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Metropolitan Water District of Southern California  
P.O. Box 54153  
Los Angeles, CA 90054

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Attention: **Mr. Jack Safely, Project Manager**

Subject: **Supplement to Draft EIR/EIS for Cadiz Groundwater Storage and Dry-Year Supply Program**

I would like to provide my strong endorsement of the Cadiz Groundwater Storage program as an extremely effective and environmentally sound approach to storage of groundwater. Southern California needs many projects like this to store groundwater collected during wet years for use in dry years. It is unlikely that the Metropolitan Water District can locate a better desert basin for a groundwater storage project. The Cadiz Project has the following attributes: 1) Coarse grained sediments in the Fenner Gap to allow for abundant recharge in the spreading basins, 2) The Fenner Valley Watershed providing natural recharge, 3) The Cadiz Valley with low total dissolved solids (TDS) ambient groundwater to provide storage, and 4) Proximity to the Colorado River Aqueduct.

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I have over 15 year experience in the practice of hydrogeology, and I have worked on numerous California desert sites, including the solar powerplant project near Harper Lake and Sierra Army Depot. I am a registered Geologist (no. 5957) and a Certified Hydrogeologist (no. 151) in California. I have also worked in Cadiz Valley including logging boreholes and performing and analyzing aquifer tests. I presently work with the Groundwater Modeling Technical Support Center/Geotechnical Laboratory at the U.S. Army Engineer Research and Development Center at Waterways Experiment Station.

P54-2

I have reviewed the following documents related to this project: - The November 1999 Cadiz Groundwater Storage and Dry-Year Supply Program Environmental Planning Technical Report Groundwater Resources Vol I and II. - The Supplement and The Draft Cadiz Groundwater Storage and Dry-Year Supply Program EIR/EIS (MWD reports 1159 and 1167). - The February 23, 2000 Memorandum from James F. Devine to Molly Brady that presents the USGS' comments.

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I found the Environmental Planning Technical Report comprehensive and complete. A review of the data collected has caused me to conclude that the project is feasible and well investigated. The monitoring plan is also complete and will provide more than adequate information to operate the project and prevent environmental degradation.

However, I was concerned about the non-technical arguments made against the project in the USGS comment letter. It looks like a comment letter written by an environmental consultant hired to "stop" a project, which is inappropriate for the USGS. It is the role of a government agency, such as the USGS or the Corps of Engineers, to provide an objective technical review for use by political decision-makers. I worked a number of years with the Corps of Engineers on the Crandon Mine Project in Northern Wisconsin, a project being opposed by a number of parties. The subject USGS letter is exactly like a comment letter from an opponent of the project that criticized nearly every aspect of the EIR/EIS. I have listed below just a few of the problems with the USGS comment letter that I discovered during my review of the USGS memorandum (the page in the Draft Environmental Planning Technical Report is included).

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**Page 41, 5.3.2 Groundwater Flow Direction.** The USGS letter surmises with no evidence that groundwater flow does not obey Darcy's law and that faults are causing groundwater to be "dammed" behind the faults. All of the collected groundwater data support a gradual hydraulic gradient from Fenner Valley to Cadiz Valley.

P54-5

**Page 60, 6.6.2.1** – The USGS is concerned about differentiating between shallow perched water and discharged regional groundwater flow in the dry lakes. Shallow perched water would have a much lower TDS concentration. An example would be Honey Lake in California, which receives surface water recharge, and has a TDS of 2,000 to 4,000 mg/l measured in the shallow groundwater. TDS concentrations of 100,000 to 250,000 + for the groundwater below Cadiz and Bristol Lakes are indicative of a groundwater fed lake.

P54-6

**Section 7.0** – The USGS is asking for an unsaturated zone model of the infiltration test. I assume they want this calibrated to the pilot test so then it can be used for estimating the aquifer recharge from infiltration ponds. I have done quite a bit of vadose zone modeling, and my experience is that the vadose zone model predicts either too much or too little infiltration. It is very difficult to get it working right. It is far better to use actual infiltration data than a model. Vadose zone models are generally used in the absence of an infiltration study.

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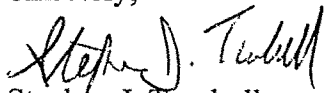
**Page 105 – Longitudinal Dispersivity.** The USGS is critical of longitudinal dispersivity values of 50 feet. Values of 50 to 100 feet have been used on many USGS studies. I personally am using 50 feet on a model at Aberdeen Proving Grounds in Maryland, and 100 feet for a model in Hawaii.

P54-8

**Page 129 9.3.2.1. Early Time Aquifer Test Data.** The USGS is concerned with using late time data in the aquifer test, and want you to use early time. There are references that support the use of the late time data as being more accurate (Neuman, S.P, 1975 Water Resources Research Vol. 11, No. 2).

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Sincerely,

  
Stephen J. Turnbull

Cc: Mr. James Williams, U.S. BLM, Riverside, CA.  
Secretary, U.S. Department of the Interior, Washington, D.C.