ILLINOIS POLLUTION CONTROL BOARD
January 23, 1986

MARATHON PETROLEUM COMPANY, Petitioner,	)	
v.	)	PCB 85-83
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, Respondent.	)	

MESSRS. JEFFREY E. FORT AND JOSEPH S. WRIGHT, JR. OF MARTIN, CRAIG, CHESTER & SONNENSCHEIN APPEARED FOR PETITIONERS; MR. RICHARD C. WARRINGTON APPEARED FOR RESPONDENT.

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

This matter comes before the Board upon the June 18, 1985 filing by Marathon Petroleum Company (Marathon) of a petition for extension of variance from the total dissolved solids (TDS) (1,000 mg/l) and chloride (500 mg/l) water quality standards (WQS) located at 35 Ill. Adm. Code 302.208. Marathon was ordered to submit an amended petition on June 27, 1985. On August 8, 1985 a responsive filing was submitted. In response to a Board Order dated September 5, 1985, Marathon submitted a filing addressing whether relief could be granted consistent with federal law. It was construed by the Board on October 10, 1985 as an amended petition. Marathon requests a five year variance. The Illinois Environmental Protection Agency recommends a grant of variance subject to conditions. A hearing was held in Robinson, Illinois on October 22, 1985. No members of the public were present.

Marathon owns an oil refinery in Robinson, Illinois which has a capacity of 205,000 bbls/day. The 1980 refinery capacity was 195,000 bbls/day. Marathon currently employs 638 persons.

Marathon owns and operates its own wastewater treatment facilities. These facilities consist of two API separators, a chemical flocculation unit, an air flotation unit, an aerated surge basin, an activated sludge unit, a final clarifier, an equalization pond to maintain a constant load on the tertiary sand filters and a stormwater impoundment basin.

Discharge by Marathon pursuant to NPDES Permit No. IL0004073 is to an unnamed tributary of Sugar Creek, to Sugar Creek, then to the Wabash River. The unnamed tributary has a 7 day, 10 year low flow of zero at the point of discharge from Marathon's facilities. Municipal and industrial wastewater discharges account for an average flow of 5.58 cubic feet per second (cfs)

in the tributary. Marathon contributes 3.5 cfs, while the two upstream dischargers, the City of Robinson and Briggs Manufacturing Company, discharge 2.00 cfs and 0.10 cfs, respectively. The tributary is one-third to two-thirds of a foot deep (Exh. C to Petition).

Marathon was granted a prior five year variance from the equivalent of Section 304.105 (old rule 402 of Chapter 3) as it applies to discharges causing violations of the TDS and chloride WQS of Section 302.208 (formerly rule 203(f)) subject to conditions [PCB 80-102, October 2, 1980]. Interim effluent limitations were 3500 mg/l TDS and 700 mg/l chloride. The variance expired October 2, 1985. One of the conditions of the variance was for Marathon to study the feasibility of:

1. separate treatment and disposal of high TDS waste streams,

2. constructing a holding basin to retain the high TDS water until it can be released during times of high flow, and

3. obtaining low TDS water for dilution of the effluent during times of low flow, including a study of whether this would be a sound conservation practice.

Alternatives Studied

The Radian Study commissioned by Marathon addresses the technical and economic feasibility of each. (Pet. Exh. 2). All three were found to be technically feasible by Radian (Id. at 3-28).

The first alternative involves segregation of high TDS waste streams by reverse osmosis. The literature search conducted by Marathon identified advances in membrane technology for reverse osmosis (Pet. Exh. 1 at 2, 3, 4). The search also identified problem areas such as brine disposal and expensive pretreatment to control membrane fouling (Id. at 4). The Radian study concurred and pointed out that one of the constituents of refinery effluent, oil, is a prime membrane fouler (Pet. Exh. 2 at 3-11). Capital costs for the first alternative were $1.3 million. The $1.3 million figure includes the purchase of 15 surface acres of land for construction of a 10 million gallon, 20 foot deep pond. If the brine residue was to be deep well injected, the cost would rise to $2.6 million. Annual operating and maintenance costs were estimated at $270,900 with the ponds and $299,100 with deep well injection (Pet. Exh. 2, Table 3-4 at 3-16). If the brine is not deep well injected, it would be stored in the pond and released during high flow events. The study reports, however, that the land for such a pond is not readily available at the refinery. The pond size could be reduced to 2.5 million gallons if deep well injection is used (Id. at 3-17). Marathon asserted that the concentrated brine is

more toxic than the normal discharge (Id. at 3-28). Marathon does not consider deep well injection a proper disposal method.

The second alternative consists of segregation of high TDS waste streams, storage of it in a pond, and its discharge during high flow events. Marathon asserts that the problem with this alternative is that the exact modifications to the existing system and the attendant costs are difficult to predict. Therefore, the costs of this alternative as presented by the study were based on a new separate system (Pet. Exh. 2 at 3-18). The capital cost for this alternative is $5.6 million, $4.4 million of which is for land for a 10 million gallon pond. As discussed in alternative 1, this land is not readily available. Annual operating and maintenance costs would be $212,000 (Id. at 3-21, Table 3-5).

The third alternative involves the pumping of ground water to dilute the treated TDS discharge. New pumps would be needed as well as a new five mile, fourteen-inch diameter pipeline. The $1.7 million capital cost does not include expansion of the existing gravel pit or, if needed, the digging of a new well on the refinery site. Annual operating and maintenance costs would be $80,000 (Pet. Exh. 2, Table 3-6 at 3-24). The study authors concluded that "the principle of using pristine ground-water resources to improve the quality of a short stream segment...is not considered a wise use of resources...." (Id. at 3-25, 3-26).

Water Quality

Marathon submitted TDS and chloride data for the tributary in graph form for the years 1979 through December 1984, roughly accounting for most of the prior variance period. The results show consistent exceedences of the 1,000 mg/l TDS WQS at Outfall 001 (Exh. D-1 to Petition). Exceedences of the 500 mg/l chloride WQS also are shown in the tributary at Outfall 001 but none downstream in Sugar Creek (Id., Exh. D-2).

The Agency's 1978 study showed average TDS levels one and one half miles downstream of Marathon's discharge were in excess of 1900 mg/l, and chloride levels averaged 400 mg/l. (Resp. Exh. A, Agency Rec. at 5). The Agency also furnished the Discharge Monitoring Report data for TDS and chloride for Marathon's Outfall 001 for February 1984 through July 1985. The interim maximum TDS effluent limitation was not exceeded while the interim chloride limitation was exceeded twice (Agency Rec. at 4). The monthly TDS effluent averages all exceeded 1,000 mg/l. Two chloride monthly averages exceeded the WQS of 500 mg/l (Agency Rec. at 4).

No exceedences of the TDS or chloride WQS have been shown to exist downstream in the Wabash River.

The Radian Study reported a range of 326 to 1063 mg/l TDS upstream of the Marathon outfall (Pet. Exh. 2 at 4-8). The study

estimated that without the discharges of the City of Robinson and Briggs Manufacturing, the natural tributary TDS concentration would approximate 250 mg/l. Id. If only the Marathon discharge was terminated, the authors estimated that the instream tributary TDS would exceed the WQS 35 percent of the time (Id. at 4-9).

The statements in the record claim that there are no human uses of the tributary such as swimming, fishing, and boating and that, therefore, there is minimal adverse effect to human health or human activities.

No known survey of the biological community of the tributary exists other than a 1976 biological investigation by the Illinois Natural History Survey wherein stream degradation was found downstream of the City of Robinson's and Marathon's discharges (Exh. H to Pet., PCB 80-102, October 2, 1980 Opinion at 2). To supplement the paucity of data on the tributary biota, the Radian authors cite two USEPA Water Quality Criteria documents. The first states that TDS becomes unsuitable for most freshwater fish at 15,000 mg/l (EPA Quality Criteria for Water, #EPA-440/9-76-023, 1976 as cited in Pet. Exh. 2 at 4-11). A prior document from the National Academy of Sciences to the USEPA stated that the "TDS level that will affect freshwater fish by osmotic stress is between 5,000-10,000 mg/l depending on the species and prior acclimatization." (EPA Water Quality Criteria 1972, #EPA-R3-73-033 as cited in Pet. Exh. 2 at 4-13). The Radian authors conclude that the tributary levels under worst possible conditions would not exceed 2000 (Pet. Exh. 2 at 4-12&13).

Discussion

Based on recent correspondence from the USEPA in two regulatory proceedings, the Board by Order dated September 5, 1985 directed the parties to address whether the Board could grant site-specific or variance relief pursuant to the Clean Water Act (33 U.S.C. § 1257 et. seq.) (CWA), specifically Sections 303 and 510 (Id., §§ 1313 and 1370). Upon meeting with the USEPA, the Agency represents that variances can be granted consistent with the Clean Water Act. This position is based on a November 1977 Memorandum of Agreement between the Agency and the USEPA. The underlying rationale is that a variance only involves a temporary relaxation of compliance with the WQS and that ultimately compliance is required. Marathon correctly argues that such a variance thus is not a new or modified WQS within the meaning of Section 303 of the CWA and does not have to be submitted to USEPA for approval. Recently the Board has granted a variance from the TDS and chloride WQS. Borden Chemical Company v. IEPA, PCB 82-82 (December 5, 1985). The Board need not address the other arguments presented for the disposition of this case.

Marathon alleges that to require it to comply with the TDS and chloride WQS would impose an arbitary or unreasonable hardship (Petition at 8). First Marathon states that there is no

economically reasonable and technologically feasible means to accomplish compliance. Second, that its effluent causes no injury to or interference with the public health, safety, and welfare. Third, that permitting its discharge even though it exceeds the WQS would have no significant adverse environmental impact on the Sugar Creek drainage area to the Wabash River (Id. at 8-9).

Marathon's first argument is inconsistent with the Radian Study's conclusions that all three alternatives are technologically feasible means for Marathon to comply with the WQS (Pet. Exh. 2 at 3-28). If Marathon's effluent meets the WQS it would be in compliance with Section 302.208. The issue of compliance with Section 304.105 is another matter. If Marathon's effluent did not meet the WQS at the pipe a fair reading of Section 304.105 would find it contributing to a violation.

As to the economic reasonableness of requiring Marathon to comply, the $5.6 million price tag of alternative two is high. The cost of alternative three is high and would involve an unacceptable use of groundwater. Alternative one appears promising in light of the advances in reverse osmotic membrane technology in recent years. However, it could involve injecting hazardous brine waste into the ground. Marathon asserts the land needed for the alternative of pond storage is "not readily available."

In any future variance or site-specific proceeding, Marathon is to submit economic data on itself and the Robinson plant. This will help to place the cost of compliance in perspective.

Based on this record, one cannot reach reliable conclusions regarding the exact impact of Marathon's discharges on the environment. It is clear, however, that the receiving tributary is degraded and suffers water quality violations. Marathon's assertions do not appear to be adequately supported.

In any future proceeding, the Board expects that Marathon will present more complete data on the stream and alternate compliance or mitigation options. Basing assumptions about TDS on one sample at the Robinson Sewage treatment plant is unacceptable. The Board will also expect consideration of variants to alternative one which would decrease TDS and chloride levels in the stream during the periods of lowest flow. It is at this time that aquatic life requires the most protection. It is conceivable that a smaller pond for two month's storage or removal of less TDS from another wastestream could be beneficial to the stream even if total compliance was not achieved.

The Board does not accept Marathon's contention that a compliance plan is in place. Therefore, as a condition of the variance, Marathon will be ordered to submit a complete proposal for site-specific regulatory relief by a date certain or a plan schedule for compliance. The Board cautions Marathon,

however, that questions have been raised by USEPA about relief from a water quality standard on site specific rules.

The Board finds that compliance, with the TDS and chloride WQS of Section 302.208 would impose an arbitrary or unreasonable hardship at this time, considering the environmental impact. The Board hereby grants Marathon a variance for Outfall 001 at its Robinson refinery from the TDS and chloride WQS of 35 Ill. Adm. Code 302.208. To the extent requested (Pet. at 10), the Board grants relief from 35 Ill. Adm. Code 304.105. The variance will be for a period of five years, upon obtaining site-specific regulatory relief or coming into compliance. If Marathon does not propose a compliance schedule or apply for site specific relief by February 1, 1987 the variance will terminate. These conditions and those that follow will assure compliance either through a regulatory change or through the installation of compliance technology.

Should Marathon not receive relief from the WQS in a site-specific proceeding, it shall submit a compliance plan to the Agency within 60 days of denial of site specific relief and come into compliance by the end of the variance period. The interim effluent limit of 3500 mg/l TDS will be reduced to 2500 mg/l. While in August 1982 the effluent measured 3805 and 4588 mg/l TDS, the other values approximated 2500 mg/l. The 1983, 1984, and 1985 values support the lowering of the 3500 mg/l TDS interim effluent standard to 2500 mg/l (Exh. D-1 to Petition). Other conditions, none of which have been objected to by Marathon, will be included in the Order.

The dates in the Order have been changed from those in the Agency Recommendation where appropriate. Because the original petition was timely filed and delays were beyond Marathon's control, this variance shall begin on October 2, 1985.

This concludes the Board's findings of fact and conclusions of law in this matter.

ORDER

Marathon Petroleum Company is granted a variance from the TDS and chloride WQS of 35 Ill. Adm. Code 304.105 as it relates to the TDS and chloride water quality standards of Section 302.208 for Outfall 001 at its Robinson, Illinois refinery subject to the conditions below:

1. Variance shall begin on October 2, 1985.

2. Variance shall expire on October 2, 1990 or upon Marathon obtaining a site-specific regulatory change, whichever occurs first. However, in the event that Marathon does not file for a site specific rule change or file a compliance schedule with the Agency by

February 1, 1987 this variance will terminate on that date.

3. Marathon shall:

   a) conduct an investigation by November 30, 1986 of the aquatic biological community in the Sugar Creek Tributary to confirm or refute the studies by the Illinois Natural History Survey and the Agency in 1976 and 1978.

   b) conduct sampling of the Sugar Creek Tributary to determine representative background levels of TDS by November 30, 1986.

   c) Submit the data in (a) and (b) above and any other necessary data including updated literature reviews, a TDS/chloride control study and any pilot plant experiments in support of a rule change, as well as a proposal for a rule change or a compliance schedule, by February 1, 1987.

4. Should relief in the site specific proceeding be denied, Marathon shall, within 60 days from the date of the denial or two years before the expiration of the variance, submit a plan to the Agency to come into full compliance by the expiration date of the variance.

5. Variance shall apply only to Outfall 001 which shall be limited during the period of the variance as follows:

Chloride	700 mg/l
TDS	2,500 mg/l

6. Marathon shall operate its existing treatment facilities so as to minimize its discharge of chloride and TDS below the limits of 5 above if possible.

7. Marathon shall execute and forward to James C. Frost, Illinois Environmental Protection Agency, Compliance Assurance Section, Division of Water Pollution Control, 2200 Churchill Road, Springfield, Illinois 62706, and to the Pollution Control Board within twenty-eight days after the date of the Board Order herein a Certificate of Acceptance and Agreement to be bound to all the terms and conditions of the Variance, the form of said Certificate to be as follows:

CERTIFICATION

Marathon Petroleum Company, an Ohio corporation, has received and understands the Order of the Illinois Pollution Control Board in PCB 85-83 dated January 23, 1986 and hereby accepts said Order and agrees to be bound to all of the terms and conditions thereof.

Petitioner

By: Authorized Agent

Date

Title

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 23rd day of January, 1986 by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control B[redacted]