

RECLAMATION

Managing Water in the West

Klamath Tribes 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	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
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

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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 middle 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 Klamath Tribes 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 Karuk Tribe, Yurok Tribe, Hoopa Valley Tribe, and Resighini Rancheria Tribes. 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 Klamath Tribes, materials provided by the Tribes that primarily included Duer (2003; 2011), information from the FERC record, and sources listed in the bibliography.² In 2003, Duer's methods included literature review, ethnographic interviews (32 tribal members), ethnographic field work, and site visits. Members of the Economics Subteam attended meetings with the Klamath Tribes concerning potential trust resource, socioeconomic, or contemporary cultural impacts April 23, 2010 (conference call), September 3, 2010 (socioeconomics only), and January 24, 2011 (trust resources government to government). 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 Klamath Tribal history, followed by present conditions, which is organized by the following indicators: Fisheries, economic conditions (primarily income and employment), land base and uses, 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* (June 2011).³ (DOI, June 2011b). Trust resource aspects are mentioned in this report when applicable.

The Klamath Tribes comprise a federally recognized tribe consisting of the Klamath Tribe, Modoc Tribe, and the Yahooskin Band of Snake Indians (Paiute) located in the upper reaches of the Klamath Basin and headquartered in Chiloquin, Oregon (figure 2.1-1). Current Tribal enrollment is about 3,664 members. The Klamath Tribes ceded most of their aboriginal territory in their 1864 Treaty that created the Klamath Reservation, which was reduced by actions associated with the Dawes Act, and their land base was further diminished during the termination period.

Beginning in 1954, Federal recognition was terminated for the Tribes which later ended in 1986 when recognition was restored. However, Federal courts have

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, DOI by North State Resources, Inc.

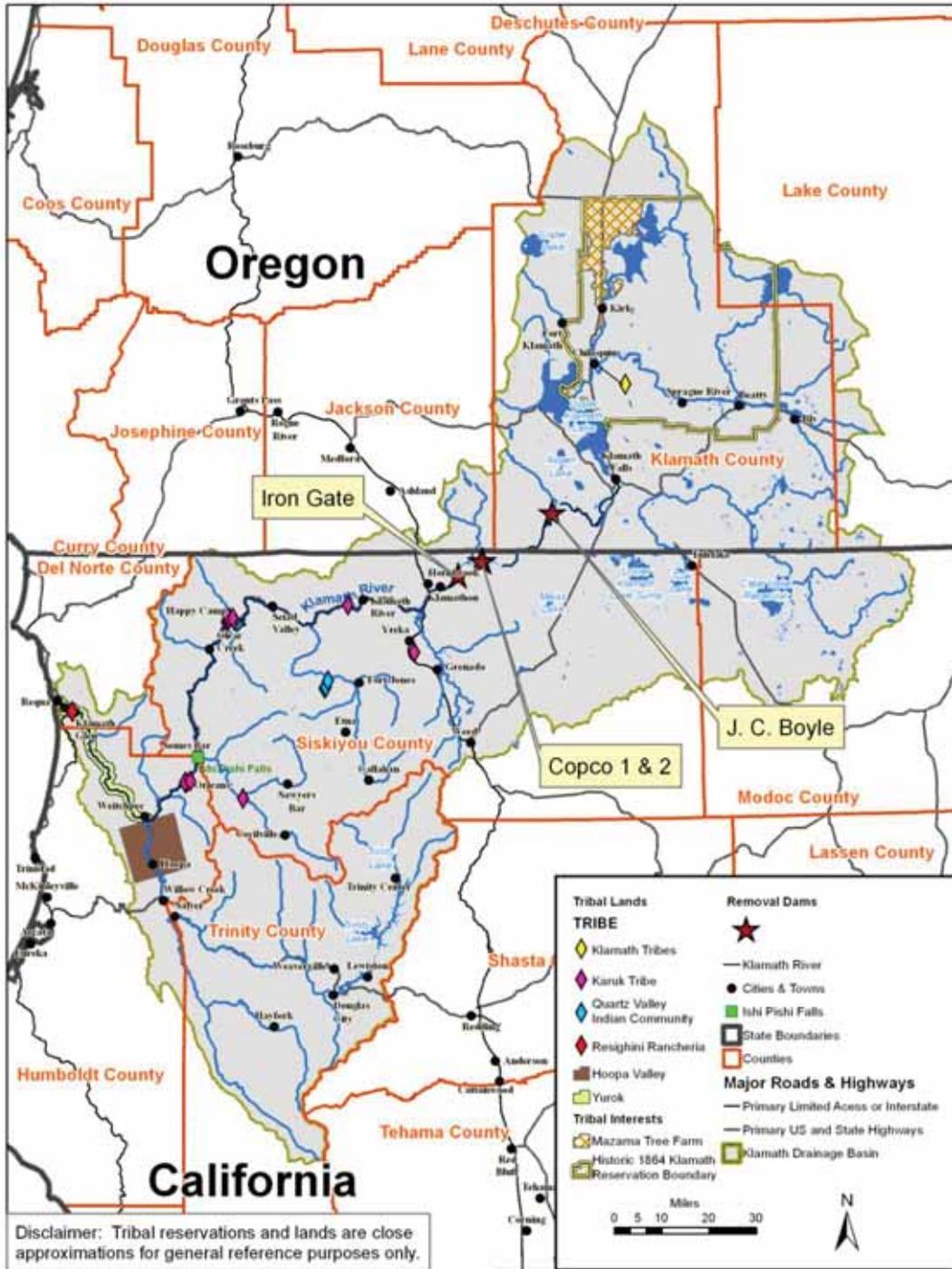


Figure 2.1-1.—Tribal lands.

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confirmed that Klamath Tribal hunting, fishing, gathering, trapping, and water rights survived termination. Today the Klamath Tribes have a few scattered parcels totaling about 556 acres used mainly for Tribal administrative buildings and similar communal purposes. The former Klamath Reservation is within the Winema National Forest and Fremont Nation Forest with some scattered private property (Tiller, 2005, p. 898).

Unemployment and poverty rates are high for Indian people in the area, particularly in Chiloquin, which has made a subsistence lifestyle important. The unemployment rate for the Klamath Tribes was 21 percent in 2005 for Indians in the BIA service area, or Klamath County (BIA, 2005). Based on 2000 Census data that appears to be unchanged through 2009, between 30 and 40 percent of the Indian population in Chiloquin, surrounding areas, and Klamath County was in poverty--a rate two to three times higher than the general population in the same areas. Unemployment was about 22 percent for the Indian population in Chiloquin; this was three times higher than the total population percentage in Klamath County and roughly five times higher than the State of Oregon (Census 2000).

The Klamath Tribes describe themselves as a spiritual people and the First C'waam (sucker fish) Ceremony is an important component as a celebration of the first fish of the season. Tribal history includes references to a time when they celebrated a First Salmon Ceremony; however, construction of Copco 1 stopped anadromous fish migration to the area 90 years ago. It has been difficult to pass fishing as a lifestyle to successive generations, continue the practice of providing fish to elders, and maintain a healthy tribal identity that would help with social problems caused by termination and the loss of most fish species central to their culture. The loss of a traditional diet combined with high unemployment and poverty rates have forced most Tribal members to rely on USDA commodity and other highly processed foods that contribute to high diabetes, heart disease, and obesity rates.

The Klamath Tribes and observers over decades have described the importance of salmon to the Klamath culture, society, economy, and religion:

“Salmon has been fundamental to Klamath, Modoc, and Yahooskin culture, society, economy, and ceremony since time immemorial. Most classic anthropological accounts such as Spier (1930: 145), correctly note that ‘Salmon ascend all the rivers leading from Klamath Lake’ and were fished in each of these tributaries...Salmon species reported to be harvested by the Klamath Tribes included Chinook and steelhead, as well as anadromous lamprey, coho salmon, and sockeye salmon may have also been present, perhaps intermittently, while chum salmon has also been reported in some sources (Hamilton et al. 2005; Lane and Lane 1981)...The presence of anadromous salmonids in the upper Klamath Basin, and their traditional harvest by the ancestors of the modern

Klamath Tribes, has been well-established archaeologically, reflecting an apparently longstanding...practice of salmon harvesting at key fishing stations in the millennia preceding European contact (Stephenson forthcoming; Butler et al. 2010; Cressman 1956). Salmon fishing is also mentioned in some of the very earliest written historical accounts of the Klamaths. [Fremont reports cited],” (Duer, March 2011, p. 4).

“Traditional stories describe how the Creator brought salmon, as well as prime salmon fishing sites, stone fishing dams, and salmon processing techniques, to the territories of the Klamath and Modoc peoples,” (Ibid, p. 23).

2.1.1 Klamath Tribal History

History explains current socioeconomic, sociocultural, and related conditions for any population, as is the case for the Klamath Tribes. Many critical events have shaped the Klamath Tribes into the Tribes they are today, particularly development and settlement in the Klamath Basin that began in the 1850s and eliminated most of their fisheries, as well as the large changes in directions that Federal Indian policies have taken, especially Termination of Federal recognition. Important historical events are broadly summarized in attachment 1.

The Klamath, Modoc, and Yahooskin Tribes thrived in their aboriginal territories until Euro-American contact. In 1826 Peter Skeen Ogden, a fur trapper from the Hudson's Bay Company, was the first explorer to encounter the Klamath Tribes, and afterwards came other explorers, then missionaries, and settlers, and ranchers. After decades of hostilities with non-Indians, the Klamath Tribes ceded more than 22 million acres of land in 1864 and entered the reservation era, but retained trust hunting, fishing, gathering, and water rights. This section highlights the most relevant aspects of Klamath Tribal history (for additional Tribal history information, see DOI, June 2011a).

This section highlights over-arching socioeconomic and cultural changes with salmon and sucker cultural practices and traditional food uses as central through the pre-treaty, treaty, reservation (pre- and post-hydroelectric dam), self governance, termination, restoration, and self determination periods.

2.1.1.1 Aboriginal Period (Pre-1864 Treaty Conditions)

Klamath Tribal members and others have described the existence of salmon in the Upper Klamath Basin, their importance as a food source, and their economic, social, and cultural roles:

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“Klamath Tribes [respondents] consistently underscored the historical importance of salmonid fish within the diet, economy, society, and culture of Klamath and Modoc peoples. Likewise, ethnographic and historical treatments of Klamath and Modoc have consistently identified fish, including salmon, as a staple food, since the beginnings of the written record dating from the 1820s (e.g., Elliot 1910, p. 210). Contemporary [Tribal respondents] agree that ‘they were one of the main food sources, those big salmon.’ When interviewed by Gatschet (1890), Klamath and Modoc...reported the extensive use of salmon (itchialash) and salmon discolored by age (vuig)...[and] ‘purple salmon’ (etchmu’na or dii-atcmu’na) to Gatschet (1890, p. 30), which were said to be three to four feet long, and ascended the Klamath River into the lakes region in November,” (Duer, 2003, p. 22).

2.1.1.1.1 Aboriginal Territory

There were six subdivisions of the Klamath Tribes along the Klamath Marsh, on the banks of Agency Lake, near the mouth of the Lower Williamson River, on Pelican Bay, beside the Link River, and in the uplands of the Sprague River Valley. The Modoc Tribe ancestral territories included all of the Upper Klamath Basin excluding portions north of Modoc Point on Upper Klamath Lake and west of Yamsey Mountain, and portions east of the Lost River drainage and south of the Medicine Lake Highland and Mount Shasta; however, the Modoc emphasize their connections to the Lost River Basin (which is excluded from the KBRA) and Lower Klamath Lake National Wildlife Refuge and Tule Lake National Wildlife Refuge (Modoc public scoping comments). The Yahooskin Bands occupied the area east of the Yamsay Mountain, south of Lakeview, and north of Fort Rock (Sturtevant, Stern, 1998, pp. 446-447) (Lane & Lane Associates, 1981, p. 174).

Modoc public scoping comments explained their view of their history as part of the Klamath Tribes:

“The three Tribes were forced onto a single reservation by the Federal Government in 1864 and within a few years the local Indian Agent appointed a Klamath man named Allen David to the ‘Chief’ of the three Tribes. The constant harassment of the Modoc Tribe at the hands of the Klamath Tribe, the failure of the U.S. government to provide food and supplies required under the 1864 Treaty (leading to the Modocs’ eating of their horses to stave off starvation), and the Indian Agent’s disrespect of Modoc sovereignty by putting a Klamath in a position superior to their own leaders – all contributed to the Modoc Indian War of 1872-73.”

Duer (2003) described the scope of traditional fishing areas as, among others, including the Klamath River corridor from Link River to Iron Gate Dam based on Tribal interviews:

“The area was described as historically having an almost continuous geographical distribution of tribal sites and activities...” and included salmon fishing sites. Particular areas mentioned were the Link River area, including the northern part of Lake Ewauna. The area continues to “serve as a locus of cultural activity and significance, despite a loss of integrity along certain portions of this reach...” and meets criteria for a TCP, (Duer, 2003, p. 6).

The upper end of the Klamath River riparian corridor from Lake Ewauna to Spencer Creek where the Klamath River intersected with Lower Klamath Lake and marshes associated with the Lost River overflow was important for many purposes, and included Tribal villages, salmon fishing sites, and particularly good deer hunting (Duer, 2003, pp. 7-8).

Additionally, Klamath Marsh, Sycan Marsh, and the shorelines of Tule, Upper Klamath, Lower Klamath and other Lakes were all reported to be connected along all rivers, lakeshores and major streams prior to construction of the dams, and were important traditionally for fishing, bird hunting, tule, cattail and wocas gathering, among other activities.

“While the Klamath, Williamson, Sprague, and Link Rivers were all given separate names by Euro-American settlers, Klamath, Modoc, and Yahooskin Paiute people apparently viewed these rivers as unified whole, and the primary geographical axis of group cultural identity. In recent decades, tribal members have adjusted patterns of traditional use in light of the privatization of land, declining water quality and quantity in the upper Klamath Basin, and a wide range of economic and logistical factors,” (Duer, 2003, pp. 11-13).

2.1.1.1.1 Fishery Species

Parties to the KBRA recognized that the Upper Klamath Basin historically had salmon, steelhead, and lamprey:

“The KBRA Fisheries Program would reintroduce anadromous species throughout their historic range above Iron Gate Dam, including tributaries to Upper Klamath Lake, excluding the Lost River Sub-basin (Sections 9.1.1 through 9.1.2). The focus of fish reintroduction would be the Upper Klamath Basin, excluding the Trinity River watershed,” (Section 9.2.3, p. 36).

The Duer study (2003) and Lane & Lane Associates report (1981) both document many early accounts in journals of salmon in the Klamath Tribes’ territory by early EuroAmerican visitors to the areas as well as first- and second- hand accounts from Klamath and Modoc elders and other Tribal members in the research:

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“Klamath Tribes members uniformly suggested that salmon were historically numerous throughout much of their traditional territory. Salmon were commonly said to arrive in runs so large that ‘it looked like you could walk across their backs,’ and they were packed so tightly in shallow river channels that they could be speared with ease.” The descriptions of salmon abundance existed for the Sprague, Williamson, Link, and Wood Rivers (Duer, 2003, p. 13).

Several explorers and others described Chinook salmon when they visited the Klamath Tribes, including: Fremont, 1887, p. 483; Gibbs in Suckley, 1860, p. 310; Cobb, 1930, pp. 437-438; Gatschet, 1890, p. xxv; and Barrett, 1910, p. 243. They described coho salmon as well: Gibbs in Suckley, 1860, p. 310; Snyder 1931, p. 16; Cobb, 1930, pp. 437-438; Gatschet, 1890, p. xxv; Barrett, 1910, p. 243 and Courtright to Simmons August 13, 1941 (Lane & Lane Associates, 1981, pp. 53-54). Lane & Lane Associates cited Gatschet who noted, in 1875, the abundance of salmon and their importance to the Klamath Tribes. Although 1875 follows the 1864 establishment of the Klamath Reservation, it is assumed that Gatschet’s accounts would apply to the 11 or more years before the Reservation was established:

“Gatschet, who visited the Klamath to investigate their language and culture in 1875 mentioned salmon as one of their important fish, (Gatschet, 1890, p. xxv),” and noted spring and fall runs (Gatschet cited in Spier, 1930, p. 148). “In 1907 Barrett, an anthropologist, studied the material culture of the Klamath and Modoc. He wrote: ‘Fish were abundant in the lakes, salmon and salmon trout being especially esteemed by the Indians.’ (Barrett, 1910, p. 243),” (Lane & Lane Associates, p. 53).

Salmon runs above the Klamath River were confirmed in the 1940 testimony from Klamath Tribal elders, many born as early as 1881, describing salmon fishing in the areas described by early explorers and other non-Indians. One of the elders believed that the “salmon fish obtained by these Indians during those years provided one-half of the food consumed by them, (David Skeen, born 1881, member of the Klamath Tribe),” (Lane & Lane Associates, 1981, p. 58). Testimony was also taken from non-Indians born around the same time that confirmed that they too had fished and caught salmon in the same areas until the runs stopped in 1910 (Lane & Lane Associates, 1981, pp. 62-63).

The presence of salmon and the runs were described in a Klamath Echoes newspaper article in 1901:

“Five minutes’ walk from Main street brings one to the shores of the Klamath rapids, where every little nook, bay and tributary creek is so crowded with mullets that their backs stick out of the water. Ordinary fishing with hooks and spears or even nets is too slow to think of. With a pitchfork or with naked hands a backload may be thrown out in

five minutes. These enormous droves of fish can now be seen not alone here, but in the rivers and creeks generally throughout the county. Mulletts, rainbow trout and salmon – splendid fish, giants for their size and apparently anxious to be caught. This phenomenon will last a month, and until their egg-laying camp meeting is over with. After that, the herd of fish will be distributed over a wider space and will be in plenty the year through, Klamath Republican, March 21, 1901 reprinted in Klamath Echoes 1965:1:2:21,” (Lane & Lane Associates, 1981, p. 47).

2.1.1.1.1.2 Traditional Fishing Areas

For the most part, village or settlements were near fishing stations. Klamath Marsh, Sycan Marsh, and the shorelines of Tule, Upper Klamath, Lower Klamath and other Lakes were all reported to be connected along all rivers, lakeshores and major streams prior to construction of the dams, and were important traditionally for fishing. Salmon and mullet appeared at about the same times and places, along with trout to consume the spawn of both species, and all species were caught (Duer, 2003, pp. 11-13, 16-17).

In the Duer report, traditional salmon fishing sites were identified:

“Klamath Tribal members reported numerous traditional salmon fishing sites throughout their historic territory...including the margins of Upper and Lower Klamath Lakes, and along the Klamath, Link, Sprague, Williamson, and Wood Rivers as well as many tributary streams. More specifically “...Link River, the Klamath River south bend downstream from Keno, the mouth and lower channel of Spencer Creek, and the area downstream Big Bend. Spier (1930, p. 9) also documented most of these sites as important seasonal fishing stations, with associated hunting and plant gathering activities.” Some Tribal members mentioned sites in the Klamath River corridor (discussed under Klamath corridor section) as far downstream as Seiad Valley.

The Duer study itemized the Klamath Tribes’ salmon fishing locations which are summarized in attachment 2.

2.1.1.1.2 Socioeconomic Aspects

Duer described how salmon was a social impetus and economic currency for trade in the Upper Klamath Basin. Gatherings of various tribes at salmon fishing stations served social and economic purposes as well as sustenance:

“Tranhumance associated with the salmon runs shaped much of Klamath and Modoc social life: ‘Early spring finds them leaving for favorable fishing stations where there are successive fish runs (Spier 1930, p. 10).’ They were often times intermarriage opportunities between village or tribal members. “Dried salmon was used in trade, particularly with

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interior populations...providing the Klamath and Modoc with access to trade goods from these interior locations. ..For example, Tule Lake villages, including those at the Lava Beds, served as a stopover point for Modocs, Paiutes, and other tribes traveling to and from the Klamath Canyon to catch or barter for salmon. During the 19th century, dried salmon became an important trade good with explorers and Applegate Trail emigrants, and it provided some tribal members with their first access to Euro-American goods and their first point of entry into the cash economy,” (Duer, 2003, pp. 17-22).

Tribal communities along the upper Klamath River canyon were significant centers of social, economic, and cultural intertribal gatherings and trade that included salmon:

“The Klamath Canyon, particularly the zone from the Spencer Creek confluence downstream, was described as a major historic center of settlement, salmon procurement, and trade for the Klamath and Modoc. Settlements were said to be found at almost every major stream confluence along this reach...During salmon fishing time, Klamaths, Shastas, and Modocs were said to occupy separate groups of structures within larger, multi-tribal communities along these reaches, providing a base of operations for fishing, social activities, and trade....The village sites in the vicinity of Topsy and Pokegama Road were often mentioned [by Tribal respondents] as being important multi-tribal centers...A wide range of trade goods were said to be obtainable in the Klamath Canyon villages that could not be found anywhere else. Salmon were also said to be an important trade good...Families and communities often participated in trade even when there were no particular economic incentives, to cement social bonds, mediate disputes, or to maintain economic alliances...” (Duer, 2003, pp. 8-10).

Fish, particularly salmon, was the element that reinforced Tribal social values and structure, as well as food distribution to the elderly, children, and those with disabilities:

“Salmon was also typically shared within the community, with tribal members catching surplus salmon to feed the elderly, children, and those with disabilities...This practice received frequent mention by tribal members...but also appears in classic ethnographic treatments of the Klamath Tribes (e.g. Gatschet 1890, p. 136, Barker, 1963, p. 135),”(p. 23). This redistribution cemented social bonds within and between communities, in addition to insuring the food security of the community as a whole,” (Duer, 2003, p. 23).

2.1.1.1.3 Sociocultural Aspects

Tribal members recalled salmon-related Creation stories, and most of the large (natural) salmon fishing dams were viewed as created by Gmok'am'c, the

Creator. Duer observed that Gatschet, (1890, p 16) stated "...events within Klamath oral tradition were sometimes said to center around tsials-ha'mi, 'salmon time' within the Klamath seasonal round," (Duer, 2003, p. 28).

Tribal members described first salmon ceremonies conducted at the beginning of each year's salmon run to ritually distribute and honor the salmon. The ceremonies would last two or three days and involved large salmon feasts celebrating salmon return and end of winter hunger (Duer, 2003, p. 29).

In addition to the Upper Klamath Basin, Klamath and Modoc first fish ceremony sites were described in the Klamath River Canyon:

"Multi-tribal first fish ceremony sites used historically by Klamath and Modoc people were mentioned as far downstream as Ishi Pishi Falls." The Keno area where a network of marshes and lakes in the upper Basin drained into the Klamath River was 'all sacred area' and contains petroglyphs associated with religious functions of the area." (Duer, 2003, pp. 9-10).

Tribal members said salmon were believed to possess a spirit that must be respected and honored in order to insure their return (Duer, 2003, p. 29). Given their spiritual belief, salmon fishing, like trout and mullet fishing, was guided by certain protocols:

"A number of potentially offensive behaviors were strictly enforced before and during the salmon harvest. The unused portions of fish carcasses were [returned] back in the water 'so that they will come back' in following years. 'You throw what's left back in the water...to feed all the animals...the fish. People have always done that,'" (Duer, 2003, p. 29).

Fish, especially salmon, played an important role that was manifested in the Tribes' spiritual practices. For example, Salmon power songs, with salmon heads and fins, were used to invoke the powers of the salmon, and:

"...the spirits of the dead were said to inhabit the bodies of a number of species of fish and become inseparable from the bodies of the fish, but only the dead or people placed under a special spell by shamans could see the spirits. Salmon was also...food for shaman novices and others when undergoing certain ritual preparations; one might eat only fish for several days, (Gatschet 1890, p. 180)." (Duer, 2003, pp. 29-30).

2.1.1.1.4 Aboriginal Diet

In addition to salmon, the Klamath Tribes fished for steelhead, mullet, trout, sturgeon, eels, and lamprey (Duer, 2003, p. 21).

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The Klamath Tribes had a reliable year-round food supply. The beginning of the cycle involved harvest of shortnose and Lost River suckers in March, critical for survival as rations ran low over winter. Trout runs followed the suckers, followed closely by salmon runs. Salmon, like suckers, occupied a critical position in the seasonal round, "...with salmon runs marking both the beginning and end of annual resource procurement," and that some Tribal members believe that "...it was only after salmon was unavailable...that these other fish gained such relative importance in the diet of the Klamath Tribes," (Duer, 2003, p. 25).

During late spring and early summer, in addition to fishing, they hunted deer and gathered roots. In July, they moved to summer grounds and gathered wocus (a native water lily) and fish were still harvested. During the summer they gathered berries, hunted in highlands, and in late fall moved back down to winter grounds and villages and where they harvested wild plums, elderberries, huckleberries, and tule reeds for basketry. October was the beginning of the fall salmon run and they had abundant supplies for present needs and for drying and storing over the winter (Mitchell, 2010; Sturtevant and Walker, 1998; Duer, 2003; Lane & Lane Associates, December 1981, pp. 80-84).

Lamprey occurred during salmon season, and Duer described the type used by the Tribes:

"Lamprey were said to be harvested in large numbers during salmon season, often being gilled or speared and cooked as a separate specialty item. Only the large lamprey that was available prior to the construction of Copco Dam was used this way. A smaller lamprey is said to have persisted in the upper basin following dam construction, but this smaller lamprey was never used as a food fish," (Duer, 2003, p. 21).

According to Duer, "Affidavits compiled in the early 1940s suggest that between one-half and one-sixth of the aboriginal diet consisted of salmonid fish. Rates of salmon consumption likely varied over time and between individual communities and households, but a review of both written accounts and contemporary oral histories suggests that salmonid fish were consumed in large quantities by most Klamaths and many Modocs as a dietary staple."(Duer, 2003, p.25). Additional detail concerning estimated amounts of salmon consumed can be found in the following treaty period section.

Given the early accounts describing the large size of salmon caught, it is understandable that they constituted a large share of the Tribes' diet:

"Some salmon were said to be so large during Chinook salmon runs that, during the 19th...centuries, horses were regularly brought in to assist in pulling ashore these fish, and for a brief time, the horse became an integral part of Klamath Tribes salmon fishing traditions." (Duer, 2003, p. 20).

2.1.1.2 Reservation Period (about 1864–1910)

2.1.1.2.1 Treaty of 1864

The Klamath Tribes surrendered approximately 22 million acres of ancestral lands in the Upper Klamath Basin for the reserved rights to hunt, fish, and gather on the Klamath Reservation as specified in the Tribe’s 1864 Treaty with the United States (attachment 3). The Klamath Reservation encompassed roughly 880,000 acres. The Klamath Treaty of 1864 expressly reserved an exclusive right for the Tribes to carry out subsistence activities within the reservation:

“It is further stipulated and agreed that no white person shall be permitted to locate or remain upon the reservation, except the Indian superintendent and agent...and the exclusive right of taking fish in the streams and lakes, included in said reservation, and of gathering edible roots, seeds, and berries within its limits, is hereby secured for the Indians aforesaid,” (Kappler, volume II).

2.1.1.2.2 Socioeconomic History

The Dawes Act of 1887 manifested another national policy to assimilate Indians into general society by dividing reservation lands into farm-sized parcels, which happened on the Klamath Reservation from about 1895 to 1910. The policy failed to convert Klamath Tribal members to farmers because of poor climate and other farming conditions. By 1910, the result was that the Tribes lost about 220,000 acres of Klamath Reservation land because parcels were given to non-Indians.

Due to widespread trade networks established by the Tribes long before settlers arrived, freighting was successful for them and by August 1889, there were 20 Tribal teams working year-round to supply the private and commercial needs of the rapidly growing country. A Klamath Tribal Agency sponsored sawmill was completed in 1870 for the purpose of constructing the Agency. By 1873, Tribal members sold lumber to Fort Klamath and many other private parties, and by 1896, sales outside the Klamath Reservation was estimated at a quarter of a million board feet. With the arrival of the railroad in 1911, Reservation timber became extremely valuable, and the Klamath County economy was sustained by it for decades.

2.1.1.2.3 Sociocultural History

In terms of salmon and other fishing, Doug Duer (2003) summarized the transition from traditional salmon fishing in aboriginal areas to one of a Klamath Reservation lifestyle:

“Despite the ubiquitous distribution of salmon fishing sites within the upper Klamath Basin, Klamath Tribes...typically convey greater

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knowledge and stronger sentiments regarding sites within or close to the former Reservation boundary...immediately after the signing of the Klamath Tribes Treaty in 1864, the Klamath Tribes found themselves forcibly displaced from a number of traditional fishing sites and increasingly restricted to the Reservation by Indian Agency staff and U.S. troops stationed at Fort Klamath,” (Duer, 2003, p. 26).

Lane & Lane Associates described Stern as observing Klamath Tribal life during this time period in terms of the Tribes managing to maintain some portion of the aboriginal lifestyle:

“At the end of the 19th century, although life was radically altered, many traditional patterns of life survived. In 1884, one-half to two-thirds of the reservation families were away from home for months at a time. Some of them were fishing, hunting, and gathering vegetable foods.” (Stern, 1965) (Lane & Lane Associates, 1981, p. 42).

2.1.1.2.4 Traditional Diet

Testimony in the Lane & Lane Associates report included Delford Lang’s (Klamath Tribal member) statement, among others, that there were no salmon runs after about 1910 (which coincides with the beginning of Copco I dams construction). He also estimated that about half of his family’s diet as well as that of all Tribal members from 1898 to the time the fish stopped running was comprised of salmon.

Salmon was understandably important, as Tribal member Robert David showed by explaining that there was essentially no farming, little hunting, and no rations provided:

“During the early days on the reservation up to 1910 the salmon secured from the reservation rivers furnished a large part of the food supply of the Indians. There was very little farming during those years and very little hunting was done by the Klamath Indians. No rations were received from the Agency. There were no per capita payments received. We Indians depended to a great extent on the salmon for our food supply. I would state that about 1/3 to a half of our food supply was provided for by the salmon.” (Lane & Lane Associates, pp. 58-59)

Another Tribal member, Clayton Kirk, estimated that salmon constituted about 40,000 pounds of fresh salmon and about 80,000 pounds dried, annually; about one sixth of their diet:

“In trying to arrive at the quantity of fish caught annually on an average from 1890 to 1909 you might compute it this way: There are 1,000 Indians, we will say, on the average, including the total population of those Indians that ate fish, with on the average of two fish a day,

weighing about 20 pounds. If they ate two fish during the time of the two salmon runs, they would consume 40,000 pounds annually. That is the nearest we can come to computing this...In addition each Indian dried at least 4 salmon each year weighing on the average of 20 pounds for winter consumption which would last until the next salmon run. I would say all of the Indians each year would dry 80,000 pounds annually...I estimate that 1/6 of the sustenance of all of the Indians residing on the Klamath River between the years 1890 and 1909 was provided by the salmon fish caught in the reservation streams...” (Lane & Lane Associates, 1981, pp. 59-60).

Similarly, other Tribal members testified concerning amounts of salmon consumed and estimated it to be between 100 and 200 pounds per person annually:

“On average each and every year from 1891 to 1910, with my family, I would take out of the reservation waters 50 or 60 salmon between 40 and 50 pounds in weight. This amount would provide for our family which usually numbered between 12 and 14 persons until the next fishing season the following fall...The average adult Indian would consume three and four salmon, weighing approximately 40 pounds each year...Each Indian would, on the average, consume 200 pounds of salmon annually. Assuming there were 1500 Indians on the reservation, which is a conservative estimate, the annual average consumption of salmon would approximate 300,000 pounds.” Lane & Lane Associates noted that Bertha Lotches believed the annual consumption of salmon was about 150,000 pounds of salmon, making no deductions for consumption by children: “Each adult Indian in the Beatty locality would, on the average, consume about 100 pounds of salmon annually. A child living there would consume on the average about 25 lbs. of salmon annually,” (Lane & Lane Associates, pp. 95-96).

2.1.1.3 Copco Dams (About 1911 – 1934)

By about 1910, the Tribes had relinquished all aboriginal territory and the land they received in exchange, the Klamath Reservation, had decreased in acreage because of the Dawes Act of 1887 that created many individually (often non-Indian) owned parcels – as had happened for many reservations opened to non-Indian settlement pursuant to allotment acts and other congressional enactments. The Klamath Reservation was allotted between 1895 and 1910, and by about 1934, ‘left over’ land from Indian allotments was given to non-Indians and the Klamath Tribes lost an estimated 220,000 acres of Reservation land in the process. These events contributed greatly to the private property access-to-fishing (and gathering and hunting) site problems that have become increasingly problematic over more recent decades.

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Salmon passage was obstructed by the construction of the Klamath hydroelectric Project that began with the Copco 1 dam around 1910, virtually eliminating salmon from the Upper Klamath Basin. During the same time, additional development in the form of irrigation construction for the Klamath irrigation project altered Klamath Lake and the surrounding water network that negatively impacted suckers and other fish populations (Land & Lane Associates, December 1981).

Nevertheless, fishing for salmon continued at many traditional sites (listed in attachment 2) until Copco Dam 1 halted salmon runs. Some sites were used for mullet and trout fishing as well, "...but with much reduced numbers of fish and fishermen," (Duer, 2003, p. 15). Adverse impacts from Copco 1 were described by Tribal members during interviews:

"The construction of the Copco Dam...effectively eliminated all salmon passage into the upper Klamath Basin. Despite moderate declines in salmon numbers prior to that time, attributed by tribal members to commercial fisheries downriver, salmon remained a staple food until the time of dam construction,"(Duer, 2003, p. 30).

Tribal members compensated for the decline of salmon in the Upper Klamath Basin by going elsewhere between the 1910s and 1930s:

"Tribal members spoke of the intensification of salmon harvests in the upper Rogue River as part of the annual ascent to Huckleberry Mountain to offset some of these losses in the 1910s and 1920s. While salmon were historically fished in these areas as part of the huckleberry harvest prior to the elimination of salmon from the upper Klamath Basin, trips to the Rogue basin solely for salmon fishing became commonplace following this development. People returned with entire wagon or car-loads full of dried salmon caught in the Rogue River during this period. By the 1930s [during the Great Depression], however, upper Rogue fishing was also in rapid decline due to the enforcement of recreational fishing regulations and general declines in salmon numbers on that river. A number of [Tribal members] reported conflicts with Oregon Department of Fish and Wildlife wardens, U.S. Forest Service rangers, or state and county police when their families attempted to catch their usual quantities of salmon for subsistence purposes." (Duer, 2003, p. 31).

2.1.1.3.1 Socioeconomic and Sociocultural Impacts

Impacts resulting from Copco 1 construction were described by Tribal members as devastating, killing their way of life, and causing major disruption in cultural practices:

"'Fishing and gathering wocas was the most important thing' to the generations of Klamath Tribes members who grew up with salmon in

their lakes and rivers. Accordingly, tribal [members] discussed the social and economic changes associated with this loss, suggesting that the impediment of salmon passage essentially ‘killed a way of life.’ ‘It devastated us,’ destabilizing communities and necessitating the rapid adoption of non-Indian dietary, economic, and residential patterns. The loss of salmon was said to result in a corresponding loss of cultural knowledge and practice within the Klamath Tribes: ‘Ways of perceiving death and respect...the religious dimension...people lose respect and they lose [these things]...the fish was central to our culture and when they took it away it was cultural genocide.’ Some tribal members identified the loss of salmon as one of the most corrosive influences on their traditional culture, on par with the Modoc War and federal termination,” (Duer, 2003, p. 30).

2.1.1.3.2 Traditional Diet and Health Impacts

The impact on the Tribes’ traditional diet from the loss of salmon was described as dramatic, and it caused them to rely more heavily on other traditional foods, which reduced their quantities, and ultimately greater reliance on processed and similar commodity foods:

“The loss of salmon was said to have initiated some of the most dramatic dietary shifts in the Klamath Tribes, being the first dietary staple to be lost to the tribes. For a time, this fostered the increased use of deer and mullet, and some tribal members felt that this resulted in localized overexploitation of these resources when taken in combination with poor fish and game management by the State of Oregon. For some, the loss of the salmon was the instigating event for a dietary transition that led to the ultimate dependence of the Klamath Tribes on the purchase of processed foods and the use of supplementary commodity foods. ‘[Salmon] was our store for the winter...we lost it,’ (Duer, 2003, pp. 34-35).

The early 1900s had a number of pandemics, and Tribal members commented on the effects to Tribal members with the loss of salmon:

“Tribal members attributed a number of historical health problems to the loss of salmon. A 1920s tuberculosis epidemic was said to have been worsened by the rapid impoverishment of the diet in preceding years. ‘Salmon is good food...healthy...’” (Duer, 2003, pp. 34-35).

2.1.1.4 Self Governance Period (1934 – 1953)

The failure of the allotment process was acknowledged and the Indian Reorganization Act of 1934 was passed (aka Wheeler-Howard Act) which ended allotments and authorized tribes to set up their own governments. The Act fostered self governance for several decades.

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By the 1950s, the Tribes exercised self governance and prospered with timber sales and ranching while struggling to hold on to their traditional social and cultural structure and identity in the face of the loss of salmon and under the pressures of assimilation (boarding schools, banned ceremonies, relocation programs, and other policies) and reduced access to traditional foods.

Evidence of the Klamath Tribes' continued reliance on traditional foods for subsistence and as a livelihood includes a Finding of Fact from the U.S. District Court in 1956 (Land & Lane Associates, December 1981, p. 89):

“Hunting and trapping on the reservation is still practiced by the tribe and its members and affords a substantial part of the subsistence and livelihood of the Klamath people. Many would be inadequately fed were they deprived of the right to hunt on their reservation as their needs for food require, (Klamath et al. v. Maison, 139 F. Supp. 634).”

Also by the 1950s, additional development affected fish quantity and sites within and outside the Upper Klamath Basin, and travel to locations outside the Basin required more time and expense than when they were able to fish in their homelands:

“The loss of salmon from their traditional territories gave the Klamaths an incentive to expand these modest fisheries until the upper Deschutes, itself, became devoid of large fish runs due to the construction of dams on the Deschutes and Columbia Rivers and other human impacts within these basins. The harvests from these distant fisheries were much less than levels historically available in the Upper Klamath Basin.” Travel to the Rogue and Deschutes River involved an approximately 150 mile round trip from Chiloquin or about 230 miles from Beatty, and the time and expense involved became prohibitive,” (Duer, 2003, p 31- 32).

2.1.1.5 Termination and Relocation Period (1954 – 1985)

In 1954 the Klamath Tribes' Klamath Reservation and Federal recognition as a Tribe was abruptly taken away (without input from the Tribes) during a time when many Tribes' recognition was being terminated as a national Indian policy. Losing their land (for the second time within a generation or so), and much of the traditional foods central to their existence was so socially, culturally, and economically devastating that crime, alcoholism, and related symptoms of social dysfunction rose dramatically as land was abruptly replaced with money.

The Termination Act forced Tribal members to withdraw from the Tribe to receive a share of tribal assets or remain with the tribe and have their claim to the unsold portion placed under private trust. In 1958, it is estimated that nearly

80 percent of the members voted to withdraw from the Tribe and the Federal Government transferred a lot of the land to the Forest Service and sold part of the 880,000 acres to pay out shares.

“The windfall tore the community apart. More young Klamaths than ever before dropped out of school and left home. Bitter resentment arose between those born before 1954 who were suddenly rich and their younger brothers and sisters who received nothing. Some Tribal members squandered vast sums; others could not make a living. The Klamath had little experience with money. Instead of cash, the BIA had previously issued them coupons that could be exchanged for goods at the agency store. When the \$43,000 payday finally came in 1961, few knew how to invest money or save it to safeguard their families’ future. Within months, millions of dollars passed through their hands,” (Most, 2006, p. 222).

By 1961, termination was so devastating and disruptive that social dysfunction had taken hold to the point that Chiloquin was dubbed ‘murder capital,’ USA (Ball, 2001). By 1971, remaining Tribal members requested that the trustee be removed which resulted in fee title being returned to the Federal Government which in turn transferred the lands to the Forest Service (Tiller, 2005).

Although Klamath Tribal water, fishing, hunting, and gathering rights were spared in the Klamath Termination Act, their validity was challenged (and upheld) several times in court. It was not until 1971 that the termination process was completed for the Klamath Tribes, and not until 1974 that a Federal Court decided that the Klamath Tribes had retained 1864 treaty water, fishing, hunting, and gathering rights (although there was another challenge and reaffirmation in 1977 (*Kimball v. Callahan*)).⁴ Challenges to the Klamath Tribes’ water, fishing, hunting, and gathering rights were particularly disruptive since the Klamath Termination Act had specified that the Act did not affect their rights.

Furthermore, the U.S. Forest Service and Oregon State policies and practices reduced wildlife and fisheries to catastrophic levels which had a drastic effect on subsistence rights. In total, Termination threw into question their existence as a people and any Tribal rights they had for a period of about 25 years (Klamath Tribes General Council, 2000). As an example of the impact termination has had, it was described by a Klamath Tribal scholar as the Holocaust of the Klamath (Ball, 2001). The Klamath people described Termination as a sudden loss of identity for individuals and collectively as a Tribe; many people moved away to cities with the BIA relocation programs, there was a breakdown of extended

⁴ The State of Oregon refused to recognize their rights and tribal members were harassed and often arrested. In 1972, five tribal members filed suit against the state and won.

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families, decreased practice of spiritual customs, high rates of alcoholism, high crime rates, and other symptoms of extreme social trauma (Klamath Tribes General Council, 2000; Canby, 1988, pp. 223-226).

Ironically, it was from the depths of chaos and despair caused by Termination that a resurgence grew in traditional Tribal lifestyle and culture, primarily through the efforts of Edison Chiloquin, grandson of the Last Plaikni chief, and son of Kilda Chiloquin who had protested the influx of white settlers on their family allotment taken over by the railroad. Edison refused to take the payout money because he explained that the land was sacred and money could not replace it, and instead demanded Chief Chilquin's village site as an alternative around 1976. He received a special use permit in the Winema National Forest where he built a traditional village on his grandfather's land. Many supporters came and lived a traditional lifestyle at the village, primarily subsisting by fishing and hunting, and participants noted that it was particularly difficult in the winter. The small parcel was granted to Edison Chiloquin (Chiloquin Act of 1980). Their 'life on the land' lasted nearly seven years and, in addition to being a cultural revival, it was the beginning of the process of restoration of Federal recognition for the Klamath Tribes, (Most, 2006, pp. 223-226).

**2.1.1.6 Restoration and Tribal Self-Determination Period
(1986 – the Present)**

The U.S. Indian policy changed and most terminated Tribes had Federal recognition restored. Federal Indian policy shifted towards self determination beginning in 1975 with the Indian Self Determination Act, 25 U.S.C.A. 450). The Indian Reorganization Act and Klamath Indian Tribes Restoration Act (P.L. 99-398) were the primary forces that enabled the Klamath Tribes to take self-determination action. Although the Klamath Tribes regained Federal recognition as a Tribe in 1986, they did not regain the vast majority their reservation land. As former chairman Jeff Mitchell described the situation:

“We're still left without a homeland. Even though our government-to-government relationship has been restored, our economy hasn't. We've gone from being one of the most self-sufficient Tribes in the nation to being one of the most dependent...The land and the resources are the Tribe, and the Tribe is the land and the resources,” (Most, 2006, p. 226).

The Tribes were required by the Klamath Indian Tribes Restoration Act (P.L. 99-398) to develop an Economic Self-sufficiency Plan, which they completed in October 2000 and have followed, leading to two economic enterprises; Kla-Mo-Ya Casino in 1997 (employing about 150 people, at least

half of whom are Tribal members), and a travel center near Crater Lake National Park in 2010. Restoration has been so important to the Klamath Tribes that they celebrate the anniversary of restoration of Federal recognition each year.

The cultural revitalization that began around 1976 has continued over the past 35 years and persists today. For example, a 1993 photo shows an elder, Neva Eggsman, blessing c'waam at the Klamath First Sucker Ceremony with Don Gentry and Marvin Garcia holding the c'waam (Walker, 1998, p. 448). Books have been translated into the Penutian language and there has been a renewed emphasis on traditional crafts, ceremonies, and religion. Cultural and language courses are offered by the Tribes, and youth camps teach the Klamath traditional lifestyle, (Tiller, 2005 p. 899).

2.1.2 Present Conditions

Politically, self determination has been a step forward for the Klamath Tribes, yet from an economic, social, and cultural standpoint, the Tribes are still in a recovery process from the trauma caused by losing all ancestral territories, then salmon, then reaching economic heights in the 1950s on their 1864 Klamath Reservation, to abrupt termination of Federal recognition and the associated loss of essentially all of their Klamath Reservation land since 1954. Particularly from the 1950s to the present, fish and game became increasingly scarce, and at about this point in time, the 1864 Treaty was 90 years prior, the length of a couple of generations, and 1954 was 56 years ago – scarcely one generation; therefore, historical events have profound influence today. It should be noted that Klamath Basin conditions contributing to low fish populations and Tribal social, cultural, and economic conditions and goals were acknowledged and summarized in the KBRA (attachment 4).

The Tribes have lost historical fish species and most access to fishing areas. Subsistence fishing is a vital part of their standard of living and has health consequences. Water quality issues have impacted cultural practices. Concerning high poverty and unemployment rates, the subsistence fishing—income connection was analyzed by Stercho and found to have a high value:

“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).

2.1.2.1 Subsistence Fisheries

The Klamath Tribes do not operate any recreation or tourist fisheries because they lack adequate land and fisheries, and there is extreme competition for existing

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resident, primarily trout, fisheries. The Tribes have a right to fish, hunt, gather, and sufficient water for purposes of the Reservation, all reserved by their 1864 Treaty.

The Klamath Tribes used to rely on the following species and would like all of them to be available again for subsistence fishing: Salmon; steelhead trout, the shortnose, Lost River (c’waam and koptu in Klamath language), Klamath largescale and Klamath smallscale suckers; chub; speckled dace; sculpin; bull trout; Pacific lamprey eel. Salmon, steelhead and c’waam were most important for sustaining the Klamath people from season to season, but salmon stopped running to the area about 90 years ago when the hydroelectric dams were constructed, and Lost River and shortnose suckers were placed on the endangered species list in the 1988. As discussed in the history section, there used to be first salmon ceremonies and salmon comprised a large part of the Klamath Tribal diet.

Suckers (c’waam and koptu) continue to be central to Klamath people because they traditionally provided subsistence, (largely replaced with highly processed commodity foods today), employment in canneries, and constitute the much of the core of their cultural and social structure. Klamath Tribal regulations on resident redband and rainbow trout allow subsistence for Tribal members up to five fish per day in the Williamson River system and up to ten fish per day in other systems (Buchanan, et al., April 11, 2011).

The Klamath Tribes aptly summarized the social, economic, trust resource, cultural, and health impacts of unavailable traditional fisheries today:

“Each year that Klamath fisheries remain unavailable, it represents and incremental degradation of Tribal culture and is a violation of the Federal trust responsibility. As years pass, familial and social interactions that revolved around the c’waam, koptu, and c’iyaal’s [salmon] fisheries unravel since the fisheries were like the glue holding a complex social structure together through: community celebrations and ceremonies; elders teaching youngsters how to fish and be socially responsible by giving away their first catch; catching fish for elders and others who could not fish for themselves, experiencing the depth and absolute rightness and connectedness of doing what countless generations of ancestors had done before them in that place; providing healthy food; and experiencing many other connections with the environment,”
(Klamath Tribes, memo dated July 20, 2010).

2.1.2.1.1 Substitution

Similarly, Tribal members explained that in an attempt to cope with the abrupt loss of salmon from their homeland, certain species of trout and mullet became central to their diet and were fished in unprecedented quantities, and game hunting intensified, resulting in low deer populations that affects the ability of

the Tribes to provide food to their families and increases hunting expenses, (Duer, 2003, p 31). Currently, tribal redband/rainbow trout regulations allow subsistence take for Tribal members of up to five fish per day in the Williamson River system and up to 10 fish per day in other systems.

The Tribes believe that their hunting rights have been impacted as less fish has meant reduced game populations to the point that they cannot completely serve the subsistence need intended in their 1864 Treaty, compounded by not having enough subsistence fish. In their view, poor game management on public lands and former reservation lands, according to the Tribes, has also contributed to fewer deer. The regional barter system among the regions Tribes was a thriving economy prior to European contact that has been affected for the Klamath Tribes since they have not had salmon to trade and have had to hunt more game animals in its place. In addition, hunting is an expensive investment that requires transportation, gasoline, expensive supplies, and a lot of time to travel and for the hunting activity without any guarantee of success, (Gentry, 2010).

2.1.2.1.2 Social and Cultural

“Now Tribal children go to the river and hear stories of what has been lost, and they, along with their parents, feel the anguish of their inability to do that which has always been done, and experience the anger of the injustice....results in a sense of brokenness, and manifests in a myriad of social problems... Among these problems are health issues associated with the loss of native foods,” (Klamath Tribes, July 20, 2010 memo).

The 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 that some describe as cultural genocide (Ball 2001; Klamath respondents in Duer, 2003). The Tribes believe that the solution is restoration of the fisheries, and with it, strengthening their traditions and social fabric, which would improve social conditions.

The significance of the absence of fish species traditionally used by the Tribes in the Upper Klamath Basin results in degrees of a loss of culture and identity, as Norgaard observed when studying the Karuk Tribe:

“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).

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

“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 [or c’waam] 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).

Intense grief from the loss of their land and resources and 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).

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 many setbacks, the Tribes have put a lot of effort into trying to retain cultural traditions, as with the cultural revival that began in the mid-1970s. The Klamath people have had to expand to aboriginal areas in the upper most portion of the Klamath River to fish and to connect with other cultural areas. Duer (2003) found that the Klamath Tribes’ aboriginal fishery sites covered a large area that is still used today within the Klamath River corridor from Link River to Iron Gate Dam, including the northern part of Lake Ewauna:

“Today ‘the Klamath Canyon’ as a whole retains its importance as a place of distinctive cultural and historical significance among the Klamath Tribes....The Klamath Canyon is the site of considerable ceremonial activity today; this activity is carried out diffusely, in a number of locations both in the canyon and upon its rim. A number of

[Tribal interviewees] report visiting historical village sites along the canyon, particularly from Keno to the Pokegama area near the California border, for historical commemoration, engagement with one's ancestors, and ritual activity. It is considered important to be able to see tangible markers of ancestors' activities ...Modest resource harvesting activities also continue along the canyon, including hunting, trout fishing, and occasional riparian plant gathering..." (Duer, 2003, pp. 6, 10-12,).

Klamath Tribal oral history tells about when the world and the animals were created and the Klamath people believe they were placed in their ancestral lands by the Creator to safe guard their homelands. The Tribes believe that everything they needed in the ancestral lands was provided for them by the Creator. For thousands of years, the Tribes survived on prudent reserves in winter and towards the end of March when food supplies were low, large fish runs surged up the Williamson, Sprague, and Lost River.

A place on the Sprague River is where the Creator first began the fish runs and is where the Klamath Tribes continue to celebrate the Return of the C'waam Ceremony, held in mid-March, which celebrates the return of the shortnose and Lost River suckers. The c'waam are endangered and low in numbers which has meant that since 1988, only one fish could be taken each year in the annual C'waam Ceremony, resulting in a limited ability for the Tribes to practice their cultural beliefs since part of the tradition is for the group to share a meal of the first seasonal catch.

Traditional salmon ceremonies reportedly included distribution of fish to elders and other dependents, a practice that remains today with salmon-substitutes. Tribal members recalled salmon-related Creation stories, and most of the large (natural) salmon fishing dams were viewed as created by Gmok'am'c, the Creator. Duer observed that Gatschet, (1890, p 16) stated "...events within Klamath oral tradition were sometimes said to center around tsials-ha'mi, 'salmon time' within the Klamath seasonal round," (Duer, 2003, p. 28). Tribal members described first salmon ceremonies conducted at the beginning of each year's salmon run to ritually distribute and honor the salmon. The ceremonies would last two or three days and involved large salmon feasts celebrating salmon return and end of winter hunger (Duer, 2003, p. 29).

Some Tribal members believe that the region-wide demise of salmon... reflects non-Indians' interference in the lives of salmonid fish:

"The causes of the contemporary 'salmon crisis,' in their view, are as much cosmological as biological...ritual activity continues in limited form today, with Klamath Tribes members attempting to ritually insure the return or resuscitation of salmon, mullet, and other important but

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imperiled species. Ritual efforts to influence water levels and water quality for the benefit of fish are also conducted by contemporary Tribal members,” (Duer, 2003, p. 29).

2.1.2.1.3 Trade/Barter

Salmon has remained an important socioeconomic factor to Tribal members in the ancient, regional barter system:

“Numerous [Tribal members] described trips that they or their families had taken in recent decades to Yurok country, Smith River, or The Dalles to acquire truckloads of salmon in exchange for cash or bartered goods. Particularly at Celilo Falls, the Klamath Tribes continued to participate in both subsistence and social activities until the elimination of this Columbia River fishery. Some [Tribal members] recall attending, or heard of their parents or grandparents attending, large social gatherings at Celilo during the fishing season...and group social and ceremonial activity. Trips taken to the Pendleton Roundup and other major rodeos sometimes provided the opportunity for a detour to Celilo Falls for salmon. The Indian Shaker Church was also mentioned as providing enduring, region-wide social connections that facilitated continued if limited access to salmon into the late 20th century, especially on the lower Klamath River....Occasionally, friends or family from downriver tribes, living in such places as Yreka and Klamath, transported a load of salmon to the Klamath Basin for barter. Warm Springs was also occasionally visited for this purpose, and Warm Springs families with Klamath ties were said to sometimes provide a few salmon to their kin who had no fish. Exchange rates varied, but [Tribal members] indicated that in recent decades on the lower Klamath River ten mullet could be exchanged for a single salmon. A number of other goods were sometimes used in barter: six salmon could be obtained for a large deer, and unspecified quantities of huckleberries, epos, wocas, and pine nuts were sometimes used to acquire salmon on the lower Klamath River. While such barter arrangements allowed continued access to salmon, with its dietary and cultural importance, these arrangements required dramatically more labor per unit of salmon than had been the case prior to the elimination of upper Klamath Basin salmon fishing,” (Duer, 2003, p. 33).

In addition, a film, *Upstream Battle*, documented an example of salmon bartering between the Klamath Tribes and downstream Tribes. In meetings with the Klamath Tribal government, members described their ongoing family bartering practices with area Tribes – providing meat for salmon (meetings with the Tribes in 2010 and 2011).

2.1.2.1.4 Trust Rights and Resources

When dams were constructed on the Klamath River, the health of the river was compromised and all anadromous fish species were affected. Salmon have not reached the Klamath Tribe's 1864 treaty-right-protected hunting and fishing area since around 1910 when Copco 1 dam construction began, which has meant that the Tribe has not been able to fully exercise their fishing rights (and they believe hunting rights as well) as they were when the 1864 Treaty was signed, despite their continued importance. Tribal members continue to express their hope to be able to catch salmon in their homeland (Duer, 2003) (Tribal meetings, 2010, 2011). Access to fishing sites is critical to family (food) security and carrying on the Tribes' social values and structure. (DOI, June 2011a; Ibid. June 2011b).

2.1.2.2 Economic Conditions

Although the Tribes are opening businesses and working towards greater autonomy, devastating historical events have kept the Tribes in extreme poverty, essentially landless, and with little to no access to traditional fisheries. With current enrolled membership at about 3,664, the Klamath Tribes estimate that they contribute about \$25 million per year to Klamath County's economy in the form of payroll, direct expenses, and goods and services. The Tribes employ more than 250 Klamath County residents. The Klamath Tribes opened Kla-Mo-Ya Casino 13 years ago, employing about 150 people (about half of them were Tribal members), and it has been the second largest tourist attraction in Klamath County with approximately 300,000 visitors each year which was second only to Crater Lake National Park (Klamath Tribes, October 31, 2000; Tiller, 2005, pp. 898-900).

The Upper Klamath Basin has had a boom and bust cycle with timber as one of its primary industries which generally dominates the area economy. Once the Klamath Tribes lost their aboriginal territory, they had to rely on timber sales and cattle. In 1954, Federal recognition ended, and Tribal members no longer had employment in on-Reservation timber, ranching, and other land-based occupations and no longer received medical services, education programs, and other assistance. Although the Tribes retained hunting, fishing, and gathering rights, their access was limited by land condemnation so there has been little opportunity to continue augmenting their incomes with fish, game animals, plants, roots, and the associated barter system important in the region. In addition, tax exempt status for homes and ranches ended (Klamath Tribes, October 31, 2000; Tiller, 2005, pp. 898-900).

Overall, Klamath County is about 80 percent forest land with roughly 60 percent of it as National Forest. The area has gone through boom and bust cycles related to logging for decades. The Upper Klamath Basin was hit hard by a 1980s recession and was still recovering in the 1990s. The Self Sufficiency Plan

indicated that the Klamath County family poverty levels increased 33 percent during that timeframe. Reservation lands previously held by the Tribes comprised about 54.4 percent of the Winema National Forest and 9.6 percent of the Fremont National Forest. A study by Paul F. Ehinger and Associates found the forest lands to be highly profitable, especially in the 1980s, which benefited the Federal Government, State of Oregon, and Klamath County – the average gross timber sale was \$25,880,246 in former Klamath Reservation lands. For social, economic, cultural, and spiritual reasons, the Klamath Tribes list restoration of their land base as their highest priority (Klamath Tribes, October 31, 2000; Tiller, 2005, pp. 898-900).

2.1.2.2.1 Unemployment, Income, and Poverty Rates

The Klamath Tribal Government employs about 300 people and the casino employs about 150. The Tribe continues working on their economic self-sufficiency plan, the final phase of the congressionally mandated process in the Klamath Restoration act that required the Tribes to show they will achieve self-sufficiency.

A 1990 BIA labor force report showed Indian unemployment rates in Klamath County of nearly 60 percent. A survey was conducted by the Tribes in the late 1980s concerning reasons for high unemployment rates in which respondents believed that a lack of skills, lack of work experience, and discrimination were primary reasons for unemployment (Klamath Tribes General Council, 2000). A 1988 “Klamath Tribes Comprehensive Needs Assessment” showed that the Klamath Tribes had an unemployment rate of 46.4 percent while the rate for the State of Oregon was 8.1 percent. The survey found that almost 60 percent of all Tribal members lived below the poverty level in 1988, and more than 40 percent reported difficulty in meeting such basic needs as food, shelter, and clothing. About 13 percent reported being homeless in 1987, and the median household income was very low at \$8,750 compared to the Klamath County general population’s \$27,000⁵ (Klamath Tribes General Council, 2000).

More recently, the 2005 BIA Labor Forces Report data showed that 21 percent (including only Indians eligible for BIA services) were unemployed in the service area (Klamath County) (BIA definitions in attachment 5). The 2000 Census data for Chiloquin showed the highest Indian unemployment rate in the area at about 22.4 percent (civilian labor force age 16 and over), which was two to three times higher than the general population in the area, County, and State. Chiloquin had the lowest median and per capita incomes in areas analyzed, and one of the highest poverty rates, especially for families with no husband present with

⁵ Based on 1990 Census, Klamath Tribes Comprehensive Needs Assessment of 1988 and Klamath Tribal enrollment.

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children 18 and younger (table 2-1.1).⁶ For all areas analyzed except the State, about 40 to 45 percent of the Indian population was in poverty; two to three times that of the general population in the same areas.⁷ An explanation of what is included in the poverty thresholds and the dollar amounts according to family size for the 2000 Census, and 2005 to 2009 American Community Survey Census data estimates are included in attachment 5.

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

Geographic areas	Census unemployment (%)	BIA unemployment (%)	Median household income	Per capita income	Poverty status (%)	Poverty – families, female householder, no husband, children under 18 (%)	Poverty – families, female householder, no husband, children under 5 (%)
Chiloquin	17.7	—	\$20,688	\$9,604	31.2	73.6	70.6
Indian	22.4	—	\$15,750	\$8,646	40.4	72.7	64.3
Chiloquin CCD	8.1	—	\$26,853	\$13,029	20.9	43.3	37.3
Indian	18.6	—	\$15,625	\$9,342	38.8	64.6	54.2
Klamath Falls CCD	5.9	—	\$31,626	\$17,165	16.6	41.1	58.2
Indian	15.4	—	\$19,664	\$9,782	44.4	40.4	54.1
Klamath County	6.0	—	\$31,537	\$16,719	16.8	42.4	55.1
Indian	15.4	21	\$20,469	\$10,457	40	49.4	50.0
Oregon	4.2	—	\$40,916	\$20,940	11.6	33.3	47.4
Indian	8.3	—	\$30,735	\$13,443	22.2	44.1	55.4

Sources: Census Bureau DP-3 Profile of Selected Economic Characteristics and 2005 BIA Labor Force Report.

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 6.

The pattern appears to be relatively unchanged based on limited current data from the Census American Community Survey estimates for 2005 to 2009 (attachment 5). It appears that unemployment rates may have decreased slightly in Chiloquin CDP since 2000; however, it is likely due to Klamath people out-migrating to find employment.

⁷ The “employed, but below poverty guidelines” percentages were not reported for the Klamath Tribes in the 2005 Labor Force Report.

The Chiloquin and surrounding area Indian population had unemployment rates about three times higher than for the Klamath County total population and roughly five times higher than for the State of Oregon. The Klamath Falls area, the County overall, and the State all had Indian unemployment rates at least twice as high and as much as three times as much as their areas' total population rates. Disparities between the Indian population and total population in each area were not as severe in incomes as for unemployment rates, but Indian median incomes were about \$5,000 to \$10,000 lower. In the Chiloquin and Klamath Falls areas, and in Klamath County, 40 percent to half of the Indian population was below the poverty line, compared to 22 percent for Indians throughout Oregon and 11.6 percent for all people in the State. The high rate of poverty in single households coincides with the finding that Tribal adolescents are more likely to live in a single parent household compared with other groups in Klamath County (Klamath Tribes General Council, 2000). General unemployment and poverty patterns appear to be about the same based on the Census Bureau's 2005 to 2009 five year average data estimates (attachment 5b). The 2010 data was not used since evaluations of the data are not necessarily directly comparable between censuses for the sample economic data since some methodologies changed during the decade.

2.1.1.2.2 Employment by Occupation

As would be expected, most percentages are similar across the two CCDs and the County, with a few exceptions (as shown in table 2-1.2). The town of Chiloquin had the lowest percentage of construction, extraction, and maintenance occupations while Chiloquin CCD had more than all other areas (about twice as much as Chiloquin). In contrast, the town of Chiloquin had about twice as many production, transportation, and material moving occupations than other areas and the State. The Klamath Tribal government, particularly the Klamath Tribal Health & Family Services and Klamath Tribes Health and Wellness Center, and Kla-Mo-Ya Casino are relatively large employers, which explains the slightly higher proportion of service jobs compared to other areas.

2.1.1.2.3 Demographics

Around 1839, it was estimated that there were about 1,000 Klamath people. Some believe that there were up to 2,000 Indians on the reservation at different periods prior to 1908, after which diseases drastically reduced the population (Land & Lane Associates, pp. 24-27/Table A). In 2010, there were 3,664 enrolled Tribal members (Jackson, S., November 2010, personal communication), up about 2.3 percent from a total enrollment of 3,579 in 2005. Enrolled members of tribes may reside anywhere, but many come back to the reservations or comparable tribal areas for short-to mid-term support services, ceremonies, family, and other reasons.

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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...
Chiloquin	17	23.4	21.8	3.2	6.9	27.7
Chiloquin CCD	22.5	18.3	22.1	6.6	14.4	16.1
Klamath Falls CCD	28.2	18.1	25.8	1.6	10	16.3
Klamath County	28.3	18	24.4	2.6	10.4	16.3
Oregon	33.1	15.3	26.1	1.7	9.1	14.7

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 5.

Most Tribal members and their families do not live on Tribal land since there are only a few small scattered parcels used for Tribal administration buildings. For this reason, only 9 people (4 of whom were Indian) were counted in the 2000 Census on the “Klamath Reservation,” which went up to 26 people (15 of whom were Indian) in the 2010 Census. It appeared that most Klamath Tribal members and their families live in Chiloquin, but many also live in surrounding areas and throughout Klamath County. Around 1990, it was estimated that perhaps about 40 percent of all Klamath Tribal members lived outside Klamath County (Klamath Tribes General Council, 2000).

Table 2.1-3 shows population changes in the area between the 1990, 2000 and 2010 censuses. The 2000 Census reported only nine people (four were classified as American Indian) for the Klamath Tribes because the Tribes have so little land and most of it is being used for such facilities as the Tribal headquarter buildings, the casino, and similar purposes.⁸ Area-wide, Klamath Tribal members tend to be clustered in Chiloquin, Klamath Falls, Beatty, and Portland, Oregon. When comparing the Indian population to that of the general population in the town of Chiloquin and surrounding area, Klamath Falls area and Klamath County, it is apparent that the Indian population grew rapidly between 1990 and 2000, but has slowed significantly in Chiloquin; however, the Indian population still constituted about half of the total population. Part of the slowing is likely explained by a partial offset in a growing number of people reporting American Indian in combination with other rates. In addition, it appears that problems with the national economy during the past decade may have hit hard in the Chiloquin area, forcing many Indian families out of the area presumably for more employment opportunities.

⁸ Census 2000 population for Klamath Tribal area is based on a total 1,248,154 square meter area.

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

Geographic areas	1990	2000	1990 - 2000 change (%)	2010	2000 - 2010 change (%)
Chiloquin CDP	673	716	6.0	734	2.5
Indian	260	369	29.5	361	-2.2
Percent	38.6	51.5	–	49.2	–
American Indian Alone or in Combination with other races	na	400	na	422	5.2
Percent	na	55.9	–	57.5	–
Chiloquin CCD	3,784	4,302	12.0	4,723	8.9
Indian	668	697	4.2	714	2.4
Percent	17.7	16.2	–	15.1	–
Klamath Falls CCD	42,838	46,967	8.8	48,711	3.6
Indian	1487	1713	13.2	1797	4.7
Percent	3.5	3.6	–	3.6	–
Klamath County	57,702	63,775	9.5	66,380	3.9
Indian	2370	2672	11.3	2,734	2.3
Percent	4.1	4.2	–	3.6	–
Oregon	2,842,321	3,421,399	16.9	3,831,074	10.7
Indian	38,496	45,211	14.9	53,203	15.0
Percent	1.4	1.3	–	1.4	–

Sources: Census Bureau Web site. 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. See attachment 5 for definitions.

2.1.1.2.3.1 Race and Ethnicity

In the year 2010, the American Indian population comprised between about half (49.2 percent in table 2.1-3) and a majority of the Chiloquin population at about 58 percent, the White population was most of the other half (as shown in table 2.1-4).⁹ Otherwise, the next largest proportion of Indians was in Chiloquin CCD at about 20 percent and the White population comprising most of the

⁹ Each race category includes that race or ethnicity alone or in combination with other races; for more information and Census definitions, see attachment 5. Some data was not available or not readily available in August 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 (%)
Chiloquin							
2010	734	49.5	0.4	57.5	1.3	0.7	6.5
2000	716	47.1	0	55.9	0.3	1.7	5.3
Chiloquin CCD							
2010	4,723	83.3	0.8	19.5	1.4	0.8	5.0
2000	4,302	81.5	0.3	19.0	0.9	2.1	3.9
Klamath Falls CCD							
2010	48,711	90.1	1.5	6.2	2.1	4.7	10.2
2000	46,967	91.2	1.2	5.6	1.8	4.0	7.5
Klamath County							
2010	66,380	89.8	1.2	6.7	1.8	4.8	10.4
2000	63,775	90.6	1.0	6.1	1.6	4.4	7.8
Oregon							
2010	3,831,074	87.1	2.6	2.9	5.6	6.1	11.7
2000	3,421,399	89.3	2.1	2.5	4.2	5.2	8.0

Source: Census 2010 tables D-1, QT-P6, QT-P5, and QT-P10. Census 2000 tables P1 and P9. Notes: Each race category includes that race or ethnicity alone or in combination with other races; for more information and Census definitions, see attachment 5. For this reason, percentages add to more than 100%.

remainder. For the Klamath Falls area and Klamath County, the Indian population was roughly 6 to 7 percent of the population, and the State of Oregon had the smallest proportion of Indians at about 3 percent.

2.1.1.2.3.2 Median Age

Table 2.1-5 shows that the median age for all Klamath County residents in 2000 was 38.2, slightly older than the State of Oregon’s 36.3. In contrast, the Indian population median age in the County was younger at 27.5 and Klamath Falls CCD had about the same distributions. Chiloquin CCD was older at 44.5 than the total population and about 29 for the Indian population; although the Indian population was still significantly younger than the overall population. Most striking was the median age differences in the town of Chiloquin at 33.6 for the total population and 24.3 for the Indian population with half of all Indian males below the age of 18.5 while the median age for Indian females was 27.8, which is young, but at

Table 2.1-5.—Census 2000 median age

Total population and Indian only median age	Chiloquin Place	Chiloquin CCD	Klamath Falls CCD	Klamath County	State of Oregon
Total population median age					
Median age	33.6	44.5	36.7	38.2	36.3
Male	31.8	45.1	35.3	37.2	35.1
Female	35.5	43.9	38	39.1	37.5
Indian only population					
Median age	24.3	29.1	26.6	27.5	29.2
Male	18.5	27.6	25.5	26.5	28.3
Female	27.8	30.6	28	28.8	30.2

about the same median age as Indians in all the areas analyzed. Younger median ages generally indicate higher birth rates, out migration rates and/or high mortality rates at relatively young ages, or some combination. Median age Census 2010 data showed a similar pattern overall since all areas have a higher median age by about six to ten years, but the pattern is the Non-Indian and Indian pattern is same. However, the relatively young male Chiloquin Place Indian population’s median age gap closed as it increased from 18 years to 32 years—the same as the female and total Indian median age; all assuming that the data are accurate at this lower level and with a high percentage of the Indian population which often involves data collection challenges.

2.1.2.2.4 Barter System

Duer observed that distant salmon bartering continues in rather limited and gradually diminishing form today. The Klamath Tribes attempt to continue cultural practices related to salmon, but it is prohibitive. Some Tribal members have been able to get small quantities of canned salmon for dried deer meat in Yurok country in 2002 and 2003:

“Most of the other bartering locations or secondary fishing sites have ceased to be available to tribal members, as impediments to salmon passage and other factors have reduced or eliminated harvests on the Columbia, upper Deschutes, and upper Rogue Rivers. Many [Tribal members] noted that, in addition to a regional decline in the availability of salmon, barter has been declining in recent decades due in part to a reduction in the availability of mullet, deer and other items traditionally used for barter by members of the Klamath Tribes. Cultural incentives for barter clearly eclipsed simple dietary and economic incentives. As such, salmon increasingly became a symbolically charged food for

“special occasions” rather than a dietary staple, reflecting both enduring and pronounced cultural importance coupled with a dramatic decrease in food availability. Though this partially offset the dietary impacts of the loss of salmon for some families, these journeys were widely seen as a great hardship: ‘that’s a *long* way to go to get fish.’ Many families simply decided that they could not afford the time or fuel to make this journey and had to accept a diet without salmon... “[Tribal members] ...report acquiring small quantities of canned salmon for dried deer meat in Yurok country in 2002 and 2003.” (Duer, 2003, p. 33).

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 or non-existent fish populations and access problems limit the ability of Tribal members to continue this practice:

“These [fish distribution] practices are still a source of pride among many tribal members today...describe how young people still share the catch of other fish species, especially trout and mullet, in the traditional manner. ‘You always give away fish to the elders...our grandparents taught us that and young people still need to listen to that.’ Young men who go on salmon fishing trips outside of the upper Klamath basin also redistribute modest quantities of salmon among tribal members, and such salmon is highly prized. Young people ‘always drop by to drop off fish’ after these long-distance fishing trips,”(Duer, 2003, p. 23).

2.1.2.3 Land Base and Uses

The Klamath Tribes ceded most of their aboriginal territory in the 1864 Treaty that created the Klamath Reservation, but that was reduced by actions associated with the Dawes Act, and their land base was further diminished to near non-existence during the Termination period that began in 1954. Today the Klamath Tribes have a few scattered parcels totaling around 556 acres used mainly for Tribal administrative buildings. The region is mostly national forest with some private property (Tiller, 2005, p. 898).

The Upper Klamath Basin has had a boom and bust cycle with the forest industry as one of its primary industries, and generally dominates area economy. Once the Klamath Tribes lost their aboriginal territory, they had to rely on timber sales and cattle. Federal recognition ended in 1954, and Tribal members no longer had employment in timber, ranching, and other land-based occupations, nor did they receive medical service, education program, and other assistance. Although the Tribes retained hunting, fishing, gathering, and water rights, their access was

limited by land condemnation and later by increasing amounts of privately owned land. The result has been limited opportunities to continue augmenting their incomes with fish, game animals, plants, roots, and the associated barter system important in the region. In addition, the tax exempt status for homes and ranches ended during the Termination Period.

The loss of Klamath Reservation lands has limited the Tribes' ability to exercise fishing, hunting, and gathering rights. More specifically, privatization of land and the acquisition of lands by non-Tribal members has further displaced traditional uses of salmon sites:

“A number of these sites are now fenced off and no public access is allowed. Such places as Kaumkam Springs, Trout Creek, Fivemile Creek, sites along Lost River and Lower Klamath Lake, the mouth of Williamson River, and a number of fishing stations in the Wood River Valley were cited as important fishing sites that had been...lost. Places with enduring public access have retained a higher level of use by tribal members, and tribal members retain subsistence fishing rights in locations within the 1954 Reservation boundary; in turn this has arguably fostered the enduring cultural significance of sites on public or former tribal lands. Small dams, irrigation facilities, and land reclamation have further impacted some traditional salmon fishing sites,” (Duer, 2003, p. 27).

2.1.2.4 Health

The Klamath Tribes believe that the loss of fisheries have led to higher obesity, diabetes and heart disease rates. These diseases raise health care-related costs of the Klamath Tribal government since the Tribes estimate that about 75 percent of their budget goes towards health care despite receiving funding from the Federal Government for health costs. Disability rates are high for diabetic and heart disease patients which is an additional monetary and social expense.

2.1.2.4.1 Traditional Diet and Health

When the dams blocked anadromous fish passage beginning about 1910, the Klamath diet began to change and continued shifting as more land fell into non-Indian ownership and the Tribes lost their Reservation in 1954, and traditional food gathering became limited along with fishing. By 1988, the C'waam were listed as Endangered, and the Klamath Tribal diet came to rely more on commodity foods which has led to high heart disease and diabetes rates.

The decline in the availability of traditional foods such as salmon, suckers, other fish, eels, and wokus and extreme poverty shifted the Klamath people's diet, resulting in higher obesity, diabetes, and heart disease rates. In 1976, Congress

stated in the Indian Health Care Improvement Act, P.L. 94-437, that: "...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," (IHCA, p. 1). Alternatively stated, maintaining and improving Indian health is part of the trust doctrine (Cherokee Nation 30 U.S. 1, Georgia, 1831) to ensure a standard of living for Indians comparable to non-Indian society (attachment 6).

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

The shift in the Klamath diet to a western diet was marked mainly by the loss of salmon and has resulted in diabetes and other diseases:

"Recent Indian Health Service studies endorsed by the Klamath Tribes conclude that a host of physical ailments that plague Klamath Tribes members have been linked to the demise of the aboriginal diet. Diabetes, hypertension, obesity, and related cardiovascular ailments are described as being particularly widespread, reflecting dramatic changes in food consumption and procurement patterns. A number of tribal [members] expressed the view that the loss of salmon was among the most significant components of this dietary shift," (Duer, 2003, pp. 34-35).

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).

Substitution has played a role in health conditions as diminishing game populations and other fish replaced the amount of salmon traditionally consumed. Tribal members explained that in an attempt to cope with the abrupt loss of salmon from their homeland, certain species of trout and mullet became central to their diet and were fished in unprecedented quantities, and game hunting intensified, (Duer, 2003, p 31). The Klamath Tribes struggle to continue practicing traditional food preparation and consumption, albeit small amounts:

“Kamalsh made from trout or salmon and mullet from outside the upper Klamath Basin is still an important part of the Klamath Tribes diet, even if the reduction in fish populations through much of the basin has rendered its importance more symbolic than caloric,” (Duer, 2003, p. 24).

2.1.2.4.2 Trust Responsibility and Health Care

The Federal Government is compelled 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 (attachment 6).

2.1.2.4.3 Mortality Rates

Primarily as a result of problems stemming from Termination and an assault on their way of life, including substandard fisheries, between 1966 to 1980 mortality rates were nearly 30 percent for Tribal members by the age 25 and over 50 percent by the age of 40. Approximately 40 percent of all deaths were directly from alcoholism or related to alcohol intoxication. The infant mortality rate was 2.5 times the State of Oregon average (Klamath Tribes General Council, 2000).

Today, 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).

2.1.2.4.4 Heart Disease

Heart disease is the leading cause of death and morbidity for American Indians, as well as the general population, and based on discussions with the Klamath Tribal Health & Family Services clinic, overall Indian trends apply to the Klamath Tribes (Jackson, October 2010). 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 diabetes, depression, and some other conditions as well (Norgaard, 2005) (American Heart Association, accessed September 2010).

2.1.2.4.5 Diabetes

Diabetes is a major contributor to morbidity and is the fourth leading cause of death among American Indians. A general overview of Klamath Tribes' health clinic data showed the same trends and patterns as for all American Indian populations served by IHS (CDC, accessed September 2010)(Jackson, personal communication, October 2010). Diabetes rates could be as high as about 21 percent and heart disease rates could be as high as 40 percent in the Klamath Tribes, as is the case for the nearby Karuk Tribe (Norgaard, 2005).

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). The Tribes believe that the physical exertion and time involved in accessing many traditional fishing areas would contribute to improved physical activity, a factor noted for decreasing type 2 diabetes rates. 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, pp. 39, 47).

2.1.2.4.6 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.

2.1.2.4.7 Diet and Nutrition

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

2.1.2.4.7.1 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 additional omega 3 benefits, which include benefits for diabetes, depression, and other conditions:

“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).

In the study of the Karuk Tribe, a survey of Karuk Tribal members stated that overweight, diabetes, and heart disease were relatively new and coincided with the shift from a traditional to a Western diet, which appears to be the same pattern for the Klamath Tribe. For example, 66 percent of Karuk members surveyed reported that diabetes appeared in their families for the first time since 1970, which is when the salmon runs were essentially unavailable to the Karuk Tribe (Norgaard, 2005, pp. 39-50).

2.1.2.4.7.2. Shift from Traditional to Western Diet and Disease

Assuming the Klamath peoples have experienced conditions similar to their downstream 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.

2.1.2.4.7.3. 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. Concerning the Klamath Tribes, it is estimated that about 60 percent of the population relies on commodity foods and the only fish in the USDA list of foods for Indian reservations is canned tuna (Jackson, November 2010, personal communication) (USDA, accessed November 2010). 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).

2.1.2.4.8 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, a large proportion of deer, and most of their barter economy in addition to experiencing high disease and mortality rates, and many other important associated factors, the Klamath Tribes 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 apply to the Klamath Tribes concerning social psychological stress 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).

2.1.2.4.9 Health Care Costs

2.1.2.4.9.1 Heart Disease Costs

In 2010, it was estimated that heart disease costs the United States \$316.4 billion, including 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 Klamath Tribes. 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.

2.1.2.4.9.2 Diabetes Costs

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).

2.1.2.4.9.3 Obesity Costs

Recent national estimates of the 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).

2.1.2.4.10 Water Quality Concerns

There are health concerns related to water quality problems for traditional fishing, bird hunting, tule, cattail and wocas gathering, basketry material gathering and processing by mouth, ceremonial bathing, among other activities in Upper Klamath Lake, associated wetlands, and Upper Klamath River areas (effects discussed further in DOI, June 2011a and 2011b):

“In recent decades, tribal members have adjusted patterns of traditional use in light of the privatization of land, declining water quality and quantity in the upper Klamath Basin, and a wide range of economic and logistical factors,” (Duer, 2003, pp. 11-13).

The DOI studies have substantiated the Klamath Tribes’ assertions that Upper Klamath Lake water quality is poor, primarily due to human activities, and that it adversely affects fisheries and Tribal cultural activities. Blue Green algae and toxins it produces have adversely impacted resident and migratory fisheries in Upper Klamath Lake, and it contributes to poor water quality downstream, and many KHSA and KBRA actions, in addition to dam removal, include interim measures that are necessary for improvements. Measures include actions already

taken, in progress, or proposed in the future, mainly before 2020, as described in a water quality technical report by the Water Quality Subteam for the SDOR and Klamath EIS/EIR:

“Klamath Basin water quality, particularly in Upper Klamath Lake, has degraded over time...paleolimnological research shows evidence of change in Upper Klamath Lake to an increasingly shallow, hypereutrophic lake...Based on more than 40,000 years of continuous paleoclimatic record for Upper Klamath Lake... [concludes that] remains of blue-green algae demonstrate progressive eutrophication of the lake in the 20th century, especially after about [year] 1920.... Conditions in the Upper Klamath Basin are a significant factor contributing to the downstream deterioration of water quality in the Klamath River and the decline of fisheries in the basin. In the Upper Klamath Basin, Lost River sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*) were listed as endangered under the federal Endangered Species Act (ESA) in 1988. In the Lower Klamath Basin, Coho salmon (*Oncorhynchus kisutch*) was listed as threatened under ESA in 1995....[human] activities have resulted in physical and biological degradation. Impairments that threaten both species include loss of wetland habitat and impeded fish passage. Additional water quality impairments that threaten Coho include: increased water temperature, altered seasonal temperature patterns, reduced dissolved oxygen, elevated nutrient loading, exposure to algal toxins, pH levels outside of optimal ranges, and increased turbidity. To support these species, recovery actions are needed to reduce the magnitude and duration of water quality impairments and improve habitat.” (DOI, August 18, 2011p. 3-4)

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.¹⁰ A comparison of impacts between the two alternatives is summarized in table 3.1-1.

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

¹⁰ The two agreements have language specifying their interdependence for execution.

Table 3.1-1.—The Klamath Tribes impacts summary table

Indicators	No Action	Dam removal
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 and relevant portions of the KBRA were examined individually.		
Fisheries	Continuation of no anadromous fish available for subsistence. Limited opportunity to continue practicing a traditional lifestyle and reinstatement of the first salmon ceremony. No salmon for barter. Fishing rights not fully protected. Continued negative tribal identity and other social and cultural conditions.	Anadromous fish available for subsistence 2020 to 2060. Opportunity to continue practicing a traditional lifestyle and reinstate the first salmon ceremony. Salmon for barter. Fishing rights more fully protected. Improved tribal identity and other social and cultural conditions.
Employment and income	Limited opportunities to improve high poverty rates and low income conditions with subsistence fishing and barter. Continuation of high unemployment and poverty rates, and low median income levels. Limited potential for improved social conditions related to poverty.	Opportunity for tribal members to improve high poverty rates and low income conditions with subsistence fishing and barter between 2020 and 2060. Potential to improve high unemployment levels directly or indirectly from dam deconstruction from around 2012 to 2020. Potential for improved social conditions related to poverty.
Land base and use	No change.	No change.
Health	Limited opportunity to alleviate high diabetes, heart disease, and obesity rate trends and associated high costs, disability, and mortality rates. Continued relative heavy reliance on commodity/processed foods.	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 and other processed foods.

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Table 3.1-1.—The Klamath Tribes impacts summary table

Indicators	No Action	Dam removal
KBRA Part VII. Tribal Program 34. Klamath Tribe’s Interim Fishing Site		
Fisheries	Chinook salmon unavailable for subsistence. Limited opportunity to continue practicing a traditional lifestyle and first salmon ceremony. No salmon for barter. Fishing rights not fully protected. Continued negative tribal identity and other social and cultural conditions.	Chinook salmon available for subsistence, possibly as soon as 2012. ¹ Opportunity to continue practicing a traditional lifestyle and reinstate the first salmon ceremony. Fishing rights more fully protected. Improved tribal identity and other social and cultural conditions.
Employment and income	Limited opportunities to improve high poverty rates and low income conditions with subsistence Chinook fishing and barter. Limited potential for improved social conditions related to poverty.	Opportunity for tribal members to improve high poverty rates and low income conditions with subsistence Chinook fishing and barter beginning as soon as 2012. ² Potential for improved social conditions related to poverty.
Land base and use	Continuation of essentially no land base for social, economic, or cultural purposes and no restoration of Klamath Reservation land lost in the 1954 Termination.	Although there would be no additional land added to the Klamath Tribal land base, they would have additional access to Chinook fisheries; although it would be temporary for an unknown amount of time.
Health	Limited opportunity to influence high diabetes, heart disease, and obesity rate trends and associated high costs, disability, and mortality rates. Continued heavy reliance on commodity/processed foods.	Opportunities for additional anadromous fish consumption that would be beneficial for diabetes, heart disease, and obesity rate trends with associated high costs, disability, and mortality rates, and reduced reliance on commodity/processed foods potentially beginning as soon as 2012. ³

Table 3.1-1.—The Klamath Tribes impacts summary table

Indicators	No Action	Dam removal
KBRA Part VII. Tribal Program 33. Long-term Economic Revitalization Projects, 33.2 Mazama Project		
Fisheries	Fishing rights would continue to be limited by the lack tribal land for fishing site access.	Fishing rights would be strengthened by additional tribal land for access to fishing site which would improve tribal identity and other social and cultural conditions.
Employment and income	Continuation of limited tribal land-based economic development.	The Klamath Tribes would receive Program funds for initial purchase of the Mazama Tree Farm in 2012 and 2013 which would increase land-based economic development opportunities.
Land base and use	No restoration of Klamath Reservation land lost in the 1954 Termination. Continuation of social and cultural trauma. Limited potential for additional land-based economic development. Treaty fishing, hunting, and gathering rights would continue to be limited by the small amount of tribally owned land for traditional food access and traditional lifestyle and cultural practices.	Restoration of Klamath Reservation land lost in the 1954 Termination would strengthen tribal identity and encourage improved social and cultural conditions. Potential for additional land-based economic development. Treaty fishing, hunting, and gathering rights would be enhanced with Tribally owned land for traditional food access and traditional lifestyle and cultural practices.
Health	Limited opportunity to change high diabetes, heart disease, and obesity rate trends and associated high costs, disability, and mortality rates. Continued heavy reliance on commodity/processed foods.	Additional land would increase the Tribes' ability to subsist on traditional foods which are linked to lower disease rates and associated costs.

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Table 3.1-1.—The Klamath Tribes impacts summary table

Indicators	No Action	Dam removal
KBRA Part VII. Tribal Program, 32. Tribal Participation in Fisheries and Other Programs		
Fisheries	Limited 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 employment 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, and are expected to improve unemployment, poverty rates, and income levels. Includes funds for an economic development study that would likely strengthen the tribal economy.
Land base and use	No change.	No change.
Health	Limited opportunities to influence high diabetes, heart disease, and obesity rate trends and associated high costs, disability, and mortality rates. Continued heavy reliance on commodity/processed foods.	Fishery management and conservation would enhance tribal participation, fisheries, cultural identity, and social conditions that would likely facilitate more fish consumption and less reliance on commodity food.

Table 3.1-1.—The Klamath Tribes impacts summary table

Indicators	No Action	Dam removal
KBRA Part IV, 18. Additional Water Conservation and Storage, 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)		
Fisheries	Continued limited numbers and species of native fish. Limited opportunity for traditional lifestyle and the c'waam ceremony. Fishing rights not fully protected. Continued negative tribal identity and other social and cultural conditions, particularly related to the shortnose and Lost River suckers which could become extinct. Fishing rights not fully protected. Continued negative tribal identity and other social and cultural conditions.	Improvements in fish habitat would increase numbers of all native fish species traditionally used by the Tribes for subsistence. More opportunity to practice a traditional lifestyle and the Return of the C'waam Ceremony for the shortnose and Lost River suckers. Fishing rights more fully protected. Improved tribal identity and other social and cultural conditions.
Employment and income	Limited subsistence fishing opportunities to ease challenges associated with high unemployment and poverty rates and low income conditions.	Habitat improvements assumed to improve conditions for all or most traditional fish species used for subsistence; however, it is uncertain whether habitat improvements would be sufficient to bring endangered sucker populations back to harvestable levels.
Land base and use	Continuation of essentially no land base for economic, social, or cultural purposes and no restoration of Klamath Reservation land lost in the 1954 Termination.	Although there would be no additional lands or access, the restored areas would have some benefit to tribal fishing, hunting, and gathering rights and subsistence by increasing the numbers and varieties of fish and waterfowl species in, and adjacent to the exterior boundaries of the former Klamath Reservation.
Health	Limited opportunity to change high diabetes, heart disease, and obesity rate trends and associated high costs, disability, and mortality rates. Continued heavy reliance on commodity/processed foods. Continued poor water quality with associated health problems and concerns.	Expected beneficial effects for diabetes, heart disease, and obesity rate trends with associated high costs, disability, and mortality rates, and reduced reliance on commodity/processed foods. Improved water quality conditions and associated health problems and concerns.

¹ Assuming there is sufficient Chinook availability at Iron Gate as early as 2012 and depending on Phase I harvest limitations (KBRA, pp. 43-44).

² Ibid.

³ Ibid.

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. In the basin above Upper Klamath Lake, program planning will involve and reflect collaboration among Upper Basin irrigators, Klamath Tribes, and other appropriate parties. It would emphasize strategies and actions to restore and maintain properly functioning 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 to improve water quality. 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 protect key Indian trust resources that have been adversely affected by the KHP; in a majority of instances, these benefits would not occur under the No Action Alternative.

3.1.1 No Action: Potential Impacts without the KHSA and KBRA

Expert panel, biological subgroup draft Synthesis report, and DOI report information (June 2011a and b) were used for drawing conclusions about potential impacts to species.¹¹

3.1.1.1 Subsistence Fisheries

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, eucelone, coastal cutthroat trout, and Pacific lamprey (Hamilton, et al., June 13, 2011, p. 11).

Most of the anadromous species migrated up to the Upper Klamath Basin prior to dam construction, and the species the Klamath Tribes relied on for subsistence, and the few that exist today, are in this section in terms of impacts without the KHSA and KBRA. Additionally, there are 16 native resident species representing five families of fishes currently in existence in the Upper Klamath Basin and most are endemic to the watershed (Buchanan, et al., April 11, 2011, p. 71).

Historically, most species were used for subsistence, however the Klamath Tribes depended primarily on salmon and the Lost River (c'waam in Klamath language)

¹¹ 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

and shortnose suckers (koptu in Klamath language), and including; Spring and fall Chinook salmon, probably coho salmon; Pacific lamprey; steelhead trout; resident redband/rainbow, cutthroat, and bull trout; Klamath smallscale and largescale suckers; blue and tui chubs; speckled dace; and sculpin. (Duer, 2003) (DOI, June 2011a).

Table 3.1-2 summarizes projected current conditions (no action) without KHSA and KBRA actions. 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, especially with construction of Copco 1 and subsequent hydroelectric dams that began around 1910, and with the endangered status of the resident Lost River and shortnose suckers in 1988. The Tribes described trust, social, cultural, religious, and health impacts of the KHP in a scoping memo:

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

Coho salmon (threatened)	Continue to be unavailable in the Upper Klamath Basin with possibility of declining populations.
Spring Chinook salmon	Continue to be unavailable in the Upper Klamath Basin with possibility of declining populations.
Fall Chinook salmon	Continue to be unavailable in the Upper Klamath Basin with possibility of declining populations.
Pacific lamprey	Continue to be unavailable in the Upper Klamath Basin.
Steelhead trout	Continue to be unavailable in the Upper Klamath Basin.
Shortnose and Lost River suckers (endangered)	The draft expert panel report concluded they may become extinct within 10-15 years. The Draft EIS/EIR stated that populations could increase and that there would be "...a less than significant..." impact.
Redband trout/rainbow trout	Size and abundance expected to remain stable according to the draft expert panel report. The final draft synthesis report concluded there were negative conditions affecting populations, and the EIS/EIR made a similar conclusion although there would be "...a less than significant..." impact.
Bull trout (threatened)	The expert panel states that they could become extinct in the upper basin. The final draft synthesis report asserts there could be improvements.
Other species	The expert panel report listed the following as abundant species that are expected to remain stable or increase: Klamath tui chub, blue chub, Klamath speckled dace, Upper Klamath marbled sculpin and Klamath Lake sculpin.
Other species: Klamath largescale and smallscale suckers	Klamath smallscale sucker population may decline (since it was not in the expert panel list of abundant species). The synthesis report stated that both species would continue to be successful.

Sources: See attachment 7.

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“Each year that Klamath fisheries remain unavailable, it represents and incremental degradation of Tribal culture and is a violation of the Federal trust responsibility. As years pass, familial and social interactions that revolved around the c’waam, koptu, and c’iyaal’s fisheries unravel since the fisheries were like the glue holding a complex social structure together through: community celebrations and ceremonies; elders teaching youngsters how to fish and be socially responsible by giving away their first catch; catching fish for elders and others who could not fish for themselves, experiencing the depth and absolute rightness and connectedness of doing what countless generations of ancestors had done before them in that place; providing healthy food; and experiencing many other connections with the environment,” (Klamath Tribes, memo dated July 20, 2010).

Under no action, or conditions without the KHSAs and KBRA, the most important species to the Tribes would be highly unlikely to be at harvest levels, which has significant economic, social, cultural, and trust resource impacts. All anadromous species would remain absent from the Upper Klamath Basin, and salmon may possibly decline in the Lower Klamath Basin which would leave little hope of any return to the Upper Basin in the future. In terms of resident fish, the endangered suckers could become extinct, the important contemporary redband/rainbow trout fishery would remain stable or may decline, and resident fish populations are projected to remain stable or increase. Steelhead was another important species for sustaining the Klamath people that would continue to be inaccessible under a no action scenario.

Overall economic, social, cultural, and trust rights impacts of not having fish species available for traditional uses would continue past trends. The Tribes had a subsistence lifestyle up to the 1950s that faded with the devastation caused by the sudden withdrawal of Federal recognition in the Termination period that began in 1954, followed by major social and cultural upheaval and period of extreme social dysfunction that transitioned into a cultural revival in the late 1970s that has gained momentum until the present. Social, cultural, and economic gains since the late 1970s would be expected to slow and possibly decline as remaining key fish species continue to dwindle or are lost forever. When one Tribal member was asked what would happen to their culture if the trout disappear as well, and he responded: “We won’t have a culture. We are a lake people, a water people,” said Herrera” (Most, 2006, p. xxx).

No action would contribute to a continuation of an impaired sense of Tribal identity, heightened injustice, and social trauma that began about 150 years ago with loss of their traditional territory, 90 years ago with the loss of salmon, 57 years ago with Termination and the loss of essentially all Reservation land, and 23 years ago with the endangered status of c’waam and koptu. Construction of Copco 1 and the resulting loss of anadromous fish was described by Tribal members and others as ‘killing a way of life,’ ‘devastating,’ ‘cultural genocide,’

and similar descriptions that also apply to the effects of Termination. 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 unavailable cannot be used or distributed, and the Tribes described:

“Now Tribal children go to the river and hear stories of what has been lost, and they, along with their parents, feel the anguish of their inability to do that which has always been done, and experience the anger of the injustice...[that]...results in a sense of brokenness, and manifests in a myriad of social problems...” (Klamath Tribes, July 20, 2010, memo).

The regional barter system that was a thriving economy prior to European contact, and which regional tribes have retained to the extent possible, would continue to be adversely affected as Klamath Tribal members would have no salmon to trade and ever declining game populations for trade with other Tribes. In terms of trust fishing rights, the Tribes would continue to experience a lack of comprehensive fishing-rights protection as important fish species would remain absent from the upper basin or become unavailable, some of them forever. To remain in the barter system, the Tribes have had to substitute game for fish which would continue to adversely affect hunting as reduced availability of fish for subsistence and barter would continue to put pressure on game populations to the point that they could not serve the subsistence needs intended by the 1864 Treaty.

The No Action Alternative would have adverse economic, social, and cultural impacts as a result of impacts on salmon. Income would continue to be impacted since there would be no salmon for subsistence and barter. Adverse social impacts would include problems stemming from the continuation of damaged Tribal identity and the sense of injustice of having fishing rights for a traditional, significant species that no longer exists in the area. Culturally, the First Salmon Ceremony would not have the potential of being revived since salmon species would continue to be unavailable in the upper basin and may decline in the rest of the system.

Concerning the endangered suckers, the No Action Alternative would have a significant adverse impact on Klamath Tribal social and cultural well-being, and to a lesser extent, adverse economic impacts by eliminating all future hope of a return to harvestable levels of these resources as they would likely become extinct.

The redband/rainbow trout fishery is important to the Klamath Tribes today because it is one of the few remaining fisheries that is above minimum harvest-levels. Based on April 11, 2011, expert panel report conclusions, under no action, the size and abundance are expected to remain stable, but two other sources

described conditions under which populations may decline in the upper basin. Tribal redband and rainbow trout regulations may continue to allow subsistence take for Tribal members of up to five fish per day in the Williamson River system and up to ten fish per day in other systems throughout the period of analysis to 2055; however, since there appears to be some risk of degradation of the population under no action, there may be a potential for adverse impacts on the Klamath Tribes.

The Klamath Tribes primarily used Pacific lamprey prior to dam construction (Duer, 2003) (DOI, June 2011a). Information about the Klamath Tribes' lamprey use and species is limited. One Tribal member explained that they were harvested in large numbers during salmon season cooked as a separate specialty item, and that only large lamprey available prior to the construction of the Copco Dam was used, and that there was a smaller lamprey that persisted after dam construction, but it was never used as a food fish, (Duer, 2003, p. 21).

Steelhead was another important anadromous species for sustaining the Klamath people that would continue to be inaccessible under a no action scenario. Bull trout are listed as threatened under the ESA, and is another species in the seasonal round that would continue to be unavailable, possibly forever, to the Tribes for subsistence and other benefits.

3.1.1.2 Employment and Income

The trend of declining varieties and populations of fish for subsistence to supplement low income and high poverty conditions levels, and for barter would remain unchanged. Fishing has been considered an essential component of a family's security which would continue to be threatened under no action:

Food insecurity is an issue for populations with high poverty conditions. Indian unemployment rates, particularly where the Tribal headquarters are located in Chiloquin, Oregon and the surrounding area would continue to be about three to four times higher than for the non-Indian population and about five times higher than rates for the State as a whole. Poverty rates would continue to be high in Chiloquin, especially for the Indian population at about two to three times higher than surrounding area rates. In Chiloquin, poverty levels were at roughly 70 percent of all Indian families with children 18 years old and younger.¹²

Few potential opportunities exist to improve to high unemployment levels since the main industry in the region has been timber-based, which remains weak, and Tribal members are at a disadvantage in terms of education, training, and discrimination for other relatively few area jobs. The potential for improved

¹² Census Bureau definition for these figures is single parent householder, no husband present.

social conditions related to poverty are limited. For these reasons, the development and growth of Tribal education and job training programs and employment has been important. However, Tribal economic development, which was strongly encouraged by the Restoration Act to further Tribal self determination, would continue to be constrained by the lack of abundant resources (i.e., timber, fish, game, etc.), and land owned by the Tribe, and the lack of sufficient funds for purchasing land.

3.1.1.3 Land Base and Uses

The Klamath Termination Act (P.L. 587) abruptly replaced nearly all of the Tribes' land with large sums of money given out to those willing to take the buyout. In terms of land base, the Tribes have experienced a trend of diminishment that has left them essentially landless. Termination and associated land loss had a tremendous negative social, economic, and cultural impact that is continually felt today.

The Tribes are still recovering from the social trauma, economic consequences, and cultural low point brought about by Termination. With a no action scenario, the intense grief from the loss of their land and fisheries and associated cultural disruption would continue the symptoms of social trauma that has left a legacy over generations; a syndrome that has been described as an "Indian holocaust." In addition to a continuation of the negative social and economic impacts under no action, adverse cultural and trust resource impacts would continue. The Klamath Tribes would continue to have a severely limited land base and diminishing access to lands within the exterior boundaries of the former reservation for exercising fishing, hunting, and gathering rights. Access problems have increased over the years as private property owners continue to change and generally will not agree to what they view as trespassing by Tribal members. Limited land base and access issues would continue to be a problem for cultural purposes that include ceremonies and youth camps that educate them about the Tribes' past and current practices.

3.1.1.4 Health

A no action scenario would be a continuation of current trends of limited land base and access problems that hinder economic development, which in turn fuels low income and high unemployment and poverty rates as discussed in the "Affected Environment" section. A lower standard of living combined with declining fish and game supplies for subsistence and barter could translate into a continued or increased reliance on commodity foods that is associated with high diabetes, heart disease, and obesity rates and correlated to higher costs to the

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Tribes and Federal Government. Water quality problems would continue to pose health concerns and risks for Tribal traditional ceremonial and cultural uses of Upper Klamath Lake, associated water bodies, and the Upper Klamath River.

With no action, conditions that began with the construction of Copco 1 about 90 years ago, blocking anadromous fish from returning to the Upper Klamath Basin would remain the same, with the continued absence of salmon being most significant factor since it comprised up to half of the traditional Klamath diet. The impact on the Tribes' traditional diet from the loss of salmon was described as dramatic, and it caused them to rely more heavily on other traditional foods, which reduced their quantities, and ultimately reliance, a heavy reliance on commodity foods:

“The loss of salmon was said to have initiated some of the most dramatic dietary shifts in the Klamath Tribes, being the first dietary staple to be lost to the tribes. For a time, this fostered the increased use of deer and mullet, and some tribal members felt that this resulted in localized overexploitation of these resources when taken in combination with poor fish and game management by the State of Oregon. For some, the loss of the salmon was the instigating event for a dietary transition that led to the ultimate dependence of the Klamath Tribes on the purchase of processed foods and the use of supplementary commodity foods. ‘[Salmon] was our store for the winter... we lost it,’ (Duer, 2003, pp. 34-35).

Over the years, development in the Upper Klamath Basin has negatively impacted resident fish populations, particularly several other key subsistence species for the Tribes, the Lost River and shortnose suckers which were listed as threatened under the ESA in 1988 (DOI, August 18, 2011). Land base and accessibility issues have compounded the diminishing fish population problem, resulting in a decline over the decades in the availability of traditional foods in the Klamath Tribes' diet.

The decline in traditional food availability in the Klamath Tribal diet has had adverse effects as it was replaced by USDA commodity foods which are largely highly processed with high sugar and fat content that many Tribes have had to rely on to help feed their people.¹³ Norgaard found that omega-3 fatty acids, which are highest in salmon, have been linked with a number of significant health benefits, including a reduced risk of heart attacks, strokes, and Alzheimer's (2005):

“...reduced risk of heart attacks, strokes and Alzheimer, prevention of osteoporosis, a diabetic treatment, improved mental health and improved

¹³ 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.

brain development in infants...[and] beneficial effects ...on various forms of depression...(Bruinsma 2000; Hibbeln 1998),“ (Norgaard, 2005, pp. 50-51).

The shift in diet resulted in high heart disease, diabetes, and obesity rates with associated high direct and indirect social and monetary costs and high 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. At the national level, the economic costs are estimated to be \$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 annually for obese people would continue with a no action scenario.

The loss of elders at early ages, believed by the Tribes to be caused by the lack of accessibility to traditional foods, presents a compounding problem since they are the ones who are needed to encourage and teach others in the Tribes how to live a traditional lifestyle. Under no action, high mortality trends caused by heart disease, diabetes and obesity are expected to continue to rob the Tribes of this “intellectual capital.”

Similarly, there has been a significant loss of Tribal identity associated with inaccessible fisheries, with social trauma as the outcome that can result in increased stress, depression, suicide, and similar conditions. Without salmon, the First Salmon Ceremony ceased, with few endangered suckers, the First C’ waam Ceremony has been celebrated in a truncated fashion, and under no action may cease entirely. The Tribes have experienced social and cultural trauma related to the unavailability of traditional foods that would continue under no action:

“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 [or c’ waam] 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).

Intense grief from the loss of their land and fisheries with associated cultural disruption would continue the symptoms of social trauma.

Water quality would continue to be a health concern for traditional fishing, bird hunting, tule, cattail, wocas, and basketry material gathering, among other plants and activities in Upper Klamath Basin water areas.(DOI, June 2011b, p. 3-55-64).

3.1.2 Action Alternative: Potential Impacts of the KHSA and KBRA

Conclusions were based on findings among project documents as of February 2011 that included four documents (attachment 7).

In order to more thoroughly evaluate impacts related to each of the most significant and relevant components of the KHSA and KBRA, 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 34. Klamath Tribe's interim fishing site
- KBRA Part VII. Tribal Program 33.2. Mazama Project
- KBRA Part VII. Tribal Program 32. Tribal participation in fisheries and other programs
- Part IV, 18. Additional water conservation and storage, 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

Overall, if the KHSA and KBRA were implemented, conditions measured by the indicators; subsistence fisheries, employment and income, land base, and health are projected to improve, as described in the following sections and summarized in table 3.1-3.

Impacts would be positive in the long run for all species which is an improvement in the view of the Klamath Tribes since the Tribes place a high value on the return of conditions closer to the historic, healthy, diverse ecosystem the Upper Basin once was. For this reason, the prospect of the mere presence of species in the Upper Basin that have not been there since the hydroelectric dams were constructed is perceived as a benefit regardless of whether all fisheries would be at harvestable levels. The concept of the importance of each species (and fish are considered to be synonymous with water) to the Tribes is manifested in a statement made when one tribal member was asked what would happen to their culture if the Tribe's remaining fishery, trout, disappeared, he responded: "We won't have a culture.

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

Coho salmon (threatened)	Below IGD, 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 would reoccupy, possibly increase, but not to 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, 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%. Potential to occupy UB, but uncertain.
Steelhead trout	UB, reestablish and increase, possibly substantial. Below IGD, short term, adverse sediment impacts (approximately 2020-2026), long term, increased numbers, possibly substantial.
Shortnose and Lost River suckers (c'waam and koptu) (endangered)	UB, KBRA effects would be beneficial.
Redband trout/Rainbow trout	UB, could be substantial benefits/increases. Keno Dam to JC Boyle reach, may experience some short-term adverse dam removal sediment impacts, long-term, positive effects.
Bull trout (threatened)	Likely to prevent extinction and increase overall abundance and distribution.
Other native species	Upper and lower basins would experience increased populations.
Other native species: Klamath largescale sucker	Positive effects/increase populations.
Other native species: smallscale sucker	Positive effects/increase populations.

Sources: See attachment 7.

We are a lake people, a water people,' said Herrera" (Most, 2006, p. xxx). Clearly the Klamath Tribes still view themselves as a fish and water culture. Therefore, it is assumed that more fishing opportunities could lead to the practice of a traditional lifestyle on a greater scale that is currently taking place. Additionally, it is important to note that although this analysis focuses mainly

on subsistence fisheries, the fact that the Action Alternative could mean preservation of some species that are projected to become extinct under No Action is as important as the fact that such species as Chinook would again be present in the Upper Basin at harvestable levels for subsistence fishing.

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, especially with construction of Copco 1 and subsequent hydroelectric dams that began around 1910, and with the endangered status of the resident Lost River and shortnose suckers in 1988. There are 16 native resident species representing five families of fishes currently in existence in the Upper Klamath Basin and most are endemic to the watershed (Buchanan, April 11, 2011, p. 71). Historically most species were used for subsistence, however the Klamath Tribes depended heavily on salmon and the Lost River and shortnose suckers. Table 3.1-3 summarizes impacts by species for which information was available, and additional detail about species impacts are in attachment 8.

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

3.1.2.1.1 Subsistence Fisheries

Dam removal would begin in 2020, followed by adverse short term impacts to anadromous species resulting from the release of sediment that has accumulated for decades in the four reservoirs that would impair water quality downstream. However, there would be no adverse short-term effects to any existing Klamath Tribal fisheries since the dams blocked migration of anadromous species to the Upper Basin when they were constructed so they no longer reach the area, and dam removal occurs downstream which would have virtually no affect on resident fish in the Upper Basin.

Sometime between 2021 and 2026, depending on the species, mitigation, and other factors, spring- and fall-run Chinook, steelhead, and bull trout are expected to once again migrate up the Klamath River to occupy Upper Basin habitat. This could greatly benefit the Klamath Tribes. Although the endangered bull trout would likely increase in population and distribution, it is highly unlikely that numbers in the Upper Basin would be sufficient for harvest during the 2021-2060 time period. Similarly, it is uncertain whether Coho salmon would reoccupy the Upper Basin, and since they are threatened, it is doubtful that the population would be at harvestable levels in the Upper Basin during the period of analysis.

In the long run, spring- and fall-run Chinook and steelhead would increase, possibly substantially, which would provide a great deal more subsistence opportunities within and surrounding the external boundaries of the Klamath Reservation. Salmon was one of the most important species for sustaining the

Klamath people from season to season and traditionally comprised up to half of their diet. Spring Chinook were particularly important because, like the endangered suckers, they came relatively early in the seasonal round and were highest in fat content. The prospect of the Tribes to be able to reinstitute the First Salmon Ceremony would be a significant positive consequence. There is a potential for Pacific Lamprey to exist in the Upper Basin.

Positive subsistence fishing impacts would include:

- Culturally, the First Salmon Ceremony would have the potential of being revived since salmon species would once again migrate to the Upper Basin.
- The Tribes' social, cultural and economic recovery from the loss of their land, salmon, and endangered suckers could continue.
- Tribal members could experience the same connection to the salmon, steelhead, other species, and the environment that their ancestors had countless generations before.
- 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 at traditional salmon fishing locations.
- Familial and social interactions that revolve around the salmon and other fisheries would be strengthened through revival of the First Salmon Ceremony and other community celebrations.
- Additional opportunities for elders to teach youth how to catch salmon and steelhead and be socially responsible by giving away their first catch (especially when more salmon, and possibly lamprey, consumption is expected to increase overall life-spans).
- Youth could continue to learn to catch salmon and steelhead for elders and others.
- Tribal identity would improve and there would be a reduced sense of injustice that would be expected to lead to improvements in social conditions.
- The regional barter system could be revitalized for the Tribes since they would have salmon to trade and would not have to rely entirely on declining game populations or trout as barter-sources.

- The Tribes would regain comprehensive fishing right trust protection as important fish species would be able to reoccupy the Upper Basin, and hunting rights would be better supported through salmon and steelhead bartering substitution.

3.1.2.1.2 Employment and Income

Beginning around 2021, dam deconstruction could directly and/or indirectly improve employment and incomes. Increases in salmon and steelhead populations in the Upper Basin may:

- Potential to improve income, poverty, and food insecurity problems since there would be salmon for subsistence and barter.
- Possibly lower subsistence costs by eliminating the need to travel long distances to fish for salmon or hunt, both costly options because of travel expenses.
- Contribute toward improving the functioning of the existing Tribal redistribution of wealth (fish) to the elderly and other dependent populations within the community.
- Potentially increase recreation and tourism opportunities (i.e., tribal fishing guides) and related individual and/or tribal endeavors which would have the potential to increase employment and income.

3.1.2.1.3 Land Base and Use

The KHSA would not affect Tribal land base.

3.1.2.1.4 Health

Beginning around 2021, there is the potential for Pacific lamprey to be in the Upper Basin. The Tribes consider them to be particularly nutritious for elders (DOI, June 2011a). There would be an increase in salmon, particularly spring-run Chinook, which is considered one of the best foods for preventing heart disease and ranks high in the same regard for diabetes and obesity.

American Indians suffer disproportionately high rates of diabetes, and positive effects of increased salmon and/or lamprey availability and consumption could reduce rates of some of the highest incidences of disease. Positive health effects could occur if more salmon is consumed, particularly for the elderly. Some possible beneficial effects 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 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, Alzheimer's, 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.

3.1.2.2 KBRA Part VII., Tribal Program 34. Klamath Tribe's Interim Fishing Site

The KBRA Fisheries Management Programs would require reduced harvest by all participants (sport, recreation, and tribal) during the Phase I Reintroduction of the fisheries program; however, there is no definite timeframe when Phase I would end (harvest restrictions) and Phase II would begin (lifting harvest restrictions) since it is based on adaptive management (tentatively, Phase I would be from 2012 to 2022 and Phase II would begin around 2023) (attachment 4c). Fisheries management and timing would depend on monitoring and adaptive management which means that it is not clear if and when the Tribes would be able to harvest Chinook at the interim fishing site, and if so, to what degree. Therefore, the assumption made here for the purpose of this impact analysis is that the Tribes would be able to harvest Chinook at low levels, perhaps beginning as soon as 2012, and that there would be a sufficient number of salmon available for that purpose in the Iron Gate Dam to I-5 Bridge reach of the Klamath River.

Concerning fish species, timing, and any hatchery issues, Section 34 states:

“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,” (KBRA, Section 34, p. 171).

Potential positive subsistence, employment/income, land base, and health improvement opportunities would be similar to, but possibly less extensive than those described under the KHSA portion of this Action Alternative section because the quantity, variety, and timing of fish/fishing would be limited for the following reasons:¹⁴

- Implementation of the Action Alternative would have occurred to such a small extent in the initial period that populations may be too low for anything but a nominal harvest.
- The KBRA Phase I Reintroduction program would limit harvest levels and actual timeframes are unknown due to adaptive management and other factors.

3.1.2.3 KBRA Part VII. Tribal Program 33. Long-Term Economic Revitalization Projects, 33.2, Mazama Project

3.1.2.3.1 Subsistence Fisheries

Fishing and hunting rights would be strengthened by additional tribal land for accessing fishing sites which would improve tribal identity and other social and cultural conditions. For example, families, Tribal youth camps, and other community gatherings, ceremonies, other outings, and spiritual uses would likely occur more frequently and with greater freedom from interference if they would no longer be limited almost exclusively to using and/or traversing private or public land. Tribal identity would improve with additional land and fish to practice and transmit traditional knowledge and lifestyle to successive generations.

¹⁴ Concerning employment/income, any potential dam deconstruction benefits under the KHSA would not apply under this section of the KBRA.

3.1.2.3.2 *Employment and Income*

The Klamath Tribes would receive Program funds for initial purchase of the Mazama Tree Farm in 2012 and 2013 which would increase land-based economic development opportunities. At this point there are no known Tribal plans for economic development, however there would exist a potential for using the land for economic development. As purely hypothetical examples, at some point in the 2020-2060 timeframe, or anytime after 2060, the Tribes could decide to open a Tribal museum and/or tourist area with/without a fishing guide operation that would have the potential for including other components, or perhaps a tree farm, or some other enterprise(s). Therefore, this component has the potential to contribute to Tribal employment and income.

3.1.2.3.3 *Land Base and Use*

The Mazama Tree Farm is within the former Klamath Reservation (see figure 1), and would provide some restitution for land lost during the 1954 Termination period. Tribal identity would be strengthened through regaining lands previously lost and the greater access to subsistence fishing that it would provide. Greater fishing opportunities and some restitution for lands lost during Termination would improve social and cultural conditions. Treaty, trust-protected fishing, hunting, and gathering rights would be enhanced with tribally controlled land that would improve traditional food access and the means to more freely practice a traditional lifestyle.

3.1.2.3.4 *Health*

Increased access to fisheries would be expected to expand the use of fisheries, particularly if there are more fish available, and health benefits of additional fish for subsistence are described in the KHSA portion and KBRA Part IV, 18 portion of this Action Alternative section. Any possible water quality improvements would minimize or eliminate associated health concerns.

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

3.1.2.4.1 *Subsistence Fisheries*

Program funds for fishery management and conservation roles would occur between about 2012 and 2021, enhancing tribal participation. Through Tribal participation and funding, Tribal fisheries would benefit and lead to all the benefits described under the subsistence fisheries portions of the KHSA and KBRA sections in this Action Alternative section. As previously mentioned, Tribal identity and social conditions would improve, particularly as Tribal participation and ownership increases with the restoration program, and as

fisheries revive and become re-established. Funding and participation provided by the KBRA Tribal Program would strengthen the Tribes' existing fish management efforts and enhance Tribal self-determination.¹⁵

3.1.2.4.2 Employment and Income

Program funds for fishery management and conservation roles would occur between about 2012 and 2021, and are expected to improve unemployment, poverty rates, and income levels. Funds for an economic development study would be included that would likely strengthen the tribal economy.

Tribal members anticipate that the KBRA Tribal Program could provide some employment opportunities:

“...some express enthusiasm for the suggestion that the tribal members might assist in many of these habitat restoration tasks, especially those requiring construction and other forms of labor that might provide work for underemployed tribal members while also improving the health of the tribal homeland and culturally significant species.” (Duer, March 2011, p. 49).

Beginning soon after 2012, KBRA activities and Tribal funding and participation would directly and possibly indirectly improve Tribal employment and incomes, and habitat improvements would increase resident fish populations; together these would:

- Improve income, poverty, and food insecurity problems since there would be more resident fish for subsistence.
- Enhance the functioning of the existing Tribal redistribution of wealth (fish) to the elderly and other dependent populations within the community.
- Increase recreation and tourism opportunities (i.e., tribal fishing guides) and related individual and/or tribal endeavors which would have the potential to increase employment and income.

¹⁵ 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.

3.1.2.4.3 Land Base and Use

This section of the KBRA would not affect Tribal land base and use.

3.1.2.4.4 Health

Participation in fisheries management and conservation activities would enhance tribal participation, fisheries production/subsistence fishing, cultural identity, and social conditions that may encourage more fish consumption and less reliance on commodity food. Health benefits could include those described under the KHSA and other KBRA portions of this Action Alternative section.

3.1.2.5 KBRA Part IV, 18. Additional Water Conservation and Storage, 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

Although the Upper Klamath Lake and tributaries would be enhanced for all species, including anadromous species, for analysis purposes, the focus of this section will be on resident fisheries since anadromous species were the focus of the KHSA analysis in this Environmental Consequences Action Alternative section. However, the KBRA states in many places that habitat improvement in the Upper Basin is expected to benefit all anadromous species in the entire Klamath Basin.

3.1.2.5.1 Subsistence Fisheries

Overall, impacts would be positive for all resident native species which is a significant improvement in the view of the Klamath Tribes since the Tribes place a high value on the return of conditions closer to the historic, healthy, diverse ecosystem the Upper Basin once was. There are 16 native resident species representing five families of fishes currently in existence in the Upper Klamath Basin and most were historically used for subsistence to some extent by the Klamath Tribes. Native resident fish primarily include the endangered Lost River and shortnose suckers; redband/rainbow, cutthroat, and threatened bull trout; Klamath smallscale and largescale suckers; blue and tui chubs; speckled dace; and sculpin (Duer, 2003) (DOI, June 2011a and 2011b, pp. 3-6). For the most part, all native resident species are expected to benefit from the Action Alternative. Table 3.1-3 summarizes impacts by species (when available), and additional detail about species impacts are in attachment 7.

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Improvements in the Upper Klamath Lake hydrograph and water quality are expected to benefit the endangered shortnose and Lost River suckers, but not likely to harvest levels within the project period, as discussed in expert panel reports and other fisheries and algae sections in the Klamath EIS/EIR, September 2011. The Return of the C'waam ceremony is important as one of their remaining ceremonies, and because it celebrated the beginning of relief offered by Gmok'am'c, the Creator, from dwindling winter food rations each year, and later provided employment and income in canneries; they provided subsistence, income, and employment to the Tribes in canneries before about 1986 when populations became too low and the Tribes recommended that they be listed as threatened/endangered. Upper Klamath Lake KBRA improvements would enhance and protect endangered sucker populations, and provide hope to the Tribes of a future in which harvest may be possible at some point, even if beyond the project period. Although the Return of the C'waam Ceremony would have to continue to be celebrated on a small scale with the taking of one or a similarly extremely low number of fish each season, it would occur and Klamath youth could continue to learn about the species and associated cultural views and practices; under the No Action Alternative, there is a possibility that they could become extinct in 10-15 years.

The redband/rainbow trout fishery is important to the Klamath Tribes today because it is one of the few remaining fisheries that is at or above minimum harvest-levels. The Action Alternative is expected to benefit redband trout, possibly substantially. Tribal redband/rainbow trout regulations would be able to continue to allow subsistence take for Tribal members of up to five fish per day in the Williamson River system and up to ten fish per day in other systems.

Overall, positive subsistence fishing impacts would include:

- Culturally, the Tribes would be able to retain the Return of the C'waam Ceremony, and perhaps one day practice the full ceremony that would involve a larger community gathering that could involve sharing a meal of the first catch of the season.
- The Tribes' social, cultural and economic recovery from the loss of their land, salmon, and endangered suckers could continue.
- Tribal members could continue to experience the same connection to endangered suckers, redband trout, other native resident species, and the environment that their ancestors had countless generations before.
- 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.

- Familial and social interactions that revolve around the Return of the C’waam Ceremony, the Tribal redband trout fishery, and other fisheries would be strengthened by having abundant future populations.
- Continuation of opportunities for elders to teach youth how to fish and be socially responsible by giving away their first catch.
- Youth could continue to learn to catch resident fish for elders and others.
- Improved tribal identity and reduced sense of injustice could lead to improvements in social trauma and conditions.
- The Tribes would regain comprehensive fishing right trust protection as important fish species would be better-protected by habitat improvements in the Upper Basin, and hunting rights would be better supported as more resident fish could substitute for the past, present, and No Action need to rely heavily on game for subsistence needs.

3.1.2.5.2 *Employment and Income*

Beginning soon after 2012, KBRA activities and Tribal funding and participation would directly, and possibly indirectly, improve Tribal employment and incomes, and habitat improvements would increase resident fish populations; together these would:

- Improve income, poverty, and food insecurity problems since there would be more resident fish for subsistence for a growing population.
- Improve the functioning of the existing Tribal redistribution of wealth (fish) to extended family and dependent populations within the community to better support dependent Tribal members.
- Increase recreation and tourism opportunities (i.e., tribal fishing guides) and related individual and/or tribal endeavors which would have the potential to increase employment and income.

3.1.2.5.3 *Land Base and Use*

This section of the KBRA would not affect Tribal land base or use.

3.1.2.5.4 *Health*

Beginning sometime soon after 2012, there is the potential for an increase in resident fish populations which would have the same potential positive health

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effects described under the KHSA portion of this Environmental Consequences, Action Alternative section, although perhaps not quite to the same extent. Replacing commodity and other processed foods with any type of fish could improve high diabetes and heart disease rates and many other health problems and associated costs, but salmon is singled-out as particularly good for preventing heart disease because it is the highest in omega-3 fatty acids.

Water quality related health concerns and potential risks would improve (more rapidly than with no action) related to traditional fishing, bird hunting, tule, cattail and wocas gathering, ceremonial bathing (and overall aesthetics), gathering and consuming medicinal and edible plants, among other activities in Upper Klamath Basin water areas. Improved water quality would benefit fisheries and an improved hydrograph would promote greater riparian growth, both of which would make greater amounts of traditional foods available (DOI, June 2011b, pp. 4-53 to 4-64).

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Attachments

- 1 The Klamath Tribes Historical Timeline
- 2 List of Salmon Fishing Areas and Sites
- 3 Treaty with the Klamath
- 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 Reintroduction and Management Plan
- 4d KBRA Part IV. Water Resources Program. Section 18. Additional Water Conservation and Storage, 18.1 General to 18.2 Measures to Restore UKL Water Storage and Reconnect Historic Lake Bed
- 5a Bureau of the Census Maps
- 5b Bureau of the Census 5-Year Average 2005–2009 Unemployment, Income, and Poverty Estimates for the Klamath Tribes' Area
- 5c Bureau of the Census Definitions
- 5d Bureau of Indian Affairs Labor Force Report Definitions
- 6a Indian Health Care Improvement Act Made Permanent by Health Care Reform Legislation
- 6b 90 Stat. 1400 1976
- 7 Klamath Tribes Fisheries Impacts

Attachment 1

The Klamath Tribes Historical Timeline

Attachment 1

The Klamath Tribes 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 headwaters and all that depended on them as a central. The Klamath Tribes depended heavily on the Upper Basin lakes and Upper Klamath River—their lands provided everything they needed.
<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>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>Explorers & Settlers</i>	1825	Ogden enters the area. McDonald expedition – Hudson Bay Company.
	1835	French Canadian trappers.
	1843	Fremont expedition fires cannon across Klamath marsh.
	1846	Second Fremont expedition and Kit Carson massacre of Klamath village.
	1840s	Applegates and Portland notables plot to take Klamath land.
<i>Disease</i>	1846	Applegate Trail opens and smallpox hits Modocs.
<i>Explorers & Settlers</i>	1846–1860	Modocs defend territory and retaliate against wagon trains.
	1850s	Expedition from Portland to Oregon Trail.
	1852	Ben Wright massacre.
	1860–1864	Fort Klamath built. Massacre of Indian women and children near Fort Klamath.
Reservation Period	1850s–1870 1864	The three Klamath Tribes ceded more than 22 million acres of land in 1864 Treaty, but retained about 2.5 million acres (later reduced to about 1.1 million due to erroneous surveys and other land cessions) as the Klamath Reservation, with fishing, hunting, and gathering rights.
<i>Missionaries</i>	1865	Reservation schools were established under Christian organizations in 1865.
<i>Reservation Treaty Era Ends - E.O. Begins</i>	1870	Klamath Treaty of 1864 ratified. Congress ended formal treaty making with Indian tribes, and subsequent reservations were established by Executive orders.
<i>Economic Assimilation & Observers</i>	1873	Klamath Tribal members successfully sold lumber to Fort Klamath. Albert Gatschet described the Klamath Tribal aboriginal territory, fishing, and culture.
<i>Settlers</i>	1873–1874	Four Modoc leaders hung and beheaded at Fort Klamath, and Modocs who waged war were banished to Indian Territory in Oklahoma.
<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>Allotments & Assimilation</i>	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. The Klamath Tribes lost about 220,000 acres to allotment process.
<i>Assimilation</i>	1900s	Forced boarding school attendance ended and day schools on reservations begin.
<i>Trust Responsibility (water rights)</i>	1908	<i>Winters v. U.S.</i> “Winters Doctrine”: when reservations were established, sufficient water was an implied right superior to appropriations after reservation establishment. First elected [Klamath] Tribal official elected.

Era or Event	Year	Description
<i>Reservations, Development, Copco 1</i>	1910	Some of the banished Modocs return to Klamath Tribes. 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>Disease</i>	1920s–30s	TB epidemic.
<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>Assimilation</i>	1940s–50s	BIA relocation programs meant a sudden loss of many Tribal members to cities.
<i>Economic Success</i>	1950	The Klamath Tribes has become one of the wealthiest and most self-sufficient Tribes in the nation, mainly from raising cattle and timber (KTWebsite) (KTChron).
Termination Period	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. A relocation program encouraged Indians to leave reservations for cities. The Klamath Termination Act terminated the Tribes' Federal recognition in 1954 (P.L. 587) and took 1.8 million acres which has had devastating social, cultural, and economic effects on the Klamath Tribes.
<i>Development, JC Boyle</i>	1958	JC Boyle hydroelectric dam constructed, blocking salmon passage up the Klamath River to Klamath Tribal areas.
<i>Social trauma</i>	1961	Chiloquin was dubbed “murder capital, USA.”
<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>Cash Settlement – Trust Responsibility</i>	1969	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. Klamath Tribes were given funds for excluded (errors) ceded lands in 1969.
<i>Termination</i>	1971	Remaining Klamath Tribal members complete the termination process.
<i>Trust Responsibility (health care)</i>	1974	Federal court ruled that the Klamath Tribes had retained 1864 treaty rights.
	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.”
	1977	<i>Kimball v. Callahan</i> reaffirmed Klamath Tribal hunting rights reserved in 1864 Treaty.
<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 Revitalization</i>	1977	Edison Chiloquin refused termination funds for Klamath Reservation land and started revitalization of Klamath tribal culture that continued to the present.
Restoration of Federal Recognition	1986	1973 – 1986 Congress passed statutes restoring the Federal relationship with previously terminated Indian tribes, but only 10 tribes were restored to their former status. The Klamath Tribes regained Federal recognition although their land base was not returned , and in the Klamath Restoration Act, the Klamath Tribes were required to do an Economic Self-sufficiency Plan.
Suckers ESA listed	1986	Tribal Lost River and shortnose sucker fisheries closed due to declining populations.
	1988	Lost River and shortnose suckers listed as endangered.

Era or Event	Year	Description
<i>Self Determination Period</i>	1990	Klamath Tribes purchase health building.
	1996–1997	As a result of the economic self-sufficiency planning process, the Tribal Council and General Council purchased 40 acres near Chiloquin and constructed Kla-Mo-Ya Casino – the first enterprise in 45 years since termination.
	2000	Klamath tribal headquarters and related administrative buildings open and Klamath Tribal Economic Development Plan submitted to the Secretary of the Interior.
	2010	Crater Lake Junction Travel Center opens as the second business owned and operated by the Klamath Tribes. It has a convenience store, taco shop, gas station, laundromat, showers, propane services, and truck stop services.
	2010 & Future	The Klamath Tribes believe that the KHSA and KBRA dam removals would improve the health of Upper Basin lakes, tributaries, refuges, and the Klamath River, including water quality, which would increase fish availability that would in turn help improve the social, cultural, economic, and physical health of their people and would uphold their fish and hunting treaty rights. A major goal the Klamath Tribes has been to regain a tribal land base, and the KBRA provides for the means or the tribes to purchase Mazama tree farm.

Adapted from Ball, T., PhD. The Klamath Tribes Historical Trauma Genogram: Intergenerational Trauma and Unresolved Grief Project, Phase I, chart in the Klamath Council Chambers, Klamath Tribal Headquarters, Chiloquin.

Attachment 2

List of Salmon Fishing Areas and Sites

Attachment 2

Table 1.—List of salmon fishing areas and sites

<p>Klamath Tribes – Larger salmon fishing areas and sites</p> <p>Williamson River mouth Above and below the Sprague River confluence Knapp's Dam/Williamson Canyon area Sprague River and tributaries Chiloquin Dam Braymill Kaumkam Springs Cheholis Park narrows Trout Creek Jackson Ford Sycan River forks Beatty Springs South Fork Sprague River Canyon</p>
<p>Klamath Tribes – Smaller salmon fishing areas and sites</p> <p>Cherry Creek Lower Whiskey Creek Cottonwood Springs/"Coyote Bucket" reach of the Sycan River Fivemile Creek</p>
<p>Klamath Tribes – Wood River Valley salmon fishing areas and sites</p> <p>Wood River mouth Tecumseh Spring area Springs at Kimball State Park Mare's Egg Springs Pelican Bay Along Fort Creek</p>
<p>Klamath Tribes – Upper Klamath Lake salmon and other fishing areas and sites</p> <p>Springs at Modoc Point Howard Bay Rattlesnake Point (Algoma) Barkley Springs Buck Island Peninsula opposite Buck Island (Dektconks) - noted by Spier to be a nighttime salmon fishing site with triangular scoop nets.</p>
<p>Modoc – Salmon fishing areas and sites</p> <p>Lost River Lake Ewauna Spencer Creek confluence with Klamath River Nightfire Island Portion of Lower Klamath Lake near Worden (p. 15)</p>

Source: Duer, 2003, p. 13-15.

Attachment 3

Treaty with the Klamath

all necessary transportation and subsistence to their new homes and subsistence for six months thereafter: *Provided*, That, owing to the heretofore good conduct of the Mille Lac Indians, they shall not be compelled to remove so long as they shall not in any way interfere with or in any manner molest the persons or property of the whites: *Provided*, That those of the tribe residing on the Sandy Lake reservation shall not be removed until the President shall so direct.

ARTICLE 13. Female members of the family of any government employe[e] residing on the reservation, who shall teach Indian girls domestic economy, shall be allowed and paid a sum not exceeding ten dollars per month while so engaged: *Provided*, That not more than one thousand dollars shall be so expended during any one year, and that the President of the United States may suspend or annul this article whenever he may deem it expedient to do so.

Certain females may be paid as teachers.

Proviso.

ARTICLE 14. It is distinctly understood and agreed that the clearing and breaking of land for the Chippewas of the Mississippi, as provided for in the fourth article of this treaty, shall be in lieu of all former engagements of the United States as to the breaking of lands for those bands, and that this treaty is in lieu of the treaty made by the same tribes, approved March 11th, 1863.

Provisions for clearing, etc., lands to be in lieu of former provisions.

In testimony whereof the said Wm. P. Dole and Clark W. Thompson, on behalf of the United States, and Chippewa chiefs, Hole-in-the-day and Mis-qua-dace, on behalf of Indians parties to this treaty, have hereunto set their hands and affixed their seals this seventh day of May, A. D. one thousand eight hundred and sixty-four.

W. P. Dole, Commissioner Indian Affairs. [SEAL.]
 Clark W. Thompson, Superintendent Indian Affairs. [SEAL.]
 Que-ze-zance, or Hole-in-the-day, his x mark. [SEAL.]
 Mis-qua-dace, or Turtle, his x mark. [SEAL.]

Signed in presence of
 Peter Roy, special interpreter.
 Benjn. Thompson.

TREATY WITH THE KLAMATH, ETC., 1864.

Articles of agreement and convention made and concluded at Klamath Lake, Oregon, on the fourteenth day of October, A. D. one thousand eight hundred and sixty-four, by J. W. Perit Huntington, superintendent of Indian affairs in Oregon, and William Logan, United States Indian agent for Oregon, on the part of the United States, and the chiefs and head-men of the Klamath and Moadoc tribes, and Yahooskin band of Snake Indians, hereinafter named, to wit, Lu-Lake, Chil-o-que-nas, Kellogue, Mo-ghen-kas-kit, Blow, Le-lu, Palmer, Jack, Que-as, Poo-sak-sult, Che-mult, No-ak-sum, Mookkat-allick, Toon-tuck-tee, Boos-ki-you, Ski-a-tic, Shol-las-loos, Tatet-pas, Muk-has, Herman-koos-mam, chiefs and head-men of the Klamaths; Schon-chin, Stat-it-ut, Keint-poos, Chuck-e-i-ow, chiefs and head-men of the Moadocs, and Kile-to-ak and Sky-te-ock-et, chiefs of the Yahooskin band of Snakes.

Oct. 14, 1864.
 16 Stats., 707.
 Ratified, July 2,
 1866.
 Proclaimed Feb. 17,
 1870.

ARTICLE 1. The tribes of Indians aforesaid cede to the United States all their right, title, and claim to all the country claimed by them, the same being determined by the following boundaries, to wit: Beginning at the point where the forty fourth parallel of north latitude crosses the summit of the Cascade Mountains; thence following the main dividing-ridge of said mountains in a southerly direction to the ridge which separates the waters of Pitt and McCloud Rivers from the waters on the north; thence along said dividing-ridge in an easterly direction to the southern end of Goose Lake; thence northeasterly to the north-

Cession of lands to the United States.

Boundaries.

Reservation.	ern end of Harney Lake; thence due north to the forty-fourth parallel of north latitude; thence west to the place of beginning: <i>Provided</i> , That the following-described tract, within the country ceded by this treaty, shall, until otherwise directed by the President of the United States, be set apart as a residence for said Indians, [and] held and regarded as an Indian reservation, to wit: Beginning upon the eastern shore of the middle Klamath Lake, at the Point of Rocks, about twelve miles below the mouth of Williamson's River; thence following up said eastern shore to the mouth of Wood River; thence up Wood River to a point one mile north of the bridge at Fort Klamath; thence due east to the summit of the ridge which divides the upper and middle Klamath Lakes; thence along said ridge to a point due east of the north end of the upper lake; thence due east, passing the said north end of the lake; thence along said mountain to the point where Sprague's River is intersected by the Ish-tish-ea-wax Creek; thence in a southerly direction to the summit of the mountain, the extremity of which forms the Point of Rocks; thence along said mountain to the place of beginning. And the tribes aforesaid agree and bind themselves that, immediately after the ratification of this treaty, they will remove to said reservation and remain thereon, unless temporary leave of absence be granted to them by the superintendent or agent having charge of the tribes.
Boundaries.	
Indians to remove to and live upon the reservation.	
White persons not to remain on reservation.	It is further stipulated and agreed that no white person shall be permitted to locate or remain upon the reservation, except the Indian superintendent and agent, employes of the Indian department, and officers of the Army of the United States, and that in case persons other than those specified are found upon the reservation, they shall be immediately expelled therefrom; and the exclusive right of taking fish in the streams and lakes, included in said reservation, and of gathering edible roots, seeds, and berries within its limits, is hereby secured to the Indians aforesaid: <i>Provided, also</i> , That the right of way for public roads and railroads across said reservation is reserved to citizens of the United States.
Right of way for railroads.	
Payments by the United States.	ARTICLE 2. In consideration of, and in payment for the country ceded by this treaty, the United States agree to pay to the tribes conveying the same the several sums of money hereinafter enumerated, to wit: Eight thousand dollars per annum for a period of five years, commencing on the first day of October, eighteen hundred and sixty-five, or as soon thereafter as this treaty may be ratified; five thousand dollars per annum for the term of five years next succeeding the first period of five years; and three thousand dollars per annum for the term of five years next succeeding the second period; all of which several sums shall be applied to the use and benefit of said Indians by the superintendent or agent having charge of the tribes, under the direction of the President of the United States, who shall, from time to time, in his discretion, determine for what objects the same shall be expended, so as to carry out the design of the expenditure, [it] being to promote the well-being of the Indians, advance them in civilization, and especially agriculture, and to secure their moral improvement and education.
How to be expended.	
Additional payment and for what purpose.	ARTICLE 3. The United States agree to pay said Indians the additional sum of thirty-five thousand dollars, a portion whereof shall be used to pay for such articles as may be advanced to them at the time of signing this treaty, and the remainder shall be applied to subsisting the Indians during the first year after their removal to the reservation, the purchase of teams, farming implements, tools, seeds, clothing, and provisions, and for the payment of the necessary employes.
Mills and shops to be erected.	ARTICLE 4. The United States further agree that there shall be erected at suitable points on the reservation, as soon as practicable after the

ratification of this treaty, one saw-mill, one flouring-mill, suitable buildings for the use of the blacksmith, carpenter, and wagon and plough maker, the necessary buildings for one manual-labor school, and such hospital buildings as may be necessary, which buildings shall be kept in repair at the expense of the United States for the term of twenty years; and it is further stipulated that the necessary tools and material for the saw-mill, flour-mill, carpenter, blacksmith, and wagon and plough maker's shops, and books and stationery for the manual-labor school, shall be furnished by the United States for the period of twenty years.

Schoolhouse and hospital.

Tools, books, and stationery

ARTICLE 5. The United States further engage to furnish and pay for the services and subsistence, for the term of fifteen years, of one superintendent of farming operations, one farmer, one blacksmith, one sawyer, one carpenter, and one wagon and plough maker, and for the term of twenty years of one physician, one miller, and two school-teachers.

Farmer, mechanics, and teachers.

ARTICLE 6. The United States may, in their discretion, cause a part or the whole of the reservation provided for in Article 1 to be surveyed into tracts and assigned to members of the tribes of Indians, parties to this treaty, or such of them as may appear likely to be benefited by the same, under the following restrictions and limitations, to wit: To each head of a family shall be assigned and granted a tract of not less than forty nor more than one hundred and twenty acres, according to the number of persons in such family; and to each single man above the age of twenty-one years a tract not exceeding forty acres. The Indians to whom these tracts are granted are guaranteed the perpetual possession and use of the tracts thus granted and of the improvements which may be placed thereon; but no Indian shall have the right to alienate or convey any such tract to any person whatsoever, and the same shall be forever exempt from levy, sale, or forfeiture: *Provided*, That the Congress of the United States may hereafter abolish these restrictions and permit the sale of the lands so assigned, if the prosperity of the Indians will be advanced thereby: *And provided further*, If any Indian, to whom an assignment of land has been made, shall refuse to reside upon the tract so assigned for a period of two years, his right to the same shall be deemed forfeited.

Reservation may be surveyed into tracts and assigned to heads of families and single persons.

Not to be alienated nor subject to levy, etc.

Restrictions may be removed.

Forfeiture.

ARTICLE 7. The President of the United States is empowered to declare such rules and regulations as will secure to the family, in case of the death of the head thereof, the use and possession of the tract assigned to him, with the improvements thereon.

Regulations as to successions.

ARTICLE 8. The annuities of the tribes mentioned in this treaty shall not be held liable or taken to pay the debts of individuals.

Annuities not liable for debts.

ARTICLE 9. The several tribes of Indians, parties to this treaty, acknowledge their dependence upon the Government of the United States, and agree to be friendly with all citizens thereof, and to commit no depredations upon the person or property of said citizens, and to refrain from carrying on any war upon other Indian tribes; and they further agree that they will not communicate with or assist any persons or nation hostile to the United States, and, further, that they will submit to and obey all laws and regulations which the United States may prescribe for their government and conduct.

Peace and friendship.

ARTICLE 10. It is hereby provided that if any member of these tribes shall drink any spirituous liquor, or bring any such liquor upon the reservation, his or her proportion of the benefits of this treaty may be withheld for such time as the President of the United States may direct.

Members drinking, etc. spirituous liquors, not to have the benefits of this treaty.

ARTICLE 11. It is agreed between the contracting parties that if the United States, at any future time, may desire to locate other tribes upon the reservation provided for in this treaty, no objection shall be made thereto; but the tribes, parties to this treaty, shall not, by such

Other tribes may be located on reservation.

Proviso

location of other tribes, forfeit any of their rights or privileges guaranteed to them by this treaty.

Treaty, when to take effect.

ARTICLE 12. This treaty shall bind the contracting parties whenever the same is ratified by the Senate and President of the United States.

Execution.

In witness of which, the several parties named in the foregoing treaty have hereunto set their hands and seals at the place and date above written.

J. W. Perit Huntington, [SEAL.]
 Superintendent Indian Affairs.
 William Logan, [SEAL.]
 United States Indian Agent.

La-lake, his x mark.	[SEAL.]	Boss-ki-you, his x mark.	[SEAL.]
Chil-o-que-nas, his x mark.	[SEAL.]	Ski-at-tic, his x mark.	[SEAL.]
Kellogue, his x mark.	[SEAL.]	Shol-lal-loos, his x mark.	[SEAL.]
Mo-ghen-kas-kit, his x mark.	[SEAL.]	Tat-tet-pas, his x mark.	[SEAL.]
Blow, his x mark.	[SEAL.]	Muk-has, his x mark.	[SEAL.]
Le-lu, his x mark.	[SEAL.]	Herman-kus-mam, his x mark.	[SEAL.]
Palmer, his x mark.	[SEAL.]	Jackson, his x mark.	[SEAL.]
Jack, his x mark.	[SEAL.]	Schon-chin, his x mark.	[SEAL.]
Que-ass, his x mark.	[SEAL.]	Stak-it-ut, his x mark.	[SEAL.]
Poo-sak-sult, his x mark.	[SEAL.]	Keint-poos, his x mark.	[SEAL.]
Che-mult, his x mark.	[SEAL.]	Chuck-e-i-ox, his x mark.	[SEAL.]
No-ak-sum, his x mark.	[SEAL.]	Kile-to-ak, his x mark.	[SEAL.]
Mooch-kat-allick, his x mark.	[SEAL.]	Sky-te-ock-et, his x mark.	[SEAL.]
Toon-tuc-tee, his x mark.	[SEAL.]		

Signed in the presence of—

R. P. Earhart, secretary.
 Wm. Kelly, captain First Cavalry, Oregon Volunteers.
 James Halloran, second lieutenant First Infantry, W. T. Volunteers.
 William C. McKay, M. D.
 Robert (his x mark) Biddle.

TREATY WITH THE CHIPPEWA OF SAGINAW, SWAN CREEK, AND BLACK RIVER, 1864.

Oct. 18, 1864.
 U.S. STAT., 6, 7.
 Ratified May 22, 1866.
 Proclaimed Aug. 16, 1866.

Articles of agreement and convention made and concluded at the Isabella Indian Reservation, in the State of Michigan, on the eighteenth day of October, in the year one thousand eight hundred and sixty-four, between H. J. Alvord, special commissioner of the United States, and D. C. Leach, United States Indian agent, acting as commissioners for and on the part of the United States, and the Chippewas of Saginaw, Swan Creek, and Black River, in the State of Michigan aforesaid, parties to the treaty of August 2d, 1855, as follows, viz:

Released to the United States of reservation and right to locate and purchase certain lands.

ARTICLE 1. The said Chippewas of Saginaw, Swan Creek, and Black River, for and in consideration of the conditions hereinafter specified, do hereby release to the United States the several townships of land reserved to said tribe by said treaty aforesaid, situate and being upon Saginaw Bay, in said State.

The said Indians also agree to relinquish to the United States all claim to any right they may possess to locate lands in lieu of lands sold or disposed of by the United States upon their reservation at Isabella, and also the right to purchase the unselected lands in said reservation, as provided for in the first article of said treaty.

Certain lands set apart for the Indians in Isabella County.

ARTICLE 2. In consideration of the foregoing relinquishments, the United States hereby agree to set apart for the exclusive use, ownership, and occupancy of the said *of the said* Chippewas of Saginaw, Swan Creek, and Black River, all of the unsold lands within the six townships in Isabella County, reserved to said Indians by the treaty of August 2, 1855, aforesaid, and designated as follows, viz:

The north half of township fourteen, and townships fifteen and sixteen north, of range three west; the north half of township fourteen

In testimony whereof, the said Wm. P. Dole, Commissioner as aforesaid, and the undersigned, chiefs of the Ponca tribe of Indians, have hereunto set their hands and seals at the place and on the day hereinbefore written.

Wm. P. Dole.

Wah-gah-sap-pi, or Iron Whip, his x mark. [SEAL.]

Gist-tah-wah-gu, or Strong Walker, his x mark. [SEAL.]

Wash-com-mo-ni, or Mitchell P. Cerre, his x mark. [SEAL.]

Ash-nan-e-kah-gah-he, or Lone Chief, his x mark. [SEAL.]

Tah-ton-ga-nuz-zhe, or Standing Buffalo, his x mark. [SEAL.]

Executed in the presence of—

Chas. Sims.

Stephen A. Dole.

Newton Edmunds.

J. Shaw Gregory.

George N. Propper.

TREATY WITH THE SNAKE, 1865.

Aug. 12, 1865.
14 Stat., 683.
Ratified July 5, 1866.
Proclaimed July 10,
1866.

Articles of agreement and convention made and concluded at Sprague River Valley, on this twelfth day of August, in the year one thousand eight hundred and sixty-five, by J. W. Perit Huntington, superintendent of Indian affairs in Oregon, on the part of the United States, and the undersigned chiefs and head-men of the Woll-pah-pe tribe of Snake Indians, acting in behalf of said tribe, being duly authorized so to do.

Peace.

Prisoners and
slaves.

ARTICLE 1. Peace is declared henceforth between the United States and the Woll-pah-pe tribe of Snake Indians, and also between said tribe and all other tribes in amity with the United States. All prisoners and slaves held by the Woll-pah-pe tribe, whether the same are white persons or members of Indian tribes in amity with the United States, shall be released; and all persons belonging to the said Woll-pah-pe tribe now held as prisoners by whites, or as slaves by other Indian tribes, shall be given up.

Cession of lands to
the United States.

Boundaries.

ARTICLE 2. The said tribe hereby cedes and relinquishes to the United States all their right, title, and interest to the country occupied by them, described as follows, to wit: Beginning at the Snow Peak in the summit of the Blue Mountain range, near the heads of the Grande Ronde River and the north fork of John Day's River; thence down said north fork of John Day's River to its junction with the south fork; thence due south to Crooked River; thence up Crooked River and the south fork thereof to its source; thence southeasterly to Harney Lake; thence northerly to the heads of Malheur and Burnt Rivers; thence continuing northerly to the place of beginning.

Indians to remove
to reservation.

ARTICLE 3. The said tribe agree to remove forthwith to the reservation designated by the treaty concluded on the 14th [15th] of October, 1864, with the Klamath, Moadoc, and Yahooskiu Snake Indians, there to remain under the authority and protection of such Indian agent, or other officer, as the Government of the United States may assign to such duty, and no member of said tribe shall leave said reservation for any purpose without the written consent of the agent or superintendent having jurisdiction over said tribe.

To submit to the
United States and not
depredate.

Offenders to be
given up.

ARTICLE 4. The said Woll-pah-pe tribe promise to be friendly with the people of the United States, to submit to the authority thereof, and to commit no depredations upon the persons or property of citizens thereof, or of other Indian tribes; and should any member of said tribe commit any such depredations, he shall be delivered up to the agent for punishment, and the property restored. If after due notice the tribe

neglect or refuse to make restitution, or the property is injured or destroyed, compensation may be made by the Government out of the annuities hereinafter provided. In case of any depredation being committed upon the person or property of any member of the aforesaid Woll-pah-pe tribe, it is stipulated that no attempt at revenge, retaliation, or reclamation shall be made by said tribe; but the case shall be reported to the agent or superintendent in charge, and the United States guarantee that such depredation shall be punished in the same manner as if committed against white persons, and that the property shall be restored to the owner.

Wrongs upon Indians, how redressed.

ARTICLE 5. The said tribe promise to endeavor to induce the Hoo-ne-boo-ey and Wa-tat-kah tribes of Snake Indians to cease hostilities against the whites; and they also agree that they will, in no case, sell any arms or ammunition to them nor to any other tribe hostile to the United States.

Hostile tribes, sale of arms, etc.

ARTICLE 6. The United States agree to expend, for the use and benefit of said tribe, the sum of five thousand dollars to enable the Indians to fence, break up, and cultivate a sufficient quantity of land for their use, to supply them with seeds, farming-implements, domestic animals, and such subsistence as may be necessary during the first year of their residence upon the reservation.

Fencing and cultivating lands.

Seeds, tools, etc.

ARTICLE 7. The United States also agree to expend, for the use and benefit of said tribe, the sum of two thousand dollars per annum for five years next succeeding the ratification of this treaty, and twelve hundred dollars per annum for the next ten years following, the same to be expended under the direction of the President of the United States for such objects as, in his judgment, will be beneficial to the Indians, and advance them in morals and knowledge of civilization.

Beneficial expenditures.

ARTICLE 8. The said tribe, after their removal to the reservation, are to have the benefit of the services of the physician, mechanics, farmers, teachers, and other employés provided for in the treaty of the 15th October, 1864, in common with the Klamaths, Moadocs, and Yahooskiu Snakes, and are also to have the use of the mills and school-houses provided for in said treaty, so far as may be necessary to them, and not to the disadvantage of the other tribes; and, in addition, an interpreter who understands the Snake language shall be provided by the Government. Whenever, in the judgment of the President, the proper time shall have arrived for an allotment of land in severalty to the Indians upon the said reservation, a suitable tract shall be set apart for each family of the said Woll-pah-pe tribe, and peaceable possession of the same is guaranteed to them.

Physician, mechanics, etc.

Mill and school houses.

Interpreter.

ARTICLE 9. The tribe are desirous of preventing the use of ardent spirits among themselves, and it is therefore provided that any Indian who brings liquor on to the reservation, or who has it in his possession, may in addition to the penalties affixed by law, have his or her proportion of the annuities withheld for such time as the President may determine.

Possession of ardent spirits on reservation, how punished.

ARTICLE 10. This treaty shall be obligatory upon the contracting parties as soon as the same shall be ratified by the Senate of the United States.

Treaty, when to be obligatory.

In testimony whereof, the said J. W. Perit Huntington, superintendent of Indian affairs, and the undersigned chiefs and headmen of the tribe aforesaid, have hereunto set their signatures and seals, at the place and on the day and year above written.

J. W. Perit Huntington,		
Superintendent Indian Affairs in Oregon.	his x mark.	[SEAL.]
Pah-ni-ne,	his x mark.	[SEAL.]
Hau-ni-noo-ey,	his x mark.	[SEAL.]
Ki-nau-ney,	his x mark.	[SEAL.]
Wa-ak-chau,	his x mark.	[SEAL.]

Attachment 4

- 4a BRA 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 Reintroduction and Management Plan
- 4d KBRA Part IV. Water Resources Program. Section 18. Additional
Water Conservation and Storage, 18.1 General to
18.2 Measures to Restore UKL Water Storage and Reconnect
Historic Lake Bed

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 10, Fisheries Restoration Plan, and Section 11 Fisheries Reintroduction and Management Plan

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 4d

KBRA Part IV. Water Resources Program. Section 18. Additional Water Conservation and Storage, 18.1 General to 18.2 Measures to Restore UKL Water Storage and Reconnect Historic Lake Bed

investment account. In the event that the grant funding sources have received the return of funds equaling the funds originally provided by them under this Agreement and deposited into the investment account, then no further payments are required to be made to such entities.

- D. Aside from the use of excess project revenues as set forth in this section, neither the Management Entity nor any other Party shall have any affirmative obligation to repay funds originally transferred into the investment account. In no case shall the availability of funds provided under this Agreement preclude the Management Entity or any other Party from applying for or receiving grants, credits, or other financial incentives as may be available for the development of renewable power or conservation projects.

17.7.4. Conservation and Efficiency

The Non-Federal Parties will support applications for energy-based economic development, federal and state renewable energy generation, and conservation and efficiency, funding and technical assistance programs to assist in realizing energy efficiency and renewable energy generation consistent with the Purposes of the Power for Water Management Program and its elements. The Management Entity shall periodically make recommendations to entities providing funding for conservation.

18. Additional Water Conservation and Storage

The Parties agree to these additional obligations to enhance water conservation and provide for further water storage.

18.1. General

This Agreement does not limit any authority under Applicable Law to implement additional water conservation measures that are consistent with the terms of this Agreement.

18.2. Measures to Restore Upper Klamath Lake Water Storage and Reconnect Historic Lake Bed

18.2.1. Williamson River Delta

In accordance with the preferred alternative described in the Environmental Impact Statement and with funding provided by Reclamation, Natural Resource Conservation Service and the FWS, The Nature Conservancy (TNC) completed the breaching of the levies in November 2008 to restore approximately 28,800 acre-feet (gross) of lake storage capacity when Upper Klamath Lake elevations are between 4143.3 and 4136.0 feet. The Parties agree to support efforts to

monitor the effects on fish populations and water quality associated with this restoration project.

18.2.2. Agency Lake Ranch and Barnes Ranch

To achieve water management outcomes consistent with this Agreement, the diked and drained areas of Agency Lake and Barnes Ranches that once were part of Agency Lake will be operated as pumped storage within existing dikes subject to Section 18.2.2.D, with the goal of reconnecting to Agency Lake by breaching existing dikes.

A. Recital

Reclamation, FWS, and TNC entered into a Memorandum of Understanding (MOU) on March 2, 2007, to, among other things, provide for transfer of the remaining areas of the Agency Lake Ranch and Barnes Ranch (collectively, the land) to FWS and for pumped storage operations. The MOU also provides that upon transfer of the land, FWS will manage the land as part of the Upper Klamath NWR (UKNWR) with the goal of breaching the existing lakeshore levee system. Under this Agreement, the Parties shall investigate and seek to secure additional water storage in the Upper Klamath Basin, including reconnecting the land to Agency Lake to provide approximately 63,770 acre-feet (gross) of restored storage between elevations 4143.3 and 4136.0, subject to availability of funds.

B. Transfer of Lands

Reclamation shall transfer, subject to Section 18.2.2.C, the land to FWS upon written mutual agreement between Reclamation and FWS (transfer agreement) within one year of the Effective Date. Upon transfer to FWS, FWS will manage the transferred lands as part of the UKNWR subject to Section 18.2.2.C so long as it is in effect.

C. Reconnection

The FWS, with technical assistance from Reclamation, will make Best Efforts to reconnect the land to Agency Lake as described in Section 18.2.2.A. Such reconnection is intended to provide restoration, wildlife, fisheries, and water management benefits.

The FWS will complete a study, by March 31, 2012, that evaluates options for enhancing water management flexibility in providing benefits for water storage, fish, wildlife, and wetlands habitat, including the construction of a dike along the northern border of the property, from the Effective Date until the date on which the On-Project Plan is fully implemented pursuant to Section 15.2.2.B.ii. FWS shall commence its environmental analysis of the options

considered in the above study within 60 days of an Affirmative Determination by the Secretary under Section 3 of the Hydroelectric Settlement. It shall undertake to complete such analysis within two years of commencement. FWS shall implement the selected alternative in a Timely manner provided adequate funding is available. FWS will provide a progress report to the Parties every 6 months after the Effective Date.

D. Pumped Storage Operations

Reclamation will continue the pumped storage operations on the land consistent with such operations since 1998, in accordance with Applicable Law, and pursuant to this Agreement and the transfer agreement between Reclamation and FWS, for the period from the Effective Date until one of the following events occurs (“pumped storage period”): (i) the date of reconnection of the land to Agency Lake; or (ii) the date on which the On-Project Plan is fully implemented pursuant to Section 15.2; or (iii) when an additional 30,000 acre-feet of inflow is being provided in UKL on an average annual basis, as determined by OWRD pursuant to Section 16.2.2.F; or (iv) until such time that pumped storage ceases, based on a determination by the Secretary, in consultation with the Parties, that pumped storage is no longer feasible or cost-effective. Further, Reclamation shall be responsible during the pumped storage period for all operations and maintenance for such pumped storage operations, consistent with the transfer agreement and pursuant to this Agreement.

E. Management After Cessation of Pumped Storage

After cessation of the pumped storage period, FWS shall manage the land as part of the UKNWR no longer subject to the requirement of Section 18.2.2.D.

18.2.3. Wood River Wetland Restoration Project

To achieve water management outcomes consistent with this Agreement, the Parties’ ultimate goal is to reconnect Wood River Wetland to Agency Lake when physical and biotic conditions are sufficient to provide the wetland restoration benefits for which the property was acquired.

BLM currently manages the Wood River Wetland to restore wetlands adjacent to Agency Lake. In furtherance of this Agreement and the ultimate goal, BLM, in collaboration with the KBAC and TAT will complete a study, by March 31, 2012, that evaluates options for enhancing water management flexibility in providing benefits for water storage, fish, wildlife and wetlands habitat from the Effective Date until the date on which the On-Project Plan is fully implemented pursuant to Section 15.2.2.B.ii, or an additional 30,000 acre-feet of water inflow is being

provided in UKL on an average annual basis as determined by OWRD pursuant to Section 16.2.2.F. This study will consider options, among others, whether diked and drained areas of Wood River Wetland that once comprised Agency Lake should be operated as pumped storage within existing dikes, or fully reconnected to Agency Lake by breaching dikes. Either option would result in a total water volume of approximately 16,000 acre-feet of gross storage between elevations 4143.3 and 4136.0 feet, but would provide differing arrays of water management opportunities and ecosystem benefits.

The BLM shall commence its environmental analysis of the options considered in the above study within 60 days of an Affirmative Determination by the Secretary, as described in Section 3.3 of the Hydroelectric Settlement. It shall undertake to complete such review within 2 years after commencement. BLM shall implement the selected alternative in a Timely manner. All actions described in this section are contingent upon adequate funding.

18.2.4. Off-Project Water Use Retirements above Upper Klamath Lake

As provided in Section 16, a WURP will be implemented to generate, on an average annual basis, an additional 30,000 acre-feet of inflow to Upper Klamath Lake.

18.2.5. Alternatives

If any of the obligations in Sections 18.2.2 through 18.2.4 cannot be met or become technically infeasible or legally impossible, the Parties shall pursue amendment of this Agreement pursuant to Section 7.2 to achieve comparable storage and/or inflows into Upper Klamath Lake.

18.2.6. Additional Conservation

The Parties shall support continued investigations of methods to achieve conservation of Klamath Basin water.

18.3. Future Storage Opportunities

18.3.1. Technical Investigation

Pursuant to the Klamath Basin Water Supply Enhancement Act of 2000 (P.L. 106-498), and given sufficient appropriations identified in Appendix C-2, Reclamation shall work diligently to complete appropriate studies for off-stream storage projects. Reclamation will provide a progress report to the Parties every six months after the Effective Date. The Parties shall continue to support ongoing investigations and acquisition of additional storage.

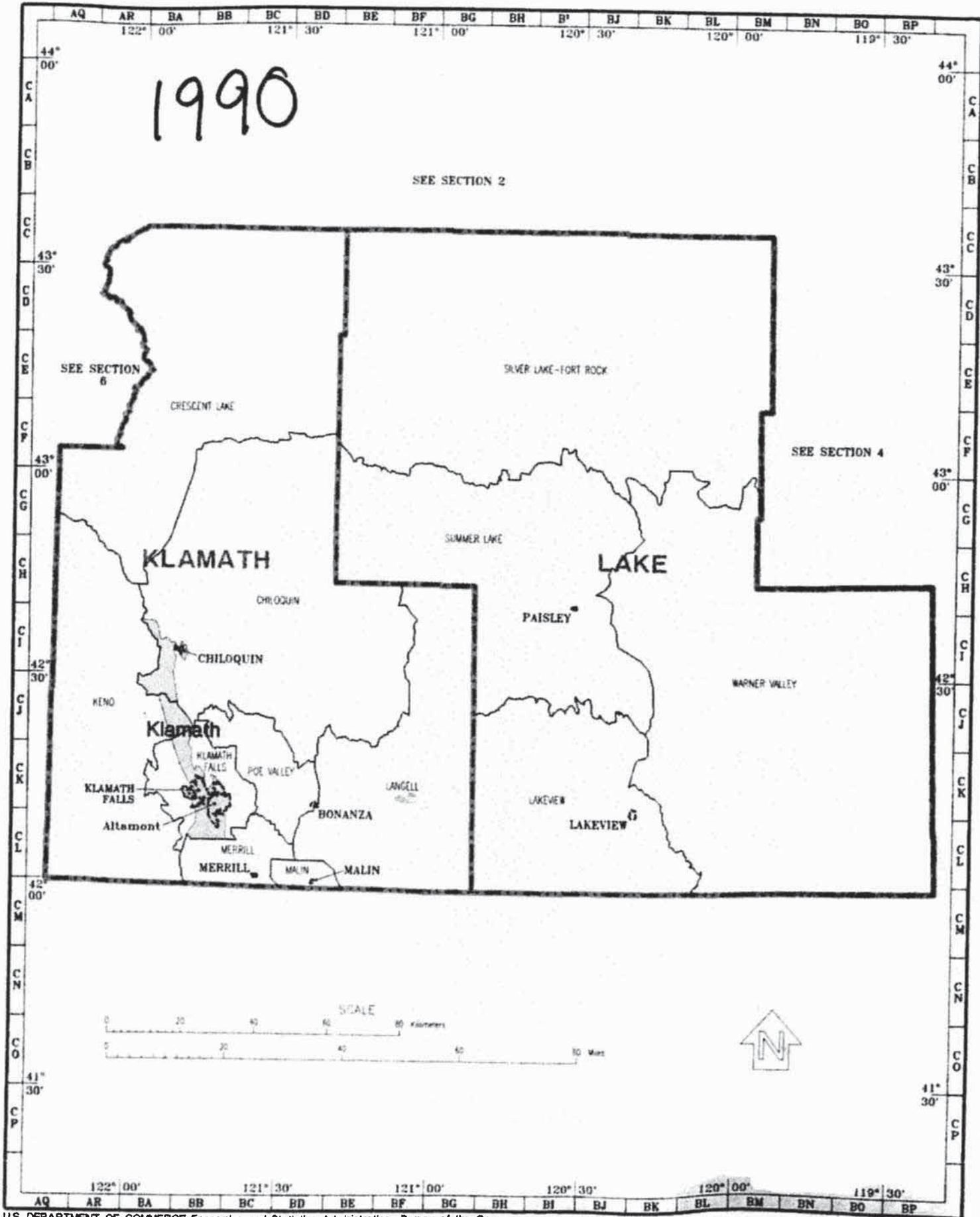
Attachment 5

- 5a Bureau of the Census Maps
- 5b Bureau of the Census 5-Year Average 2005–2009 Unemployment,
Income, and Poverty Estimates for the Klamath Tribes Area
- 5c Bureau of the Census Definitions
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Attachment 5a

Bureau of the Census Maps

American Indian Areas, Counties, County Subdivisions, and Places - Section 5



U.S. DEPARTMENT OF COMMERCE Economics and Statistics Administration Bureau of the Census

MAPS

Attachment 5b

Bureau of the Census 5-Year Average 2005–2009 Unemployment,
Income, and Poverty Estimates for the Klamath Tribes Area

Attachment 5b

Bureau of the Census 5-Year Average 2005–2009 Unemployment, Income, and Poverty Estimates for the Klamath Tribes Area

Geographic areas	Census unemployment (%)	Median household income	Per capita income	Poverty status (%)	Poverty – families, female householder, no husband, children under 18 ¹ (%)	Poverty – families, female householder, no husband, children under 5 (%)
Chiloquin CDP	12.2	23,029	11,267	40.5	84.6	100
Chiloquin CCD	7.2	30,096	17,213	31.1	67.2	100
Klamath Falls CCD	5.3	41,076	22,228	16.8	39.7	38.6
Klamath County	5.3	41,040	21,770	17.6	41.4	41.0
Oregon	5.1	49,033	25,893	13.6	38.1	51.8

Source: American Community Survey DP03 “selected economic characteristics: 2005-2009.” American Indian population data were not available when the data was released.

¹ The sample error rates are higher for these categories than the non-family poverty category or other categories.

Attachment 5c

Bureau of the Census Definitions

Attachment 5c

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

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C2KBR-25

By
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"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

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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-Coshen, 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

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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

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Attachment 5d

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 6

6a Indian Health Care Improvement Act Made Permanent by Health
Care Reform Legislation

6b 90 Stat. 1400 1976

Attachment 6a

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/Welcome_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.

Health Law Perspectives (April 2010)

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Attachment 6b

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.

**Two-year
limitation.**

(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.

**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.

**25 USC 1396j
note.**

25 USC 1396.

(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.

Supra.

(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.

**25 USC 1396j
note.**

(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).”.

**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 7

Klamath Tribes Fisheries Impacts

Attachment 7

Klamath Tribes Fisheries 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 7-1.—Summary of Projected No Action Conditions by Species

Coho Salmon (Threatened)	<p>Summation: Coho would likely remain endangered and continuation depressed populations below IGD and unavailable in UB.</p> <p>EP: Marginal benefits and unavailable in UB.</p> <p>SR: Remain endangered and unavailable in UB. Below IGD, current populations may remain depressed.</p> <p>EIS/EIR: Continue downward trend.</p> <p>DOI: Continue downward trend.</p>
Spring Chinook Salmon	<p>Summation: Continue on current downward trajectory, remain unavailable in UB, and may become extinct/ESA listing.</p> <p>EP: Numerous negative factors listed.</p> <p>SR: Significantly lower than historic levels and some fishing restrictions; remain on current downward trajectory and unavailable in UB, may become extinct.</p> <p>EIS/EIR: Continued downward trend.</p> <p>DOI: Remain at low levels and high risk of ESA and CESA uplisting.</p>
Fall Chinook Salmon	<p>Summation: Continue current downward trajectory and remain unavailable in UB.</p> <p>EP: Numerous negative factors listed.</p> <p>SR: Significantly lower than historic levels; would remain unavailable in UB and would likely continue on current downward trajectory.</p> <p>EIS/EIR: Continuation of downward trend.</p> <p>DOI: Chinook would remain in a depleted state and unavailable in UB.</p>
Pacific Lamprey	<p>Summation: Pacific Lamprey would remain about the same or decline in Klamath River and remain unavailable in UB.</p> <p>EP: No change, unavailable in UB.</p> <p>SR: Remain the same or decline and continue to be unavailable in UB.</p> <p>EIS/EIR: Essentially no change.</p> <p>DOI: Unavailable in UB.</p>
Steelhead Trout	<p>Summation: May remain the same or improve slightly in Klamath River and remain unavailable in the UB.</p> <p>EP: Unsure, remain unavailable in UB, small improvement otherwise.</p> <p>SR: Somewhat uncertain, remain unavailable in UB, may decline.</p> <p>EIS/EIR: No change.</p> <p>DOI: Remain unavailable in UB.</p>
Shortnose and Lost River Suckers (Endangered)	<p>Summation: Range from possible improvement to risk of extinction.</p> <p>EP: Declining; could become extinct in near future.</p> <p>SR: Ongoing efforts beneficial.</p> <p>EIS/EIR: Expected to improve.</p> <p>DOI: No anticipated improvement.</p>

Table 7-1.—Summary of Projected No Action Conditions by Species

Redband and Rainbow Trout	Summation: No change to downward trend in size and abundance. EP: No change. SR: Continued downward trend in size and abundance. EIS/EIR: Continued downward trend in size and abundance. BIA: Not included/analyzed.
Bull trout (Threatened)	Summation: Ranges from slow improvements to possible extinction. EP: High risk of extinction. SR: Likely improve on its current downward trajectory. EIS/EIR: No change. BIA: Not included/analyzed.
Other Species – Generally	Summation: (EP) Overall, most would remain stable or gradually improve.
Other Native Species: Klamath Largescale	Summation: Stable or increase. EP: Stable or increase. SR: Stable or increase. EIS/EIR: Not included/analyzed. BIA: No change.
Other Native Species: Klamath Smallscale	Summation: Stable or increase. EP: Stable or increase. SR: Stable or increase. EIS/EIR: Not included/analyzed. BIA: Not specifically analyzed.

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 (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 Report (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

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.

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. 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 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)

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.

Expert Panel (Close, et. al., January 14, 2011)

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 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)

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 (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 EIS/EIR

“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).

Shortnose (SNS) and Lost River (LRS) Suckers

Both suckers were listed as endangered under the ESA in 1988 and are endemic to the lakes on the Upper Basin, and may become extinct. The SNS can survive up to 33 years and the LRS up to 57 years. Although there would be some ongoing improvements in habitat, both species are declining and could become extinct.

Expert Panel (Buchanan, et. al., April 11, 2011)

The report concluded that under no action they could become extinct:

“Available data show that both [species] are declining under current conditions and that they could become extinct in the near future unless a major recruitment event occurs soon...” (p. 76). “With declining populations under the current conditions, there are no opportunities for tribal or recreational harvest,” (p. 71).

Synthesis Report

Considerable ongoing efforts are expected to benefit species:

“Considerable efforts are on-going to restore habitat in the upper Klamath River Basin. Although many of these restoration efforts have targeted habitat for sucker species listed under the ESA, these efforts would also benefit anadromous species. Since the early 1990’s, the Service, Reclamation, State of Oregon, Klamath Tribes, National Resources Conservation Service (NRCS), other partners, and private landowners have been working to recover the Lost River sucker and the shortnose sucker.” (p. 14). “Conditions with dams and without KBRA would provide fewer opportunities for water quality and habitat improvements in the upper basin areas where Lost River and shortnose suckers reside.” (p. 58).

Klamath EIS/EIR

“Under the No Action/No Project Alternative, existing efforts to restore habitat for shortnose and Lost River sucker and improve water quality conditions would continue. These actions would be expected to improve conditions for these species over time and their populations would be expected to increase. The effect of the No Action/No Project Alternative would be no change from existing conditions for Lost River and shortnose sucker populations in the short and long term.” (pp. 3.3-71).

DOI/BIA Technical Report

No improvement is anticipated in sucker populations because habitat and water quality improvements would fall short of what is needed.

“The sucker species in the upper watershed—particularly Lost River, shortnose, Klamath smallscale, and Klamath largescale suckers, resident lamprey species, and redband trout—are important to the Klamath Tribes. Under the Dams In Scenario, no improvement is anticipated in sucker populations because there is less opportunity for improvements to habitat and overall ecosystem functionality and health. Additionally, although TMDLs will be in place, improvements in water quality are not anticipated to the extent that they would result in improved conditions for population increases.” (p. 3-61).

Redband/Rainbow Trout⁸

The redband trout fishery is important to the Klamath Tribes because it one of the few remaining fisheries that can be harvested. In sum, distribution, abundance and/or sizes of redband/rainbow would possibly decline since, among other things, the dams impair migration.

Expert Panel (Buchanan, April 11, 2011)

“Under the current Conditions with Dams, distribution and abundance of Lake/River redband/rainbow trout is expected to remain stable,” (p.72).

Synthesis Report

Migration would be impaired and hydropower peaking would continue to impact populations:

“Redband trout need to migrate among habitats between the dams, mainstem tributaries and reservoirs...Under conditions with dams...[they] will continue to be blocked...by the lower three Klamath River dams and be greatly impaired in their movements by J.C. Boyle Dam (Jacobs et al. 2008)...Migration impairment and hydropower peaking has apparently altered redband trout life history and abundance and led to the decline in size and abundance...” (p. 59).

⁸ Redband trout is a name used for an inland subspecies of rainbow trout in certain areas in the U.S. Bull trout, threatened, do not occur below IGD.

Klamath Settlement EIS/EIR

Continuation of reduced abundance and distribution upstream of IGD as well as throughout the Basin:

“Reduced redband trout abundance and distribution upstream of Iron Gate Dam attributable to Four Facilities features and operations would continue under the No Action/No Project Alternative. Habitat connectivity and suitability are substantially reduced in some reaches, which also suppresses the full range of life-history options formerly available to them. Other features of the redband trout populations in these reaches would likely be sustained under the No Action/No Project Alternative, such as declines in size (Jacobs et al. 2008, as cited in Hamilton et al. 2011) and condition factor,” (p.3.3-73).

DOI/BIA Subteam Technical Report - Same conclusions as the other analyses.

Bull Trout

Bull trout are native to the UKB, and are listed as threatened under the ESA, and do not occur below IGD. The overall status continues to be depressed. Conclusions range from an eventual improvement (but not to harvestable levels) to possible extinction during the period of analysis:

Expert Panel (Buchanan, et. al., April 11, 2011)

High risk of extinction:

“The small fragmented populations of bull trout in these limited areas are at a high risk of extinction compared to other areas. The current abundance and distribution of bull trout in the Upper Klamath Lake basin are greatly reduced from historical levels because of habitat loss and degradation caused by reduced water quality, timber harvest, livestock grazing, water diversions, roads, and non-native fishes (USFWS 2002; Hamilton et al. 2010a). If existing conditions continue to degrade, bull trout in these remnant populations could become extinct.” (p. 63-64).

Synthesis Report

“Under conditions with dams the status of Federally listed bull trout will likely continue to improve on its current trajectory,” (p. 56).

Klamath EIS/EIR

No change:

“The distribution and numbers of bull trout are believed to have declined in the Klamath Basin due to habitat isolation, loss of migratory corridors, poor water quality, and the introduction of nonnative species. The geographic isolation of the Klamath populations places them at greater risk of genetic effects and extirpation (NRC 2004). The effect of the No Action/No Project Alternative would be no change from existing conditions for bull trout in the short and long term.” (p. 3.3-73).

DOI/BIA Subteam Technical Report - Not included/analyzed.

Other Species

There are numerous resident species throughout the basin, but the most common in the UKB primarily include various species of suckers and resident lamprey. Impacts to resident lamprey were not analyzed to much extent; therefore, they were not included here. Most resident fish species would remain stable as TMDL water quality benefits continue, albeit relatively slowly compared to conditions under the Action Alternative.

Expert Panel (Buchanan, et. al., April 11, 2011)

Stated that the most abundant species would be stable and increase, but less abundant species (not specified) are declining:

“In total, 16 native species representing five families of fishes currently exist in the Upper Klamath Basin. Most of the native fishes in the Upper Klamath Basin are endemic to the watershed. Relatively abundant or common species include Klamath tui chub (*Gila bicolor bicolor*), blue chub (*Gila coerulea*), Klamath speckled dace (*Rhinichthys osculus klamathensis*), Upper Klamath marbled sculpin (*Cottus klamathensis klamathensis*), and Klamath Lake sculpin (*Cottus princeps*). Some of the species are not common including Slender sculpin (*Cottus tenuis*) and Miller Lake lamprey (*Lampretra milleri*) and there is potential for them to be considered for protection under the ESA in the future (NRC 2004). The Proposed Action has a greater probability of benefiting native fish populations compared with the Current Conditions. NRC (2004) concluded that restoration of habitats in the Upper Klamath Basin would be beneficial for most native fishes. The Proposed Action includes KBRA, which is a major effort to restore habitat throughout the Upper Klamath Basin.

Although efforts are ongoing to restore habitat, KBRA would accelerate and expand upon the ongoing efforts, thereby providing greater benefit to native fishes.” (p. 64).

Klamath EIS/EIR

There are about five or six resident lamprey species in the Klamath Basin:

“Pit-Klamath brook lamprey (*Entosphenus lethophagus*)
Modoc brook lamprey (*Entosphenus folletti*)
Western brook lamprey (*Lampetra richardsoni*)
Klamath River lamprey (*Entosphenus similis*)
Miller Lake lamprey (*Entosphenus minima*)

Klamath Lake lamprey, an undescribed, parasitic species. All lamprey species have similar early life history where ammocoetes drift downstream to areas of low velocity with silt or sand substrate and proceed to burrow into the stream bottom and live as filter feeders (USFWS 2004). After they transform into adults, the non-parasitic species do not feed, while the parasitic species feed on a variety of fish species (FERC 2007). Klamath River lamprey are found both upstream and downstream of Iron Gate Dam, from Spencer Creek downstream, and are common in the lower Klamath River and the low-gradient tributaries there (NRC 2004). They are also found in the Trinity River, and in the Link River of the Upper Klamath Basin (Lorion et al. 2000, as cited by Close et al. 2010). Klamath Lake lamprey, an as yet undescribed species, reside in Upper Klamath Lake and migrate upstream in the Sprague River to spawn (Close et al. 2010). Klamath Lake lamprey ammocoetes are reported to metamorphose in the fall, spend 12 to 15 months in Upper Klamath Lake parasitizing fish, and then spawn in the spring in the Sprague River (FERC 2007).” (p. 3.3-13)

Klamath Largescale Sucker

In sum, the trend in abundance is expected to be stable or increase.

Expert Panel (Buchanan, et. al., April 11, 2011)

Ongoing habitat and water quality improvements would likely be beneficial:

“The Klamath largescale sucker seems to be the least lake-dependent of the three Upper Klamath Basin suckers, although it is found in lakes and reservoirs of the upper basin (Moyle 2002). There is some evidence that it needs fairly high quality water because it is largely absent from open water areas of Upper Klamath Lake...Although these suckers can apparently withstand for short periods, temperatures

as high as 32°C, DO levels of 1 milligrams/liter (mg/l) and pH levels in excess of 10 (Castleberry and Cech 1993; Falter and Cech 1991), conditions in polluted lakes may exceed even their limits...Tributary streams that support KLS rarely exceed 25°C...there are reproducing populations in a number of larger rivers (e.g., upper Williamson River, Sprague River, Sycan River). Spawning migrations from Upper Klamath Lake, occur from February through early May, depending on flows and temperatures. A stock that migrates up the Sprague to the Beatty Gap area migrates in February and March, typically before LRS and SNS (Buettner and Scoppettone 1990)... Although abundance of largescale and smallscale suckers is somewhat small, the trend in abundance of both species appears to be stable.” ” (p. 15-16).

Synthesis Report

The biological subteam found that the species would continue to be successful:

“In Oregon, the populations of Klamath largescale suckers are relatively abundant compared with the status of Lost River and shortnose suckers because they do not depend on lakes for rearing and they are able to ascend barriers, especially if fish ladders are present. Under conditions with dams the status of Klamath largescale suckers will likely continue on its current trajectory. Implementation of TMDL would likely have benefits for this species.” (pp. 62-63).

Klamath EIS/EIR - Not included/analyzed.

DOI/BIA Subteam Technical Report - Essentially no change from current conditions.

No improvement is anticipated in sucker populations because habitat and water quality improvements would fall short of what is needed.

“The sucker species in the upper watershed—particularly Lost River, shortnose, Klamath smallscale, and Klamath largescale suckers, resident lamprey species, and redband trout—are important to the Klamath Tribes. Under the Dams In Scenario, no improvement is anticipated in sucker populations because there is less opportunity for improvements to habitat and overall ecosystem functionality and health. Additionally, although TMDLs will be in place, improvements in water quality are not anticipated to the extent that they would result in improved conditions for population increases.” (p. 3-61).

Klamath Smallscale Sucker

In sum, the trend in abundance is expected to be stable.

Expert Panel (Buchanan, et. al., April 11, 2011)

The trend in abundance is stable:

“They are also common in Copco and J.C. Boyle reservoirs (Desjardins and Markle 2000). KSS migrate up tributary streams to spawn in spring; spawning in tributaries to Copco and J.C. Boyle reservoirs has been observed from mid- March through April. Juvenile KSS are most abundant in small streams used for spawning. Although abundance of largescale and smallscale suckers is somewhat small, the trend in abundance of both species appears to be stable.” (p. 15).

Synthesis Report

The biological subteam report stated that the species would continue to be successful:

“Under conditions with dams the status of Klamath smallscale suckers will likely continue on its current trajectory. Implementation of TMDL would likely have benefits for this species.” (p. 63).

Klamath EIS/EIR - Not fully included/analyzed.

DOI/BIA Subteam Technical Report

Essentially no change - no improvement is anticipated in sucker populations because habitat and water quality improvements would fall short of what is needed.

“The sucker species in the upper watershed—particularly Lost River, shortnose, Klamath smallscale, and Klamath largescale suckers, resident lamprey species, and redband trout—are important to the Klamath Tribes. Under the Dams In Scenario, no improvement is anticipated in sucker populations because there is less opportunity for improvements to habitat and overall ecosystem functionality and health. Additionally, although TMDLs will be in place, improvements in water quality are not anticipated to the extent that they would result in improved conditions for population increases.” (p. 3-61).

Action Alternative

Table 7-2.—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 somewhat 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 7-2.—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 7-2.—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>Shortnose and Lost River Suckers (Endangered)</p>	<p>Summation: Dam removal and KBRA effects would be beneficial, especially by about 2022.</p> <p>EP: Improved UKL hydrograph, water quality, and no turbine entrainment would be beneficial.</p> <p>SR: Same as EP conclusions.</p> <p>EIS/EIR: Same as EP conclusions.</p> <p>DOI: Same as EP conclusions.</p>
<p>Redband and Rainbow Trout</p>	<p>Summation: Some short term impacts, long run increased abundance, potentially significant.</p> <p>EP: Short term adverse, long term beneficial</p> <p>SR: Mid to long term beneficial</p> <p>EIS/EIR: Mid to long term beneficial</p> <p>DOI: Same conclusions as other analyses.</p>
<p>Bull Trout (Threatened)</p>	<p>Summation: Likely to prevent extinction and increase overall abundance and distribution.</p> <p>EP: Provides promise for preventing extinction of this species and for increasing overall population abundance and distribution.</p> <p>SR: Mixed, difficult to draw a definite conclusion.</p> <p>EIS/EIR: Provides promise for preventing extinction of bull trout and increasing abundance in the UKR. Dam removal would allow access to additional areas, LTS impacts.</p> <p>DOI: Not included/analyzed.</p>
<p>Other Native Fish Species – Generally</p>	<p>Summation: Resident native fish and lamprey are expected to benefit.</p> <p>EP: Great probability of benefiting native fish populations compared to no action in UB. Downstream of Keno and/or below IGD, populations would benefit compared to no action.</p> <p>SR: General/overall not covered.</p> <p>EIS/EIR: Not included/analyzed.</p> <p>DOI: Similar conclusions.</p>

Table 7-2.—Summary of Projected Action (KHSA and KBRA) Conditions by Species

<p>Other Native Species: Klamath Largescale</p>	<p>Summation: Beneficial effects. EP: KBRA water quality improvements would be particularly beneficial. SR: Overall, dam removal and KBRA may increase populations. EIS/EIR: Not included/analyzed. DOI: Populations would benefit.</p>
<p>Other Native Species: Klamath Smallscale</p>	<p>Summation: Likely to benefit. EP: All native fish would have a greater probability of benefiting with the Action Alternative. SR: Overall benefit; KBRA would improve conditions in UKB. EIS/EIR: Dam removal would restore migration and reservoirs do not appear to provide habitat. DOI: Populations would benefit.</p>

Sources and acronyms: Expert panel reports (EP), biological subteam synthesis report (SR), draft Klamath 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 (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 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).

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“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 (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.

Expert Panel 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.

Expert Panel (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).

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 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.

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 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).

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 (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 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).

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).

Shortnose and Lost River Suckers

Both suckers were listed as endangered under the ESA in 1988 and are found most often in lakes of the Upper Basin. Populations are expected to increase under the Action Alternative.

Expert Panel (Buchanan, et. al., April 11, 2011)

Populations would increase by 2022, but harvest would be detrimental:

“With major restoration efforts occurring from 2012 to 2022, adult sucker populations are likely to start showing an upward trend by 2022 given that it takes 5-10 years for LRS and SNS to

mature....However, until population monitoring indicates an upward trend in the population over at least a decade with major recruitment events and multiple age classes, harvest would reduce or negate population growth....Harvest other than ceremonial tribal harvest should only occur after a sustained population growth can be shown over a period of decades.” (pp. 71-72).

Synthesis Report

Dam removal and habitat improvements will benefit the species:

“Under conditions without dams and power generation, federally listed suckers would no longer be entrained in Project turbines (Gutermuth et al. 2000). Suckers (likely to include federally listed suckers) would no longer be stranded following spill reductions at Link River, Eastside, Westside, or J.C. Boyle project facilities as reported (Oregon Department of Fish and Wildlife 2006; Tinniswood 2006a) or in the peaking reach below J.C. Boyle Dam powerhouse.” (p. 58) “KBRA elevations target lake levels from falling too quickly in June and July and to meet a minimum lake level of 4,140 feet at the end of July (Figure 2). When lake elevations drop below about 4,140 feet, vegetated habitats preferred by larval suckers and to a lesser extent, juvenile suckers, become dewatered and they must move to less desirable habitats.... Overall, dam removal and associated KBRA actions will accelerate water quality improvements (Dunne et al. 2011) and TMDL water quality benefits to this species (USDI Secretarial Determination Water Quality Subgroup In Review).” (p. 59).

Klamath EIS/EIR

The Proposed Action would have a long term beneficial impact:

“...water elevations in Upper Klamath Lake would be higher, which would benefit Lost River and shortnose suckers, but the difference in habitat value would not be substantive. No adverse impacts on these species were predicted for this area....Based on improved habitat quality, the effect of the Proposed Action would be beneficial for Lost River and shortnose sucker populations in the long term.” (pp. 3.3-126-127).

DOI/BIA Subteam Technical Report

Various improvements would be beneficial for the species:

“Under the Proposed Action, there is expected improvement in Lost River, where shortnose suckers will no longer be entrained in project turbines or stranded after spill reductions or peaking events. Filling the Upper Klamath Lake in the fall and winter months enhances the spawning migration to tributary streams, particularly the Williamson and Sprague rivers. Although the NMFS BO does include measures to increase the lake levels, the KBRA would provide higher levels in more year,” (pp. 4-19).

Redband/Rainbow Trout

In sum, since redband trout need to migrate from various areas, dam removal would facilitate movement, halt mortality related to turbines, and improve water temperatures and related conditions which would improve populations, probably substantially.

Expert Panel

Short term adverse impacts, long term beneficial changes including significant increases in size and abundance, and KBRA activities would enhance populations in the UKB:

[short run] “While there would be short-term adverse impacts from dam removal...the Proposed Action would likely create significant increases in size, abundance, and distribution of resident trout in the 43 mi...of the Klamath River between J.C. Boyle Reservoir and Iron Gate Dam.” (p. 73).

[long run] “It is expected that eventually the entire reach downstream of Keno Dam would be capable of supporting a resident redband/rainbow trout fishery after the removal of the four dams. It is possible that the trophy fishery will expand seven times from below Keno Dam to the Iron Gate reach...Recreational fishing opportunities would be expected to increase in proportion to the increase in trout abundance in all areas.” (p. 74-75).

[UB] “KBRA activities should expand abundance and distribution of headwater trout, but increases in the harvest potential will be dampened by the relatively small size of these trout...The distribution and abundance... in UKL, and the lower Williamson and Wood rivers, three very important areas for harvest, is also expected

to expand...Under successful implementation of KBRA measures, the large size of resident trout within these areas is expected to remain stable.” (p. 73).

Synthesis Report

Dam removal and KBRA habitat improvements would be beneficial:

“Under dam removal and KBRA, redband trout would be able to migrate volitionally, as observed after a similar dam removal...Removal of J.C. Boyle Dam and restoration of a more nature flow regime would likely reverse the decline in abundance and size of adult redband trout migrating....With dam removal and no power generation, redband trout would no longer be entrained in turbines... Effective habitat...would be increased in the reach from the J.C. Boyle powerhouse to the California state line under the flows associated with dam removal and KBRA.” (p. 61).

Klamath EIS/EIR

Dam removal would facilitate migration and increase habitat:

“Under the Proposed Action, redband trout would be able to migrate more successfully from the Hydroelectric Reach to the Upper Klamath Basin (Hamilton et al. 2011) than under existing conditions. Establishment of a flow regime that more closely mimics natural conditions downstream of Keno Dam would eliminate the stranding of redband trout caused by flow reductions at Klamath Hydroelectric Project facilities, and would create stable stream habitat between J.C. Boyle Reservoir and the California state line....Dam removal would increase connectivity between Upper Klamath Basin and the Hydroelectric Reach and would create additional riverine habitat within the Hydroelectric Reach. Based on increased habitat availability and improved habitat quality, the effect of the Proposed Action would be beneficial for redband trout in the long term.” (p. 3.3-128 to 3.3-129).

DOI/BIA Subteam Technical Report - Conclusions are similar to those of other analyses.

Bull Trout

Bull trout are listed as threatened under the ESA and the overall status continues to be depressed. Conclusions range from improvement (but not to harvestable levels) to possible extinction during the period of analysis:

Expert Panel (Buchanan, et. al., April 11, 2011)

The Proposed Action may create conditions under which the species would avoid extinction:

“The Proposed Action provides promise for preventing extinction of this species and for increasing overall population abundance and distribution. The primary goal of actions should be the recovery and delisting of bull trout from a threatened status under the federal ESA.” (p. 77).

Synthesis Report

There would likely be an overall benefit:

“...the status of Federally listed bull trout would likely continue on its current trajectory. There may be some loss of Federally listed bull trout as reintroduced anadromous salmonids prey upon bull trout fry and juvenile... This loss may be offset by increased food availability as bull trout prey upon salmonid eggs, fry, and juveniles...KBRA would likely accelerate TMDL water quality benefits to bull trout...” (p. 56-57).

Klamath EIS/EIR

Water quality improvements and access to additional habitat would be beneficial:

“...the physical and chemical components of critical habitat for bull trout would be improved...The KBRA actions would also result in increases in the amount of water available for environmental purposes, but the origin of this water is unknown, so it cannot be determined whether this water would benefit bull trout habitat. Implementation of the KHSAs would not affect the physical or chemical components of critical habitat, but would allow Chinook salmon and steelhead to access areas they have not been able to access since the completion of Copco I development in the 1920s. The Proposed Action would have a less than significant impact on critical habitat for bull trout,” (pp. 3.3-116-117).

[upper Klamath River] “Buchanan et al. (2011) state that the Proposed Action provides promise for preventing extinction of bull trout and for increasing overall population abundance and distribution,” (pp. 3.3-134).

Not specifically included/analyzed.

Other Native Species

There are numerous resident species throughout the basin, but the most common in the UKB primarily include various species of suckers and resident lamprey. Impacts to resident lamprey were not analyzed, therefore they were not included here. Overall, impacts to resident fish species are expected to be positive, especially in the long run.

Expert Panel (Buchanan, et. al, April 11, 2011)

The KBRA would provide a benefit to native fishes:

“The Proposed Action has a greater probability of benefiting native fish populations compared with the Current conditions....Although efforts are ongoing to restore habitat, KBRA would accelerate and expand upon the ongoing efforts, thereby providing greater benefit to native fishes,” (p. 64).

Klamath Largescale Sucker

Dam removal would avoid entrainment and KBRA water quality improvements and would be beneficial:

Expert Panel (Buchanan, et. al, April 11, 2011)

KBRA water quality improvements, in particular, would benefit species:

“Klamath largescale sucker populations, which are currently fairly abundant in the Sprague River, are also likely to increase in abundance and productivity with water quality improvements under Conditions without Dams and with KBRA.” (p. 52).

Synthesis Report

Dam removal and KBRA would have positive effects:

“Klamath largescale suckers would no longer be entrained in Project turbines (Gutermuth et al. 2000) and would no longer be stranded following spill reductions at Link River, Eastside, Westside, or J.C. Boyle Project facilities. Removing the dams with KBRA may also increase populations as physical, chemical, and biological

processes of the Klamath River are restored. Overall, dam removal and associated KBRA actions will accelerate water quality improvements (Dunne et al. 2011) and TMDL water quality benefits to this species (USDI Secretarial Determination Water Quality Subgroup In Review).” (p. 63).

Klamath EIS/EIR

Not specifically included/analyzed.

DOI/BIA Subteam Technical Report

Dam removal and KBRA impacts would benefit KLS populations:

“Klamath small scale and Klamath large scale sucker populations would benefit from the Proposed Action because they would not be entrained in project turbines or stranded after spill reductions. The KBRA is expected to accelerate the TMDL water quality benefits to these fish as well,” (pp. 4-19).

Klamath Smallscale Sucker

Some of the impact assessment is mixed, but KBRA would benefit species:

Expert Panel (Buchanan, et. al, April 11, 2011)

Overall beneficial, similar to effects for Klamath largescale sucker.

Synthesis Report

Although some reservoir habitat would be eliminated entrainment would also end, and habitat would increase:

“Dam removal with KBRA would eliminate reservoir habitat for Klamath smallscale suckers, but may also increase populations as physical, chemical, and biological processes of the Klamath River are restored. Klamath smallscale suckers would no longer be entrained in Project turbines...and would no longer be stranded following spill reductions at Link River, Eastside, Westside, or J.C. Boyle Project facilities. Overall, dam removal and associated KBRA actions will accelerate TMDL potential water quality benefits to this species...,” (p. 63).

Klamath EIS/EIR

JC Boyle Dam blocks migration - reservoirs do not appear to provide habitat:

“The J.C. Boyle Dam blocks the migration of suckers to spawning habitat in Spencer Creek. Spawning now occurs in the mainstem Klamath River where smallscale suckers are exposed to flow fluctuations that can displace their broadcast eggs or dessicated them during power peaking (Dunsmoor 2006). Electrofishing in Jenny Creek revealed adult smallscale suckers occupying deep, moderate-velocity habitat among boulders (W. Tinniswood, 2011, pers. comm.). The reservoirs themselves do not appear to provide habitat for smallscale sucker.” (p. 3.3-14).

DOI/BIA Subteam Technical Report

Species would benefit:

“Klamath smallscale and Klamath largescale sucker populations would benefit from the Proposed Action because they would not be entrained in project turbines or stranded after spill reductions. The KBRA is expected to accelerate the TMDL water quality benefits to these fish as well,” (pp. 4-19).

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