Section 1
Introduction

This report summarizes substantial pre-existing and new information that was collected, analyzed and produced as part of the El Dorado County Water Agency (EDCWA) Hydroelectric Development Options Study. This section gives an overview of the methodologies used and content of the report.

As with most studies, previous studies were researched first. This proved more challenging than expected given the vast history and dispersed locations of the documents for the previous investigations. To help with future investigations, the EDCWA organized and cataloged previous reports into the EDCWA document library.

The information in this report generally follows the Hydroelectric Development Options study process. Early in the study, energy market trends and recent water-related planning initiatives were investigated. Emerging regulatory measures for water system energy use and production, combined with California Public Utilities Commission (CPUC)-mandated utility contracts and rates for small hydro, significantly influenced early investigations and a focus on existing facility energy recovery hydro options.

The energy industry and markets have been exceptionally dynamic over the past three years as a result of the passage of Assembly Bill (AB) 32 and associated legislation. In contrast, water system operations remain relatively unchanged, with current concerns over drought and State policies regarding: 1) water conservation (i.e., Governor Schwarzenegger's 20% per capita reduction by 2020) and, 2) interregional water conveyance through the Sacramento-San Joaquin Delta. The related topics and forces of the evolving energy industry (e.g., renewable energy and water system energy efficiency) and regional water management (e.g., local hydro development and other beneficial uses) are discussed in Section 2 (Energy Policies Supporting Hydroelectric Generation) and Section 3 (Water and Wastewater Energy Management Goals and Objectives for El Dorado County) of this report, respectively.

Screening and analyzing the hydro options gradually narrowed the list of the 100-plus hydro options identified for evaluation to those that are the most viable. New sites (including many with new reservoirs), options at existing water and wastewater facilities, and technology demonstration options were evaluated using multi-disciplinary fatal flaw and ranking criteria. This ultimately led to a "top 10" list of projects for which detailed economic and financial analyses were performed. The study process also concluded with technology demonstration, existing facility energy recovery, and new facility hydro options that are recommended for detailed feasibility analyses. The evaluation processes and results are described in the following sections: Section 4 (Study Approach and Process to Develop Plan), Section 5 (Inventory of County Hydroelectric Potential), Section 6 (Preliminary Project Analyses of the Highest Ranked Hydro Options), Section 7 (Detailed Project Analyses of "Top Ten" Options), and Section 8 (Projects Warranting Additional Detailed Feasibility Analyses).

Over the nine-month study period, there have been numerous intergovernmental proceedings and joint planning sessions between the California Energy Commission (CEC), CPUC, and California Air Resources Board (CARB) to promote renewable energy and energy efficiency. Also over this period, the United States has lapsed into a severe economic recession. Newly elected President Obama recently authorized the American Recovery and Reinvestment Act of 2009 that includes renewable energy investment as one of the cornerstones for the nation's economic recovery. California's third year of drought and local/statewide drought declarations highlight the need for additional water storage that would extend water and power benefits to downstream hydroelectric operators and water purveyors.

These economic, water supply, and energy market settings present EDCWA and El Dorado County purveyors with tremendous, short-term opportunities to develop long-term energy revenue and water supply benefits for the County. The hydro options identified as economically viable for immediate development and the specific steps and timing that will be necessary to take advantage of these opportunities are discussed in Section 9 (Recommendations and Next Steps).

Participants in the study process included EDCWA and water purveyor management and staff, Citizens for Water Chair Harry Dunlop, a panel of local land and water management experts (i.e., Robert Smart, Fred McKain, Doug Leisz, Bob Harris and Jack Hannaford), and a technical team of regulatory, economic, engineering, and environmental consultants that performed the study under the guidance of the EDCWA and water purveyor staff. The study participants, meetings held, additional persons consulted, and study organizations are explained in Section 10 (Study Participants and Meetings Held).

Acronyms are provided in Section 11 (Acronyms and Other Terms) to identify abbreviated phrases, measurements, agencies and organizations. References cited are in Section 12 (References).

Several appendices are included with this report. The appendices provide additional detail on the assumptions, calculations, water flow projections, hydro design assumptions, energy generation estimates, cost estimates, environmental and regulatory permitting processes, and renewable energy certification programs affecting hydroelectric development options in El Dorado County. For the reader's ease of reference, some appendices contain website and related materials that helped form the analyses and conclusions of this study, but which may not be readily accessible at the time this report is reviewed.