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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

March 23, 1993

(Executive Committee--Information)
(Engineering and Operations Committee--Information)
To: Board of Directors (Special Committee on Water Quality and Environmental Compliance--Information)

From: General Manager

Subject: Disinfectants/Disinfection By-Products (D/DBP) Negotiations

Report

The U.S. Environmental Protection Agency (USEPA) is conducting a regulatory negotiation (reg-neg) in order to develop a consensus-based regulation for disinfectants and disinfection by-products. Metropolitan is a full participant in this process, because Director of Resources E. G. Means is the negotiator for the National Water Resources Association (NWRA), with Senior Research Chemist S. W. Krasner and Water Quality Specialist M. G. Shovlin acting as his alternates. Participation of Water Quality Division staff and research facilities (Oxidation Demonstration Plant (ODP) and laboratories), as well as of Engineering Division and Operations Division staff, has been instrumental in development of the water supply community's negotiating position.

On March 19, 1993, a tentative agreement was reached on most of the major components of the regulation. Some critical issues remain. The purpose of this letter is to solicit Board input on the framework of the existing tentative agreement.

For perspective, the current D/DBP regulation consists of a total trihalomethane (TTHM) Maximum Contaminant Level (MCL) of 100 micrograms per liter (μg/L). In 1989, the USEPA indicated their intent to lower the THM MCL to 25 or 50 μg/L, and to promulgate MCLs for four individual THMs, two haloacetic acids (HAAs), and several other disinfectants or by-products, with granular activated carbon (GAC) as best available technology (BAT).

The USEPA subsequently revised their favored alternative to a two-phased regulation, in an attempt to balance chemical and microbial risks. In the short term (mid-1990s), the USEPA would promulgate MCLs for individual THMs, individual haloacetic acids (HAAs), other DBPs, and disinfectants, but would not substantially lower the total THM MCL; in the early 2000s,

however, stringent requirements for DBP precursor control would come into effect, with GAC or membranes as BAT.

Due to the limitations of the scientific data, and to the enormous cost impacts of the two-phased approach, in September 1993, the USEPA decided to conduct a negotiated rulemaking. At several points in the negotiations, the USEPA indicated that they continued to favor requirements for GAC and membranes in the long term. Such requirements are estimated to cost Metropolitan $2 billion to $3 billion in capital costs alone.

The tentative agreement reached during the reg-neg represents a substantially more reasonable approach to the D/DBP regulation. The major elements of the tentative agreement are as follows:

- **DBP MCLs:** All public drinking water supplies, regardless of size, would have to meet a reduced MCL of 80 μg/L for total THMs, and a new MCL of 60 μg/L for total haloacetic acids (THAAs). There are no MCLs for individual THMs or individual HAAs. Systems treating surface water and serving greater than 10,000 people would have to meet these MCLs by late 1997; other systems would be phased in by the year 2000.

- **Enhanced Coagulation:** All surface water systems using conventional water treatment plants (i.e., plants having a sedimentation process), and having a total organic carbon (TOC) level of more than 2 mg/L, would have to enhance their coagulation process to reduce TOC. This generally involves substantially higher doses of coagulants (e.g., alum) and the use of acid to reduce pH, thus significantly increasing water treatment chemical use. Language is currently being worked out to help ensure that enhancing coagulation would not compromise other water quality objectives, nor impose unreasonable operating constraints.

- **Advanced Technology Studies:** By 1998, all water suppliers serving more than 50,000 people, and either having total THMs above 40 μg/L, or total HAA above 30 μg/L, or TOC above 2 μg/L, would have to have completed studies into advanced technologies for DBP and precursor control (e.g., GAC, membranes, alternate disinfectants).

- **Reg-Neg II:** In 1998, the USEPA would conduct another negotiated rulemaking, the purpose of which would be to

evaluate whether further reductions in DBPs and/or DBP precursors (such as TOC) are necessary. To ensure that this second reg-neg happens, upon proposal of the D/DBP rule in 1993, the USEPA would also propose that, in the year 2005, MCLs of 40 µg/L and 30 µg/L go into effect for TTHMs and THAAs, respectively, for systems serving more than 10,000 people and treating surface water. These lower limits would not be promulgated, though -- they are strictly an incentive to ensure that all parties return in 1998 to negotiate a new rule.

While this tentative agreement is significantly better than the most likely alternative (i.e., the USEPA proposes strict precursor controls in the early 2000s, requiring GAC or membranes), there will be important impacts on Metropolitan, and on some member agencies. The capital cost of enhanced coagulation at all Metropolitan plants may be as high as $120 million; O&M cost may be as high as $50 per acre-foot, depending on how much flexibility ultimately is incorporated into the regulatory language. Acid handling facilities would be needed (based on studies currently under way at the ODP, such facilities may be needed in any case if ozone is used, to reduce bromate formation), alum sludge production would be greatly increased, and chemical costs for alum, acid, and caustic soda would rise substantially. Also, the point of initial application of chlorine would have to be moved to after the sedimentation basins, which could impact the ability to meet disinfection requirements. A separate chlorine contactor after the filters may be required, unless ozone is used as a preoxidant. Constraints on plant capacities and on blending water from different sources may be necessary.

A possible benefit of enhanced coagulation is that it may be sufficient to meet an upcoming arsenic regulation, though this is speculative at this point.

As mentioned above, language to allow sound engineering judgement and flexibility in meeting these requirements is under discussion. Allowing utilities to avoid enhanced coagulation by meeting a total THM MCL of 40 µg/L and a total HAA MCL of 30 µg/L through use of an alternative treatment technology (for example, by using ozone), is also under discussion.

Several issues remain to be resolved. The most critical from Metropolitan's perspective is the bromate MCL. At levels currently under discussion (5 µg/L), salt water intrusion in the Sacramento/San Joaquin Delta may make the use of ozone difficult for State project water. The $20 to $30 per acre-foot cost of ozone or PEROXONE coupled with the possibility that the

final D/DBP rule may allow utilities to avoid enhanced coagulation (by using ozone to achieve lower MCLs than required by the regulation), makes protection of water quality in the Delta increasingly important.

Metropolitan staff are currently soliciting input on this concept from the NWRA/Metropolitan Member Agencies Advisory Group, which has been advising Metropolitan staff throughout this process. The Member Agencies and Subagencies represented are L.A. Department of Water and Power, Orange County Water District, Municipal Water District of Orange County, City of Pasadena Water Department, Sweetwater Authority and Central/West Basin Municipal Water District. Additional NWRA members represented are the Denver Water Department and the Coachella Valley Water District.

Board Committee Assignments

This letter is referred for information to:

The Executive Committee because of its authority with regard to legislation sponsored by the District or in any way affecting the District, pursuant to Administrative Code Section 2417 (a);

The Engineering and Operations Committee because of its authority to study, advise, and make recommendations with regard to the production and treatment of water pursuant to Administrative Code Section 2431 (c); and

The Special Committee on Water Quality and Environmental Compliance because of its authority regarding Federal and State water quality regulations pursuant to Administrative Code Section 2551 (a) and (b).

Recommendation

For information only.

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