Socioeconomics and Environmental Justice

Appendix G

Trinity River Mainstem
Fishery Restoration

October 1999

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INTRODUCTION

This technical appendix reviews the economic and social environment that could be affected by implementation of the proposed alternatives, discusses socioeconomic methods, and provides detailed results of the regional analysis. Under affected environment, a short discussion of the geographic impact area is followed by descriptions of current conditions within each of the directly affected regions. Under environmental consequences, methodology discussions by type of analysis (cost, recreation, sport and commercial fisheries, hydropower, M&I water supply, agriculture, social) are followed by temporary and permanent regional economic and social impact results for each alternative as compared to the No Action Alternative (NEPA comparison). In addition to the federally mandated NEPA comparison, a state required comparison of the Preferred Alternative to Existing Conditions is presented towards the end of the appendix (CEQA comparison).

This EIS/EIR presents two types of economic analyses, one measuring economic benefits and the other regional economic impacts. The economic benefit analyses measure regional as opposed to national benefits. National benefit analyses (or national economic development (NED) analyses) attempt to measure offsetting gains and losses between various regions of the country, whereas regional benefit analyses focus purely on the primary impact region. As the name implies, regional economic impact analyses (or regional economic development (RED) analyses) are regionally as opposed to nationally oriented. As a result, given the focus regions are similar for both analyses, the primary difference between the benefits and economic impact analyses within this document pertains to distinctions between the benefits and regional impact measures, as opposed to any differences in geographic orientation.

Regional economic impacts measure total economic activity within a given region often using such indicators as output/sales, income, and employment. Conversely, benefits measure economic welfare based on a net value concept. For consumers, economic welfare reflects the value of goods and services consumed above what is actually paid for them (willingness-to-pay in excess of cost). For producers or businesses, economic welfare reflects gross revenues minus operating costs (profit).

One way to visualize the difference between impacts and benefits is to consider how each reacts to increases in in-region expenditures. Regional economic impacts typically increase as in-region expenditures increase, whereas profitability and therefore benefits tend to decrease as costs or expenditures increase assuming revenues remain the same. While regional benefits and economic impacts often move in unison since they typically rise or fall with levels of production, there are many situations where changes in benefits and economic impacts diverge. This potential for divergence, along with the fact that different user groups are often interested in different economic measures, creates a need for both analyses.

For both the benefit and regional impact analyses presented in this document, results cannot be summed across all regions (Trinity River Basin, Lower Klamath River Basin and Coastal Areas, and Central Valley) and economic categories (agriculture, M&I, power, recreation, fisheries) into a net effect for each alternative. There are several reasons for this: 1) not all economic effects have been quantified (e.g. tribal fishing effects), 2) model accuracy varies across analyses, 3) input data accuracy varies across analyses (e.g., fisheries analyses are based on harvest estimates developed solely to compare alternatives, the accuracy of the harvest

estimates for comparison to other economic benefits may be questionable), and 4) the benefit estimates are developed for the year 2020 only, whereas the cost analysis reflects costs across all years, therefore costs cannot be compared to benefits.

Since it is inappropriate to aggregate benefits across economic categories and compare them to costs, the only reasonable benefit comparison is within a given economic category (e.g. compare agricultural benefits across regions for each alternative). For this reason, the benefit analyses are presented under each of the appropriate resource areas - fisheries, recreation, land use (agriculture, M&I water), and power. For the regional impacts, the alternative comparison is constrained to impacts across economic categories within a given region (e.g. aggregate hydropower, agriculture, and municipal and industrial impacts within the Central Valley for each alternative). It was deemed reasonable to aggregate regional impacts across economic categories for the same region since the analyses use the same underlying model, the IMPLAN input-output model.[1] Regional impacts should not be aggregated across regions since the inter-regional relationships have not been addressed.

Given the above discussion, the basic objective of the socioeconomic analysis is to measure changes in economic activity within the affected regions for each alternative as compared to the No Action Alternative using input-output analysis. The proposed alternatives potentially affect each region's economic activity through changes in water supply (agriculture, municipal and industrial water, and hydropower analyses), ocean based commercial and recreational fishing, inland surface water recreation, and construction activity.

Input-output (I-O) analysis estimates regional economic impacts caused by changes in final demand based on a region's inter-industry trade linkages. Final demand reflects any initial change in sales that arises from outside of the region. The analyses present changes in total economic impact defined as the sum of direct effects (impacts to initially affected industries), indirect effects (impacts to industries providing inputs to directly impacted industries, i.e., backward linkages), and induced effects (impacts from employees spending wages within the region) all caused by the initial change in final demand. For example, if $1,000 in agricultural product is lost from irrigated acreage idled by water shortage, and the farmer buys $500 less in seed and fertilizer from the farm store, and the farm store buys $250 less seed from another in-region farmer, and the farm workers spend $100 less for household goods and services within the region, then the total loss in output to regional agriculture is $1,250, but the total regional output loss is $1,850. Three measures of economic activity provide the basis of the evaluation: total industry output, total place of work income, and employment.

> Total Industry Output: Dollar value of production (sales revenues) from all industries in the region. Total industry output exceeds final demand by including the value of inter-industry trade of intermediate goods prior to final manufacture and sale.

[1] For the KMZ-California subregion, the overall regional impacts would be understated given tribal harvest effects were not considered.

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Total Place of Work (PoW) Income: Employment income derived at the workplace including wages and benefits (employee compensation) plus self-employed income.

Employment: Total of hourly wage, salary, and self-employed jobs (part-time and full-time), measured in terms of number of jobs, not full-time equivalents.

AFFECTED ENVIRONMENT

The affected environment includes all economic regions that are expected to be directly influenced by the alternatives under consideration. These directly affected areas have been divided into three primary regions: Trinity River Basin, the Lower Klamath River Basin and Coastal Areas, and the Central Valley. The Lower Klamath River Basin and Coastal Areas region is further separated into the following coastal area subregions: Monterey, San Francisco, Mendocino, Klamath Management Zone - California (KMZ-CA), Klamath Management Zone - Oregon (KMZ-OR), and Northern / Central Oregon. Note that the Lower Klamath River Basin falls within the boundaries of the KMZ-CA coastal area. The Central Valley region has also been subdivided into the following three subregions: Sacramento Valley, San Joaquin Valley, and Tulare Basin. The counties included in each of the subregions are shown in Table TA-1.

TABLE TA-1. Economic Regions by County

	Counties
Trinity River Basin:	
Up-Front Impacts:	Trinity
Annual Impacts:	Trinity, Shasta
Lower Klamath River Basin and Coastal Areas:	
Monterey Coastal Area:	Santa Cruz, Monterey, San Luis Obispo
San Francisco Coastal Area:	Sonoma, Marin, Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara
Mendocino Coastal Area:	Mendocino
KMZ-CA Coastal Area:	Del Norte, Humboldt
KMZ-OR Coastal Area:	Curry
Northern/Central Oregon Coastal Area:	Clatsop, Tillamook, Lincoln, Lane, Douglas, Coos
Central Valley:	
Sacramento Valley:	Amador, Butte, Colusa, El Dorado, Glenn, Napa, Nevada, Placer, Sacramento, Shasta, Solano, Sutter, Tehama, Yolo, Yuba
San Joaquin Valley:	Calaveras, Fresno, Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tuolumne
Tulare Basin:	Kern, Kings, Tulare

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The Trinity River Fisheries Restoration EIS includes two types of economic analyses, one measuring economic benefits and the other regional economic impacts. The economic benefit analyses are presented within the fisheries, recreation, and land use sections. This technical appendix covers regional economics and socioeconomics. The focus regions are similar for both analyses.

The primary difference between the benefits and economic impact analysis is the types of measures estimated and reported. Regional economic impact measures typically involve the quantity or value of sales such as employment, value of production or income. Benefits, on the other hand, are based on a net value concept. For consumers, economic benefit reflects the value of goods and services bought above what is actually paid for them (willingness-to-pay in excess of cost). For producers or businesses, economic benefit is profit, measured as gross revenues minus all costs.

TRINITY RIVER BASIN

For purposes of the 2020 socioeconomic analyses, the Trinity River Basin is defined as Trinity and Shasta Counties. This is due to the strong linkage of recreation-related spending between the two counties (recreation-related spending impacts specific to Trinity County are also identified). For the up-front cost impacts, the region was defined as Trinity County since that is where the costs are incurred.

Current Economic Conditions

Trinity County is rural with substantial amounts of public land. As a result, the region is relatively dependent on tourism and natural resources for its economic base. Since 1990, unemployment within the county has been high, averaging 13.9 percent compared to the statewide average of 7.5 percent. Total industry output and place of work income in 1992, as obtained from the IMPLAN model, was estimated at $339 and $183 million, respectively (in 1997 dollars[2]). Total 1992 employment is about 4,870 jobs with major employment sectors being government (27.6 percent), services (20.4 percent), wholesale and retail trade (17.2 percent), and manufacturing (12.2 percent) (Table TA-2a).

Although much of Shasta County also consists of public lands, the county is considerably more urban than Trinity County because of the City of Redding. Shasta County's unemployment rate since 1990 has averaged nearly 11 percent. Total industry output and place of work income in 1992 was estimated at $5.4 and $3.0 billion, respectively. Total employment in 1992 was estimated at more than 74,000 jobs with major employment sectors including services (27.6 percent), wholesale and retail trade (25.4 percent), and government (15.6 percent) (Table TA-2a). Over 90 percent of the total industry output, place of work income, and jobs in the combined Trinity / Shasta County Region in 1992 occurred in Shasta County.

Based on recent estimates of recreational use of the Trinity River and Trinity, Shasta, and Whiskeytown Reservoirs, it is estimated that approximately $70 million is spent annually in

[2] Unless otherwise noted, all monetary values referred to in Section 3.11 were derived using 1997 dollars.

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TableTA-2a. Employment Data for Trinity River Basin

	Trinity County		Shasta County		Trinity & Shasta Counties	
Economic Sectors	1992 Employment	Percent of Total	1992 Employment	Percent of Total	1992 Employment	Percent of Total
Agriculture, forestry, fishing	385	7.8	2,370	3.2	2,755	3.5
Mining	15	.3	210	.3	225	.3
Construction	365	7.5	6,255	8.4	6,620	8.4
Manufacturing	595	12.2	5,625	7.6	6,220	7.9
Transportation; communications; electric, gas, & sanitary services	120	2.5	3,960	5.3	4,080	5.2
Wholesale trade	105	2.1	4,550	6.1	4,655	5.9
Retail trade	735	15.1	14,325	19.3	15,060	19.1
Food stores	185	3.8	2,955	4.0	3,140	4.0
Eating & drinking places	220	4.5	4,540	6.1	4,760	6.0
Auto dealers & service stations	55	1.1	1,575	2.1	1,630	2.1
Finance, insurance, & real estate	185	3.8	4,100	5.5	4,285	5.4
Services	995	20.4	20,475	27.6	21,470	27.2
Lodging	185	3.8	1,185	1.6	1,370	1.7
Government	1,345	27.6	11,580	15.6	12,925	16.4
Other	25	.5	665	.9	690	.9
Total	**4,870**	**100.0**	**74,115**	**100.0**	**78,985**	**100.0**

Source: IMPLAN, 1992.

Trinity and Shasta Counties to recreate at these areas. Of this spending, an estimated $13 million is spent in Trinity County, with nonresidents of the county accounting for about 75 percent. Spending associated with recreation at these areas supports 2,100 jobs directly, and indirectly supports an additional 1,500 jobs within the two-county area.

Current Social Conditions

Trinity County's population slowly increased from 1990 until 1995 when it began to decline. A recent estimate by the U.S. Census Bureau indicates the population dropped from 13,401 people in July 1996, to 13,197 people in July 1997. The decline in the timber industry and attendant loss of jobs is viewed as one reason for the decline. The county has been seeking new businesses. Recreation and tourism—especially that which is water-based—are viewed as important to the local economy.

Flooding along the Trinity River in January of 1997 raised residents' awareness and level of concern about potential flooding. Those living near the river experienced first-hand the physical and emotional impacts of flooding.

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The residents of Trinity County value living where they do and their lifestyle, far removed from urban areas. Many have given up higher paying jobs to live in the area. The local public has voiced a desire to have water returned to the Trinity River. Some believe that the assurances and promises that the TRD would have no adverse impacts to the local area have been broken.

LOWER KLAMATH RIVER BASIN/COASTAL AREA

The Lower Klamath River Basin Coastal Area region extends from Monterey, California, to approximately the Oregon Washington border. This region, which corresponds to the migratory range of Trinity River salmon, includes six subregions: Monterey, San Francisco, Mendocino, Klamath Management Zone (KMZ)-California, KMZ-Oregon, and Northern/Central Oregon. For purposes of socioeconomic analyses, the lower Klamath River, which extends from the confluence of the Trinity and Klamath Rivers to the mouth of the Klamath, is included in the KMZ-California Coastal Area.

Current Economic Conditions

Monterey Coastal Area

The Monterey Coastal Area extends from Point Conception to Point San Pedro, California, and includes the counties of San Luis Obispo, Monterey, and Santa Cruz. The region is characterized by both an agricultural and urban economy. Total industrial output in 1992 was valued at $32.4 billion. Place of work income was estimated at $18.3 billion, and approximately 144,200 persons were employed. Major employment sectors included services (26 percent of regional employment), government (19 percent), retail trade (16 percent), and agriculture, forestry, and fishing (12 percent) (Table TA-2b).

The economy of the Monterey Coastal Area is potentially affected by changes in ocean commercial and sport fishing for salmon. Employment in the commercial fishing sector totaled 210 jobs in 1992. Commercial fish harvests generated an additional 450 jobs in the seafood processing sector. Together, these two sectors accounted for slightly more than 0.1 percent of the total employment within the area in 1992. In 1996, the area accounted for nearly half of California's commercial salmon harvest, generating an estimated $2.9 million in gross harvest revenue (Pacific Fishery Management Council, 1997). As Table TA-4 shows, much of this harvest was landed at Moss Landing and, to a lesser extent, Santa Cruz and Monterey.

Ocean sportfishing for salmon takes place primarily from privately owned pleasure craft or chartered boats. Businesses that benefit from trip-related spending by ocean salmon sport fishers include charter boat operations, retail operations that provide goods to sport fishers (e.g., restaurants, bait and tackle stores), and lodging places. Ocean sportfishing for salmon generates an estimated $4.4 million annually in trip-related spending in the area. Of this spending, nonresidents account for about 50 percent.

San Francisco Coastal Area

The San Francisco Coastal Area extends from Point San Pedro to Point Arena, California, and includes San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, and Sonoma Counties.The region is characterized by an urban economy. In 1992, approximately 3.5 million persons were employed (Table TA-2b). Major employment sectors include services (32 percent

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Table TA-2b. Employment Data for Lower Klamath River Basin/Coastal Area Regions, 1992

Economic Sectors	Monterey Region		San Francisco Region		Mendocino Region		KMZ-California Region		KMZ-Oregon Region		Northern/Central Oregon Region	
	Employment	Percent of Total	Employment	Percent of Total	Employment	Percent of Total	Employment	Percent of Total	Employment	Percent of Total	Employment	Percent of Total
Agriculture, forestry, fishing	54,110	12.2	41,560	1.2	3,640	8.7	3,630	5.0	520	6.1	13,690	4.9
Commercial fishing	210	<0.1	440	<0.1	180	0.4	520	0.7	130	1.5	900	0.3
Mining	490	0.1	5,220	0.1	50	0.1	70	0.1	10	<0.1	550	0.2
Construction	25,770	5.8	189,100	5.4	3,000	7.2	4,700	6.5	810	9.5	16,150	5.8
Manufacturing	30,600	6.9	460,270	13.0	4,960	11.9	7,110	9.9	860	10.0	38,720	13.8
Canned & cured seafood	300	<0.1	50	<0.1	10	<0.1	50	<0.1	10	0.1	40	<0.1
Prepared fresh/frozen seafood	150	<0.1	480	<0.1	170	0.4	410	0.6	100	1.2	1,700	0.6
Transportation; communications; electric, gas, & sanitary services	14,110	3.2	163,980	4.6	1,280	3.1	2,730	3.8	280	3.3	10,430	3.7
Wholesale trade	17,760	4.0	211,450	6.0	1,300	3.1	3,140	4.4	310	3.6	10,850	3.9
Retail trade	72,290	16.3	521,750	14.8	7,770	18.6	13,500	18.7	1,960	22.8	54,350	19.4
Food stores	10,300	2.3	68,010	1.9	1,640	3.9	2,280	3.2	370	4.3	8,540	3.0
Eating & drinking places	26,390	5.9	168,810	4.8	2,300	5.5	4,150	5.8	630	7.3	18,500	6.6
Auto dealers & service stations	6,210	1.4	39,740	1.1	660	1.6	1,420	2.0	260	3.0	5,960	2.1
Finance, insurance, real estate	22,070	5.0	306,630	8.7	1,940	4.7	3,300	4.6	560	6.5	15,080	5.4
Services	116,040	26.1	1,136,580	32.2	11,560	27.7	19,370	26.9	1,890	22.1	70,230	25.0
Lodging	11,630	2.6	39,540	1.1	1,640	3.9	1,350	1.9	470	5.5	6,140	2.2
Government	86,760	19.5	474,010	13.4	6,110	14.7	13,690	19.0	1,250	14.6	48,120	17.2
Other	4,160	0.9	23,660	0.7	80	0.2	810	1.1	130	1.5	2,150	0.8
Totals	**444,160**	**100.0**	**3,534,210**	**100.0**	**41,690**	**100.0**	**72,050**	**100.0**	**8,580**	**100.0**	**280,310**	**100.0**

Source: IMPLAN, 1992.

of regional employment), retail trade (15 percent), government (13 percent), and manufacturing (13 percent). Agriculture, forestry, and fisheries sectors account for 1.2 percent of regional employment.

Table TA-3 shows existing conditions economic data estimated for the Bay Region. The final demand column in Table TA-3 is a sum of several components. It includes three personal consumption components (low, medium, and high income household consumption); two federal government consumption components (military and non-military spending); two state and local government components (education and non-education); capital investment; inventory investment; and two export components (rest-of-USA and foreign). The total industry output column shows the total value of output of each industry. The difference between final demand and total industrial output is inter-industry trade, the value of regional production used by resident industries for commodity production.

Table TA-3. 1991 Existing Conditions Data for the San Francisco Bay Region, Million 1997 Dollars

	Final Demand (MM$)	Total Industry Output (MM$)	Employ Compens. Income (MM$)	Property Income (MM$)	Total Place of Work Income (MM$)	Total Value Added (MM$)
Agriculture, Forestry, Fisheries	1.4	2.7	0.6	0.6	1.3	1.3
Mining	0.2	4.9	0.3	2.0	2.3	3.2
Construction	21.5	23.9	7.2	2.3	9.5	9.6
Manufacturing	66.9	101.2	26.1	18.0	44.1	45.6
Transportation, Comm., Utilities	13.5	27.0	7.5	6.4	14.0	14.9
Wholesale, Retail Trade	26.1	38.8	19.4	5.6	25.0	31.2
Finance, Insurance, Real Estate	26.6	47.8	9.8	22.7	32.5	37.8
Services	36.5	69.2	30.8	13.8	44.6	45.3
Gov. Enterprise & Special Industry	19.3	22.1	18.3	0.4	18.7	18.7
Total	212.0	337.7	120.1	71.9	192.0	207.5
Population	5,443,400					

The next three columns summarize final payments to factors of production. Property income includes proprietary income (payments to owners), rents, royalties, and dividends. "Place of work" income is total income paid by businesses operating in the region, not necessarily to people living in the region. Some share of place of work income is paid to commuters and non-resident factor owners such as company shareholders, absentee owners, and others. The difference between total place of work income and value added is indirect business taxes. Total industrial output in 1991 was $212 billion. Total employee compensation was about $120 billion and property income was $72 billion. Currently, the largest proportions of wage and salary jobs in the region are in the services, wholesale and retail trade, manufacturing, and government sectors.

The economy of the area is potentially affected by changes in ocean commercial and sport fishing for salmon, agricultural production, hydropower generation, and M&I water supply. The discussions below describe current conditions in these sectors.

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Table TA-4. Subregional Distribution of the California and Oregon Ocean Commercial Salmon Harvest in 1996

Coastal Region: Port	Percentage of the Harvest Within the Region[a]
Northern/Central Oregon[b]:	
Astoria	1.2%
Garabaldi	6.8%
Pacific City	0.1%
Depoe Bay	0.6%
Newport	66.4%
Florence	4.5%
Winchester Bay	3.4%
Charleston	14.4%
Bandon	0.6%
Port Orford	2.0%
KMZ-Oregon:	
Gold Beach	1.1%
Brookings	98.9%
KMZ-California:	
Crescent City	2.1%
Trinidad	4.9%
Arcata	0.2%
Eureka	92.8%
Mendocino[c]:	
Shelter Cove	2.4%
Westport	0.3%
Fort Bragg	90.2%
Albion	1.5%
Point Arena	5.6%
San Francisco[d]:	
Bodega Bay	17.2%
Dillon Beach	0.2%
Bolinas	0.2%
China Camp	0.1%
Sausalito	0.3%
Richmond	0.4%
Berkeley	0.5%
San Francisco	33.4%
Princeton/Half Moon Bay	47.7%
Monterey[e]:	
Santa Cruz	24.1%
Moss Landing	61.1%
Monterey	14.8%

Notes:
[a] Based on pounds of salmon landed within the region.
[b] A small number of salmon were also landed in Nehalem Bay and Natarts.
[c] A small number of salmon were also landed in Little River.
[d] A small number of salmon were also landed in Tomales Bay, Marconi Cove, South San Francisco, and the Sacramento area.
[e] A small number of salmon were also landed in Mill Creek and other locations in the Monterey area.

Sources: Oregon Department of Fish and Wildlife 1998; California Department of Fish and Game 1998.

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Agriculture.—The affected environment for agriculture in the Bay region is the service area of the San Felipe unit of the CVP which serves parts of Santa Clara and San Benito counties. The major water user is Santa Clara Valley Water District (SCVWD); San Benito County also receives a relatively small amount of CVP water. Important crops are fruits, especially strawberries, and vegetables. Relatively low-value crops such as hay and pasture have declined in importance over time. More description is provided in the Land Use Technical Appendix.

M&I Water Supply.—The affected environment includes the service area of any M&I water provider within the CVP service area who has a CVP water service contract. CVP contracts are held by Contra Costa Water District (195,000 AF of contract in the No Action condition), Santa Clara Valley Water District (119,400 AF) and San Benito County (8,300 AF). CVP water is practically the only supply available to CCWD, but SCVWD has a variety of supplies. More description in provided in the Land Use Technical Appendix.

Hydropower.— CVP power is an important part of the overall electricity supply in the Bay Area. Important preference power users include the Santa Clara Valley Water District, municipal districts such as the cities of Alameda, Palo Alto and Santa Clara, federal users such as Moffett Federal Airfield, and a number of other public users. CVP hydropower is used in the region for public, residential, commercial, and industrial purposes.

Commercial Fishing.—1992 employment in the area's commercial fishing and processing sectors totaled 440 and 530 jobs, respectively. Together, these sectors accounted for less than 0.1 percent of total employment within the area in 1992. Commercial salmon harvests in the area have remained relatively constant over the last 25 years, averaging 193,500 salmon per year, even though harvests dropped dramatically in 1992 to 67,000 along the entire West Coast. In 1996, 152,000 salmon were harvested in the area, which resulted in an estimated $2.4 million of gross revenue, or about 42 percent of the California total (Pacific Fishery Management Council, 1997). Much of the harvest was landed in Princeton / Half Moon Bay and San Francisco, and to a lesser extent, in Bodega Bay and the other ports shown in Table TA-4.

Ocean Sportfishing.—About 40 percent of ocean sportfishing for salmon takes place from privately owned pleasure craft and about 60 percent from chartered boats. Ocean sportfishing for salmon generates an estimated $10.4 million annually in trip-related spending in the area. Of this, nonresidents account for 40 percent. Businesses that benefit from trip-related spending by ocean salmon sport fishers include charterboat operations, retail operations that provide goods to sport fishers (e.g., restaurants, bait and tackle stores), and lodging places.

Mendocino Coastal Area

The Mendocino Coastal Area extends from Point Arena to Horse Mountain, California, and includes the port area of Fort Bragg in Mendocino County. The area is primarily rural, with an economy based largely on agriculture, forestry, and tourism. Total industrial output was valued at $3.0 billion. Place of work income was estimated at $1.5 billion, and approximately 41,700 persons were employed. Major employment sectors within the area include services (28 percent of regional employment); retail trade (19 percent); government (15 percent); manufacturing (12 percent); and agriculture, forestry, and fishing (9 percent) (Table TA-2b).

The economy of the area is potentially affected by changes in ocean commercial and sport fishing for salmon. Employment in the area's commercial fishing sector totaled 180 jobs in

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1992. Commercial fish harvests generated an additional 180 jobs in the seafood processing sector. Together, these two sectors accounted for approximately 0.9 percent of total employment within the area in 1992. Commercial salmon harvest has declined substantially in the area since 1990 due to harvest restrictions and reallocation of salmon harvests among user groups. In 1996, the area accounted for 5.5 percent of California's commercial salmon harvest, generating an estimated $308,000 in gross harvest revenue (Pacific Fishery Management Council, 1997). Approximately 90 percent of this harvest was landed in Fort Bragg, with the remainder in Port Arena, Shelter Cove, Albion, and Westport (Table TA-4).

About 90 percent of ocean sportfishing for salmon takes place from privately owned pleasure craft and about 10 percent from chartered boats. Ocean sportfishing for salmon generates an estimated $1.9 million annually in trip-related spending in the area. Of this, nonresidents account for about 25 percent. Businesses that benefit from trip-related spending by ocean salmon sport fishers include charterboat operations, retail operations that provide goods to sport fishers (e.g., restaurants, bait and tackle stores), and lodging places.

KMZ-California Coastal Area

The KMZ-California Coastal Area extends from Horse Mountain to Point St. George, California, and includes the port areas of Eureka in Humboldt County and Crescent City in Del Norte County. This coastal area also includes the lower Klamath River Basin. The region is characterized by a resource-based economy including forestry, wood-products manufacturing, and commercial fishing. The Eureka area serves as a regional center for retail trade and consumer services. Total regional output in 1992 was valued at $5.0 billion. Place of work income was estimated at $2.7 billion, and approximately 72,000 persons were employed. Major employment sectors include services (27 percent of regional employment), retail trade (19 percent), government (19 percent), and manufacturing (10 percent) (Table TA-2b).

The economy of the area is potentially affected by changes in ocean commercial and sport fishing for salmon. Employment in the area's commercial fishing and processing sectors totaled 520 and 460 jobs, respectively, in 1992. Together, these two sectors accounted for 1.4 percent of total employment within the area. Commercial salmon harvests in the area have steadily declined since the 1970s and virtually disappeared in the early 1990s when harvest restrictions closed the salmon fishery during certain years. The reallocation of salmon resources among fishery groups has also diminished ocean commercial salmon harvests in recent years. In 1996, 11,700 salmon were harvested in the area, which resulted in an estimated $185,000 in gross revenue, or about 3.2 percent of the California total (Pacific Fishery Management Council, 1997). Most of this harvest was landed in Eureka and to a lesser extent, Trinidad and Crescent City (Table TA-4).

About 95 percent of ocean sportfishing for salmon takes place from privately owned pleasure craft and about 5 percent from chartered boats. Ocean sportfishing for salmon generates an estimated $2.1 million annually in trip-related spending. Of this, nonresidents account for about 20 percent. Businesses that benefit from trip-related spending by ocean salmon sport fishers include charterboat operations, retail operations that provide goods to sport fishers (e.g., restaurants, bait and tackle stores), and lodging places. In addition to ocean sportfishing, sportfishing for salmon and steelhead on the lower Klamath River generates an estimated $1.3 million annually in spending.

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KMZ-Oregon Coastal Area

The KMZ-Oregon Coastal Area extends from Point St. George, California, to Humbug Mountain, Oregon, and includes the port area of Brookings in Curry County, Oregon. The region is largely rural with a resource-based economy. Total regional output in 1992 was valued at $544.0 million. Place of work income was estimated at $275.6 million, and approximately 8,600 persons were employed. Major employment sectors include retail trade (23 percent of regional employment), services (22 percent), government (15 percent), and manufacturing (10 percent) (Table TA-2b).

The economy of the area is potentially affected by changes in ocean commercial and sport fishing for salmon. Employment in the area's commercial fishing and processing sectors totaled 130 and 110 jobs, respectively, in 1992. Together, these sectors accounted for 2.8 percent of total employment within the area. Commercial salmon harvests in the area have steadily declined since the 1970s and virtually disappeared in the early 1990s when harvest restrictions closed the fishery during certain years. The reallocation of Trinity River salmon resources among fishery groups has also diminished ocean commercial salmon harvests in recent years. In 1996, 8,500 salmon were harvested in the area, which resulted in an estimated $150,000 in gross revenue, or about 4.9 percent of the Oregon total (Pacific Fishery Management Council, 1997). Virtually all of this harvest was landed in Brookings (Table TA-4).

About 95 percent of ocean sportfishing for salmon takes place from privately owned pleasure craft and about 5 percent from chartered boats. Ocean sportfishing for salmon generates an estimated $4.2 million annually in trip-related spending in the area. Of this, nonresidents account for about 20 percent. Businesses that benefit from trip-related spending by ocean salmon sport fishers include charterboat operations, retail operations that provide goods to sport fishers (e.g., restaurants, bait and tackle stores), and lodging places.

Northern/Central Oregon Coastal Area

The Northern Central Oregon Coastal Area is a large region that extends from Humbug Mountain to Leadbetter Point, Washington, and includes the port areas of Coos Bay, Newport, Tillamook, and the Columbia River within the counties of Coos, Douglas, Lane, Lincoln, Tillamook, and Clatsop. The area is largely rural and coastal, although Lane and Douglas Counties take in inland area that include the larger communities of Eugene and Roseburg. Total regional output in 1992 was valued at $20.2 billion. Place of work income was estimated at $10.3 billion, and approximately 280,300 persons were employed. Major employment sectors include services (25 percent of regional employment), retail trade (19 percent), government (17 percent), and manufacturing (14 percent) (Table TA-2b).

The economy of the area is potentially affected by changes in ocean commercial and sport fishing for salmon. Employment in the area's commercial fishing and processing sectors totaled 900 and 1,740 jobs, respectively, in 1992. Together, these two sectors accounted for 0.9 percent of total employment within the area. Commercial salmon harvests in the area have declined somewhat since 1990 due to harvest restrictions and fishery conditions. This has been especially true in the Coos Bay area, which has been subject to restrictions protecting Trinity River salmon. In 1996, 166,600 salmon were harvested in the area, which resulted in an estimated $2.9 million in gross revenue, or about 95.1 percent of the Oregon total (Pacific

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Fishery Management Council, 1997). Much of this harvest was landed in Newport and Charleston (Table TA-4).

About 75 percent of ocean sport fishing for salmon takes place from privately owned pleasure craft and about 25 percent from chartered boats. Ocean sportfishing for salmon generates an estimated $6.1 million annually in trip-related spending in the area. Of this, nonresidents account for 20 percent. Businesses that benefit from trip-related spending by ocean salmon sport fishers include charterboat operations, retail operations that provide goods to sport fishers (e.g., restaurants, bait and tackle stores), and lodging places.

Current Social Conditions

The Mendocino Coastal, KMZ-California Coastal, KMZ-Oregon Coastal, and Northern / Central Oregon Coastal Area have all experienced a steady decline in the commercial salmon fishing industry. Many coastal communities have historically been tied to the industry. For most individuals who fish, it is not just a job and a way to earn a living; it is a way of life. Often, previous generations of the same families have been fishers. With the decline of the salmon stocks and the increasing restrictions on salmon fishing, many of those individuals have had to abandon their way of life and seek other employment. Many of those who continue to pursue the fishing way of life must have supplemental employment. Individuals must often leave their historical fishing areas near their homes and go to other distant places to fish for salmon during the remaining fishing seasons. The younger generation sees little future in pursuing their fishing heritage as a way of life.

CENTRAL VALLEY

For purposes of the socioeconomics analysis, the Central Valley region consists of three subregions: the Sacramento Valley, the San Joaquin Valley, and the Tulare Basin. This region is potentially affected through changes in water supply for irrigated agriculture, hydropower generation, and M&I use. Recent Central Valley employment data are presented in Table TA-5.

Current Economic Conditions

Sacramento Valley

The Sacramento Valley includes the central valley from Shasta County to the Bay / Delta. The region is characterized by fast-growing urban centers and smaller towns with a strong agricultural base. As derived from the IMPLAN model, total output was valued at $96 billion, and about 1.3 million persons out of a population of 2.7 million were employed in 1991.

Table TA-6 shows existing conditions data estimated for the Sacramento River Region.

Total 1991 industrial output was estimated to be $96 billion (in 1997 dollars). Total employee compensation was about $36 billion and property income was $20 billion.

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Table TA-5. Employment Data for Central Valley Regions, 1991

Industry	Sacramento Valley		San Joaquin Valley		Tulare Region	
	Employment (1,000's)	Percent of Total	Employment (1,000's)	Percent of Total	Employment (1,000's)	Percent of Total
Agriculture, forestry, fisheries	57.6	4.4	150.0	16.9	108.3	23.1
Mining	1.8	0.1	1.5	0.2	3.8	0.8
Construction	104.6	8.1	58.2	6.5	35.0	7.5
Manufacturing	82.2	6.3	91.1	10.2	26.6	5.7
Transportation, communication, utilities	45.0	3.5	32.6	3.7	22.8	4.9
Wholesale, retail trade	264.9	20.4	169.7	19.1	80.7	17.2
Finance, insurance, real estate	107.6	8.3	59.6	6.7	21.6	4.6
Services	327.2	25.2	191.0	21.5	85.4	18.2
Government enterprise & special industry	306.3	23.6	136.5	15.3	84.6	18.0
Total	**1297.3**	**100.0**	**890.2**	**100.0**	**468.7**	**100.0**

Source: IMPLAN, 1991.

Table TA-6. 1991 Existing Conditions Data for the Sacramento River Region, Million 1997 Dollar

Industry	Final Demand (MM$)	Total Industry Output (MM$)	Employee Compens. Income (MM$)	Property Income (MM$)	Total Place of Work Income (MM$)	Total Value Added (MM$)	Employ-ment (Thousands of Jobs)
Agriculture, Forestry, Fisheries	2.2	3.2	0.4	0.7	1.1	1.2	57.6
Mining	0.9	1.0	0.1	0.6	0.7	0.8	1.8
Construction	10.4	11.6	3.0	0.9	4.0	4.0	104.6
Manufacturing	11.3	14.4	3.3	2.4	5.6	6.1	82.2
Transportation, Comm., Utilities	3.6	6.8	1.8	1.8	3.6	3.9	45.0
Wholesale, Retail Trade	9.8	11.6	6.1	1.5	7.6	9.3	264.9
Finance, Insurance, Real Estate	11.0	14.5	2.6	6.8	9.4	11.5	107.6
Services	13.7	18.0	8.0	3.4	11.3	11.6	327.2
Gov. Enterprise & Special Industry	13.8	15.2	11.3	1.5	12.7	12.8	306.3
Total	76.8	96.3	36.5	19.6	56.1	61.0	1297.3
Population	2,671,300						

The economy of the Sacramento Valley is potentially affected by changes in agricultural production, hydropower generation, M&I water supply, and water-oriented recreation.

Agriculture.—Rice, grains, hay, pasture, vegetables, fruits and nuts are important crops in the Sacramento Valley. Farm supply and product processing industries are important in the region, especially in the smaller communities. Production agriculture provides about four percent of

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wage and salary employment in the region, but the percentage varies widely among the counties. In 1992, production agriculture accounted for 33 percent of employment in Colusa County, 19 percent in Glenn County, and 16 percent in Yuba County. However, it accounted for less than one percent in Sacramento, Placer, and Nevada counties. In general, the large cities have very diverse economies but the small cities and towns are more dependent on agriculture. More description of regional agriculture is provided in the Land Use Technical Appendix.

Hydropower.—CVP hydropower is an important part of the overall electricity supply in the Sacramento Valley provided either directly or through exchange agreements. CVP power is used in the region for public, agricultural, residential, commercial, and industrial purposes. Important preference power users include irrigation and water districts having CVP contracts, municipal districts such as the cities of Roseville, Redding and Shasta Lake, federal users such as McClellan and Travis Air Force Base, and a number of other public users such as prisons, universities, and medical facilities.

M&I Water Supply.—The affected M&I water supply environment includes the service area of any M&I water provider who has a CVP water service contract. CVP M&I water supplies are used at locations scattered throughout the valley. Most providers are located near Sacramento (75,900 AF of contracts in the No Action condition) and Redding (36,900 AF). More description is provided in the Land Use Technical Appendix. Some M&I users have limited alternative supplies.

Recreation.—Trip-related recreational spending occurs from use at rivers and reservoirs including the Sacramento River, Lake Folsom and other reservoirs.

San Joaquin Valley

The region incorporates the floodplain of the San Joaquin River and ranges from the Bay / Delta to Fresno County. The region is characterized by fast-growing urban centers and smaller towns with a strong agricultural base. Table TA-7 shows existing conditions data estimated for the San Joaquin River Region.

Table TA-7. 1991 Existing Conditions Data for the San Joaquin River Region, Million 1997 Dollars

Industry	Final Demand (MM$)	Total Industry Output (MM$)	Employee Compens. Income (MM$)	Property Income (MM$)	Total Place of Work Income (MM$)	Total Value Added (MM$)	Employ-ment (Thousands of Jobs)
Agriculture, Forestry, Fisheries	6.3	9.2	1.0	1.8	2.8	2.8	150.0
Mining	2.2	2.4	0.1	1.8	1.9	1.9	1.5
Construction	5.6	6.3	1.6	0.5	2.1	2.2	58.2
Manufacturing	15.3	18.4	3.3	2.5	5.8	6.3	91.1
Transportation, Comm., Utilities	2.6	4.7	1.2	1.0	2.2	2.4	32.6
Wholesale, Retail Trade	5.8	7.5	4.0	1.0	5.0	6.1	169.7
Finance, Insurance, Real Estate	5.8	8.3	1.4	4.1	5.4	6.6	59.6
Services	8.4	10.4	4.6	1.8	6.4	6.6	191.0
Gov. Enterprise & Special Industry	4.9	5.3	4.5	0.3	4.8	4.8	136.5
Total	56.9	72.3	21.7	14.8	36.5	39.8	890.2
Population	1,944,100						

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1991 population was estimated to be 1.94 million persons of which 0.9 million were employed. Primary employers were services, agriculture / forestry / fisheries, trade and government. Total industrial output, in 1997 dollars, was estimated to be $72 billion. Total employee compensation was about $22 billion and property income was $15 billion. Currently, the largest proportions of wage and salary jobs in the region are in services and trade.

The area's economy is potentially affected by changes in agricultural production, hydropower generation, M&I water supply, and water oriented recreation.

Agriculture.—The San Joaquin Valley is an important agricultural region. Important crops in the region include cotton, grains, hay and pasture, vegetables, grapes, fruits and nuts. Some CVP water supplied by the Friant Unit would not be affected by the proposed alternatives. Potentially affected irrigation is primarily in the San Luis Unit and the Delta Mendota Canal service areas. Farm supply and product processing industries are important, especially in the smaller communities. More description of the regional agricultural economy is provided in the Land Use Technical Appendix.

M&I Water Supply.—The affected M&I water supply environment includes the service area of any M&I water provider who has a CVP water service contract. The City of Tracy has a contract for 10,000 AF in the No Action condition. Friant-Kern M&I water contracts would not be affected so they are not included in the analysis. More description is provided in the Land Use Technical Appendix.

Hydropower.—CVP power is an important part of the overall electricity supply in the San Joaquin Valley. Important preference power users include irrigation and water districts having CVP contracts, municipal districts such as the city of Lodi, and military users. CVP hydropower is used in the region for public, irrigation, residential, commercial, and industrial purposes. CVP M&I water supplies are provided for use in locations scattered around the valley. Some M&I users have limited alternative supplies.

Recreation.—Trip-related recreational spending occurs from use at rivers and reservoirs including the San Joaquin River, and San Luis and other CVP reservoirs.

Tulare Basin

The Tulare Basin ranges from Fresno County to Kern County. In general, the region is characterized by fast-growing urban centers and smaller towns with a strong agricultural base.

Table TA-8 shows existing conditions data estimated for the Tulare Lake Region. 1991 population was estimated to be almost 1 million persons of which 469,000 were employed. Primary employers were agriculture / forestry / fisheries, services and government. Total industrial output in 1997 dollars was estimated to be $29 billion. Total employee compensation was about $11 billion and property income was $7 billion.

Agriculture.—Farm supply and product processing industries are important in the region, especially in the smaller communities. Dairies and the industries associated with them, such as hay and forage, are important parts of the agricultural sector in the region. Production

Table TA-8. 1991 Existing Conditions Data for the Tulare Region, Million 1997 Dollars

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Industry	Final Demand (MM$)	Total Industry Output (MM$)	Employee Compens. Income (MM$)	Property Income (MM$)	Total Place of Work Income (MM$)	Total Value Added (MM$)	Employ-ment (Thousands of Jobs)
Agriculture, Forestry, Fisheries	5.0	6.3	0.7	1.2	2.0	2.0	108.3
Mining	2.8	3.0	0.2	1.0	1.3	1.9	3.8
Construction	3.2	4.0	1.0	0.3	1.2	1.3	35.0
Manufacturing	4.5	5.7	1.0	0.8	1.8	1.9	26.6
Transportation, Comm., Utilities	1.7	2.7	0.7	0.7	1.5	1.6	22.8
Wholesale, Retail Trade	2.7	3.5	1.8	0.5	2.3	2.8	80.7
Finance, Insurance, Real Estate	2.3	3.2	0.5	1.6	2.1	2.6	21.6
Services	3.4	4.6	1.9	0.9	2.8	2.9	85.4
Gov. Enterprise & Special Industry	3.3	3.5	3.0	0.1	3.1	3.1	84.6
Total	28.9	36.5	11.0	7.1	18.1	20.1	468.7
Population	994,000						

agriculture accounted for 10 percent of wage and salary employment in 1992, but the share varied from 7 percent in Kern County to 16 percent in Kings County. More description is provided in the Land Use Technical Appendix.

M&I Water Supply.—The affected M&I water supply environment includes the service area of any M&I water provider who has a CVP water service contract. The important providers are the cities of Coalinga (10,000 AF of contract in the No Action condition), Avenal (3,500 AF) and Huron (3,000 AF). Friant-Kern M&I water contracts would not be affected so they are not included in the analysis. More description is provided in the Land Use Technical Appendix.

Hydropower.—CVP power is an important part of the overall electricity supply in the Tulare region. Preference power users are irrigation and water districts having CVP contracts. The City of Avenal and Lemoore Naval Air Station are also preference customers.

The area's economy is potentially affected by changes in agriculture production. The region is an important agricultural region that produces fruits, nuts, vegetables, and field crops. Most CVP water use in the region is from the Friant Unit of the CVP, which would not be affected by the alternatives proposed in this DEIS/EIR. Farm supply and product processing industries are important, especially in the smaller communities.

Current Social Conditions

Central Valley farmers who depend on irrigation are being affected by a wide array of decisions affecting their way of life, many of which are outside their control. For example, changes in farm subsidies and water supplies are accumulating. While farming has always had risks and uncertainties associated with it, recent changes have increased those elements. The loss of control some farmers feel has increased their stress and concern for maintaining their way of life.

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Producers, marketers, and consumers of CVP hydropower are facing new challenges as the deregulation of the power industry and changes in water supply are occurring simultaneously. The uncertainty about what will happen, how to plan for the future, and how each user of CVP hydropower will be affected is an existing social concern.

ENVIRONMENTAL CONSEQUENCES

METHODOLOGY AND IMPACT EVALUATION CRITERIA

Input-output (I-O) analysis is often used to measure changes in total economic activity within a region. I-O analysis considers the trade linkages between directly and indirectly affected sectors of the economy. I-O models attempt to represent a region's economic activity through use of inter-industry tables reflecting transactions between industries at a given point in time. For this DEIS/EIR, regional impacts were estimated using IMPLAN, an I-O modeling and database package.

Due to the broad range of regional economic analyses pursued in this section (e.g., agriculture, hydropower, M&I, recreation, fisheries), the focus of the evaluations is on aggregated impacts within each region. Because the Lower Klamath River Basin/Coastal Area and Central Valley regions are so large, impacts are evaluated at the subregion level. For all analyses, three levels of comparison were performed: (1) total economic effects, (2) economic effects by sector , and (3) analyses of more affected groups. Despite certain analyses (e.g., recreation and fishing) providing numeric results, the more affected group analysis is largely qualitative.

Impact thresholds were applied to employment estimates (Table TA-9). For evaluating the importance of total impacts at the subregion level, thresholds range from 0.1-5 percent depending on the size of the region or subregion. For evaluating sector-level impacts, the thresholds ranged from 10-50 jobs and 5-20 percent. Generally speaking, smaller regions used large thresholds and larger regions used small thresholds. These thresholds are based on consideration of the margin of error associated with the analysis, the potential for more concentrated effects within regions, and the yearly variation in employment within the various regional economies and sectors. Exceedence of these thresholds is considered a substantial effect.

Adverse impacts can be concentrated into sub-regions within the larger regions for several reasons. For impacts that originate from irrigation and M&I, some subregions are relatively dependent on CVP contract water. A given percent change in CVP contract supplies tends to affect their agricultural economies and M&I water costs more than for regions that have more diverse water supplies. For impacts originating from hydropower costs, some providers are CVP preference customers and changes in CVP power production tend to affect them more. This study does not utilize any regional models for the smaller subregions so potential substantial impacts are described qualitatively. The size of the regional impact and subjective information on the concentration of impacts within the region were used for this qualitative assessment.

Table TA-9. Impact Thresholds by Analysis Type and Region

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Region	Total Impact Threshold (percent)	Sector Impact Threshold	Most Affected Group Threshold
Trinity River Basin			
Up-front impacts (Trinity County only)	5	10 jobs and 20%	Qualitative
2020 annual impacts (Trinity and Shasta Counties)	1	20 jobs and 20%	>20% of No Action[1]
Lower Klamath River Basin/Coastal Area			
Monterey	0.1	50 jobs and 5%	>20% of No Action[1]
San Francisco	0.1	50 jobs and 5%	>20% of No Action[1]
Mendocino	1	20 jobs and 10%	>20% of No Action[1]
KMZ-California	1	20 jobs and 10%	>20% of No Action[1]
KMZ-Oregon	1	20 jobs and 10%	>20% of No Action[1]
Northern/Central Oregon	1	20 jobs and 10%	>20% of No Action[1]
Central Valley			
Sacramento Valley	0.1	50 jobs and 5%	Qualitative
San Joaquin Valley	0.1	50 jobs and 5%	Qualitative
Tulare Basin	0.1	50 jobs and 5%	Qualitative

[1] Applied to recreation and fishing analyses only.

Cost Methodology

This section describes the cost analyses conducted for each Trinity River EIS/EIR alternative (No Action, Maximum Flow, Flow Evaluation, Percent Inflow, Mechanical Restoration, State Permit, and Preferred). The section is broken down into two parts: 1) cost comparison and 2) regional economic impact analysis. The cost comparison compares full project costs between alternatives whereas the regional economic impact analysis evaluates localized effects based exclusively upon those costs incurred within the impact region. Since project construction and maintenance activities are planned exclusively along the upper reaches of the Trinity River, the economic impact region for the cost analysis has been defined as Trinity County.
This section presents a detailed explanation of both the methodologies applied and the results of the analyses. For the regional impact analyses in particular, results are presented both by cost element and by alternative and year. This presentation is far more detailed than the summary results presented under each alternative further along in this technical appendix. The decision was made to present the more important cost results under each alternative so as not to cloud the overall regional implications of each alternative with unnecessary cost detail. This cost methodology section therefore reflects a stand alone presentation of the cost impacts. For a presentation of overall impacts across all categories of impact (costs, recreation, fisheries, agriculture, M&I, and hydropower), the reader will need to refer to the discussion under each alternative.

Cost Comparison

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This section focuses on the full range of construction and maintenance costs associated with each alternative. The costs refer to estimated expenditures involved with each alternative as opposed to lost benefits (i.e., lost agricultural, M&I, and power benefits). Discussions of lost benefits can be found under the economics sections of each resource area (e.g., land use, fisheries, recreation, and power). The following programs are the focus of the cost analysis:

- Construction to modify Trinity Dam
- Construction of 47 new Trinity River channel rehabilitation and side channel projects
- Maintenance of 27 existing Trinity River channel rehabilitation and side channel projects
- Maintenance of 47 new Trinity River channel rehabilitation and side channel projects
- Placement of fish spawning gravel
- Dredging and watershed protection program
- Adaptive management program

These programs are both new and on-going. The costs range from up-front, to temporary, to periodic, to annual. Certain costs are expected only in the short-term, while others are anticipated to be perpetual.

Construction Costs.—Source of data: U. S. Bureau of Reclamation. *Final Draft Reconnaissance-Level Cost Estimates for Restoration Alternatives, Trinity and Lewiston Dams, Central Valley Project, California*. March 1996.

The following presents estimated costs by type of construction and alternative.

Construction Costs for Trinity Dam Modifications.—Modification costs were estimated as a function of required water releases from Trinity Dam. The Maximum Flow Alternative is the only alternative which involves flows high enough to warrant modification of Trinity Dam.

Three Trinity Dam modification options designed to release up to 30,000 cfs were developed by Reclamation engineers for the Maximum Flow Alternative (options 4A, 4B, and 4C). These three options were developed as combinations of three dam modification strategies (3A, 3B, and 3C). The dam modification strategies and resulting construction options are described below.

Trinity Dam Modification Strategies:

3A: Connect the main outlet works to the spillway tunnel and add gates. Reconnaissance level (preliminary) construction cost estimate = $56,750,000

3B: Modify the main outlet works by installing an additional penstock, guard and regulating gates, a control structure, and a stilling basin. Reconnaissance level construction cost estimate = $16,230,000

3C: Replace the fixed crest morning glory spillway with a sliding ring gate. The present fixed crest extends to elevation 2370 feet, the crest of the sliding gate would vary from elevation 2356 to 2370, depending on reservoir water level. Reconnaissance level construction cost estimate = $6,850,000

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Trinity Dam Modification Options (Combinations of the modification strategies):

4A: Combination of modification strategies 3A and 3B. Total reconnaissance level construction cost estimate = $72,980,000 ($56,750,000 + $16,230,000). Construction period = 2 years (50% completion rate each year).

4B: Combination of modification strategies 3A and 3C. Total reconnaissance level construction cost estimate = $63,600,000 ($56,750,000 + $6,850,000). Construction period = 2 years (50% completion rate each year).

4C: Combination of modification strategies 3B and 3C. Total reconnaissance level construction cost estimate = $23,080,000 ($16,230,000 + $6,850,000). Construction period = 1 year.

Construction Costs for 47 New River Restoration Sites.—Source of construction cost data: U.S. Bureau of Reclamation, Northern California Area Office

Mechanical manipulation of the Trinity River, through construction of channel rehabilitation and side channels projects, is proposed for the Flow Evaluation, Percent Inflow, Mechanical Restoration, and Preferred Alternatives. Forty four channel rehabilitation sites, at a cost of $300,000 each, and 3 side channel sites, at a cost of $50,000 each, are proposed for these three alternatives. The total cost of all 47 projects is estimated at $13,350,000. The current plan is to construct 27 of the 47 projects within the first 3 years after project implementation with 8 channel rehabilitation projects and 1 side channel project to be constructed each year (annual cost of $2,450,000 for each of the first 3 years). The remaining 20 projects would be constructed over the next 3 years (7 channel rehabilitation projects each in years 4 and 5 ($2,100,000 each year) and 6 channel rehabilitation projects in year 6 ($1,800,000)).

Maintenance Costs - River and Watershed.—

Maintenance Costs for Existing and New River Restoration Sites.—Source of maintenance cost data: U.S. Bureau of Reclamation, Northern California Area Office.

Three to five year periodic maintenance schedules for existing and new river restoration sites are as follows:

Mechanically Maintain 27 Existing Sites (No Action, Mechanical Restoration, and Harvest Management Alternatives):

- $1,000 every 3 years to manually remove vegetation.
- $3,000 every 5 years to mechanically remove root systems on channel restorations and to modify side channel openings

Mechanically Maintain 47 New Sites (Mechanical Restoration Alternative):

- $6,000 every 3 years to manually remove vegetation.
- $30,000 every 5 years to mechanically remove root systems on channel restorations and to modify side channel openings

Spawning Gravel Placement Costs.—Source of spawning gravel data: McBain & Trush Fisheries Consultants; and U.S. Bureau of Reclamation, Northern California Area Office

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Spawning gravel costs were derived from estimates of gravel requirements by water year type and costs of dredging, sifting, transportation, and placement. Weighted average annual spawning gravel requirements were developed by applying gravel requirements by water year type to occurrence probabilities by water year type.

A cost per cubic yard of $10 was estimated for dredging and sifting or purchase of spawning gravel. All spawning gravel material would either be dredged from the river or purchased. Costs per cubic yard for transportation and placement were also estimated at $10, totaling $20 per cubic yard of gravel placed. Table TA-10 presents the gravel requirements and costs for each alternative on average and by water year type.

Table TA-10. Spawning Gravel Cost Comparison

		ALTERNATIVES:					
	Prob.	No Action	Maximum Flow	Flow Evaluation/ Preferred	Percent Inflow	Mechanical Restoration	State Permit
Gravel Needs (yd^3):							
Critically Dry	.12	700	0	0	0	700	0
Dry	.28	700	150	200	0	700	0
Normal	.2	700	1,500	2000	50	700	0
Wet	.28	700	14,550	14,200	1350	700	0
Extremely Wet	.12	23,200	>100,000	49,100	4650	23,200	30,800
Weighted Average		3,400	16,416	10,324	946	3,400	3,700
Costs ($K):							
Critically Dry	.12	14.0	0	0	0	14.0	0
Dry	.28	14.0	3.0	4.0	0	14.0	0
Normal	.2	14.0	30.0	40.0	1.0	14.0	0
Wet	.28	14.0	291.0	284.0	27.0	14.0	0
Extremely Wet	.12	464.0	2,000.0	982.0	93.0	464.0	616.0
Weighted Average		68.0	328.3	206.5	18.9	68.0	74.0

Dredging Program Costs.—Source of dredging data: Trinity County Planning Department and U.S. Bureau of Reclamation, Northern California Area Office

Baseline Sediment Dredging Program.—Sediment dredging programs at the Grass Valley Creek ponds and in the Trinity River at confluence with Grass Valley Creek (approximate cost: $75,000 per year).

Expanded Dredging Program.—In addition to the baseline dredging associated with all alternatives, an expanded Trinity River dredging program is included

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within the Mechanical Restoration Alternative. This expanded dredging plan removes sediment from ten additional pools within the mainstem of the Trinity River. Approximately 80,000 cubic yards of sediment would be removed from these pools over a 4-year cycle. Assuming 20,000 cubic yards are dredged each year, at a cost of $10 a cubic yard, the annual labor cost would run about $200,000.

Watershed Protection Program Costs.—Source of dredging data: Trinity County Planning Department

Baseline Watershed Protection Program.—(Since the only program component for which costs are readily available is the maintenance of Buckhorn Reservoir, that cost is used to represent the costs of the baseline program.)

Maintenance of sediment control structures at Buckhorn Reservoir (approximate cost: $60,000 annually)

Managing existing land management plans and enforcing Trinity County's decomposed granite grading ordinance

Implement the South Fork Trinity River Action Plan (cost varies annually)

Enforce California Department of Forestry's Forest Practice Rules

Expanded Watershed Protection Program.—In addition to the baseline watershed protection program associated with all alternatives, an expanded watershed protection program has been included in the Mechanical Restoration and Preferred Alternatives.

The goal of the program is to limit sediment input into the Trinity River mainstem. The program includes two primary elements: a perpetual road maintenance component and a 22-year road rehabilitation and obliteration component. Both of these components are planned on back country roads on both public and private lands throughout the Trinity River watershed.

The road maintenance cost is estimated at $1,781,000 for its first year. With road decommissioning, this cost is expected to decline by approximately 40 percent to $1,069,000 by year 22 (average annual cost across the first 22 years is $1,425,000). Perpetual road maintenance at the $1,069,000 level is expected after reaching the 22 year mark. Road rehabilitation / obliteration is planned for only the first 22 years at an average annual cost of $1,123,000.

Combining these components results in an initial year cost estimate of $2,904,000 ($1,781,000 + $1,123,000). In year 22, the combined costs would decline to approximately $2,192,000 ($1,069,000 + $1,123,000). The average annual cost across the first 22 years would be approximately $2,548,000 ($1,425,000 + $1,123,000). Finally, after 22 years, the road rehabilitation / obliteration component is assumed to be complete implying the existence of only the on-going road maintenance component at $1,069,000 per year.

Adaptive Management Program.—Source of adaptive management data: USFWS.

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Adaptive management is a trail and error, learning by doing program used to manage environments characterized by complexity, shifting conditions, and uncertainty. Adaptive management would assess the effects of reservoir operations, water resource allocations, and mechanical habitat manipulations on biotic resources of the Trinity River. The adaptive management program would: 1) define goals and objectives in measurable terms; 2) develop hypotheses, build models, compare options, and design system manipulations and monitoring programs; 3) propose modifications to operations that protect, conserve, and enhance the resources; and 4) implement monitoring and research programs to examine how selected management actions meet resource management objectives.

Costs for the program are expected to range anywhere from $2,450,000 to $4,450,000 per year and have been assigned exclusively to the Flow Evaluation and Preferred Alternatives. Given the uncertain nature as to what will actually be involved in the program, the cost estimates are included in the cost comparison, but due to lack of expenditure details, have not been included in the regional analysis.

Results - Cost Comparison.—Given the Trinity EIS/EIR represents both a federally oriented NEPA EIS document and a state oriented CEQA EIR document, both perspectives must be addressed. To analyze costs by alternative from a NEPA perspective, one must compare costs of the baseline (No Action) alternative to those of each "action" alternative. To analyze costs by alternative from a CEQA perspective, one must compare costs of the Preferred Alternative to those of Existing Conditions. Since the costs associated with the No Action Alternative all involve on-going programs, from a cost perspective, existing conditions and the No Action Alternative are assumed to be the same. Tables TA-11 and TA-12 present both the costs for each alternative and the change in costs for each "action" alternative as compared to No Action/Existing Conditions.

Given the unique cost characteristics, three categories were defined: 1) temporary up-front costs, 2) temporary annual costs, and 3) long term periodic or annual costs. Temporary up-front costs reflect total costs incurred in the first few years after alternative implementation (i.e., dam modification). Temporary annual costs are incurred annually for a set period of time (i.e., construction of channel restoration sites, watershed protection - road rehabilitation/obliteration component). Long term periodic or annual costs are incurred indefinitely on a periodic or annual basis (i.e. periodic maintenance, annual spawning gravel placement, annual dredging, and annual watershed protection - road maintenance component).

Regional Economic Impact Analysis

The regional economic impact analysis, hereafter referred to as regional analysis, focuses on the same cost elements considered in the cost comparison. These costs basically involve various forms of construction and periodic maintenance. Again, negative regional impacts associated with lost project benefits (e.g. agricultural, M&I, power, etc.) will be presented elsewhere in this socioeconomics technical appendix.

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Table TA-11. Total Costs by Alternative

Cost Elements	No ActionAlt./ Existing Cond.	Maximum Flow Alternative	Flow Evaluation Alternative	Percent Inflow Alternative	Mechanical Restoration Alternative	State Permit Alternative	Preferred Alternative
Temporary Up-Front Costs:							
Dam Modification:	None	$72.98M, $63.60M, $23.08M	None	None	None	None	None
Temporary Annual Costs:							
47 New Channel Restoration Sites	None	None	$13.35M total Yrs 1-3: $2.45M/yr Yrs 4 & 5: $ 2.1M/yr Yr 6: $ 1.8M	$13.35M total Years 1-3: $2.45M/yrr Years 4 & 5: $ 2.1M/yr Year 6: $ 1.8M	$13.35M total Years 1-3: $2.45M/yr Years 4 & 5: $ 2.1M/yr Year 6: $ 1.8M	None	$13.35M total Years 1-3: $2.45M/yr Years 4 & 5: $ 2.1M/yr Year 6: $ 1.8M
Watershed Protection: Expanded Road Rehabilitation and Obliteration	None	None	None	None	$24.7M total $1.123M annually for 22 yrs	None	$24.7M total $1.123M annually for 22 yrs
Long Term Periodic or Annual Costs:							
Maintenance of 27 Existing Channel Restoration Sites	$1K every 3 yrs $3K every 5 yrs	None	None	None	$1K every 3 yrs $3K every 5 yrs	None	None
Maintenance of 47 New Channel Restoration Sites	None	None	None	None	$6K every 3 yrs $30K every 5 yrs	None	None
Spawning Gravel Placement	Ext. Dry: $ 14K Dry: 14K Normal: 14K Wet: 14K Ext. Wet: 464K Annl Avg: $68K	Ext. Dry: $ 0K Dry: 3K Normal: 30K Wet: 291K Ext. Wet: 2,000K Annl Avg: $328.3K	Ext. Dry: $ 0K Dry: 4K Normal: 40K Wet: 284K Ext. Wet: 982K Annl Avg: $206.5K	Ext. Dry: $ 0K Dry: 0K Normal: 1K Wet: 27K Ext. Wet: 93K Annl Avg: $18.9K	Ext. Dry: $ 14K Dry: 14K Normal: 14K Wet: 14K Ext. Wet: 464K Annl Avg: $68K	Ext. Dry: $ 0 Dry: 0 Normal: 0 Wet: 0 Ext. Wet: 616K Annl Avg: $74K	Ext. Dry: $ 0K Dry: 4K Normal: 40K Wet: 284K Ext. Wet: 982K Annl Avg: $206.5K
Dredging Program: Baseline Expanded	$75K annually None	$75K annually None	$75K annually None	$75K annually None	$75K annually $200K annually	$75K annually None	$75K annually None
Watershed Protection : Baseline Expanded: Road Maintenance	$60K annually None	$60K annually None	$60K annually None	$60K annually None	$60K annually 1st Year: $1.781M Yr22-Perpetual: $1.069M	$60K annually None	$60K annually 1st Year: $1.781M Yr22-Perpetual: $1.069M
Adaptive Management:	None	None	$2.45-4.45M/yr	None	None	None	$2.45-4.45M/yr

Table TA-12. Cost Comparison to No Action Alternative

Cost Elements	No Action/ Existing Conditions	Changes From No Action Alternative/Existing Conditions					
		Maximum Flow Alternative	Flow Evaluation Alternative	Percent Inflow Alternative	Mechanical Restoration Alternative	State Permit Alternative	Preferred Alternative
Temporary Up-Front Costs:							
Dam Modification	None	+$72.98M, +$63.60M, +$23.08M	$0	$0	$0	$0	$0
Temporary Annual Costs:							
47 New Channel Restoration Sites	None	$0	+ $13.35M Years 1-3: +$2.45M/yr Years 4-5: +$2.1M/yr Year 6: +$1.8M	+ $13.35M Years 1-3: +$2.45M/yr Years 4-5: +$2.1M/yr Year 6: +$1.8M	+ $13.35M Years 1-3: +$2.45M/yr Years 4-5: +$2.1M/yr Year 6: +$1.8M	$0	+ $13.35M Years 1-3: +$2.45M/yr Years 4-5: +$2.1M/yr Year 6: +$1.8M
Watershed Protection: Expanded Road Rehabilitation and Obliteration	None	$0	$0	$0	+ 24.7M + $ 1.123M annlly	$0	+ 24.7M + $ 1.123M annlly
Long Term Periodic and Annual Costs:							
Maintenance of 27 Existing Channel Restoration Sites	$1K every 3 yrs $3K every 5 yrs	- $1K every 3 yrs - $3K every 5 yrs	- $1K every 3 yrs - $3K every 5 yrs	- $1K every 3 yrs - $3K every 5 yrs	$0	- $1K every 3 yrs - $3K every 5 yrs	- $1K every 3 yrs - $3K every 5 yrs
Maintenance of 47 New Channel Restoration Sites	None	$0	$0	$0	+ $6K every 3 yrs + $30K every 5 yrs	$0	$0
Spawning Gravel Placement							
Average:	$68K annually	+ $260.3K annlly	+ $138.5K annlly	- $49.1K annlly	$0	+ $6K annlly	+ $138.5K annlly
Extremely Wet Years:	$464K	+ $1,536K	+ $518K	- $371K	$0	+ $152K	+ $518K
Dredging Program: Baseline	$75K annually	$0	$0	$0	$0	$0	$0
Expanded	None	$0	$0	$0	+ $200K annlly	$0	$0
Watershed Protection: Baseline	$60K annually	$0	$0	$0	$0	$0	$0
Expanded	None	$0	$0	$0	Initial Year: + $1.781M L/T Level: + $1.069M	$0	Initial Year: + $1.781M L/T Level: + $1.069M
Adaptive Management:	None	$0	+ $2.45 to 4.45M annlly	$0	$0	$0	+ $2.45 to 4.45M annlly

The primary difference between the costs used in the regional analysis and those focused on in the cost comparison is that only those costs incurred within the impact region are considered in the regional analysis. The region has been defined as Trinity County since the construction and annual maintenance activities are planned at Trinity Lake and along the upper reaches of the Trinity River. All of these sites are found in Trinity County.

In-Region Cost Estimation.—This section presents the in-region cost estimates for each of the construction and maintenance cost elements.

Construction Costs for Modification of Trinity Dam.—Dam modification construction reflects one time, up front costs to modify Trinity Dam to allow for increased releases. Costs are considered up front because all construction would be completed within 2 years.

Only the Maximum Flow Alternative requires dam modification. As presented under the cost comparison section, three different construction options (4A, 4B, and 4C) were developed by Reclamation engineers for the Maximum Flow Alternative. These three options were developed as combinations of three dam modification elements (3A, 3B, and 3C).

In an attempt to more accurately depict the portion of construction costs incurred and remaining in the Trinity County region, total construction costs were first separated by item. Each construction item was separately reviewed to estimate the percent of costs ultimately remaining in the region. The itemized in-region costs for each of the dam modification elements (3A, 3B, and 3C) were combined to estimate in-region costs for each option (4A, 4B, and 4C). Table TA-13 presents the in-region dam modification construction costs.

For each item, estimates were first developed as to the percent of costs incurred in the region. These regionally incurred costs were then evaluated to estimate the percent expected to actually remain in the region as opposed to quickly exiting. To aid in the analysis, the regionally incurred costs were separated into labor and nonlabor components.

In-region labor costs were allocated between federal government labor and contract labor, with contract labor further separated into skilled versus general labor. Since skilled labor costs remaining in the region were estimated as a percentage of labor wages, employee benefits were deducted from labor costs to obtain wages under the assumption that the cost of benefits would be transferred to entities outside the region.[3] Since general labor costs were handled as lump sums to in-region contractors, wage estimation was unnecessary.

Federal Government Labor (skilled only).—It was assumed that all construction items except engineering and design would be provided by a contractor. Of the federal labor incurred within the region (15% of engineering and design costs), all of those individuals were assumed to come from outside the region, primarily from Reclamation's Denver Technical Service Center. A ratio of lodging and per diem costs to engineering wages was used to approximate in-region expenditures. Federal worker wages were estimated by

[3] Of the total labor costs, 68.6 percent were assumed to represent wages based on information for the construction industry obtained from a Bureau of Labor Statistics report entitled "Employer Costs for Employee Compensation" March 1995.

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TABLE TA-13: DAM MODIFICATION CONSTRUCTION COSTS BY ALTERNATIVE:

Wages Only %: 0.686

I. **MAXIMUM FLOW ALTERNATIVE**: Three Construction Options (4A, 4B, & 4C)

In-Region %: Federal = 0.35, Contractor = 0.1

OPTION 4A: 30,000 cfs

Item		Total In-Region Cost: Total Cost	In-Region %	In-Region Cost	In-Region Labor: In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	$	Materials %	$ of Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
Mobilize	3A	1,650,000	0.2	330,000	0.45	148,500	111,375	37,125	7,640	0.55	181,500	0.25	45,375	34,031	5,672
	3B	470,000	0.2	94,000	0.45	42,300	31,725	10,575	2,176	0.55	51,700	0.25	12,925	9,694	1,616
		2,120,000		424,000		190,800					233,200		58,300	43,725	7,288
Diversion - bulkhead 20’ ID spillway tunnel	3A	1,120	0.75	840	0.6	504	378	126	26	0.4	336	0.25	84	63	11
	3B	0	0.75	0	0.6	0	0	0	0	0.4	0	0.25	0	0	0
		1,120		840		504					336		84	63	11
Excavation from above through shaft in rock and chamber	3A	11,125,000	0.75	8,343,750	0.4	3,337,500	2,503,125	834,375	171,714	0.6	5,006,250	0.25	1,251,563	938,672	156,445
	3B	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		11,125,000		8,343,750		3,337,500					5,006,250		1,251,563	938,672	156,445
Excavation from above through shaft in rock and tunnel	3A	1,600,000	0.75	1,200,000	0.4	480,000	360,000	120,000	24,696	0.6	720,000	0.25	180,000	135,000	22,500
	3B	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		1,600,000		1,200,000		480,000					720,000		180,000	135,000	22,500
Excavation from above through shaft	3A	2,250,000	0.75	1,687,500	0.4	675,000	506,250	168,750	34,729	0.6	1,012,500	0.25	253,125	189,844	31,641
	3B	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		2,250,000		1,687,500		675,000					1,012,500		253,125	189,844	31,641
Excavation, concrete	3A	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3B	350,000	0.75	262,500	0.4	105,000	78,750	26,250	5,402	0.6	157,500	0.25	39,375	29,531	4,922
		350,000		262,500		105,000					157,500		39,375	29,531	4,922
Excavation, surface rock	3A	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3B	540,000	0.75	405,000	0.4	162,000	121,500	40,500	8,335	0.6	243,000	0.25	60,750	45,563	7,594
		540,000		405,000		162,000					243,000		60,750	45,563	7,594
Anchor bars, drilling	3A	0	0.5	0	0.35	0	0	0	0	0.65	0	0.25	0	0	0
	3B	150,000	0.5	75,000	0.35	26,250	19,688	6,563	1,351	0.65	48,750	0.25	12,188	9,141	1,523
		150,000		75,000		26,250					48,750		12,188	9,141	1,523
Concrete in anchor block	3A	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
	3B	1,410,000	0.75	1,057,500	0.45	475,875	356,906	118,969	24,484	0.55	581,625	0.25	145,406	109,055	18,176
		1,410,000		1,057,500		475,875					581,625		145,406	109,055	18,176
Concrete in control house	3A	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
	3B	192,500	0.75	144,375	0.45	64,969	48,727	16,242	3,343	0.55	79,406	0.25	19,852	14,889	2,481
		192,500		144,375		64,969					79,406		19,852	14,889	2,481

Item		Total Cost	In-Region %	In-Region Cost	In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	In Region Non-Labor: $	Materials %	$ of Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
Concrete in walls and	3A	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
stilling basin	3B	2,010,000	0.75	1,507,500	0.45	678,375	508,781	169,594	34,902	0.55	829,125	0.25	207,281	155,461	25,910
		2,010,000		1,507,500		678,375					829,125		207,281	155,461	25,910
Backfill	3A	0	0.75	0	0.3	0	0	0	0	0.7	0	0.25	0	0	0
	3B	35,000	0.75	26,250	0.3	7,875	5,906	1,969	405	0.7	18,375	0.25	4,594	3,445	574
		35,000		26,250		7,875					18,375		4,594	3,445	574

Ring-follower gates	3A	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3B	1,488,000	0.25	372,000	0.4	148,800	111,600	37,200	7,656	0.6	223,200	0.25	55,800	41,850	6,975
		1,488,000		372,000		148,800					223,200		55,800	41,850	6,975
Grouting, setups	3A	67,500	0.75	50,625	0.5	25,313	18,984	6,328	1,302	0.5	25,313	0.25	6,328	4,746	791
	3B	0	0.75	0	0.5	0	0	0	0	0.5	0	0.25	0	0	0
		67,500		50,625		25,313					25,313		6,328	4,746	791
Grouting, drilling	3A	540,000	0.75	405,000	0.4	162,000	121,500	40,500	8,335	0.6	243,000	0.25	60,750	45,563	7,594
	3B	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		540,000		405,000		162,000					243,000		60,750	45,563	7,594
Concrete for structure, 2nd stage tunnel	3A	1,200,000	0.75	900,000	0.45	405,000	303,750	101,250	20,837	0.55	495,000	0.25	123,750	92,813	15,469
	3B	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		1,200,000		900,000		405,000					495,000		123,750	92,813	15,469
Concrete for structure, 2nd stage shaft	3A	1,575,000	0.75	1,181,250	0.45	531,563	398,672	132,891	27,349	0.55	649,688	0.25	162,422	121,816	20,303
	3B	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		1,575,000		1,181,250		531,563					649,688		162,422	121,816	20,303
Concrete for structure, 2nd stage chamber	3A	7,200,000	0.75	5,400,000	0.45	2,430,000	1,822,500	607,500	125,024	0.55	2,970,000	0.25	742,500	556,875	92,813
	3B	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		7,200,000		5,400,000		2,430,000					2,970,000		742,500	556,875	92,813
Stays, 6" thick for excavation	3A	300,000	0.45	135,000	0.3	40,500	30,375	10,125	2,084	0.7	94,500	0.25	23,625	17,719	2,953
	3B	0	0.45	0	0.3	0	0	0	0	0.7	0	0.25	0	0	0
		300,000		135,000		40,500					94,500		23,625	17,719	2,953
Cement	3A	972,000	0.75	729,000	0.1	72,900	54,675	18,225	3,751	0.9	656,100	0.1	65,610		
	3B	360,000	0.75	270,000	0.1	27,000	20,250	6,750	1,389	0.9	243,000	0.1	24,300		
		1,332,000		999,000		99,900					899,100		89,910		
Reinforcement	3A	1,500,000	0.4	600,000	0.85	510,000	382,500	127,500	26,240	0.15	90,000	0.25	22,500	16,875	2,813
	3B	690,000	0.4	276,000	0.85	234,600	175,950	58,650	12,070	0.15	41,400	0.25	10,350	7,763	1,294
		2,190,000		876,000		744,600					131,400		32,850	24,638	4,106
Wheel-mounted gate	3A	1,337,000	0.25	334,250	0.4	133,700	100,275	33,425	6,879	0.6	200,550	0.25	50,138	37,603	6,267
	3B	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		1,337,000		334,250		133,700					200,550		50,138	37,603	6,267
90’ diameter jet flow gate	3A	2,160,000	0.25	540,000	0.4	216,000	162,000	54,000	11,113	0.6	324,000	0.25	81,000	60,750	10,125
	3B	1,080,250	0.25	270,063	0.4	108,025	81,019	27,006	5,558	0.6	162,038	0.25	40,509	30,382	5,064
		3,240,250		810,063		324,025					486,038		121,509	91,132	15,189
Pipe	3A	695,750	0.25	173,938	0.4	69,575	52,181	17,394	3,580	0.6	104,363	0.25	26,091	19,568	3,261
	3B	1,012,000	0.25	253,000	0.4	101,200	75,900	25,300	5,207	0.6	151,800	0.25	37,950	28,463	4,744
		1,707,750		426,938		170,775					256,163		64,041	48,030	8,005
Unlisted Items	3A	5,175,000	0.4	2,070,000	0.4	828,000	621,000	207,000	42,601	0.6	1,242,000	0.25	310,500	232,875	38,813
	3B	1,468,163	0.4	587,265	0.4	234,906	176,180	58,727	12,086	0.6	352,359	0.25	88,090	66,067	11,011
		6,643,163		2,657,265		1,062,906					1,594,359		398,590	298,942	49,824
Engineering & Design	3A	5,925,000	0.15	888,750	0.75	666,563	666,563	0	160,042	0.25	222,188	0.25	55,547	41,660	6,943
	3B	1,725,000	0.15	258,750	0.75	194,063	194,063	0	46,594	0.25	64,688	0.25	16,172	12,129	2,021

Item		Total Cost	In-Region %	In-Region Cost	In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	$	Materials %	$ of Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
		7,650,000		1,147,500		860,625					286,875		71,719	53,789	8,965
Contingencies	3A	11,475,717	0.4	4,590,287	0.4	1,836,115	1,377,086	459,029	94,468	0.6	2,754,172	0.25	688,543	516,407	86,068
	3B	3,250,000	0.4	1,300,000	0.4	520,000	390,000	130,000	26,754	0.6	780,000	0.25	195,000	146,250	24,375
		14,725,717		5,890,287		2,356,115					3,534,172		883,543	662,657	110,443
TOTALS:		72,980,000		36,719,392		15,699,969	11,990,133	3,709,836	970,120		21,019,423		5,119,991	3,772,561	628,760

Summary: Notice how the percentage of total cost which remains in the region falls off rapidly. The portion of the total cost incurred in the region was estimated to be about fifty percent ($36.7M ÷ $72.9M). Consideration of what percentage of this "in-region" cost actually remained in the region reduced the ultimate in-region percentage even further. The labor cost analysis eliminated certain employee benefits and took into consideration the residence and commuting habitats of the regional work force. Of the $15.7 million in-region labor cost estimate, only about $4.68 million or about 29.8 percent of the total labor cost was expected to remain in the region. Similarly, of the $21.0 million of in-region nonlabor costs, only about $4.49 million or 21.4 percent was assumed to be purchased from within Trinity county. Combining the in-region labor and nonlabor estimates, approximately $9.17 million or 12.6 percent of the total construction cost was assumed to truly reflect in-region costs.

Notes:

* For all items except engineering and design, 75% of the in-region labor costs were assumed to reflect contractor skilled labor and 25% contractor general labor. Contractor skilled labor was adjusted downward to reflect wages only (68.6% of labor costs) and was assumed to come from outside the region, but within the study area's commuting area (only 10% of commuter wages were assumed to be spent in the region). General labor was assumed to be obtained via subcontractors from within the county, therefore all the general labor costs were assumed spent in the region. Example (Contingencies (3B)): Of the $520,000 of in-region labor costs, 75% were assumed to represent skilled labor commuting from the surrounding counties, wages remaining in the region was assumed at 10% or $26,754 ($520,000 * .75 = $390,000 * .686 = $267,540 * .10 = $26,754). Conversely, general labor was estimated at $130,000 ($520,000 * .25 = $130,000). Finally, 100% of in-region engineering and design costs were assumed to represent skilled federal labor coming from outside the commuting area (an estimate of 35% of wages was assumed to be spent in the region to reflect cost of lodging and per diem). Example (Engineering & Design (3B)): $194,063 * .686 = $133,127 *.35 = $46,594.

** The contingencies item, while typically part of engineering cost estimates, was also used as a balancing item. Engineers worked from both an itemized cost list and total costs from previous similar construction jobs. As a result, the contingencies item was partially estimated by subtracting itemized costs from the total cost estimate. Therefore, the contingencies item varies across the dam modification options (4A, 4B, and 4C) even for the same dam modification elements (3A, 3B, 3C). The adjustment of the contingencies element is relatively minor (2/10 of 1 percent of total cost) and doesn't significantly impact the regional analyses.

OPTION 4B: 30,000 cfs

Item		Total In-Region Cost: Total Cost	In-Region %	In-Region Cost	In-Region Labor: In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	$	Materials %	Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
Mobilize	3A	1,650,000	0.2	330,000	0.45	148,500	111,375	37,125	7,640	0.55	181,500	0.25	45,375	34,031	5,672
	3C	200,000	0.2	40,000	0.45	18,000	13,500	4,500	926	0.55	22,000	0.25	5,500	4,125	688
		1,850,000		370,000		166,500					203,500		50,875	38,156	6,359
Diversion - bulkhead 20’ ID spillway tunnel	3A	1,120	0.75	840	0.6	504	378	126	26	0.4	336	0.25	84	63	11
	3C	0	0.75	0	0.6	0	0	0	0	0.4	0	0.25	0	0	0
		1,120		840		504					336		84	63	11
Excavation from above through shaft in rock and chamber	3A	11,125,000	0.75	8,343,750	0.4	3,337,500	2,503,125	834,375	171,714	0.6	5,006,250	0.25	1,251,563	938,672	156,445
	3C	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		11,125,000		8,343,750		3,337,500					5,006,250		1,251,563	938,672	156,445
Excavation from above through shaft in rock and tunnel	3A	1,600,000	0.75	1,200,000	0.4	480,000	360,000	120,000	24,696	0.6	720,000	0.25	180,000	135,000	22,500
	3C	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		1,600,000		1,200,000		480,000					720,000		180,000	135,000	22,500
Excavation from above through shaft	3A	2,250,000	0.75	1,687,500	0.4	675,000	506,250	168,750	34,729	0.6	1,012,500	0.25	253,125	189,844	31,641
	3C	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		2,250,000		1,687,500		675,000					1,012,500		253,125	189,844	31,641
Excavation, concrete	3A	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3C	120,000	0.75	90,000	0.4	36,000	27,000	9,000	1,852	0.6	54,000	0.25	13,500	10,125	1,688
		120,000		90,000		36,000					54,000		13,500	10,125	1,688
Structural concrete	3A	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3C	2,187,500	0.75	1,640,625	0.4	656,250	492,188	164,063	33,764	0.6	984,375	0.25	246,094	184,570	30,762
		2,187,500		1,640,625		656,250					984,375		246,094	184,570	30,762
Excavation, surface rock and common	3A	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3C	180,000	0.75	135,000	0.4	54,000	40,500	13,500	2,778	0.6	81,000	0.25	20,250	15,188	2,531
		180,000		135,000		54,000					81,000		20,250	15,188	2,531
Grouting, setups	3A	67,500	0.75	50,625	0.5	25,313	18,984	6,328	1,302	0.5	25,313	0.25	6,328	4,746	791
	3C	0	0.75	0	0.5	0	0	0	0	0.5	0	0.25	0	0	0
		67,500		50,625		25,313					25,313		6,328	4,746	791
Grouting, drilling	3A	540,000	0.75	405,000	0.4	162,000	121,500	40,500	8,335	0.6	243,000	0.25	60,750	45,563	7,594
	3C	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		540,000		405,000		162,000					243,000		60,750	45,563	7,594
Concrete for structure, 2nd stage tunnel	3A	1,200,000	0.75	900,000	0.45	405,000	303,750	101,250	20,837	0.55	495,000	0.25	123,750	92,813	15,469
	3C	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		1,200,000		900,000		405,000					495,000		123,750	92,813	15,469
Concrete for structure, 2nd stage shaft	3A	1,575,000	0.75	1,181,250	0.45	531,563	398,672	132,891	27,349	0.55	649,688	0.25	162,422	121,816	20,303
	3C	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		1,575,000		1,181,250		531,563					649,688		162,422	121,816	20,303
Concrete for structure, 2nd stage chamber	3A	7,200,000	0.75	5,400,000	0.45	2,430,000	1,822,500	607,500	125,024	0.55	2,970,000	0.25	742,500	556,875	92,813
	3C	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0

7,200,000	5,400,000	2,430,000	2,970,000	742,500	556,875	92,813

Item		Total Cost	In-Region %	In-Region Cost	In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	$	Materials %	$ of Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
Stays, 6" thick for excavation	3A	300,000	0.45	135,000	0.3	40,500	30,375	10,125	2,084	0.7	94,500	0.25	23,625	17,719	2,953
	3C	0	0.45	0	0.3	0	0	0	0	0.7	0	0.25	0	0	0
		300,000		135,000		40,500					94,500		23,625	17,719	2,953
Cement	3A	972,000	0.75	729,000	0.1	72,900	54,675	18,225	3,751	0.9	656,100	0.1	65,610		
	3C	216,000	0.75	162,000	0.1	16,200	12,150	4,050	833	0.9	145,800	0.1	14,580		
		1,188,000		891,000		89,100					801,900		80,190		
Reinforcement	3A	1,500,000	0.4	600,000	0.85	510,000	382,500	127,500	26,240	0.15	90,000	0.25	22,500	16,875	2,813
	3C	612,000	0.4	244,800	0.85	208,080	156,060	52,020	10,706	0.15	36,720	0.25	9,180	6,885	1,148
		2,112,000		844,800		718,080					126,720		31,680	23,760	3,960
Wheel-mounted gate	3A	1,337,000	0.25	334,250	0.4	133,700	100,275	33,425	6,879	0.6	200,550	0.25	50,138	37,603	6,267
	3C	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		1,337,000		334,250		133,700					200,550		50,138	37,603	6,267
90’ diameter jet flow gate	3A	2,160,000	0.25	540,000	0.4	216,000	162,000	54,000	11,113	0.6	324,000	0.25	81,000	60,750	10,125
	3C	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		2,160,000		540,000		216,000					324,000		81,000	60,750	10,125
Ring Gate	3A	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3C	623,000	0.25	155,750	0.4	62,300	46,725	15,575	3,205	0.6	93,450	0.25	23,363	17,522	2,920
		623,000		155,750		62,300					93,450		23,363	17,522	2,920
Pipe	3A	695,750	0.25	173,938	0.4	69,575	52,181	17,394	3,580	0.6	104,363	0.25	26,091	19,568	3,261
	3C	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		695,750		173,938		69,575					104,363		26,091	19,568	3,261
Unlisted Items	3A	5,175,000	0.4	2,070,000	0.4	828,000	621,000	207,000	42,601	0.6	1,242,000	0.25	310,500	232,875	38,813
	3C	622,500	0.4	249,000	0.4	99,600	74,700	24,900	5,124	0.6	149,400	0.25	37,350	28,013	4,669
		5,797,500		2,319,000		927,600					1,391,400		347,850	260,888	43,481
Engineering & Design	3A	5,925,000	0.15	888,750	0.75	666,563	666,563	0	160,042	0.25	222,188	0.25	55,547	41,660	6,943
	3C	712,500	0.15	106,875	0.75	80,156	80,156	0	19,246	0.25	26,719	0.25	6,680	5,010	835
		6,637,500		995,625		746,719					248,906		62,227	46,670	7,778
Contingencies	3A	11,478,130	0.4	4,591,252	0.4	1,836,501	1,377,376	459,125	94,488	0.6	2,754,751	0.25	688,688	516,516	86,086
	3C	1,375,000	0.4	550,000	0.4	220,000	165,000	55,000	11,319	0.6	330,000	0.25	82,500	61,875	10,313
		12,853,130		5,141,252		2,056,501					3,084,751		771,188	578,391	96,398

Item	Total Cost	In-Region %	In-Region Cost	In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	In Region Non-Labor: $	Materials %	$ of Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
TOTALS:	63,600,000		32,935,205		14,019,704	10,701,457	3,318,246	862,182		18,915,501		4,608,590	3,396,300	566,050

Summary: Notice how the percentage of total cost which remains in the region falls off rapidly. The portion of the total cost incurred in the region was estimated to be about 51.8 percent. Consideration of what percentage of this "in-region" cost actually remained in the region reduced the ultimate in-region percentage even further. The labor cost analysis eliminated certain employee benefits and took into consideration the residence and commuting habitats of the regional work force. Of the $14.0 million in-region labor cost estimate, only about $4.18 million or about 29.8 percent of the total labor cost was expected to remain in the region. Similarly, of the $18.9 million of in-region nonlabor costs, only about $4.04 million or 21.4 percent was assumed to be purchased from within the county. Combining the in-region labor and nonlabor estimates, approximately $8.22 million or 12.9 percent of the total construction cost was assumed to truly reflect in-region costs.

OPTION 4C: 30,000 cfs

Item		Total In-Region Cost: Total Cost	In-Region %	In-Region Cost	In-Region Labor: In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	$	Materials %	Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
Mobilize	3B	470,000	0.2	94,000	0.45	42,300	31,725	10,575	2,176	0.55	51,700	0.25	12,925	9,694	1,616
	3C	200,000	0.2	40,000	0.45	18,000	13,500	4,500	926	0.55	22,000	0.25	5,500	4,125	688
		670,000		134,000		60,300					73,700		18,425	13,819	2,303
Excavation, concrete	3B	350,000	0.75	262,500	0.4	105,000	78,750	26,250	5,402	0.6	157,500	0.25	39,375	29,531	4,922
	3C	120,000	0.75	90,000	0.4	36,000	27,000	9,000	1,852	0.6	54,000	0.25	13,500	10,125	1,688
		470,000		352,500		141,000					211,500		52,875	39,656	6,609
Excavation, surface rock	3B	540,000	0.75	405,000	0.4	162,000	121,500	40,500	8,335	0.6	243,000	0.25	60,750	45,563	7,594
	3C	180,000	0.75	135,000	0.4	54,000	40,500	13,500	2,778	0.6	81,000	0.25	20,250	15,188	2,531
		720,000		540,000		216,000					324,000		81,000	60,750	10,125
Anchor bars, drilling	3B	150,000	0.5	75,000	0.35	26,250	19,688	6,563	1,351	0.65	48,750	0.25	12,188	9,141	1,523
	3C	0	0.5	0	0.35	0	0	0	0	0.65	0	0.25	0	0	0
		150,000		75,000		26,250					48,750		12,188	9,141	1,523
Concrete in anchor block	3B	1,410,000	0.75	1,057,500	0.45	475,875	356,906	118,969	24,484	0.55	581,625	0.25	145,406	109,055	18,176
	3C	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		1,410,000		1,057,500		475,875					581,625		145,406	109,055	18,176
Concrete in control house	3B	192,500	0.75	144,375	0.45	64,969	48,727	16,242	3,343	0.55	79,406	0.25	19,852	14,889	2,481
	3C	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		192,500		144,375		64,969					79,406		19,852	14,889	2,481
Concrete in walls and stilling basin	3B	2,010,000	0.75	1,507,500	0.45	678,375	508,781	169,594	34,902	0.55	829,125	0.25	207,281	155,461	25,910
	3C	0	0.75	0	0.45	0	0	0	0	0.55	0	0.25	0	0	0
		2,010,000		1,507,500		678,375					829,125		207,281	155,461	25,910
Structural concrete	3B	0	0.75	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
	3C	2,187,500	0.75	1,640,625	0.4	656,250	492,188	164,063	33,764	0.6	984,375	0.25	246,094	184,570	30,762
		2,187,500		1,640,625		656,250					984,375		246,094	184,570	30,762
Backfil	3B	35,000	0.75	26,250	0.3	7,875	5,906	1,969	405	0.7	18,375	0.25	4,594	3,445	574
	3C	0	0.75	0	0.3	0	0	0	0	0.7	0	0.25	0	0	0
		35,000		26,250		7,875					18,375		4,594	3,445	574
Cement	3B	360,000	0.75	270,000	0.1	27,000	20,250	6,750	1,389	0.9	243,000	0.1	24,300		
	3C	216,000	0.75	162,000	0.1	16,200	12,150	4,050	833	0.9	145,800	0.1	14,580		
		576,000		432,000		43,200					388,800		38,880		
Reinforcement	3B	690,000	0.4	276,000	0.85	234,600	175,950	58,650	12,070	0.15	41,400	0.25	10,350	7,763	1,294
	3C	612,000	0.4	244,800	0.85	208,080	156,060	52,020	10,706	0.15	36,720	0.25	9,180	6,885	1,148
		1,302,000		520,800		442,680					78,120		19,530	14,648	2,441
Ring-follower gates	3B	1,488,000	0.25	372,000	0.4	148,800	111,600	37,200	7,656	0.6	223,200	0.25	55,800	41,850	6,975
	3C	623,000	0.25	155,750	0.4	62,300	46,725	15,575	3,205	0.6	93,450	0.25	23,363	17,522	2,920
		2,111,000		527,750		211,100					316,650		79,163	59,372	9,895
Jet flow gates	3B	1,080,250	0.25	270,063	0.4	108,025	81,019	27,006	5,558	0.6	162,038	0.25	40,509	30,382	5,064
	3C	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0

Item		Total Cost	In-Region %	In-Region Cost	In-Region Labor %	Wages & Benefits	Skilled Labor Cost (75%)	General Labor Cost (25%)	Wages In-Region (Skilled)	In Region Non-Labor: %	In Region Non-Labor: $	Materials %	$ of Materials	$ of Fuel & Lubricants	$ of Minor Spare Parts
		1,080,250		270,063		108,025					162,038		40,509	30,382	5,064
Pipe	3B	1,012,000	0.25	253,000	0.4	101,200	75,900	25,300	5,207	0.6	151,800	0.25	37,950	28,463	4,744
	3C	0	0.25	0	0.4	0	0	0	0	0.6	0	0.25	0	0	0
		1,012,000		253,000		101,200					151,800		37,950	28,463	4,744

Unlisted Items	3B	1,468,163	0.4	587,265	0.4	234,906	176,180	58,727	12,086	0.6	352,359	0.25	88,090	66,067	11,011
	3C	622,500	0.4	249,000	0.4	99,600	74,700	24,900	5,124	0.6	149,400	0.25	37,350	28,013	4,669
		2,090,663		836,265		334,506					501,759		125,440	94,080	15,680
Engineering & Design	3B	1,725,000	0.15	258,750	0.75	194,063	194,063	0	46,594	0.25	64,688	0.25	16,172	12,129	2,021
	3C	712,500	0.15	106,875	0.75	80,156	80,156	0	19,246	0.25	26,719	0.25	6,680	5,010	835
		2,437,500		365,625		274,219					91,406		22,852	17,139	2,856
Contingencies	3B	3,250,587	0.4	1,300,235	0.4	520,094	390,070	130,023	26,759	0.6	780,141	0.25	195,035	146,276	24,379
	3C	1,375,000	0.4	550,000	0.4	220,000	165,000	55,000	11,319	0.6	330,000	0.25	82,500	61,875	10,313
		4,625,587		1,850,235		740,094					1,110,141		277,535	208,151	34,692
TOTALS:		23,080,000		10,533,488		4,581,918	3,504,993	1,076,925	287,471		5,951,570		1,429,573	1,043,019	173,837

Summary: Notice how the percentage of total cost which remains in the region falls off rapidly. The portion of the total cost incurred in the region was estimated to be about 45.6 percent. Consideration of what percentage of this "in-region" cost actually remained in the region reduced the ultimate in-region percentage even further. The labor cost analysis eliminated certain employee benefits and took into consideration the residence and commuting habitats of the regional work force. Of the $4.58 million in-region labor cost estimate, only about $1.36 million or about 29.8 percent of the total labor cost was expected to remain in the region. Similarly, of the $5.95 million of in-region nonlabor costs, only about $1.26 million or 21.1 percent was assumed to be purchased from within the county. Combining the in-region labor and nonlabor estimates, approximately $2.62 million or 11.4 percent of the total construction cost was assumed to truly reflect in-region costs.

deducting benefits from in-region labor costs. Thirty-five percent of in-region engineering wages was assumed to reflect the costs of residing in the region and represents costs remaining in the region.[4] Travel costs are typically included in federal labor cost estimates, along with wages and benefits, since federal workers purchase and are reimbursed for travel expenses.

Contractor Labor.—All construction items except engineering and design were assumed provided by contractors. Contractor costs were divided between skilled and general labor. The primary contractor was assumed based from outside the region. As a result, in-region costs for skilled labor were assumed to reflect labor only costs (i.e., exclusive of profit and overhead). The primary contractor's skilled labor force was assumed to come from outside the region, but from within the construction site's commuting area. For commuters, lodging and the majority food purchases would not be purchased within the region, therefore the assumption was made that only 10 percent of skilled wages would be expended in the region. As for federal skilled labor, wages were obtained by extracting benefits from the in-region skilled labor costs. Finally, the primary contractor was assumed to subcontract to construction firms within the county to obtain general labor, therefore 100 percent of general labor costs were assumed to remain in the region. As will be discussed later in this section, the general labor contracts were handled differently than the skilled labor analysis (i.e., costs were allocated lump sum to the construction industry).

Contractor Profit.—Costs related to contractor profit varied between in-region and out-of-region based on assumptions as to the location of the contractor. With the primary contractor for dam modification based outside the region, those profits were assumed to exit the region without impact (i.e., deducted to obtain in-region skilled labor costs). Subcontractors used for general labor were assumed to come from within the county, therefore those profits were assumed to remain in the county (i.e., all costs were allocated to the in-region construction industry).

Nonlabor.—In-region nonlabor costs were evaluated through a two step process. The first step looked at the percent of materials purchased locally (defined as Trinity or Shasta counties) versus nonlocally. The percent of materials purchased locally was estimated at 25 percent for all items except cement where only 10 percent was assumed to come from within the two-county area. Materials purchased within the local area (other than cement) were assumed to consist of fuel, grease, filters (75%) and minor spare parts (25%). The second step separated out materials purchased exclusively within Trinity county. Given fuel wholesalers are found in Weaverville, and the proximity of Weaverville to wholesalers in the City of Redding would force price competition, the assumption was made that 100 percent of the fuel, grease, and filter costs would be purchased in Trinity county. By contrast, only 50 percent of the costs associated with minor spare parts were assumed purchased within the county. Other nonlabor costs (e.g. rental costs for equipment, overhead) are assumed to come from outside the county.

[4] Percentage Estimation: Assuming federal workers stay in Weaverville, Trinity County's largest town, fiscal year 1996 lodging and food (per diem) allowances total $66 a day. Allowing a few extra dollars for gas and incidentals, the assumption was made that $75 a day would be spent in Trinity County. Reclamation design engineer's typical fiscal year 1996 pay scale (GS12 & GS13) ranges from $44,600 to $68,900. Midpoint of this range is $56,750. Dividing this annual gross income by 250 annual working days results in a daily wage of approximately $227. Dividing our $75 of in-region costs per day by the $227 in engineering wages per day equals 33 percent. This estimate was rounded up to 35 percent of in-region wages to reflect lodging and per diem costs in the region.

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Non-Dam Construction and Maintenance Costs.—Analysis of all non-dam modification costs were developed on an aggregate as opposed to an itemized basis. Given the relatively low cost of these non-dam cost elements as compared to the dam modification costs, a less detailed analysis was pursued. Table TA-14 presents assumptions as to the percent of costs incurred within Trinity County, the percent federal versus contractor, the percent labor versus nonlabor costs, etc. Applying these percentages to each cost element provides the in-region costs used for estimating regional impacts. (See Tables TA-14a through TA-14f.)

Categorization of In-Region Costs by Industry.—After separating out the various elements of in-region labor and nonlabor, the costs were assigned to direct impact industries before running the IMPLAN regional input-output analysis model. The following IMPLAN industries have been selected to reflect each of the labor and nonlabor costs:

Labor Costs.—wages, travel costs, profits

Federal Labor (nonlocals).— The engineering and design cost element associated with modifying Trinity Dam is expected to be provided by Reclamation engineers from Denver. A small portion (15%) of the engineering labor cost (comprised of wages, benefits, and travel costs) is expected to be incurred in Trinity County. These workers will be traveling to and staying in the county. As a result, the expectation is for them to incur in-region lodging, food, and gasoline expenses (assumed 40% lodging, 40% food, and 20% gasoline expenses) estimated at 35 percent of wages. Actual wages were assumed to be immediately sent to permanent residences as opposed to being spent in the region.

- Lodging Costs: IMPLAN Industry # 463, Hotels & Lodging Places

- Food Costs:

50% Restaurants: IMPLAN Retail Industry #454, Eating and Drinking Places was allocated to Personal Consumption Expenditure (PCE) Industry #1120, Purchased Meals and Beverages[5]

50% Grocery Stores: IMPLAN Retail Industry #450, Food Stores was allocated to PCE Industry #1111, Food Consumed Off Premises

- Gasoline: IMPLAN Retail Industry #451, Auto Dealers and Service Stations was allocated to PCE Industry #8140, Gasoline & Oil

*Contractor Labor (commuters and local residents).—*Contractor labor has been divided between skilled and general labor.

[5] Retail trade sectors represent pure service. These sectors do not manufacture product, they simply consolidate goods for consumer purchase. Retail sectors represent the building, utilities, and employees. As such, these sectors reflect pure margin. As a result, there is a need to bridge between the retail sectors and the actual manufacturing sectors. The Bureau of Economic Analysis (BEA) personal consumption pattern information is used to make this bridge.

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Table TA-14. Summary of Trinity County Costs

Cost Percentages	COSTS of..					
	Construction of 47 New River Restoration Sites	Maintenance on 27 Existing River Restoration Sites	Maintenance on 47 New River Restoration Sites	Spawning Gravel Placement	Expanded Dredging Program	Expanded Watershed Protection Program
1) % Incurred in Trinity County:	100	100	100	100	100	100
2) Federal vs Contractor Cost:						
- Federal/County	33	50	50	50	50	0
- Contractor	66	50	50	50	50	100
3) Federal Cost:						
- Labor:	100	100	100	100	100	0
- Nonlabor:	0	0	0	0	0	0
- Profit & Overhead:	0	0	0	0	0	0
4) Contractor Cost:						
- Labor:	75	100	75	75	75	25
- Nonlabor:	0	0	0	0	0	50
- Profit & Overhead:	25	0	25	25	25	25
5) Federal Labor:						
- County Residents:	0	0	0	0	0	0
- Commuters:	50	100	75	75	75	0
- Nonlocals:	50	0	25	25	25	0
6) Contractor Labor:						
- County Residents:	100	100	100	100	50	50
- Commuters:	0	0	0	0	50	50
- Nonlocals:	0	0	0	0	0	0
7) Labor Costs Staying in County (both Federal and Contractor):						
- County Residents:	100	100	100	100	100	100
- Commuters:	10	10	10	10	10	10
- Nonlocals:	35	35	35	35	35	35

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Table TA-14a1. CONSTRUCTION COSTS FOR NEW RIVER RESTORATION SITES: Construction costs for the new river rehabilitation sites are defined as temporary annual costs. Within the first 3 years after project implementation, 27 of the planned 47 projects are scheduled for construction. The remaining 20 projects are scheduled for construction in years 4 to 6. Compared to the long term periodic and annual maintenance costs, these construction costs will ultimately have an anticipated end date. Instead of lumping the entire $13,350,000 of estimated construction costs for the 47 new river restoration sites into one up-front figure, the decision was made to estimate regional impacts on an annual basis. In years 1-3, $2,450,000 of construction costs would be incurred annually (8 channel restoration sites at $300,000 and 1 side channel site at $50,000) resulting in $1,170,200 of in-region costs. See Table 6A2 and 6A3 for construction costs for years 4-5 and 6 respectively.

Cost Elements:	Percentages	ALTERNATIVES						
		No Action	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred
1. Annual Construction Costs		0	0	2,450,000	2,450,000	2,450,000	0	2,450,000
2. Percent of Costs Incurred In-Region	100	0	0	2,450,000	2,450,000	2,450,000	0	2,450,000
3. In-Region Government vs Contractor Costs:								
Federal Gov't Costs:	33.3	0	0	816,700	816,700	816,700	0	816,700
Contractor Costs:	66.6	0	0	1,633,300	1,633,300	1,633,300	0	1,633,300
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)							
Federal Gov't Cost Detail:								
Labor:	100 68.6	0	0	560,300	560,300	560,300	0	560,300
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
Contractor Cost Detail:								
Labor:	75 68.6	0	0	840,300	840,300	840,300	0	840,300
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	25	0	0	408,300	408,300	408,300	0	408,300
5. In-Region Labor Detail:	|Remains in-Region (%) | (%)							
Federal Workforce:								
% County Residents	0 100	0	0	0	0	0	0	0
% Local Commuters	50 10	0	0	28,000	28,000	28,000	0	28,000
% Nonlocal	50 35	0	0	98,000	98,000	98,000	0	98,000
Contract Labor:								
% County Residents	100 100	0	0	840,000	840,000	840,000	0	840,000
% Local Commuters	0 10	0	0	0	0	0	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
Contractor Profit:	50 100	0	0	204,200	204,200	240,200	0	240,200
6. In-Region Nonlabor Detail:		0	0	0	0	0	0	0
7. Total In-Region Costs:		0	0	1,170,200	1,170,200	1,170,200	0	1,170,200

Note: Contract is expected to go to a local company. As a result, profit was assumed to remain in Trinity County (profit is estimated at 50% of profit and overhead item).

Table TA-14a2. CONSTRUCTION COSTS FOR NEW RIVER RESTORATION SITES: Annual construction costs for years 4 and 5 ($2,100,000 of construction costs would be incurred annually comprised of 7 channel restoration sites at $300,000 each).

Cost Elements:	Percentages	ALTERNATIVES						
		No Action	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred
1. Annual Construction Costs		0	0	2,100,000	2,100,000	2,100,000	0	2,100,000
2. Percent of Costs Incurred In-Region	100	0	0	2,100,000	2,100,000	2,100,000	0	2,100,000
3. In-Region Government vs Contractor Costs:								
Federal Gov't Costs:								
Contractor Costs:	33.3	0	0	700,000	700,000	700,000	0	700,000
	66.6	0	0	1,400,000	1,400,000	1,400,000	0	1,400,000
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)							
Federal Gov't Cost Detail:								
Labor:	100 68.6	0	0	480,200	480,200	480,200	0	480,200
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
Contractor Cost Detail:								
Labor:	75 68.6	0	0	720,300	720,300	720,300	0	720,300
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	25	0	0	350,000	350,000	350,000	0	350,000
5. In-Region Labor Detail:	|Remains in-Region (%) | (%)							
Federal Workforce:								
% County Residents	0 100	0	0	0	0	0	0	0
% Local Commuters	50 10	0	0	24,000	24,000	24,000	0	24,000
% Nonlocal	50 35	0	0	84,000	84,000	84,000	0	84,000
Contract Labor:								
% County Residents	100 100	0	0	720,300	720,300	720,300	0	720,300
% Local Commuters	0 10	0	0	0	0	0	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
Contractor Profit:	50 100	0	0	175,000	175,000	175,000	0	175,000
6. In-Region Nonlabor Detail:		0	0	0	0	0	0	0
7. Total In-Region Costs:		0	0	1,003,300	1,003,300	1,003,300	0	1,003,300

Note: Contract is expected to go to a local company. As a result, profit was assumed to remain in Trinity County (profit is estimated at 50% of profit and overhead item).

Table TA-14a3. CONSTRUCTION COSTS FOR NEW RIVER RESTORATION SITES: Annual construction costs for year 6 ($1,800,000 of construction costs would be incurred annually comprised of 6 channel restoration sites at $300,000 each).

Cost Elements:	Percentages	ALTERNATIVES						
		No Action	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred
1. Annual Construction Costs		0	0	1,800,000	1,800,000	1,800,000	0	1,800,000
2. Percent of Costs Incurred In-Region	100	0	0	1,800,000	1,800,000	1,800,000	0	1,800,000
3. In-Region Government vs Contractor Costs:								
Federal Gov't Costs:	33.3	0	0	600,000	600,000	600,000	0	600,000
Contractor Costs:	66.6	0	0	1,200,000	1,800,000	1,800,000	0	1,800,000
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)							
Federal Gov't Cost Detail:								
Labor:	100 68.6	0	0	411,600	411,600	411,600	0	411,600
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
Contractor Cost Detail:								
Labor:	75 68.6	0	0	617,400	617,400	617,400	0	617,400
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	25	0	0	300,000	300,000	300,000	0	300,000
5. In-Region Labor Detail:	|Remains in-Region (%) | (%)							
Federal Workforce:								
% County Residents	0 100	0	0	0	0	0	0	0
% Local Commuters	50 10	0	0	20,600	20,600	20,600	0	20,600
% Nonlocal	50 35	0	0	72,000	72,000	72,000	0	72,000
Contract Labor:								
% County Residents	100 100	0	0	617,400	617,400	617,400	0	617,400
% Local Commuters	0 10	0	0	0	0	0	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
Contractor Profit:	50 100	0	0	150,000	150,000	150,000	0	150,000
6. In-Region Nonlabor Detail:		0	0	0	0	0	0	0
7. Total In-Region Costs:		0	0	860,000	860,000	860,000	0	860,000

Note: Contract is expected to go to a local company. As a result, profit was assumed to remain in Trinity County (profit is estimated at 50% of profit and overhead item).

Table TA-14b. MAINTENANCE COSTS FOR EXISTING RIVER RESTORATION SITES: Periodic maintenance costs of 27 existing channel restoration and side channel river habitat projects. For the affected alternatives, the maintenance plan included $1000 every three years for vegetation removal and $3000 every five years for removal of root systems and opening of side channels. The calculation below focuses on the $3000 maintenance. Since the in-region costs are minor (just over $1100), this element was not included in the regional impact analysis.

Cost Elements:	Percentages	ALTERNATIVES						
		No Action	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred
1. Annual Maintenance Costs		3000	0	0	0	3000	0	0
2. Percent of Costs Incurred In-Region	100	3000	0	0	0	3000	0	0
3. In-Region Government vs Contractor Costs:								
Federal Gov't Costs:								
Contractor Costs:	50	1500	0	0	0	1500	0	0
	50	1500	0	0	0	1500	0	0
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)							
Federal Gov't Cost Detail:								
Labor:	100 68.6	1029	0	0	0	1029	0	0
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
Contractor Cost Detail:								
Labor:	100 68.6	1029	0	0	0	1029	0	0
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
5. In-Region Labor Detail:	(%) | Remains in-Region (%)							
Federal Workforce:								
% County Residents	0 100	0	0	0	0	0	0	0
% Local Commuters	100 10	103	0	0	0	103	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
Contract Labor:								
% County Residents	100 100	1029	0	0	0	1029	0	0
% Local Commuters	0 10	0	0	0	0	0	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
6. In-Region Nonlabor Detail:		0	0	0	0	0	0	0
7. Total In-Region Costs:		1132	0	0	0	1132	0	0

Table TA-14c. MAINTENANCE COSTS FOR NEW RIVER RESTORATION SITES: Periodic maintenance costs of 47 new channel restoration and side channel river habitat projects. For the affected alternatives, the maintenance plan included $6,000 every three years for vegetation removal and $30,000 every five years for removal of root systems and opening of side channels. The calculation below focuses on the $30,000 maintenance. Since the in-region costs are minor (just over $11,000), this element was not included in the regional impact analysis.

Cost Elements:	Percentages	ALTERNATIVES						
		No Action	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred
1. Annual Maintenance Costs		0	0	0	0	30,000	0	0
2. Percent of Costs Incurred In-Region	100	0	0	0	0	30,000	0	0
3. In-Region Government vs Contractor Costs:								
Federal Gov't Costs:								
Contractor Costs:	50	0	0	0	0	15,000	0	0
	50	0	0	0	0	15,000	0	0
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)							
Federal Gov't Cost Detail:								
Labor:	100 68.6	0	0	0	0	10,290	0	0
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
Contractor Cost Detail:								
Labor:	75 68.6	0	0	0	0	7,720	0	0
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	25	0	0	0	0	3,750	0	0
5. In-Region Labor Detail:	|Remains in-Region (%) | (%)							
Federal Workforce:								
% County Residents	0 100	0	0	0	0	0	0	0
% Local Commuters	75 10	0	0	0	0	770	0	0
% Nonlocal	25 35	0	0	0	0	900	0	0
Contract Labor:								
% County Residents	100 100	0	0	0	0	7,720	0	0
% Local Commuters	0 10	0	0	0	0	0	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
6. In-Region Nonlabor Detail:		0	0	0	0	0	0	0
7. Total In-Region Costs:		0	0	0	0	11,265	0	0

Table TA-14d1. MAINTENANCE COSTS FOR SPAWNING GRAVEL: Annual placement of fish spawning gravel. This cost element was the only analysis where the increment from the No Action alternative had to be calculated. For all other cost elements included in the regional analysis, the increment was equivalent to the total cost of that element since the No Action alternative had no costs.

The No Action Alternative was estimated to average $68,000 annually. Since this is an on-going program, this spending doesn't reflect additional impact to the region (true for the Mechanical Restoration Alternative as well since it assumes the same level of spending as No Action). As a result, only the change in spending for each alternative relative to the No Action Alternative may create regional economic impacts. Finally, since the additional in-region spending associated with both the Percent Inflow and State Permit Alternatives is so small, these costs were not included in the regional analysis.

1. **Maintenance Costs for Spawning Gravel (Weighted Averages across all water year types):**

Cost Elements:	Percentages	Change in Spending Compared to the No Action Alternative				
		Maximum Flow Alternative	Flow Evaluation Alternative	Percent Inflow Alternative	State Permit Alternative	Preferred Alternative
1. Annual Spawning Gravel Costs		+ 260,300	+ 138,500	- 49,100	+ 6,000	+ 138,500
2. Percent of Costs Incurred In-Region	100	+ 260,300	+ 138,500	- 49,100	+ 6,000	+ 138,500
3. In-Region Government vs Contractor Costs:						
Federal Gov't Costs:	50	+ 130,200	+ 69,300	- 24,600	+ 3,000	+ 69,300
Contractor Costs:	50	+ 130,100	+ 69,200	- 24,500	+ 3,000	+ 69,200
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)					
Federal Gov't Cost Detail:						
Labor:	100 68.6	+ 89,300	+ 47,500	- 16,900	+ 2,100	+ 47,500
Nonlabor:	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0
Contractor Cost Detail:						
Labor:	75 68.6	+ 66,900	+ 35,600	- 12,600	+ 1,500	+ 35,600
Nonlabor:	0	0	0	0	0	0
Profit & Overhead:	25	+ 32,500	+ 17,300	- 6,100	+ 800	+ 17,300
5. In-Region Labor Detail:	(%) | Remains in-Region (%)					
Federal Workforce:						
% County Residents	0 100	0	0	0	0	0
% Local Commuters	75 10	+ 6,700	+ 3,600	- 1,300	+ 200	+ 3,600
% Nonlocal	25 35	+ 7,800	+ 4,200	- 1,500	+ 200	+ 4,200
Contract Labor:						
% County Residents	100 100	+ 66,900	+ 35,600	- 12,600	+ 1,500	+ 35,600
% Local Commuters	0 10	0	0	0	0	0
% Nonlocal	0 35	0	0	0	0	0
Contractor Profit:	50 100	+ 16,300	+ 8,700	- 3,100	+ 400	+ 8,700
6. In-Region Nonlabor Detail:		0	0	0	0	0
7. Total In-Region Costs:		+ 97,700	+ 52,100	- 18,500	+ 2,300	+ 52,100

Table TA-14d2. MAINTENANCE COSTS FOR SPAWNING GRAVEL: Annual placement of fish spawning gravel. This cost element was the only analysis where the increment from the No Action alternative had to be calculated. For all other cost elements included in the regional analysis, the increment was equivalent to the total cost of that element since the No Action alternative had no costs.

2. **Maintenance Costs for Spawning Gravel (Extremely Wet water years)**: Periodic placement of fish spawning gravel. Extremely wet years required the most spawning gravel placement. All other water year types would require less gravel placement and would produce insignificant regional impacts. As a result, regional impacts were only estimated for the extremely wet water year type.

Cost Elements:	Percentages	Change in Spending Compared to No Action Alternative			
		Maximum Flow Alternative	Flow Evaluation Alternative	Percent Inflow Alternative	Preferred Alternative
1. Annual Spawning Gravel Costs		+ 1,536,000	+ 518,000	- 371,000	+ 518,000
2. Percent of Costs Incurred In-Region	100	+ 1,536,000	+ 518,000	- 371,000	+ 518,000
3. In-Region Government vs Contractor Costs:					
Federal Gov't Costs:	50	+ 768,000	+ 259,000	- 185,500	+ 259,000
Contractor Costs:	50	+ 768,000	+ 259,000	- 185,500	+ 259,000
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)				
Federal Gov't Cost Detail:					
Labor:	100 68.6	+ 526,800	+ 177,700	- 127,300	+ 177,700
Nonlabor:	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0
Contractor Cost Detail:					
Labor:	75 68.6	+ 395,100	+ 133,300	- 95,200	+ 133,300
Nonlabor:	0	0	0	0	0
Profit & Overhead:	25	+ 192,000	+ 64,800	- 46,300	+ 64,800
5. In-Region Labor Detail:	|Remains in-Region (%) | (%)				
Federal Workforce:					
% County Residents	0 100	0	0	0	0
% Local Commuters	75 10	+ 39,500	+ 13,300	- 9,500	+ 13,300
% Nonlocal	25 35	+ 46,100	+ 15,600	- 11,100	+ 15,600
Contract Labor:					
% County Residents	100 100	+ 395,100	+ 133,300	- 95,200	+ 133,300
% Local Commuters	0 10	0	0	0	0
% Nonlocal	0 35	0	0	0	0
Contractor Profit:	50 100	+ 96,000	+ 32,400	- 23,200	+ 32,400
6. In-Region Nonlabor Detail:		0	0	0	0
7. Total In-Region Costs:		+ 576,700	+ 194,600	- 139,000	+ 194,600

Table TA-14e. EXPANDED DREDGING PROGRAM COSTS: Program implemented only for the Mechanical Restoration Alternative.

Cost Elements:	Percentages	ALTERNATIVES						
		No Action	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred
1. Annual Dredging Costs		0	0	0	0	200,000	0	0
2. Percent of Costs Incurred In-Region	100	0	0	0	0	200,000	0	0
3. In-Region Government vs Contractor Costs:								
Federal Gov't Costs:								
Contractor Costs:	50	0	0	0	0	100,000	0	0
	50	0	0	0	0	100,000	0	0
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)							
Federal Gov't Cost Detail:								
Labor:	100 68.6	0	0	0	0	68,600	0	0
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0	0	0	0
Contractor Cost Detail:								
Labor:	75 68.6	0	0	0	0	51,500	0	0
Nonlabor:	0	0	0	0	0	0	0	0
Profit & Overhead:	25	0	0	0	0	25,000	0	0
5. In-Region Labor Detail:	(%) | Remains in-Region (%)							
Federal Workforce:								
% County Residents	0 100	0	0	0	0	0	0	0
% Local Commuters	75 10	0	0	0	0	5,100	0	0
% Nonlocal	25 35	0	0	0	0	6,000	0	0
Contract Labor:								
% County Residents	50 100	0	0	0	0	27,800	0	0
% Local Commuters	50 10	0	0	0	0	2,600	0	0
% Nonlocal	0 35	0	0	0	0	0	0	0
Contractor Profit:	50 100					12,500		
6. In-Region Nonlabor Detail:		0	0	0	0	0	0	0
7. Total In-Region Costs:		0	0	0	0	54,000	0	0

Table TA-14f. EXPANDED WATERSHED PROTECTION PROGRAM COSTS: Annual costs of expanded watershed protection program (i.e., road maintenance and road rehabilitation/obliteration). Road maintenance element is perpetual, the road rehabilitation/obliteration is projected to last 22 years. Program implemented only for the Mechanical Restoration and Preferred Alternatives.

Cost Elements:	Percentages	COST OPTIONS			
		Annual Road Maintenance (Perpetual)			Road Rehabilitation/Obliteration
		Initial Level	22 Year Average	Long-Term Level	22 Year Average
1. Annual Watershed Protection Costs		1,781,000	1,425,000	1,069,000	1,123,000
2. Percent of Costs Incurred In-Region	100	1,781,000	1,425,000	1,069,000	1,123,000
3. In-Region Government vs Contractor Costs:					
Federal Gov't Costs:	0	0	0	0	0
Contractor Costs:	100	1,781,000	1,425,000	1,069,000	1,123,000
4. In-Region Government vs Contractor Detail:	In-Region (%) | Wages (%)				
Federal Gov't Cost Detail:					
Labor:	0 | 68.6	0	0	0	0
Nonlabor:	0	0	0	0	0
Profit & Overhead:	0	0	0	0	0
Contractor Cost Detail:					
Labor:	25 | 68.6	305,440	244,390	183,330	192,600
Nonlabor:	50	890,500	712,500	534,500	561,500
Profit & Overhead:	25	445,250	356,250	267,250	280,800
5. In-Region Labor Detail:	(%) | Remains in-Region (%)				
Federal Workforce:					
% County Residents	0 | 100	0	0	0	0
% Local Commuters	0 | 10	0	0	0	0
% Nonlocal	0 | 35	0	0	0	0
Contract Labor:					
% County Residents	50 | 100	152,700	122,200	91,700	96,300
% Local Commuters	50 | 10	15,300	12,200	9,200	9,600
% Nonlocal	0 | 35	0	0	0	0
Contractor Profit:	50 | 100	222,600	178,100	133,600	140,400
6. In-Region Nonlabor Detail:	(%) | Bought in-Region (%)				
% Equipment Rental:	67 | 50	298,300	238,700	179,100	188,100
% Building Materials:	33 | 50	146,900	117,600	88,200	92,600
7. Total In-Region Costs:		835,800	668,800	501,800	527,000

from outside Trinity County, but from within the commuting area. Since commuters do not stay in the region, only a small percentage of their wages was assumed to be spent in the region (assumed 10%). Given lodging costs are not involved, expenditures were assumed to be comprised of food (2/3 of in-region wages) and gasoline (1/3 of in-region wages).

- Food Costs:

50% Restaurants: IMPLAN Retail Industry #454, Eating and Drinking Places was allocated to PCE Industry #1120, Purchased Meals and Beverages

50% Grocery Stores: IMPLAN Retail Industry #450, Food Stores was allocated to PCE Industry #1111, Food Consumed Off Premises

- Gasoline: IMPLAN Retail Industry #451, Auto Dealers and Service Stations was allocated to PCE Industry #8140, Gasoline & Oil

Skilled Contractor Labor (commuters). Skilled labor is assumed to come

labor is assumed to come via Trinity County subcontractor. Therefore, all general laborer wages were assumed to remain in the county. Since detail was unavailable as to contractor labor costs and profitability, the entire labor cost component (i.e. labor, benefits, overhead, and profit) was handled as a lump sum and allocated to the new government facilities construction industry (IMPLAN Industry #54). In this way, the IMPLAN model handles the regional allocation of the various labor cost sub-elements based on industry averages.

General Contractor Labor (local residents). Local residents

For all non-dam cost elements, contractors were also assumed located in Trinity County. Previous experience with these types of construction and maintenance elements allowed for separation of contractor costs into labor, overhead, and profit components. Local laborer wages were allocated across various expenditure categories within the county using IMPLAN's low wage level personal consumption expenditure (PCE-low) procedure which IMPLAN derived by updating a 1985 national consumer expenditure survey to 1992 dollars.

Contractor Profit.—For dam modification, the primary contractor's profit would not create local impacts since the contractor was assumed to be based outside the county. The general contractor was expected to come from Trinity County, therefore those profits were assumed to create regional impacts. By lumping the entire general contractor cost into the new government facilities construction industry (IMPLAN Industry #54), the impact of in-region profit is considered.

For all non-dam elements, the contractors were also assumed to be based in Trinity County. Since prior experience with these types of construction and maintenance elements allowed for estimation of contractor profitability (50 percent of overhead and profit item), profits were allocated across various in-region expenditure categories based on IMPLAN's medium wage personal consumption expenditure (PCE-med) procedure. The in-region impact from profitability was based on the assumption that contractor businesses were organized as either a sole proprietorship or partnership (i.e. profits would be passed on to local individuals).

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Nonlabor Costs.—Nonlabor costs are associated with dam modification and expanded watershed program costs only. All other construction and maintenance cost elements involve labor only. In-region nonlabor costs were expected to be limited to building materials (i.e., fuel and lubricants, minor spare parts, and cement), and heavy equipment rental.

Fuel & Lubricants:	IMPLAN Retail Industry #451, Auto Dealers and Service Stations was allocated to PCE Industry #8140, Gasoline & Oil
Minor Spare Parts:	50% Auto Parts: IMPLAN Retail Industry #451, Auto Dealers and Service Stations was allocated 50 percent to PCE Industry #8121, Tires and Tubes and 50 percent to PCE Industry #8122, Auto Accessories and Parts 50% Building Materials: IMPLAN Retail Industry #448, Building Materials and Gardening Supplies was allocated to PCE Industry #5440, Hand Tools
Cement:	IMPLAN Retail Industry #448, Building Materials and Gardening Supplies was allocated to PCE Industry #5440, Hand Tools
Equipment Rental:	IMPLAN Industry #473, Equipment Rental and Leasing

Tables TA-15a, 15b, and 15c extract in-region cost information by cost element (i.e. dam modification construction, river restoration site construction, spawning gravel placement, etc.) and alternative from Tables TA-13 and TA-14 and apply the cost allocation percentages by industry presented above. These calculations result in estimates of in-region costs by industry.

Comparison Bases and Evaluation Criteria.—Since the Trinity EIS/EIR is intended to address both federal and state environmental documentation requirements, two different comparisons bases are necessary. For the federal NEPA analysis, all alternatives are compared back to the No Action Alternative. Given the largest of the costs are incurred up-front, and it is expected that these costs wouldn't actually start until year 2001, the decision was made to compare cost impacts to estimates of the modeled 2001 Trinity County economy. For the state CEQA analysis, "existing conditions" is the comparison base. In addition, only the Preferred Alternative is compared to "existing conditions" as opposed to all alternatives. To insure that the CEQA comparison is legitimate, modeled estimates of existing conditions are compared to modeled Preferred Alternative impacts. For Prosim based analyses, of which the cost analysis is not one, a Prosim run was generated to reflect 1995 conditions. Given the orientation to 1995, the CEQA cost analysis compares Preferred Alternative impacts to modeled estimates of the 1995 Trinity County economy. Therefore, despite that fact that costs are assumed to be the same for both the No Action Alternative and Existing Conditions comparison bases (all No Action Alternative costs reflect on-going programs and are therefore equivalent to existing conditions), the different year orientations of the NEPA and CEQA analyses imply somewhat different representations of the overall regional economy for these analyses.

For all regional analyses, three levels of comparison are being performed: 1) total economic effects which considers aggregated impacts across all sectors, 2) economic effects by sector which focuses on the impacts within each sector, and 3) analyses of more affected groups which attempt to target more affected persons or businesses. Given the more affected group analysis

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is largely qualitative, the decision was made to evaluate the importance of economic impacts based on the top two quantitative comparisons. For the cost analysis, total and sector level employment impacts were compared to estimates of both 2001 and 1995 Trinity County employment. To be claimed substantial, a change in employment needed to exceed a threshold of five percent of total county employment or 10 jobs and twenty percent of a given sector's employment.

Projected estimates of Trinity County employment in both 2001 and 1995 are presented under the NEPA and CEQA results sections respectively. Differences between "actual" measured economic conditions in 1995 and modeled conditions in 1995 will inevitably occur.

NEPA Results - Regional Impacts by Alternative Compared to No Action Alternative.—The in-region costs by industry presented in Tables TA-15a through 15c were run through the input-output model (IMPLAN) to calculate regional impacts by alternative as compared to the No Action Alternative. Regional impacts for the No Action Alternative were not estimated since all costs stemmed from on-going programs and are therefore already embedded within current estimates of regional economic activity. The comparison to the No Action Alternative ensures the incremental (decremental) effects of each alternative under consideration are explicitly identified. Table TA-17 reflects the results generated by running the industry by industry in-region costs for each cost category through IMPLAN's impact analysis module.

Current estimates of Trinity County employment, consistent with the No Action Alternative, were projected to year 2001 to align with the anticipated starting date of the initial cost components (see Table TA-16). Year 2001 employment was estimated by projecting 1992 base year employment data from IMPLAN. Since the IMPLAN model is being used to estimate the impacts by alternative, the decision was made to use IMPLAN results to generate estimates of the 2001 economy so as to compare modeled results on both ends of the comparison. For all sectors except agriculture and commercial fishing, the projection was based on a ratio of projected 2001 population divided by 1992 population. Using population estimates and projections published by the California Department of Finance Demographic Research Unit (State of California, 1998), a population growth factor of 3.5 percent was estimated from 1992 to 2001 for Trinity County (1992 population: 13147, 2001 population projection: 13605). For agriculture and commercial fishing, different approaches were used to account for the likelihood that these sectors would grow at a pace slower than the general population. For the commercial fishing sector, the assumption was made that fisheries improvements would not occur in the short-term, therefore no growth was assumed between 1992 and 2001. For the agricultural sectors, anticipated growth was targeted at the lower of the population growth rate or .5 percent per year based on results from the Central Valley Production Model (CVPM). For the 1992 to 2001 period, the population growth rate was applied.

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Table TA-15a. IN-REGION TOTAL DAM MODIFICATION COSTS BY INDUSTRY (Temporary Up-Front Costs)

COST ELEMENT: (1000 $)	IMPLAN/BEA Industry Number	Maximum Flow Alternative: Option 4A	Option 4B	Option 4C
1. Labor Wages:				
a. Federal Skilled		$ 206.6	$ 179.3	$ 65.8
- Lodging (40%)	463	82.7	71.6	26.2
- Restaurant (20%)	454/1120	41.3	35.9	13.2
- Food Stores (20%)	450/1111	41.3	35.9	13.2
- Gas (20%)	451/8140	41.3	35.9	13.2
b. Contractor Skilled		$ 763.5	$ 682.9	$ 221.6
- Restaurant (33.3%)	454/1120	254.6	227.7	73.9
- Food Stores (33.3%)	450/1111	254.6	227.7	73.9
- Gas (33.3)	451/8140	254.3	227.5	73.8
c. Contractor General	54	$ 3,709.8	$ 3,318.2	$ 1,076.9
2. Nonlabor:				
- Fuel & Lubricants	451/8140	$ 3,772.6	$ 3,396.3	$ 1,043.0
- Spare Parts: Tires & Tubes	451/8121	$ 157.2	$ 141.6	$ 43.5
Accessories & Parts	451/8122	$ 157.2	$ 141.5	$ 43.4
- Spare Parts: Bldg Mat	448/5440	$ 314.4	$ 283.0	$ 86.9
- Cement	448/5440	$ 89.9	$ 80.2	$ 38.9
Total In-Region Costs:		$ 9,171.2	$ 8,223.0	$ 2,620.0

Table TA-15b. IN-REGION ANNUAL NON-DAM MODIFICATION COSTS BY INDUSTRY

COST ELEMENT: (1000 $) IMPLAN/BEA Industry Number	Temporary Annual Costs: Construct River Sites Flow Evaluation, Percent Inflow, Mechanical Restoration, & Preferred Alternatives			Long Term Annual Costs					
				Change in Spawning Gravel Costs Compared to No Action Alternative:					Expanded Dredging Program Mechanical Restoration Alternative
				Maximum Flow Alternative:		Flow Evaluation/ Preferred Alternative:		Percent Inflow Alternative:	
	Years 1-3	Years 4-5	Year 6	Annual Average	Ext. Wet Year	Annual Average	Ext. Wet Year	Ext. Wet Year	
1. Labor Wages/Profit:									
a. Federal Nonlocals	98.0	84.0	72.0	7.8	46.1	4.2	15.6	-11.1	6.0
- Lodging (40%) 463	39.2	33.6	28.8	3.1	18.5	1.7	6.3	-4.5	2.4
- Restaurant (20%) 454/1120	19.6	16.8	14.4	1.6	9.2	.9	3.1	-2.2	1.2
- Food Stores (20%) 450/1111	19.6	16.8	14.4	1.6	9.2	.8	3.1	-2.2	1.2
- Gas (20%) 451/8140	19.6	16.8	14.4	1.5	9.2	.8	3.1	-2.2	1.2
b. Fed. & Contractor Commuters	28.0	24.0	20.6	6.7	39.5	3.6	13.3	-9.5	7.7
- Restaurant (33.3%) 454/1120	9.4	8.0	6.9	2.3	13.2	1.2	4.5	-3.2	2.6
- Food Stores (33.3%) 450/1111	9.3	8.0	6.9	2.2	13.2	1.2	4.4	-3.2	2.6
- Gas (33.3) 451/8140	9.3	8.0	6.8	2.2	13.1	1.2	4.4	-3.1	2.5
c. Contractor Residents PCE-low	840.0	720.3	617.4	66.9	395.1	35.6	133.3	-95.2	27.8
d. Contractor Profit PCE-medium	204.2	175.0	150.0	16.3	96.0	8.7	32.4	-23.2	12.5
2. Nonlabor:	0	0	0	0	0	0	0	0	0
Total In-Region Costs:	1,170.2	1,003.3	860.0	97.7	576.7	52.1	194.6	-139.0	54.0

Table TA-15c. IN-REGION ANNUAL EXPANDED WATERSHED PROGRAM COSTS BY INDUSTRY (Mechanical Restoration and Preferred Alternatives)

COST ELEMENT: ($1000) IMPLAN/BEA INDUSTRY NUMBER	ROAD MAINTENANCE COSTS (Duration: Perpetual)			ROAD REHABILITATION & OBLITERATION COSTS (Duration: 22 Years)	TOTAL COSTS (Sum of Road Maintenance and Road Rehabilitation and Obliteration Costs)			
	Initial Year	22 Year Average	Perpetual (Starting: 22nd Year)	22 Year Average	Initial Year	22 Year Average	Year 22	Long-Term (Beyond Year 22)
1. Labor Wages/Profit:								
a. Contractor Commuters:	$ 15.3	$ 12.2	$ 9.2	$ 9.6	$ 24.9	$ 21.8	$ 18.8	$ 9.2
- Restaurant (33.3%) 454/1120	$ 5.1	$ 4.1	$ 3.1	$ 3.2	$ 8.3	$ 7.3	$ 6.3	$ 3.1
- Food Stores (33.3%) 450/1111	$ 5.1	$ 4.1	$ 3.1	$ 3.2	$ 8.3	$ 7.3	$ 6.3	$ 3.1
- Gas (33.3%) 451/8140	$ 5.1	$ 4.0	$ 3.0	$ 3.2	$ 8.3	$ 7.2	$ 6.2	$ 3.1
b. Contractor Residents PCE-low	$ 152.7	$ 122.2	$ 91.7	$ 96.3	$ 249.0	$ 218.5	$ 188.0	$ 91.7
c. Contractor Profit PCE-Medium	$ 222.6	$ 178.1	$ 133.6	$ 140.4	$ 363.0	$ 318.5	$ 274.0	$ 133.6
2. Nonlabor:								
- Equipment Rental 473	$ 298.3	$ 238.7	$ 179.1	$ 188.1	$ 486.4	$ 426.8	$ 367.2	$ 179.1
- Building Materials 448/5440	$ 146.9	$ 117.6	$ 88.2	$ 92.6	$ 239.5	$ 210.2	$ 180.8	$ 88.2
3. Total In-Region Costs:	$ 835.8	$ 668.8	$ 501.8	$ 527.0	$ 1,362.8	$ 1,195.8	$ 1, 028.8	$ 501.8

Table TA-16. Projected 2001 Trinity County Employment Information			
Employment by Industry	Jobs in 1992 (from IMPLAN) [1]	Modeled 2001 Jobs [2] (growth rate: 3.5%)	Percent of 2001 Job Total
Agriculture	260	269	5.4
Forestry	68	70	1.4
Commercial Fisheries	54	54	1.1
Mining	17	18	.4
Construction	367	380	7.6
Manufacturing	595	616	12.3
Transportation & Public Utilities	122	126	2.5
Wholesale Trade	103	107	2.1
Retail Trade	737	763	15.2
- Food Stores	187	194	
- Eating & Drinking Places	221	229	
- Automotive Dealers & Service Stations	53	55	
Finance, Insurance, Real Estate	187	194	3.9
Services	995	1030	20.5
- Lodging	183	189	
Government	1343	1390	27.7
Other	23	23	
Total:	4871	5040	100

Sources: 1) 1992 IMPLAN Base Year Information for Trinity County.
2) Projected from 1992 IMPLAN employment estimates, projection approach varies by sector.

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Table TA-17. REGIONAL IMPACTS BY ALTERNATIVE AND COST TYPE

Regional Impact Measures	Units	ANALYZED AS: TEMPORARY, UP FRONT ANNUAL IMPACTS			ANALYZED AS: TEMPORARY, ANNUAL IMPACTS			ANALYZED AS: LONG TERM, ANNUAL IMPACTS					
		Dam Modification Alternatives and Options:			Construct 27 river Sites: Flow Evaluation, Percent Inflow, & Mechanical Restoration Alts.			Spawning Gravel Placement:					Expanded Dredging Program Mechanical Restoration Alternative
		Maximum Flow Alt. Options:						Maximum Flow Alternative		Flow Evaluation Alternative		Percent Inflow Alternative	
		4A	4B	4C				Wtd. Average	Extreme Wet Year	Wtd. Average	Extreme Wet Year	Extreme Wet Year	
DURATION (Years):		yrs 1-2	yrs 1-2	yr 1	yrs 1-3	yrs 4-5	yr 6	L/T, annual	L/T, 1 in 12 years	L/T, annual	L/T, 1 in 12 years	L/T, 1 in 12 years	L/T, annual
I. Direct Effects													
Final Demand/ Total Industry Output	$M	4.3	3.9	2.5	.79	.68	.58	.067	.39	.036	.133	(.095)	.038
Total Place of Work (PoW) Income	$M	2.0	1.8	1.2	.41	.35	.30	.034	.20	.018	.068	(.048)	.019
Employment	Jobs	49	44	28	14	12	11	1	7	1	3	(2)	1
II. Direct + Indirect + Induced Effects:													
Total Industry Output	$M	6.1	5.4	3.5	1.23	1.05	.9	.1	.61	.054	.206	(.145)	.058
Total Place of Work (PoW) Income	$M	2.9	2.6	1.7	.63	.54	.46	.052	.31	.028	.105	(.074)	.03
Employment	Jobs	75	68	43	21	18	16	2	11	1	4	(3)	1

Note: Numbers in parenthesis ( ) reflect reductions as compared to No Action/current levels of economic activity.

Table TA-17. REGIONAL IMPACTS BY ALTERNATIVE AND COST TYPE Continued...

Expanded Watershed Protection Program - Mechanical Restoration Alternative Only

Regional Impact Measures	Units	Road Maintenance			Road Rehabilitation	Road Maintenance & Rehabilitation Totals			
		Initial Year	Year 22	22-Year Average	22-Year Average	Initial Year	Year 22	22-Year Average	Long-Term
I. Direct Effects									
Final Demand	$M	.337	.203	.270	.213	.55	.415	.483	.203
Total Place of Work (PoW) Income)	$M	.176	.106	.141	.111	.288	.217	.252	.106
Employment	Jobs	6	4	5	4	10	8	9	4
II. Direct + Indirect + Induced Effects									
Total Industry Output	$M	.522	.313	.418	.329	.854	.642	.749	.313
Total Place of Work (PoW) Income)	$M	.272	.163	.218	.172	.445	.335	.391	.163
Employment	Jobs	9	5	7	6	15	11	13	5

Regional impact measures generated by IMPLAN include final demand, total industry output, employee compensation income, property income, total income, total place of work (PoW) income, total value added, and employment.[1] Three of the above measures are included in the regional impact presentation - total industry output, total place of work (PoW) income, and employment. As noted above, changes in employment compared to 2001 Trinity County projected employment provide the basis for evaluating the importance of an impact.

Recall that of the eight cost elements, two (annual maintenance of existing restoration sites, and annual maintenance of new restoration sites) were excluded from the regional analysis since their low in-region costs were deemed at the onset not to create a measurable impact. A third cost element, that of adaptive management, was excluded from the cost analysis due to lack of expenditure details. Therefore, the regional analysis focuses on in-region costs associated with the following elements: temporary up-front dam modification, temporary annual river rehabilitation site construction, long term annual spawning gravel placement, long term annual expanded dredging, and temporary and long term annual expanded watershed work.

The regional analysis for the Maximum Flow Alternative's dam modification was conducted for all three dam modification options (4A, 4B, and 4C). The impacts associated with these dam modification options are expected only for one to two years (therefore they reflect temporary, up-front costs). Given varying numbers of river rehabilitation sites are projected to be completed each year across the 6 year construction period, the analysis presents the annual impact by year. The spawning gravel and expanded dredging program are incurred annually, although the level of spawning gravel placement varies by water year type. Spawning gravel impacts were estimated for the weighted average across water year types and for the extremely wet water year where the most gravel would need to be added. Finally the expanded watershed program involves both a 22 year road rehabilitation / obliteration element and a perpetual road maintenance element. The road maintenance element would gradually taper off as roads are decommissioned until a long-term maintenance level is achieved by year 22. As a result of these various watershed protection elements, a series of IMPLAN runs were

[1] Impact Measure Definitions:

1) Final Demand: Dollar value of purchases by ultimate consumers (e.g. households / consumers, investment by industry, government purchases, exports from the region) of the product or service.

2) Total Industry Output: Dollar value of production (sales) from all industries in the region.

3) Employee Compensation Income: Value of wages and benefits

4) Property Income: Proprietary income (self-employed income) and other property income (value of rents, royalties, dividends, and corporate profit)

5) Total Income: Employee Compensation plus Property Income

6) Total Place of Work (PoW) Income: Employment income derived at the workplace (employee compensation plus proprietary income)

7) Total Value Added: Increased value contributed by inputs from within the region (value of final demand (price) minus value of inputs obtained outside the region (imports)).

8) Employment: Total of wage, salary, and self-employed jobs (part-time and full-time), not full-time equivalents.

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developed so as to estimate combined road maintenance and rehabilitation / obliteration impacts for year one, for the average over the 22 year period, for year 22, and for the long-term (perpetual effects starting in year 23).

Impacts are presented at both the direct level and direct, indirect, and induced levels. Direct impacts reflect those industries that are initially and directly affected by an action (e.g., construction industry). Indirect and induced effects reflect secondary or stemming from impacts derived from changes to the directly impacted industries. Indirect impacts illustrate backward linked effects to the support industries, those industries which provide inputs to the directly impacted industries. Induced impacts represent those forward linked effects associated with the spending of direct impact industry labor wages within the region. The direct impacts reflect the initial, first level impact whereas the direct, indirect, and induced impacts reflect the full level of impact. While the direct effect may be of interest to some, the focus of the discussion will be on the total effects.

Annual impacts of varying durations are difficult to compare because they are hard to place in equivalent terms. If one measured the impacts in terms of job years (number of jobs per year times number of years), one is implicitly assuming that the community impacts of an equal number of job years would equate. For example, suppose we had an alternative which created 50 full-time jobs for twenty years, from a job year perspective, that would be considered equivalent to creating 1000 full-time jobs for one year. From a community impact perspective, these two extremes could imply vastly different consequences. Given the inherent difficulty with job year or similar concepts, regional economic impacts are estimated separately for the up front annual, temporary annual, and long-term annual costs. No attempt is made to convert these to some arbitrary equivalent measure.

All of the regional impacts represent a gain to Trinity County given they reflect an increase in regional expenditures as compared to the No Action Alternative (with the exception of the spawning gravel placement for the Percent Inflow Alternative in extremely wet years which results in a reduction in costs compared to the No Action Alternative). The ranking of the regional impacts follows the ranking of the in-region expenditures, that is, the higher the in-region costs the greater the regional impacts, regardless of the regional impact measure.

Regional Impacts by Cost Category.—

Dam Modification.—The Maximum Flow alternative is the only alternative which required modification of Trinity Dam. All of the costs and impacts would be temporary since they would occur within the first year or two after project implementation. While total construction costs are substantial, only 10 to 12 percent of the these costs were assumed to remain in Trinity County.

Option 4A, the highest cost Maximum Flow Alternative option was estimated to create $6.1 million in total industry output, $2.9 million in total income, and 75 jobs per year over the two year construction period.

To try and evaluate the potential importance of the estimated regional impacts, employment impacts were compared to 2001 projected Trinity County employment. Total employment in

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Trinity County for 2001 was projected at slightly over 5000 jobs. The 75 additional annual jobs estimated for Option 4A represents only 1.5 percent of 2001 Trinity County employment.

To try an evaluate the potential impact of the additional 75 additional annual jobs on an industry by industry basis, information as to both the estimated distribution and percentage increase in employment by industry was reviewed.

The New Government Facilities Construction sector, the Automotive Dealers and Service Station sector, the Eating and Drinking sector, and the Wholesale Trade sector are expected to absorb the majority (approximately 57 percent) of the total employment impact. Slightly less than 25 percent of the employment impact (18 jobs) are expected to fall within the New Government Facilities Construction sector. Total industry employment within the Trinity County construction sector was projected at 380 jobs in 2001. The 18 additional construction jobs reflects only 5 percent of the total 2001 construction sector employment and is therefore not considered a substantial impact.

Another 11 jobs, or 15 percent of total employment impact, was estimated in the Automotive Dealers and Service Station industry. Projected employment in 2001 within this sector was estimated at 55 jobs. Since the additional 11 jobs reflects about 20 percent of the current Trinity County Automotive Dealers and Service Stations sector employment estimate, this impact was considered potentially substantial from the industry perspective.

The Eating and Drinking and Wholesale Trade sectors are estimated to gain about 15 jobs or about 20 percent of employment impacts. However, since employment impacts in each sector were estimated at less than 10 jobs, these impacts were considered minor from the industry perspective.

Option 4B is estimated to produce $5.4 million of total industry output, $2.6 million of total income, and 68 jobs per year over the two year construction period. The 68 annual jobs estimated for Option 4B represents only 1.4 percent of total Trinity County employment in 2001. The same construction, automotive, eating and drinking, and trade sectors as discussed under option 4A incur the majority of impacts under option 4B (39 jobs, 57 percent of total employment impact). None of the sector level employment impacts were considered substantial.

Finally, Option 4C, the least cost Maximum Flow Alternative dam modification option, is estimated to create $3.5 million in total industry output, $1.7 million in total income, and 43 jobs during the single year construction period. The estimated 43 additional jobs represents less than one percent of total Trinity County employment in 2001. The same construction, automotive, eating and drinking, and trade sectors as discussed above incur the majority of impacts under option 4C (25 jobs, 57 percent of total employment impact). The largest employment impact (11 jobs, 26 percent of total impact) was estimated for the New Government Facility Construction sector. These 11 jobs represent only 2.9 percent of the 2001 Trinity County construction sector employment and therefore were deemed minor. All other impacted industries gained less than 10 jobs and were also considered minor.

Construction of River Rehabilitation Sites.—The Flow Evaluation, Percent Inflow, Mechanical Restoration, and Preferred Alternatives all include construction of

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47 new river rehabilitation sites over a six year time frame. The annual costs and regional impacts were based on the following construction schedule: 1) 8 channel rehabilitation sites and 1 side channel site each year during the first 3 years (cost = $2.45M per year), 2) 7 channel rehabilitation sites each year during years 4 and 5 (cost = $2.1M per year), and 3) 6 channel rehabilitation sites during year 6 (cost = $1.8M). The estimated in-region annual cost (47.8 percent of total annual cost) is expected to generate $ 790,000 in total industry output, $ 410,000 in total income, and 21 jobs annually for each of the first 3 years. The impacts decline in years 4-6 as presented in Table TA-18. The levels of Trinity County employment increase (21 for years 1-3, 18 for year 4-5, and 16 for year 6) were deemed minor from the perspective of both the overall economy and individual industries.

Spawning Gravel Placement.—All alternatives included a long-term, perpetual annual spawning gravel placement component differentiated by water year type. However, only the Maximum Flow, Flow Evaluation, and Preferred Alternatives require gravel placement noticeably different from that of the No Action Alternative (the Percent Inflow Alternative actually involves nearly $50,000 less gravel placement on average compared to the No Action Alternative, this cost differential was considered minor from a regional impact perspective). Impacts for the No Action Alternative level of spawning gravel placement were not estimated since they represent an on-going program (impacts would already be reflected in current regional economic activity). The spawning gravel requirements for the Maximum Flow, Flow Evaluation, and Preferred Alternatives were greater than those of the No Action Alternative, implying an increase in regional economic activity.

Two regional impact estimates were developed for the Maximum Flow, Flow Evaluation, and Preferred Alternatives - a weighted average across all water year types and an estimate for the most costly extremely wet water year. For the Percent Inflow Alternative, impacts were estimated for only the extremely wet year since the reduction in in-region average cost was considered minor. The costs for the remainder of the water year types were evaluated at the onset to be low enough so as not to generate significant regional impacts.

The Maximum Flow alternative's extremely wet water year would require placement of in excess 100,000 cubic yards of spawning gravel (note that extremely wet years are estimated to occur 12 percent of the time, or on average once every eight years). Since no more precise estimate was available, gravel placement for the Maximum Flow Alternative was assumed at 100,000 yd^3 for the purposes of the regional analysis. The 100,000 yd^3 of gravel was estimated to result in about $576,700 of in-region costs (37.5percent of total cost). Regional impacts stemming from these extremely wet year expenditures were estimated at $610,000 in total industry output, $310,000 in total income, and 11 jobs. This increase in Trinity County employment impact was assumed to be minor. Since the extremely wet year costs for the Maximum Flow Alternative exceeded those of all other alternatives and water years, the overall spawning gravel impact was deemed minor.

Expanded Dredging Program.—A baseline dredging program of the sediment control ponds in Grass Valley Creek and at the confluence of Grass Valley Creek and the Trinity River is assumed for all alternatives. Since this program is currently in place, regional effects would already be included in current employment estimates. This analysis focuses exclusively on the expanded long-term perpetual Trinity River dredging program included within the Mechanical Restoration Alternative.

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Of the estimated $200,000 in annual cost, only $54,000 or about 27 percent of total cost, was assumed to remain in the region. This expenditure was run through the regional model and is not expected to result in substantial impacts.

Expanded Watershed Protection Program.—The expanded watershed protection program (watershed effort in addition to baseline) included in the Mechanical Restoration and Preferred Alternatives includes both a perpetual, but declining road maintenance element and a 22 year road rehabilitation / obliteration element. The road maintenance element would gradually taper off as roads are decommissioned until a long-term maintenance level is achieved by year 22. As a result, impacts were run for the initial year, the 22 year average, the 22nd year, and the long-term (beyond year 22). Impacts were estimated both for the road maintenance and rehabilitation / obliteration elements separately and in combination.

The combined impacts for the initial year were estimated at $854,000 in total industry output, $445,000 in total place of work (PoW) income, and 15 jobs. The long-term impacts after year 22 were estimated at $313,000 in total industry output, $163,000 in total place of work (PoW) income, and 5 jobs. None of these impacts were expected to create substantial effects either in the short or long-term.

Regional Impacts by Alternative, Aggregated Across Cost Categories.—Finally, in addition to the above review of regional impacts by cost element, it is also necessary to aggregate impacts across cost elements for each alternative. Regional economic impact comparisons between alternatives are complicated by the different durations of costs presented in the analysis. While all the impacts are presented on an annual basis, the duration varies as follows: 1) dam modification impacts are incurred up-front (first 1 or 2 years), 2) river rehabilitation site impacts are incurred over the first 6 years, 3) expanded watershed protection program's road rehabilitation element impacts occur for the first 22 years, and 4) spawning gravel placement, expanded dredging program, and expanded watershed protection program's road maintenance element impacts are incurred on a perpetual, long-term annual basis.

Tables TA-18, TA-19, and TA-20 present total industry output, total place of work (PoW) income, and employment impacts by alternative for eight time intervals: year 1, year 2, year 3, years 4 and 5, year 6, years 7-21, year 22, and years 23+. The costs for the No Action Alternative stemmed from on-going programs and therefore would be already reflected in current estimates of regional economic activity. The State Permit Alternative resulted in no major cost differences from the No Action Alternative. As a result, regional impacts are only presented for the cost elements noted above for the following alternatives: Maximum Flow, Flow Evaluation, Percent Inflow, Mechanical Restoration, and Preferred.

Summary.— Combining impacts across cost elements for each alternative did not result in substantial impacts from the perspective of the overall Trinity County economy. The largest potential employment impact would occur with the Maximum Flow Alternative assuming dam modification option 4A was selected and this coincided with an extremely wet water year for spawning gravel placement. This unlikely event would result in about 86 additional jobs in Trinity County for that year. The 86 jobs still only reflects 1.7 percent of the projected 2001 Trinity County total employment.

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Table TA-18. POTENTIAL RANGE IN ANNUAL TOTAL INDUSTRY OUTPUT BY ALTERNATIVE (Change from No Action Alternative)
Units = Millions of $

Year	Alternative	Dam Modification Options: 4A/4B/4C	River Rehabilitation	Wtd. Average Spawning Gravel Placement (Extremely Wet Years)		Expanded Dredging	Expanded Watershed Protection	ALTERNATIVE TOTAL (Extremely Wet Years in parenthesis)	
1	Max. Flow	6.1/ 5.4 / 3.5	N/A	.1	(.61)	N/A	N/A	6.2 / 5.5 / 3.6	(6.71 / 6.01 / 4.11)
	Flow Eval.	N/A	1.23	.054	(.206)	N/A	N/A	1.284	(1.436)
	% Inflow	N/A	1.23	0	(-.145)	N/A	N/A	1.23	(1.085)
	Mech. Rest.	N/A	1.23	0	(0)	.058	.854	2.142	
	Preferred	N/A	1.23	.054	(.206)	N/A	.854	2.138	(2.29)
2	Max. Flow	6.1/ 5.4 / 0	N/A	.1	(.61)	N/A	N/A	6.1 / 5.5 / .1	(6.71 / 6.01 / .61)
	Flow Eval.	N/A	1.23	.054	(.206)	N/A	N/A	1.284	(1.436)
	% Inflow	N/A	1.23	0	(-.145)	N/A	N/A	1.23	(1.085)
	Mech. Rest	N/A	1.23	0	(0)	.058	.749	2.037	
	Preferred	N/A	1.23	.054	(.206)	N/A	.749	2.033	(2.185)
3	Max. Flow	N/A	N/A	.1	(.61)	N/A	N/A	.1	(.61)
	Flow Eval.	N/A	1.23	.054	(.206)	N/A	N/A	1.284	(1.436)
	% Inflow	N/A	1.23	0	(-.145)	N/A	N/A	1.23	(1.085)
	Mech. Rest.	N/A	1.23	0	(0)	.058	.749	2.037	
	Preferred	N/A	1.23	.054	(.206)	N/A	.749	2.033	(2.185)
4 & 5	Max. Flow	N/A	N/A	.1	(.61)	N/A	N/A	.1	(.61)
	Flow Eval.	N/A	1.05	.054	(.206)	N/A	N/A	1.104	(1.256)
	% Inflow	N/A	1.05	0	(-.145)	N/A	N/A	1.05	(.905)
	Mech. Rest.	N/A	1.05	0	(0)	.058	.749	1.857	
	Preferred	N/A	1.05	.054	(.206)	N/A	.749	1.853	(2.005)
6	Max. Flow	N/A	N/A	.1	(.61)	N/A	N/A	.1	(.61)
	Flow Eval.	N/A	.9	.054	(.206)	N/A	N/A	.954	(1.106)
	% Inflow	N/A	.9	0	(-.145)	N/A	N/A	.9	(.755)
	Mech. Rest.	N/A	.9	0	(0)	.058	.749	1.707	
	Preferred	N/A	.9	.054	(.206)	N/A	.749	1.703	(1.855)
7 - 21	Max. Flow	N/A	N/A	.1	(.61)	N/A	N/A	.1	(.61)
	Flow Eval.	N/A	N/A	.054	(.206)	N/A	N/A	.054	(.206)
	% Inflow	N/A	N/A	0	(-.145)	N/A	N/A	0	(-.145)
	Mech. Rest.	N/A	N/A	0	(0)	.058	.749	.807	
	Preferred	N/A	N/A	.054	(.206)	N/A	.749	.803	(.955)
22	Max. Flow	N/A	N/A	.1	(.61)	N/A	N/A	.1	(.61)
	Flow Eval.	N/A	N/A	.054	(.206)	N/A	N/A	.054	(.206)
	% Inflow	N/A	N/A	0	(-.145)	N/A	N/A	0	(-.145)
	Mech. Rest.	N/A	N/A	0	(0)	.058	.642	.7	
	Preferred	N/A	N/A	.054	(.206)	N/A	.642	.696	(.848)
23+	Max. Flow	N/A	N/A	.1	(.61)	N/A	N/A	.1	(.61)
	Flow Eval.	N/A	N/A	.054	(.206)	N/A	N/A	.054	(.206)
	% Inflow	N/A	N/A	0	(-.145)	N/A	N/A	0	(-.145)
	Mech. Rest.	N/A	N/A	0	(0)	.058	.313	.371	
	Preferred	N/A	N/A	.054	(.206)	N/A	.313	.367	(.519)

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Table TA-19. POTENTIAL RANGE IN ANNUAL TOTAL PLACE OF WORK INCOME BY ALTERNATIVE (Change from No Action Alternative)
Units = Millions of $

Year	Alternative	Dam Modification Options: 4A/4B/4C	River Rehabilitation	Wtd. Average Spawning Gravel Placement (Extremely Wet Years)		Expanded Dredging	Expanded Watershed Protection	ALTERNATIVE TOTAL (Extremely Wet Years in parenthesis)	
1	Max. Flow	2.9/ 2.6 / 1.7	N/A	.052	(.31)	N/A	N/A	2.95 / 2.65 / 1.75	(3.21 / 2.91 / 2.01)
	Flow Eval.	N/A	.63	.028	(.105)	N/A	N/A	.658	(.735)
	% Inflow	N/A	.63	0	(-.074)	N/A	N/A	.63	(.556)
	Mech. Rest.	N/A	.63	0	(0)	.03	.445	1.105	
	Preferred	N/A	.63	.028	(.105)	N/A	.445	1.103	(1.180)
2	Max. Flow	2.9/ 2.6 / 0	N/A	.052	(.31)	N/A	N/A	2.95 / 2.65 / .31	(3.21 / 2.91 / .31)
	Flow Eval.	N/A	.63	.028	(.105)	N/A	N/A	.658	(.735)
	% Inflow	N/A	.63	0	(-.074)	N/A	N/A	.63	(.556)
	Mech. Rest	N/A	.63	0	(0)	.03	.391	1.051	
	Preferred	N/A	.63	.028	(.105)	N/A	.391	1.049	(1.126)
3	Max. Flow	N/A	N/A	.052	(.31)	N/A	N/A	.052	(.31)
	Flow Eval.	N/A	.63	.028	(.105)	N/A	N/A	.658	(.735)
	% Inflow	N/A	.63	0	(-.074)	N/A	N/A	.63	(.556)
	Mech. Rest.	N/A	.63	0	(0)	.03	.391	1.051	
	Preferred	N/A	.63	.028	(.105)	N/A	.391	1.049	(1.126)
4 & 5	Max. Flow	N/A	N/A	.052	(.31)	N/A	N/A	.052	(.31)
	Flow Eval.	N/A	.54	.028	(.105)	N/A	N/A	.568	(.645)
	% Inflow	N/A	.54	0	(-.074)	N/A	N/A	.54	(.466)
	Mech. Rest.	N/A	.54	0	(0)	.03	.391	.961	
	Preferred	N/A	.54	.028	(.105)	N/A	.391	.959	(1.036)
6	Max. Flow	N/A	N/A	.052	(.31)	N/A	N/A	.052	(.31)
	Flow Eval.	N/A	.46	.028	(.105)	N/A	N/A	.488	(.565)
	% Inflow	N/A	.46	0	(-.074)	N/A	N/A	.46	(.386)
	Mech. Rest.	N/A	.46	0	(0)	.03	.391	.881	
	Preferred	N/A	.46	.028	(.105)	N/A	.391	.879	(.956)
7 - 21	Max. Flow	N/A	N/A	.052	(.31)	N/A	N/A	.052	(.31)
	Flow Eval.	N/A	N/A	.028	(.105)	N/A	N/A	.028	(.105)
	% Inflow	N/A	N/A	0	(-.074)	N/A	N/A	0	(-.074)
	Mech. Rest.	N/A	N/A	0	(0)	.03	.391	.421	
	Preferred	N/A	N/A	.028	(.105)	N/A	.391	.419	(.496)
22	Max. Flow	N/A	N/A	.052	(.31)	N/A	N/A	.052	(.31)
	Flow Eval.	N/A	N/A	.028	(.105)	N/A	N/A	.028	(.105)
	% Inflow	N/A	N/A	0	(-.074)	N/A	N/A	0	(-.074)
	Mech. Rest.	N/A	N/A	0	(0)	.03	.335	.365	
	Preferred	N/A	N/A	.028	(.105)	N/A	.335	.363	(.440)
23+	Max. Flow	N/A	N/A	.052	(.31)	N/A	N/A	.052	(.31)
	Flow Eval.	N/A	N/A	.028	(.105)	N/A	N/A	.028	(.105)
	% Inflow	N/A	N/A	0	(-.074)	N/A	N/A	0	(-.074)
	Mech. Rest.	N/A	N/A	0	(0)	.03	.163	.193	
	Preferred	N/A	N/A	.028	(.105)	N/A	N/A	.191	(.268)

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Table TA-20. POTENTIAL RANGE IN ANNUAL TOTAL EMPLOYMENT BY ALTERNATIVE (Change from No Action Alternative)
Units = Jobs

Year	Alternative	Dam Modification Options: 4A/4B/4C	River Rehabilitation	Wtd. Average Spawning Gravel Placement (Extremely Wet Years)	Expanded Dredging	Expanded Watershed Protection	ALTERNATIVE TOTAL (Extremely Wet Years in parenthesis)
1	Max. Flow	75 / 68 / 43	N/A	2 (11)	N/A	N/A	77 / 70 / 45 (86 / 79 / 54)
	Flow Eval.	N/A	21	1 (4)	N/A	N/A	22 (25)
	% Inflow	N/A	21	0 (-3)	N/A	N/A	21 (18)
	Mech. Rest.	N/A	21	0 (0)	1	15	37
	Preferred	N/A	21	1 (4)	N/A	15	37 (40)
2	Max. Flow	75 / 68 / 0	N/A	2 (11)	N/A	N/A	77 / 70 / 2 (86 / 79 / 11)
	Flow Eval.	N/A	21	1 (4)	N/A	N/A	22 (25)
	% Inflow	N/A	21	0 (-3)	N/A	N/A	21 (18)
	Mech. Rest	N/A	21	0 (0)	1	13	35
	Preferred	N/A	21	1 (4)	N/A	13	35 (38)
3	Max. Flow	N/A	N/A	2 (11)	N/A	N/A	2 (11)
	Flow Eval.	N/A	21	1 (4)	N/A	N/A	22 (25)
	% Inflow	N/A	21	0 (-3)	N/A	N/A	21 (18)
	Mech. Rest.	N/A	21	0 (0)	1	13	35
	Preferred	N/A	21	1 (4)	N/A	13	35 (38)
4 & 5	Max. Flow	N/A	N/A	2 (11)	N/A	N/A	2 (11)
	Flow Eval.	N/A	18	1 (4)	N/A	N/A	19 (22)
	% Inflow	N/A	18	0 (-3)	N/A	N/A	18 (15)
	Mech. Rest.	N/A	18	0 (0)	1	13	32
	Preferred	N/A	18	1 (4)	N/A	13	32 (35)
6	Max. Flow	N/A	N/A	2 (11)	N/A	N/A	2 (11)
	Flow Eval.	N/A	16	1 (4)	N/A	N/A	17 (20)
	% Inflow	N/A	16	0 (-3)	N/A	N/A	16 (13)
	Mech. Rest.	N/A	16	0 (0)	1	13	30
	Preferred	N/A	16	1 (4)	N/A	13	30 (33)
7 - 21	Max. Flow	N/A	N/A	2 (11)	N/A	N/A	2 (11)
	Flow Eval.	N/A	N/A	1 (4)	N/A	N/A	1 (4)
	% Inflow	N/A	N/A	0 (-3)	N/A	N/A	0 (-3)
	Mech. Rest.	N/A	N/A	0 (0)	1	13	14
	Preferred	N/A	N/A	1 (4)	N/A	13	14 (17)
22	Max. Flow	N/A	N/A	2 (11)	N/A	N/A	2 (11)
	Flow Eval.	N/A	N/A	1 (4)	N/A	N/A	1 (4)
	% Inflow	N/A	N/A	0 (-3)	N/A	N/A	0 (-3)
	Mech. Rest.	N/A	N/A	0 (0)	1	11	12
	Preferred	N/A	N/A	1 (4)	N/A	11	12 (15)
23+	Max. Flow	N/A	N/A	2 (11)	N/A	N/A	2 (11)
	Flow Eval.	N/A	N/A	1 (4)	N/A	N/A	1 (4)
	% Inflow	N/A	N/A	0 (-3)	N/A	N/A	0 (-3)
	Mech. Rest.	N/A	N/A	0 (0)	1	5	6
	Preferred	N/A	N/A	1 (4)	N/A	5	6 (9)

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From the industry level perspective, the only alternative where potentially substantial impacts could be expected would be the Maximum Flow Alternative, primarily as a result of dam modification (potentially substantial impacts to the Auto Dealers and Service Station industry). As noted above, even this is questionable because potentially substantial impacts to these industries were identified only under the dam modification construction options 4A and 4B. Dam modification option 4C results in minor regional impacts from both the overall and industry level perspectives. Since 4C is the lowest cost construction option which meets the dam modification goal, 4C becomes the most likely selection. Even if construction option 4A or 4B was selected, the impacts would last only for a couple of years, implying only a short-term effect. In-region costs for each of the other alternatives was estimated to be small enough so as not to generate major impacts. So bottomline, all of the alternatives generate additional regional economic activity compared to the No Action Alternative, but none of the additional impact is expected to be substantial. For a more detailed discussion of the impacts generated by each alternative, see the following alternative specific sections.

It should be restated that one of the larger cost components, being that of the adaptive management program, was not included in the regional economic analysis for the Flow Evaluation Alternative due to the uncertain nature of the program's costs. The costs were very roughly estimated to fall within the $2.5 to $4.5 million range annually. Not having any details as to how the money would likely be spent lead to the decision to exclude this element from detailed analysis. However, assuming these costs follow the in-region percentages associated with some of the other cost elements, one could speculate that additional employment due to the adaptive management program might fall somewhere within the range of 25 to 50 additional jobs annually. Even after adding this program into the costs associated with the Flow Evaluation and Preferred Alternatives, the admittedly very rough estimate of additional employment would not likely create substantial impacts.

No Action Alternative.—

Total Economic Effects.—Since the costs associated with the No Action Alternative all reflect on-going programs, estimates of current regional economic conditions in Trinity County are representative of the No Action Alternative. For an estimate of 2001 regional economic conditions, see Table TA-16.

Economic Effects by Sector.—For an estimate of 2001 regional economic conditions, including employment projections by sector, see Table TA-16.

Analysis of More Affected Groups or Businesses.—The total costs associated with the No Action Alternative are not particularly large, averaging about just over $200K annually and running about $150K nearly 90 percent of the time (for all water years except extremely wet where total costs jump to $600K). The average costs are comprised of $14K of spawning gravel placement, $75K of sediment dredging in Grass Valley Creek (GVC) and at the confluence of GVC and the Trinity River, and $60K of maintenance of sediment control structure at Buckhorn Dam. The baseline costs of dredging and Buckhorn Dam maintenance are included in all alternatives. Geographically, these activities are concentrated at Buckhorn Dam and the confluence of GVC and the Trinity River, with spawning gravel placement being a dispersed activity. Therefore, service industries closest to these locations are

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likely to continue to be the most affected by the small amount of regional economic activity generated by the No Action Alternative.

Maximum Flow Alternative.—

Total Economic Effects.—The Maximum Flow Alternative is expected to generate more jobs than any other alternative due primarily to the costs of dam modification. Depending on the dam modification construction option selected, the additional jobs could range on average from a high of 77 to a low of 45 (the 45 job estimate is the most likely scenario and would last for only one year). These dam modification costs are anticipated to last at most a couple of years, implying only a short-term impact. After dam modification is complete, job generation drops of to minor levels (additional 11 jobs in extremely wet years for spawning gravel placement). The maximum job generation would result if dam modification option 4A was selected in combination with an extremely wet year during one of the two years of dam construction. With this situation, job generation would expand to approximately 86 jobs. Even with this unlikely event, the 86 additional jobs reflects only 1.7 percent of projected 2001 Trinity County employment. Therefore, even under the most extreme situation, the employment increase was not seen as substantial compared to total county employment.

Economic Effects by Sector.—The individual economic sectors in Trinity County most affected by the cost elements associated with the Maximum Flow Alternative are the construction, wholesale trade, auto dealers and service stations, and eating and drinking sectors. The largest impacts are expected in the construction sector, with an additional 18 jobs under dam modification option 4A, however this represents less than 5 percent of the 2001 projected employment within the construction sector. The only sector that meets the criteria for resulting a potentially substantial impact is the auto dealer and service station sector under dam modification option 4A with an increase of 11 jobs and 19.8% of the projected sector's 2001 employment. Since dam modification option 4C is the far more likely scenario, and it results in no substantial impacts by sector, overall the Maximum Flow Alternative is not expected to generate substantial sector level impacts.

Analysis of More Affected Groups or Businesses.—The largest cost element associated with the Maximum Flow Alternative is the modification of Trinity Dam. The costs associated with this task dwarf all other costs associated with all other alternatives on an annual basis. As a result, service industries closest to the dam would be most affected by the temporary workforce (1 to 2 years only). Costs associated with spawning gravel placement, particularly in wet and extremely wet years, also substantially exceed those of the No Action Alternative. However, since spawning gravel placement is likely to be highly dispersed, concentrated effects on service sector industries may not materialize.

Flow Evaluation Alternative.—

Total Economic Effects.—The Flow Evaluation Alternative is expected to generate a high of 22 and a low of 17 additional jobs on average for the first six years after alternative implementation (in extremely wet years these estimates could increase to a high of 25 and a low of 20 additional jobs). The majority of this impact stems from the cost of constructing the river rehabilitation sites. After the first six years, the river rehabilitation sites would be finished and the job levels would drop dramatically. Given this level of job creation

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represents less than one percent of the projected total employment in Trinity County in 2001, the impact of these additional jobs is not seen as substantial.

Economic Effects by Sector.—The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level.

Analysis of More Affected Groups or Businesses.—The largest cost elements known with any certainty relate to construction of river restoration sites ($1.8M to $2.45M for years 1-6) and spawning gravel placement ($206K average, $982K in extremely wet years). Adaptive management, which could imply a myriad of programs, is estimated to range from about $2.5 to 4.5M per year. All of these cost elements are seen as fairly dispersed through the watershed, again implying a lack of concentrated regional economic impacts.

Percent Inflow Alternative.—

Total Economic Effects.—The Percent Inflow Alternative is expected to generate a high of 21 and a low of 16 additional jobs on average for the first six years after alternative implementation (in extremely wet years these estimates could actually decrease to a high of 18 and a low of 13 additional jobs since the spawning gravel requirements for this alternative are less than those of the No Action Alternative). The majority of this impact stems from the cost of constructing the river rehabilitation sites. After the first six years, the river rehabilitation sites would be finished and the job levels would drop zero. Given this level of job creation represents less than one percent of the projected total employment in Trinity County in 2001, the impact of these additional jobs is not seen as substantial.

Economic Effects by Sector.—The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level.

Analysis of More Affected Groups or Businesses.—The only relatively large cost element associated with this alternative is the construction of river restoration sites ($1.8M to $2.45M for years 1-6). While these activities would be concentrated along the Trinity River mainstem, they would be dispersed along the length of the river. This would imply a lack of concentrated regional economic impacts.

Mechanical Restoration Alternative.—

Total Economic Effects.—The Mechanical Restoration Alternative is expected to generate a high of 37 and a low of 30 additional jobs for the first six years after alternative implementation. The majority of this impact stems from the combined cost of constructing the river rehabilitation sites and the expanded watershed program. After the first six years, the river rehabilitation sites would be finished but the expanded watershed program would continue to produce approximately 13 jobs per year until the long-term maintenance level of 5 additional jobs was reached in year 23. Given the highest level of job creation represents less than one percent of the projected total employment in Trinity County in 2001, the impact of these additional jobs is not seen as substantial.

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Economic Effects by Sector.—The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level.

Analysis of More Affected Groups or Businesses.—The Mechanical Restoration Alternative includes the following programs in addition to the No Action Alternative costs: watershed rehabilitation and protection program, construction of river restoration sites, maintenance of additional river restoration sites, and expanded dredging program. Given these construction and maintenance activities are dispersed, it is unlikely that regional economic impacts would be geographically concentrated.

State Permit Alternative.—

Total Economic Effects.—The additional costs associated with the State Permit Alternative as compared to the No Action Alternative were seen as minor enough to not create much by way of regional impact.

Economic Effects by Sector.—The lack of impacts associated with this alternative would hold for the sector level comparison as well as the overall comparison.

Analysis of More Affected Groups or Businesses.—The State Permit Alternative involves costs similar to those of the No Action Alternative. Average spawning gravel placement was estimated at $74K, although no gravel would be placed except in extremely wet years. Although not large, these activities are concentrated at Buckhorn Dam and the confluence of GVC and the Trinity River, with spawning gravel placement being a dispersed activity. Therefore, service industries closest to these locations are likely to be most affected.

Preferred Alternative.—

Total Economic Effects.—The Preferred Alternative, from a cost perspective, basically represents the Flow Evaluation Alternative plus the expanded watershed element from the Mechanical Restoration Alternative. The Preferred Alternative is expected to generate a high of 37 and a low of 30 additional jobs on average for the first six years after alternative implementation (in extremely wet years these estimates could increase to a high of 40 and a low of 33 additional jobs). The majority of this impact stems from the combined cost of constructing the river rehabilitation sites and the expanded watershed program. After the first six years, the river rehabilitation sites would be finished but the expanded watershed program would continue to produce approximately 13 jobs per year until the long-term maintenance level of 5 additional jobs was reached in year 23. Given the highest level of job creation represents less than one percent of the projected total employment in Trinity County in 2001, the impact of these additional jobs is not seen as substantial.

Economic Effects by Sector.—The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level.

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Analysis of More Affected Groups or Businesses.—Since virtually all of the costs associated with the Preferred Alternative are likely to be dispersed, regional economic impacts would not be concentrated in any particular area.

CEQA Results - Regional Impacts for Preferred Alternative Compared to Existing Conditions.—To meet State of California CEQA requirements, the Preferred Alternative was compared to "existing conditions." Only the Preferred Alternative is compared as opposed to all alternatives. To insure that the CEQA comparison is as legitimate as possible, modeled estimates of existing conditions are compared to modeled Preferred Alternative impacts. As noted above, existing conditions were oriented to 1995. Therefore, the CEQA cost analysis compares Preferred Alternative impacts to modeled estimates of the 1995 Trinity County economy (Table TA-21). Modeled estimates of the 1995 Trinity County economy will necessarily differ from actual estimates of the 1995 economy. Generally speaking, estimates of the overall Trinity County economy as derived from IMPLAN, exceed those provided by California Department of Labor.

Table TA-21. Projected 1995 Trinity County Employment Information

Employment by Industry	Jobs in 1992 (from IMPLAN) [1]	Modeled 1995 Jobs [2] (growth rate: 1.6%)	Percent of 1995 Job Total
Agriculture	260	264	5.4
Forestry	68	69	1.4
Commercial Fisheries	54	54	1.1
Mining	17	17	.3
Construction	367	373	7.6
Manufacturing	595	605	12.3
Transportation & Public Utilities	122	124	2.5
Wholesale Trade	103	105	2.1
Retail Trade	737	749	15.2
- Food Stores	187	190	
- Eating & Drinking Places	221	225	
- Automotive Dealers & Service Stations	53	54	
Finance, Insurance, Real Estate	187	190	3.9
Services	995	1011	20.5
- Lodging	183	186	
Government	1343	1364	27.7
Other	23	23	
Total:	4871	4948	100

Sources: 1) 1992 IMPLAN Base Year Information for Trinity County
2) Projected from 1992 IMPLAN employment estimates, projection approach varies by sector

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IMPLAN estimates of Trinity County employment represent 1992 conditions and were therefore projected to 1995 to reflect existing conditions. For all sectors except agriculture and commercial fishing, the projection was based on the ratio of 1995 to 1992 population. Using a report of population estimates and projections from 1990 to 2040 published by the California Department of Finance Demographic Research Unit (State of California, 1998), a population growth factor of 1.6 percent was estimated from 1992 to 1995 for Trinity County (1992 population: 13147, 1995 population projection: 13363). For agriculture and commercial fishing, a different projection approach was used to account for the likelihood that these sectors would grow at a pace slower than the general population. For the commercial fishing sector, the assumption was made that fisheries improvements would not occur in the short-term, therefore no growth was assumed between 1992 and 1995. For the agricultural sectors, anticipated growth was targeted at the lower of the population growth rate or .5 percent per year based on results from the Central Valley Production Model (CVPM). For the 1992 to 1995 period, the .5 percent per year approach was applied.

Impacts associated with the Preferred Alternative mirror those presented under the NEPA comparison to the No Action Alternative. Since the costs of the No Action Alternative all reflect on-going programs, the costs of No Action Alternative are essentially equivalent to those associated with existing conditions. As a result, the change in costs from the No Action Alternative would be the same as the change in costs compared to existing conditions. The different year orientations of the NEPA and CEQA analyses lead to the distinctions between use of the 2001 versus 1995 regional economic base. However, the impacts associated with the Preferred Alternative are the same regardless of the NEPA or CEQA perspective.

Preferred Alternative.—

Total Economic Effects.—The Preferred Alternative is expected to generate a high of 37 and a low of 30 additional jobs on average for the first six years after alternative implementation (in extremely wet years these estimates could increase to a high of 40 and a low of 33 additional jobs). The majority of this impact stems from the combined cost of constructing the river rehabilitation sites and the expanded watershed program. After the first six years, the river rehabilitation sites would be finished but the expanded watershed program would continue to produce approximately 13 jobs per year until the long-term maintenance level of 5 additional jobs was reached in year 23. Given the highest level of job creation represents less than one percent of the projected total employment in Trinity County in 1995, the impact of these additional jobs is not seen as substantial.

Economic Effects by Sector.—The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level.

Analysis of More Affected Groups or Businesses.— Since virtually all of the costs associated with the Preferred Alternative are likely to be dispersed, regional economic impacts would not be concentrated in any particular area.

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Water-Oriented Recreation, Sportfishing, and Commercial Fishing Methodologies

Water-Oriented Recreation

Regional recreation impacts were developed by estimating the effects of changes in nonresident recreation spending by region and alternative. Estimates of recreation use by alternative, developed from statistical models of recreation demand described in the Recreation Resources Technical Appendix, were combined with per-day recreation spending estimates to calculate regional recreation expenditures. The changes in recreation expenditures were assigned to appropriate economic sectors and run through the IMPLAN model to estimate impacts by region and alternative.

The region for analyzing regional impacts in the Trinity River Basin includes Trinity and Shasta Counties. Changes in nonresident spending at Trinity County businesses also were estimated by apportioning changes in nonresident recreation spending at the affected recreation areas (i.e., Trinity River, Trinity Lake, and Shasta Lake) to Trinity County. It was assumed that 70% of nonresident spending associated with recreation activity along the Trinity River and at Trinity Lake occurred in Trinity County, and that 2% of nonresident spending associated with recreation activity at Lake Shasta occurred in Trinity County.

In the Central Valley, hydrologic conditions (i.e., reservoir water levels or instream flows) at all affected Central Valley facilities are not expected to substantially affect recreation opportunities; consequently, socioeconomic impacts related to recreation were not quantified and no significance criteria were developed.

The following sections describe the methods employed to estimate recreation-related spending changes associated with use of Trinity River and Trinity and Shasta Lakes.

Trinity River Spending Changes.—Predicted recreational use of the Trinity River under the project alternatives was used as the basis for estimating spending changes within the Trinity River Basin area. The focus of the analysis was on changes in nonresident spending because this spending represents new spending within the region, generating increased net economic activity, while changes in resident spending represent spending shifts within the region, generating no net change in regional economic activity.

The predicted number of visitor days under each alternative was apportioned to resident and nonresident recreationists based on data collected in a survey of Trinity River users (Douglas pers. comm.) Nonresidents were assumed to account for 57% of the total number of visitor days under the alternatives and residents of the two-county area were assumed to account for 43%.

Per-day spending estimates developed for resident and nonresident recreationists were then applied to these estimates of visitor days. Per-day spending by nonresidents was developed from average expenditure data in a 1991 survey of recreationists who fished in freshwater along rivers and at wildlife refuges in California (U.S. Fish and Wildlife Service and U.S. Bureau of the Census 1993, as found in U.S. Bureau of Reclamation 1997). Per-day spending by residents was developed from creel census information obtained in a study of anglers along the Lower Kern River (Southern California Edison 1995). The per-day spending estimates used in the analysis were comparable to values found in studies of other recreation areas in California,

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such as eastside Sierra streams (Jones & Stokes Associates 1993) and rivers in the San Joaquin Valley (Jones & Stokes Associates 1990).

Estimates of per-day spending were adjusted to 1997 dollars, and apportioned among recreation-related economic sectors using information obtained from the Trinity River User Survey (Douglas pers. comm.) These sectors include five categories of typical trip-related expenditures, including purchases at food stores; expenditures on fuel and on other goods and services at service stations; expenditures at hotels, motels, and campgrounds; restaurant expenditures; and expenditures on miscellaneous retail goods and services. The resulting spending profiles are shown in Table TA-22. It should be noted that estimates of spending from the Trinity River User Survey were not used because these estimates were considered unreasonably high compared to spending information in other recreation studies.

TableTA-22. Estimated Average Spending per Day by Persons Recreating along the Trinity and Lower Klamath Rivers (1997 dollars)

Sector	Residents	Nonresidents
Food stores	$3.41	$6.88
Eating and drinking establishments	$0.91	$4.99
Service stations and fuel	$2.35	$4.64
Hotels, motels, and campgrounds	$1.97	$16.44
Miscellaneous retail services and products	$9.47	$17.97
TOTAL (per person per day)	$18.11	$50.92

Note: Estimates of resident spending per day were derived from a 1992 creel census of Kern River anglers (Southern California Edison 1994).

Estimates of nonresident spending per day were derived from a 1990 U.S. FWS survey of freshwater anglers in California (U.S. Fish and Wildlife Service and U.S. Bureau of the Census 1993, as found in U.S. Bureau of Reclamation 1997)

Allocations of total per person per day spending to different sectors is based on information from the Trinity River User Survey (Douglas pers. comm.)

The spending profiles were applied to the recreation use estimates for the Trinity River for each alternative to generate spending impacts, which are shown in Table TA-23.

Trinity and Shasta Lakes Spending Changes.—Estimated recreational use of Trinity and Shasta Lakes under the project alternatives were used as the basis for estimating spending changes within the Trinity River Basin area. As with the Trinity River, the focus of the analysis was on changes in nonresident spending because this spending represents new spending within the region, generating increased net economic activity.

Total estimated use, in 12-hour recreation visitor days, was apportioned among residents and nonresidents of the two-county region based on information contained in a 1994 study conducted by the USDA Forest Service. Nonresident use at each lake was assumed to represent 78% of total use under the alternatives. Use at each lake was then allocated among five recreation activities based on the following percentages derived from the USDA Forest Service study.

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Table TA-23. Trinity River Recreation Spending Effects of the Project Alternatives

	No Action		Maximum Flow		Flow Study		Percent Inflow		Mechanical Restoration		Exisiting Conditions		State Permit	
	Recreation Days	Recreation Spending	Recreation Days	Recreation Spending	Recreation Days	Recreation Spending	Recreation Days	Recreation Spending	Recreation Days	Recreation Spending	Recreation Days	Recreation Spending	Recreation Days	Recreation Spending
Non-Residents	236,412		314,514		288,700		232,197		237,598		161,424		145,008	
% change in days compared to No Action			33%		22%		-2%		1%		-32%		-39%	
Food Stores		$1,437,385		$1,912,245		$1,755,296		$1,411,758		$1,444,596		$981,458		$881,649
Change in spending compared to No Action				$474,860		$317,911		-$25,627		$7,211		-$455,927		-$555,736
Eating and drinking establishments		$1,042,577		$1,387,007		$1,273,167		$1,023,989		$1,047,807		$711,880		$639,485
Change in spending compared to No Action				$344,430		$230,590		-$18,588		$5,230		-$330,697		-$403,092
Service stations and fuel		$969,289		$1,289,507		$1,183,670		$952,008		$974,152		$661,838		$594,533
Change in spending compared to No Action				$320,218		$214,381		-$17,282		$4,863		-$307,451		-$374,756
Hotels, motels, and campgrounds		$3,435,066		$4,569,888		$4,194,811		$3,373,822		$3,452,299		$2,345,491		$2,106,966
Change in spending compared to No Action				$1,134,822		$759,745		-$61,244		$17,233		-$1,089,576		-$1,328,100
Miscellaneous retail and services		$3,754,223		$4,994,482		$4,584,556		$3,687,288		$3,773,056		$2,563,413		$2,302,727
Change in spending compared to No Action				$1,240,260		$830,333		-$66,934		$18,834		-$1,190,809		-$1,451,496
TOTAL		$10,638,540		$14,153,130		$12,991,500		$10,448,865		$10,691,910		$7,264,080		$6,525,360
Change in spending compared to No Action				$3,514,590		$2,352,960		-$189,675		$53,370		-$3,374,460		-$4,113,180
Residents														
	177,309		235,885		216,525		174,147		178,198		121,068		108,756	
% change in days compared to No Action			33%		22%		-2%		1%		-32%		-39%	
Food Stores		$533,700		$710,014		$651,740		$524,182		$536,376		$364,415		$327,356
Eating and drinking establishments		$141,847		$188,708		$173,220		$139,318		$142,558		$96,854		$87,005
Service stations and fuel		$368,803		$490,641		$450,372		$362,226		$370,652		$251,821		$226,212
Hotels, motels, and campgrounds		$308,518		$410,440		$376,754		$303,016		$310,065		$210,658		$189,235
Miscellaneous retail and services		$1,484,076		$1,974,357		$1,812,314		$1,457,610		$1,491,517		$1,013,339		$910,288
TOTAL		$2,836,944		$3,774,160		$3,464,400		$2,786,352		$2,851,168		$1,937,088		$1,740,096

Activities:	Trinity Lake	Shasta Lake
Houseboating	20%	35%
Other boating	26%	27%
Developed camping	31%	12%
Dispersed camping	5%	10%
Fishing	18%	16%

Nonresident spending profiles were then developed for these five activities. A combined spending profile was also developed for all activities for resident recreationists. The spending profiles, which represent spending within the two-county region by recreationists, included the same five categories of typical trip-related expenditures as the Trinity River, including purchases at food stores; expenditures on fuel and on other goods and services at service stations; expenditures at hotels, motels, and campgrounds; restaurant expenditures; and expenditures on miscellaneous retail goods and services. These spending profiles are shown in Table TA-24.

The nonresident spending profiles were developed using expenditure data from surveys conducted for the USDA Forest Service study. Expenditure data from these surveys were adjusted to 1997 dollars, adjusted to represent a 12-hour visitor day, and slightly modified to fit the expenditure categories shown in Table TA-24.

The composite resident spending profile shown in Table TA-24 was developed based on a weighted average of spending profiles estimated for various categories of resident recreationists by the U.S. Army Corps of Engineers (Propst et. al. 1992) as part of a study of spending patterns at 12 Corps project lakes throughout the United States. The weighting of resident spending was accomplished using distributions of resident use by activity at these reservoirs. Spending estimates were adjusted to 1997 dollars, adjusted to represent spending over a 12-hour visitor day, and compiled to fit expenditure categories.

The spending profiles were applied to the recreation use estimates for each lake and alternative to generate the spending impacts shown for Trinity Lake in Table TA-25 and Shasta Lake in Table TA-26.

Sportfishing

Regional sportfishing impacts were developed by estimating the effects of changes in nonresident angler spending by region and alternative. Estimates of sport salmon fishing trips by alternative (developed from statistical models described in the Fishery Resources Technical Appendix) were combined with angler expenditure information to calculate regional sportfishing expenditures. The changes in nonresident angler expenditures were assigned to appropriate economic sectors and run through the IMPLAN model to estimate impacts by region and alternative.

Regional impacts of sportfishing for salmon and steelhead in the Lower Klamath River and in six coastal subregions were evaluated. Regional impacts of sportfishing in the Trinity River also were evaluated along with changes in other recreation activities in the Trinity River; the

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Table TA-24. Average Trip-Related Expenditures per Recreation Visitor Day for Trinity and Shasta Lakes
(1997 Dollars)

Spending Category	Residents	Non-Residents									
		Trinity Lake					Shasta Lake				
	All Acitivities	Camping	Fishing	Houseboating	Other Boating	Scenic Driving	Developed Camping	Dispersed Camping	Fishing	Houseboating	Other Boating
Food stores	$7.42	$5.93	$3.95	$4.55	$3.83	$0.53	$4.35	$3.11	$2.44	$4.55	$1.81
Eating and drinking establishments	1.49	2.54	1.69	1.96	1.65	1.31	1.86	1.34	1.05	1.96	0.78
Service stations and fuel	9.38	1.66	2.66	14.23	2.89	0.52	16.54	3.73	6.54	14.23	4.11
Hotels, motels, and campgrounds	0.85	8.78	9.43	5.77	2.15	3.40	3.44	1.28	1.99	5.77	2.15
Miscellaneous retail services and products	6.91	1.55	3.41	2.12	1.83	0.43	2.79	2.00	1.06	2.12	1.53
Total	$26.05	$20.46	$21.14	$28.63	$12.35	$6.19	$28.98	$11.46	$13.08	$28.63	$10.38

Notes:

Trip-related expenditures made outside of the study area during the trip to the recreation site are excluded. Average expenditures represent spending by one person during a recreation visitor day, which equals 12 hours of recreation use.

Average spending estimates were derived from the following sources:
Resident profile: Propst et. al. 1992;
Non-resident profiles: USDA Forest Service 1994.

Table TA-25. Net Recreation Expenditure Effects of the Project Alternatives: Trinity Lake

Activity/ Spending Category	No Action		Maximum Flow		Flow Study		Percent Inflow		Mechanical Restoration		State Permit	
	Recreation Use	Recreation Spending	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action
Camping:	192,521		(7,254)		1,596		3,264		0		10,833	
Food stores		$1,141,650		($43,016)		$9,464		$19,357		$0		$64,238
Eating and drinking establishments		489,004		(18,425)		4,054		8,291		0		27,515
Service stations and fuel		319,585		(12,042)		2,649		5,419		0		17,982
Hotels, motels, and campgrounds		1,690,336		(63,690)		14,012		28,661		0		95,111
Miscellaneous retail & services		298,408		(11,244)		2,474		5,060		0		16,791
Subtotal	192,521	3,938,983	(7,254)	(148,417)	1,596	32,652	3,264	66,788	0	0	10,833	221,636
Fishing:	111,786		(4,212)		927		1,895		0		6,290	
Food stores		$441,557		($16,637)		$3,660		$7,487		$0		$24,845
Eating and drinking establishments		188,919		(7,118)		1,566		3,203		0		10,630
Service stations and fuel		297,352		(11,204)		2,465		5,042		0		16,731
Hotels, motels, and campgrounds		1,054,147		(39,719)		8,738		17,874		0		59,314
Miscellaneous retail & services		381,192		(14,363)		3,160		6,463		0		21,449
Subtotal	111,786	2,363,166	(4,212)	(89,042)	927	19,589	1,895	40,069	0	0	6,290	132,969
Houseboating:	124,207		(4,680)		1,030		2,106		0		6,989	
Food stores		$565,143		($21,294)		$4,685		$9,582		$0		$31,799
Eating and drinking establishments		243,446		(9,173)		2,018		4,128		0		13,698
Service stations and fuel		1,767,468		(66,596)		14,651		29,968		0		99,451
Hotels, motels, and campgrounds		716,676		(27,004)		5,941		12,152		0		40,325
Miscellaneous retail & services		263,319		(9,922)		2,183		4,465		0		14,816
Subtotal	124,207	3,556,052	(4,680)	(133,988)	1,030	29,477	2,106	60,295	0	0	6,989	200,089
Other boating:	161,469		(6,084)		1,338		2,738		0		9,085	
Food stores		$618,428		($23,302)		$5,126		$10,486		$0		$34,797
Eating and drinking establishments		266,424		(10,039)		2,208		4,517		0		14,991
Service stations and fuel		466,646		(17,583)		3,868		7,912		0		26,257
Hotels, motels, and campgrounds		347,159		(13,081)		2,878		5,886		0		19,534
Miscellaneous retail & services		295,489		(11,134)		2,449		5,010		0		16,626
Subtotal	161,469	1,994,147	(6,084)	(75,137)	1,338	16,530	2,738	33,812	0	0	9,085	112,205
Scenic driving:	31,052		(1,170)		257		527		0		1,747	
Food stores		$16,457		($620)		$136		$279		$0		$926
Eating and drinking establishments		40,678		(1,533)		337		690		0		2,289
Service stations and fuel		16,147		(608)		134		274		0		909
Hotels, motels, and campgrounds		105,576		(3,978)		875		1,790		0		5,940
Miscellaneous retail & services		13,352		(503)		111		226		0		751
Subtotal	31,052	192,211	(1,170)	(7,242)	257	1,593	527	3,259	0	0	1,747	10,815
Non-Resident Total:	621,036		(23,400)		5,148		10,530		0		34,944	
Food stores		$2,783,235		($104,869)		$23,071		$47,191		$0		$156,605
Eating and drinking establishments		1,228,471		(46,288)		10,183		20,829		0		69,123
Service stations and fuel		2,867,199		(108,033)		23,767		48,615		0		161,329
Hotels, motels, and campgrounds		3,913,893		(147,471)		32,444		66,362		0		220,224
Miscellaneous retail & services		1,251,760		(47,165)		10,376		21,224		0		70,433
Total	621,036	12,044,558	(23,400)	(453,827)	5,148	99,842	10,530	204,222	0	0	34,944	677,714
Resident (all activities):	175,164		(6,600)		1,452		2,970		0		9,856	
Food stores		$1,299,717		($48,972)		$10,774		$22,037		$0		$73,132
Eating and drinking establishments		260,994		(9,834)		2,163		4,425		0		14,685
Service stations and fuel		1,643,038		(61,908)		13,620		27,859		0		92,449
Hotels, motels, and campgrounds		148,889		(5,610)		1,234		2,525		0		8,378
Miscellaneous retail & services		1,210,383		(45,606)		10,033		20,523		0		68,105
Total	175,164	4,563,022	(6,600)	(171,930)	1,452	37,825	2,970	77,369	0	0	9,856	256,749

Note: Expenditures represent 2020 expenditure levels in 1997 dollars based on use during average hydrologic years. Use is shown in 12-hour recreation visitor days.

Source: Jones & Stokes Associates staff estimate based on estimated spending profiles and estimated recreation use.

Table TA-26. Net Recreation Expenditure Effects of the Project Alternatives: Shasta Lake

Activity/ Spending Category	No Action		Maximum Flow		Flow Study		Percent Inflow		Mechanical Restoration		State Permit	
	Recreation Use	Recreation Spending	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action	Change in Use from No Action	Change in Spending from No Action
Developed camping:	531,901		(43,636)		(9,294)		(852)		0		9,744	
Food stores		$2,313,768		($189,818)		($40,431)		($3,705)		$0		$42,385
Eating and drinking establishments		989,335		(81,164)		(17,288)		(1,584)		0		18,123
Service stations and fuel		8,797,638		(721,745)		(153,731)		(14,088)		0		161,162
Hotels, motels, and campgrounds		1,829,738		(150,109)		(31,973)		(2,930)		0		33,519
Miscellaneous retail & services		1,484,003		(121,745)		(25,932)		(2,376)		0		27,185
Subtotal	531,901	15,414,483	(43,636)	(1,264,581)	(9,294)	(269,354)	(852)	(24,684)	0	0	9,744	282,374
Dispersed camping:	443,251		(36,364)		(7,745)		(710)		0		8,120	
Food stores		$1,378,509		($113,091)		($24,088)		($2,207)		$0		$25,253
Eating and drinking establishments		593,956		(48,727)		(10,379)		(951)		0		10,881
Service stations and fuel		1,653,325		(135,636)		(28,890)		(2,648)		0		30,287
Hotels, motels, and campgrounds		567,361		(46,545)		(9,914)		(909)		0		10,393
Miscellaneous retail & services		886,501		(72,727)		(15,491)		(1,420)		0		16,240
Subtotal	443,251	5,079,652	(36,364)	(416,727)	(7,745)	(88,762)	(710)	(8,134)	0	0	8,120	93,053
Fishing:	709,201		(58,182)		(12,393)		(1,136)		0		12,992	
Food stores		$1,730,450		($141,963)		($30,238)		($2,771)		$0		$31,700
Eating and drinking establishments		744,661		(61,091)		(13,012)		(1,192)		0		13,641
Service stations and fuel		4,638,174		(380,509)		(81,048)		(7,427)		0		84,966
Hotels, motels, and campgrounds		1,411,310		(115,782)		(24,661)		(2,260)		0		25,853
Miscellaneous retail & services		751,753		(61,673)		(13,136)		(1,204)		0		13,771
Subtotal	709,201	9,276,349	(58,182)	(761,017)	(12,393)	(162,096)	(1,136)	(14,855)	0	0	12,992	169,931
Houseboating:	1,551,377		(127,273)		(27,109)		(2,484)		0		28,419	
Food stores		$7,058,766		($579,090)		($123,345)		($11,304)		$0		$129,308
Eating and drinking establishments		3,040,699		(249,454)		(53,133)		(4,869)		0		55,702
Service stations and fuel		22,076,096		(1,811,089)		(385,760)		(35,352)		0		404,407
Hotels, motels, and campgrounds		8,951,446		(734,363)		(156,418)		(14,334)		0		163,979
Miscellaneous retail & services		3,288,919		(269,818)		(57,471)		(5,267)		0		60,249
Subtotal	1,551,377	44,415,926	(127,273)	(3,643,815)	(27,109)	(776,128)	(2,484)	(71,126)	0	0	28,419	813,645
Other boating::	1,196,777		(98,182)		(20,913)		(1,916)		0		21,923	
Food stores		$2,166,166		($177,709)		($37,852)		($3,469)		$0		$39,681
Eating and drinking establishments		933,486		(76,582)		(16,312)		(1,495)		0		17,100
Service stations and fuel		4,918,752		(403,527)		(85,951)		(7,877)		0		90,105
Hotels, motels, and campgrounds		2,573,070		(211,091)		(44,962)		(4,120)		0		47,135
Miscellaneous retail & services		1,831,068		(150,218)		(31,996)		(2,932)		0		33,543
Subtotal	1,196,777	12,422,541	(98,182)	(1,019,126)	(20,913)	(217,073)	(1,916)	(19,893)	0	0	21,923	227,566
Non-Resident Total:	4,432,506		(363,636)		(77,454)		(7,098)		0		81,198	
Food stores		$14,647,659		($1,201,672)		($255,954)		($23,456)		$0		$268,327
Eating and drinking establishments		6,302,137		(517,018)		(110,124)		(10,092)		0		115,447
Service stations and fuel		42,083,985		(3,452,506)		(735,379)		(67,391)		0		770,926
Hotels, motels, and campgrounds		15,332,925		(1,257,890)		(267,929)		(24,553)		0		280,880
Miscellaneous retail & services		8,242,245		(676,181)		(144,026)		(13,199)		0		150,988
Total	4,432,506	86,608,951	(363,636)	(7,105,266)	(77,454)	(1,513,412)	(7,098)	(138,691)	0	0	81,198	1,586,568
Resident (all activities):	1,250,194		(102,564)		(21,846)		(2,002)		0		22,902	
Food stores		$9,276,439		($761,025)		($162,097)		($14,855)		$0		$169,933
Eating and drinking establishments		1,862,789		(152,820)		(32,551)		(2,983)		0		34,124
Service stations and fuel		11,726,820		(962,050)		(204,915)		(18,779)		0		214,821
Hotels, motels, and campgrounds		1,062,665		(87,179)		(18,569)		(1,702)		0		19,467
Miscellaneous retail & services		8,638,841		(708,717)		(150,956)		(13,834)		0		158,253
Total	1,250,194	32,567,554	(102,564)	(2,671,792)	(21,846)	(569,088)	(2,002)	(52,152)	0	0	22,902	596,597

Note: Expenditures represent 2020 expenditure levels in 1997 dollars based on use during average hydrologic years. Use is shown in 12-hour visitor days.

Source: Jones & Stokes Associates staff estimate based on estimated spending profiles and estimated recreation use.

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statistical models used to predict changes in salmon sportfishing along the Trinity River are described in the Recreation Resources Technical Appendix.

The following sections describe the methods employed to estimate sportfishing-related spending changes associated with use of the Lower Klamath River and in coastal areas.

Salmon and Steelhead Sportfishing on the Lower Klamath River.—The predicted number of angler days for salmon and steelhead along the Lower Klamath River under the project alternatives were used as the basis for estimating spending changes within the KMZ-CA region, which includes Humboldt and Del Norte Counties. The focus of the analysis was on changes in nonresident spending because this spending represents new spending within the region.

The predicted number of angler days was apportioned to resident and nonresident recreationists based on information from the Trinity River User Survey (Douglas pers. comm.) Similar to the Trinity River, nonresident anglers along the Lower Klamath River were assumed to account for 57% of the total number of visitor days and residents of the two-county area were assumed to account for 43%.

Per-day spending estimates developed for resident and nonresident recreationists were then applied to these estimates of visitor days. Per-day spending estimates and procedures for allocating this spending among the recreation-related economic sectors are similar to those described above for the Trinity River. These spending profiles are shown in Table TA-22.

The spending profiles were applied to the estimates of angler days for the Lower Klamath River under each alternative to generate the spending impacts shown in Table TA-27.

Ocean Sport Salmon Fishing.—Ocean sport salmon fishing effects were assessed in the coastal region extending from Monterey, California to the Oregon/Washington border. This region corresponds to the primary migratory range of Trinity River salmon. Because of the size of this region, the coastal area was divided into six subregions. These subregions were defined as follows.

- Monterey: Point Conception to Point San Pedro, California, including the port area of Monterey. Counties within this region includes San Luis Obispo, Monterey, and Santa Cruz.
- San Francisco: Point San Pedro to Point Arena, California, including the port area of San Francisco. Counties within this region include Santa Clara, San Mateo, San Francisco, Contra Costa, Alameda, Marin, and Sonoma.
- Mendocino: Point Arena to Horse Mountain, California, including the port area of Fort Bragg and the county of Mendocino.
- Klamath Management Zone (KMZ)-California: Horse Mountain to Point St. George, California, including the port areas of Eureka and Crescent City. Counties within this region include Humboldt and Del Norte.
- KMZ-Oregon: Point St. George, California, to Humbug Mountain, Oregon, including the port area of Brookings in Curry County, Oregon.

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Table TA-27. Spending Effects from Sport Fishing on the Lower Klamath River

	No Action		Maximum Flow		Flow Study		Percent Inflow		Mechanical Restoration		Existing Conditions		State Permit	
	Sport Fishing Days	Sport Fishing Spending	Sport Fishing Days	Sport Fishing Spending	Sport Fishing Days	Sport Fishing Spending	Sport Fishing Days	Sport Fishing Spending	Sport Fishing Days	Sport Fishing Spending	Sport Fishing Days	Sport Fishing Spending	Sport Fishing Days	Sport Fishing Spending
Non-Residents	7,516		9,682		9,377		8,091		7,888		5,061		7,143	
% change in days compared to No Action			29%		25%		8%		5%		-33%		-5%	
Food Stores		$45,697		$58,867		$57,012		$49,193		$47,959		$30,771		$43,429
Change in spending compared to No Action				$13,169		$11,315		$3,496		$2,262		-$14,926		-$2,268
Eating and drinking establishments		$33,146		$42,698		$41,353		$35,681		$34,786		$22,319		$31,501
Change in spending compared to No Action				$9,552		$8,207		$2,536		$1,641		-$10,827		-$1,645
Service stations and fuel		$30,816		$39,696		$38,446		$33,173		$32,341		$20,750		$29,286
Change in spending compared to No Action				$8,881		$7,630		$2,358		$1,525		-$10,066		-$1,529
Hotels, motels, and campgrounds		$109,207		$140,679		$136,248		$117,562		$114,613		$73,536		$103,788
Change in spending compared to No Action				$31,472		$27,040		$8,355		$5,405		-$35,671		-$5,420
Miscellaneous retail and services		$119,354		$153,750		$148,907		$128,485		$125,261		$80,369		$113,431
Change in spending compared to No Action				$34,396		$29,553		$9,131		$5,907		-$38,985		-$5,923
TOTAL		$338,220		$435,690		$421,965		$364,095		$354,960		$227,745		$321,435
Change in spending compared to No Action				$97,470		$83,745		$25,875		$16,740		-$110,475		-$16,785
Residents														
	5,637		7,262		7,033		6,068		5,916		3,796		5,357	
% change in trips compared to No Action			29%		25%		8%		5%		-33%		-5%	
Food Stores		$49,436		$63,688		$61,679		$53,216		$51,883		$33,291		$46,981
Eating and drinking establishments		$13,134		$16,920		$16,387		$14,138		$13,784		$8,845		$12,482
Service stations and fuel		$34,104		$43,935		$42,550		$36,711		$35,792		$22,966		$32,410
Hotels, motels, and campgrounds		$28,523		$36,746		$35,587		$30,704		$29,935		$19,208		$27,106
Miscellaneous retail and services		$137,656		$177,338		$171,746		$148,181		$144,469		$92,698		$130,818
TOTAL		$262,853		$338,627		$327,949		$282,951		$275,863		$177,007		$249,797
Change in spending compared to No Action				$75,774		$65,095		$20,098		$13,010		-$85,846		-$13,056

- Northern / Central Oregon: Humbug Mountain, Oregon, to Ledbetter Point, Washington, including the Oregon port areas of Coos Bay, Newport, Tillamook, and the Columbia River. Counties within this region include Coos, Douglas, Lane, Lincoln, Tillamook, and Clatsop.

The predicted number of ocean sport salmon fishing trips in each subregion under the project alternatives were used as the basis for estimating spending changes within each subregion. The focus of the analysis was on changes in nonresident spending because this spending represents new spending within the region.

The predicted number of sportfishing trips was apportioned to resident and nonresident salmon anglers based on information obtained from discussions with Pacific Fishery Management Council (PFMC) staff and review of available studies. Per-trip spending profiles, as derived from Thomson and Huppert (1987) and shown in Table TA-28, were then applied to these estimates of angler days to generate the spending impacts shown in Tables TA-29a through TA-29f.

TableTA-28. Average per Person per Trip Spending for Ocean Sport Salmon Fishing (1997 dollars)

Sector	Charter Boat	Private Boat
Food stores	$3.89	$4.44
Eating and drinking establishments	$7.79	$8.90
Service stations and fuel	$13.35	$26.87
Hotels, motels, and campgrounds	$7.79	$8.88
Miscellaneous retail services and products	$76.06	$25.30
TOTAL (per person per day)	$108.88	$74.39

Source: Based on information from Thomson and Huppert 1987, as found in U.S. Bureau of Reclamation 1997.

Ocean Commercial Salmon Fishing

The focus of the ocean commercial fishing assessment was on estimating the change in gross harvest revenue received by the ocean salmon fishing industry under the project alternatives. Changes in gross harvest revenues, or final demand, for the commercial fishing industry were then used as input to the model used to estimate regional changes in total industrial output and direct and total changes in place-of-work income and employment.

Changes in gross salmon harvesting revenues were estimated based on estimated changes in ocean commercial salmon harvests within the coastal subregions under each alternative and assumed market prices for salmon. The subregions used in this assessment were the same as those identified above for ocean sport salmon fishing effects, extending from Monterey, California to the Oregon / Washington border.

A full description of the methods used to estimate changes in ocean commercial salmon harvests for each region and alternative is presented in the Fisheries Resources Technical Appendix. The fishery impact analysis focused on estimating changes in the total ocean

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Table TA-29a. Ocean Salmon Sport Fishing Spending: North/Central Oregon Region

Oregon: North/Central Coast

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	186,713		207,051		205,829		201,718		201,171		150,744		161,884	
Food Stores		$808,467		$896,531		$891,240		$873,439		$871,070		$652,722		$700,958
Non-resident spending changes				$17,613		$16,554		$12,994		$12,521		-$31,149		-$21,502
Eating and drinking establishments		$1,620,669		$1,797,203		$1,786,596		$1,750,912		$1,746,164		$1,308,458		$1,405,153
Non-resident spending changes				$35,307		$33,185		$26,049		$25,099		-$62,442		-$43,103
Service sta tions and fuel		$4,512,853		$5,004,423		$4,974,887		$4,875,524		$4,862,303		$3,643,482		$3,912,736
Non-resident spending changes				$98,314		$92,407		$72,534		$69,890		-$173,874		-$120,023
Hotels, motels, and campgrounds		$1,616,935		$1,793,062		$1,782,479		$1,746,878		$1,742,141		$1,305,443		$1,401,915
Non-resident spending changes				$35,225		$33,109		$25,989		$25,041		-$62,298		-$43,004
Miscellaneous retail and services		$6,618,976		$7,339,958		$7,296,638		$7,150,903		$7,131,512		$5,343,875		$5,738,788
Non-resident spending changes				$144,196		$135,532		$106,385		$102,507		-$255,020		-$176,038
TOTAL		$15,177,900		$16,831,176		$16,731,839		$16,397,656		$16,353,191		$12,253,980		$13,159,550
Non-Resident Spending Changes (20% of total change)				$330,655		$310,788		$243,951		$235,058		-$584,784		-$403,670

Table TA-29b. Ocean Salmon Sport Fishing Spending: KMZ-Oregon Region

Oregon: KMZ Region

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Exisiting Conditions Trips	Exisiting Conditions Spending	State Permit Trips	State Permit Spending
	56,974		95,966		94,387		88,279		87,295		52,061		50,518	
Food Stores		$246,697		$415,533		$408,696		$382,248		$377,987		$225,424		$218,743
Non-resident spending changes				$33,767		$32,400		$27,110		$26,258		-$4,255		-$5,591
Eating and drinking establishments		$494,534		$832,985		$819,279		$766,262		$757,721		$451,889		$438,496
Non-resident spending changes				$67,690		$64,949		$54,345		$52,637		-$8,529		-$11,208
Service sta tions and fuel		$1,377,062		$2,319,498		$2,281,334		$2,133,703		$2,109,920		$1,258,314		$1,221,020
Non-resident spending changes				$188,487		$180,854		$151,328		$146,572		-$23,749		-$31,208
Hotels, motels, and campgrounds		$493,395		$831,066		$817,391		$764,496		$755,975		$450,848		$437,486
Non-resident spending changes				$67,534		$64,799		$54,220		$52,516		-$8,509		-$11,182
Miscellaneous retail and services		$2,019,728		$3,401,995		$3,346,019		$3,129,491		$3,094,608		$1,845,562		$1,790,863
Non-resident spending changes				$276,453		$265,258		$221,952		$214,976		-$34,833		-$45,773
TOTAL		$4,631,416		$7,801,076		$7,672,719		$7,176,200		$7,096,211		$4,232,039		$4,106,608
Non-Resident Spending Changes (20% of total)				$633,932		$608,261		$508,957		$492,959		-$79,876		-$104,962

Table TA-29c. Ocean Salmon Sport Fishing Spending: KMZ-CA Region

California: KMZ Region (Charter Boat)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	1,294		2,246		2,210		2,066		2,050		1,020		1,168	
Food Stores		$5,034		$8,737		$8,597		$8,037		$7,975		$3,968		$4,544
Non-resident spending changes				$2,222		$2,138		$1,802		$1,765		-$640		-$294
Eating and drinking establishments		$10,080		$17,496		$17,216		$16,094		$15,970		$7,946		$9,099
Non-resident spending changes				$4,450		$4,281		$3,608		$3,534		-$1,281		-$589
Service sta tions and fuel		$17,275		$29,984		$29,504		$27,581		$27,368		$13,617		$15,593
Non-resident spending changes				$7,626		$7,337		$6,184		$6,056		-$2,195		-$1,009
Hotels, motels, and campgrounds		$10,080		$17,496		$17,216		$16,094		$15,970		$7,946		$9,099
Non-resident spending changes				$4,450		$4,281		$3,608		$3,534		-$1,281		-$589
Miscellaneous retail and services		$98,422		$170,831		$168,093		$157,140		$155,923		$77,581		$88,838
Non-resident spending changes				$43,445		$41,803		$35,231		$34,501		-$12,504		-$5,750
TOTAL		$140,891		$244,544		$240,625		$224,946		$223,204		$111,058		$127,172
Non-Resident Spending Changes (60% of total)				$62,192		$59,840		$50,433		$49,388		-$17,900		-$8,231

California: KMZ Region (Private Boats)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	34,948		50,084		49,535		47,428		47,128		26,100		32,876	
Food Stores		$155,169		$222,373		$219,935		$210,580		$209,248		$115,884		$145,969
Non-resident spending changes				$10,081		$9,715		$8,312		$8,112		-$5,893		-$1,380
Eating and drinking establishments		$311,037		$445,748		$440,862		$422,109		$419,439		$232,290		$292,596
Non-resident spending changes				$20,207		$19,474		$16,661		$16,260		-$11,812		-$2,766
Service sta tions and fuel		$939,053		$1,345,757		$1,331,005		$1,274,390		$1,266,329		$701,307		$883,378
Non-resident spending changes				$61,006		$58,793		$50,301		$49,091		-$35,662		-$8,351
Hotels, motels, and campgrounds		$310,338		$444,746		$439,871		$421,161		$418,497		$231,768		$291,939
Non-resident spending changes				$20,161		$19,430		$16,623		$16,224		-$11,786		-$2,760
Miscellaneous retail and services		$884,184		$1,267,125		$1,253,236		$1,199,928		$1,192,338		$660,330		$831,763
Non-resident spending changes				$57,441		$55,358		$47,362		$46,223		-$33,578		-$7,863
TOTAL		$2,599,782		$3,725,749		$3,684,909		$3,528,169		$3,505,852		$1,941,579		$2,445,646
Non-Resident Spending Changes (15% of total)				$168,895		$162,769		$139,258		$135,911		-$98,730		-$23,120

Table TA-29d. Ocean Salmon Sport Fishing Spending: Mendocino Region

California: Mendocino Region (Charter Boat)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	4,032		6,271		6,109		5,394		5,286		2,860		2,576	
Food Stores		$15,684		$24,394		$23,764		$20,983		$20,563		$11,125		$10,021
Non-resident spending changes				$5,226		$4,848		$3,179		$2,927		-$2,735		-$3,398
Eating and drinking establishments		$31,409		$48,851		$47,589		$42,019		$41,178		$22,279		$20,067
Non-resident spending changes				$10,465		$9,708		$6,366		$5,861		-$5,478		-$6,805
Service sta tions and fuel		$53,827		$83,718		$81,555		$72,010		$70,568		$38,181		$34,390
Non-resident spending changes				$17,934		$16,637		$10,910		$10,045		-$9,388		-$11,663
Hotels, motels, and campgrounds		$31,409		$48,851		$47,589		$42,019		$41,178		$22,279		$20,067
Non-resident spending changes				$10,465		$9,708		$6,366		$5,861		-$5,478		-$6,805
Miscellaneous retail and services		$306,674		$476,972		$464,651		$410,268		$402,053		$217,532		$195,931
Non-resident spending changes				$102,179		$94,786		$62,156		$57,228		-$53,485		-$66,446
TOTAL		$439,004		$682,786		$665,148		$587,299		$575,540		$311,397		$280,475
Non-Resident Spending Changes (60% of total)				$146,269		$135,686		$88,977		$81,921		-$76,564		-$95,118

California:Mendocino Region (Private Boats)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	29,695		39,682		38,967		35,973		35,444		21,064		22,172	
Food Stores		$131,846		$176,188		$173,013		$159,720		$157,371		$93,524		$98,444
Non-resident spending changes				$6,651		$6,175		$4,181		$3,829		-$5,748		-$5,010
Eating and drinking establishments		$264,286		$353,170		$346,806		$320,160		$315,452		$187,470		$197,331
Non-resident spending changes				$13,333		$12,378		$8,381		$7,675		-$11,522		-$10,043
Service sta tions and fuel		$797,905		$1,066,255		$1,047,043		$966,595		$952,380		$565,990		$595,762
Non-resident spending changes				$40,253		$37,371		$25,303		$23,171		-$34,787		-$30,321
Hotels, motels, and campgrounds		$263,692		$352,376		$346,027		$319,440		$314,743		$187,048		$196,887
Non-resident spending changes				$13,303		$12,350		$8,362		$7,658		-$11,496		-$10,021
Miscellaneous retail and services		$751,284		$1,003,955		$985,865		$910,117		$896,733		$532,919		$560,952
Non-resident spending changes				$37,901		$35,187		$23,825		$21,817		-$32,755		-$28,550
TOTAL		$2,209,011		$2,951,944		$2,898,755		$2,676,031		$2,636,679		$1,566,951		$1,649,375
Non-Resident Spending Changes(15% of total)				$111,440		$103,462		$70,053		$64,150		-$96,309		-$83,945

Table TA-29e. Ocean Salmon Sport Fishing Spending: San Francisco Region

California: San Francisco Region (Charter Boat)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	82,312		83,388		83,388		83,388		83,388		64,600		76,933	
Food Stores		$320,194		$324,379		$324,379		$324,379		$324,379		$251,294		$299,269
Non-resident spending changes				$2,093		$2,093		$2,093		$2,093		-$34,450		-$10,462
Eating and drinking establishments		$641,210		$649,593		$649,593		$649,593		$649,593		$503,234		$599,308
Non-resident spending changes				$4,191		$4,191		$4,191		$4,191		-$68,988		-$20,951
Service sta tions and fuel		$1,098,865		$1,113,230		$1,113,230		$1,113,230		$1,113,230		$862,410		$1,027,056
Non-resident spending changes				$7,182		$7,182		$7,182		$7,182		-$118,228		-$35,905
Hotels, motels, and campgrounds		$641,210		$649,593		$649,593		$649,593		$649,593		$503,234		$599,308
Non-resident spending changes				$4,191		$4,191		$4,191		$4,191		-$68,988		-$20,951
Miscellaneous retail and services		$6,260,651		$6,342,491		$6,342,491		$6,342,491		$6,342,491		$4,913,476		$5,851,524
Non-resident spending changes				$40,920		$40,920		$40,920		$40,920		-$673,587		-$204,563
TOTAL		$8,962,131		$9,079,285		$9,079,285		$9,079,285		$9,079,285		$7,033,648		$8,376,465
Non-Resident Spending Changes (50% of total)				$58,577		$58,577		$58,577		$58,577		-$964,241		-$292,833

California: San Francisco Region (Private Boats)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	57,095		57,095		57,095		57,095		57,095		44,800		54,332	
Food Stores		$253,502		$253,502		$253,502		$253,502		$253,502		$198,912		$241,234
Non-resident spending changes				$0		$0		$0		$0		-$8,188		-$1,840
Eating and drinking establishments		$508,146		$508,146		$508,146		$508,146		$508,146		$398,720		$483,555
Non-resident spending changes				$0		$0		$0		$0		-$16,414		-$3,689
Service sta tions and fuel		$1,534,143		$1,534,143		$1,534,143		$1,534,143		$1,534,143		$1,203,776		$1,459,901
Non-resident spending changes				$0		$0		$0		$0		-$49,555		-$11,136
Hotels, motels, and campgrounds		$507,004		$507,004		$507,004		$507,004		$507,004		$397,824		$482,468
Non-resident spending changes				$0		$0		$0		$0		-$16,377		-$3,680
Miscellaneous retail and services		$1,444,504		$1,444,504		$1,444,504		$1,444,504		$1,444,504		$1,133,440		$1,374,600
Non-resident spending changes				$0		$0		$0		$0		-$46,660		-$10,486
TOTAL		$4,247,297		$4,247,297		$4,247,297		$4,247,297		$4,247,297		$3,332,672		$4,041,757
Non-Residnet Spending Changes (15% of total)				$0		$0		$0		$0		-$137,194		-$30,831

Table TA-29f. Ocean Salmon Sport Fishing Spending: Monterey Region

California:Monterey Region (Charter Boat)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	43,708		43,708		43,708		43,708		43,708		27,501		40,615	
Food Stores		$170,024		$170,024		$170,024		$170,024		$170,024		$106,979		$157,992
Non-resident spending changes				$0		$0		$0		$0		-$44,132		-$8,422
Eating and drinking establishments		$340,485		$340,485		$340,485		$340,485		$340,485		$214,233		$316,391
Non-resident spending changes				$0		$0		$0		$0		-$88,377		-$16,866
Service sta tions and fuel		$583,502		$583,502		$583,502		$583,502		$583,502		$367,138		$542,210
Non-resident spending changes				$0		$0		$0		$0		-$151,454		-$28,904
Hotels, motels, and campgrounds		$340,485		$340,485		$340,485		$340,485		$340,485		$214,233		$316,391
Non-resident spending changes				$0		$0		$0		$0		-$88,377		-$16,866
Miscellaneous retail and services		$3,324,430		$3,324,430		$3,324,430		$3,324,430		$3,324,430		$2,091,726		$3,089,177
Non-resident spending changes				$0		$0		$0		$0		-$862,893		-$164,678
TOTAL		$4,758,927		$4,758,927		$4,758,927		$4,758,927		$4,758,927		$2,994,309		$4,422,161
Non-Resident Spending Changes (70% of total)				$0		$0		$0		$0		-$1,235,233		-$235,736

California: Monterey Region (Private Boats)

REGION/SECTOR	No Action Trips	No Action Spending	Maximum Flow Trips	Maximum Flow Spending	Flow Study Trips	Flow Study Spending	Percent Inflow Trips	Percent Inflow Spending	Mechanical Restoration Trips	Mechanical Restoration Spending	Existing Conditions Trips	Existing Conditions Spending	State Permit Trips	State Permit Spending
	89,066		89,066		89,066		89,066		89,066		56,045		84,886	
Food Stores		$395,453		$395,453		$395,453		$395,453		$395,453		$248,840		$376,894
Non-resident spending changes				$0		$0		$0		$0		-$36,653		-$4,640
Eating and drinking establishments		$792,687		$792,687		$792,687		$792,687		$792,687		$498,801		$755,485
Non-resident spending changes				$0		$0		$0		$0		-$73,472		-$9,301
Service sta tions and fuel		$2,393,203		$2,393,203		$2,393,203		$2,393,203		$2,393,203		$1,505,929		$2,280,887
Non-resident spending changes				$0		$0		$0		$0		-$221,819		-$28,079
Hotels, motels, and campgrounds		$790,906		$790,906		$790,906		$790,906		$790,906		$497,680		$753,788
Non-resident spending changes				$0		$0		$0		$0		-$73,307		-$9,280
Miscellaneous retail and services		$2,253,370		$2,253,370		$2,253,370		$2,253,370		$2,253,370		$1,417,939		$2,147,616
Non-resident spending changes				$0		$0		$0		$0		-$208,858		-$26,439
TOTAL		$6,625,620		$6,625,620		$6,625,620		$6,625,620		$6,625,620		$4,169,188		$6,314,670
Non-Resident Spending Changes (25% of total)				$0		$0		$0		$0		-$614,108		-$77,738

commercial harvest of salmon in each coastal region resulting from changes in the harvest of salmon originating naturally from the Trinity River under the project alternatives. The number of salmon available for commercial harvest vary throughout the coastal regions, with salmon stock sizes determining the allowable harvest in each coastal region. As any particular stock size increases or decreases, relative numbers of salmon available for harvest in each region shift. Changes in the abundance of naturally produced Trinity River salmon would, therefore, affect overall harvest levels throughout coastal regions. The fishery impact assessment incorporated appropriate factors to adjust for shifts in harvest impacts based on the magnitude of allowable harvest.

As described in the Fisheries Resources Technical Appendix, harvest estimates for Trinity River naturally produced salmon were developed by the Trinity River EIS/EIR Fish and Channel Restoration Team for each alternative. Total harvest estimates for each alternative and region were provided by the Service.

Changes in harvest levels would directly affect gross revenues for the salmon harvesting sector in each region. The value of the ocean commercial salmon harvest under both no-action and with-project conditions was assessed based on estimated harvest levels and assumed market prices received by commercial fishers. Harvest levels, in number of fish, were converted to harvested weight based on harvest and weight data from 1986-1990 (Pacific Fishery Management Council 1997). Average pounds per harvested salmon were derived by weighting calculated averages for chinook and coho by the proportion of the overall salmon harvest attributable to each specie. This procedure resulted in average salmon weights of 9.7 pounds (dressed weight) in California and 7.2 pounds in Oregon over this period. These average weights were assumed for the analysis. (Cohos, which are generally smaller than chinook, have historically represented a much larger share of the Oregon harvest.)

Real (i.e., adjusted for inflation) salmon prices varied substantially from year to year among the coastal regions between 1980 and 1986. According to the PFMC (1997), average chinook salmon prices over this period ranged from $1.55-$3.81 per dressed pound (in 1997 dollars) in Oregon and from $1.44-$3.41 per pound in California. Salmon prices along the West Coast generally have been declining since the early 1990s.

To avoid speculation concerning future market price levels, an average sales price of $3.01 per pound (dressed weight) for Oregon and $3.04 per pound for California were used to estimate both no-action and with-project gross harvest values. Prices were calculated based on price data reported by the PFMC (1997) for the 1981-1990 period, adjusted to 1997 dollars using the Producer Price Index. The 1981-1990 period represents an era when regional harvest levels were relatively high and before highly restrictive harvest-management measures were imposed. The use of constant, average prices assumes that changes in harvest levels will have little effect on prices received by the salmon harvesting sector.

Estimated gross harvest revenues under no-action and with-project conditions are presented for each region in Table TA-30. This table shows revenues for both the harvest of salmon naturally originating from the Trinity River and total harvests of salmon originating from all sources.

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Table TA-30. Estimated Average Annual Harvesting Sector Gross Revenues under No-Action and With-Project Conditions

Region of Harvest (Port Areas)	Ex-Vessel Price per Pound/a	No Action		Maximum Flow		Flow Study/ Preferred Alternative		Percent Inflow		Mechanical Restoration		State Permit	
		Trinity Harvest/b ($1,000)	Total Harvest/b ($1,000)	Trinity Harvest/b ($1,000)	Total Harvest/b ($1,000)	Trinity Harvest/b ($1,000)	Total Harvest/b ($1,000)	Trinity Harvest/b ($1,000)	Total Harvest/b ($1,000)	Trinity Harvest/b ($1,000)	Total Harvest/b ($1,000)	Trinity Harvest/b ($1,000)	Total Harvest/b ($1,000)
Northern/Central Oregon (Columbia River/Tillamook/ Newport/Coos Bay)	$3.01	$30.1	$7,999.1	$466.4	$12,576.3	$375.6	$12,255.5	$104.2	$11,219.6	$74.6	$11,087.4	$0.0	$4,280.2
KMZ-Oregon (Brookings)	$3.01	1.1	54.2	27.7	587.3	21.5	546.1	4.8	407.4	3.3	387.9	0.0	0.0
KMZ-California (Crescent City/Eureka)	$3.04	1.5	61.9	31.6	701.8	25.4	651.7	5.6	486.6	3.5	465.9	0.0	0.0
Mendocino (Fort Bragg)	$3.04	4.4	404.0	102.6	2,848.5	79.9	2,524.2	18.6	1,468.5	12.7	1,332.9	0.0	0.0
San Francisco	$3.04	30.4	5,877.0	131.8	6,139.4	123.0	6,139.4	68.7	6,139.4	56.3	6,139.4	0.0	4,266.9
Monterey	$3.04	23.6	4,573.6	102.6	4,573.6	95.5	4,573.6	53.7	4,573.6	43.9	4,573.6	0.0	3,311.5
Total	NA	$91.1	$18,969.8	$862.7	$27,426.9	$720.8	$26,690.5	$255.6	$24,295.1	$194.3	$23,987.1	$0.0	$11,858.6

Notes:
Prices and revenues are expressed in dollars adjusted to a 1997 base year.

NA = not applicable.

/a Represents average ex-vessel prices for Oregon and California salmon over the 1981-1990 period (Pacific Fishery Management Council 1997) adjusted to 1997 dollars using the Producer Price Index.

/b Represents the gross value of the salmon harvest. Derived by multiplying price by pounds of salmon landed based on an average dressed weight per salmon of 9.7 pounds for California and 7.2 pounds for Oregon.

Annual Regional Impacts in the Trinity River Basin and Lower Klamath River Basin/Coastal Area Regions

Regional economic impacts were evaluated for the Trinity River Basin (i.e., Trinity and Shasta Counties) and all coastal areas other than the San Francisco Coastal Area using the IMPLAN input-output (IO) model with a 1992 database package. I-O models attempt to characterize a region's economy through inter-industry tables reflecting transactions between industries at a given point in time. As a result, I-O models consider the trade linkages between directly and indirectly affected sectors of the economy, allowing evaluations of changes in a region's economy resulting from a change in the demand for an industry's product.

Using the IMPLAN I-O model, regional models were constructed for the Trinity River Basin and coastal areas to include the counties within each area. Project-related changes in final demand and consumer spending were used to estimate regional impacts for each area.

The focus of the regional analysis was on estimating changes in direct and total (i.e., direct, indirect, and induced) industrial output, place-of-work income, and jobs. Direct effects are the first-round purchases made by businesses to meet the increased demand for their products by customers, such as recreationists for retail businesses or seafood processors for salmon harvesters. Indirect effects are the ripple effects that occur in the economy as the first-round suppliers make additional input purchases to meet their increased demand. The direct and indirect effects result in an overall production increase in the area, which generates additional employment and income for households. As households spend their increased income, further rounds of economic activity are induced. (USDA Forest Service 1994)

For the Trinity River Basin, project-related changes in hydropower costs and changes in recreation spending related to use of the Trinity River and Trinity and Shasta Lakes were used to assess aggregated changes in regional economic activity. For the coastal areas, estimated project-related changes in spending by ocean sport fishers and changes in gross revenues for the ocean commercial salmon industry were used to evaluate regional effects. (For the KMZ-California Coastal Area, which includes the Lower Klamath River, recreation spending changes associated with use of the Lower Klamath River were also included.)

The assessment of regional effects resulting from changes in recreation-related spending focused on nonresident expenditures because purchases on goods and services within the region by nonresidents bring outside dollars into the local region. Nonresident spending represents new economic activity within the region. Conversely, spending by recreationists who reside in the region represents only a transfer of money within the region and does not generally contribute to new economic growth. Therefore, only trip-related spending by nonresidents within each region was considered in the analysis.

The regional analysis assessed three levels of economic effects: total economic effects, economic effects by sector, and economic impacts on more affected groups (e.g., the ocean commercial salmon industry). The sectorial analysis generally focused on those sectors most-affected by changes in recreation-related spending and salmon harvesting, including the wholesale and retail trade sectors, the lodging sector, the commercial fishing sector, and the seafood processing sector.

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Because the IMPLAN I-O model is backward linked (i.e., the model assesses economic changes in industries supplying inputs to the directly affected industry), the model does not accurately capture impacts on forward-linked industries resulting from changes in the output of industries producing intermediate goods. For example, a small proportion of commercially harvested salmon is sold as a final product to consumers through farmers markets, but much of total harvest is sold as an intermediate product to seafood processors who freeze, can, cure, and prepare salmon for final consumption. As a result, inputting project-related changes in commercial salmon harvest values into the IMPLAN model will not allow the impacts to seafood processors to be captured. To capture effects on these forward-linked sectors, the commercial fishing-related inputs into the model were allocated among the industries that produce final products from the intermediate salmon inputs. This was done by using the IMPLAN database to produce a commodity balance sheet for commercial fishing for each region showing database values for the percentage of the commercial harvest processed within the region, and, for each processing sector, the proportion of each sector's total inputs accounted for by the raw salmon.

The change in the output of the fish processing sector resulting from a change in the value of the commercial salmon harvest can be calculated from these data. For example, in the Northern/Central Oregon Coastal Area, the IMPLAN database indicates that 95% of the region's fish harvest is processed locally by the prepared fresh or frozen fish sector. The 96% of regional fish production accounts for approximately 16% of the total value of the fresh/frozen fish sector's output. Therefore, a $1.0 million change in the value of the commercial salmon harvest would result in a $5.9 million dollar change in the output of the regional fresh/frozen fish sector [$1,000,000 * (0.96/0.16) = $5,937,500]. Using this method, output changes were derived for each seafood processing sector for each region and alternative, and the resulting values were input into the IMPLAN model to generate regional changes in economic activity for the processing sectors.

Economic impacts within each region were evaluated for each alternative by comparing the total and sector-level changes in industrial output, place-of-work income, and jobs to projected 2020 no-action levels for the NEPA analysis and to estimated 1995 existing-conditions levels for the CEQA analysis. Projections of 1995 and 2020 economic activity were done by indexing up levels from the 1992 database using county-level population growth projections provided by the California Department of Finance (1998) and the Oregon Office of Economic Analysis (1997). Economic levels for the commercial fishing and processing sectors were not indexed up from 1992 to 1995 and 2020 levels because the outputs of these sectors were assumed to be more sensitive to resource availability than to population growth rates.

Hydropower Methodology

Data on changes in hydropower value were obtained from Western. It was assumed that a change in hydropower value has an equivalent impact on the value of personal consumption expenditure originating in the region. IMPLAN includes a personal consumption vector that allocates the change in expenditure over regional industries and imports. The impact on regional personal consumption is less than the value of hydropower lost because of the leakage caused by import purchases. The initial personal consumption impacts are shown in Table TA-31.

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Table TA-31. Direct Effects on Regional Economics from Hydropower, Change to Personal Consumption Expenditure, Million $ Annually

	Alternative				
Region	Maximum Flow	Flow Study	Percent Inflow	Mechanical Restoration	State Permit
Trinity	-0.321	-0.069	-0.087	0.000	0.073
Sacramento Region	-11.850	-2.532	-3.196	0.000	2.702
Bay Region	-10.493	-2.242	-2.830	0.000	2.393
San Joaquin	-2.280	-0.487	-0.615	0.000	0.520
Tulare Region	-1.090	-0.230	0.300	0.000	0.250

M&I Water Supply Methodology

Data on changes in cost of M&I water supply were obtained from the M&I water cost analysis (Section 3.9.1). It was assumed that a change in cost of M&I water supply has an equivalent inverse impact on the value of personal consumption expenditure originating in the region. IMPLAN includes a personal consumption vector that allocates the change in expenditure over regional industries and imports. The impact on regional personal consumption is less than the change in M&I water costs because of the leakage caused by import purchases. The initial impacts are shown in Table TA-32.

Table TA-32. Direct Effects on Regional Economics from M&I Water Costs, Change to Personal Consumption Expenditure, Million $ Annually

	Alternative				
Region	Maximum Flow	Flow Study	Percent Inflow	Mechanical Restoration	State Permit
Trinity	0.00	0.00	0.00	0.00	0.00
Sacramento Region	-2.70	-0.70	-0.10	0.00	0.50
Bay Region	-7.60	-1.30	0.00	0.00	0.80
San Joaquin	-0.50	-0.10	0.00	0.00	0.10
Tulare Region	0.00	0.00	0.00	0.00	0.00

Agriculture Methodology

Data on changes in value of production and net income in agriculture were obtained from the Agriculture section (Section 3.9.2). Impacts associated with a change in gross value of production were captured by changing the value of production of that crop in the pertinent I-O IMPLAN model. I-O normally includes backward trade linkages only, so an adjustment is required to avoid understating total impacts by neglecting forward linkages. For rice, sugar, and fruits and vegetables the analysis includes an adjustment to capture impacts in forward processing. It was assumed that 90 percent of rice would be milled in the region, 80 percent of

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sugar beets would be processed, and 15 percent of fruits and vegetables would be sent to the regional canned fruits and vegetables sector. Therefore, if the total change in rice production is $1,000, then the change in rice sold to mills is $900, and the change in exports of rough rice is $100.

It is assumed that losses in regional production of rice, fruits and vegetables would not result in increased imports to regional processing facilities to compensate for the loss, and vice-versa. Therefore, the change in the value of output in the forward processing sector can be estimated as the change in the value of raw product processed divided by the share of processed output value accounted for by the raw product. For example, if 25 percent of the value of milled rice is made up of rough rice, then the initial change in final demand of milled rice used in the I-O analysis would be $3,600 ($900 / .25). The total direct change in value of rice produced would be $100 of rough rice and $3,600 of milled rice, or $3,700.

Some impacts cannot be captured by use of the change in value of production only. Changes in application of irrigation technology, changes in groundwater pumping costs, and revenue changes from changes in crop prices are handled separately. First, the net effect of these changes on net farm income is estimated. The change in net returns is assumed to result in equivalent changes in farmers' expenditures. It is assumed that half of the change affects the farm machinery and equipment sector (sector number 309) and the other half affects miscellaneous retail (sector number 455). For example, if better crop prices increase net returns by $1,000, the farmer then spends $500 more on new machinery and $500 on retail goods.

The initial impacts arising from the agricultural sector are shown in Table TA-33.

Social Methodology

Social impacts and effects are the changes in people lives resulting from implementation of an alternative. During scoping and throughout the study, the public requested social impacts be identified. Public issues and concerns, the results of the regional economic analyses, and the results of the analyses of other resource areas were analyzed and discussed with individuals in and knowledgeable of the local and regional areas to identify significant social impacts.

Existing Conditions Methodology

To meet CEQA requirements, the modeled Preferred Alternative impacts were compared to modeled existing conditions, i.e., 1995. IMPLAN estimates of total industry output, place of work income, and employment represent 1992 conditions. Therefore, they were adjusted to reflect 1995 conditions. For all sectors, except agriculture and commercial fishing, the correction was based on the ratio of the 1995 to 1992 populations. For the commercial fishing sector, no growth was assumed between those years. For the agricultural sectors, anticipated growth of 0.5 percent per year was used based on results from the Central Valley Production Model (CVPM).

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Table TA-33. Direct Effects on Regional Economics from Agricultural Sector, Million $ Annually

	Region							
	Sacra-mento	Bay Region	San Joaquin	Tulare	Sacra-mento	Bay Region	San Joaquin	Tulare
	Alternative							
Sector	Maximum Flow				Flow Study			
Cotton	0.00	0.00	-6.20	-2.20	0.00	0.00	-1.10	-0.60
Food Grains	-0.02	0.00	-0.07	-0.08	-0.01	0.00	0.00	0.00
Feed Grains	-0.08	-0.39	-0.42	-0.22	0.00	-0.11	-0.08	-0.06
Hay And Pasture	-0.22	-0.32	-1.01	-0.65	0.00	-0.06	-0.12	-0.13
Fruits	0.00	-1.07	-0.02	-0.09	0.00	-0.35	0.00	0.00
Tree Nuts	0.00	-2.08	-0.06	0.00	0.00	-0.67	0.00	0.00
Vegetables	0.00	-22.15	-1.28	-0.09	0.00	-7.04	-0.17	0.00
Sugar Crops	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00
Oil Bearing Crops	-0.01	-0.08	-0.01	-0.05	0.00	-0.02	0.00	-0.01
Canned Fruits And Vegetables	0.00	-29.50	-1.60	-0.20	0.00	-9.40	-0.20	0.00
Rice Milling	-0.69	0.00	0.00	0.00	-0.35	0.00	0.00	
Sugar	0.00	0.00	-0.10	0.00	0.00	0.00	0.00	
Farm Machinery And Equipment	-2.10	0.00	-12.05	-3.70	-0.55	0.00	-2.25	-1.60
Miscellaneous Retail	-2.10	0.00	-12.05	-3.70	-0.55	0.00	-2.25	-1.60
	Alternative							
Sector	Percent Inflow				State Permit			
Cotton	0.00	0.00	-0.30	-0.40	0.00	0.00	-0.10	0.00
Food Grains	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Feed Grains	0.00	-0.06	0.00	-0.06	0.00	0.00	0.00	0.00
Hay And Pasture	0.00	-0.03	0.00	-0.13	0.00	0.00	0.10	0.00
Fruits	0.00	-0.20	0.00	0.00	0.00	0.00	0.00	0.00
Tree Nuts	0.00	-0.39	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables	0.00	-4.29	0.00	0.00	0.00	-0.09	0.00	0.00
Sugar Crops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oil Bearing Crops	0.00	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00
Canned Fruits And Vegetables	0.00	-5.70	0.00	0.00	0.00	-0.10	0.00	0.00
Rice Milling	0.00	0.00	0.00		0.35	0.00	0.00	0.00
Sugar	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Farm Machinery And Equipment	-0.20		-0.65	-1.25	0.20	0.00	2.20	0.00
Miscellaneous Retail	-0.20		-0.65	-1.25	0.20	0.00	2.20	0.00

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NO ACTION ALTERNATIVE

Trinity River Basin

Up-Front Impacts

Given that the costs associated with the No Action Alternative are small, their specific contribution to the Trinity County economy were not estimated. Projecting measures of the overall economy to year 2001 (i.e., anticipated starting date for the cost components) resulted in $350.6 million in total industry output, $189.5 million in place of work income, and 5,045 jobs in Trinity County (see Table TA-54). These measures of economic activity are used to gauge the magnitude of the cost impacts for the other alternatives. (Summary Tables TA-54 , TA-55 , and TA-56 are located at the end of this Socioeconomics section.)

Annual Impacts

2020 Economic Conditions.—The population of Trinity and Shasta Counties is projected to increase substantially in coming years, reaching 256,600 by 2020 (California Department of Finance, 1998). Most of this growth would occur in Shasta County. Based on this growth, 1992 economic conditions were projected for 2020 (Table TA-54). Total industrial output is projected to reach $8.7 billion. Place of work income is projected to total $4.8 billion with regional employment totaling 119,100 jobs. The retail trade and lodging sectors are projected to represent 19.1 percent and 1.7 percent of regional employment, respectively, in 2020.

2020 Social Conditions.—The expected increase in population and jobs would be viewed positively by most residents. However, some who moved to the area to get away from heavily populated areas may decide that the area is becoming too populated and choose to relocate to less populated areas. The potential for flooding would remain, with attendant concern by residents about whether their homes and property would be flooded. Water would not be returned to the Trinity River. As a result, many residents would continue to believe that the assurances and promises that the TRD would have no adverse impacts to the local area have been broken.

Lower Klamath River Basin/Coastal Area

2020 Economic Conditions

Monterey Coastal Area.—The population of the Monterey Coastal Area is projected to increase substantially in coming years, reaching 1.3 million by 2020 (California Department of Finance, 1998). Total industrial output is projected to reach $51.7 billion within the region by 2020. Place of work income is projected to total $29.2 billion with regional employment totaling 715,200 jobs (Table TA-55). Future economic levels associated with ocean commercial fishing are assumed to remain similar to existing levels. Employment in the area's commercial fishing industry is estimated at 210 jobs in 2020. Seafood processing employment is estimated to total 2,450 jobs. Together, these industries would account for 0.4 percent of regional employment in 2020. The value of the ocean commercial salmon harvest is estimated to total $4.6 million. Economic activity associated with ocean sportfishing for salmon is expected to increase at a rate similar to the change in regional population. The economic sectors most affected by ocean

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sportfishing activity include wholesale trade, retail trade, and lodging places. Total projected employment in these sectors (163,700 jobs) would account for 23 percent of total employment in the area in 2020. Trip-related spending associated with ocean sportfishing for salmon would be about $11.4 million, of which $5.0 million would be made by nonresidents of the region. Businesses in the Monterey port area would be primary beneficiaries.

San Francisco Coastal Area.—The San Francisco Coastal Area is expected to grow in population between now and 2020, but the rate of increase is not expected to be large compared to other areas of California. Since most of the available land in the region is already urbanized, additional urbanization and economic growth will occur primarily through intensification. The value of output is expected to be $431 billion in the year 2020. Place of work income is estimated to be $245 billion, and 4.5 million persons out of a population of 7.1 million would be employed (Table TA-55).

Table TA-34 provides economic projections by sector. Major employment sectors would include services (32 percent of regional employment), wholesale / retail trade (20 percent), government (14 percent), and manufacturing (16 percent).

Table TA-34. No Action Alternative Economic Levels, Bay Region, Year 2020, 1997 Dollars

Industry	Final Demand Billion $	Total Industry Output Billion $	Employ Compens Income Billion $	Property Income Billion $	Total Place of Work Income Billion $	Total Value Added Billion $	Employ-ment (1000's of Jobs)
Agriculture, Forestry, Fisheries	1.7	3.4	0.8	0.8	1.6	1.6	55
Mining	0.2	6.3	0.4	2.5	3.0	4.1	7
Construction	27.4	30.5	9.2	2.9	12.1	12.2	253
Manufacturing	85.4	129.1	33.3	22.9	56.2	58.2	609
Transportation, Comm., Utilities	17.2	34.5	9.6	8.2	17.8	19.0	208
Wholesale, Retail Trade	33.3	49.5	24.8	7.2	32.0	39.8	915
Finance, Insurance, Real Estate	34.0	61.0	12.5	29.0	41.5	48.2	395
Services	46.6	88.3	39.2	17.6	56.9	57.8	1,415
Gov. enterprise, special industry	24.7	28.2	23.4	0.5	23.9	23.9	620
Total	270.5	430.9	153.2	91.8	245.0	264.8	4,475
Population, 1000s						6,946	

Future economic levels associated with ocean commercial fishing are assumed to remain similar to existing levels. The value of the ocean commercial salmon harvest would total $5.9 million in 2020. Economic activity associated with ocean sportfishing for salmon is expected to increase at a rate similar to the change in regional population. Trip-related spending associated with ocean sportfishing for salmon would be about $13.2 million, of which $5.1 million would be made by nonresidents of the region. Businesses in the San Francisco port area would be the primary beneficiaries.

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Mendocino Coastal Area.—The population of the Mendocino Coastal Area is projected to reach 118,800 by 2020 (California Department of Finance, 1998). Total industrial output is projected to reach $4.3 billion within the region by 2020. Place of work income is projected to total $2.1 billion with regional employment totaling 59,800 jobs (Table TA-55). Future economic levels associated with ocean commercial fishing are assumed to remain similar to existing levels. Employment in the area's commercial fishing industry and seafood processing industry is estimated at 180 jobs in each sector in 2020. Together, these industries would account for 0.6 percent of regional employment. The value of the ocean commercial salmon harvest is estimated at $404,000 in 2020. Economic activity associated with ocean sportfishing for salmon is expected to increase at a rate similar to the change in regional population. The economic sectors most affected by ocean sportfishing activity include wholesale trade, retail trade, and lodging places. Total projected employment in these sectors (15,370 jobs) is estimated to account for 26 percent of total employment in the area in 2020. Trip-related spending associated with ocean sportfishing for salmon is estimated to be $2.6 million in 2020, of which $661,000 would be made by nonresidents of the region. Businesses in the Fort Bragg port area would be the primary beneficiaries of these activities.

KMZ-California Coastal Area.—The population of the KMZ-California Coastal Area is projected to grow slowly in coming years, reaching a population of 183,000 by 2020 (California Department of Finance 1998). Total industrial output is projected to reach $6.1 billion within the region by 2020. Place of work income is projected to total $3.3 billion with regional employment totaling 88,000 jobs. Future economic levels associated with ocean commercial fishing are assumed to remain similar to existing levels. Employment in the area's commercial fishing industry is estimated at 520 jobs in 2020. Seafood processing employment is estimated at 460 jobs (Table TA-55). Together, these industries would account for 1.1 percent of regional employment in 2020. The value of the ocean commercial salmon harvest is estimated at $61,900. Economic activity associated with sportfishing for salmon in the ocean and along the Klamath River is expected to increase at a rate similar to the change in regional population. The economic sectors most affected by sportfishing activity include wholesale trade, retail trade, and lodging places. Projected employment in these sectors (21,970 jobs) is estimated to account for about 25 percent of total employment in the area in 2020. Trip-related spending associated with sportfishing for salmon is estimated to be $3.2 million in 2020, of which $1.8 million would be made by nonresidents of the region. Businesses in the Eureka and Crescent City port areas would be primary beneficiaries from this activity.

KMZ-Oregon Coastal Area.—The population of the KMZ-Oregon Coastal Area is projected to grow to 32,500 by 2020 (Oregon Office of Economic Analysis, 1997). Total industrial output is projected to reach $848.4 million within the region by 2020. Place of work income is projected to total $429.7 million with regional employment totaling 13,500 jobs. Future economic levels associated with ocean commercial fishing are assumed to remain similar to existing levels. Employment in the area's commercial fishing industry is estimated at 130 jobs in 2020. Seafood processing employment is estimated to total 110 jobs (Table TA-55). Together, these industries would account for 1.8 percent of regional employment in 2020. The value of the ocean commercial salmon harvest is estimated to total $54,200. Economic activity associated with ocean sportfishing for salmon is expected to increase at a rate similar to the change in regional population. The economic sectors most affected by ocean sportfishing activity include wholesale trade, retail trade, and lodging places. Total projected employment in these sectors (4,310 jobs) would account for 32 percent of total employment in the area in 2020. Trip-related

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spending associated with ocean sportfishing for salmon would be $4.6 million, of which $926,000 would be made by nonresidents of the region. Businesses in the Brookings port area would be the primary beneficiaries from this activity.

Northern/Central Oregon Coastal Area.—The population of the Northern / Central Oregon Coastal Area is projected to grow to 737,800 by 2020 (Oregon Office of Economic Analysis, 1997). Total industrial output is projected to reach $27.1 billion within the region by 2020. Place of work income is projected to total $13.8 billion, with regional employment totaling 379,800 jobs. Future economic levels associated with ocean commercial fishing are assumed to remain similar to existing levels. Employment in area's commercial fishing industry is estimated at 900 jobs in 2020. Seafood processing employment is estimated to total 1,730 jobs (Table TA-55). Together, these industries would account for 0.7 percent of regional employment. The value of the ocean commercial salmon harvest would be $8.0 million. Economic activity associated with ocean sportfishing for salmon is expected to increase at a rate similar to the change in regional population. The economic sectors most affected by ocean sportfishing activity include wholesale trade, retail trade, and lodging places. Projected employment in these sectors (96,650 jobs) is estimated to account for about 25 percent of total employment in the area. Trip-related spending associated with ocean sportfishing for salmon is estimated to be about $15.2 million, of which $3.0 million would be made by nonresidents of the region. Businesses in the Coos Bay, Newport, Tillamook, and Columbia River port areas would be the primary beneficiaries from this activity.

2020 Social Conditions

The commercial salmon fishing industry would remain depressed throughout most of the coastal areas. Communities and individuals who depend on the industry would continue to be stressed. Many of those who would continue to pursue the fishing way of life would have to have supplemental employment (those in smaller communities would have comparatively fewer opportunities). Many others would have to leave their historical fishing areas near their homes and go to other distant places to fish. Younger generations would continue to abandon fishing as a way of life. People in the lower Klamath River would continue to believe that the assurances and promises that the TRD would have no adverse impacts to the Trinity River (and indirectly, the Klamath River) were broken.

Central Valley

2020 Economic Conditions

Sacramento Valley.—The Sacramento Valley is expected to grow rapidly in population between now and 2020 (Table TA-56). Value of output is expected to be $169 billion. Place of work income is estimated to $98 billion, and approximately 2.1 million persons out of a population of 4.0 million would be employed. Table TA-35 provides economic projections by sector.

San Joaquin Valley.—The San Joaquin Valley is expected to grow rapidly in population between now and 2020 (Table TA-56). Value of output is expected to be $155 billion. Place of work income is estimated to $78 billion, and approximately 1.8 million persons out of a population of 3.8 million would be employed. Table TA-36 provides economic projections by sector.

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Table TA-35. No Action Alternative Economic Levels, Sacramento River Region, Year 2020, 1997 Dollars

Industry	Final Demand Billion $	Total Industry Output Billion $	Employ Compens Income Billion $	Property Income Billion $	Total Place of Work Income Billion $	Total Value Added Billion $	Employ-ment (1000's of Jobs)
Agriculture, Forestry, Fisheries	3.8	5.6	0.7	1.3	1.9	2.1	101
Mining	1.6	1.7	0.1	1.1	1.2	1.3	3
Construction	18.3	20.3	5.3	1.7	7.0	7.1	183
Manufacturing	19.8	25.2	5.7	4.1	9.9	10.6	144
Transportation, Comm., Utilities	6.3	11.9	3.2	3.1	6.3	6.8	79
Wholesale, Retail Trade	17.2	20.4	10.7	2.7	13.4	16.3	464
Finance, Insurance, Real Estate	19.3	25.5	4.5	11.9	16.5	20.2	189
Services	24.1	31.5	14.0	5.9	19.8	20.3	574
Gov. enterprise, special industry	24.3	26.7	19.8	2.6	22.4	22.4	537
Total	134.7	168.8	64.0	34.3	98.3	107.0	2,274
Population, 1000s						4,299	

Table TA-36. No Action Alternative Economic Levels, San Joaquin River Region, Year 2020, 1997 Dollars

Industry	Final Demand Billion $	Total Industry Output Billion $	Employ Compens Income Billion $	Property Income Billion $	Total Place of Work Income Billion $	Total Value Added Billion $	Employ-ment (1000's of Jobs)
Agriculture, Forestry, Fisheries	13.4	19.6	2.1	3.8	5.9	6.1	321
Mining	4.6	5.1	0.1	3.9	4.1	4.2	3
Construction	12.1	13.5	3.5	1.1	4.6	4.7	125
Manufacturing	32.7	39.4	7.1	5.3	12.5	13.5	195
Transportation, Comm., Utilities	5.6	10.0	2.6	2.2	4.8	5.2	70
Wholesale, Retail Trade	12.4	16.0	8.5	2.2	10.6	13.0	364
Finance, Insurance, Real Estate	12.4	17.7	2.9	8.7	11.6	14.2	128
Services	18.0	22.3	9.9	3.9	13.8	14.1	409
Gov. enterprise, special industry	10.6	11.3	9.7	0.6	10.3	10.3	292
Total	121.9	154.9	46.5	31.7	78.2	85.2	1,907
Population, 1000s						4,002	

Tulare Region.—The Tulare Region is expected to grow rapidly in population between now and 2020 (Table TA-56). Value of output is expected to be $78 billion. Place of work income is estimated to $39 billion, and approximately 1.0 million persons out of a population of 2.0 million would be employed. Table TA-37 provides economic projections by sector.

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Table TA-37. No Action Alternative Economic Levels, Tulare Lake Region, Year 2020, 1997 Dollars

Industry	Final Demand Billion $	Total Industry Output Billion $	Employ Compens Income Billion $	Property Income Billion $	Total Place of Work Income Billion $	Total Value Added Billion $	Employ-ment (1000's of Jobs)
Agriculture, Forestry, Fisheries	10.6	13.5	1.6	2.6	4.2	4.3	232
Mining	5.9	6.4	0.5	2.2	2.7	4.0	8
Construction	6.8	8.6	2.1	0.5	2.7	2.7	75
Manufacturing	9.7	12.1	2.2	1.7	3.9	4.2	57
Transportation, Comm., Utilities	3.6	5.8	1.6	1.5	3.1	3.4	49
Wholesale, Retail Trade	5.8	7.4	3.9	1.0	4.9	6.0	173
Finance, Insurance, Real Estate	5.0	6.9	1.0	3.5	4.5	5.6	46
Services	7.3	10.0	4.2	1.9	6.0	6.2	183
Gov. enterprise, special industry	7.2	7.5	6.5	0.3	6.7	6.7	181
Total	61.9	78.2	23.5	15.3	38.8	43.1	1,005
Population, 1000s						2,162	

2020 Social Conditions

Due to population growth, all Central Valley residents would feel increased stress regarding water issues, even if there are no changes to TRD operations. Irrigated agricultural landowners would be stressed by other changes to water supply, as well as changes in farm subsidies. The associated loss of control would exacerbate their stress. Producers, marketers, and consumers of CVP hydropower would continue to face new challenges due to the deregulation of the power industry and non-TRD changes in water supply.

MAXIMUM FLOW ALTERNATIVE

Trinity River Basin

Up-Front Impacts

The costs associated with the Maximum Flow Alternative are expected to generate $3.6-6.2 million in total industry output, $1.8-3.0 million in place of work income, and 45-77 additional jobs depending on the dam modification option (Table TA-54). This represents more jobs in Trinity County than any other alternative due primarily to the dam modification component. These dam modification costs are anticipated to last at most a couple of years, implying only a short-term impact. After dam modification is complete, job generation drops off dramatically. The 77 additional jobs reflect an insubstantial 1.5 percent of projected 2001 Trinity County employment.

The individual economic sectors in Trinity County most affected by the cost elements associated with the Maximum Flow Alternative are the construction, wholesale trade, auto

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dealers and service stations, and eating and drinking sectors. The largest impacts are expected in the construction sector, with an additional 18 jobs under the most costly dam modification scenario; however, this represents less than 5 percent of the 2001 projected employment within the construction sector. The only sector that meets the criteria for a substantial impact is the auto dealer and service station sector under the most costly dam modification option. This sector is expected to increase by 11 jobs and 19.8 percent. Since the least costly dam modification option is a more likely scenario, and it results in no substantial impacts by sector, the alternative is not expected to generate substantial sector-level impacts.

Since the largest cost element associated with the alternative is the modification of Trinity Dam, those service industries closest to the dam would be most affected by the temporary workforce (1-2 years only). Costs associated with spawning gravel placement are likely to be highly dispersed; therefore, concentrated effects on service sector industries would not materialize.

Annual Impacts

2020 Economic Impacts.—Under the Maximum Flow Alternative, the TrinityShasta County regional economy would be negatively affected by decreases in spending associated with water-oriented recreation. Although recreation-related spending associated with use of the Trinity River would increase, these effects would be more than offset by decreases in recreation-related spending associated with use of Trinity and Shasta Reservoirs. Annual regional economic output would decrease by an estimated $6.3 million, place of work income by $2.6 million, and employment by 66 jobs (Table TA-54). These changes are not considered substantial. Revenues specific to businesses in Trinity County are estimated to increase $2.0 million annually.

The economic sectors most affected by recreation activity are wholesale trade, retail trade, and lodging places. Annual employment in these sectors is estimated to decrease by 39 jobs, with 25 of those occurring in the retail trade sector. These impacts are not considered substantial. Businesses that primarily cater to persons recreating at Trinity and Shasta Reservoirs, or along the Trinity River, would be most impacted by this alternative. These businesses include concessionaires, marina operators and other service providers at the lakes, and guiding and recreation services along the river. Adverse, but not substantial, impacts would be experienced by businesses that serve recreationists at Trinity and Shasta Reservoirs. Businesses that primarily serve persons recreating along the Trinity River would experience a substantial positive impact.

2020 Social Impacts.—While the overall economic changes in Trinity and Shasta Counties would not be substantial, groups of people would be affected differently. Some people who formerly went to Trinity and Shasta Reservoirs for recreation would no longer do so because of decreased water elevations. The increased flow in the Trinity River would attract more people to river recreation opportunities. Because of the increased risk of flooding associated with this alternative, some residents with developed parcels along the river would have to be relocated. While they would be compensated for their property, comparable river-front property would likely not be available in the Trinity County area. These individuals would have to seek similar property elsewhere or stay in the area and live in a different setting. Some may not welcome having to move. Others may prefer to move to be away from the risk of flooding. Those who advocated that more Trinity River water remain in the river would have their desire fulfilled.

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Lower Klamath River Basin/Coastal Area

2020 Economic Impacts

Monterey Coastal Area.—The Monterey Coastal Area would be unaffected by implementation of the Maximum Flow Alternative because this area has historically been less affected by restraints imposed to protect Klamath Basin salmon. Therefore, easing harvest restrictions on natural Trinity River salmon would have little effect on the total harvest in this region. No project-related changes in ocean commercial salmon harvests or sportfishing-related spending are expected within the region.

San Francisco Coastal Area.—The San Francisco Coastal Area would be affected by change in ocean sportfishing and commercial fishing activity, by change in M&I water supply and electricity costs, and by change in agricultural production and net returns. The total loss of output would be $159.6 million, place of work income would be reduced by $79.2 million, and employment would be reduced by 1,540 persons (Table TA-55). These values are not substantially different than No Action levels. Table TA-38 provides economic impacts by sector.

Table TA-38. Economic Impacts of Maximum Flow Alternative, Bay Region, by Industry

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-30.29	-2.02	-7.79	-9.81	-10.00	-307.3
Mining	-0.10	-0.01	-0.04	-0.04	-0.06	-0.1
Construction	-1.73	-0.81	-0.22	-1.03	-1.03	-20.7
Manufacturing	-47.19	-8.83	-9.16	-17.99	-18.48	-209.6
Transportation/Communications/Utilities	-10.15	-2.86	-2.34	-5.20	-5.52	-65.5
Wholesale Trade	-6.01	-3.41	-0.93	-4.34	-5.61	-71.9
Retail Trade	-11.10	-5.10	-1.46	-6.56	-7.92	-255.3
Finance/Insurance/Real Estate	-24.74	-4.70	-12.10	-16.80	-19.77	-151.7
Services	-25.11	-11.08	-4.77	-15.85	-16.20	-420.3
Govt. Enterprise & Special Industry	-3.15	-1.33	-0.20	-1.54	-1.54	-34.76
Total	-159.57	-40.14	-39.01	-79.15	-86.15	-1537.1

This alternative affects some industries more than others. Relatively large effects occur in vegetable production, canned fruit and vegetables, and certain retail, services, and finance-insurance-real estate sectors. The number of jobs lost in vegetable production and canned fruits and vegetables are 165 and 125, respectively, a substantial share of No Action levels. Some impacts would be concentrated in certain local communities that are relatively dependent on CVP power, CVP M&I supplies, and/or irrigated agriculture that uses CVP contract supplies. Most agricultural costs would occur in the southern Santa Clara Valley. Electricity cost increases would be important in certain water districts, such as the SCVWD, and within the service areas of preference customers, such as the cities of Alameda, Palo Alto, and Santa Clara. The most adverse effects stemming from M&I water costs would be within the CCWD.

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The ocean commercial salmon fishing and processing industry, and businesses that cater to persons sportfishing for salmon including charter boat operators, marina operators, and other service providers near port areas, would benefit from this alternative. The gross value of the annual commercial harvest of salmon is estimated to increase by $262,400 (4 percent), and regional spending by persons ocean sportfishing for salmon would increase by $117,000 (1 percent) compared to No Action levels. These changes are not substantial.

Mendocino Coastal Area.—The Mendocino Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending changes under the Maximum Flow Alternative. These changes would result in annual regional industrial output increasing by $11.1 million, place of work income by $5.1 million, and employment by 127 jobs (Table TA-55). These increases are not considered substantial.

Employment in the overall commercial fishing and seafood processing sectors is estimated to increase by 33 and 31 jobs, respectively, within the region by 2020. These changes represent substantial increases of approximately 18 percent over 2020 No Action levels. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual harvest is estimated to increase by $2.4 million, or 600 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this benefit would occur in the ports of Fort Bragg and to a lesser extent in Point Arena. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. Annual employment in these sectors would increase by 26 jobs, with 18 of those occurring in the retail trade sector. These changes are not substantial. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $987,000, or 37 percent, compared to No Action levels.

KMZ-California Coastal Area.—Under the Maximum Flow Alternative, the KMZ-California Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending changes by 2020. These changes would result in annual regional industrial output increasing by $3.0 million (Table TA-55). This 0.5 percent increase in output would generate $1.5 million in place of work income and 37 jobs within the region. These increases are not considered substantial compared to No Action levels. Note that these impacts are understated since the analysis does not include the effects of changes in tribal harvests.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 15 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $639,900, or 1,000 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this increase would occur in the Port of Eureka, and to a lesser extent, in Trinidad. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Based on the predicted increase in ocean sportfishing trips for salmon, and along the lower Klamath River,

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regional spending by persons sportfishing for salmon would increase by $1.2 million, or 44 percent, compared to No Action levels.

KMZ-Oregon Coastal Area.—Under the Maximum Flow Alternative, the KMZ-Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $3.9 million by 2020 (Table TA-55). This 0.5 percent increase in output would generate $1.7 million in place of work income and 62 jobs within the region. These changes are not substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 10 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual salmon harvest would increase by $533,100, or 900 percent, compared to No Action levels. Most of this increase would be realized in the Port of Brookings, based on 1996 harvest data (Table TA-4). The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $1.4 million, or 42 percent, compared to No Action levels.

Northern/Central Oregon Coastal Area.—Under the Maximum Flow Alternative, the Northern / Central Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $51.1 million (Table TA-55). This 0.2 percent increase in output would generate $19.3 million in place of work income and 601 jobs within the region. These increases are not considered substantial.

Employment in the area's commercial fishing and seafood processing sectors is estimated to increase by 109 and 181 jobs, respectively. These changes represent increases of 12 percent over No Action levels. These increases are substantial. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual harvest is estimated to increase by $4.6 million, or 55 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), ports that would primarily benefit from this increase would include Newport and Charleston. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $789,000, or 11 percent, compared to No Action levels. These changes are not considered substantial.

2020 Social Impacts

There would be no social impacts to the Monterey Coastal Area. In the San Francisco Coastal Area those losing jobs would have to seek employment in another business in the local area if such jobs were available, or leave the area to secure similar employment. Increased costs for

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electricity and M&I water would most adversely affect those with low incomes. In the Mendocino Coastal and Northern/Central Oregon Coastal Areas, the increases in commercial fishing opportunities would be welcomed by those wishing to pursue this way of life. The substantial increase in employment in seafood processing and benefits to businesses supporting sportfishing for salmon would be viewed as positive by the affected port areas. In the KMZ-California Coastal and KMZ-Oregon Coastal Areas the substantial increase in benefits to businesses supporting sportfishing for salmon would be viewed as positive by the affected communities.

Central Valley

2020 Economic Impacts

Sacramento Valley.—The Sacramento Valley would be affected by change in M&I water supply and electricity costs, and by change in agricultural production and net returns. The total loss in output would be $50.6 million, place of work income would be reduced by $27.6 million, and employment would be reduced by 700 persons (Table TA-56). These values are not a substantial change from No Action levels. Table TA-39 provides economic impacts by sector.

Table TA-39. Economic Impacts of Maximum Flow Alternative, Sacramento Region, by Industry
Million 1997 Dollars

	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-0.99	-0.17	-0.32	-0.49	-0.52	-15.0
Mining	-0.02	0.00	-0.01	-0.01	-0.02	0.0
Construction	-0.76	-0.30	-0.09	-0.39	-0.40	-9.9
Manufacturing	-9.72	-1.87	-1.53	-3.40	-3.52	-59.2
Transportation/Communications/Utilities	-3.78	-0.98	-0.96	-1.94	-2.06	-25.5
Wholesale Trade	-1.28	-0.66	-0.19	-0.85	-1.20	-19.5
Retail Trade	-8.35	-3.63	-1.43	-5.05	-6.33	-250.7
Finance/Insurance/Real Estate	-11.01	-1.79	-5.19	-6.98	-8.65	-79.8
Services	-11.76	-4.82	-2.25	-7.07	-7.25	-220.2
Govt. Enterprise & Special Industry	-2.94	-0.82	-0.56	-1.38	-1.38	-18.3
Total	-50.62	-15.04	-12.53	-27.57	-31.32	-698.1

This alternative affects some industries and areas more than others. Relatively large, but insubstantial, effects occur in rice production and milling, and in certain retail, services, and finance-insurance-real estate sectors. Substantial impacts might be concentrated in certain local communities that are relatively dependent on CVP power, CVP M&I supplies, and/or irrigated agriculture using CVP contract supplies, e.g., the Tehama-Colusa Canal service area. Electricity cost increases would be important in certain water districts, such as SCID, and within the service areas of preference customers such as Roseville, Redding,

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and Shasta Lake. The most adverse effects stemming from M&I water costs would be in the Sacramento Area, especially Roseville.

San Joaquin Valley.—The San Joaquin Valley would be affected by change in M&I water supply and electricity costs, and by change in agricultural production and net returns. The total loss in output would be $94.7 million, place of work income would be reduced by $50.1 million, and employment would be reduced by 1,510 persons (Table TA-56). These values are not substantially different than No Action levels. Table TA-40 provides economic impacts by sector.

Table RM-40. Economic Impacts of Maximum Flow Alternative, San Joaquin Region, by Industry
Million 1997 Dollars

	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-13.78	-1.69	-3.85	-5.54	-5.80	-178.2
Mining	-0.09	0.00	-0.05	-0.05	-0.07	-0.1
Construction	-1.02	-0.39	-0.14	-0.53	-0.54	-14.1
Manufacturing	-22.61	-4.78	-3.71	-8.49	-8.63	-149.8
Transportation/Communications/Utilities	-4.03	-0.99	-0.82	-1.81	-1.93	-30.3
Wholesale Trade	-2.31	-1.18	-0.35	-1.53	-2.16	-35.5
Retail Trade	-21.89	-9.74	-4.58	-14.32	-17.78	-734.2
Finance/Insurance/Real Estate	-13.72	-1.96	-6.96	-8.92	-10.97	-93.1
Services	-13.79	-5.63	-2.60	-8.23	-8.43	-260.7
Govt. Enterprise & Special Industry	-1.50	-0.56	-0.15	-0.71	-0.71	-14.4
Total	-94.73	-26.93	-23.20	-50.13	-57.03	-1510.3

This alternative affects some industries and areas more than others. Relatively large effects occur in cotton production and farm inputs such as farm machinery. Substantial effects could occur in some areas dependent on CVP M&I supplies or hydropower, e.g., Tracy, Avenal, Huron, and Coalinga. Substantial effects on local agricultural economies might occur in areas entirely dependent on CVP contracts, especially, the San Luis Canal service area.

Tulare Basin.—The Tulare Basin would be affected by change in agricultural production and net returns. The total loss in output would be $28.0 million, place of work income would be reduced by $14.4 million, and employment would be reduced by 440 (Table TA-56). These changes are not substantial compared to No Action levels. Substantial effects at the industry and local level may involve communities dependent on irrigated agriculture using CVP contract water. Table TA-41 provides economic impacts by sector.

2020 Social Impacts

In the Sacramento and San Joaquin Valleys the increased electricity and M&I water costs would most adversely affect those with low incomes. Agricultural employment and income would be

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adversely affected in communities served by the Tehama-Colusa Canal and San Luis Canal service areas. In the Tulare Basin, agricultural employment and income in those communities dependent on irrigated agriculture using CVP contract water could be adversely affected.

Table TA-41. Economic Impacts of Maximum Flow Alternative, Tulare Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-4.81	-0.64	-1.46	-2.11	-2.22	-64.3
Mining	-0.13	-0.01	-0.05	-0.06	-0.09	-0.2
Construction	-0.36	-0.12	-0.04	-0.16	-0.16	-4.1
Manufacturing	-6.65	-1.24	-1.01	-2.26	-2.32	-45.9
Transportation/Communications/Utilities	-2.06	-0.67	-0.43	-1.10	-1.35	-20.4
Wholesale Trade	-0.09	-0.05	-0.01	-0.05	-0.07	-2.1
Retail Trade	-6.81	-3.08	-1.41	-4.49	-5.45	-208.1
Finance/Insurance/Real Estate	-2.86	-0.28	-1.61	-1.89	-2.42	-18.9
Services	-3.68	-1.39	-0.71	-2.10	-2.15	-68.5
Govt. Enterprise & Special Industry	-0.52	-0.17	0.02	-0.15	-0.15	-4.8
Total	-27.96	-7.65	-6.71	-14.36	-16.37	-437.1

FLOW EVALUATION ALTERNATIVE

Trinity River Basin

Up-Front Impacts

Costs associated with the Flow Evaluation Alternative are expected to generate an additional $1.3 million in outputsales, $660,000 in income, and 22 jobs annually in Trinity County (Table TA-54). This reflects the maximum impact and is expected during the first 3 years of implementation. The majority of the impact stems from the construction of the channel rehabilitation sites. Since site construction is anticipated to take 6 years, impacts become virtually nonexistent starting in year 7. Given this level of job creation represents less than 1 percent of the projected total employment in Trinity County in 2001, the impact of these additional jobs is not seen as substantial. The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the sector level. The largest cost elements known with any certainty relate to construction of channel rehabilitation sites and spawning gravel placement. The Flow Evaluation cost elements are dispersed throughout the watershed, implying a lack of concentrated regional economic impacts.

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Annual Impacts

2020 Economic Impacts.—Under the Flow Evaluation Alternative, the Trinity / Shasta County regional economy would be positively affected by increases in spending associated with increases in water-oriented recreation. Recreation-related spending associated with increases in use of the Trinity River and Trinity Reservoir would more than offset the decreases in recreation-related spending associated with projected declines in use at Shasta Reservoir. Annual regional economic output would increase by an estimated $3.2 million, place of work income would increase by $2.0 million, and employment would increase by 66 jobs (Table TA-54). These increases are not considered substantial. Revenues specific to businesses in Trinity County are estimated to increase $1.7 million annually.

The economic sectors most affected by recreation activity are wholesale trade, retail trade, and lodging places. Annual employment in these sectors is estimated to increase by 43 jobs, with 41 of those occurring in the retail trade and lodging sectors. These impacts are not considered substantial.

Businesses that primarily cater to persons recreating at Trinity and Shasta Reservoirs, or along the Trinity River, would be most impacted by this alternative. These businesses include concessionaires, marina operators and other service providers at the reservoirs, and guiding and recreation services along the river. Adverse, but not substantial, impacts would be experienced by businesses that serve recreationists at Shasta Reservoir. Positive, but not substantial, impacts would be experienced by businesses that serve recreationists at Trinity Reservoir. Businesses that primarily serve persons recreating along the Trinity River would experience a substantial positive impact.

2020 Social Impacts.—While the overall economic changes in Trinity and Shasta Counties would not be substantial, groups of people would be affected differently. The increased flow in the Trinity River would attract more people to river recreation opportunities. Because of the increased risk of flooding associated with this alternative, some residents with parcels along the river would have to be relocated or would not be able to develop the sites. While they would be compensated for their property, comparable river-front property would likely not be available in the Trinity County area. Some people may prefer to move away from the river to reduce the risk of flooding. Those who advocated that more Trinity River water remain in the river would have their desire fulfilled.

Lower Klamath River Basin/Coastal Area

2020 Economic Impacts

Monterey Coastal Area.—The Monterey Coastal Area would be unaffected by implementation of the Flow Evaluation Alternative. No project-related changes in ocean commercial salmon harvests or sportfishing-related spending are expected within the region under this alternative because this area has historically been less affected by restraints imposed to protect Klamath Basin salmon. Therefore, easing harvest restrictions on natural Trinity River salmon would have little effect on the total harvest in this region. No project-related changes in ocean commercial salmon harvests or sportfishing-related spending are expected within the region under this alternative.

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San Francisco Coastal Area.—The San Francisco Coastal Area would be affected by changes in commercial and sportfishing expenditures, by changes in M&I water supply and electricity costs, and by changes in agricultural production and net returns. The total loss in output would be $32.6 million, place of work income would be reduced by $16.2 million, and employment would be reduced by 310 persons (Table TA-55). These values are not substantial compared to No Action levels. Relatively large effects occur in CVP service areas and in preference power areas, but these are not expected to be substantial. Table TA-42 provides economic impacts by sector.

Table TA-42. Economic Impacts of Flow Evaluation Alternative, Bay Region, by Industry

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-6.59	-0.49	-1.81	-2.30	-2.37	-67.0
Mining	-0.02	0.00	-0.01	-0.01	-0.01	0.0
Construction	-0.35	-0.16	-0.04	-0.21	-0.21	-4.2
Manufacturing	-9.44	-1.75	-1.79	-3.55	-3.65	-42.1
Transportation/Communications/Utilities	-2.04	-0.58	-0.47	-1.05	-1.11	-13.2
Wholesale Trade	-1.22	-0.69	-0.19	-0.88	-1.14	-14.6
Retail Trade	-2.20	-1.01	-0.29	-1.30	-1.56	-50.2
Finance/Insurance/Real Estate	-5.02	-0.95	-2.46	-3.41	-4.01	-30.8
Services	-5.06	-2.23	-0.96	-3.19	-3.26	-84.7
Govt. Enterprise & Special Industry	-0.63	-0.27	-0.04	-0.31	-0.31	-6.95
Total	-32.57	-8.13	-8.07	-16.20	-17.64	-313.8

The ocean commercial salmon fishing and processing industry, and businesses that cater to persons sportfishing for salmon including charter boat operators, marina operators, and other service providers near port areas, would benefit from this alternative. The gross value of the annual commercial harvest of salmon is estimated to increase by $262,400 (4 percent), and regional spending by persons ocean sportfishing for salmon would increase by $117,000 (1 percent) compared to No Action levels. These increases are not considered substantial.

Mendocino Coastal Area.—Under the Flow Evaluation Alternative, the Mendocino Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending changes. These changes would result in annual regional industrial output increasing by $9.6 million, place of work income increasing by $4.4 million, and employment increasing by 110 jobs (Table TA-55). These increases, which are 0.2 percent greater than No Action levels, are not considered substantial.

Employment in the commercial fishing and seafood processing sectors is estimated to increase by 29 and 27 jobs, respectively. These changes represent substantial increases of 16 percent over No Action levels. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual harvest is estimated to increase by $2.1 million, or 500 percent, compared to No Action levels. Based on

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1996 harvest data (Table TA-4), most of this increase would occur at the port in Fort Bragg, and to a lesser extent, in Point Arena. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors would be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $915,900, or 26 percent, compared to No Action levels.

KMZ-California Coastal Area.—Under the Flow Evaluation Alternative, the KMZ-California Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending changes. These changes would result in annual regional industrial output increasing by $2.9 million (Table TA-55). This growth in output would generate $1.5 million in place of work income and 36 jobs. These increases, which represent less than 0.1 percent of No Action levels, are not substantial. Note that these impacts are understated since the analysis does not include the effects of changes in tribal harvests. Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 1.3 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual harvest is estimated to increase by $589,800, or 900 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this increase would occur at the port of Eureka, and to a lesser extent, in Trinidad. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Based on the predicted increase in sportfishing trips for salmon in the ocean and along the lower Klamath River, regional spending by persons sportfishing for salmon would increase by $1.3 million, or 40 percent, compared to No Action levels.

KMZ-Oregon Coastal Area.—Under the Flow Evaluation Alternative, the KMZ-Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending changes. These changes would result in annual regional industrial output increasing by $3.7 million (Table TA-55). This 0.4 percent increase in output would generate $1.6 million in place of work income and 58 jobs. These increases are not considered substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 9 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual harvest is estimated to increase by $492,000, or 900 percent, compared to No Action levels. Most of this increase would be realized in the port of Brookings based on 1996 harvest data (Table TA-4). The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $3.0 million, or 66 percent, compared to No Action levels.

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Northern/Central Oregon Coastal Area.—Under the Flow Evaluation Alternative, the Northern / Central Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $47.5 million (Table TA-55). This 0.2 percent increase in output would generate $17.9 million in place of work income and 559 jobs. These increases are not considered substantial.

Employment in the area's commercial fishing and seafood processing sectors is estimated to increase by 102 and 168 jobs, respectively. These changes represent substantial increases of 11 percent over No Action levels. The ocean commercial salmon fishing industry would experience substantial economic benefits under the alternative. The gross value of the annual harvest is estimated to increase by $4.3 million, or 50 percent, compared to No-Action levels. Based on 1996 harvest data (Table TA-4), port that would primarily benefit from this increase would include Newport and Charleston. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $741,300, or 10 percent, compared to No Action levels. This change is not considered substantial.

2020 Social Impacts

There would be no social impacts to the Monterey Coastal and San Francisco Coastal Areas. In the Mendocino Coastal and Northern / Central Oregon Coastal Areas the increases in commercial fishing opportunities would be welcomed by those wishing to pursue this way of life. The substantial increase in employment in seafood processing and benefits to businesses supporting sportfishing for salmon would be viewed as positive by the affected port areas. In the KMZ-California Coastal and KMZ-Oregon Coastal Areas the substantial increase in benefits to businesses supporting sportfishing for salmon would be viewed as positive by the affected communities.

Central Valley

2020 Economic Impacts

Sacramento Valley.—The Sacramento Valley would be affected by change in M&I water supply and electricity costs, and by change in agricultural production and net returns. The total loss in output would be $12.1 million, place of work income would be reduced by $6.6 million, and employment would be reduced by 160 persons (Table TA-56). These changes are not substantial compared to No Action levels. Relatively large effects occur in CVP service areas and in preference power areas, but these are not expected to be substantial. Table TA-43 provides economic impacts by sector.

San Joaquin Valley.—The San Joaquin Valley would be affected by change in M&I water supply and electricity costs, and by change in agricultural production and net returns. The total loss in output would be $17.0 million, place of work income would be reduced by $9.0 million, and employment would be reduced by 270 persons (Table TA-56). These changes

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Table TA-43. Economic Impacts of Flow Evaluation Alternative, Sacramento Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-0.15	-0.03	-0.04	-0.07	-0.07	-2.5
Mining	-0.01	0.00	0.00	0.00	0.00	0.0
Construction	-0.18	-0.07	-0.02	-0.09	-0.09	-2.3
Manufacturing	-2.52	-0.47	-0.39	-0.86	-0.89	-14.5
Transportation/Communications/Utilities	-0.91	-0.24	-0.23	-0.46	-0.49	-6.1
Wholesale Trade	-0.31	-0.16	-0.05	-0.21	-0.29	-4.8
Retail Trade	-2.00	-0.87	-0.35	-1.22	-1.52	-60.7
Finance/Insurance/Real Estate	-2.53	-0.41	-1.19	-1.61	-1.99	-18.4
Services	-2.72	-1.11	-0.52	-1.64	-1.68	-50.9
Govt. Enterprise & Special Industry	-0.69	-0.19	-0.13	-0.32	-0.32	-4.3
Total	-12.03	-3.55	-2.93	-6.48	-7.37	-164.5

are not substantial. Relatively large effects occur in CVP service areas and in preference power areas, but these changes are not expected to be substantial. Table TA-44 provides economic impacts by sector.

Table TA-44. Economic Impacts of Flow Evaluation Alternative, San Joaquin Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-2.25	-0.28	-0.62	-0.90	-0.94	-28.6
Mining	-0.02	0.00	-0.01	-0.01	-0.01	0.0
Construction	-0.18	-0.07	-0.02	-0.10	-0.10	-2.5
Manufacturing	-4.06	-0.86	-0.66	-1.53	-1.56	-27.2
Transportation/Communications/Utilities	-0.72	-0.18	-0.15	-0.33	-0.35	-5.5
Wholesale Trade	-0.41	-0.21	-0.06	-0.27	-0.39	-6.3
Retail Trade	-4.06	-1.81	-0.85	-2.66	-3.30	-136.3
Finance/Insurance/Real Estate	-2.49	-0.36	-1.26	-1.62	-1.99	-16.9
Services	-2.52	-1.03	-0.47	-1.50	-1.54	-47.6
Govt. Enterprise & Special Industry	-0.27	-0.10	-0.03	-0.13	-0.13	-2.6
Total	-16.98	-4.89	-4.14	-9.04	-10.29	-273.5

Tulare Basin.—The Tulare Basin would be affected by changes in agricultural production and net returns. The total reduction in output would be $9.9 million, place of work income would be reduced by $5.1 million, and employment would be reduced by 160 persons (Table TA-56). These changes are not substantial compared to No Action levels. Relatively large effects on

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certain industries or areas may occur, but these are not expected to be substantial. Table TA-45 provides economic impacts by sector.

Table TA-45. Economic Impacts of Flow Evaluation Alternative, Tulare Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-1.17	-0.16	-0.35	-0.51	-0.53	-15.1
Mining	-0.04	0.00	-0.02	-0.02	-0.03	-0.1
Construction	-0.10	-0.04	-0.01	-0.05	-0.05	-1.4
Manufacturing	-2.59	-0.49	-0.39	-0.88	-0.90	-18.4
Transportation/Communications/Utilities	-0.48	-0.11	-0.11	-0.22	-0.24	-3.3
Wholesale Trade	-0.25	-0.13	-0.04	-0.16	-0.23	-3.9
Retail Trade	-2.60	-1.21	-0.54	-1.75	-2.14	-84.1
Finance/Insurance/Real Estate	-1.12	-0.13	-0.58	-0.72	-0.90	-6.9
Services	-1.32	-0.50	-0.26	-0.76	-0.78	-25.0
Govt. Enterprise & Special Industry	-0.18	-0.06	0.01	-0.05	-0.05	-1.7
Total	-9.85	-2.83	-2.29	-5.12	-5.86	-159.9

2020 Social Impacts

There would be no substantial social impacts in the Central Valley under the Flow Evaluation Alternative.

PERCENT INFLOW ALTERNATIVE

Trinity River Basin

Up-Front Impacts

The costs associated with the Percent Inflow Alternative are expected to generate an additional $1.2 million in outputsales, $630 thousand in income, and 21 jobs annually in Trinity County (Table TA-54). This reflects the maximum impact and is expected during the first 3 years of implementation. The majority of the impact stems from the construction of channel rehabilitation sites. Impacts drop to zero starting in year 7. Given this level of job creation represents less than 1 percent of the projected total employment in Trinity County in 2001, the impact of these additional jobs is not substantial.

The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level. The only relatively large cost element associated with this alternative is the construction of channel rehabilitation sites. While these

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activities would be concentrated along the Trinity River mainstem, they would be dispersed along the length of the river, implying a lack of concentrated regional economic impacts.

Annual Impacts

2020 Economic Impacts.—Under the Percent Inflow Alternative, the Trinity / Shasta County regional economy would be negatively affected by decreases in spending associated with declines in water-oriented recreation. Although recreation-related spending associated with use of Trinity Reservoir would increase, these effects would be more than offset by decreases in recreation-related spending associated with declines in use at Shasta Reservoir and along the Trinity River. Annual regional economic output would decrease by an estimated $500,000, place of work income would decrease by $300,000, and employment would decrease by 8 jobs (Table TA-54). These decreases, however, are not considered substantial. Revenues specific to businesses in Trinity County are estimated to increase by less than $10,000 annually.

The economic sectors most affected by recreation activity are wholesale trade, retail trade, and lodging places. Annual employment in these sectors is estimated to decrease by 5 jobs, with 3 of those occurring in the retail trade sector. These impacts are not considered substantial.

Businesses that primarily cater to persons recreating at Trinity and Shasta Reservoirs, or along the Trinity River, would be most impacted by this alternative. These businesses include concessionaires, marina operators and other service providers at the reservoirs, and guiding and recreation services along the river. Adverse, but not substantial, impacts would be experienced by businesses that serve recreationists at Shasta Reservoir and along the Trinity River. Businesses that primarily serve persons recreating at Trinity Reservoir would experience a positive, but not substantial, impact.

2020 Social Impacts.—There would be no substantial social changes in the Trinity River Basin under the Percent Inflow Alternative.

Lower Klamath River Basin/Coastal Area

2020 Economic Impacts

Monterey Coastal Area.—The Monterey Coastal Area would be unaffected by implementation of the Percent Inflow Alternative because this area has historically been less affected by restraints imposed to protect Klamath Basin salmon. Therefore, easing harvest restrictions on natural Trinity River salmon would have little effect on the total harvest in this region. No project-related changes in ocean commercial salmon harvests or sportfishing-related spending are expected within the region.

San Francisco Coastal Area.—The San Francisco Coastal Area would be affected by change in recreation and commercial fishing expenditure, by change in M&I water supply and electricity costs, and by change in agricultural production and net returns. The total loss in output would be $12.3 million, place of work income would be reduced by $6.4 million, and employment would be reduced by 120 persons (Table TA-55). These changes are not substantial. Relatively large effects on certain industries or areas may occur, but these are not expected to be substantial. Table TA-46 provides economic impacts by sector.

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Table TA-46. Economic Impacts of Percent Inflow Alternative, Bay Region, by Industry

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-1.48	-0.09	-0.37	-0.46	-0.47	-13.7
Mining	-0.01	0.00	0.00	0.00	-0.01	0.0
Construction	-0.15	-0.07	-0.02	-0.09	-0.09	-1.7
Manufacturing	-3.26	-0.61	-0.61	-1.22	-1.26	-14.8
Transportation/Communications/Utilities	-0.87	-0.25	-0.21	-0.45	-0.48	-5.6
Wholesale Trade	-0.45	-0.25	-0.07	-0.32	-0.42	-5.4
Retail Trade	-1.10	-0.50	-0.14	-0.65	-0.78	-24.8
Finance/Insurance/Real Estate	-2.28	-0.44	-1.09	-1.53	-1.82	-13.7
Services	-2.43	-1.08	-0.45	-1.53	-1.56	-41.1
Govt. Enterprise & Special Industry	-0.32	-0.14	-0.03	-0.16	-0.16	-3.80
Total	-12.34	-3.43	-2.98	-6.42	-7.04	-124.5

The ocean commercial salmon fishing and processing industry, and businesses that cater to persons sportfishing for salmon including charter boat operators, marina operators, and other service providers near port areas, would benefit from this alternative. The gross value of the annual commercial harvest of salmon would increase by $262,400 (4 percent), and regional spending by persons ocean sportfishing for salmon would increase by $117,000 (1 percent) compared to No Action levels. These increases are not substantial.

Mendocino Coastal Area.—Under the Percent Inflow Alternative, the Mendocino Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $4.9 million, place of work income increasing by $2.3 million, and employment increasing by 57 jobs (Table TA-55). These increases, which are 0.1 percent greater than No Action levels, are not considered substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 7 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $1.1 million, or 260 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this increase would occur at the port of Fort Bragg, and to a lesser extent, in Point Arena. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $615,300, or 19 percent, compared to No Action levels. This beneficial impact is not considered substantial.

KMZ-California Coastal Area.—Under the Percent Inflow Alternative, the KMZ-California Coastal Area economy would benefit from increases in ocean commercial salmon harvests and

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sportfishing-related spending. These changes would result in annual regional industrial output increasing by $2.0 million (Table TA-55). This growth in output would generate $1.0 million in place of work income and 24 jobs. These increases, which represent less than 0.1 percent of No Action levels, are not substantial. Note that these impacts are understated since the analysis does not include the effects of changes in tribal harvests.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 1.0 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $424,600, or 700 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this increase would occur at the port in Eureka, and to a lesser extent, in Trinidad. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Based on the predicted increase in sportfishing for salmon in the ocean, and along the lower Klamath River, regional spending by persons sportfishing for salmon would increase by $1.1 million, or 32 percent, compared to No Action levels.

KMZ-Oregon Coastal Area.—Under the Percent Inflow Alternative, the KMZ-Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending changes. These changes would result in annual regional industrial output increasing by $2.8 million (Table TA-55). This 0.3 percent increase in output would generate $1.2 million in place of work income and 45 jobs. These increases are not considered substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 7 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $353,300, or 6,500 percent, compared to No Action levels. Most of this increase would be realized at the port in Brookings based on 1996 harvest data (Table TA-4). The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from this alternative. Regional spending by persons ocean sportfishing for salmon would increase by $2.5 million, or 55 percent, compared to No Action levels.

Northern/Central Oregon Coastal Area.—Under the Percent Inflow Alternative, the Northern / Central Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending changes. These changes would result in annual regional industrial output increasing by $36.0 million (Table TA-55). This 0.1 percent increase in output would generate $13.6 million in place of work income and 423 jobs. These increases are not considered substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 8 percent. The ocean commercial salmon fishing industry would

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experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $3.2 million, or 40 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), ports that would primarily benefit from this increase would include Newport and Charleston. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit. Regional spending by persons ocean sportfishing for salmon would increase by $581,800, or 8 percent, compared to No Action levels. These impacts are not considered substantial.

Social Impacts

In the KMZ-California and KMZ-Oregon Coastal Areas, the substantial increase in benefits to businesses for supporting sportfishing for salmon would be viewed as positive by the affected communities. In the remainder of the Lower Klamath River Basin / Coastal Area there would be no substantial changes under the Percent Inflow Alternative.

Central Valley

2020 Economic Impacts

Sacramento Valley.—The Sacramento Valley would be affected by change in municipal water supply and electricity costs, and by change in agricultural production and net returns. The total loss in value of output would be $9.2 million, place of work income would be reduced by $5.0 million, and employment would be reduced by 130 persons (Table TA-56). These changes are not substantial. Relatively large effects on certain industries or areas may occur, but these are not expected to be substantial. Table TA-47 provides economic impacts by sector.

Table TA-47. Economic Impacts of Percent Inflow Alternative, Sacramento River Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-0.12	-0.02	-0.03	-0.05	-0.05	-1.8
Mining	0.00	0.00	0.00	0.00	0.00	0.0
Construction	-0.15	-0.06	-0.02	-0.07	-0.08	-1.9
Manufacturing	-1.57	-0.30	-0.24	-0.55	-0.57	-9.6
Transportation/Communications/Utilities	-0.71	-0.18	-0.18	-0.37	-0.39	-4.8
Wholesale Trade	-0.23	-0.12	-0.04	-0.16	-0.22	-3.6
Retail Trade	-1.40	-0.61	-0.22	-0.82	-1.03	-39.8
Finance/Insurance/Real Estate	-2.16	-0.35	-1.01	-1.37	-1.70	-15.7
Services	-2.30	-0.94	-0.44	-1.38	-1.42	-43.2
Govt. Enterprise & Special Industry	-0.57	-0.16	-0.11	-0.27	-0.27	-3.6
Total	-9.20	-2.75	-2.29	-5.04	-5.72	-123.9

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San Joaquin Valley.—The San Joaquin Valley would be affected by change in municipal water supply and electricity costs, and by change in agricultural production and net returns. The total loss in value of output would be $5.4 million, place of work income would be reduced by $2.9 million, and employment would be reduced by 90 persons (Table TA-56). These changes are not substantial. Relatively large effects on certain industries or areas may occur, but these are not expected to be substantial. Table TA-48 provides economic impacts by sector.

Table TA-48. Economic Impacts of Percent Inflow Alternative, San Joaquin Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-0.49	-0.06	-0.13	-0.19	-0.20	-6.4
Mining	-0.01	0.00	0.00	0.00	-0.01	0.0
Construction	-0.06	-0.02	-0.01	-0.03	-0.03	-0.9
Manufacturing	-1.24	-0.26	-0.20	-0.46	-0.47	-8.4
Transportation/Communications/Utilities	-0.26	-0.06	-0.06	-0.12	-0.13	-2.0
Wholesale Trade	-0.13	-0.07	-0.02	-0.09	-0.13	-2.1
Retail Trade	-1.29	-0.57	-0.26	-0.83	-1.04	-42.6
Finance/Insurance/Real Estate	-0.90	-0.13	-0.45	-0.58	-0.72	-6.1
Services	-0.92	-0.38	-0.17	-0.55	-0.56	-17.6
Govt. Enterprise & Special Industry	-0.11	-0.04	-0.01	-0.05	-0.05	-1.0
Total	-5.42	-1.60	-1.31	-2.91	-3.33	-86.9

Tulare Basin.—The Tulare Basin would be affected by changes in agricultural production and net returns. The total reduction in value of output would be $6.7 million, place of work income would be reduced $3.5 million, and employment would be reduced by 110 persons (Table TA-56). These changes are not substantial. Relatively large effects on certain industries or areas may occur, but these are not expected to be substantial. Table TA-49 provides economic impacts by sector.

2020 Social Impacts

There would be no substantial changes in the Central Valley under the Percent Inflow Alternative.

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Table TA-49. Economic Impacts of Percent Inflow Alternative, Tulare Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	-0.85	-0.12	-0.26	-0.38	-0.40	-11.0
Mining	-0.03	0.00	-0.01	-0.01	-0.02	0.0
Construction	-0.06	-0.03	-0.01	-0.03	-0.03	-0.9
Manufacturing	-1.84	-0.35	-0.28	-0.63	-0.65	-13.5
Transportation/Communications/Utilities	-0.29	-0.07	-0.06	-0.13	-0.14	-2.0
Wholesale Trade	-0.16	-0.08	-0.02	-0.11	-0.15	-2.5
Retail Trade	-1.89	-0.88	-0.40	-1.29	-1.57	-61.9
Finance/Insurance/Real Estate	-0.64	-0.07	-0.35	-0.42	-0.52	-3.6
Services	-0.78	-0.30	-0.15	-0.45	-0.46	-14.6
Govt. Enterprise & Special Industry	-0.11	-0.04	0.01	-0.03	-0.03	-1.0
Total	-6.65	-1.93	-1.55	-3.48	-3.98	-111.1

MECHANICAL RESTORATION ALTERNATIVE

Trinity River Basin

Up-Front Impacts

The costs associated with the Mechanical Restoration Alternative are expected to generate an additional $2.1 million in outputsales, $1.1 million in income, and 37 jobs annually in Trinity County (Table TA-54). The majority of this impact stems from the combined cost of constructing the channel rehabilitation sites and the watershed protection program. Impacts taper off gradually until the channel rehabilitation sites are completed in year 6. At that point impacts decline by 50 percent and represent primarily the watershed protection program. Given the peak level of job creation represents less than 1 percent of the projected total employment in Trinity County in 2001, the total impacts associated with the alternative are not substantial. The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level.

The alternative includes the following programs: watershed protection, construction of channel rehabilitation sites, maintenance of existing and new channel rehabilitation sites, and a mainstem dredging program. Given all of these activities are dispersed, it is unlikely that regional economic impacts would be geographically concentrated.

Annual Impacts

2020 Economic Impacts.—The Trinity / Shasta County regional economy would be positively affected by the Mechanical Restoration Alternative. The only changes in recreation-related spending would be associated with slight increases in use of the Trinity River for sportfishing. Annual regional economic output would increase by an estimated $110,000, place of work

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income would increase by $60,000, and employment would increase by 2 jobs (Table TA-54). These increases are not considered substantial. Revenues specific to businesses in Trinity County are estimated to increase by less than $50,000 annually.

Businesses that primarily cater to persons recreating at Trinity and Shasta Reservoirs, or along the Trinity River, would be most impacted by this alternative. These businesses include concessionaires, marina operators and other service providers at the lakes, and guiding and recreation services along the river. Positive, but not substantial, impacts would be experienced by businesses that serve recreationists along the Trinity River; businesses that serve persons recreating at Trinity and Shasta Reservoirs would not be affected.

2020 Social Impacts.—There would be no substantial social changes in the Trinity River Basin under the Mechanical Restoration Alternative.

Lower Klamath River Basin/Coastal Area

2020 Economic Impacts

Monterey Coastal Area.—The Monterey Coastal Area would be unaffected by implementation of the Mechanical Restoration Alternative because this area has historically been less affected by restraints imposed to protect Klamath Basin salmon. Therefore, easing harvest restrictions on natural Trinity River salmon would have little effect on the total harvest in this region. No project-related changes in ocean commercial salmon harvests or sportfishing-related spending are expected within the region.

San Francisco Coastal Area.—This Mechanical Restoration Alternative has no effect on agriculture, hydropower, or M&I water supply; however, sportfishing and commercial fishing are affected. The increase in value of production is $2.3 million, place of work income is increased by $0.9 million, and employment would be increased by 25 persons (Table TA-55). These effects are not substantial. Table TA-50 provides economic impacts by sector.

The ocean commercial salmon fishing and processing industry, and businesses that cater to persons sportfishing for salmon including charter boat operators, marina operators, and other service providers near port areas, would benefit from this alternative. The gross value of the annual commercial harvest of salmon is estimated to increase by $262,400 (4 percent), and regional spending by persons ocean sportfishing for salmon would increase by $117,000 (1 percent) compared to No Action levels. The changes are not substantial.

Mendocino Coastal Area.—Under the Mechanical Restoration Alternative, the Mendocino Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $4.3 million, place of work income increasing by $2.0 million, and employment increasing by 50 jobs (Table TA-55). These increases, which are less than 0.1 percent of No Action levels, are not substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 7 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to

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Table TA-50. Economic Impacts of Mechanical Restoration Alternative, Bay Region, by Industry Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	0.16	0.02	0.05	0.08	0.08	3.3
Mining	0.00	0.00	0.00	0.00	0.00	0.0
Construction	0.02	0.01	0.00	0.01	0.01	0.2
Manufacturing	1.08	0.14	0.04	0.18	0.19	6.8
Transportation/Communications/Utilities	0.13	0.04	0.03	0.07	0.07	0.9
Wholesale Trade	0.12	0.07	0.02	0.09	0.11	1.5
Retail Trade	0.18	0.08	0.03	0.11	0.13	4.5
Finance/Insurance/Real Estate	0.24	0.05	0.11	0.16	0.19	1.5
Services	0.32	0.14	0.06	0.21	0.21	5.6
Govt. Enterprise & Special Industry	0.03	0.01	0.00	0.01	0.01	0.3
Total	2.28	0.57	0.34	0.91	1.01	24.6

increase by $928,900, or 23 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this increase would occur at the port in Fort Bragg, and to a lesser extent, in Point Arena. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit. Regional spending by persons ocean sportfishing for salmon would increase by $564,200, or 18 percent, compared to No Action levels. This change is not substantial.

KMZ-California Coastal Area.—Under the Mechanical Restoration Alternative, the KMZ-California Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $1.9 million (Table TA-55). This growth in output would generate an increase of $0.9 million in place of work income and 23 jobs within the region. These increases, which represent less than 0.1 percent of No Action levels, are not substantial. Note that these impacts are understated since the analysis does not include the effects of changes in tribal harvests.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 1.0 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $404,000, or 600 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), most of this increase would occur at the port in Eureka, and to a leser extent, in Trinidad. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit. Regional spending by persons sportfishing for salmon in the ocean and the lower Klamath River would increase by $1.0 million, or 30 percent, compared to No Action levels.

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KMZ-Oregon Coastal Area.—Under the Mechanical Restoration Alternative, the KMZ-Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $2.6 million (Table TA-55). This 0.3 percent increase in output would generate an increase of $1.0 million in place of work income and 43 jobs within the region. These changes are not substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 6 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest would increase by $333,700, or 600 percent, compared to No Action levels. Most of this increase would be realized at the port in Brookings based on 1996 harvest data (Table TA-4). The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit. Regional spending by persons ocean sportfishing for salmon would increase by $2.5 million, or 53 percent, compared to No Action levels.

Northern/Central Oregon Coastal Area.—Under the Mechanical Restoration Alternative, the Northern Central Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output increasing by $35.7 million (Table TA-55). This 0.1 percent increase in output would generate $13.4 million in place of work income and 419 jobs. These increases are not substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to increase by an insubstantial 8 percent. The ocean commercial salmon fishing industry would experience substantial economic benefits. The gross value of the annual harvest is estimated to increase by $3.1 million, or 40 percent, compared to No Action levels. Based on 1996 harvest data (Table TA-4), ports that would primarily benefit from this increase would include Newport and Charleston. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit. Regional spending by persons ocean sportfishing for salmon would increase by $560,700, or 8 percent, compared to No Action levels. This change is not substantial.

2020 Social Impacts

In the KMZ-California and KMZ-Oregon Coastal Areas, the increase in benefits to businesses supporting sportfishing for salmon would be viewed as positive by the affected communities. In the remainder of the Lower Klamath River Basin / Coastal Area there would not be any substantial changes under the Mechanical Restoration Alternative.

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Central Valley

2020 Economic Impacts

Sacramento Valley.—The Mechanical Restoration Alternative has no effect on Sacramento Valley agriculture, power, recreation, or M&I water supply. Therefore, there are no regional effects.

San Joaquin Valley.—The Mechanical Restoration Alternative has no effect on San Joaquin Valley agriculture, power, recreation, or M&I water supply. Therefore, there are no regional effects.

Tulare Basin.— The Mechanical Restoration Alternative has no effect on Tulare Basin agriculture, power, recreation, or M&I water supply. Therefore, there are not regional effects. 2020 Social Impacts. There would be no substantial social impacts to the Central Valley under the Mechanical Restoration Alternative.

STATE PERMIT ALTERNATIVE

Trinity River Basin

Up-Front Impacts

The additional costs associated with the State Permit Alternative as compared to No Action (i.e., increased spawning gravel costs due to Safety of Dam releases) were determined to be minor enough not to create noticeable regional impacts. The lack of up-front impacts associated with this alternative would hold for the sector-level comparison as well as the total comparison.

Annual Impacts

2020 Economic Impacts.—Under the State Permit Alternative, the TrinityShasta County regional economy would be negatively affected by decreases in spending associated with declines in Trinity River recreation. Although recreation-related spending associated with use of Trinity and Shasta Reservoirs would increase, these effects would be more than offset by decreases in recreation-related spending along the Trinity River. Annual regional economic output would decrease by $5.9 million, place of work income would decrease by $3.5 million, and employment would decrease by 115 (Table TA-54) jobs. These changes are not substantial. Revenues specific to businesses in Trinity County are estimated to decrease by $1.8 million annually.

The economic sectors most affected by recreation activity are wholesale trade, retail trade, and lodging places. Annual employment in these sectors is estimated to decrease by 74 jobs, with 70 of those occurring in the retail trade and lodging sectors. The adverse impacts on the lodging sector are substantial.

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Businesses that primarily cater to persons recreating at Trinity and Shasta Reservoirs, or along the Trinity River, would be most impacted by this alternative. These businesses include concessionaires, marina operators and other service providers at the reservoirs, and guiding and recreation services along the river. Beneficial but not substantial impacts would be experienced by businesses that serve recreationists at the reservoirs. Businesses that primarily serve persons recreating along the Trinity River would experience a substantial, adverse impact.

2020 Social Impacts.—Those losing jobs in lodging or in businesses serving recreationists along the Trinity River would have to obtain employment in different businesses or leave the area to secure employment.

Lower Klamath River Basin/Coastal Area

As discussed in the following sections, ocean commercial salmon harvests are estimated to decrease in all coastal regions under the State Permit Alternative. In addition to the reductions in commercial fishing and seafood processing employment described for each coastal area, harvest reductions would also result in lost income to commercial fishing operations, potentially causing credit problems for commercial harvesters who rely on annual operating loans. Salmon fishing provides an important contribution to the total annual income of many commercial fishing operations who harvest various commercial species during the course of a year. Business credit depends largely on the expected income of commercial operations and the risk involved in generating that income. Therefore, changes in conditions that reduce income and increase risk, such as reductions in salmon harvests, could reduce lender's willingness to lend money to commercial fishing operations or to increase the rate lenders charge for operating loans. Both of these outcomes could damage the ability of a commercial fishing business to continue to operate. The severity of this effect would largely depend on the reliance of individual fishing operations on annual or periodic operating loans from commercial lenders to finance ongoing fishing activities.

2020 Economic Impacts

Monterey Coastal Area.—Under the State Permit Alternative, the Monterey Coastal Area economy would be adversely affected by reductions in ocean commercial salmon harvests and sportfishing-related spending changes because harvests in this region would be presumably restricted to protect natural Trinity River salmon, which are assumed to be listed under the Endangered Species Act because of poor habitat conditions under this alternative. These changes would result in annual regional industrial output decreasing by $13.3 million, place of work income decreasing by $5.4 million, and employment decreasing by 166 jobs (Table TA-55). These reductions, which are less than 0.1 percent of No Action levels, are not substantial. Overall commercial fishing and seafood processing employment in the area is estimated to decrease by an insubstantial 13 percent and 2 percent respectively. The ocean commercial salmon fishing industry would experience adverse economic effects. Reductions in salmon harvests would result in annual gross harvest revenues decreasing by $1.3 million, or 28 percent, compared to No Action levels. These changes, which would be primarily felt in the port communities of Moss Landing, Santa Cruz, and Monterey, are not substantial. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily

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cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would be adversely impacted. Regional spending by persons ocean sportfishing for salmon would decrease by $647,700, or 6 percent, compared to No Action levels. This change is not substantial.

San Francisco Coastal Area.—Under the State Permit Alternative, the San Francisco Coastal Area would be affected by changes in sportfishing and commercial fishing expenditures, by changes in municipal water supply and electricity costs, and by changes in agricultural production and net returns. The positive effects from increased M&I water supply, hydropower generation and agricultural production exceed the negative effects from reduced fishing. The net increase in valuse of production would be $13.2 million, place of work income would increase by $7.9 million, and employment would increase by 110 persons (Table TA-55). These changes are not substantial. Table TA-51 provides economic impacts by sector.

Table TA-51. Economic Impacts of State Permit Alternative, Bay Region, by Industry

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	4.08	0.19	0.97	1.16	1.18	31.1
Mining	0.01	0.00	0.00	0.00	0.01	0.0
Construction	0.20	0.09	0.02	0.12	0.12	2.3
Manufacturing	1.41	0.62	1.30	1.91	1.94	-6.4
Transportation/Communications/Utilities	0.94	0.25	0.23	0.49	0.52	5.8
Wholesale Trade	0.28	0.16	0.04	0.20	0.26	3.3
Retail Trade	0.88	0.40	0.09	0.50	0.60	17.7
Finance/Insurance/Real Estate	2.75	0.50	1.38	1.88	2.21	16.8
Services	2.33	1.02	0.43	1.46	1.49	38.3
Govt. Enterprise & Special Industry	0.35	0.14	0.04	0.18	0.18	4.02
Total	13.22	3.37	4.52	7.89	8.50	113.0

The ocean commercial salmon fishing and processing industry, and businesses that cater to persons sportfishing for salmon including charter boat operators, marina operators, and other service providers near port areas, would be adversely affected. The gross value of the annual commercial harvest of salmon would decrease by $1.6 million (27 percent), and regional spending by persons ocean sportfishing for salmon would decrease by $791,200 (6 percent) compared to No Action levels. These decreases, which would be felt primarily in the Princeton / Half Moon Bay, San Francisco, and Bodega Bay port areas, are not substantial.

Mendocino Coastal Area.—Under the State Permit Alternative, the Mendocino Coastal Area economy would be adversely affected by decreases in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output decreasing by $2.1 million, place of work income decreasing by $1.0 million, and employment decreasing by 25 jobs (Table TA-55). These reductions, which are less than 0.1 percent of No Action levels, are not substantial.

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Overall commercial fishing and seafood processing employment in the area is estimated to decrease by an insubstantial 3 percent. The ocean commercial salmon fishing industry would experience substantial adverse economic effects. Based on the assumption that commercial salmon harvests would be eliminated in the region under this alternative, the gross value of the annual salmon harvest would decrease by $404,000 compared to No Action levels. This harvest reduction would be primarily felt in the port areas of Fort Bragg and Point Arena. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would be adversely affected. Regional spending by persons ocean sportfishing for salmon would decrease by $2.6 million, or 27 percent, compared to No Action levels.

KMZ-California Coastal Area.—Under the State Permit Alternative, the KMZ-California Coastal Area economy would experience slight reductions in economic activity due to decreases in ocean commercial salmon harvests and sportfishing-related spending. Annual regional industrial output would decrease by an estimated $300,000. This reduction in output would generate a $200,000 decrease in place of work income and the loss of 4 jobs (Table TA-55). These decreases, which represent less than 0.001 percent of No Action levels, are not substantial. Note that these impacts are understated since the analysis does not include the effects of changes in tribal harvests.

Overall commercial fishing and seafood processing employment in the area is estimated to decrease by an insubstantial 2 jobs. The ocean commercial salmon fishing industry would experience a substantial adverse economic impact due to the assumed closure of the ocean salmon fishery. The gross value of the annual harvest is estimated to decrease by $61,900, or 100 percent, compared to No Action levels. This harvest reduction and resulting economic effects would be primarily felt in the port areas of Eureka, and to a lesser extent, Trinidad and Crescent City. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would be adversely affected. Regional spending by persons sportfishing for salmon in the ocean and lower Klamath River would decrease by $198,000, or 6 percent, compared to No Action levels. This change is not substantial.

KMZ-Oregon Coastal Area.—Under the State Permit Alternative, the KMZ-Oregon Coastal Area economy would experience reductions in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output decreasing by $500,000 (Table TA-55). This 0.06 percent decrease in output would cause an estimated $200,000 reduction in place of work income and the loss of 8 jobs. These changes are not substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to decrease by an insubstantial 2 jobs. The ocean commercial salmon fishing industry would experience substantial reductions in salmon harvest revenues resulting from the assumed closure of the salmon fishery in the area. The gross value of the annual harvest would decrease by $54,200, or 100 percent, compared to No Action levels. This reduction would be primarily

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felt in the port community of Brookings. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would be adversely affected. Regional spending by persons ocean sportfishing for salmon would decrease by $524,000, or 11 percent, compared to No Action levels. This change is not substantial.

Northern/Central Oregon Coastal Area.—Under the State Permit Alternative, the Northern / Central Oregon Coastal Area economy would experience reductions in ocean commercial salmon harvests and sportfishing-related spending. These changes would result in annual regional industrial output decreasing by $41.8 million (Table TA-55). This decrease, which is less than 1 percent of No Action levels, would cause a $15.8 million reduction in place of work income and the loss of 494 jobs. These changes are not substantial.

Overall commercial fishing and seafood processing employment in the area is estimated to decrease by an insubstantial 10 percent and 8 percent, respectively. The ocean commercial salmon fishing industry would experience substantial reductions in economic benefits. The gross value of the annual harvest in the region would decrease by $3.7 million, or 50 percent, compared to No Action levels. This harvest reduction would be primarily felt in the port communities of Newport and Charleston. The economic sectors most affected by sportfishing activity are wholesale trade, retail trade, and lodging places. None of these sectors will be substantially affected. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would be adversely affected. Regional spending by persons ocean sportfishing for salmon would decrease by $964,300, or 13 percent, compared to No Action levels. This change is not substantial.

2020 Social Impacts

There would be no substantial social impacts to the Lower Klamath River Basin / Coastal Area under the State Permit Alternative.

Central Valley

2020 Economic Impacts

Sacramento Valley.—Under the State Permit Alternative, the Sacramento Valley would be affected by changes in M&I water supply and electricity costs, and by changes in agricultural production and net returns. The total increase in output would be $9.8 million, place of work income would increase $5.2 million, and employment would increase by 130 persons (Table TA-56). No substantial adverse regional effects were identified. Table TA-52 provides economic impacts by sector.

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Table TA-52. Economic Impacts of State Permit Alternative, Sacramento Region, by Industry
Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	0.14	0.02	0.04	0.07	0.07	2.3
Mining	0.01	0.00	0.00	0.00	0.00	0.0
Construction	0.15	0.06	0.02	0.08	0.08	2.0
Manufacturing	1.96	0.35	0.30	0.64	0.67	10.7
Transportation/Communications/Utilities	0.78	0.20	0.19	0.40	0.42	5.3
Wholesale Trade	0.27	0.14	0.04	0.18	0.25	4.1
Retail Trade	1.40	0.61	0.22	0.82	1.03	39.9
Finance/Insurance/Real Estate	2.18	0.36	1.02	1.38	1.71	15.8
Services	2.33	0.95	0.45	1.40	1.44	43.7
Govt. Enterprise & Special Industry	0.59	0.16	0.11	0.27	0.27	3.6
Total	9.80	2.85	2.39	5.24	5.94	127

San Joaquin Valley.—Under the State Permit Alternative, the San Joaquin Valley would be affected by changes in M&I water supply and electricity costs, and by changes in agricultural production and net returns. The total increase in output would be $12.5 million, place of work income would increase $6.9 million, and employment would increase by 220 persons (Table TA-56). No substantial adverse regional effects were identified. Table TA-53 provides economic impacts by sector.

Table TA-53. Economic Impacts of State Permit Alternative, San Joaquin Region, by Industry
Million 1997 Dollars

Industry	Total Industrial Output	Employee Comp. Income	Property Income	Total PoW Income	Value Added	Employment Number of Jobs)
Agriculture, Forestry, Fisheries	0.11	0.03	0.05	0.07	0.08	2.0
Mining	0.01	0.00	0.00	0.01	0.01	0.0
Construction	0.13	0.05	0.02	0.07	0.07	1.8
Manufacturing	3.55	0.78	0.58	1.36	1.38	24.6
Transportation/Communications/Utilities	0.55	0.14	0.11	0.25	0.27	4.2
Wholesale Trade	0.31	0.16	0.05	0.20	0.29	4.7
Retail Trade	3.73	1.67	0.80	2.47	3.06	126.9
Finance/Insurance/Real Estate	1.87	0.27	0.94	1.20	1.49	12.3
Services	2.02	0.83	0.38	1.21	1.24	38.3
Govt. Enterprise & Special Industry	0.22	0.08	0.02	0.10	0.10	2.1
Total	12.50	3.99	2.94	6.94	7.98	216.9

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Tulare Basin.—Under the State Permit Alternative, the Tulare Basin would be unaffected.

2020 Social Impacts

There would be no substantial social impacts to the Central Valley under the State Permit Alternative.

NO ACTION VERSUS PREFERRED ALTERNATIVE

Trinity River Basin

Up-Front Impacts

The Preferred Alternative consists of the Flow Evaluation Alternative plus the watershed protection component of the Mechanical Restoration Alternative. Therefore, all socioeconomic impacts associated with the Preferred Alternative, other than costs, are identical to those of the Flow Evaluation Alternative. The costs associated with the Preferred Alternative are expected to generate $2.1 million in output/sales, $1.1 million in income, and 37 jobs annually in Trinity County (Table TA-54). The majority of these impacts stem from the combined cost of constructing the channel rehabilitation sites and the watershed protection program. Impacts taper off gradually until the channel rehabilitation sites are completed in year 6. At that point, impacts decline by 50 percent and represent primarily the watershed protection program. Given the peak level of job creation represents less than 1 percent of the projected total employment in Trinity County in 2001, the total impacts associated with the Preferred Alternative are not substantial.

The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts. Since virtually all of the costs associated with the Preferred Alternative are likely to be dispersed, regional economic impacts would not be concentrated in any particular area.

EXISTING CONDITIONS VERSUS PREFERRED ALTERNATIVE

Trinity River Basin

Economic Impacts

Up-Front Impacts.—The overall change in the Trinity County economy from 1995 existing conditions to 2001 conditions under the Preferred Alternative was estimated at $8.5 million in output, $4.5 million in income, and 127 jobs (Table TA-54). Approximately 75 percent of this change is due to the projection from 1995 to 2001 and not to implementing the alternative. The cost impacts associated with the Preferred Alternative are $2.1 million in output/sales, $1.1 million in income, and 37 jobs. The majority of this impact stems from the combined cost of constructing the channel rehabilitation sites and the watershed protection program. Impacts taper off gradually until the channel rehabilitation sites are completed in year 6. At that point, impacts decline by 50 percent and represent primarily the watershed protection program.

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Given the peak level of job creation associated with the alternative represents less than 1 percent of the projected total employment in Trinity County in 1995, the total impacts associated with the Preferred Alternative are not substantial.

The jobs generated in any particular sector are expected to be so small as to not result in any substantial impacts at the individual sector level. Since virtually all of the costs associated with the Preferred Alternative are likely to be dispersed, regional economic impacts would not be concentrated in any particular area.

Annual Impacts.—Under the Preferred Alternative, the Trinity/Shasta County regional economy would be positively affected by increases in spending associated with increases in water-oriented recreation. Annual regional economic output would increase by $2.6 billion, place of work income would increase by $1.4 billion, and employment would increase by 35,900 jobs (Table TA-54). More than 99 percent of these changes in economic activity are attributable to the effects of increased population on recreation use and spending associated with the Trinity River and Trinity and Shasta Reservoirs. Project-related effects are not substantial.

The economic sectors most affected by recreation activity are wholesale trade, retail trade, and lodging places. Annual employment in these sectors is estimated to increase by about 9,600 jobs, with 6,850 of those occurring in the retail trade sector. Because nearly all of these job impacts are attributable to population changes that are not associated with the project, project-related effects are not considered substantial.

Businesses that primarily cater to persons recreating at Trinity or Shasta Reservoirs, or along the Trinity River, would be positively impacted. These businesses include concessionaires, marina operators and other service providers at the reservoirs, and guiding and recreation services along the river. However, because most of these effects are attributable to population changes that are not associated with the project, project-related effects are not considered substantial.

Social Impacts

Social impacts would be similar to those between the No Action Alternative and the Flow Evaluation Alternative; however, additional jobs could be created as a result of the watershed protection work.

Lower Klamath River Basin/Coastal Area

2020 Economic Conditions

Monterey Coastal Area.—Compared to modeled 1995 conditions, substantial economic growth would occur within the Monterey Coastal Area by 2020 under the Preferred Alternative. Regional output is projected to increase by $17.5 billion (Table TA-55). Similarly, place of work income is projected to increase by $9.9 billion, and a projected 241,980 additional jobs would be created. This growth, however, would be entirely related to the overall growth of the regional population and its economy, and not due to the Preferred Alternative. No changes in ocean commercial or sport salmon harvests are expected between 1995 and 2020 as a result of the

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Preferred Alternative because this area has historically been less affected by restraints imposed to protect Klamath Basin salmon. Therefore, easing harvest restrictions on natural Trinity River salmon would have little effect on the total harvest in this region.

San Francisco Coastal Area.—Differences between 1995 conditions and 2020 conditions under the Preferred Alternative are largely caused by population increases, and not implementation of the project. The gross value of the annual commercial salmon harvest is estimated to increase by $262,400, or 4 percent, and regional spending by persons ocean sportfishing for salmon would increase by $3.0 million, or 29 percent, compared to 1995 levels (Table TA-55). Because more than 90 percent of this increased sportfishing-related spending is due to the effect of population growth, the project-related effects are not considered substantial.

Mendocino Coastal Area.—Compared to modeled 1995 conditions, the Mendocino Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending in 2020 under the Preferred Alternative. Employment in the overall commercial fishing and seafood processing sectors is estimated to increase by 29 and 27 jobs, respectively, by 2020 (Table TA-55). These changes represent increases of approximately 16 percent over modeled 1995 conditions. These increases are considered substantial. The gross value of the annual salmon harvest is estimated to increase by $2.1 million, or 500 percent, from modeled 1995 conditions to 2020 conditions under the Preferred Alternative. This harvest increase would be primarily felt in Fort Bragg and Point Arena based on 1996 harvest data (Table TA-4). Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from the Preferred Alternative. Regional spending by persons ocean sportfishing for salmon would increase by $1.7 million, or 65 percent, compared to 1995 levels. Because more than half of this increase is related to the project, project-related effects are considered substantial.

KMZ-California Coastal Area.—Compared to modeled 1995 conditions, the KMZ-California Coastal Area economy would be beneficially affected by increases in ocean commercial salmon harvests and sportfishing-related spending in 2020 under the Preferred Alternative. Employment in the overall commercial fishing and seafood processing sectors is estimated to increase by 7 and 6 jobs, respectively, by 2020 (Table TA-55). These changes represent increases of 1.3 percent over modeled 1995 conditions. These increases are not considered substantial. Note that these impacts are understated since the analysis does not include the effects of changes in tribal harvests. The gross value of the annual harvest is estimated to increase by $589,800, or 900 percent, from modeled 1995 conditions to 2020 conditions under the Preferred Alternative. This harvest increase would be primarily felt in the port community of Eureka, and to a lesser extent Trinidad based on 1996 harvest data (Table TA-4). Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from the Preferred Alternative. Regional spending by persons ocean sportfishing for salmon would increase by $1.9 million, or 68 percent, compared to 1995 levels. Because more than 60 percent of this increased spending is related to the project, project-related effects are considered substantial.

KMZ-Oregon Coastal Area.—Compared to modeled 1995 conditions, the KMZ-Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and

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sportfishing-related spending by 2020 under the Preferred Alternative. Employment in the overall commercial fishing and seafood processing sectors is estimated to increase by 12 and 8 jobs, respectively, by 2020 (Table TA-55). These changes represent increases of 9 percent over modeled 1995 conditions. These increases are considered less than substantial. The gross value of the annual salmon harvest is estimated to increase by $492,000, or 900 percent, from modeled 1995 conditions to 2020 conditions under the Preferred Alternative. Based on 1996 harvest data (Table TA-4), this increase would be primarily felt in the port community of Brookings. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would substantially benefit from the Preferred Alternative. Regional spending by persons ocean sportfishing for salmon would increase by $3.4 million, or 68 percent, compared to 1995 levels. Because about 90 percent of this increase is related to the project, project-related effects are considered substantial.

Northern/Central Oregon Coastal Area.—Compared to 1995 modeled conditions, the Northern / Central Oregon Coastal Area economy would benefit from increases in ocean commercial salmon harvests and sportfishing-related spending by 2020 under the Preferred Alternative. Employment in the overall commercial fishing and seafood processing sectors is estimated to increase by 102 and 168 jobs, respectively, by 2020 (Table TA-55). These changes represent increases of 11 percent over modeled 1995 conditions. These increases are considered substantial. The gross value of the annual salmon harvest is estimated to increase by $4.3 million, or 50 percent, from modeled 1995 conditions to 2020 conditions under the Preferred Alternative. Based on 1996 harvest data (Table TA-4), this increase would be primarily felt in the port communities of Newport and Charleston. Businesses that primarily cater to persons sportfishing for salmon in the ocean, including charter boat operators, marina operators, and other service providers near affected port areas, would benefit from the Preferred Alternative. Regional spending by persons ocean sportfishing for salmon would increase by $1.8 million, or 30 percent, compared to 1995 levels. Because about 60 percent of this increase is related to the effect of population growth on ocean salmon sportfishing, project-related effects are not considered substantial.

Social Impacts

Social impacts would be similar to those between the No Action Alternative and the Flow Evaluation Alternative.

Central Valley

2020 Economic Impacts

Sacramento Valley.—The differences between 1995 conditions and conditions in 2020 under the Preferred Alternative are largely caused by population increases, and not due to the project (Table TA-56).

San Joaquin Valley.—The differences between 1995 conditions and conditions in 2020 under the Preferred Alternative are largely caused by population increases, and not due to the project (Table TA-56).

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Tulare Basin.—The differences between 1995 conditions and conditions in 2020 under the Preferred Alternative are largely caused by population increases, and not due to the project (Table TA-56).

Social Impacts

Social impacts would be similar to those between the No Action Alternative and the Flow Evaluation Alternative.

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TABLE TA-54
Trinity River Basin Region (Defined as Trinity and Shasta Counties for These Analyses)

Time of Impact/ Impact Measures/ Economic Sectors	Units	Comparison Bases		Action Alternatives						
		Existing Conditions	No Action Alternative	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred Alternative	
				Change from No Action Alternative in 2020						Change from Existing Conditions
Up-front Impacts		**Year 1995 Totals**	**Year 2001 Totals**							
Output/Sales	M$	344.2	350.6	6.2/5.5/3.6[a]	1.28	1.23	2.14	0	2.14	8.54
Income	M$	186.1	189.5	2.95/2.65/1.75[a]	0.66	0.63	1.11	0	1.10	4.5
Employment	Jobs	4,955	5,045	77/70/45[a]	22	21	37	0	37	127
Most Impacted Sectors:										
Construction	Jobs	375	380	18/16/11	0	0	0	0	0	5
Wholesale trade	Jobs	105	105	7/6/4[a]	1	1	2	0	2	2
Eating & drinking	Jobs	225	230	8/7/4[a]	3	3	5	0	5	10
Auto & service stations	Jobs	55	55	11/10/6[a]	0	0	0	0	0	0
Annual Impacts		**Year 1995 Totals**	**Year 2020 Totals**							
Output/Sales	M$	6,078.2	8,693.7	-6.3	3.2	-0.5	0.1	-5.9	3.2	2,618.7
Income	M$	3,377.4	4,830.7	-2.6	2.0	-0.3	0.1	-3.5	2.0	1,455.3
Employment	Jobs	83,280	119,110	-66	66	-8	2	-115	66	35,896
Most Impacted Sectors:										
Wholesale trade	Jobs	490	7,010	-9	2	-1	-1	-4	2	2,112
Retail trade	Jobs	15,880	22,710	-25	21	-3	-2	-38	21	6,851
Lodging places	Jobs	1,440	2,060	-5	20	-1	1	-32	20	640

[a]Three estimates reflect dam modification options. See Section 2.1.3.
M$ = million dollars.

TABLE TA-55
Lower Klamath River Basin/Coastal Area Regions

Impact Subregion/Impact Measures/Economic Sectors	Units	Comparison Bases		Action Alternatives						
		Existing Conditions (1995)	No Action Alternative (2020)	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred Alternative	
		Change from No Action Alternative in 2020								Change from Existing Conditions
Monterey Coastal Area										
Total output	M$	34,214.6	51,714.2	0	0	0	0	-13.3	0	17,499.6
Income	M$	19,297.0	29,166.8	0	0	0	0	-5.4	0	9,869.8
Employment	Jobs	473,210	715,190	0	0	0	0	-166	0	241,980
Most Impacted Sectors:										
Commercial fishing	Jobs	210	210	0	0	0	0	-27	0	0
Seafood processing	Jobs	2,450	2,450	0	0	0	0	-57	0	0
Wholesale trade	Jobs	18,920	28,600	0	0	0	0	-8	0	9,680
Retail trade	Jobs	77,010	116,390	0	0	0	0	-24	0	39.380
Lodging places	Jobs	12,390	18,720	0	0	0	0	-2	0	6,330
San Francisco Coastal Area										
Total output	M$	351,700	430,900	-159.6	-32.6	-12.3	2.28	13.2	-32.6	79,167
Income	M$	199,900	245,000	-79.2	-16.2	-6.4	0.91	7.9	-16.2	45,084
Employment	Jobs	3,652,600	4,560,500	-1,540	-310	-120	25	110	-310	907,590
Most Impacted Sectors:										
Vegetables	Jobs	1,423	1,776	-165	-1	-9	0	27	-1	352
Canned fruit and vegetables	Jobs	3,281	4,097	-125	-24	-7	0	21	-24	792
Retail and wholesale trade	Jobs	746,600	932,218	-327	-65	-30	6	21	-65	185,553
Services	Jobs	1,154,925	1,441,977	-420	-85	-41	6	38	-85	286,967
Commercial Fishing	Jobs	1,276	1,593	3	0	-3	3	-20	0	317
Mendocino Coastal Area										
Total output	M$	3,111.5	4,267.1	11.1	9.6	4.9	4.3	-2.1	9.6	1,165.2
Income	M$	1,560.4	2,140.0	5.1	4.4	2.3	2.0	-1.0	4.4	584.0
Employment	Jobs	43,630	59,835	127	110	57	50	-25	110	16,315

TABLE TA-55 (Continued)
Lower Klamath River Basin/Coastal Area Regions

Impact Subregion/Impact Measures/Economic Sectors	Units	Comparison Bases		Action Alternatives						
		Existing Conditions (1995)	No Action Alternative (2020)	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred Alternative	
		Change from No Action Alternative in 2020								Change from Existing Conditions
Most Impacted Sectors:										
Commercial fishing	Jobs	180	180	33	29	14	13	-5	29	29
Seafood processing	Jobs	180	180	31	27	13	12	-5	27	27
Wholesale trade	Jobs	1,360	1,870	6	5	3	2	-1	5	515
Retail trade	Jobs	8,130	11,150	18	15	8	7	-5	15	3,035
Lodging places	Jobs	1,710	2,350	2	2	1	1	-1	2	642
KMZ-California Coastal Area										
Total Output	M$	5,086.9	6,072.5	3.0	2.9	2.0	1.9	-0.3	2.9	988.5
Income	M$	2,752.4	3,285.7	1.5	1.5	1.0	0.9	-0.2	1.5	534.8
Employment	Jobs	73,760	88,050	37	36	24	23	-4	36	14,326
Most Impacted Sectors:										
Commercial fishing	Jobs	520	520	8	7	5	5	-1	7	7
Seafood processing	Jobs	460	460	7	6	4	4	-1	6	6
Wholesale trade	Jobs	3,210	3,830	2	2	2	1	0	2	622
Retail trade	Jobs	13,820	16,490	8	8	5	5	-1	8	2,678
Lodging places	Jobs	1,390	1,650	2	2	1	1	0	2	262
KMZ-Oregon Coastal Area										
Total Output	M$	572.4	848.4	3.9	3.7	2.8	2.6	-0.5	3.7	279.7
Income	M$	289.9	429.7	1.7	1.6	1.2	1.0	-0.2	1.6	141.4
Employment	Jobs	9,100	13,490	62	58	45	43	-8	58	4,448
Most Impacted Sectors:										
Commercial fishing	Jobs	130	130	13	12	9	8	-1	12	12
Seafood processing	Jobs	110	110	9	8	6	6	-1	8	8
Wholesale trade	Jobs	330	490	4	3	3	3	0	3	163
Retail trade	Jobs	2,080	3,080	18	17	14	13	-3	17	1,017
Lodging places	Jobs	500	740	3	3	3	2	-1	3	243

TABLE TA-55 (Continued)
Lower Klamath River Basin/Coastal Area Regions

Impact Subregion/Impact Measures/Economic Sectors	Units	Comparison Bases		Action Alternatives						
		Existing Conditions (1995)	No Action Alternative (2020)	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred Alternative	Change from Existing Conditions
				Change from No Action Alternative in 2020						
Northern/Central Oregon Coastal Area										
Total output	M$	20,757.5	27,094.0	50.6	47.1	35.6	35.4	-41.3	47.1	6,383.6
Income	M$	10,549.2	13,768.8	19.0	17.7	13.4	13.2	-15.5	17.7	3,237.3
Employment	Jobs	290,960	379,760	593	552	418	413	-484	552	89,352
Most Impacted Sectors:										
Commercial fishing	Jobs	900	900	109	102	77	74	-89	102	102
Seafood processing	Jobs	1,730	1,730	181	168	127	127	-147	168	168
Wholesale trade	Jobs	11,260	14,700	36	34	26	26	-30	34	3,474
Retail trade	Jobs	56,410	73,630	88	82	62	61	-73	82	17,302
Lodging places	Jobs	6,370	8,320	5	5	4	4	-4	5	1,955

M$ = million dollars.

TABLE TA-56
Central Valley Regions

Impact Subregion/Impact Measures/Economic Sectors	Units	Comparison Bases		Action Alternatives						
		Existing Conditions (1995)	No Action Alternative (2020)	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred Alternative	
				Change from No Action Alternative in 2020						Change from Existing Conditions
Sacramento Valley										
Total output	M$	104,900	168,800	-50.6	-12.1	-9.2	0	9.8	-12.1	63,888
Income	M$	61,100	98,300	-27.6	-6.6	-5	0	5.2	-6.6	37,193
Employment	Jobs	1,413,400	2,137,600	-700	-160	-130	0	130	-160	724,200
Most Impacted Sectors:										
Rice milling	Jobs	1,106	1,672	-2	-1	0	0	1	-1	565
Retail and wholesale trade	Jobs	250,962	379,549	-146	-34	-29	0	29	-34	128,553
Farm machinery and equipment	Jobs	566	857	-19	-5	-2	0	2	-5	286
Miscellaneous retail	Jobs	37,640	56,925	-125	-32	-15	0	15	-32	19,253
San Joaquin Valley										
Total output	M$	82,700	154,900	-94.7	-17.0	-5.4	0	12.5	-17.0	72,183
Income	M$	41,700	78,200	-50.1	-9.0	-2.9	0	6.9	-9.0	36,491
Employment	Jobs	1,017,500	1,812,100	-1,510	-270	-90	0	220	-270	794,330
Most Impacted Sectors:										
Cotton	Jobs	6,557	11,678	-69.7	-12.4	-3.4	0	-1	-12	5,109
Retail and wholesale trade	Jobs	167,627	298,549	-208.1	-37.9	-13.8	0	30	-38	130,884
Farm machinery and equipment	Jobs	783	1,394	-112.6	-21.0	-6.1	0	20	-21	590
Miscellaneous retail	Jobs	26,349	46,928	-561.5	-104.7	-30.8	0	101	-105	20,474

TABLE TA-56 (Continued)
Central Valley Regions

Impact Subregion/Impact Measures/Economic Sectors	Units	Comparison Bases		Action Alternatives						
		Existing Conditions (1995)	No Action Alternative (2020)	Maximum Flow	Flow Evaluation	Percent Inflow	Mechanical Restoration	State Permit	Preferred Alternative	
				Change from No Action Alternative in 2020						Change from Existing Conditions
Tulare Basin										
Total output	M$	41,600	78,200	-28.0	-9.9	-6.7	0	0	-9.9	36,590
Income	M$	20,700	38,800	-14.4	-5.1	-3.5	0	0	-5.1	18,095
Employment	Jobs	534,600	945,800	-440	-160	-110	0	0	-160	411,040
Most Impacted Sectors:										
Cotton	Jobs	7,813	13,823	-24.8	-6.8	-4.5	0	0	-6.8	6,003
Retail and wholesale trade	Jobs	77,185	136,558	-57.5	-20.2	-12.1	0	0	-20.2	59,353
Farm machinery and equipment	Jobs	375	664	-37.4	-16.1	-12.6	0	0	-16.1	273
Miscellaneous retail	Jobs	26,349	46,924	-158.5	-67.8	-52.3	0	0	-67.8	20,507

M$ = million dollars.

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ENVIRONMENTAL JUSTICE TECHNICAL APPENDIX

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ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 11, 1994, requires agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities as well as the equity of the distribution of the benefits and risks of their decisions. Environmental Justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group of people should bear a disproportionate share of negative impacts from an environmental action. To comply with the environmental justice policy established by the Secretary, all Interior agencies are to identify and evaluate any anticipated effects, direct or indirect, from the proposed project, action or decision on minority and low-income populations and communities, including the equity of the distribution of the benefits and risks. Accordingly, this section examines the anticipated distributional equity of alternative-associated impacts with respect to potentially affected minority and economically disadvantaged groups.

AFFECTED ENVIRONMENT

A high concentration of Native Americans lives in the Klamath-Trinity region, particularly along the main-stem Trinity and lower Klamath Rivers. Thus, any adverse environmental affects could have a large and potentially disproportionate impact on this minority group. A primary concern regarding possible adverse impacts on the region's Native American populace is that they are already affected by low incomes, poverty and high unemployment. The Hoopa Valley and Yurok tribes account for a majority of the region's Native American population and probably would be most directly affected by the implementation of any alternative given the location of their reservations along the mainstem Trinity and lower Klamath rivers.

In 1996, Native Americans accounted for less than 1% of California's population. In that same year, the combined Native American population of Humboldt and Trinity Counties (the counties which overlap the Trinity and Lower Klamath River basins) was about 7,500, or 5% of the counties' total populations (California Department of Finance 1998). Thus, the proportion of the population living within the Klamath-Trinity region comprised of Native Americans is much higher than for the State overall.

Native Americans living in the region lag behind their non-Indian neighbors economically. For example, according to the 1990 Census, average per-capita incomes on the Hoopa Valley and Yurok reservations were $6,671 and $8,375 respectively, well below the per-capita incomes of residents of Trinity County, Humboldt County and the state of California --- $13,113, $15,498 and $16,409 respectively (U.S. Bureau of the Census 1990, Regional Economic Information System 1990).

Corresponding to low per capita incomes amongst the region's Native American people are high levels of poverty and unemployment. In 1989, it is estimated that over 35% of the

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populations of both the Hoopa Valley and Yurok reservations were living in poverty, more than two times the poverty levels of the surrounding counties, and more than three times that of the state as a whole (U.S. Bureau of the Census 1990). According to the Bureau of Indian Affairs, in 1993 unemployment amongst Hoopa Valley and Yurok tribal members living on and adjacent their reservations was 64% and 75% respectively, not accounting for underemployment (U.S. Department of the Interior, Bureau of Indian Affairs, 1993). In that same year, unemployment for all of Trinity County was 16.3%, while for Humboldt County unemployment was 9.8% (California Employment Development Department, 1994).

Two tables are presented showing the potentially affected counties within the study area. Table EJ-1A presents those counties with minority populations higher than 40% that could potentially be adversely affected by employment and/or income impacts associated with implementation of the alternatives. Table EJ2 displays income and poverty data for all the potentially affected counties. Counties in the Central Valley, such as Tulare (28.2), Merced (25.9) and Fresno (25.2) have percents of population in poverty substantially higher than California (16.5) and the United States (13.8). Counties near San Francisco Bay tend to have a lower percent of population in poverty. People of Hispanic descent make up about a third of most Central Valley county populations and African Americans about 5 percent. The percentage of people of Asian/Pacific Islander descent increases near the Bay.

ENVIRONMENTAL CONSEQUENCES.

METHODOLOGY

The analysis of the Native American environmental justice impacts examines the extent to which each alternative would restore Native American access to Trinity River resources. As Native American socioeconomic-economic opportunities in the Klamath-Trinity region are tied directly to river ecosystem health (e.g., commercial and subsistence fishing, recreation, etc.), the alternatives were evaluated based on riverine health measures (see EIS/R Sections 3.2, 3.5, and 3.7) and tribal trust analyses (see EIS/R Section 3.6).

Two suggestions are made by CEQ in "Environmental Justice: Guidance under the National Environmental Policy Act" (http://www.whitehouse.gov/CEQ/EJ.pdf) concerning minority and low income groups required to be considered under E. O. 12898. First, a population (in this case, a county) must be considered if it has more than a 50 percent minority population. For purposes of inclusion, 40 percent was used in this analysis. Table EJ-1A shows those counties with minority populations greater than 40 percent. Second, it is suggested the Current Population Survey's series P-60 on income and poverty, the Census Bureau's annual table for determining people in poverty (http://ferret.bls.census.gov/macro/031997/pov/21_000.htm) be used to determine low-income populations. However, using the 1996 poverty threshold of $16,183 median income annually for a family of four, not even the poorest counties in California would have been included in the analysis. Again, for purposes of inclusion, a different measure, percent of population in poverty (Model Based Income and Poverty Estimates 1996: http://www.census.gov/hhes/www/saipe/stcty/estimate.html), was used to

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identify counties with low-income populations. Once potentially effected counties were identified, the median incomes and percent of population in poverty for those counties were compared against the median incomes and percent of population in poverty for California to avoid excluding low-income populations above the poverty line from the analysis (see Table EJ-2). The percent of population in poverty was used as the low-income indicator for this analysis.

Counties and sectors having substantial adverse employment impacts were identified by alternative and region in the Socioeconomics Technical Appendix. Those affected counties with minority populations greater than 40 percent and percent of population in poverty greater than the state of California were identified. Minority workers in affected occupations in those counties were identified and environmental justice impacts evaluated. Tables EJ-3A and EJ-3B from the Equal Opportunity Employment data file (http://govinfo.library.orst.edu/) were used to identify minority workers in affected occupations.

NO ACTION

Trinity River Basin and Lower Klamath River Basin/Coastal Area

Under the No Action Alternative the Trinity River is projected to have in the year 2020 only 8 percent of the attributes of a healthy alluvial river. Thus, the alternative would have negative environmental justice implications for the Native American people of the Trinity and Klamath River Basins. The alternative would not repair the existing inequities in their access to Trinity River resources. There would not be substantial environmental justice impacts to non-Native American groups.

Trinity River Basin

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

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North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Joaquin Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Tulare Region

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

MAXIMUM FLOW

Trinity River Basin and Lower Klamath River Basin/Coastal Area

Implementation of the Maximum Flow Alternative could have substantial positive impacts on the Hoopa Valley, Yurok and other tribes of the region. By restoring the Trinity River's physical attributes to 81 percent of those present in a healthy alluvial river, the subsequent improvements to the river's fisheries, water quality, riparian habitat and other resources would greatly improve tribal access to many trust resources to the substantial benefit of their communities. Thus, this Alternative would have very large, positive environmental justice implications for Native American communities in the region. As discussed below, substantial environmental justice impacts to non-Native Americans could occur in the San Francisco Coastal Area.

Trinity River Basin

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—Most of the identified impacts on agriculture resulting from the Max Flow alternative would be concentrated in the Santa Clara Valley. The demographics of

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Santa Clara county indicate the Maximum Flow Alternative could have substantial environmental justice impacts. Santa Clara has a large minority population. In 1990 Santa Clara had a minority population of 42% and a Hispanic population of 21%. By 1996 the minority and Hispanic populations were 47 and 23 percent respectively. While the percent of population in poverty (9.1) is less than the state (16.5), over 80 percent of the farm workers in the county are Hispanic.

Increased electricity costs could have environmental justice impacts for low-income populations. The three counties potentially affected are Alameda, Santa Clara, and San Mateo. While Santa Clara and Alameda both have high minority populations, all three counties are relatively wealthy with high median incomes and low poverty levels. Thus it is not expected higher energy costs would have environmental justice impacts.

The most adverse affects from M&I water costs would occur in Contra Costa valley. However, Contra Costa is one of the wealthiest counties in California with a median income approximately 17,000 dollars higher than the median income of California and approximately 19,000 dollars higher than the national median income. In the county 7.9 percent of the population are in poverty compared to 16.5 percent for California and 13.8 for the United States.

Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

The Tehama Colusa canal area, where substantial agricultural costs may occur with the Maximum Flow Alternative, includes the following counties: Glenn, Colusa, and Yolo. Based on Table EJ-2, Colusa and Glenn counties fall above the California state percent in poverty. All three counties are above the national percent of people in poverty. However, only Colusa County has a minority population greater than 40 percent. With most of the farm workers being Hispanic, potentially substantial job losses could occur within this Hispanic population and could be a substantial environmental justice impact.

Sacramento County, where the majority of M&I water cost affects would occur, has no significant minority population and is just slightly above the California percent in poverty. This suggests no substantial environmental justice impacts would occur.

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San Joaquin Valley

Substantial agricultural impacts could occur along the San Luis canal for those users entirely dependent on CVP contracts. This includes the counties of Merced and Madera and is a potentially substantial environmental justice impact. According to Tables EJ-1A and EJ-2, both counties have minority populations greater than 40 percent and high percents of people in poverty at 25.9 and 20.8 respectively. A majority of the agricultural workers are Hispanic. Substantial impacts on agricultural occupations could have substantial environmental justice impacts on this population.

Tulare Region

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

FLOW EVALUATION/PREFERRED ALTERNATIVE

Trinity River Basin and Lower Klamath River Basin/Coastal Area

Implementation of the Maximum Flow Alternative could have substantial positive impacts on the Hoopa Valley, Yurok and other tribes of the region. By restoring the Trinity River's physical attributes to 66 percent of those present in a healthy alluvial river, the subsequent improvements to the river's fisheries, water quality, riparian habitat and other resources would improve tribal access to many trust resources to the substantial benefit of their communities. Thus, this Alternative would have large, positive environmental justice implications for Native American communities in the region. There would not be substantial environmental justice impacts to the non-Native Americans in the region.

Trinity River Basin

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

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KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Joaquin Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Tulare Region

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

PERCENT INFLOW

Trinity River Basin and Lower Klamath River Basin/Coastal Area

The Percent Inflow Alternative would lead to a marginal improvement in the health of the Trinity River system compared to the No Action Alternative. The improvement in the river's health should increase tribal access to fish and other trust assets dependant on Trinity River conditions. Nonetheless, this alternative falls well short of having positive environmental justice implications for the region's Native Americans.

Trinity River Basin

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

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Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Joaquin Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Tulare Region

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

MECHANICAL RESTORATION

Trinity River Basin and Lower Klamath River Basin/Coastal Area

The Mechanical Restoration Alternative would result in a small improvement in the health of the Trinity River when compared to the No Action Alternative and accordingly, should lead to a marginal improvement in tribal access to Trinity River fish and other economically important resources. However, given how little of the region's riverine resources are currently accessible to Native American communities, overall, this alternative would have negative environmental justice implications for these people. There would not be substantial environmental justice impacts to non-Native American groups in the region.

Trinity River Basin

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

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Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Joaquin Valley.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Tulare Region.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

STATE PERMIT

Trinity River Basin and Lower Klamath River Basin/Coastal Area

The State Permit Alternative would reduce flows in the Trinity River well below current levels, causing the river's health to decline even more than under the No Action Alternative. Thus, it is anticipated the State Permit Alternative would have even greater negative environmental justice implications for the Native American people of the Klamath-Trinity region than would the No Action Alternative.

Trinity River Basin

Substantial impacts may occur in the wholesale and retail trade and lodging sectors in Shasta and Trinity counties. These counties, however, have extremely low minority populations, both under 20%. The percent in poverty, 16.0 and 16.9 respectively, is not substantially different

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from the state (16.5). Therefore, it is unlikely the substantial effects on wholesale and retail trade will have substantial environmental justice impacts.

Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Joaquin Valley.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Tulare Region.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

EXISTING CONDITIONS VERSUS PREFERRED ALTERNATIVE

Trinity River Basin and Lower Klamath River Basin/Coastal Area

Environmental justice impacts would be similar to those between the Flow Evaluation Alternative and the No Action baseline.

Trinity River Basin

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No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Lower Klamath River Basin/Coastal Areas

Monterey Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Francisco Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Mendocino Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-California Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

KMZ-Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

North/Central Oregon Coastal Area.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Central Valley

Sacramento Valley

No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

San Joaquin Valley.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

Tulare Region.—No substantial impacts to employment or income identified. Therefore, there are no substantial environmental justice impacts.

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Table EJ-1A. Percent of Population by Race 1990 and 1996								
Region	County	Year	Total	% White	% Hispanic	% Black	% Asian Pacific Islander	% American Indian Eskimo/Aluet
Monterey	Monterey	1990	357364	52.41	33.79	6.04	7.16	0.60
		1996	360253	48.13	37.67	5.96	7.60	0.64
Sacramento	Colusa	1990	16355	62.03	33.65	0.50	1.96	1.86
		1996	18197	56.94	38.93	0.44	1.94	1.75
	Solano	1990	344116	60.95	13.43	12.92	11.98	0.72
		1996	372493	57.39	14.61	13.66	13.65	0.69
San Francisco	San Francisco	1990	727873	46.57	13.97	10.53	28.57	0.36
		1996	768263	41.92	15.35	10.04	32.34	0.35
	San Mateo	1990	651401	60.27	17.77	5.22	16.38	0.36
		1996	698042	55.02	20.60	4.86	19.14	0.39
	Santa Clara	1990	1504402	57.98	21.09	3.51	16.97	0.44
		1996	1638352	52.03	23.03	3.57	21.03	0.34
	Alameda	1990	1284825	53.15	14.29	17.43	14.60	0.53
		1996	1365041	47.98	15.95	17.68	17.90	0.49
San Joaquin	Fresno	1990	673608	50.79	35.56	4.69	8.20	0.76
		1996	769709	46.59	37.77	4.76	10.04	0.84
	Madera	1990	89349	60.22	34.66	2.60	1.22	1.30
		1996	110298	56.74	36.96	3.88	1.31	1.11
	Merced	1990	180182	54.27	32.71	4.40	7.99	0.63
		1996	198390	50.04	35.42	4.22	9.72	0.60
	San Joaquin	1990	483817	58.84	23.51	5.16	11.69	0.79
		1996	533177	55.53	24.91	5.27	13.56	0.73
Tulare	Kern	1990	549531	62.81	28.10	5.31	2.75	1.03
		1996	624092	59.35	30.79	5.76	3.05	1.05
	Kings	1990	102238	53.96	34.18	7.63	3.34	0.89
		1996	115774	50.88	36.70	7.81	3.75	0.86
	Tulare	1990	313999	54.63	38.92	1.38	4.03	1.03
		1996	353645	50.46	42.42	1.39	4.80	0.94

From Table EJ-1B. Population by Race 1990 and 1996

Source: Model Based Income and Poverty Estimates 1996: *http://www.census.gov/hhes/www/saipe/stcty/estimate.html*

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Table EJ-1B. Population by Race 1990 and 1996

REGION	COUNTY	YEAR	TOTAL	WHITE	HISPANIC	ASIAN/PACIFIC ISLANDER	BLACK	AMERICAN INDIAN ESKIMO/ALEUT
San Fransisco	ALAMEDA	1990	1284825	682947	183577	187527	223994	6780
San Fransisco	ALAMEDA	1996	1365041	654915	217719	244361	241363	6683
Sacramento	AMADOR	1990	30284	25418	2539	201	1665	461
Sacramento	AMADOR	1996	32925	27833	2738	216	1666	472
Sacramento	BUTTE	1990	183074	159074	13732	5066	2255	2947
Sacramento	BUTTE	1996	196522	167481	16263	7016	2555	3207
San Joaquin	CALAVERAS	1990	32301	29614	1714	187	180	606
San Joaquin	CALAVERAS	1996	36881	33658	2102	215	199	707
Sacramento	COLUSA	1990	16355	10145	5504	321	81	304
Sacramento	COLUSA	1996	18197	10362	7084	353	80	318
San Fransisco	CONTRA COSTA	1990	807608	562840	92310	74784	73224	4450
San Fransisco	CONTRA COSTA	1996	877965	582836	113708	95622	81024	4775
KMZCal	DEL NORTE	1990	24135	18918	2479	438	869	1431
KMZCal	DEL NORTE	1996	27527	21240	3096	614	1002	1575
Sacramento	EL DORADO	1990	127396	114347	8933	2331	581	1204
Sacramento	EL DORADO	1996	144710	127884	11619	3077	694	1436
San Joaquin	FRESNO	1990	673608	342145	239541	55213	31609	5100
San Joaquin	FRESNO	1996	769709	358592	290741	77260	36670	6446
Sacramento	GLENN	1990	24856	18489	5016	773	131	447
Sacramento	GLENN	1996	26699	18664	6282	1142	133	478
KMZCal	HUMBOLDT	1990	119500	105055	5044	2271	936	6194
KMZCal	HUMBOLDT	1996	125100	107953	6137	3056	1075	6879
Tulare	KERN	1990	549531	345148	154397	15133	29177	5676
Tulare	KERN	1996	624092	370427	192164	19026	35930	6545
Tulare	KINGS	1990	102238	55172	34940	3419	7800	907
Tulare	KINGS	1996	115774	58906	42490	4336	9046	996
San Joaquin	MADERA	1990	89349	53808	30968	1087	2321	1165
San Joaquin	MADERA	1996	110298	62583	40769	1443	4280	1223
San Francisco	MARIN	1990	230155	194728	18103	9111	7552	661
San Francisco	MARIN	1996	239630	196741	22959	11181	8146	603
San Joaquin	MARIPOSA	1990	14529	13005	697	113	120	594
San Joaquin	MARIPOSA	1996	15965	14324	839	125	127	550
Mendocino	MENDOCINO	1990	80908	68272	8377	868	484	2907
Mendocino	MENDOCINO	1996	84817	69247	10576	1076	493	3425
San Joaquin	MERCED	1990	180182	97786	58939	14393	7922	1142
San Joaquin	MERCED	1996	198390	99265	70265	19292	8370	1198
Monterey	MONTEREY	1990	357364	187307	120762	25572	21589	2134
Monterey	MONTEREY	1996	360253	173374	135719	27371	21489	2300
Sacramento	NAPA	1990	111244	89825	16156	3407	1169	687
Sacramento	NAPA	1996	118949	91914	20481	4350	1460	744
Sacramento	NEVADA	1990	79107	74288	3294	615	172	738
Sacramento	NEVADA	1996	87001	81171	4141	734	179	776
Sacramento	PLACER	1990	174979	154578	14100	3705	988	1608
Sacramento	PLACER	1996	209167	183066	17959	5057	1378	1707
Sacramento	SACRAMENTO	1990	1049010	727447	122959	93594	95034	9976
Sacramento	SACRAMENTO	1996	1132189	747483	143976	118307	110702	11721
San Francisco	SAN FRANCISCO	1990	727873	338958	101687	207969	76615	2644
San Francisco	SAN FRANCISCO	1996	768263	322025	117965	248421	77163	2689
San Joaquin	SAN JOAQUIN	1990	483817	284700	113743	56578	24984	3812
San Joaquin	SAN JOAQUIN	1996	533177	296065	132801	72313	28112	3886
Monterey	SAN LUIS OBISPO	1990	217944	177031	29122	5783	4351	1657
Monterey	SAN LUIS OBISPO	1996	230691	185135	32854	6412	4641	1649
San Francisco	SAN MATEO	1990	651401	392594	115780	106670	34007	2350
San Francisco	SAN MATEO	1996	698042	384038	143784	133592	33909	2719
San Francisco	SANTA CLARA	1990	1504402	872210	317288	255357	52860	6687
San Francisco	SANTA CLARA	1996	1638352	852363	377370	344539	58453	5627
Trinity	SHASTA	1990	148477	135387	5742	2655	1047	3646
Trinity	SHASTA	1996	161688	145738	7099	3714	1154	3983
Sacramento	SOLANO	1990	344116	209752	46217	41216	44457	2474
Sacramento	SOLANO	1996	372493	213768	54433	50835	50889	2568
San Francisco	SONOMA	1990	390225	329156	41758	10354	5288	3669
San Francisco	SONOMA	1996	424481	348390	52705	13100	6334	3952
San Joaquin	STANISLAUS	1990	375089	264519	82327	18554	6208	3481
San Joaquin	STANISLAUS	1996	418455	280419	101408	24899	7746	3983
Sacramento	SUTTER	1990	64967	46597	10726	5826	989	829
Sacramento	SUTTER	1996	74591	51389	13502	7557	1264	879
Sacramento	TEHAMA	1990	49851	43243	5188	325	246	849
Sacramento	TEHAMA	1996	54353	46224	6605	353	303	868

Source: Historical and Projected population tables: http://www.dof.ca.gov/html/Demograp/druhpar.htm

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Table EJ-1B. Population by Race 1990 and 1996								
REGION	COUNTY	YEAR	TOTAL	WHITE	HISPANIC	ASIAN/PACIFIC ISLANDER	BLACK	AMERICAN INDIAN ESKIMO/ALEUT
Trinity	TRINITY	1990	13021	11843	431	99	53	595
Trinity	TRINITY	1996	13328	12037	481	106	59	645
Tulare	TULARE	1990	313999	171547	122218	12653	4345	3236
Tulare	TULARE	1996	353645	178433	149999	16972	4924	3317
San Joaquin	TUOLUMNE	1990	48647	42150	3726	362	1532	877
San Joaquin	TUOLUMNE	1996	51583	44845	4014	390	1540	794
Sacramento	YOLO	1990	141504	97227	28360	11569	2984	1364
Sacramento	YOLO	1996	152535	100851	32709	13914	3306	1755
Sacramento	YUBA	1990	58776	43359	6811	4727	2342	1537
Sacramento	YUBA	1996	60575	42930	7777	6293	2319	1256

Table EJ-2. Income and Poverty Estimates (Ordered by Percent in Poverty in Descending Order

County	Median Income	Percent In Poverty
Tulare	25935	28.2
Merced	27125	25.9
Fresno	30984	25.2
Yuba	24960	22.8
Kings	28337	22.3
Madera	31644	20.8
Kern	32183	20.6
Del Norte	28103	19.6
Butte	28229	19
Glenn	26293	18.7
San Joaquin	33339	18.7
Tehama	26314	18.5
Stanislaus	34575	17.3
Colusa	28030	17.3
Humboldt	28468	17
Trinity	25173	16.9
Mendocino	30073	16.9
California	**36767**	**16.5**
Monterey	34461	16.1
Shasta	30761	16
Sutter	32650	15.9
Sacramento	36642	15.6
Yolo	35620	15.5
USA	**34076**	**13.8**
Mariposa	29339	13.4
Santa Cruz	40596	13.3
San Luis Obispo	35683	13.2
Tuolumne	31462	12.3
San Francisco	37854	12.3
Alameda	44653	11.3
Calaveras	32696	11.3
Amador	35647	9.6
Solano	45369	9.5
Nevada	37113	9.4
Sonoma	41016	9.4
Santa Clara	53490	9.1
Napa	41378	8.5
El Dorado	42658	8.3
Contra Costa	53055	7.9
Placer	46687	7.6
San Mateo	50957	6.5
Marin	53266	6.4

Source: Model Based Income and Poverty Estimates 1996: *http://www.census.gov/hhes/www/saipe/stcty/estimate.html*

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
Alameda	Animal caretakers, except farm	9.38	76.55	5.03	0.00	9.05	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	58.46	25.22	5.34	2.37	8.61	0.00
	Farmers, except horticultural	12.57	74.04	3.28	0.00	9.02	1.09
	Fishers	0.00	35.42	52.08	0.00	12.50	0.00
	Forestry workers, except logging	0.00	68.63	31.37	0.00	0.00	0.00
	Graders and sorters, agricultural products	57.14	21.80	12.78	0.00	8.27	0.00
	Groundskeepers and gardeners, except	36.97	40.66	11.28	0.51	10.58	0.00
	Horticultural specialty farmers	21.62	51.80	12.61	0.00	13.96	0.00
	Hunters and trappers	0.00	100.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	4.50	84.68	6.31	0.00	4.50	0.00
	Managers, horticultural specialty farms	0.00	0.00	37.93	0.00	62.07	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	40.24	21.95	0.00	0.00	29.27	8.54
	Supervisors, farm workers	37.88	62.12	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	32.09	48.65	3.38	3.04	12.84	0.00
	Timber cutting and logging occupations	25.83	26.67	35.00	0.00	12.50	0.00
	Total	33.66	44.91	10.09	0.66	10.52	0.16
Amador	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	16.00	84.00	0.00	0.00	0.00	0.00
	Farmers, except horticultural	9.35	90.65	0.00	0.00	0.00	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	21.43	71.43	0.00	4.76	2.38	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	66.67	0.00	33.33	0.00	0.00
	Timber cutting and logging occupations	0.00	77.19	0.00	22.81	0.00	0.00
	Total	9.09	84.66	0.00	5.68	0.57	0.00
Butte	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	100.00	0.00
	Farm workers	55.82	36.69	0.00	1.41	4.06	2.03
	Farmers, except horticultural	7.93	90.83	0.00	0.00	1.24	0.00
	Fishers	20.24	61.90	0.00	8.33	0.00	9.52
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Graders and sorters, agricultural products	67.83	13.99	0.00	3.50	14.69	0.00
	Groundskeepers and gardeners, except	11.49	85.28	0.00	1.50	1.07	0.64
	Horticultural specialty farmers	8.20	83.61	8.20	0.00	0.00	0.00
	Hunters and trappers	0.00	100.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	21.21	77.13	0.00	0.00	1.65	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	100.00	0.00
	Marine life cultivation workers	100.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	60.53	36.84	0.00	2.63	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	17.39	82.61	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	4.00	78.22	0.00	17.78	0.00	0.00
	Total	27.30	66.86	0.12	2.01	2.78	0.93
Calaveras	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	31.65	68.35	0.00	0.00	0.00	0.00
	Farmers, except horticultural	11.54	88.46	0.00	0.00	0.00	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	9.77	84.21	0.00	6.02	0.00	0.00
	Horticultural specialty farmers	50.00	50.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	10.00	90.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	6.48	93.52	0.00	0.00	0.00	0.00
	Total	11.72	86.67	0.00	1.62	0.00	0.00
Colusa	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	77.73	20.32	0.00	0.75	0.00	1.20
	Farmers, except horticultural	6.29	89.74	0.00	1.99	1.32	0.66
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	96.23	3.77	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	18.63	64.71	0.00	0.00	16.67	0.00
	Horticultural specialty farmers	0.00	0.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	30.04	64.20	0.00	0.00	2.88	2.88

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*
http://govinfo.library.orst.edu/

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	57.94	42.06	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	100.00	0.00	0.00	0.00	0.00	0.00
	Total	58.47	38.33	0.00	0.74	1.30	1.16
Contra Costa	Animal caretakers, except farm	7.24	87.17	0.00	0.00	5.59	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	73.22	18.21	1.06	0.00	7.52	0.00
	Farmers, except horticultural	16.12	78.96	0.00	2.73	2.19	0.00
	Fishers	12.50	87.50	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	90.24	9.76	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	43.87	42.40	5.84	0.86	7.02	0.00
	Horticultural specialty farmers	24.49	72.45	0.00	0.00	3.06	0.00
	Hunters and trappers	0.00	100.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	22.06	74.02	0.00	0.00	3.92	0.00
	Managers, horticultural specialty farms	50.00	50.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	86.76	13.24	0.00	0.00	0.00	0.00
	Supervisors, farm workers	15.49	84.51	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	17.77	77.66	0.00	0.00	2.03	2.54
	Timber cutting and logging occupations	52.22	47.78	0.00	0.00	0.00	0.00
	Total	41.17	49.17	3.29	0.64	5.57	0.17
Del Norte	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	66.96	30.43	0.00	2.61	0.00	0.00
	Farmers, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Fishers	0.00	96.25	0.00	3.75	0.00	0.00
	Forestry workers, except logging	0.00	61.90	0.00	38.10	0.00	0.00
	Graders and sorters, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	9.20	87.36	0.00	3.45	0.00	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	100.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	100.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	68.75	31.25	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Timber cutting and logging occupations	0.00	83.55	0.00	16.45	0.00	0.00
	Total	20.00	73.13	0.00	6.87	0.00	0.00
El Dorado	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	32.74	67.26	0.00	0.00	0.00	0.00
	Farmers, except horticultural	3.21	91.03	0.00	0.00	5.77	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	81.36	0.00	18.64	0.00	0.00
	Graders and sorters, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	10.79	88.31	0.00	0.00	0.90	0.00
	Horticultural specialty farmers	43.24	56.76	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	29.23	70.77	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	100.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	20.00	76.74	0.00	3.26	0.00	0.00
	Total	16.53	81.13	0.00	1.36	0.98	0.00
Fresno	Animal caretakers, except farm	7.56	89.33	0.00	0.00	3.11	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	91.13	6.55	0.29	0.10	1.60	0.33
	Farmers, except horticultural	15.38	72.81	0.26	0.26	11.30	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	15.63	51.56	18.75	14.06	0.00	0.00
	Graders and sorters, agricultural products	91.00	4.85	0.59	0.17	3.38	0.00
	Groundskeepers and gardeners, except	54.96	35.92	1.61	0.21	7.30	0.00
	Horticultural specialty farmers	34.22	55.61	0.00	0.00	10.16	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	32.08	67.92	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	48.29	44.55	0.00	0.00	7.16	0.00
	Managers, horticultural specialty farms	20.00	80.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	100.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	100.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	73.23	23.91	0.61	0.00	1.36	0.89
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	36.08	63.92	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	22.11	64.32	9.05	4.52	0.00	0.00
	Total	76.02	19.59	0.51	0.17	3.46	0.24
Glenn	Animal caretakers, except farm	29.03	70.97	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	71.33	28.67	0.00	0.00	0.00	0.00
	Farmers, except horticultural	5.11	93.83	0.00	0.00	1.06	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	53.85	46.15	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	78.38	13.51	0.00	2.70	5.41	0.00
	Groundskeepers and gardeners, except	46.39	42.27	0.00	5.15	6.19	0.00
	Horticultural specialty farmers	0.00	0.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	20.48	79.52	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	100.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	100.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	31.11	68.89	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	25.00	45.83	0.00	29.17	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	0.00	0.00	0.00	0.00	0.00	0.00
	Total	47.86	50.62	0.00	0.71	0.81	0.00
Humboldt	Animal caretakers, except farm	7.95	92.05	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	18.56	75.45	0.00	5.79	0.20	0.00
	Farmers, except horticultural	0.00	94.43	0.00	1.11	4.46	0.00
	Fishers	0.67	91.28	0.00	8.05	0.00	0.00
	Forestry workers, except logging	9.05	87.44	0.00	3.52	0.00	0.00
	Graders and sorters, agricultural products	0.00	89.29	0.00	10.71	0.00	0.00
	Groundskeepers and gardeners, except	5.82	82.86	0.00	6.99	4.33	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	100.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	96.61	0.00	3.39	0.00	0.00
	Managers, horticultural specialty farms	0.00	92.86	0.00	7.14	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	92.75	0.00	7.25	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	87.01	0.00	12.99	0.00	0.00
	Supervisors, related agricultural	0.00	92.86	0.00	7.14	0.00	0.00
	Timber cutting and logging occupations	2.01	84.06	0.00	13.93	0.00	0.00
	Total	5.24	85.50	0.00	7.61	1.64	0.00
Kern	Animal caretakers, except farm	13.85	77.31	2.31	6.54	0.00	0.00
	Captains and other officers, fishing vessels	68.75	31.25	0.00	0.00	0.00	0.00
	Farm workers	83.83	7.33	0.53	0.26	7.74	0.30
	Farmers, except horticultural	16.88	73.42	0.00	1.36	8.34	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	88.97	3.68	1.98	0.00	4.94	0.43
	Groundskeepers and gardeners, except	51.14	42.21	1.92	1.22	3.06	0.44
	Horticultural specialty farmers	20.00	80.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Inspectors, agricultural products	35.56	64.44	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	56.30	40.91	0.00	0.68	1.69	0.42
	Managers, horticultural specialty farms	96.79	3.21	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	80.57	16.59	2.84	0.00	0.00	0.00
	Supervisors, farm workers	65.02	29.72	0.32	0.84	4.11	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	28.16	50.57	21.26	0.00	0.00	0.00
	Timber cutting and logging occupations	43.84	35.62	20.55	0.00	0.00	0.00
	Total	74.76	17.22	1.02	0.47	6.23	0.30
Kings	Animal caretakers, except farm	28.95	71.05	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	81.77	17.36	0.33	0.22	0.33	0.00
	Farmers, except horticultural	11.07	87.48	1.45	0.00	0.00	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	95.48	1.61	0.00	0.00	2.90	0.00
	Groundskeepers and gardeners, except	55.11	39.77	4.26	0.00	0.85	0.00
	Horticultural specialty farmers	0.00	0.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	52.38	47.62	0.00	0.00	0.00
	Managers, farms, except horticultural	31.83	65.92	0.00	0.00	2.25	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	76.87	23.13	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	0.00	100.00	0.00	0.00	0.00	0.00
	Total	69.67	28.85	0.79	0.14	0.56	0.00
Madera	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	89.50	9.85	0.36	0.19	0.10	0.00
	Farmers, except horticultural	11.62	86.41	0.00	0.42	1.54	0.00
	Fishers	42.86	57.14	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	79.56	6.93	0.00	0.00	13.50	0.00
	Groundskeepers and gardeners, except	43.07	56.93	0.00	0.00	0.00	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	60.32	38.06	0.00	0.00	1.62	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	81.82	0.00	0.00	0.00	18.18	0.00
	Supervisors, farm workers	72.69	27.31	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	20.00	80.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	0.00	50.44	0.00	49.56	0.00	0.00
	Total	72.57	25.15	0.24	1.06	0.98	0.00
Marin	Animal caretakers, except farm	9.57	90.43	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	51.25	39.78	5.38	0.00	3.58	0.00
	Farmers, except horticultural	5.88	94.12	0.00	0.00	0.00	0.00
	Fishers	47.22	52.78	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	34.40	62.93	1.82	0.00	0.85	0.00
	Horticultural specialty farmers	13.10	86.90	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	22.96	77.04	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	27.78	72.22	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	20.54	79.46	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	26.09	73.91	0.00	0.00	0.00	0.00
	Total	29.56	68.01	1.55	0.00	0.87	0.00
Mariposa	Animal caretakers, except farm	0.00	0.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	0.00	86.67	0.00	13.33	0.00	0.00
	Farmers, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	73.91	0.00	26.09	0.00	0.00
	Graders and sorters, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	0.00	100.00	0.00	0.00	0.00	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	0.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	0.00	100.00	0.00	0.00	0.00	0.00
	Total	0.00	94.31	0.00	5.69	0.00	0.00
Mendocino	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race							
			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Farm workers	70.80	27.00	0.00	0.23	1.97	0.00
	Farmers, except horticultural	3.08	96.92	0.00	0.00	0.00	0.00
	Fishers	20.32	78.09	0.00	1.59	0.00	0.00
	Forestry workers, except logging	12.82	87.18	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	12.30	80.94	1.02	5.74	0.00	0.00
	Horticultural specialty farmers	0.00	75.76	0.00	24.24	0.00	0.00
	Hunters and trappers	0.00	100.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	42.86	57.14	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	100.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	61.18	38.82	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	18.47	75.88	1.37	3.05	0.00	1.22
	Total	31.98	64.84	0.44	1.95	0.53	0.25
Merced	Animal caretakers, except farm	25.56	74.44	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	77.34	19.55	0.36	0.13	1.92	0.71
	Farmers, except horticultural	18.28	77.75	0.00	0.52	3.45	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	50.00	50.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	85.12	6.35	1.51	0.84	6.19	0.00
	Groundskeepers and gardeners, except	53.74	39.46	2.59	0.68	3.54	0.00
	Horticultural specialty farmers	71.43	28.57	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	47.62	0.00	0.00	52.38	0.00
	Managers, farms, except horticultural	43.82	47.83	0.00	1.41	5.53	1.41
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	85.71	0.00	0.00	0.00	14.29	0.00
	Supervisors, farm workers	60.36	36.76	0.00	0.00	2.87	0.00
	Supervisors, forestry and logging workers	100.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	69.57	0.00	30.43	0.00	0.00
	Timber cutting and logging occupations	41.46	34.15	0.00	0.00	24.39	0.00
	Total	63.14	32.44	0.46	0.41	3.02	0.52
Monterey	Animal caretakers, except farm	7.18	92.82	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	94.77	2.64	0.16	0.14	2.01	0.28
	Farmers, except horticultural	26.38	72.39	0.00	0.00	1.23	0.00
	Fishers	8.06	72.18	0.00	0.00	19.76	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	94.66	0.63	0.00	0.00	4.72	0.00
	Groundskeepers and gardeners, except	37.91	50.21	2.26	0.77	8.85	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Horticultural specialty farmers	35.96	29.21	0.00	0.00	34.83	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	78.57	18.57	0.00	2.86	0.00	0.00
	Managers, farms, except horticultural	42.83	46.68	0.00	0.00	10.49	0.00
	Managers, horticultural specialty farms	51.61	17.74	0.00	0.00	30.65	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	78.93	6.13	0.00	0.00	13.60	1.33
	Supervisors, farm workers	81.47	10.62	0.90	2.49	4.52	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	27.39	50.96	5.10	0.00	16.56	0.00
	Timber cutting and logging occupations	42.11	48.68	0.00	9.21	0.00	0.00
	Total	81.66	13.40	0.37	0.30	4.08	0.20
Napa	Animal caretakers, except farm	31.34	67.16	0.00	0.00	1.49	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	91.16	8.84	0.00	0.00	0.00	0.00
	Farmers, except horticultural	13.55	86.45	0.00	0.00	0.00	0.00
	Fishers	14.71	85.29	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	44.17	51.65	0.00	3.13	1.04	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	42.81	54.52	0.00	0.00	2.68	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	100.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	65.95	34.05	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	91.38	0.00	8.62	0.00	0.00
	Timber cutting and logging occupations	70.83	29.17	0.00	0.00	0.00	0.00
	Total	63.22	35.47	0.00	0.78	0.54	0.00
Nevada	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	26.92	68.46	0.00	0.00	0.00	4.62
	Farmers, except horticultural	7.02	92.98	0.00	0.00	0.00	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	0.00	97.20	0.00	2.80	0.00	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race							
			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Nursery workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	6.72	86.55	0.00	6.72	0.00	0.00
	Total	5.25	92.39	0.00	1.75	0.00	0.62
Placer	Animal caretakers, except farm	13.07	86.93	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	33.74	59.27	0.00	0.00	2.13	4.86
	Farmers, except horticultural	3.17	93.14	0.00	0.00	3.69	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	20.21	69.60	0.46	3.04	6.69	0.00
	Horticultural specialty farmers	24.39	75.61	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	31.43	68.57	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	100.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	91.14	0.00	0.00	8.86	0.00
	Timber cutting and logging occupations	6.85	79.45	0.00	13.70	0.00	0.00
	Total	17.88	75.62	0.16	1.61	3.87	0.86
Sacramento	Animal caretakers, except farm	16.05	77.37	0.00	6.58	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	62.08	24.29	3.30	0.83	9.50	0.00
	Farmers, except horticultural	2.16	92.11	0.00	0.51	5.22	0.00
	Fishers	0.00	93.44	6.56	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	51.78	21.92	4.11	4.11	18.08	0.00
	Groundskeepers and gardeners, except	33.48	52.04	5.21	1.60	7.35	0.32
	Horticultural specialty farmers	29.70	56.36	3.64	0.00	10.30	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	33.33	66.67	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	25.20	62.60	0.00	0.00	12.20	0.00
	Managers, horticultural specialty farms	26.32	55.26	0.00	0.00	18.42	0.00
	Marine life cultivation workers	0.00	100.00	0.00	0.00	0.00	0.00
	Nursery workers	65.09	23.58	0.00	0.00	11.32	0.00
	Supervisors, farm workers	44.22	55.78	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	13.27	81.55	1.29	0.00	3.88	0.00
	Timber cutting and logging occupations	0.00	95.00	0.00	0.00	0.00	5.00
	Total	34.09	53.20	3.49	1.44	7.56	0.22

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
San Francisco	Animal caretakers, except farm	26.83	69.11	0.00	0.00	4.07	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	71.99	10.64	7.09	0.00	8.16	2.13
	Farmers, except horticultural	18.92	62.16	0.00	0.00	18.92	0.00
	Fishers	14.08	77.46	0.00	0.00	8.45	0.00
	Forestry workers, except logging	100.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	59.42	8.70	14.49	0.00	17.39	0.00
	Groundskeepers and gardeners, except	27.39	53.83	7.50	0.24	11.05	0.00
	Horticultural specialty farmers	27.69	72.31	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	19.67	59.02	0.00	0.00	21.31	0.00
	Managers, horticultural specialty farms	63.64	36.36	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	67.65	32.35	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	0.00	0.00	0.00	100.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	48.65	51.35	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	0.00	33.33	38.89	0.00	27.78	0.00
	Total	34.75	48.42	6.12	0.14	10.29	0.28
San Joaquin	Animal caretakers, except farm	20.56	79.44	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	79.94	12.84	0.30	0.21	6.58	0.12
	Farmers, except horticultural	7.36	87.03	0.00	1.22	4.39	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	64.84	10.19	2.25	0.00	22.72	0.00
	Groundskeepers and gardeners, except	44.91	44.15	4.77	0.80	4.97	0.40
	Horticultural specialty farmers	8.70	78.26	13.04	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	69.77	30.23	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	34.00	56.32	0.00	0.00	9.68	0.00
	Managers, horticultural specialty farms	58.33	41.67	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	42.25	49.30	0.00	0.00	8.45	0.00
	Supervisors, farm workers	54.75	38.75	0.00	0.00	6.50	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	34.02	65.98	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	40.00	26.15	0.00	4.62	29.23	0.00
	Total	59.70	31.22	1.05	0.39	7.52	0.12
San Luis Obispo	Animal caretakers, except farm	5.26	93.30	0.00	1.44	0.00	0.00
	Captains and other officers, fishing vessels	0.00	73.33	0.00	26.67	0.00	0.00
	Farm workers	68.54	28.94	0.47	0.00	2.05	0.00
	Farmers, except horticultural	12.32	80.07	0.00	0.90	6.72	0.00
	Fishers	8.99	83.07	0.00	7.94	0.00	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Graders and sorters, agricultural products	46.00	54.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	18.65	78.50	0.69	1.04	1.12	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	41.03	58.97	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	33.40	59.56	0.00	0.00	7.04	0.00
	Managers, horticultural specialty farms	42.86	57.14	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	45.00	55.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	46.06	48.48	0.00	0.00	5.45	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	29.11	70.89	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	58.82	41.18	0.00	0.00	0.00	0.00
	Total	35.42	60.49	0.31	0.88	2.91	0.00
San Mateo	Animal caretakers, except farm	7.91	69.96	8.30	0.00	13.83	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	82.89	14.55	0.58	0.00	1.98	0.00
	Farmers, except horticultural	22.70	72.43	2.70	0.00	2.16	0.00
	Fishers	0.00	84.21	0.00	0.00	15.79	0.00
	Forestry workers, except logging	0.00	100.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	74.19	25.81	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	59.99	29.32	1.69	0.00	8.79	0.21
	Horticultural specialty farmers	10.64	65.25	0.00	0.00	24.11	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	42.42	35.15	0.00	4.85	17.58	0.00
	Managers, horticultural specialty farms	17.65	58.82	0.00	0.00	23.53	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	93.97	0.00	0.00	0.00	6.03	0.00
	Supervisors, farm workers	75.00	25.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	56.21	43.79	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	76.06	23.94	0.00	0.00	0.00	0.00
	Total	58.10	32.04	1.54	0.14	8.05	0.12
Santa Clara	Animal caretakers, except farm	10.91	80.61	2.02	2.63	2.83	1.01
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	84.20	11.65	0.61	0.28	3.25	0.00
	Farmers, except horticultural	17.72	61.02	0.00	0.00	21.26	0.00
	Fishers	7.14	69.05	0.00	0.00	23.81	0.00
	Forestry workers, except logging	83.72	0.00	0.00	0.00	16.28	0.00
	Graders and sorters, agricultural products	89.38	3.70	0.00	0.00	6.91	0.00
	Groundskeepers and gardeners, except	57.35	29.53	1.44	0.16	11.37	0.15
	Horticultural specialty farmers	20.36	65.82	0.00	0.00	13.82	0.00
	Hunters and trappers	0.00	100.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	46.26	37.95	0.00	0.00	13.30	2.49

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*
http://govinfo.library.orst.edu/

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Managers, horticultural specialty farms	54.81	25.19	0.00	0.00	20.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	68.44	19.77	0.00	0.00	11.79	0.00
	Supervisors, farm workers	75.53	16.49	0.00	0.00	7.98	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	28.74	64.85	0.00	0.00	6.41	0.00
	Timber cutting and logging occupations	34.04	19.15	0.00	19.15	27.66	0.00
	Total	57.42	31.05	1.00	0.32	10.02	0.20
Santa Cruz	Animal caretakers, except farm	12.12	87.88	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	91.99	5.55	0.00	0.00	2.29	0.17
	Farmers, except horticultural	39.68	53.87	0.00	0.00	6.45	0.00
	Fishers	53.27	46.73	0.00	0.00	0.00	0.00
	Forestry workers, except logging	16.67	83.33	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	93.89	3.82	0.00	0.00	2.29	0.00
	Groundskeepers and gardeners, except	29.30	64.38	0.46	2.05	3.81	0.00
	Horticultural specialty farmers	7.69	92.31	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	51.50	39.82	0.00	0.00	8.68	0.00
	Managers, horticultural specialty farms	34.15	21.95	0.00	0.00	43.90	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	92.36	7.64	0.00	0.00	0.00	0.00
	Supervisors, farm workers	69.38	13.57	0.00	0.00	17.05	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	17.24	82.76	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	15.00	78.00	0.00	0.00	0.00	7.00
	Total	70.65	25.27	0.08	0.37	3.45	0.18
Shasta	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	21.13	65.98	0.00	5.67	7.22	0.00
	Farmers, except horticultural	2.27	97.73	0.00	0.00	0.00	0.00
	Fishers	25.00	75.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	13.33	86.67	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	5.45	92.18	0.00	1.27	1.09	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	4.44	75.56	0.00	20.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	41.67	0.00	0.00	58.33	0.00
	Supervisors, farm workers	23.08	76.92	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	95.31	0.00	4.69	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race							
			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Timber cutting and logging occupations	4.20	87.61	0.00	6.72	1.47	0.00
	Total	8.09	85.45	0.00	4.23	2.23	0.00
Solano	Animal caretakers, except farm	0.00	96.97	0.00	3.03	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	77.51	15.07	4.04	0.98	2.40	0.00
	Farmers, except horticultural	14.03	82.99	0.00	0.00	2.99	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	76.80	3.20	0.00	0.00	20.00	0.00
	Groundskeepers and gardeners, except	33.67	46.12	8.22	0.31	11.28	0.39
	Horticultural specialty farmers	18.92	33.78	9.46	0.00	37.84	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	38.18	56.36	0.00	0.00	5.45	0.00
	Managers, horticultural specialty farms	46.38	31.88	21.74	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	28.57	33.33	0.00	0.00	38.10	0.00
	Supervisors, farm workers	36.59	63.41	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	26.02	54.47	13.82	0.00	5.69	0.00
	Timber cutting and logging occupations	54.55	45.45	0.00	0.00	0.00	0.00
	Total	43.77	42.71	5.33	0.50	7.54	0.15
Sonoma	Animal caretakers, except farm	10.85	89.15	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	100.00	0.00	0.00	0.00	0.00
	Farm workers	70.16	27.80	0.46	0.83	0.74	0.00
	Farmers, except horticultural	6.34	93.04	0.00	0.00	0.62	0.00
	Fishers	7.35	92.65	0.00	0.00	0.00	0.00
	Forestry workers, except logging	100.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	100.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	38.29	55.85	0.47	1.44	3.96	0.00
	Horticultural specialty farmers	12.32	76.85	0.00	0.00	10.84	0.00
	Hunters and trappers	0.00	0.00	0.00	100.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	34.64	64.65	0.71	0.00	0.00	0.00
	Managers, horticultural specialty farms	32.20	67.80	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	58.77	41.23	0.00	0.00	0.00	0.00
	Supervisors, farm workers	45.39	54.61	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	11.20	88.80	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	23.38	62.69	0.00	9.45	0.00	4.48
	Total	40.64	56.09	0.33	1.04	1.77	0.12
Stanislaus	Animal caretakers, except farm	10.14	89.86	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	70.35	26.70	0.00	0.48	2.34	0.13
	Farmers, except horticultural	8.57	90.72	0.00	0.00	0.71	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*
http://govinfo.library.orst.edu/

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Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Fishers	40.00	60.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	46.15	53.85	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	71.51	20.81	0.00	0.84	6.84	0.00
	Groundskeepers and gardeners, except	36.22	53.99	3.21	0.00	5.81	0.78
	Horticultural specialty farmers	0.00	84.13	0.00	6.35	9.52	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	47.73	52.27	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	27.47	69.30	0.00	1.53	1.71	0.00
	Managers, horticultural specialty farms	100.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	79.12	20.88	0.00	0.00	0.00	0.00
	Supervisors, farm workers	54.64	42.99	0.00	1.82	0.55	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	21.10	61.47	0.00	12.84	4.59	0.00
	Timber cutting and logging occupations	0.00	100.00	0.00	0.00	0.00	0.00
	Total	50.91	45.37	0.33	0.69	2.57	0.14
Sutter	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	46.27	16.32	0.00	0.27	37.13	0.00
	Farmers, except horticultural	4.12	65.73	0.00	1.30	28.85	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	0.00	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	77.33	3.49	0.00	0.00	19.19	0.00
	Groundskeepers and gardeners, except	26.97	50.56	0.00	5.99	16.48	0.00
	Horticultural specialty farmers	46.15	53.85	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	21.79	63.21	0.00	0.00	15.00	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	100.00	0.00
	Supervisors, farm workers	17.65	61.18	4.71	5.88	10.59	0.00
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	44.19	55.81	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	37.50	62.50	0.00	0.00	0.00	0.00
	Total	37.67	31.05	0.11	0.92	30.24	0.00
Tehama	Animal caretakers, except farm	17.54	82.46	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	48.98	49.92	0.00	0.00	0.63	0.47
	Farmers, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	44.44	50.00	0.00	5.56	0.00	0.00
	Graders and sorters, agricultural products	59.46	40.54	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	26.74	66.86	0.00	3.49	2.91	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race							
			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	24.11	72.77	0.00	0.00	3.13	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	33.85	66.15	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	82.61	0.00	17.39	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	32.85	62.82	0.00	4.33	0.00	0.00
	Total	29.52	68.40	0.00	1.18	0.76	0.14
Trinity	Animal caretakers, except farm	0.00	100.00	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	0.00	76.60	0.00	23.40	0.00	0.00
	Farmers, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	9.09	81.82	0.00	9.09	0.00	0.00
	Graders and sorters, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	16.00	84.00	0.00	0.00	0.00	0.00
	Horticultural specialty farmers	0.00	0.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	19.35	80.65	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	0.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	4.48	81.61	0.00	13.90	0.00	0.00
	Total	6.89	83.46	0.00	9.65	0.00	0.00
Tulare	Animal caretakers, except farm	16.77	81.99	0.00	1.24	0.00	0.00
	Captains and other officers, fishing vessels	100.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	83.95	12.48	0.07	0.10	3.29	0.11
	Farmers, except horticultural	15.69	77.59	0.00	0.20	6.52	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	82.35	0.00	0.00	17.65	0.00	0.00
	Graders and sorters, agricultural products	80.44	14.66	0.00	0.74	3.83	0.33
	Groundskeepers and gardeners, except	48.55	48.09	0.66	0.53	1.91	0.26
	Horticultural specialty farmers	32.00	42.00	0.00	26.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	50.88	49.12	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	38.74	52.56	0.00	1.17	7.53	0.00
	Managers, horticultural specialty farms	100.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	81.42	13.27	0.00	0.00	5.31	0.00
	Supervisors, farm workers	67.33	26.98	0.00	1.40	3.63	0.66

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race

			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Supervisors, forestry and logging workers	0.00	100.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	38.81	61.19	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	13.70	74.66	0.00	11.64	0.00	0.00
	Total	71.52	24.08	0.08	0.46	3.70	0.15
Tuolumne	Animal caretakers, except farm	0.00	82.86	0.00	17.14	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	26.42	66.04	0.00	0.00	7.55	0.00
	Farmers, except horticultural	13.11	86.89	0.00	0.00	0.00	0.00
	Fishers	100.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	0.00	89.87	0.00	10.13	0.00	0.00
	Graders and sorters, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	11.98	88.02	0.00	0.00	0.00	0.00
	Horticultural specialty farmers	0.00	0.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	0.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	15.83	84.17	0.00	0.00	0.00	0.00
	Total	13.00	83.59	0.00	2.17	1.24	0.00
Yolo	Animal caretakers, except farm	6.11	90.00	0.00	0.00	3.89	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00
	Farm workers	83.15	14.44	1.31	0.26	0.85	0.00
	Farmers, except horticultural	9.24	83.55	0.00	0.00	7.21	0.00
	Fishers	0.00	0.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	68.75	31.25	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	93.30	6.70	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	33.59	56.08	0.91	2.89	6.53	0.00
	Horticultural specialty farmers	0.00	85.29	0.00	0.00	14.71	0.00
	Hunters and trappers	0.00	0.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	100.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	21.94	66.39	0.00	0.00	11.67	0.00
	Managers, horticultural specialty farms	0.00	0.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	42.86	57.14	0.00	0.00	0.00	0.00
	Supervisors, farm workers	65.00	30.83	0.00	0.00	4.17	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	48.44	35.94	15.63	0.00	0.00	0.00
	Total	51.73	42.65	0.95	0.61	4.06	0.00
Yuba	Animal caretakers, except farm	62.75	37.25	0.00	0.00	0.00	0.00
	Captains and other officers, fishing vessels	0.00	0.00	0.00	0.00	0.00	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

Table EJ-3A. Percent Employed by Occupation by Hispanic Origin and Race							
			Non-Hispanic				
County	Occupation	%Hispanic	% White	% Black	% American Indian Eskimo / Aleut	% Asian Pacific Islander	% Other Race
	Farm workers	64.62	33.38	1.23	0.77	0.00	0.00
	Farmers, except horticultural	8.66	83.55	0.00	0.00	7.79	0.00
	Fishers	0.00	100.00	0.00	0.00	0.00	0.00
	Forestry workers, except logging	41.67	58.33	0.00	0.00	0.00	0.00
	Graders and sorters, agricultural products	55.00	45.00	0.00	0.00	0.00	0.00
	Groundskeepers and gardeners, except	26.69	59.02	0.00	7.52	6.77	0.00
	Horticultural specialty farmers	0.00	100.00	0.00	0.00	0.00	0.00
	Hunters and trappers	0.00	100.00	0.00	0.00	0.00	0.00
	Inspectors, agricultural products	0.00	0.00	0.00	0.00	0.00	0.00
	Managers, farms, except horticultural	38.89	61.11	0.00	0.00	0.00	0.00
	Managers, horticultural specialty farms	0.00	100.00	0.00	0.00	0.00	0.00
	Marine life cultivation workers	0.00	0.00	0.00	0.00	0.00	0.00
	Nursery workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, farm workers	26.09	58.70	0.00	4.35	10.87	0.00
	Supervisors, forestry and logging workers	0.00	0.00	0.00	0.00	0.00	0.00
	Supervisors, related agricultural	0.00	100.00	0.00	0.00	0.00	0.00
	Timber cutting and logging occupations	0.00	100.00	0.00	0.00	0.00	0.00
	Total	40.74	54.36	0.47	1.71	2.71	0.00

Source: *California Equal Employment Opportunity File. Farming, Fishing and Forestry Occupations:*

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
Alameda	Animal caretakers, except farm	597	56	457	30	0	54	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	674	394	170	36	16	58	0
	Farmers, except horticultural	366	46	271	12	0	33	4
	Fishers	48	0	17	25	0	6	0
	Forestry workers, except logging	51	0	35	16	0	0	0
	Graders and sorters, agricultural products	133	76	29	17	0	11	0
	Groundskeepers and gardeners, except farm	4149	1534	1687	468	21	439	0
	Horticultural specialty farmers	222	48	115	28	0	31	0
	Hunters and trappers	9	0	9	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	111	5	94	7	0	5	0
	Managers, horticultural specialty farms	29	0	0	11	0	18	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	82	33	18	0	0	24	7
	Supervisors, farm workers	66	25	41	0	0	0	0
	Supervisors, forestry and logging workers	7	0	7	0	0	0	0
	Supervisors, related agricultural occupations	296	95	144	10	9	38	0
	Timber cutting and logging occupations	120	31	32	42	0	15	0
	Total	6960	2343	3126	702	46	732	11
Amador	Animal caretakers, except farm	29	0	29	0	0	0	0
	Captains and other officers, fishing vessels	7	0	7	0	0	0	0
	Farm workers	25	4	21	0	0	0	0
	Farmers, except horticultural	107	10	97	0	0	0	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	2	0	2	0	0	0	0
	Graders and sorters, agricultural products	1	0	1	0	0	0	0
	Groundskeepers and gardeners, except farm	84	18	60	0	4	2	0
	Horticultural specialty farmers	13	0	13	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	3	0	3	0	0	0	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	1	0	1	0	0	0	0
	Supervisors, forestry and logging workers	14	0	14	0	0	0	0
	Supervisors, related agricultural occupations	9	0	6	0	3	0	0
	Timber cutting and logging occupations	57	0	44	0	13	0	0
	Total	352	32	298	0	20	2	0
Butte	Animal caretakers, except farm	135	0	135	0	0	0	0
	Captains and other officers, fishing vessels	17	0	0	0	0	17	0
	Farm workers	1281	715	470	0	18	52	26
	Farmers, except horticultural	807	64	733	0	0	10	0
	Fishers	84	17	52	0	7	0	8
	Forestry workers, except logging	9	0	9	0	0	0	0
	Graders and sorters, agricultural products	143	97	20	0	5	21	0
	Groundskeepers and gardeners, except farm	931	107	794	0	14	10	6
	Horticultural specialty farmers	61	5	51	5	0	0	0
	Hunters and trappers	8	0	8	0	0	0	0
	Inspectors, agricultural products	29	0	29	0	0	0	0
	Managers, farms, except horticultural	363	77	280	0	0	6	0
	Managers, horticultural specialty farms	4	0	0	0	0	4	0
	Marine life cultivation workers	7	7	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	114	69	42	0	3	0	0
	Supervisors, forestry and logging workers	31	0	31	0	0	0	0
	Supervisors, related agricultural occupations	69	12	57	0	0	0	0
	Timber cutting and logging occupations	225	9	176	0	40	0	0
	Total	4318	1179	2887	5	87	120	40
Calaveras	Animal caretakers, except farm	34	0	34	0	0	0	0

Source: California Equal Employment Opportunity file. Farming, Fishing and Forestry Occupations: http://govinfo.library.orst.edu/

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	79	25	54	0	0	0	0
	Farmers, except horticultural	52	6	46	0	0	0	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	5	0	5	0	0	0	0
	Graders and sorters, agricultural products	7	0	7	0	0	0	0
	Groundskeepers and gardeners, except farm	133	13	112	0	8	0	0
	Horticultural specialty farmers	6	3	3	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	40	4	36	0	0	0	0
	Managers, horticultural specialty farms	6	0	6	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	3	0	3	0	0	0	0
	Supervisors, farm workers	13	0	13	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	9	0	9	0	0	0	0
	Timber cutting and logging occupations	108	7	101	0	0	0	0
	Total	495	58	429	0	8	0	0
Colusa	Animal caretakers, except farm	12	0	12	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	1329	1033	270	0	10	0	16
	Farmers, except horticultural	302	19	271	0	6	4	2
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	0	0	0	0	0	0	0
	Graders and sorters, agricultural products	53	51	2	0	0	0	0
	Groundskeepers and gardeners, except farm	102	19	66	0	0	17	0
	Horticultural specialty farmers	0	0	0	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	243	73	156	0	0	7	7
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	107	62	45	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	6	0	6	0	0	0	0
	Timber cutting and logging occupations	6	6	0	0	0	0	0
	Total	2160	1263	828	0	16	28	25
Contra Costa	Animal caretakers, except farm	304	22	265	0	0	17	0
	Captains and other officers, fishing vessels	11	0	11	0	0	0	0
	Farm workers	758	555	138	8	0	57	0
	Farmers, except horticultural	366	59	289	0	10	8	0
	Fishers	48	6	42	0	0	0	0
	Forestry workers, except logging	28	0	28	0	0	0	0
	Graders and sorters, agricultural products	82	74	8	0	0	0	0
	Groundskeepers and gardeners, except farm	3132	1374	1328	183	27	220	0
	Horticultural specialty farmers	196	48	142	0	0	6	0
	Hunters and trappers	10	0	10	0	0	0	0
	Inspectors, agricultural products	5	5	0	0	0	0	0
	Managers, farms, except horticultural	204	45	151	0	0	8	0
	Managers, horticultural specialty farms	36	18	18	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	68	59	9	0	0	0	0
	Supervisors, farm workers	71	11	60	0	0	0	0
	Supervisors, forestry and logging workers	10	0	10	0	0	0	0
	Supervisors, related agricultural occupations	394	70	306	0	0	8	10
	Timber cutting and logging occupations	90	47	43	0	0	0	0
	Total	5813	2393	2858	191	37	324	10
Del Norte	Animal caretakers, except farm	4	0	4	0	0	0	0
	Captains and other officers, fishing vessels	12	0	12	0	0	0	0
	Farm workers	115	77	35	0	3	0	0
	Farmers, except horticultural	13	0	13	0	0	0	0

Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Fishers	160	0	154	0	6	0	0
	Forestry workers, except logging	21	0	13	0	8	0	0
	Graders and sorters, agricultural products	7	0	7	0	0	0	0
	Groundskeepers and gardeners, except farm	87	8	76	0	3	0	0
	Horticultural specialty farmers	5	0	5	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	0	0	0	0	0	0	0
	Managers, horticultural specialty farms	8	8	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	16	16	0	0	0	0	0
	Supervisors, farm workers	21	0	21	0	0	0	0
	Supervisors, forestry and logging workers	2	0	2	0	0	0	0
	Supervisors, related agricultural occupations	32	22	10	0	0	0	0
	Timber cutting and logging occupations	152	0	127	0	25	0	0
	Total	655	131	479	0	45	0	0
El Dorado	Animal caretakers, except farm	39	0	39	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	223	73	150	0	0	0	0
	Farmers, except horticultural	156	5	142	0	0	9	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	59	0	48	0	11	0	0
	Graders and sorters, agricultural products	0	0	0	0	0	0	0
	Groundskeepers and gardeners, except farm	445	48	393	0	0	4	0
	Horticultural specialty farmers	37	16	21	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	8	8	0	0	0	0	0
	Managers, farms, except horticultural	65	19	46	0	0	0	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	10	0	10	0	0	0	0
	Supervisors, farm workers	7	7	0	0	0	0	0
	Supervisors, forestry and logging workers	22	0	22	0	0	0	0
	Supervisors, related agricultural occupations	39	0	39	0	0	0	0
	Timber cutting and logging occupations	215	43	165	0	7	0	0
	Total	1325	219	1075	0	18	13	0
Fresno	Animal caretakers, except farm	225	17	201	0	0	7	0
	Captains and other officers, fishing vessels	7	0	7	0	0	0	0
	Farm workers	19555	17821	1280	57	19	313	65
	Farmers, except horticultural	2718	418	1979	7	7	307	0
	Fishers	18	0	18	0	0	0	0
	Forestry workers, except logging	64	10	33	12	9	0	0
	Graders and sorters, agricultural products	2868	2610	139	17	5	97	0
	Groundskeepers and gardeners, except farm	2851	1567	1024	46	6	208	0
	Horticultural specialty farmers	187	64	104	0	0	19	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	53	17	36	0	0	0	0
	Managers, farms, except horticultural	2222	1073	990	0	0	159	0
	Managers, horticultural specialty farms	40	8	32	0	0	0	0
	Marine life cultivation workers	9	9	0	0	0	0	0
	Nursery workers	26	26	0	0	0	0	0
	Supervisors, farm workers	1468	1075	351	9	0	20	13
	Supervisors, forestry and logging workers	6	0	6	0	0	0	0
	Supervisors, related agricultural occupations	97	35	62	0	0	0	0
	Timber cutting and logging occupations	199	44	128	18	9	0	0
	Total	32613	24794	6390	166	55	1130	78
Glenn	Animal caretakers, except farm	31	9	22	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	1015	724	291	0	0	0	0
	Farmers, except horticultural	470	24	441	0	0	5	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	26	14	12	0	0	0	0
	Graders and sorters, agricultural products	111	87	15	0	3	6	0

Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Groundskeepers and gardeners, except farm	97	45	41	0	5	6	0
	Horticultural specialty farmers	0	0	0	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	210	43	167	0	0	0	0
	Managers, horticultural specialty farms	7	7	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	32	32	0	0	0	0	0
	Supervisors, farm workers	45	14	31	0	0	0	0
	Supervisors, forestry and logging workers	24	6	11	0	7	0	0
	Supervisors, related agricultural occupations	32	0	32	0	0	0	0
	Timber cutting and logging occupations	0	0	0	0	0	0	0
	Total	2100	1005	1063	0	15	17	0
Humboldt	Animal caretakers, except farm	88	7	81	0	0	0	0
	Captains and other officers, fishing vessels	6	0	6	0	0	0	0
	Farm workers	501	93	378	0	29	1	0
	Farmers, except horticultural	359	0	339	0	4	16	0
	Fishers	298	2	272	0	24	0	0
	Forestry workers, except logging	199	18	174	0	7	0	0
	Graders and sorters, agricultural products	28	0	25	0	3	0	0
	Groundskeepers and gardeners, except farm	601	35	498	0	42	26	0
	Horticultural specialty farmers	29	0	29	0	0	0	0
	Hunters and trappers	11	0	0	0	0	11	0
	Inspectors, agricultural products	10	0	10	0	0	0	0
	Managers, farms, except horticultural	59	0	57	0	2	0	0
	Managers, horticultural specialty farms	28	0	26	0	2	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	69	0	64	0	5	0	0
	Supervisors, farm workers	17	0	17	0	0	0	0
	Supervisors, forestry and logging workers	77	0	67	0	10	0	0
	Supervisors, related agricultural occupations	56	0	52	0	4	0	0
	Timber cutting and logging occupations	847	17	712	0	118	0	0
	Total	3283	172	2807	0	250	54	0
Kern	Animal caretakers, except farm	260	36	201	6	17	0	0
	Captains and other officers, fishing vessels	16	11	5	0	0	0	0
	Farm workers	14961	12542	1097	80	39	1158	45
	Farmers, except horticultural	1031	174	757	0	14	86	0
	Fishers	17	0	17	0	0	0	0
	Forestry workers, except logging	27	0	27	0	0	0	0
	Graders and sorters, agricultural products	2774	2468	102	55	0	137	12
	Groundskeepers and gardeners, except farm	2286	1169	965	44	28	70	10
	Horticultural specialty farmers	55	11	44	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	45	16	29	0	0	0	0
	Managers, farms, except horticultural	1183	666	484	0	8	20	5
	Managers, horticultural specialty farms	156	151	5	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	211	170	35	6	0	0	0
	Supervisors, farm workers	949	617	282	3	8	39	0
	Supervisors, forestry and logging workers	8	0	8	0	0	0	0
	Supervisors, related agricultural occupations	174	49	88	37	0	0	0
	Timber cutting and logging occupations	73	32	26	15	0	0	0
	Total	24226	18112	4172	246	114	1510	72
Kings	Animal caretakers, except farm	38	11	27	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	3658	2991	635	12	8	12	0
	Farmers, except horticultural	551	61	482	8	0	0	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	0	0	0	0	0	0	0
	Graders and sorters, agricultural products	310	296	5	0	0	9	0
	Groundskeepers and gardeners, except farm	352	194	140	15	0	3	0
	Horticultural specialty farmers	0	0	0	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Inspectors, agricultural products	21	0	11	10	0	0	0
	Managers, farms, except horticultural	355	113	234	0	0	8	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	415	319	96	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	8	0	8	0	0	0	0
	Timber cutting and logging occupations	12	0	12	0	0	0	0
	Total	5720	3985	1650	45	8	32	0
Madera	Animal caretakers, except farm	10	0	10	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	4113	3681	405	15	8	4	0
	Farmers, except horticultural	714	83	617	0	3	11	0
	Fishers	14	6	8	0	0	0	0
	Forestry workers, except logging	21	0	21	0	0	0	0
	Graders and sorters, agricultural products	274	218	19	0	0	37	0
	Groundskeepers and gardeners, except farm	274	118	156	0	0	0	0
	Horticultural specialty farmers	11	0	11	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	6	0	6	0	0	0	0
	Managers, farms, except horticultural	494	298	188	0	0	8	0
	Managers, horticultural specialty farms	8	0	8	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	11	9	0	0	0	2	0
	Supervisors, farm workers	227	165	62	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	25	5	20	0	0	0	0
	Timber cutting and logging occupations	113	0	57	0	56	0	0
	Total	6315	4583	1588	15	67	62	0
Marin	Animal caretakers, except farm	115	11	104	0	0	0	0
	Captains and other officers, fishing vessels	7	0	7	0	0	0	0
	Farm workers	279	143	111	15	0	10	0
	Farmers, except horticultural	204	12	192	0	0	0	0
	Fishers	72	34	38	0	0	0	0
	Forestry workers, except logging	0	0	0	0	0	0	0
	Graders and sorters, agricultural products	0	0	0	0	0	0	0
	Groundskeepers and gardeners, except farm	936	322	589	17	0	8	0
	Horticultural specialty farmers	84	11	73	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	135	31	104	0	0	0	0
	Managers, horticultural specialty farms	18	0	18	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	36	10	26	0	0	0	0
	Supervisors, farm workers	16	0	16	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	112	23	89	0	0	0	0
	Timber cutting and logging occupations	46	12	34	0	0	0	0
	Total	2060	609	1401	32	0	18	0
Mariposa	Animal caretakers, except farm	0	0	0	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	45	0	39	0	6	0	0
	Farmers, except horticultural	23	0	23	0	0	0	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	23	0	17	0	6	0	0
	Graders and sorters, agricultural products	0	0	0	0	0	0	0
	Groundskeepers and gardeners, except farm	54	0	54	0	0	0	0
	Horticultural specialty farmers	14	0	14	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	17	0	17	0	0	0	0
	Managers, horticultural specialty farms	4	0	4	0	0	0	0

Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	0	0	0	0	0	0	0
	Supervisors, forestry and logging workers	6	0	6	0	0	0	0
	Supervisors, related agricultural occupations	0	0	0	0	0	0	0
	Timber cutting and logging occupations	25	0	25	0	0	0	0
	Total	211	0	199	0	12	0	0
Mendocino	Animal caretakers, except farm	59	0	59	0	0	0	0
	Captains and other officers, fishing vessels	20	0	20	0	0	0	0
	Farm workers	863	611	233	0	2	17	0
	Farmers, except horticultural	390	12	378	0	0	0	0
	Fishers	251	51	196	0	4	0	0
	Forestry workers, except logging	39	5	34	0	0	0	0
	Graders and sorters, agricultural products	26	26	0	0	0	0	0
	Groundskeepers and gardeners, except farm	488	60	395	5	28	0	0
	Horticultural specialty farmers	33	0	25	0	8	0	0
	Hunters and trappers	14	0	14	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	175	75	100	0	0	0	0
	Managers, horticultural specialty farms	5	5	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	43	0	43	0	0	0	0
	Supervisors, farm workers	85	52	33	0	0	0	0
	Supervisors, forestry and logging workers	23	0	23	0	0	0	0
	Supervisors, related agricultural occupations	14	0	14	0	0	0	0
	Timber cutting and logging occupations	655	121	497	9	20	0	8
	Total	3183	1018	2064	14	62	17	8
Merced	Animal caretakers, except farm	90	23	67	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	6368	4925	1245	23	8	122	45
	Farmers, except horticultural	1537	281	1195	0	8	53	0
	Fishers	22	0	22	0	0	0	0
	Forestry workers, except logging	22	11	11	0	0	0	0
	Graders and sorters, agricultural products	598	509	38	9	5	37	0
	Groundskeepers and gardeners, except farm	735	395	290	19	5	26	0
	Horticultural specialty farmers	21	15	6	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	21	0	10	0	0	11	0
	Managers, farms, except horticultural	922	404	441	0	13	51	13
	Managers, horticultural specialty farms	19	0	19	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	56	48	0	0	0	8	0
	Supervisors, farm workers	661	399	243	0	0	19	0
	Supervisors, forestry and logging workers	13	13	0	0	0	0	0
	Supervisors, related agricultural occupations	23	0	16	0	7	0	0
	Timber cutting and logging occupations	41	17	14	0	0	10	0
	Total	11149	7040	3617	51	46	337	58
Monterey	Animal caretakers, except farm	195	14	181	0	0	0	0
	Captains and other officers, fishing vessels	7	0	7	0	0	0	0
	Farm workers	13437	12734	355	21	19	270	38
	Farmers, except horticultural	652	172	472	0	0	8	0
	Fishers	248	20	179	0	0	49	0
	Forestry workers, except logging	23	0	23	0	0	0	0
	Graders and sorters, agricultural products	2713	2568	17	0	0	128	0
	Groundskeepers and gardeners, except farm	1944	737	976	44	15	172	0
	Horticultural specialty farmers	89	32	26	0	0	31	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	70	55	13	0	2	0	0
	Managers, farms, except horticultural	934	400	436	0	0	98	0
	Managers, horticultural specialty farms	62	32	11	0	0	19	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	375	296	23	0	0	51	5
	Supervisors, farm workers	885	721	94	8	22	40	0

Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	157	43	80	8	0	26	0
	Timber cutting and logging occupations	76	32	37	0	7	0	0
	Total	21867	17856	2930	81	65	892	43
Napa	Animal caretakers, except farm	134	42	90	0	0	2	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	1369	1248	121	0	0	0	0
	Farmers, except horticultural	214	29	185	0	0	0	0
	Fishers	34	5	29	0	0	0	0
	Forestry workers, except logging	0	0	0	0	0	0	0
	Graders and sorters, agricultural products	13	13	0	0	0	0	0
	Groundskeepers and gardeners, except farm	575	254	297	0	18	6	0
	Horticultural specialty farmers	32	0	32	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	12	0	12	0	0	0	0
	Managers, farms, except horticultural	299	128	163	0	0	8	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	17	17	0	0	0	0	0
	Supervisors, farm workers	185	122	63	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	58	0	53	0	5	0	0
	Timber cutting and logging occupations	24	17	7	0	0	0	0
	Total	2966	1875	1052	0	23	16	0
Nevada	Animal caretakers, except farm	65	0	65	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	130	35	89	0	0	0	6
	Farmers, except horticultural	114	8	106	0	0	0	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	27	0	27	0	0	0	0
	Graders and sorters, agricultural products	0	0	0	0	0	0	0
	Groundskeepers and gardeners, except farm	322	0	313	0	9	0	0
	Horticultural specialty farmers	47	0	47	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	45	0	45	0	0	0	0
	Managers, horticultural specialty farms	6	0	6	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	16	0	16	0	0	0	0
	Supervisors, farm workers	19	0	19	0	0	0	0
	Supervisors, forestry and logging workers	40	0	40	0	0	0	0
	Supervisors, related agricultural occupations	22	0	22	0	0	0	0
	Timber cutting and logging occupations	119	8	103	0	8	0	0
	Total	972	51	898	0	17	0	6
Placer	Animal caretakers, except farm	153	20	133	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	329	111	195	0	0	7	16
	Farmers, except horticultural	379	12	353	0	0	14	0
	Fishers	9	0	9	0	0	0	0
	Forestry workers, except logging	41	0	41	0	0	0	0
	Graders and sorters, agricultural products	24	24	0	0	0	0	0
	Groundskeepers and gardeners, except farm	658	133	458	3	20	44	0
	Horticultural specialty farmers	41	10	31	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	7	7	0	0	0	0	0
	Managers, farms, except horticultural	35	11	24	0	0	0	0
	Managers, horticultural specialty farms	11	0	11	0	0	0	0
	Marine life cultivation workers	3	0	3	0	0	0	0
	Nursery workers	8	0	8	0	0	0	0
	Supervisors, farm workers	6	0	6	0	0	0	0
	Supervisors, forestry and logging workers	6	0	6	0	0	0	0
	Supervisors, related agricultural occupations	79	0	72	0	0	7	0
	Timber cutting and logging occupations	73	5	58	0	10	0	0

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Total	1862	333	1408	3	30	72	16
Sacramento	Animal caretakers, except farm	380	61	294	0	25	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	1453	902	353	48	12	138	0
	Farmers, except horticultural	786	17	724	0	4	41	0
	Fishers	61	0	57	4	0	0	0
	Forestry workers, except logging	11	0	11	0	0	0	0
	Graders and sorters, agricultural products	365	189	80	15	15	66	0
	Groundskeepers and gardeners, except farm	4379	1466	2279	228	70	322	14
	Horticultural specialty farmers	165	49	93	6	0	17	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	45	15	30	0	0	0	0
	Managers, farms, except horticultural	369	93	231	0	0	45	0
	Managers, horticultural specialty farms	38	10	21	0	0	7	0
	Marine life cultivation workers	13	0	13	0	0	0	0
	Nursery workers	106	69	25	0	0	12	0
	Supervisors, farm workers	147	65	82	0	0	0	0
	Supervisors, forestry and logging workers	6	0	6	0	0	0	0
	Supervisors, related agricultural occupations	309	41	252	4	0	12	0
	Timber cutting and logging occupations	100	0	95	0	0	0	5
	Total	8733	2977	4646	305	126	660	19
San Francisco	Animal caretakers, except farm	123	33	85	0	0	5	0
	Captains and other officers, fishing vessels	18	0	18	0	0	0	0
	Farm workers	282	203	30	20	0	23	6
	Farmers, except horticultural	37	7	23	0	0	7	0
	Fishers	71	10	55	0	0	6	0
	Forestry workers, except logging	6	6	0	0	0	0	0
	Graders and sorters, agricultural products	69	41	6	10	0	12	0
	Groundskeepers and gardeners, except farm	1267	347	682	95	3	140	0
	Horticultural specialty farmers	65	18	47	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	61	12	36	0	0	13	0
	Managers, horticultural specialty farms	22	14	8	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	34	23	11	0	0	0	0
	Supervisors, farm workers	11	0	0	0	0	11	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	74	36	38	0	0	0	0
	Timber cutting and logging occupations	18	0	6	7	0	5	0
	Total	2158	750	1045	132	3	222	6
San Joaquin	Animal caretakers, except farm	214	44	170	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	7599	6075	976	23	16	500	9
	Farmers, except horticultural	1480	109	1288	0	18	65	0
	Fishers	31	0	31	0	0	0	0
	Forestry workers, except logging	4	0	4	0	0	0	0
	Graders and sorters, agricultural products	1021	662	104	23	0	232	0
	Groundskeepers and gardeners, except farm	1993	895	880	95	16	99	8
	Horticultural specialty farmers	69	6	54	9	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	43	30	13	0	0	0	0
	Managers, farms, except horticultural	1147	390	646	0	0	111	0
	Managers, horticultural specialty farms	12	7	5	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	71	30	35	0	0	6	0
	Supervisors, farm workers	400	219	155	0	0	26	0
	Supervisors, forestry and logging workers	13	0	13	0	0	0	0
	Supervisors, related agricultural occupations	97	33	64	0	0	0	0
	Timber cutting and logging occupations	130	52	34	0	6	38	0
	Total	14324	8552	4472	150	56	1077	17
San Luis Obispo	Animal caretakers, except farm	209	11	195	0	3	0	0
	Captains and other officers, fishing vessels	30	0	22	0	8	0	0

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Farm workers	1707	1170	494	8	0	35	0
	Farmers, except horticultural	893	110	715	0	8	60	0
	Fishers	189	17	157	0	15	0	0
	Forestry workers, except logging	10	0	10	0	0	0	0
	Graders and sorters, agricultural products	50	23	27	0	0	0	0
	Groundskeepers and gardeners, except farm	1158	216	909	8	12	13	0
	Horticultural specialty farmers	144	0	144	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	39	16	23	0	0	0	0
	Managers, farms, except horticultural	497	166	296	0	0	35	0
	Managers, horticultural specialty farms	14	6	8	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	20	9	11	0	0	0	0
	Supervisors, farm workers	165	76	80	0	0	9	0
	Supervisors, forestry and logging workers	10	0	10	0	0	0	0
	Supervisors, related agricultural occupations	79	23	56	0	0	0	0
	Timber cutting and logging occupations	17	10	7	0	0	0	0
	Total	5231	1853	3164	16	46	152	0
San Mateo	Animal caretakers, except farm	253	20	177	21	0	35	0
	Captains and other officers, fishing vessels	9	0	9	0	0	0	0
	Farm workers	859	712	125	5	0	17	0
	Farmers, except horticultural	185	42	134	5	0	4	0
	Fishers	114	0	96	0	0	18	0
	Forestry workers, except logging	6	0	6	0	0	0	0
	Graders and sorters, agricultural products	31	23	8	0	0	0	0
	Groundskeepers and gardeners, except farm	3377	2026	990	57	0	297	7
	Horticultural specialty farmers	141	15	92	0	0	34	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	7	0	7	0	0	0	0
	Managers, farms, except horticultural	165	70	58	0	8	29	0
	Managers, horticultural specialty farms	51	9	30	0	0	12	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	232	218	0	0	0	14	0
	Supervisors, farm workers	60	45	15	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	153	86	67	0	0	0	0
	Timber cutting and logging occupations	71	54	17	0	0	0	0
	Total	5714	3320	1831	88	8	460	7
Santa Clara	Animal caretakers, except farm	495	54	399	10	13	14	5
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	2120	1785	247	13	6	69	0
	Farmers, except horticultural	508	90	310	0	0	108	0
	Fishers	84	6	58	0	0	20	0
	Forestry workers, except logging	43	36	0	0	0	7	0
	Graders and sorters, agricultural products	405	362	15	0	0	28	0
	Groundskeepers and gardeners, except farm	6870	3940	2029	99	11	781	10
	Horticultural specialty farmers	275	56	181	0	0	38	0
	Hunters and trappers	10	0	10	0	0	0	0
	Inspectors, agricultural products	16	0	16	0	0	0	0
	Managers, farms, except horticultural	361	167	137	0	0	48	9
	Managers, horticultural specialty farms	135	74	34	0	0	27	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	263	180	52	0	0	31	0
	Supervisors, farm workers	188	142	31	0	0	15	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	421	121	273	0	0	27	0
	Timber cutting and logging occupations	47	16	9	0	9	13	0
	Total	12241	7029	3801	122	39	1226	24
Santa Cruz	Animal caretakers, except farm	132	16	116	0	0	0	0
	Captains and other officers, fishing vessels	7	0	7	0	0	0	0
	Farm workers	3444	3168	191	0	0	79	6
	Farmers, except horticultural	310	123	167	0	0	20	0
	Fishers	107	57	50	0	0	0	0

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Forestry workers, except logging	18	3	15	0	0	0	0
	Graders and sorters, agricultural products	524	492	20	0	0	12	0
	Groundskeepers and gardeners, except farm	1314	385	846	6	27	50	0
	Horticultural specialty farmers	65	5	60	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	15	15	0	0	0	0	0
	Managers, farms, except horticultural	334	172	133	0	0	29	0
	Managers, horticultural specialty farms	41	14	9	0	0	18	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	550	508	42	0	0	0	0
	Supervisors, farm workers	258	179	35	0	0	44	0
	Supervisors, forestry and logging workers	7	0	7	0	0	0	0
	Supervisors, related agricultural occupations	87	15	72	0	0	0	0
	Timber cutting and logging occupations	100	15	78	0	0	0	7
	Total	7313	5167	1848	6	27	252	13
Shasta	Animal caretakers, except farm	54	0	54	0	0	0	0
	Captains and other officers, fishing vessels	12	0	12	0	0	0	0
	Farm workers	388	82	256	0	22	28	0
	Farmers, except horticultural	264	6	258	0	0	0	0
	Fishers	36	9	27	0	0	0	0
	Forestry workers, except logging	60	8	52	0	0	0	0
	Graders and sorters, agricultural products	4	4	0	0	0	0	0
	Groundskeepers and gardeners, except farm	550	30	507	0	7	6	0
	Horticultural specialty farmers	15	0	15	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	135	6	102	0	27	0	0
	Managers, horticultural specialty farms	6	0	6	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	12	0	5	0	0	7	0
	Supervisors, farm workers	39	9	30	0	0	0	0
	Supervisors, forestry and logging workers	64	0	61	0	3	0	0
	Supervisors, related agricultural occupations	36	0	36	0	0	0	0
	Timber cutting and logging occupations	476	20	417	0	32	7	0
	Total	2151	174	1838	0	91	48	0
Solano	Animal caretakers, except farm	132	0	128	0	4	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	916	710	138	37	9	22	0
	Farmers, except horticultural	335	47	278	0	0	10	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	0	0	0	0	0	0	0
	Graders and sorters, agricultural products	125	96	4	0	0	25	0
	Groundskeepers and gardeners, except farm	1277	430	589	105	4	144	5
	Horticultural specialty farmers	74	14	25	7	0	28	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	7	0	7	0	0	0	0
	Managers, farms, except horticultural	220	84	124	0	0	12	0
	Managers, horticultural specialty farms	69	32	22	15	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	21	6	7	0	0	8	0
	Supervisors, farm workers	82	30	52	0	0	0	0
	Supervisors, forestry and logging workers	5	0	5	0	0	0	0
	Supervisors, related agricultural occupations	123	32	67	17	0	7	0
	Timber cutting and logging occupations	11	6	5	0	0	0	0
	Total	3397	1487	1451	181	17	256	5
Sonoma	Animal caretakers, except farm	295	32	263	0	0	0	0
	Captains and other officers, fishing vessels	16	0	16	0	0	0	0
	Farm workers	2158	1514	600	10	18	16	0
	Farmers, except horticultural	962	61	895	0	0	6	0
	Fishers	68	5	63	0	0	0	0
	Forestry workers, except logging	19	19	0	0	0	0	0
	Graders and sorters, agricultural products	55	55	0	0	0	0	0
	Groundskeepers and gardeners, except farm	2147	822	1199	10	31	85	0

Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Horticultural specialty farmers	203	25	156	0	0	22	0
	Hunters and trappers	8	0	0	0	8	0	0
	Inspectors, agricultural products	9	0	9	0	0	0	0
	Managers, farms, except horticultural	563	195	364	4	0	0	0
	Managers, horticultural specialty farms	59	19	40	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	114	67	47	0	0	0	0
	Supervisors, farm workers	152	69	83	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	250	28	222	0	0	0	0
	Timber cutting and logging occupations	201	47	126	0	19	0	9
	Total	7279	2958	4083	24	76	129	9
Stanislaus	Animal caretakers, except farm	148	15	133	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	5592	3934	1493	0	27	131	7
	Farmers, except horticultural	1691	145	1534	0	0	12	0
	Fishers	20	8	12	0	0	0	0
	Forestry workers, except logging	26	12	14	0	0	0	0
	Graders and sorters, agricultural products	716	512	149	0	6	49	0
	Groundskeepers and gardeners, except farm	1154	418	623	37	0	67	9
	Horticultural specialty farmers	63	0	53	0	4	6	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	88	42	46	0	0	0	0
	Managers, farms, except horticultural	1114	306	772	0	17	19	0
	Managers, horticultural specialty farms	7	7	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	91	72	19	0	0	0	0
	Supervisors, farm workers	549	300	236	0	10	3	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	109	23	67	0	14	5	0
	Timber cutting and logging occupations	12	0	12	0	0	0	0
	Total	11380	5794	5163	37	78	292	16
Sutter	Animal caretakers, except farm	7	0	7	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	2187	1012	357	0	6	812	0
	Farmers, except horticultural	461	19	303	0	6	133	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	0	0	0	0	0	0	0
	Graders and sorters, agricultural products	172	133	6	0	0	33	0
	Groundskeepers and gardeners, except farm	267	72	135	0	16	44	0
	Horticultural specialty farmers	13	6	7	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	7	0	7	0	0	0	0
	Managers, farms, except horticultural	280	61	177	0	0	42	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	10	0	0	0	0	10	0
	Supervisors, farm workers	85	15	52	4	5	9	0
	Supervisors, forestry and logging workers	17	0	17	0	0	0	0
	Supervisors, related agricultural occupations	43	19	24	0	0	0	0
	Timber cutting and logging occupations	32	12	20	0	0	0	0
	Total	3581	1349	1112	4	33	1083	0
Tehama	Animal caretakers, except farm	57	10	47	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	635	311	317	0	0	4	3
	Farmers, except horticultural	441	0	441	0	0	0	0
	Fishers	9	0	9	0	0	0	0
	Forestry workers, except logging	54	24	27	0	3	0	0
	Graders and sorters, agricultural products	111	66	45	0	0	0	0
	Groundskeepers and gardeners, except farm	172	46	115	0	6	5	0
	Horticultural specialty farmers	7	0	7	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0

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Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Managers, farms, except horticultural	224	54	163	0	0	7	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	6	0	6	0	0	0	0
	Supervisors, farm workers	65	22	43	0	0	0	0
	Supervisors, forestry and logging workers	23	0	19	0	4	0	0
	Supervisors, related agricultural occupations	33	0	33	0	0	0	0
	Timber cutting and logging occupations	277	91	174	0	12	0	0
	Total	2114	624	1446	0	25	16	3
Trinity	Animal caretakers, except farm	20	0	20	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	47	0	36	0	11	0	0
	Farmers, except horticultural	7	0	7	0	0	0	0
	Fishers	15	0	15	0	0	0	0
	Forestry workers, except logging	77	7	63	0	7	0	0
	Graders and sorters, agricultural products	0	0	0	0	0	0	0
	Groundskeepers and gardeners, except farm	75	12	63	0	0	0	0
	Horticultural specialty farmers	0	0	0	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	13	0	13	0	0	0	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	0	0	0	0	0	0	0
	Supervisors, forestry and logging workers	31	6	25	0	0	0	0
	Supervisors, related agricultural occupations	0	0	0	0	0	0	0
	Timber cutting and logging occupations	223	10	182	0	31	0	0
	Total	508	35	424	0	49	0	0
Tulare	Animal caretakers, except farm	161	27	132	0	2	0	0
	Captains and other officers, fishing vessels	14	14	0	0	0	0	0
	Farm workers	15609	13103	1948	11	16	514	17
	Farmers, except horticultural	1963	308	1523	0	4	128	0
	Fishers	7	0	7	0	0	0	0
	Forestry workers, except logging	17	14	0	0	3	0	0
	Graders and sorters, agricultural products	2429	1954	356	0	18	93	8
	Groundskeepers and gardeners, except farm	1522	739	732	10	8	29	4
	Horticultural specialty farmers	50	16	21	0	13	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	57	29	28	0	0	0	0
	Managers, farms, except horticultural	1368	530	719	0	16	103	0
	Managers, horticultural specialty farms	19	19	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	113	92	15	0	0	6	0
	Supervisors, farm workers	1212	816	327	0	17	44	8
	Supervisors, forestry and logging workers	5	0	5	0	0	0	0
	Supervisors, related agricultural occupations	67	26	41	0	0	0	0
	Timber cutting and logging occupations	146	20	109	0	17	0	0
	Total	24759	17707	5963	21	114	917	37
Tuolumne	Animal caretakers, except farm	35	0	29	0	6	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	106	28	70	0	0	8	0
	Farmers, except horticultural	61	8	53	0	0	0	0
	Fishers	6	6	0	0	0	0	0
	Forestry workers, except logging	79	0	71	0	8	0	0
	Graders and sorters, agricultural products	20	0	20	0	0	0	0
	Groundskeepers and gardeners, except farm	167	20	147	0	0	0	0
	Horticultural specialty farmers	0	0	0	0	0	0	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	33	0	33	0	0	0	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0

Table EJ-3B. Occupation by Hispanic Origin and Race

				Non-Hispanic				
County	Occupation	Total	Hispanic	White	Black	American Indian Eskimo / Aleut	Asian Pacific Islander	Other Race
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	0	0	0	0	0	0	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	0	0	0	0	0	0	0
	Timber cutting and logging occupations	139	22	117	0	0	0	0
	Total	646	84	540	0	14	8	0
Yolo	Animal caretakers, except farm	180	11	162	0	0	7	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	1531	1273	221	20	4	13	0
	Farmers, except horticultural	541	50	452	0	0	39	0
	Fishers	0	0	0	0	0	0	0
	Forestry workers, except logging	16	11	5	0	0	0	0
	Graders and sorters, agricultural products	209	195	14	0	0	0	0
	Groundskeepers and gardeners, except farm	658	221	369	6	19	43	0
	Horticultural specialty farmers	34	0	29	0	0	5	0
	Hunters and trappers	0	0	0	0	0	0	0
	Inspectors, agricultural products	8	0	8	0	0	0	0
	Managers, farms, except horticultural	360	79	239	0	0	42	0
	Managers, horticultural specialty farms	0	0	0	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	28	12	16	0	0	0	0
	Supervisors, farm workers	120	78	37	0	0	5	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	42	0	42	0	0	0	0
	Timber cutting and logging occupations	64	31	23	10	0	0	0
	Total	3791	1961	1617	36	23	154	0
Yuba	Animal caretakers, except farm	51	32	19	0	0	0	0
	Captains and other officers, fishing vessels	0	0	0	0	0	0	0
	Farm workers	650	420	217	8	5	0	0
	Farmers, except horticultural	231	20	193	0	0	18	0
	Fishers	2	0	2	0	0	0	0
	Forestry workers, except logging	24	10	14	0	0	0	0
	Graders and sorters, agricultural products	80	44	36	0	0	0	0
	Groundskeepers and gardeners, except farm	266	71	157	0	20	18	0
	Horticultural specialty farmers	2	0	2	0	0	0	0
	Hunters and trappers	6	0	6	0	0	0	0
	Inspectors, agricultural products	0	0	0	0	0	0	0
	Managers, farms, except horticultural	180	70	110	0	0	0	0
	Managers, horticultural specialty farms	21	0	21	0	0	0	0
	Marine life cultivation workers	0	0	0	0	0	0	0
	Nursery workers	0	0	0	0	0	0	0
	Supervisors, farm workers	92	24	54	0	4	10	0
	Supervisors, forestry and logging workers	0	0	0	0	0	0	0
	Supervisors, related agricultural occupations	13	0	13	0	0	0	0
	Timber cutting and logging occupations	78	0	78	0	0	0	0
	Total	1696	691	922	8	29	46	0