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SEP 7 1989

MEMORANDUM

SUBJECT: Designation of Recreation Uses

FROM: William R. Diamond, Director *151*
Criteria and Standards Division (WH-585)

TO: Bruce R. Barrett, Director
Water Management Division, Region IV

This memorandum is in response to a request from your staff for guidance concerning State designation of recreation uses. This topic has also been addressed in the preamble to the 1983 water quality standards regulation, the WQS Handbook, and the 1986 criteria document for bacteria. This memorandum summarizes the guidance issued previously and outlines a number of acceptable State options for designation of recreation uses.

Option 1

Designate primary contact recreation uses for all waters of the State and set bacteriological criteria sufficient to support primary contact recreation. This option fully conforms with the requirement in Section 131.6 of the WQS regulation to designate uses consistent with the provisions of Section 101(a)(2) and 303(c)(2) of the CWA. States are not required to conduct use attainability analyses (for recreation) when primary contact recreation uses are designated for all waters of the State.

Option 2

Designate either primary contact recreation uses or secondary contact recreation uses for all waters of the State and, where secondary contact recreation is designated, set bacteriological criteria sufficient to support primary contact recreation. EPA believes that a secondary contact recreation use (with criteria sufficient to support primary contact recreation) is consistent with the CWA Section 101(a)(2) goal. The rationale for this option is discussed in the preamble to the WQS

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regulation, which states that "even though it may not make sense to encourage use of a stream for swimming because of the flow, depth or the velocity of the water, the States and EPA must recognize that swimming and/or wading may occur anyway. In order to protect public health, States must set criteria to reflect recreational uses if it appears that recreation will in fact occur in the stream." Under this option, future revisions to the bacteriological criterion for specific stream segments would be subject to the downgrading provisions of the Federal water quality standards regulation (40 CFR 131.10).

Option 3

Designate either primary contact recreation, secondary contact recreation (with bacteriological criteria sufficient to support primary contact recreation), or conduct use attainability analyses demonstrating that recreation uses consistent with the CWA Section 101(a)(2) goal are not attainable for all waters of the State. Such use attainability analyses are required by Section 131.10 of the WQS regulation, which also specifies six factors which may be used by States in demonstrating that attaining a use is not feasible. Physical factors, which are important in determining attainability of aquatic life uses, may not be used as the basis for not designating a recreation use consistent with the CWA Section 101(a)(2) goal. This precludes States from using 40 CFR 131.10(g) factor 2 (pertaining to low flows) and factor 5 (pertaining to physical factors in general). The basis for this policy, which is covered in the WQS Handbook (p. 1-6), is that the States and EPA have an obligation to do as much as possible to protect the health of the public. In certain instances, people will use whatever waterbodies are available for recreation, regardless of the physical conditions. In conducting UAAs where available data are scarce or nonexistent, sanitary surveys are useful in determining the sources of bacterial water quality indicators. Information on land use is also useful in predicting bacteria levels and sources.

Other Options

- o States may apply bacterial criteria sufficient to support primary contact recreation with a rebuttable presumption that the indicators show the presence of human fecal pollution. Rebuttal of this presumption, however, must be based on a sanitary survey which demonstrates a lack of contamination from human sources. The basis for this option is the absence of data demonstrating a relationship between high densities of bacterial water quality indicators and increased risk of swimming-associated illness in animal contaminated waters (see attached August 17, 1989 memorandum from Al Dufour to Kent Ballentine and the the 1986 criteria document for bacteria). Maine is an example of a State which has successfully implemented this option.

- o Where States adopt a standards package which does not support the swimmable goal and does not contain a UAA to justify the omission, EPA may conditionally approve the package provided that: (1) the State commits, in writing, to a schedule for rapid completion of the UAAs, generally within 90 days - see June 20, 1989 conditional approval guidance memorandum (attached), and (2) the omission may be considered a minor deficiency (i.e., EPA, after consultation with the State, determines that there is no basis for concluding that the UAAs would support upgrading the use of the waterbody). Otherwise, failure to support the swimmable goal is a major deficiency and must be disapproved to allow prompt Federal promulgation action.

- o States may conduct basin-wide use attainability analyses if the circumstances relating to the segments in question are sufficiently similar to make the results of the basin-wide analyses reasonably applicable to each segment.

If you have questions about these comments, please call me or have your staff call David Moon of my staff at FTS-475-7328.

cc Mike McGhee, Region IV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY
CINCINNATI, OHIO 45268

DATE: August 17, 1989

SUBJECT: Non-point Pollution Study-Summary of Results

FROM: *Alfred Dufour*
Alfred Dufour, Director
Microbiology Research Division
Environmental Monitoring Systems
Laboratory - Cincinnati

TO: Kent Ballentine (WH-585)
Criteria and Standards Division

I have put together a summary of our non-point pollution study which was conducted by Yale University. The summary is not very detailed but it should provide enough information on which to make tentative decisions. If you think it needs more detail, please let me know and I'll expand on whatever sections you want modified.

The site for the non-point study was a man-made pond located in central Connecticut. A sanitary survey of the watershed area indicated that there were no human sources affecting the water quality of the pond. The watershed area was highly populated by small animals and some occasional deer. Under dry conditions the fecal coliform density was approximately 17/100 ml and under rainfall conditions the count was about 600-800/100 ml. Extreme counts after a rainfall were as high as 2,000 per 100 ml.

The study population was composed of volunteers from a small community which had exclusive use of the beach area at the pond. At least half of the study population was children.

The study was conducted over a 49 day period. Water samples were taken three times per day at multiple locations along the beach area. Health status of the participants was followed using the calendar system. The calendars were collected on a weekly basis. Symptoms, such as diarrhea, vomiting and stomach ache, were considered evidence of gastroenteritis. The water quality parameters measured on a daily basis were, E coli, enterococci, fecal coliforms, Pseudomonas aeruginosa, staphylococci and rainfall.

Analysis of the data indicated that the gastrointestinal illness rate in swimmers was significantly greater than that of non-swimmers. The association of swimmer-illness to indicator bacteria densities and other variables was examined using Chi Square analysis. Indicator bacteria densities were segregated into high and low levels based on natural distributions.

The analysis indicated whether or not ill swimmers were randomly distributed between the high and low levels or if ill swimmers clustered on the days when indicator levels were high. The results showed that ill swimmers were not associated with high levels of E. coli, enterococci, or fecal coliforms. Illness in swimmers also was not associated with rainfall days. This finding was expected since all of the high indicator density days were highly correlated with the heavy rainfall days. Staphylococci, bacteria that are not associated with fecal contamination, were not correlated with rainfall. This organism was monitored because it is commonly found on the skin of humans and, therefore, might serve as an indicator of bather density. Staphylococci did, in fact, correlate with bather density. Swimmers that became ill clustered on the high staphylococci density days and on the high bather density days, rather than being evenly distributed between the high and low variables.

The conclusions reached from these results are as follows:

1. The risk of swimming-associated illness in this study is not related to high densities of bacterial water quality indicators whose source is animals.
2. Swimming-associated illness was apparently due to swimmer to swimmer transmission in this study.
3. Risk of illness due to swimming in animal contaminated water may not be as great as that due to swimming in human contaminated water.