



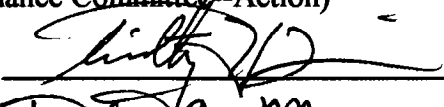
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METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

8-7

June 23, 1998

To: Board of Directors (Water Planning and Resources Committee--Action)
(Budget and Finance Committee--Action)

From: General Manager 

Submitted by: Debra C. Man, Chief
Planning and Resources 

Subject: Authorize \$2,200,000 for Technical Studies and a Demonstration Banking Project for the Hayfield/Chuckwalla Basins Storage Program

Reference: Appropriation No. 15325

RECOMMENDATION

That the Board appropriate \$2,200,000 for a demonstration project, environmental review and technical studies for the Hayfield/Chuckwalla Groundwater Storage Program.

EXECUTIVE SUMMARY

The Hayfield and Chuckwalla groundwater basins are located in the Mojave Desert between Eagle Mountain and Hinds pumping plants. Preliminary feasibility analysis has been completed, indicating that groundwater storage in the Hayfield and Chuckwalla basins is technically feasible and cost effective. As currently proposed, Metropolitan would store approximately 500,000 to 1,000,000 acre-feet (AF) of available Colorado River Aqueduct water in the Hayfield and Chuckwalla groundwater basins. During years of shortage, this stored water would be recovered and placed in the Colorado River Aqueduct for use in Metropolitan's service area. The preliminary feasibility analysis indicates that the expected recharge and return capacity of the Hayfield and Chuckwalla groundwater basins is about 150,000 to 250,000 AF per year.

The Hayfield and Chuckwalla basin characteristics analysis is based on preliminary feasibility studies and existing information, some of which was collected at the time of the construction of the Colorado River Aqueduct in the 1930s. To verify the findings and to assist in optimizing the proposed facilities, additional technical studies and a Demonstration Project is needed. The Demonstration Project will serve the purposes of supplying essential data for the technical studies and initiating the storage portion of the full-scale project. The combined budget for the technical studies and the demonstration project and will be \$2,200,000 and take about 12 to 18 months to complete.

In summary, the full scale project will allow Metropolitan to store Colorado River water, an essential component of the California 4.4 Plan, and to then have access to this water on demand as a valuable dry-year source. Additionally, the indigenous groundwater has low total dissolved solids that could provide a water quality benefit to water in the Colorado River Aqueduct.

JUSTIFICATION

The studies and actions to be undertaken with the requested funds are necessary to gather sufficient information to determine whether to proceed with implementation of a full-scale Hayfield/Chuckwalla Valleys Groundwater Storage Program and to later optimize the design and operation of these facilities.

ALTERNATIVE TO PROPOSED ACTION

This project is a part of Metropolitan's effort to comply with the requirements of the California 4.4 Plan. The alternative to compliance with the California 4.4 Plan is to accept a lower water supply reliability of Metropolitan's Colorado River supplies.

FUNDING REQUEST

Program Name: Hayfield/Chuckwalla Valleys Groundwater Storage Program			
Source of Funds: General Fund (included in FY 1998-99 and FY 1999-00 Budgets)			
Appropriation No.: 15325	Board Action No.: 1	FY 97/98 Budget:	
Requested Amount:	\$2,200,000	Capital Program No.:	
Total Appropriated Amount:	\$2,200,000	Capital Program Page No.:	
Total Program Estimate:	N/A	Program Category:	Supply & delivery reliability

ACTIONS AND MILESTONES

The initial feasibility study for the project has been completed. The technical studies and Demonstration Project will commence following Board approval and will take approximately 12-18 months to complete. The environmental work for the Demonstration project will start with the technical studies and will require approximately six months to complete. If authorized by the Board, final design and construction would be completed by January 2001.

CEQA COMPLIANCE / ENVIRONMENTAL DOCUMENTATION

One element of the feasibility phase of the proposed Hayfield/Chuckwalla Groundwater Storage Program is the preparation of the necessary environmental documentation for the proposed

Demonstration Project. In accordance with the requirements of the California Environmental Quality Act (CEQA) and State CEQA Guidelines, the required CEQA documentation that assess the potential impacts associated with the Demonstration Project will be prepared and brought to your Board for approval. It is anticipated that the required CEQA documentation will take approximately six months to complete.

Based on the results of the technical studies and the Demonstration project, additional environmental documentation for the full-scale project will be developed for your Board's review and approval.

DETAILED REPORT

As part of the Phase I Resources Procurement Process for Colorado River Resources, staff has established a process to secure supplemental water supplies and regional storage through the development and execution of cost-effective transactions with both public and private-sector organizations. This process has allowed Metropolitan to identify and evaluate numerous potential groundwater storage programs located along the Colorado River Aqueduct (CRA).

The Hayfield and Chuckwalla groundwater basins are located in the Mojave Desert between Eagle Mountain and Hinds pumping plants. As currently proposed, Metropolitan would store approximately 500,000 to 1,000,000 acre-feet (AF) of available CRA water in the Hayfield and Chuckwalla groundwater basins. During years of shortage, this stored water would be recovered and placed into the CRA for use in Metropolitan's service area. The preliminary feasibility analysis indicates that the expected recharge and return capacity of the Hayfield and Chuckwalla groundwater storage basins is about 150,000 to 250,000 AF/yr. In addition, preliminary studies demonstrate that the Hayfield and Chuckwalla basins have the following characteristics:

Characteristic	Hayfield Basin	Chuckwalla Basin
Available Storage Capacity	500,000-800,000 AF	500,000 AF
Put Capacity	100,000-150,000 AF/yr	50,000 - 100,000 AF/yr
Take Capacity	100,000-150,000 AF/yr	50,000 - 100,000 AF/yr
Indigenous water quality	270 - 460 TDS	270 - 990 TDS
Land Ownership (approximate)	MWD 8,000 acres (73%) Private/Catellus 2,000 acres (18%) BLM 1,000 acres (9%)	MWD <1,000 acres (0%) Private/Catellus 15,000 acres (60%) BLM 10,000 acres (40%)

The basin characteristics noted above are based on preliminary feasibility studies, some of which were conducted at the time of the construction of the CRA in the 1930s. To confirm the analyses that have been accomplished to date and to assist in the full-scale facility sizing and location, it is recommended that detailed technical studies and a Groundwater Storage Demonstration Project be undertaken. The Demonstration Project will serve the purposes of initiating the storage portion of the full-scale project as well as supplying essential data as part of the technical studies. The combined budget for the technical studies and the demonstration project will be \$2,200,000 and will take about 12 to 18 months to complete.

Technical Studies

Accomplishment of the technical studies would involve retaining a consultant to perform a variety of activities. The potential for adverse chemical reactions that could occur as a result of mixing imported Colorado River water with indigenous groundwater will be evaluated. In addition, the necessary environmental documents to comply with CEQA requirements will be prepared for the Demonstration Project. The boundaries of the involved groundwater basins will be defined to verify the aquifer confinement characteristics. Information from the test borings will be used to estimate the underlying permeability of the basins and to assess subsidence potential, stratigraphy, hydraulic conductivity and soil characteristics. Estimates of the infiltration basin rates within the proposed basins will be used to size the Demonstration Project infiltration basins. Each basin will be about 10 acres in size. The construction period will be about 12 months, starting about January 1, 1999. Long-term testing of the infiltration basins will include evaporation, water quality and water level monitoring, and measurements of the underlying aquifer. The results of these tests will be used to size and establish the operational procedures of the full-scale project infiltration basins. A full-scale production well for aquifer testing will be constructed in the area considered most likely to be used for the full-scale well field. In addition, monitoring wells will be constructed to measure drawdown during aquifer testing. It is planned that the production well will become part of the long-term project facilities. The production well will undergo extensive testing in order to quantify the hydrologic characteristics of the aquifer. These tests will provide important data for refinement of the numerical model of the groundwater aquifer which is to be employed in the design of the full-scale project facilities. A comprehensive report will summarize results of the completed test program.

Demonstration Project

The Demonstration Project will consist of storing about 100,000 AF on Metropolitan property in Hayfield Basin near Hayfield Pumping Plant. The water would be turned out from the Hayfield Pumping Plant forebay into several contiguous 10 acre infiltration basins. The basins will be formed by low retention dikes about 2-3 feet in height using adjacent borrow material. It is estimated that the total size of the infiltration basins will be from 400 to 500 acres, depending on the infiltration characteristics of the basins. It is assumed that the infiltration basins constructed for the demonstration project will ultimately become an integral part of full-scale project facilities.

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