MINUTE ITEM

This Calendar Item No. 25 was approved as Minute Item No. 25 by the State Lands Commission by a vote of 3 to 0 at its 2/22/79 meeting.

CALENDAR ITEM

25.

2/79
W 9996
W 9964
Burnett

PROPOSED SELECTION OF LANDS FOR GEOTHERMAL RESOURCES LEASE OF RESERVED MINERAL INTERESTS

It is proposed that the Commission select, pursuant to Section 6911(a) of the P.R.C., 2 parcels containing approximately 160 acres of land in Sonoma County for geothermal resources lease by competitive bid. These parcels, on which the State has reserved mineral interests, are located northwest of the Geysers Steam Field, approximately 1 mile northwest of the recently extended KGRA boundary. The parcels are located approximately 1 mile northwest of geothermal well Adlin. No. 1, reported to have commercial potential. The parcels are underlain by the same lithology as the proven steam field, and lie on a structural trend with it. Several geothermal wells have been drilled in the area, at least 1 of which is capable of steam production, and the area is considered to have goethermal potential.

Applicants for prospecting permits were submitted by the respective surface owners to the State Lands Commission in 1976. The staff feels, however, that the goethermal potential of these parcels warrants competitive bidding rather than the issuance of exclusive prospecting permits. Section 6910(a) of the P.R.C. provides, in part, that an application for a permit shall be denied if, prior to the issuance of the permit, the lands are selected by the Commission for lease by competitive public bid.

Section 6911(a) of the P.R.C. states that selected lands may be leased by competitive bid on the basis of a cash bonus, net profit, or other single biddable factor. Section 6912(b) provides that the surface landowner may, within 10 days after notification by the Commission, submit a bid identical to the highest accepetable bid, in which case the Commission shall issue a lease to such surface landowner. If the surface landowner does not file such a bid, then the Commission may proceed with the award of the bid.

EIRs have been prepared by the Sonoma County Planning Commission which cover both subject parcels. The impacts of the project proposed by staff are identified in the EIRs prepared by Sonoma County. By notices of determination, the Sonoma County Planning Commission certified that (1)

A 2

S 2

the EIRs were prepared pursuant to the provisions of the CEQA of 1970, as amended; (2) the projects will not have a signficant effect on the environment; and (3) the projects have been approved by the Sonoma County Planning Commission. The notices of determination have been filed with the Secretary for Resources, the State Lands Commission, and the County Clerk for Sonoma County.

The environmental documents have been reviewed by staff, and it is staff's opinion that the intent of the provisions of CEQA have been satisfied.

EXHIBITS:
A. Location Map. B. Property Descriptions.
C. EIR Summary - Domenichelli Leasehold.
D. EIR Summary - Aidlen - Gouvea Leasehold.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT EIRS HAVE BEEN PREPARED FOR THIS PROJECT BY THE SONOMA COUNTY PLANNING COMMISSION.

2. CERTIFY THAT THE INFORMATION CONTAINED IN THE EIRS OF THE SONOMA COUNTY PLANNING COMMISSION HAS BEEN REVIEWED AND CONSIDERED BY THE STATE LANDS COMMISSION.

3. DETERMINE THAT THE PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.

4. AUTHORIZE THE STAFF TO OFFER, PURSUANT TO DIVISION 6 OF THE P.R.C., FOR BID FOR THE EXTRACTION OF GEOTHERMAL RESOURCES THE PARCELS DESCRIBED IN EXHIBIT "B" AND BY REFERENCE MADE A PART HEREOF, AND TO DENY THE EXISTING APPLICATIONS FOR PROSPECTING PERMITS ON THOSE PARCELS.

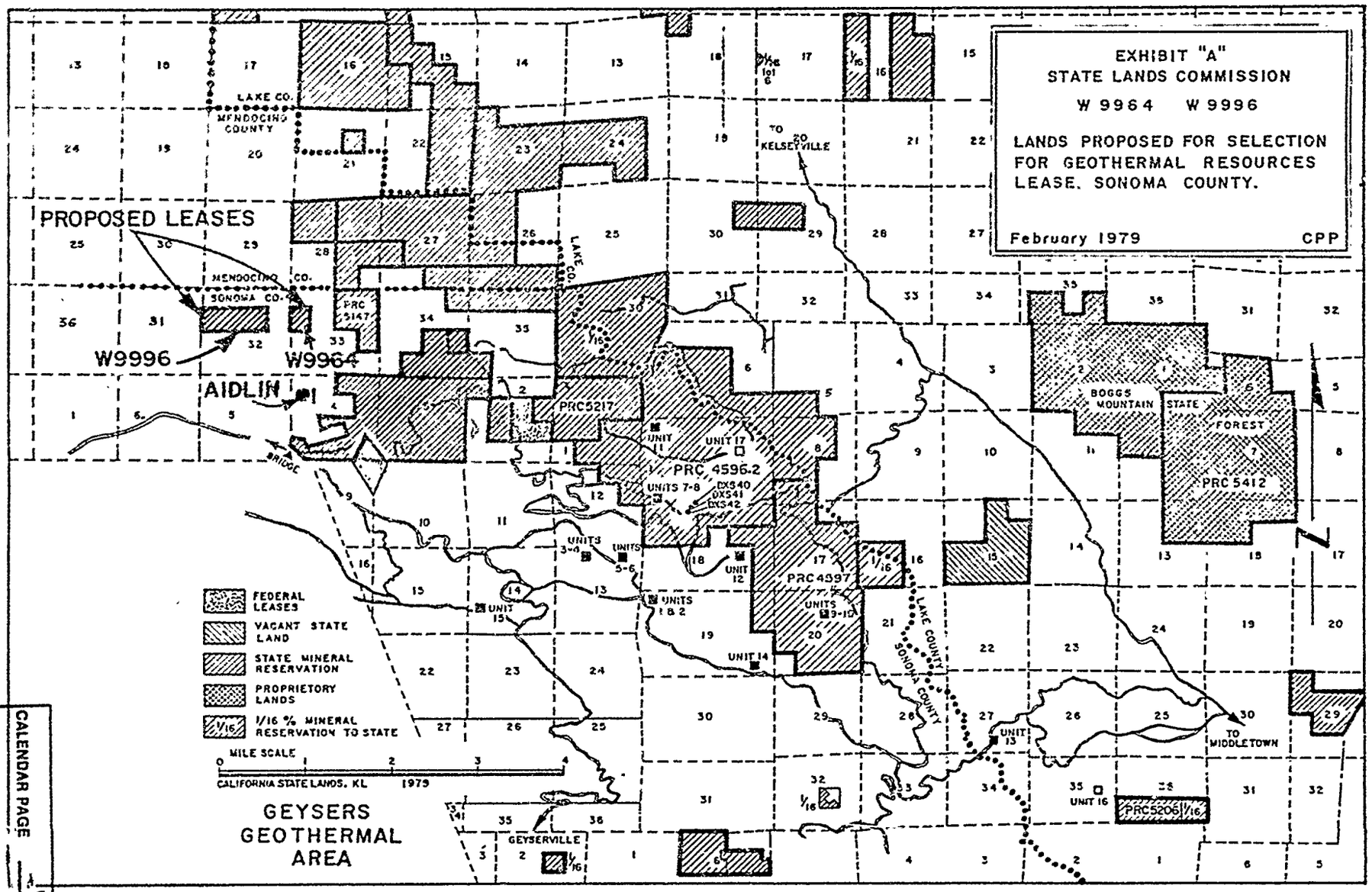

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EXHIBIT "B"

W 9964

Mineral interests reserved to the State in Township 12 North, Range 9 West, M.D.B.&M., Sonoma County, California

Setion 33: Southwest one-quarter (SW¼) of the Northwest one-quarter (NW¼), containing 10 acres, more or less.

W 9996

Mineral interests reserved to the State in Township twelve (12) north, Range nine(9) west, M.D.M., Sonoma County, California: The south half of the northwest quarter and the southwest quarter of the northeast quarter of section thirty-two(32), containing approximately 120.00 acres.

EXHIBIT "C"

W 9964
W 9996

SUMMARY

ENVIRONMENTAL IMPACT REPORT FOR
BURMAH OIL AND GAS COMPANY'S DOMENICHELLI LEASEHOLD

An environmental report was prepared and certified to cover geothermal development by Burmah Oil and Gas Company in the Squaw Creek drainage system for an as yet undesignated electrical generation plant.

I. Description of the Project:

The overall report covers geothermal development of Burmah Oil and Gas Company's leaseholds on the upper part of the Squaw Creek drainage northwest of The Geysers Field, Sonoma County. Items covered include roads, drill sites and pads, pipelines and the power plant site. An area in excess of that needed for the proper number of wells to supply steam for a generating plant was covered to be certain to include several areas stable enough to support a plant's structure.

II. Project Location:

The area under study includes most of Sections 28 and 33 and the eastern portions of Sections 29 and 32, T. 12 N., R. 9 W., M. D. B&M; the north line of Sections 32 and 33 separating Sonoma and Mendocino Counties. The northern boundary of the area is roughly the north line of Section 28 and the southern boundary approximates the south line of Section 33. The proposed drill site is just south of the Sonoma County line, near the center of the study area at an elevation of 2,750 feet.

III. Project Action:

The action involves the following specific steps:

1. Drilling an exploratory well to approximately 8,000 feet total depth to establish the existence of commercial quantities of geothermal steam. Construction of a drill site, including a drill pad for drilling equipment, drilling mast, tanks, compressors and other equipment plus a sump, requires approximately 2½ acres of flat area. An access road will add some 1½ acres, bringing the total to 4 acres.

2. If the exploratory well indicates a good potential steam supply, further drilling will be undertaken. Ten to fifteen wells will be required to establish generation capacity. Final normal development in The Geysers Field is 20 acres per well; up to 40 wells, over the life expectancy of a plant, are necessary to serve each generation plant.

3. Well testing and stand-by maintenance operations require periodic venting of full heads of steam for periods extending from a few hours to several days in order to clear debris and condensation from the wellbore.

4. The siting and construction of a generation plant includes generators, condensers, cooling towers, H_2S scrubbers, condensate reinjection system plus transmission towers and lines.

5. Construction of steam transfer pipelines from the well sites to the generation plant.

6. At future dates, additional wells for replacement (up to the 40 wells mentioned in No. 2.) in order to maintain the steam supply, will require drilling, testing and the laying of pipelines.

IV. Present Environmental Setting:

a. Climate:	☐ Cool	☒ Moderate	☐ Hot
b. Air Quality:	☐ Poor	☐ Fair	☒ Good
c. Water Quality:	☐ Poor	☐ Fair	☒ Good
d. Noise Quality:	☐ Poor	☐ Fair	☒ Good
e. Transportation Systems:	☒ Poor	☐ Fair	☐ Good
f. Public Utilities:	☒ Poor	☐ Adequate	☐ Good
g. Public Services:	☒ Poor	☐ Adequate	☐ Good

h. Other Values: The land is of importance as a watershed and wildlife habitat. In addition, there are several springs in the area from which much of the wildlife in the area obtain their water supply and there are several archaeological areas.

i. Present Land Use: The land has been primarily used as a deer hunting preserve. Some grazing of cattle does occur in the lower savannahs, but most of the browse is largely unpalatable to cattle

V. Environmental Impacts:

A. Adverse:

a. Air Quality: ☒ Low ☐ Mod. ☐ High ☐ Short-Term ☒ Long-Term

Comment: The amount of noncondensible gases released to the atmosphere will increase. The cumulative effect at the time the field is fully developed may well exceed acceptable ambiant, air tolerance levels even if scrubbing installations are installed at power plants. Materials carryied in steam may cause impacts if accumulated over a long period. These may be indirect or direct effects. Cooling tower drift potentially is an additional problem. Considerable research is needed in order to recognize symptoms, to determine rates of action, dispersion patterns, etc. The determination could then be made whether conditions are beneficial or adverse.

b. Water Quality: [X] Low [ ] Mod. [ ] High [ ] Short-Term [X] Long-Term

Comment: The direct effect of geothermal operations on water quality is a result of erosion products, solutions derived from runoff after it is concentrated, fallout substances and accidental spillage. There is no baseline data available at this time and no accurate prediction can be made regarding the extent and probability of these effects.

c. Noise Quality: [X] Low [ ] Mod. [ ] High [ ] Short-Term [X] Long-Term

Comment: Audio effects can be reduced to tolerable limits, but some unnatural noise will always accompany exploratory well drilling and geothermal operations. It is unlikely that the nearest residents, some 2½ miles away, will be bothered by excessive noise.

d. Transportation Systems: [X] Low [ ] Mod. [ ] High [X] Short-Term [ ] Long-Term

Comment: Development of this and other geothermal fields in the area will probably bring pressure to widen and improve roads to the area. Which roads and the extent of the impact such transportation improvements will be determined by the direction in which the field is developed.

e. Public Utilities: [X] Low [ ] Mod. [ ] High [X] Short-Term [ ] Long-Term

Comment: The growth induced impacts are almost nonexistent.

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f. Public Services: [X] Low [ ] Mod. [ ] High [ ] Short-Term [X] Long-Term

Comment: The same growth induced impacts as described in Item (e).

g. Energy Consumption: [X] Low [ ] Mod. [ ] High [X] Short-Term [ ] Long-Term

Comment: Drilling rigs are self-contained and provide their own energy. Consumption of fuels is limited to the drilling period.

h. Growth Inducing: [ ] Low [X] Mod. [ ] High [ ] Short-Term [X] Long-Term

Comment: The only induced growth will be in the nearby towns, such as Cobb or Middletown, rather than at the field site itself. There may be a slight increase in the number of persons living in the area due to permanent employment.

i. Other Values:

1. Vegetation

There will be some vegetation loss due to removal in preparation of the drill site. There will be overall a loss or decline in vigor of stands in certain areas due to increased humidity from the release of steam.

2. Fauna

The immediate adverse effect is not clearly known, however, there is a loss of habitat, but the extent is hypothetical.

3. Cultural

There are no cultural installations in the area.

4. Aesthetics

Visual effects of the installation will be long termed. Mitigation will be very slow.

B. Beneficial Effects:

a. Social: [ ] Low [ ] Mod. [X] High [ ] Short-Term [X] Long-Term

Comment: The basic purpose of the project is to develop geothermal resources for the production of electrical energy. There will be little social impact in the project area except for a slight increase in employment base, but the impact will be great where the energy is used in substitution for that created by the use of fossil fuels.

b. Economic: [ ] Low [ ] Mod. [X] High [ ] Short-Term [X] Long-Term

Comment: There is an economic impact to the county tax base on the completion of each individual well. There is added economic impact with the building of a generation plant.

VI. Adverse Environmental Effects Which Cannot Be Avoided:

Modification will occur, due to the construction of roads to some 1½ acres of land surface and the construction at the drill site of the pad will alter an additional 2½ acres of land. Natural vegetation will be removed and there will be an irreversible effect, such as loss of top soil, destruction of soil profile, accellerated erosion, alteration of local drainage patterns and the loss of wildlife habitat. These and future losses can be minimized by adherence to good engineering practices and county and state regulations.

VII. Mitigation Measures Proposed:

There are three areas in which mitigation is proposed. It is urged that those areas in which there has been periodic burning, thus devoiding completely the surface of vegetation, that no drainage pattern changes be made. If access is from the south of the study area, special precautions in excavation and maintenance of a road crossing in the area designated, as flanking Alder Creek need to be taken. Existing road cuts in this particular area are subject to heavy erosion. The present proposed drill site will have approximately 1/3 of the cut material temporarily placed just north of the site. The material will be retrieved upon the completion of drilling to fill the sump and grade the pad to its final configuration. Although this is costly, it is felt to be of necessity.

VIII. Alternatives to the Proposed Action:

One alternative is to disallow future geothermal development, for whatever reason, in this area. The state of the energy crisis throughout the nation and the necessity of finding alternative energy sources to fossil fuels would seem to preclude this alternative. This alternative would be appreciated mostly by those persons directly affected by the noise, odors or altered visual aesthetic values. A more modern approach would be to designate area where these types of problems are most acute and to then

prohibit drilling in such areas until equipment and procedures are available to satisfactorily mitigate them. Such reasons for disallowing geothermal development in the proposed area are insignificant on an environmental basis. A second alternative would be to allow only the testing of the possible existence of commercial steam source. If commercially productive steam was not found in the drill site covered, the land could then be reverted to its previous uses with a minimum of adverse problems. Third, is to have a delayed development alternative and this would be to insure that the proper technology was available to mitigate objectionable impacts. The major drawback in this alternative is the great uncertainty regarding the lifetime necessary to make such technological advances. The fourth alternative, is to take a mitigated action decision to impose reasonable restrictions that current technology can supply. The application of this alternative is suggested in this EIR and should be a line with specific requirements of appropriate agencies exercising jurisdiction over the area. Additional stringent requirements may be applied by the county or the state agencies.

IX. Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity:

Previously the area under study has had a burning program conducted by the landowner in order to improve the wildlife habitat quality, specifically for game management and hunting purposes. There was an increase in wildlife utilization, but these game animals comprised a very limited recreational hunting resource. Geothermal development will conflict with these hunting activities and the burning program, by necessity, will be greatly modified.

The watershed resource is a controlling factor in the natural quality and in the downstream flood control methods. Previously, these values have not figured in land use methods. Natural drainage has been greatly modified by water impoundment by the landowner. There are many areas in which the soil has been exposed to the full impact of heavy rains and results have been an increase in runoff and accelleration of erosion and sedementation.

A fundamental decision to be made is whether the revenue of geothermal resource development and the resultant energy generation at this site for use elsewhere offset the cost of land restoration and the impacts to the water quality or to the air quality. The direct or indirect cost is either to the public at large or should be paid by those directly affected. The decision, who by necessity, requires a change in attitude of those exploring the resource in the area.

Geothermal extraction can be compatible with existing and future renewable and nonrenewable resources, but the methods will have to be changed. Stringent mitigation measures are essential in underlying this concept. Trade-offs must be made by necessity, but these can be made acceptable over the long term.

X. Irreversible Environmental Changes:

Limited topographical modification and the resulting increase in erosion will have an impact on water quality and on fish and wildlife. There will also be an increase in the amount of gases vented to the air and an increase in humidity from the vented steam.

XI. Comments and Issues Raised:

1. The Sierra Club made some objections, in that the EIR process was incomplete for giving too little attention to the proposed well site itself. Additional comments were made by the Sierra Club and were answered by Ecoview as follows:

   The discussion of the affects on residents was termed insensitive. Had the 5 or 6 residents been consulted for their opinions: Will they not be forced in any way to relocate?

   The persons were contacted and it has been determined that they will not be in any way forced to relocate.

   Access roads to the drill site will apparently involve the destruction of two springs. Is this justifiable?

   The road was rerouted and the spring area avoided.

2. The Sonoma County Water Agency made several general comments, which were responded to by Ecoview.

   In regard to the possibility of failure being a definite possibility, unless specific mitigating measures are made a part of design construction and operation at the well site.

   Failure is always a possibility, but the conditions and mitigations already worked into the planning, make this exploratory well less likely to fail.

   It was viewed that since no accurate prediction method can be made regarding the extent and probability of water quality problems from erosion, fall-out substances, solutes derived from concentrated runoff and accidental spillages, it is probable that no accurate prediction can ever be made considering the possible range of variables. It is felt that the high probability of significant adverse impact and that reasonable mitigative measures should be used based on the best estimates of such adverse impacts. Then, as more precise data is developed, adjustments to the scale of mitigative measures could be made.

   This is precisely what has been done. However, there still is no pre-project or post-project monitoring to establish any data to detect the inadequacy or "over-kill of mitigation".

3. County of Napa Conservation, Development and Planning Department reiterated the policy adopted by Napa County to oppose geothermal leasing of Federal lands because of the potential hazardous effects of geothermal activities on grape growing activities, irrigation and domestic water supplies, recreation usage, the adverse impact on fish and wildlife areas, and the primitive state of programs to mitigate adverse impacts. Several points of alleged inadequacy were indicated, but no specific points or elements identified to which a response could be formulated.

   We would be glad to do so if these points were clarified and stated as specific questions or errors that need correction.

4. California Department of Fish and Game referred to the fact that if the initial well is successful, additional wells, roads sumps, pipelines, and a power plant and related transmission lines will be constructed. Requested that a master plan for the production facility should be developed and the environmental impact discussed before exploration drilling is permitted.

   These comments are the same as those to previous EIR's and our response to them is the same. It is not feasible to proceed much farther in identifying field impacts than we already have until the field can be identified, otherwise the potential problems and ramifications are answered to the best data currently available.

   Reference made to fish resource in Alder Creek, Squaw Creek and Big Sulphur Creek without discussing the species present and their habitat needs.

   These fisheries were discussed in Neilson, et al., 1974a.

   Mitigative measures described are not binding on the developing company and therefore, the report is misleading.

   The EIR can only state the condition and suggest alternative mitigative procedures to minimize the impacts. It is only through the interpretation of the EIR by the person preparing the use permit or permit to construct that any thing said in the EIR is made binding and then only to the extent that the language legally permits. Any permit issued by the State Lands Commission will be subject to the mitigation measures.

5. The California State Lands Division referred to the fact that 31 of 49 drill pads referred to in the Pacific Energy EIR will be located on areas classified in land sensitivity classes 4 and 5, which indicates that these sites have high to very high impact sensitivities. The Division feels that each site should be analyzed individually to determine if such impacts really exist and to suggest mitigation measures where applicable.

Landslide potential was discussed and it was felt that the report failed to significantly treat environmental impacts associated with construction activities on these slides. However, well sites on State land will be investigated by State Lands Division staff prior to approval of well proposals.

6. The California Air Resources Board referred to the fact that the EIR treats the project only as the drilling of a single exploratory well. The Air Resources Board recommended that the EIR address, at least briefly, the problems associated with ultimate development of power-generation facilities on the leasehold.

The impacts of total field development are discussed generally. Data will not be available to discuss potential impacts in greater detail until a resource has been identified. Upon discovery of geothermal resources, the preferential right to convert the permit into a geothermal lease will be subject to an additional or supplemental EIR covering proposed commercial operations.

EXHIBIT "D"

SUMMARY

ENVIRONMENTAL IMPACT REPORT FOR AMINOIL, USA, INC.'S AIDLIN-GOUVEA LEASHOLD IN THE UPPER PART OF THE BIG SULPHUR CREEK DRAINAGE AND FOR THE PROPOSED EXPLORATORY DRILLING OF TWO WELLS

An Environmental Impact Report was originally prepared and certified to cover geothermal development by Burmah Oil and Gas (now Aminoil, USA, Inc.) in the Big Sulphur Creek drainage northwest of The Geysers, Sonoma County. The EIR is a regional type analysis for consideration of the total project. Aminoil proposes to drill two wells and site specific data has been included for these two wells and alternative drilling sites.

I. Description of the Project:

The report covers geothermal development of Amincil's Aidlin-Gouvea leasehold on the upper part of Big Sulphur Creek drainage at The Geysers, Sonoma County. The report covers roads, drill pads, pipelines and negotiation for construction of a powerplant.

II. Project Location:

The proposed drilling target area is located in rugged, mountainous terrain in northwestern Sonoma County. The study area is bordered on the north by the Sonoma-Mendocino County line, on the east by Aminoil's Domenichelli and Squaw Creek Leaseholds, on the south by Big Sulphur Creek, and on the West by open, mountainous terrain. Approximately 2240 acres is encompassed in this area including portions of : T11N, R9W, MDMB, Sections 4,5 and 6 and T12N, R9W, MDBM, Sections 30, 31 and 32.

III. Project Action:

The action involves the following specific steps:

1. Test boring to determine subsurface temperature profile.

2. Drilling one or more exploratory or step-out wells to prove the steam reservoir.

3. Field development planning including correlating 20 acre blocks of subsurface well target areas to potential well-head sites at the surface.

4. Drill pad, sump and access road preparation. Apprximately 2½ acres of flat area are required to accomodate a drill rig and sump together with tanks, compressors, supply and administration equipment.

5. Field development well drilling. Fifteen to nineteen wells are required to begin operations.

6. Well testing and standby maintenance requires periodic venting of full heads of steam for several hours to several days to clear debris and condensation from the well throat.

7. Siting and construction of the generator unit including generators, turbines, condensers, cooling towers, H2S scrubbers, condensate reinjection system and transmission towers and lines.

8. Construction of steam transfer pipelines from wells ~~to generator~~ to the steam supply system.

9. Drilling, testing and connecting replacement wells

IV. Present Environmental Setting:

a.	Climate:	☐ Cool	☒ Moderate	☐ Hot
b.	Air Quality:	☐ Poor	☐ Fair	☒ Good
c.	Water Quality:	☐ Poor	☐ Fair	☒ Good
d.	Noise Quality:	☐ Poor	☐ Fair	☒ Good
e.	Transportation System:	☒ Poor	☐ Fair	☐ Good
f.	Public Utilities:	☒ Poor	☐ Adequate	☐ Good
g.	Public Services	☒ Poor	☐ Adequate	☐ Good

h. Other Values: The land is of importance as watershed and wildlife habitat.

i. Present Land Use: The land has been used primarily as a hunting preserve. Some grazing logging has also taken place.

V. Environmental Impacts:

A. Adverse:

a. Air Quality ☒ Low ☐ Moderate ☐ High ☐ Short-Term ☒ Long-Term

Comment: The amount of non-condensable gases released to the atmosphere will increase. Their cumulative effect by the time full field development occurs may exceed tolerance levels even with abatement techniques now available. There may be direct and indirect effects of materials carried in steam that will cause negative effects over a long period of time. Colling tower drift is another problem. Much research must be done to recognize sample to determine rates of action, dispersion patters, etc. that will determine what adverse effects can be expected.

b. Water Quality: ☒ Low ☐ Moderate ☐ High ☐ Short-Term ☒ Long-Term

Comment: The most effect of geothermal operations on water quality arises from erosion products, solutes derived from runoff that concentrates fallout of tracer and accidental spillages. Since no base line data are available at this time, no accurate prediction can be made regarding the extent and probability of these effects.

c. Noise Quality ☒ Low ☐ Moderate ☐ High ☐ Short-Term ☒ Long-Term

Comment: Noise effects can be reduced to tolerable limits, but some amount of noise will always accompany geothermal operations.

d. Transportation Systems:

☒ Low ☐ Moderate ☐ High ☒ Short-Term ☐ Long-Term

Comment: As development of this and other geothermal fields in the area proceeds, there will probably be pressure from the developers, workers or suppliers to widen and improve roads into the area. What roads and the extent of the impact such transportation improvements will have will be determined by the direction in which the field is developed.

e. Public Utilities:

☒ Low ☐ Moderate ☐ High ☒ Short-Term ☐ Long-Term

Comment: The same growth inducing impacts as described in item (d)

f. Public Services:

☒ Low ☐ Moderate ☐ High ☐ Short-Term ☒ Long-Term

Comment: The same growth inducing impacts as described in item (d)

g. Energy Consumption:

☒ Low ☐ Moderate ☐ High ☒ Short-Term ☐ Long-Term

Comment: Drill rigs are self-contained and provide their own energy. Consumption of fuels for compressors, lighting and rig operations is limited to the drilling period.

h. Growth Inducing:

☐ Low ☒ Moderate ☐ High ☐ Short-Term ☒ Long-Term

Comment: Whatever growth induced impacts there are in the fields of transportation, public utilities or public services will not occur within the project area, but mainly outside in nearby towns like Cloverdale, Healdsburg, Santa Rosa or Ukiah. There will be a slight increase in permanent employees.

i. Other Values:

1. Vegetation
Direct vegetation loss arises from removal and corresponds with that of topographical modification. Some loss or decline in vigor of stands in certain areas may be expected from increased humidity from release of steam.

2. Fauna
As with vegetation, the immediate adverse effects are not clearly known; however, loss of habitat ~~is obvious but~~ extent is hypothetical.

3. Cultural

Several archeological sites of various ages were discovered in the project area. These should be avoided by pad and pipeline construction. If avoidance is not possible, monitoring should be provided.

4. Aesthetics

Assuming reasonable success in restoring ground cover at drill sites, little permanent effect will be noticed.

B. Beneficial Effects:

a. Social: ☐ Low ☐ Moderate ☒ High ☐ Short-Term ☒ Long-Term

Comment: The project is to develop geothermal resources for production of electrical energy. There will be little social impact in the project area, but impact will be great where this energy is used as a substitute for energy created by use of fossil fuels.

b. Economic: ☐ Low ☐ Moderate ☒ High ☐ Short-Term ☒ Long-Term

Comment: Completion of the project will have an economic impact on the entire county through generation of additional tax revenues.

VI. Adverse Environmental Effects Which Cannot Be Avoided:

Three categories of effects cannot be totally mitigated and must be accepted if the project is carried out. They are: land surface alteration, steam venting and its accompanying effluents, and noise.

VII. Mitigation Measures Proposed:

Construction of access roads, drill pads and sumps in accordance with good engineering practices to reduce erosion. Techniques to reduce venting of steam and scrubbing of steam released from cooling towers to eliminate gasses, particularly H_2S.

VIII. Alternatives to the Proposed Action:

The no project alternative would leave the area in its present rural state, but would preclude assessing the potential of the area and possible discovery of energy. The alternative of delay until developer demonstrates the ability to mitigate all objectionable impacts, but this would be costly, and if and when the decision to proceed is made, most of the impacts would be the same. The alternative of stopping further development outside its present limits is possible. However, in light of the state of fossil fuels, this alternative would be useful mostly to persons directly affected by noise, odors and reduced or altered visual asthetic values. At the present time the reasons for limiting geothermal development to its present area have insufficient environmental grounds to logically support them.

IX. Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity:

The fundamental question to be answered is whether the revenue of geothermal resource development and the resultant energy generation for use elsewhere offsets the cost of land restoration and impacts downstream or in the air shed that must either be a direct or indirect cost to the public at large or paid by those directly affected. The answer requires a change in attitude of exploitation. Extractible resources should not and need not be made at the expense or interruption of other resources in the area. In the case of geothermal extraction, it can be made compatible with existing and future renewable and non-renewable resources, but not on its current basis. Stringent mitigation measures are essential to this underlying concept. Even then, tradeoffs must be made, but these can be made acceptable over the long term.

X. Irreversible Environmental Changes:

Some topographical modifications and resulting increase in erosion will have an impact on water quality and fish and wildlife. There will also be an increase in the amount of gases vented to the air and possible increase in humidity from steam.

XI. Comments and Issues Raised:

1. Michael W. Tolmasoff, Air Pollution Control Officer, Northern Sonoma County Air Pollution Control District, commented that the H2S concentration isopleth were grossly misleading and should be removed or redone.

   The consultant responded by showing data used by Ecoview and that submitted by the District to indicated that the values were in close agreement. The variation among the individual units was attributed to differences in steam flow and would be expected to vary slightly from well to well.

2. Department of Forestry commented that because of the remote location of the project and long travel times for fire crews to reach the scene, a wildfire could cause widespread damage to watershed and water quality as well as to structures in the area. The Department recommended that prior to issuance of and as a condition of the use permit that a detailed written fire plan be approved by the Department.

   The consultant said no response was necessary.

3. The Solid Waste Management Board noted the report states, "Spillage or dumping of waste material as a highly localized impact." The board noted, however, if these wastes are not adequately contained immediately after spillage occurs, the magnitude of the impacts could be greater. It was recommended that adequate mitigation measures such as protective berms, contingency cleanup plans and adequate disposal sites be developed. The Board also noted the report states that drilling wastes will either be transported to a Class I disposal site or will be treated and disposed of at an on-site pond. The Board noted the nearest Class I site was in Contra Costa County and this option would not only be costly, but posed the danger of accidents during transport. They recommended disposal in an approved regional site.

   The consultant responded that at the time the EIR was written, no regional disposal site [illegible] and only circumstantial evidence supports the contention that the materials are hazardous except in catastrophic circumstances.