

MINUTE ITEM

This Calendar Item No. 27  
was approved as Minute Item  
No. 27 by the State Lands  
Commission by a vote of 2  
0 at its 3/2/92  
meeting.

CALENDAR ITEM

27

A 80  
S 37

03/02/92  
W 40595 PRC 7621  
Willard  
Kruger

APPROVE A NEGOTIATED SUBSURFACE (NO SURFACE USE)  
GEOTHERMAL RESOURCES LEASE,  
IMPERIAL COUNTY

APPLICANT:

Magma Power Company  
11770 Bernardo Plaza Court, Suite 366  
San Diego, California 92128

AREA, TYPE LAND, AND LOCATION:

Approximately 80 acres of one-half mineral interest State  
proprietary land described as S1/2NW1/4 of Section 26, T11S  
R13E, SBM and situated within the Hazard Tract Unit of the  
Imperial Wildlife Management Area approximately five miles  
southwest of Niland, California.

LAND USE:

The subject parcel is within the Imperial Wildlife  
Management Area at the south end of Salton Sea. There shall  
be no surface use of the leased land for any purpose to a  
depth of 500 feet.

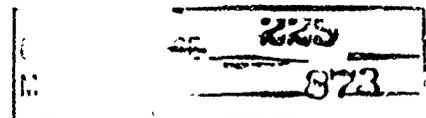
Adjacent to the subject parcel are privately owned lands  
included within the Elmore Geothermal Unit. Geothermal  
wells, completed within the subsurface underlying the  
subject parcel, will be directionally drilled from these  
adjacent private lands. If the lease is approved, the  
leased land will become part of the Elmore Geothermal Unit  
and the State will immediately share in revenue produced  
under the unit.

TERMS OF PROPOSED LEASE:

Primary term:

Ten (10) years effective March 1, 1992, and for so long  
as geothermal resources are produced in commercial  
quantities.

Within 30 days of the effective date of this lease, the  
Lessee shall furnish and maintain, until released by



the State, a bond in the sum of \$50,000 to guarantee performance of terms and conditions of the lease. At the option of the State, Lessee shall procure and maintain public liability, property damage, or other insurance for the benefit of the State, in an amount satisfactory to the State.

**ROYALTIES AND RENTAL:**

The Lessee shall pay to the State royalties on geothermal resources produced, utilized, saved, or sold from the leased lands in the amount of ten percent (10%) of the gross revenue, exclusive of charges approved by the State, made or incurred, with respect to transmission or other services or processes, received from the sale of steam, brine from which no minerals have been extracted and associated gases at the point of delivery to the purchaser. A royalty of five percent (5%) of the gross revenue received from the sale of mineral products or chemical compounds recovered from geothermal fluids in the first marketable form as to each such mineral product or chemical compound. Annual rental of \$1.00 per acre shall be payable in advance for each year, or fraction of year, that this lease is in effect.

Additionally, the Lessee has agreed that, if at any time during the primary term of the lease, Lessee acquires a lease on any private or public lands within the Elmore Geothermal Unit, which shall contain a greater royalty or rental payment than is provided by this lease, Lessee will revise the terms of this lease so as to afford the State equal terms.

The existing Elmore Geothermal Unit encompasses approximately 800 acres within sections 26, 27, 34, and 35. If this lease is approved by the Commission, the total acreage in the unit would be approximately 880 of which the additional acreage would be approximately nine percent (9%). Since the State's mineral interest is fifty percent (50%) of the additional acreage, the effective State interest would be four and one-half percent (4.5%).

**DRILLING REQUIREMENT:**

With the addition of the leased land into the existing Elmore Geothermal Unit, the Lessee shall be deemed to have fully developed the leased lands, and that any continuous drilling requirements will be satisfied.

**PREREQUISITE CONDITIONS, FEES, AND EXPENSES:**

Filing fee, processing costs, and the first year's rental have been paid by the Applicant.

**STATUTORY AND OTHER REFERENCES:**

A. P.R.C.: Div. 6, Parts 1 and 2.

B. Cal. Code Regs.: Title 2, Section 2000.

**AB 884:**

N/A.

**OTHER PERTINENT INFORMATION:**

1. CEQA Guidelines Section 15378(a)(3) identifies the issuance of a lease as a "project". However, there will be no surface use of the leased land for any purpose. As such, the site of any environmental effects from geothermal resource development shall occur on adjacent private lands of the Elmore Geothermal Project area within Imperial County. Therefore, Imperial County functioned as Lead Agency for the project pursuant to CEQA Guidelines Section 15366.

The Imperial County Planning Department approved the Elmore Geothermal Project on March 25, 1987 determining that this project will not have a significant effect on the environment. CEQA Initial Study #1813-87 was completed for this project, and the Salton Sea Master Environmental Impact Report (SCH# 80102409) was utilized as the primary CEQA document reference.

2. Geothermal resource development within the State lands, including directional drilling from the adjacent private lands, shall have prior written approval by the State. Any development shall be performed subject to the provisions of this lease, the P.R.C., and applicable State regulations. This lease and operations under it shall be consistent with the principle of multiple use of public lands and resources as provided in Section 6906 of the P.R.C.
3. The leased land is within the Hazard Tract Unit of the Imperial Wildlife Management Area. This unit was developed by the State Department of Fish and Game (DFG) for the purpose of maintaining wildlife habitat. The U.S. Fish and Wildlife Service operates and

maintains the habitat for DFG. Imperial County's Conditional Use Permit No. 9007-87 contains specific conditions which require wildlife monitoring and noise abatement and specify a time window when drilling may not occur near the Alamo River or the wildlife refuge areas. In addition, the County has indicated that its findings, pursuant to the Salton Sea Master EIR, contain monitoring requirements for the development of each geothermal field within the Salton Sea KGRA.

**EXHIBITS:**

- A. Land Description.
- B. Location Map.
- C. Imperial County CEQA Findings

**IT IS RECOMMENDED THAT THE COMMISSION:**

1. FIND THAT THE COUNTY OF IMPERIAL, AS CEQA LEAD AGENCY, HAS DETERMINED THAT THE SALTON SEA MASTER EIR (SCH# 80102409) DISCUSSES, IN A MANNER WHICH COMPLIES WITH THE REQUIREMENTS OF CEQA, THE IMPACTS WHICH MAY RESULT FROM THE PROPOSED PROJECT.
2. FIND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.
3. ADOPT THE CEQA FINDINGS MADE BY THE COUNTY OF IMPERIAL, PURSUANT TO THE SALTON SEA MASTER EIR (EXHIBIT "C").
4. DETERMINE THAT THE IMPACTS WHICH MAY RESULT FROM THE PROJECT, AS PROPOSED, ARE UNDER THE JURISDICTION OF IMPERIAL COUNTY AND OTHER RESPONSIBLE AGENCIES AS IDENTIFIED IN THE CEQA FINDINGS, AND THAT THIS PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON LANDS UNDER THE JURISDICTION OF THE STATE LANDS COMMISSION.
5. AUTHORIZE ISSUANCE OF A NEGOTIATED SUBSURFACE (NO SURFACE USE) GEOTHERMAL RESOURCES LEASE TO MAGMA POWER COMPANY OF SAN DIEGO, CALIFORNIA, FOR A PRIMARY TERM OF TEN YEARS, EFFECTIVE MARCH 1, 1992, IN ACCORDANCE WITH P.R.C. SECTIONS 6901 AND 6905.

**EXHIBIT "A"**

W 40595

**LAND DESCRIPTION**

A parcel of State-owned land in Imperial County, California, more directly described as the South one-half (S 1/2 ) of the Northwest one-quarter ( NW 1/4 ) of Section 26, Township 11 South, Range 13 East, San Bernardino Base and Meridian.

**END OF DESCRIPTION**

**PREPARED JANUARY, 1992 BY LLB**

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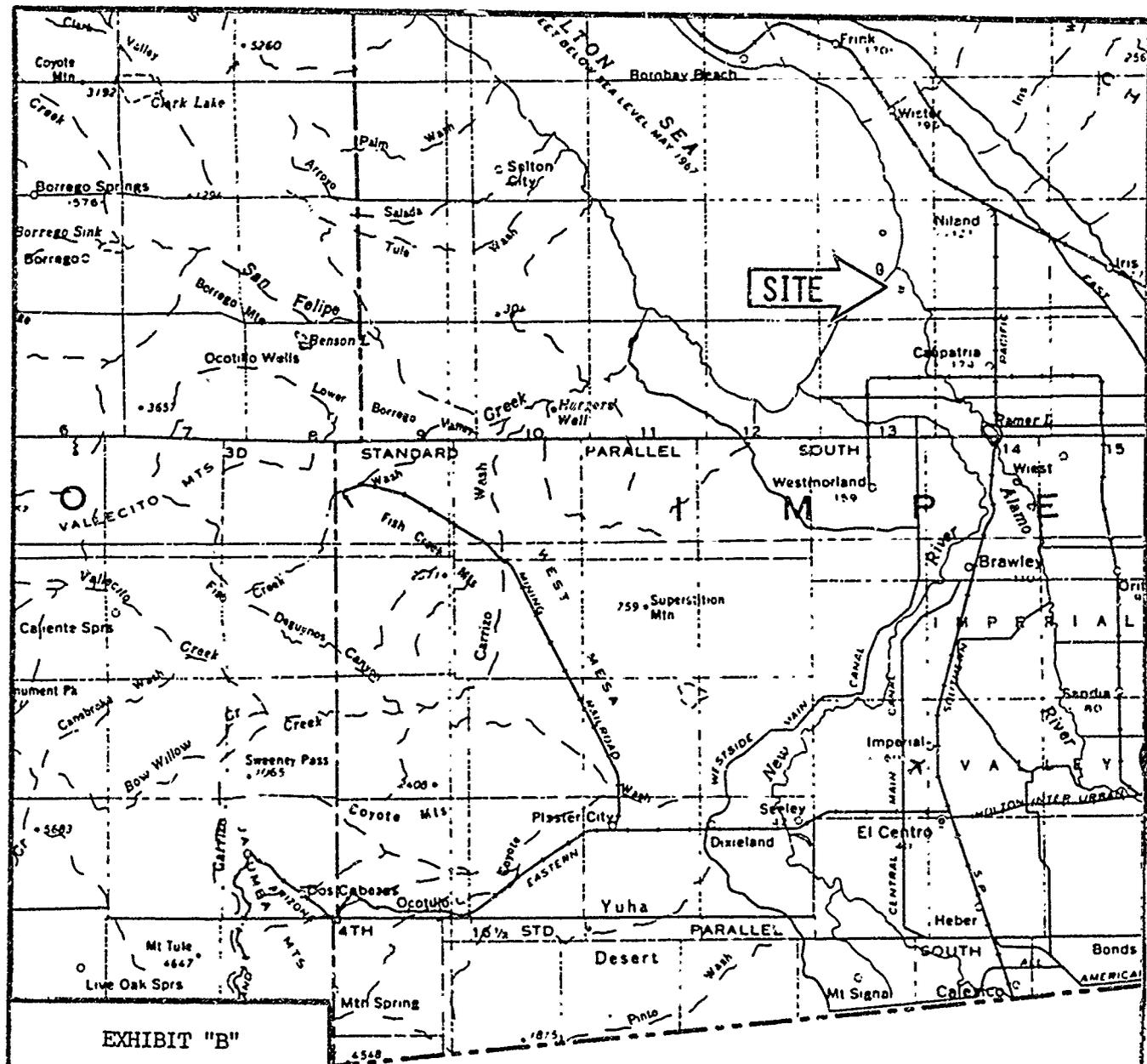


EXHIBIT "B"  
W 40595



X I C

EXHIBIT C

1 RESOLUTION ADOPTING FINDINGS AND  
2 STATEMENT OF OVERRIDING CONSIDERATIONS  
3 FOR EXPANSION OF GEOTHERMAL OVERLAY ZONE  
4 IN THE SALTON SEA ANOMALY

4 WHEREAS, following a public hearing held on May 5,  
5 1982, the Board of Supervisors determined to expand the  
6 existing geothermal overlay zone ("G-Zone") in the Salton  
7 Sea Anomaly from 20,000 acres to 111,444 acres, including  
8 offshore areas of the Salton Sea as well as onshore lands  
9 and encompassing most of the federally designated Salton Sea  
10 Known Geothermal Resource Area ("KGRA"), plus 5,000 additional  
11 acres adjacent to and east of said existing KGRA ("the G-  
12 Zone expansion"), and on May 11, 1982, enacted County of  
13 Imperial Ordinance No. 813 to so expand the G-Zone; and

14 WHEREAS, based on the record, and prior to taking such  
15 action, the Board also determined the G-Zone expansion was  
16 consistent with the County's General Plan, certified the  
17 "Final Salton Sea Anomaly Master Environmental Impact Report"  
18 ("MEIR"), and adopted findings and a statement of overriding  
19 considerations pertaining thereto; and

20 WHEREAS, in addition to testimony from staff, residents,  
21 property owners and industry representatives, the Board  
22 considered testimony and arguments of state agencies and the  
23 Imperial Irrigation District summarized, in part, as follows:

24 (1) The State Department of Fish & Game argued the  
25 MEIR was insufficient for not properly documenting certain  
26 environmental impacts, mitigation and alternatives; and,  
27 said Department opposed the zoning expansion, particularly  
28 in offshore areas.

1 (2) The State Department of Water Resources urged  
2 development of a comprehensive water management plan to  
3 determine the most advantageous water allocation scheme for  
4 the Salton Sea area.

5 (3) The State Energy Commission concluded the MEIR was  
6 sufficient for the zoning expansion and emphasized the  
7 County retains the ability to evaluate individual development  
8 projects and to require mitigation through the local permitting  
9 process. The Energy Commission supported the zoning expansion  
10 and noted geothermal energy is a "preferred energy source."

11 (4) The State Division of Oil and Gas found the MEIR  
12 sufficient for its intended purposes and its representatives  
13 opined no detrimental subsidence can be expected as a  
14 direct result of full field development of the Salton Sea  
15 Anomaly.

16 (5) Imperial Irrigation District representatives  
17 emphasized its responsibility for water management at the  
18 Salton Sea and noted the District owns substantial offshore  
19 lands which are potentially suitable for geothermal development.  
20 The District favored the zoning expansion; and

21 WHEREAS, in a subsequent legal challenge, the Imperial  
22 County Superior Court found, although, the MEIR is legally  
23 adequate and that the General Plan of the County of Imperial  
24 is legally adequate and County of Imperial Ordinance No. 813  
25 was consistent with said General Plan, that the findings  
26 adopted by the Board were legally inadequate because the  
27 Board of Supervisors did not, in the written findings adopted,  
28 address and resolve issues raised by the MEIR, and adopt

1 findings as to each such issue, and ordered the Board to set  
2 aside and annul Ordinance No. 813 and the accompanying  
3 resolution adopting findings and the statement of overriding  
4 considerations; and

5 WHEREAS, on May 3, 1983, by Minute Order No. 14, the  
6 Board rescinded its approval of Ordinance No. 813 and the  
7 accompanying resolution of May 11, 1982, adopting findings  
8 and a statement of overriding considerations, and set a new  
9 hearing to consider adoption of new findings and enactment  
10 of a new ordinance to replace the rescinded Ordinance No.  
11 813; and

12 WHEREAS, said hearing was subsequently cancelled at the  
13 request of staff and interested parties to allow for additional  
14 time for the preparation, circulation and review of such new  
15 findings, and, on this date, a new public hearing has been  
16 held before the Board of Supervisors at which the Board has  
17 reconsidered the previously established record, including  
18 the transcript of its previous hearing of May 5, 1982, as  
19 well as the new, more comprehensive findings prepared by  
20 staff for this hearing, the Board also has considered the  
21 written and public comments of interested agencies and  
22 parties as elicited from the circulation for review of  
23 proposed new findings as prepared by staff and as provided  
24 at this new hearing this date, the Board also finds and  
25 certifies as indicated in more detail hereinbelow, that the  
26 MEIR has been prepared in compliance with the provisions of  
27 the California Environmental Quality Act ("CEQA") and the  
28 State Guidelines pertaining thereto, and the Board herein

1 deems it appropriate to adopt these expanded findings which  
2 more fully reflect the Board's rationale for approving the  
3 expansion of the Salton Sea G-Zone, and, based thereon,  
4 herein determines to adopt Ordinance No. \_\_\_\_\_, enclosed  
5 herewith, expanding the G-Zone in the Salton Sea Anomaly;

6 NOW THEREFORE BE IT RESOLVED, the Board of Supervisors  
7 hereby adopts findings and a statement of overriding considerations  
8 in support of its decision to grant the G-Zone expansion as  
9 follows:

10 I. PROJECT STATEMENT

11 The project herein discussed consists of expansion of  
12 the existing geothermal overlay zone in the Salton Sea  
13 Anomaly from approximately 26,000 acres (including approximately  
14 6,000 acres recently so zoned in the Niland area of the  
15 County) to approximately 111,444 acres. After expansion,  
16 fifty-four percent of the G-Zone will consist of offshore  
17 portions of the Salton Sea, a large portion of which is  
18 under management and control of the Bureau of Land Management.\*  
19 The onshore portion of the expanded zone will contain the  
20 environmentally sensitive Salton Sea National Wildlife  
21 Refuge, Wister Waterfowl Management Area and riparian habitat  
22 along the New and Alamo Rivers.

23 The Salton Sea Anomaly is the largest of the anomalies  
24 in the Imperial Valley. It is marked by geothermal resources  
25 \_\_\_\_\_

26 \*Federal lands in the Salton Sea are already subject to  
27 gas and mineral leases. Further, leases for geothermal  
28 resource exploration and development were issued for federal  
lands within the KGRA during the pendency of the challenge  
to the rezone.

1 at a shallow depth (2,000 to 10,000 feet) with high temperatures.  
2 However, geothermal fluids produced in the area contain high  
3 levels of salinity.

4 The Salton Sea Anomaly Master Environmental Impact  
5 Report contemplates the development of from 300 to 4,000  
6 megawatts ("MW") of geothermal energy over a thirty-year  
7 period in both onshore and offshore portions of the anomaly.  
8 Offshore development is not expected to occur until several  
9 years after onshore development is underway. The most  
10 probable scenario is for the development of 1,400 MW by the  
11 year 2010. The MEIR reports that, by 1985, five power  
12 plants will exist generating a total of 187 MW, assumes  
13 between 1985 and 1990 an additional 16 power plants each  
14 with 50 MW capacity will be built, although the possibility  
15 exists that 100 MW plants might be built instead; and assumes  
16 additional 50 MW or 100 MW plants will produce a total of  
17 1,400 MWs by the year 2010. If only 50 MW plants are built,  
18 these assumptions indicate the KGRA will contain 27 power  
19 plants by the year 2010.

20 The G-Zone expansion will permit the County to accept  
21 and process applications for geothermal production facilities.  
22 Actual approval of a production facility requires issuance  
23 of a production permit by the County; further site specific  
24 environmental review will occur before such a permit issues.  
25 Conditions imposed in production permits will be designed to  
26 mitigate environmental impacts.

## 27 II. CONSISTENCY WITH GENERAL PLAN

28 The County's General Plan recognizes commercially

1 viable geothermal anomalies in various zones may be the  
2 subject of geothermal "overlay" zoning, such as with the G-  
3 Zone, but that the actual right to develop geothermal resources  
4 must depend on issuance of production permit entitlements.  
5 The Salton Sea Anomaly is recognized by the County's Geothermal  
6 Element to the General Plan in particular, as an area where  
7 geothermal resources may be commercially developed.

8       The Geothermal Element to Imperial County's General  
9 Plan ("Geothermal Element") provides that the County shall  
10 "[p]ermit geothermal development in areas classified as  
11 within a Geothermal Overlay Zone and allow production activities  
12 by Conditional Use Permit containing performance standards."

13       Other elements of Imperial County's General Plan set  
14 forth goals and objectives for geothermal development in  
15 Imperial County as follows: to "[e]ncourage the exploration  
16 for and development of new sources of geothermal energy"  
17 (Open Space Element, p. 21); to "[p]rovide for the maximum  
18 feasible development of geothermal energy, water, and minerals  
19 while assuring the maintenance of environmental quality"  
20 (Conservation Element, p. 69.); to "[e]ncourage development  
21 of geothermal energy. . . consistent with environmental  
22 protection and the preservation of productive agricultural  
23 lands" (Open Space Element, p. 43); to "[e]ncourage the  
24 exploration and development of geothermal resources by  
25 public and private organizations consistent with protection  
26 of environmental values" (Conservation Element, p. 78); to  
27 "[p]articipate in and promote a program to develop and  
28 centralize data relevant to geothermal resources for the

1 purpose of providing long-range direction based on reliable  
2 technical information" (Conservation Element, p. 78); and  
3 "to encourage exploration and development projects in order  
4 to increase the store of knowledge surrounding this useful  
5 resource" (Ultimate Land Use Plan, p. 31).

6 The Geothermal Element also states "the area to be  
7 zoned should be large enough to encompass the area anticipated  
8 for ultimate development in accordance with the master plan  
9 submitted by the operator" (Geo. El., p. 64).

10 Accordingly, based on the foregoing, the Board of  
11 Supervisors determines that the G-Zone expansion is consistent  
12 with the County's General Plan.

13 III. THE MASTER ENVIRONMENTAL IMPACT REPORT--CONSIDERATIONS  
14 AND FINDINGS.

15 A. CEQA CONSIDERATIONS.

16 The Board of Supervisors finds and herein certifies  
17 that the Salton Sea Anomaly Master Environmental Impact  
18 Report ("MEIR") was completed in compliance with the California  
19 Environmental Quality Act ("CEQA") and the State Guidelines  
20 pertaining thereto, to address the impacts which could  
21 result from overlaying the entire Salton Sea anomaly with a  
22 G-Zone. It was reviewed and considered by the Board prior  
23 to approval of the zoning expansion. The zoning expansion  
24 in the Salton Anomaly does not, per se, authorize geothermal  
25 production activities in the area, but establishes grounds  
26 for prospective developers to submit applications for production  
27 projects in the area so rezoned. Although the proposed  
28 rezoning does not cause any direct environmental impact, it

1 creates the opportunity for new geothermal projects which  
2 can cause environmental impacts.

3 The MEIR identified all environmental impacts which  
4 could be expected to occur as a result of large-scale geothermal  
5 development of the rezoned area. In addition, testimony  
6 before the Board further refined the knowledge about the  
7 impacts. Geothermal development has the potential to create  
8 the following impacts, if no mitigation is required:

- 9 Geology 1. Induce seismicity changes (MEIR, p. 3.1-13)  
10 2. Induce subsidence (MEIR, p. 3.1-16)  
11 3. Induce erosion (MEIR, p. 3.1-19)  
12 4. Suffer damage from seismicity, fault ruptures,  
13 and soil liquefaction and settlement (MEIR,  
14 pp. 3.1-15, 3.1-16, 3.1-18)
- 15 Hydrology 5. Pollute near-surface groundwaters (MEIR,  
16 p. 3.2-22)  
17 6. Compete for and consume surface or ground  
18 waters (MEIR, pp. 3.2-30, 3.2-41)  
19 7. Induce changes in Salton Sea level and  
20 salinity (MEIR, pp. 3.2-31; 3.6-42)  
21 8. Pollute surface waters and land with spills  
22 of geothermal fluids (MEIR, pp. 3.2-35,  
23 3.2-37, 3.8-48, 3.8-49)  
24 9. Degrade surface water quality in agricultural  
25 waste water drains (MEIR, p. 3.2-37)  
26 10. Suffer damage from flooding due to the rising  
27 level of the Salton Sea (MEIR, p. 3.2-39)

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1 Climatology

- 2 11. Increase local relative humidity (MEIR  
3 p. 3.3-9)  
4 12. Create visible plumes and fogging (MEIR,  
5 p. 3.3-9)

6 Air Quality

- 7 13. Create dust and air emissions from construction  
8 (MEIR, p. 3.4-7)  
9 14. Raise ambient hydrogen sulfide levels in  
10 the air (MEIR, p. 3.4-13)  
11 15. Emit other non-H<sub>2</sub>S air pollutants (MEIR,  
12 p. 3.4-21)  
13 16. Emit drift droplets into the air which  
14 could ultimately pollute land and water,  
15 or be inhaled by humans or animals (MEIR,  
16 pp. 3.4-22, 3.8-49)

17 Acoustical

- 18 17. Increase noise during construction and  
19 operations (MEIR, p. 3.5-13)

20 Biological

- 21 18. Cause some loss of nonagricultural vegetation  
22 (MEIR, p. 3.6-34)  
23 19. Remove or alter wildlife habitat or render  
24 sensitive habitats such as refuges less  
25 attractive to wildlife (MEIR, p. 3.6-34)  
26 20. Adversely impact avian resources due to  
27 habitat loss, noise, or spills, and increase  
28 transmission line bird mortalities

1 (MEIR, p. 3.6-39)

2 21. Create impacts to aquatic resources due  
3 to use of irrigation tail water for cooling  
4 resulting in potential increased salinity  
5 of the Salton Sea as well as fluctuations  
6 of the level of the Sea, create loss of  
7 habitat and water quality deterioration  
8 due to offshore geothermal development.  
9 (MEIR, p. 3.6-42).

10 Cultural

11 22. Damage archeological sites (MEIR, p. 3.7-3)

12 Land Use

13 23. Remove arable land from agricultural  
14 production (MEIR p. 3.8-41)

15 24. Remove or impair gravel mining resources  
16 (MEIR, p. 3.8-45)

17 25. Reduce recreation potential (MEIR, p. 3.8-50)

18 26. Conflict with some other County goals,  
19 policies and programs (MEIR, p.3.8-42)

20 27. Conflict with urban or residential use of  
21 the area (MEIR, p. 3.8-52)

22 28. Create solid waste traffic load (MEIR,  
23 p. 3.8-52)

24 29. Increase traffic (MEIR, p. 3.8-53)

25 Socio-economics

26 30. Increase population (MEIR, p. 3.9-22)

27 31. Increase employment (MEIR, p. 3.9-25)

28 32. Temporarily create a housing shortage (MEIR,

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p. 3.9-29)

33. Increase demands for government services  
(MEIR, p. 3.9-31)

34. Increase property tax receipts by the  
County (MEIR, p. 3.9-32)

Visual 35. Modify the visual environment in the area  
(MEIR, pp. 3.10-8 to 3.10-13)

Subjects identified as "key" issues were numbers 2, 6,  
8, 15, 16, 19, 20, 21, 25 and 30 (MEIR, Chapter 3.11).

The MEIR concluded that some of the 35 impacts were  
significant and unavoidable. After consideration of the  
MEIR and testimony received in public hearings, the Board  
finds that changes or alterations will be required for or  
incorporated into future geothermal developments which will  
avoid the significant environmental effects or mitigate such  
effects to insignificant levels. These findings are summarized  
hereinbelow.

B. ENVIRONMENTAL IMPACT FINDINGS

GEOLOGY

In General

Each site-specific project will have changes or alterations  
required for or incorporated into it by the County of Imperial  
to mitigate or avoid its potential significant geological  
impacts, as discussed hereinbelow. Therefore, geothermal  
projects constructed in the G-Zone expansion will not have a  
significantly adverse effect on geology in Imperial County.

1. Significant Effect: Geothermal production and  
injection well field operations conducted within the G-Zone

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1 have the potential to induce alterations in the existing  
2 seismic activity (MEIR, p. 3.1-15).

3       Statement of Facts: The Geothermal Element to the  
4 General Plan of Imperial County states that "the County  
5 shall require producers to participate in any seismic monitoring  
6 established a seismic monitoring program and has required  
7 other geothermal production project permittees within the  
8 County to participate in the County's program, submit a plan  
9 for approval by Imperial County's Public Works Department,  
10 implement the plan as approved, and, if evidence of detrimental  
11 seismicity induced by the project is indicated, change  
12 operations as appropriate to mitigate the detrimental seismicity.

13       Imperial Valley is a naturally seismic area. However,  
14 there is little reason to expect that fluid injection will  
15 cause significant expansion of seismic activity in the  
16 Salton Sea area (MEIR, p. 3.1-15). However, if evidence  
17 becomes available that development is anticipated to affect  
18 the natural seismic activity, geothermal developers will be  
19 required to participate in any seismic monitoring network  
20 which may be established for the purpose of providing background  
21 data on seismic occurrence (Geo. El., p. 59; MEIR, p. 3.1-  
22 15). The Imperial County Public Works Department is responsible  
23 for preparing and enforcing permit conditions relating to  
24 the monitoring of seismic networks (Geo. El., p. 68).  
25 Baseline data is being accumulated by Lawrence Livermore  
26 Laboratories. The County will require that each developer  
27 submit an acceptable seismic monitoring program from which  
28 data will be compared to the baseline data. If monitoring

1 programs indicate a statistically significant change in  
2 seismic activity which is attributable to geothermal projects,  
3 the County will consider measures to be imposed upon developers  
4 which control production and injection activities (MEIR, p.  
5 3.1-21). In addition, geothermal production permits granted  
6 for site-specific projects will carry a condition which  
7 provides the County with authority to revoke the permit if  
8 the permittee violates conditions of the permit and does not  
9 cure the violation, given reasonable notice and opportunity  
10 (see "Other Specific Conditions" section of geothermal  
11 production permits issued by Imperial County in the last 5  
12 years).

13 Imperial County will consider and may require all these  
14 mitigation measures of each geothermal production project  
15 proposed within this zone unless the subsequent, project-  
16 specific environmental document prepared for each project  
17 identifies mitigation measures which may be more appropriate  
18 or identifies that the impact is not significant and mitigation  
19 is not appropriate. The MEIR (p. 3.1-21) states that the  
20 above-indicated mitigation measures will probably never be  
21 necessary.

22 Finding: Imperial County will require for or incorporate  
23 into each site-specific project proposed within this zone  
24 changes or alterations which mitigate or avoid the significant  
25 environmental effects identified hereinabove.

26 Statement of Facts: The California Division of Oil and  
27 Gas ("CDOG") is required by law to ensure that geothermal  
28 wells are operated in such a manner as to safeguard life,

1 health, property and the public welfare. Should evidence of  
2 detrimental seismicity induced by project operations be  
3 indicated by the monitoring program, the CDOG can and should  
4 require, in consultation with Imperial County, those changes  
5 in geothermal well operations within its responsibility and  
6 jurisdiction as appropriate to mitigate the negative impacts.

7 Finding: Changes or alterations required to mitigate  
8 or avoid the significant environmental effects of detrimental  
9 seismicity of any geothermal production project proposed  
10 within this zone may also be within the responsibility and  
11 jurisdiction of another public agency (the CDOG), and such  
12 changes can and should be adopted, to the extent of its  
13 responsibility and jurisdiction, by such other agency.

14 2. Significant Effect: Naturally-occurring subsidence in  
15 Imperial Valley may accelerate due to geothermal fluid withdrawal  
16 resulting from geothermal production activity (MEIR, p. 3.1-17).

17 Statement of Facts: The County will require participation  
18 by geothermal developers in the existing subsidence monitoring  
19 network when site-specific studies indicate such participation  
20 is necessary (MEIR, p. 3.1-22). The Imperial County Public  
21 Works Department is responsible for preparing and enforcing  
22 permit conditions relating to the monitoring of subsidence  
23 detection networks, and production permits issued by the  
24 County will require operators to monitor subsidence detection  
25 networks (Geo. El., p. 68). It is also responsible for  
26 monitoring the review of reinjection plans by CDOG, and for  
27 requesting subsidence analyses for proposals other than for  
28 total reinjection of geothermal brine.

1 In order to fully mitigate the potential subsidence due  
2 to geothermal fluid withdrawal, Imperial County standards  
3 require reinjection of all geothermal fluids extracted from  
4 irrigated areas of the County or from any area that could  
5 directly impact those irrigated lands (Geo. El., p. 58).  
6 Applications for deviation from this policy are to be submitted  
7 to CDOG for review and findings prior to County consideration.  
8 If detrimental subsidence is detected attributable to geothermal  
9 production, the CDOG will devise an amelioration program  
10 (Geo. El., pp. 58-59). Such a program may consider an  
11 increase in the required injection, altered injection depths,  
12 releveling of drains, canals and land surfaces, other restoration  
13 or correction of the surface effects of subsidence, changes  
14 in field operations, or reduction or total cessation of  
15 geothermal production. Imperial County has required these  
16 mitigation measures of geothermal production projects within  
17 the County, and these measures are identified as being  
18 appropriate to any geothermal production project (MEIR, p.  
19 3.1-22).

20 Imperial County will consider and may require all these  
21 mitigation measures of each geothermal production project  
22 proposed within this zone unless the subsequent, project-  
23 specific environmental document prepared for each project  
24 identifies mitigation measures which may be more appropriate  
25 or identifies that the impact is not significant and mitigation  
26 is not appropriate.

27 Finding: Imperial County will require for or incorporate  
28 into each site-specific project proposed within this zone

1 changes or alterations which mitigate or avoid the significant  
2 environmental effects identified hereinabove.

3       Statement of Facts: The CDOG is required to ensure  
4 that geothermal wells are operated in such a manner as to  
5 safeguard life, health, property and the public welfare.  
6 The CDOG requires the installation and monitoring of subsidence  
7 bench marks for all wells that will be tested or produced.  
8 If evidence of detrimental subsidence induced by project  
9 operations is indicated by the required monitoring, the CDOG  
10 can and should, in consultation with Imperial County, require  
11 those changes in operations within its responsibility and  
12 jurisdiction as appropriate to prevent detrimental subsidence.  
13 These changes could include increasing the amount of injected  
14 fluid, altering injection well locations or spacing, altering  
15 production well locations or spacing, or decreasing the  
16 quantity of geothermal fluid withdrawn from the reservoir.

17       Finding: Changes or alterations required to mitigate  
18 or avoid the significant environmental effects of detrimental  
19 subsidence of any geothermal production project proposed  
20 within this zone are within the responsibility and jurisdiction  
21 of another public agency (the CDOG), and such changes or  
22 alterations can and should be adopted, to the extent of its  
23 responsibility and jurisdiction, by such other agency.

24       3. Significant Effect: Although the MEIR found no  
25 potential for significant erosion or slope stability impacts  
26 (with the possible exception of gully erosion around the  
27 Alamo River banks), drainage control and devices such as  
28 energy dissipators and gunite lining of gullies are recommended

1 (MEIR, p. 3.1-22).

2 Statement of Facts: These mitigation measures will be  
3 considered on a case-by-case basis as projects are proposed  
4 which are expected to impact these gullys. The County, to  
5 the extent feasible for specific projects, may require that  
6 facilities be located away from river channels where possible  
7 and that drainage be designed to avoid concentrating run-off  
8 in gullys.

9 4. Significant Effects:

10 a. Seismic Groundshaking.

11 Any geothermal production project constructed in  
12 the G-Zone will likely be subject to at least one occurrence  
13 of significant seismic groundshaking, which could lead to  
14 structural collapse, during the probable thirty-year life of  
15 that project (MEIR, p.3.1-13).

16 Statement of Facts: Imperial County has required the  
17 following mitigation measures of other geothermal projects  
18 within the County: (1) geothermal production projects be  
19 built in accordance with the County building code requirements  
20 of the Uniform Building Code, as adopted by the County,  
21 applicable to "Seismic Zone 4"; (2) all structures and  
22 facilities be designed in accordance with the publication  
23 entitled "Recommended Lateral Force Requirements and Commentary  
24 by the Structural Engineers Association of California"; and  
25 (3) the structural components of the facility be reviewed  
26 and approved by a structural engineer licensed in the State  
27 of California. The MEIR (p. 3.1-20) states that implementation  
28 of these mitigation measures would provide reasonable assurance

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1 that structures and facilities would safely withstand the  
2 most severe earthquake predicted.

3 Imperial County will consider and may require all these  
4 mitigation measures of each geothermal production project  
5 proposed within this zone unless the subsequent, project-  
6 specific environmental document prepared for each project  
7 identifies mitigation measures which may be more appropriate  
8 or identifies that the impact is not significant and mitigation  
9 is not appropriate.

10 Finding: Imperial County will require for or incorporate  
11 into each site-specific project proposed within this zone  
12 changes or alterations which mitigate or avoid the significant  
13 environmental effects identified hereinabove.

14 The above-discussed requirements, in fact, will mitigate  
15 this particular impact to a level of insignificance.

16 b. Fault Ruptures.

17 There is the potential for ground rupture along  
18 several potentially active faults within the proposed G-Zone  
19 which could cause moderate to severe damage to any geothermal  
20 production facility constructed over the fault trace (MEIR,  
21 p. 3.1-16).

22 Statement of Facts: Imperial County has required that  
23 other geothermal production projects within the County  
24 conduct a geotechnical investigation, including trenching to  
25 locate fault traces, at each proposed geothermal production  
26 facility site. The MEIR (p. 3.1-21) also suggests that  
27 should any faults be discovered, the project be designed to  
28 avoid placing structures on or across the fault traces, that

1 minimum setback distances be established by a licensed  
2 engineering geologist experienced with mitigating the effects  
3 of fault displacement, that well sites be placed to minimize  
4 the possibility of drilling through a fault plane, where  
5 such a plane lies less than 1,300' in depth, and that berms  
6 be constructed around each well pad.

7 Imperial County will consider and may require all these  
8 mitigation measures of each geothermal production project  
9 proposed within this zone unless the subsequent, project-  
10 specific environmental document prepared for each project  
11 identifies mitigation measures which may be more appropriate  
12 or identifies that the impact is not significant and mitigation  
13 is not appropriate.

14 Finding: Imperial County will require for or incorporate  
15 into each site-specific project proposed within this zone  
16 changes or alterations which mitigate or avoid the significant  
17 environmental effects identified hereinabove.

18 c. Soil Liquefaction and Settlement.

19 Potential soil liquefaction and differential  
20 settlement conditions may exist throughout the G-Zone area  
21 (MEIR, p. 3.1-18).

22 Statement of Facts: If a potential for liquefaction or  
23 settlement is identified during site-specific studies,  
24 appropriate soil preparation and foundation design will be  
25 required (MEIR, p. 3.1-22). Imperial County has required  
26 those mitigation measures identified in the MEIR of other  
27 geothermal production projects within the County. These  
28 include the requirements that all geothermal production