impacts might be compounded is so low that a "cumulative impact" could not properly be identified.

Note: If the chances of a significant spill occurring at one plant is .01 (one out of a hundred), the chances of spills occurring at two plants is .01 + .01 = .02 (two out of a hundred). But the chances of two spills occurring at the same time are .01 x .01 = .0001 (one out of ten thousand

Finally, the "worst-case scenario" for various impacts is similar when considering a specific site. The probability of the worst-case scenario occurring once is high enough to be seriously considered, but the probability of the worst-case scenario repeating at all of the sites that might be developed Valley-wide is very low, so the cumulative impact should be projected from the most probable individual impacts, not the "worst-case" impacts.

In the following summary, the impacts identified are generally significant but subject to being mitigated substantially or to insignificant levels.

ACOUSTICS

Localized noise levels will increase in the vicinity of individual well drilling sites and power plants throughout the Valley. Unless located very near to sensitive receptors, these impacts will not be significant, and mitigation can be applied at the project level, if necessary. Because of the probable project spacing Valley-wide and normal noise attenuation and absorption, there will be no cumulative effect.

AIR QUALITY

It is probable that the H_2S standard would be violated by certain individual power plants throughout the Valley, as well as on a cumulative basis. Mitigation in the form of abatement measures will therefore have

to be established on a project-by-project basis and to mitigate possible Valley-wide impacts, mitigation measures might need to be applied to plants which themselves did not exceed standards.

BIOLOGICAL RESOURCES

Agricultural Lands and Habitat: Loss of vegetation (agricultural and habitat) will accompany each new power plant and related well field. On the project level, the loss of sensitive or already limited habitat could be significant. Because the precise locations of each power plant to be built throughout the Valley are not currently known, it is impossible to predict with any accuracy whether the cumulative loss of a sensitive habitat (such as riparian) will be significant or not. Based on the locations of the known power plants, the loss of vegetation (either agricultural or habitat) is projected to be 2040 acres. Even if all of this is agricultural (perhaps 1700 acres will be) it represents less than one half of one percent of the County's agricultural land. The impact will be cumulative but it will not be significant.

Spills: The potential for geothermal fluid spills will exist throughout the geothermal resource areas. Spills could have significant, adverse effects on vegetation, animals, waterfowl, and aquatic resources. This effect would normally be most severe on a highly localized basis, while the fluid is still hot and before any degree of dilution has taken place. Cumulatively, if such spills occurred with some regularity and were allowed to reach nearby watercourses, impacts on downstream biological resources, including those in the Salton Sea, could be significant. Past history indicates that such spills -- particularly major ones -- do not occur frequently, and when they do occur, are controlled rather quickly. In addition, as a standard practice imposed by the County, a site-specific

Spill Contingency Plan has been proposed as a mitigation measure for each plant. It is felt that this will reduce any potential spill on biological resources to below significant levels both individually and cumulatively.

Species Disruption: Potential disruption of high-interest biological species and avian species could occur through loss of habitat, increased noise levels or transmission lines. However, this impact is highly site-specific. County-wide, it is felt that this potential impact will not reach cumulatively significant levels, based on our current knowledge of power plant and transmission line placement.

CULTURAL RESOURCES

No significant, long-term cumulative impacts on known cultural resources are expected to occur as a result of full-field geothermal development in Imperial Valley.

GEOLOGY

Groundshaking: At least one significant seismic groundshaking event (over magnitude 6.5) is expected to occur naturally during the next 30 years in Imperial Valley. The direct and indirect impacts resulting from damage to plants can be mitigated by proper design and construction standards on a site-specific basis. No significant cumulative effects will result from seismic groundshaking.

Ground Rupture. The potential for ground rupture will exist throughout the Valley, and could produce serious damage to structures built across faults. Mitigation is available on a site-specific basis. There is no cumulative impact.

Induced Subsidence: The potential for induced subsidence will exist which would exceed the rate occurring naturally and which would be cumulative.

One, where geologic conditions and good reservoir management require, higher injection rates would be prescribed. Two, should a case of detrimental subsidence occur in only a few of the 60 plant sites involved in full development, that would not be cumulatively significant. Three, the type of cumulative subsidence that might occur would be minimal and more probably generalized and thus not detrimental. Four, the County-wide subsidence monitoring system throughout the Valley will provide sufficient warning for adequate mitigation measures to be taken. At this time, and with the above provisions, it would appear that injection programs which provide for water self-sufficiency will not, on a Valley-wide cumulative basis, result in significant subsidence.

Induced Seismicity: Because of the limited amount of data available for the Imperial Valley geothermal resource, it is too speculative at this time to draw specific conclusions as to whether significant seismic events will or will not be induced by geothermal operations. The impact could be cumulative, but the trend of accumulating evidence is that it would not be detrimentally significant.

Soils: Within the major geothermal resource areas, soils generally have high shrink-swell characteristics and low bearing capacities. They are subject to liquefaction, lurching, and similar failures. They are corrosive to metals and concrete. If design of geothermal projects does not consider soil characteristics and bearing capacities, significant hazards to the plant, its personnel, and the surrounding environment could exist. Proper project design and construction will mitigate this hazard on a site-specific basis. There are no cumulative impacts.

Groundwater: Leakage through well casing, ineffective grout seals, seepage from holding ponds or spills could occur and contaminate groundwater. Although these impacts are potentially significant, the quality of the groundwater in most of the geothermal resource areas is so poor as to have no beneficial uses. Such impacts would also be cumulative. The site-specific mitigation measures will reduce the cumulative impacts to insignificance.

Surface Water: The potential for significantly degrading surface water will exist, particularly if a major spill or well blowout occurs. The potential severity of this impact would tend to increase the closer a given project is to a sensitive watercourse or to the Salton Sea. However, mitigation at the project level, such as a spill contingency plan, does exist which will reduce the potential for impact to below significant levels.

Water Usage: Full field development will require about 180,000 acre-feet annually (AFA). If steam condensate is not used for cooling throughout the Valley, adverse impacts to water availability and quality could occur. On the other hand, if steam condensate is used for cooling at full field development for the entire geothermal resource, and less than 100 percent reinjection is permitted, no outside sources of cooling water will be required and no adverse water supply impacts will occur.

The trend would appear to be for water self-sufficiency for about two-thirds of the projects. A minimum of at least 60,000 AFA probably will be required. Where individual plants may require external water, potential significant effects would be Valley wide. What impacts occur will be cumulative. They are expected to be primarily on the rivers and the Salton Sea. If drain water is the source, then the impact would

be direct. If canal water is the source, then arguably there would be no impact. (This assumes that Colorado River water diverted into Imperial County is all designated for some user agricultural, domestic, geothermal, etc., and would not otherwise enter the system). As noted in the Alternative section, water management practices by water users in the future are uncertain, but probably will change. In any event, the study by the UCLA Department of Environmental Science and Engineering for the Southern California Edison Company (Oritschilo, et al) discussed in the South Brawley Program EIR indicates that the water impact of geothermal development will be minor whatever the usage.

Flooding: Most of the probable development sites are flat and subject to some ponding and flooding. The impacts would be entirely on the facilities themselves. Protective measures can be taken. There would be no other significant effects and no cumulative effects.

LAND USE

Patterns of Use: Full field development of the geothermal resource throughout Imperial County will result in a significant change in land use patterns from rural, agricultural and recreation uses to a mixture of these plus geothermal-related industrial uses. This impact may be individually significant within certain geothermal resource areas having a high degree of recreation or open space. It will also be cumulatively significant on a Valley-wide basis.

Crop Dusting: On a cumulative basis at full development, the placement of wells, power plants, electrical distribution lines, and transmission lines, could significantly affect aerial cropdusting activities. For power plants and wells, mitigation can best be accommodated at the individual project level. For electrical lines, it should be addressed

when area-wide facilities improvements are being considered. Careful planning at the project level can reduce any potential impacts to below significant levels.

TRAFFIC

Temporary increases in traffic, probably significant, occur at the times of construction. These are not cumulative. The established facilities will contribute to increased traffic levels which will be cumulative, but probably not significant for staff and clients. The traffic and safety effect of transporting solid waste from geothermal power plants throughout the Valley, to currently approved landfill sites could be significant. This could be true for individual resource areas as well as cumulatively, from all resource areas in the Valley. Full mitigation of this potential impact would require cooperative efforts between not only geothermal developers and the County, but would also involve other agencies, such as Caltrans.

VISUAL

Cumulatively, a significant impact on the visual characteristics of the Valley will occur as a result of full-field geothermal development. The extent to which visual impacts are detrimental is largely subjective. Aesthetically, the good or bad of something is how well it looks like what it should. Thus far, geothermal facilities and transmission lines have been viewed as intrusions on the "natural" landscape, and mitigations have been aimed at masking and dulling their impacts. Geothermal facilities might now be considered normal to the Valley as are agricultural activities.

WASTE DISPOSAL

The bulk of the waste material will be injected back into the reservoir. Most of the "flash" technology facilities will generate solid wastes, some of which may be hazardous. Some may generate liquid wastes which will not be injected. The drilling of wells generates wastes requiring disposal. The impacts can be mitigated by site specific measures. The cumulative impacts are on the capacity of the various County disposal sites and on the Class II-1 site and their shortened life. Additional sites might be needed in the future. An additional cumulative impact is discussed above under traffic.

SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

The significant irreversible change involved if this plan is implemented would be depletion of the resource.

Assuming that all of the mitigation measures outlined within this and the incorporated documents are adhered to, and the power plants and related structures are dismantled and the areas returned to their previous condition, then few impacts of an irreversible nature should occur other than depletion of the geothermal resource. However, given the long-term dynamics of full field development, and the social, economic and physical changes that will accompany such development, it is probable that the ambiance and way of life currently experienced by existing residents and visitors to the area could not be fully restored to its current state. In this context, development of 3000 MW of power would produce an irreversible set of impacts. Because the resource is being heated, even depletion of the resource can be viewed as not irreversible, but only over a period of hundreds of years.

Summary of Mitigation Measures. The following discussion is representative of mitigation measure suggested in the incorporated documents. It is not intended to be exhaustive. The inclusion of a specific mitigation here, or in any EIR, does not mandate its implementation nor exclude other measures which might be employed to mitigate impacts.

ACOUSTICAL

Noise control measures, may include: hospital-type mufflers on all diesel equipment used within 1000 feet of any residence; mufflers on all well venting and testing equipment used within 1000 feet of any residence; limiting the hours of heavy truck traffic, well site preparation, and pipe racking within 1000 feet of any residence; in-line mufflers or rock mufflers to reduce power plant steam venting noise; blowoff silencers on noncondensable gas vent stacks; shielding of the turbine/generator and condensor/air ejector; limiting the hours of hydroblaster use when used within 1000 feet of a residence; and limiting the daily or annual periods for drilling or testing of wells when located within 1000 feet of any sensitive wildlife.

AIR QUALITY

Projects should utilize cooling towers with high draft elimination efficiency; orient cooling towers along the axis of maximum wind speeds to reduce downwash potential; organize plant layouts to site cooling towers away from adjacent fields to prevent deposition of heavy splash droplets; and monitor cooling water chemistry. Power plants should not be lined up parallel with principal wind directions, and should be located sufficiently far from populated areas to prevent exceeding the state ambient H_2S standard. They should be sited so as to reduce the potential for overlap of hydrogen sulfide pollution plumes from different plants. Plant design

should include a system of hydrogen sulfide control that can be easily installed if cummulative H_2S exceeds standards even where individual plants may not. An H_2S monitoring program to determine source contributions and dispersal patterns may be required.

Fugitive dust emissions can be controlled by such measures as applying watering, clean gravel, oil, or soil stabilizers to access road, well sites, and construction areas, enforcing reduced travel speed and limiting access to unpaved areas; and paving regularly used roads and parking areas.

During construction, impacts of worker travel and those on limited transient housing can be eased by development of temporary housing, such as a trailer park or camp, on or near the construction site, to house the workers, or arrangements with local hotel operators for long-term leases for adequate rooms, should be considered.

AGRICULTURAL

Liquid transmission lines should utilize existing easements or right of way whenever possible and provide means to maintain adequate ingress and egress to fields. Careful power plant siting, directional drilling, and pipeline design can reduce land consumption and minimize interference with agricultural activity. Transmission line construction should also be coordinated with local planning and irrigation schedules. Crop production should be allowed within rights-of-way and transmission lines should follow roads and canals when possible. Measures listed elsewhere include those to avoid interference with aeriel applications, subsidence, fluid spills, and cooling tower drift.

BIOLOGICAL

To reduce impacts on wildlife and biological resources, studies should be conducted for proposed project sites which have not been surveyed.

Geothermal production projects should be oriented away from sensitive habitat areas. Drilling during "bird season" (Oct. - Feb.) may be limited in such areas. A one-half mile buffer should be placed between sensitive areas and geothermal facilities, and specific measures, such as noise attenuation devices or spill containment structures, may be required if these buffer zones must be encroached upon. Facilities should be oriented away from the Desert Microphyll Woodland, Creosote Scrub, and other sensitive vegetation communities where possible. Site-specific surveys in these areas should be conducted in springtime to determine the presence of sensitive plant species.

Mitigation measures to reduce surface water quality degredation from geothermal fluid spills are equally applicable to reducing the potential for impact from these spills on aquatic resources. Selection of dredging periods for causeway construction should be flexible to minimize impacts to habitats and to prevent artificially increasing suspended sediment which can contain toxic materials.

To the extent feasible for specific projects, limiting offshore exploratory and development activities to identified environmentally safe technologies may be appropriate. Undergrounding of transmission lines should be considered in major flight corridors such as the New and Alamo Rivers, within one mile of the Salton Sea shoreline and near the wildlife refuge and hunting clubs. Transmission lines should be constructed with appropriate conductor seperation, insulation near poles, or installation of perches, to minimize raptor electrocution.

CULTURAL

A site-specific cultural resource survey should be conducted in any area where there is a high potential for the discovery of archeological

resources. If any unusual specimens of bone, stone, or ceramic are dscovered during construction, all construction affecting the discovery site should cease until a qualified archaeologist reviews the specimens, and recommends appropriate steps.

GEOLOGY

Geotechnical investigations at each facility site should be conducted to locate fault traces and determine soil characteristics. No structures should be built on or across faults. Facilities should be designed to adequately withstand expected soil liquifaction, corrosiveness, and expansiveness. Wells should avoid drilling through a fault plane at less than 1300' depth. Geothermal production projects should be built in accordance with the County building code requirements of the Uniform Building Code, as adopted by the County, applicable to "Seismic Zone 4". All structures and facilities should be designed in accordance with the publication entitled "Recommended Lateral Force Requirements and Commentary by the Structural Engineeers Association of California". The structural components of the facility should be reviewed and approved by a structural engineer licensed in the State of California.

Monitoring programs to detect induced subsidence and seismicity should be conducted. If evidence of detrimental subsidence induced by project operations is indicated, changes in operations may be required such as increasing the amount of injected fluid, altering well locations or spacing, changes in production or injection depth, or limitation or cessation of activities. Corrections, such as releveling canals or fields, may be appropriate. If evidence of detrimental seismicity is revealed, appropriate changes in field operations may be required.

HYDROLOGY

Ponds holding geothermal fluids should be lined with materials which will prevent fluid escape. Injection wells may require monitoring in areas where near-surface groundwaters are usable and could be impacted. Berming around power plants and well pads; development of emergency containment plans; lining of basins so that permeability does not exceed $1x10^{-6}$ cm/sec; and off-site disposal of solid geothermal wastes only to an approved facility should be employed to prevent contamination of groundwater. The quality of groundwater may be monitored by sampling agricultural drainage sumps.

Plant design should include a system of pressure and flow sensing devices and regular inspection of all geothermal fluid lines which is capable of detecting leaks and spills. The plant site and well pads should be graded and constructed so that any spills are diverted into overflow brine ponds or storage basins. Precautions, such as extra heavy pipe, block valves, or automatic injection pump shut-off and check valve systems, should be installed at any drain, canal, or water crossings as necessary. Each geothermal production project operator should develop an emergency and disaster plan to reduce the extent and severity of any major fluid spill. Appropriate blowout prevention equipment should be used with all wells.

The hazards of flooding should be avoided by raising facility levels above expected flood levels, or the construction of adequate berms and levees. Investigation of the use of agricultural waste waters, Salton Sea waters, condensation waters and desalinized brines, as possible sources for use in geothermal production, should be encouraged. Participation in

studies with local, state and federal agencies and with industry, to determine long range water sources should be pursued. Practices that conserve water should be encouraged.

LAND USE

In addition to those measures listed to mitigate impacts on agriculture and wildlife areas, the consolidation of pipe lines, transmission lines, wells, and plant sites, use of "islands" and slant drilling can reduce both the use of land and the impacts on adjacent land uses. Especially recreational land use impacts can be reduced through planning and cooperation with the California Department of Fish and Game, the United States Fish and Wildlife Service, and local sport clubs. Any development within local "spheres of influence" should involve early and detailed consultation with the affected city.

TRAFFIC

To mitigate traffic and transportation impacts, railroad transport of heavy and large components should be considered, where appropriate; and proper escorts and warning signs should be used for oversized loads. On site parking should be provided, and carpooling and staggering of work-shifts should be considered. Improvement of roads and intersections may be required; and consultation with Caltrans should be employed to insure proper coordination.

VISUAL

Fluid lines should be horizontal, except where design constraints require otherwise. Shrubs, trees and ground cover should be painted and maintained to complement the appearance of the project in accordance with a landscaping plan approved by the County. All lights should be directed

or shielded to confine any direct rays to the site and be muted to the maximum extent consistent with safety and operational necessity. Facilities should be painted or wrapped with nonreflective colors to blend in as much as possible with the surrounding terrain to the extent consistent with safety and operational necessity. Electric transmission lines should be designed and constructed to minimize visual impacts. Alternately, where a facility's existence cannot be ignored, and attempts to mask or dull it would be unattractive, artistic techniques which accented its dynamic and interesting aspects might be visually more satisfactory.

ALTERNATIVES TO THE PROPOSED ACTION

The proposed project is the adoption of a revised geothermal section to the General Plan. This proposal can be described as establishing policies that will facilitate geothermal development while imposing reasonable restrictions. The following is a discussion of the various alternatives to the proposed project.

No Project (simple):

If this project is not approved, the existing Geothermal Element of 1977 with its supporting EIR will remain as the County's basic geothermal policy documents. They also promote development with reasonable restrictions, but contain some outdated material, and notably project 4500 MW's of development. The anticipated result of this alternative would be greater impacts than the proposed project.

No Project (positive):

In addition to not adopting the proposed project, the County could take the positive action of rescinding its existing Geothermal Element and related policies. There would then be no specific County policy on geothermal development, and it would depend on regular zoning and use permit processes. The immediate affect would be confusion, uncertainty, and curtailment of geothermal development and planning for development in Imperial County. The Division of Oil and Gas would assume CEQA lead agency status for exploratory projects. Although the extent of actual development in the long term would be difficult to assess, with no limiting guidelines, environmental impacts would be based on the worst case, maximum development scenario imaginable -- perhaps 6000 MW to 10,000 MW, and be much greater than the impacts of the proposed project.

No Project (radical):

In addition to the above positive rescinding action, the County could possibly take steps to abdicate responsibility for permitting geothermal

projects so that development would be regulated by state and federal agencies alone. This also would generate confusion and stop all development for several years. The levelt of long-term development is impossible to predict, but would be limited. The ultimate impacts might be more or less than the proposed project.

The important consideration, however, is not the policy document itself - the geothermal plan - but the probable development it anticipates. Alternatives which county policy might anticipate could be as follows:

No Development:

The County could attempt to prohibit all geothermal development. This would result in confusion, disruption of a portion of the economy, and numerous legal challenges. The end result probably would fall into the realm of the "positive" or "radical" no project alternatives above.

Severe Restrictions:

The County could adopt policies applicable to all projects, not just geothermal, and which were directed toward eliminating all undesirable impacts (e.g. 25 foot height limits in view areas, no night glare, no noise levels above 45 db, etc.). These might stand up to legal challenge. Such policies might effectively eliminate most geothermal development and thus produce the fewest environmental impacts. This scenario might also eliminate the generally conceded beneficial impacts to the local economy (tax revenues and employment) from geothermal development.

Area Restrictions:

Geothermal resources occur in geographically limited areas. Facilities to use the resources must be sited generally within one mile of the resource location. Wells to tap the resource can have their surface locations from one quarter up to one and one-quarter mile away from the down hole site. Thus, assuming necessary adjustments in leasehold arrangements and with

some added drilling and construction costs, loss of energy, and added impacts from extended fluid lines; areas with dimensions of from one and one-quarter to two and one-quarter miles might be avoided without seriously curtailing the proposed development scenario. Restricting development in larger areas would simply represent incremental variations on the no development alternative. The extent to which this was extended, and consideration of specific areas excluded, would determine the extent to which this alternative received legal challenge. The large areas possibly considered for exclusion might be agricultural, wildlife areas, and the Salton Sea.

Excluding agricultural lands would eliminate eighty to ninety percent of geothermal development, and thus most of the impacts. But, the impacts on agricultural operations are minimal and the total agricultural land used by the proposed project is 2040 acres, or only 1/2 of one percent of the Valley's agricultural land. There is no basis for arbitrarily excluding some agricultural lands and not others.

Excluding development within the Salton Sea itself is an alternative discussed in the Salton Sea MEIR. However, two-thirds of the off-shore areas are under federal jurisdiction and geothermal lease sales have already been held. Of the 1400 MW's anticipated in the Salton Sea MEIR, less than 200 MW's were projected to be offshore. BLM, rather than Imperial County, will make the significant policy decisions concerning the extent of permitted geothermal development in the off-shore areas of the Salton Sea KGRA. Nevertheless, this exclusion could be exercised within the overall objectives of this plan.

Factors which might affect the desirability of this alternative are:

The best geothermal resources thus far located are on the edge of the Salton Sea. Indications are that equal or better resources lie off-shore.

Development within the sea is not necessarily environmentally detrimental and some positive impacts could occur. There could be improved fish habitat and the possibility of pass-through cooling using sea water with the only water usage being a slightly increased evaporation rate from the slightly increased water temperature.

At this writing (July 1984) substantial changes in water management practices by water users and the Imperial Irrigation DIstrict (IID) are anticipated. These and other factors foretell a lowering of the sea level from its current record high of -226 feet. IID's recent annual usage has been about 2,800,000 acre-feet annually (AFA), with approximately 1,100,000 AFA flowing into the Salton Sea. IID's drain water inflow to the Salton Sea is about 71 percent of the total flow into the sea. The Department of Water Resources has estimated that IID could conserve 438,000 acre-feet per year. Of this, at least 200,000 AFA would be a decrease in flow to the sea. A 100,000 AFA change in inflow represent approximately a 5.5 foot change in Salton Sea equilibrium level. (See Figure 10 which provides the annual evaporation rate of the Salton Sea). Thus, an eleven foot drop in sea level is reasonable to anticipate. Such a drop would cause the bulk of the roughly 20,000 acres of areas under County jurisdiction which are now "off-shore" to become "on-shore." (Data from State Water Resources Control Board Water Rights Decision 1600, June 1984).

Both agricultural lands and the canal and drain system are "wildlife habitats." None of these is expected to be significantly affected by the 3000 MW development scenario. The most substantial wildlife habitats are those of the Finney-Ramer and Salton Sea areas. Finney-Ramer

is not in a projected development area. The Salton Sea MEIR discusses in detail wildlife areas. The 1400 MW scenario used for the MEIR and this plan, in fact, represents "exclusions" of wildlife areas. Without the various "sensitive" areas present there, the development scenario for that study area alone would have been 3000 MW. It was reduced more than half to avoid and reduce impacts on the sensitive wildlife areas.

Timing Restrictions:

The most crucial impacts on the existing environment looming in the near future are those on the rivers and littoral areas of the Salton Sea. Substantially decreased water flow and increased salinity seem probable with or without geothermal development. These changes occurring in a year or two might be fatal to a number of species. Spread over ten years the species might easily adapt.

The impacts of any development are more severe when occurring abruptly. In August 1984 three commercial scale geothermal plants were under construction in the Imperial Valley. There is no indication of any sense of disruption nor any significant detrimental impacts.

Legal mechanisms for refusing to accept and process applications for geothermal development projects within the existing "G" zones probably do not exist. The County could exercise timing controls by delaying the creation of new "G" zones. As development continues and begins to approach the 3000 MW level, additional restrictions to limit possible cumulative impacts (such as the anticipated H_2S impact) may be applied and work to slow development.

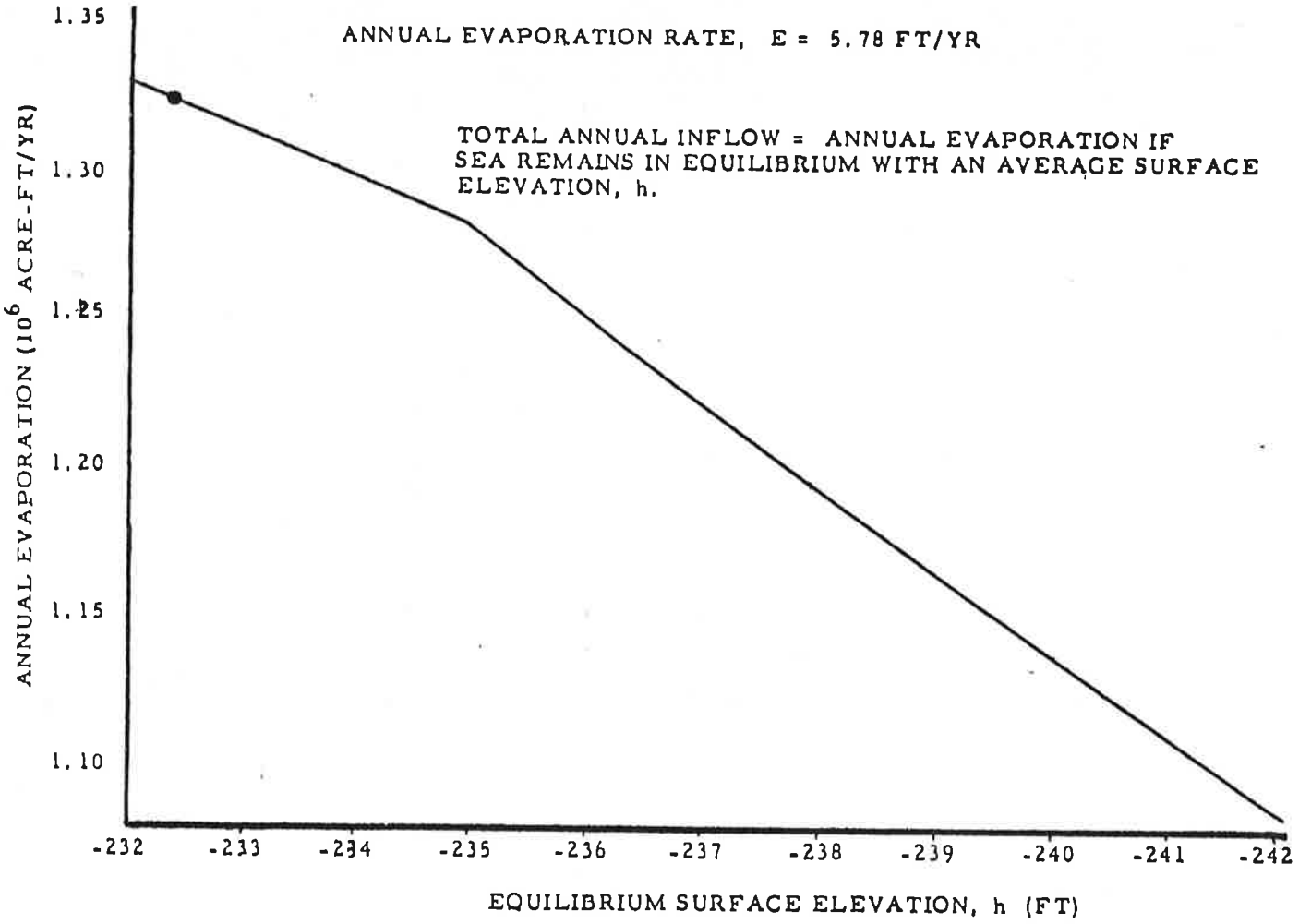
Minimal Restrictions:

The County could take the positive action of eliminating or easing most of its performance standards on geothermal development. There

would not be the uncertainty and confusion caused by some of the alternatives discussed above. Assuming that other regulatory agencies maintained their present policies (notably DOG, RWQCB, and APCD), neither the pace of development nor environmental impacts would change greatly. But there probably would be an increase of both. As the general government, Imperial County oversees all impacts - many of which are ignored by the special purpose agencies - traffic, noise, visual, archaeological, seismic, flooding, public facilities, recreation, and land use. This alternative does not anticipate that the County would cease issuing use permits or being lead agency for the preparation of EIR's on projects. Therefore, assuming the CEQA process was exercised properly, even most of these impacts would be identified and result in mitigating conditions on permits.

Among the alternatives that can feasibly achieve the objectives of this project, that is, 3000 MW of development, the proposed project of promoting geothermal development while imposing reasonable restrictions (which include both area and timing limitations) is the environmentally superior one.

Fig. 10



(Annual Evaporation from Salton Sea as a Function of Equilibrium Surface Elevation)

Source: "Salinity Control Study Salton Sea Project," Goldsmith, Feb. 1971

SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Full field development of 3000 MW of geothermal power in Imperial County will constitute a long-term benefit in productivity. Development of this energy source will constitute a small portion of the country's total energy needs. Nevertheless, it does represent an alternate energy source which is available. In addition, the project will benefit the local economy through increased employment and tax revenues. These benefits are expected to extend over at least 30 years, but eventually this resource will be depleted.

Estimates on the extent of the resource, its rate of replenishment, and even the rate at which development will deplete it, are somewhat tentative. Based on these, a maximum development scenario of 160 MW would be self-sustaining and not deplete the resource. Such an "alternative" would probably not justify the research and development efforts already expended. It also would not contribute to present energy urgencies, nor produce the above benefits.

Offsetting those benefits are the environmental impacts that might occur. Most can be mitigated to levels of insignificance. If not mitigated, a number of short to mid-term impacts would occur, the most significant being those listed below:

1. Spills, blowouts or structural collapse from earthquakes.
2. Surface water quality degradation from blowouts.
3. Air quality impacts (H_2S and cooling tower drift).
4. Increased noise levels.
5. Loss or disruption of biological habitat.
6. Incompatibility between geothermal development and residential units.

7. Increased safety hazards from transporting solid wastes to disposal sites.

8. Disruption of aircraft operation for cropdusting.

9. Loss of agricultural land and disruption of farming activities.

However, all of these impacts can be mitigated to insignificant levels, or substantially lessened.

SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSAL IS IMPLEMENTED

The cumulative impact discussion identifies the significant effects that will occur with implementation of this plan. The land use patterns, general ambiance and visual appearance of the Valley are the areas that will be impacted in ways which should be considered significant and not capable of being mitigated to insignificant levels. The extent to which these impacts are considered detrimentally significant is subjective and probably will change with time. The incorporated documents identify in greater detail unavoidable impacts for individual projects.

GROWTH INDUCING IMPACTS OF THE PROPOSED ACTION

The implementation of this plan will induce growth. The incorporated documents, especially the four "master" EIR's, contain more detailed analyses. Actual "induced" growth is expected to be moderate to small and almost entirely beneficial.

VI. ORGANIZATIONS AND PERSONS CONSULTED

In order to adequately address the issues of geothermal development in Imperial County, the Planning Department staff consulted with and/or requested information from the following organizations and individuals:

Federal

Bureau of Land Management
Department of Agriculture
Fish and Wildlife Service
Naval Air Facility (Seeley)

State

Department of Fish and Game
Department of Water Resources
Division of Oil and Gas
Department of Conservation
Air Resources Board
Department of Health
Department of Transportation
Regional Water Resources Control Board
Energy Commission
Department of Parks and Recreation
Native American Heritage Commission
Office of Historic Preservation
Public Utilities Commission
State Land Commission
Geothermal Resource Council

County of Imperial

Fish and Game Commission
Air Pollution Control District
County Department Heads
Agricultural Commissioner
Assessor's Office
Planning Commission
Superintendent of Schools
Fire Marshall
Public Library
Cooperative Agriculture Extension
Department of Public Works
Imperial Valley Ass'n of Governments
Coordinated Housing Authorities

Municipal

City of Calipatria
City of Calexico
City of Brawley
City of Holtville
City of El Centro
City of Imperial
City of Westmorland

School Districts

Calipatria Unified School District
Brawley Elementary School District
Calexico Unified School District
Heber School District
Holtville Unified School District
El Centro and Central School District
Brawley Unified High School District
Imperial Unified School District
Meadows Union School District
Magnolia Elementary School District
Mulberry Elementary School District
McCabe Unified School District
Palo Verde Unified School District
Sea View School
San Pasqual Unified School District
Valley View School
Westmorland Unified Elementary School District

Educational Institutions

California Institute of technology
University of California, Riverside
University of California, Natural Land/Water Reserve System
Berkeley, California
Imperial Valley College Museum

Others

Imperial Irrigation District
California Native Plant Society
Imperial Valley Pioneer Society
Soil Conservation Service
Coachella Valley County Water District
San Diego Gas and Electric

Others (continued)

Niland Chamber of Commerce
Heber Public Utilities District
Salton Sea Community Services District
Farm Bureau
Pacific Telephone
Southern California Water Company
Continental Telephone Company of California
Southern California Gas Company
Seeley Water Ditrict
Quechan Tribal Council
Winterhaven Water District
Palo Verde Irrigation District
General Telephone
State Clearinghouse
House of Hospitality
Indian Hill Library
El Centro Public Library
Brawley Library
Coachella Valley Association of Governments
Southern California Association of Governments
Southern California Edison Company
Chevron Geothermal Company of California
Salton Sea Chamber of Commerce
Bear Creek Mining Company
Imperial Magma
MCR Geothermal Corporation
Occidental Geothermal, Inc.
Phillips Petroleum Company
Republic Geothermal, Inc.
Ultrasystems, Inc.
Union Geothermal Division
Grace Geothermal
Lahontan, Inc.
H & W Drilling, Inc.
Geothermal Element Industrial Advisory Committee

Public

I.C. Geothermal Plan Citizens Advisory Committee

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(Not an exhaustive listing of document and personal referencess--bibliographical sources can be found in many of the above-referenced documents)

Environmental Impact Report (EIR) references:

Each of the documents incorporated herein has a Reference Section. Some, like the Salton Sea MEIR, have extensive and comprehensive references. Those References, plus the other documents cited above constitute the Reference Section for this EIR.

VIII. GLOSSARY OF TERMS

This listing of terms is not comprehensive. Terms defined in the text are not included. A few terms common in the industry, but not in the text are included.

ACRE FOOT	325,836 gallons of water, or equivalent to one foot of water spread over an acre of land.
AFA	Acre foot annually.
ALLUVIUM/ALLUVIAL	Unconsolidated sediments laid down in river beds, flood plains, lakes, fans at the foot of the mountain slopes, and estuaries during relatively recent geologic times.
AMBIENT	Encompassing atmosphere, or environment as in ambient air or ambient temperature; the normal undisturbed condition.
ANOMALY	A deviation or inconsistency from what is normal.
AQUIFER	A body of rock or sediment that contains sufficient saturated permeable material to conduct groundwater and which can yield significant quantities of groundwater.
APCD	Air Pollution Control District.
BLM	Bureau of Land Management, U.S. Department of Interior.
BLOWOUT	A sudden, explosive escape of fluids or gases from a well that can occur when subsurface formation pressures exceed pressures produced by the column of fluid in the well bore hole or by improper drilling procedures.
BOPE	Blowout Prevention Equipment.

BRINE	Fluids containing high salinity levels.
BTU	British Thermal Unit. Heat required to raise the temperature of one pound of water one degree farenheit.
CALORIE	Heat required to raise the temperature of one gram of water one degree celsius.
CASCADING HEAT	The process of routing geothermal fluid to a succession of users, each successive use requiring a lower heat content. A system using cascaded heat would thus provide the temperature fluid needed for each user's production process, beginning with supply to the highest heat user and ending with users requiring low temperature fluids.
CEQA	California Environmental Quality Act (CEQA) requires that projects approved by governmental agencies be reviewed for environmental impacts.
COGENERATION	Generation of two forms of energy from a single process, such as electricity and heat.
DIRECT HEAT USE	Geothermal energy directly used in any process or activity to provide thermal energy to industrial processes. Direct heat uses can also utilize the resource directly from a well, e.g. a fish farm, or can "cascade" exhaust heat from an electricity generating plant.
DIRECTIONAL WELL	Developers can slant drill a well to tap into a resource at some horizontal distance below the surface well location. The maximum amount of directional offset obtainable is determined by the depth of the resource: less for shallower resources, and more for deeper ones. Although directional wells are more costly to drill, less surface area is required for several wells from one location and need for transmission pipe lines is reduced.

DOG (CDOG)	California Division of Oil and Gas.
DRAWDOWN	Difference of water level, in feet, before and after a pump test.
DRIFT	A fine mist or droplets from a plant's cooling tower.
ENVIRONMENTAL IMPACT REPORT (EIR)	An informational document which". . .shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of an EIR is to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project." (CEQA, Section 21061).
FAULT	A zone of rupture in the earth along which there has been differential movement.
FAUNA	Animals or animal life.
FLORA	Plants or plant life.
GEOMORPHOLOGY	The branch of geology (science of the earth) which deals with the form of the earth, the general configuration of its surface, and the changes that take place in the evolution of land forms.
GEOTHERMAL	Geo: earth; thermal: heat; of or pertaining to heat within the earth.
GEOTHERMAL ELECTRIC GENERATION PROJECT	A geothermal project whose prime purpose is the generation of electricity for commercial distribution and sale, and whose energy is derived primarily from geothermal resources, and which project may, but need not necessarily, include the production

of the geothermal resource. Such project shall be classified as major, intermediate, or minor, as appropriate. (County Code Section 83101)

GEOTHERMAL GRADIENT

The rate of temperature increase with depth below the earth's surface. Usually expressed in degrees C/km or degrees F/ft. The average worldwide gradient is roughly 26°C/km or 1°F/70'.

GEOTHERMAL INTERMEDIATE PROJECT

A geothermal project which does not fall within the definitions of either a major or a minor geothermal project; that is, a project using more than one production and/or one injection well, or having a geothermal resource flow of more than one hundred gallons per minute (or fifty thousand pounds per hour); and using no more than six wells (production or injection in any combination), or having an average resource flow of less than two thousand gallons per minute (or one million pounds per hour). (County Code Section 83101)

GEOTHERMAL MAJOR EXPLORATORY WELL

Any well which in other respects may be to depths of such size as to be fully capable of producing any resource encountered, or being utilized for injection of fluids, but which is not permitted to produce or inject beyond that necessary to evaluate any resource encountered. A major exploratory well may not be flowed or utilized for injection of fluids for more than three months in any twelve month period. A major exploratory well permit may not authorize more than six wells. (County Code Section 83101)

GEOTHERMAL MAJOR PROJECT

A geothermal project for the large scale production or use of geothermal resources and which involves more than six wells (production or injection in any combination) or the average resource flow of more than 2000 gpm (or one million pounds per hour). (County Code Section 83101)

GEOTHERMAL MINOR EXPLORATORY WELL	A well less than one thousand feet deep drilled for monitoring purposes, and which is not permitted to produce or inject any resource. Minor exploratory wells may be flowed only to the extent necessary to clean out the well and take measurements and samples. A minor exploratory well permit may authorize up to twenty-five wells. (County Code Section 83101)
GEOTHERMAL MINOR PROJECT	A geothermal project for the production or use of geothermal resources and using no more than one production and one injection well, and a maximum geothermal resource flow of one hundred gallons per minute (or fifty thousand pounds per hour). (County Code Section 83101)
GEOTHERMAL OVERLAY ZONE	The designation of a Geothermal Overlay Zone ("G" Zone) indicates that the zoned area is generally appropriate for geothermal development. "G" zoning permits minor projects and major or intermediate projects with a conditional use permit.
GEOTHERMAL PROJECT	Any activity to discover, test, produce, or use geothermal resources. A project whose intended purpose is the discovery, test, production, or use of geothermal heat, minerals or other products, or a project which encounters or produces resources over 140 degrees Farenheit or with over 10,000 parts per million total dissolved solids, is a geothermal project. The use of heat, minerals or other products which may initially have derived from geothermal resources produced by a separate project, shall not in itself classify a project as a geothermal project. (County Code Section 83101)
GEOTHERMAL TEST FACILITY	A geothermal project which may include the drilling of wells, the construction of any or all of the components necessary to test and evaluate a production or utilization facility, and the operation of the test facility and all of its components including the production and injection of geothermal resources, for a period not to

	exceed five years after commencement of the project, and with no commercial activities permitted in connection with the project, beyond those which may be incidental to the test facility project. (County Code Section 83101)
gpm	Gallons per minute.
H_2S	Hydrogen sulfide; a noncondensible gas.
HEAT EXCHANGER	In geothermal operational systems, it transfers heat from a high temperature geothermal fluid to a secondary working fluid, e.g. isobutane.
HEAT FLOW	The amount of earth heat moving radially outward per unit surface area unit time, expressed as microcalories/cm^2sec.
INJECTION	The returning of produced fluids (geothermal) back into the reservoir from which they came through disposal/injection wells.
KILOWATT	A unit of power equal to 1,000 watts.
KILOWATT HOUR (KWH)	Use of one kilowatt for an hour. Use by which electricity is normally sold. In 1984 typical prices ranged from $.04 to $.12 per KWH in California.
mg/l	Milligrams per liter. Approximately equal to ppm.
MAGMA	Molten rock which is the heat source for geothermal reservoirs and systems.
MANTLE	The spherical shell of the earth's interior lying beneath the crust and above the core that is about 2,900 kilometers thick, hot, and plastic.

MEGAWATT (MW)	A unit of power equal to 1,000,000 watts; electricity sufficient to meet the needs of 1,000 people.
MEIR	Master Environmental Impact Report; a document which analyzes full-field development of a particular geothermal resource area.
NEGATIVE DECLARATION	A written statement briefly describing the reasons that a proposed project will not have a significant effect on the environment and does not require the preparation of an Environmental Impact Report.
NEPA	National Environmental Policy Act of 1969; similar to CEQA and applicable to projects under federal jurisdiction.
NONCONDENSIBLE GAS	Gases which do not condense to fluids under the operating conditions (temperature and pressure) maintained in a condenser.
OFFSET WELL	Same as Directional Well.
PERMEABLE	Rock, sediment, or soil that allows penetration of fluid.
ppm	Parts per million. Approximately equal to mg/l.
RESERVOIR	A natural underground rock formation with certain properties of porosity and permeability, or fracture systems enabling it to contain liquids e.g. brine, water, oil. A liquid-dominated reservoir contains primarily fluids in liquid form; a vapor-dominated reservoir contains primarily gases and/or steam.
RUNOFF	The discharge of water through surface drains; refers to the rate water is removed by flow over the ground surface.

GLOSSARY (continued)

RWQCB	Regional Water-Quality Control Board.
SALINITY	A measurement of the quantity or concentration of dissolved salts in water.
SCALE	Solids precipitated from geothermal brines deposited on piping and equipment.
SCENARIO	An assessment or synopis of a projected/planned course of action.
SCRUB	The removal of gases from air emissions.
SEDIMENTARY ROCK	Rock resulting from the consolidation and cementation of loose sediments. It is commonly formed in layers.
SEISMICITY	Earthquakes and related earth movements and vibration. Micro seismicity involves events less than 2.0 Richter magnitude. Creep involves movement without a measureable event.
SHRINK-SWELL	Susceptibility to volume change due to loss or gain in moisture content of the soil.
STRATIGRAPHY	The classification of layered rocks and geologic time into various units.
SUBSIDENCE	A local ground movement involving downward settling or sinking of the earth's surface by natural or human activity.
TDS	Total Dissolved Solids; describes the chemical constituents dissolved in geothermal brines. Expressed as mg/l or ppm.

TECTONIC	Characteristic of, or relating to, the structure of the earth's crust and its deformation; also used to describe shocks produced by movements along faults.
TEMPERATURE GRADIENT SURVEY	A survey to sample temperature at successive points in a drill hole to determine the temperature increase with depth.
TOPOGRAPHY	General configuration of land surface; its relief and natural or man-made features.
TURBINE	A rotary engine actuated by the reaction/impulse of a current of steam.
TWO PHASE FLOW	A flow of both brine and steam of various fractions through a geothermal system.
UNIT/UNITIZE	Two or more geothermal lease holders may form a "unit agreement" providing for development of the resource by a "unit operator" for the benefit of all the lease holders. The purpose of unitizing a field is to provide for more efficient development of the resource.
ug/m^3	Micrograms per cubic meter. Commonly used to measure concentrations of contaminants in air. Roughly equivalent to ppm.
WATT	A unit of power equal to 1 joule per second. An electric current flow of one ampere at one volt. One horsepower equals 746 watts.
WELL	A hole drilled into the earth to reach a supply of water, brine, gas or oil.
WELL LOG	A record of certain geophysical properties of rock penetrated by a well, from which the physical character of the rock can be determined.
YIELD	The production of a well, in gallons per minute, for the drawdown indicated.

CONVERSION TABLE

Acre	=	43,560.	sq. feet
	=	4,047.	sq. meters
	=	.4047	hectares
Acre Foot	=	325,836.	gallons
	=	7,758.	barrels
Barrel	=	42.0	gallons
	=	5.6146	cubic feet
British Thermal Unit (BTU)	=	.2928	watt hour
	=	.2520	kilogram calorie
Centimeter	=	.3937	inch
Foot	=	30.48	centimeters
	=	.3048	meter
Gallon	=	3.785	liters
	=	.1337	cubic feet
Hectare	=	2.471	acres
Horsepower	=	.7457	kilowatt
	=	42.44	BTU per minute
Inch	=	2.540	centimeters
Joule	=	Energy produced when 1 Newton of force applied moves 1 meter in the direction of the force.	
Kilogram	=	2.2046	pounds
Kilometer	=	3,281.0	feet
	=	.6214	mile
Kilowatt	=	1.341	horsepower
Kilowatt-hour	=	3,413.0	BTU's
Liter	=	1.0567	quarts
	=	.2642	gallon
Meter	=	3.281	feet
	=	39.37	inches
Mile	=	5,280.0	feet
	=	1.609	kilometers
Mile per hour	=	1.4667	feet per second
Ounce (Avoirdupois)	=	28.3495	grams
Part per million	=	.05835	grain per gallon
Pound	=	7,000.0	grains (.4536 kilogram)
Quart (liquid)	=	.946	liter
Temp. Centigrade	=	5/9 (Temp. Fahr. -32)	
Temp. Fahrenheit	=	(9/5 Temp. Cent. +32)	
Ton (long)	=	2,240	pounds
Ton (metric)	=	2,205	pounds
Watt	=	1.0	joule per second
Watt-hour	=	3.415	BTU's
Yard	=	.9144	meter

Source: Assoc. of Oilwell Servicing Contractors, Basic Data Manual, 1981.

IX. COMMENTS AND RESPONSES TO THE DRAFT ENVIRONMENTAL IMPACT REPORT

Pursuant to the requirements of the California Environmental Quality Act, letters of comment are reproduced here exactly as received, except that brief notes are added to each letter indicating how responses were made to the comments. Most letters combined comments on the Plan and the EIR. All of the comments received on the Plan are included here, and where appropriate (correction of data, improvement of description, etc.) responses have been made. But, unlike the EIR, the Plan is a policy document. Generally, no response has been made to comments on policy portions of the document. In addition to the letters, several respondents returned marked up copies of the draft noting typographical and grammatical errors and suggesting various sentence and other editorial revisions. Many of these helpful suggestions have been incorporated, but such "comments" are not reproduced here.

This Plan is a portion of the County General Plan, and all of the portions constitute an integrated whole. Information in each of the "elements" of the General Plan is part of the data base for the whole Plan and for each of its parts. At the time of revision of this Geothermal Plan, the Conservation and Open Space "Elements" are being revised and combined. Pertinent to some of the following "comments" is the incorporation of the "Natural Diversity Data Base," prepared and regularly updated by the California Department of Fish and Game, into the Conservation Element.

This Plan and EIR (November 1984) is essentially the same as the October Draft considered by the Planning Commission. Changes made by the Commisison (pages 66,67,69 and 72) have been incorporated, and a few errors corrected.

There are some notable differences from the August 1984 Draft circulated for review. The "County Overview" to the General Plan (pages 98-137) and "Response to the Notice of Preparation" (pages 176-271) in the August

Draft are not reproduced here. Several of the maps have been revised and combined and a figure on Brine Chemistry and a representative summary of typical mitigation measures has been added. Page numbers in the comment letters refer to the August Draft, not this document. Although page numbers are different, with the exception of the changes noted above, the organization of the document remains the same.

Some comments clearly require no response and are marked "No Response Necessary." A response of "Comment Noted" indicates general concurrence with the comment, but that it duplicates existing language or provisions, provides interesting but non-pertinent information, or otherwise requires no special response, and that no revision to the text has been made. Responses, where brief, are made directly on the commenting letter. Otherwise, they are in the following Response Section (beginning on page 178).

LETTERS OF COMMENT

Southern California Edison Company

P.O. BOX 5080
235 E. BADILLO STREET
COVINA, CALIFORNIA 91723

October 12, 1984

RECEIVED
OCT 18 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

Philip Shafer
Planning Department
Imperial County Courthouse
El Centro, California 92243-2856

Subject: Imperial County General Plan
Draft Review

Dear Mr. Shafer:

Southern California Edison Company has reviewed the Draft Geothermal/Transmission Plan and Environmental Impact Report portion of the County's General Plan. The draft, as presently written, has incorporated the comments from our previous review of the Geothermal Plan. It appears that environmental regulations and concerns will be adequately addressed as the geothermal resource is developed through the various procedures and activities described in the Plan.

Again, thank you for the opportunity to review and comment on these draft documents.

Very truly yours,

D. L. BARNES
Special Services Consultant

DLB:rm

cc: E. C. Hutchins

NO RESPONSE NECESSARY.

Chevron

Chevron Geothermal Company of California
595 Market Street, San Francisco, California
Mail Address: P.O. Box 7147, San Francisco, CA 94120-7147

RECEIVED
OCT 11 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

October 9, 1984

Mr. Richard D. Mitchell
Planning Director
Imperial County Planning Department
Courthouse
El Centro, CA 92243-2856

Dear Mr. Mitchell:

Thank you for affording Chevron Geothermal Company an opportunity to be involved in the preparation of and to comment on the final Draft Geothermal/Transmission Plan of the Imperial County General Plan. We perceive this plan, just as its name implies, to be a general tool used by the County Administrators to promote the development of geothermal resources in a manner compatable with the overall objectives, policies and goals of Imperial County. Recognizing these ideals, this document must be flexable to encourage the development of geothermal resources, while securing the welfare of the populous and protecting the environment.

Our brief comments on the final draft are attached. We commend the fine work of your staff in the preparation of this plan.

Thank you for your time and consideration regarding our comments. We at Chevron are committed to the long term development of geothermal resources within Imperial County and a continued excellent relationship between the County Administrators and ourselves.

Sincerely,

Mark Kehoe

J. M. Kehoe

Enclosure

COMMENTS TO THE DRAFT GEOTHERMAL/TRANSMISSION PLAN

p.47 Figure No. 6

Both drawings suggest that the cooling tower blowdown water is injected into the reservoir. However, most power plants, either on-line or under construction, dispose of the blowdown by surface discharge or circulation to secondary systems. The injeciton wells are not "re"-injection, strike "re".

p. 74 "Therefore, the County may:"

The word may allows the County a degree of flexibility in dealing with the issue of seismicity, rather than locking the County into certain requirements if the word will was used.

p. 77 Third paragraph, first sentence, line 2

"and 15 to 40 wells each will be built": replace will with may.

p. 140 Groundshaking:

The first sentence is unclear: How does one predict the life of the "geothermal resource" (or does it mean geothermal power plant)? What is a significant event (magnitude 3 or 8)? and Is it implying that a significant groundshaking event is the result of the geothermal resource or its production?

Revisions have been made to the text to incorporate or respond to all of these comments.

San Diego Gas & Electric

RECEIVED
OCT 04 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

October 2, 1984

Mr. Richard D. Mitchell
Planning Director
County of Imperial
Courthouse
El Centro, CA 92243-2856

Dear Mr. Mitchell:

Following in response to your letter of August 27, 1984, are San Diego Gas & Electric's comments on your County General Plan, Draft Geothermal/Transmission Plan and Environmental Impact Report. We appreciate the opportunity to review and comment on the Draft, and to have been involved by your staff in its preparation.

Page 47, Figure No. 6

The simplified flash and binary conversion cycle diagrams show cooling tower blowdown going to reinjection wells. While this may occur in some plants, the more typical design would be discharge to a surface drain. Mixing with brine and reinjecting may cause scaling and plugging of the wells. Further there may be beneficial consequences of surface discharge such as reducing salinity of the Salton Sea. Attached is a copy of Figure No. 6 with suggested modifications.

Page 69, Water Use and Conservation

To be consistent with the EIR Section discussion on Water Usage, page 142, the following changes are suggested beginning with the sixth line. The inference that two-thirds of the projects will be flashed-steam type is too strong.

> "The development of the 3,000 mw scenario may ~~will~~ require approximately 180,000 acre-feet of water per year. The trend would appear to be for water self-sufficiency for about two-thirds of the projects. ~~Current data indicates that approximately two-thirds of the projects can be supplied by condensate from the power plant.~~"

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Page 73, Economic, Fiscal and Social Impacts

The economic, fiscal, and social benefits of geothermal development are recognized on pages 62 through 67. In addition, and using power plants as an example, on-site fire protection and security, off-site road improvements if necessary, and utilities are provided at developer expense. The discussion on page 73 should, then, connote recognition of the benefits and improvements. The following changes are suggested:

- "The County intends that the positive ~~to maximize~~ benefits will outweigh the ~~and minimize~~ negative impacts of geothermal development. The proportionate costs of... should be supported ~~paid~~ by the geothermal industry."

Page 143, Patterns of Use

The discussion states that impact of full field development of geothermal resources on land use patterns will be individually and cumulatively significant in areas having a high degree of recreation or open space. It is recognized on pages 139 (Agricultural Lands and Habitat) and 150 (first paragraph) that impacts on agricultural lands will not be significant. Except possibly for the Salton Sea zone, it can be expected that geothermal developments will by design avoid designated recreation or open space areas within the County's geothermal zones. It may be reasonable to postulate that development in the Salton Sea zone could have significant impact on recreation or open space values depending on location. The following change is suggested:

- "...This impact may ~~will~~ be individually and cumulatively significant within the Salton Sea ~~certain~~ geothermal zone ~~resource area~~ which has ~~having~~ a high degree of recreation or open space value. ~~It will also be cumulatively significant on a valley-wide basis.~~

Sincerely,

Michael W. Danna

Michael W. Danna

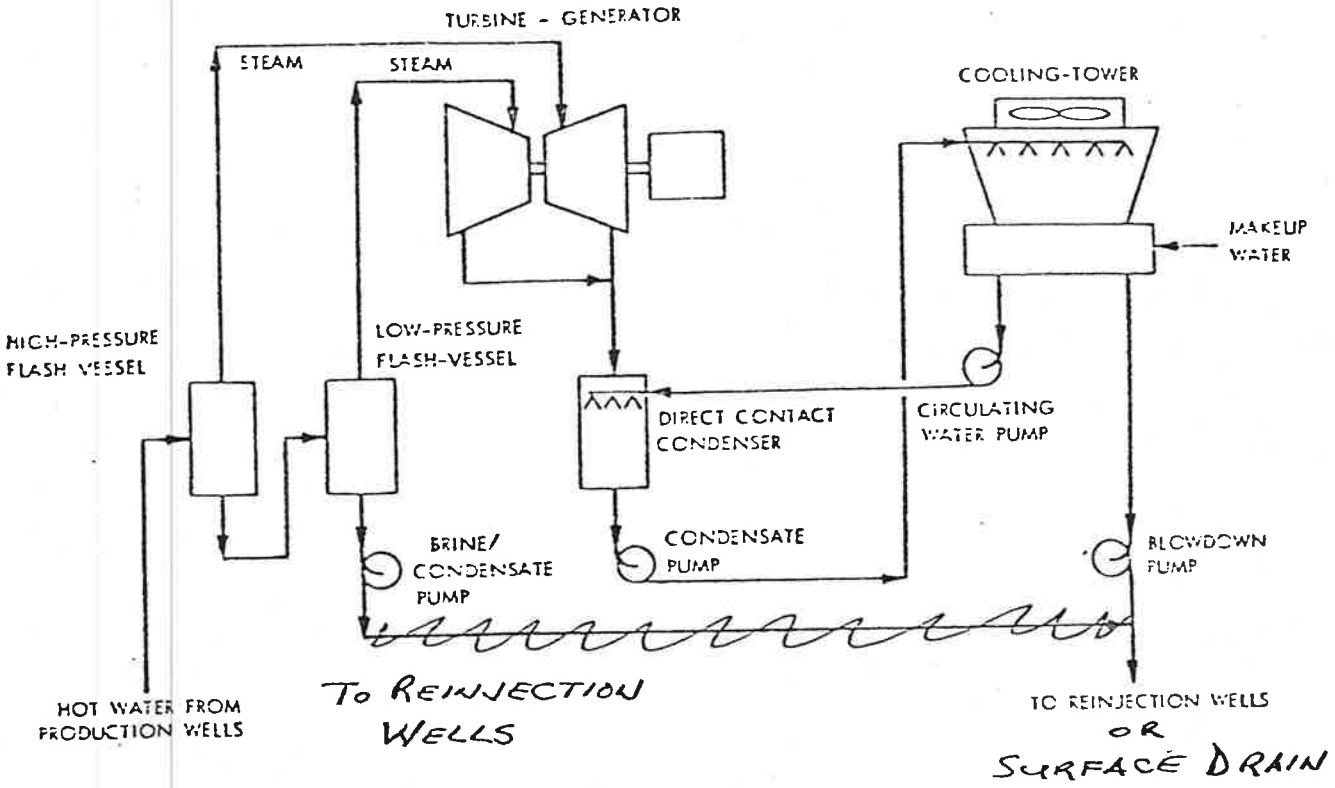
MWD:mcm

Attachment

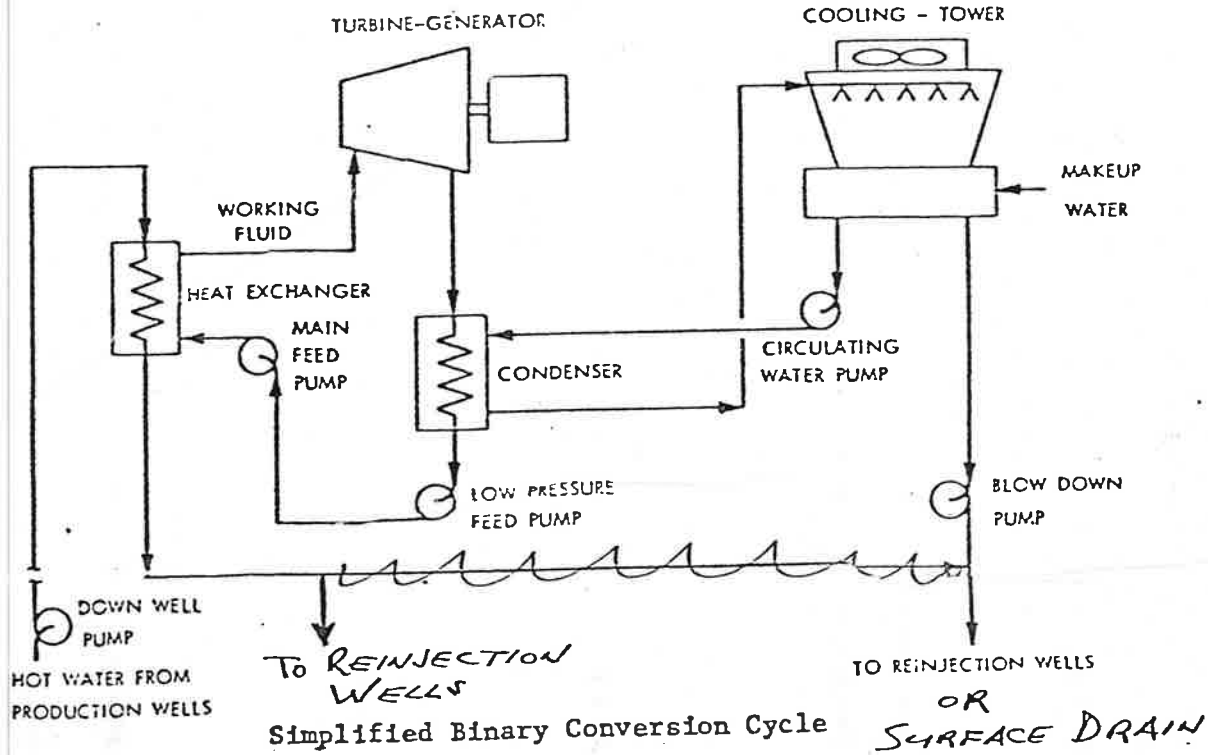
cc: E.M. Gabrielson R.G. Lacy G.W. Pennington

SEE FOLLOWING RESPONSE.

FIGURE NO. 6



Simplified Flashed-Steam Conversion Cycle



Simplified Binary Conversion Cycle

TELEPHONE 619-339-9200

IMPERIAL IRRIGATION DISTRICT

OPERATING HEADQUARTERS · IMPERIAL, CALIFORNIA 92251

IIDGM

September 10, 1984

RECEIVED
SEP 12 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

Mr. Richard D. Mitchell
Planning Director
County of Imperial
939 Main Street
El Centro, CA 92243

Dear Mr. Mitchell:

Subject: Draft Geothermal/Transmission Plan and Environmental Impact Report Section of the Imperial County General Plan

Following are Imperial Irrigation District comments on subject report in response to your letter dated August 27, 1984.

- Page 23 opposite Heber under "OWNER/OPERATOR," should read "SDG&E/IID/Others.
- Page 43 on fourth and fifth lines, delete "is then available for injection" and substitute "must be injected."
- Page 71 under "Transmission Line Siting," first subdivision, add the word "major" after the word "All" so that it reads "All major transmission lines be located..."
- Page 102 under "4. WATER RESOURCES," three lines from the bottom after "Imperial Irrigation District" delete "and the Bard Irrigation District."
- Page 114 under "Irrigated (Agriculture) Imperial Valley" the figures shown are 512,163 acres, which does not correspond to Imperial Irrigation District records. Enclosed is a copy of the IID Annual Inventory of Areas Receiving Water for the Years 1981, 1982 and 1983, the back side of which gives various acreages under II SUMMARY OF AREA SERVED. We are providing this in order that the correct figure for Imperial Valley may be selected for the report.
- Page 127 in the third line, delete "the Yuma Project Reservation Division of the U.S. Bureau of Reclamation provides water to the Bard Irrigation District and the Fort Yuma Indian Reservation" and

change it to read "and Bard Irrigation District supplies water to the Winterhaven area."

- Page 143 delete in the first line "use policies of IID for" and substitute "management practices by water users in..."

- Page 149 at the second paragraph reads "At this writing (July 1984) substantial changes in water management practices by the Imperial Irrigation District (IID) are anticipated." Insert the words "water users and" after the words "practices by" so that the sentence will read "At this writing (July 1984) substantial changes in water management practices by water users and the Imperial Irrigation District (IID) are anticipated."

Thank you for the opportunity to comment on this report.

Yours truly,

CHARLES L. SHREVES
General Manager

Enclosure

Numbers 1,3,7 and 8 have been incorporated. Numbers 4,5, and 6: The pages referred to have been deleted from this Geothermal Plan. The suggested changes are appropriate to the "County Overview" portion of the General Plan and have been incorporated into that document.

Number 2: Although the suggested change describes typical permit requirements, the discussion is of typical plant operations. The physical process through the plant does leave 80% "available for injection," but that physical process doesn't mandate it.

II SUMMARY OF AREA SERVED

	ACRES		
	1983	1982	1981
Field Crops	401 150	487 398	500 601
Garden Crops	77 827	88 469	85 155
Permanent Crops	22 859	18 602	14 279
Total Acres of Crops	501 836	594 469	600 035
Total Duplicate Crops	61 089	133 113	136 948
Total Net Acres in Crops	440 747	461 356	463 087
Area Being Reclaimed: Leached	5 178	3 959	1 112
Net Area Irrigated	445 925	465 315	464 199
Area Farmable but not Farmed during Year (Fallow Land)	52 592	16 618	15 108
Total Area Farmable	498 517	481 933	479 307
Area of Farms in Homes, Feed Lots, Corrals, Cotton Gins, Experimental Farms, and Industrial Areas	13 646	13 903	13 905
Areas in Cities, Towns, Airports, Cemeteries, Fairgrounds, Golf Courses, Recreational Parks, Lakes, and Rural Schools, Less Area Being Farmed	16 047	14 508	14 113
Total Area Receiving Water	528 210	510 344	507 325
Area in Drains, Canals, Rivers, Railroads, and Roads	74 018	73 513	73 161
Area below -230 Salton Sea Reserve Boundary and Area Covered by Salton Sea, Less Area Receiving Water	39 481	39 417	39 417
Area in Imperial Unit not Entitled to Water	63 933	63 933	63 933
Undeveloped Area of Imperial, West Mesa, East Mesa, and Pilot Knob Units	269 619	288 054	291 425
Total Acreage Included - All Units	975 261	975 261	975 261
*Acreage Not Included - All Units	87 029	87 029	87 029
Total Gross Acreage within District Boundaries	1 062 290	1 062 290	1 062 290

IMPERIAL IRRIGATION DISTRICT

R. Wilson

J. R. WILSON, Manager
Water Department

*Acreage within District Boundaries that is not Included in District.

IMPERIAL IRRIGATION DISTRICT
ANNUAL INVENTORY OF AREAS RECEIVING WATER
YEARS 1983, 1982, 1981

I CROP SURVEY

GARDEN CROPS	ACRES 1983	1982	1981
Beans	79	165	20
Blackeyed Peas	85	0	0
Broccoli	4 427	2 306	2 466
Broccoli (Seed)	258	40	35
Cabbage	31	444	510
Cabbage, Chinese	32	22	3
Cabbage (Seed)	37	198	25
Carrots	7 402	8 917	6 605
Carrots (Seed)	104	218	0
Cauliflower	151	84	179
Cauliflower (Seed)	27	20	60
Celery	161	533	551
Chicory	0	6	3
Collards	0	25	53
Cucumbers	137	155	173
Dill	0	0	36
Ear Corn	510	658	2
Eggplant	18	2	4
Endive (Seed)	18	18	0
Fava Beans	27	54	20
Fennel	3	3	0
Flowers	187	229	111
Flowers (Seed)	79	0	0
Garlic	376	306	159
Herbs, Mixed	55	52	9
Herbs (Seed)	67	26	157
Lettuce	26 086	31 086	36 997
Lettuce, Butter	0	0	35
Lettuce, Chinese	0	0	30
Lettuce, Red	0	0	35
Lettuce, Romaine	0	0	143
Lettuce (Seed)	382	77	2
Melons			
Cantaloupes, Fall	5 319	6 547	7 680
Cantaloupes (Seed)	141	44	75
Cantaloupes, Spring	7 944	7 473	6 877
Casaba, Fall	18	41	215
Casaba, Spring	170	0	0
Crenshaw, Fall	366	873	513
Crenshaw, Spring	49	50	39
Honeydew, Fall	1 046	2 547	1 648
Honeydew, Spring	388	370	156
Kava Melons	21	10	0
Mixed, Fall	860	662	225
Mixed, Spring	270	135	8
Watermelons	4 972	5 354	3 917
Watermelons (Seed)	200	25	70
Mung Beans	0	33	105
Mustard	38	148	179
Mustard (Seed)	60	209	70
Okra	96	188	14
Okra (Seed)	96	466	194
Onions	7 248	10 013	5 739
Onions (Seed)	2 886	2 371	3 232
Parsley	72	20	0
Parsley (Seed)	0	79	0
Parsnips	0	20	0
Peas	0	15	1
Peas (Seed)	137	54	0
Peppers, Hot	0	8	46
Peppers, Sweet	120	12	35
Radishes	11	149	48
Radishes (Seed)	167	28	0
Rappini	184	156	305
Rhubarb	0	0	40
Rutabagas	36	40	21
Sesame (Seed)	15	2	0
Spinach	16	0	30
Squash	797	1 286	1 471
Squash (Seed)	0	34	0
Swiss Chard	0	1	20
Swiss Chard (Seed)	0	30	0
Tomatoes, Fall	0	18	666
Tomatoes, Spring	2 822	3 053	2 767
Turnips	105	205	150
Vegetables, Mixed	402	4	121
Vegetables, Mixed (Seed)	0	35	37
Waterlilies	16	17	18
Total	77 827	88 469	85 155

FIELD CROPS	ACRES 1983	1982	1981
Alfalfa	205 138	202 190	171 810
Alfalfa (Seed)	2 685	833	2 515
Alicia Grass	50	52	62
Barley	259	232	382
Bermuda Grass	2 816	3 684	3 745
Bermuda Grass (Seed)	16 428	7 849	5 929
Clover	150	20	20
Clover (Seed)	0	349	0
Cotton	18 079	42 217	80 001
Dichondra Grass	20	38	38
Field Corn	294	0	0
Grass, Mixed	30	276	204
Oats	274	717	39
Rape	267	0	0
Rye Grass	2 540	4 892	2 332
Rye Grass (Seed)	185	188	0
Safflower	0	0	109
Sali Cornia	10	0	0
Sesbania	75	0	0
Sesbania (Seed)	0	38	0
Sorghum Grain	1 616	2 335	2 300
Sorghum Silage	552	582	775
Soy Beans	0	181	145
Spirulina Algae	12	0	0
Sudan Grass	10 410	8 013	22 122
Sudan Grass (Seed)	228	0	0
Sugar Beets	39 525	37 607	43 921
Triticale Grain	0	58	55
Wheat	99 507	175 047	164 097
Total	401 150	487 398	500 601

PERMANENT CROPS	ACRES 1983	1982	1981
Asparagus	2 992	2 459	2 568
Citrus			
Grapefruit	464	444	294
Lemons	710	671	776
Mixed	390	191	191
Oranges	356	353	369
Tangerines	113	75	75
Dates	132	53	53
Duck Ponds (Feed)	12 908	8 169	8 064
Fish Farms	1 196	754	684
Fruit, Mixed	21	21	16
Grapes	30	0	0
Guar Beans	0	1 892	299
Jojoba	3 005	3 062	508
Nursery	0	5	5
Palms	13	11	9
Pasture, Permanent	449	386	312
Peaches	40	24	24
Pecans	40	32	32
Total	22 859	18 602	14 279

	ACRES 1983	1982	1981
Total Acres of Crops	501 836	594 469	600 035

Note: Crops are listed for the year in which they are predominately harvested.

SUMMARY

	1983		1982		1981	
Number of Farm Accounts		6 997		6 933		7 005
Number of Owner-Operated Farm Accounts	(32.0%)	2 225	(30.5%)	2 119	(32.1%)	2 250
Number of Tenant-Operated Farm Accounts	(68.0%)	4 772	(69.5%)	4 814	(67.9%)	4 755
Average Acreage of Farm Accounts		73.67		70.83		70.41

DEPARTMENT OF THE NAVY
NAVAL AIR FACILITY
EL CENTRO, CALIFORNIA 92243

IN REPLY REFER TO:
9210
Ser 30/ 0525
OCT 10 1984

RECEIVED
OCT 15 1984

County of Imperial
Attn: Mr. R. D. Mitchell, Planning Director
Courthouse
El Centro, CA 92243-2856

IMPERIAL COUNTY
PLANNING DEPARTMENT

Dear Mr. Mitchell:

The Geothermal/Transmission Plan and Environmental Impact Report Draft forwarded by your letter of 27 August 1984 has been reviewed. Our imput deals with a comment made on page 32 under the paragraph heading entitled "Military Use of County Lands". Specifically our concern is focused on the following Statement:

> The Bureau of Reclamation agreement with the Navy stipulates that if geothermal development occurs on Navy range land, then these areas are automatically exempt from the agreement.

This statement is an oversimplified description of one of many land use documents currently in effect in the Navy's range areas and only pertains to a portion of the total range acreage. We recommend that the above sited statement be replaced with the following statement or similar verbage which we believe to be more accurate:

> Range lands, used by the Navy for aerial weapons training activities, are controlled through a number of land use instruments, some of which allow for Geothermal developement and compatible use where practical.

We very much appreciate the opportunity to provide input to the General Plan Draft. If possible we would like to be placed on the distribution list to receive a copy of the final version of the Geothermal/Transmission Plan.

Sincerely,

E. G. GRAM
Captain, United States Navy
Commanding Officer

RECEIVED
OCT 12 1984
IMPERIAL COUNTY
PROBATION OFFICE

THE CHANGE HAS BEEN INCORPORATED.

CLAUDE M. FINNELL
COMMISSIONER - DIRECTOR - APCO

DARRELL E. BYRD
CHIEF DEPUTY COMMISSIONER - DIRECTOR
ASSISTANT APCO

COURTHOUSE
939 MAIN STREET
EL CENTRO, CALIFORNIA 92243
(619) 339-4314

IMPERIAL COUNTY

OFFICE OF
AGRICULTURAL COMMISSIONER
DIRECTOR OF WEIGHTS AND MEASURES
AIR POLLUTION CONTROL OFFICER

September 6, 1984

RECEIVED
SEP 07 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

Richard Mitchell, Planning Director
Planning Department
Courthouse
El Centro, CA 92243

Dear Mr. Mitchell:

RE: Draft Geothermal/Transmission Plan and Environmental Impact Report

Review of the document has been made by our office. Due to the inclusion by reference of other more detailed documents, we are satisfied on the technical aspects of air quality impacts and mitigation measures.

One document we refer to often since it is applicable to all of the county is "The Potential Air Quality Impact of Geothermal Power Production in the Imperial Valley", Gudiksen et al, LLL, UCRL-52797, October 1979. We would suggest its inclusion by reference in the final plan since we have found that air emissions as predicted in this report have been accurate despite being generalized.

Thank you very much for this opportunity to comment.

Sincerely,

Claude M. Finnell
Air Pollution Control Officer

Carlos Villalon
Air Pollution Control Engineer I

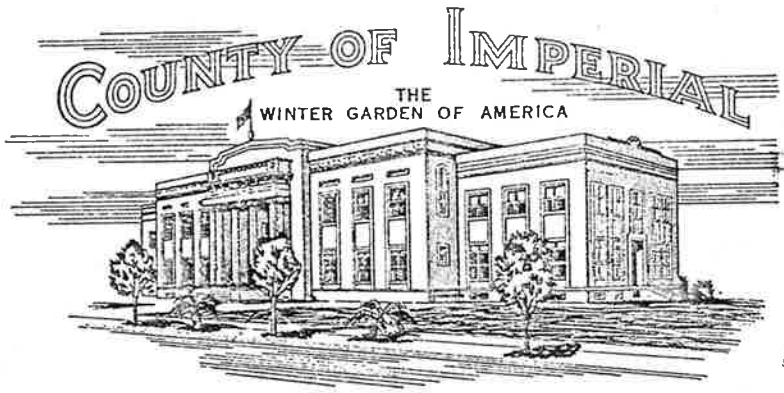
CV/ni

THIS SUGGESTION HAS BEEN INCORPORATED.

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

"The Largest Irrigated District in the World"

S. HARRY ORFANOS
DIRECTOR OF PUBLIC WORKS
COUNTY ROAD COMMISSIONER
COUNTY SURVEYOR
COUNTY ENGINEER



TELEPHONE
619-339-4462

RECEIVED
1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

DEPARTMENT OF PUBLIC WORKS
COURTHOUSE
EL CENTRO, CALIFORNIA 92243-2853

October 11, 1984

Mr. Richard Mitchell
Planning Director
County of Imperial
Courthouse
El Centro, CA 92243

SUBJECT: Comments on the Draft Geothermal/Transmission Plan Section of the Imperial County General Plan

Dear Mr. Mitchell:

We have reviewed the Draft Geothermal Plan. We believe that this Plan will prove to be an excellent information and guidance document for County staff, the geothermal industry, and the public. We wish to submit the following comments and suggestions for your consideration:

1. Page 2, Paragraph 1: Refer the reader to the "Glossary of Terms" contained in this Plan.

2. Page 15, Paragraph 3: This paragraph is irrelevant to the discussion of the history of geothermal development.

3. Page 31, Item 9: What is meant by "Regional Equity", as used by BLM?

4. Page 35, Last Sentence: Should sump volume be stated in acre feet, rather than acres?

5. Page 36, Paragraph 4: DOG's role in inspecting well drilling, blow-out prevention devices, and well operations should also be noted.

6. Page 37, Paragraph 2: "Directional hole" should be defined, either here or in the Glossary. Explain that because directional drilling allows wells to be clustered at the surface, less surface area is used for a cluster of wells than would be used for the same number of individual wells.

7. Page 37, Paragraph 4, Sentence 4: Delete the phrase "and toxic elements". This phrase is misleading, especially since no brine

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analysis is given in this Geothermal Plan. We suggest that some information on brine chemistry be included in the discussion of "Type of Resource and Temperature" (page 11) and/or "Mineral and Gas Extraction" (Page 53). A figure showing chemical analysis of a Salton Sea brine and an East Mesa or Heber brine could be included to provide additional information.

8. Page 38: Define what is meant by "abandon a well". For example: "well abandonment is a regulated process, under DOG supervision, for safely plugging a well and restoring a well site." Also, explain that drilling sites are cleaned up once drilling is completed, and only the well-head equipment and necessary piping and fencing remains on site.

9. Page 42, Paragraph 3, Sentence 3: This sentence implies that the developers have a choice regarding whether spent brine is to be injected. This is unlikely to be the case.

10. Page 45, Paragraph 3: For clarity, we suggest the following wording change: "...a combined flash/binary process where, after a flash cycle, the fluid is passed through...". Also, explain that a flash system requires temperatures over 350° F because, with current technology and price of competing energy sources, it is uneconomic to utilize lower temperature fluids in a flash system.

11. Page 46, Paragraph 5: Binary systems are not proposed for the high TDS resources, so minerals recovery is not as likely from a binary system.

12. Page 54, Paragraph 1: We suggest the following wording change: "Although the potential for mineral extraction appears favorable, extraction technologies are still under development...It appears that the flashed steam process will be most easily adapted to mineral extraction technologies".

13. Page 54, Paragraph 2: We suggest the following modification: "Geothermal brines contain some minerals that are of strategic value to the United States. Strategic materials are those having widespread industrial and military uses, which are not produced in sufficient quantities in the United States, and which are imported from countries where supply could be interrupted due to political problems. Figure 8 (page 55) lists strategic materials that could be extracted from geothermal brines".

14. Page 56: This discussion of solid waste disposal implies that all geothermal wastes are now taken to a Class II-1 disposal site. This is not the case. We suggest that Paragraph 1 and 3 be deleted and the following two paragraphs from the updated County Solid Waste Management Plan be inserted.

"Geothermal energy production creates large volumes of waste, much of it containing some heavy metals and salts. Wastes result from well drilling and testing, and power plant operation. Wastes can include rotary drilling muds, workover and clean out fluids, well testing fluids, geothermal brines and residues,

pretreatment sludge from cooling water makeup, and cooling tower and boiler blowdown sludges.

The RWQCB requires that geothermal wastes which contain in excess of 6,000 parts per million (ppm) total dissolved solids be disposed in a Class I or a Class II-1 landfill, wastes with less dissolved solids may go to certain Class II-2 sites. Five sites are authorized for the acceptance of geothermal wastes: IT Corporation Class II-1 site, and areas of the Brawley, Calexico, Holtville, and Salton City Class II-2 sites."

15. Page 70, Paragraph 3: "Well field program" is undefined, we suggest the wording: "Well field development programs covering production and injection plans are required by DOG for each major geothermal project."

16. Page 70, Paragraph 4: Since injection of non-geothermal fluids does not relate to subsidence concerns, paragraph 4 should be deleted from this section on subsidence. We suggest that this issue be included in the "Resource Maximization" section (page 71).

17. Page 71, Paragraph 1, Item 2: This item should read: "Request a CDOG subsidence review, if necessary, for consideration in determining County injection requirements."

18. Page 71, Last Item under "Transmission Line Siting": We suggest the following wording to clarify this item: "Transmission lines be consistent with this Geothermal Plan."

19. Page 73: We suggest the items under "Economic, Fiscal, and Social Impacts" be reordered and an additional item added, as below:

    - o Determine the services...
    - o Determine the costs...
    - o Assure that revenues resulting from geothermal development are sufficient to offset costs to the County of that development.
    - o Encourage employment...
    - o Encourage the establishment...

20. Page 76, Implementation measure 10: We suggest that this item be revised to assure that all County costs can be recovered. Suggested wording: "Determine the costs of processing applications, inspections, and monitoring (including major monitoring projects), passing costs on to geothermal developers through appropriate fees."

21. Page 159: Please add "Department of Public Works" following the Geothermal Coordinator title.

22. Glossary:

    - o "Abandonment of well" should include a description of what is involved in a well abandonment.
    - o "Blowout prevention" should describe devices and/or procedures used to prevent blowouts, rather than the

regulations related to blowout prevention.

- Suggested definition - "Cascading": The process of routing geothermal fluid to a succession of users, each successive use requires a lower heat content. A system using cascaded heat would thus provide the temperature fluid needed for each user's production process, beginning with supply to the highest heat user and ending with users requiring low temperature fluids.
- Suggested definition - "Co-generation": Generation of two forms of energy from a single process, such as electricity and heat.
- We suggest that geothermal major, intermediate, and minor project definitions not be included, since these definitions have not yet been formally adopted by the Board of Supervisors and because these definitions consist only of regulatory criteria to be used to distinguish one project from another; such criteria is subject to change. We also suggest that the last sentence from each exploratory well definition be deleted, because these sentences refer to a regulatory detail that could be changed.
- "Multiple Use" is not a recognized geothermal-related term. We suggest this be deleted.
- "Scrub": We suggest this definition be deleted.
- Define "unit/unitize": Two or more geothermal lease holders may form a "unit agreement" providing for development of the resource by a "unit operator" for the benefit of all the lease holders. The purpose of unitizing a field is to provide for more efficient development of the resource.
- Define "deviated or directional well": Developers can slant drill a well to tap into a resource at some horizontal distance below the surface well location. The maximum amount of directional offset obtainable is determined by the depth of the resource: less for shallower resources, and more for deeper ones. Although directional wells are more costly to drill, less surface area is required for several wells from one location and need for transmission pipe lines is reduced.
- We suggest that a more understandable definition of "Watt" be substituted for the current definition.

We hope these suggestions and comments are helpful in the preparation of the Final Geothermal Plan. We have enjoyed working with you and your staff in this project, and appreciate this opportunity to offer comments.

Sincerely yours,

S. Harry Orfanos

S. HARRY ORFANOS
Director of Public Works

SHO:MJR/kk

SEE FOLLOWING RESPONSE.

"The Largest Irrigated District in the World"

S. HARRY ORFANOS
DIRECTOR OF PUBLIC WORKS
COUNTY ROAD COMMISSIONER
COUNTY SURVEYOR
COUNTY ENGINEER

COUNTY OF IMPERIAL
THE WINTER GARDEN OF AMERICA

TELEPHONE
619-339-4462

RECEIVED
OCT 11 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

DEPARTMENT OF PUBLIC WORKS
COURTHOUSE
EL CENTRO, CALIFORNIA 92243-2853

October 11, 1984

Richard D. Mitchell
Planning Director
County of Imperial
Courthouse
El Centro, CA 92243

SUBJECT: Environmental Impact Report for the Draft Geothermal/ Transmission Plan

Dear Mr. Mitchell:

We have reviewed the EIR for the Geothermal Plan, and wish to submit the following comments.

1. Page 140, Groundshaking: We believe that the present wording does not accurately summarize the conclusions reached in the supporting material for this EIR. We suggest that the following wording will clarify and improve this section: "At least one significant seismic groundshaking event is expected to occur during the next 30 years in Imperial County. Damage to geothermal facilities from seismic groundshaking can be mitigated by proper design and construction standards on a site-specific basis. No significant cumulative effect will result from seismic groundshaking."

2. Page 140, Ground Rupture: A discussion of ground rupture has been omitted. We believe that the discussion of ground rupture should include: Ground rupture could seriously damage any structures built across fault traces (known or unknown faults). Site-specific geotechnical investigations can be used prior to the final selection of facility locations in order to minimize the threat of damage from ground rupture. Any impacts would be site-specific, no significant cumulative effects would occur.

3. Page 140, Paragraph 4: The topic heading of this item should be "Subsidence", rather than "Ground Rupture". We believe Sentence 1 should be clarified. We suggest: "There is a potential for geothermal development to induce subsidence in addition to the rate of subsidence occurring naturally. Induced subsidence effects would be cumulative."

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We do not agree with Sentence 2. Experience with geothermal development world-wide is limited. Subsidence is only considered a major potential problem in areas where surface improvements would be damaged by subsidence. At Cerro Prieto, for example, gravity readings and surveying have detected geothermal-related subsidence. Subsidence has not been considered a serious impact of development in Mexico, however, possibly because there are few competing land uses in the development area.

Finally, from Sentence 4 to the end of this section, an argument and a conclusion are presented. We would disagree with the conclusion (Sentence 4) if it was presented alone, because available data is insufficient for evaluating the potential for long term subsidence. As qualified by the four arguments which follow this statement, however, we do not disagree. Therefore, to properly qualify Sentence 4, we suggest that this section be set off in a separate paragraph and rearranged to present the four arguments first, followed by the conclusion.

4. Page 141, Induced Seismicity: It is possible that reservoir changes leading to induced seismicity could be cumulative for a specific reservoir. However, based on available information and analyses, experts seem to agree that any induced seismicity would be of low magnitude and thus is unlikely to be a significant detrimental impact of development. Based on our information, it appears that cumulative impacts of induced seismicity will not be significant on a Valley-wide basis.

5. Page 141, Soils: We suggest that the fourth sentence be revised to read: "If design of geothermal projects does not consider soil characteristics and bearing capacities, significant hazards to the plant, its personnel, and the surrounding environment could exist. Proper project design and construction will mitigate this hazard on a site-specific basis. There are no cumulative impacts."

We hope these comments are helpful in your preparation of the final EIR for this Plan. Thank you for the opportunity to comment.

Sincerely yours,

S. Harry Orfanos

S. HARRY ORFANOS
Director of Public Works

SHO:MJR/kk

SEE FOLLOWING RESPONSE.

Oroville

RECEIVED

SEP 07 1984

IMPERIAL COUNTY
PLANNING DEPARTMENT

Niland Chamber of Commerce

Post Office Box 97, Niland, California 92257

9/6/1984

Mr. Richard D. Mitchell,
Planning Director,
County of Imperial,
El Centro, CA. 92243

Re: Documents for review- Housing, County Overview, Geothermal Plan

Dear Sir:

The Final Drafts for Housing, County Overview and the Geothermal Element Plan have been reviewed and are very good presentations of the subjects covered.

We would have liked to have seen the wording furnished by the Planning Commission Chairman,during the Hearing on the Niland Geothermal, Inc. Permit relative to the routing of transmission lines in and aroung Niland, as a part of the Plan. It was specific as to encroaching on Town of Niland so that future developers would not have to go through the process if it were necessary for us to oppose line routing.

The information in the Housing Document pinpoints the problems for the un-incorporated areas. In Niland those problems center on inadequate sewer and water facilities. We have to surmount both before we can do anything about housing and the document certainly show we need housing. Neither of the above problems can be attainable without subsidizing from outside funds. Our sewer charges are very high and the Water Company has just aised the rates to slightly more than $1.00 per day and in order to have decent water to drink we have to purchase bottled water. The Southern Califonia Water Company does not furnish adequate water pressure nor distribution system to allow expanding the present system to include new housing. I see no indication that they intend to do anything about either one. There are a number of houses on Commercial Street that are not supplied a main for fire protection so not many people are going to build there although there is lots of good space. It seems that the County could force this issue through the Franchise process. I dont think they have approached that method.

We will get some housing upgraded thru the grant we received but the majority of the condemnable belongs to our older people with no way to do the extensive overhaul required except by puregrant. About the only way to get rid of the poorest housing would be to tear down the worst ones since it appears that as long as one is standing someone will try to use it. It usually is all they can afford. A program to tear them down and re-build would make more sense than to try to repair most of them with grant money. This is just an idea that someone in the County might include in future surveys.

The Chamber appreciates the opportunity to comment on such important projects as the three reviewed in this case. All documents are well done and reflect the expertise and competence of your staff and those participating in their preparation. It is a pleasure to work with your people.

Yours truly,

Niland Chamber of Commerce,
C C Irwin
C. C. Irwin, Public Relations Dir.

NO RESPONSE NECESSARY.

San Diego Chapter of the Sierra Club

House of Hospitality, 1549 El Prado, Balboa Park
San Diego, California 92101

RECEIVED
OCT 0 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

4 October 1984

TO: Richard D. Mitchell, Planning Director
Imperial County Planning Department
Courthouse
El Centro CA 92243

RE: Draft Geothermal Transmission Plan and EIR

The production of geothermal power is seen by the Sierra Club as a desireable alternative to the burning of fossil fuels for energy. Its development in Imperial County would bring added reliability to electrical power supplies in the area, in addition to reducing the outflow of money spent on imported power and fossil fuels.

However, a possible problem may result from the wastes generated by pumping brine. Careful scrutiny should be given to requests for on-site dumps to ascertain if the requirements for a Class II-1 disposal site are met. A related concern is the possibility that the waste, from spills or leaching, would enter the canals, irrigation ditches, or the Salton Sea. The monitoring of waste dumps, to the present, has been generally poor. Care in development can preclude the regarding of geothermal as another threat to health or the environment.

The requirement to avoid, insofar as possible, disturbing prime agricultural lands and wildlife habitats must also be adhered to. Endangered species should be protected along with their ecosystems. We concur in the comments of the California Department of Fish and Game, and suggest you work closely with them to preserve the environment. Also included in the Plan should be the stipulation that Wilderness Study Areas should not be considered for geothermal sites.

With the above additional safeguards, we recommend the adoption of the Geothermal Element of the Imperial County General Plan.

Jeanne Davies

Jeanne Davies
Energy Chair

c.c. Harry Welte
Jim Dodson

SEE FOLLOWING RESPONSE.

STATE OF CALIFORNIA—OFFICE OF THE GOVERNOR

GEORGE DEUKMEJIAN, *Governor*

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

RECEIVED
OCT 17 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

October 15, 1984

Mr. Phil Shafer
Imperial County
Courthouse
El Centro, CA 92243-2856

Subject: SCH# 84032111, Geothermal Section of General Plan Revision

Dear Mr. Shafer:

The State Clearinghouse submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is closed and the comments of the individual agency(ies) is(are) attached. If you would like to discuss their concerns and recommendations, please contact the staff from the appropriate agency(ies).

When preparing the final EIR, you must include all comments and responses (CEQA Guidelines, Section 15132). The certified EIR must be considered in the decision-making process for the project. In addition, we urge you to respond directly to the commenting agency(ies) by writing to them, including the State Clearinghouse number on all correspondence.

In the event that the project is approved without adequate mitigation of significant effects, the lead agency must make written findings for each significant effect and it must support its actions with a written statement of overriding considerations for each unmitigated significant effect (CEQA Guidelines Section 15091 and 15093).

If the project requires discretionary approval from any state agency, the Notice of Determination must be filed with the Secretary for Resources, as well as with the County Clerk. Please contact Mark Boehme at (916) 445-0613 if you have any questions about the environmental review process.

Sincerely,

John B. Ohanian

John B. Ohanian
Chief Deputy Director

cc: Resources Agency
attachment

NO RESPONSE REQUIRED.

State of California

The Resources Agency

Memorandum

To : 1. Gordon F. Snow
Assistant Secretary for Resources

2. Imperial County Courthouse
El Centro, CA 92243-2856

Attention: Phil Shafer

From : **Department of Water Resources**
Los Angeles, CA 90055

Date : OCT 1 1984

File No.:

Subject: Imperial County General Plan, Draft Geothermal/ Transmission Plan and EIR. SCH 84032111.

The Department of Water Resources (DWR) has reviewed the subject report and offers the following comments:

We are concerned about the protection of the water resources of the large area covered in Imperial County where geothermal developments have already taken place, and will increase in accordance with the current projection of developing 3,000 megawatts of power over a 30-year period, from 1985 to 2015.

DWR recommends the following guidelines to protect the surface and ground water resources in the area:

a. Adequate plans should be prepared in advance to deal with a disaster, natural or human. Funds must be made available to deal with any uncontrolled spillage.

b. Adequate hydrological and geological data on the surface and subsurface areas should be furnished by the sponsor before initiating the drilling operations.

c. Records should be kept of all significant events and made available upon request.

d. All noxious fluid should be stored in places designated as able to withstand earthquakes, floods, and other natural disasters until rendered harmless. All storage facilities should be of impervious materials and their construction should be under the supervision of a registered civil engineer.

For further information, you may wish to contact John Pariewski at 213-620-3951.

Sincerely,

Robert Y. D. Chun

Robert Y. D. Chun, Chief
Planning Branch
Southern District

SEE FOLLOWING RESPONSE.

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN • REGION 7
73-271 HIGHWAY 111, SUITE 21
PALM DESERT, CALIFORNIA 92260
Phone: (619) 346-7491

October 3, 1984

State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

Subject: Imperial County General Plan - Geothermal/transmission Plan and Environmental Impact Report, August 1984, SCH# 84032111

We have reviewed the subject draft document and have the following comments:

Page 142 Water Usage

Comments: As an alternative to the use of Colorado River or drainage water by the geothermal industry, the potential for consumptive use of Salton Sea water should be discussed along with the resultant positive impacts to the Sea's fishery from this use.

We have no other comments at this time.

Gary L. Mains
for ARTHUR SWAJIAN
Executive Officer

PG/dh

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& RESEARCH

Regional Water Quality Control Board comment noted. This is discussed on pages 3.2 - 27, 30 - 31 of the Salton Sea MEIR.

Memorandum

To : Dr. Gordon F. Snow
Assistant Secretary for Resources

Mr. Phil Shafer
Imperial County Planning Dept.
Courthouse
El Centro, CA 52243-2856

Date : OCT 0 3 1984

Subject: SCH No. 84032111 Geothermal Element - Revision, Imperial County, DEIR

From : Department of Conservation—Office of the Director

The Department of Conservation has reviewed the Geothermal Element Revision of the Imperial County General Plan (SCH #84032111). We have comments on subsidence control authority and on agricultural impacts.

Pages 70-71. Subsidence

This section should be revised to show the State's primary authority in this area. The California Division of Oil and Gas (CDOG), pursuant to state law and through agreements with the State Water Resources Control Board (SWRCB) and the U.S. Environmental Protection Agency, is the agency responsible for establishing geothermal injection requirements. The county should revise the section to reflect CDOG jurisdiction and procedures to monitor projects and to control subsidence by liquid injection. The CDOG and county have established an excellent working relationship in this area in the past and it could be continued with this recommended revision. It is also noted that the county has no authority over production or injection in unitized areas or fields. We propose that the county modify the statement.

Agricultural Impacts

The document's text is quite thorough in acknowledging the impact that additional geothermal development can have on the county's agricultural lands. It appears that the county has a strong policy commitment to minimizing the conversion of agricultural lands in geothermal resource areas, and mitigating the environmental impacts. We were very pleased to see that both the geothermal reservoirs and agricultural areas are considered valuable resources by the county.

The DEIR's agricultural land protection policies provide a good start on one aspect of a comprehensive, environmentally sound approach to new geothermal development. As individual projects are proposed, we look forward to seeing the same thoroughness and commitment to implementation of these policies.

If you have any questions on our comments, feel free to call us at (916) 322-5873.

Dennis J. O'Bryant
Environmental Program Coordinator

cc: Eileen Allen, Division of Land Resource Protection
Bob Reid, Division of Oil and Gas

7202B

SEE FOLLOWING RESPONSE.

State of California

Department of Health Services

Memorandum

To : Terry Roberts
STATE CLEARINGHOUSE
1400 Tenth Street, Room 121

Date : October 1, 1984

Subject: Geothermal Element Revision, Imperial County - SCH #84032111

From : ENVIRONMENTAL HEALTH DIVISION
714 P Street, Room 430
322-2308

The Department has reviewed the subject environmental document and offers the following comments.

In order to prevent annoyance and complaints about noise, particularly at night when background noise levels are very low, it is prudent at this time to establish a noise level limit for power plants. Because three demonstration plants are operating (page 204), noise levels and spectra should be measured and used to establish the limit for sensitive receptors. The Department can recommend a limit or review the limit developed by the County.

If you have any questions or need further information concerning these comments, please contact Dr. Jerome Lukas of the Noise Control Program, Office of Local Environmental Health Programs, at 2151 Berkeley Way, Room 613, Berkeley, CA 94704, 415/540-2665.

for Stuart E. Richardson, Jr., R.S., Chief
Office of Local Environmental Health Programs

RECEIVED
OCT 10 1984
OFFICE OF PLANNING
& RESEARCH

SEE FOLLOWING RESPONSE.

State of California The Resources Agency

Memorandum

To : 1. Projects Coordinator
Resources Agency

Date: October 4, 1984

2. Imperial County Planning Commission
Courthouse
El Centro, CA 92243-2856

From : Department of Fish and Game

Subject: Imperial County Draft Geothermal/Transmission Plan & EIR - SCH 84032111

The Department of Fish and Game has reviewed both the environmnental document and the revised geothermal element of the County General Plan for potential development of 3,000 MW of electricity by the year 2015 A.D. The revised geothermal plan provides for the construction of up to 60 new geothermal power plants of 50 MW each. The total number of production and reinjection wells will range between 750 to 2,000, with an indeterminate number of additional wells for direct heat uses.

We find that the EIR portion of the subject document fails to meet CEQA requirements on the issues pertaining to protection of biological resources within Imperial County. Some of the major deficiencies are as follows:

1. Various substantive issues raised in our responses to the Notice of Preparation for this Element (Pages 184-190) have not been addressed and thus there is not the required full disclosure of pertinent information. CEQA requires that a reasoned analysis be provided for rejection of any substantive recommendation. To cite just a few examples of issues we raised but that are not addressed, we list the following:

   a) A rough estimate of the habitats ultimately expected to be disrupted by the various geothermal activities is projected as only affecting 2,040 acres of land. Of this total, 1,700 acres would be on agricultural land and the remainder on reclaimed Salton Sea bed and other desert lands. It is not clear whether this estimate is based on the land needed only for the well sites or if it included land for the power plants only, or both. We believe these estimates do not include surrounding lands to be disturbed by pipelines and transmission line corridors. These estimates appear incorrect because each plant could impact up to one hundred acres if 40 wells are required for each power plant with connecting pipelines between individual wells and the power plant. (The wells could be up to a mile away from

the power plant.) We believe itemization of these figures should be provided in the document as follows:

1. Power plant site acreage.
2. Production wells (16 - 40) with sump ponds - total acreage per site.
3. Average length of pipelines required or maximum distance from each production or reinjection well.
4. Length of new roads required.
5. Length of new transmission lines.

b) The potential for geothermal spills has been recognized as significant. However, no data has been presented on the number of spills to date, their magnitude, quantities of geothermal fluids spilled and the time required to bring the spills under control. Thus, the document fails to include pertinent, factual information about the spills that may have occurred since the inception of the geothermal program. The generalized conclusion that "major spills do not occur frequently and when they do occur, are controlled rather quickly" is not acceptable as the source of information for decisions. The facts capable of supporting such a conclusion must be presented for evaluation as we have requested in our letter dated June 2, 1984.

c) The Department has requested that a program be developed for monitoring the losses of fish and wildlife resources, as has been done for subsidence and other issues. No data or facts have been presented in the document justifying why such a program to quantify the losses of wildlife habitat, displacement of wildlife, bird mortality in sumps, and bird strikes against existing transmission lines cannot be started. In this regard, the agricultural lands in the Imperial Valley constitute important wildlife habitat under inhospitable desert conditions and thus support considerable wildlife resources.

d) A list of potential compensation measures (items 9a through 9g) was provided in our letter dated March 13, 1984. The document fails to discuss any of them or justify why they cannot be included in the implementation section for protection of biological resources.

e) The EIR portion of this General Plan Element incorporates 7,120 pages of other referenced CEQA documents pertaining to geothermal development in Imperial County and is declared to "constitute the major portion of this EIR." Incorporation by referral to the entire body of the literature on the general subject cannot be regarded as an appropriate substitute for the required specific identification and discussion of adverse impacts and mitigation measures. We recommend that the list of literature be referenced in an appendix rather than in the text. Relevant summaries and specific quotations regarding important and pertinent issues in support of the Geothermal Element policies should be extracted from the literature and presented in the EIR.

f) Page 89. The document states that Figures 1 through 8 provide a detailed analysis of some site-specific environmental assessments done in various areas of Imperial County. These figures are made up of area maps showing the locations of existing or proposed well sites and the boundaries of those projects. They do not provide a meaningful or detailed analysis of Plan impacts, yet such analysis is required by CEQA. A discussion or analysis of this nature, to disclose the various issues involved, is of concern to all.

2. We recommend that, in the absence of effective compensation measures, the County should reject proposals for offshore development in the Salton Sea.

3. Page 1-2. Executive Summary: The policy statement contained in the Executive Summary does not show any concerns or commitment for the preservation and enhancement of the biological resources of Imperial Valley. This tends to nullify assumption No. 8.

4. CEQA does not allow the development of agriculture and geothermal resources , or any other resource, to the detriment of other resources without thorough analysis first. This Geothermal Element fails to provide meaningful discussion of adverse impacts to fish and wildlife (direct, indirect, and cumulative). It fails to list even a single measure for protection of fish and wildlife resources.

5. Page 68, Issues: It is recommended that County policies emphasize that geothermal development will be allowed with adequate safeguards so as to be compatible with the preservation of important fish and wildlife habitat. An

example of some adequate safeguards is presented by the Bear Creek Mining Company development on the Wister Wildlife Area.

6. Page 58, Transmission Corridor: The disruption of well over 2,000 acres of agricultural land combined with development of new powerlines could result in significant adverse impacts to the bird life foraging in and flying over these areas. The conclusion reached on page 150 of the document that such impact is not to be expected needs to be substantiated by fact. As only one example, we cite the results of bird strikes against existing powerlines at Wister Wildlife Management Area where even endangered species have died. We recommend that all powerlines be either kept within existing corridors, or in new areas, they be placed underground.

7. Page 107, Species List: Change from "State Department of Fish and Game" to "State Fish and Game Commission".

8. We would welcome the opportunity for discussions with the County staff on other issues pertaining to hydrology and other points. Our staff plans to call the Planning Department in the near future to initiate such a meeting.

Thank you for the opportunity to provide comments on this Geothermal Element of the County General Plan. We request that a copy of the Final EIR be sent to us before certification by the Board of Supervisors. If you have any questions, please contact Fred A. Worthley Jr., Regional Manager of Region 5, at 245 W. Broadway, Suite 350, Long Beach, CA 90802; telephone number (213) 590-5113.

Jack C. Parnell
Director

SEE FOLLOWING RESPONSE.

RECEIVED
OCT 12 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

October 5, 1984

Richard D. Mitchell, Planning Director
Imperial County Planning Department
Courthouse
El Centro, California 92243-2856

Dear Mr. Mitchell:

Thank you for the Draft Geothermal/Transmission Plan and Environmental Impact Report section of the Imperial County General Plan. As you recall, we were forced to take legal action on the Salton Sea M.E.I.R.. This is a course of action we do not like to take unless we are forced to due to a lack of consideration of environmental impacts and safeguards. As professional wildlife ecologists and managers, we have some very serious concerns about geothermal development and it's effects on sensitive and unique wildlife habitats in Imperial County and the State as a whole.

We would like to offer the following comments and sincerely hope that our suggestions are accepted to the greatest extent possible:

1. The E.I.R. represents a good description of geothermal development and should help people that are unaware of the potential value of the resource understand it's importance to the County.

2. (Pg.1) Executive Summary. The Policy Statements summary doesn't mention anything about the environment, fish and widlife or the Salton Sea. In this regard, it is inconsistant with the rest of the document and indicates a lack of concern for thes resources which we don't think you intended.

3. (Pg.2) Introduction and Background. We are very pleased to see the statement regarding the support and encouragement of geothermal in a manner compatible with the protection of the environment. We are concerned that this condition of compatibility is not clearly stated throughout the document, especially in the goals, objectives and policies discussions. This committment to protection of the environment needs to be kept up front just as you have done with agriculture.

Since the plan will provide goals, policies,and implementation measures, there needs to be very specific reference to how sensitive biological areas such as the

Salton Sea, and other wetlands will be treated as opposed to areas that aren't so sensitive. As much of the specifics were referred to as being contained in previous documents, a very positive committment to protect and enhance environmental conditions in sensitive and unique habitats needs to be made.

The same committment to the protection of threatened and endangered species should also be made.

4. (Pg.3) Authority for the Plan. The definition in the document of a Geothermal Element states that a discussion of environmental damages and identification of sensitive environmental areas will be included. This aspect of the document is extremely weak and should be greatly expanded so there is little doubt regarding what are sensitive areas, what the potential impacts are and what sorts of restrictions will be required in and near sensitive areas. For this information, we suggest you pull out the information from the various communications from the Department of Fish and Game on the Salton Sea M.E.I.R.. You have referred to the M.E.I.R. in several locations, so we would hope that you will beef up the portion on sensitive areas.

5. (Pg.5) County Goals and Objectives. Here again reference is made to another document which had a goal to assure that geothermal development is compatible with our environment. We must be sure that this goal is carried forth to Section III.

6. (Pg.43) Typical Power Plant Production Phase. Reference is made to using agricultural wastewater, river water and Salton Sea water to make up water lost to cooling tower needs. We would hope that the county will go on record requiring the use of the lowest quality water feasible to meet this need in order to retain higher quality water for uses which require better water such as maintaining salinity levels in the Salton Sea, fish and wildlife habitat, water for human consummption and agriculture.

Salton Sea salinity stabilization should also be mentioned as a use for desalinized water.

7. (Page 57) Transmission Corridors. The goal on location of transmission corridors to protect the ecological balance of wetlands and deserts should also mention using most current design standards developed to protect avian species.

8. (Pg.58) The guideline on minimizing build-up of electrical charge and protecting avian species should refer to requiring the most recently developed design criteria to protect avian species also.

9. (Pg.59) The significant environmental impacts associated with transmission lines and corridors should be identified rather than merely referred to.

10. (Pg.62) Benefits of Development. The potential benefits of geothermal development to the Salton Sea and other fish and wildlife habitat should be mentioned. This should include desalinization of Salton Sea water, use of desalinated geothermal brine as a freshwater source to stabilize water and salinity levels in the Sea and create or maintain fish and wildlife habitat, and potential injection of highly saline water produced in various techniques used to reduce salinity of the Sea.

11. (Pg.67) Issues and County Policies. The assumption that geothermal development will be environmentally acceptable will only be true if it is planned and implemented very carefully, especially in sensitive wildlife habitats. This should be included , or another assumption added that states that some sensitive areas will have to be excluded until geothermal development can be safely carried out.

12. (Pg.68) Issues. This plan should establish county policy on protection of the environment including unique and sensitive wildlife and their habitats just as it does for preservation of agricultural lands.

13. (Pg.70) Water Use and Conservation. The water use policies should also include maintenance and enhancement of fish and wildlife resources, especially threatened and endangered species. Since federal funding is involved in funding of many county planning activities and specific geothermal projects, you should make specific reference to protection of threatened and endangered species. If the county cares about the Salton Sea, it's natural resources and economic benefits to the county, it would be very appropriate to mention maintenance of Salton Sea productivity and salinity as a high priority for saved water.

14. (Pg.75 Implementation Measures. In addition to requiring the applicant to provide a statement of measures to protect the environment, an evaluation of potential environmental impacts by qualified biologists should also be made. Without this biological assessment, there is no way to know what measures are needed and what resources are present to protect.

(Pg.76) Another item that should be included in the list of things that the county will do should be requiring applicants to do E.I.R.s in all sensitive biological areas. This is required by C.E.Q.A. especially where there is

significant public controversy. Past projects such as the Salton Sea M.E.I.R. and the recent Wister exploration have demonstrated the significant public controversy in all wetland habitats.

Another item should be added to the list of studies. The county should cooperate and participate in studies designed to determine ways to utilize geothermal development to improve and enhance wetlands and other wildlife habitat, especially the Salton Sea.

15. (Pg.78) Intended Use of the E.I.R.. The statement that this E.I.R. will provide environmental documentation for all or most exploratory, test, minor and intermediate geothermal projects should be much more specific, and state that this will only be the case where there is no significant environmental concern or significant public controversy.

16. (Pg.79) Project Summary. The entire cumulative impact discussion here is very weak, especially in regard to environmental impacts. We refer you to Fish and Game's input to the Salton Sea M.E.I.R. and your concurrence on the effects of spills. Increasing salinity of the Sea, lowering of Sea levels, destruction of wetlands, and decreasing supplies of fresh water in the county are all cumulative impacts that could and will be effected by geothermal development. These impacts and the role of geothermal development in causing or preventing these impacts should be fully discussed.

17. (Pg.80) You state that with a project by project analysis and proper planning, cumulative impacts cosidered significant can be mitigated substantially to levels which are insignificant. This statement is not consistant with the statement on Pg.78 that says this E.I.R. will provide the environmental documentation for all or most projects. We agree with a project by project analysis especially in unique and sensitive areas.

18. (Pg. 81) Discussion of C.E.Q.A.. This plan should be addressed and analyzed on it's own merit rather than compared to the previous E.I.R., especially in terms of environmental impacts. If this document does not fully deal with the importance of maintaining the continued productivity of the Salton Sea and other sensitive fish and wildlife habitats, and set very strong policies, goals, and guidelines for protection, then this project will have very serious environmental impacts even though it is only projecting 3000 MW's of development.

The document talks about a scoping meeting being held and meetings being held with the Industrial Advisory Committee. Based on the controversy over the Salton Sea

M.E.I.R., we feel that it would have been very appropriate to meet with the environmental/conservation interests early in the planning stages of this plan and E.I.R.. Without doing this you are almost creating a we/they atmosphere rather than a cooperative working relationship.

We would like to see a clear statement that future projects under this E.I.R. will have a scoping process for determining the need for additional environmental documentation that includes the environmental/conservation and scientific community.

19. (Pg.84) As we understand it, the M.E.I.R. for the Salton Sea is still not adequate based on the Findings and cannot be referred to as an adequate document to tier off of.

20. (Pg.105) Description of Biological Resources. This section is very weak. We suggest that you get together with the Department of Fish and Game and beef this section up considerably. The importance of the area to threatened and endangered species such as the Yuma Clapper Rail needs to be fully discussed to allow adequate public review. The recreation values associated with the fish and wildlife in the form of hunting, fishing, birdwatching, nature study and photography need to be discussed.

21. (Pg.139) Environmental Impacts on Biological Resources. There should be a thorough discussion of potential impacts here based on Fish and Game input on past projects and E.I.R.s. The Salton Sea M.E.I.R. would be a good source document for this along with biological input received from various experts and groups. The only way to say the impacts will not be significant is to make a very strong committment to protecting biological resources in the policies, guidelines, goals and implementation measures. The draft has not done this.

22. (Pg.142) Impacts on Surface Water and Water Usage. A much more thorough discussion is needed on the effects of geothermal development on the Salton Sea and associated wetlands including; pollution from spills, increasing salinity from reduction of freshwater flows, and potential of using geothermal development to improve environmental conditions.

23. (Pg.146-151) Alternatives to the Proposed Action. This section is very unclear. The preferred alternative appears to be a combination of several of those discussed and is never clearly defined. Reference is made to area and timing restrictions, but these restrictions in the preferred alternative need to be spelled out. It seems that a map of

area restrictions and criteria for areas that will be excluded should be developed. Biologists from the various agencies and conservation/environmental groups should be used to delineate area restrictions for biological resources.

25. (Pg.156) Organizations and Persons Contacted. It is very discouraging that groups such as ours, Coachella Audubon, San Bernardino Audubon, and the Salton Sea Fish and Wildlife Club were not given an equal opportunity to participate in the development of this Plan and E.I.R. as were the various geothermal developers listed. Had we been involved from the beginning, we could have provided you with input that would have made this a much better and more legally adequate document.

In summary, we are very dissappointed that we weren't involved earlier in the process of developing this Plan and E.I.R.. As it currently reads, it is very inadequate and does not meet the legal requirements of C.E.Q.A.. The discussions of biological resources, impacts and mitigating measures are very inadequate and need to be expanded upon considerably. Goals, policies, guidelines, and implementation measures need to be beefed up considerably to assure protection of unique and sensitve species and their habitats. The importance of fish and wildlife habitat and associated recreation is not sufficiently dealt with throughout the Plan and E.I.R..

Referring to other conflicting environmental documents as the primary basis for this E.I.R. is not adequate and does not meet the intent of C.E.Q.A.. It would be acceptable to refer to them specifically by page number for certain guidelines or discussions of specific items that were being made a part of this Plan and E.I.R., but to refer to them all as being incorporated is not correct. Many of our members are on environmental staffs of various governmental agencies and have confirmed that this broad incorporation of many conflicting documents is not legally correct and a gross misuse of the E.I.R. tiering concept.

We request that you carefully consider our comments on this plan and E.I.R. and make the suggested changes needed to make this an adequate document under C.E.Q.A. guidelines. We understand your desire to reduce paperwork and delays on development, and think this can be accomplished with this document if properly prepared. To accomplish your objective, the differences in sensitive and non-sensitive areas needs to be clearly spelled out. Policies, guidelines and implementing measures must be different for both. Sensitive areas need to be mapped out to your best ability and criteria defined for those that don't lend themselves to mapping. We

urge you to proceed with the final document slowly and solicit the help of the environmental/conservation communities in it's preparation. Utilize expertise within the Department of Fish and Game to the fullest extent, and your jpb will be greatly simplified. We suggest that you contact the Salton Sea Coordinating Committee, a new group that is forming to work toward a coordinated resource management plan for the Salton Sea and associated wetlands. They can currently be reached through Steve Loe, 5453 Elm Ave., San Bernardino, California 92404. His phone number is (714) 882-3175. Since they are a broad based organization representing many varied interests, they can help gain support for a well developed Plan and E.I.R..

Please contact us if we can be of any assistance in the preparation of your final document.

Sincerely,

Thomas W. Keeney
President, The Wildlife Society
Southern California Chapter

15102 Carnell St.
Whittier, Ca. 90603

cc: Salton Sea Fish and Wildlife Club
Coachella Valley Audubon
San Bernardino Valley Audubon
Salton Sea Coordinating Committee
Department of Fish and Game
U.S. Fish and Wildlife Service

SEE FOLLOWING RESPONSE.

RECEIVED
OCT 18 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

Salton Sea Coordinating Committee
5453 Elm Ave.
San Bernardino, California 92404

October 17, 1984

Richard D. Mitchell, Planning Director
Imperial County Planning Department
Courthouse
El Centro, California 92243-2856

Dear Mr. Mitchell:

Thank you for the extension of time you have given our group and others to respond to the Draft Geothermal/Transmission Plan and Environmental Report section of the General Plan.

We are a relatively new group that has formed with the primary purpose of cooperatively working for the maintenance and enhancement of the Salton Sea and associated ecosystems for scientific, historic, educational, ecological, recreational, agricultural, and scenic opportunities and all worthwhile economic endeavors if compatible with the primary purpose of maintaining and enhancing the Sea and related ecosystems. With this as our primary purpose, we have some grave concerns regarding the draft document.

Our major concern is the lack of a strong committment throughout the document to maintain the Salton Sea and related ecosystems such as wetlands, rivers, and other important fish and wildlife resources. We are pleased to see an emphasis on maintenance of agricultural lands, and in general agree with the positive aspects of geothermal development to the County and State as a whole.

As the document currently exists, we cannot support it and it's decisions. Without the committment to the Salton Sea and associated ecosystems the document is not adequate by C.E.Q.A. standards. A considerable amount of work needs to be done in fully describing the values associated with these critical areas and the potential impacts of geothermal development if allowed there. We could support this Plan if some changes are made that will insure full consideration and protection of the values at the Sea and associated ecosystems.

We suggest the following changes to make this document legally adequate and a plan that our group could support. Sensitive ecological and recreational areas should be identified and protected. This will require unique measures in the siting and construction of geothermal/transmission

facilities. The requirements in these areas should include the preparation of an E.I.R. in all areas of significant ecological and recreational importance. We do not have the time to provide you with a map or list of all of these at the present time, but we will be happy to work with you in identifying these prior to the completion of the Final Plan and E.I.R.. We suggest that you work with the Department of Fish and Game, the Fish and Wildlife Service, the State Park and all conservation groups with an interest in the Sea in identifying and developing protective measures to protect these areas.

Our primary goal at this time is the development and implementation of a Coordinated Resource Mangement Plan for the Salton Sea and related ecosystems. This plan will recognize and capitalize on all the values and potential benefits at the Sea including geothermal development. Our preliminary evaluations of the recreational values that can be derived from the Sea and associated ecosystems is in the millions of dollars. One of our objectives will be to further quantify the recreation potential. Our preliminary investigations indicate that recreational use can be substantially increased and result in significant economic benefit to the County and it's residents. To accomplish a coordinated resource management plan, we will need to work together in a spirit of cooperation. We hope that our cooperating on this Plan and E.I.R. will be the beginning of a close relationship with the County. We all stand to benefit greatly if we cooperate.

We have made initial contact with numerous groups and agencies interested in the Sea including, but not limited to, the Department of Fish and Game, I.I.D., Army Corps of Engineers, Bureau of Reclamation, Southern California Edison, various Audubon Society groups, The Wildlife Society, Salton Sea Fish and Wildlife Club, and the Inland Wetlands Coalition. We have had favorable responses to the concept of a Coordinated Resource Management Plan. We sincerely desire your cooperation and support in this effort.

Please let us know if we can be of any assistance in completing your E.I.R. and Plan. If the changes we have suggested are incorporated, we should be able to help gain support for the Plan. Call me at (714) 882-3175 if you need any additional information or assistance.

Sincerely yours,

Steve A. Loe

Steve A. Loe
Acting Executive Director

SEE FOLLOWING RESPONSE.

San Bernardino Valley AUDUBON SOCIETY

to enjoy
to study
to protect
our natural heritage

RECEIVED
OCT 19 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

18 October 1984

Richard D. Mitchell, Planning Director
Imperial County Planning Department
Courthouse
El Centro, CA 92243-2856

Dear Mr. Mitchell:

As you know, this society has been actively interested in issues involving the development of geothermal energy at the Salton Sea. We are very concerned about the recent Draft Geothermal/ Transmission Plan and E.I.R. and the Resolution Adopting findings and Statement of Overriding Considerations for Expansion of Geothermal Overlay Zone in the Salton Sea Anomaly. The fact that we were not consulted in the course of the development of either of these documents, were never sent a copy of the E.I.R., and only received a copy of the Findings on October 9 (fully one month after they were drafted !) are all sources of irritation. Is the County of Imperial interested in adequate public comment and compliance with the law, or is this an attempt to rush things through with no one looking?

As far as we can see, these documents suffer from the same deficiencies as previous attempts at adoption of geothermal overlay zoning. You appear to be continuing to ignore identified wildlife values of the Salton Sea in a headlong rush toward geothermal development. We fully agree with the comments on the E.I.R. made by the Southern California Chapter of the Wildlife Society in their letter of October 5th, and would like to add that we do not believe that there is any fundamental incompatability between geothermal development and the maintenance of wildlife, but that it is necessary to procede carefully and intelligently. We strongly recommend that you suspend any further action on the proposed rezoning until such time as there has been adequate public comment to bring your documents into compliance with C.E.Q.A.

Sincerely,

Norwood Hazard

Norwood Hazard, President
2173 E. Colton Ave., Mentone, CA 92359

NO RESPONSE NECESSARY but see Response to Wildlife Society comments.

RECEIVED
OCT 19 1984
IMPERIAL COUNTY
PLANNING DEPARTMENT

INLAND WETLANDS COALITION
45-240 Rubidoux St.
Indio, Cal.
92201

October 18, 1984

IMPERIAL COUNTY Planning Department
Courthouse
El Centro, California 92243-2856

Att: Mr. Richard D. Mitchell

Dear Sir,

Thank you for the opportunity to comment on the proposed Draft Geothermal/Transmission Plan and Environmental Impact Report of the Imperial County General Plan.

Firstly, the Inland Wetlands Coalition would like to re-emphasize that we are not against geothermal development within the county, and, in fact, are in favor of expanded exploration and development. Our concern is for the sensitive areas within Imperial County.

In regards to the Plan, we feel the document explains quite comprehensively the background of geothermal development within the county, and it does make mention of some of the problems associated with geothermal development. The Draft cannot be considered, though, as an "Environmental Impact Report" as the reader is led to believe. This document does not separate any of the more sensitive areas from the insensitive areas, and does not go into sufficient detail of the environmental consequences in the sensitive areas. We would suggest rewording that statement to read "Environmental Guideline" rather than "Environmental Impact Report".

We understand that Imperial County is building an environmental document to be used as a basis for the issuance of mitigated negative declarations to facilitate exploration and development of geothermal power, and we concur with the need to cut down on unnecessary expense and lost time. The County will not, though, be saving expense or time if this document invites a challenge for any development in sensitive areas.... that would negate it's usefulness.

The Inland Wetlands Coalition would suggest the inclusion of a clear statement that recognizes the sensitivity of certain areas within the County, and that those certain areas would require a full and complete environmental Impact Report prior to any exploration or development. We would suggest this list of sensitive areas to be based on previous documents submitted to you by the Department of Fish and Game, and which should include the Imperial Wildlife Management Area in it's entirety, the Alamo and New River drainages, the Salton Sea and all borders to a distance of ½ mile. We would suggest this statement be made in the Executive summary right up front, so that your intent to ensure the protection of the environment, fish

(Please See Page 2)

and wildlife is made clear.

We also feel you should be made aware of recent changes in California State law that will, or could, have a significant effect on the issuance of negative declarations within your county.

As of January 1, 1984, it became illegal to accept a mitigated negative declaration rather than conducting an EIR in situations such as the geothermal exploration on Wister. We refer specifically to the California Environmental Quality Act guideline 15064 that reads in part "If the lead agency finds that there is substantial evidence in the record that the project may have a significant effect on the environment the lead agency must prepare an EIR." Conflicts regarding this wording were clarified and resolved in a Court of Appeals decision citation 106 Cal App 3rd 988, which referenced "Friends of B street versus the city of Hayward".

The decision stated, in effect, that if a lead agency is presented with a fair argument that a project may have a significant effect on the environment, then the lead agency must prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect (mitigation measures). It goes on with further clarifications, requiring an EIR if there is "serious public controversy" or "disagreement between experts".

Our purpose for bringing this to your attention is twofold. Primarily, we wish to ensure the protection of the environment and species of wildlife within your area of control, and we feel that if you will make this allowance in your document (requiring an EIR for sensitive areas) there will be little, if any, controversy regarding negative declarations in the insensitive locations. Secondly, we are in hopes that Imperial County will see the benefits of working in cooperation with environmental and recreational groups, and will make this good faith gesture to the Southern California outdoor community as an example of how business and those with environmental concerns can work hand-in-hand for common goals.

In closing, a new non-profit corporation is presently being formed that may have a big hand in assisting the diverse interest groups of the Salton Sea to build a coordinated resource management plan. The Salton Sea Coordinating Committee has all the appearances of becoming a powerful tool for those involved with the Salton Sea, and I plan on devoting much personal effort to assist them in their endeavors to work towards the maintenance and enhancement of the Salton Sea and surrounding environs in conjunction with sound economic development.

Their address is P.O. Box 3060, North Shore, Cal. 92254 and a phone contact may be made with Mr. Steve Loe at 714 383-5762.

(Please See Page 3)