continue to do so using sustainable resource-based economies. There are tribal fishing rights in various locations that have associated water rights for the fish to propagate and produce sufficient numbers for harvest. The Tribes, irrigators, and the United States have differed in administrative and judicial settings over the amounts of water needed for fish. This Agreement seeks to resolve these substantial differences and also to provide the Tribes with both sustainable natural resources and sustainable communities.

Attachment 4b

KBRA Part VII. Tribal Program

PART VII.
TRIBAL PROGRAM

31. Overview of Tribal Program

31.1. Recitals

- 31.1.1.** As the original stewards of the natural resources of the Klamath River Basin, the Karuk Tribe, Klamath Tribes, and Yurok Tribe hold special positions in the Basin. The Parties are mindful of the Tribes' interests in, and relation to the Basin ecosystem and its fisheries.
- 31.1.2.** The Parties acknowledge that the Tribes' economic, cultural, and spiritual dependence upon the natural resources of the Klamath Basin have caused the Tribes to be particularly vulnerable as those resources have become scarce. Over the past century, traditional tribal subsistence and related economies have suffered.
- 31.1.3.** The Tribes have a sound and long standing history of competent resource management that provides the Tribes with special understanding of natural resource science and restoration.
- 31.1.4.** Accordingly, the Tribes, Public Agency Parties, and other Parties acknowledge the Tribes' essential role in the Collaborative Management necessary to implement the provisions of this Agreement.

31.2. Purposes

The Parties support the goals of each Tribe to achieve the revitalization of tribal subsistence and related economies during the period immediately following this Agreement. The Parties support the Tribes as they strive to meet a reasonable standard of living, a standard recognized in the reservation of tribal fishing and other related rights, until the fisheries are restored such that Full Participation in Harvest Opportunities are achieved. Funding provided in these sections is, among other purposes, intended to be used to assist the Tribes in developing the capacity to participate as grantees and in the Collaborative Management of the Fisheries Program described in Sections 9 through 13 above.

31.3. Funding

The Non-Federal Parties shall support authorizations and appropriations in addition to existing funds, in the amount of \$65 million as estimated in Appendix C-2, to implement the Tribal Program for the first ten years following the Effective Date.

32. Tribal Participation in Fisheries and Other Programs

32.1. Purpose

The Parties support tribal participation in the Fisheries and other programs under this Agreement. Specifically, funding provided for this purpose shall be used in each Tribe's discretion for the purposes of: (i) building each Tribe's internal capacity to participate in the Collaborative Management and restoration of the fisheries; (ii) administration of each Tribe's fisheries-related programs; and (iii) participation in conservation management programs for habitat above Upper Klamath Lake and on the Klamath River.

32.2. Term of Funding

The Non-Federal Parties shall support authorization and appropriation of funds, as estimated in Appendix C-2 for the first ten years after the Effective Date.

32.3. Other Funding

In the Collaborative Management of the Environmental Water and resources of the Klamath Basin, and as consistent with Applicable Law, the Tribes shall be priority recipients of federal grants and funds for Fisheries Program described in Part III. The Tribes will remain eligible for funding associated with fisheries restoration and reintroduction programs outside the scope of this Agreement.

33. Long-term Economic Revitalization Projects

33.1. Other Funds

The Parties acknowledge that this Agreement addresses primarily tribal fishing and water matters, and accordingly agree that they will also support efforts by the Tribes to secure economic revitalization programs and funds such that the Tribes may achieve long-term economic self-sufficiency. Funding provided for Long-Term Economic Revitalization Projects will be used at each Tribe's discretion for development and planning of long-term economic revitalization projects.

33.2. Mazama Project

33.2.1. Acquisition

The Non-Federal Parties shall support the authorization and appropriation of, or otherwise Timely provision to, the Klamath Tribes of \$21,000,000 toward the acquisition of the Mazama Forest Project in Klamath County, Oregon. The Parties agree that nothing in the development of the Mazama Forest Project, including but not limited to the Klamath Tribes' purchase of property, or the United States' designation of property as having federal trust status, will alter existing law regarding the applicability of state water law. The Parties agree that, notwithstanding the first sentence in Section 6, any disputes about the

applicability of state water law shall be resolved in a court of competent jurisdiction.

33.2.2. Withdrawal

In the event that the funding described in Section 33.2.1 is not Timely provided, the Klamath Tribes shall have the right to withdraw from this Agreement. Section 7.5 shall not apply to such withdrawal. Prior to exercising the right of withdrawal, the Klamath Tribes shall Timely provide the Parties with a Notice of impending failure which shall set out the relevant circumstances. Following such Notice, the Parties shall meet and confer in an effort to remedy the failure or to amend this Agreement as provided for in Section 7.2.1.B, provided that the referral to the Dispute Resolution Procedures in Section 7.2.1.F shall not apply. If, after 30 days, the failure is not remedied or the Agreement is not amended, then the Klamath Tribes may withdraw from this Agreement by providing a Notice of withdrawal to the Parties, and the Klamath Tribes shall thereafter have no obligation under this Agreement to provide Assurances, waivers, or relinquishments of any kind, and any Assurances, waivers, or relinquishments of any kind they have provided shall terminate.

33.2.3. Sections Surviving Withdrawal

Notwithstanding the withdrawal of the Klamath Tribes pursuant to this Section 33.2, Section 15.3.2.B shall continue in force and effect.

34. Klamath Tribes' Interim Fishing Site

34.1. Petition

Within three months of the Effective Date, the CDFG, Klamath Tribes, and relevant agencies of the United States will jointly petition the California Fish and Game Commission to establish an interim fishing site in the reach of the Klamath River between Iron Gate Dam and the I-5 Bridge. The petition will provide that Chinook salmon fishing in this reach of the river will be open to the Klamath Tribes each salmon season immediately after the hatchery at Iron Gate Dam achieves egg take goals. The provisions regulating this interim fishing site, including the definition of the interim period for this purpose, will be set forth in this joint petition. The Parties will support the petition. The interim fishing regulations will become effective as soon as practicable.

34.2. Alternative Procedure

If the petition is not granted, the United States, the Klamath Tribes, and other interested Parties agree to meet and confer to develop equivalent benefits for the Klamath Tribes.

34.3. No Adverse Impact

Any outcome under this Section 34 will not have any adverse impact upon existing harvest allocation issues among other Tribes and non-Indian interests.

PART VIII.
EXECUTION OF AGREEMENT

35. Authority

35.1. General

Each signatory to this Agreement certifies that he or she is authorized to execute this Agreement and to legally bind the Party he or she represents. As of the Effective Date, this binding effect applies to all obligations which legally may be performed under existing authorities. This binding effect applies to other obligations arising from new authorities arising pursuant to the Authorizing Legislation as provided in Section 3.1.1.

35.2. Public Agency Parties

In signing this Agreement, a Public Agency Party expresses its support for the Agreement and the policies that apply to its exercise of its authorities. By such signing and as provided in Sections 2.2.7 and 7.4.3, no Public Agency Party has taken an action.

36. Counterparts

This Agreement may be executed in counterparts. Each executed counterpart shall have the same force and effect as an original instrument as if all the signatory Parties to all of the counterparts had signed the same document.

37. Concurrent Execution

Each Non-Federal Party shall execute this Agreement and the Hydroelectric Settlement concurrently.

38. New Parties

Any entity listed in Section 1.1.1 of this Agreement that does not execute this Agreement on the Effective Date will become a Party, subject to Section 37, by signing the Agreement within 60 days of the Effective Date, without amendment of this Agreement or other action by existing Parties. After 60 days from the Effective Date, any such entity, or any other entity, may become a Party, subject to Section 37, through an amendment of this Agreement in accordance with Section 7.2.2. Federal Agency Parties shall become Parties pursuant to Section 1.1.2. The Hoopa Valley Tribe may become a Party under Sections 7.2.2. and 37 within 60 days of the Effective Date or otherwise on the following conditions: (a) the Hoopa Valley Tribe agrees to this Agreement and the Hydroelectric Settlement and agrees to insertion of provisions into this Agreement that are equivalent in nature, content and geographic scope as that of the signatory Tribes, including (i) Assurances to water users of the Klamath Reclamation Project and Reclamation and FWS, (ii) relinquishment and release of claims to the United States, and (iii) restriction of the scope of the Agreement to the Klamath River Basin outside of the Trinity River Basin; and (b) the Parties, including specifically the United States, Tribes and KPWU, agree to the amended provisions related specifically to the Hoopa Valley Tribe. In the event that the Hoopa Valley Tribe becomes a Party, the Parties shall amend Appendix C-2 to allocate funding

Attachment 4c

KBRA Part III Fisheries Program, Section 9 beginning with 9.2. Program Elements, Section 11 Fisheries

9.1. Recitals

9.1.1. Blockage of Passage

The Parties acknowledge that the Hydroelectric Project has excluded coho salmon, Chinook salmon, steelhead, and Pacific lamprey from the Klamath Basin upstream of Iron Gate Dam. The Parties also acknowledge that coho salmon, Lost River and shortnose suckers and bull trout are presently listed under the Federal Endangered Species Act.

9.1.2. Other Harmful Conditions

Portions of the Klamath River and its tributaries currently present certain conditions harmful to fish. These conditions include degraded riparian habitat and stream channels, passage barriers, diversions resulting in entrainment, adverse water quality conditions, adverse hydraulic conditions, fluctuating water levels, and other impacts, known and unknown. These conditions may result in mortality or injury to fish, and reduce the viability of fish populations. These conditions will probably continue in the future unless reduced by cooperative and concerted efforts to resolve them.

9.1.3. Benefits of Reintroduction

Notwithstanding the conditions described in Sections 9.1.1 through 9.1.2, the Parties expect that the availability of additional habitat and the introduction or reintroduction of Fish Species upstream of Iron Gate Dam are likely to result in significant net conservation benefits.

9.1.4. Benefits of Restoration

The Parties agree to pursue restoration actions above, within, and below the Hydroelectric Project to substantially remove, reduce or mitigate the conditions described in Sections 9.1.1 through 9.1.2.

9.2. Program Elements

9.2.1. Purposes

The purposes of the Fisheries Program are to restore and sustain natural production of Fish Species throughout the Klamath River Basin, excluding the Trinity River. Specifically, this program:

- A. provides for reintroduction of anadromous Species throughout their historic range above Iron Gate Dam, including tributaries to Upper Klamath Lake but excluding the Lost River sub-basin, and for reestablishment and maintenance of the ecological functionality and connectivity of Fish habitat;

- B. otherwise establishes conditions that, combined with effective implementation of the Water Resources Program in Part IV, will provide for the natural sustainability and genetic diversity of Fish Species, their full utilization of restored and reconnected habitat, Full Participation in Harvest Opportunities, as well as the overall ecosystem health of the Klamath River Basin;
- C. assesses status and trends, and the factors that influence those trends, of Fish Species and their habitats as identified in Sections 9.1.1 and 9.1.2, and the effectiveness of actions under this Agreement to achieve this purpose; and
- D. provides for adaptive management and reporting as described in Section 5.4 and elsewhere in the Agreement.

9.2.2. Approaches

Throughout the geographic scope of the Fisheries Program described in Section 9.2.3, the Fisheries Program shall use collaboration, incentives, and adaptive management as preferred approaches. The Fisheries Program shall also emphasize restoration and maintenance of properly functioning lake and riverine processes and conditions, and remediation of the conditions described in Section 9.1.2, while also striving to maintain or enhance economic stability of adjacent landowners. Further, the Fisheries Program shall prioritize habitat restoration and monitoring actions to ensure the greatest return on expenditures.

9.2.3. Geographic Scope

The focus of reintroduction shall be the Upper Klamath Basin. The focus of habitat restoration and monitoring shall be the Klamath River Basin, excluding the Trinity River watershed above its confluence with the Klamath River. The Agreement is not intended and shall not be implemented to establish or introduce populations of salmon, steelhead, or Pacific lamprey in the Lost River or its tributaries or the Tule Lake Basin.

9.2.4. Plans

The Parties agree to implement a Fisheries Restoration Plan, a Fisheries Reintroduction Plan, and a Fisheries Monitoring Plan (collectively, “Fisheries Plans”), along with measures in the Water Resources Program described in Part IV.

A. Plan Coordination

The Fisheries Plans shall include common as well as specific elements. They shall allow for Collaborative Management among Fish Managers and shall provide for coordinated performance, including adaptive management.

B. Mitigation of Adverse Impacts

To the extent feasible and appropriate, the Fisheries Plans shall mitigate adverse effects from reintroduction upon other Fish Species. Such effects may include but are not limited to the potential for disease, predation, and competition. In addition, the Fisheries Plans shall include measures, to the extent practicable and lawful, to mitigate threats to species listed under the ESA or other adverse impacts to natural resources, so as to protect the species and avoid disruption of ongoing programs under this Agreement.

9.2.5. Use of Best Available Science

The Fisheries Program shall be based on the best available scientific data and information. Fish Managers shall consider all relevant past and current scientific information.

9.2.6. Fisheries Program Goals

The Fisheries Program shall include goals to evaluate the Fisheries Program's progress and evaluate effectiveness of implementation.

Consistent with the purposes stated in Section 9.2.1, the goals of the Fisheries Program are to (i) restore and maintain ecological functionality and connectivity of historic Fish habitats; (ii) re-establish and maintain naturally sustainable and viable populations of Fish to the full capacity of restored habitats; and (iii) provide for Full Participation in Harvest Opportunities for Fish Species.

The Fisheries Program will establish metrics to evaluate program progress.

The Fish Managers shall use best available science to establish the specific metrics for such goals for each phase of the Fisheries Program. These metrics shall consider and integrate the four parameters for evaluating population viability status, including: abundance, population growth rate, genetic diversity, and population spatial structure.

9.3. Funding

The Non-Federal Parties shall support authorization and appropriation of funds in the amount of \$493.2 million, as estimated in Appendix C-2, to implement the Fisheries Program for the first ten years after the Effective Date.

10. Fisheries Restoration Plan

10.1. Phase I of the Fisheries Restoration Plan

10.1.1. Preparation

Within one year of the Effective Date, the Fish Managers shall co-author and distribute a draft of Phase I of the Klamath River Fisheries Restoration Plan.

- A. FWS and NMFS shall be co-Lead Parties for administrative tasks in the plan development process.
- B. The Fish Managers shall work with other Parties and seek their input during plan development, and shall also consider public input under Applicable Law.
- C. The Phase I Plan shall describe how the public comments and recommendations were incorporated. If the Fish Managers cannot agree as co-authors on the content of the Phase I Plan, FWS and NMFS shall author and distribute a Phase I Plan. The Fish Managers shall be responsible for revision of the Phase I Plan as appropriate pursuant to the same process used for the initial plan.
- D. NMFS and FWS shall use Best Efforts to complete any NEPA analysis for the Phase I Plan and the Fish Managers shall use Best Efforts to finalize the Phase I Plan by March 31, 2012.

10.1.2. Plan Elements

Based on best available science, Phase I of the Fisheries Restoration Plan shall establish restoration priorities and criteria for restoration project selection for the ten years following the Effective Date. Specific elements will include, but may not be limited to, restoration and permanent protection of riparian vegetation, water quality improvements, restoration of stream channel functions, measures to prevent and control excessive sediment inputs, remediation of Fish passage problems, and prevention of entrainment into diversions. Within these specific elements, the Phase I Plan will address, among other things: (i) coarse sediment management in the Klamath River between Keno Dam and the Shasta River confluence, where coarse sediment supply will be managed, in coordination with any plan for Facilities Removal, to replenish and sustain existing in-river sediment storage capacity, which may subsequently be increased after evaluating the attendant biological benefits; and, (ii) management and reduction of organic and nutrient loads in and above Keno Reservoir and in the Klamath River downstream. The Phase I Plan will identify high priority projects that either: (i) have direct benefits to existing Fish resources; or (ii) will significantly contribute to protecting and preparing habitats for use by anadromous Fish once passage is

restored. The Phase I Plan shall indicate how it will integrate the approaches described in Section 9.2.2.

10.2. Phase II of the Fisheries Restoration Plan

10.2.1. Preparation and Adoption

Within seven years of finalization of the Phase I Plan, the Fish Managers shall co-author and distribute a draft Phase II of the Klamath River Fisheries Restoration Plan.

- A. The Fish Managers shall collaborate with other Parties, including the KBCC, and seek their input during plan development, and shall also consider public input under Applicable Law.
- B. The Phase II Plan shall describe how these comments and recommendations were incorporated.
- C. The FWS and NMFS shall be co-Lead Parties for administrative tasks in the plan development process. If the Fish Managers cannot agree as co-authors on the content of the Phase II Plan, FWS and NMFS shall author and distribute a Phase II Plan.
- D. NMFS and FWS shall use Best Efforts to complete any NEPA analysis for the Phase II Plan, and the Fish Managers shall use Best Efforts to finalize the Phase II Plan by March 31, 2022.

10.2.2. Plan Elements

Using the results of the effectiveness monitoring of Phase I actions, the Phase II Plan will establish elements, restoration priorities, and an adaptive management process, for the remaining term of the Agreement. The Phase II Plan will describe how it will integrate the approaches described in Section 9.2.2.

10.2.3. Plan Revision

The Fish Managers shall be responsible for revision of the Phase II Plan as appropriate and pursuant to the same process used for the initial plan.

11. Fisheries Reintroduction and Management Plan

Reintroduction of anadromous Fish into the Upper Klamath Basin by the Fish Managers will involve two planning and implementation phases. Phase I will address the near-term investigations, facilities, actions, monitoring, and decisions necessary to initiate and accomplish the reintroduction of anadromous Fish Species. Phase II will address the management of re-established Fish populations in presently un-occupied habitats and as part of the fisheries of the Klamath River Basin.

11.1. Oregon Wildlife Policy

Because anadromous Fish Species were not part of fisheries management in the Klamath River Basin in Oregon, and in light of Parties' support of the January 15, 2008 public draft of the Agreement, ODFW presented an Amendment to the Klamath River Basin Fish Management Plan (1997) to the Oregon Fish and Wildlife Commission. The Commission adopted the Amendment on July 18, 2008. The 2008 Amendment to the 1997 Klamath River Basin Fish Management Plan (OAR 635-500-3890 *et seq.*) provides Policy direction for ODFW's participation in the implementation of this section.

11.1.1. General Policy

Oregon's Wildlife Policy (ORS 496.012) recognizes that the Oregon Fish and Wildlife Commission represents "the public interest of the State of Oregon" and further will implement the goal "To develop and manage the lands and waters of the state in a manner that will enhance the production and public enjoyment of wildlife." By statutory definition, wildlife includes fish. Nothing in this Agreement modifies or abrogates the Oregon Fish and Wildlife Commission's statutory responsibilities.

11.1.2. Amended Klamath Policy

The July 2008 Amendment to the Klamath River Basin Fish Management Plan (OAR 635-500-3890 *et seq.*) established Goals, Policies, and Objectives to direct ODFW in the development of the Phase I and Phase II Reintroduction and Management Plans.

A. Goal: Self-Sustaining Populations of Anadromous Fish

Oregon's goal is to re-establish in Oregon, self-sustaining, naturally-produced populations of Chinook, steelhead, coho, and lamprey that were historically present in the Upper Klamath Basin, into historic habitats currently vacant of anadromy.

B. Fish Plans

The 2008 Amendment to the Klamath River Basin Fish Management Plan (1997) directs ODFW to develop a Reintroduction Implementation Plan and an Anadromous Fish Conservation Plan for the Oregon portions of the Klamath River Basin. The Reintroduction Implementation Plan corresponds with the Phase I Plan described below. The Anadromous Fish Conservation Plan corresponds with the Phase II Plan described below.

C. Policies

The 2008 Amendment to the Klamath River Basin Fish Management Plan (1997) provides Policies that direct ODFW to: develop a

Reintroduction Implementation Plan prior to release of any Chinook above Upper Klamath Lake; monitor the volitional re-colonization of the Oregon portion of the Klamath River and tributaries by Chinook salmon, steelhead, coho salmon, and Pacific lamprey, and not release anadromous fish into the Oregon portion of the Klamath River and tributaries below Upper Klamath Lake unless re-colonization is proceeding too slowly according to criteria developed in the Reintroduction Plan; and develop a Reintroduction Implementation Plan prior to release of any Chinook above Upper Klamath Lake.

11.2. Oregon Fisheries Reintroduction and Management Plans

11.2.1. Preparation and Adoption

- A. Upon receipt of funding to implement this Agreement, but no later than upon state concurrence with an Affirmative Determination under Section 3 of the Hydroelectric Settlement, ODFW and the Klamath Tribes shall prepare, collaboratively with other Fish Managers, the Phase I Reintroduction Plan for reintroduction of anadromous Fish Species into Oregon reaches of the Klamath River Basin. Plan development will include measures to implement early components of reintroduction. It will include participation from interested Parties and other entities capable of adding appropriate technical expertise to the process. ODFW and the Klamath Tribes will use Best Efforts to finalize the Phase I Reintroduction Plan within one year of state concurrence with an Affirmative Determination under Section 3 of the Hydroelectric Settlement.
- B. The Phase I Reintroduction Plan will identify facilities and actions necessary to start the reintroduction, as well as monitoring, evaluation, and other investigations as appropriate to narrow uncertainties. The Phase I Plan will be adaptable in order to incorporate knowledge gained from monitoring and evaluation during the reintroduction. Additionally, the Fish Managers from the reaches of the Klamath River below Upper Klamath Lake will develop specific actions to be incorporated into the Fisheries Monitoring Plan to assess the volitional re-colonization of those reaches of river and tributaries by Fish currently blocked by Iron Gate Dam.
- C. ODFW and the Klamath Tribes shall implement the reintroduction actions in Oregon. Reintroduction actions in California shall be implemented by the Fish Managers in California.

- D. Once the implementation of Phase I Reintroduction yields results to guide the management of anadromous Fish in Oregon as described in Section 11.3.2, Phase II Reintroduction will be initiated.
- E. ODFW, in close coordination with the Klamath Tribes, shall prepare for the Oregon Fish and Wildlife Commission an Anadromous Fish Conservation Plan to guide ODFW's management of established anadromous fish populations in the Oregon reaches of the Klamath River Basin. The Oregon Fish and Wildlife Commission's decision on this plan will provide policy guidance to ODFW for participation in development of a basinwide plan to manage reintroduced fish populations in the Klamath Basin.
- F. Following the Oregon Fish and Wildlife Commission's approval of ODFW's Anadromous Fish Conservation Plan for Oregon's reaches of the Klamath River Basin, ODFW and other Fish Managers shall prepare collaboratively the Phase II Reintroduction Plan to describe the management of new populations of anadromous Fish in the basin as integral components of Fisheries management of the entire Klamath River Basin. The Phase II Reintroduction Plan will be incorporated into a plan for the management of Klamath Fisheries that will fulfill the requirements of the Pacific Fisheries Management Council. This latter plan will be prepared by the Fish Managers and will be submitted to the respective policy decision bodies of the Fish Managers for their adoption. This planning effort will include participation from interested Parties or other entities capable of adding appropriate technical expertise to the process.

11.2.2. Elements

The Phase I Reintroduction and Phase II Reintroduction Plans will present specific management options for managing Chinook salmon, coho salmon, steelhead trout and Pacific lamprey in the Klamath River Basin, where anadromous Fish were historically present. The implementation plan will identify near-term and long-term actions necessary to address key uncertainties and develop specific strategies for achieving the goals of reintroduction.

A. Schedule

ODFW shall conduct activities necessary to prepare the Phase I Reintroduction Plan beginning as early as 2010. Key investigations that do not require Fish passage through the Hydroelectric Project (e.g.

stock selection, outmigrant behavior, and reintroduction methods) will begin as soon as funding is available.

B. Lost River

The Reintroduction Plan will not propose to introduce anadromous Fish into the Lost River and Tule Lake subbasin.

11.3. Oregon Implementation

The Fish Managers shall annually provide a report to the Klamath Basin Coordinating Council on the progress of implementing the Reintroduction Plan. During implementation of the plans, the Fish Managers shall include participation by interested Parties and other entities capable of adding technical expertise to the process.

11.3.1. Implementation of Phase I Reintroduction

A. Above Upper Klamath Lake

In Phase I Reintroduction, ODFW and the Klamath Tribes, in collaboration with the other Fish Managers, shall introduce Chinook salmon into Upper Klamath Lake and tributaries. This phase will require active intervention and movement of fish into habitats above Upper Klamath Lake. A variety of release and rearing strategies will be utilized to optimize opportunities for success. An adaptive management approach will be utilized to determine appropriate race(s) and life history of Chinook to release (spring and/or fall Chinook) with best opportunities for successful rearing, emigration to the ocean and return.

B. Below Upper Klamath Lake

During Phase I Reintroduction, the Fish Managers shall monitor and evaluate natural re-colonization of native Chinook and coho salmon, steelhead trout and Pacific lamprey into the Klamath River and tributaries below Upper Klamath Lake. No active intervention or movement of Fish will be immediately proposed to re-establish salmon, steelhead or lamprey in these stream areas during the initial portion of Phase I Reintroduction. However, if monitoring reveals that re-colonization is not occurring or is too slow, the Fish Managers may pursue active reintroduction of salmon and lamprey into habitats below Klamath Lake.

C. Sport and Commercial Fisheries

To the extent possible, adult salmon returning to Upper Klamath Lake and tributaries from Phase I Reintroduction efforts shall be protected

to minimize their harvest in sport, commercial and tribal fisheries until the Phase II Reintroduction Plan is adopted.

D. Research

Research investigations shall be undertaken during Phase I Reintroduction to determine appropriate stocks which meet strict disease criteria and migration ability, potential competition and interaction of re-introduced Fish with existing native stocks, and natural production potential for anadromous Fish in the upper basin. In addition, research will inform adaptive management of active reintroduction efforts in and above Upper Klamath Lake.

11.3.2. Implementation of Phase II Reintroduction

On a continuing basis, the Fish Managers shall ascertain the status of reintroduced or recolonized populations of anadromous Fish in the Klamath River and tributaries. The Fish Managers shall include participation by interested Parties and other entities capable of adding technical expertise to the process. Once self-sustaining populations of Chinook salmon and steelhead are established in the Upper Klamath Basin, at levels of population productivity consistently above replacement, Phase II will be initiated. As described in Section 11.2.1.E, ODFW will initiate Phase II by preparing Oregon's Anadromous Fish Conservation Plan for the Oregon Fish and Wildlife Commission's approval. Following the Oregon Fish and Wildlife Commission's approval of the Anadromous Fish Conservation Plan, the Fish Managers and interested parties will develop the Phase II Reintroduction Plan. In Phase II Reintroduction, Fish Managers will implement management actions to achieve objectives identified in the Phase II plan that will guide basinwide management of the re-established fish populations. The re-established populations in the Upper Klamath Basin will contribute to the Fisheries of the basin as a whole. Management actions will insure that tribal, commercial, and sport harvests are managed in a way that provides for escapement of salmon and steelhead into the Upper Klamath Basin at levels that sustain healthy populations.

11.4. California Fisheries Reintroduction Plan

11.4.1. General

Natural reintroduction of anadromous fish within the California portion of the Klamath Basin will commence immediately once fish passage is restored. The California Department of Fish and Game shall adopt a passive (wait and see) approach to reintroduction which shall include development of reintroduction goals, monitoring protocols, habitat assessments and other investigations as appropriate. The Plan shall also include development of guidelines for use of a conservation fish hatchery to more quickly establish naturally producing populations in the wild if deemed appropriate and necessary.

11.4.2. Reintroduction Plan

Upon an Affirmative Determination by the Secretary under Section 3 of the Hydroelectric Settlement, the California Department of Fish and Game shall begin a California Fisheries Reintroduction Plan. The Plan shall be developed in collaboration with the Tribes and other Fish Managers and will be developed in coordination with the Oregon Fisheries Reintroduction Plan as described in Sections 11.2 and 11.3. It will include participation from interested Parties and other entities capable of adding appropriate technical expertise to the process. CDFG will use Best Efforts to finalize its California Fisheries Reintroduction Plan within two years of the Secretarial Determination under Section 3 of the Hydroelectric Settlement.

11.4.3. Adaptive Management

The Plan shall include an adaptive management approach during reintroduction to allow for inclusion of new information as it becomes available and provide flexibility in the methods used to achieve established goals. For example, if monitoring reveals that re-colonization is not occurring or is too slow, the Fish Managers may pursue active reintroduction of native anadromous fish. Such reintroduction actions could include a variety of release and rearing strategies to optimize opportunities for success. The adaptive management approach would be utilized to determine appropriate race(s) and life history of Chinook to release (spring and/or fall Chinook) with best opportunities for successful rearing, emigration to the ocean and return. Research would inform any adaptive management of active reintroduction efforts. One such research priority would be to determine appropriate stocks for active reintroduction which meet strict disease criteria and migration ability. Research would also need to address, potential competition and interaction of reintroduced fish with existing native stocks, and natural production potential for anadromous fish.

11.4.4. Conservation Hatchery

In the context of this Agreement, a conservation hatchery is an artificial fish production facility with the primary objective of enabling naturally produced fishes to fully support re-establishing populations. Fishes produced in such a facility must fit within the ecological context of the Klamath River such that (i) artificially produced fishes demonstrate the range of life history characteristics representative of naturally produced fishes; (ii) the genetic structure of the artificially produced fishes matches that of the naturally produced fishes; (iii) the number of fishes produced in the hatchery does not overwhelm the naturally produced fishes as returning adults; and (iv) artificially produced fishes do not introduce new diseases or greater susceptibility to existing diseases to the naturally producing population(s). A successful conservation hatchery program will continually decrease the dependence on artificial production as naturally produced fishes become more abundant, successful, and dispersed among the range of available habitats. A successful conservation hatchery eventually stops

Attachment 5

Yurok Tribe: Socioeconomic Analysis, Priorities, Needs, and Issues

Historic Places for the Klamath River Inter-Tribal Fish and Water Commission. In this report, Dr. King also evaluates the proposed re-licensing of the Klamath Hydro-Electric Project under a range of federal environmental laws. In his evaluation of Environmental Justice Executive Order 12898 he concludes:

Executive Order 12898 on “environmental justice” calls upon Federal agencies to do what they can to prevent disproportionate adverse environmental impacts on low income and minority populations. The tribes – both those that are federally recognized and those that are not – constitute such populations.

Guidance from the Council on Environmental Quality, Environmental Protection Agency, and Department of Justice indicates that agencies are to comply with Executive Order 12898 by identifying low income and minority communities that might be affected by their actions, by involving such communities in their environmental review work, and by working with such communities to identify and, if possible, avoid or mitigate disproportionate adverse effect on aspects of the environment that affect or are important to low income and minority people. In the case of the Klamath Riverscape, all the tribes (both federally recognized and non-recognized) are minority communities, and probably low-income as well.

It is evident from the preceding discussion that the dams contribute to a pattern of cumulative effects on the cultural values and interests of the tribes – aspects of the environment that are of great importance to them. This would be the case even if the Klamath Riverscape were found ineligible for the National Register, because whatever the significance of the riverscape in the eyes of the National Register, to the tribes it is utterly central to their cultural identity.

This being the case, it is equally evident that the effects of the dams, together with the other contributors to the Klamath’s plight, fall disproportionately on the tribes. While others live within the riverscape, travel through it, fish in it and hunt in it, only the tribes have an intimate cultural connection to the riverscape going back to time immemorial. Only to the tribes is the riverscape the core of their cultural identity. Maintaining and reinforcing this association is particularly important today, as the tribes work to reestablish their traditional belief systems and ways of life.

Yurok Comments on FERC EIS

In 2006 the Yurok Tribe provided extensive data and comments on the Draft EIS prepared by the Federal Energy Regulatory Commission (FERC) on the Klamath Hydro-Electric Project Relicensing Application filed by Pacificorp. Portions of these formal comments filed by the Yurok Tribe related to Environmental Justice issues and the inadequacy of the socio-economic analysis in the DEIS. Excerpts from these comments are provided in the remaining pages of this Chapter.

Socioeconomic Resources

A legitimate socioeconomic impact assessment of the Klamath Hydroelectric Project and current conditions must determine how the proposed *federal action* affects the lives of current and future residents of the impacted area. PacifiCorp selected a 5-mile and 50-mile corridor as the study areas identifies for analysis under the National Environmental Policy Act (NEPA), which effectively diluted the representation of Tribes that live on the Klamath River and its tributaries and distorted the impact the Klamath Hydroelectric Project has on those Tribes. A socioeconomic impact assessment must evaluate the impacts of the proposed *federal action* on low-income and minority populations. The analysis of impacts on low-income and minority populations must address both specific/direct and cumulative effects of the project on the populations' demographics, employment, income levels, aesthetic environments and community-specific social, health, and economic conditions. The FERC EIS failed to adequately assess or consider any of those criteria, particularly for their impacts on the Yurok Tribe, Yurok Indian Reservation, or other Native American tribes within the basin and watershed.

The National Environmental Policy Act mandates that the Lead Agency follow a valid, established, and legitimate scientific assessment and process for insuring NEPA compliance and considering the impacts and cumulative effects of the proposed federal action and any alternatives. Section 4332 of NEPA states:

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government shall -

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on -

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

The NEPA process is intended to promote excellent decision-making by federal agencies. It is intended to be interdisciplinary in scope. It requires compliance with all applicable federal and state laws. The Lead Agency cannot make any determination concerning compliance with federal and state laws if the necessary data have not been collected, and the necessary studies have not been conducted. The FERC EIS was fatally flawed because it did not contain the data necessary to identify and assess compliance with state and federal laws based on the Klamath Hydroelectric Project's effects on Native American tribes, reservation communities, and tribal trust resources.

The federal government, specifically those federal agencies involved in the preparation of the Secretarial Determination Overview Report and the associated NEPA analysis being conducted for the current proposed action, must fulfill its responsibilities under NEPA and to federally recognized Indian Tribes, especially to the Yurok Tribe; a tribe that has been undergoing active social, cultural, economic, and political restoration as a result of the Tribe's reorganization following the Hoopa-Yurok Settlement Act of 1988.

In 2006, out of concern over the lack of a legitimate socioeconomic analysis of the dams' impacts on Native American communities, the Yurok Tribe conducted a preliminary socioeconomic survey. The Tribe performed this survey as a preliminary way of identifying some of the potential socioeconomic impacts of the Project on the Yurok people. Because the Tribe recognizes the significance of these issues and understands the need for the Department of the Interior to have sufficient reliable information necessary to make a balanced and informed analyses under NEPA and for the Secretarial Determination Overview Report, the Tribe is providing key data and findings from this 2006 study in this report. Some of the key findings of this study, The Yurok Tribe's *Healthy River, Healthy People Traditional Foods Survey* are presented in the following comments. As these data and analyses will show, the FERC's socioeconomic data and analyses as presented in the Final EIS were biased and misrepresented or ignored socioeconomic impacts of the Klamath Hydroelectric Project on the Yurok Tribe, and Native American communities in general. This analysis was also submitted to the FERC in formal comments submitted by the Yurok Tribe on the Draft EIS to the formal FERC record in a separate filing. This 2006 study and the following data and findings have direct bearing on the Secretarial Determination Overview Report and the NEPA analysis currently underway. It is being submitted to the Bureau of Indian Affairs (BIA) due to its relevance and bearing on issues of tribal trust responsibilities of the federal government and its agencies.

Executive Order 12898 on Environmental Justice requires all federal agencies to consider the impacts of their actions on low-income and minority populations. Native American communities and Tribes are by all definitions low-income and minority populations. Federal and state laws, statutes, and government policies on Environmental Justice (EJ) that must be considered in the current NEPA and CEQA analysis and the Secretarial Determination Overview Report also include:

Federal Environmental Justice:

- Constitution of the United States;
- Title VI of the Civil Rights Act of 1964 (42 USC sec. 2000 et seq.) -Non discrimination in programs with Federal Funds;
- 40 CFR 7.35 (No disparate impacts from programs with Federal funds); and
- Executive Order 12898 (Established Federal EJ program).

State Environmental Justice:

- California State Constitution;
- Government Code section 65040.12 (Definition of EJ and designation of OPR as coordinating agency for EJ);
- Government Code section 65040.2 (requiring OPR to develop EJ guidance for General Plan); and
- Public Resources Code § 71110 et seq. (Established CA EJ program).

California Public Resources Code § 71110 et seq:

71110. The California Environmental Protection Agency, in designing its mission for programs, policies, and standards, shall do all of the following:

- (a) Conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state.
- (b) Promote enforcement of all health and environmental statutes within its jurisdiction in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations in the state.
- (c) Ensure greater public participation in the agency's development, adoption, and implementation of environmental regulations and policies.
- (d) Improve research and data collection for programs within the agency relating to the health of, and environment of, people of all races, cultures, and income levels, including minority populations and low-income populations of the state.
- (e) Coordinate its efforts and share information with the United States Environmental Protection Agency.
- (f) Identify differential patterns of consumption of natural resources among people of - different socioeconomic classifications for programs within the agency.

The socioeconomic analysis in the FERC EIS failed to present any evidence of tribal consultation in the NEPA process by the FERC on Project impacts on the Yurok Tribe. The relationship between the United States and Indian tribes is defined by treaties, statutes, and

judicial decisions. Indian tribes have various sovereign authorities, including the power to make and enforce laws, administer justice, and manage and control their lands and resources. Through several Executive Orders and a Presidential Memorandum, departments and agencies of the Executive Branch have been directed to consult with federally recognized Indian tribes in a manner that recognizes the government-to-government relationship between these agencies and tribes. In essence, this means that consultation should involve direct contact between agencies and tribes, in a manner that recognizes the status of the tribes as sovereign governments. Some applicable statutes on the federal responsibility regarding government-to-government consultation with Tribes include:

- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (issued November 6, 2000);
- Executive Order 13084, Consultation and Coordination with Indian Tribal Governments (issued May 14, 1998);
- Presidential Memorandum, Government-to-Government Relations with Native American Tribal Governments (issued April 29, 1994), reprinted at 59 Fed. Reg. 22,951; and
- Executive Order 12875, Enhancing the Intergovernmental Partnership (issued October 26, 1993).

In order for the Lead Agency, the BIA, or the Secretary of the Interior to make an accurate and valid determination of the current conditions on tribal trust resources, it must engage in meaningful consultation with Tribes, particularly on the design and implementation of research used to identify and assess Project impacts on tribal communities, tribal governments, tribal economies, and reservation communities. As the final FERC EIS illustrates, this consultation has yet to occur. Further, the socioeconomic analysis in the EIS makes it evident that PacifiCorp failed to make a valid or defensible effort to assess Project impacts on the Yurok Tribe, the YIR, and the Yurok People who have born the disproportionate costs of the Klamath Hydroelectric Project in the loss of many tribal trust resources, tribal trust species, cultural, traditional and ceremonial resources, traditional subsistence resources, and other significant tribal trust resources on which the Yurok Tribe relies for its survival, restoration, and recovery from more than one hundred years of cultural genocide, racism, oppression, and injustice that continues to affect the Tribe through the present-day.

Restoration of the Klamath River, its species and its fishery is an appropriate first step to begin to mitigate the decades of trauma and injustice inflicted upon Klamath River tribes, and the Yurok Tribe in particular. In fact, the Klamath Watershed is one of the few areas where that which was taken from the Yurok people can be restored. Klamath River and Basin Tribes have historically paid, and continue to pay the highest, and most adverse social, cultural, and economic costs for the Project. The failure of the FERC EIS to address these disproportionate impacts on tribal communities invalidates some of the conclusions in the FEIS. Therefore, the BIA cannot simply rely upon the FERC EIS findings specific to Environmental Justice and Tribal Trust issues.

Affected Environment

Yurok ancestral territory lies entirely within Humboldt and Del Norte Counties. The aboriginal territory used by the Yurok Tribe extended into adjacent counties. Today, the Yurok Indian Reservation (YIR) encompasses one mile on either side of the Klamath River from the Mouth at the Pacific Ocean upstream 45 miles, extending though both Del Norte and Humboldt counties. As demonstrated in the previous Yurok Tribe submissions (Sloan 2003, Gates 2003, King 2004) to the FERC, the center of Yurok culture and life has always been, and continues to be, the Klamath River. The Klamath River is the common thread that unites and connects all Klamath River Basin Tribes, in spite of distinct histories, cultures, languages, and governments.

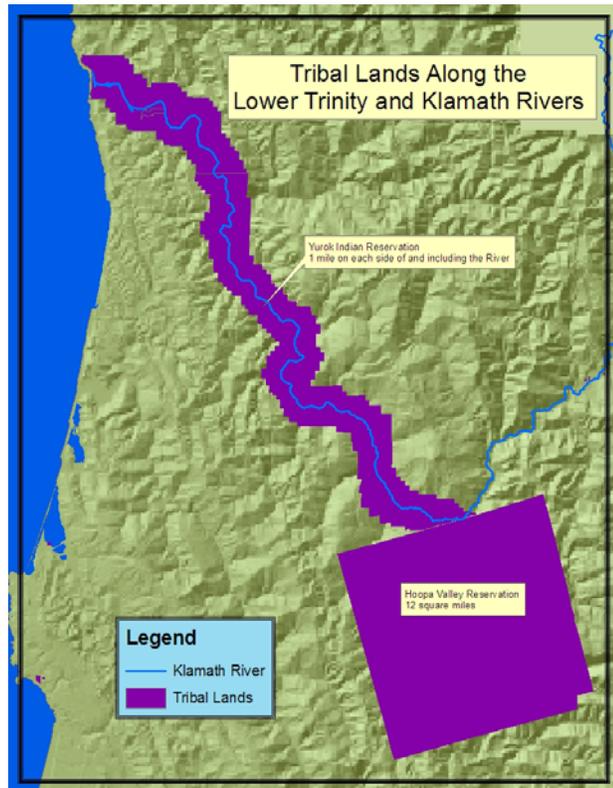
The Yurok relationship to the Klamath River has been well-documented for the purposes of evaluating current conditions and potentially effected tribal trust resources (Sloan 2003). Abundant data exist within peer reviewed and published literature that document the Yurok reliance on the Klamath River and its abundant resources for their cultural, spiritual, economic, and political survival and for their prosperity and well-being. Information on this data (archival, historical, primary, and ethnographic documents as well as academic studies and peer-reviewed literature) have already been provided to PacifiCorp and the FERC, yet none of this information was utilized in the Final EIS. The FERC EIS failed to adequately acknowledge the previous submissions to the FERC that address the socioeconomic and cultural impacts on the Yurok Tribe resulting from the operations of the Klamath Hydroelectric Project, particularly the impacts on those tribal members who live within Yurok ancestral territory. Furthermore, the EIS mischaracterized the demographic and economic realities of Native American communities within the Klamath River Basin and watershed, the impact of the loss of the Tribe's subsistence and commercial fishery on the tribal and reservation communities and economies, and the significance of the Klamath River and the health of the Klamath River ecosystem to the past, present, and future of Yurok People.

The BIA and the Secretary of the Interior need to address the fact that the current conditions of the Klamath Hydroelectric Project have had a disproportionate and adverse impact on those Native American communities that have always relied, and continue today to rely upon the Klamath River. Executive Order 12898 on Environmental Justice directs all federal agencies to consider the impacts of their actions on low-income and minority populations. Furthermore, California Environmental Justice law requires that California agencies consider the impacts on differential rates of consumption for low-income and minority communities. The FERC EIS failed to accurately portray or assess the impacts and cumulative effects of the Project on Native American tribes, low-income and minority communities that rely upon the Klamath River and its resources for their subsistence, culture, spiritual traditions and practices, and local economies. These tribal communities experience significantly higher rates of food insecurity, poverty, and unemployment than non-Indian communities within the counties included in the study area (Fig.1-5). The FERC must consider the impacts of the Project, and any application for continued operations, on the Yurok Tribe, especially the impacts on Tribal Members

residing on the Reservation and within the two counties (Humboldt and Del Norte, CA) that contain the Yurok Ancestral Territory.

PacifiCorp did not provide adequate data or analysis for the FERC to make an accurate assessment on the determination of the affected environment. It is the position of the Yurok Tribe that PacifiCorp and the FERC did not adequately fund or conduct the necessary socioeconomic impact assessments, environmental justice analyses, cultural resources studies, or cumulative effects analyses and as a result, the information provided to the FERC by PacifiCorp was both flawed and misleading and resulted in inadequate analysis in the Final FERC EIS. It is the responsibility of the Department of the Interior, specifically the Secretary of the Interior to consider these omissions and following data in the final assessment that will lead to the Secretarial Determination for the current proposed action to remove the dams and implement the Klamath Basin Restoration Agreement (KBRA) and the Klamath Hydroelectric Settlement Agreement (KHSA).

The BIA is evaluating the effects of current conditions and the proposed Action (to remove the dams and implement the KBRA and KHSA) on tribal trust resources and the federal government's trust responsibility the effected federally recognized Indian Tribes. The Yurok Tribe has maintained and continues to maintain that impacts of the Klamath hydroelectric Project dams extend downstream of the dams to the Klamath River mouth



to at the Pacific Ocean and beyond. For the Yurok Tribe, the affected environment is the Tribe's ancestral territory as well as those areas within the external boundaries of the YIR. The federal government has a trust responsibility for reservation and non-reservation trust lands; all of which are lands held in trust for the Tribe by the US Department of Interior. The FERC EIS and PacifiCorp failed to recognize the unique status of the Yurok Tribe, whose reservation occupies both sides of the Lower Klamath River (part of PacifiCorp's 'downstream subregion'), a region that suffers the cumulative adverse effects of everything that occurs upstream in the watershed. The FERC EIS failed to assess these impacts, or even acknowledge the overwhelmingly disproportionate adverse effects upon Yurok Tribe and its members. The FERC EIS not only failed to do this, but relied entirely on information provided by PacifiCorp that appears to be presented in an attempt to deliberately mask the socioeconomic realities of the YIR and

the Yurok Tribe and to avoid addressing the Project impacts on the Tribes within the region. The economic conditions on the Reservations in the downstream subregion are significantly worse compared to those in the downstream counties; likewise, Tribes suffer significantly greater poverty and food insecurity than the surrounding non-Indian communities in the downstream subregion. Thus, economically disadvantaged Native American communities have borne the disproportionate socioeconomic costs of the Project resulting in the decline of the fishery and the decline or loss of numerous traditional cultural species resulting from altered riparian conditions caused by the Klamath Hydroelectric Project dams and current conditions.

Demographic Characteristics

The FERC EIS failed to consider the historical, cultural and economic geography of *tribal lands* within the Klamath Watershed. By using five- and fifty-mile corridors, the analysis offered by PacifiCorp diluted the representation of Tribes. Further by using county, city and census-designated-place data to describe the economic context of the project, the FERC EIS grossly underestimated the levels of unemployment, poverty and food insecurity in Indian Country—conditions that increased abundance of salmon and other fish species would *directly* ameliorate through increased subsistence and commercial harvests. The FERC EIS did not include data that included the socioeconomic and cultural impacts of the Klamath Hydroelectric Project on Tribes and Tribal Lands within the PacifiCorp-designated downstream five-mile corridor, nor was any economic, social or cultural justification given for using a five-mile corridor in their socioeconomic analysis. Given that both downstream and upstream Reservations are immediately adjacent to the Klamath River and its tributaries, it difficult to understand why an analysis of the socioeconomic impacts of the Klamath Hydroelectric Project on the Tribes, Reservations and Trust Lands was missing from the FERC EIS, even though it was provided to the FERC in formal comments on the Draft EIS in 2006.

The earliest historic accounts of non-Indian encounters with the *Poh-lik-lah*, the Down-River-People, the name the Yurok People used for themselves, document in great detail the elaborate cultural, spiritual, subsistence, and economic importance of the Klamath River and its abundant species of salmon, steelhead, pacific lamprey, eulachon, and sturgeon to the Tribe. As previously summarized in the Sloan (2003) Ethnographic Inventory, the Klamath River has always been the center of Yurok life and culture. This traditional life and culture continues today, in spite of the economic, social and cultural dislocation that the Tribe has experienced over the past 150 years. Yurok People continue to live, pray, practice, fish, and rely upon the Klamath River. The Yurok culture or Tribal Members' desire to continue a traditional way of life persist, but the loss of economic viability as a result of dramatically declining fish populations threatens the ability of the Yurok Tribe to continue practicing their traditions.

The FERC EIS failed to adequately address the socioeconomic impacts of the loss of the commercial fishery on the Yurok Tribe, but also fails to adequately assess the socioeconomic impacts resulting from the decline of a viable subsistence fishery. The Yurok Tribe is submitting this data to illustrate the importance of the subsistence fishery

to the Yurok Tribe, particularly for those living on the YIR and within Humboldt and Del Norte Counties. Loss of an abundant and reliable subsistence harvest compounds the extremely high levels of food insecurity experienced within these Yurok communities (Fig. 10).

Employment data and analysis used in the Secretarial Determination Overview Report and associated NEPA and CEQA analysis currently underway must clearly identify the data specific to the Yurok Tribe, the YIR, and other Native American communities within the Klamath River Basin. Tribe-specific data should then be compared against the county and state employment data. Because county-specific data for Tribes is not available in the US 2000 Census⁴, these county-specific data will need to be collected before any appropriate analysis can be performed. Using available Tribal, BIA Labor Force, and Census data, the Yurok Tribe Environmental Program performed a preliminary analysis of the economic conditions of Tribes and reservations in the downstream subregion to illustrate the disparity between tribal communities and non-Indian sectors within the 5-mile corridor. Although the Yurok Tribe experiences adverse and disproportionate impacts from the current operations, data and analysis fail to address the impacts of the Project on downstream tribal communities who rely on a healthy fishery for their subsistence, cultural, spiritual, and economic survival and prosperity. The FERC EIS used county, city and census-designated-place data while ignoring the cognate 2000 census data available for reservations and non-reservation trust lands. There is no excuse for excluding sources of data on affected Tribes, such as the data from the 2000 US Census, from this analysis or any analysis currently underway for determining the effects of current conditions on the Yurok Tribe or Yurok trust resources. The Secretary and the BIA must consider the data submitted in the following sections in its analyses and reports. The current analysis must accurately capture and evaluate the very real and cumulative adverse impacts of the Klamath Hydroelectric project on Yurok Trust resources and the Yurok people.

Population, Race and Ethnicity

The 2000 Census data on demography, race and ethnicity for the ‘downstream’ Reservations (Yurok Indian Reservation or YIR and Hoopa Valley Indian Reservation or HVIR) paint a very different portrait than the one offered by the FERC in the final EIS for the downstream subregion. Not surprisingly, 75% of the population living within these lands is designated by the 2000 U.S. Census as “American Indian alone or in combination with one or more other races”⁵. Population growth rates for the region are also distinct; based on data from the 1990 and 2000 US Census, the population of the two reservations grew by an average 46%—a significantly higher growth rate than those cited for the downstream subregion within the EIS^{5,6}.

⁴ US Census Bureau, 2006 Letter, Question Reference #061117-000054, copy available upon request

⁵ U.S. Census Bureau, Census 2000 American Indian and Alaska Native Summary Profile of Selected General Demographic Characteristics 2000 http://factfinder.census.gov/servlet/QTTable?_bm=y&-reg=DEC_2000_SFAIAN_DP1:20A|69A;&-qr_name=DEC_2000_SFAIAN_DP1&-ds_name=DEC_2000_SFAIAN&-geo_id=01000US&-lang=en&-format=&-CONTEXT=qt

⁶ U.S. Census Bureau, Census 1990 Census Summary Tape File 1 (STF 1) – 100 percent data;

http://factfinder.census.gov/servlet/DatasetMainPageServlet?_lang=en&-ts=182194946578&-ds_name=DEC_1990_STF1_&-program=

Economic Sectors

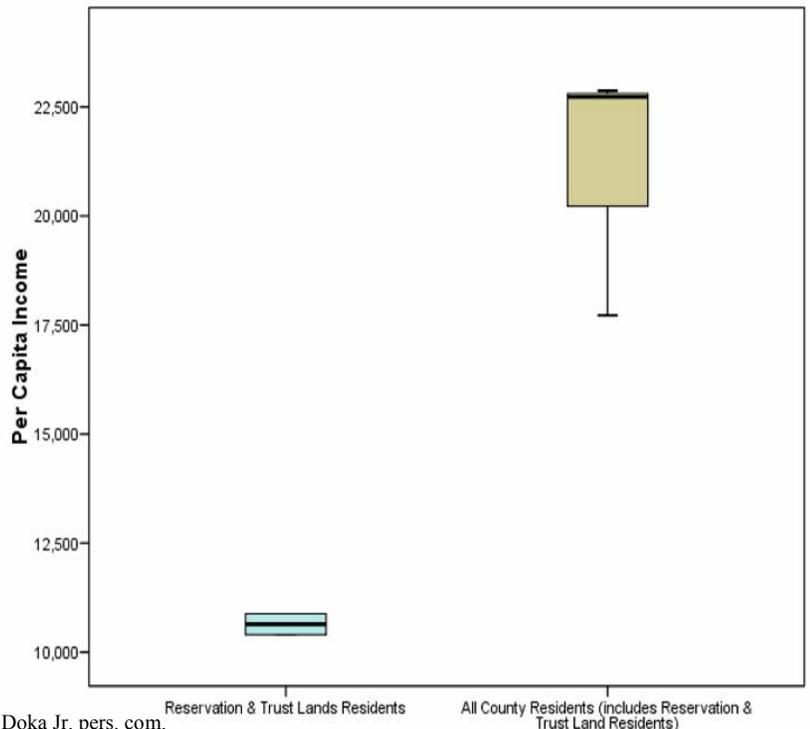
The FERC EIS failed to accurately portray the political and economic realities of tribal governments and Indian reservations. Tribal and reservation economies are unique and specific to each tribe, often operating as closed or semi-closed economic entities independent of state or county economic trends. PacifiCorp and the FERC failed to evaluate the socioeconomic impact of the Project on tribal and reservation communities within the 5- and 50-mile corridors even though there are six (i.e. Klamath Tribes, Quartz Valley Indian Tribe, Karuk Tribe, Hoopa Tribe, Yurok Tribe and Resighini Rancheria) federally recognized Indian Tribes with recognized tribal governments and within these corridors. Socioeconomic impacts of the Project on the Yurok Tribe and other federally recognized Indian Tribes must be evaluated using accurate demographic, economic, social, cultural and epidemiological data for both the YIR and the Tribe as a whole.

The following preliminary analysis was submitted as evidence that the data provided to the FERC by PacifiCorp was incomplete and misleading and resulted in a flawed analysis in the FEIS.

Employment and Income

The Tribes that live on the Klamath River have suffered and continue to suffer major losses of cultural, subsistence and commercial resources. Despite the net job growth cited by the DEIS the unemployment rate of Tribes in the downstream subregion is extremely high and significantly greater than that experienced by the counties in the downstream subregion ($G=66.77$, $p<0.001$).

Employment data for 2001 from the BIA⁷ indicate that the unemployment rate is 75% for Yurok and 40% for Hoopa Tribal Members. Comparable data for the downstream three counties in 2001 are much lower; Humboldt and Del Norte and Curry County Oregon having 6%, 8.1% and 6.9% unemployment respectively.⁸ Likewise, there is significant disparity in the median per capita income between the downstream Reservations and the counties in the downstream subregion (Fig. 3).⁹



7 Unemployment figures for Tribes (not reservation) BIA 2001 F. Doka Jr. pers. com.

8 2001 Unemployment figures for counties Bureau of Labor Statistics <http://www.bls.gov/lau/#tables>

In contrast to the figures reported in the FERC EIS, between 1990 and 2000 people living on the YIR experienced a *net increase* of 59% in employment in the agriculture, forestry, fishing, hunting and mining sector, while the HVIR saw a net decrease of 7% in the same sector comparing data in the 1990 and 2000 US Census. In 2000 this sector employed 10.7% and 6.7% of Yurok and Hoopa Reservation residents respectively. Contrary to the statement in the DEIS that “employment related to recreation and tourism is not separately reported in the census” (p. 3-474), data on employment in the “arts, entertainment, recreation, accommodation and food services” sector are reported for both Reservations in the 2000 US Census. For the YIR this sector provided 18.1% of all employment in 2000, whereas for the HVIR the proportion was lower, at 3.8%.¹⁰

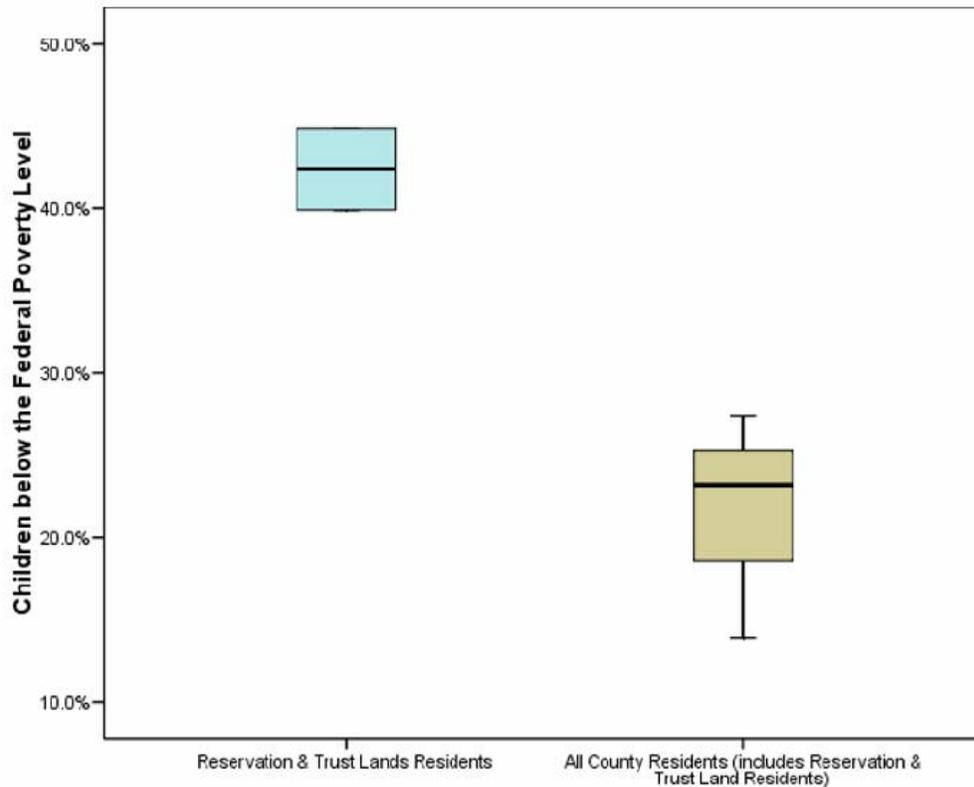
Declining fish stocks have affected all aspects of Yurok life. All the species on which Yurok People depend upon are in decline; largely because of effects the Klamath River Hydro-electric Project has had upon the fishery resource. As noted in Table 3-55 of the DEIS, the Yurok Tribe has had only minimal levels of fall Chinook commercial harvest during four of the past fifteen years. During the remaining 11 years the Yurok Tribal Council determined that the projected abundance of Klamath fall Chinook was insufficient to support a commercial fishery. For the past 15 years, the Yurok Tribe has also forgone commercial harvest of species other than fall-run Chinook (with the exception of minimal numbers of spring Chinook that were harvested during the beginning of the fall Chinook fishery). The Yurok Tribal Council has chosen not to have any commercial fisheries for other species such as spring-run Chinook salmon, Coho salmon, steelhead, lamprey, eulachon and sturgeon because of their concern regarding the status of these other species.

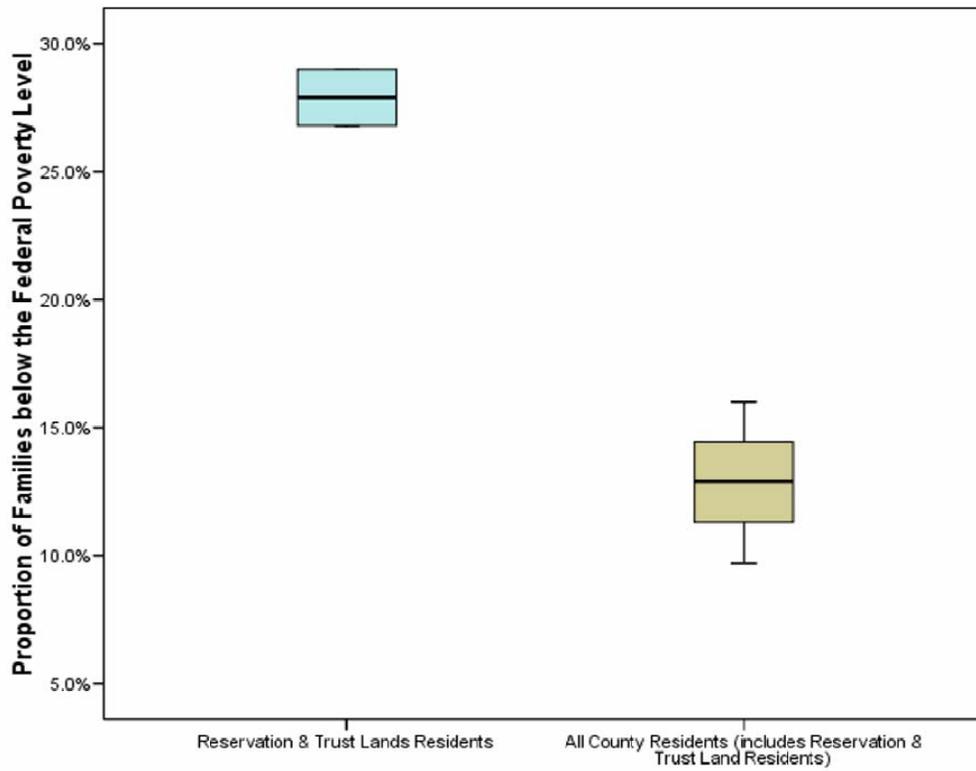
Poverty, inadequate access to traditional foods and resources, high unemployment rates and lack of food security are critical problems for the Yurok Tribe. The 2000 US Census indicates that 27% of families and 33% of individuals living on the Yurok Indian Reservation (YIR) fell below the federal poverty level in 1999¹⁰. For the Tribe as a whole, irrespective of residence location, the 2000 census data suggest that 20% of families, 25% percent of individuals and 26% of children fell below the federal poverty level¹⁰. For families with children the situation is worse: 26% of families with children under the age of eighteen and 32% of families with children under the age of five were below the federal poverty level in 1999 and 38% of Yurok families with a female head of household and no husband present fell below the federal poverty level in that year¹⁰. Figures four through six, compare the proportion of children, families and individuals living on the downstream Reservations with children, families and individuals living in the surrounding counties the downstream subregion living below the federal poverty level in 1999; in all cases, significantly greater proportion of children, families

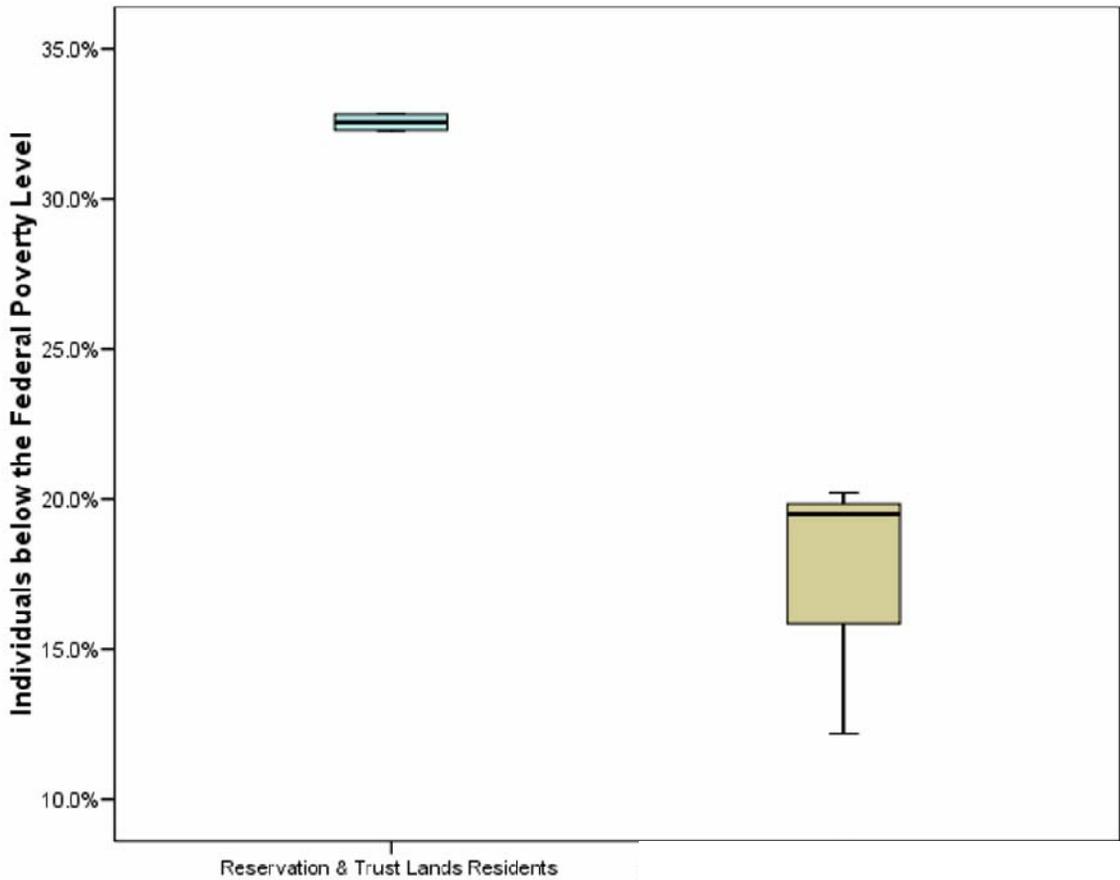
9 U.S. Census Bureau Census 2000 DP-3: Profile of Selected Economic Characteristics: 2000 Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data, Geographic Areas: Humboldt & Del Norte County, California, Curry County, Oregon.

10 U.S. Census Bureau, Census 2000 American Indian and Alaska Native Summary Profile of Selected General Economic Characteristics 2000 http://factfinder.census.gov/servlet/QTTTable?_bm=y&-reg=DEC_2000_SFAIAN_DP3:20A|69A;&-qr_name=DEC_2000_SFAIAN_DP3&-ds_name=DEC_2000_SFAIAN&-geo_id=01000US&-lang=en&-format=&-CONTEXT=qt

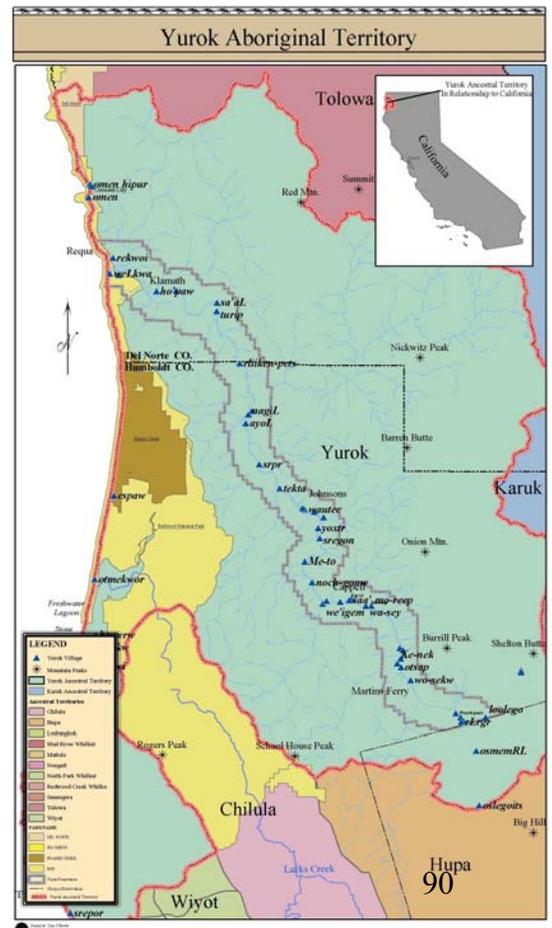
and individuals living on the downstream Reservations fall below the federal poverty limit than do the children families and individuals living in the downstream counties (chi-square, $p < 0.001$, in all cases).^{9,10}







In 2006 the Yurok Tribe circulated a survey to determine the impact of the deteriorating health of the Klamath River on the health and wellbeing of Tribal Members. The *Healthy River, Healthy People, Traditional Foods Survey* collected data on access to traditional resources, economic status, medical conditions and the influence of water quality on Tribal Members health and wellbeing. The survey was only sent to adults (i.e. individuals 18 years of age or older) and response rate was >12%. 56% of respondents lived within the Ancestral Territory (Fig. 7) and 44% lived elsewhere. There were no significant differences in age or sex between the respondents living in the Ancestral Territory and those living elsewhere



(F=0.99, p=0.32, G=0.44, p=0.51, respectively). Regardless of where they live, the majority of respondents consider the Ancestral Territory in general, and the Klamath River in particular, home. It has been less than two hundred years since the Yurok Tribe was displaced from the Ancestral Territory and the Yurok continue to rely on the Klamath River and its abundant resources for their cultural, spiritual, economic, and political survival and for their prosperity and wellbeing and so the Klamath River is home.

I was born and raised on the River. My life is woven with the river and its fish and people. If the River is sick, so am I. So are we all, because it is our spirit and strength. It is not the simple fact of eating healthy food from the River that is important... It is the knowing in my mind, heart and spirit that the River itself is whole and healthy. We are merely a reflection of the river, and will never be healthy again until it is.

(Yurok Tribal Member Survey Respondent 2006)

Preliminary analyses of household income data from the *Healthy River, Healthy People, Traditional Foods Survey* are broadly congruent with census data for the Reservation and the Tribe. Data from both the Tribe's Survey and the 2000 US Census indicate that Yurok Tribal members living in Humboldt & Del Norte Counties suffer significantly greater poverty and unemployment compared to the populations of the three counties taken as a whole. A greater proportion of Yurok Tribal Members living within the Ancestral Territory earn less than \$10,000 per annum compared to the three counties in the downstream subregion taken as a whole (G=10.25, p<0.01) (Fig. 8). Significant economic disparities also exist between Tribal Members who remain within the Ancestral Territory and those who reside outside of the Ancestral Territory (G=23.69, p<0.005) (Fig. 9). The data presented here support the common assertion by Tribal Members that they are forced by economic circumstances to move away from home.

Even though I live in town, I still live and choose to live close enough so I can go to the River whenever I choose. I participate in ceremonies on the River. If it were possible, I would live on the River, to see it and hear it and smell it every day and every night. I will not be completely healthy again until I can look out my front door at night and see the salmon moving up the River as they did when I was a child.

(Yurok Tribal Member Survey Respondent 2006)

Figure 8. Comparison of individuals earning less than \$10,000PA in the counties in the downriver subregion with Yurok Tribal Members living in the Ancestral Territory within those two counties who earn less than \$10,000 PA.

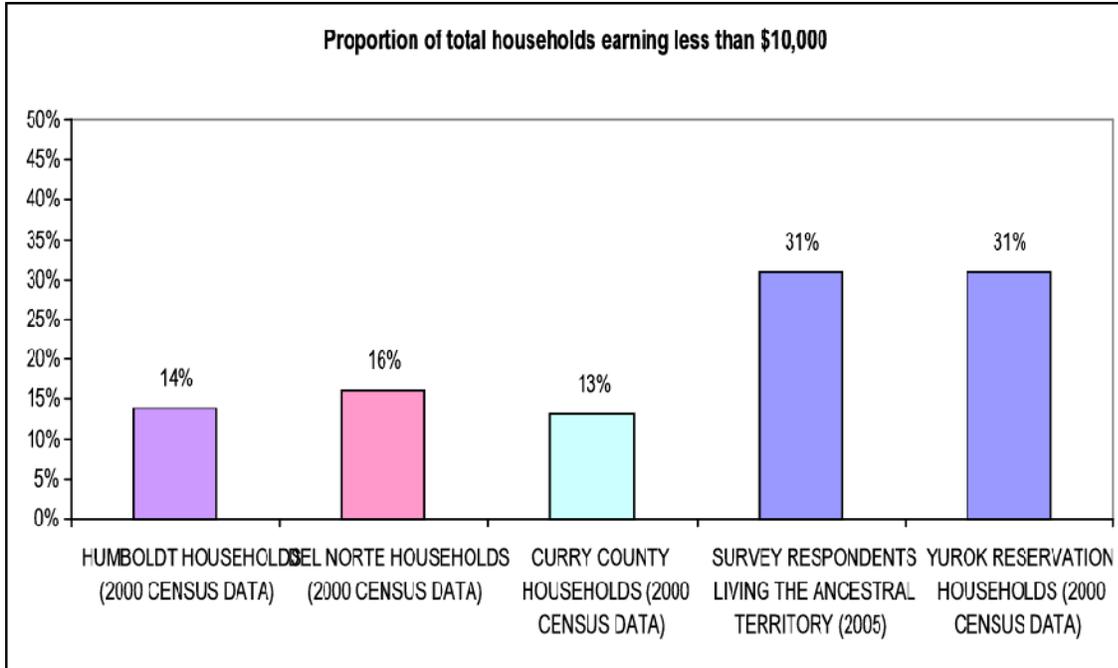
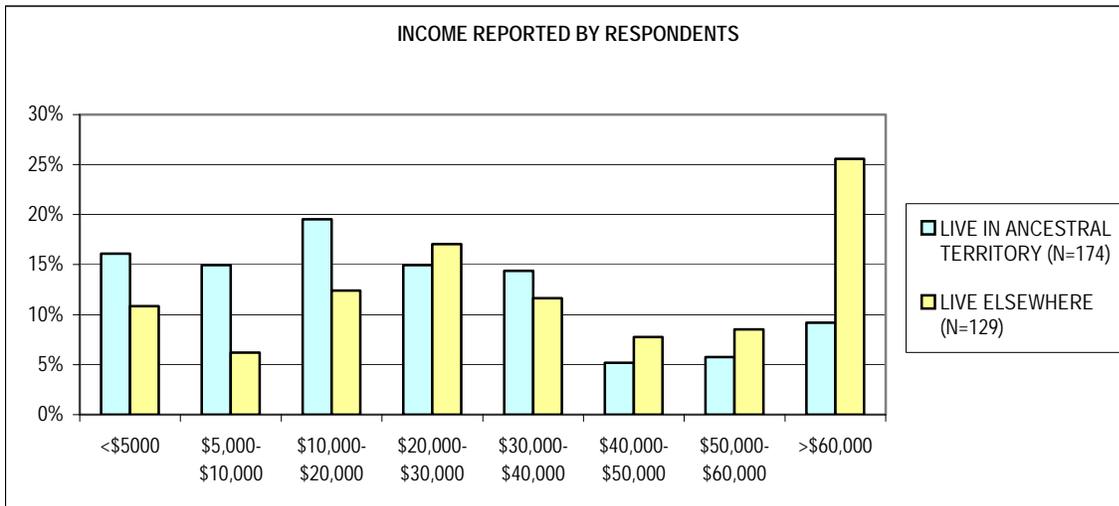


Figure 9. Comparison of income reported by survey respondents living within and outside of the Yurok Ancestral Territory



Similarly, food security continues to pose a significant problem for Tribal members. As defined by Harrison *et al.* in their 2002 UCLA Health Policy Research Brief, families and households in California are food insecure if their income is <200% of the federal poverty level¹¹. According to the 2000 US Census, the average size of a Yurok family or household is three persons.¹² If we assume that the ‘average’ Yurok family or household in 2006 also consisted of three people, the federal poverty level for that family/household in 2006 is \$16,600¹³ and 200% of the poverty level for an ‘average’ Yurok family/household is \$33,200. By the definition of food insecurity used by Harrison *et al.* (2002) 57% of Yurok families/households lack basic food security.

Respondents living within the Ancestral Territory are even more at risk: 80% lack basic food security. The 2000 Census reports that 68% of individuals living on the YIR were below 200% of the Federal Poverty Level in 1999, the survey data suggest that poverty, and with it, food insecurity has increased within the Ancestral Territory during the six years since the census was performed.

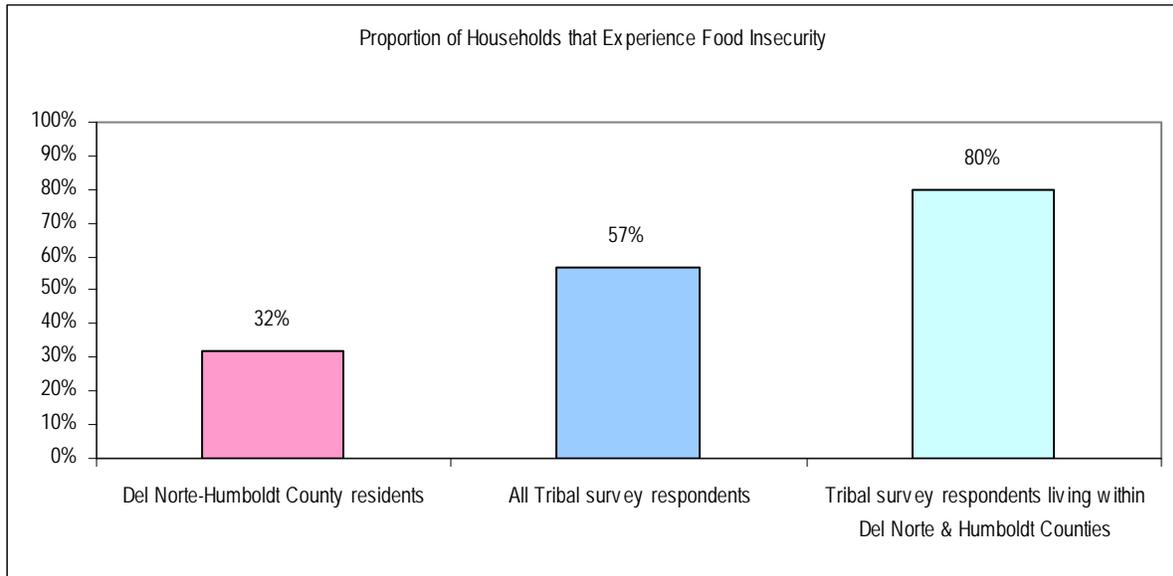
How do Tribal Members compare with the general population living within the Ancestral Territory? The UCLA study analyzed Del Norte and Humboldt Counties, together and found that, as of 2002, 32% of residents were food insecure (Fig. 10). The prevalence of hunger and food insecurity among Yurok Tribal Members residing within the Yurok Ancestral Territory in 2006 is almost three times that reported for the general population of Humboldt and Del Norte Counties in 2002.

11 Harrison, G.G. C.A. Disogra, G. Manalo-Leclair, J. Aguayo, W. Yen. 2002. Over 2.2 Million Low-Income California Adults Are Food Insecure; 658,000 Suffer Hunger. Policy Brief, UCLA Center for Health Policy Research, November 2002. Available online at <http://www.healthpolicy.ucla.edu/pubs/files/FoodInsecurity.pdf>

12 U.S. Census Bureau, Census 2000 American Indian and Alaska Native Summary Profile of Selected General Demographic Characteristics 2000 http://factfinder.census.gov/servlet/QTTable?_bm=y&-reg=DEC_2000_SFAIAN_DP1:20A|69A;&-qr_name=DEC_2000_SFAIAN_DP1&-ds_name=DEC_2000_SFAIAN&-geo_id=01000US&-_lang=en&-format=&-CONTEXT=qt

13 Federal Register, Vol. 71, No. 15, January 24, 2006, pp. 3848-3849

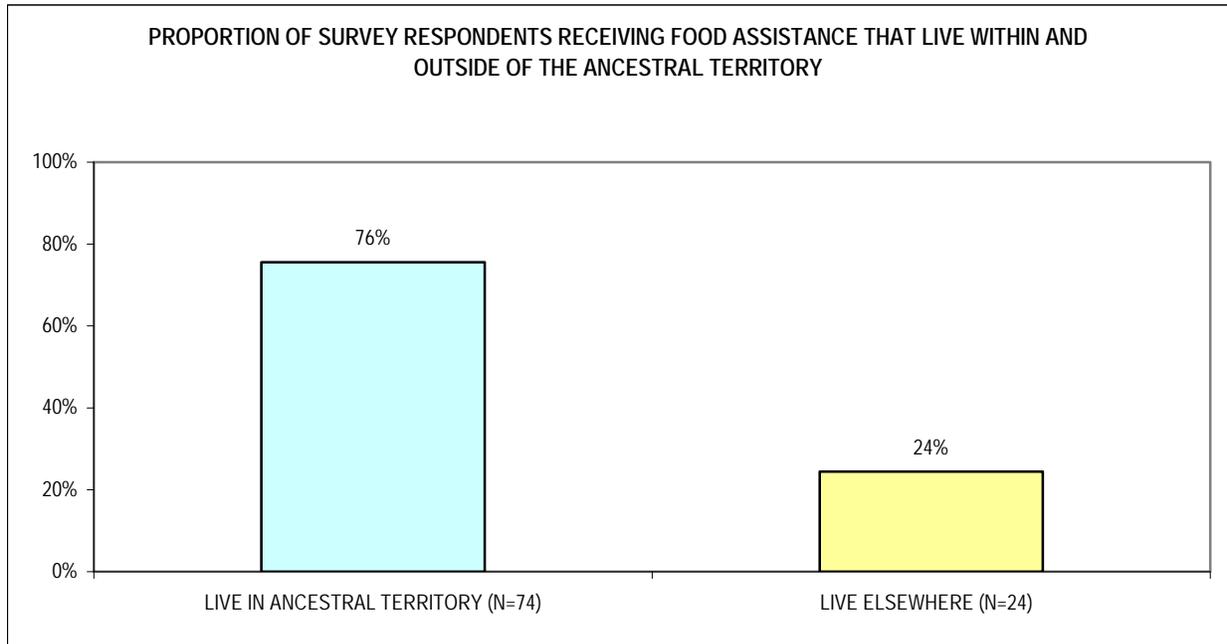
Figure 10. Proportion of households that experience food insecurity, data for Del Norte & Humboldt County residents from Harrison *et al.* 2002¹¹.



These estimates of food insecurity correlate well with the results of the survey regarding food assistance programs. Survey results indicate that 31% of the 305 respondents who answered the survey questions regarding food security receive some form of food assistance on a regular basis (compared to 57% classified as food insecure above), with the majority of aide going to respondents living within the Ancestral Territory ($G=21.12$, $p<0.001$) (Fig. 11).

This document uses respondents' reports of participation in the federal food assistance programs (Food Stamps, WIC and Commodity Supplemental Foods Program) as a surrogate variable for low income status since eligibility is directly linked to income (130%-185% of the federal poverty level). Because all individuals who are eligible for food assistance do not apply, the numbers used here undoubtedly underestimate the number of low income households within our pool of respondents. Harrison *et al.* (2002) report that, of income eligible persons in California who report hunger, less than 20% of adults participate in the Food Stamp Program and only 66% of hungry, eligible, pregnant women participate in WIC.¹¹

Figure 11. Comparison of food assistance between respondents living within and outside the Ancestral Territory.



Historically, Yurok People were able to harvest fish from the Klamath River all year-round. People harvested fall Chinook and Coho salmon during the late summer/fall; steelhead, lamprey and candle fish during the winter and spring Chinook, sturgeon and lamprey during the spring and summer. The decline in these and other river species means that the Yurok People can no longer sustain themselves from the river on a year-round basis. In any community where 80% of the people lack basic food security this loss is ruinous. For the Yurok People who are recovering from more than one hundred years of cultural genocide the loss is catastrophic. Any assessment of the impact of the current conditions on the Yurok Tribe, the federal government’s trust responsibility and any impacts of current conditions on tribal trust resources must consider these facts.

Dependence on food assistance and lack of traditional foods have been implicated in the development of a range of medical conditions. ¹⁴¹⁵ Preliminary results from the Healthy River, Healthy People, Traditional Foods Survey suggest that similar patterns may exist within the Yurok Tribe. For example, the prevalence of diabetes among survey respondents 65 years and older is significantly greater among those who receive food assistance than those who do not ($G=5.64$, $p<.0.05$) (Fig. 12). In contrast, the prevalence of obesity, hypertension and heart disease and other related disorders show no significant differences between those who receive food assistance and those who do not.

14 Dillinger, Teresa L. et al. 1999. Feast or famine? Supplemental food programs and their impacts on two American Indian communities in California. *Intl. J. Food Sci and Nutr.* 50:173-187.
 15 Norgaard K. 2005. The Effects of altered diet on the health of the Karuk People. A Report prepared for the Karuk Tribe of California

The prevalence of diabetes among American Indians and Alaska Natives is 2.3 times greater than that of non-Hispanic Whites and as of 2002, diabetes prevalence for American Indian and Alaska Natives as a whole was 15.3%¹⁶. Yurok Tribal Members report comparable levels of diabetes by and large, although they do report higher levels of diabetes among younger (25-30 year olds) and older (65 and older) age classes compared to the diabetes levels reported for American Indian and Alaska Natives as a whole (Fig. 13)¹⁶. Further research is needed to determine if these differences are significant and to determine the underlying factors associated with these high-than-average rates of diabetes among Yurok Tribal Members. Comments concerning the prevalence and incidence of diabetes within the FERC EIS indicate a lack of familiarity with the medical literature: Native American populations experience a disproportionately higher prevalence of diabetes than the overall US population. Contrary to statements within the FERC EIS, the increased prevalence and incidence of diabetes among the Native American population is statistically and epidemiologically distinct from that in the general US population (Fig. 14).¹⁷ These preliminary findings suggest that further investigation into the health affects associated with loss of traditional foods and other river-based resources is warranted.

16 Acton, K.J et al. 2003. Diabetes prevalence among American Indians and Alaska Natives and the overall population---United States, 1994-2002. Morbidity and Mortality Weekly Report, August 1, 2003, 52(30): 702-04.

17 Diabetes prevalence among American Indians and Alaska Natives and the overall population--United States, 1994-2002. MMWR. Morbidity and Mortality Weekly Report - 2003 - Aug 1;52(30):702-4. NB According to the Editor, this report probably underestimates prevalence of Diabetes among AN/AN population;

Figure 12. Dependence on food assistance and prevalence of diabetes among respondents 65 years and older

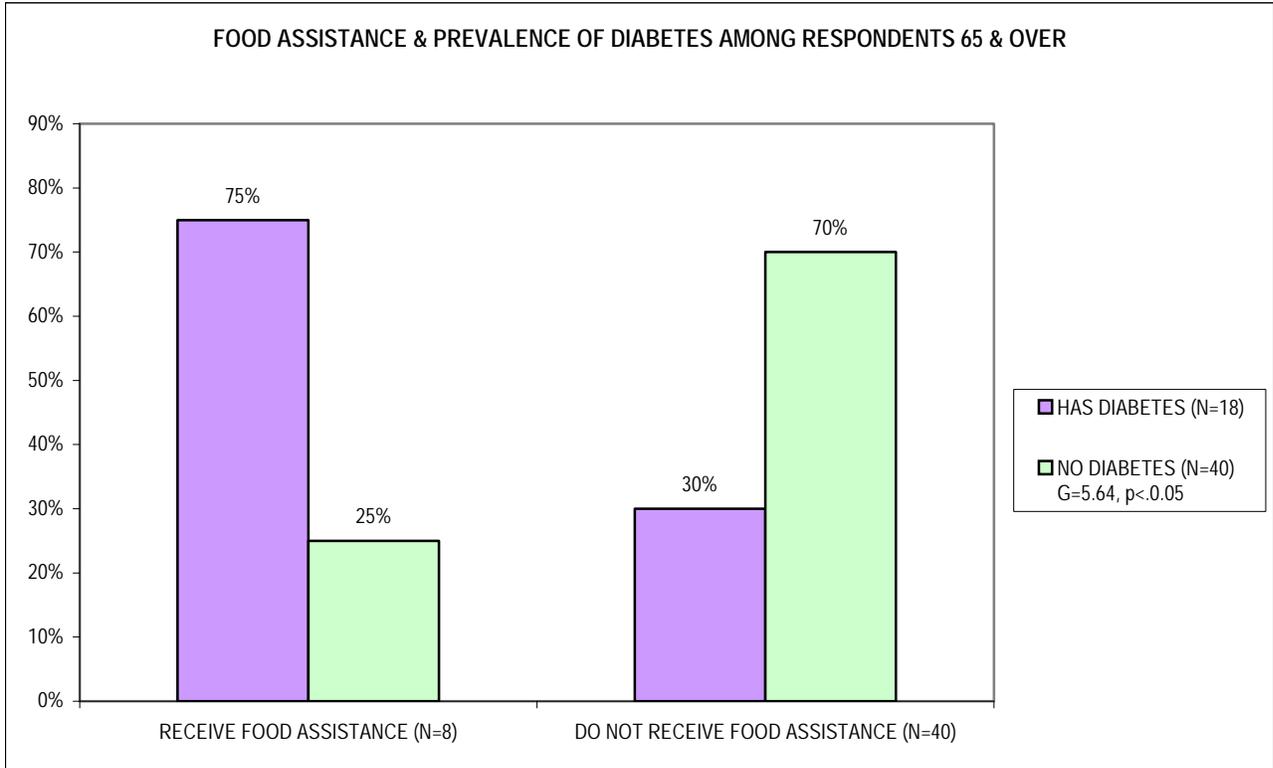


Figure 13. Prevalence of Diabetes among three populations compared within age groups. Data for AI/AN and US Population from Morbidity & Mortality Weekly Report, all differences significant (95%CI).

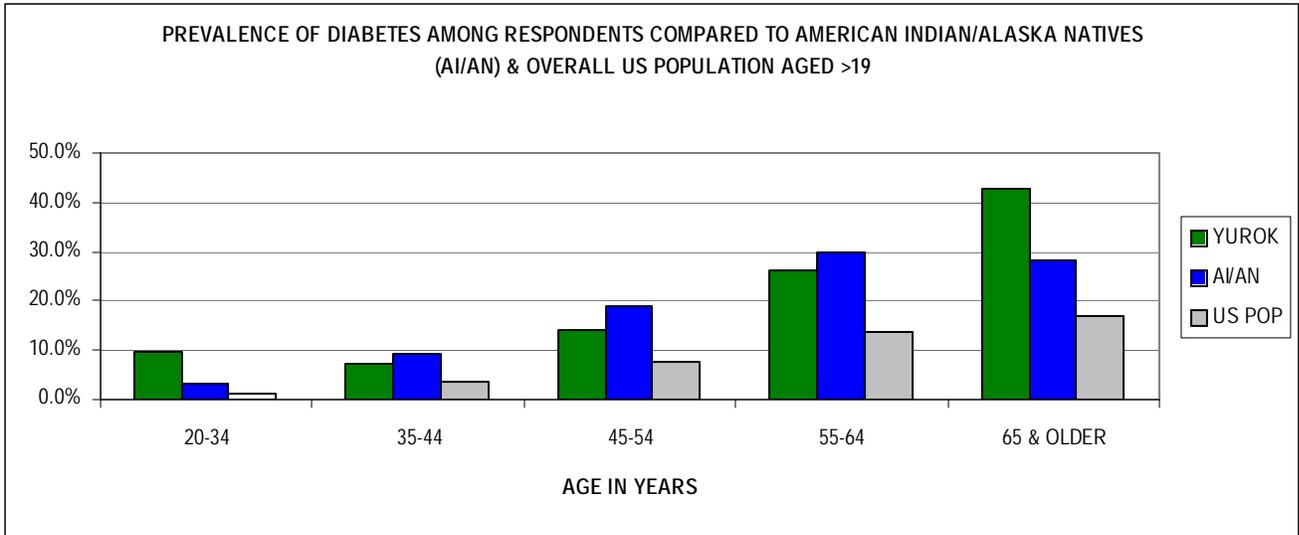
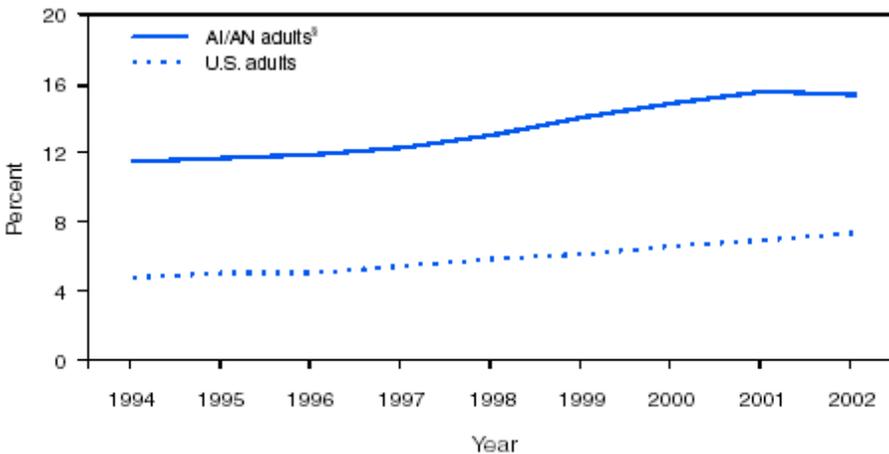


Figure 14. Prevalence of Diabetes among AI/AN and US Population taken from Morbidity & Mortality Weekly Report¹⁷

FIGURE. Age-adjusted prevalence* of diagnosed diabetes among American Indian/Alaska Native (AI/AN) and U.S. adults aged ≥ 20 years, by year — United States, 1994–2002[†]



* Based on the 2000 U.S. population.

[†] Based on Indian Health Service ambulatory patient-care data and the Behavioral Risk Factor Surveillance System.

[§] Although the rate of increase in diabetes prevalence among AI/ANs slowed during 2001–2002, additional data are needed to assess recent trends.

Commercial and Subsistence Fisheries

Although subsistence and commercial fishing rights have been restored for the Yurok Tribe in recent decades, fish populations in the Klamath River have declined precipitously over this same period due to the operations of the dams, water diversions for agriculture, and other management decisions made by federal agencies within the Klamath Basin. Many of these adverse effects on tribal trust resources, specifically the fishery, are largely a result of effects the Klamath River Hydro-electric Project, or current conditions. The Yurok Tribe has had only minimal levels of fall Chinook commercial harvest during four of the past fifteen years. During the remaining 11 years the Yurok Tribal Council determined that the projected abundance of Klamath fall Chinook was insufficient to support a commercial fishery. For the past 15 years, the Yurok Tribe has also forgone commercial harvest of species other than fall-run Chinook (with the exception of minimal numbers of spring Chinook that were harvested during the beginning of the fall Chinook fishery). The Yurok Tribal Council has chosen not to have any commercial fisheries for other species such as spring-run Chinook salmon, Coho salmon, steelhead, lamprey, eulachon and sturgeon because of their concern regarding the status of these other species. Reduced abundance of these species has also affected subsistence harvest patterns.

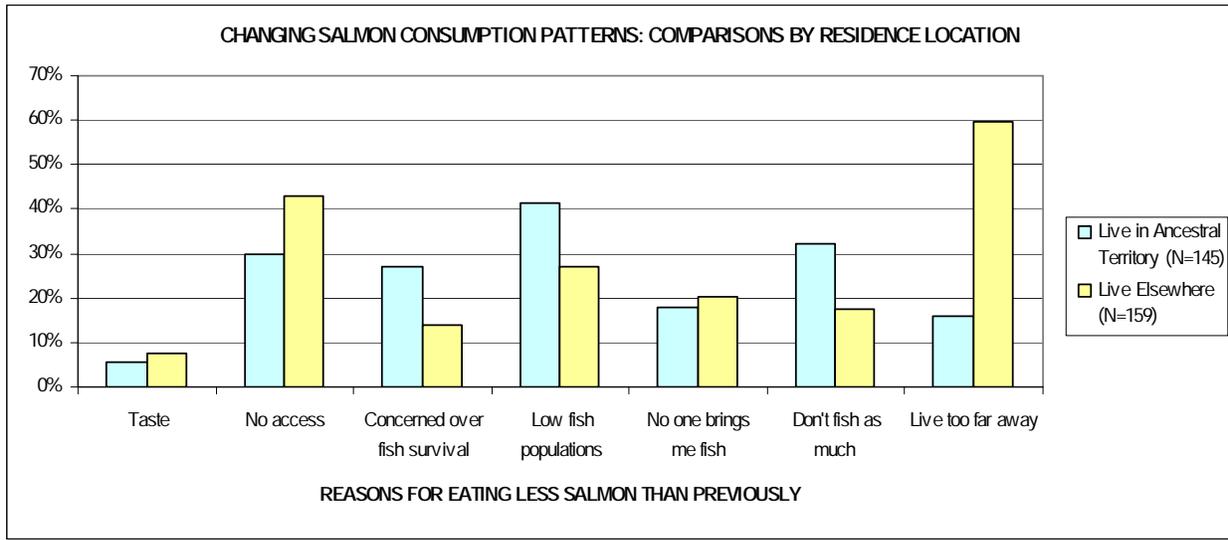
As a kid there were abundant salmon because you could see the salmon thick in the river from the bridges. You had to row your boat out to rocks that you can walk out to now.....In my lifetime I have watched the salmon, sturgeon, and eels become depleted. Salmon, eels, and sturgeon were our main food. We ate one of the three daily. We only ate meat on payday. The rest of the week we ate fish. Now we get fish only occasionally. This year we have not had any fish. My children may not have any salmon in the future.

(Yurok Tribal Member Survey Respondent 2006)

Because long-term data on fish numbers in the Klamath River do not exist for the periods prior to the construction of the first dams, respondents were asked about lifetime consumption patterns as way to document changes in the availability of particular species to Tribal Members over time. When comparing respondents' diets growing up as a function of age, reported consumption of Coho, Lamprey and Candlefish declined significantly ($G=18.34$, $p<0.01$, 19.00 , $p<0.01$, $G=37.9$, $p<0.001$ respectively). A similar trend exists for Spring Chinook, Steelhead, Fall Chinook, and Sturgeon.

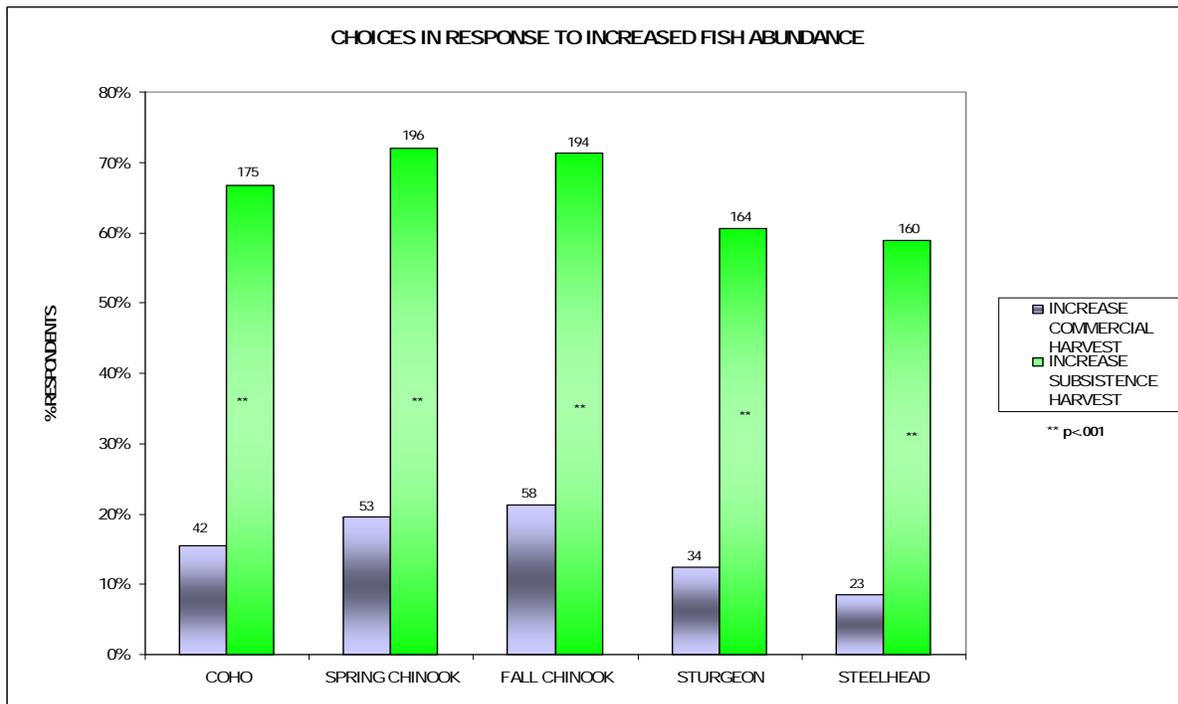
To determine whether decreased consumption was a reflection of changing tastes, respondents were asked to identify the reasons they consumed less salmon. For respondents residing within the Ancestral Territory the most influential factor was reduced fish populations, whereas those living outside the Ancestral Territory cited lack of access and distance from the Klamath River as the major factors responsible for reduced salmon consumption by other Tribal Members (Fig 15).

Figure 15. Changing consumption patterns



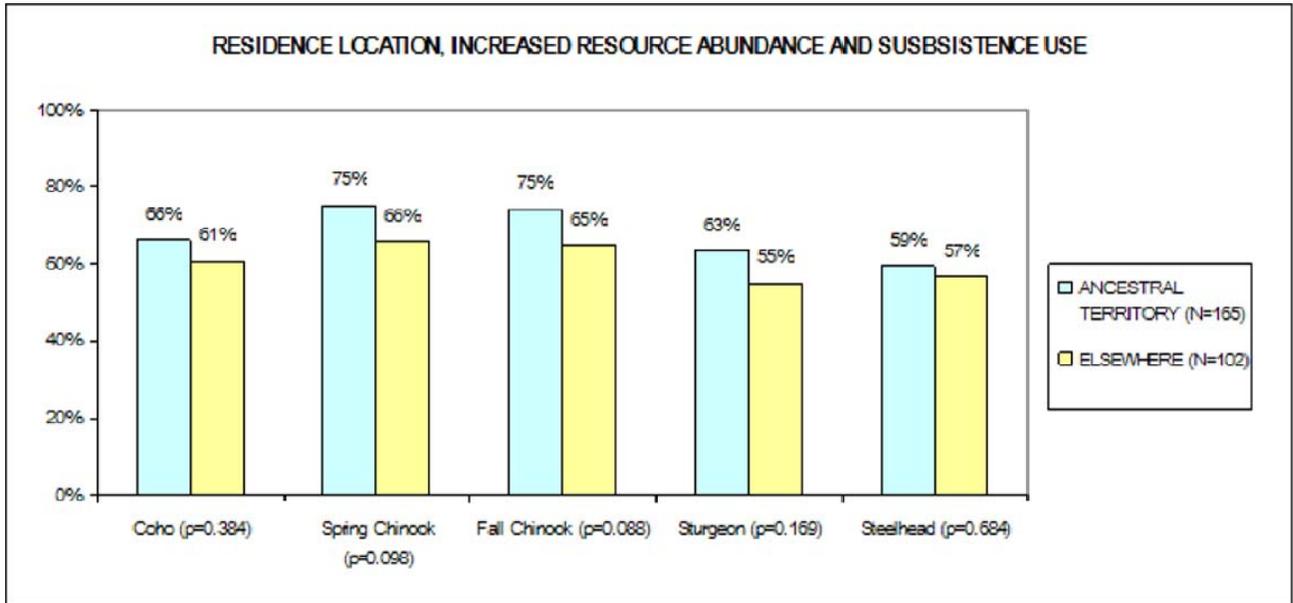
Respondents were asked whether they would increase subsistence and/or commercial harvest if fish were more abundant. In all cases, the majority of respondents indicated that they would increase subsistence fishing if the fish resource were more abundant. A significantly smaller number of individuals indicated that they would be interested in commercial harvests given increased resource availability (Fig. 16).

Figure 16. Choices in responses to increased fish abundance comparing subsistence and commercial interests of all respondents.

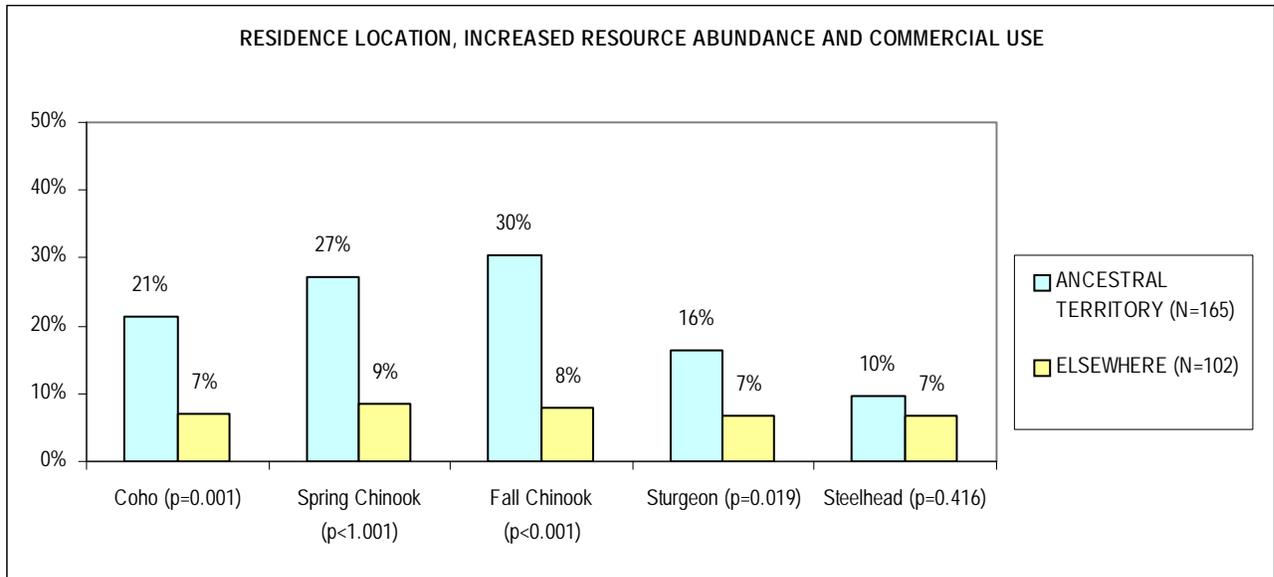


Interest in increased subsistence activity transcends geography: the majority of respondents living within and outside the Ancestral Territory indicated that they would increase subsistence activities in response to increased fish abundance (Fig. 17).

Figure 17 Comparison of responses to increased resource abundance among respondents living with the Ancestral Territory and those living elsewhere, showing the proportion of respondents who would increase subsistence harvest in response to increased resource abundance.



In contrast, interest in commercial use of most fish stocks is greater among those living within the Ancestral Territory (Fig. 18).



Fish are not commodities and their importance cannot be quantified using the usual economic measures; however the loss of these traditional resources, the closures and reduced harvests of the Tribal Commercial Fishery have had an economic impact on Tribal Members. As might be expected, the survey data suggest that the hardships associated the Commercial Fishery closures have had a greater impact on respondents living within the Ancestral Territory than those living elsewhere and in some cases these losses have disproportionately affected those respondents who receive food assistances (Table 1)

Table 1. Losses associated with Tribal Commercial Fishery closures

LOSSES ASSOCIATED WITH CLOSURE OF TRIBAL FISHERY	PROPORTION OF RESPONDENTS REPORTING LOSSES	PROPORTION OF RESPONDENTS ON FOOD ASSISTANCE REPORTING LOSSES	TOTAL RESPONDING
Loss of income	22% (61)	33%* (30)	280
Increased food expenses	28% (78)	39%* (38)	280
Reduction in social & cultural activities	24% (66)	32%* (29)	280
Loss of goods & services received through barter & trade	18% (49)	28%* (25)	280
Increased financial stress	18% (51)	30%* (27)	280
Reduced income from secondary business	8% (21)	13%* (12)	280
Applied for public assistance due to closure	8% (22)	21%* (19)	280

*Significantly greater proportion of respondents on food assistance affected, Chi-square test, p<0.05

Tribal Members who choose to remain within the Ancestral Territory experience higher levels of poverty and food insecurity than Tribal Members who live elsewhere. In spite of these conditions, Tribal Members choose to live in the Ancestral Territories because their culture and identity are inextricably bound to these lands and resources, and specifically the Klamath River. Economically forced relocation is perceived as another of the inequalities visited on the Tribe as a result of denied access to traditional resources, particularly the resources of the river.

I no longer live or work along the Klamath River. I had to leave due to financial reasons. I can no longer fish or gather, my children are not learning the culture like they should. They are not experiencing all that the Klamath River has to offer.

(Tribal Member Survey Respondent 2006)

Traditional Activities

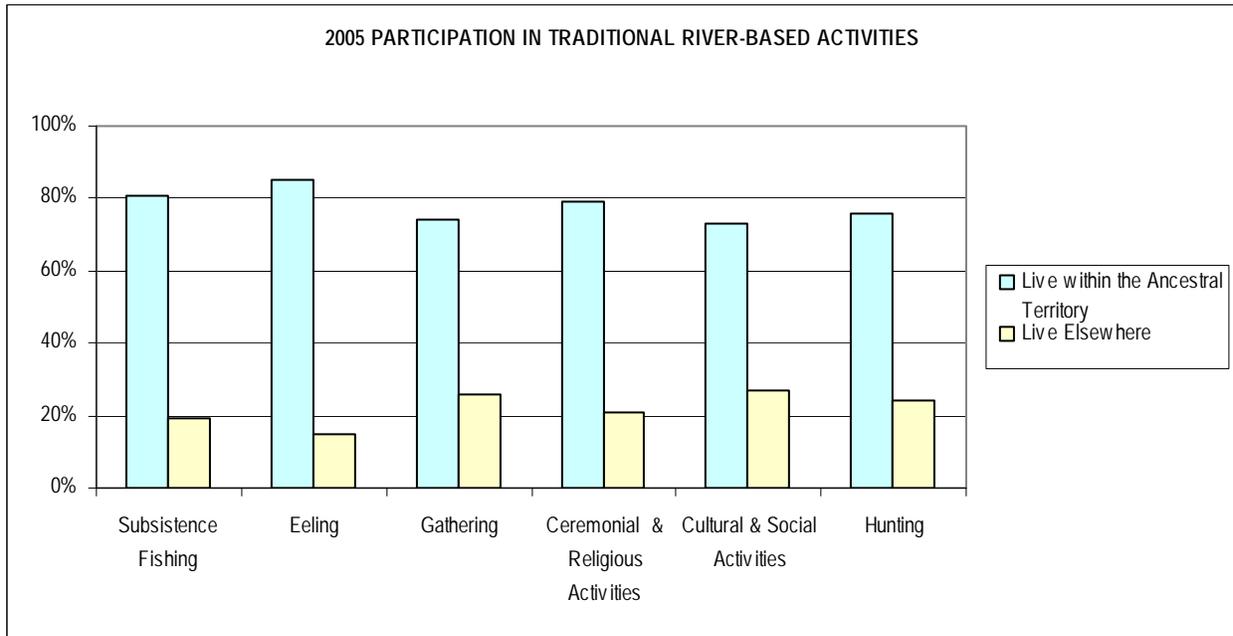
Fish plays a variety of roles in Yurok households. According to respondents, 86% use fish as food, 72% share fish with friends and family, for 34% fish fills ceremonial and religious roles and in 45% of households fish is part of cultural and social activities. In contrast, 21% of households report using fish in barter or trade and only 16% of households sell fish. This underscores the important *meanings* of fish for the Tribe. The Klamath River Hydroelectric Project has altered the river in ways that are destructive for all parts of Yurok life:

“[T]he dams contribute to a pattern of cumulative effects on the cultural values and interests of the tribes – aspects of the environment that are of great importance to them... to the tribes [the Klamath River] is utterly central to their cultural identity. This being the case, it is equally evident that the effects of the dams, together with the other contributors to the Klamath’s plight, fall disproportionately on the tribes. While others live within the riverscape, travel through it, fish in it and hunt in it, only the tribes have an intimate cultural connection to the riverscape going back to time immemorial. Only to the tribes is the riverscape the core of their cultural identity. Maintaining and reinforcing this association is particularly important today, as the tribes work to reestablish their traditional belief systems and ways of life.”¹⁸

Preliminary analyses of survey data indicate that a greater proportion of individuals who participate in traditional activities as children are more likely to continue those activities as adults. A similar pattern exists when those who live within the Ancestral Territory are compared to those who live elsewhere. In 2006, respondents who lived within the Ancestral Territory participated in traditional activities in significantly greater numbers than Tribal Members who lived elsewhere Territory (Fig. 20).

¹⁸ King, T.F. 2004. First Salmon. Prepared for Klamath River Intertribal Fish and Water Commission

Figure 20. Respondents involved in traditional activities in 2006 compared by residence location. In all cases Chi-square, $p < 0.05$.



In spite of more than one hundred years of concerted attempts to destroy the Yurok Tribe's cultural and spiritual integrity, the language and the culture survived. For the Yurok Tribe, the health of the Klamath River, its fish runs and other traditional resources are essential for cultural survival.

Denied access to the river and the salmon is tantamount to denied access to essential cultural and spiritual resources. In these circumstances, poor water quality and unhealthy conditions constitute denied access. Respondents have indicated that poor water quality has had a detrimental affect on many aspects of their lives not just during the 2005 cyanobacterial bloom but various times during the past five years (Tables 2 and 3).

Table 2. Proportion of respondents who changes their use of the Klamath River in response to concerns over water quality during 2000-2004

ACTIVITY	PROPORTION REPORTING CHANGED USE	NUMBER REPORTING CHANGED USE	TOTAL RESPONDING
Fishing	52.9%	148	280
Eeling	33.2%	89	268
Hunting	19.5%	52	267
Gathering	21.2%	55	259
Ceremonial & Religious Activities	16.6%	43	258
Cultural & Social Activities	20.8%	54	260
Recreational	46.0%	126	274
Transportation	20.9%	53	254
Bathing & Drinking	49.8%	134	269

Table 3. Proportion of respondents who changes their use of the Klamath River in 2005 in response to the Microcystin Public Health Notice for the Klamath River

ACTIVITY	PROPORTION REPORTING CHANGED USE	NUMBER REPORTING CHANGED USE	TOTAL RESPONDING
Fishing	46.1%	113	245
Hunting	24.7%	59	239
Gathering	26.8%	64	239
Ceremonial & Religious Activities	22.5%	53	236
Recreational	45.8%	110	240
Transportation	22.6%	53	235
Bathing & Drinking	44.1%	104	236

When people are denied access to the River, they are cut off from these essential activities. Poor water quality has changed peoples’ use of the River and interfered with many aspects of Tribal Members’ lives.

“Over the years, the river got smaller and smaller. The color has gradually gotten darker. At first, (60’s, 70’s, 80’s) the Klamath only looked unhealthy at the end of summer. Now the River always looks too dark in color and low. At the end of summer now, the Klamath looks dark, low, slow, dirty, slimy and too unhealthy to get into or eat anything coming from it. We used to be able to tell which salmon were not from the mouth, because they would sometimes have a muddy taste. Now I don’t eat any salmon... for fear of eating toxins and diseased fish.”

(Tribal Member Survey Respondent 2006)

This analysis, while preliminary, clearly demonstrates the inadequate and flawed data and analyses submitted by PacifiCorp to the FERC for the DEIS. The Yurok Tribe has managed to provide a more comprehensive and accurate analysis than PacifiCorp provided or the FERC itself offered, but this is hardly sufficient to remedy the deep structural and substantive defects in the FERC analysis. A more thorough, representative evaluation of the cultural, social and economic analysis of the affects of the Project on Tribes within the region must be undertaken before any determination can be made by the FERC.

Environmental Effects

Data compiled by the Yurok Tribe and submitted in formal comments to the FERC DEIS in 2006 indicate that the Project's immediate and long-term, cumulative impacts on the socioeconomic conditions of the Yurok Tribe are actually severe and disproportionate. The impacts of the current conditions are particularly onerous on Native American Tribes in the Klamath basin and watershed, Tribes who are dependent upon the River and its fishery for not only subsistence but also their cultural, spiritual, economic way of life. Again, impacts on the Yurok Tribe, the YIR, and tribal trust resources must be accurately and meaningfully considered and evaluated in the Secretarial Determination Overview Report in addition to the NEPA and CEQA analysis currently underway.

The FERC EIS was completely inadequate in its consideration of Project effects on low-income and minority populations. Executive Order 12898 mandates that all federal agencies must consider the impacts of their actions on low-income and minority populations. California also has an Environmental Justice law that mandates all state agencies not only to consider impacts of actions on low-income and minority populations, but also examine disproportionate effects on differential rates of consumption of resources. The FERC EIS provides inadequate analysis of the impacts of the loss of a traditional diet on Klamath River tribes. Comments within the FERC EIS indicate a lack of familiarity with the evidence indicating that Native American populations experience disproportionately higher prevalence of diabetes than the overall US population. Contrary to statements within the FERC EIS, this increased prevalence is statistically and epidemiologically distinct from that in the general US population.¹⁹

The fact remains that the impacts of the current conditions on the Yurok Tribe, a low-income and minority population and a federally recognized Indian Tribe, are extensive. It is important to note that the FERC EIS failed to acknowledge or assess the health benefits of a traditional diet or the impact of food insecurity and

¹⁹ [Diabetes prevalence among American Indians and Alaska Natives and the overall population--United States, 1994-2002](#). MMWR. Morbidity and Mortality Weekly Report - 2003 - Aug 1;52(30):702-4. NB This report probably underestimates prevalence of dDiabetes among AN/AN population; also see figure below

poverty on the health of Native Americans in the affected areas. A preliminary analysis of poverty, food insecurity and tribal health data are being submitted as supporting documentation on this issue in the following comments. Peer reviewed and published medical studies support both the health benefits of a traditional Yurok diet, and the disproportionate rates of diabetes in Native American communities.^{11,14,15,16,17,19}

The FERC EIS failed to address Environmental Justice (EJ) issues resulting from Project impacts on the Yurok Tribe, particularly in the area of disproportionate impacts on the health to Tribal and reservation communities, and the health of individual tribal members. The Klamath Hydroelectric project, current conditions and its continued operations, as well as the biased and discriminating treatment of Native Americans by PacifiCorp and the FERC in the previous NEPA process, as demonstrated in the flawed, insufficient and indefensible assessment of Project impacts in the FERC EIS are examples of what can only be defined as environmental racism and examples of blatant environmental injustice. The Yurok Tribe has provided ample testimony and evidence to PacifiCorp and the FERC that the Klamath Hydroelectric Project has had and continued to have significant, adverse, and disproportionate impacts on the Yurok Tribe and other tribal communities, which are low-income and minority populations. Unlike other stakeholders within the Basin, the Yurok Tribe receives no economic benefit as a result of the Project, yet the Project has resulted in the near-destruction of the River, its anadromous and resident species, numerous culturally significant resources, ie: tribal trust resources and as a result, the complete Yurok tribal fishery. The Klamath Hydroelectric Project and current conditions have had, and continue to have significant disproportionate adverse impacts on the Yurok Tribe because of its position in the watershed and its continued reliance on both subsistence and commercial fisheries. The basic and fundamental tenets of federal and state EJ laws suggest that the Department of the Interior and all federal agencies involved in the current analysis must consider the very real effects of these disproportionate impacts on a range of tribal trust resources.

The Department of the Interior and all federal agencies involved in the current Secretarial Determination and NEPA/CEQA analysis must consider the impacts of all aspects of the Klamath Hydroelectric Project and current conditions on low-income and minority communities, particularly on individual Klamath River Basin Tribes including the Yurok Tribe. The FERC EIS only provided a superficial assessment of the data submitted by the Karuk Tribe.¹⁵ The Klamath Hydroelectric Project has had significant adverse effects on all aspects of Yurok cultural and traditional life and on numerous tribal trust resources. These impacts have been documented and submitted to the FERC, in written and verbal testimony by hundreds of Yurok tribal members, yet they are not included or reflected in the FERC EIS or the assessment of the impacts of current conditions on low-income and minority populations.

Attachment 6

6a Yurok Tribe: Water Quality Problems

6b Health Advisory

Attachment 6a

Yurok Tribe: Water Quality Problems

The California North Coast Regional Water Quality Control Board has established both Native American Cultural and Subsistence Beneficial Uses for the Klamath River and its tributaries. In 2006, Klamath River tribes participated in an Environmental Justice Pilot Project with the State Water Resources Control Board that served to help provide data on these Beneficial Uses in terms of types of uses and also times of the year during which these Beneficial Uses occur. In 2006 a proposal prepared by the Tribes (Karuk, Yurok, Hoopa) stated:

The Klamath Basin Tribes working with the State Water Resources Control Board propose an Environment Justice Pilot Project for the Klamath River Watershed. This project seeks to restore Klamath River water resource health for the protection, restoration, and enforcement of Native American Cultural and Traditional Subsistence Beneficial Uses.

The need for such a pilot project is clear. Water quality- based Environmental Justice issues of special concern are:

- (1) that the tributaries, lakes, wetlands and the main stem of the Klamath River continue to benefit the Klamath River Basin tribes through traditional economic, subsistence, commercial, and ceremonial uses;
- (2) that Native American Cultural and Traditional Subsistence Beneficial Uses, including ceremonial and religious uses of the river, subsistence fishing and other continued traditional cultural uses can and must be restored and protected.
- (3) that tribal cultural, social, and physical health can be improved through State Water Board programs designed to restore water quality within the Klamath River Basin.

In order to address the significant water quality issues, the Klamath Basin Tribes have determined that the primary goal of this EJ Pilot Project is to uphold all regulatory parameters for Native American Cultural and Traditional Subsistence Beneficial Uses per the SWRCB North Coast Region Basin Plan:

The basis for the discussion of beneficial water uses, which follows, is Section 13050(f) of California's Porter-Cologne Water Quality Control Act, which states:

"Beneficial uses" of the waters of the state that may be protected against water quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. An essential part of a water quality control plan is an assessment of the beneficial uses, which are to be designated and protected....

Protection will be afforded to the present and potential beneficial uses of waters of the North Coast Region as designated....The beneficial uses of any specifically identified water body generally apply to all its tributaries....

Water quality standards are adopted to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act (as defined in Sections 101(a)(2), and 303(c) of the Act). Water quality standards consist of 1) designated beneficial uses; 2) the water quality objectives to protect those designated uses; 3) implementation of the Federal and State policies for antidegradation; and 4) general policies for application and implementation....

Established and adopted Beneficial Uses for the SWRCB North Coast Region that are of particular importance to Klamath Basin Tribes include but are not limited to:

Native American Culture (CUL) Uses of water that support the cultural and/or traditional rights of indigenous people such as subsistence fishing and shellfish gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses.

Subsistence Fishing (FISH) Uses of water that support subsistence fishing.

The SWRCB EJ Pilot Project for Klamath Basin Tribes should be devoted to assisting each Tribe in asserting regulatory enforcement of tribally-determined water quality criteria for these Beneficial Uses as they relate to SWRCB policies and actions for the Klamath River Basin.

It is important to recognize that each tribe has its own unique history, culture, and status relative to federal recognition, retained rights, and sovereignty. Participation in this project does not represent a waiver of sovereignty or any rights for any tribe, nor does it establish any additional rights for any tribe.

In a final 2006 Scope of Work prepared by the California State Water Quality Control Board as part of the pilot project the tribes stated:

The State and Regional Water Boards are engaged in a number of activities to prevent further degradation to the Klamath River and its tributaries and to restore the health, habitat and beneficial uses of the river.

The Klamath River and its tributaries are listed as impaired on the Federal Clean Water Act (CWA) Section 303(d) list. The Regional Water Board has adopted

Total Maximum Daily Loads (TMDLs) including Action Plans to restore the water quality and beneficial uses of Scott, Shasta, and Salmon River watersheds, and is in the process of developing TMDLs for the main stem Klamath River.

A TMDL is a framework for assessing the condition of a watershed, evaluating the factors that contribute to water quality problems in the watershed, and for developing a plan to restore healthy water quality conditions. There are five general objectives of a TMDL:

1. To assess the condition of a waterbody, and determine/confirm cause(s) / source(s) of stress.
2. To quantify the sources of the pollutant or stressor.
3. To determine how much of a particular pollutant or stressor a waterbody can handle and still meet desired conditions.
4. To identify whether and how much the different sources need to be reduced in order to support desired conditions.
5. To develop a plan which, when implemented, will restore waterbody health.

The Klamath River is listed as impaired due to low dissolved oxygen, high water temperature and nutrient concentrations. The Water Quality Control Plan for the North Coast Region (Basin Plan) designates the following beneficial uses to one or more hydrologic areas or sub-areas of the Klamath River:

- Municipal Water Supply (MUN)
- Water Contact Recreation (REC-1)
- Non-Contact Water Recreation (REC-2)
- Cold Freshwater Habitat (COLD)
- Spawning, Reproduction or Early Development (SPWN)
- Migration of Aquatic Organisms (MIGR)
- Rare, Threatened or Endangered Species (RARE)
- Commercial and Sport Fishing (COMM)
- Native American Cultural (CUL)
- Subsistence Fishing (FISH)
- Wildlife Habitat (WILD)
- Marine Habitat (MAR)
- Navigation (NAV)
- Shellfish Harvesting (SHELL)
- Aquaculture (AQUA)
- Agricultural Supply (AGR)
- Industrial Supply (IND)
- Industrial Process Supply (PRO)
- Groundwater Recharge (GWR)
- Freshwater Replenishment (FRSH)
- Hydropower Generation (POW)

In addition to beneficial uses related to the cold water fishery (COLD, SPAWN, MIGR) and drinking water (MUN); the Native American Cultural (CUL) use and the Subsistence Fishing (FISH) use are extremely important to the Klamath Basin Tribes (Tribes). The Regional Water Board added the CUL and FISH beneficial uses during a Basin Plan update in June 2003. This was done to specifically acknowledge reliance by the Tribes on fish to provide most of the protein in their diet and the extreme importance of high-quality water to their culture, spirituality and their economy.

The North Coast Basin Plan defines the Native American Cultural (CUL) and Subsistence Fishing (FISH) uses as follows.

Native American Culture (CUL) Uses of water that support the cultural and/or traditional rights of indigenous people such as subsistence fishing and shellfish gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses.

Subsistence Fishing (FISH) Uses of water that support subsistence fishing.

At the time the CUL use was added to the Basin Plan, the Regional Water Board staff did not have adequate information with which to support the designation of the use for all of the waterbodies in the region as existing or potential. Thus, staff did the best they could with the designations using the information submitted by approximately five tribes in the Region. For this reason the CUL designations are not complete in the beneficial use table found within the Basin Plan. There are many other waterbodies where the CUL use very likely exists or existed historically (potential). The Regional Water Board plans to update these beneficial use designations at their earliest opportunity.

In addition, Regional Water Board staff had originally proposed to add subsistence fishing to the Commercial and Sport Fishing use definition. However, at the adoption hearing for the Beneficial Use Amendment, the State Water Board stated that they preferred not to change the statewide definition of this use, but instead agreed to add a separate beneficial use entitled “Subsistence Fishing” (FISH). Because this use was adopted separately, the Regional Water Board was unable to designate this use to any specific waterbody at the time of adoption. This use is known to exist or existed historically (potential) in many waterbodies, including the Klamath River, and will be designated during the next update of the Beneficial Use Chapter of the Basin Plan.

Existing uses are those uses, which were attained in a waterbody on or after November 28, 1975. Existing uses cannot be removed or modified unless a use requiring more stringent criteria is added. However, a use requiring more stringent criteria can always be added because doing so reflects the goal of further

improvement of water quality. Biological data, human use statistics, and/or professional experience is used to document the existing uses.

Waterbodies may have potential beneficial uses established for any of the following reasons: 1) the use existed prior to November 28, 1975, but is not currently being attained; 2) plans already exist to put the water to that use; 3) conditions make such future use likely; 4) the water has been identified as a potential source of drinking water based on the quality and quantity available (see *Sources of Drinking Water Policy*, in Appendix 7); 5) existing water quality does not support these uses, but remedial measures may lead to attainment in the future or 6) there is insufficient information to support the use as existing, however, the potential for the use exists and upon future review, the potential designation may be re-designated as existing.

The CUL use is designated as an existing as well as a potential beneficial use in the Basin Plan and as such, must be protected and if impaired, must be restored. As stated above, existing uses cannot be removed using a use attainability analysis (UAA).

It is imperative that the beneficial use designations in the Basin Plan be updated to reflect existing and potential CUL and FISH beneficial uses so that water quality necessary to protect these uses can be restored and maintained as required by the federal Clean Water Act and the state Porter Cologne Water Quality Control Act.

Under the project described above, the Yurok Tribe Environmental Program (Sloan and McConnell 2007) collected data on Yurok Beneficial Uses of the Klamath River and its tributaries. This work continued in 2008 under a California Environmental Justice Grant (Sloan and McConnell 2009) and documented that Yurok traditional uses of the Klamath River and its tributaries is extensive and continual, spanning through most months of the year. The following tables present information both on types of uses and times of year during which these uses occur within the Yurok community.

YUOK TRIBE CULTURAL USES OF THE KLAMATH RIVER & TRIBUTARIES

Codes used in table: 1 = Main stem Klamath only, 2 = Tributaries only, 3 = Main stem AND Tributaries

USES:

	January	February	March	April	May	June	July	August	September	October	November	December
CEREMONIAL												
Plants	3	3	3	3	3	3	3	3	3	3	3	NO
Fish	3	3	3	1	1	1	1	1	1	1	1	NO
Fishing	3	3	3	3	3	3	3	3	3	3	3	NO
Water-drinking, steaming, cooking	2	2	2	2	2	2	2	2	2	2	2	2
Rocks	3	3	3	3	3	3	3	3	3	3	3	NO
Bathing						3	3	3	3	3	3	
Boating	3	3	3	3	3	3	3	3	3	3	3	3
Wildlife	3	3	3	3	3	3	3	3	3	3	3	3
River & Trail Access	3	3	3	3	3	3	3	3	3	3	3	3
Training	3	3	3	3	3	3	3	3	3	3	3	3
Swimming						3	3	3	3	3		NO
Prayer/Meditation	3	3	3	3	3	3	3	3	3	3	3	NO

YUOK TRIBE CULTURAL USES OF THE KLAMATH RIVER & TRIBUTARIES

Codes used in table: 1 = Main stem Klamath only, 2 = Tributaries only, 3 = Main stem AND Tributaries

USES:

ACTIVITIES	January	February	March	April	May	June	July	August	September	October	November	December
Plants	3	3	3	3	3	3	3	3	3	3	3	NO
Water-drinking, steaming, cooking	2	2	2	2	2	2	2	2	2	2	2	2
Rocks	3	3	3	3	3	3	3	3	3	3	3	NO
Bathing	3	3	3	3	3	3	3	3	3	3	3	3
Boating	1	1	1	1	1	1	1	1	1	1	1	1
River & Trail Access	3	3	3	3	3	3	3	3	3	3	3	3
Training	3	3	3	3	3	3	3	3	3	3	3	3
Swimming						3	3	3	3	3		
Washing	3	3	3	3	3	3	3	3	3	3	3	3
Meditation	3	3	3	3	3	3	3	3	3	3	3	3
Wood Gathering	3	3	3	3	3	3	3	3	3	3	3	3

YUOK TRIBE CULTURAL USES OF THE KLAMATH RIVER & TRIBUTARIES

Codes used in table: 1 = Main stem Klamath only, 2 = Tributaries only, 3 = Main stem AND Tributaries

USES:

SUBSISTENCE	January	February	March	April	May	June	July	August	September	October	November	December
Plants				3	3	3						NO
Fishing	3	1	1	1	1	1	1	1	1	1	1	NO
Eeling	1	1	1	1	1							NO
Shellfish						1	1	1				NO
Water-drinking, steaming, cooking	2	2	2	2	2	2	2	2	2	2	2	2
Wildlife	3	3	3	3	3	3	3	3	3	3	3	NO
River & Trail Access	3	3	3	3	3	3	3	3	3	3	3	3
Food Preparation	2	2	2	2	2	2	2	2	2	2	2	2

Yurok Tribe Cultural Uses of the Klamath River & Tributaries

CEREMONIAL	Pathways of Exposure
Plants	Gathering, walking in streams & river side, cooking, cleaning, soaking, exposure to water when dispensing of medicinal plants, water often taken to ceremonies and used with plants for medicine
Fish	Catching is the same as subsistence, fish for ceremonial use is fresh, contact with fish during preparation
Fishing	Same as subsistence, contact with water nearly constant
Water-drinking, steaming, cooking	Water often taken to the site of ceremony and used in various ways including cleansing, cooking, preparation, drinking, landscaping (packing sand down),
Rocks	Steaming, sweating, cooking, gathering on river and creek banks, exposure to water while walking to pick up rocks.
Bathing	Bathing before, during and after ceremonies and sweats, exposure to water while immersed.
Boating	Getting in and out of boat, splashing, paddling, accidentally falling in, boat capsizing
Wildlife	Walking during hunting for wildlife, cleaning, wildlife drank the water, otter, sea lion, ducks
River & Trail Access	Splashing while walking near and in waterways, trail often cross tributaries or run along side waterways.
Training	Swimming, diving, bathing after training
Swimming	Immersion in waterways, splashing, possibly swallowing water during swimming
Prayer/Meditation	Sitting on riverbank, feet in water
Fish dam	Full body immersion during construction, use of dam after construction, and deconstruction

Yurok Tribe Cultural Uses of the Klamath River & Tributaries

ACTIVITIES	Pathways of Exposure
Plants	Gathering in and near waterways, walking to gather plants, cleaning, cooking, steaming, rinsing, wading in waterways to gather plants,
Water-drinking, steaming, cooking	Drinking water from tributaries, using water to cook and clean, steaming, used to rinse food and eating utensils, water used in camps for multiple purposes
Rocks	Rocks gathered from banks of waterways, often time coming in contact with the water while gathering, either by splashing or wading. The rocks gathered have been in contact with the water, as well as rinsed in the water. Rocks are then used to cook and prepare either medicine or food.
Bathing	Daily bathing in river or tributaries, either by immersion, rinsing or splashing. Direct contact with skin and body
Boating	Getting in and out of boat, splashing while moving and paddling, putting in and taking boat out of water. As a result of being on the water there is constant contact with the water. Bailing of water from boat.
River & Trail Access	The trails often cross paths with waterways or are around, run along side. Contact by wading, splashing. Also when traveling the trails the waterway is used for cooling down and drinking
Training	Swimming, immersion in water, bathing, and diving.
Swimming	Full body immersion, splashing, wading, playing near and in the waterways
Washing	Washing of baskets, utensils, food, rocks, and plants. Washing hands, face, feet, and other body parts. Water used through out the day to wash various things, constant contact with water.
Meditation	Same as ceremonial
Wood Gathering	Gathering wood from the banks of the river, splashing. Traveling to gather wood, having to go through or wade in the shallows of the water to get to the wood. Also possibility that wood has been exposed to the water at some point. Winter gathering involvesthe use of a boat to gather wood that is floating downstream
Tanning hides	Placing of hides in creek

Yurok Tribe Cultural Uses of the Klamath River & Tributaries

BASKETRY	Pathways of Exposure
Roots	Having to dig near the water for roots. Wading in water to get the roots. Constant exposure of water on hands to gather. Also the cleaning and preparing the roots for use. Soaking the roots for flexibility
Sticks	Gathering near tributaries and river could possibly put one in contact with the water. Cleaning and soaking of the sticks to make them usable.
River & Trail Access	Wading to get to the resource. Crossing tributaries and river while gathering basket materials.
Plants	Gathering plants near waterways, having to travel to the plant location puts one in contact with waterways. Also the preparation and cleaning of plants uses water from river and tributaries. The soaking of plant material for flexibility uses water from the river and tributaries.
Weaving	Women would often gather in groups near a tributary. The placing of a wet stick or root in the mouth while weaving.

JEWELRY	Pathways of Exposure
Shells	Gathering from the streams and river. Wading to gather resource. Also preparation of use of the shells requires them to be cleaned in the waterways. Dipping of shell (abalone) in water while grinding

Yurok Tribe Cultural Uses of the Klamath River & Tributaries

SUBSISTENCE	Pathways of Exposure
Plants	The gathering plants in and near streams and rivers, cleaning and rinsing. Preparation, cooking, soaking, steaming...
Fishing	Getting in and out of the boat, Setting and pulling the net. Hands and arms continuously in the water while checking the net and removing fish. Cleaning the fish with water, using the water for slush tanks for storage, wading in the water, splashing from fish, boat moving and dropping the anchor. Trigger net for salmon and sturgeon
Eeling	Setting and checking eel baskets in the water ways. Hooking eels by wading and exposing feet, legs, hands and arms to the water. `Scraping` eels from rocks at Coon Creek and Smokers Falls. Trigger net and dip net. Cleaning eels and preparing them.
Shellfish	Immersion in the water to gather, cleaning and preparation of freshwater clams.
Water-drinking, steaming, cooking	Drinking water directly from tributaries, using water to cook and clean food and items used for food preparation. Water used for multi purposes in the kitchen with preparing all foods.
Wildlife	Wildlife caught in and near waterways. Water used to clean and prepare wildlife for consumption. Geese, ducks, mudhens
River & Trail Access	The trails used to gather and prepare subsistence food are in direct or indirect contact with the waterways.
Food Preparation	Water is used directly and indirectly with food preparation. Used for gathering, cooking, steaming, boiling, cleaning, and multiple uses in all food preparation.

- Other impacts on fish – ranging from catastrophic effects like the massive 2002 fish kill to a general decline in the populations of both anadromous and resident fish, and including the complete or near elimination of particular fish runs²⁷, resulting from such factors as:
 - Release of insufficient water down the river, or releases at the wrong times, or in the wrong amounts, to meet the biological needs of all fish species, at all life stages.
 - Release of water that has been warmed (or cooled) by being held in reservoirs, creating an unnatural and detrimental temperature regime for fish.
 - Release of water that is polluted by agricultural runoff from above the reservoirs, full of chemical foam and algae, making it unhealthy not only for fish but also for people to drink or bathe in.
 - Deposition of sediment in cold-water holes where fish congregate.
 - Creation of a flow regime in which periodic flushing flows (“freshets”) are replaced by a flat flow punctuated by flood events²⁸, failing to clear away sand and gravel bars at the mouths of tributaries and thus sealing off spawning ground and fish refugia.
- Through the same alterations in flow regime, causing erosion of culturally important areas along the river, such as the World Renewal site *Katamin*.
- Through flow alterations, temperature changes, and pollution, causing damage to the health of plants required for basketry and other cultural purposes.

Such effects have obvious implications for the relationships of the tribes to the river, the fish, special places along the river, and other elements that contribute to the significance of the riverscape. If the salmon do not run, the First Salmon Ceremony becomes meaningless. If the priest’s sweatlodge washes away, the priest cannot use it during the World Renewal Ceremony. If the river is too polluted to bathe in, important purification rituals cannot be performed. If people cannot get enough salmon, or steelhead, or lampreys, their connection with the riverscape is diminished.

consultants did not make this distinction but reported similar differences between wild and farmed salmon, and all consultants commented on the problem of competition between hatchery-raised fish and wild fish, arguing that the wild population is endangered by the release of hatchery fish.

²⁷ For summary statistics from Federal government sources, see Karuk ethnographic report:77-8

²⁸ See, for instance, Karuk ethnographic report:57-8

Further, interviews with Yurok tribal elders have made it clear that for Yurok, there is a direct cause and effect between the dams and the conditions on the River and impairments to the fishery and Yurok way of life:

I think Iron Gate has a lot to do with the Klamath River because what it's doing is during these slack years when there is less water, that algae builds up in the bottom of swimming ponds, well that's the same thing that's happening up there now and we're getting this fertilizer and stuff from them farms building up on the floor of these little reservoirs. It is building up thick and then we get a little high water and they hold the water back. They hold the water back because they're trying to keep their water level in the reservoirs which cuts it short from going into the ocean. Then it just builds up and finally we get our weather and they say, 'Okay, we hit our level,' and they turn it loose. Then they open the gates and all we get is that slush and cow shit and debris from them reservoirs and it's pouring into our water and there is that white foamy stuff on the top of the water and this algae that is so thick you can't even walk in it and it's no good for the fish. It's no good for the wildlife. It's no good for nothing. And anymore even if we do have a high water it doesn't flush it. It goes down the little channels where the water is supposed to be and all this algae is on the sides and it floats up and goes down to where the fish are and never goes away. There it is. That has a lot of effect on our river.

The River used to have high winter flows. People would move around in the winter. The River would rise 40-50 feet every year in peak flows. Walt recalls high water and flood events in 1955, 1964, and 1974. High water events removed silt and sediments and large woody debris from the river. Now the flows are not high enough to float out the big logs over the riffles or clear out the gravel and sediments that pile up at the mouths of the creeks. The construction of dams on the Klamath and the Trinity Rivers had a big impact on the River and its annual flow. Walt stated that a significant decline in fish population was evident after the construction of the dams.

(Walt McCovey Jr., 2003)

In his 2004 analysis, Thomas King concludes the following:

The Klamath Riverscape is the physical cultural environment of the tribes, and that its health is intimately related to the health of their less tangible cultural institutions. The Klamath Riverscape, the river itself, and its fish would be key cultural resources for the tribes even if they were not eligible for the National Register. To the extent the dams contribute to the pattern of cumulative impacts on the riverscape, they have an adverse effect on the integrity of these resources, which must be considered in project review under NEPA.

It remains the position of the Yurok Tribe that the only resolution of these long standing violations of Yurok sovereignty, the depletion and degradation of Yurok Trust Resources and the actual fulfillment of the federal government's Trust Responsibility to the Yurok

Tribe and its members requires the full removal of the 4 Klamath River dams and the implementation of the KBRA and KHSA all leading to the restoration of the Klamath River its ecosystem and its fishery. This report has been prepared for the purposes of providing citations, references, data and evidence that will assist the Department of the Interior, the Secretary of the Interior and all federal agencies engaged in the Secretarial Determination Process and the ongoing NEPA/CEQA process in making a sound and informed decision on these important matters of vital interest to the Yurok Tribe.

Attachment 6b

Health Advisory

HEALTH ADVISORY



AVOID WATER CONTACT IN IRON GATE AND COPCO RESERVOIRS

Pollution has resulted in high levels of blue-green algae that can produce harmful toxins. This has resulted in violations of the State's water quality standards

- Do not use this water for drinking or cooking
- Fish from these waters previously tested positive for an algal toxin. Limit or avoid consuming fish as the risk to human health is being evaluated by public health agencies
- Do not consume fish innards, and wash fillets with drinking water

Children and pets are at greatest risk

For more information contact staff at:

North Coast Regional Water Quality Control Board

(707) 576-2220

Attachment 7

- 7a Bureau of the Census Maps
- 7b Bureau of the Census 5-Year Average 2005–2009 Unemployment, Income, and Poverty Estimates for the Yurok Tribe Area
- 7c Bureau of the Census Definitions
- 7d Bureau of Indian Affairs Labor Force Report Definitions

Attachment 7a

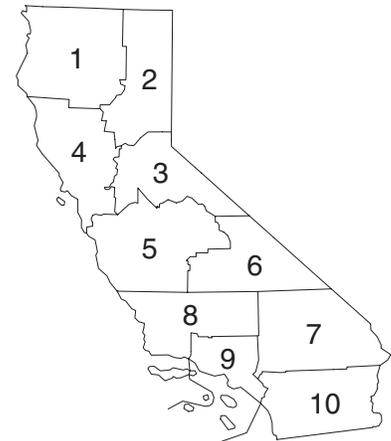
Bureau of the Census Maps

County Subdivision Outline Map Legend and County Location Index

Map Legend

---	International
	CAMPO American Indian Reservation (Federal)
	ZIA Off-Reservation Trust Land
	Tetlin Tribal Designated Statistical Areas
---	State
	ERIE County
---	YORK County Subdivision ¹
---	ROME Incorporated Place ¹
---	Zena Census Designated Place
	<i>Lake Erie</i> Large River, Lake, Water Body, or Shoreline
	A fishhook joins contiguous and/or discontinuous parts of the same geographic entity

Map Sections



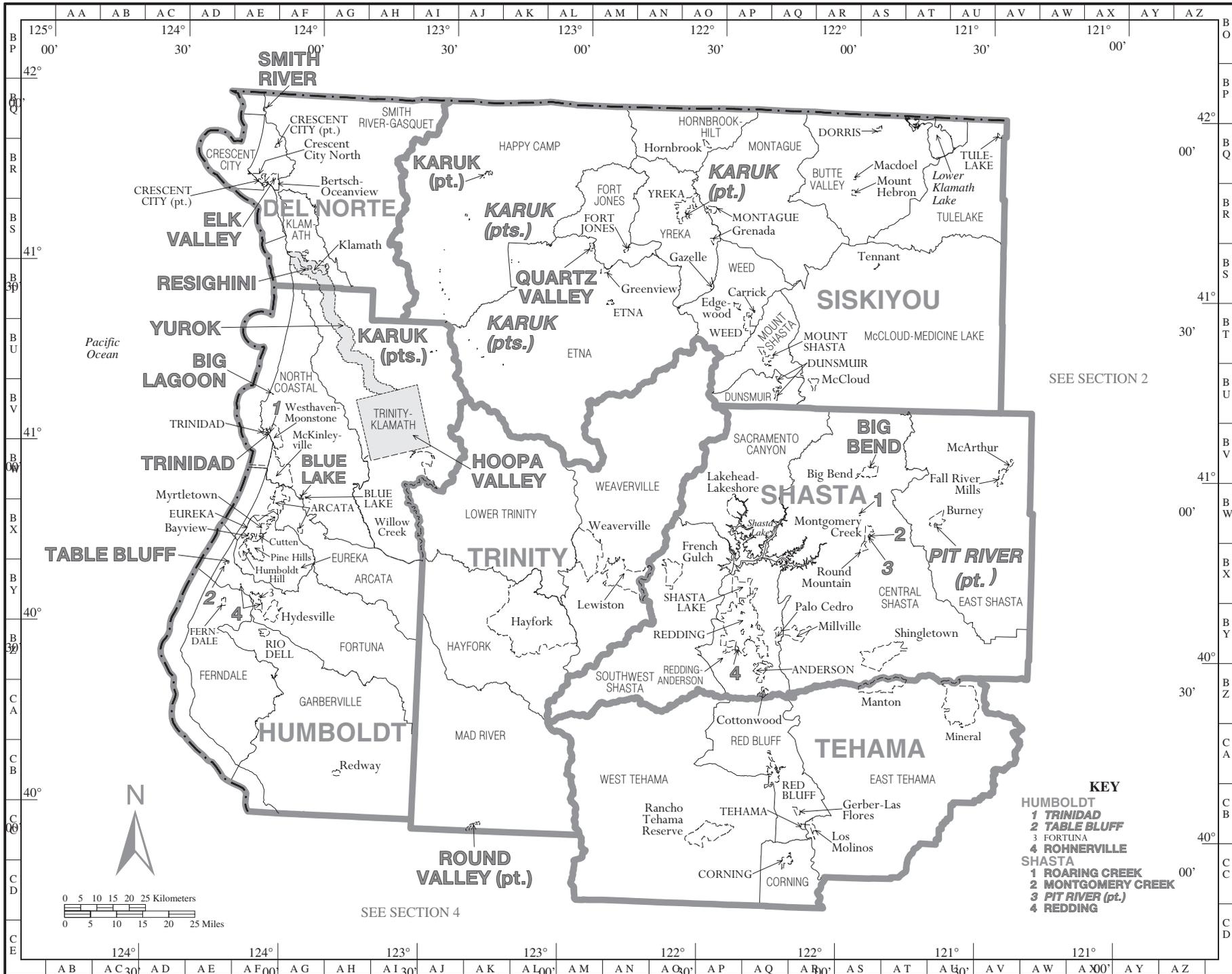
¹ A "*" following a place name indicates that the place is coextensive with a separate county subdivision. The county subdivision name is shown only if different than the name of the place.

Note: All legal boundaries and names are as of January 1, 2000. Where international, state, county, and/or county subdivision boundaries coincide, the map shows the boundary symbol for the highest level of these geographic entities. The county boundary is always shown. Where a county subdivision boundary coincides with a place boundary, the map does not show the place boundary symbol. Any geographic entity name may include '(pt.)' if some portion of the entity extends beyond the limits of the map area displayed on the page, or if multiple discontinuous pieces of the entity have been discretely labeled on the page. A geographic entity name may include '(pts.)' if many discontinuous pieces exist for that entity that cannot be discretely labeled. The boundaries shown on this map are for Census Bureau statistical data collection and tabulation purposes only; their depiction and designation for statistical purposes does not constitute a determination of jurisdictional authority or rights of ownership or entitlement.

County Location Index

This list presents the reference coordinates for each county on the county subdivision outline map. Map section numbers refer to the county subdivision outline maps only.

COUNTY	MAP SEC	MAP REF	COUNTY	MAP SEC	MAP REF	COUNTY	MAP SEC	MAP REF
Alameda.....	4	AS-CQ	Napa.....	4	AQ-CK	Tuolumne.....	3	BE-CN
Alpine.....	3	BF-CK	Nevada.....	2	AZ-CG	Ventura.....	9	BJ-DJ
Amador.....	3	BA-CL	Orange.....	9	BR-DN	Yolo.....	4	AS-CJ
Butte.....	2	AU-CE	Placer.....	3	AZ-CH	Yuba.....	2	AV-CG
Calaveras.....	3	BA-CM	Plumas.....	2	AY-CB			
Colusa.....	4	AQ-CG	Riverside.....	10	CC-DN			
Contra Costa.....	4	AS-CO	Sacramento.....	3	AV-CL			
Del Norte.....	1	AG-BR	San Benito.....	5	AX-CW			
El Dorado.....	3	BA-CJ	San Bernardino.....	7	CA-DG			
Fresno.....	5	BG-CV	San Diego.....	10	BX-DR			
Glenn.....	4	AP-CE	San Francisco.....	4	AP-CP			
Humboldt.....	1	AG-BX	San Joaquin.....	3	AW-CO			
Imperial.....	10	CF-DR	San Luis Obispo.....	8	BB-DD			
Inyo.....	6	BT-CW	San Mateo.....	4	AP-CR			
Kern.....	8	BL-DD	Santa Barbara.....	8	BD-DH			
Kings.....	5	BF-CZ	Santa Clara.....	5	AT-CS			
Lake.....	4	AN-CH	Santa Cruz.....	5	AR-CT			
Lassen.....	2	BA-BX	Shasta.....	1	AR-BX			
Los Angeles.....	9	BO-DJ	Sierra.....	2	BA-CE			
Madera.....	5	BF-CS	Siskiyou.....	1	AO-BS			
Marin.....	4	AN-CN	Solano.....	4	AS-CM			
Mariposa.....	5	BE-CQ	Sonoma.....	4	AM-CK			
Mendocino.....	4	AJ-CF	Stanislaus.....	5	AY-CQ			
Merced.....	5	AZ-CS	Sutter.....	4	AT-CH			
Modoc.....	2	AZ-BS	Tehama.....	1	AQ-CB			
Mono.....	3	BK-CO	Trinity.....	1	AL-BY			
Monterey.....	5	AW-CY	Tulare.....	6	BL-CY			



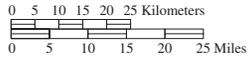
KEY

HUMBOLDT

- 1 TRINIDAD
- 2 TABLE BLUFF
- 3 FORTUNA
- 4 ROHNERVILLE

SHASTA

- 1 ROARING CREEK
- 2 MONTGOMERY CREEK
- 3 PIT RIVER (pt.)
- 4 REDDING



Attachment 7b

Bureau of the Census 5-Year Average 2005–2009 Unemployment,
Income, and Poverty Estimates for the Yurok Tribe Area

Attachment 7b

Bureau of the Census 5-Year Average 2005–2009 Unemployment, Income, and Poverty Estimates for the Yurok Tribe Area

Geographic areas	Census unemployment (%)	Median household income	Per capita income	Poverty status (%)	Poverty – families, female householder, no husband, children under 5 (%)	Poverty – families, female householder, no husband, children under 18 (%)
Yurok Reservation	10.8	28,036	14,470	29.5	61.1	56.0
Del Norte County	3.7	38,408	19,016	19.4	50.0	39.8
Klamath CCD	5.0	29,615	16,804	19.6	na	43.6
Klamath CDP	7.9	29,135	14,806	27.5	na	43.6
Crescent City CCD	3.8	38,155	18,371	21.3	52.9	42.0
Humboldt County	4.8	39,124	23,496	18.2	63.0	43.3
Trinity-Klamath CCD	8.1	29,094	15,837	23.5	93.1	51.0
California	5.0	60,392	29,020	13.2	36.9	32.2

Source: American Community Survey DP03 “selected economic characteristics: 2005-2009.” American Indian population data were not available when the data was released.

Attachment 7c

Bureau of the Census Definitions

Attachment 7c

Census Bureau - Glossary (online): http://factfinder.census.gov/home/en/epss/glossary_e.html#employed.

American Indian Area, Alaska Native Area, Hawaiian Home Land (AIANAHH)

A Census Bureau term referring to these types of geographic areas: federal and state American Indian reservations, American Indian off-reservation trust land (individual or tribal), Oklahoma tribal statistical area (in 1990 tribal jurisdictional statistical area), tribal designated statistical area, state designated American Indian statistical area, Alaska Native Regional Corporation, Alaska Native village statistical area, and Hawaiian home lands.

American Indian off-reservation trust land

Lands held in trust by the federal government for either a tribe or an individual member of that tribe. They may be located on or outside of the reservation; the Census Bureau recognizes and tabulates data only for the off-reservation trust lands because the tribe has primary governmental authority over these lands.

American Indian reservation

Land that has been set aside for the use of the tribe. There are two types of American Indian reservations, federal and state. These entities are designated as colonies, communities, pueblos, ranches, rancherias, reservations, reserves, tribal towns, and villages.

American Indian Reservation - federal

Areas with boundaries established by treaty, statute, and/or executive or court order recognized by the federal government as territory in which American Indian tribes have primary governmental authority. The U.S. Census Bureau contacts representatives of American Indian tribal governments to identify the boundaries. The Bureau of Indian Affairs (BIA) maintains a list of federally recognized tribal governments.

American Indian Reservation - state

Lands held in trust by state governments for the use and benefit of a given tribe. A governor-appointed state liaison provides the names and boundaries for state reservations. The names of the American Indian reservations recognized by state governments, but not by the federal government, are followed by "(state)" in the data presentations.

American Indian Tribal Subdivision

Administrative subdivisions of federally recognized American Indian reservations, off-reservations trust lands, and Oklahoma tribal statistical areas (OTSAs), known as an area, chapter, community, or district. Internal units of self-government or administration that serve social, cultural, and/or economic purposes for American Indians. Provided in 1980 as "American Indian subreservation areas." These areas were not available in 1990.

American Indian tribe/Selected American Indian categories

Self-identification among people of American Indian descent. Many American Indians are members of a principal tribe or group empowered to negotiate and make decisions on behalf of the individual members.

Employed

Employed includes all civilians 16 years old and over who were either (1) "at work" -- those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were "with a job but not at work" -- those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are people whose only activity consisted of work around the house or unpaid volunteer work for religious, charitable, and similar organizations; also excluded are people on active duty in the United States Armed Forces. The reference week is the calendar week preceding the date on which the respondents completed their questionnaires or were interviewed. This week may not be the same for all respondents.

Household

A household includes all the people who occupy a housing unit as their usual place of residence.

Labor force

The labor force includes all people classified in the civilian labor force, plus members of the U.S. Armed Forces (people on active duty with the United States Army, Air Force, Navy, Marine Corps, or Coast Guard). The Civilian Labor Force consists of people classified as employed or unemployed.

Median age

This measure divides the age distribution in a stated area into two equal parts: one-half of the population falling below the median value and one-half above the median value.

Median income

The median income divides the income distribution into two equal groups, one having incomes above the median, and other having incomes below the median.

Occupation

Occupation describes the kind of work the person does on the job. For employed people, the data refer to the person's job during the reference week. For those who worked at two or more jobs, the data refer to the job at which the person worked the greatest number of hours. Some examples of occupational groups shown in this product include managerial occupations; business and financial specialists; scientists and technicians; entertainment; healthcare; food service; personal services; sales; office and administrative support; farming; maintenance and repair; and production workers.

Per capita income

Average obtained by dividing aggregate income by total population of an area.

Poverty

Following the Office of Management and Budget's (OMB's) Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is poor. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being "below the poverty level."

Race

Race is a self-identification data item in which respondents choose the race or races with which they most closely identify.

For Census 2000:

In 1997, after a lengthy analysis and public comment period, the Federal Office of Management and Budget (OMB) revised the standards for how the Federal government would collect and present data on race and ethnicity. The new guidelines reflect "the increasing diversity of our Nation's population, stemming from growth in interracial marriages and immigration."

These new guidelines revised some of the racial categories used in 1990 and preceding censuses and allowed respondents to report as many race categories as were necessary to identify themselves on the Census 2000 questionnaire.

How the new guidelines affect Census 2000 results and the comparison with data from 1990:

Census 2000 race data are not directly comparable with data from 1990 and previous censuses. See the Census 2000 Brief, "[Overview of Race and Hispanic Origin](#)".

Race Alone categories (6):

Includes the minimum 5 race categories required by OMB, plus the 'some other race alone' included by the Census Bureau for Census 2000, with the approval of OMB.

- White alone
- Black or African-American alone
- American Indian or Alaska Native alone
- Asian alone
- Native Hawaiian or other Pacific Islander alone
- Some other race alone

Race Alone or in combination categories (63):

There will be other tabulations where 'race alone or in combination' will be shown. These tabulations include not only persons who marked only one race (the 'race alone' category) but also those who marked that race and at least one other race. For example, a person who indicated that she was of Filipino and African-American background would be included in the African-American alone or in combination count, as well as in the Asian alone or in combination count. The alone or in combination totals are tallies of responses, rather than respondents. So the sum of the race alone or in combination will add to more than the total population.

Some tabulations will show the number of persons who checked 'two or more races'.

In some tables, including the first release of Census 2000 information, data will be tabulated for 63 possible combinations of race:

- 6 race alone categories
- 15 categories of 2 races (e.g., White and African American, White and Asian, etc.)
- 20 categories of 3 races
- 15 categories of 4 races
- 6 categories of 5 races
- 1 category of 6 races
- =63 possible combinations

Some tables will show data for 7 race categories: the 6 (mutually-exclusive) major race-alone categories (White, African-American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and some other race) and a 'two or more races' category. The sum of these 7 categories will add to 100 percent of the population.

Unemployed

All civilians 16 years old and over are classified as unemployed if they (1) were neither "at work" nor "with a job but not at work" during the reference week, and (2) were actively looking for work during the last 4 weeks, and (3) were available to accept a job. Also included as unemployed are civilians who did not work at all during the reference week, were waiting to be called back to a job from which they had been laid off, and were available for work except for temporary illness.



March 14, 2001

Question: Can data users compare data by race from Census 2000 with previous censuses?

Answer: Data on race from Census 2000 are not directly comparable with those from the 1990 census and previous censuses due, in large part, to giving respondents the option to report more than one race. Other factors, such as reversing the order of the questions on race and Hispanic origin and changing question wording and format, also may affect comparability.

Question: Why didn't the Census Bureau allow respondents to report more than one race in previous censuses?

Answer: The decision to use the instruction "mark one or more races" was reached by the Office of Management and Budget in 1997 after noting evidence of increasing numbers of children from interracial unions and the need to measure the increased diversity in the United States. Prior to this decision, most efforts to collect data on race (including those by the Census Bureau) asked people to report one race.

Question: What census data products will include data by race.

Answer: Data by race will appear in most Census 2000 data products. A large portion of Census 2000 data products will be made available on the Internet through the American FactFinder web page. Data on race also will be made available through paper reports and computer media such as CD-ROM and DVD. A description of our data products and a schedule for their release can be found on our web site at www.census.gov. Click on "Schedule", which will take you to the "Census 2000 Products at a Glance."

Question: How will data on race be presented?

Answer: Data on race will be shown using several different options. For example, in the Public Law 94-171 (redistricting) file, data will be shown for 63 racial categories. These include White alone, Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, Some other race alone and 57 possible combinations of the above six categories.

In data products where it will not be possible to show 63 racial categories, such as the Demographic Profiles, data will be shown for seven mutually exclusive and exhaustive categories. The seven categories are White alone, Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, Some other race alone, and Two or more races. The two or more races category represents all those respondents who reported more than one race.

A third option provides data about people who reported a race either alone or in combination with one or more other races. For example, the White alone or in combination category consists of those respondents who reported White, whether or not they reported any other races. In other words, people who reported only White or who reported combinations such as "White *and* Black or African American," or "White *and* Asian *and* American Indian and Alaska Native" are included in the White alone or in combination category. Using this option there are six alone or in combinations groups: White alone or in combination; Black or African American alone or in combination, American Indian and Alaska Native alone or in combination, Asian alone or in combination, Native Hawaiian and Other Pacific Islander alone or in combination, and Some other race alone or in combination. If the number of people in these six categories is calculated, it will equal the total number of responses and will generally exceed the total population.

Question: How were decisions made on which census data products would and would not contain data on race?

Answer: The decision on which products would include which tabulation option for race was determined through consultations with data users, especially our race and ethnic advisory committees. Ultimately, the decision was based on the Census Bureau's ability to provide data users with reliable and accurate data without violating respondents' confidentiality.

Question: Will the Census Bureau develop methods to facilitate comparisons between the race data in Census 2000 and previous censuses?

Answer: An OMB federal agency working group is studying possible bridging methods for comparing Census 2000 data on race with data from previous censuses. The Census Bureau did not develop these methods, but it is participating with the working group that is evaluating them. The Census Bureau is conducting evaluation studies to understand better the impact of changes to the question on race. For example, during the summer of 2001, the Census Bureau will implement a Census Quality Survey, gathering data from approximately 50,000 households, to assess the reporting of race and Hispanic origin in Census 2000. The purpose of this study is to produce a data file that will assist users in developing ways to make comparisons between Census 2000 data on race, where respondents were asked to report one or more races, and data on race from other sources that asked for only a single race.

Question: Does the Census Bureau have a policy on which tabulation options data users should use when comparing data on race from Census 2000 and previous censuses?

Answer: The Census Bureau is providing different tabulation options so that users may decide which option best satisfies their needs. In addition, the Census Bureau will provide a data file, using results from the Census Quality Survey to be conducted in the summer of 2001, that will assist users in developing ways to make comparisons between Census 2000 data on race, where respondents were asked to report one or more races, and data on race from other sources that asked for only a single race.

Question: What are the race groups that federal agencies are to use to comply with the Office of Management and Budget's guidance for civil rights monitoring and enforcement?

Answer: The categories (made available in OMB Bulletin No. 00-02, "Guidance on Aggregation and Allocation of Data on Race for Use in Civil Rights Monitoring and Enforcement") to be used are:

1. American Indian and Alaska Native
2. Asian
3. Black or African American
4. Native Hawaiian and Other Pacific Islander
5. White
6. American Indian and Alaska Native *and* White
7. Asian *and* White
8. Black or African American *and* White
9. American Indian and Alaska Native *and* Black or African American
10. >1 percent: Fill in if applicable with multiracial combinations greater than 1% of the population
11. Balance of individuals reporting more than one race
12. Total

The use of these categories, including the identification of specific two or more race combinations greater than 1 percent, is mandatory for civil rights monitoring and enforcement agencies. For more information, see www.whitehouse.gov/omb/bulletins/b00-02.html

Question: If data users combined a single race group, such as White, with all of the possible combination groups that include White, such as "White *and* Black or African American," "White *and* American Indian and Alaska Native *and* Asian," will such entries equal the total race population for White for a given jurisdiction?

Answer: While this total provides the maximum number of people who identify with being White, regardless of what other races were reported, it cannot be used with other racial categories to add to the total population. This

White total includes race combinations such as "White *and* Black or African American" that also would be included in the total of people who reported Black or African American regardless of other races reported.

By contrast, the "one-race" categories added to the "Two or more races" category equals the total population. See example below:

	Population Counts for City X
Total Population	500,000
One Race - Total	450,000
White	400,000
Black or African American	10,000
American Indian and Alaska Native	5,000
Asian	500
Native Hawaiian and Other Pacific Islander	100
Some Other Race	34,400
Two or more races - Total	50,000

Question: How does the Census Bureau define race and ethnicity?

Answer: Census Bureau complies with the Office of Management and Budget's standards for maintaining, collecting, and presenting data on race, which were revised in October 1997. They generally reflect a social definition of race recognized in this country. They do not conform to any biological, anthropological or genetic criteria.

In accordance with the Office of Management and Budget definition of ethnicity, the Census Bureau provides data for the basic categories in the OMB standards: Hispanic or Latino and Not Hispanic or Latino. In general, the Census Bureau defines ethnicity or origin as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. People who identify their origin as Spanish, Hispanic, or Latino may be of any race.

According to the revised Office of Management and Budget standards noted above, race is considered a separate concept from Hispanic origin (ethnicity) and, wherever possible, separate questions should be asked on each concept.

Question: How did the Census Bureau handle multiple responses to the race question in the 1990 census?

Answer: The 1990 Census data capture system was not designed to capture multiple circles being filled by respondents. When individuals marked the Other race circle and provided a multiple write in, the response was assigned according to the first write in. For example, a write in of "Black-White" was assigned a code of Black, a write in of "White-Black" was assigned a code of White. Separate codes were assigned to the various combinations of write ins for research and evaluation purposes.

Information gathered prior to the 1990 census indicated that less than one half of one percent of the population would mark more than one circle.

Question: Will multiple responses be captured for the question on Hispanic origin?

Answer: The Census Bureau followed the recommendation of its Hispanic Advisory Committee and captured multiple responses to the question on Hispanic origin for research purposes. However, multiple responses ultimately were assigned a code of one category for the official Census 2000 data.

Question: Is the multiracial population in the U.S. growing? Do we know the size of this population?

Answer: This is the first census that collected and tabulated data on people reporting two or more races, so we do not have an exact measure of change in the multiracial population. However, Census Bureau research shows

that the number of children living in mixed-race families has been increasing in the past two decades. In 1970, the number of children living in mixed-race families totaled 460,000. This number increased to 996,070 in 1980 and reached almost 2 million in 1990. In 1990, children in mixed-race households accounted for 4 percent of all children in households.

The Census Bureau's 1996 National Content Survey and the Bureau of Labor Statistics' 1995 Current Population Survey Supplement on Race and Ethnicity indicated that, nationwide, less than 2 percent of the population self-identified as multiracial.

Additional Information:

Number of Children Living in Mixed-Race Families	
<u>Year</u>	<u>Number</u>
1970	460,000
1980	996,070
1990	1,937,496

Question: How will data for people reporting two or more races be tabulated beyond showing a total number of people reporting two or more races?

Answer: The Census Bureau will use two approaches in its standard data products, to present data for people reporting two or more races. One approach, which will be implemented in selected data products, is to show the 57 possible combinations of the six race groups (White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Some other race). These detailed categories can be combined, if desired, to show the number of people with two races, the number with three races, and so forth.

The second approach, which also will be implemented in selected data products, is to show the number of times a respondent reports one of the six race categories either alone or in combination with the other five race categories. Thus, the tabulation category "Black or African American alone or in combination with one or more other races" will include all people who reported only Black or African American and people who reported Black or African American in combination with any of the other five race categories.

Question: Will people who report two or more races be counted twice?

Answer: No. Individuals will be counted only once. However, in tabulation approaches including the 6 race groups shown *alone or in combination* with one or more other races, respondents will be tallied in each of the race groups they have reported. For example, people who reported "Asian *and* Black or African American" would be counted both in the "Asian alone or in combination" population and also in the "Black or African American alone or in combination" population. Consequently, the total of the six alone or in combination groups will exceed the total population whenever some people in the group of interest reported more than one race.

Question: How will people who do not mark any check box in the question on race, but provide a write-in entry of "Black and White" be counted in the census?

Answer: These individuals will be counted in the category "Two or more races." In tabulations where specific combinations are shown, these individuals will be tabulated in the category "White *and* Black or African American."

Source: U.S. Census Bureau | Public Information Office | (301) 763-3030
Last Revised: May 28, 2010 at 10:32:57 AM

Occupations: 2000

Census 2000 Brief

Issued August 2003

C2KBR-25

By
Peter Fronczek
and
Patricia Johnson

"What do you do for a living?" is a question frequently asked in contexts ranging from social conversation to scientific research. A person's occupation has often been a defining characteristic, so much so that many of today's surnames reflect the occupation of a long ago relative.

Census 2000 counted 281.4 million people in the United States on April 1, 2000, of whom 129.7 million were employed civilians aged 16 and over (Table 1).¹ The census classifies occupations at various levels, from the least-detailed summary level — six occupational groups — to the most detailed level — 509 occupation categories. This Census 2000 Sample Brief examines occupations of the employed civilian population 16 years old and older.

Census 2000 occupation classifications were based on the government-wide 2000 Standard Occupation Classification (SOC) system, whereas the 1990 census occupations were based on the 1980

¹ The text of this report discusses data for the United States, including the 50 states and the District of Columbia. Data for the Commonwealth of Puerto Rico are shown in Table 6 and Figure 3 only.

Figure 1.

Reproduction of the Questions on Occupation from Census 2000

28 Occupation

a. What kind of work was this person doing?
(For example: registered nurse, personnel manager, supervisor of order department, auto mechanic, accountant)

b. What were this person's most important activities or duties? (For example: patient care, directing hiring policies, supervising order clerks, repairing automobiles, reconciling financial records)

Source: U.S. Census Bureau, Census 2000 questionnaire.

SOC. The SOC was overhauled in 1998 (with additional revisions in 2000) to create a classification system that more accurately reflected the occupational structure in the United States at the time of the revisions. As a result, comparisons of occupation data from the 1990 census and Census 2000 are not recommended and therefore are not attempted in this report.

At the least-detailed summary level, the highest proportion of civilian workers 16 and older, 33.6 percent, were in

U.S. CENSUS BUREAU

Helping You Make Informed Decisions

U.S. Department of Commerce
Economics and Statistics Administration
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United States
**Census
2000**

Table 8.
Occupational Groups by Industry Groups for the United States: 2000

(Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/prod/cen2000/doc/sf3.pdf)

Industry groups	Occupational groups						
	Employed civilian population 16 years and over	Management, professional and related occupations	Service	Sales and office	Farming, fishing, and forestry	Construction, extraction, and maintenance	Production, transportation, and material moving
Totals	129,721,512	100.00	100.00	100.00	100.00	100.00	100.00
Agriculture, forestry, fishing and hunting, and mining....	2,426,053	2.2	0.4	0.4	82.2	1.9	1.2
Construction	8,801,507	2.9	0.4	1.9	0.4	51.4	2.6
Manufacturing	18,286,005	10.3	1.6	7.5	2.9	10.6	50.5
Wholesale trade	4,666,757	1.9	0.3	6.8	6.2	2.3	5.7
Retail trade	15,221,716	4.1	2.9	30.0	2.4	6.1	9.0
Transportation and warehousing, and utilities	6,740,102	2.0	1.5	5.5	0.7	5.3	15.8
Information	3,996,564	4.5	0.4	3.9	0.0	3.3	1.0
Finance, insurance, real estate, and rental and leasing ..	8,934,972	8.0	1.6	13.8	0.0	1.6	0.7
Professional, scientific, management, administrative, and waste management services	12,061,865	14.3	9.9	8.5	2.3	2.3	3.6
Educational, health and social services	25,843,029	36.7	28.4	10.1	0.5	2.3	3.0
Arts, entertainment, recreation, accommodation and food services	10,210,295	4.2	33.5	4.0	0.6	1.2	2.0
Other services (except public administration)	6,320,632	3.3	9.7	3.0	0.3	9.9	4.0
Public administration	6,212,015	5.5	9.4	4.6	1.5	1.9	0.9

Source: United States Census 2000, Sample Edited Detail File.

areas in the ten highest had about 3 out of 10 workers employed in sales and office occupations.

Nine out of ten metropolitan areas with the highest percentage of construction, extraction, and maintenance workers were in the South.

Nine out of ten metropolitan areas with the highest percentage of workers in construction, extraction, and maintenance occupations were in the South in 2000. The only area not in the South was Casper, WY, which was in the West. All of the ten were relatively small, with none having more than 200,000 workers.

Similarly, each of the ten metropolitan areas with the highest percentage of workers in production, transportation, and material moving occupations in 2000 was small: only one had more than 100,000

workers. The leading metropolitan areas in this group were Hickory-Morganton-Lenoir, NC, and Elkhart-Goshen, IN, with 34.3 percent and 32.7 percent¹⁴ of their workforce in production, transportation, and material moving occupations.

ADDITIONAL FINDINGS

*** How does occupation differ from industry?**

People often confuse industry and occupation data. Industry refers to the kind of business conducted by a person's employing organization; occupation describes the kind of work that person does on the job.

Some occupation groups are related closely to certain industries. Operators of transportation

¹⁴ The difference between these two metropolitan areas was not statistically significant.

equipment, farm operators and workers, and health care providers account for major portions of their respective industries of transportation, agriculture, and health care. However, the industry categories include people in other occupations. For example, people employed in agriculture include truck drivers and bookkeepers; people employed in transportation include mechanics, freight handlers, and payroll clerks; and people in the health care industry include occupations such as security guard and secretary.

The industry classification system used during Census 2000 was developed for the census and consists of 265 categories classified into 13 major industry groups. The Census 2000 industry classification was developed from the 1997

North American Industry Classification System (NAICS), which is an industry description system that groups establishments into industries based on activities in which they are primarily engaged. Several census data products use the aggregation structure shown in this report, while others, such as Summary File 3 and Summary File 4, use more detail.

Some occupational groups have a closely related industry counterpart.

About 82.2 percent of farming, fishing, and forestry workers were employed in agriculture, forestry, fishing and hunting, and mining industries. A little more than half (51.4 percent) of construction, extraction, and maintenance occupation workers were in the construction industry. Similarly, over half (50.5 percent) of workers in production, transportation, and material moving occupations were in manufacturing industries. Service occupations was the only occupational group to have a substantial percent of workers in two industry areas — arts, entertainment, recreation, accommodation and food service, with 33.5 percent; and educational, health and social services, with 28.4 percent. More than one-third (36.7 percent) of workers in management, professional and related occupations worked in the educational, health and social services industries. About 30.0 percent of sales and office workers worked in retail trade industries.

ABOUT CENSUS 2000

Why Census 2000 asked about occupation.

The study of occupations is important because it facilitates a better understanding of the economy by tracking labor force trends and identifying new and emerging occupations, such as those related to computers or the Internet. It also provides a window on changes taking place in society, reflected by the work people do.

Specifically, information on occupations is used by a number of federal agencies to distribute funds, to develop policy, and to measure compliance with laws and regulations. For example, occupation data are required by the Bureau of Economic Analysis to develop state per capita income estimates, which are used in the allocation formulas or eligibility criteria of more than 20 federal programs. Data are used to help the Environmental Protection Agency, under the Toxic Substances Control Act, to identify occupations that expose people to harmful chemicals and that adversely affect the environment. They are also used by the Equal Employment Opportunity Commission, under the Civil Rights and Equal Pay Acts, to monitor compliance with federal law and to investigate complaints where employment discrimination is alleged. Occupation data are used by the Department of Labor to formulate policies and programs for employment, career development, and training.

Accuracy of the Estimates

The data contained in this product are based on the sample of households who reported to the Census 2000 long form. Nationally, approximately 1 out of every 6 housing units was included in this sample. As a result, the sample estimates may differ somewhat from the 100-percent figures that would have been obtained if all housing units, people within those housing units, and people living in group quarters had been enumerated using the same questionnaires, instructions, enumerators, and so forth. The sample estimates also differ from the values that would have been obtained from different samples of housing units, people within those housing units, and people living in group quarters. The deviation of a sample estimate from the average of all possible samples is called the sampling error.

In addition to the variability that arises from the sampling procedures, both sample data and 100-percent data are subject to nonsampling error. Nonsampling error may be introduced during any of the various complex operations used to collect and process census data. Such errors may include: not enumerating every household or every person in the population, failing to obtain all required information from the respondents, obtaining incorrect or inconsistent information, and recording information incorrectly. In addition, errors can occur during the field review of the enumerators' work, during clerical handling of

the census questionnaires, or during the electronic processing of the questionnaires.

Nonsampling error may affect the data in two ways: (1) errors that are introduced randomly will increase the variability of the data and, therefore, should be reflected in the standard errors; and (2) errors that tend to be consistent in one direction will bias both sample and 100-percent data in that direction. For example, if respondents consistently tend to underreport their incomes, then the resulting estimates of households or families by income category will tend to be understated for the higher income categories and overstated for the lower income categories. Such biases are not reflected in the standard errors.

While it is impossible to completely eliminate error from an operation as large and complex as the decennial census, the Census Bureau attempts to control the sources of such error during the data collection and processing operations. The primary sources of error and the programs instituted to control error in Census 2000 are described in detail in *Summary File 3*

Technical Documentation under Chapter 8, "Accuracy of the Data," located at www.census.gov/prod/cen2000/doc/sf3.pdf.

All statements in this Census 2000 Brief have undergone statistical testing and all comparisons are significant at the 90-percent confidence level, unless otherwise noted. The estimates in tables, maps, and other figures may vary from actual values due to sampling and nonsampling errors. As a result, estimates in one category may not be significantly different from estimates assigned to a different category. Further information on the accuracy of the data is located at www.census.gov/prod/cen2000/doc/sf3.pdf. For further information on the computation and use of standard errors, contact the Decennial Statistical Studies Division at 301-763-4242.

For More Information.

The Census 2000 Summary File 3 data are available from the American Factfinder on the Internet (factfinder.census.gov). They were released on a state-by-state basis during 2002. For information on confidentiality protection,

nonsampling error, sampling error, and definitions, also see www.census.gov/prod/cen2000/doc/sf3.pdf or contact the Customer Services Center at 301-763-INFO (4636).

Information on population and housing topics is presented in the Census 2000 Brief series, located on the Census Bureau's Web site at www.census.gov/population/www/cen2000/briefs.html. This series, which will be completed in 2003, presents information on race, Hispanic origin, age, sex, household type, housing tenure, and social, economic, and housing characteristics, such as ancestry, income, and housing costs.

For additional information on occupations in the United States, including reports and survey data, visit the Census Bureau's Internet site at www.census.gov/hhes/www/occupation.html.

To find information about the availability of data products, including reports, CD-ROMs, and DVDs, call the Customer Services Center at 301-763-INFO (4636), or e-mail webmaster@census.gov.

Census.gov › People and Households › Poverty Main › Poverty Data › Poverty Thresholds › 2000

Poverty Thresholds 2000

(Use landscape & legal printer options to print this table)

Poverty Thresholds for 2000 by Size of Family and Number of Related Children Under 18 Years

Size of family unit	Weighted Average Thresholds	Related children under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual).....	8,794									
Under 65 years.....	8,959	8,959								
65 years and over.....	8,259	8,259								
Two persons.....	11,239									
Householder under 65 years.....	11,590	11,531	11,869							
Householder 65 years and over.....	10,419	10,409	11,824							
Three persons.....	13,738	13,470	13,861	13,874						
Four persons.....	17,603	17,761	18,052	17,463	17,524					
Five persons.....	20,819	21,419	21,731	21,065	20,550	20,236				
Six persons.....	23,528	24,636	24,734	24,224	23,736	23,009	22,579			
Seven persons.....	26,754	28,347	28,524	27,914	27,489	26,696	25,772	24,758		
Eight persons.....	29,701	31,704	31,984	31,408	30,904	30,188	29,279	28,334	28,093	
Nine persons or more.....	35,060	38,138	38,322	37,813	37,385	36,682	35,716	34,841	34,625	33,291
Source: U.S. Census Bureau										

Source: U.S. Census Bureau | Poverty | Last Revised: September 16, 2010

7c-13

Poverty Thresholds 2009

Poverty Thresholds for 2009 by Size of Family and Number of Related Children Under 18 Years

Size of Family Unit	Weighted Average Thresholds	Related children under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person (unrelated individual)	10,956									
Under 65 years	11,161	11,161								
65 years and over	10,289	10,289								
Two people	13,991									
Householder under 65 years	14,439	14,366	14,787							
Householder 65 years and over	12,982	12,968	14,731							
Three people	17,098	16,781	17,268	17,285						
Four people	21,954	22,128	22,490	21,756	21,832					
Five people	25,991	26,686	27,074	26,245	25,603	25,211				
Six people	29,405	30,693	30,815	30,180	29,571	28,666	28,130			
Seven people	33,372	35,316	35,537	34,777	34,247	33,260	32,108	30,845		
Eight people	37,252	39,498	39,847	39,130	38,501	37,610	36,478	35,300	35,000	
Nine people or more	44,366	47,514	47,744	47,109	46,576	45,701	44,497	43,408	43,138	41,476

Note: The poverty thresholds are updated each year using the change in the average annual Consumer Price Index for All Urban Consumers (CPI-U). Since the average annual CPI-U for 2009 was lower than the average annual CPI-U for 2008, poverty thresholds for 2009 are slightly lower than the corresponding thresholds for 2008.

Source: U.S. Census Bureau

7-C-14

Source: U.S. Census Bureau | Poverty | Last Revised: September 16, 2010

Attachment 7d

Bureau of Indian Affairs Labor Force Report Definitions

Service Population

The total 2005 Service Population of 1,731,178 represents an increase of 143,659 Indian residents or 9 percent over the 1,587,519 reported in the 2003 Labor Force Report.

The total 2005 Service Population represents an increase of 470,972 or 37 percent over the 1,260,206 total Service Population reported in 1995, and an increase of 996,283 or 136 percent over the total Service Population of 734,895 reported in 1982 (the earliest year for which historical data is available).

The 2005 increase in Service Population is attributed to increased record-keeping and improved data collection methods, as well as eligible Indian individuals and families who came to reside in a tribe's service area to benefit from opportunities and services unavailable to them in off-reservation communities. The trend, wherein enrolled Indians returned to reside on or near a reservation, continued in 2005.

Employment

Unemployment, as a percent of the available labor force, did not change between 2003 and 2005, remaining at 49 percent.

The total 2005 workforce (i.e., those available for work) of 872,483 increased by 71,955 individuals, a 9 percent increase over the total workforce of 800,528 reported in 2003. The total 2005 workforce increase is, in part, attributable to the increase of 84,771 reservation residents in the Service Population who were age 16 to 64, as well as the increase in the number of Indians who were available for work.

Between 2003 and 2005, private sector employment increased by 14 percent or 24,439 (from 178,692 in 2003 to 203,131 in 2005). During the same time period, public sector employment increased by 8 percent or 18,195 (from 227,131 in 2003 to 245,326 in 2005). Hence, the total number of employed Indians increased by 11 percent (from 405,823 to 450,511) over the two-year period.

In 2005, Indian individuals employed but earning wages below the poverty level increased by 494 or less than 1 percent between 2003 (131,728) and 2005 (132,222). Even so, the percentage of those employed below the poverty guidelines decreased from 32 percent in 2003 to 29 percent in 2005.

Since the total number of employed Indians increased by 11 percent, from 2003 to 2005, and the number of Indians who were employed under the poverty guidelines increased by less than 1 percent in the same two-year period, this yielded a slight net decrease (3 percent) in the proportion of the Indian reservation population who were employed below the poverty guideline.

Report Coverage

Each tribe that responded designated a tribal labor force coordinator who used a standardized survey reporting form to collect data and provide estimates on their enrolled members and members from other tribes who lived “on-or-near” the reservation and who were eligible to use the tribe’s BIA-funded services. The aggregated total of those eligible to use the services constituted the tribe’s Indian “Service Population.” Excluded from each tribe’s 2005 Service Population total and other report totals were members who, for example, were serving in the Armed Forces or attending post-secondary institutions and not residing on tribal lands. Members were also excluded from the tribe’s Service Population if they had relocated for purposes of direct employment or were incarcerated or confined to a long-term treatment facility.

The data within the Regional section of this Report are provided by Tribe, by BIA Agency, and by BIA Region. The Navajo Nation is listed by BIA Agency under the BIA Navajo Region. Alaska Native entities are listed individually or grouped by consortium.

Definitions Used for the Report (from 25 CFR § 20.1)

Indian means any person who is a member of a federally recognized Indian tribe. Some tribes have enrollment criteria that allows their members to have a blood quantum less than the one-fourth specified in 25 CFR § 20.1.

Indian Tribes are tribes, bands, nations, rancherias, pueblos, colonies, communities, and Alaska Native groups recognized as eligible for funding and services from the BIA and included in the current list of tribal entities, pursuant to Section 104 of the Act of November 2, 1994 (Pub. L. 103-454; 108 Stat. 4791). The list was last published in the Federal Register on November 25, 2005.

Near Reservation means those areas or communities adjacent or contiguous to a reservation, which are designated by the Assistant Secretary upon recommendation of the local BIA Superintendent. The recommendation is based upon consultation with the tribal governing body of those reservations on the basis of such general criteria as:

- ▶ Number of Indian people native to the reservation residing in the area;
- ▶ A written designation by the tribal governing body that members of their tribe and family members who are Indians and residing in the area are socially, culturally, and economically affiliated with the tribe and the reservation;
- ▶ Geographic proximity of the area to the reservation; and
- ▶ Administrative feasibility of providing an adequate level of service.

For Alaska, the term includes the entire State, since Alaska Native tribes are typically isolated from each other and are not formed as reservations, except for the Metlakatla Indian Community on the Annette Island Reserve in southeast Alaska.

On Reservation means American Indians who live within present reservation boundaries and who are eligible for BIA-funded services.

Resident Indian means American Indians living on or near Federal reservations who are considered part of the tribe's service population.

Report Headings/Terms

Tribal Enrollment is the total number of tribal enrollees who are certified as being tribal members by their tribe's leader or designate. Pursuant to tribal governing documents, tribal enrollees may live on-reservation or anywhere outside the reservation – for example, in distant towns, cities, or foreign countries.

Total Service Population is the tribe's estimate of all American Indians and Alaska Natives, members and non-members, who are living on or near the tribe's reservation during the 2005 calendar year and who are eligible to use BIA-funded services. The aggregated sum of those reported as "Age Under 16", "Age 16-64", and "Age 65 and Over" sub-totals of a given tribe equals the tribe's "Total Service Population". Typically, Indians included in a tribe's Service Population live within a reasonable distance of the reservation from where they can access the tribe's services. Such Indians typically do not live in distant cities, towns, or foreign countries.

Not Available for Work is the total estimated number of individuals who were age 16 and over and who were included in a tribe's Service Population, but because of personal circumstances were unable to assume or sustain gainful employment.

Available for Work represents the tribe's 2005 "Total Work Force" and is the sum of the "Age 16-64" and "Age 65 and Over" sub-totals minus the number of individuals who were "Not Available for Work".

Number Employed is determined by aggregating the tribe's estimated subtotals of the number of individuals in its Service Population who were employed by either public, private, or tribal entities.

Number Not Employed is determined by subtracting the "Number Employed" from the tribe's number of individuals in the tribe who were "Available for Work".

Unemployed as a percent of the Labor Force is determined by dividing the "Number Not Employed" by the "Total Workforce" (also called the "Available for Work" total).

Employed, but Below Poverty Guidelines is determined by using the U.S. Department of Health and Human Services (DHHS) 2005 Poverty Guidelines. The tribe estimated the number of its employed workforce whose annual earned income was below the poverty guidelines. For example, for a family of two the poverty threshold of combined earned income was \$12,830 and for a family of four the poverty threshold of combined earned income was \$19,350 (for Alaska, \$16,030 and \$24,190, respectively). Additionally, the report tables show the percent of those employed below the "Poverty Guideline." This percent is derived by dividing the tribe's estimated total number of "Employed, but Below Poverty Guidelines" by the "Number Employed".

Description of Report Tables

State

This table provides information, by state, on the number of Indians who reside on or near a reservation in that state.

Regional

This series of tables provides information on those tribes which were under each BIA Region. In addition, a Self-Governance Table provides information on self-governing tribes.

Alphabetical

This table provides a quick reference tool to locate a specific tribe.

Report Participation

This table provides information on how current and complete the data are for this report. The data included in the 2005 biennial report are reasonably current in that 73 percent of the reporting entities submitted data for the 2005 reporting period and an additional 18 percent submitted data in 2003. Therefore, 91 percent of the data in the report are no older than the previous reporting period (2003). This report participation analysis was not preformed in prior reporting periods.

Additional Information

Any questions regarding a specific tribe's labor market information can be directed to the tribe's BIA Agency, Field Office, or Regional Office. The current BIA Tribal Leaders Directory, with contact information for BIA Regional and Agency offices and the federally recognized tribes, can be accessed at www.doi.gov/leaders.pdf. This report can be accessed at www.doi.gov/triballaborforce2005.pdf.

Note to Readers

The process for collecting data included in the *American Indian Population and Labor Force Report* has remained unchanged since 1999. Tribes are provided written instructions and technical assistance, if requested, to report the data. Data is certified by the tribe. In most cases, BIA reports data as reported by the tribes. An analysis of the data provided in this report, however, reveals problems in the population data reported by the tribes. Users of this report should also be aware that the unemployment data detailed in the report is calculated pursuant to the law that requires the report and that this definition of employment is not the same as that used by the Federal Bureau of Labor Statistics.

Population Data includes “Tribal Enrollment” and the “Total Eligible for Services” data reported by Tribes. Tribes are instructed to report “Tribal Enrollment” as well as the “Total [number of individuals] Eligible for Services” within the tribal domain. The distinction is made because services provided through BIA funding are only available to tribal members living on or near the reservation. The numbers differ because not all enrolled members live on or near the tribal reservation (because they are serving in the armed forces or attending colleges or live in another part of the country, for example.) Conversely, in many cases members of one tribe may live on or near another tribe’s reservation (because of marriage, for example). These individuals are eligible for services provided through BIA funding from the tribe on whose reservation they live on or near.

A review of the reported population data indicates that many tribes do not report these numbers as instructed. For example, there are many cases where “Tribal Enrollment” and the “Total Eligible for Services” are identical, which while possible, is not probable, especially to the extent reported in this document. BIA believes that many of the reporting issues may be the result of misunderstandings of how to fill out the data submission form. To address this problem, as part of the 2007 data collection, the BIA will re-examine its data collection process and train the tribes on how to fill out the submission forms so that future Labor Force Reports reflect a truer depiction of Tribal enrollment and BIA service population in Indian Country.

Unemployment Data is calculated consistent with the methodology included in the Indian Employment, Training and Related Services Demonstration Act of 1992 (P. L. 102-477), which differs from the methodology used by the Federal Bureau of Labor Statistics. The BLS unemployment rates includes adults who do not have a job, are currently available for work, and who have actively looked for work in the last 4 weeks. The BIA definition includes the BLS definition plus those who would like a job but who are no longer actively looking for work. The difference in calculations generally leads to the Tribes reporting significantly higher unemployment rates than those reported by BLS for counties and states in proximity to the reservations.

Attachment 8

8a Indian Health Care Improvement Act Made Permanent by Health
Care Reform Legislation

8b 90 Stat. 1400 1976

Attachment 8a

Indian Health Care Improvement Act Made Permanent by Health Care Reform Legislation

Indian Health Care Improvement Act Made Permanent By Health Care Reform Legislation

By Craig A. Conway, J.D., LL.M. (Health Law)
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Included in the recently-passed Patient Protection and Affordable Care Act¹ signed into law by President Obama was the reauthorization of the Indian Health Care Improvement Act (IHCIA)² – considered to be the cornerstone legal authority for the provision of progressive health care services to American Indians and Alaska Natives (AI/AN).³ Viewed as a victory for individuals and tribes that have requested the legislation for the past ten years, the reauthorization of the IHCIA affirms the federal government's trust responsibility to provide health care to AI/ANs across the country.⁴

Background

During the 1890s, the federal government began to advocate the assimilation of Native Americans into mainstream American life.⁵ As part of that assimilation process, the government sought to increase the tribes' dependence on medicine practiced by physicians of the West and decreased reliance on Tribal practices. The Bureau of Indian Affairs oversaw congressional appropriations used for health care programs offered to American Indians. Since that time, the responsibility for their health care oversight has bounced around and currently is placed with the Indian Health Service (IHS), a division of the U.S. Department of Health and Human Services.

The IHS provides health care services to 1.9 million of the estimated 3.3 million nationwide AI/ANs belonging to 562 federally-recognized tribes in 35 states.⁶ The agency does this through a network of 63 health centers, 29 hospitals, and 28 health stations which are managed by 161 service units and 12 Area Offices.⁷ Health care services are delivered in three ways: (1) directly through IHS services; (2) through tribal medical services; or (3) by contract with non-IHS service providers.⁸

Better quality and increased health care services provided to AI/ANs has been met with some success in the last 30 years. Life expectancy among the Indian people has

¹ Patient Protection and Affordable Care Act, H.R. 3590, Pub. L. No. 111-148, 111th Cong. (2010).

² Indian Health Care Improvement Act, Pub. L. No. 94-437, 94th Cong. (Sept. 30, 1976).

³ See Nat'l Indian Health Bd., Press Release, *America Reaffirms Health Care for Indian Country*, (Mar. 21, 2010), <http://www.nihb.org/docs/03212010/PR-03.21.10%20FINAL.pdf>.

⁴ *Id.*

⁵ Gary D. Sandefur, *Federal Policy Toward Minorities, 1787-1980*, 10 FOCUS 21 (1987), available at <http://www.irp.wisc.edu/publications/focus/pdfs/foc102c.pdf>.

⁶ Indian Health Serv., *Indian Health Service Introduction*, http://www.ihs.gov/PublicInfo/PublicAffairs/Welcome_Info/IHSintro.asp (last accessed Apr. 3, 2010).

⁷ Indian Health Serv., *IHS Year 2010 Profile*, <http://info.ihs.gov/Profile2010.asp> (last accessed Apr. 3, 2010).

⁸ Indian Health Serv., *Quick Look*, <http://info.ihs.gov/QuickLook2010.asp> (last accessed Apr. 3, 2010). See also Holly T. Kuschell-Haworth, *Jumping Through Hoops: Traditional Healers And The Indian Health Care Improvement Act*, 4 DEPAUL J. OF HEALTH CARE L. 843 (Summer 1999).

increased by more than 9 years since 1973 while mortality rates have decreased for infant deaths, tuberculosis, pneumonia, influenza, homicide, suicide, and alcoholism.⁹ However, disparities for each of those categories still exist compared with the U.S. general population. Indian life expectancy is still nearly 5 years less than the average American while death rates for various illnesses and other causes are significantly higher across the board.¹⁰

Federal Legislation Governing AI/AN Health Care

The duty of the federal government to provide health services to Indian Tribes derives from a number of different sources, including negotiated treaties to ceded lands, settlements, agreements, and legislation.¹¹ The principal legislation authorizing federal funds for health services to American Indians is the Snyder Act of 1921.¹² That legislation authorized funds for “the relief of distress and conservation of health...[and]...for the employment of...physicians...for Indian Tribes throughout the United States.”¹³ Following the Snyder Act, Congress created a patchwork process for transferring the responsibility of overseeing health programs to tribal governments in 1975.

By enacting the Indian Self-Determination and Education Assistance Act of 1975,¹⁴ Congress sought to provide Indian Tribes with a greater role in governing their own health care and education programs. The 1975 Act contained two provisions: (1) the Indian Self-Determination Act, which established procedures by which Tribes could eventually administer their own education and social service programs, and (2) the Indian Education Assistance Act, which sought to increase parental involvement in Indian education.¹⁵ Since 1975 the Act has been amended several times. The following year, Congress passed a health care-specific bill designed to provide the quality and quantity of health care services necessary to elevate the health status of AI/ANs to the highest possible health status and to provide existing Indian health services with all resources necessary to effect that policy.

⁹ *Id.*

¹⁰ *Id.* For example, tuberculosis (500% higher), alcoholism (519% higher), diabetes (195% higher), unintentional injuries (149% higher), homicide (92% higher), and suicide (72% higher).

¹¹ Nat’l Indian Health Bd., *supra* note 3. See also Holly T. Kuschell-Haworth, *Jumping Through Hoops: Traditional Healers And The Indian Health Care Improvement Act*, 4 DEPAUL J. OF HEALTH CARE L. 843 (Summer 1999).

¹² Pub. L. No. 67-85, 42 Stat. 208 (Nov. 2, 1921), *codified at* 25 U.S.C. 1 *et seq.* (2001), *available at* http://www.ihs.gov/adminmngresources/legislativeaffairs/legislative_affairs_web_files/key_acts/snyder_act.pdf.

¹³ *Id.* See also Indian Health Serv., *Fact Sheet*, http://www.ihs.gov/PublicAffairs/Welcme_Info/ThisFacts.asp (last accessed Apr. 3, 2010).

¹⁴ Pub. L. No. 93-638, 88 Stat. 2203 (1975), *codified as* 25 U.S.C. §§ 450a-450n, and as amended in scattered sections of 25 U.S.C, 42 U.S.C, and 50 U.S.C.).

¹⁵ *Id.* See also GEORGE CASTILE, *TO SHOW HEART: NATIVE AMERICAN SELF-DETERMINATION AND FEDERAL INDIAN POLICY, 1960–1975* (Univ. of Ariz. Press, 1998); THOMAS CLARKIN, *FEDERAL INDIAN POLICY IN THE KENNEDY AND JOHNSON ADMINISTRATIONS, 1961–1969*, (Univ. of N.M. Press, 2001).

In 1976, Congress found that many IHS facilities were “inadequate, outdated, inefficient, and undermanned,” and enacted the Indian Health Care Improvement Act (IHCIA)¹⁶ to “implement the Federal responsibility for the care and education of the Indian people by improving the services and facilities of Federal Indian health programs and encouraging maximum participation” in those programs.¹⁷ Specific portions of the IHCIA contained language that would ensure that AI/ANs could obtain access to high-quality, comprehensive health care services when needed and also established procedures for the IHS to assist tribes in developing infrastructure to manage their health programs. Since 1976, the legislation has been amended numerous times,¹⁸ including substantive changes in 1992 which extended the act’s purpose of raising the health status of AI/ANs over a specified period of time to the level of the general U.S. population.¹⁹

During the late 1990s, the IHS worked closely with Indian Tribes and governments to draft amendments to IHCIA that would provide greater administrative capabilities to tribal health programs and increase quality of care given.²⁰ In 1999, a National Steering Committee was established to review those proposed recommendations and complete a final legislative draft. By late 1999, the Committee’s final proposal was in the hands of the Congressional leadership as well as the White House. However, nothing ever materialized.

The IHCIA expired in 2000, but was extended through 2001 in the belief that Congress would reauthorize it shortly thereafter. Yet, since 2001 Congress has only held hearings on various proposals but enacted no substantive changes to the IHCIA until the recently-passed health care reform legislation was passed.

Reauthorization of IHCIA

The version of the IHCIA signed into law on March 23, 2010, differs in several ways from the original 1976 version. It includes many major changes and improvements to effectuate the delivery of health care services to AI/ANs, including:

- Enhances the authority of the IHS Director, including the responsibility to facilitate advocacy and promote consultation on matters relating to Indian health within the Department of Health and Human Services.

¹⁶ Pub. L. No. 94-437, 90 Stat. 400, 94th Cong. (Sept. 30, 1976); *Ariz. Health Care Cost Containment Sys. v. McClellan*, 508 F.3d 1243, 1246 (9th Cir.2007).

¹⁷ *Id.*

¹⁸ Pub. L. No. 94-437, 90 Stat. 400, 94th Cong. (Sept. 30, 1976), as amended by Pub. L. No. 96-537 (Dec. 17, 1980), Pub. L. No. 100-579 (Oct. 31, 1988), Pub. L. No. 100-690 (Nov. 18, 1988), Pub. L. No. 100-713 (Nov. 23, 1988), Pub. L. No. 101-630 (Nov. 28, 1990), Pub. L. No. 102-573 (Oct. 29, 1992), Pub. L. No. 104-313 (Oct. 19, 1996), and Pub. L. No. 106-417 (Nov. 1, 2000). A copy of the marked-up legislation may be found at <http://www.ihs.gov/adminmngresources/ihcia/documents/ihcia.pdf>.

¹⁹ *Id.* See also Holly T. Kuschell-Haworth, *supra* note 8.

²⁰ Indian Health Serv., *Indian Health Care Improvement Act*, <http://info.ihs.gov/TreatiesLaws/Treaties3.pdf> (last accessed Apr. 3, 2010).

- Provides authorization for hospice, assisted living, long-term, and home- and community-based care.
- Extends the ability to recover costs from third parties to tribally operated facilities.
- Updates current law regarding collection of reimbursements from Medicare, Medicaid, and CHIP (Children’s Health Insurance Program) by Indian health facilities.
- Allows tribes and tribal organizations to purchase health benefits coverage for IHS beneficiaries.
- Authorizes IHS to enter into arrangements with the Departments of Veterans Affairs and Defense to share medical facilities and services.
- Allows a tribe or tribal organization carrying out a program under the Indian Self-Determination and Education Assistance Act and an urban Indian organization carrying out a program under Title V of IHCA to purchase coverage for its employees from the Federal Employees Health Benefits Program.
- Authorizes the establishment of a Community Health Representative program for urban Indian organizations to train and employ Indians to provide health care services.
- Directs the IHS to establish comprehensive behavioral health, prevention, and treatment programs for Indians.²¹

The inclusion of the IHCA in the reform legislation was hailed by the National Indian Health Board as a much-needed provision. “No one can deny the intense political climate that has been present in the debates regarding health care reform. However, there is one issue that has remained consistently agreed upon: Indian Country is in dire need of health care reform,” said Reno Franklin, Chairman of the National Indian Health Board.²² Adding to that sentiment, President Obama remarked after he signed the reform legislation that he “believes it is unacceptable that Native American communities still face gaping health care disparities.”²³

²¹ Pub. L. No. 94-437, 90 Stat. 400, 94th Cong. (Sept. 30, 1976); Patient Protection and Affordable Care Act, H.R. 3590, Pub. L. No. 111-148, 111th Cong. (2010) at Sec. 10221; U.S. Dep’t of Health & Human Servs., Press Release, *Indian Health Care Improvement Act Made Permanent*, (Mar. 26, 2010), <http://www.hhs.gov/news/press/2010pres/03/20100326a.html>.

²² Nat’l Indian Health Bd., Press Release, *America Reaffirms Health Care for Indian Country*, Mar. 21, 2010, <http://www.nihb.org/docs/03212010/PR-03.21.10%20FINAL.pdf>.

²³ The White House, Office of the Press Sec’y, *Statement by the President on the Reauthorization of the Indian Health Care Improvement Act*, Mar. 23, 2010, <http://www.whitehouse.gov/the-press-office/statement-president-reauthorization-indian-health-care-improvement-act>; U.S. Dep’t of Health &

Conclusion

Federal funding for the IHCIA has contributed billions of dollars to improve the health status of Indian people, yet significant health care disparities still exist compared with the U.S. general population. Hopefully, the inclusion of the IHCIA in the reform legislation will be a significant step towards reducing those disparities.

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Health Law & Policy Institute

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Human Servs., Press Release, *Indian Health Care Improvement Act Made Permanent*, (Mar. 26, 2010), <http://www.hhs.gov/news/press/2010pres/03/20100326a.html>.

Attachment 8b

90 Stat. 1400 1976

Public Law 94-437
94th Congress

An Act

Sept. 30, 1976
 [S. 522]

**Indian Health
 Care
 Improvement
 Act**
 25 USC 1601
 note.
 25 USC 1601.

To implement the Federal responsibility for the care and education of the Indian people by improving the services and facilities of Federal Indian health programs and encouraging maximum participation of Indians in such programs, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Indian Health Care Improvement Act".

FINDINGS

SEC. 2. The Congress finds that—

(a) Federal health services to maintain and improve the health of the Indians are consonant with and required by the Federal Government's historical and unique legal relationship with, and resulting responsibility to, the American Indian people.

(b) A major national goal of the United States is to provide the quantity and quality of health services which will permit the health status of Indians to be raised to the highest possible level and to encourage the maximum participation of Indians in the planning and management of those services.

(c) Federal health services to Indians have resulted in a reduction in the prevalence and incidence of preventable illnesses among, and unnecessary and premature deaths of, Indians.

(d) Despite such services, the unmet health needs of the American Indian people are severe and the health status of the Indians is far below that of the general population of the United States. For example, for Indians compared to all Americans in 1971, the tuberculosis death rate was over four and one-half times greater, the influenza and pneumonia death rate over one and one-half times greater, and the infant death rate approximately 20 per centum greater.

(e) All other Federal services and programs in fulfillment of the Federal responsibility to Indians are jeopardized by the low health status of the American Indian people.

(f) Further improvement in Indian health is imperiled by—

(1) inadequate, outdated, inefficient, and undermanned facilities. For example, only twenty-four of fifty-one Indian Health Service hospitals are accredited by the Joint Commission on Accreditation of Hospitals; only thirty-one meet national fire and safety codes; and fifty-two locations with Indian populations have been identified as requiring either new or replacement health centers and stations, or clinics remodeled for improved or additional service;

(2) shortage of personnel. For example, about one-half of the Service hospitals, four-fifths of the Service hospital outpatient clinics, and one-half of the Service health clinics meet only 80 per centum of staffing standards for their respective services;

(3) insufficient services in such areas as laboratory, hospital inpatient and outpatient, eye care and mental health services, and services available through contracts with private physicians, clinics, and agencies. For example, about 90 per centum of the surgical operations needed for otitis media have not been performed, over 57 per centum of required dental services remain to be provided, and about 98 per centum of hearing aid requirements are unmet;

(4) related support factors. For example, over seven hundred housing units are needed for staff at remote Service facilities;

(5) lack of access of Indians to health services due to remote residences, undeveloped or underdeveloped communication and transportation systems, and difficult, sometimes severe, climate conditions; and

(6) lack of safe water and sanitary waste disposal services. For example, over thirty-seven thousand four hundred existing and forty-eight thousand nine hundred and sixty planned replacement and renovated Indian housing units need new or upgraded water and sanitation facilities.

(g) The Indian people's growth of confidence in Federal Indian health services is revealed by their increasingly heavy use of such services. Progress toward the goal of better Indian health is dependent on this continued growth of confidence. Both such progress and such confidence are dependent on improved Federal Indian health services.

DECLARATION OF POLICY

SEC. 3. The Congress hereby declares that it is the policy of this Nation, in fulfillment of its special responsibilities and legal obligation to the American Indian people, to meet the national goal of providing the highest possible health status to Indians and to provide existing Indian health services with all resources necessary to effect that policy.

25 USC 1602.

DEFINITIONS

SEC. 4. For purposes of this Act—

(a) "Secretary", unless otherwise designated, means the Secretary of Health, Education, and Welfare.

(b) "Service" means the Indian Health Service.

(c) "Indians" or "Indian", unless otherwise designated, means any person who is a member of an Indian tribe, as defined in subsection (d) hereof, except that, for the purpose of sections 102, 103, and 201 (c)(5), such terms shall mean any individual who (1), irrespective of whether he or she lives on or near a reservation, is a member of a tribe, band, or other organized group of Indians, including those tribes, bands, or groups terminated since 1940 and those recognized now or in the future by the State in which they reside, or who is a descendant, in the first or second degree, of any such member, or (2) is an Eskimo or Aleut or other Alaska Native, or (3) is considered by the Secretary of the Interior to be an Indian for any purpose, or (4) is determined to be an Indian under regulations promulgated by the Secretary.

(d) "Indian tribe" means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or group or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

(e) "Tribal organization" means the elected governing body of any Indian tribe or any legally established organization of Indians which is controlled by one or more such bodies or by a board of directors elected or selected by one or more such bodies (or elected by the Indian population to be served by such organization) and which includes the maximum participation of Indians in all phases of its activities.

(f) "Urban Indian" means any individual who resides in an urban center, as defined in subsection (g) hereof, and who meets one or more of the four criteria in subsection (c) (1) through (4) of this section.

(g) "Urban center" means any community which has a sufficient urban Indian population with unmet health needs to warrant assistance under title V, as determined by the Secretary.

25 USC 1603.

(h) "Urban Indian organization" means a nonprofit corporate body situated in an urban center, composed of urban Indians, and providing for the maximum participation of all interested Indian groups and individuals, which body is capable of legally cooperating with other public and private entities for the purpose of performing the activities described in section 503 (a).

TITLE I—INDIAN HEALTH MANPOWER

PURPOSE

25 USC 1611.

SEC. 101. The purpose of this title is to augment the inadequate number of health professionals serving Indians and remove the multiple barriers to the entrance of health professionals into the Service and private practice among Indians.

HEALTH PROFESSIONS RECRUITMENT PROGRAM FOR INDIANS

Grants. 25 USC 1612.

SEC. 102. (a) The Secretary, acting through the Service, shall make grants to public or nonprofit private health or educational entities or Indian tribes or tribal organizations to assist such entities in meeting the costs of—

(1) identifying Indians with a potential for education or training in the health professions and encouraging and assisting them (A) to enroll in schools of medicine, osteopathy, dentistry, veterinary medicine, optometry, podiatry, pharmacy, public health, nursing, or allied health professions; or (B), if they are not qualified to enroll in any such school, to undertake such postsecondary education or training as may be required to qualify them for enrollment;

(2) publicizing existing sources of financial aid available to Indians enrolled in any school referred to in clause (1)(A) of this subsection or who are undertaking training necessary to qualify them to enroll in any such school; or

(3) establishing other programs which the Secretary determines will enhance and facilitate the enrollment of Indians, and the subsequent pursuit and completion by them of courses of study, in any school referred to in clause (1)(A) of this subsection.

Application, submittal, and approval.

(b) (1) No grant may be made under this section unless an application therefore has been submitted to, and approved by, the Secretary. Such application shall be in such form, submitted in such manner, and contain such information, as the Secretary shall by regulation prescribe: *Provided*, That the Secretary shall give a preference to applications submitted by Indian tribes or tribal organizations.

Amount and payment.

(2) The amount of any grant under this section shall be determined by the Secretary. Payments pursuant to grants under this section may be made in advance or by way of reimbursement, and at such intervals and on such conditions as the Secretary finds necessary.

Appropriation authorization.

(c) For the purpose of making payments pursuant to grants under this section, there are authorized to be appropriated \$900,000 for fiscal year 1978, \$1,500,000 for fiscal year 1979, and \$1,800,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984 there are authorized to be appropriated for such payments such sums as may be specifically authorized by an Act enacted after this Act.

HEALTH PROFESSIONS PREPARATORY SCHOLARSHIP PROGRAM FOR INDIANS

Scholarship grants, eligibility requirements. 25 USC 1613

SEC. 103. (a) The Secretary, acting through the Service, shall make scholarship grants available to Indians who—

(1) have successfully completed their high school education or high school equivalency; and

(2) have demonstrated the capability to successfully complete courses of study in schools of medicine, osteopathy, dentistry, veterinary medicine,

optometry, podiatry, pharmacy, public health, nursing, or allied health professions.

(b) Each scholarship grant made under this section shall be for a period not to exceed two academic years, which years shall be for compensatory preprofessional education of any grantee.

(c) Scholarship grants made under this section may cover costs of tuition, books, transportation, board, and other necessary related expenses.

(d) There are authorized to be appropriated for the purpose of this section: \$800,000 for fiscal year 1978, \$1,000,000 for fiscal year 1979, and \$1,300,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984 there are authorized to be appropriated for the purpose of this section such sums as may be specifically authorized by an Act enacted after this Act.

**Two-year
limitation.**

**Appropriation
authorization.**

HEALTH PROFESSIONS SCHOLARSHIP PROGRAM

SEC. 104. Section 225(i) of the Public Health Service Act (42 U.S.C. 234(i)) is amended (1) by inserting “(1)” after “(i)”, and (2) by adding at the end the following:

“(2)(A) In addition to the sums authorized to be appropriated under paragraph (1) to carry out the Program, there are authorized to be appropriated for the fiscal year ending September 30, 1978, \$5,450,000; for the fiscal year ending September 30, 1979, \$6,300,000; for the fiscal year ending September 30, 1980, \$7,200,000; and for fiscal years 1981, 1982, 1983, and 1984 such sums as may be specifically authorized by an Act enacted after the Indian Health Care Improvement Act, to provide scholarships under the Program to provide physicians, osteopaths, dentists, veterinarians, nurses, optometrists, podiatrists, pharmacists, public health personnel, and allied health professionals to provide services to Indians. Such scholarships shall be designated Indian Health Scholarships and shall be made in accordance with this section except as provided in subparagraph (B).

**Appropriation
authorization.**

“(B)(i) The Secretary, acting through the Indian Health Service, shall determine the individuals who receive the Indian Health Scholarships, shall accord priority to applicants who are Indians, and shall determine the distribution of the scholarships on the basis of the relative needs of Indians for additional service in specific health professions.

Distribution.

“(ii) The active duty service obligation prescribed by subsection (e) shall be met by the recipient of an Indian Health Scholarship by service in the Indian Health Service, in a program assisted under title V of the Indian Health Care Improvement Act, or in the private practice of his profession if, as determined by the Secretary in accordance with guidelines promulgated by him, such practice is situated in a physician or other health professional shortage area and addresses the health care needs of a substantial number of Indians.

**Active duty
service
obligation.
Post, p. 1410.**

“(C) For purposes of this paragraph, the term ‘Indians’ has the same meaning given that term by subsection (c) of section 4 of the Indian Health Care Improvement Act and includes individuals described in clauses (1) through (4) of that subsection.”

**“Indians.”
Ante, p. 1401.**

INDIAN HEALTH SERVICE EXTERN PROGRAMS

SEC. 105. (a) Any individual who receives a scholarship grant pursuant to section 104 shall be entitled to employment in the Service during any nonacademic period of the year. Periods of employment pursuant to this subsection shall not be counted in determining the fulfillment of the service obligation incurred as a condition of the scholarship grant.

25 USC 1614.

(b) Any individual enrolled in a school of medicine, osteopathy, dentistry, veterinary medicine, optometry, podiatry, pharmacy, public health, nursing, or allied

health professions may be employed by the Service during any nonacademic period of the year. Any such employment shall not exceed one hundred and twenty days during any calendar year.

(c) Any employment pursuant to this section shall be made without regard to any competitive personnel system or agency personnel limitation and to a position which will enable the individual so employed to receive practical experience in the health profession in which he or she is engaged in study. Any individual so employed shall receive payment for his or her services comparable to the salary he or she would receive if he or she were employed in the competitive system. Any individual so employed shall not be counted against any employment ceiling affecting the Service or the Department of Health, Education, and Welfare.

**Appropriation
authorization.**

(d) There are authorized to be appropriated for the purpose of this section: \$600,000 for fiscal year 1978, \$800,000 for fiscal year 1979, and \$1,000,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984 there are authorized to be appropriated for the purpose of this section such sums as may be specifically authorized by an Act enacted after this Act.

CONTINUING EDUCATION ALLOWANCES

25 USC 1615.

Sec. 106. (a) In order to encourage physicians, dentists, and other health professionals to join or continue in the Service and to provide their services in the rural and remote areas where a significant portion of the Indian people resides, the Secretary, acting through the Service, may provide allowances to health professionals employed in the Service to enable them for a period of time each year prescribed by regulation of the Secretary to take leave of their duty stations for professional consultation and refresher training courses.

**Appropriation
authorization.**

(b) There are authorized to be appropriated for the purpose of this section: \$100,000 for fiscal year 1978, \$200,000 for fiscal year 1979, and \$250,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984 there are authorized to be appropriated for the purpose of this section such sums as may be specifically authorized by an Act enacted after this Act.

TITLE II—HEALTH SERVICES

HEALTH SERVICES

25 USC 1621.

SEC. 201. (a) For the purpose of eliminating backlogs in Indian health care services and to supply known, unmet medical, surgical, dental, optometrical, and other Indian health needs, the Secretary is authorized to expend, through the Service, over the seven-fiscal-year period beginning after the date of the enactment of this Act the amounts authorized to be appropriated by subsection (c). Funds appropriated pursuant to this section for each fiscal year shall not be used to offset or limit the appropriations required by the Service under other Federal laws to continue to serve the health needs of Indians during and subsequent to such seven-fiscal-year period, but shall be in addition to the level of appropriations provided to the Service under this Act and such other Federal laws in the preceding fiscal year plus an amount equal to the amount required to cover pay increases and employee benefits for personnel employed under this Act and such laws and increases in the costs of serving the health needs of Indians under this Act and such laws, which increases are caused by inflation.

**Employment
during seven-
fiscal-year
period.**

(b) The Secretary, acting through the Service, is authorized to employ persons to implement the provisions of this section during the seven-fiscal-year period in accordance with the schedule provided in subsection (c). Such positions authorized each fiscal year pursuant to this section shall not be considered as offsetting or limiting the personnel required by the Service to serve the health needs of Indians

during and subsequent to such seven-fiscal-year period but shall be in addition to the positions authorized in the previous fiscal year.

(c) The following amounts and positions are authorized, in accordance with the provisions of subsections (a) and (b), for the specific purposes noted:

(1) Patient care (direct and indirect): sums and positions as provided in subsection (e) for fiscal year 1978, \$8,500,000 and two hundred and twenty-five positions for fiscal year 1979, and \$16,200,000 and three hundred positions for fiscal year 1980.

(2) Field health, excluding dental care (direct and indirect): sums and positions as provided in subsection (e) for fiscal year 1978, \$3,350,000 and eighty-five positions for fiscal year 1979, and \$5,550,000 and one hundred and thirteen positions for fiscal year 1980.

(3) Dental care (direct and indirect): sums and positions as provided in subsection (e) for fiscal year 1978, \$1,500,000 and eighty positions for fiscal year 1979, and \$1,500,000 and fifty positions for fiscal year 1980.

(4) Mental health: (A) Community mental health services: sums and positions as provided in subsection (e) for fiscal year 1978, \$1,300,000 and thirty positions for fiscal year 1979, and \$2,000,000 and thirty positions for fiscal year 1980.

(B) Inpatient mental health services: sums and positions as provided in subsection (e) for fiscal year 1978, \$400,000 and fifteen positions for fiscal year 1979, and \$600,000 and fifteen positions for fiscal year 1980.

(C) Model dormitory mental health services: sums and positions as provided in subsection (e) for fiscal year 1978, \$1,250,000 and fifty positions for fiscal year 1979, and \$1,875,000 and fifty positions for fiscal year 1980.

(D) Therapeutic and residential treatment centers: sums and positions as provided in subsection (e) for fiscal year 1978, \$300,000 and ten positions for fiscal year 1979, and \$400,000 and five positions for fiscal year 1980.

(E) Training of traditional Indian practitioners in mental health: sums as provided in subsection (e) for fiscal year 1978, \$150,000 for fiscal year 1979, and \$200,000 for fiscal year 1980.

(5) Treatment and control of alcoholism among Indians: \$4,000,000 for fiscal year 1978, \$9,000,000 for fiscal year 1979, and \$9,200,000 for fiscal year 1980.

(6) Maintenance and repair (direct and indirect): sums and positions as provided in subsection (e) for fiscal year 1978, \$3,000,000 and twenty positions for fiscal year 1979, and \$4,000,000 and thirty positions for fiscal year 1980.

(7) For fiscal years 1981, 1982, 1983, and 1984 there are authorized to be appropriated for the items referred to in the preceding paragraphs such sums as may be specifically authorized by an Act enacted after this Act. For such fiscal years, positions are authorized for such items (other than the items referred to in paragraphs (4)(E) and (5)) as may be specified in an Act enacted after the date of the enactment of this Act.

(d) The Secretary, acting through the Service, shall expend directly or by contract not less than 1 per centum of the funds appropriated under the authorizations in each of the clauses (1) through (5) of subsection (c) for research in each of the areas of Indian health care for which such funds are authorized to be appropriated.

(e) For fiscal year 1978, the Secretary is authorized to apportion not to exceed a total of \$10,025,000 and 425 positions for the programs enumerated in clauses (c)(1) through (4) and (c)(6) of this section.

**Appropriation
authorization.**

Research funds.

**Appropriation
authorization.**

TITLE III—HEALTH FACILITIES

CONSTRUCTION AND RENOVATION OF SERVICE FACILITIES

25 USC 1631.

SEC. 301. (a) The Secretary, acting through the Service, is authorized to expend over the seven-fiscal-year period beginning after the date of the enactment of this Act the sums authorized by subsection (b) for the construction and renovation of hospitals, health centers, health stations, and other facilities of the Service.

Appropriation authorization.

(b) The following amounts are authorized to be appropriated for purposes of subsection (a):

(1) Hospitals: \$67,180,000 for fiscal year 1978, \$73,256,000 for fiscal year 1979, and \$49,742,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984, there are authorized to be appropriated for hospitals such sums as may be specifically authorized by an Act enacted after this Act.

(2) Health centers and health stations: \$6,960,000 for fiscal year 1978, \$6,226,000 for fiscal year 1979, and \$3,720,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984, there are authorized to be appropriated for health centers and health stations such sums as may be specifically authorized by an Act enacted after this Act.

(3) Staff housing: \$1,242,000 for fiscal year 1978, \$21,725,000 for fiscal year 1979, and \$4,116,000 for fiscal year 1980. For fiscal years 1981, 1982, 1983, and 1984, there are authorized to be appropriated for staff housing such sums as may be specifically authorized by an Act enacted after this Act.

(c) Prior to the expenditure of, or the making of any firm commitment to expend, any funds authorized in subsection (a), the Secretary, acting through the Service shall—

Consultation.

(1) consult with any Indian tribe to be significantly affected by any such expenditure for the purpose of determining and, wherever practicable, honoring tribal preferences concerning the size, location, type, and other characteristics of any facility on which such expenditure is to be made; and

(2) be assured that, wherever practicable, such facility, not later than one year after its construction or renovation, shall meet the standards of the Joint Committee on Accreditation of Hospitals.

CONSTRUCTION OF SAFE WATER AND SANITARY WASTE DISPOSAL FACILITIES

25 USC 1632.

SEC. 302. (a) During the seven-fiscal-year period beginning after the date of the enactment of this Act, the Secretary is authorized to expend under section 7 of the Act of August 5, 1954 (42 U.S.C. 2004a), the sums authorized under subsection (b) to supply unmet needs for safe water and sanitary waste disposal facilities in existing and new Indian homes and communities.

Appropriation authorization.

(b) For expenditures of the Secretary authorized by subsection (a) for facilities in existing Indian homes and communities there are authorized to be appropriated \$43,000,000 for fiscal year 1978, \$30,000,000 for fiscal year 1979, and \$30,000,000 for fiscal year 1980. For expenditures of the Secretary authorized by subsection (a) for facilities in new Indian homes and communities there are authorized to be appropriated such sums as may be necessary for fiscal years 1978, 1979, and 1980. For fiscal years 1981, 1982, 1983, and 1984 for expenditures authorized by subsection (a) there are authorized to be appropriated such sums as may be specifically authorized in an Act enacted after this Act.

New York Indian tribes, eligibility for assistance.

(c) Former and currently federally recognized Indian tribes in the State of New York shall be eligible for assistance under this section.

PREFERENCE TO INDIANS AND INDIAN FIRMS

SEC. 303. (a) The Secretary, acting through the Service, may utilize the negotiating authority of the Act of June 25, 1910 (25 U.S.C. 47), to give preference to any Indian or any enterprise, partnership, corporation, or other type of business organization owned and controlled by an Indian or Indians including former or currently federally recognized Indian tribes in the State of New York (hereinafter referred to as an "Indian firm") in the construction and renovation of Service facilities pursuant to section 301 and in the construction of safe water and sanitary waste disposal facilities pursuant to section 302. Such preference may be accorded by the Secretary unless he finds, pursuant to rules and regulations promulgated by him, that the project or function to be contracted for will not be satisfactory or such project or function cannot be properly completed or maintained under the proposed contract. The Secretary, in arriving at his finding, shall consider whether the Indian or Indian firm will be deficient with respect to (1) ownership and control by Indians, (2) equipment, (3) bookkeeping and accounting procedures, (4) substantive knowledge of the project or function to be contracted for, (5) adequately trained personnel, or (6) other necessary components of contract performance.

25 USC 1633.

(b) For the purpose of implementing the provisions of this title, the Secretary shall assure that the rates of pay for personnel engaged in the construction or renovation of facilities constructed or renovated in whole or in part by funds made available pursuant to this title are not less than the prevailing local wage rates for similar work as determined in accordance with the Act of March 3, 1931 (40 U.S.C. 276a-276a-5, known as the Davis-Bacon Act).

Construction personnel, pay rates.

40 USC 276a, note.

SOBOBA SANITATION FACILITIES

SEC. 304. The Act of December 17, 1970 (84 Stat. 1465), is hereby amended by adding the following new section 9 at the end thereof: "SEC. 9. Nothing in this Act shall preclude the Soboba Band of Mission Indians and the Soboba Indian Reservation from being provided with sanitation facilities and services under the authority of section 7 of the Act of August 5, 1954 (68 Stat. 674), as amended by the Act of July 31, 1959 (73 Stat. 267)."

42 USC 2004a.

TITLE IV - ACCESS TO HEALTH SERVICES

ELIGIBILITY OF INDIAN HEALTH SERVICE FACILITIES
UNDER MEDICARE PROGRAM

SEC. 401. (a) Sections 1814(c) and 1835(d) of the Social Security Act are each amended by striking out "No payment" and inserting in lieu thereof "Subject to section 1880, no payment".

42 USC 1395f, 1395n.

(b) Part C of title XVIII of such Act is amended by adding at the end thereof the following new section:

42 USC 1395x.

"INDIAN HEALTH SERVICE FACILITIES

"SEC. 1880. (a) A hospital or skilled nursing facility of the Indian Health Service, whether operated by such Service or by an Indian tribe or tribal organization (as those terms are defined in section 4 of the Indian Health Care Improvement Act), shall be eligible for payments under this title, notwithstanding sections 1814(c) and 1835 (d), if and for so long as it meets all of the conditions and requirements for such payments which are applicable generally to hospitals or skilled nursing facilities (as the case may be) under this title.

Hospital or skilled nursing facility, eligibility for payments.
42 USC 1395qq.

"(b) Notwithstanding subsection (a), a hospital or skilled nursing hospital or skilled facility of the Indian Health Service which does not meet all of the conditions

Ineligible hospital or skilled nursing facility, submittal of plan for compliance.

and requirements of this title which are applicable generally to hospitals or skilled nursing facilities (as the case may be), but which submits to the Secretary within six months after the date of the enactment of this section an acceptable plan for achieving compliance with such conditions and requirements, shall be deemed to meet such conditions and requirements (and to be eligible for payments under this title), without regard to the extent of its actual compliance with such conditions and requirements, during the first 12 months after the month in which such plan is submitted.

Fund for improvements.

“(c) Notwithstanding any other provision of this title, payments to which any hospital or skilled nursing facility of the Indian Health Service is entitled by reason of this section shall be placed in a special fund to be held by the Secretary and used by him (to such extent or in such amounts as are provided in appropriation Acts) exclusively for the purpose of making any improvements in the hospitals and skilled nursing facilities of such Service which may be necessary to achieve compliance with the applicable conditions and requirements of this title. The preceding sentence shall cease to apply when the Secretary determines and certifies that substantially all of the hospitals and skilled nursing facilities of such Service in the United States are in compliance with such conditions and requirements.

Post, p. 1413.
Post, p. 1410.

“(d) The annual report of the Secretary which is required by section 701 of the Indian Health Care Improvement Act shall include (along with the matters specified in section 403 of such Act) a detailed statement of the status of the hospitals and skilled nursing facilities of the Service in terms of their compliance with the applicable conditions and requirements of this title and of the progress being made by such hospitals and facilities (under plans submitted under subsection (b) and otherwise) toward the achievement of such compliance.”

42 USC 1395qq note.

(c) Any payments received for services provided to beneficiaries hereunder shall not be considered in determining appropriations for health care and services to Indians.

Services to an Indian beneficiary.
42 USC 1395qq note.
42 USC 1395.

(d) Nothing herein authorizes the Secretary to provide services to an Indian beneficiary with coverage under title XVIII of the Social Indian Security Act, as amended, in preference to an Indian beneficiary without such coverage.

SERVICES PROVIDED TO MEDICAID ELIGIBLE INDIANS

SEC. 402. (a) Title XIX of the Social Security Act is amended by adding at the end thereof the following new section:

“INDIAN HEALTH SERVICE FACILITIES

Eligibility for reimbursement.
42 USC 1396j.
Ante, p. 1401.

“SEC. 1911. (a) A facility of the Indian Health Service (including a hospital, intermediate care facility, or skilled nursing facility), whether operated by such Service or by an Indian tribe or tribal organization (as those terms are defined in section 4 of the Indian Health Care Improvement Act), shall be eligible for reimbursement for medical assistance provided under a State plan if and for so long as it meets all of the conditions and requirements which are applicable generally to such facilities under this title.

Facilities, submittal of plan for compliance.
42 USC 1396j note.

“(b) Notwithstanding subsection (a), a facility of the Indian Health Service (including a hospital, intermediate care facility, or skilled nursing facility) which does not meet all of the conditions and requirements of this title which are applicable generally to such facility, but which submits to the Secretary within six months after the date of the enactment of this section an acceptable plan for achieving compliance with such conditions and requirements, shall be deemed to meet such conditions and requirements (and to be eligible for reimbursement under this title), without regard to the extent of its actual compliance with such conditions

and requirements, during the first twelve months after the month in which such plan is submitted.”.

(b) The Secretary is authorized to enter into agreements with the appropriate State agency for the purpose of reimbursing such agency for health care and services provided in Service facilities to Indians who are eligible for medical assistance under title XIX of the Social Security Act, as amended.

(c) Notwithstanding any other provision of law, payments to which any facility of the Indian Health Service (including a hospital, intermediate care facility, or skilled nursing facility) is entitled under a State plan approved under title XIX of the Social Security Act by reason of section 1911 of such Act shall be placed in a special fund to be held by the Secretary and used by him (to such extent or in such amounts as are provided in appropriation Acts) exclusively for the purpose of making any improvements in the facilities of such Service which may be necessary to achieve compliance with the applicable conditions and requirements of such title. The preceding sentence shall cease to apply when the Secretary determines and certifies that substantially all of the health facilities of such Service in the United States are in compliance with such conditions and requirements.

(d) Any payments received for services provided recipients hereunder shall not be considered in determining appropriations for the provision of health care and services to Indians.

(e) Section 1905(b) of the Social Security Act is amended by inserting at the end thereof the following: “Notwithstanding the first sentence of this section, the Federal medical assistance percentage shall be 100 per centum with respect to amounts expended as medical assistance for services which are received through an Indian Health Service facility whether operated by the Indian Health Service or by an Indian tribe or tribal organization (as defined in section 4 of the Indian Health Care Improvement Act).”.

**25 USC 1396j
note.**

25 USC 1396.

Supra.

**25 USC 1396j
note.**

**Federal medical
assistance
percentage.
25 USC 1396d.**

Ante, p. 1401

REPORT

SEC. 403. The Secretary shall include in his annual report required by section 701 an accounting on the amount and use of funds made available to the Service pursuant to this title as a result of reimbursements through titles XVIII and XIX of the Social Security Act, as amended.

**25 USC 1671
note.**

**42 USC 1395,
1396.**

TITLE V—HEALTH SERVICES FOR URBAN INDIANS

PURPOSE

SEC. 501. The purpose of this title is to encourage the establishment of programs in urban areas to make health services more accessible to the urban Indian population.

25 USC 1651.

CONTRACTS WITH URBAN INDIAN ORGANIZATIONS

SEC. 502. The Secretary, acting through the Service, shall enter into contracts with urban Indian organizations to assist such organizations to establish and administer, in the urban centers in which such organizations are situated, programs which meet the requirements set forth in sections 503 and 504.

25 USC 1652.

CONTRACT ELIGIBILITY

SEC. 503. (a) The Secretary, acting through the Service, shall place such conditions as he deems necessary to effect the purpose of this title in any contract which he makes with any urban Indian organization pursuant to this title. Such conditions

25 USC 1653.

shall include, but are not limited to, requirements that the organization successfully undertake the following activities:

- (1) determine the population of urban Indians which are or could be recipients of health referral or care services;
- (2) identify all public and private health service resources within the urban center in which the organization is situated which are or may be available to urban Indians;
- (3) assist such resources in providing service to such urban Indians;
- (4) assist such urban Indians in becoming familiar with and utilizing such resources;
- (5) provide basic health education to such urban Indians;
- (6) establish and implement manpower training programs to accomplish the referral and education tasks set forth in clauses (3) through (5) of this subsection;
- (7) identify gaps between unmet health needs of urban Indians and the resources available to meet such needs;
- (8) make recommendations to the Secretary and Federal, State, local, and other resource agencies on methods of improving health service programs to meet the needs of urban Indians; and
- (9) where necessary, provide or contract for health care services to urban Indians.

Urban Indian organizations, selection criteria.

(b) The Secretary, acting through the Service, shall by regulation Urban Indian prescribe the criteria for selecting urban Indian organizations with organizations, which to contract pursuant to this title. Such criteria shall, among other factors, take into consideration:

- (1) the extent of the unmet health care needs of urban Indians in the urban center involved;
- (2) the size of the urban Indian population which is to receive assistance;
- (3) the relative accessibility which such population has to health care services in such urban center;
- (4) the extent, if any, to which the activities set forth in subsection (a) would duplicate any previous or current public or private health services project funded by another source in such urban center;
- (5) the appropriateness and likely effectiveness of the activities set forth in subsection (a) in such urban center;
- (6) the existence of an urban Indian organization capable of performing the activities set forth in subsection (a) and of entering into a contract with the Secretary pursuant to this title; and
- (7) the extent of existing or likely future participation in the activities set forth in subsection (a) by appropriate health and health-related Federal, State, local, and other resource agencies.

OTHER CONTRACT REQUIREMENTS

25 USC 1654.

SEC. 504. (a) Contracts with urban Indian organizations pursuant to this title shall be in accordance with all Federal contracting laws and regulations except that, in the discretion of the Secretary, such contracts may be negotiated without advertising and need not conform to the provisions of the Act of August 24, 1935 (48 Stat. 793), as amended.

**49 Stat. 793.
40 USC 270a-270d**

(b) Payments under any contracts pursuant to this title may be made in advance or by way of reimbursement and in such installments and on such conditions as the Secretary deems necessary to carry out the purposes of this title.

Contract revision or amendment.

(c) Notwithstanding any provision of law to the contrary, the Secretary may, at the request or consent of an urban Indian organization, revise or amend any contract made by him with such organization pursuant to this title as necessary to carry out

the purposes of this title: Provided, however, That whenever an urban Indian organization requests retrocession of the Secretary for any contract entered into pursuant to this title, such retrocession shall become effective upon a date specified by the Secretary not more than one hundred and twenty days from the date of the request by the organization or at such later date as may be mutually agreed to by the Secretary and the organization.

(d) In connection with any contract made pursuant to this title, the Secretary may permit an urban Indian organization to utilize, in carrying out such contract, existing facilities owned by the Federal Government within his jurisdiction under such terms and conditions as may be agreed upon for their use and maintenance.

(e) Contracts with urban Indian organizations and regulations adopted pursuant to this title shall include provisions to assure the fair and uniform provision to urban Indians of services and assistance under such contracts by such organizations.

Government facilities, use.

REPORTS AND RECORDS

SEC. 505. For each fiscal year during which an urban Indian organization receives or expends funds pursuant to a contract under this title, such organization shall submit to the Secretary a report including information gathered pursuant to section 503(a)(7) and (8), information on activities conducted by the organization pursuant to the contract, an accounting of the amounts and purposes for which Federal funds were expended, and such other information as the Secretary may request. The reports and records of the urban Indian organization with respect to such contract shall be subject to audit by the Secretary and the Comptroller General of the United States.

Report to the Secretary of the Interior.
25 USC 1655.

Audit.

AUTHORIZATIONS

SEC. 506. There are authorized to be appropriated for the purpose of this title: \$5,000,000 for fiscal year 1978, \$10,000,000 for fiscal year 1979, and \$15,000,000 for fiscal year 1980.

25 USC 1656.

REVIEW OF PROGRAM

SEC. 507. Within six months after the end of fiscal year 1979, the Secretary, acting through the Service and with the assistance of the urban Indian organizations which have entered into contracts pursuant to this title, shall review the program established under this title and submit to the Congress his assessment thereof and recommendations for any further legislative efforts he deems necessary to meet the purpose of this title.

Submittal to Congress.
Legislative recommendations.
25 USC 1657.

RURAL HEALTH PROJECTS

SEC. 508. Not to exceed 1 per centum of the amounts authorized by section 506 shall be available for not to exceed two pilot projects providing outreach services to eligible Indians residing in rural communities near Indian reservations.

25 USC 1658.

TITLE VI—AMERICAN INDIAN SCHOOL OF MEDICINE; FEASIBILITY STUDY

FEASIBILITY STUDY

SEC. 601. The Secretary, in consultation with Indian tribes and appropriate Indian organizations, shall conduct a study to determine the need for, and the feasibility of, establishing a school of medicine to train Indians to provide health services for Indians. Within one year of the date of the enactment of this Act the Secretary shall

25 USC 1661.

Report to Congress.

complete such study and shall report to the Congress findings and recommendations based on such study.

TITLE VII—MISCELLANEOUS

REPORTS

Report to the President and Congress.
25 USC 1671.

SEC. 701. The Secretary shall report annually to the President and the Congress on progress made in effecting the purposes of this Act. Within three months after the end of fiscal year 1979, the Secretary shall review expenditures and progress made under this Act and make recommendations to the Congress concerning any additional authorizations for fiscal years 1981 through 1984 for programs authorized under this Act which he deems appropriate. In the event the Congress enacts legislation authorizing appropriations for programs under this Act for fiscal years 1981 through 1984, within three months after the end of fiscal year 1983, the Secretary shall review programs established or assisted pursuant to this Act and shall submit to the Congress his assessment and recommendations of additional programs or additional assistance necessary to, at a minimum, provide health services to Indians, and insure a health status for Indians, which are at a parity with the health services available to, and the health status, of the general population.

Program review, submittal to Congress.

REGULATIONS

Consultation.
25 USC 1672.

SEC. 702. (a)(1) Within six months from the date of enactment of this Act, the Secretary shall, to the extent practicable, consult with national and regional Indian organizations to consider and formulate appropriate rules and regulations to implement the provisions of this Act.

Publication in Federal Register.

(2) Within eight months from the date of enactment of this Act, the Secretary shall publish proposed rules and regulations in the Federal Register for the purpose of receiving comments from interested parties.

Rules or regulations, proposed revision or amendment; publication in Federal Register.

(3) Within ten months from the date of enactment of this Act, the Secretary shall promulgate rules and regulations to implement the provisions of this Act.

(b) The Secretary is authorized to revise and amend any rules or regulations promulgated pursuant to this Act: *Provided*, That, prior to any revision of or amendment to such rules or regulations, the Secretary shall, to the extent practicable, consult with appropriate national or regional Indian organizations and shall publish any proposed revision or amendment in the Federal Register not less than sixty days prior to the effective date of such revision or amendment in order to provide adequate notice to, and receive comments from, other interested parties.

PLAN OF IMPLEMENTATION

Submittal to Congress.
25 USC 1673.

SEC. 703. Within two hundred and forty days after enactment of this Act, a plan will be prepared by the Secretary and will be submitted to the Congress. The plan will explain the manner and schedule (including a schedule of appropriation requests), by title and section, by which the Secretary will implement the provisions of this Act.

LEASES WITH INDIAN TRIBES

25 USC 1674.

SEC. 704. Notwithstanding any other provision of law, the Secretary is authorized, in carrying out the purposes of this Act, to enter into leases with Indian tribes for periods not in excess of twenty years.

AVAILABILITY OF FUNDS

SEC. 705. The funds appropriated pursuant to this Act shall remain available until expended.

25 USC 1675.

Approved September 30, 1976.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 94-1026 pt. I and 94-1026 part IV (Comm. on Interior and Insular Affairs), No. 94-1026 pt. II (Comm. on Ways and Means), and No. 94-1026 pt. III (Comm. on Interstate and Foreign Commerce) all accompanying H.R. 2525.

SENATE REPORT No. 94-133 (Comm. on Interior and Insular Affairs).

CONGRESSIONAL RECORD:

Vol. 121 (1975): May 16, considered and passed Senate.

Vol. 122 (1976): July 30, considered and passed House, amended, in lieu of H.R. 2525.

Sept. 9, Senate concurred in House amendment with an amendment.

Sept. 16, House concurred in Senate amendment.

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS:

Vol. 12, No. 40: Oct. 1, Presidential statement.

Attachment 9

Yurok Tribe Subsistence and Commercial Species Impacts

Attachment 9

Yurok Tribe and Aquatic Species Impacts

This summary was based primarily on the following sources for each species (full citations are listed in a bibliography at the end of this attachment and in the main report bibliography):

1. Expert panel reports (EP)
2. Final synthesis report (SR)
3. Klamath EIS/EIR (EIS/EIR)
4. DOI/BIA subteam Indian trust background report (DOI)

All native species are historically and presently important socially, economically, and culturally to area tribes, as are impacts to those species; however it is important to note that some species are federally protected trust resources and others are not which differs by tribe. (DOI, June 2011b). The first section of this attachment covers the No Action Alternative followed by the Action Alternative information.

No Action Alternative

The “Synthesis of the Effects to Fish Species of Two Management Scenarios for the Secretarial Determination on Removal of the Lower Four Dams on the Klamath River” (referred to here as the synthesis report, or biological subteam document) described some of the causes for the 2002 fish kill that occurred under current conditions:

“The most noted fish health incident in the Klamath River was an adult fish die-off that occurred in September 2002 in the lower river. A minimum of 32,533 fall Chinook salmon, 629 steelhead, and 344 coho salmon perished during this event as a result of poor environmental conditions, high escapement, and an epizootic outbreak of columnaris (*Flavobacterium columnare*) and Ich (*Ichthyophthirius multifiliis*) (USDI Fish and Wildlife Service 2003b) (California Department of Fish and Game 2004b; USDI Fish and Wildlife Service 2003b). It is important to note that estimates from the Service mortality report ‘should be viewed as a minimum number of fish killed’ (USDI Fish and Wildlife Service 2003a),” (Hamilton, et. al., June 13, 2011, p. 98).

Table 9-1.—Summary of Projected No Action Conditions by Species

<p>Coho Salmon (Threatened)</p>	<p>Summation: Coho would likely remain endangered and continuation depressed populations below IGD and unavailable in UB. EP: Marginal benefits and unavailable in UB. SR: Remain endangered and unavailable in UB. Below IGD, current populations may remain depressed. EIS/EIR: Continue downward trend. DOI: Continue downward trend.</p>
<p>Spring Chinook Salmon</p>	<p>Summation: Continue on current downward trajectory, remain unavailable in UB, and may become extinct/ESA listing. EP: Numerous negative factors listed. SR: Significantly lower than historic levels and some fishing restrictions; remain on current downward trajectory and unavailable in UB, may become extinct. EIS/EIR: Continued downward trend. DOI: Remain at low levels and high risk of ESA and CESA uplisting.</p>
<p>Fall Chinook Salmon</p>	<p>Summation: Continue current downward trajectory and remain unavailable in UB. EP: Numerous negative factors listed. SR: Significantly lower than historic levels; would remain unavailable in UB and would likely continue on current downward trajectory. EIS/EIR: Continuation of downward trend. DOI: Chinook would remain in a depleted state and unavailable in UB.</p>
<p>Pacific Lamprey</p>	<p>Summation: Pacific Lamprey would remain about the same or decline in Klamath River and remain unavailable in UB. EP: No change, unavailable in UB. SR: Remain the same or decline and continue to be unavailable in UB. EIS/EIR: Essentially no change. DOI: Unavailable in UB.</p>
<p>Steelhead Trout</p>	<p>Summation: May remain the same or improve slightly in Klamath River and remain unavailable in the UB. EP: Unsure, remain unavailable in UB, small improvement otherwise. SR: Somewhat uncertain, remain unavailable in UB, may decline. EIS/EIR: No change. DOI: Remain unavailable in UB.</p>
<p>Green Sturgeon (threatened)</p>	<p>Summation: Uncertain - range from low levels to may improve. EP: Not included/analyzed. SR: May improve. EIS/EIR: No change. DOI: Expected to remain at low levels.</p>

Table 9-1.—Summary of Projected No Action Conditions by Species

<p>Eulachon or Candlefish (essentially extinct in California)</p>	<p>Summation: There would essentially be no impacts since eulachon are likely extinct in California. EP: Not included/analyzed. SR: Minimal impact since few if any exist; however, TMDLs would improve any potential habitat use. EIS/EIR: The extent and quality of eulachon habitat would be expected to remain similar. DOI: Not included/analyzed.</p>
<p>Longfin Smelt</p>	<p>Summation: Since smelt occur in the estuary and a great deal of mixing occurs, water quality problems are expected to be relatively insignificant. Klamath Settlement EIS/EIR stated no change. Other reports - Not included/analyzed.</p>
<p>Crayfish (Benthic Macro invertebrates)</p>	<p>Summation: No change. EP and SR: Not included/analyzed. EIS/EIR: No change expected. DOI: Not included/analyzed, but stated importance of mussels to Karuk Tribe in DOI Tribal Reports (DOI, June 2011a and June 2011b).</p>
<p>Freshwater Mussels (Mollusks)</p>	<p>Summation: No change. EP and SR: Not included/analyzed. EIS/EIR: No change expected. DOI: Not included/analyzed, but stated importance of mussels to Karuk Tribe in DOI Tribal Background Report.</p>

Acronyms: Expert panel reports (EP), biological subteam synthesis report (SR), Klamath EIS/EIR (EIS/EIR), and DOI/BIA background reports (DOI). Iron Gate Dam (IGD), Upper Basin (UB), Upper Klamath Basin (UKB), Upper Klamath Lake (UKL), hydroelectric reach (HR), Upper Klamath River (UKR), Endangered Species Act (ESA).

Salmon

Coho (endangered)¹

In sum, coho salmon would continue to be unavailable in the Upper Klamath Basin during the project period, and are expected to remain endangered throughout the entire Klamath Basin during the project period.

Expert Panel Report (Dunne, et al., April 25, 2011).

No access to upstream habitats, and current trends would provide marginal benefits:

“Coho salmon and steelhead will not have access to habitats upstream of Iron Gate Dam,” (p. 40) [and] Continuation of current level of restoration activities and flow regulation will provide very small, probably undetectable, benefits for the two [coho and steelhead] species,”(p. 18).

Synthesis Report

Based on information in the synthesis report, Coho salmon would remain extirpated in the Upper Klamath Basin and likely remain endangered, and as such, are not expected to be at harvestable levels within the period of analysis despite efforts towards recovery (p. 49).

Klamath EIS/EIR

The Klamath Settlement EIS/EIR indicated no change from current downward trends:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for coho salmon critical habitat in the short and long term.” (p. 3.3-60)

¹ “Coho salmon were once abundant in the Klamath River. Coho salmon in the Klamath River watershed are included within the SONCC coho salmon ESU and are currently listed as a threatened species under the Federal ESA. Historically, coho salmon inhabited an expansive range of the Klamath Basin, including habitat upstream of current dams - Iron Gate, Lewiston (Trinity River), and Dwinnell (Shasta River). Coho salmon populations within the Klamath River watershed have declined dramatically and currently exist only within a limited portion of their historical range. NMFS determined that coho salmon populations throughout the SONCC coho salmon ESU continue to be depressed relative to historical numbers, and strong indications exist that breeding groups have been lost from a significant percentage of streams within their historical range.” (p. 86).

DOI/ BIA Background Report

[lower basin]“Under the No Action Alternative, it is expected that populations of these fishes will also continue to decline, particularly with anticipated changes in the climate, resulting in further reductions in tribal health. Coho salmon, steelhead, green sturgeon, and Pacific lamprey are expected to remain at low population levels, with low viability of Klamath River populations...[existing efforts] will help reduce the stress on the fishes, but will not be sufficient to bring the species to recovery,” (DOI/BIA, p. 4-4).

Spring and Fall Chinook Salmon²

When project report sources are taken together, conclusions indicate that Chinook salmon would continue to be unavailable in the Upper Klamath Basin and Spring Chinook could possibly become extinct with Fall Chinook remaining low or its populations declining further.

Expert Panel Reports (Goodman, et. al., June 13, 2011; July 20, 2011).

The reports did not analyze the no action alternative per se, however aspects of current conditions were discussed. The TMDLs would be less likely to be met under current conditions, disease rates would remain relatively high, escapement rates are low, there are too many hatchery fish (Iron Gate Hatchery), predation is relatively high, and water supplies may be too low, at least at critical times depending on various factors (including climate change and agriculture).

Synthesis Report

The biological subgroup report asserted that spring and fall Chinook salmon would continue to be unavailable in the Upper Klamath Basin, remain a fraction of historical levels in the lower basin, and spring-run Chinook may become extinct:

“Chinook salmon populations were extirpated [above Iron Gate Dam] with the construction of Project dams. Historically, the range of this species included tributaries to Upper Klamath Lake...[and] Under conditions with dams, Chinook salmon will remain extirpated in the Klamath River above IGD,” (p. 42-43). [In general and below IGD] “Chinook salmon in the Klamath River Basin are not listed under the State or federal ESA, but low abundance predictions of Klamath River Fall Chinook salmon in recent years have forced restrictions to West Coast commercial and recreational fisheries. Klamath River

² The NMFS determined that there are modest genetic differences between the fall and spring runs, but Spring Chinook have higher fat content valued by Indians for greater subsistence value after winter rations were low and by non-Indians for better flavor.

fall-run Chinook salmon enter the Klamath River in August through October of each year, spawning shortly thereafter in the lower reaches of rivers and streams. These runs are substantially lower than historical levels.” (p. 82).

Spring Chinook:³

[In general and below Iron Gate Dam] “With minimal access to appropriate habitat, Spring Chinook runs will likely remain at a fraction of historical levels; it is possible that Klamath River spring run Chinook salmon runs will likely remain at a fraction of historical levels; it is possible that Klamath River spring-run Chinook salmon may become extinct over the period of analysis (Moyle et al. In press; Nehlsen et al. 1991)” (p. 83).

Fall Chinook:⁴

[below Iron Gate Dam] Chinook salmon in the Klamath Basin are not listed under the state or federal ESA, but low abundance predictions of Klamath River Fall Chinook salmon in recent years have forced restrictions to West Coast commercial and recreational fisheries. Klamath River fall-run Chinook salmon enter the Klamath River in August through October of each year, spawning shortly thereafter in the lower reaches of rivers and streams. However, under conditions with dams, the status of naturally spawning fall-run Chinook salmon may continue on its current trajectory (R. Quiñones, USFS, pers. comm. (p. 82-83).

³ [existing conditions: spring run]Spring-run Chinook salmon enter the Klamath River from April to June of each year before migrating to smaller headwater tributaries. Historically, populations may have returned earlier, perhaps as early as February and March (Klamath Republican articles in Fortune et al. 1966). They require cold, clear rivers and streams with deep pools to sustain them through the warm summer months (McCullough 1999). These areas have been greatly reduced in the basin due to dams and degradation of habitat. Naturally spawned spring-run Chinook salmon populations are now a remnant of their historical abundance and primarily occur in the South Fork Trinity River and Salmon River Basins.

⁴ “[existing conditions: fall run]Chinook salmon in the Klamath Basin are not listed under the State or federal ESA, but low abundance predictions of Klamath River Fall Chinook salmon in recent years have forced restrictions to West Coast commercial and recreational fisheries. Klamath River fall-run Chinook salmon enter the Klamath River in August through October of each year, spawning shortly thereafter...These runs are substantially lower than historical levels. (p. 80)

Klamath Settlement EIS/EIR

Spring Chinook:

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for spring-run Chinook salmon in the short and long term.” (p. 3.3-64)

Fall Chinook:

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for fall-run Chinook salmon in the short and long term.” (p. 3.3-63)

Draft BIA/DOI Subteam Technical Report

Both Spring- and Fall-Run Chinook

[upper basin] “Under the No Action Alternative, Chinook salmon, steelhead, and Pacific lamprey will continue to be precluded from waters within the Klamath Tribes’ land,” (p. 4-10).

[lower Klamath River] “Under the No Action Alternative, Chinook salmon populations will continue to be affected by loss of habitat, warm water, and blockage of substrate movement negatively affecting spawning habitat...The Chinook salmon populations will remain in a depleted state...there will be long term degradation of habitat complexity and suitability...increased disease, and impaired geomorphologic functions in the river downstream from Iron Gate Dam,” (p. 4-3 to 4-4).

Spring Chinook:

[lower Klamath River] “Spring-run Chinook salmon will continue to remain at low population levels with a high risk of uplisting under the ESA and CESA,”

Pacific Lamprey

In sum, populations below IGD would remain about the same or continue declining.

Final Expert Panel (Close, et. al., January 14, 2010)

The report stated it was uncertain whether Pacific lamprey were in the upper basin, and that there would likely continue to be no change (no Pacific Lamprey in the upper basin):

[Upper Basin]“This area was historically accessible to anadromous fishes, but the historical occurrence by Pacific lamprey is unresolved... Nevertheless, improvements to fish passage scheduled for Keno Dam may open the upper Klamath Basin to Pacific lamprey irrespective of their historical occurrence (p. 46) [and] Pacific lamprey are currently extirpated above Iron Gate Dam; they are unable to pass the dam and the confirmed upstream limit in the mainstem Klamath River is Bogus Creek...” (p. 28).

[Below IGD]”Other habitat improvements [under no action] are also planned in a general way that may gradually extend small areas of both spawning and rearing conditions for resident lamprey in the sediment-starved UKL Basin and spawning conditions in the Klamath River downstream of IGD...but since the Panel was provided with no concrete information about TMDL actions, it is not possible to assess whether such effects are likely to be recognizable downstream of UKL without more specific information about the TMDL actions.” (p. 23).

*Synthesis Report*⁵

Synthesis report conclusions were that Pacific lamprey may have been in the upper basin, and they will be unable to access suitable habitat in reaches above IGD, and populations below IGD may remain the same or decline:

⁵ “[existing conditions, below Iron Gate, synth rpt] There is little data on historical abundance or distribution of Pacific lamprey in the Klamath River Basin, however anecdotal evidence suggests stocks have been in decline since the late 1980’s (Larson and Belchik 1998; (Moyle et al. 2009) and are currently on a status “Watch List” (Moyle et al. In review.). FERC believes this decline may be part of a coastwide trend (Federal Energy Regulatory Commission 2007). However, a lamprey distribution survey conducted by the Karuk Tribe in 2002 captured no lamprey ammocoetes in the reach below Iron Gate Dam to Cottonwood Creek (Karuk Tribal Fisheries 2010). Crews noted that “ideally suitable” habitat with substrate consisting of soft (easy to push your finger into) sand and fine silt material was almost entirely absent within the reach (Karuk Tribal Fisheries 2010). Lamprey ammocoetes were captured directly below Cottonwood Creek, one of the first sediment contributing tributaries below the dam (Karuk Tribal Fisheries 2010).” (p. 92-93).

[above Iron Gate Dam] The historical upstream distribution of Pacific lamprey was likely to at least Spencer Creek above IGD, although there is some uncertainty in this regard (Administrative Law Judge 2006)...Under conditions with dams, Pacific lamprey will be unable to access suitable habitat for spawning and juvenile rearing within tributaries and stream reaches above IGD. TMDL implementation will benefit this species.” (p. 51-52).

[below Iron Gate Dam] “Under conditions with dams, anadromous Pacific lamprey populations may remain at status quo or continue to decline below IGD. TMDL implementation for the Klamath River will likely benefit Pacific lamprey,” (p. 95).

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for Pacific lamprey in the short and long term.” (p. 3.3-69)

Draft BIA/DOI Subteam Technical Report

[upper basin] “Under the No Action Alternative, Chinook salmon, steelhead, and Pacific lamprey will continue to be precluded from waters within the Klamath Tribes’ land,” (p. 4-10).

Steelhead Trout⁶

Overall, indications from the reports are that populations would likely continue declining.

Expert Panel Report (Dunne, et. al., April 25, 2011)

“...steelhead will not have access to habitats upstream of Iron Gate Dam, [and] This alternative could result in small improvements in habitat for steelhead due to TMDLs, NMFS coho BO, and ongoing...restoration activities. However, these actions are not necessarily targeted for steelhead, and, without specific targeting for steelhead, their effectiveness...is unknown,” (p. 40 and 46).

⁶ Rainbow or redband trout that develop a more pointed head, migrate to the ocean, and become much larger than those that remain in fresh water.

*Synthesis Report*⁷

The report stated that steelhead used to be in the upper basin, but were extirpated with construction of the dams—a condition would remain unchanged under no action, and lower basin toward goal of recovery once TMDLs are implemented:

[above Iron Gate Dam] “Steelhead populations in the Klamath River above IGD were extirpated with the construction of Project dams. Historically, the range of this species included the tributaries of Upper Klamath Lake... Under conditions with dams steelhead will remain extirpated in the Klamath River above Iron Gate Dam.(p. 50).

[below Iron Gate Dam] “Under this scenario, considerable efforts to improve habitat are underway (National Marine Fisheries Service 2010b) toward the goal of recovery of salmon and steelhead stocks. Once implemented, TMDLs and associated Implementation Plans are expected to improve water quality, reduce stress on salmonids from pollution, and contribute to their recovery (National Marine Fisheries Service 2010b). (p. 93).

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for steelhead in the short and long term.” (p. 3.3-67)

Draft BIA/DOI Subteam Technical Report

[upper basin] “Under the No Action Alternative, Chinook salmon, steelhead, and Pacific lamprey will continue to be precluded from waters within the Klamath Tribes’ land,” (p. 4-10). “Coho salmon, steelhead, green sturgeon, and Pacific lamprey are expected to remain at low population levels, with low viability of Klamath River populations... [existing efforts] will help reduce the stress on the fishes, but will not be sufficient to bring the species to recovery,” (p. 4-4).

⁷ “[Existing conditions below Iron Gate Dam] The limited data on summer steelhead abundance indicates this run is depressed, Steelhead are widely distributed throughout the Klamath River watershed below IGD. Populations, including summer, fall, and winter steelhead, are considered part of the Klamath Mountains Province ESU. Even though NMFS found that listing of the Klamath Mountain Province Steelhead Distinct Population Segment (DPS) was not warranted, NMFS expressed concerns about the status of steelhead within this DPS, and identified the DPS as a candidate species, which the agency would continue to monitor and re-assess (66 FR 17845).

Green Sturgeon

In sum, indications from the documents range from no change to possible improvement.

Expert Panel Reports - Not included/analyzed.

*Synthesis Report*⁸

Green sturgeon spawn primarily in the mainstem Klamath River downstream of Ishi Pishi Falls, in the Trinity River downstream of Grey's Falls, and potentially in the lower Salmon River...However, the Northern green sturgeon...is considered a Species of Concern (69 FR 19975)... Under this scenario, considerable efforts to improve habitat are underway (National Marine Fisheries Service 2010b) toward the goal of recovery of salmon and steelhead stocks. Once implemented, TMDLs and associated Implementation Plans are expected to improve water quality, reduce stress on salmonids from pollution, and contribute to their recovery (National Marine Fisheries Service 2010b). These efforts may benefit green sturgeon as well.” (p. 96)

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for green sturgeon in the short and long term.” (p. 3.3-70)

Draft BIA/DOI Subteam Technical Report

“Coho salmon, steelhead, green sturgeon, and Pacific lamprey are expected to remain at low population levels, with low viability of

⁸ “[existing conditions, below Iron Gate] Green sturgeon are long-lived, slow-growing fish and the most marine-oriented of the sturgeon species. Green sturgeon are believed to spend the majority of their lives in nearshore oceanic waters, bays, and estuaries. Early life-history stages reside in fresh water, with adults returning to freshwater to spawn when they are more than 15 years of age and more than 4 feet (1.3 m) in size. Green sturgeon are thought to spawn every two to four years (74 FR 52300). However, the Northern green sturgeon DPS is considered a Species of Concern (69 FR 19975). Green sturgeon populations in this DPS face a number of potential threats including concentration of spawning, lack of population data, harvest concerns, and loss of spawning habitat. The Klamath River drainage is thought to contain most of the total spawning population of green sturgeon (Adams et al. 2002). Green sturgeon are known to occupy the mainstem Klamath River to Ishi Pishi falls and the lower portions of the Salmon River. Green sturgeon also occupy the Trinity River. Each year juveniles are captured in outmigrant traps at Willow Creek. Green sturgeon are regularly harvested by Hoopa Valley Tribal members.” (p. 93).

Klamath River populations...[existing efforts] will help reduce the stress on the fishes, but will not be sufficient to bring the species to recovery,” (p. 4-4).

Eulachon or Candlefish (essentially extinct in California)

There would essentially be no impacts since eulachon are practically extinct in California.

Expert Panel Reports - Not included/analyzed.

Synthesis Report

“There will be short-term suspended sediment impacts to eulachon under dam removal conditions (Stillwater Sciences 2009a). Eulachon are likely extinct in California except for strays (Moyle et al. In Press), thus, impacts in any particular year are likely to be minimal.” (p. 98).

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for eulachon in the short and long term.” (p. 3.3-73)

Draft BIA/DOI Subteam Technical Report - - Not included/analyzed.

Longfin Smelt

Expert Panel Reports - Not included/analyzed.

Synthesis Report - Not included/analyzed.

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for longfin smelt in the short and long term.” (p.3.3-74)

Crayfish

Expert Panel Reports - Not included/analyzed.

Synthesis Report - Not included/analyzed.

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“Benthic Macroinvertebrates The effect of the No Action/No Project Alternative would be no change from existing conditions on macroinvertebrates in the short and long term.” (p. 3.3-74)

Mussels

Expert Panel Reports - Not included/analyzed.

Synthesis Report - Not included/analyzed.

Klamath Settlement EIS/EIR

The Klamath EIS/EIR stated no change:

“The effect of the No Action/No Project Alternative would be no change from existing conditions for freshwater mussels in the short and long term.” (p. 3.3-74)

Action Alternative

Table 9-2.—Summary of Projected Action (KHSa and KBRA) Conditions by Species

<p>Coho Salmon (Threatened)</p>	<p>Summation: Below IGD, significant negative short term impacts and long term effects range from marginal to beneficial. UB, uncertain whether they would reoccupy the area.</p> <p>EP: Adverse impacts in short run, minimal beneficial effects in long run, and additional habitat in the UB would be marginal.</p> <p>SR: Likely reestablish Coho above IGD in a short period of time which will improve overall population persistence in the long run.</p> <p>EIS/EIR: Populations/habitat restored in JC Boyle to IGD reach. Below IGD, short term impacts would be adverse/significant and long term impacts beneficial. Unclear whether they would be available in upper river/UB.</p> <p>DOI: Expected coho to benefit.</p>
<p>Spring Chinook Salmon</p>	<p>Summation: Below IGD, minimal short run impacts (about 2020) due to dam removal sediment, positive long run effects (roughly 2021-2060), although extent varies from minimal to more extensive. UB, Spring Chinook would reoccupy, possibly increase, but not to historic levels.</p> <p>EP: Abundance is exceptionally low therefore KBRA actions would have to be significant to improve survival of existing populations.</p> <p>SR: Short run, reduced abundance, long run slight benefits. Potential to increase population in UB, but not to historical levels.</p> <p>EIS/EIR Short run less than significant effects. In the Lower KR/downstream of IGD, short run, some adverse effects, but would be minimized. Long term, benefit species in the reach beginning in 2020. Additional access to UB – total increase of 420 miles of habitat.</p> <p>DOI: Short run suffer losses from up to 1.2 to 2.4 million tons of released sediment. Long run, quick recovery of the fall run and potentially spring run. Salmon would have access to UB habitat.</p>

Table 9-2.—Summary of Projected Action (KHSA and KBRA) Conditions by Species

<p>Fall Chinook Salmon</p>	<p>Summation: Estuarine habitat would not be affected. Negative short run impacts (around 2020) due to dam removal sediment, especially in the lower Klamath. Positive long run effects (about 2021-2060). Fall Chinook would reoccupy the UB, possibly substantial increase, particularly helpful in years when production is low.</p> <p>EP: Would experience a substantial increase in lower reaches and there could be significant adverse short term dam removal sediment impacts.</p> <p>SR: Below IGD, short run adverse impacts, but population expected to fully recover within 5 years, and in the long run, modeling shows substantially more spawners. Above IGD, greatest benefit would be in years production was low.</p> <p>EIS/EIR: In HR/JC Boyle to IGD reach, short run sediment effects would only last about 4 months, long run, establish a more favorable water temperatures and quality, decrease disease/toxins that would benefit species 2021 onward. In the Lower KR/downstream of IGD, short run, adverse effects would be minimized, long run beneficial. Additional access to UB for a total increase of habitat.</p> <p>DOI: Gain access to 350 miles of historic spawning habitat. Short run suffer losses from up to 1.2 to 2.4 million tons of released sediment. Long run, quick recovery of the fall run and potentially spring run. Salmon would have access to UB habitat.</p>
<p>Pacific Lamprey</p>	<p>Summation: Below IGD, short run, 2012-2020 no change and around 2020-2025/30 decline due to dam removal sediment could be severe, but would recover, especially UKR. Long run (about 2025/30 -2060), population would increase up to 10% (14% in the mainstem). Potential to occupy UB.</p> <p>EP: Below IGD their range would increase 1 – 10%. Mainstem increase capacity about 14% or more. Short term, 2012 to 2020, no change in harvest rates. 2020 to 2025/2030, short term decline due to sediment release. Long term, 2025/2030 to 2060, gradual increase (up to 10%) resulting from recolonization. IGD to Keno reach would see an increase in habitat quality and population. Potential to access and occupy UB.</p> <p>SR: Below IGD, short term, effects from sediment could be severe, but would recover quickly. Above IGD would quickly recolonize area between UKL and IGD, long term beneficial.</p> <p>EIS/EIR: Estuarine habitat would not be affected. Below IGD, short term, significant effects and long term benefits. Not expected to occupy UB.</p> <p>DOI: Expected to benefit/increase.</p>

Table 9-2.—Summary of Projected Action (KHSA and KBRA) Conditions by Species

<p>Steelhead Trout</p>	<p>Summation: Below IGD, short term, adverse sediment impacts (approximately 2020-2026), long term, increased numbers, possibly substantial. UB, reestablish and increase, possibly substantial.</p> <p>EP: Short term, sediment will be injurious to upstream migratory steelhead and coho. Long term, increased numbers. UB, assuming passage through Keno and UKL is successful, then increase in habitat and abundance, possibly substantial.</p> <p>SR: Increased habitat available above IGD would enable reestablishment. Below IGD, short term, reservoir drawdown would affect 6 year classes. Long term Action Alternative would be beneficial.</p> <p>EIS/EIR: Estuarine habitat would not be affected. Short term significant sediment effects. Long term restore connectivity of potentially useable habitat in UKB. Below IGD, substantial long term benefit.</p> <p>DOI: Expected to benefit/increase.</p>
<p>Green Sturgeon (threatened)</p>	<p>Summation: Short term minimal effects, long term benefit, possibly substantial.</p> <p>EP: Not included/analyzed.</p> <p>SR: Short term would have little influence on the population over the long term. Dam removal and KBRA would likely be beneficial.</p> <p>EIS/EIR: Estuarine habitat would not be affected. In the short term significant effects, long term they could benefit substantially.</p> <p>DOI: Expected to benefit/increase.</p>
<p>Eulachon or Candlefish (likely extinct in California)</p>	<p>Summation: Essentially no impacts since euechelon are practically extinct in California. Short term minimal adverse effects and long term beneficial habitat changes.</p> <p>EP: Not included/analyzed.</p> <p>SR: No impact since essentially none exist, so short term sediment impacts are likely to be minimal and overall long term any 'strays' would benefit.</p> <p>EIS/EIR: Minimal short term effects. Estuarine habitat is not expected to substantially change.</p> <p>DOI: Not included/analyzed.</p>
<p>Longfin Smelt</p>	<p>Summation: Short term minimal adverse effects, long term benefit, possibly substantial.</p> <p>EP and SR: Not included/analyzed.</p> <p>EIS/EIR: Short term sediment may affect smelt, but the magnitude would be low, in part because of dilutions downstream, LTS impacts.</p> <p>DOI: Not included/analyzed.</p>

Table 9-2.—Summary of Projected Action (KHSA and KBRA) Conditions by Species

Crayfish (Benthic Macro invertebrates)	<p>Summation: Short term significant adverse effects, long term benefit. EP and SR: Not included/analyzed. EIS/EIR: Would be a significant impact on crayfish populations in HR and mainstem Klamath River downstream of IGD, but recovery would be relatively fast. DOI: Not included/analyzed.</p>
Mollusks, mainly Mussels	<p>Summation: Significant adverse effects in HR and mainstem from about 2020-2030, longer term beneficial. EP: Not included/analyzed. SR: No change. EIS/EIR: Would be a significant impact on mussel populations in HR and mainstem Klamath River downstream of IGD since it would take up to a decade to recover. DOI: Not included/analyzed.</p>

Sources and acronyms: Expert panel reports (EP), biological subteam synthesis report (SR), preliminary administrative draft EIS/EIR (EIS/EIR), and DOI Final Report (DOI/BIA).
 Acronyms: Iron Gate Dam (IGD), Upper Basin (UB), Upper Klamath Basin (UKB), Upper Klamath Lake (UKL), hydroelectric reach (HR), Upper Klamath River (UKR), Endangered Species Act (ESA).

Salmon

Coho

In sum, it appears that there would be adverse short term impacts to coho salmon populations, and positive long term impacts for the action alternative. It is unclear whether there would be Coho salmon in the Upper Klamath Basin.

Expert Panel Report (Dunne, April 25, 2011)

Changed from essentially no effect to small beneficial effect in all reaches except UKB where it is more uncertain, especially for Coho (as opposed to steelhead) Action Alternative would likely have small beneficial effects in the long run and would have some adverse impacts in the short term (dam removal sediment), and additional habitat in the Upper Klamath Basin might be inaccessible:

“Short-term effects of dam removal on sediment transport will be injurious to upstream migrating coho and steelhead, but longer-term prospects...is an increase and expansion in spawning and rearing habitat...for coho probably slightly.(p. 18)

“...the difference between the Proposed Action and Current Conditions is expected to be small, especially in the short-term

(0-10 years after dam removal). Larger (moderate) responses are possible under the Proposed Action if the KBRA is fully and effectively implemented and mortality caused by the pathogen *C. shasta* is reduced. The more likely small response will result from modest increases in habitat area usable by coho with dam removal, small changes in conditions in the mainstem, positive but unquantified changes in tributary habitats where most coho spawn and rear, and the potential risk for disease and low ocean survival to offset gains in production in the new habitat.... Improvements on the order of two to four times the current freshwater survival are likely needed to offset low marine survival. Nevertheless, colonization of the Project Reach between Keno and Iron Gate Dams by coho would likely lead to a small increase in abundance and spatial distribution of the ESU, which are key factors used by NMFS to assess viability of the ESU.”(p. ii).

[concerning Upper Basin] “In the long-term, KBRA activities in the tributaries of Upper Klamath Lake will enhance flow and sedimentation and especially physical habitat quality, but will greatly benefit the fish only if the coho and steelhead can access the tributaries through Upper Klamath Lake. There is not strong evidence that coho previously migrated through Upper Klamath Lake.” (Hamilton et al. 2005).(p. 19).

“The extent of new habitat for coho and steelhead upstream of Upper Klamath Lake will depend on the success of these fish to travel through the lake and establish populations in the tributaries. Thus, it will depend on the success of KBRA restoration activities.” (p. 29)

“If both upstream and downstream passage through Keno Reservoir and Upper Klamath Lake are successful, then access to upstream habitat (above Upper Klamath Lake) could increase the abundance of steelhead (possibly substantially) and coho salmon if fish utilize the new habitat and can successfully complete their life cycles.... However, recolonization of habitats above Upper Klamath Lake are uncertain because many factors may limit population success, especially for coho salmon.” (p. 40).

Synthesis Report

Dam removal would benefit coho salmon by providing additional habitat and reestablish them above Iron Gate Dam, and the KBRA would accelerate TMDL water quality benefits with essentially negligible short term impacts since most would be out of the mainstem by November:

[short term below IGD] “The effect of dam removal on the coho salmon population is not expected to be significant, despite direct

mortality to a proportion of some life stages (Stillwater Sciences 2009a). A decrease in coho salmon production is likely for two year classes (Stillwater Sciences 2009a).” (p. 91).

[long term below IGD] “Over the long term, water quality and habitat would improve for coho salmon downstream from IGD with dam removal.” (p. 91)

[short term above IGD] “Dam removal would result in an increase in habitat and likely reestablish coho salmon above Iron Gate Dam in a short period of time... From 2012 to 2020 sport, commercial, and Tribal harvest will be held at minimal levels to rebuild runs under KBRA. Consequently, incidental coho salmon harvest would be reduced. Afterward 2020 coho incidental harvest would likely increase due to the increase effort directed at Chinook salmon, “(p. 49-50).

[long term above IGD] “Dam removal would result in an increase in habitat and coho salmon would likely access these habitats above IGD in a short period of time, as observed after barrier removal at Landsburg Dam in Washington (Kiffney et al. 2008) and dam removal at Little Sandy Dam in Oregon (B. Strobel, Portland Water Bureau, pers. comm.). Assuming coho salmon distribution up to Spencer Creek after dam removal, coho salmon will have an additional 68 miles of habitat, including approximately 45 miles of habitat in the mainstem Klamath River and tributaries (National Marine Fisheries Service 2007a; U.S. Department of the Interior 2007), as well as an additional 23 miles of habitat currently inundated by the reservoirs (Cunanan 2009). From 2012 to 2020 sport, commercial, and Tribal harvest will be held at minimal levels to rebuild runs under KBRA20” Consequently, incidental coho salmon harvest would be reduced. After 2020 coho incidental harvest would likely increase due to the increased effort directed at Chinook salmon.”(p. 49)

[long term below IGD] “Overall, dam removal and associated KBRA actions will accelerate TMDL potential water quality benefits to this species (USDI Secretarial Determination Water Quality SubGroup In Prep)...Access to habitat above IGD would provide connectivity across historically accessible habitats and allows fish to respond to changing environmental conditions... Thus, there would be less risk of extinction when more habitat is available across the ESU.” (p. 90-91).

Klamath Settlement EIS/EIR

The Klamath Settlement EIS/EIR indicated that coho salmon would continue to be absent in the Upper Klamath Basin and that there would be adverse impacts in the short run to some portions of the populations with benefits in the long term due primarily to additional habitat and improved water quality and temperatures:

[Overall Klamath River Reach - 9 coho population units total] “Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action would be beneficial for the coho salmon from the Upper Klamath River, Mid-Klamath River, Lower Klamath River, Shasta River, Scott River, and Salmon River population units in the long term. Based on improved habitat quality, the effect of the Proposed Action on coho salmon from the three Trinity River population units would be less-than-significant for the long term.” (p. 3.3-112).

[Long term] “These [primarily as a result of dam removal] changes would result in more favorable water temperature for salmonids, and would improve water quality and reduce instances of disease and algal toxins. All of these changes would benefit coho salmon produced in the Hydroelectric Reach in 2020 and thereafter.” (p. 3.3-107)

[Upper Klamath River]”There is no historical evidence that coho salmon occurred upstream of J.C. Boyle Reservoir...”(p. 3.3-106). Based on substantial reduction in the abundance of a year class in the short term, the Proposed Action would have a significant effect on coho salmon from the Upper Klamath River, Mid-Klamath River, Shasta River, and Scott River population units after mitigation in the short term. (p. 3.3-111)

[Hydroelectric Reach] “These changes would result in more favorable water temperature for salmonids, and would improve water quality and reduce instances of disease and algal toxins. All of these changes would benefit coho salmon produced in the Hydroelectric Reach in 2020 and thereafter.”(p. 3.3-107)

[Estuary]”The Proposed Action is not expected to substantially change or affect coho salmon estuarine habitat. Sediment, flow, and water temperature effects would likely not extend downstream to the estuary.”(p. 3.3-110).

Draft DOI/BIA Subteam Technical Report

“Coho salmon, steelhead, and Pacific lamprey populations are expected to increase in the Klamath River and its tributaries as a result of the Proposed Action,” (p. 4-15).

Spring and Fall Chinook

Fall Chinook conclusions ranged from modest increase to a sizeable increase due primarily to improvements in water quality, temperature, and additional habitat. Short term impacts, although dam removal may have significant impacts, are not expected to last longer than five years at most. For Spring Chinook, mid to long term conclusions ranged essentially no change to significant improvement due primarily to improvements in water quality, temperature, and additional habitat. Short term impacts would be negligible since dam removal would occur in the fall.

Expert Panel Reports (Goodman, et. al., June 13, 2011; Goodman et al, July 20, 2011)

Conclusions indicate that fall Chinook would experience a substantial increase in lower reaches of the River and there may be significant adverse short term dam removal sediment impacts. Improvements in spring Chinook populations is expected to be minimal, although the conclusion involves unknowns. An increase in Chinook salmon upstream of Keno Dam is uncertain.

Addendum (Goodman, et. al., July 20, 2011)

Fall Chinook

“The Panel concluded that a substantial [about 10 percent of the average number of natural spawners, or about 10,000 spawners] increase in Chinook salmon is possible in the reach between Iron Gate Dam and Keno Dam. An increase in Chinook salmon upstream of Keno Dam is less certain. Within the range of pertinent uncertainties, it is possible that the increase in Chinook salmon upstream of Keno Dam could be large, but the nature of the uncertainties precludes attaching a probability to the prediction by the methods and information available to the Panel. The principal uncertainties fall into four classes: the wide range of variability in salmon runs in near-pristine systems, lack of detail and specificity about KBRA, uncertainty about an institutional framework for implementing KBRA in an adaptive fashion, and outstanding ecological uncertainties in the Klamath system that appear not to have been resolved by the available studies to date.” (p. i).

Spring Chinook

“The prospects for the Proposed Action to provide a substantial positive effect for spring Chinook salmon is much more remote than for fall Chinook salmon. The present abundance of spring Chinook salmon is exceptionally low and spawning occurs in only a few

tributaries in the basin.”(p. 25). Also stated that conditions would be more favorable under action verses no action concerning climate change.

Final Report (Goodman, et. al., June 13, 2011)

Fall Chinook

[short term middle and lower River] “...sediments from Klamath project reservoirs may have significant effects on the survival of the run and brood present when the dams are removed.”(p. 20-21).

[Keno to Iron Gate Dam reach and LKR mid to long term] “...a substantial increase in Chinook salmon is possible in the reach between Iron Gate dam and Keno Dam.” (p. i) [Dam removal/sediment]..the degree to which these persistent sands will reduce Chinook salmon spawning success in the lower mainstem Klamath River, relative to increase spawning success in the project area, is unknown.”(p. 21)

[Upstream of Keno Dam] “...An increase in Chinook salmon upstream of Keno Dam is less certain.”(p. i)

Spring Chinook

“The prospects for the Proposed Action to provide a substantial positive effect for spring Chinook salmon is much more remote than for fall Chinook salmon. The present abundance of spring Chinook salmon is exceptionally low and spawning occurs in only a few tributaries in the basin...Intervention would be needed to establish populations in the new habitats, at least initially...KBRA actions would need to greatly improve survival of existing populations...” (p. 25).

Synthesis Report

The mobility of Chinook salmon (and other anadromous species) require consideration of the entire Klamath River Basin when examining impacts for particular reaches or areas, as with commercial fisheries, described by the synthesis report:

[above IGD]“...While this management scenario would not create a commercial fishery above IGD, anadromous salmonid access to habitat above IGD would benefit commercial salmon fisheries. (p. 69).

[below IGD] By truncating the range of flows that led to diverse life history strategies, changes in the annual hydrology have influenced populations of fish that have evolved under the natural flow regime. These changes included effects on the environmental cues used to trigger anadromous salmonid migrations (outmigration, spawning) and the availability and quality of habitat necessary to meet the life history needs of species (National Marine Fisheries Service 2002).” (p. 70)

Spring Chinook

[Entire River] “Dam removal provides an opportunity for spring-run Chinook salmon to become reestablished in the upper Klamath River,” (p.47). “Restoration under KBRA provides considerable potential to increase spring run abundance. However, Huntington (2006) cautioned that the existing potential for Chinook salmon production within the basin above UKL is clearly much lower than his estimate of historical potential,”(p. 42).

[below Iron Gate Dam – short term] The overall effect of dam removal to the spring-run Chinook population is not anticipated to be considerable (Stillwater Sciences 2009a),” (p. 85).

[below Iron Gate Dam – long run] “Implementing either the KBRA type flows or the Hardy et al. (2006) Phase II flow recommendations was predicted to decrease the occurrence of poor production years in the future by 2/3. This would have significant positive consequences for Chinook salmon given their life cycle in the Klamath River (Hetrick et al. 2009). Overall, dam removal and associated KBRA actions will accelerate TMDL potential water quality benefits to this species (USDI Secretarial Determination Water Quality SubGroup In Prep). The restored temperature regime would mean varied and differing effects to anadromous fish below IGD,”(p. 85).

Fall Chinook

[Overall] “Modeling for fall-run Chinook salmon showed the chance of getting substantially more fall-run Chinook salmon spawners is much better with the dams removed than with the dams remaining, over a 50 year period (Oosterhout 2005).” (p. 88)

[above Iron Gate Dam]“A ranking level model comparison of fall run Chinook spawners in the upper watershed predicts that numbers will likely be higher with dam removal than under existing conditions...over a 50 year period (Oosterhout 2005),” (p. 46). “...conditions for fall-run Chinook migration appear favorable (at least through Upper Klamath Lake),” (p. 48). “KBRA flows are intended to benefit fall-run Chinook salmon. Hetrick’s analysis of

KBRA type²³ flows interim flows showed the greatest benefits of would be in years when production was low (Hetrick et al, 2009),” (p. 85).

[below Iron Gate Dam – short term] The reduction in the number of fall-run spawners that would occur under the worst-case scenario would be evident for three years of direct impact from a given sediment pulse (Stillwater Sciences 2009a)...Overall, it appears that the impacts on fall-run Chinook salmon due to suspended sediments will be short-term, and that the population will fully recover within five years after dam removal (Stillwater Sciences 2008),” (p. 85).

[middle Klamath River mid to long term] “KBRA flows are intended to benefit fall-run Chinook salmon. Hetrick’s analysis of KBRA type²³ flows interim flows showed the greatest benefits of would be in years when production was low (Hetrick et al, 2009). For years where modeled historical production was high, there was little difference from KBRA management...Implementing either the KBRA type flows or the Hardy et al. (2006) Phase II flow recommendations was predicted to decrease the occurrence of poor production years in the future by 2/3. This would have significant positive consequences for Chinook salmon given their life cycle in the Klamath River (Hetrick et al. 2009).” (p. 85).

[long term middle and lower Klamath River] “The miles of habitat below IGD with suitable temperatures for Chinook salmon migration during August 15 to September 15 would increase from 20 miles with dams in to more than 100 miles with dams out (Figure 12)... Dam removal would reestablish connectivity of resident and anadromous fish to habitat currently blocked by the dams (Burroughs et al. 2010).” (p. 85 and 87).

[below IGD long run] “Modeling for fall-run Chinook salmon shows the chance of getting substantially more fall-run Chinook salmon spawners is much better with the dams removed than with the dams remaining, over a 50 year period (Oosterhout 2005).” (p. 88).

Draft DOI/BIA Subteam Technical Report

[Overall long run]“...Chinook salmon would gain access to more than 350 miles of historic spawning habitat,” (p. 4-14).

[Short term] Chinook salmon are expected to suffer losses resulting from a release of up to 1.2 to 2.4 million tons of fine sediment, causing high suspended sediment loads and local, short-term sediment deposition,” (p. 4-14).

[Long term] "...Improved temperatures (reduced by 7 degrees to 9 degrees Celsius) from October through November would create more ideal temperatures for adult migration and spawning. Implementation of the proposed action will directly affect Chinook salmon by accelerating the TMDL process, and thus improving water quality conditions at a more rapid rate... This life cycle change benefits the Klamath River Chinook salmon because it takes them closer to their historic conditions... These factors in combination will result in an anticipated quick recovery of the fall-run and potentially spring run, Chinook salmon populations," (p. 4-15.)

[UKB]"Chinook salmon would be able to access habitat in the Klamath River within the Tribes' reservation... [and] their numbers are expected to increase," (p. 4-19).

Klamath Settlement EIS/EIR

Spring Chinook

[short term] "Based on minimal reduction in the abundance of a year class in the short term, the effect of the Proposed Action would be less-than-significant for spring-run Chinook salmon in the short term. Based on minimal reduction in the abundance of a year class in the short term, the Proposed Action would be a less-than-significant effect on spring-run Chinook salmon after mitigation." (p. 3.3-105)

[long term] "Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action would be beneficial for spring-run Chinook salmon in the long term." (p. 3.3-106).

[in the Upper Klamath River]... dam removal would allow... access to the Upper Klamath River upstream of J.C. Boyle Reservoir. The access would expand the... current habitat to include historic habitat along the mainstem Klamath river and upstream to the Sprague, Williamson, and Wood Rivers (Hamilton, et al, 2005)... a potential increase in access to 49 significant tributaries in the UKB, comprising 420 miles of additional potentially productive habitat...". The Proposed Action would not result in changes to suspended or bedload sediment, flow-related habitat, or algal toxins and disease." (p. 3.3-101).

[hydroelectric reach] "The Proposed Action would restore spring-run Chinook salmon access to the Hydroelectric Reach. Adults could first access this reach in spring 2021 after dam removal; thus, short-term gains in flow-related habitat or habitat expansion would be limited to later cohorts. The Proposed Action would eliminate the Four

Facilities and would establish a flow regime that more closely mimics natural conditions by increasing spring flow and by incorporating more variability in daily flows.” (p. 3.3-102).

[lower Klamath] “The Proposed Action would release dam-stored sediment downstream to the lower Klamath River Reach in the short term, and would establish a flow regime that more closely mimics natural conditions in the long term. Adult spring-run Chinook salmon do not currently occur upstream of the Salmon River, and would not be expected to be able to use the mainstem Klamath River upstream of Iron Gate Dam until conditions in the Hydroelectric Reach are suitable.” (p. 3.3-102).

[Estuary] “The Proposed Action is not expected to substantially change or affect spring-run Chinook salmon estuarine habitat.” (p. 3.3-105).

Fall Chinook:

[short term] “Based on substantial reduction in the abundance of a year class in the short term, the effect of the Proposed Action would be significant for fall-run Chinook salmon in the short term. Based on minimal reduction in the abundance of a year class in the short term, the Proposed Action would be a less-than-significant effect on fall-run Chinook salmon after mitigation.” (p. 3.3-100).

[long term] “Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action would be beneficial for fall-run Chinook salmon in the long term.” (p. 3.3-101).

[in the Upper Klamath River]“...removal of the four dams would allow fall-run Chinook salmon to gain access to the upper Klamath River upstream of J.C. Boyle Reservoir. The access would expand the Chinook salmon’s current habitat to include historic habitat along the mainstem Klamath River, upstream to the Sprague, Williamson, and Wood Rivers (Hamilton et al. 2005)...a potential increase in access to 49 significant tributaries in the UKB, comprising 420 miles of additional potentially productive habitat...”(p. 3.3-95)

[hydroelectric reach] “The Proposed Action would restore fall-run Chinook salmon access to the Hydroelectric Reach. Adults could first access this reach in fall 2020 after dam removal. Because of this they would not be exposed to the elevated SSCs that would occur during dam removal.” (p. 3.3-96).

[downstream of Iron Gate Dam] “The Proposed Action would establish a flow regime that more closely mimics natural conditions in the lower Klamath River. Flows under the Proposed Action are intended to benefit fall-run Chinook salmon.” (p. 3.3-99).

[Estuary] The Proposed Action would not substantially change or affect estuarine habitat used by fall-run Chinook salmon.” (p. 3.3-99).

Pacific Lamprey

In sum, there could be a total increase in their range of 1 to 10 percent below Iron Gate dam and increased capacity in the mainstem of about 14 percent or more. From about 2010 to 2020, there would be no change, and from 2020 to about 2025 to 2030 there is expected to be a short term decline due to sediment release, and from 2030 to 2060, there is would likely be a gradual increase.

Final Expert Panel (January 14, 2010)

From about 2012 to 2020, there would be no change in harvest rates, and from roughly 2020 to anywhere from about 2025 to 2030, a short term decline due to sediment issues associated with dam removal, and from about 2030 to 2060, there is expected to be a gradual increase and there is the potential for Pacific Lamprey to exist in the Upper Klamath Basin:

“Increased extent of habitat (capacity) for Pacific lamprey... was estimated approximately at 14 percent (Section 5.2.1). However, larval habitat quality in the reach between Iron Gate Dam and Keno Dam will be less desirable than in downstream reaches currently available to anadromous lamprey, making the increase in lamprey production as the result of dam removal and KBRA in this reach alone less than 14 percent. ...Conditions without Dams and with the KBRA might lead to an increase in productivity below Iron Gate Dam also (due to a potential increase in spawning habitat upstream of Iron Gate Dam and reestablishment of natural sediment dynamics downstream of Iron Gate Dam), the Panel then roughly estimated that there might be a total increase of production of outmigrant lamprey (and hence harvest potential) in the range of 1 to 10 percent relative to conditions with Dams. Within the range of 1 to 10 percent, the production of lamprey in this extended range downstream of Keno Dam will depend on the survival of adults in the ocean and the success of the KBRA.”(p. 45-46).

[hydroelectric reach] “Dam removal will put an end to rapid fluctuations of flow for peaking of power production in the impounded reach. Halting of this practice will remove the frequent alternation of hours of high flow velocities followed by rapid dewatering of channel margins” (p. 25).

[below Iron Gate Dam] "...might be a total increase of production of outmigrant lamprey (and hence harvest potential) in the range of 1 to 10 percent relative to Conditions with Dams. Within the range of 1 to 10 percent, the production of lamprey in this extended range downstream of Keno Dam will depend on survival of adults in the ocean and the success of the KBRA,"(p. 46).

[mainstem] "Dam removal would then increase the extent of potential mainstem habitat by approximately 14 percent," (p. 29). "Capacity for Pacific Lamprey in the Klamath River system is predicted to increase by a maximum of 14 percent (based on analysis of mainstem habitat), with potentially more if habitat in the upper Klamath River Basin is accessible and suitable,"(p. 32).

[above IGD] "Pacific lamprey are currently extirpated above Iron Gate Dam; they are unable to pass the dam and the confirmed upstream limit in the mainstem Klamath River is Bogus Creek... Hamilton e. al. (2010) estimated that an additional 69 miles of Pacific lamprey habitat will be opened up by removal of the four lower Klamath River dams." (p. 28-29).

Synthesis Report

Dam removal is expected to expand their range and Pacific lamprey would recolonize the Upper Klamath Basin and benefit mid to long term despite negative short term impacts:

[below IGD short term] "... nearly half of the escapement returns to the Trinity River and its tributaries...where effects would be less severe because of dilution...With few ammocoetes directly below IGD, effects are unlikely to impact the Pacific lamprey population as a whole. Due to their wide spatial distribution in the Klamath basin, straying behavior, and high fecundity, Pacific lamprey are anticipated to recover relatively quickly from dam removal impacts (Stillwater Sciences 2009a)." (p. 95).

[Below IGD mid to long term] "...increased habitat availability and reestablishment of natural sediment dynamics following dam removal are likely to help reduce the impacts of dam removal for any Pacific lamprey in the mainstem that survive initial sediment releases (Stillwater Sciences 2009a)...Overall, dam removal and associated KBRA actions will accelerate TMDL water quality benefits to this species (USDI Secretarial Determination Water Quality SubGroup In Prep)," (p. 95).

[above Iron Gate Dam]"...dam removal would be more conducive to the reestablishment of anadromous Pacific lamprey above IGD... Capacity for Pacific lamprey in the Klamath River system is predicted

to increase by a maximum of 14 percent (based on analysis of mainstem habitat), with potentially more if habitat in the upper Klamath River Basin is accessible and suitable (Close et al. 2010). Full implementation of KBRA could potentially increase the capacity of Pacific lamprey habitat upstream from Keno Dam (Close et al. 2010). (p. 52).

Overall, dam removal and associated KBRA actions will accelerate water quality improvements (Dunne et al. 2011) and TMDL water quality benefits to this species... (p. 52).

Klamath Settlement EIS/EIR

[short term] “Based on substantial reduction in the abundance of a year class in the short term, the effect of the Proposed Action would be significant for Pacific lamprey in the short term [and] after mitigation.” (p. 3.3-123).

[Long run] “Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action would be beneficial for Pacific lamprey in the long term.” (p. 3.3-123)

[in the Upper Klamath River]“...removal of the four dams would allow fall-run Chinook salmon to gain access to the upper Klamath River upstream of J.C. Boyle Reservoir. The access would expand the Chinook salmon’s current habitat to include historic habitat along the mainstem Klamath River, upstream to the Sprague, Williamson, and Wood Rivers (Hamilton et al. 2005)...a potential increase in access to 49 significant tributaries in the UKB, comprising 420 miles of additional potentially productive habitat...”(p. 3.3-95)

[hydroelectric reach] “The Proposed Action would provide Pacific lamprey with access to the Hydroelectric Reach and tributaries...Most sediment released from the reservoirs would likely be eroded within the first five months after dam removal (by May 2020), returning sections of river currently inundated by reservoirs and riverine sections between reservoirs to a pool-riffle morphology. After erosion of dam-stored sediment, the Hydroelectric Reach would likely contain gravel suitable for lamprey spawning and rearing. The Proposed Action would also eliminate the reservoirs and establish a flow regime that more closely mimics natural conditions.” (p. 3.3-120).

[downstream of Iron Gate Dam] “The Proposed Action would release dam-stored sediment and reduce dissolved oxygen downstream to the lower Klamath River in the short term, and restore a flow regime that more closely mimics natural conditions in the long term.” (p. 3.3-121).

[Estuary] “The Proposed Action would not substantially change or affect Pacific lamprey estuarine habitat used by fall-run Chinook salmon.” (p. 3.3-121).

Draft DOI/BIA Subteam Technical Report

“Coho salmon, steelhead, and Pacific lamprey populations are expected to increase in the Klamath River and its tributaries as a result of the Proposed Action,” (p. 4-15).

Steelhead Trout

Short term effects of dam removal would be negative, but short-lived, and positive in the long term, primarily due to many more miles of habitat available.

Expert Panel Report (Dunne, et. al., April 25, 2011)

[short term] “Short-term effects of dam removal on sediment transport will be injurious to upstream migrating coho and steelhead, but longer-term prospects of dam removal with KBRA is an increase and expansion in spawning and rearing habitat – for steelhead probably considerably, and for coho probably slightly.” (p. 18).

“...effects of dam removal on sediment transport will be injurious to upstream migrating coho and steelhead, but longer-term prospects of dam removal with KBRA is an increase and expansion in spawning and rearing habitat - for steelhead probably considerably, and for coho probably slightly.” (p. 18).

“the Proposed Action could result in increased spatial distribution and numbers of steelhead, and in the long-term (decades), increased numbers relative to those under Current Conditions.” (p. ii).

[concerning Upper Basin] “In the long-term, KBRA activities in the tributaries of Upper Klamath Lake will enhance flow and sedimentation and especially physical habitat quality, but will greatly benefit the fish only if the coho and steelhead can access the tributaries through Upper Klamath Lake. There is not strong evidence that coho previously migrated through Upper Klamath Lake.” (Hamilton et al. 2005). (p. 19).

“The extent of new habitat for coho and steelhead upstream of Upper Klamath Lake will depend on the success of these fish to travel through the lake and establish populations in the tributaries. Thus, it will depend on the success of KBRA restoration activities.” (p. 29)

“If both upstream and downstream passage through Keno Reservoir and Upper Klamath Lake are successful, then access to upstream habitat (above Upper Klamath Lake) could increase the abundance of steelhead (possibly substantially) and coho salmon if fish utilize the new habitat and can successfully complete their life cycles.... However, recolonization of habitats above Upper Klamath Lake are uncertain because many factors may limit population success, especially for coho salmon.” (p. 40).

Synthesis Report

“Overall, dam removal and associated KBRA actions will accelerate TMDL potential water quality benefits to this species (USDI Secretarial Determination Water Quality SubGroup In Review).” (p. 94).

[below Iron Gate Dam] “Summer and winter steelhead are currently distributed throughout the Klamath River downstream of IGD and its tributaries, spawning primarily in tributaries such as Trinity, Scott, Shasta, and Salmon rivers. Reservoir draw down impacts are predicted to be greatest for the portion of the steelhead adults migrating to spawn in tributaries upstream of the Trinity River confluence, and are anticipated to affect at least six year classes of this group (Stillwater Sciences 2009a)...Access to additional habitat in the upper Klamath River watershed would benefit steelhead runs. In general, dam removal with KBRA would likely result in the restoration of more reproducing populations, higher genetic diversity, and the opportunity for variable life histories and use of new habitats.” (p. 93)

[above Iron Gate Dam] Steelhead populations in the Klamath River above IGD were extirpated with the construction of Project dams. “Conditions without dams would enable reestablishment of steelhead above Iron Gate Dam and result in an increase in the amount of habitat for this species...Because of their ability to navigate steeper gradient channels and spawn in smaller and intermittent streams (Platts and Partridge 1978), steelhead would realize the extent of anadromous habitat gain to a greater degree than other species.”(p. 50-51).

Overall, dam removal and associated KBRA actions will accelerate TMDL potential water quality benefits to this species...,” (Hamilton et. al., November 23, 2010, p. 50-51).

Klamath Settlement EIS/EIR

[short term] “Based on substantial reduction in the abundance of a year class in the short term, the effect of the Proposed Action would be significant for summer and winter steelhead in the short term...[and] after mitigation” (p. 3.3-119)

[long term] “Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action would be beneficial for summer and winter steelhead in the long term.” (p. 3.3-119-120)

[Upper Klamath] “Under the Proposed Action, dam removal would allow steelhead to gain access to the upper Klamath River upstream of J.C. Boyle Reservoir. This would expand the population’s distribution to include historical habitat along the mainstem Klamath River upstream to the Sprague, Williamson, and Wood Rivers (Hamilton et al. 2005).” (p. 3.3-112).

[hydroelectric Reach] “The Proposed Action would restore steelhead access to the Hydroelectric Reach [beginning in] fall 2020 (winter steelhead) or winter 2021 (summer steelhead) after dam removal (summer steelhead spawning typically does not begin until December). Elevated suspended sediment concentrations resulting from dam removal would likely have returned to background levels similar to existing conditions. The Proposed Action would also...establish a flow regime that more closely mimics natural conditions by increasing spring flow and by incorporating more variability in daily flows.” (p. 3.3-112 to 3.3-113).

[Lower Klamath] “The Proposed Action would release dam-stored sediment downstream to the lower Klamath River in the short term, and restore a flow regime that more closely mimics natural conditions in the long term.” (p. 3.3-113).

Draft DOI DOI/BIA Subteam Technical Report

“Coho salmon, steelhead, and Pacific lamprey populations are expected to increase in the Klamath River and its tributaries as a result of the Proposed Action,” (p. 4-15).

Green Sturgeon

Green sturgeon only occur in the lower Klamath River. Short term sediment would impact sturgeon, possibly severely, much of the spawning and rearing occurs away from areas most impacted. Improved water quality, temperature, and flow regimes would have beneficial mid to long term effects.

Expert Panel Reports - Not included/analyzed.

Synthesis Report

“Although green sturgeon in the mainstem Klamath River at the time of dam removal could be severely affected, much of the spawning and rearing habitat occurs downstream of the Trinity River confluence where sediment concentrations are predicted to be lower. Any impacts to green sturgeon life stages in the mainstem Klamath River during dam removal will have little influence on the population as a whole over time (Stillwater Sciences 2009a). The return to a temperature and flow regime that more closely mimic historical patterns would likely benefit green sturgeon. Overall, dam removal and associated KBRA actions will accelerate TMDL potential water quality benefits to this species (USDI Secretarial Determination Water Quality SubGroup In Review),” (p. 97).

Klamath Settlement EIS/EIR

[short term] “Based on substantial reduction in the abundance of a year class in the short term, the effect of the Proposed Action would be significant for green sturgeon in the short term [and] after mitigation.” (p. 3.3-126).

[long term] “Based on improvements in habitat quality within part of their range, the effect of the Proposed Action would be less-than-significant for green sturgeon in the long term.” (p.3.3-126).

[lower Klamath River] “The Proposed Action would release dam-stored sediment downstream to the lower Klamath River in the short term, and restore a flow regime that more closely mimics natural seasonal flow patterns in the long term.” (p. 3.3-123).

[Estuary] “The Proposed Action is not expected to substantially change or affect estuarine habitat. Sediment, flow, and water temperature effects resulting from the Proposed Action would likely not extend downstream to the estuary.”(p. 3.3-124).

Draft DOI/BIA Subteam Technical Report - Not included/analyzed.

Eulachon or Candlefish (essentially extinct in California)

There would essentially be no impacts since eulachon are practically extinct in California; however, short term impacts would be minimal and there would be long term beneficial habitat changes.

Expert Panels - Not included/analyzed.

Synthesis Report

“There will be short-term suspended sediment impacts to eulachon under dam removal conditions (Stillwater Sciences 2009a). Eulachon are likely extinct in California except for strays (Moyle et al. In Press), thus, impacts in any particular year are likely to be minimal. Overall, dam removal and associated KBRA actions will accelerate potential TMDL water quality benefits to this species (USDI Secretarial Determination Water Quality Subgroup In Review).” (p. 98).

Klamath Settlement EIS/EIR

“Based on short duration of poor water quality during reservoir drawdown in the estuary, the Proposed Action would have a less-than-significant effect on eulachon in the short and long term.” (p. 3.3-130)

Draft DOI/BIA Subteam Technical Report - Not included/analyzed.

Longfin Smelt

Expert Panels - Not included/analyzed.

Synthesis Report - Not included/analyzed.

Klamath Settlement EIS/EIR

Based on short duration of poor water quality during reservoir drawdown in the estuary, the Proposed Action would have a less-than-significant effect on longfin smelt in the short and long term. (p. 3.3-130)

Crayfish (Benthic Macro invertebrates)

Expert Panels - Not included/analyzed.

Synthesis Report - Not included/analyzed.

Klamath Settlement EIS/EIR

[short term] “Based on substantial reduction in the abundance of a year class in the short term, the effect of the Proposed Action would be significant for macroinvertebrates in the short term.” (p. 3.3-134)

[long term] “Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action on macroinvertebrates would be beneficial in the long term.” (p. 3.3-134)

Mussels (Mollusks)

Expert Panels - Not included/analyzed.

Synthesis Report - Not included/analyzed.

Klamath Settlement EIS/EIR

[short term] “Based on substantial reduction in the abundance of multiple year classes in the short term and the slow recovery time of freshwater mussels, the effect of the Proposed Action would be significant for mussels in the short term.. [and]...after mitigation. (p. 3.3-132 to 3.3-133).

[long term] “Based on increased habitat availability and habitat quality in the long term, the effect of the Proposed Action would be beneficial for mussels in the long term.” (p. 3.3-133)

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