

Appendix A
Economic Analysis

ECONOMIC ANALYSIS							05/16/09
Moonlight Alternative A							14:12:38
		Total Acres =		14755	acres		
VALUE - Units		Total Acres =		10366	Low mbf/ac de	\$0	
PP/SP >24" sawtimber *	34447	mbf X	(\$250	/mbf +	\$0	/mbf)	\$8,611,750
WF >24" sawtimber *	13246	mbf X	(\$177	/mbf +	\$0	/mbf)	\$2,344,542
DF >24" sawtimber *	22161	mbf X	(\$260	/mbf +	\$0	/mbf)	\$5,761,860
IC >24" sawtimber *	8836	mbf X	(\$457	/mbf +	\$0	/mbf)	\$4,038,052
ALL 16"-23.9" sawtimber **	27491	mbf X	(\$184	/mbf +	\$0	/mbf)	\$5,058,344
	106181	mbf		10.2	avg mbf/acre		
VALUE - Roadside		Total Acres =		4382	acres	Low mbf/ac de	\$0
PP/SP >24" sawtimber *	4968	mbf X	(\$250	/mbf +		/mbf)	\$1,242,000
WF >24" sawtimber *	1918	mbf X	(\$177	/mbf +		/mbf)	\$339,486
DF >24" sawtimber *	3655	mbf X	(\$260	/mbf +		/mbf)	\$950,300
IC >24" sawtimber *	639	mbf X	(\$457	/mbf +		/mbf)	\$292,023
ALL 16"-23.9" sawtimber **	2833	mbf X	(\$184	/mbf +		/mbf)	\$521,272
	14013	mbf		3.2	avg mbf/acre		
Sawlog Total Value		120194 mbf					\$29,159,629
COSTS		(Assumes Harvesting Sawtimber and Biomass in One Operation)					
Tractor cost	50106	mbf X	\$120	/mbf =			\$6,012,724
Skyline cost*	15318	mbf X	\$220	/mbf			\$3,369,867
Helicopter cost	54770	mbf X	\$320	/mbf			\$17,526,523
# of sawtimber loads	120194	mbf /		5 mbf/truck =	24039		
Haul Cost	4	hours/trip X	\$85	/hour X	24039	trips	\$8,173,260
Surface Replacement-sawtimber	120194	mbf X		\$18.00	/mbf =		\$2,163,492
Subsoiling Costs	190	acres X	\$230	/acre			\$43,700
BD Costs	120194	mbf X	\$0.30	/mbf			\$36,058
Temporary Road Construction	19.2	miles X	10,000	/mile			\$192,000
Advertised Rate-sawtimber	120194	mbf X		\$14.23	/mbf		\$1,710,411
Yield Tax	\$29,159,629	X	2.9%				\$845,629
Scaling Sawtimber	24039	trips	\$22	/trip			\$528,858
Sawlog Total Cost							\$40,602,524
Sawlog Net Value							(\$11,442,895)
							PERCENT ABOVE VALUE
							-39%
Biomass Value when Removed	4147	acres X	28.4	tons/acre X	\$27.00	/ton =	\$3,179,920
Biomass Total Value							\$3,179,920
							PERCENT ABOVE VALUE
							-14%
Combined (Sawlog & Biomass) Total Value							\$32,339,549
Combined (Sawlog & Biomass) Total Cost							\$44,226,249
Combined (Sawlog & Biomass) Net Value							(\$11,886,700)
							PERCENT ABOVE VALUE
							-37%
Reforestation Costs	16006	acres X	\$450	/acre	110	320	\$7,202,700
Grapple Pile & burn	0	acres X	\$550	/acre	120	0	\$0
Hand thin, Pile, and burn	0	acres X	\$700	/acre	400	0	\$0
Hand thin, Pile, and burn- Heli (6S)	0	acres X	\$1100	/acre	400	0	\$0
Hand line and Underburn	0	acres X	\$450	/acre	400	0	\$0
							\$7,202,700
WO/RO/SO Overhead Costs	50.5%	of above costs					\$3,637,364
TOTAL NON-HARVEST COST							\$10,840,064
TOTAL PROJECT VALUE							-\$22,726,764
Harvest & Biomass (Employment)						1700	
TOTAL FULL TIME JOBS							2020
TOTAL EMPLOYEE-RELATED INCOME							\$86,861,975
<p>Based on historical relationships between employment and harvest in California during the 1980's, each million board feet harvested supports 6.5 year-around jobs (1 in logging, 4 in sawmill, and 1.5 in US Forest Service employment). In regional economic models of employment for California and the Pacific Northwest, and estimate of one indirect or induced job for every direct timber job is added. Indirect jobs result from the employment created by the local purchase of materials for the sawmill, local expenditures by workers, and the demand for local government employees. Each million board feet harvested supports a total of 13 jobs that are timber related. The restoration work would support additional direct and indirect employment. There are approximately 1.4 indirect jobs for every full time field job. All jobs are equivalent to year-around employment. Total employee-related income is calculated by assuming an annual wage of \$43,000 per full time job. This estimate is based on an average value added per California worker of \$43,000 based on data in the California Statistical abstract.</p>							
<p>Timber values based on the average value of the Board of Equalization July 2009 thru December 2009 plus cost of harvest is included based on B</p>							

ECONOMIC ANALYSIS							05/16/09	
Moonlight Alternative C							14:12:38	
		Total Acres =	8536	acres				
VALUE Units		Total Acres =	4147		Low mbf/ac de	\$0		
PP/SP >24" sawtimber *		13425	mbf X	(\$250	/mbf +	\$0	/mbf)	\$3,356,250
WF >24" sawtimber *		6850	mbf X	(\$177	/mbf +	\$0	/mbf)	\$1,212,450
DF >24"sawtimber *		7155	mbf X	(\$260	/mbf +	\$0	/mbf)	\$1,860,300
IC >24" sawtimber *		3879	mbf X	(\$457	/mbf +	\$0	/mbf)	\$1,772,703
ALL 16"-23.9" sawtimber **		12665	mbf X	(\$184	/mbf +	\$0	/mbf)	\$2,330,360
		43974	mbf		10.6	avg mbf/acre		
VALUE - Roadside		Total Acres =	4389	acres	Low mbf/ac de	\$0		
PP/SP >24" sawtimber *		4968	mbf X	(\$250	/mbf +		/mbf)	\$1,242,000
WF >24" sawtimber *		1918	mbf X	(\$177	/mbf +		/mbf)	\$339,486
DF >24"sawtimber *		3655	mbf X	(\$260	/mbf +		/mbf)	\$950,300
IC >24" sawtimber *		639	mbf X	(\$457	/mbf +		/mbf)	\$292,023
ALL 16"-23.9" sawtimber **		2833	mbf X	(\$184	/mbf +		/mbf)	\$521,272
		14013	mbf		3.2	avg mbf/acre		
Sawlog Total Value		57987	mbf					\$13,877,144
COSTS		(Assumes Harvesting Sawtimber and Biomass in One Operation)						
Tractor cost		50220	mbf X	\$120	/mbf =			\$6,026,400
Roadside (steep)		7767	mbf X	\$220	/mbf =			\$1,708,740
# of sawtimber loads		57987	mbf /		5 mbf/truck =	11597		
Haul Cost		4	hours/trip X	\$85	/hour X	11597	trips	\$3,942,980
Surface Replacement-sawtimber		57987	mbf X		\$18.00	/mbf =		\$1,043,766
Subsoiling Costs		110	acres X	\$230	/acre			\$25,300
BD Costs		57987	mbf X	\$0.30	/mbf			\$17,396
Temporary Road Construction		18.1	miles X	####	/mile			\$181,000
Advertised Rate-sawtimber		57987	mbf X		\$17.50	/mbf		\$1,014,683
Yield Tax		\$13,877,144	X	2.9%				\$402,437
Scaling Sawtimber		11597	trips	\$22	/trip			\$255,134
Sawlog Total Cost								\$14,617,836
Sawlog Net Value								(\$740,692)
						PERCENT ABOVE VALUE		-5%
					Acre/job	Full Time Jobs		
Biomass Value when Removed		4147	acres X	28.4	tons/acre X	\$22.00	/ton =	\$2,591,046
Biomass Value when Removed		0	acres X	20.0	tons/acre X	\$22.00	/ton =	\$0
Biomass Total Value								\$2,591,046
	Acres	Total Biomass	118	1000 tons	28.4	Average Tons/Ac		
		Average Unit Size =	50	acres	\$43	/acre		
		Contract Length =	2	years	(\$43)	/acre		
		Months Operation =	5	months	\$0	/acre		
Acres of 6-14" biomass-tractor		4147	acres X (\$434	/acre +	\$0	/acre)	\$1,799,798
		4147	Biomass Acres					
# of biomass loads	4147	acres X	28.4	tons/acr	25	tons/truck =	4711	
Haul Cost Biomass		5.5	hours/trip X	\$85	/hour X	4711	trips	\$2,202,393
Surface Replacement-biomass		4147	acres X	28.4	tons/acre X	2.57	/ton =	\$302,849
Temporary Road Construction		18.1	miles X	5,000	/mile			\$90,500
Advertised Rate-biomass		4147	acres X	28.4	tons/acre X	\$0.20	/ton	\$23,555
Scaling Biomass		4711	trips	\$0	/trip			\$0
Biomass Total Cost								\$4,419,095
Biomass Net Value								(\$1,828,049)
						PERCENT ABOVE VALUE		-71%
Combined (Sawlog & Biomass) Total Value								\$16,468,190
Combined (Sawlog & Biomass) Total Cost								\$19,036,931
Combined (Sawlog & Biomass) Net Value								(\$2,568,742)
						PERCENT ABOVE VALUE		-16%
Reforestation Costs		9306	acres X	\$450	/acre	110	186	\$4,187,700
Grapple Pile & burn		0	acres X	\$550	/acre	120	0	\$0
Hand thin, Pile, and burn		0	acres X	\$700	/acre	400	0	\$0
Hand thin, Pile, and burn- Heli (65)		0	acres X	\$1100	/acre	400	0	\$0
Hand line and Underburn		0	acres X	\$450	/acre	400	0	\$0
								\$4,187,700
WO/RO/SO Overhead Costs	50.5%	of above costs						\$2,114,789
TOTAL NON-HARVEST COST								\$6,302,489
TOTAL PROJECT VALUE								-\$8,871,230
Harvest & Biomass (Employment)							891	
TOTAL FULL TIME JOBS								1077
TOTAL EMPLOYEE-RELATED INCOME								\$46,326,262
Based on historical relationships between employment and harvest in California during the 1980's, each million board feet harvested supports 6.5 year-around jobs (1 in logging, 4 in sawmill, and 1.5 in US Forest Service employment). In regional economic models of employment for California and the Pacific Northwest, and estimate of one indirect or induced job for every direct timber job is added. Indirect jobs result from the employment created by the local purchase of materials for the sawmill, local expenditures by workers, and the demand for local government employees. Each million board feet harvested supports a total of 13 jobs that are timber related. The restoration work would support additional direct and indirect employment. There are approximately 1.4 indirect jobs for every full time field job. All jobs are equivalent to year-around employment. Total employee-related income is calculated by assuming an annual wage of \$43,000 per full time job. This estimate is based on an average value added per California worker of \$43,000 based on data in the California Statistical abstract.								
Timber values based on the average value of the Board of Equalization July 2009 thru December 2009 plus cost of harvest is included based on B								

ECONOMIC ANALYSIS							05/16/09	
Moonlight Alternative D							14:12:38	
Total Acres = 5656 acres								
Total Acres = 1267							Low mbf/ac de \$0	
VALUE - Units								
PP/SP >24" sawtimber *	32.0%	2919	mbf X	(\$250	/mbf +	\$0	/mbf)	\$729,792
WF >24" sawtimber *	13.0%	1186	mbf X	(\$177	/mbf +	\$0	/mbf)	\$209,906
DF >24" sawtimber *	21.0%	1916	mbf X	(\$260	/mbf +	\$0	/mbf)	\$498,083
IC >24" sawtimber *	8.0%	730	mbf X	(\$457	/mbf +	\$0	/mbf)	\$333,515
ALL 16"-23.9" sawtimber **	26.0%	2372	mbf X	(\$184	/mbf +	\$0	/mbf)	\$436,416
	100%	9122	mbf		7.2	avg mbf/acre		
Total Acres = 4389 acres							Low mbf/ac de \$0	
VALUE - Roadside								
PP/SP >24" sawtimber *		4968	mbf X	(\$250	/mbf +	\$0	/mbf)	\$1,242,000
WF >24" sawtimber *		1918	mbf X	(\$177	/mbf +	\$0	/mbf)	\$339,486
DF >24" sawtimber *		3655	mbf X	(\$260	/mbf +	\$0	/mbf)	\$950,300
IC >24" sawtimber *		639	mbf X	(\$457	/mbf +	\$0	/mbf)	\$292,023
ALL 16"-23.9" sawtimber **		2833	mbf X	(\$184	/mbf +	\$0	/mbf)	\$521,272
		14013	mbf		3.2	avg mbf/acre		
Sawlog Total Value 23135 mbf							\$5,552,793	
COSTS (Assumes Harvesting Sawtimber and Biomass in One Operation)								
Tractor cost		15368	mbf X	\$120	/mbf =			\$1,844,160
Roadside (steep)		7767	mbf X	\$220	/mbf			\$1,708,740
# of sawtimber loads		23135	mbf /		5 mbf/truck =	4627		
Haul Cost		4	hours/trip X	\$85	/hour X	4627	trips	\$1,573,180
Surface Replacement-sawtimber		23135	mbf X		\$18.00 /mbf =			\$416,437
Subsoiling Costs		50	acres X	\$230	/acre			\$11,500
BD Costs		23135	mbf X	\$0.30	/mbf			\$6,941
Temporary Road Construction		3.0	miles X	#####	/mile			\$30,000
Advertised Rate-sawtimber		23135	mbf X		\$18.00 /mbf			\$416,540
Yield Tax		\$5,552,793	X	2.9%				\$161,031
Scaling Sawtimber		4627	trips	\$22	/trip			\$101,794
Sawlog Total Cost							\$6,270,323	
Sawlog Net Value							(\$717,530)	
							PERCENT ABOVE VALUE -13%	
							PERCENT ABOVE VALUE -13%	
Biomass Value when Removed		1267	acres X	28.4	tons/acre X	\$27.00	/ton =	\$971,536
Biomass Value when Removed		0	acres X	20.0	tons/acre X	\$0.00	/ton =	\$0
Biomass Total Value							\$971,536	
							PERCENT ABOVE VALUE -13%	
							PERCENT ABOVE VALUE -16%	
Combined (Sawlog & Biomass) Total Value							\$6,524,329	
Combined (Sawlog & Biomass) Total Cost							\$7,396,310	
Combined (Sawlog & Biomass) Net Value							(\$871,982)	
							PERCENT ABOVE VALUE -13%	
Reforestation Costs		16006	acres X	\$450	/acre	110	320	\$7,202,700
Grapple Pile & burn		0	acres X	\$550	/acre	120	0	\$0
Hand thin, Pile, and burn		0	acres X	\$700	/acre	400	0	\$0
Hand thin, Pile, and burn- Heli (GS)		0	acres X	\$1100	/acre	400	0	\$0
Hand line and Underburn		0	acres X	\$450	/acre	400	0	\$0
WO/RO/SO Overhead Costs	50.5%	of above costs						\$3,637,364
TOTAL NON-HARVEST COST							\$10,840,064	
TOTAL PROJECT VALUE							-\$11,712,045	
Harvest & Biomass (Employment)						343		
TOTAL FULL TIME JOBS							663	
TOTAL EMPLOYEE-RELATED INCOME							\$28,502,986	
based on historical relationships between employment and harvest in California during the 1980's, each million board feet harvested supports 6.5 year-around jobs (1 in logging, 4 in sawmill, and 1.5 in US Forest Service employment). In regional economic models of employment for California and the Pacific Northwest, and estimate of one indirect or induced job for every direct timber job is added. Indirect jobs result from the employment created by the local purchase of materials for the sawmill, local expenditures by workers, and the demand for local government employees. Each million board feet harvested supports a total of 13 jobs that are timber related. The restoration work would support additional direct and indirect employment. There are approximately 1.4 indirect jobs for every full time field job. All jobs are equivalent to year-around employment. Total employee-related income is calculated by assuming an annual wage of \$43,000 per full time job. This estimate is based on an average value added per California worker of \$43,000 based on data in the California Statistical abstract.								
Timber values based on the average value of the Board of Equalization July 2009 thru December 2009 plus cost of harvest is included based on								

ECONOMIC ANALYSIS							05/16/09
Moonlight Alternative E							14:12:38
VALUE - Roadside		Total Acres =	4389	acres		Low mbf/ac de	\$0
PP/SP >24" sawtimber *	4968	mbf X	(\$250	/mbf +	\$0	/mbf)	\$1,242,000
WF >24" sawtimber *	1918	mbf X	(\$177	/mbf +	\$0	/mbf)	\$339,486
DF >24" sawtimber *	3655	mbf X	(\$260	/mbf +	\$0	/mbf)	\$950,300
IC >24" sawtimber *	639	mbf X	(\$457	/mbf +	\$0	/mbf)	\$292,023
ALL 16"-23.9" sawtimber **	2833	mbf X	(\$184	/mbf +	\$0	/mbf)	\$521,272
	14013	mbf	3.2	avg mbf/acre			
Sawlog Total Value	14013	mbf					\$3,345,081
COSTS	(Assumes Harvesting Sawtimber and Biomass in One Operation)						
Tractor cost	5082	mbf X	\$120	/mbf =			\$609,840
Roadside (steep)	7767	mbf X	\$220	/mbf			\$1,708,740
# of sawtimber loads	14013	mbf /			5 mbf/truck =	2803	
Haul Cost	4	hours/trip X	\$85	/hour X	2803	trips	\$953,020
Surface Replacement-sawtimber	14013	mbf X			\$18.00	/mbf =	\$252,234
Subsoiling Costs	15	acres X	\$230	/acre			\$3,450
BD Costs	14013	mbf X	\$0.30	/mbf			\$4,204
Temporary Road Construction	0.0	miles X	0	/mile			\$0
Advertised Rate-sawtimber	14013	mbf X			\$18.17	/mbf	\$254,620
Yield Tax	\$3,345,081	X	2.9%				\$97,007
Scaling Sawtimber	2803	trips	\$22	/trip			\$61,666
Sawlog Total Cost							\$3,944,782
Sawlog Net Value							(\$599,701)
					PERCENT ABOVE VALUE		-18%
Combined (Sawlog & Biomass) Total Value							\$3,345,081
Combined (Sawlog & Biomass) Total Cost							\$3,944,782
Combined (Sawlog & Biomass) Net Value							(\$599,701)
					PERCENT ABOVE VALUE		-18%
Reforestation Costs	16006	acres X	\$450	/acre	110	320	\$7,202,700
Grapple Pile & burn	0	acres X	\$550	/acre	120	0	\$0
Hand thin, Pile, and burn	0	acres X	\$700	/acre	400	0	\$0
Hand thin, Pile, and burn- Heli (GS)	0	acres X	\$1100	/acre	400	0	\$0
Hand line and Underburn	0	acres X	\$450	/acre	400	0	\$0
							\$7,202,700
WO/RO/SO Overhead Costs	50.5%	of above costs					\$3,637,364
TOTAL NON-HARVEST COST							\$10,840,064
TOTAL PROJECT VALUE							-\$7,494,983
Harvest & Biomass (Employment)						182	
TOTAL FULL TIME JOBS							502
TOTAL EMPLOYEE-RELATED INCOME							\$21,598,427
Based on historical relationships between employment and harvest in California during the 1980's, each million board feet harvested supports 6.5 year-around jobs (1 in logging, 4 in sawmill, and 1.5 in US Forest Service employment). In regional economic models of employment for California and the Pacific Northwest, and estimate of one indirect or induced job for every direct timber job is added. Indirect jobs result from the employment created by the local purchase of materials for the sawmill, local expenditures by workers, and the demand for local government employees. Each million board feet harvested supports a total of 13 jobs that are timber related. The restoration work would support additional direct and indirect employment. There are approximately 1.4 indirect jobs for every full time field job. All jobs are equivalent to year-around employment. Total employee-related income is calculated by assuming an annual wage of \$43,000 per full time job. This estimate is based on an average value added per California worker of \$43,000 based on data in the California Statistical abstract.							
Timber values based on the average value of the Board of Equalization July 2009 thru December 2009 plus cost of harvest is included based on B							