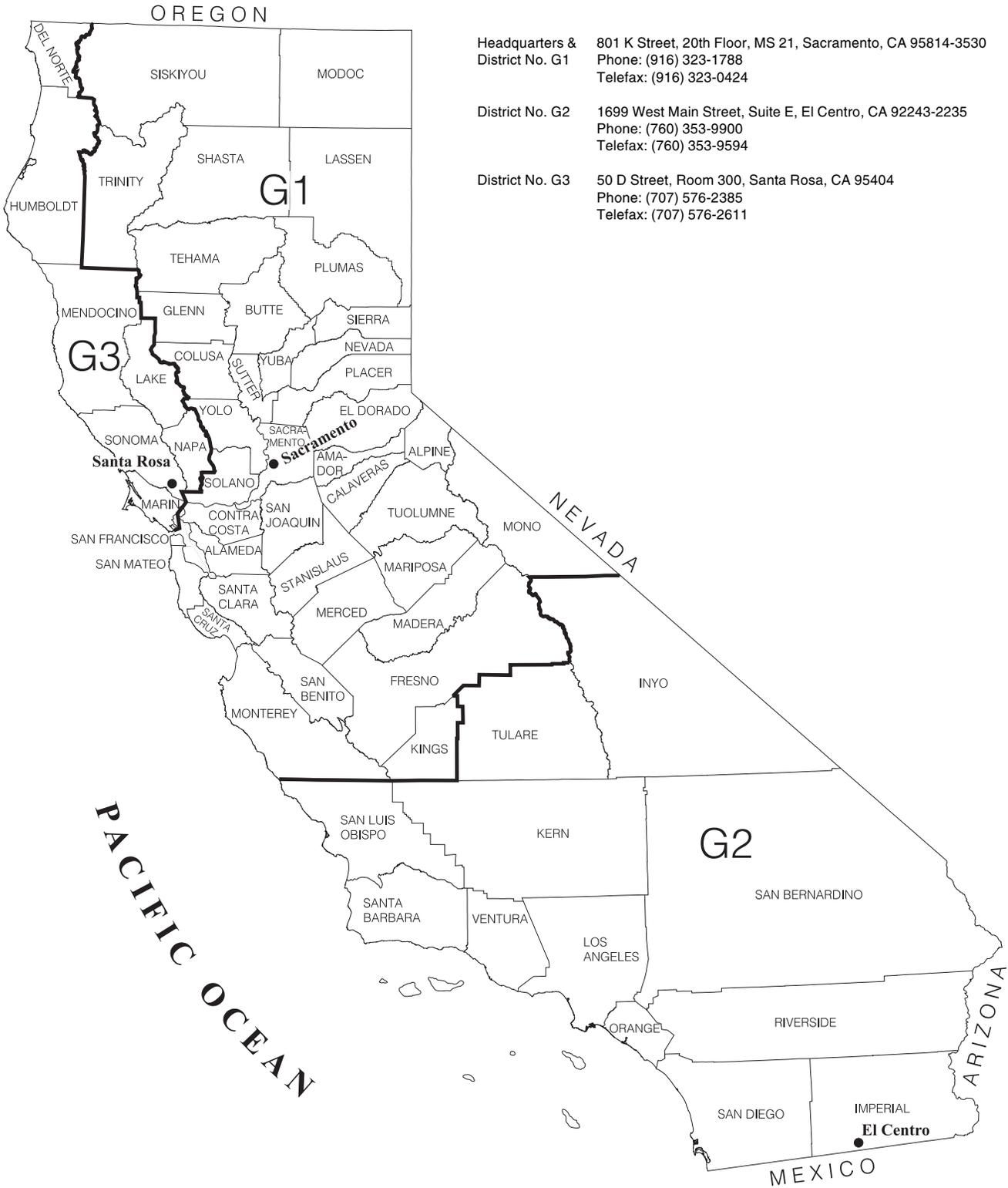


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# **GEOHERMAL OPERATIONS**

**GEOHERMAL DISTRICT BOUNDARIES AND OFFICES  
of the  
Division of Oil, Gas, and Geothermal Resources**



# SUMMARY OF GEOTHERMAL OPERATIONS

*Richard P. Thomas, Geothermal Officer, Sacramento*

## PROGRAM HIGHLIGHTS:

**FINANCIAL ASSURANCE** The Department of Conservation organized a public meeting with geothermal stakeholders on May 21 in Santa Rosa. The group discussed financial assurance issues related to geothermal well plugging and abandonment costs, should no legally responsible party be available.

**DATA MANAGEMENT SYSTEM** During the year, significant progress was made in the joint effort between the Department of Conservation and Lawrence Livermore National Laboratory to develop a modern data-gathering and viewing system. The system will feature Internet access and electronic data submittal capabilities. As part of the effort, over 2,000 well records were scanned.

## DISTRICT NO. G1

*Elizabeth A. Johnson, District Engineer, Sacramento*



**SCIENTIFIC WELL** Well "Long Valley Federal" 51-20 was completed to a depth of 9,832 feet in the summer of 1998. Teams from Sandia and the U.S. Department of Energy led drilling operations. Scientific research was coordinated by the U. S. Geological Survey.

The California Energy Commission, U.S. Geological Survey, U.S. Department of Energy, and the International Continental Drilling Program funded the 1998 drilling program, at a cost of \$2 million.

The well, drilled to a depth of 7,588 feet in 1991, was cored continuously from 7,588 feet to 9,832 feet in 1998. After the well was completed, an open-hole injection test was performed with a pressure/

temperature/spinner tool. A borehole televiewer log was made of the cored interval.

In 1999, the well will become a downhole volcanological observation site for the U.S. Geological Survey and other research institutions.

## DISTRICT NO. G2

*Timothy S. Boardman, District Engineer, El Centro*



**SALTON SEA GEOTHERMAL FIELD** CalEnergy Co., Inc., announced plans to break ground in early 1999 for a 49-megawatt power plant and zinc recovery facility in the Salton Sea Geothermal field. The \$285 million project represents the largest single renewable energy investment in the United States in nearly a decade. The zinc recovery facility will process geothermal fluids, using half of the power generated by the new power plant. Although brines in the Salton Sea Geothermal field contain mostly common salts, they also hold minute amounts of many elements, from arsenic to zinc. The target completion date is the summer of 2000.

**EAST MESA GEOTHERMAL FIELD** In early 1998, Florida Power and Light (FPL Energy Operating Services, Inc.) and Caithness Energy L.L.C. purchased the I, IE, and IH binary power plant units from Imperial Operators in East Mesa Geothermal field. FPL Energy Operating Services, Inc., also became partial owner of the Unit II binary plant, in partnership with Caithness.

On March 15, Mission Resources shut down the Gem 2 and 3 power plants and sold the facilities to the partnership of FPL Energy Operating Services, Inc., and Caithness Energy, L.L.C. Now, all projects in the field are known as the East Mesa Geothermal Projects.

The East Mesa power plant units have been renamed as follows: the Unit I facility is PEM 1, Unit IE is PEM 2, Unit II is PEM 3, Unit IH is PEM 4, Gem 2 is PEM 5, and Gem 3 is PEM 6.

In August, PEM 4 and 5 were restarted. The plan is for these units to supply the parasitic load of East Mesa Geothermal field ( $\pm 20$  megawatts) sometime in early 1999. The rest of the power will be sold to the California Power Exchange.

## DISTRICT NO. G3

*Kenneth F. Stelling, District Engineer, Santa Rosa*



**THE GEYSERS GEOTHERMAL FIELD** The Lake County Pipeline Project (LCPP) marked its first full year of operation in 1998. The amount of water injected in The Geysers Geothermal field during the

year, including the pipeline water, increased 66 percent, from 26.7 billion kilograms in 1997 to 44.3 billion kilograms in 1998. The higher injection volumes have caused pressures in parts of the southeastern portion of the field to stabilize after years of decline, and have increased pressures in some areas.

Steam production at The Geysers held steady in 1998, remaining at 66.5 billion kilograms. The additional water injected in the field from the LCPP is expected to become produced steam.

The success of the Lake County project has renewed interest in the Santa Rosa Geysers Project in Sonoma County. The final locations and routes of the Santa Rosa pipeline have not been determined.

**POWER PLANT SOLD** During 1998, Calpine Corporation purchased SMUDGE 1, a 72-megawatt power plant at The Geysers, from the Sacramento Municipal Utility District for \$13 million. The plant was renamed the Sonoma Power Plant.

# **GEOHERMAL STATISTICS**

## GEOHERMAL OPERATIONS AND METERS DRILLED - 1998\*

Field or county	API county code	Drilled					Completed					Redrilled or deepened					Plugged & abandoned					Meters drilled					
		Explor.	Prod.	Serv.	Temp. grad.	Total	Explor.	Prod.	Serv.	Temp. grad.	Total	Explor.	Prod.	Serv.	Temp. grad.	Total	Explor.	Prod.	Serv.	Temp. grad.	Total	Suspended	New Wells	Reworks			
DISTRICT G1																											
Casa Diablo	051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lake City	049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Litchfield	035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Susanville	035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wendel	035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lassen County	035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Modoc County	049	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mono County	051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plumas County	063	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shasta County	089	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sierra County	091	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
District G1 Totals		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DISTRICT G2																											
Brawley	025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heber	025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
East Mesa	025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mesquite	025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salton Sea	025	0	1	2	1	4	0	1	2	1	4	0	3	4	7	0	6	1	1	8	0	0	0	0	6,686	4,073	
Desert Hot Springs	065	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Imperial County	025	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Inyo County	027	0	3	0	0	3	0	3	0	0	3	0	4	1	5	0	0	0	0	0	0	0	0	0	8,300	3,348	
Kern County	029	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Riverside County	065	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
San Bernardino	071	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
San Luis Obispo	079	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District G2 Totals		0	6	2	1	9	0	6	2	1	9	0	7	5	0	12	0	6	1	1	8	0	14,986	7,421			
DISTRICT G3																											
Calistoga	055	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
The Geysers	033	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	097	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lake County	033	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Mendocino County	045	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sonoma County	097	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District G3 Totals		0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	3,048	0			
STATE TOTALS		0	7	2	1	10	0	7	2	1	10	0	7	5	0	12	0	7	1	1	9	0	18,034	7,421			

\* Data for federal leases are not included.

## CALIFORNIA'S STEAM-DOMINATED GEOHERMAL FIELDS\*

Year	Average number of producing wells	Gross steam produced kilograms (thousands)	Average number of active injection wells	Water injected kilograms (thousands)	Percent injected
The Geysers Geothermal field:					
1960	3	306,180	0	0	0
1961	3	857,431	0	0	0
1962	3	913,804	0	0	0
1963	7	1,530,900	0	0	0
1964	7	1,838,314	0	0	0
1965	7	1,727,581	0	0	0
1966	7	1,709,872	0	0	0
1967	13	2,862,470	0	0	0
1968	13	3,515,849	0	0	0
1969	26	6,812,616	1	410,788	6.0
1970	27	6,457,453	1	847,490	13.1
1971	30	7,813,799	2	1,224,598	15.7
1972	45	15,777,373	3	2,904,923	18.4
1973	60	21,464,314	4	4,064,929	18.9
1974	72	26,329,259	5	5,364,196	20.4
1975	84	30,514,607	5	7,473,397	24.5
1976	92	31,995,187	6	7,717,116	24.1
1977	95	32,527,275	6	7,496,076	23.0
1978	95	27,622,596	6	6,522,400	23.6
1979	123	36,138,118	9	8,723,633	24.1
1980	150	46,966,791	10	10,866,000	23.1
1981	165	52,864,353	12	13,595,090	25.7
1982	174	48,174,347	11	13,549,916	28.1
1983	225	65,893,108	15	19,081,541	29.0
1984	253	80,067,099	17	23,312,221	29.1
1985	309	95,232,214	22	26,517,067	27.8
1986	354	106,561,865	23	30,771,676	28.9
1987	390	111,821,897	23	31,495,280	28.2
1988	429	108,523,641	23	28,325,113	26.1
1989	439	100,205,378	23	28,348,657	28.3
1990	442	95,646,626	25	27,318,499	28.6
1991	436	89,660,288	26	25,747,804	28.7
1992	444	88,513,172	29	27,344,280	30.9
1993	450	84,379,560	29	30,183,128	35.8
1994	447	78,427,345	28	24,524,066	31.3
1995	428	61,104,078	26	26,826,230	43.9
1996	439	65,110,919	25	30,601,721	47.0
1997	+429	+66,488,424	+30	26,701,703	40.1
1998	424	66,542,281	43	44,311,161	66.6

\* Data for federal leases included.  
+ Contains corrected data.

## CALIFORNIA'S WATER - DOMINATED GEOTHERMAL FIELDS\*

Geothermal field	Year	Average number of producing wells	Gross water produced kilograms (thousands)	Average number of injection wells	Water injected kilograms (thousands)	Geothermal field	Year	Average number of producing wells	Gross water produced kilograms (thousands)	Average number of injection wells	Water injected kilograms (thousands)
Amedee	1988**	2	1,283,871	NO INJECTION		Litchfield	1984**	1	945,419	NO INJECTION	
	1989	2	4,778,856				1985	1	987,427		
	1990	2	5,443,317				1986	1	852,801		
	1991	2	5,778,129				1987	1	712,709		
	1992	2	5,946,618				1988	1	765,384		
	1993	2	5,535,367				1989	1	1,061,360		
	1994	2	4,970,443				1990	1	891,708		
	1995	2	5,357,734				1991	1	760,304		
	1996	2	5,670,982				1992	1	621,690		
	1997	2	5,374,700				1993	1	885,045		
	1998	2	5,223,708				1994	1	701,006		
Brawley	1982**	2	1,833,217	2	1,578,510	Salton Sea	1982**	2	2,383,365	2	2,071,770
	1983	2	2,397,722	4	2,342,862		1983	3	3,735,455	2	3,260,076
	1984	1	1,122,414	3	994,175		1984	2	4,208,900	2	3,211,456
	1985	1	555,731	1	529,041		1985	2	4,167,497	2	3,193,912
	1986		PROJECT TERMINATED				1986	9	13,433,795	7	10,851,579
Casa Diablo	1984**	1	1,317,788	1	1,317,788		1987	9	14,272,783	8	11,911,933
	1985	3	3,840,401	3	3,840,401		1988	11	19,572,266	10	17,087,924
	1986	3	6,076,840	3	6,076,840		1989	23	56,570,756	18	47,581,465
	1987	4	6,754,790	3	6,754,790		1990	32	75,745,346	23	62,991,977
	1988	4	6,723,808	3	6,723,808		1991	33	77,687,699	23	68,884,579
	1989	3	6,871,002	3	6,871,002		1992	35	78,034,671	22	69,247,157
	1990	4	6,971,231	3	6,971,231	1993	34	77,792,273	25	66,406,019	
	1991	10	24,538,220	5	24,538,220	1994	31	77,764,065	24	69,917,900	
	1992	10	24,604,335	4	24,604,335	1995	32	80,974,333	24	71,139,969	
	1993	10	23,544,466	4	23,544,466	1996	32	96,779,351	26	+82,086,809	
	1994	10	23,637,236	5	23,637,236	1997	30	102,380,076	29	+84,698,562	
	1995	9	22,498,589	5	22,498,589	1998	28	101,337,579	28	91,218,237	
	1996	9	22,500,565	5	22,500,565						
	1997	9	22,229,408	5	22,229,408						
1998	9	20,905,997	5	20,905,997							
Coso	1987**	5	4,125,630	3	3,547,813	Susanville***	1982**	1	21,228	1	21,228
	1988	15	13,965,143	6	9,233,591		1983	1	174,352	1	174,352
	1989	32	44,187,631	12	34,841,883		1984	1	134,832	1	134,832
	1990	47	55,936,765	14	40,390,044		1985	1	339,792	1	171,360
	1991	57	46,624,874	14	28,479,346		1986	1	345,600	1	199,104
	1992	63	41,198,639	16	27,342,886		1987	1	436,751	1	276,196
	1993	68	+47,726,990	18	26,693,236		1988	1	262,878	1	230,307
	1994	72	+43,261,502	19	24,412,831		1989	1	448,792	1	300,972
	1995	75	+40,317,057	20	24,483,807		1990	1	518,471	1	297,840
	1996	79	+39,732,984	20	22,416,692		1991	1	525,490	1	297,840
	1997	82	36,611,570	20	19,485,632		1992	1	482,574	1	298,656
	1998	82	36,765,700	21	17,223,884		1993	1	589,658	1	297,840
							1994	1	551,406	1	297,840
							1995	1	565,345	1	297,024
					1996	1	489,327	1	297,840		
					1997	1	415,313	1	297,840		
					1998	1	234,957	1	204,174		
East Mesa	1983**	5	3,196,215	3	3,190,219	Wendel	1985**	1	833,989		0
	1984	6	4,050,175	2	3,963,468		1986	1	1,808,949		0
	1985	6	3,659,938	2	3,385,793		1987	1	1,773,907		0
	1986	6	4,725,162	3	4,399,114		1988	1	1,763,722		0
	1987	15	14,187,024	6	13,734,959		1989	2	2,542,910	1	428,745
	1988	25	40,952,496	12	35,950,366		1990	2	2,618,618	1	978,066
	1989	32	67,990,914	23	57,796,766		1991	2	2,440,737	1	+953,641
	1990	39	79,221,063	33	75,465,209		1992	2	2,503,719	1	1,017,408
	1991	42	91,984,758	36	89,406,945		1993	2	2,370,861	1	1,043,371
	1992	42	97,750,781	39	94,370,772		1994	2	2,309,924	1	1,145,622
	1993	43	97,849,346	40	96,029,637		1995	2	2,153,224	1	956,770
	1994	43	90,589,304	40	87,198,495		1996	2	+2,032,435	1	749,124
	1995	43	90,488,703	41	86,970,705		1997	2	1,772,335	1	605,987
	1996	43	92,604,479	42	89,674,536		1998	2	1,183,856	1	524,260
1997	42	92,797,342	43	89,231,453							
1998	34	78,787,415	36	81,319,831							
Heber	1985**	9	13,584,658	8	13,214,051						
	1986	13	32,263,682	12	29,716,492						
	1987	16	34,472,259	13	31,300,084						
	1988	12	29,769,219	10	26,031,068						
	1989	11	29,384,658	10	24,976,751						
	1990	10	29,487,574	9	25,085,848						
	1991	10	29,215,287	9	25,252,223						
	1992	10	29,478,685	9	26,816,804						
	1993	17	41,674,826	17	38,101,717						
	1994	22	53,988,169	22	+49,640,276						
	1995	22	56,645,248	23	52,587,798						
	1996	22	58,358,658	23	54,637,130						
	1997	22	60,145,589	20	56,449,799						
	1998	22	60,223,518	23	56,825,739						

\* Data for federal leases included.

\*\* The first year that production data were reported to the Division of Oil, Gas, and Geothermal Resources.

\*\*\* Data are only available for the city's space-heating project.

+ Contains corrected data.

## GEOTHERMAL NOTICES FILED AND INSPECTIONS - 1998\*

Field or county	Notices to drill					Notices to rework					Notices to plug & abandon					Total inspections by district	
	Explor.	Prod.	Serv.	Temp. grad.	Total	Explor.	Prod.	Serv.	Temp. grad.	Total	Explor.	Prod.	Serv.	Temp. grad.	Total		
DISTRICT G1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	203	
Casa Diablo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Lake City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Litchfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Wendel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Susanville	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Lassen County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Modoc County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mono County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Plumas County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Shasta County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Sierra County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
District G1 Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DISTRICT G2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		227
Brawley	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Heber	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0		
East Mesa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mesquite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Salton Sea	0	2	2	1	5	10	10	2	22	22	6	1	1	1	8		
Desert Hot Springs	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0		
Imperial County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Inyo County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Los Angeles County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Riverside County	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0		
San Bernardino	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
San Luis Obispo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
District G2 Totals	0	5	2	1	8	11	10	2	23	23	6	1	1	1	8		
DISTRICT G3	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	863	
Calistoga	0	0	0	0	0	2	6	8	8	13	0	0	0	0	13		
The Geysers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Lake County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Mendocino County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Napa County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Sonoma County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
District G3 Totals	0	0	0	0	0	2	7	0	9	9	13	0	0	0	13		
STATE TOTALS	0	5	2	1	8	13	17	2	32	32	19	1	1	1	21	1,293	

\*Data for federal leases not included. The number of drilling permits issued by the Bureau of Land Management (BLM) for geothermal development on federal lands in California increased in 1998. According to the BLM, 2 wells were permitted during federal fiscal year 1998 (October 1997-September 1998), compared with 1 well permitted the year before.

## GEOTHERMAL EXPLORATORY WELLS DRILLED TO TOTAL DEPTH IN 1998

County	T.	R.	Sec.	B. & M.	Operator	Well designation and API number	Elev. (meters)	Month drilling completed	Total depth (meters)	Stratigraphic units penetrated and/or time-stratigraphic units at total depth (depth in meters)

## GEOTHERMAL CEQA APPLICATIONS AND SITE VISITS

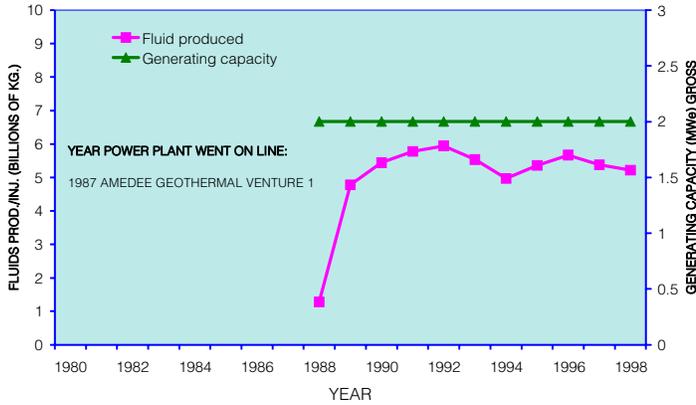
Year	Projects filed				Notices issued				Reports				Site inspections		
	Temperature gradient	Exploratory	Other	Total	Preparation	Exemption	Determination	Total	Negative declaration	Draft EIR	Final EIR	Total	General	Specific	Total
1980	24	6	0	30	9	20	6	35	3	4	4	11	2	9	11
1981	12	7	0	19	15	15	6	36	3	3	2	8	0	11	11
1982	2	6	0	8	5	3	5	13	2	2	2	5	0	2	2
1983	4	7	0	11	4	6	2	12	1	2	2	5	0	5	5
1984	5	3	0	8	1	7	5	13	0	4	4	9	0	4	4
1985	5	3	0	8	2	5	3	10	1	2	2	5	1	0	0
1986	0	3	0	3	0	2	1	3	1	1	1	1	1	0	1
1987	0	5	0	5	0	3	1	4	1	1	1	1	1	4	5
1988	0	1	0	1	0	1	1	2	0	0	0	0	1	0	1
1989	0	2	0	2	0	1	1	2	1	1	1	1	3	0	3
1990	0	2	0	2	0	2	2	4	0	0	0	0	0	0	2
1991	0	3	0	3	0	3	0	3	0	0	0	0	2	3	3
1992	0	2	1	3	0	0	2	2	0	0	0	2	0	6	8
1993	2	2	0	4	2	2	2	6	2	0	0	2	4	4	8
1994	0	1	0	1	0	0	0	0	0	0	0	0	1	1	2
1995	0	1	0	1	0	1	0	1	1	0	1	1	1	1	2
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# FLUID PRODUCED AND INJECTED, AND POWER PLANT CAPACITY FOR CALIFORNIA GEOTHERMAL FIELDS

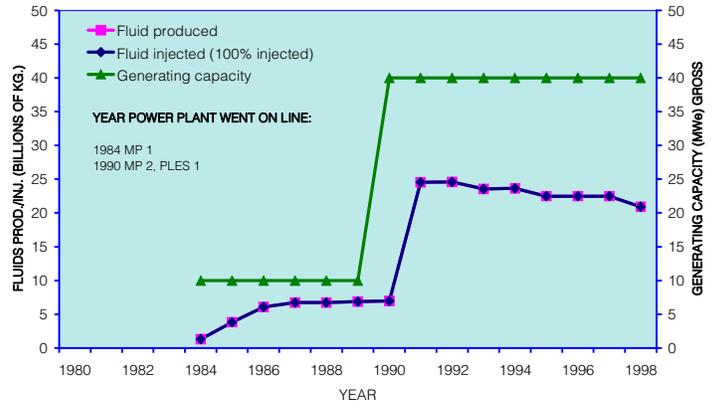
## DISTRICT NO. G1



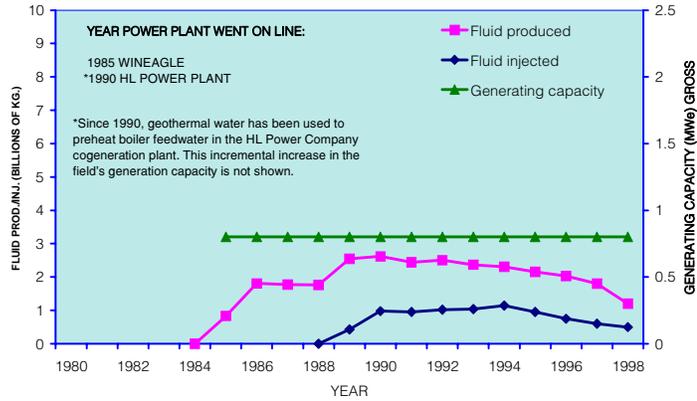
### AMEDEE GEOTHERMAL FIELD



### CASA DIABLO GEOTHERMAL FIELD



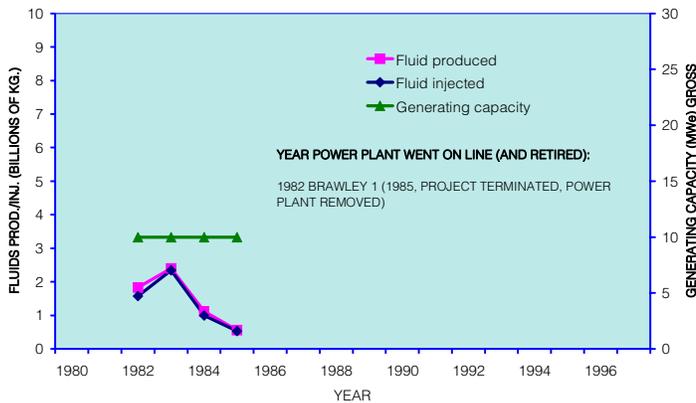
### WENDEL GEOTHERMAL FIELD



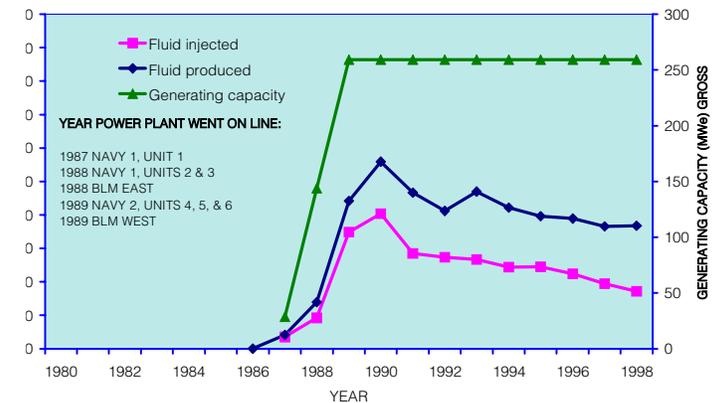
## DISTRICT NO. G2



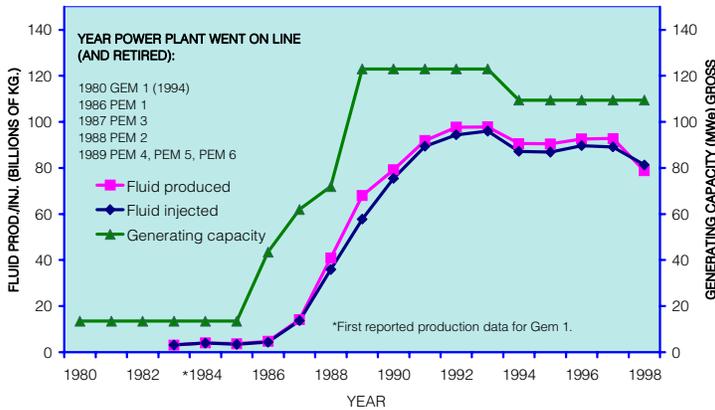
### BRAWLEY GEOTHERMAL FIELD



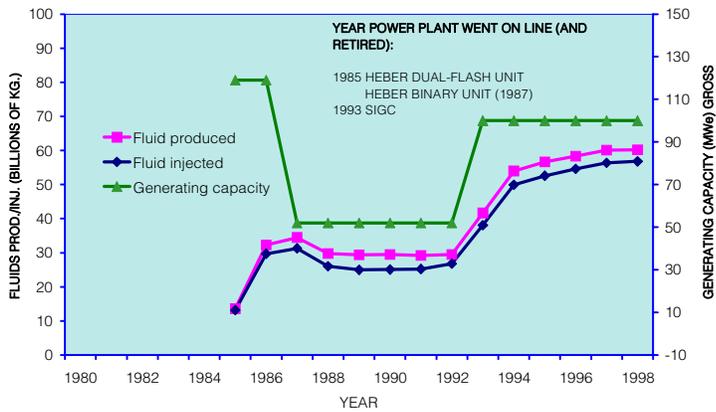
### COSO GEOTHERMAL FIELD



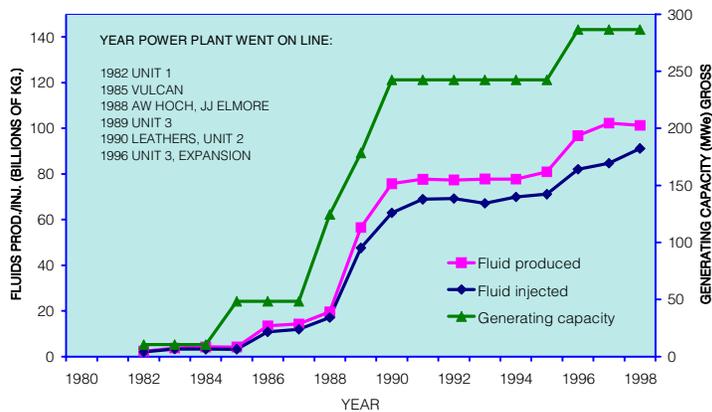
**EAST MESA GEOTHERMAL FIELD**



**HEBER GEOTHERMAL FIELD**



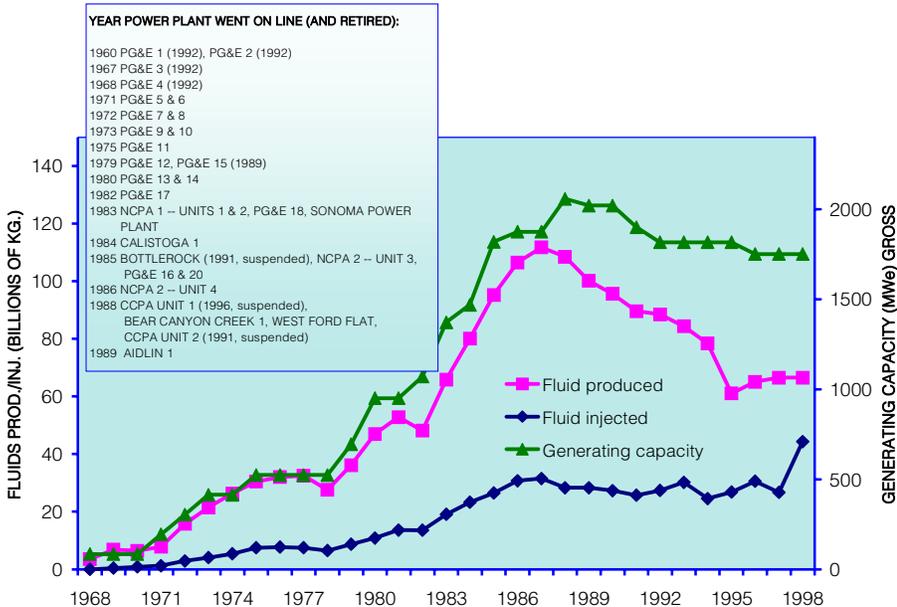
**SALTON SEA GEOTHERMAL FIELD**



**DISTRICT NO. G3**



**THE GEYSERS GEOTHERMAL FIELD**



# **FINANCIAL REPORT**

# FINANCIAL REPORT

The following report is made in accordance with Section 3108, Division 3, Public Resources Code, which reads as follows: "On or before the first day of October of each year the supervisor shall make public for the benefit of all interested persons, a report in writing showing:

(a) The total amounts of oil and gas produced in each county in the state during the previous calendar year. (Figures for 1997 are published in the *83rd Annual Report of the State Oil and Gas Supervisor.*)

(b) The total cost of the division for the previous fiscal year.

(c) The total amount delinquent and uncollected from any assessments or charges levied pursuant to the chapter.

The report shall also include such other information as the supervisor deems advisable."

## Collection of Funds by Assessment

Funds for the support of the Department of Conservation's Division of Oil, Gas, and Geothermal Resources are raised by an assessment on oil and gas production as provided for in Article 7 of Division 3, Public Resources Code.

The assessment is based on the projected expenditures of the division, taking into account any previous surpluses or deficiencies, and the prior year's production. For the 1998-99 fiscal year, the rate of assessment was established at \$0.035438 per barrel of oil or ten thousand cubic feet of gas.

As provided for in Chapter 4, Division 3, Section 3724.5 of the Public Resources Code, the division is also partly funded by an annual assessment levied on operators of high-temperature geothermal resource wells and by drilling fees charged to geothermal operators for drilling new wells or redrilling abandoned wells.

For the 1998-99 fiscal year, the fee-assessment was established at \$1,685.00 per high-temperature geothermal well.

## Financial Statement

1997-98 Fiscal Year

Beginning Resource .....	\$	208,000.00
Balance Available from Prior Year .....	\$	-19,000.00
Revenue Applicable to Oil, Gas, and Geothermal Operations .....	\$	<u>11,078,000.00</u>
Total Resources .....	\$	11,267,000.00
Total Expenditures .....	\$	<u>10,728,000.00</u>
Ending Resources .....	\$	539,000.00

## Hazardous and Idle – deserted Well Abandonment Expenditures

1997-98 Fiscal Year

No. of Wells			
145 .....	Hazardous and Idle-deserted Wells Plugged and Abandoned .....	\$	545,650.28
0 .....	Section 3237 PRC Wells Plugged and Abandoned .....	\$	22,827.75
<u>5</u> .....	Orphaned Wells Plugged and Abandoned (HIDWAF) .....	\$	<u>42,174.46</u>
150 .....	Total Wells Plugged and Abandoned .....	\$	610,652.49
3 .....	Wells On Which Remedial Action Was Taken .....	\$	1,479.97
	Gross Expenditure .....	\$	612,132.46
	Bond Reimbursement .....	\$	-146,781.30
	Lien Reimbursement.....	\$	<u>-21,478.44</u>
	Net Expenditure .....	\$	443,872.72

### Geothermal

16 .....	Section 3237 PRC Wells Plugged and Abandoned, .....	\$	1,497,385.82
	Reimbursed by the County of Sonoma		

## Underground Injection Control Program Expenditures

(Oct. 1, 1997 – Sept. 30, 1998 Federal Fiscal Year)

Beginning Resource .....	\$	453,487.00
Balance Available from Prior Year .....	\$	0.00
Total Resources .....	\$	453,487.00
Total Expenditures.....	\$	<u>453,487.00</u>
Ending Resources .....	\$	0.00

## List of Delinquent Assessments and Penalties: Oil, Gas, and Geothermal Operations as of June 30, 1999

OPERATOR	YEAR	ASSESSMENT
OIL AND GAS OPERATORS		
Alanmar Energy	1997	\$1,505.33
	1998	\$2,209.23
Allied Energy Corp.	1996	\$104.11
	1997	\$36.29
American Barter Petro., Inc.	1993	\$4,899.45
	1994	\$3,882.26
American Titan Oil Co.	1996	\$303.00
Baker Oil and Gas Co.	1990	\$1,177.01
Bellaire Oil Co.	1998	\$4,473.39
Blackhawk Oil Co.	1994	\$8,071.54
	1995	\$2,825.71
E. H. Brogdon	1996	\$80.28
Weldon Bruce	1989	\$680.93
Calif. Oil Independents, Inc.	1995	\$409.19
	1996	\$354.06
Cemco-Edison #1 Fr Prtnrshp	1997	\$73.78
	1998	\$46.64
Central Lease Inc.	1991	\$1,720.26
	1992	\$1,219.92
	1993	\$901.34
	1995	\$92.78
Deuel Petroleum Co., Inc.	1987	\$131.82
	1988	\$224.57
Dynometrics	1996	\$218.98
	1997	\$112.52
Eastern Pacific Oil Co.	1996	\$74.40
Energy Devel. of Calif.	1990	\$1,291.06
	1991	\$483.45
Henry & Jane Fong	1997	\$158.51
Fortune Petroleum Corp.	1996	\$273.81
	1997	\$815.40
Foust-Britton Opr.	1998	\$177.99
GEO Petroleum, Inc.	1996	\$1,672.13
	1997	\$2,150.92
	1998	\$1,261.90
Graham Royalty, LTD.	1994	\$8,910.75
Grayson Service, Inc.	1996	\$122.23
	1997	\$158.48
Hilliard Oil & Gas Inc.	1986	\$550.54
Kalco Development Corp.	1988	\$3,265.56
	1989	\$2,516.32
	1990	\$518.49
	1991	\$354.39
Kern Front - Section 35 Prt.	1998	\$136.89
Killingsworth Oil Co.	1994	\$137.21
Ted Koble, Opr.	1994	\$247.26
Lobodo Inc.	1994	\$224.82
	1995	\$72.45
	1996	\$76.32
	1997	\$58.29
	1998	\$93.82
Marlin Pacific Oil & Gas	1996	\$421.01
	1997	\$103.24
	1998	\$153.16
William McLennan	1998	\$60.85
Mitchell Oil Co.	1989	\$302.88
	1990	\$366.05
	1991	\$284.43
	1992	\$149.21
	1994	\$295.53
Nahama & Weagant Energy Co.	1994	\$1,857.24
	1996	\$6,103.18
Nahama & Weagant 1984 LP	1997	\$4,124.79
The National Oil Co.	1987	\$72.33
	1990	\$218.62
	1991	\$113.63
Nugget Oil Co.	1997	\$342.58
	1998	\$280.09
Oilfield Pet. & Energy Co.	1995	\$140.69
	1996	\$237.00
Oro Negro, Inc.	1997	\$1,032.57
	1998	\$2,132.38
Pacific Inland Oper. Corp.	1996	\$3,390.93
Pan American Energy Corp.	1993	\$160.71
	1994	\$45.70
	1995	\$144.33
Pangea Inc.	1997	\$802.15
	1998	\$127.71
Petro Nova	1989	\$558.91
	1990	\$224.35
Pine Meadows Ranch Inc.	1996	\$1,221.31
	1997	\$753.39
Polaris Prod. Co.	1997	\$80.16
Prado Petroleum	1988	\$2,661.48
	1989	\$748.27
	1990	\$1,391.16
	1991	\$983.61
	1992	\$531.31
	1993	\$541.67
Harvey Pritchard	1998	\$59.21
Pueblo Oil & Gas	1992	\$482.83
	1993	\$434.08

OPERATOR	YEAR	ASSESSMENT
OIL AND GAS OPERATORS		
Razar Resources	1996	\$470.42
	1997	\$125.24
	1998	\$52.26
Rincon Island LTD Prtnrshp	1998	\$11,844.54
Saba Petroleum Inc.	1998	\$41,856.47
Sam Enterprises, Inc.	1996	\$144.87
South Coast Oil Corp.	1997	\$550.85
	1998	\$848.89
St. Regis Resources Corp.	1995	\$427.06
Sunwest Petroleum Inc.	1996	\$1,041.33
	1997	\$607.27
	1998	\$942.18
Supreme Oil & Gas Corp.	1994	\$121.86
Synergy Resources Co.	1998	\$159.81
TRV Minerals Corp.	1987	\$422.26
Zachary T. Tatum	1995	\$107.18
	1996	\$236.44
	1997	\$211.24
Terra Expl. & Prod. Co. Inc.	1998	\$2,977.40
Thomas Oil Co.	1987	\$364.60
	1988	\$486.61
	1989	\$297.20
	1990	\$267.22
	1993	\$397.87
	1994	\$464.97
	1998	\$137.36
Tri Kern Resources	1988	\$601.30
	1989	\$284.80
Troy Resources Corp.	1988	\$228.56
	1989	\$480.25
Turco Products Division	1994	\$149.56
	1998	\$44.50
United Energy, Inc.	1996	\$623.78
	1997	\$1,686.58
	1998	\$1,764.30
TOTALS	1986	\$550.54
	1987	\$991.02
	1988	\$7,468.09
	1989	\$5,869.56
	1990	\$5,453.96
	1991	\$3,939.77
	1992	\$2,383.27
	1993	\$7,335.13
	1994	\$24,408.70
	1995	\$4,219.39
	1996	\$17,169.59
	1997	\$15,489.58
	1998	\$71,840.97
		\$167,119.56
GEOTHERMAL OPERATORS		
GEO Operator Corp.	1988	\$21,197.44
	1989	\$171,604.00
	1990	\$100,534.82
	1991	\$90,212.08
	1992	\$8,195.40
	1996	\$7,515.48
	1997	\$6,753.60
Geysers Power, Inc.	1992	\$53,012.00
	1993	\$61,404.00
	1994	\$65,010.00
	1995	\$52,221.00
	1996	\$52,608.36
	1997	\$47,275.20
Imperial Energy Corp.	1985	\$3,307.41
MSR Power Agency	1994	\$6,501.00
Republic Geothermal, Inc.	1998	\$26.02
TOTALS	1985	\$3,307.41
	1986	\$0.00
	1987	\$0.00
	1988	\$21,197.44
	1989	\$171,604.00
	1990	\$100,534.82
	1991	\$90,212.08
	1992	\$61,207.40
	1993	\$61,404.00
	1994	\$71,511.00
	1995	\$52,221.00
	1996	\$60,123.84
	1997	\$54,028.80
	1998	\$26.02
		\$747,351.79
GRAND TOTAL		\$914,471.35

PR06 (8/99/UCP/2M)