

MINUTE ITEM

This Calendar Item No. 33  
was approved as Minute Item  
No. 33 by the State Lands  
Commission by a vote of 3  
to 0 at its 3-5-81  
meeting.

CALENDAR ITEM

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PRC 5217  
Priddy

APPROVAL OF PROPOSED NEW WELL "PRATI: STATE 5217" 1

LESSEE: Aminoil U.S.A., Inc.  
c/o GRI Operator Corporation  
2300 County Center Drive  
Santa Rosa, California 95401

AREA, TYPE LAND AND LOCATION:  
434.16 acres of reserved mineral interests  
in the Geysers Area, Sonoma County.

PERTINENT INFORMATION:

The parcel was offered for lease by competitive bid with a percentage of the net profits as the bid factor. The high bid of 47.77% was matched and the lease was issued by the surface owners on February 25, 1977. The lease was assigned the following October to Aminoil.

The lessee is required under the provisions of Section 8.(a) of the lease to commence drilling a well on or before February 25, 1982, or be subject to cancellation of the lease and forfeiture of the bond. Further, Section 9.(e) provides that the lessee shall not drill a geothermal resources well into the leased lands except on prior approval.

GRI Operator Corporation has submitted on behalf of Aminoil a proposal to drill new well "Prati State 5217" 1. The well will be directionally drilled from a site on State-reserved mineral land adjacent to the lease. The site has been constructed and a well is currently being drilled and it is proposed to move the rig approximately 100 feet to drill the well into PRC 5217. The site has been inspected and is located in a geologically stable area. The proposed drilling and completion programs have been

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reviewed by the staff and determined to be in accordance with good engineering practices and the rules and regulations of the Commission.

An environmental impact report (EIR) was prepared by the Sonoma County Planning Commission covering geothermal development of an area that includes the leased lands. This EIR was certified by the State Lands Commission prior to leasing on August 26, 1976. However, it was recognized in the EIR that additional stepout wells would be required to accurately define the boundaries of the productive field and that these wells would require a separate site evaluation. An addendum to the EIR was prepared and the EIR was then recertified by the Sonoma County Board of Zoning Adjustments. A use permit to construct the drilling pad and drill two wells was granted by the Board on June 26, 1980.

This project is situated on lands not identified as possessing significant environmental values. A staff review of available environmental information indicated no reason to identify the subject land as having such values at this time.

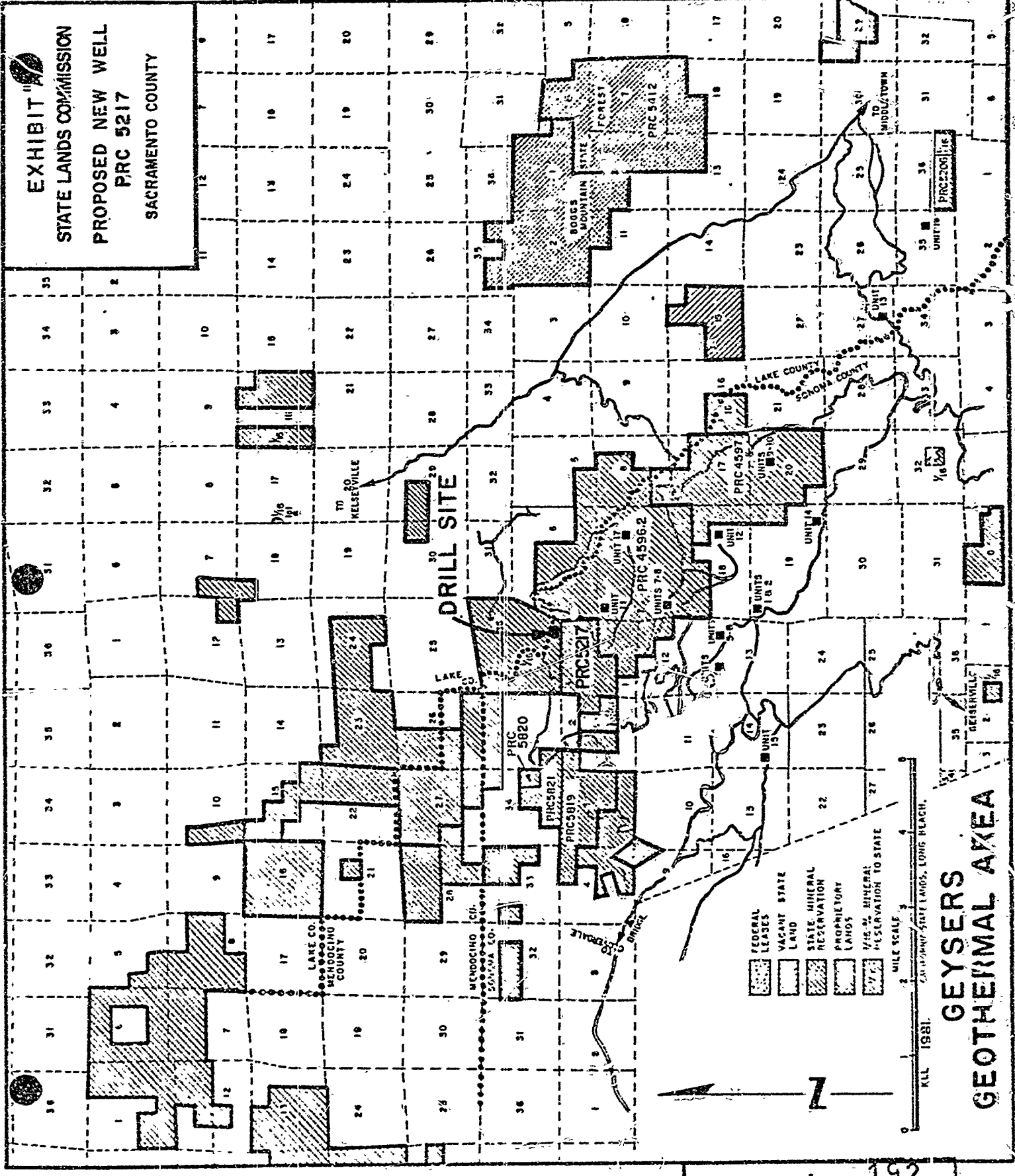
EXHIBITS:           A. Site Map.   B. EIR Summary.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT AN ENVIRONMENTAL IMPACT REPORT HAS BEEN PREPARED FOR THIS PROJECT BY THE SONOMA COUNTY BOARD OF ZONING ADJUSTMENTS AND CERTIFIED ON JUNE 26, 1980.
2. CERTIFY THAT THE INFORMATION CONTAINED IN THE ENVIRONMENTAL IMPACT REPORT BY THE SONOMA COUNTY BOARD OF ZONING ADJUSTMENTS HAS BEEN REVIEWED AND CONSIDERED BY THE STATE LANDS COMMISSION.
3. DETERMINE THAT THE PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.

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4. AUTHORIZE THE APPROVAL OF DRILLING WELL "PRATI STATE 5217" 1 IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF GEOTHERMAL RESOURCES LEASE PRC 5217 AND THE RULES AND REGULATIONS OF THE COMMISSION.



## SUMMARY

SITE SPECIFIC ENVIRONMENTAL REPORT FOR GEOTHERMAL RESOURCES  
DEVELOPMENT ON THE WILDHORSE LEASEHOLD OF AMINOIL USA, INC.  
AT THE GEYSERS, SONOMA COUNTY, CALIFORNIA

The environmental report covers site specific impacts and mitigations for well "Praci State 5217" 1, the Wildhorse Leasehold of Aminoil USA, Inc. Basic information regarding leasehold environmental status and project intent will be found in the Final Environmental Report for Wildhorse #5, prepared by the Sonoma County Planning Commission, and certified by the State Lands Commission at its meeting on August 26, 1976 (Minute Item No. 25).

Location

This site is located approximately 750 feet west and 400 feet north of the southeast corner of Section 36, T12N, R9W, MDE&M. Good existing access is provided to the site from the west through Union Geothermal Division's steam field. Four-wheel drive access is possible from the southwest through the Black Oaks Ranch.

Topography

The proposed well site is just below the crest of the main ridge line of the Mayacmas Mountains. Site topography is irregular and occupies the uppermost reaches of an ephemeral drainage way. Within the confines of the site, the slopes are moderate near the ridge crest and increase in steepness downslope to the southwest. Site elevation is about 3100 feet.

Beyond the borders of the site, the gradient of the drainage way steepens abruptly and remains so until it empties into Bear Canyon Creek at a point about 1/2 mile southwest of the ridge crest and nearly 900 feet vertically below it.

Geology

Upslope areas of the site are underlain entirely by graywacke sandstone, while lower areas are underlain by chert and graywacke. The contact between rock units trends in a westerly direction and it is assumed to be depositional in nature.

At the surface, graywacke is yellowish-buff brown and well weathered. Beneath the surface, it becomes progressively less weathered, harder and grayish in color. Throughout the site and nearby areas, the graywacke is massive, generally close fractured and locally cut by occasional shears. At the surface, it is generally soft and friable, becoming progressively more competent with depth. A thin, generally less than 2 feet, patchy sandy/clayey soil overlies portions of this rock unit.

Cherts are maroon in color, well bedded (one to four inches in thickness), very hard, fractured and locally contorted. Interbedded with the cherts are similarly colored, brittle shales, a fraction of an inch in thickness. The chert unit appears to dip into the hillside northward, but limited outcrops make this relationship uncertain. Thin patchy, rocky, clayey soils overlie this unit.

No springs or seepage areas were observed issuing from these rock units within or immediately adjacent to the well pad. The presence or absence of shallow groundwater will have to be determined by subsurface exploration undertaken by the applicant for well pad design purposes.

#### Geologic Hazards

No landslides or other geologic hazards were observed which would preclude or seriously constrain pad and sump construction as is presently proposed. The well pad is subject to earthquake induced ground shaking, as is the entire Geysers area. While such shaking can be damaging, its effects can be minimized through careful design and construction.

#### Vegetation and Soils

Vegetation on the site is a Chamise Community growing on a Stoneyford Gravelly loam. Soils are very thin and not well developed. The Chamise Community is typical of such soils in the Mayacmas Mountains and consists of chamise (Adenostema fasciculata), scattered buckbrush (Ceanothus cuneatus), and manzanita (Arctostaphylos glandulosa) (cf. pp. 55-63 Neilson et al 1975).

#### Geotechnical Considerations

There appears to be sufficient space available to construct a pad and reserve pit at the site selected. The preliminary drawing suggests that overall dimensions are roughly 225 by 250 feet with the reserve pit having a capacity of about 1.2 million gallons.

Because of irregular terrain, considerable grading will be required to construct the pad and pit. Cut slopes about 40 feet high and fill slopes about 40 feet deep will result. However, major, highly damaging slope instability is not anticipated in properly constructed cut and fill slopes. Some minor sloughing and/or raveling may occur in cuts, particularly those constructed in weathered graywacke and chert. A balance cut and fill should be possible. Site rock materials should be excavated without blasting, provided modern, heavy-duty grading equipment is used. Lower portions of cuts may encounter some wetness; subdrains should be installed in all wet areas and beneath all fills placed over natural drainage ways.

#### Impacts of Site Development

Anticipated impacts associated with site development, as is presently proposed, are listed below. In compiling this list certain assumptions were made. They were: 1) that the applicant would undertake sufficiently detailed civil engineering and geotechnical engineering design



studies for the subject site, 2) good quality construction and construction observation would be adhered to, 3) and an adequate program of site maintenance or site reclamation (in the event that resource is not encountered) would also be adhered to. If these conditions are not met, severity and number of impacts would increase.

Impacts anticipated are:

- Removal of vegetation within the boundary of the site.
- Moderate to moderately high topographic alteration and drainage modification.
- Minor amounts of raveling, sloughing, and slumping of cut slope faces. This should not create a hazard to the site, sump, or well heads.
- Minor amounts of erosion induced siltation introduced into the drainage way downslope of the site. This introduction would diminish after the first year or two following construction. Runoff would carry some of this silt down drainage and, thus, would create an off-site impact in part.
- Seismic ground shaking on the site caused by one or more earthquake events on one or more of the region's known or potentially active faults. Ground shaking would not be related in any way to pad development. The most likely result of such shaking would be to cause or aggravate cut slope failure.

#### Mitigations for Site Development

The site selected by the applicant appears to be feasible for the intended use.

Mitigations suggested for the site are:

- Plans and specifications prepared by a civil engineer with assistance from an engineer specializing in soil mechanics and an engineering geologist. Plans and specifications should be approved by the County or their authorized representative prior to construction.
- A geotechnical investigation should be conducted for the following purposes: 1) to explore and evaluate soil, groundwater, and geologic conditions, 2) to provide soil engineering criteria for the proposed grading, 3) to evaluate site stability under static and earthquake conditions, and 4) to assess the potential for reserve pit leakage.
- Grading observation and testing should be conducted by a qualified observer on a full-time, or nearly full-time basis during construction.
- To the extent possible, the pad should be designed on the basis

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of balanced cut and fill. This would eliminate the need to export or import materials. Large sliver fills should be avoided.

- Should site construction result in excess spoils, the spoils should be placed on as stable a location as possible. This location should be selected by the County's environmental consultants working with the applicant.
- Site surface drainage should be collected into adequately sized culverts or lined ditches and directed toward the reserve pit. Energy dissipators should be installed at all outfalls into soil or highly weathered rock.
- Underdrains should be installed beneath fills placed over natural drainage ways and in areas of wetness encountered during site grading.
- If practical, all cut slopes in soil or highly weathered rock should be seeded and fertilized as necessary. This should be done prior to the first heavy rains after construction. The progress of the reseeding program should be evaluated and, if necessary, repeated. Fill slopes should be either ripped or seeded as above, whichever is more appropriate from an erosion retardation standpoint.
- A program of long term maintenance should be developed by the applicant or the County to insure continued performance of the site.
- Upon completion of drilling, the reserve pit should be abandoned according to State and County requirements.
- The chamise community is widespread throughout the region. No special measures need be applied to protect vegetation except to confine operations to the site and not wantonly destroy plants outside this boundary.
- No rare species or species of special concern have been noted over the several years (1975, 1976, 1978, and 1980) of observations on the site.