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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

August 4, 1992

*To:* Board of Directors (Water Problems Committee--Information)  
*From:* General Manager  
*Subject:* Status Report on Efforts to Obtain Additional Colorado River Water Supplies

Report

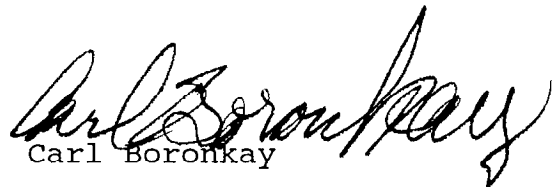
Metropolitan has numerous efforts under way to secure additional Colorado River water for assisting in meeting Southern California's water demands. Even though the Central Arizona Water Conservation District began diverting Colorado River water in 1985, Metropolitan has been able to continue diverting approximately 1.2 million acre-feet of water to its service area. Last year, the fifth year of California's current drought, Metropolitan took delivery of more Colorado River water than State Water Project water. Metropolitan's ability to maximize its Colorado River diversions in the future will depend upon the development of a number of programs and projects. Potentially, these include utilization of unused and excess supplies, water conservation, land fallowing, groundwater storage and recovery, modifications in reservoir system operations, and augmentation of river supplies. The attached detailed report provides a status report on these efforts.

Board Committee Assignment

This letter is referred for information to the Water Problems Committee because of its authority to study and advise on the sources of importing water required by Metropolitan pursuant to Administrative Code Section 2481(a).

Recommendation

For information only.

  
Carl Boronkay

HMR:gn

Attachment

## Status Report On Efforts to Obtain Additional Colorado River Supplies

Under the Secretary of the Interior's 1992 Annual Operating Plan for the Colorado River system reservoirs, California has been permitted to divert the unused apportionments of Arizona and Nevada. Considering projected net diversions by Arizona, Nevada, and higher priority California users, Metropolitan will be able to divert over 1.2 million acre-feet of Colorado River water this year.

Metropolitan has had a dedicated effort underway for a number of years to obtain additional Colorado River water supplies both on a short-term and long-term basis. This report provides information on the status of those efforts. Maximizing diversions of Colorado River water in the future will be critical to avoiding or reducing water shortages.

### 1993 Annual Operating Plan

The United States Bureau of Reclamation (Reclamation) has issued a draft 1993 Colorado River Annual Operating Plan (Plan) for review by representatives of the Colorado River Basin states. In its draft Plan, Reclamation is proposing to permit Metropolitan to divert sufficient Colorado River water to meet its request. In order to accomplish this, California would utilize apportioned, but unused Arizona and Nevada water during calendar year 1993 in addition to its basic 4.4 million acre-foot apportionment. Reclamation believes that net diversions by Arizona, California, and Nevada may not exceed 7.5 million acre-feet. If it is later determined that more than 7.5 million acre-feet was used in the three states in 1993, then the contractors which exceeded their entitlements would have to compensate for their overuse by 1996.

Representatives from the Colorado River Basin states have concurred with the concepts contained in the 1993 draft Plan. Reclamation will consult with them in August 1992 before transmitting a recommended plan to the Secretary of the Interior for consideration.

### Potential for Future Flood Control Releases

In evaluating the effects of various strategies for making surplus water available, Reclamation has conducted long-term operation studies of the Colorado River system reservoirs. Those studies showed that with reservoir storage at slightly less than 70 percent of capacity at the end of this year, the likelihood that flood control releases would be required would increase to 15 percent in 1995 and

35 percent in the year 2005. On past occasions when flood control releases have been forecasted for the next year, Reclamation has redistributed releases from Lake Mead to maximize consumptive use of such releases in the Lower Basin states. When flood control releases are available for redistribution, California would be permitted to utilize a minimum of half of that water available as the water would be surplus. Metropolitan would have the highest priority to its utilization. The Colorado River Board of California and Metropolitan have urged Reclamation to recommend an annual operating plan to the Secretary which would satisfy consumptive use in excess of 7.5 million acre-feet in a year, making surplus water available to Metropolitan. The other Colorado River Basin states have objected to such a declaration.

#### Unused Agricultural Priority Water

After accounting for the lining of the Coachella Canal, the agricultural entities in California have used less than their full entitlement of Colorado River water in over two-thirds of the years between 1961 and 1991. However, in 1989 and 1990 based on Reclamation records, the entities utilized all of the Colorado River water available to them under the first three priorities of the water delivery contracts with the Secretary. One or more of the contractors may be required by Reclamation to offset their overuse if pending credits for unmeasured return flows reaching the Colorado River are insufficient to do so. The agricultural entities are forecasted to use less than their full entitlement in 1992. Reclamation, the Colorado River Board of California, and Metropolitan continue to utilize methods developed for forecasting water use by these entities, and thus how much unused water could be available for diversion by Metropolitan in a particular year. The Colorado River Board of California's preliminary July 1 forecast of year-end use by these entities is 3.500 million acre-feet. This is 316,000 acre-feet less than that available under the first three priorities to use in the water delivery contracts with the Secretary and Metropolitan's Water Conservation and Approval agreements with the Imperial Irrigation District (Imperial). Reclamation is developing a Lower Colorado River Accounting System which will be based on remote sensing of land use acquired via satellite imagery to project water use by entities along the Colorado River.

Reclamation has requested that Metropolitan and the other California entities holding priorities to the use of Colorado River water negotiate equitable procedures and methods that will ensure that use of Colorado River water does not exceed specified limits, define inadvertent overuse, and define methods by which inadvertent overuse

will be offset by the responsible parties. The parties have explored a number of concepts to satisfy Reclamation's request, but have not been able to reach agreement. Reclamation has proposed that individual entitlements be established for the entities sharing the first three priorities to use of 3.85 million acre-feet per year of California's 4.4 million acre-foot basic apportionment. Reclamation plans to provide the California entities with its recommendations in this regard for their consideration.

#### Unused Arizona and Nevada Water

Use of Colorado River water in Arizona and Nevada is projected by Reclamation to total 2.7 million acre-feet and 200,000 acre-feet respectively in 1993. These projections exclude credits for unmeasured return flows. Following the filling of Lake Pleasant (New Waddell Dam) in 1993, Arizona is projected to utilize all of its basic 2.8 million acre-foot apportionment in 1995. Reclamation is projecting that Nevada will not use all of its basic 300,000 acre-foot apportionment until 2005 and the Secretary has the discretion to make that water available to California. Based on Reclamation's projections, about 200,000 acre-feet of water will go unused by Arizona and Nevada in 1993, declining to 39,000 acre-feet unused by Nevada in the year 2000. When the Secretary allows California to use this water, Metropolitan will be able to call on it first. Representatives of Arizona and Nevada have, in the past, indicated their desire that such water remain in reservoir storage rather than being made available to California.

#### Imperial-Metropolitan Water Conservation Agreement

Under the 1988 Water Conservation Agreement with Imperial, Metropolitan is paying the actual costs of a number of conservation projects. As indicated in the 1992-93 Capital Programs Budget, the capital costs are estimated to total \$102.6 million. The annual direct costs were estimated in 1988 dollars to total \$2.6 million upon full program implementation.

The Conservation Agreement is for a minimum 35 year term upon full program implementation. The projects are estimated to conserve 106,000 acre-feet per year once implemented.

Implementation of the water conservation projects funded by Metropolitan under the Agreement with Imperial is continuing. Under the terms of the 1988 Conservation and 1989 Approval agreements, Imperial is to reduce its Colorado River diversions this year by 33,929 acre-feet. Since program implementation began in February 1990, the Z Reservoir has been placed into operation, approximately 130 miles of canal have been concrete lined, and over 31,500 twelve-hour

deliveries have been made. Work on distribution system automation is in progress as well as construction of the Plum-Oasis spill interceptor canal.

Through June 1992, Imperial has expended a total of \$52.0 million and \$3.0 million for the capital and annual direct costs of the conservation projects, respectively. Interest earned on the balance in Imperial's conservation program bank account through June 1992 totals \$2.7 million. Budgeted funds remaining for meeting 1992 capital and annual direct costs total \$12.7 million and \$1.3 million respectively. As of the end of June 1992, the conservation program bank account balance was \$ 23.01 million, excluding funds available for meeting indirect costs.

To date, Metropolitan has compensated Imperial \$13.8 million for indirect costs. Payments of \$4.6 million in 1993 and 1994 will complete Metropolitan's obligation in this regard. Imperial may utilize these funds for loss of water sale and hydroelectric power revenues, mitigation of program impacts on agriculture from the increase in salinity of Colorado River water, and environmental mitigation relating to the impact of the program, if any, on the Salton Sea or the New and Alamo Rivers. These funds can also be used by Imperial for lateral, canal pipelining, public information, modernization of Imperials water supply system, and liability related to program operation and maintenance not covered by insurance. None of the funds contributed by Metropolitan to date have been expended by Imperial.

Proposal for Phase II Water Conservation Program with Imperial

In July 1990, Metropolitan submitted a conceptual proposal for a Phase II water conservation program to Imperial's Chief Counsel for consideration. Metropolitan has proposed that the provisions of a Phase II water conservation program be similar to those of Phase I with a few modifications. One modification would be that all of the water conserved by a Phase II program would be made available to Metropolitan. Metropolitan suggested that the Phase II program consist of constructing a regulatory reservoir and a spill-interceptor canal, lining canals with concrete, and further managing irrigation water on the farm. Such a program could conserve 150,000 acre-feet annually upon full implementation. The magnitude of reimbursement for indirect costs would be subject to negotiation. In February 1991, Imperial responded that it remains interested in discussing various options that may be available to enable Imperial to implement further water conservation programs, including temporary use by Metropolitan of a portion of the water conserved. Negotiations began in March 1991 on such an arrangement.

In February 1992, Imperial's Chief Counsel informed Metropolitan that while Imperial was continuing with its environmental/water quality and liability risk assessment for a Phase II Water Conservation Program, Imperial believed that continuing negotiations on such a program would not be fruitful at that time. Imperial cited adoption of the Inland Surface Waters Plan by the State Water Resources Control Board and comments and correspondence received from the Regional Water Quality Control Board, Colorado River Basin Region as its rationale. The Inland Surface Waters Plan requires Imperial to insure that the discharge of agricultural drainage water does not degrade the beneficial uses of its drains. Evaporation of Colorado River water during the irrigation of crops and the leaching of soils results in higher selenium concentrations in tile water which is collected in perforated subsurface pipes and discharged to the drains. In January 1992, the Regional Water Quality Control Board suggested to Imperial that widespread implementation of conservation measures in Imperial Valley be delayed until selenium control measures for agricultural drainage water are developed. While implementation of on-farm tailwater pumpback systems would decrease pesticide and sediment concentrations in drains, the Regional Water Quality Control Board stated that selenium concentrations in drains would increase. Metropolitan has informed Imperial that negotiations should continue. Imperial's water delivery contract with the Secretary limits use of Colorado River water and does not contemplate its utilization for diluting selenium concentrations in the agricultural drains in lieu of water conservation.

#### Palo Verde Test Land Fallowing Program

Individual agreements for the Palo Verde Test Land Fallowing Program are currently being executed by Palo Verde Valley landowners and lessees and Metropolitan. As of July 27, agreements to fallow 10,906 acres of land in the Palo Verde Valley for a two-year period beginning August 1, 1992 have been executed by all the parties. Agreements to fallow an additional 9,640 acres are being processed. Assuming all of these remaining agreements are executed, the program would make available 94,512 acre-feet per year. If not fully needed by Metropolitan between 1992 and 1994, such water would be maintained in a water management account in Lake Mead and used by Metropolitan as soon as practicable, prior to January 1, 2000.

Metropolitan will make five payments of \$248 per fallowed acre over the course of approximately a two-year period to the lessees of the fallowed land. The Palo Verde Irrigation District (Palo Verde) is being reimbursed \$500,000 by Metropolitan for administrative costs. Land management plans have been developed by lessees and landowners to ensure that fallowed land will be kept free of phreatophytes and

blowing dust. The fallowed land will remain idle through July 31, 1994.

Imperial Test Land Fallowing and Modified Irrigation Practice Program

Metropolitan and Imperial have negotiated the principles of a land fallowing and modified irrigation practice agreement. The land fallowing element would be similar to the Palo Verde Test Land Fallowing Program. Land fallowing would begin January 1, 1993 for two years. Under the modified irrigation practice element, irrigation of alfalfa would be foregone for a 75-day period during the summer of 1993 and 1994. Imperial would enter into individual agreements with individual farmers and administer both elements of the test program. This test program could make 100,000 acre-feet of Colorado River water available to Metropolitan annually on a guaranteed basis for a two-year period. If not fully needed, the saved water would be maintained in a water management account in Lake Mead for Metropolitan's use as soon as practicable. To the extent that flood control releases are made from Lake Mead, the saved water would be discharged from Hoover Dam. The funding to be provided by Metropolitan for the Imperial program of reducing irrigation of alfalfa and fallowing irrigated fields remains to be negotiated. While it was not possible to implement this test program in 1992, negotiations are proceeding toward implementation on January 1, 1993. It will be necessary for Imperial to complete the environmental documentation for the program and for Palo Verde, the Coachella Valley Water District (Coachella), and Reclamation to concur with the terms and conditions of the program agreement.

All American and Coachella Canal Lining Projects

In 1988, the President signed Public Law 100-675 which authorized the Secretary to line the All American Canal from Pilot Knob to Drop 4 and the Coachella Canal from Siphon 7 to Siphon 32. Water conserved by the projects would be made available to the entities in California holding Colorado River water delivery contracts with the Secretary. The projects are to be funded by one or more of these California contractors with 100 percent non-federal funding. Should the water made available by these projects be used by a contractor out of proportion to the funding provided, the contractor(s) funding the project would be reimbursed.

The preferred alternative for lining the All American Canal is to construct a parallel concrete lined canal. It is estimated that 67,700 acre-feet per year would be conserved by constructing a new canal from Pilot Knob to

Drop 3 at a cost of \$87.5 million. The bases for choosing a parallel-lined canal include cost effectiveness, timeframe for construction, post-project seepage and evaporation, reliability, and redundancy.

Reclamation is preparing an EIS/EIR for the All American Canal lining project. The draft EIS/EIR was released in July 1991 for public review. While the comment period ended in September 1991, Reclamation is awaiting the receipt of non-federal funds to complete the document. Metropolitan has informed Reclamation that it is willing to provide 50 percent of the funding required. In July 1992, Imperial's Board of Directors approved funding 50 percent of the costs of Reclamation completing the EIS/EIR. Reclamation projects that a Secretarial record of decision can be reached in September 1993. Water could be available to Metropolitan beginning in 1997 with the timely execution of a construction funding agreement with the United States.

In January 1990, Imperial informed Reclamation that it intends to become the sole participating contractor for the All American Canal Lining Project. Since then, Metropolitan and Imperial have been discussing the circumstances under which Imperial would withdraw its letter of intent. Imperial has indicated that it could withdraw if certain concerns were resolved. Discussions are continuing on this matter and have centered on a proposal by which Metropolitan would provide funding of \$33.577 million for the construction of two regulatory reservoirs along the All American Canal and receive water that could conceptually be conserved by these reservoirs.

For the Coachella Canal, the preferred alternative is to construct a lined canal in the existing cross section while bypassing the canal flow through temporary pipelines. Approximately 30,000 acre-feet per year might be conserved by constructing this project at a cost of about \$54.72 million. Reclamation plans to release a draft EIS/EIR for public review in January 1993. Reclamation projects that a Secretarial record of decision can be reached in August 1993. Water could be available to Metropolitan beginning in 1994 with timely execution of a construction funding agreement with the United States.

Metropolitan, Coachella and Reclamation jointly funded a prototype project to line 1.5 miles of the Coachella Branch between Siphons 14 and 15 in place while water continued to flow through the canal. This project was completed in March 1991. This 1.5 mile section of the canal was lined with an impervious polyvinylchloride (PVC) membrane that was overlain with a three-inch cover of concrete. To help the concrete adhere to the side slopes, a geotextile material was placed on the sides of the canal



on top of the PVC layer. This reach of the Coachella Canal was successfully lined by the in-place method. However, due to a number of complications encountered in the field, project construction was suspended for over one year. Cost modifications associated with the construction contract are currently under negotiation between the contractor and Reclamation. The total cost in 1992 dollars to in place line the remaining unlined reaches of the Coachella Canal is estimated by Reclamation to be \$81 million, including mitigation. Reclamation is currently in the process of preparing a final report for the in-place prototype project.

#### Imperial County Groundwater Storage and Recovery Program

In 1988, the Colorado River Board of California released a report prepared by Reclamation for the Six Agency Committee (Metropolitan, Los Angeles Department of Water and Power, San Diego County Water Authority, Palo Verde, Imperial, and Coachella) on the practicality of implementing a groundwater storage and recovery program on the East Mesa of Imperial County. The study results were promising, but recommended that additional groundwater quality and environmental resources data be collected and examined to determine the feasibility of such a program. Following the drilling of observation wells and the completion of environmental documentation, a demonstration program to recharge water in a six-mile section of the old earthen Coachella Canal began. Over 17,000 acre-feet of water was recharged to the groundwater basin in late 1988 and early 1989. A small amount of water was recharged in 1990 when precipitation during the summertime reduced demands for Colorado River water already in transit to water agencies.

Reclamation has proposed recovering a portion of the recharged water using shallow, low-capacity skimming wells. Water from the wells would be conveyed to the lined Coachella Canal and used by Coachella. Metropolitan, Coachella, and Reclamation staff have reached a consensus on the terms and conditions of funding a demonstration recovery program. The water pumped from four wells, up to 8,000 acre-feet, would be made available by exchange to Metropolitan for the demonstration period 1993 to 1999. Coachella has adopted environmental documentation for the proposed demonstration recovery program. Construction of the facilities is scheduled for October to December 1992, pending consideration by Metropolitan's Board of Directors.

#### Proposed Demonstration Program On Interstate Underground Storage of Unused Colorado River Water

The states of Arizona, California, and Nevada, Metropolitan and the Central Arizona Water Conservation

District have been discussing a proposal to store unused Colorado River water in Arizona. Under this proposal, Colorado River water would be placed in groundwater storage in central Arizona in years in which net diversions for beneficial consumptive use are forecast to be less than 7.5 million acre-feet in the three states or in years in which a surplus is declared and all requests are met.

The demonstration program being considered contemplates storage of 100,000 acre-feet, with an initial amount of 30,000 acre-feet to be stored in 1992. The cost of the program would total \$68.00 per acre-foot for indirect storage by exchange, and \$80.00 per acre foot for direct storage in 1992. If anticipatory flood releases or flood control releases are made from Lake Mead, then 90 percent of the Colorado River water stored in Arizona's groundwater basins as a result of this program would be made available, through water exchanges, to those parties funding the program. If the Secretary declares a shortage, then the Central Arizona Water Conservation District would have the right to withdraw the stored groundwater to reduce the impact of the shortage. Implementation of the demonstration program would require the approval of Reclamation.

#### Upper Coachella Valley Groundwater Storage Program

Metropolitan's contracts with Coachella and Desert Water Agency (Desert) require that Metropolitan exchange its Colorado River water for these agencies' State Water Project entitlement water on an annual basis. In accordance with an Advance Delivery Agreement executed by Metropolitan, Coachella and Desert, Metropolitan delivered Colorado River water in advance to these agencies when sufficient supplies were available for storage in the Coachella Groundwater Basin. Since 1987, Coachella and Desert have relied on this water delivered in advance. As a result, through the end of 1991 over 180,000 acre-feet of additional Colorado River water was made available to Metropolitan's service area during the drought. This has reduced the amount of water available in that groundwater storage account for use in the future by the same amount.

#### Lake Mead Banking

In 1991, Reclamation drafted proposed regulations for administering use of Colorado River water in Arizona, California, and Nevada. These draft regulations include procedures for transferring entitlements, implementing exchanges, reducing entitlements due to nonuse, delivering unused and surplus water, and wheeling non-system water among other matters addressed. In providing comments on the proposed regulations, the Colorado River Board of California stated that regulations which permit water to be accumulated

in Lake Mead by reason of reduced diversions should be developed. Metropolitan's water delivery contracts with the Secretary provide for the accumulation of water in Lake Mead subject to such conditions as the Secretary may from time to time prescribe. Reclamation has not yet released a revised draft of its regulations for review. Reclamation's schedule for implementing the regulations is dependent upon the Department of the Interior granting an exemption to the current federal moratorium on the promulgation of new regulation or a lifting of the moratorium. Metropolitan plans to continue participating in this rulemaking process to protect its water supply.

#### Snowpack Augmentation

A snowpack augmentation program in the Upper Colorado River Basin could serve as the means by which the Federal Government could meet its obligation to develop water to meet the requirements of the treaty with Mexico. Augmentation of the river would increase the likelihood of the availability of surplus water to Metropolitan. The Six Agency Committee is funding a portion of the cost of having Reclamation prepare a plan for conducting a snowpack augmentation demonstration program in the Upper Colorado River Basin to increase runoff. Reclamation, the Central Arizona Water Conservation District, Colorado River Commission of Nevada, Upper Colorado River Commission, Utah Division of Water Resources, and the Six Agency Committee are contributing funds to the effort. The plan will describe the technical basis for, and activities and monies required to conduct a multi-year demonstration program to validate, quantify, and transfer cloud-seeding technology within the Basin.

#### California's Conceptual Approach for Reaching Basin States Agreement on Interim Operation of Colorado River System Reservoirs, California's Use of Colorado River Water Above its Basic Apportionment and Implementation of an Interstate Water Bank

In response to the other Colorado River Basin states' past objections to declaration of a surplus condition, in August 1991 the Colorado River Board of California, following consultation with Metropolitan and other California water agencies, submitted a conceptual approach for reaching Basin states' agreement on interim operation of Colorado River system reservoirs, California's use of Colorado River water above its basic apportionment, and implementation of an interstate water bank.

Under this approach, California would agree to a schedule by which California would reduce its use of Colorado River water to 4.4 million acre-feet in the

year 2011. Under existing conditions, that would limit Metropolitan to 616,000 acre-feet in that year. The schedule would be based on implementation of the opportunities being pursued within California to more efficiently and effectively use Colorado River water. This would provide Metropolitan with the opportunity to use water above that now available.

An escrow account would provide a mechanism for Metropolitan to compensate the Basin States for use of Colorado River water above that now made available. The Basin States have indicated that compensation is required for the perceived risk associated with allowing Metropolitan to increase its supplies by withdrawing additional water from reservoir storage. The escrow account would provide a source of monies to each of the Basin States for: funding water conservation projects, enhancing environmental protection or recreation opportunities, purchasing water supplies for an interstate water bank, or other purposes to enhance the public welfare.

Establishment of an interstate water bank would allow the Basin States to govern how interstate transfers would occur. The water bank could provide a source of water for each state during critical, emergency or unique water supply/demand conditions. These objectives could range from recreation or fish and wildlife uses to urban uses. Individual sellers would inform their States of their willingness to participate in the interstate water bank. Water would be purchased from the bank for use by a willing state or stored in the Colorado River system reservoirs. Individual purchasers would obtain water bank water through their state.

Interim operating criteria would have to be developed by Reclamation and the Department of the Interior in cooperation with the Basin states to allow water diversions and operation of the reservoirs as envisioned in the conceptual approach to occur. As each of the other states have indicated concerns with California's conceptual approach, representatives of California are attempting to reach a consensus with representatives of Arizona and Nevada as to how Metropolitan's short-term needs for Colorado River water can be met. Once a consensus is reached, these representatives would present a proposal to representatives of Colorado, New Mexico, Utah, Wyoming, and Reclamation for consideration. Colorado's representative reiterated that State's concern with the conceptual approach in May 1992, stating that Colorado continues to have severe reservations as to the legal, political and technical aspects of the interstate water bank concept.

HRSTATUS