

ILLINOIS POLLUTION CONTROL BOARD
May 5, 1983

IN THE MATTER OF)
)
PROPOSED SITE SPECIFIC WATER POLLUTION) R81-19
RULES AND REGULATIONS APPLICABLE TO)
CITIZENS UTILITIES COMPANY OF ILLINOIS')
DISCHARGE TO LILY CACHE CREEK)

FINAL ORDER OF DISMISSAL

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

On June 12, 1981 Citizens Utilities Company (Citizens) filed a petition for site-specific regulatory relief which was accepted by the Board and authorized for hearing and publication on June 25, 1981. Five merit hearings were held on October 26, 1981; November 12 and 13, 1981; and January 14 and 15, 1982. On November 23, 1982 the Village of Bolingbrook entered its appearance. On July 14, 1982 the Department of Energy and Natural Resources transmitted to the Board copies of its economic study entitled The Economic Impact of Proposed Regulation R81-19 for Site-Specific Water Pollution Rules Applicable to Citizens Utilities Company Discharge to Lily Cache Creek (Ex. 23). An economic impact hearing was held to consider that study on October 20, 1982. Final comments were received by the Board on December 3, 1982.

Citizens provides sanitary sewer service to approximately 21,000 customers in the metropolitan Chicago area under certificates of public convenience and necessity granted by the Illinois Commerce Commission. One of its certificated service areas comprises a substantial portion of the Village of Bolingbrook in Will County, which is referred to as Citizens West Suburban service area. Citizens provides both water and sanitary sewer service in that area to approximately 7,300 connections (6,400 single-family residences, 760 apartment units, and 170 commercial units).

To provide public utility sanitary sewer service in the West Suburban service area, Citizens owns, operates and maintains a complete sanitary sewer collection system and two wastewater treatment plants. This proceeding concerns Citizens West Suburban wastewater treatment plant No. 1 (WSB 1) which is located at the intersection of Glengary Drive and Briarcliff Road in Bolingbrook. WSB 1 is an activated sludge plant, operated in the contact stabilization mode with a design dry weather flow of 1.28 mgd. Discharge is to Lily Cache Creek. Citizens other wastewater treatment plant (WSB 2) is located in the western portion of Bolingbrook. The portion of Bolingbrook not within Citizens service area is provided sanitary sewer service by a collection system and wastewater treatment plant owned and operated by Bolingbrook.

WSB 1 was issued NPDES permit No. IL 0032727, dated November 5, 1975, which originally required final effluent limitations for biochemical oxygen demand (BOD) and total suspended solids (TSS) of 10 and 12 mg/l, respectively, in addition to a condition that effluent ammonia nitrogen not cause a violation of old Rule 203, water quality standards (General Standards), in the receiving stream. Old Rule 203(f) of the Board's Water Pollution Rules and Regulations, Chapter 3, provides for a maximum ammonia nitrogen (NH₃-N) concentration of 1.5 mg/l. Old Rule 402 of Chapter 3 provides, in part, that no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standard, which includes old Rule 203(f). Old Rule 402.1(b), in effect, permits discharge of an effluent containing a maximum concentration of NH₃-N of 4.0 mg/l during the months of November through March, if the discharge alone or in combination with other discharges, causes or contributes to a violation of Rule 203(f) pertaining to NH₃-N.

On March 5, 1981 the Board adopted an order granting Citizens a variance until July 2, 1985 from old Rules 404(c) 402.1(b) and 402 as they apply to the NH₃-N standard of Rule 203(f). The variance established the following effluent limitations until July 2, 1985:

	<u>Monthly Average</u>	<u>Flow-Weighted Daily Composite</u>
BOD	20 mg/l	40 mg/l
TSS	25 mg/l	50 mg/l
NH ₃ -N	15 mg/l	30 mg/l

As the variance order recites, Citizens expressed its intention to pursue site-specific regulatory relief during the variance period for WSB 1 to allow permanent operation under the 20/25/15 conditions allowed during the variance period. Accordingly, this proceeding was commenced.

In addition to the requested 20/25/15 standards, Citizens also proposes that dissolved oxygen (DO) and NH₃-N water quality standards be made inapplicable to its discharge³ when the flow in the Creek is less than 2 cubic feet/sec. When the flow is greater than that amount a DO limitation of 4 mg/l is proposed.

Citizens contends that no degradation to the Creek can occur through adoption of the proposed regulations in that it will continue to operate as it has and will produce the same quality effluent. Therefore, it argues, no expenditures for attaining compliance are justifiable and the relief should be granted.

Such an argument is patently misdirected. If that reasoning were adopted anyone receiving a variance would be entitled to site-specific relief. That clearly is not the intent of the Environmental Protection Act (Act). Variances are to be granted upon a showing of arbitrary or unreasonable hardship and are to allow a period of time, not to exceed five years, for the variance petitioner to achieve compliance [Sections 35(a) and 36(b)]; they do not simply excuse compliance. Rulemaking proceedings, on the other hand, establish a regulatory framework designed to accomplish the state's environmental goals: "to restore, protect and enhance the quality of the environment" [Section 2(b)]. Similarly, Section 11 of the Act states that the purpose of water pollution regulation is "to restore, maintain and enhance the purity of the waters of this State," and to avoid "impairment of ... legitimate beneficial uses of water." Further, the national goal of the Clean Water Act is "that the discharge of pollutants into the navigable waters be eliminated" [Section 101(a)(1)]. The intent is not, as seems inherent in Citizens argument, to maintain the status quo.

STREAM USES AND ENVIRONMENTAL IMPACT

Lily Cache Creek (Creek) is approximately 16 miles long and WSB 1 is located approximately 15 miles upstream from its confluence with the DuPage River. The Creek has been classified as an intermittent stream; i.e., historical 7-day 10-year low flow is zero. Two substantial tributaries enter the Creek within three miles downstream of WSB 1 and a number of drainage tiles, culverts and man-made ditches discharge to it throughout its length.

The headwaters of a basin, even if an intermittent stream, as here, can be an important part of the ecosystem. For example, they provide spawning areas and nutrient loading (R. 667). Many intermittent streams in northern Illinois "support a variety of aquatic organisms," and "just because there is an absence of visible water does not necessarily mean that the stream has no aquatic organisms" (R. 491-492). In fact, a diverse aquatic community could be expected (R. 493).

Furthermore, Lily Cache Creek is no longer an intermittent creek due to the WSB 1 discharge (R. 491). Citizens appears to argue environmental impact on the basis of what the Creek would be absent the discharge. However, most, if not all, of the waters of the State have been affected by man, both in terms of flow and pollutant loadings. The use and enjoyment of those waters is based on their present make-up, not on what they were formerly. The goal of water pollution programs is not to return every body of water to its "natural" state, but rather to maximize the beneficial uses of those waters in their existing states. Several bodies of water would not exist at all but for man's actions giving rise to them, but the Board has never held that such waters may be freely polluted. Rather, the Board has held that where such waters are accessible to the public, they should be protected.

Citizens alleges that the Creek is "extremely degraded" and its value as a natural resource is "extremely limited" by land use changes and commitment to agricultural and suburban development including channelization, erosion, siltation, littering, impoundment, and contaminated agricultural and urban run-off. These conclusions were reached by the Envirosphere Company which was retained by Citizens to study the ecological significance of the proposed regulation upon the Creek (Ex.3). That study also concluded that land use and intermittent flows are the limiting factors for aquatic life diversity and productivity rather than WSB 1's discharges.

Further, Citizens contends that sensitive aquatic life species which form the basis for the general use standards cannot be maintained in the segment of the Creek impacted by WSB 1 due to habitat alteration. Finally, Citizens concludes that the Creek is not actually used for swimming, boating, recreation, sport fishing, or as a spawning ground for sport fish.

The Agency, however, disagrees with Citizens' assessment of the Creek. It contends that channelization has not had as substantial an impact as Citizens states and that there is an adequate habitat to support a diverse aquatic community. The Agency also argues that there is a lack of evidence of heavy siltation or of any substantial impact by urban or agricultural run-off. It, therefore, disagrees with Citizens' conclusion that allowing WSB 1 discharges at the requested levels would not have a substantial impact on the Creek. Finally, it disagrees as to the recreational value of the Creek.

That there is contradictory evidence in the record is not in itself troublesome, although the extent of disagreement in this record surpasses most. The degree of channelization, for example, is stated to be 15-20% (R. 384), 22% (R. 585), 44% (R. 525), 57% (R. 704), and 20-60% (R. 839). Further, Citizens presented evidence that channelization causes a creek to become "visually and functionally, a drainage ditch" (Ex. 3, p.3), while Wallace Matsunga, an Agency aquatic biologist, stated that "in spite of channelization that has occurred, riffle areas, pools, stream bank vegetation and canopy cover were observed in various reaches of the channelized portion of the creek" and absent "water quality limitations, these areas should still be able to support a diverse aquatic community" (R. 339-340).

What is particularly troublesome is the basis upon which these contradictory conclusions were reached. Dr. Glenn Piehler of Envirosphere, who was retained by Citizens to study the WSB 1 impact upon the Creek, examined the Creek by stopping at each road that intersects it (R. 91). At these intersections he would walk some distance up and downstream and in this manner he observed about a mile and a quarter of the Creek's sixteen mile length (R. 273-274). He did not measure the quantity of nonpoint source run-off, and yet he concluded that it caused "stress" based on his "experience," surrounding land uses, and drainage patterns (R. 277-278).

While some sampling of flows other than WSB 1 discharges was done, it is impossible to compare the impact of those flows to the WSB 1 flows due to the lack of quantity measurements. Further, the samples were taken only during periods of heavy rains during which BOD and TSS loadings would be expected to peak, and, therefore, are not representative of the overall contribution to polluttional loadings by the non-WSB 1 sources (R. 239, 277-278).

Ammonia nitrogen was neither measured nor modeled (R. 330 and Ex. 2, App. A), and yet the study concludes that surrounding "farms may, on an annual basis, be adding a considerable amount of ammonia to the creek as a result of fertilization and breakdown of organic nitrogen" based on a literature review (Ex. 3, p.6). As the Agency pointed out, Dr. Piehler admitted that his source of knowledge of Illinois farm practices came from employees of Citizen's Utilities (R. 401), and that the reference cited by Dr. Piehler (Ellis) states that ammonia rapidly converts to nitrate in the soil and does not leave the soil in the form of ammonia to any significant degree (R. 810-811). Finally Mr. William Bertrand of the Department of Conservation testified that many of the farms in the areas were using some conservation practices that would alleviate many run-off problems (R. 656).

Species of indigenous fish were also determined on the basis of a review of literature and a single fish sample using a minnow trap, which is a rather inadequate method (R. 607,641). Enviro-sphere concluded that sensitive species "have largely been eliminated from Lily Cache Creek and would not be present during low flow conditions" (Ex. 3, p. 19). Mr. William Bertrand, however, testified that a 1980 fish collection 5.3 miles below the WSB 1 discharge "included carp, bigmouth shiner, sand shiner, bluntnose minnow, fathead minnow, creek chub, green sunfish and bluegill" which he believed "disproves the contentions in Enviro-sphere's report "that sport fish are restricted to the lower seven miles of the Creek" (R. 641).

Further, there was considerable testimony that adequate habitat exists to support a diverse aquatic community, despite Citizens' contention that the habitat is limiting. Evidence was presented that riffles, pools, stream bank vegetation and canopy cover exist at several points along the Creek (R. 440-441, 446-447, 452, 457). Unfortunately, Mr. Matsunaga, who testified regarding the habitat, did not make a particularly exhaustive inspection of the Creek. He "looked at the reach, observable reach, of the stream at all of the various road crossings" (R. 480). He did not walk the Creek and took no samples (R. 478).

Citizens' analysis of the impact of the WSB 1 discharge upon the Creek is also based on inadequate support. Dr. Piehler admitted that he did not develop a full scale balanced model of the Creek because "the ends would not have justified the means," although he did not know how much such modeling would have cost (R. 265). Instead, Citizens used the basic Streeter-Phelps

model without adjustments (R. 407), which he admitted was not as accurate as other models could be (R. 404-410). He stated that it is a steady state model which did not consider benthic, algal or sediment oxygen demand (R. 407-408). He felt the model "would provide additional insight into how significantly BOD and DO would change under different flow conditions and different permit conditions, and it was geared to just getting some estimates" (R. 408-409). It was done as an "exercise" and "assumed" non-point source discharges.

Even using that model, which could understate the dissolved oxygen depression, a substantial impact on the Creek is apparent. Figure 10 of Exhibit 3 shows DO levels depressed to near 1 mg/l under conditions of 20 mg/l BOD and 15 mg/l $\text{NH}_3\text{-N}$ with a Creek flow below 2 cubic feet per second.

Based on these contradictory and ill-supported conclusions, it is impossible for the Board to determine what the present or potential uses of the Creek are. Most of the testimony is conclusory in nature, based on little sampling, observations of a small percentage of the Creek and largely unsupported assumptions. Better modeling, including sampling to verify the model, could and should have been done. The Board cannot determine what the present BOD, DO and $\text{NH}_3\text{-N}$ levels are or what they would be if Citizens were to come into compliance with present regulations. The testimony presented by the Agency at the very least raises substantial questions concerning the accuracy of Citizens' assertions regarding what aquatic life currently exists in the Creek or what aquatic life could potentially live there. Similarly, the extent of channelization, how much its effect has been mitigated with time and how much it may be mitigated in the future is uncertain. The degree of siltation is based on inadequate observations and sampling, largely unsupported by the photographic exhibits. Sampling appears to be worst case concentration levels of an unknown quantity of flow. Such data is insufficient to support the conclusion that nonpoint source loadings are equivalent to WSB 1 discharge loadings, as Citizens contends, and even if it is, that is not sufficient to demonstrate that the WSB 1 discharge is not a significant factor in limiting the aquatic life in the Creek.

ECONOMIC REASONABLENESS AND TECHNICAL FEASIBILITY

There is no question as to the technical feasibility of achieving compliance with the general use standards: wastewater treatment plants throughout the state meet them. Citizens performed a study to determine the facility improvements which would be required to meet those standards (Ex. 4). According to that study, the capital cost would be \$3.63 million with annualized costs of \$1.34 million. If apportioned among WSB 1 customers, the average yearly cost would increase \$411 or 454% (R. 146). Jack Grossman, an officer of Citizens, testified that those funds are available, but that it is not in the public interest to make the improvements (R.18-19).

There are several questions that arise concerning these figures, however. Local per capita costs for construction at WSB 2 were spread over both the WSB 1 and WSB 2 areas. Yet, the figures presented here are spread only over the WSB 1 area, which may not be acceptable to the Commerce Commission (R. 158-160). Obviously, if the expenses were spread over both service areas, the per capita cost would be less. David Chardavoyne, an environmental engineer for Citizens, testified "that if the same cost were apportioned among the entire Bolingbrook service area... the increase per customer per year would be \$167" (R. 170-171). He also mentioned a third possibility of "apportioning it among the total number of customers receiving wastewater treatment, from Citizens" (R. 172). No apportioned cost is presented for the third alternative, however.

The Agency also challenged whether the projected costs are solely attributable to upgrading to meet Board standards, since the plant is now over 20 years old and may soon be in need of repairs or upgrading even if the proposed regulations were adopted (R. 920-923). If that were the case, concurrent upgrading might well result in lower costs attributable to meeting the general use standards. However, no evidence was presented on that point. Dr. Robert Ducharme, author of the economic impact study (EcIS), made no independent analysis of the upgrading costs. He simply "went to the procedures that they [Citizens] used... step by step and checked the references... and their assumptions against current information." He found no reason to dispute the figures (R. 913-914). He did not, however evaluate whether the components themselves were needed (R. 915).

He also did not evaluate whether there might be less expensive compliance techniques (R. 917). He did not consider the costs of closing the WSB 1 plant and pumping its wastewater to WSB 2 for treatment, nor did he consider the feasibility of pumping the effluent directly to the East Branch of the DuPage River. There is some present "capability of transferring a certain amount of flow" to WSB 2 through several pipes although the quantity that could be transferred is not given (R. 757). The distance that the effluent would have to be transported for discharge to the East Branch of the DuPage River is two or three miles, but the costs involved in this are also not given (R. 758). Post aeration was briefly discussed as a possible means of compliance with the DO standard. Chardavoyne stated that it "is probably one of the...lesser expensive processes that could be done" (R. 760). Matsunaga also testified that aeration could improve the stream condition (R. 489-490). However, once again, neither the cost nor the effectiveness was quantified.

The EcIS presents an analysis of the costs and benefits of the proposed regulation. It concluded that the only environmental cost was lost fishing opportunities. Based on "worst case" assumptions (little or no present fishing limited solely by water quality problems caused by WSB 1 discharges), the study determines this cost to be \$52,000/year (EcIS, pp. 5-1 through 5-13).

This figure includes all of the lost fishing opportunities on the lower 12 miles of the Creek and 10% of those lost on 14.8 miles of the DuPage River downstream of its confluence with the Creek based upon the Creek's 10% contribution to the flow (EcIS, pp. 5-1 through 5-13).

Cost savings due to the elimination of upgrading costs to meet the general use standards (assuming adoption of the proposed regulation) are then analyzed. However, some of the assumptions used by Citizens in arriving at savings of \$1.34 million are questioned (particularly allowances for the cost of debt and equity capital, depreciation allowances and the percentage assumed in estimating tax credits) and according to Ducharme could result in a reduction of cost savings to \$0.85 million (EcIS pp. 6-1 through 6-4). Thus, the annual savings to Citizens customers would be from \$106 to \$411/year depending on whose figures are correct and what cost apportionment base is used (WSB 1 or all Bolingbrook wastewater customers).

Benefits are then compared to costs and are estimated to exceed costs by 16 to 26 times depending on which figures are used (EcIS p. 1-5). However, there are difficulties associated with those ratios. The value of a stream cannot be measured solely in terms of lost fishing opportunities. Ducharme admitted, for example, that he was "not able to quantify the value of the stream as a fish spawning stream as opposed to a fishing stream" (R. 899). He also admitted that there are other values associated with a clean stream in terms of natural resource protection, but that he did not know how "to get a handle on quantifying them" (R. 900). The possibility of odors "arising under certain conditions" could impact streamside activities but "would be a totally impossible fact to get a handle on" (R. 902). Ducharme also admitted that people who live along the Creek could be adversely affected by impairment of the aesthetics of the stream, although he felt that cost to be insignificant (R. 908-912). In all, no costs were attributed to ten of eleven stream uses suggested by Huff which could potentially be impacted by water quality because they were either unquantifiable, inapplicable or insignificant (EcIS, pp. 5-1 through 5-4).

These possible shortcomings of the study are pointed out not as a criticism of this particular study, but rather to demonstrate the proper context in which the Board must consider it. Environmental and aesthetic impacts are not readily quantifiable. Value can be either monetary or simply a quality considered worthwhile. When attempting to evaluate the monetary value of a complex, interrelated system such as the ecosystem, any economic valuation is difficult to determine. When aesthetics are overlaid, the task becomes nearly impossible.

The utility of an economic impact study lies in quantifying that which is quantifiable, in pointing out the shortcomings of that analysis, and in indicating unquantifiable impacts which should also be considered. As such, it is only one aspect among many that must be considered by the Board in determining economic reasonableness.

The Board must view site-specific regulatory proposals within the context of overall environmental programs. If the Board were to determine that Citizens should be allowed its requested relief on the basis that Lily Cache Creek has largely been "dedicated as a drainage ditch" as Citizens contends, what basis would the Board have for denying other dischargers to similar tributaries to the DuPage River? What environmental sense would it make for the Northeastern Illinois Planning Commission to proceed with plans under Section 208 of the Clean Water Act to limit non-point source discharges if the point sources are allowed to freely pollute?

Perhaps the best use of the Creek is as a drainage ditch. Perhaps allowing that use will not have a significant effect on other waterways in the State or upon the people who use the Creek for other purposes. However, this record simply does not present enough information about the Creek for the Board to determine that to be the case. Many of the factors presented as limiting the present uses of the Creek may improve in time. Debris and litter can and should be removed. The adverse effects of channelization are mitigated with time as organisms repopulate, exposed banks stabilize, and canopy regrows. Silt deposition may well lessen as "208" plans go into effect and farmers take greater measures to eliminate erosion and soil loss through low till or no till plowing techniques. As fewer pollutants are allowed in the air, the quality of urban run-off should improve. It may be possible to eliminate DO problems through instream aeration. If these things occur, water quality may well become the sole limiting factor to aquatic life in the Creek. If so, increased costs to Citizens' customers of what could be less than ten dollars a month may not be at all unreasonable.

The DuPage River water quality has improved considerably over recent years, but it is not nearly as good as it once was. Fishing has improved, but it could be made better. The Creek accounts for eleven percent of the total flow of the DuPage River at its point of confluence. It may make an even greater contribution to fishlife than that if it were to become a useful spawning area. But again, from this record the Board simply cannot make that determination. There is not enough information as to potential, or even actual, use or impact for the Board to make a determination as to whether it is economically reasonable to maintain the general use water quality standards along the Creek.

BOARD ACTION

In a regulatory proceeding, the record must provide an adequate basis for the Board to determine whether the proposal is justified. If the record fails to do so, the proceeding should be dismissed. The Board finds this record to be too deficient to make a substantive decision. The actual and potential stream conditions, the future impact assumptions, the modeling, the alternative methods of compliance, the cost projections and

apportionment base and the economic impact are all insufficiently addressed.

This proceeding is, therefore, dismissed.

IT IS SO ORDERED.
Board Member Don Anderson dissented.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board hereby certifies that the above Opinion and Order was adopted on the 5th day of May, 1983 by a vote of 3-1.



Christan L. Moffett, Clerk
Illinois Pollution Control Board