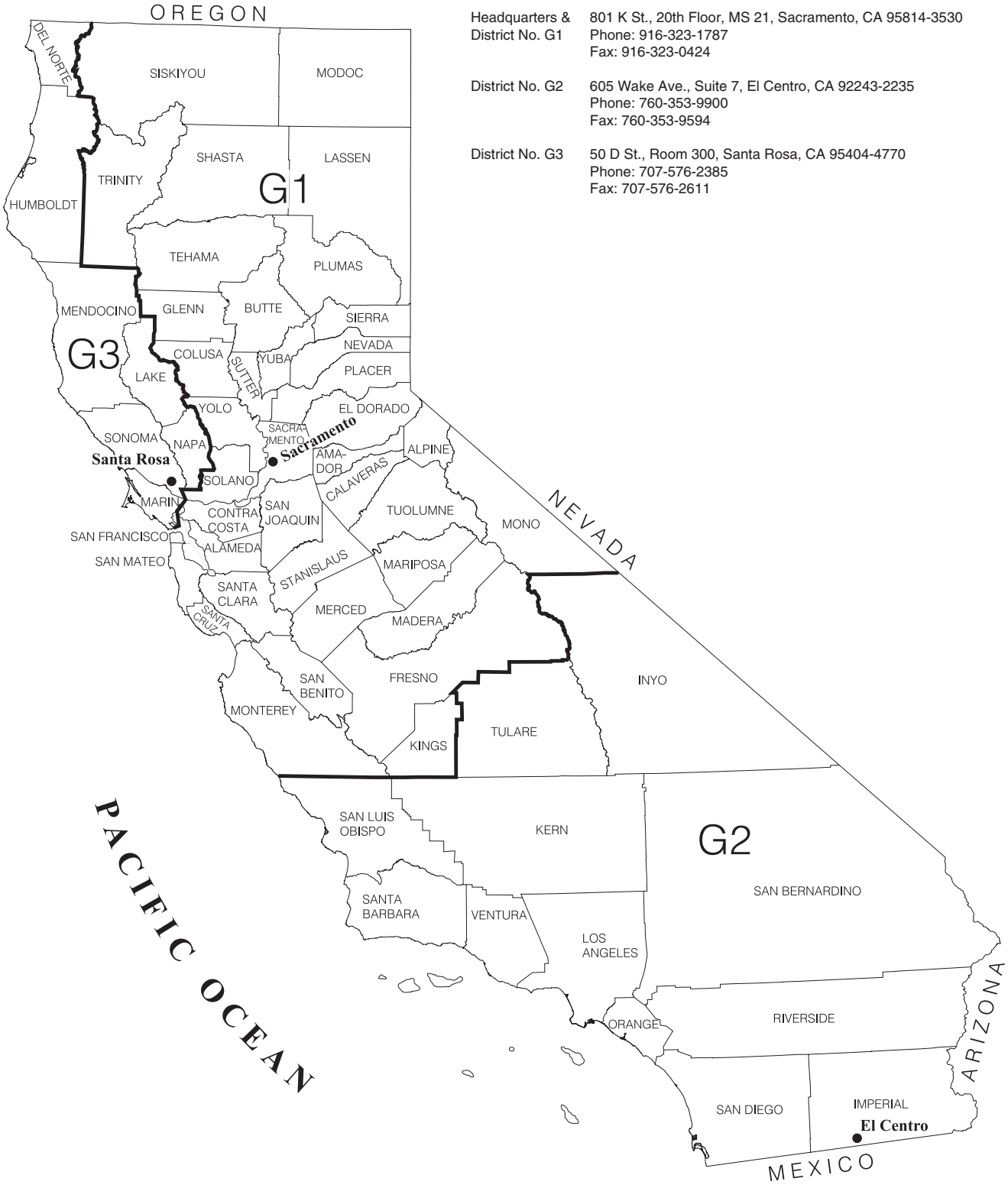
GEOTHERMAL OPERATIONS

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



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SUMMARY OF GEOTHERMAL OPERATIONS

Elizabeth A. Johnson, Geothermal Officer, Sacramento

PROGRAM HIGHLIGHTS:

GEOTHERMAL DRILLING ACTIVITY

In 2008, 32 new high-temperature geothermal wells were drilled in California compared to 12 wells drilled in 2007. Twenty- two of these wells were drilled in the Brawley field, 3 in the Salton Sea field and 7 at The Geysers (Figure 1). Total footage drilled in 2008 increased 5.7 times over the total footage drilled in 2007-- 194,758 feet compared to 49,355 feet (Figure 2).

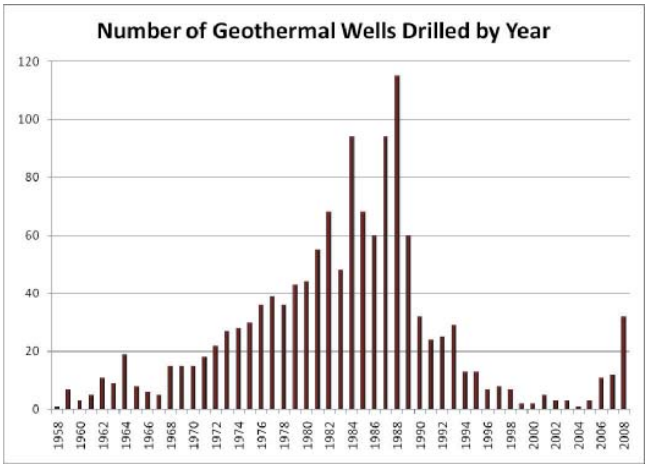


Figure 1. Number of high-temperature geothermal wells drilled by year from 1958 to 2008.

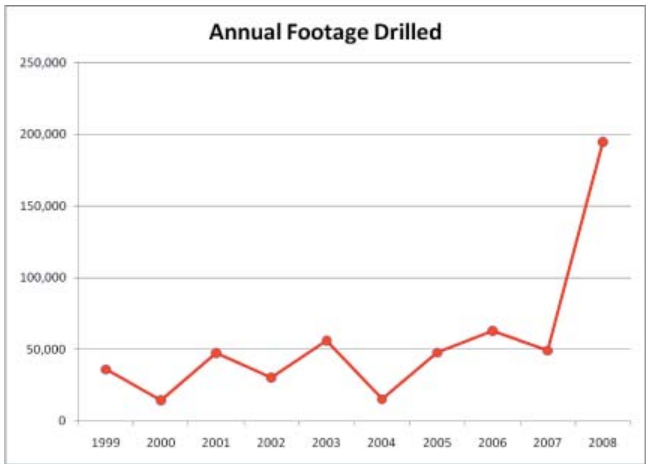


Figure 2. Geothermal well footage drilled in the last ten years—includes no data from wells on federal lands except for the Coso and East Mesa fields.

The need for sustainable power set against the turmoil of the world's economies created a chaotic 2008. What 2009 will bring in terms of developing geothermal projects is uncertain. However, one thing is certain, the increasing population's need for electricity. This need alone would seem to indicate increased geothermal development in California especially in areas of known potential.

GEOTHERMAL REGULATIONS

The regulations used by Division staff to regulate geothermal wells in California were updated in 2008. Requirements were added for the maintenance of leases, well construction, spill contingency plans, and subsidence monitoring. Definitions were made clearer for observation wells and injection projects.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) In 2008, no new applications were received.

ENVIRONMENTAL AWARDS

The Geysers Power Company, LLC (Calpine Corporation) received an award from the Department of Conservation for eight years of outstanding lease-enhancement activities at The Geysers Geothermal field. Mammoth Pacific also received an outstanding lease award for its maintenance of the Casa Diablo field.

DISTRICT NO. G1

Jack Truschel, District Engineer, Sacramento

NEW PLANT PROPOSED FOR MONO COUNTY

Mammoth Pacific LP is planning to construct a fourth geothermal power plant at the Casa Diablo geothermal field near the Town of Mammoth Lakes, CA. The proposed plant will be air-cooled and will generate 20 to 30 MW net of electricity. The types of use permits and environmental documents required will depend on whether the plant is on private or public land.

DISTRICT NO. G2

Michael Woods, District Engineer, El Centro

BRAWLEY GEOTHERMAL FIELD Development continues by ORMAT at the Brawley field. Twenty-two wells were drilled in 2008 and 5 were drilled in 2007. Drilling continues, both for the power plant nearing completion (49.9 MW) and a second proposed plant east of the New River.

HEBER GEOTHERMAL FIELD In April, ORMAT commissioned the 10 MW Heber South geothermal plant, adjacent to the existing Heber 2 plant. Six wells were drilled for this project, with 2 becoming producers and 3 injectors. Another well will be drilled in 2009.

TRUCKHAVEN AREA On February 4, SDG&E announced its second power purchase agreement (PPA) with Esmeralda Truckhaven, LLC, for 40 MW of power from Esmeralda's leases in the Truckhaven area. This brings the total of the two PPAs to 60 MW.

The BLM's Record of Decision for geothermal leasing, exploration and development in the Truckhaven area was completed on August 1. All BLM lands in the area are available for leasing, subject to stipulations including unitization for both exploration and development purposes.

IMPERIAL COUNTY In May, scoping meetings were held by the U.S. Navy in El Centro and San Diego in order to prepare a Draft EIS for a proposed geothermal project near the Superstition Mountains. Later in the year, the Navy drilled two 2,000+ feet temperature gradient wells in the area.

Mechanical integrity test of idle geothermal well "Phipps" 2 near Cedarville. *Photo by J. Truschel.*

View from Fandango Pass in the Warner Range overlooking the northern portion of the Surprise Valley KGRA. *Photo by J. Truschel.*

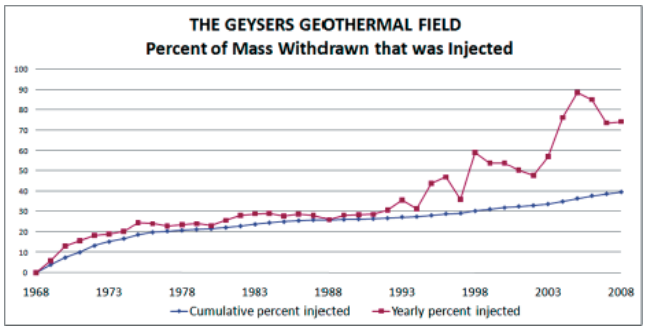
ORMAT Brawley (ORNI 17, LLC) Production Well. *Photo by E. Johnson.*

DISTRICT NO. G3

M. Ali Khan, District Engineer, Santa Rosa

THE GEYSERS PRODUCTION

In 2008, 134.25 billion pounds of steam was produced and 11.97 billion gallons of water injected at The Geysers Geothermal field by Geysers Power Company, LLC (Calpine), Northern California Power Agency (NCPA) and Bottle Rock Power, LLC (BRPL), the field's three active operators. In 2008, steam production at The Geysers decreased by 1.39 percent and injection decreased by 0.56 percent. The 2008 injection volume constitutes about 74 percent of production, although cumulative injection throughout the life of The Geysers is 39.9 percent. In 2008, 7.7 million-megawatt hours of gross (7.1 million-megawatt net) electricity was generated, which is 8.3 percent higher than 2007.



Cumulative percent injected is calculated by dividing the total mass of fluid injected into The Geysers Geothermal field by the total mass of steam produced from the reservoir.

Northern California Power Agency's solar array. *Photo by S. Enedy.*

ThermaSource rig 105 drilling at Bottle Rock Power LLC's well "Coleman 7-6." This is the first rig at The Geysers with automatic hydraulic pipe-handling. In the background is rig Kenai 6 drilling well "California State 92-6" for Geysers Power Company, LLC. *Photo by W. Leuzinger.*

WESTERN GEOPOWER DRILLING ON UNIT 15 LEASES

In 2006, Western GeoPower Corp. of Canada acquired geothermal leases for what was previously the Unit 15 area in The Geysers. In 2008, Western GeoPower drilled and completed four new wells. Currently the wells are shut-in as possible steam producers. Construction of a 35 MWe power plant is scheduled to commence in 2009 and culminate in electric generation in 2010.

SONOMA COUNTY EFFLUENT PIPLELINE EXPANSION

The City of Santa Rosa pipeline has been delivering 11 million gallons per day (mgd) of tertiary treated effluent since its completion in December 2003. In 2008, the Santa Rosa pipeline delivered 4.1 billion gallons of treated-effluent (with a total of 16.6 billion gallons delivered since inception). The Lake County pipeline delivered 3.2 billion gallons in 2008, bringing its total delivery to 40 billion gallons. The combined effect of the Santa Rosa pipeline and the Lake County pipeline (which has been delivering about 8 mgd since August 1997) has resulted in stabilizing decline in steam and electricity production, decreasing air emissions, and creating a viable solution for sewage problems of the cities in Sonoma and Lake counties. An expansion project was approved by the City of Santa Rosa to upgrade infrastructure to increase recycled effluent deliveries to the Geysers steamfield to 19.8 mgd.

In another expansion, the City of Windsor will be allowed to pump its treated effluent into the Santa Rosa pipeline. The 30-year contract requires Windsor to pay Santa Rosa a total of $30 million in maintenance and operational costs. In addition, the town will have to spend about $16 million to install a pumping facility and connect to the main pipeline.

In 2008, Northern California Power Agency (NCPA) installed a 1 MWe, 6,300 solar-cell array for $8.2 million. This renewable electricity will augment PG&E-provided grid power that had been powering the Lake County pipeline effluent pumps, offsetting nearly 800,000 pounds of carbon. A second, similar solar project under construction near Middletown, will be completed in 2009.

GEOTHERMAL STATISTICS

GEOTHERMAL OPERATIONS AND FEET DRILLED - 2008*

Field or county	API county code	Drilled					Completed					Redrilled or deepened					Plugged & abandoned					Suspended	Feet 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		New wells	Reworks
DISTRICT G1																							
Amedee	035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
Litchfield	035	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
Wendel	035	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
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
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
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
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
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
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
DISTRICT G2																							
Brawley	025	0	14	8	0	22	0	16	9	0	25	0	0	0	0	0	0	0	0	0	0	76,949	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
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
Hot Mineral Spa	025	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	3	0	0	3	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	23,054	5,952
Desert Hot Springs	065	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	900	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
Inyo County	027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coso	027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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
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
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
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
District G2 Totals		0	20	8	0	28	0	17	9	0	26	0	1	0	0	1	0	1	0	0	1	0	100,903	5,036
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
The Geysers	033	0	2	0	0	2	1	2	0	0	3	1	6	0	0	7	0	0	0	0	0	23,921	29,147
	097	4	0	0	0	4	4	0	0	0	4	0	4	0	0	4	0	0	0	0	0	35,751	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
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
Napa County	055	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
District G3 Totals		4	2	0	0	6	5	2	0	0	7	1	10	0	0	11	0	0	0	0	0	0	59,672	29,147
STATE TOTALS		4	22	8	0	34	5	19	9	0	33	1	11	0	0	12	0	1	0	0	1	0	160,575	34,183

* Data for federal leases, except Coso and East Mesa Geothermal fields are not included.

CALIFORNIA'S STEAM-DOMINATED GEOTHERMAL 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	14	6,812,616	1	410,788	6.0
1970	15	6,457,453	1	847,490	13.1
1971	16	7,813,799	2	1,224,598	15.7
1972	32	15,777,373	3	2,904,923	18.4
1973	48	21,464,314	4	4,064,929	18.9
1974	61	26,329,259	4	5,364,196	20.4
1975	76	30,514,607	5	7,473,397	24.5
1976	85	31,995,187	5	7,717,116	24.1
1977	90	32,527,275	6	7,496,076	23.0
1978	82	27,622,596	5	6,522,400	23.6
1979	107	36,138,118	7	8,723,633	24.1
1980	132	46,966,791	8	10,866,000	23.1
1981	148	52,864,353	10	13,595,090	25.7
1982	146	48,174,347	9	13,549,916	28.1
1983	196	65,893,108	11	19,081,541	29.0
1984	227	80,067,099	13	23,312,221	29.1
1985	284	95,232,214	17	26,517,067	27.8
1986	329	106,561,865	18	30,771,676	28.9
1987	372	111,821,897	18	31,495,280	28.2
1988	410	108,523,641	19	28,325,113	26.1
1989	416	100,205,378	19	28,348,657	28.3
1990	425	95,644,825	20	27,318,499	28.6
1991	417	89,660,288	21	25,747,804	28.7
1992	431	88,513,172	22	27,344,280	30.9
1993	437	84,379,560	24	30,183,128	35.8
1994	429	78,446,982	22	24,614,481	31.4
1995	387	61,104,078	21	26,825,435	43.9
1996	415	65,088,928	21	30,601,588	47.0
1997	416	66,505,718	21	23,946,226	36.0
1998	408	66,446,973	29	39,393,551	59.3
1999	414	65,554,963	30	35,360,808	53.9
2000	413	63,425,823	32	34,322,136	54.1
2001	411	64,778,701	31	32,687,237	50.5
2002	414	62,354,118	31	29,738,769	47.7
2003	411	61,601,557	32	35,289,558	57.3
2004	404	61,769,075	36	47,223,608	76.5
2005	394	60,971,362	40	54,095,573	88.7
2006	400	60,646,071	40	51,679,848	85.2
2007	403	61,746,413	44	45,555,845	73.8
2008	403	60,896,797	47	45,302,226	74.4

* Data for federal leases included.

CALIFORNIA'S WATER-DOMINATED GEOTHERMAL FIELDS*

District G1 - Northern California

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	
	1989	2	4,778,856		
	1990	2	5,443,317		
	1991	2	5,778,129		
	1992	2	5,946,618		
	1993	2	5,535,367		
	1994	2	4,970,443		
	1995	2	5,357,734		
	1996	2	5,670,982		
	1997	2	5,374,700		
	1998	2	5,573,927		
	1999	2	5,580,968		
	2000	2	5,553,949		
	2001	2	5,417,385		
	2002	2	5,213,048		
	2003	2	4,266,544		
	2004	1	3,251,013		
	2005	1	3,628,489		
	2006	1	3,669,963		
	2007	1	3,659,923		
	2008	1	3,712,868		
Casa Diablo					
	1984**	1	1,317,788	1	1,317,788
	1985	3	3,840,401	3	3,840,401
	1986	3	6,076,840	3	6,076,840
	1987	4	6,754,790	3	6,754,790
	1988	4	6,723,808	3	6,723,808
	1989	3	6,871,002	3	6,871,002
	1990	4	6,971,231	3	6,971,231
	1991	10	24,538,220	5	24,538,220
	1992	10	24,604,335	4	24,604,335
	1993	10	23,544,466	4	23,544,466
	1994	10	23,637,236	5	23,637,236
	1995	9	22,498,589	5	22,498,589
	1996	9	22,500,565	5	22,500,565
	1997	9	22,229,408	5	22,229,408
	1998	9	22,822,691	5	22,822,691
	1999	9	23,998,996	5	23,998,996
	2000	9	25,889,625	5	25,889,625
	2001	9	24,585,917	5	23,162,051
	2002	9	24,527,278	5	22,399,075
	2003	8	24,429,444	5	23,178,633
	2004	8	24,475,971	5	23,174,605
	2005	8	24,607,486	5	23,574,195
	2006	8	23,153,458	5	+23,394,436
	2007	8	23,441,810	5	22,501,024
	2008	9	25,331,363	5	25,009,034
Litchfield					
	1984**	1	945,419	NO INJECTION	
	1985	1	987,427		
	1986	1	852,801		
	1987	1	712,709		
	1988	1	765,384		
	1989	1	1,061,360		
	1990	1	891,708		
	1991	1	760,304		
	1992	1	621,690		
	1993	1	885,045		
	1994	1	701,006		
	1995	1	822,790		
	1996	1	729,777		
	1997	1	988,284		
	1998	1	571,621		
	1999	1	422,868		
	2000	1	459,915		
	2001	1	493,655		
	2002	1	923,596		
	2003	1	997,296		
	2004	1	967,133		
	2005	1	611,867		
	2006		PROJECT TERMINATED JUNE 2005		
Susanville					
	1982**	1	21,228	1	21,228
	1983	1	174,352	1	174,352
	1984	1	134,832	1	134,832
	1985	1	339,792	1	171,360
	1986	1	345,600	1	199,104
	1987	1	436,751	1	276,196
	1988	1	262,878	1	230,307
	1989	1	448,792	1	300,972
	1990	1	518,471	1	297,840
	1991	1	525,490	1	297,840
	1992	1	482,574	1	298,656
	1993	1	405,478	1	297,840
	1994	1	551,406	1	297,840
	1995	1	565,345	1	297,024
	1996	1	489,327	1	297,844
	1997	1	415,313	1	297,840
	1998	1	234,957	1	297,840
	1999	1	247,606	1	228,375
	2000	1	233,227	1	237,415
	2001	1	246,686	1	221,156
	2002	1	246,381	1	207,783
	2003	1	198,055	1	245,269
	2004	1	423,125	1	294,579

Geothermal field	Year	Average number of producing wells	Gross water produced kilograms (thousands)	Average number of injection wells	Water injected kilograms (thousands)
Susanville					
	2005	1	279,595	1	208,983
	2006	1	252,265	1	185,930
	2007	1	+220,242	1	179,263
	2008	1	383,108	1	198,288
Wendel					
	1985**	1	833,989	0	
	1986	1	1,808,949	0	
	1987	1	1,773,907	0	
	1988	1	1,763,722	0	
	1989	2	2,542,910	1	428,745
	1990	2	2,618,618	1	978,066
	1991	2	2,440,737	1	953,641
	1992	2	2,503,719	1	1,017,408
	1993	2	2,370,861	1	1,043,371
	1994	2	2,309,924	1	1,145,622
	1995	2	2,153,224	1	956,770
	1996	2	2,032,435	1	749,124
	1997	2	1,772,335	1	605,987
	1998	2	1,906,366	1	545,513
	1999	2	1,835,619	1	539,320
	2000	2	1,969,658	1	641,397
	2001	2	1,988,439	1	501,441
	2002	2	2,117,055	1	723,805
	2003	2	2,368,799	1	923,371
	2004	2	2,002,963	1	515,677
	2005	2	2,261,706	1	879,794
	2006	2	2,522,336	1	940,910
	2007	2	2,290,524	1	793,328
	2008	2	1,754,266	1	775,522

* Data for federal leases included.

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

\+ Contains corrected data.

CALIFORNIA'S WATER - DOMINATED GEOTHERMAL FIELDS*

District G2 - Southern California

Geothermal field	Year	Average number of producing wells	Gross water produced kilograms (thousands)	Average number of injection wells	Water injected kilograms (thousands)
Brawley					
	1982**	2	1,833,217	2	1,578,510
	1983	2	2,397,722	4	2,342,862
	1984	1	1,122,414	3	994,175
	1985	1	555,731	1	529,041
	1986		PROJECT TERMINATED		
Coso					
	1987**	5	4,079,862	3	3,547,813
	1988	15	13,965,143	6	9,233,591
	1989	32	44,187,631	12	34,771,770
	1990	47	55,936,765	14	36,543,678
	1991	57	48,203,875	14	26,370,492
	1992	63	43,670,330	16	24,923,696
	1993	68	50,909,559	18	24,831,128
	1994	72	46,013,825	19	23,619,268
	1995	75	42,761,491	20	24,004,829
	1996	79	42,128,943	20	22,385,912
	1997	82	38,457,010	20	19,467,543
	1998	82	38,900,941	21	17,073,809
	1999	82	38,549,943	25	18,996,354
	2000	82	39,287,586	25	18,446,982
	2001	85	39,164,654	22	17,663,173
	2002	91	35,443,306	18	17,393,666
	2003	91	34,557,385	18	16,774,314
	2004	95	35,355,170	21	+15,889,367
	2005	86	33,775,186	19	15,281,494
	2006	84	32,591,323	20	14,699,549
	2007	84	30,784,418	17	13,718,240
	2008	82	31,303,841	14	12,671,415
East Mesa					
	1983**	5	3,196,215	3	3,190,219
	1984	6	4,050,175	2	3,963,468
	1985	6	3,659,938	2	3,385,793
	1986	6	4,725,162	3	4,399,114
	1987	15	14,187,024	6	13,725,765
	1988	25	40,952,496	12	35,950,366
	1989	32	67,990,914	23	57,796,766
	1990	39	79,021,063	33	75,465,209
	1991	42	91,984,758	36	89,406,945
	1992	42	97,750,781	39	94,370,772
	1993	43	97,849,346	40	96,029,637
	1994	43	90,589,304	40	87,198,495
	1995	43	90,488,703	41	86,970,705
	1996	43	92,604,479	42	89,674,536
	1997	42	92,797,342	43	89,231,453
	1998	34	78,787,415	36	81,319,831
	1999	34	85,795,653	42	81,846,695
	2000	34	69,217,237	43	67,655,215
	2001	35	71,913,039	44	70,539,126
	2002	35	74,342,405	46	72,291,231
	2003	35	78,227,659	46	74,425,472
	2004	35	76,878,865	46	71,270,971
	2005	32	72,906,698	44	70,408,439
	2006	30	71,955,451	45	70,031,975
	2007	31	+75,793,076	45	71,733,414
	2008	31	74,069,337	44	71,124,433
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	60,273,518	23	56,825,739
	1999	22	60,773,722	23	58,210,792
	2000	22	62,078,329	25	59,895,857
	2001	22	63,086,082	25	57,867,626
	2002	22	58,395,461	25	55,509,491
	2003	22	63,302,299	21	62,198,984
	2004	22	61,705,332	22	60,243,390
	2005	20	61,258,881	20	57,265,523
	2006	21	64,611,442	25	+61,192,335
	2007	21	66,964,096	32	+65,426,951
	2008	23	72,861,205	34	69,525,524
Salton Sea					
	1982**	2	2,383,365	2	2,071,770
	1983	3	3,735,455	2	3,260,076
	1984	2	4,208,900	2	3,211,456
	1985	2	4,167,497	2	3,193,912
	1986	9	13,433,795	7	10,851,579
	1987	9	14,272,783	8	11,911,933

Geothermal field	Year	Average number of producing wells	Gross water produced kilograms (thousands)	Average number of injection wells	Water injected kilograms (thousands)
Salton Sea					
	1988	11	19,572,266	10	17,087,924
	1989	23	56,570,756	18	47,581,465
	1990	32	75,952,346	23	62,975,890
	1991	33	77,687,699	23	68,884,579
	1992	35	77,367,671	22	69,247,157
	1993	34	77,792,273	25	66,406,019
	1994	31	77,764,065	24	69,917,900
	1995	32	80,974,333	24	71,139,969
	1996	32	96,779,351	26	82,086,809
	1997	30	102,380,076	29	84,698,562
	1998	28	101,337,579	28	91,218,237
	1999	28	112,824,103	30	99,846,412
	2000	28	88,117,844	27	72,234,549
	2001	20	101,929,972	27	82,356,264
	2002	20	105,384,276	27	78,157,595
	2003	22	109,826,309	28	79,981,344
	2004	22	124,146,423	30	96,868,099
	2005	21	125,136,241	26	89,474,087
	2006	20	118,232,375	27	102,888,393
	2007	21	119,691,324	29	93,547,724
	2008	20	114,634,223	28	85,639,853

* Data for federal leases included.
** The first year that production data were reported to the Division of Oil, Gas, and Geothermal Resources.
\+ Contains corrected data.

GEOTHERMAL NOTICES FILED AND INSPECTIONS - 2008*

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																
Amedee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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	154
DISTRICT G2																
Brawley	0	22	10	0	32	0	4	1	0	5	0	0	0	0	0	
Heber	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	
East Mesa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Hot Mineral Spa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Salton Sea	0	2	0	0	2	0	1	6	0	7	0	1	0	0	1	
Desert Hot Springs	0	0	0	0	0	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	0	0	0	0	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	
Kern County	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
District G2 Totals	0	24	10	0	34	0	5	10	0	15	0	1	0	0	1	433
DISTRICT G3																
Calistoga	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
The Geysers	8	3	0	0	11	0	11	0	0	11	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	8	3	0	0	11	0	11	0	0	11	0	0	0	0	0	684
STATE TOTALS	8	27	10	0	45	0	16	10	0	25	0	1	0	0	1	1,271

*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 decreased in 2008. According to the BLM, no wells were permitted during federal fiscal year 2008 (October 2007-September 2008), compared with 1 well permitted the year before.

GEOTHERMAL EXPLORATORY WELLS DRILLED TO TOTAL DEPTH IN 2008

County	T.	R.	Sec.	B. & M.	Operator	Well designation and API number	Elev. (feet)	Month drilling completed	Total depth (meters)	Stratigraphic units penetrated and/or time-stratigraphic units at total depth (depth in meters)
Sonoma	11N	9W	14	MD	Western GeoPower Inc.	"WGP" 1 09790834	2070'	May	Conf	Conf
Sonoma	11N	9W	14	MD	Western GeoPower Inc.	"WGP" 2 09790835	2070'	August	Conf	Conf
Sonoma	11N	9W	14	MD	Western GeoPower Inc.	"WGP" 3 09790836	1664'	October	Conf	Conf
Sonoma	11N	9W	14	MD	Western GeoPower Inc.	"WGP" 4 09790837	1664"	December	Conf	Conf
Lake	11N	8W	6	MD	Geysers Power Company, LLC	"California St" 92-6 03390484	2827"	November	10,923	Franciscan Assemblage
Imperial	13S	14E	15	SB	ORNI 17,LLC	62-15 02591462	-140'	August	Conf	Conf

Data for federal leases not included

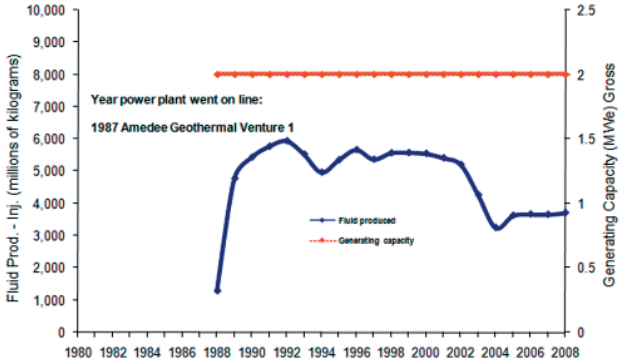
GEOTHERMAL CEQA APPLICATIONS AND SITE VISITS

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	1	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	5	4	9	0	4	4
1985	5	3	0	8	2	5	3	10	1	2	2	5	0	0	0
1986	0	3	0	3	0	2	1	3	1	0	0	1	1	0	1
1987	0	5	0	5	0	3	1	4	1	0	0	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	0	0	1	3	0	3
1990	0	2	0	2	0	2	2	4	0	0	0	0	0	2	2
1991	0	3	0	3	0	3	0	3	0	0	0	0	0	3	3
1992	0	2	1	3	0	0	2	2	2	0	0	2	2	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	0	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
1999	0	1	1	2	0	0	1	1	1	0	0	1	0	3	3
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
2002	1	2	0	3	1	0	1	2	1	0	0	1	8	10	18
2003	0	0	0	0	0	0	1	1	1	0	0	1	3	6	9
2004	0	3	0	3	0	5	2	7	2	0	0	2	5	25	30
2005	0	3	0	3	0	0	2	2	2	0	0	2	1	1	2
2006	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5
2007	0	1	0	1	0	0	1	1	1	0	0	1	1	6	7
2008	0	0	0	0	0	0	0	0	0	0	0	0	1	7	8

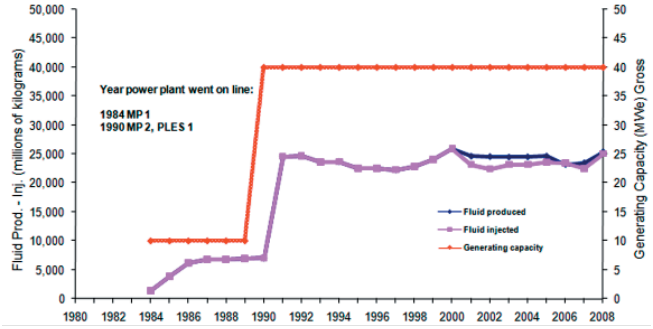
FLUID PRODUCED AND INJECTED, AND POWER PLANT CAPACITY FOR CALIFORNIA GEOTHERMAL FIELDS

DISTRICT NO. G1

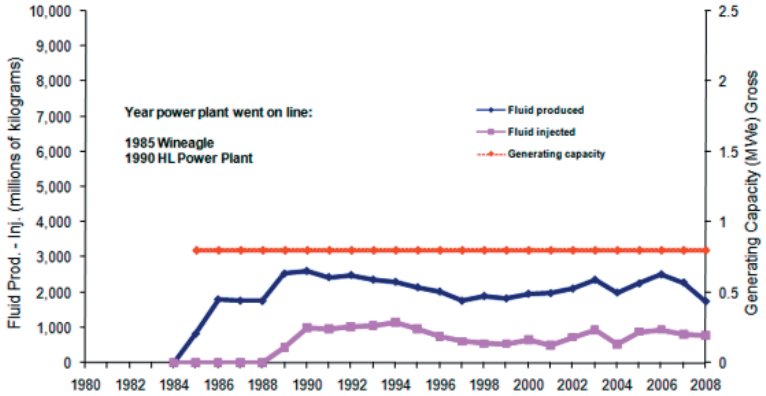
AMEDEE GEOTHERMAL FIELD



CASA DIABLO GEOTHERMAL FIELD

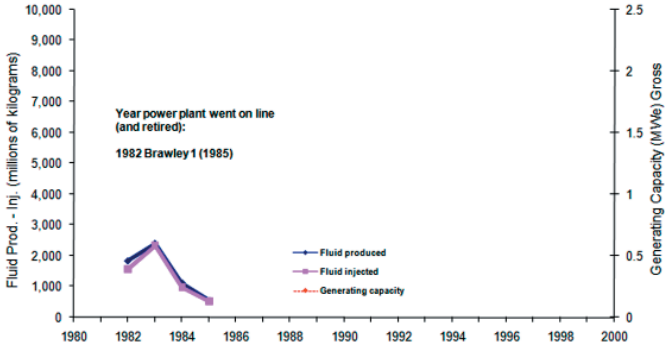


WENDEL GEOTHERMAL FIELD

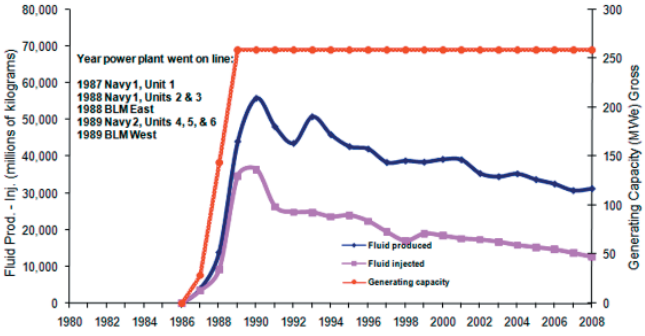


DISTRICT NO. G2

BRAWLEY GEOTHERMAL FIELD

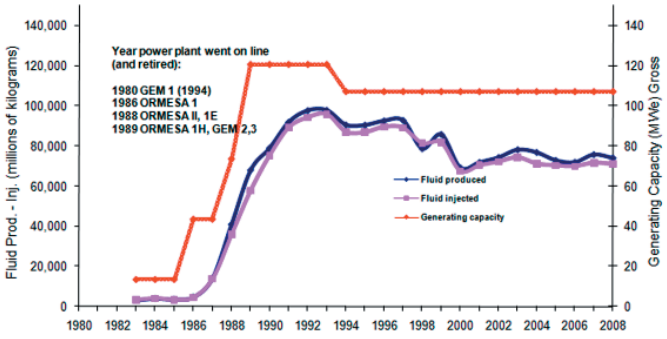


COSO GEOTHERMAL FIELD

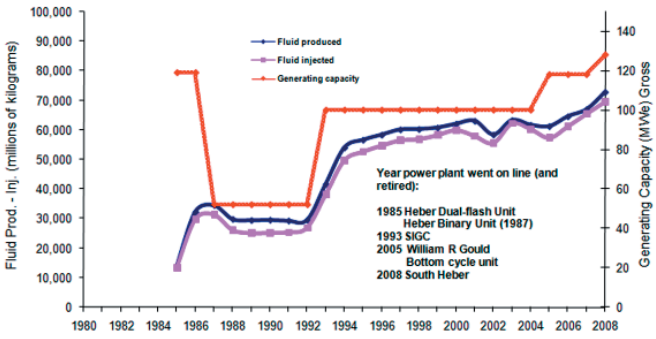


DISTRICT NO. G2 *(continued)*

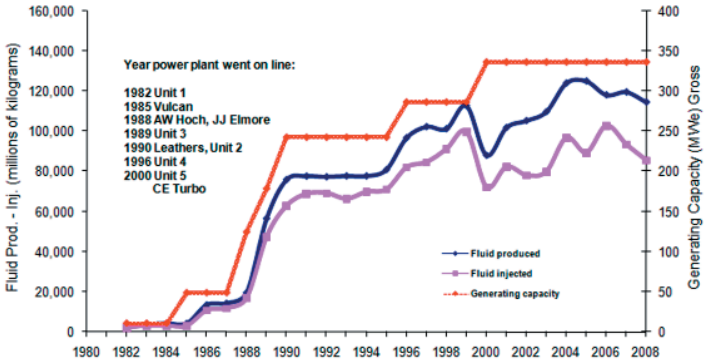
EAST MESA GEOTHERMAL FIELD



HEBER GEOTHERMAL FIELD

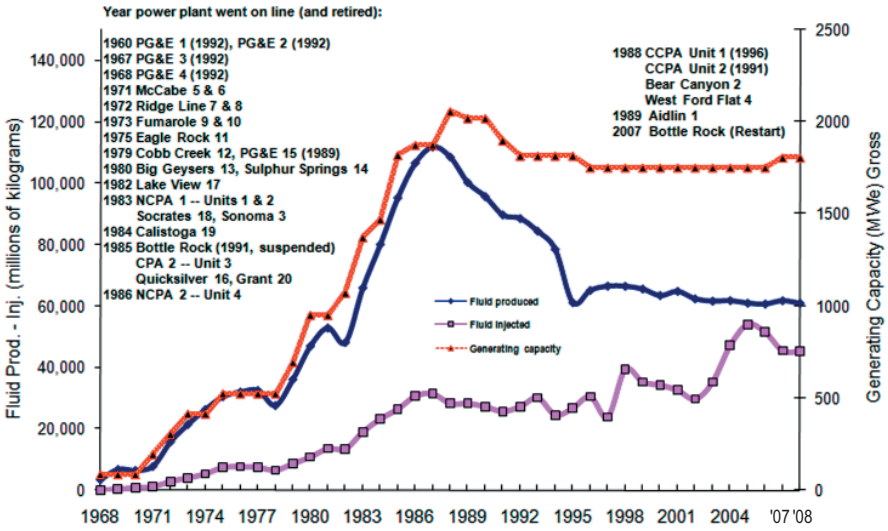


SALTON SEA GEOTHERMAL FIELD



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 2007 are published in the *2007 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 surplus or deficiencies, and the prior year's production. For the 2008-09 fiscal year, the rate of assessment was established at $0.0790758 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 2008-09 fiscal year, the fee-assessment was established at $2,175 per high-temperature geothermal well.

Financial Statement
2007-08 Fiscal Year

Beginning Resources	$	1,431,653.00
Balance Available from Prior Year	$	568,560.00
Revenue Applicable to Oil, Gas, and Geothermal Operations	$	18,629,375.00
Total Resources	$	20,629,588.00
Total Expenditures	$	17,931,264.00
Ending Resources	$	2,698,324.00

Hazardous and Idle-deserted Well Abandonment Expenditures
2007-08 Fiscal Year

No. of Wells			
14	Hazardous and Idle-deserted Wells Plugged and Abandoned	$	807,539.69
0	Section 3237 PRC Wells Plugged and Abandoned	$	2,270.00
3	Acute Orphan Well Account	$	265,948.00
2	Orphaned Wells Plugged and Abandoned (HIDWAF)	$	103,912.23
19	Total Wells Plugged and Abandoned	$	1,179,669.92
0	Wells On Which Remedial Action Was Taken	$	0.00
	Gross Expenditure	$	1,179,669.92
	Bond Reimbursement	$	- 5,000.00
	Lien Reimbursement	$	- 16,771.53
	Net Expenditure	$	1,157,898.39

Underground Injection Control Program Expenditures
(Oct. 1, 2007 – Sept. 30, 2008, Federal Fiscal Year)*

Beginning Federal Grant Allotment	$	474,500.00
Balance Available from Prior Year	$	0.00
Total Resources	$	474,500.00
Total Federal Dollar Expenditures	$	474,500.00
Ending Resources	$	0.00

* Amounts reflect federal funding only, state matching funds are not reflected in the amounts.

List of Delinquent Assessments and Penalties: Oil, Gas, and Geothermal Operations as of June 30, 2008*

OPERATOR	ASSESSMENT
OIL AND GAS OPERATORS	
Crest Oil & Gas Mgmt Corp.	$692.01
Highland Energy Res Co.	$409.63
Melvin C. Love	$174.16
Nevada Titan Energy, Inc.	$91.00
Pacific Petro Tech., LLC	$313.85
PetroTerra Resources, LLC	$725.95
Silver Exploration Company	$18.04
Two Bay Petroleum	$57.53
Total:	$2,482.17

* Periodically, the State Controllers Office discharges uncollectable assessments and removes them from the List of Delinquent Assessments. In 2008, the Controller's Office discharged the following past-due assessments:

OPERATOR	ASSESSMENT
OIL AND GAS OPERATIONS	
Blackhawk Oil Co.	$20,590.21
Cal Cont Capital Inc.	$252.50
Calpine Natural Gas, L.P.	$226.56
Casa Oil Associates, Inc.	$147.15
Kalco Development Corp.	$20,411.71
Kelt Oil & Gas, Inc.	$324.61
Marlin Pacific Oil & Gas	$1,480.37
Maxoil Inc.	$571.68
Nahama & Weagant Energy Co.	$1,663.93
Pueblo Oil & Gas	$283.16
Superior Well Service, Inc.	$10,434.41
United Energy Inc.	$9,506.89
Total:	$65,893.18
Geothermal Operations:	
Geo Operator Corp.	$575,407.70
Geysers Power, Inc.	$633,332.40
Total:	$1,208,740.10
Grand Total:	$1,274,633.28

PR06 (12/09)