

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Petition of)
RALPH JOHNSON, DAVID FREEMAN, ET AL.,)
For Review of Orders Nos. 84-075)
and 84-076 of the California)
Regional Water Quality Control)
Board, Central Valley Region. Our)
File No. A-359.)

ORDER NO. WQ 85-11

BY THE BOARD:

On June 22, 1984 the California Regional Water Quality Control Board, Central Valley Region (Regional Board) adopted revised waste discharge requirements (Order No. 84-075) and a cease and desist order (Order No. 84-076) for the Class II-1 disposal site operated by Geothermal Incorporated (Geothermal) on Butts Canyon Road near Middletown in Lake County. Geothermal places liquid and semisolid wastes from geothermal operations into evaporation ponds (surface impoundments) and discharges residual solid wastes to landfill disposal areas. The revised requirements provide for retrofitting existing ponds with double liners, leachate collection and removal systems, and prescribe limits on the concentrations of heavy metals which may be discharged to the ponds following retrofitting. They also prescribe lower interim limits for discharges to the existing ponds pending retrofitting. The cease and desist order was based on a finding that wastes from the evaporation ponds had leaked into ground water causing a condition of pollution. (Order No. 84-076, Finding 6, page 1.) The order directed Geothermal to investigate the scope of leakage, prepare cleanup plans, and retrofit the ponds in accordance with a schedule contained in the order.

On July 23, 1984 the State Water Resources Control Board (State Board) received a petition from Ralph Johnson, David Freeman, et al. (petitioners) seeking review of these orders. Petitioners own land adjacent to Geothermal's facility and allege that ground water underlying their property is being polluted by wastes from Geothermal's leaking ponds. They ask the State Board to adopt an order prohibiting further discharges of toxic waste at Geothermal's facility pending completion of appropriate cleanup and abatement measures. Geothermal filed a response on September 4, 1984. On September 5, 1984 Magoon Estate and Chateau Magoon-Lambert (Magoon) submitted comments as interested persons in support of the discharge prohibition requested by petitioners. Magoon owns property adjacent to Geothermal's facility and uses water from Detert Reservoir for irrigation of pasture and vineyards. Magoon alleges that leakage from the ponds could affect waters in the reservoir and its surface tributaries. Responses to the petition and to Magoon's comments were received from the Regional Board on August 27, 1984 and September 14, 1984 respectively.

We also take notice of the adoption of Order No. 85-092 by the Regional Board on April 26, 1985. This order requires implementation of cleanup plans, including continuous pumping of extraction wells. It also prohibits the further discharge of any waste to certain ponds pending retrofitting. The order prohibits the disposal of any wastes at the facility should any more toxic wastes be discharged to these ponds.

I. BACKGROUND

Geothermal Incorporated (Geothermal) owns and operates a waste disposal site in Lake County. It is located approximately 3 miles southeast of

Middletown on Butts Canyon Road. The disposal site has been in operation since 1976. Geothermal accepts solid and semi-solid wastes from geothermal electrical generation facilities, including sulfur from powerplant scrubbers, condensates from cooling towers, and drilling muds. Liquid wastes are decanted to one of seven ponds within a large embanked area for evaporation. Water levels in each pond can be controlled independently. After drying, residual solids are removed from the ponds and buried in lined trenches. The maximum rate of discharge of waste into the site is 75,000 gpd. Residual solids total approximately 20,000 cubic yards per year. The life of the site is estimated to be 50 years.

Geothermal received waste discharge requirements from the Regional Board in 1976. The Regional Board approved the site for operation as a Class II-1 facility under regulations governing land disposal then in effect.¹ Class II-1 disposal sites were required to have certain features for protecting water quality from the wastes discharged at the site. Dischargers could use artificial barriers (such as liners and cutoff walls) as well as natural features to contain wastes. Although Class II sites were primarily intended for disposal of Group 2 (non-toxic decomposable) wastes, regional boards could authorize discharges of certain Group 1 wastes at

¹ Subchapter 15 of Chapter 3 of Title 23 of the California Administrative Code. Guidance regarding the implementation of these regulations was contained in a State Board publication called Waste Discharge Requirements for Nonsewerable Waste Disposal to Land, referred to as "Land Disposal Guidelines". The regulations in effect at the time of the Regional Board orders have been superseded by revised regulations governing discharges of waste to land, which were also codified in Subchapter 15. Waste categories and waste management unit classifications have been changed. The revised regulations took effect on November 27, 1984. Both old and new regulations are referred to as "Subchapter 15".

designated Class II-1 sites if the discharge would not unreasonably affect water quality. Group 1 wastes included toxic substances and those which could significantly impair water quality. (Land Disposal Guidelines, pages 26, 31, 33 and 38.) Wastes from geothermal operations were typically characterized as Group 1 wastes because of high concentrations of salts and the presence of heavy metals.

In September 1983 Geothermal submitted a report of waste discharge proposing material changes in its disposal operations. It planned substantial improvements to the artificial containment structures at its ponds.

Samples taken by the Regional Board late in 1983 indicated that seepage from Geothermal's ponds had polluted local ground water. The sample locations further suggested that ponds 4 and 6 were leaking and that the pond leachate had moved off-site.

Geothermal and the petitioners commissioned independent hydrogeologic studies of the waste disposal area early in 1984. While small discrepancies can be identified between the reports, they complement each other and agree quite well on the existence and location of major geologic structures. Both reports conclude that seepage from the Geothermal ponds has migrated at least 100 feet and onto Mr. Freeman's property beneath the ground surface.

In April 1984 Geothermal began pumping two newly drilled extraction wells in the area where pond seepage was thought to be leaving the waste disposal site. The extracted water was pumped back into pond 4. Data obtained from the initial pumping was used for design of an extraction well system that would intercept all of the waste disposal pond seepage and retrieve as much polluted ground water from Mr. Freeman's property as possible. Four more extraction wells were drilled later and additional pumps were installed in two

existing monitoring wells in the same area. These wells are intended to prevent off-site migration of pond seepage along the Freeman property boundary near ponds 4 and 6.

II. CONTENTIONS AND FINDINGS

Summary

The petitioners' challenge to Regional Board Orders Nos. 84-075 and 84-076 is based on two major contentions:

1. The Regional Board acted improperly by authorizing continued discharges at Geothermal's facility pending completion of remedial measures because:

a. Monitoring has not demonstrated successful abatement of off-site pollution by Geothermal's system of extraction wells.

b. Concentration limits for toxic waste constituents in Order No. 84-075 allow higher levels of these constituents to be discharged by Geothermal than was allowed by previous requirements;

c. Geothermal has consistently failed to comply with existing requirements or take responsibility for leakage; and

d. Continued discharge is inconsistent with enforcement actions taken or proposed by Lake County;

2. The revised waste discharge requirements do not implement appropriate siting criteria in the State Board's revised regulations governing discharges of waste to land (Subchapter 15). These provisions require maintenance of a five-foot separation between wastes and waters of the State, and prohibit locating waste management units in areas of potential seismic activity.

Discussion

1. Contention: The Regional Board was remiss in allowing Geothermal to continue discharging wastes to ponds which are leaking.

Finding: An extraction well system has been installed to intercept polluted ground water. The extraction well system is designed and intended to prevent leakage from the ponds from spreading and further impairing beneficial uses of surrounding surface or ground water. In addition, the 1985 revised cease and desist order does prohibit the discharge of waste to certain ponds. Prohibiting further discharge to the other ponds would not achieve any enhancement of water quality protection, or aid in ground water cleanup.

Consultants for the petitioners have postulated the existence of a fault which could be transmitting pond leakage under the extraction wells installed along Mr. Freeman's property line. As support for their contention, they cite a radically different depth of alluvium between two logged wells on Mr. Freeman's property; one on each side of the fault. They also cite high boron and sulfate at a well point downgradient of wells that are either dry or show no pollution.

The area through which the hypothesized fault would have to pass has been intensely examined on the Geothermal property. No displacement indicative of a fault has been found. Further, the alluvium is consistent with an extension of a buried stream channel identified on the Geothermal property. No direct evidence of a fault is supplied by the petitioners, and Geothermal's consultant provides good evidence to the contrary.

Petitioners contend that high boron and sulfate measurements in a single sample from a downgradient well point are from pond leakage. High boron and sulfate levels have been found in local areas not affected by the ponds.

Thus, elevated boron and sulfate levels in the Freeman well point may be of natural origin attributable to the geothermal activity in the area. In any event, as mentioned earlier, placement of wastes into the leaking ponds is now prohibited and an extraction well system is in place.

2. Contention: Regional Board Order No. 84-075 allows Geothermal to discharge waste that contains higher concentrations of toxic waste constituents than are currently discharged to Geothermal's ponds.

Finding: The old requirements, Order No. 76-206, did not impose any quantitative restrictions on the concentration of toxic constituents in Group 1 wastes which could be discharged at Geothermal's facility. These requirements regulated the type of waste allowed at the site, regardless of concentration. It was partially in response to data that materials discharged to the ponds exceeded Department of Health Services standards that led to a revision of the Regional Board requirements. The revised requirements (Order No. 84-075) prohibit discharges of hazardous waste (as defined by DHS criteria, see 22 CAC §66693, et seq.) to Geothermal's existing ponds until such time as the ponds have been equipped with double liners, etc., in accordance with Regional Board Orders Nos. 84-075 and 84-076. Order No. 84-075 continues to limit the discharge of waste by type, but also sets a maximum concentration by constituent allowed for disposal. In this respect Order No. 84-075 contains more specific language than the previous Order regulating the site. We therefore reject petitioner's contention that Order No. 84-075 was a relaxation of requirements. Geothermal contends, in a letter dated October 15, 1985, that no hazardous wastes are being, or will be, accepted for disposal.

3. Contention: Based on Geothermal's history of non-compliance, the Regional Board should not have allowed continued discharges to Geothermal's leaking ponds.

Finding: Geothermal's history of non-compliance could justify, but does not require, the more restrictive discharge prohibition requested by petitioners and Magoon. In fact, the 1985 revised cease and desist order contains a prohibition. The Regional Board has discretion to issue enforcement orders calculated to bring discharges into compliance with applicable waste discharge requirements, or to ensure abatement of conditions of pollution and nuisance resulting from unauthorized discharges of waste. In this case the record reveals that the discharger has installed extraction wells designed to intercept subsurface leakage at the facility boundary and to remove polluted ground water from beneath petitioners' property. Geothermal has also submitted a proposal for remedial action involving retrofitting its ponds with double liners, etc. The 1985 requirements, as discussed above, go even farther and prohibit the discharge of wastes at certain ponds. These factors support the Regional Board's determination not to impose a more comprehensive prohibition against further discharges.

4. Contention: The Regional Board Orders are inconsistent with proposed enforcement actions by Lake County.

Finding: Regional Board orders do not insulate Geothermal from local regulatory or enforcement authority. Geothermal is and remains subject to the jurisdiction of local governmental agencies to revoke any local permits or take any enforcement action within their authority. As provided in Section 13002 of the Water Code, actions of the Regional Board do not preclude more stringent regulatory or enforcement actions by local agencies. However, to the extent that Geothermal is entitled to operate by local permits, etc., it must do so in accordance with the requirements and orders of the Regional Board.

5. Contention: Order No. 84-075 does not implement revised Subchapter 15 siting criteria because it does not require adequate separation

between wastes and waters of the State, and because it does not make adequate provision for seismic hazards in view of the proximity of Geothermal's facility to the Collayomi fault.

Finding: Order No. 84-075 was adopted before the revised Subchapter 15 regulations governing discharges of waste to land took effect. The Regional Board was not required to implement the siting criteria or construction standards contained therein. It should be noted the revised Subchapter 15 regulations would require Geothermal's facility to satisfy the siting criteria for Class I waste management units (geologic isolation from waters of the state) before the Regional Board could reclassify the ponds as Class I waste management units. (23 CAC §2530(b).) As an existing facility, however, Geothermal is entitled to continue operating under previous regulations and requirements until the Regional Board reviews Order No. 84-075.² (23 CAC §2510(d).)

The revised regulations require all dischargers responsible for existing waste management units, such as Geothermal, to bring their monitoring programs into compliance with the new monitoring provisions of Subchapter 15

² This review must occur before November 28, 1989 (23 CAC 2591(c)). The fact that wastes have migrated off-site from ponds 4 and 6 is evidence that these ponds are underlain by relatively permeable materials. When the Regional Board reassesses the geologic setting of these ponds in order to reclassify them according to the revised Subchapter 15 criteria, the burden will be on Geothermal to justify reclassification under 23 CAC 2531 (Class I) or 2532 (Class II). If these ponds cannot qualify for reclassification to Class I, discharges of hazardous waste to these ponds would be prohibited. In addition, the Toxic Pits Cleanup Act of 1984 prohibits discharges of liquid hazardous wastes, etc., to surface impoundments within one-half mile of potential sources of drinking water after June 1988. If Geothermal's ponds are so situated, Geothermal must apply for exemption from prohibition by January 1, 1986 (see Sections 25208.4 and 25208.5 of the Health and Safety Code.)

according to a compliance schedule to be set by the Regional Board (23 CAC §2510(d)(1)). Based in part on data from the upgraded monitoring programs, and any additional technical information gathered, the Regional Board is required by the regulations to revise the requirements for existing facilities to bring them into compliance with the new classification criteria and containment standards, to the extent feasible. (Id.) Such review of existing sites must take place no later than five years after the effective date of the revised Subchapter 15 regulations. Accordingly, the Regional Board would not have to review Geothermal's requirements before November 28, 1989.

Nonetheless, in Order No. 84-075 the Regional Board has chosen to implement certain provisions of the Subchapter 15 regulations then in effect in a manner consistent with the relevant provisions of the revised Subchapter 15 regulations.

Subsection 2530(c) of the revised regulations requires:

"[A]ll new landfills, waste piles, and surface impoundments [to] be sited, designed, constructed, and operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying ground water."

This provision reflects technical guidance developed to implement the superseded requirement for Class II-1 and II-2 disposal sites that decomposable wastes be placed above the highest anticipated elevation of ground water to minimize leachate generation. (Land Disposal Guidelines, p. 28, former 23 CAC §2511(d).)

Discharge Specification 13 of Order 84-075 prohibits discharge of waste within 5 feet of the highest anticipated ground water including the capillary fringe. In this respect, Geothermal's proposed containment system requires two 2-foot thick liners separated by a 1-foot thick zone that contains

a leachate collection system. This system of liners and leachate collection zones will be 5-feet thick. Therefore, in accordance with the revised Subchapter 15 requirements, waste can be discharged to the double-lined pond proposed by Geothermal if the bottom of the lowest clay layer is above the capillary fringe of ground water. This interpretation is limited to the facts of this case, and other situations must be evaluated on a case-by-case basis.

Revised Subchapter 15 regulations require a 200-foot setback from Holocene faults (those showing evidence of "recent" activity, i.e., within the last 11,000 years) for new Class I and Class II units. Existing units being reclassified are entitled to show that the unit can be protected from damage as a result of seismic activity. (23 CAC §§2530, 2531 and 2532 and Table 3.1.) Previous Subchapter 15 regulations did not contain siting criteria or construction standards based on seismic hazards.

Provision 6 of the Order 84-075 required Geothermal to submit an analysis of the structural stability of each pond levee by September 1, 1984. The analysis has been received by the Regional Board. Staff of the Regional Board has reviewed the analysis and found that the levees are structurally stable.

While Regional Board Order No. 84-075 implemented some of the then proposed provisions of Subchapter 15, the Regional Board has not engaged in the comprehensive reclassification process that will eventually have to take place. The Regional Board recognized, when it adopted Order 84-075, that full compliance with the then proposed (and now existing) Subchapter 15 provisions would require revisions to Geothermal's waste discharge requirements (Order No. 84-075, finding 15). Given the contentions raised by the petitioners and interested persons, given statements made at the workshop session on this matter that considerable new evidence has been generated, given our concern as

to whether certain of the ponds meet the Subchapter 15 siting criteria, given the possible application of the Toxic Pits Cleanup Act of 1984, and given the fact that an extensive retrofitting program is currently underway, we conclude that the Regional Board should take the opportunity at this time to review the waste management unit classification and waste discharge requirements for this existing site (see 23 CAC §§2510(d) & (e), 2590, 2591). Such a review, together with any necessary site reclassification and waste discharge requirements revisions shall be completed within six months of the date of this order.

III. CONCLUSIONS

1. The Regional Board acted reasonably in adopting Orders Nos. 84-075 and 84-076.

2. Order No. 84-075 implements all applicable regulations in the superseded Subchapter 15 for an existing Class II-1 disposal site.

3. Order No. 84-076 was an appropriate enforcement response to the leakage detected at Geothermal's facility within the discretion of the Regional Board.

4. The Regional Board shall review, and revise if necessary, the waste discharge requirements in accordance with the new Subchapter 15 regulations.

IV. ORDER

IT IS HEREBY ORDERED that:

1. The petition in this matter is denied.

2. Within six months of the date of this order, the Regional Board shall review the waste discharge requirements in accordance with the new Subchapter 15 provisions and make such revisions as may be necessary to implement the regulations.

3. Discharges of hazardous waste are prohibited until the Regional Board completes reclassification of Geothermal's waste management units, provided that hazardous geothermal wastes which have been granted a variance from management as hazardous wastes by the Department of Health Services may be discharged at Geothermal's facility with the approval of the Regional Board Executive Officer.

CERTIFICATION

The undersigned, Executive Director of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of an Order duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 17, 1985.

AYE: Raymond V. Stone
Darlene E. Ruiz
E. H. Finster

NO: None

ABSENT: None

ABSTAIN: Eliseo M. Samaniego



Raymond Walsh
Interim Executive Director

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