

University of Colorado Law School

## Colorado Law Scholarly Commons

---

Water Organizations in a Changing West  
(Summer Conference, June 14-16)

1993

---

6-15-1993

### Water Quality Impacts of the Point of Diversion

Robert C. Helwick

Follow this and additional works at: <https://scholar.law.colorado.edu/water-organizations-in-changing-west>



Part of the [Courts Commons](#), [Environmental Health and Protection Commons](#), [Environmental Law Commons](#), [Hydrology Commons](#), [Natural Resources and Conservation Commons](#), [Natural Resources Law Commons](#), [Natural Resources Management and Policy Commons](#), [State and Local Government Law Commons](#), [Urban Studies and Planning Commons](#), [Water Law Commons](#), and the [Water Resource Management Commons](#)

---

#### Citation Information

Helwick, Robert C., "Water Quality Impacts of the Point of Diversion" (1993). *Water Organizations in a Changing West (Summer Conference, June 14-16)*.

<https://scholar.law.colorado.edu/water-organizations-in-changing-west/24>

Reproduced with permission of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment (formerly the Natural Resources Law Center) at the University of Colorado Law School.



Robert C. Helwick, *Water Quality Impacts of the Point of Diversion*, in *WATER ORGANIZATIONS IN A CHANGING WEST* (Natural Res. Law Ctr., Univ. of Colo. Sch. of Law 1993).

Reproduced with permission of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment (formerly the Natural Resources Law Center) at the University of Colorado Law School.

**WATER QUALITY IMPACTS OF THE POINT OF DIVERSION**

**Robert C. Helwick  
Chief of Resources Law  
East Bay Municipal Utility District  
Oakland, California**

**Water Organizations in a Changing West**

**Natural Resources Law Center  
University of Colorado School of Law  
June 14-16, 1993**

C

C

C

## **I. INTRODUCTION**

As modern technology for monitoring water quality constituents grows more sophisticated, so does our ability to detect and understand the public health implications of the source of our drinking water supplies. Similarly, as knowledge about our environment expands, so does awareness and sensitivity to the impacts of human activity upon our natural resources. These factors contribute significantly to the increase in governmental regulation designed to promote public health and protect the environment.

Agencies responsible for providing safe and reliable drinking water supplies must comply with the regulations promulgated in both of these fields. The challenge of doing so becomes greater as drinking water standards grow increasingly more stringent, and as environmental safeguards reduce the availability of water supply sources. The point at which water is diverted from the stream is of particular significance in meeting this challenge. The experience of East Bay Municipal Utility District ("EBMUD") demonstrates that there can be great pressure to substitute high quality upstream sources of supply with lower quality downstream sources, when public health concerns related to water quality are viewed to be in conflict with water demands for the protection of fisheries resources.

## **II. EBMUD'S SERVICE AREA AND SOURCES OF SUPPLY**

### **A. The EBMUD Service Area.**

EBMUD is a regional public agency whose primary function is to provide water service for domestic, municipal, and industrial uses to 20 cities and 15 unincorporated communities on the east side of the San Francisco Bay. The District serves a population of 1.2 million, at an average rate of approximately 220 million gallons per day.

### **B. EBMUD's Sources of Supply.**

1. **The Mokelumne River.** The District obtains almost all the water used to serve its customers from the Mokelumne River on the western slope of the Sierra Nevada mountains. It has water rights to 364,000 acre-feet and operates two major storage facilities on

the river, Pardee Reservoir and Camanche Reservoir. The water is diverted from the river at these upstream reservoir sites and delivered to the East Bay service area through three 82-mile long aqueducts.

The Mokelumne River is formed from snowmelt runoff over undeveloped land, much of which is protected forest. Because of the high quality source, levels of contaminants in water supplied to District customers are well below all state and federal regulatory limits.

2. **The American River.** In 1970 EBMUD contracted with the U.S. Bureau of Reclamation for a supplemental supply of American River water from the Central Valley Project. The contract is for up to 150,000 acre-feet annually. The point of diversion for this supply is upstream from the City of Sacramento, in the foothills of the Sierra Nevada mountains. Like the Mokelumne River, it is also a protected water supply source of very high quality. The aqueduct system necessary to convey this supply to the East Bay has not been constructed and the District is not currently taking water under the contract.

### **III. SELECTING A PROTECTED WATER SUPPLY SOURCE**

#### **A. The Doctrine of Best Available Source.**

The guiding policy underlying EBMUD's selection of protected, upstream sources is that drinking water supplies should be obtained from the best available source possible. The doctrine of "best available source" has long been recognized as prudent policy in the field of water supply planning. Today, it takes on even greater significance when viewed in context with the continuous introduction of new chemicals into the environment, the development of new methods of detecting contaminants, the increasing number of potentially harmful substances found in polluted sources, and the uncertain health risks associated with treatment technologies.

#### **B. Public Demand for Water Quality Protection.**

Protection of public drinking water supply sources is also a matter of growing public concern. In their enactment of Proposition 65 ("The Safe Drinking Water and Toxic Enforcement Act

of 1986") California voters declared it their right to protect drinking water supplies. As submitted for voter approval in the general election, Proposition 65 stated in part:

"The people of California find that hazardous chemicals pose a serious potential threat to their health and well-being, that state government agencies have failed to provide them with adequate protection, and that these failures have been serious enough to lead to investigations by federal agencies of the administration of California's toxic protection programs. The people therefore declare their rights: (a) To protect themselves and the water they drink against chemicals that cause cancer, birth defects, or other reproductive harm." (Emphasis added.)

#### **IV. CHALLENGES TO EBMUD'S UPSTREAM POINT OF DIVERSION**

##### **A. The Competing Interests in Public Health and Environmental Protection.**

At the same time that people have grown increasingly concerned about the quality of their drinking water supplies, there has also emerged an increased concern about the impact that diversions from upstream reservoirs have on water supplies available to maintain fisheries. In California, the historical drought of 1976-1977 and the protracted drought years of 1987-1992 have focused particular attention on the limited water supplies available to meet the needs of growing urban populations and to provide protection for declining fish populations.

##### **B. The American River Litigation.**

Although the Mokelumne River has been the source of EBMUD's supply for 70 years, the first challenge to the District's policy of taking water from the best available source was directed at EBMUD's American River contract. In the early 1970s the Environmental Defense Fund ("EDF") and others sought to enjoin EBMUD from taking water under the contract.

The plaintiffs alleged that delivery of water to the District at a point upstream on the American River would constitute an "unreasonable method of diversion" in violation of Article X, Section 2 of the California Constitution, and cause harm to fisheries and other public trust resources. Their contention was that EBMUD should divert its contract supply downstream near the

Sacramento-San Joaquin Delta ("the Delta"), and thereby make the water available for boating, recreation, and protection of fish on the American River, before being diverted for municipal use. (See EDF et al. v. EBMUD [1980] 26 C.3d 183.)

**C. Mokelumne River Proceedings.**

Several proceedings are currently pending in which a challenge has been made to EBMUD's upstream diversion on the Mokelumne River.

1. **Litigation.** In 1991 a sportfishing interest group known as the Committee to Save the Mokelumne ("CSM") filed suit to enjoin EBMUD from diverting water from the Mokelumne River. CSM alleges that diversions by EBMUD do not leave sufficient flows in the river for fish. (Committee to Save the Mokelumne v. EBMUD, San Joaquin County Superior Court Action No. 234648.)

2. **State and Federal Administrative Proceedings.** In November 1992 the State Water Resources Control Board, the regulatory agency which administers California's system of appropriative water rights (Water Code Section 1000 et seq.), commenced hearings to review EBMUD's water rights, in the context of flows needed for the protection of Mokelumne River fisheries. Fish flows on the Mokelumne River are also the subject of proceedings initiated in 1991 by the Federal Regulatory Energy Commission, to modify the terms of EBMUD's federal license for hydroelectric power generation.

As a part of these proceedings, California's Department of Fish and Game ("DF&G") has proposed that flows for fisheries protection be increased significantly on the Mokelumne River. The effect of implementing DF&G's flow requirements would be to greatly reduce water available for diversion by EBMUD to supply its urban service area.

3. **Alternative Point of Diversion.** In each of these pending proceedings recognition is given to the fact that restrictions imposed upon EBMUD Mokelumne River diversions, for the purpose of providing increased flows for fisheries protection, can result in serious water supply shortages for EBMUD's 1.2 million customers. CSM and DF&G contend, however, that EBMUD can avoid such shortages



simply by moving its point of diversion to an alternative downstream location in the Delta.

As in the American River litigation, these parties contend that EBMUD should be required to divert from the Delta, so that the water is available for fisheries protection on the Mokelumne River, before it is diverted by EBMUD for municipal water supply purposes.

**V. WATER QUALITY IMPACTS OF A DOWNSTREAM POINT OF DIVERSION**

**A. Drinking Water Quality Concerns.**

As one moves downstream from the protected watersheds of the American and Mokelumne Rivers, water supply sources are increasingly impacted by contaminants from agricultural practices, industrial activity, and urban development. Therefore, a key issue in the American River litigation and in the Mokelumne River proceedings focuses on the water quality impacts associated with moving EBMUD's point of diversion to the Delta.

**B. Sources of Delta Contamination.**

1. **Municipal and Industrial Activities.** The water quality of the Delta is affected by municipal and industrial activities within and upstream of the Delta. Discharges from wastewater treatment plants and industrial sites often contain small amounts of hazardous trace elements and organic chemicals. Surface runoff from cities contains sediment, heavy metals, and petroleum hydrocarbons.

2. **Agricultural Drainage.** The Delta region is comprised of many islands that are situated within a maze of channels and sloughs. Drainage from these island farmlands, which contains high concentrations of dissolved and suspended solids, organic matter, pesticides, and fertilizers, is pumped into the Delta's waters through hundreds of agricultural drains.

3. **Trihalomethane Precursors.** Trihalomethanes ("THMs"), which have been linked to cancer, are formed when naturally occurring and man-made substances in raw water react with chlorine during the water treatment process. Water containing large concentrations of "trihalomethane precursors" produce higher concentrations of THMs. In the Delta, elevated concentrations of

trihalomethane precursors come from organic carbon in the peat soil and from the heavy load of organics in the Delta waterways.

4. **Sea Water Intrusion.** During periods of low river flows in the Delta, sea water containing sodium, chloride, bromide, and other salts enters the Delta from the San Francisco Bay. Intrusion of bromide is of concern because of the presence of brominated THMs, the most carcinogenic of the known THM compounds.

### C. **Increasing Regulatory Constraints.**

The Delta is a primary water supply source for millions of Californians. Although its polluted waters can be treated to meet current state and federal requirements, there are considerable problems with taste and odor, turbidity and total dissolved solids. Moreover, concern exists as to whether it will be economically and technologically feasible to meet drinking water standards in the future, as regulatory constraints increase the need for new and upgraded treatment facilities.

1. **Historical Perspective.** The number of regulated contaminants has increased dramatically in recent years with the advancing capability to measure water quality constituents. In 1925 only 4 health related contaminants were regulated by the federal government. By 1976, the number of regulated contaminants had gradually increased to 22. Since amendment of the Safe Drinking Water Act in 1986 (42 U.S.C. Section 300f et seq.) the number of regulated contaminants has jumped to 87, and is projected to rise to 111 by 1995.

As analytical techniques improve and more compounds are discovered, meeting regulatory requirements will become more complex. Of particular significance to suppliers of drinking water is the emerging conflict between regulations designed to protect against risks from waterborne microbial disease, and those which address the chronic risks of carcinogenic disinfection byproducts (THMs).

2. **Surface Water Treatment Rule and Total Coliform Rule.** The Surface Water Treatment Rule (54 Federal Register 27486) requires that surface water supplies be filtered and disinfected to

safeguard against Giardia cysts and enteric viruses. The Total Coliform Rule (54 Federal Register 27544) was revised in 1989 to place greater restrictions on the presence of coliform bacteria in drinking water. Compliance with these regulations is likely to require increased levels of disinfection to insure inactivation of waterborne bacteria, cysts, and viruses.

3. **Disinfectant/Disinfection Byproducts Rule.** At present, THMs are the only disinfection byproducts that are regulated. EPA has established a maximum contaminant level ("MCL") for THM's of 100 ug/L, and is charged with developing a new Disinfectant/Disinfection Byproduct Rule by 1995. It is anticipated that the new regulation will lower the MCL for THMs significantly.

4. **Conflicting Regulations and Delta Water.** At present, it is possible to meet the disinfection requirements of the Surface Water Treatment Rule and the current maximum contaminant level for THMs using Delta water. However, use of the most common disinfectants (chlorine, ozone and chloramines) may be restricted under the new Disinfectant/Disinfection Byproduct Rule.

If, for example, the MCL for THMs is lowered from 100 ug/L to 50 ug/L or less, it may not be possible to use chlorine as a primary disinfectant. If bromate is regulated, it may not be possible to use ozone because of its effect in converting bromide in Delta water to bromate. An MCL for chloramines could also be imposed which would restrict its use. Moreover, relatively little is known about the byproducts from these disinfectants. The vast majority of disinfection byproducts have yet to be identified, and may lead to a steady increase in regulatory constraints.

5. **Resulting High Cost and Uncertainty.** As the list of regulated contaminants expands and the limits of allowable concentrations are reduced, the cost of treating Delta water escalates. EBMUD estimates that future costs of treating water diverted from the Delta for District use could, as a result of changing water quality standards, exceed a billion dollars.

Notwithstanding investment of hundreds of millions of dollars

in additional treatment facilities, there is no certainty that treatment will continue to bring Delta water into compliance with changing drinking water standards, or that long-term health risks can be avoided. The State Water Resources Control Board has reported to the California Legislature that given current water quality in the Delta, anticipated stricter standards for THMs, and the Surface Water Treatment Rule which may limit options for controlling THMs,

"water utilities charged with protecting the public health through drinking water from the Delta will face serious problems in meeting anticipated state and federal regulations." (Delta Water Quality: A Report to the Legislature on Trihalomethanes and the Quality of Drinking Water Available from the Sacramento-San Joaquin Delta, October 1991.) Emphasis added.

#### **VI. ENVIRONMENTAL IMPACTS RELATED TO THE POINT OF DIVERSION**

The most effective way to minimize future health risks associated with waterborne diseases and disinfection byproducts is to divert drinking water supplies from a high quality source. There are, in essence, compelling public health reasons why EBMUD should not be forced to move its point of diversion to the Delta. However, the proposal to move EBMUD's point of diversion downstream also raises important environmental considerations.

##### **A. Delta Diversions Threaten Declining Fish Populations.**

Independent from issues of public health, Delta diversions risk injury to declining fish populations. Federal and state resource agencies, as well as organizations such as EDF and the Sierra Club, have consistently expressed concern about the impacts of Delta diversions on salmon, striped bass, and the Delta smelt. They are therefore unanimous in urging that Delta diversions be reduced and avoided.

##### **B. The Delta May Not Be A Viable Supply Source For EBMUD.**

The winter run salmon and the Delta smelt are presently listed as "threatened" under the Endangered Species Act (16 U.S.C. Section 1531 et seq.). Other Delta fisheries, including the longfin smelt and Sacramento splittail, have also been proposed for endangered species protection. The constraints on Delta diversions which

result from these environmental safeguards strongly suggest that the Delta may not be available to EBMUD as an alternative point of diversion. EPA recently commented that the institutional reliability of the Delta as a source for EBMUD water supply is "poor" given present regulatory uncertainties. (EPA Comments to EBMUD Water Supply Management Program EIR, April 1, 1993.)

#### **VII. BALANCING PUBLIC HEALTH CONCERNS WITH FISHERIES PROTECTION**

Recognizing the significance of the point of diversion to future reliability of public drinking water supplies, and taking into account the detrimental environmental impacts that can result from moving the point of diversion downstream, the preferred approach is one which balances the public interest in high quality water supply sources with reasonable instream flows standards for the protection of fisheries.

##### **A. The American River Decision.**

After twenty years of litigation, in 1990 the Court rendered a decision in the American River lawsuit which achieves such a balance. In its Statement of Decision the Court affirmed the upstream point of diversion stating (at page 73):

"Developing chemical technologies continue to increase the pollutant load on the waterways, while the technology of effective detection has not kept pace. Further, it [is] entirely likely that the existence of deadly carcinogens may first be conclusively determined only through epidemiological studies which are successful in charting patterns of illness only after substantial illness has occurred throughout the population."

Acknowledging the great uncertainty associated with future health risks of drinking water supplies, the Court concluded that providing high quality drinking water is a "significant public policy" that is furthered by diversion from an upstream source. (EDF v. EBMUD, Alameda County Superior Court Action No. 425955.)

While affirming EBMUD's entitlement to American River water, the Court also gave recognition to the importance of protecting the public trust resources of the river. To insure that those resources would not suffer, the Court imposed a Physical Solution which defines minimum instream flow conditions that must exist in

the river before water can be diverted to the EBMUD service area. In taking this approach, the Court was able to accommodate the public health interests of EBMUD's 1.2 million customers and provide protection for the fisheries of the American River.

**B. EBMUD's Mokelumne River Fisheries Management Plan.**

To achieve a balancing of interests on the Mokelumne River, EBMUD has taken a proactive role in developing a fisheries management plan which provides protection and enhancement of Mokelumne River fish populations. The plan has been submitted to the State Water Resources Control Board as part of the pending review of EBMUD's water rights, and is based on more than two years of fisheries studies in the river and scientific analysis sponsored by EBMUD.

Whereas high fish flows proposed by DF&G would result in serious water supply shortages for EBMUD and other users of the Mokelumne River, EBMUD's fisheries management plan serves the broader public interest of providing reasonable protection for the fisheries and meeting the public's need for a reliable, high quality water supply.

**VIII. CONCLUSION**

The point of diversion from which public drinking water supplies are obtained will be increasingly important as water quality standards grow more stringent and treatment technologies become more complex. Moving the point of diversion downstream can have long-term impacts on public health and is therefore not a simple solution for addressing environmental concerns.

The challenge is one of developing balanced approaches for addressing these competing needs, so that public health interests and fisheries protection are not viewed as mutually exclusive objectives. The Physical Solution which was fashioned by the Court in the American River litigation, and the fisheries management plan developed by EBMUD for the Mokelumne River, provide models for others who may face this challenge in the future.

### **ADDITIONAL REFERENCES**

California Department of Water Resources Central District. The Delta as a Source of Drinking Water - Summary of Monitoring Results - 1983 to 1987. Interagency Delta Health Aspects Monitoring Program. January 1989.

California State Water Resources Control Board. Report of Referee, Lower American River Court Reference (EDF et al. v. EBMUD). June 1988.

California State Water Resources Control Board. Water Quality Control Plan for Salinity - San Francisco Bay/Sacramento-San Joaquin Delta Estuary. May 1991.

Okun, D.A., R.H. Harris, and R. Tardiff. Water Quality Considerations in Source Selection. January 1985.

### **Author's Note:**

This presentation includes the personal views of the author and does not necessarily represent the position or views of EBMUD, its Board of Directors or its management.

C

C

C