ILLINOIS POLLUTION CONTROL BOARD
August 24, 1995

IN THE MATTER OF:	)	
	)	
PETITION OF LONE STAR INDUSTRIES, INC. FOR ADJUSTED STANDARD FROM 35 ILL. ADM. CODE 811.320(d) (Establishment of Groundwater Background Concentrations)	)	AS 94-15 (Adjusted Standard-Water)

SAMUEL T. LAWTON, JR., of ALTHEIMER & GRAY, APPEARED ON BEHALF OF PETITIONER; and,

JOHN J. KIM APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

OPINION AND ORDER OF THE BOARD (by J. Theodore Meyer):

This matter is before the Board on a petition for an adjusted standard from the requirements of 35 Ill. Adm. Code Subtitle G, Section 811.320(d) filed October 4, 1994 by petitioner, Lone Star Industries, Inc. (LSI). The Illinois Environmental Protection Agency (Agency) filed its Response to Petition for Adjusted Standard on January 9, 1995 and LSI submitted its Reply on March 3, 1995. Hearing was held on April 21, 1995 in Ottawa, Illinois in which several members of the public were in attendance[1]. Two comments were received during the post-hearing comment period. The record in this matter was completed on May 19, 1995.

RELIEF REQUESTED

LSI is seeking an adjusted standard from the background concentration requirement of groundwater quality standards pursuant to 35 Ill. Adm. Code 811.320(d). (Pet. at 1.)[2] LSI requests that groundwater standards of Part 620 be applied instead. (Tr. at 131-132.) The Agency recommends a denial of

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[1]Section 32 of the Act allows citizens of the public to offer comment at Board hearings. Pursuant to Board procedure, the hearing officer in this case asked if anyone from the public wanted to make any statements. Robert J. Ribolzi offered public comment on behalf of Area Citizens Representing Environmental Safety (A.C.R.E.S.).

[2]Petitioner's petition shall be referred to as (Pet. at __.); the Agency's recommendation shall be referred to as (Rec. at __.); petitioner's reply to the Agency's recommendation shall be referred to as (Reply at __.); and, the hearing transcript shall be referred to as (Tr. at __.). For references to exhibits within an exhibit, the cite shall be (Pet. at Exhibit __ within Exhibit __.). For references to the Incorporated Record, the cite shall be (Inc. Rec. at Exhibit __.).

the requested adjusted standard, stating that LSI failed to provide sufficient technical justification to support its position as required by 35 Ill. Adm. Code 811.320(b)(2). (Agency Br. at 2,3, Tr. at 133.)

BACKGROUND

LSI operates a portland cement manufacturing plant and associated quarry in Oglesby, LaSalle County, Illinois. (Inc. Rec. at Exhibit D.) Purchased by LSI in 1982, the plant is over 100 years old, and employs 105 people. (Id.)

A by-product of the cement manufacturing process is cement kiln dust (CKD), a portion of which is disposed in LSI's quarry. (Id.) Although 95% of CKD is returned to the cement process, some 6,000 tons have been deposited in the quarry in one year. (Id.) The wasted CKD, which is higher in sodium and potassium alkalis than recycled CKD, consists of material that appears naturally in areas rich in limestone deposits. (Tr. at 17.)

Occupying eight acres on the southeast bank of the Vermilion River across from LSI's plant, the quarry was created from the company's prior limestone mining operations. (Tr. at 21, Exhibit 2.) It is bounded by a ledge and precipitous embankment leading to the river on the north, a steep hill to the south and east, and an earthen dam to the west. (Exhibit 1, page 2,3.) South of the quarry is a large area of abandoned surface and underground limestone mines. (Exhibit 5.)

Prior to its use as a CKD landfill, the empty quarry collected rainwater and eventually became a pond. (Tr. at 21.) When CKD was first stored in the quarry, the water became contaminated with alkali, and the resulting leachate seeped into the Vermilion River. (Tr. at 21-22.)

In response to new landfill regulations passed in 1990, LSI began work to bring its landfill into compliance. (In the Matter of Development, Operating and Reporting Requirements for Non-Hazardous Waste Landfills, R88-7 (August 17, 1990).) In its May 20, 1993 Order, the Board granted LSI a variance from certain regulations, and LSI implemented a compliance plan to eliminate the migration of leachate beyond the landfill boundaries. (PCB 92-134, Board Order at 12.)[3] This was accomplished by covering the older part of the landfill with shale, draining most of the collected rainwater from the remaining landfill area, and using the collected rainwater as coolant in the cement manufacturing

[3]Relief was granted, with certain conditions, from the following regulations: 35 Ill. Adm. Code 814.302(a); 811.313; 814.302(b)(1); 811.301(b); 811.314; 811.320(d);811.317; 815.202(a); 815.203(b); 812.316; 815.202(a); 815.203(b); 811.110(d); and, 811.309(c)(4).

process. (Tr. at 22.) A shale barrier was created between the pond and the landfill to prevent further mixing of CKD and any rainwater. (Id.) Finally, a tile drainage system was placed on top of the landfill to allow rainwater to drain into the pond to be used as coolant as well. (Id.)

The landfill has no engineered liner separating the CKD from the old quarry floor or walls. (Tr. at 28.) The landfill rests on approximately eight feet of unmined limestone, two feet of coal, and several layers of clay, shale and sandstone. (Tr. at 23, 39.) Petitioner believes that this topography creates a natural, impermeable liner. (Tr. at 23,24.)

In 1992 LSI hired environmental engineers to produce a hydrogeology report for its landfill area. (Tr. at 52,53.) The report relied upon data from 15 monitoring wells: four which were located within LSI's landfill; four which were along its boundary; six which were situated between the Vermilion River and the landfill; and, one which was off-site. (Pet. at Exhibit 3 within Exhibit 1.) The report also included a potentiometric map which was used to explain that surface water flows radially outward from the landfill, indicating that the landfill is the highest point in the area, so that, hydraulically, groundwater cannot be upgradient. (Tr. at 57,78, Pet. at Exhibit 1.)[4] The report concluded that there is no groundwater upgradient from the landfill. (Pet. at Exhibit 1.)

In addition, the report concluded that no aquifer of concern existed in the area, and that, due to the impermeability of the area's topography, it is impossible for water to travel vertically. (Tr. at 57,58.) The second contention implies that, even if there was an aquifer within the zone of attenuation, no leachate could travel vertically to impact the aquifer. Therefore, it is inappropriate to determine background concentrations of groundwater. (Id.)

ADJUSTED STANDARD JUSTIFICATION

The Board's responsibility in this matter arises from Section 28.1 of the Illinois Environmental Protection Act (Act) which allows the Board to grant adjusted standards modifying the

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[4]Petitioner used the term "groundwater" interchangeably with other terms throughout its filings, exhibits and at hearing, creating confusion in the record. The Act defines groundwater as "underground water which occurs within the fluid pressure in the pore space equal to or greater than atmospheric pressure. (415 ILCS 5/3.64.) Therefore, for reasons of clarity, this opinion uses the term "rainwater" to refer to collected water in the landfill which petitioner states is the result of precipitation (Tr. at 21); "surface water" to refer to non-groundwater that travels from one point to another; and "leachate" to refer to water that has come into direct contact with solid waste. (35 Ill. Adm. Code 810.103.)

effect of general rules in specific cases. (415 ILCS 5/28.1(1992).) More generally, the Board's responsibility in this matter is based on the system of checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the Agency is responsible for carrying out the principal administrative duties.

The Act provides that a petitioner may request, and the Board may impose, an environmental standard that is different from the standard that would otherwise apply to the petitioner as the consequence of the operation of a rule of general applicability. Such a standard is called an adjusted standard.

Procedural rules for adjusted standards are found at Section 28.1 of the Act and 35 Ill. Adm. Code 106, Subpart G. Where the Board specifies a "level of justification" at the time that it adopts a rule of general applicability, that level of justification is applied to any adjusted standard request filed pursuant to that rule. Absent a specified level of justification, the provisions of Section 28.1(c) of the Act apply to a request for adjusted standard.

LSI seeks an adjusted standard from 35 Ill. Adm. Code 811.320(d). This section outlines two levels of justification: one for groundwater that presently serves, or in the foreseeable future will serve, as a source of drinking water; and, one for groundwater that cannot serve as a source of drinking water. (35 Ill. Adm. Code 811.320(b).) The level of justification for sources of drinking water is addressed specifically in 35 Ill. Adm. Code 811.320(b)(2), which states:

> For groundwater which contains naturally occurring constituents which meet the requirements of 35 Ill. Adm. Code 302.301, 302.304, and 302.305, the Board will specify adjusted groundwater quality standards no greater than those of 35 Ill. Adm. Code 302.301, 302.304, and 302.305, upon a demonstration by the operator that:
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> (A) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;
>
> (B) The change in standards is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social disbenefits, such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to

be incurred in meeting the standards; and

(C) all technically feasible and economically reasonable methods are being used to prevent the degradation of the groundwater quality.

The level of justification for sources of non-drinking water is found at 35 Ill. Adm. Code 811.320(b)(4), which states:

> For groundwater which contains naturally occurring constituents which do not meet the standards of 35 Ill. Adm. Code 302.301, 302.304, and 302.305, the Board will specify adjusted groundwater quality standards upon a demonstration by the operator that:
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> (A) The groundwater does not presently serve as a source of drinking water;
>
> (B) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;
>
> (C) The change in standards is necessary for economic or social development, by providing information, including, but not limited to, the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and
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> (D) The groundwater cannot presently, and will not in the future, serve as a source of drinking water because:
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> (i) It is impossible to remove water in usable quantities;
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> (ii) The groundwater is situated at a depth or location such that recovery of water for drinking purposes is not technologically feasible or economically reasonable;
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> (iii) The groundwater is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;
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> (iv) The total dissolved solids content of the groundwater is more than 3,000 mmg/l and that water will not be used to serve a public

water supply system; or,

(v) The total dissolved solids content of the groundwater exceeds 10,000 mg/l.

PROPOSED STANDARD

LSI requests relief from establishing background concentrations for groundwater due to the unique geology and hydrogeology of its landfill, and the history of surface and underground mining that has disturbed the entire area. LSI proposes the following language for the adjusted standard:

> "Section 811.320(d) is inapplicable to the landfill facility owned and operated by Petitioner, Lone Star Industries, Inc. at Oglesby, Illinois". (Pet. at 7.)

LSI further proposes that any monitoring at its landfill be subject to the standards set forth in 35 Ill. Adm. Code 620.440(c). (Id., Reply at 4.) This section provides:

> Section 620.440(c) Groundwater Quality Standards for Class IV: Other Groundwater
>
> c) For groundwater within a previously mined area, the standards set forth in Section 620.420 must not be exceeded, except for concentrations of TDS, chloride, iron, manganese, sulfates, or pH. For concentrations of TDS, chloride, iron, manganese, sulfates, or pH, the standards are the existing concentrations.
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> (35 Ill. Adm. Code 620.440(c))

AGENCY RESPONSE

First, the Agency believes that the correct level of justification for this matter is 35 Ill. Adm. Code 811.320(b)(2), the level for groundwater that presently serves, or in the future will serve, as a source of drinking water. As such, the Agency contends that LSI failed to adequately address the level of justification required for this Adjusted Standard, and requests denial on that basis alone. (Rec. at 2.)

Secondly, in its recommendation and at hearing, the Agency asserts that LSI has not provided sufficient information to justify the granting of the requested variance. (Rec. at 2-3, Tr. at 133.) Specifically, the Agency notes that one potentiometric map and data from on-site wells only does not establish the impossibility of determining background groundwater concentrations. (Rec. at Exhibit 1.) The Agency further believes that an aquifer is present in the area, as evidenced by

approximately 16 potable/private wells located in the area surrounding LSI's landfill. (Id.) Therefore, the Agency recommends that the request for an adjusted standard from 35 Ill. Adm. Code 811.320 be denied. (Rec. at 5.)

CONCERNED CITIZENS

Roger Ribolzi, president of A.C.R.E.S., presented the group's concern that, without constant monitoring, leachate from LSI's landfill will continue to leak into the Vermilion River. (Tr. at 9.) Mr. Ribolzi testified that the river is enjoyed by local residents for fishing and recreational use. (Id.) A.C.R.E.S. urged LSI to continue prevention measures against the spread of pollutants from LSI's landfill. (Tr. at 10.) Mr. Ribolzi requested that LSI continue to monitor its landfill for the sake of the environment and the citizens of the local community. (Tr. at 130.)

DISCUSSION

The major thrust of the Board's landfill regulations is the prevention of groundwater contamination. To accomplish this, a facility must establish groundwater quality standards based on the background concentrations of all monitored chemical constituents. (35 Ill. Adm. Code 811.320.) Petitioner is asking for relief from establishing background concentrations, stating that no groundwater exists in the area of its landfill. For the reasons set forth below, the Board is not persuaded that LSI met its burden of proving the non-existence of groundwater in the area of its CKD landfill.

Existence of Groundwater or Aquifer of Concern

In examining the record, the Board finds troubling the lack of reliable data to support LSI's contention that neither groundwater nor an aquifer of concern exists. Regarding LSI's testing for groundwater, we first notice the failure to provide testing data from any off-site monitoring wells. Only one of LSI's monitoring wells was located off-site, and no data was ever provided from this well. (Exhibit 7, figure 4-1.) In fact, several wells were either damaged or destroyed, preventing the collection of data from them. (Exhibit 7, p.5-4.) LSI did not prove that it would have been impossible to drill a well in the unmined areas directly east of LSI's landfill, within 200 feet of its service road, thus providing reliable data as to the presence of groundwater. (Exhibit 2.)

Secondly, despite LSI's characterization of the water collected in its wells as "groundwater", the Board believes the data collected from on-site wells only report the characteristics of either leachate from the landfill or surface water that had percolated through overburden and into the mines and wells. The

monitoring wells that produced data were all located within the landfill or on its border. (Pet. at Exhibit 2D within Exhibit 1.) This information does not help determine whether or not actual groundwater or an aquifer exists in the area.

We are also not convinced that petitioner met its burden of proving that no aquifer of concern exists within the zone of attenuation. Numerous shallow and deep wells exist across the Vermilion River which provide the town of Oglesby with its water supply. (Exhibit 1, p.5.) These wells tap into the Pennsylvanian, Ordovician and Cambrian rocks which include several aquifers. (Id.) Alluvial aquifers and shallow wells are present along the Illinois River as well. (Id.) Evidence was not provided to show that these aquifers are not hydraulically connected to geologic material underlying LSI's landfill.

Assuming arguendo, that LSI did provide persuasive evidence of a lack of groundwater in the area of its landfill, LSI would still need to demonstrate that any leachate from the landfill cannot mix with other sources of water. LSI must prove that previous detections of leachate travelling off-site into the Vermilion River will not occur in the future. Although data from the monitoring wells indicate a decrease in the amount of leachate moving from the landfill, and despite LSI's commendable efforts to contain it, leachate continues to leave the landfill. (Exhibit 7, p. 4-4,405.) In addition, water has been observed running through the maze of underground tunnels and emptying into the Vermilion River. (Tr. at p.65.) LSI must demonstrate that this water is surface water which has not mixed with its CKD landfill, but simply percolated through the overburden into the tunnels. Petitioner must also show that this water is not leachate seeping through the landfill walls.

Finally, although there is some evidence that vertical migration of water is minimal, we are not persuaded that the quarry floor in which the landfill sits is impervious to leachate seepage. This site experienced dynamite blasting while being mined for limestone. (Tr. at 40.) Possible cracks or fissures in the limestone floor could allow leachate to seep out of the landfill. Petitioner reasons that no observable drop in the water level of the lake is direct evidence that there are no cracks in the floor of the landfill. (Tr. at 41.) However, seepage may not be detected by observing the landfill's water level because it may be seeping at a similar rate at which precipitation enters. In addition, no evidence was provided that convinces us that the layers of shale, gravel, silt, sand and clay underneath the landfill are impermeable. (Pet. at Exhibit

7, pp. 3-2,3-3.)[5] Therefore, vertical migration is possible.

The Board notes that it has previously allowed temporary relief from background concentrations. (Gallatin National Company v. Fulton County Board and the County of Fulton, PCB 901-183(January 18, 1991).) However, Gallatin is distinguishable from the present matter in that the Board temporarily relieved the petitioner from background concentration data, and restricted the scope of its decision to 35 Ill. Adm. Code 812.317(l). (Id. at 10.). In addition, Gallatin's proposed landfill, although located in an area previously mined for coal, had an engineered liner, a surrounding area consisting of impermeable clay, and the landfill was located away from any surface drainage. (Id.) Therefore, the conditions are not comparable to the present matter.

Level of Justification

As LSI correctly asserted, the two levels of justification presume the presence of groundwater in the area at issue. (Reply at 4.) However, LSI has not answered the threshold question of whether groundwater or an aquifer of concern was found within the zone of attenuation. Therefore, at this time, the Board finds that the level of justification was not met in this matter. However, we do recognize that, due to the area's history of mining, water found within the zone of attenuation has not served, and likely will not serve, as a source of drinking water.

CONCLUSION

After a careful reading of the record, the Board hereby denies an adjusted standard from the requirement of establishing background concentrations for groundwater pursuant to 35 Ill. Adm. Code 811.320(d). Petitioner failed to prove the non-existence of groundwater or an aquifer of concern, thereby necessitating relief from background concentration requirements. This denial does not preclude LSI from filing a new petition for an adjusted standard, if circumstances should change.

This opinion constitutes the Board's findings of fact and conclusions of law.

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[5]Although petitioner's witness, Mr. Duc Vu, asserted that a layer of impermeable blue clay was discovered and documented, no evidence of the existence of a layer of blue clay was found in the record, or provided after hearing. (Tr. at 42-44).

ORDER

The Board hereby denies Lone Star Industries Inc.'s request for an adjusted standard from 35 Ill. Adm. Code 811.320(d).

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1992)) provides for the appeal of final Board orders within 35 days of the date of service of this order. The Rule of the Supreme Court of Illinois establish filing requirements. (*See also* 35 Ill. Adm. Code 101.246, Motions for Reconsideration.)

I, Dorothy Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 24th day of August, 1995, by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board