A report by:
THE JOINT LEGISLATIVE STAFF
TASK FORCE ON GOVERNMENT OVERSIGHT

Prepared for:
ASSEMBLYMAN HOWARD WAYNE, CHAIR
ASSEMBLY COMMITTEE ON ENVIRONMENTAL
SAFETY & TOXIC MATERIALS

TOILET TO TAP

The San Diego Water Repurification Project

An Informational Hearing
MONDAY
DECEMBER 8TH, 1997
9:30 A.M. - 12:30 P.M.
SUPERVISOR'S NORTH CHAMBER, ROOM 310
SAN DIEGO COUNTY BLDG.
1600 PACIFIC HIGHWAY

HOWARD WAYNE
Chair

JIM CUNNEEN
Vice Chair

STEVE BALDWIN

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CALIFORNIA LEGISLATURE

Assembly Committee on Environmental Safety and Toxic Materials
HOWARD WAYNE, Chairman

Dear fellow residents and concerned citizens:

Within the next year, the City of San Diego is planning to break ground on a $100 million plus project to convert sewage into drinking water. No community in California is directly putting its reclaimed sewage into its drinking water supply, and the technology San Diego intends to use is at the cutting edge. Indeed, no water reuse on this scale has been attempted in the United States. Additional concerns have been raided about the cost of the project. The demands of public safety and public finance requires that the public be guaranteed the drinking water will be safe before the project can be permitted to go forth.

As Chair of the Assembly Committee on Environmental Safety and Toxic Materials, I have called this interim hearing to inquire into safety, cost and desirability of San Diego's reclaimed sewage project. The concerns, detailed in the report "Toilet to Tap", are:

- San Diego's initial proposal received preliminary approval from the Department of health Services, the agency responsible for insuring that public water is safe to drink. However, San Diego subsequently suggested changes to this initial proposal, in part to reduce costs. It must be certain that lower costs do not compromise public health, Moreover, the Department of Health Services has not approved the revisions in the proposal.

- The project has proceeded with minimum input from the people of San Diego. The public's response to this Committee's questionnaire about the project has been monumental. It is critical in the context of a public hearing that the public know how this project will be implemented, whether the water will be safe, how much the processed water will cost, and whether there are more desirable alternatives to drinking reclaimed sewage. Moreover, by holding this hearing in San Diego, citizens will be able to directly express their concerns.

Thank you for your concern and involvement in this process.

HOWARD WAYNE, Assemblyman
78th Assembly District

AGENDA

Assembly Committee on Environmental Safety and Toxic Materials
Monday, December 8, 1997
9:30 a.m.
San Diego County Building, Supervisor's North Chamber - Room 310

Introduction
Members' Statements

City of San Diego Water Repurification Project:
Dave Schlesinger – Director, Metropolitan Wastewater
Virginia Grebbien – President of Water Reuse

Department of Health Services:
David P. Spath, P.E. – Chief, Division of Drinking Water and Environmental Management

Daniel A Okun, Ph.D. – Department of Environmental Science and Engineering, School of Public Health, University of North Carolina at Chapel Hill

Alan Gin – Economist, University of San Diego

INTRODUCTION

The City of San Diego has embarked on a project to turn wastewater into drinking water. The San Diego Water Repurification Project (SDWRP) is the State's first indirect potable reuse program involving surface water for the express purpose of supplementing a drinking water supply. "Repurification" is a term coined to describe the treatment of reclaimed sewage water to produce safe drinking-water. Part of this process includes the introduction of this water into the drinking water system before its final treatment. While the concept of replenishing a local domestic water supply with treated reclaimed water has been studied, until now it has never received regulatory approval.

In 1995, the California Department of Health Services (DHS) approved an initial purification process for SWDRP. Since that time the City has modified the process to cut project costs. This modified proposal has not yet received DHS approval.

In addition to meeting health standards set by the Department of Health Services, SDWRP must use a raw water supply reservoir for blending and retention of the repurified water prior to its final treatment. The City plans to introduce roughly 20 million gallons per day (20,000 acre feet per year) of reclaimed, treated sewage water into the 90,000 acre-foot San Vicente Reservoir. This treated water will blend with local storm runoff and imported water from Northern California and the Colorado River prior to final treatment at the City's Alvarado Water Filtration Plant.

A water repurification project of this magnitude is unprecedented. To date, there has been very limited involvement of the public on this issue, and the public has not been allowed to vote on funding for this project. The current estimated cost of the project is well over $100 million dollars[1] with ground-breaking set for the spring of 1998.

BACKGROUND

In the 1980s, the Point Loma sewer blowout resulted in a federal lawsuit against the City of San Diego. As part of the settlement, the City agreed to build a sewage reclamation facility. The North County Reclamation Facility (just on-line) produces 30 million gallons per day (mgd) of tertiary treated (non-potable) water suitable for irrigation. However, this water requires a separate expensive pipeline infrastructure, and customers

[1] Jim Shamloufard and Thomas Richardson, "California City Charts the Course for Accepted Use of Treated Wastewater for Indirect Potable Applications," *1997 IWSA Yearbook*, published by the International Water Supply Association. Shamloufard is with the City of San Diego Metropolitan Wastewater Department. Richardson is on the staff of Montgomery Watson, Consulting Engineers.

(such as golf courses)[2] for this water are limited. Only about 8 million gallons per day may be feasible to resell for non-potable use and, currently, about 22 million "surplus" gallons of this expensively-treated sewage water are simply pumped back into the sewers for outlet at the Point Loma facility. The City needed to find some other use for this non-potable water.

The San Diego Water Repurification Project originated from studies conducted by the City during experiments using water hyacinths to purify sewage. Raw sewage would be piped into pools of hyacinths, and the plants would remove it. An experimental treatment process -- a filtering process called reverse osmosis -- could then be used to produce potable water from the hyacinth pools. These experiments (Aquaculture I, II, III) went through several increasingly larger and increasingly expensive modifications before it was determined that the hyacinths required excessive land use and failed to thrive in sewage. The city's share of the cost (40% of the total) for these experiments was approximately $20 million. The remainder was paid for with federal subsidies.[3]

If the knowledge and technology paid for in the Aqua I, II, and III projects could be applied to the "surplus" tertiary treated water, the City could add the 20 million gallons per day of this "repurified" water to the drinking water system. The cost of this technology and treatment would be paid for by water ratepayers. Thus began the SWDRP.

I. EVOLUTION OF THE PROJECT

To begin moving this project forward, in the early 90s the City contracted with Montgomery Watson Engineering for technical studies to supplant the hyacinth studies. A public relations firm was retained, and in early 1994 the project was made public in the document, "Repurified Water, State-of-the-Art Technology for the year 2000."[4]

The City also appointed a "blue ribbon" citizens' Repurified Water Review Committee (citizens' committee) to review the project with experts at a series of public meetings. At the conclusion of those meetings, the citizens' committee issued the "Repurified Water Review Committee Final Report to the San Diego County Water Authority Staff" which stated that the proposed water should meet "the highest health standards."[5]

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[2] Shamloufard and Richardson

[3] Matt Potter, "Pour yourself a glass of tiny viruses and bacteria," *The Reader*, May 1997

[4] "Repurified Water: State of the Art Technology for the Year 2000," Joint publication of the San Diego County Water Authority and the City of San Diego, 1995

[5] Repurified Water Review Committee, *Final Report to the San Diego County Water Authority Staff*, November 1994

In June of 1994, the San Diego County Water Authority put forth a Montgomery Watson "Final Feasibility Study" on the proposed water purification processes (this is known as a "treatment train") for SDWPR.[6] On the basis of this study, and pending the test results of the proposed treatment train, the Department of Health Services granted the Water Authority "conditional conceptual approval" of the repurification project.

In 1995, DHS reviewed Water Authority test results and said the test results "successfully demonstrated that water of a high quality acceptable for delivery to the San Vicente Reservoir can be produced." In October of 1996, David Spath, Chief of the Division of Drinking Water and Environmental Management of the Department of Health Services, wrote Mayor Golding that "the project that is being proposed meets (health and reliability) standards and will serve as the model for similar projects in the future."[7]

In December of last year the City conducted a "Value Engineering Study" on the costs associated with the project. The results of this study led the City to suggest several cost-cutting measures to the treatment train. This revised project proposal was taken under submission by DHS. In April of this year DHS asked for further tests.[8]

Also in April, and in advance of final DHS approval, the City Council appropriated $8 million for project design work. The timetable for the project, unless modified, calls for design work to be concluded in the near future and ground-breaking next spring. This schedule is subject to possible modification pending DHS approvals, the draft of an EIR, and the requisite EIR hearing.

II. PUBLIC HEALTH AND SAFETY ISSUES

Sewage is dangerous. It contains coliform bacteria, parasites, and millions of viruses per cubic centimeter. Parasites are a particular problem. Cryptosporidium, for example, is highly resistant to the usual chlorination levels of potable water and have different filtration requirements than other parasites (such as giardia) because they are much smaller. Since 1984, scientists have linked 11 outbreaks of cryptosporidiosis to local drinking water supplies. The worst outbreak occurred in Milwaukee in 1993, when 400,000 people became ill and 69 people with weak immune systems (infants, aged, and HIV positives) died. Cryptosporidium had invaded the city's treatment system and survived the normal disinfection process.

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[6] Montgomery Watson and NBS/Lowry, *Final Water Repurification Feasibility Study*, 1994

[7] Letter from David Spath, Chief, Division of Drinking Water and Environmental Management, Department of Health Services, to Mayor Susan Golding, October 25, 1996

[8] Memo from Toby Roy, Department of Health Services, Drinking Water Field Operations Branch, San Diego District, to Jim Shamloufard, City of San Diego Metropolitan Wastewater Department, January 13, 1997, re: comments on Value Engineering Proposal

This very real threat of contamination is why reclaimed sewage treated to the tertiary level is restricted to non-potable uses such as irrigation and why a separate set of purification processes are required for reclaimed and potable water.[9]

The SDWRP plan includes a 20 million gallon per day advanced water repurification treatment plant which "will employ technologies never before combined." Redundant features, called "multiple barriers," will also be used to provide extra safety assurance to the regulatory community. These processes have been used individually in previous full-scale operations. However, the SDWRP "will, for the first time, combine these technologies, along with operational and monitoring concepts, to treat wastewater to a level that meets the public health officials' drinking water goals of safety and reliability," according to a spokesman for the City and the representative of the City's consulting engineering company Montgomery Watson Engineering.[10]

THE ORIGINAL REPURIFICATION PROPOSAL

Treatment to render treated sewage suitable for drinking (potable) is, with the exception of distillation, experimental. The San Diego experiment will mark the first time in California's history that treated sewage has been mixed with a surface reservoir at the scale proposed by the City. The City had initially proposed to take the tertiary treated water from the North County Reclamation Facility and process it through several advanced treatment steps:

1. microfiltration: water is pushed through a thin microfilter to remove some dissolved minerals and particles large enough to be visible to the naked eye;

2. reverse osmosis: water is pushed through a membrane of cellulose acetate under high pressure. The membrane allows water molecules to pass through but screens out most organics and dissolved salts;

3. ozone and hydrogen peroxide: ozone is a highly reactive oxidant that kills any micro-organisms that might have survived the previous treatment; hydrogen peroxide aids this process and improves the taste of the water;

4. an ion exchange process to reduce the nitrate level in the treated water; and

5. dilution in the San Vicente Reservoir for a year where the natural action of the sun (and time) should lead to the death of any remaining pathogens.

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[9] Water Education Foundation, "Layperson's Guide to Drinking Water," 1997

[10] Shamloufard and Richardson

This is the repurification treatment train given "conceptual approval" by DHS.[11]

THE CITY'S 1997 PROPOSED MODIFICATIONS IN THE TREATMENT TRAIN

In an effort to reduce the overall cost of the project, the City's value engineering team came up with several recommendations that "involve changes in the treatment train which could impact the quality of treated water and would require (additional) approval by the Department of Health Services" according to the January 13th memo from Toby Roy of DHS to Jim Shamloufard of the City's Metropolitan Wastewater Department. Those changes included:

1. provide ultrafiltration in lieu of microfiltration and ozone;

2. substitute ultra low pressure reverse osmosis thin film composite membranes for high pressure reverse osmosis;

3. replace ozone with chlorine disinfectant in the pipeline from the North City Water Reclamation Plant to the Advanced Treatment Plant; chlorine would be used to kill viruses followed by ammonia for disinfectant by-product control; and.

4. in lieu of ion exchange, achieve nitrate removal by TFC or cellulose acetate membrane.

IF THESE MODIFIED TREATMENTS ARE EFFECTIVE, WHY WEREN'T THEY PART OF THE ORIGINAL PROPOSAL?

In the 1994 Montgomery Watson report, *Advanced Water Treatment*, Chapter 5, the engineers reviewed the pros and cons associated with potential treatment technologies, making the following observations:[12]

1. The treated water is planned to be high in nitrate. The reverse osmosis procedure would reduce nitrate concentrations, but even with this reduction the nitrate-rich solution could lead to significant algae growth in the San Vicente Reservoir and effect its recreational use. Montgomery Watson suggests that "it would be prudent to consider supplemental nitrate treatment in the Advanced Water Treatment (AWT) process train."[13]

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[11] Cf Kathryn Balint's "Reclaimed Water: an assert or just a pipe dream," *Union-Tribune*, April 16, 1995, for a useful review of this period.

[12] Much of the following is summarized from the Montgomery Watson *Final Feasibility Report*, Chapter 5: Advanced Water Treatment (1997)

[13] Montgomery Watson, *Final Feasibility Report*, Chapter 5, p. 6

Ultimately Montgomery Watson recommended "an ion exchange treatment for incorporation into the AWT processes." The City recommended elimination of this treatment after the project cost study.

2. Pathogens (disease causing micro-organisms): the three categories of primary concern in water repurification are viruses, bacteria, and parasites (giardia and cryptosporidium). There are a number of treatment processes that would provide varying levels of disinfection prior to discharge of water into San Vicente Reservoir. Chemical clarification and filtration provide for removal of each of the categories of pathogens depending upon the chemicals and operating parameters.

   Typically, chemical disinfection (chlorine, ozone) is the primary means of disinfection in domestic water treatment plants. <u>However, the use of free chlorine as a primary disinfectant (with a substantial contact time) is not a recommended practice in water repurification projects until after the point organics are removed from the product water</u> (until after reverse osmosis). <u>Adding free chlorine prior to organics removal invites the formation of disinfectant by-products that are recognized animal carcinogens.</u>

   Microfiltration, ultrafiltration, nanofiltration, and reverse osmosis serve as an effective barrier for all three classes of microbes. Nevertheless, additional disinfection is recommended to provide further barriers.[14]

3. Primary Disinfection Alternatives: three alternative disinfectants/oxidants were considered for the primary disinfection step following reverse osmosis in the AWT plant. These were chlorine, ultraviolet irradiation, and ozone with hydrogen peroxide. They were tested as treatments against viruses, coliform bacteria, and parasites, and were compared with respect to efficiency, using five variables: disinfection efficiency (of viruses, bacteria, parasites), formation of by-products, degree of reliability, oxidation of organics, and residual maintenance.

   The effectiveness of each of these three alternatives for contaminant inactivation was measured by "logs":

   2 log = 99% removal of contaminants
   3 log = 99.9% removal
   4 log = 99.99% removal
   5 log = 99.999% removal
   6 log = 99.9999% removal
   100% removal of contaminants = distilled water

[14] Montgomery Watson, *final Feasibility Report*, Chapter 5, pp. 6, 7

Comparisons of the disinfection alternatives found the following:

a. Inactivation of viruses:
   (1) Chlorine achieves a 4 log inactivation of viruses
   (2) Ozone also achieves a 4 log inactivation of viruses
   (3) Ultraviolet achieves a 3 log inactivation of viruses

b. Inactivation of Coliform Bacteria
   (1) Chlorine achieves approximately a 2.5 log inactivation of coliform bacteria in filtered secondary wastewater.
   (2) Based on pilot studies, ozone achieves a 5 log deactivation.
   (3) Ultraviolet works less efficiently than either of the first two.

c. Inactivation of Parasites
   (1) Chlorine (heavy dose) results in only a 1 log deactivation of giardia. Chorine is ineffective in higher concentrations against cryotosporidium.
   (2) Ozone in low doses is sufficient to deactivate both giardia and cryotosporidium at a 2 log level.
   (3) Ultraviolet tests are inconclusive. Higher doses are anticipated to result in additional deactivation. (3 log)

d. Formation of Disinfection By-Products
   (1) Chlorine: Chlorine produces significant levels of organic by products, some of which are proven animal carcinogens. The two primary classes of by-products are trihalomethanes (THMs) and haloacetic acids (HAAs). Due to the low organic content of the reverse osmosis treated water, the levels of THMs and HAAs formed may be low if the chlorine dose is relatively low. However, THM's and HAAs are are expected to persist in the receiving reservoir.
   (2) Ozone: the by-products of ozone treatment (aldehydes and ketoacids) are biodegradable and should be eliminated by natural biological processes in the reservoir. Ozone treatment can produce measurable levels of bromate into the reservoir, but studies have indicated that bromate undergoes a series of complex reactions in the presence of organic matter, as well as decomposition due to sunlight. For a host such as San Vicente Reservoir, bromate's estimated half-life is on the order of one month.[15]

   Chlorine and ozone form some types of by-products at various levels. Chlorine is expected to form the highest level of by-products which may have an impact on the aquatic ecosystem.

[15] Montgomery Watson, *Final Feasibility Report*, Chapter 5, p. 20

e. Degree of Reliability:

(1) Both chlorine and ozone have documented reliability.

(2) Ultraviolet studies are less reliable.

f. Oxidation of Organics

(1) Chlorine is not effective for the oxidation of organic odor-causing compounds such as geosmin and methol-ido-borneol.

(2) Ozone, in addition to being a strong disinfectant, is also a strong oxidizing agent. Studies have shown that the ozone treatment process (ozonation) is capable of oxidizing pesticides and taste-and-odor causing compounds. A combination of ozone and peroxide would provide a further barrier to any trace organics that might be present in the reverse osmosis product water.

THE ORIGINAL MONTGOMERY WATSON REPORT CLEARLY INDICATES THAT THE SUBSTITUTION OF CHLORINE FOR OZONE TREATMENT, ESPECIALLY PRIOR TO THE REVERSE OSMOSIS PROCESS, IS BOTH LESS EFFECTIVE AND MORE DANGEROUS TO PUBLIC HEALTH.

In a recent communication with Chairman Wayne, F.D. Schlesinger, Director of Metropolitan Wastewater, protested that "we have never removed ozone treatment from the proposed treatment train. Nor do we intend to."[16] However, the exchange of communications between DHS and the Wastewater Department earlier this year (in the wake of the Value Engineering Study), the Wastewater Department specifically suggested substituting Chlorine disinfectant treatment for ozone for reasons of cost: "replace ozone with chlorine disinfection in the pipeline from the North city Water Reclamation Plant to the Advanced Water Treatment Plant. Chlorinate in the NCWRP contact basis for virus kill followed by ammonia for disinfectant by product control to replace ozone."[17]

(NOTE: Some water sources have more inherent organic material than others, and a greater potential to form THM by-products when chlorine is added. Sewage does. In the early 90's the Environmental Protection agency was expected to lower the amount of allowable THMs in finished water from 100 parts per million to 80 parts per million. Concern about the cost has postponed that decision. Ozonation, an alternative to chlorine, is more effective than chlorine, and is also effective for controlling color, taste, and odor. Ozonation is used widely in Europe, but less often in the US because of its cost.)

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[16] Letter from F. D. Schlesinger, Director, Metropolitan Wastewater, to Assemblymember Howard Wayne, October 28, 1997

[17] Memo from Toby Roy to Jim Shamloufard, op. cit., January 13, 1997

PUBLIC HEALTH AND PUBLIC RELATIONS

The City's response to the public over concerns about health and safety have been based, to date, on the results of focus group studies designed by the City's public relations firm. These focus group studies were designed to help convince or "sell" the public on the product's safety. The Final Report of the citizens' committee recommended reinforcing the message that "the current imported water supplies have been previously used."[18]

On October 28th of this year, F.D. Schlesinger of Metropolitan Wastewater was quoted, "…in fact, San Diegans are already drinking previously used water. Colorado River water is used and discharged by more than 200 communities before it reaches San Diego."[19]

The annual flow of the Colorado River is 15 million acre feet a year. According to the Colorado River Commission, as much as 479 acre feet per day of wastewater is discharged into the Colorado from permitted municipal and industrial sources. However, the flow of the river is 410,959 acre feet per day. In the Colorado River the proportion of treated wastewater to fresh water is less than 2%.

The SDWRP proposes to add 20,000 acre feet per year of treated wastewater to the 90,000 acre foot capacity of San Vicente Reservoir – a proportion of 28% wastewater to fresh water. It should be noted as well that the Colorado River is not a standing body of water, as is the city's reservoir[20].

The public should not be satisfied with superficial comparisons made by the City to answer concerns about public health and safety.

WHAT ARE THE CURRENT HEALTH STANDARDS BEING APPLIED TO THE WATER REPURIFICATION PROJECT?

California's Safe Drinking Water Standards are the toughest in the nation. They were designed to address water which starts as snow melt and rain. This water must be brought to a standard where it is safe for a normal adult to drink. Legislation to raise this standard in order to insure that water is also safe for infants and the aged – whose immune systems tend to be weak -- was vetoed this year by the Governor. Given that the water in question here starts out as deadly sewage, SHOULDN'T THE SAFETY STANDARDS BE HIGHER THAN FOR ORDINARY SOURCE WATER?

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[18] Citizens Review Commission, *Final Report*, p. 15

[19] Schlesinger letter to Wayne, op. cit.

[20] "Interstate Water Management/New Trends in Water Allocation", Interstate Council on Water Policy 1997 Annual Meeting, keynote address. The wastewater statistics are from the Colorado River Commission, "Forum on Saline Content", 1997.

Department of Health Services has asked the City to involve several treatment processes. Each is designed to reduce or "inactivate" a high percentage of the contaminants in the treated water (viruses, bacteria, parasites). The theory is that while no one treatment will produce a 6-log deactivation (99.9999 percent of all the pathogens), together they will achieve this standard. DO WE HAVE THE TECHNICAL CAPABILITY TO CONTINUOUSLY MONITOR THESE PROCESSES AND GUARANTEE THAT, IF ONE OF THEM FAILS, NO PARTIALLY TREATED WATER WILL MOVE INTO THE DRINKING WATER SUPPLY?

III. HOW MUCH WILL WATER REPURIFICATION COST?

WHAT IS THE TOTAL COST, TO THE PUBLIC, OF THE PROPOSED FACILITY?

The published cost of the repurification facility seems to fluctuate. In 1995, in an official City publication, "Water Repurification", the cost was $110 million.[21] In 1996, in an article by Kathryn Balint in the Union-Tribune, the cost had risen to $120 million.[22] In spring of this year, in an article in the International Water Supply Association yearbook, the cost is $125 million.[23] By late summer, in a Los Angeles Times article, the cost had escalated to $140 million.[24]

Various cost estimates are not based on the same considerations. Sometimes the cost of the 20 mile pipeline to San Vicente Reservoir is included, sometimes not. Sometimes part of the cost seems to be attributed to the sewer district. Often the cost seems to be lowered by including possible federal subsidies. Whether the cost is calculated by the sewer bill, the water bill, or federal monies, the same families write checks to all three.

WHAT WILL BE THE COST TO RATEPAYERS OF THE SDWRP WATER?

The cost of the facility and its operation will effect the price we pay at the tap. Source water from MWD presently costs San Diego $430 per acre foot and is expected to increase by $200 an acre foot over the next twenty years to approximately $630 per acre foot. The official booklet of the water district, "Water Repurification, Technology for the Year 2000", places the cost of the proposed repurified water at "$900-1200 an acre foot produced"[25].

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[21] Water Repurification, Op. Cit., page 12
[22] K. Balint, "Tests show wastewater can be made drinkable", Union-Tribune, May 15, 1996
[23] Shamloufard and Richardson, Op. Cit.
[24] Jill Leovy, "Cities Weigh Tapping Sewage for Drinking", *Los Angeles Times*, August 17, 1997
[25] Water Repurification, Op. Cit., page 12

The citizens' committee report concluded that all costs through tertiary treatment should be allocated to "wastewater" (the sewer district). They concluded "on this basis, repurified water will cost between $924 and $1,286 per acre foot depending on the method of pre-treatment and pipeline alignments chosen".[26]

This fall, in the Los Angeles Times, a different figure appears: "San Diego officials estimate it will cost about $600 per acre foot to produce drinking water from waste water, about 30% higher than the current cost of purchasing water from the Metropolitan Water District. They acknowledge that figure is fuzzy, however, because it includes federal subsidies and is counted against existing sewage-treatment costs".[27]

A January 1995 issue of Western Water quotes Ken Weinberg, Water Supervisor of the San Diego Water Authority, as estimating the cost at $924 an acre foot[28].

Most recently, F.D. Schlesinger of Metropolitan Wastewater estimated the cost of the treated water at $570-740 per acre foot[29] - although in a conversation held with Assemblyman Wayne some days earlier, Schlesinger estimated the "cost of treating water from tertiary to potable at North City, not including overhead, at $846 an acre foot". Overhead (annually) would run a little over $4,000,000 a year, adding additional costs to the finished product.[30]

THE COST OF REPURIFIED WATER WILL BE HIGHER BY AN UNKNOWN AMOUNT THAN IMPORTED MWD WATER - FOR AT LEAST 20 YEARS. AT WHAT POINT IN THE NEXT CENTURY WILL THE CITY HAVE RECOVERED THE INVESTMENT RATEPAYERS MUST START PAYING FOR NOW?

DID THE RECENT ANOUNCEMENT OF INTENDED RATE HIKES TO PAY FOR DILAPIDATED INFRASTRUCTURE INCLUDE THE COST OF SDWRP ADVANCED WATER TREATMENT FACILITY? IF NOT, WHAT FURTHER INCREASES WILL BE NECESSARY AND WHEN?

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[26] Final Report, Op. Cit., page 16
[27] Op. Cit., August 17, 1997
[28] Western Water, January 1995
[29] Letter from F.D. Schlesinger to Wayne, Op. Cit.
[30] Staff notes, meeting with Department of Water officials

IV. THE ROLE OF STATE GOVERNMENT IN REGULATION OF THE PROJECT

The following regulatory approvals are needed in order for the City of San Diego to discharge repurified water into its reservoir to be used as part of the city's drinking water supply:

1. The regional water quality control board must issue waste discharge requirements. Water Code Section 13263 requires regional water boards to issue waste discharge requirements (WDRs) to persons proposing to discharge contamination into water. This is essentially permission to discharge pollution into water, and there is no explicit requirement in law for a public hearing by a regional board prior to issuance of WDRs. The San Diego Regional Water board must issue WDRs for the discharge of reclaimed water into any surface waters in the city.

2. State Department of Health Services (DHS) must establish criteria for the use of recycled/repurified water. Water Code Section 13521 requires DHS to establish "uniform statewide recycling criteria for each varying type of use for recycled water…where the use requires the protection of public health". More simply stated, DHS must establish criteria for the use of recycled water as drinking water pursuant to this section. It is unclear whether these criteria must be adopted as regulations and whether any public notice or hearings must be held.

   In a letter from David Spath, Chief of the Division of Drinking Water and Environmental Management for DHS, to staff, Spath noted that the "Division Chief was responsible for giving approval on the project". (Spath himself would give approval.) He writes further that "approval will be given in stages. The initial approval of the San Diego Project was a conceptual approval contingent upon a demonstration of the performance and reliability of certain treatment processes. Assuming the demonstration work is successful and the City proceeds with the project, there are several additional approval steps. At each step the Department reviews the project, provides written comments and, if the project meets all the appropriate criteria, the Department will provide written approval"[31]. No mention of public hearings is included in this approval process by DHS.

3. Regional water boards and DHS must coordinate on safety requirements. Water Code Section 13523 requires regional water boards to consult with DHS on criteria to protect public health, and issue water reclamation requirements (where determined by the board to be necessary). Section 13523.1 authorizes a regional board to issue master reclamation requirements in lieu of the WDR's described above. Once again, no public hearing is required.

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[31] Letter to Richard Steffen, Joint Legislative Staff Task Force on Government Oversight, From David Spath, Chief, Division of Drinking Water and Environmental Management, Department of Health Services

4. DHS must regulate provision of water through public water system. Part 12 (commencing with Section 116275) of the Health and Safety Code, the California Safe Drinking Water Act, requires DHS to ensure that public water systems provide water which is "pure, wholesome, and potable" and more generally protect public health from contaminants in drinking water. Section 116525 requires public water systems to obtain permits from the department in order to operate. The law authorizes, but does not compel, a public hearing on the issuance or modification of a domestic water supply permit. Presumably, DHS would have to ensure that reclaimed water used in the City of San Diego's public water supply is properly treated before it is used as drinking water. As the letter from Spath indicates, however, no hearings are involved in this process either.

V. INVOLVEMENT OF THE PUBLIC IN THE DECISION TO APPROVE 'REPURIFIED' WATER

The initial timetable for the project, outlined in the Water District's booklet (Repurified Water, Technology for the year 2000) called for hearings on the project's Environmental Impact Report (EIR) in 1996 and 1997. Peter Silva, deputy director of the City Water Utilities Department announced last year that the EIR was to be "drafted and ready for public review by the Summer of 1997".[32] Earlier this year the City Council approved $8,0000,000 in funds for "project design work", said to be essential for the preparation of the EIR.[33] Groundbreaking for the project is scheduled for next Spring, but no firm date for the release of the draft EIR or for any public hearings has yet been issued by the city.

The "public's" involvement to date has consisted of:

1. A set of "community leaders" picked by the Water District to be on the citizens' committee.
2. Six hearings at a church in Mission Valley attended by an average of 20 members of the public in 1994.
3. Two meetings announced in 1996 in the Union Tribune (May 15, 1996) at Scripps Miramar Ranch branch library and the Mission Trails Regional Park Visitors and Interpretive Center.
4. Briefings and tours have been provided to identified community leaders and members of the media. The district has told staff that they have a list of 2800 project supporters.

[32] K. Balint, "Tests show wastewater…", Op. Cit., May 15, 1996
[33] Minutes of the Council of the City of San Diego for the Regular Meeting of Monday, March 31, 1997, page 56ff

VI. SUMMARY AND RECOMMENDATIONS

The public should know that the proposal to introduce treated wastewater into the drinking supply of the City of San Diego at the volume proposed is without precedent in California. To say that it hasn't been done is not to say that it cannot be done safely and not to say that it should not be done. But the public should be made aware that this is the first time studies and small scale experiments in repurification will be used as a basis for a full-scale, operating facility capable of producing 20 million gallons of repurified water each day.

Water repurification is expensive. The initial purification treatment train proposed by the city and given conditional conceptual approval by the Department of Health Services has been modified in order to cut costs on the basis of a "Value Engineering Study". One of the changes to the original proposal is a treatment process that the city's own engineering consultants had previously recommended against using. Most recently, F.D. Schlesinger's communication to the Committee seems to indicate that the City is retreating from the changes suggested in the Value Engineering Study. However, it is unclear to staff what the city is now proposing as the final treatment train.

Hard data put forth in public reports on the estimated cost of the project is inconsistent. Staff received the following numbers from the City prior to the hearing.[34] These costs should be confirmed by City officials:

Cost of treatment from tertiary to potable:	$100 million
Cost of the conveyance to San Vicente:	$ 36 million
Cost of Operation of WPF (annual):	$ 4 million

Hard data on the estimated cost of the final product (the water) has also been inconsistent. F.D. Schlesinger's communication suggests it may run less than $600 an acre foot. City water officials have told staff the cost of treatment from tertiary water to potable water at North City (not including overhead, but presumably including the capital costs of the conveyance) would be $846 an acre foot.

These cost estimates are important in order for the public to determine the value of the project. The City has provided staff with an estimate of the price of raw water from the California Water Authority that indicates San Diego will pay $177 dollars more an acre foot in 20 years ($604) than we do now ($427).

At these rates - if the $846 per acre foot number is valid - San Diegans will pay an additional $5 million more over the next 20 year for "repurified project water" than they would pay for imported water. We will reduce our "dependency" on imported water by only 5% or so.

[34] Staff notes, meeting with Department of Water officials

RECOMMENDATIONS TO THE COMMITTEE:

1. The Committee should attempt to ascertain the true cost of SDRWP and the cost of its water at the tap

2. The Committee should make a determination as to whether the current "Safe Drinking Water" standards are sufficiently stringent to protect infants, the aged, and other persons with weak immune systems, if, in fact, our drinking water will be mixed with “repurified” water.

PENDING LEGISLATION

The current regulatory scheme provides inadequate opportunity for the public to voice its concerns. Assemblyman Wayne has introduced legislation to remedy this fault. Assembly Bill 921 would:

a. Require the Department of Health Services to make a "finding of fact" before approving the repurification project that the project meets all health standards; and,

b. Require a DHS "finding of fact" that risks were not taken because of costs"; and,

c. Require DHS to hold three public hearings on those findings before giving approval to the City to proceed.