PLANNING AREA 6 PRELIMINARY DESIGN REPORT

EXECUTIVE SUMMARY (BOZORGINIA, M)

Prepared for

IRVINE RANCH WATER DISTRICT

BY

ENGINEERED WELL

UC IRVINE

Karly Ho, Civil Engineer (Co – Project Manager)

Mahan Bozorginia, Civil Engineer (Co – Project Manager)

Raymond Scobel, Civil Engineer

James Iskarous, Civil Engineer

This Preliminary Design Report (PDR) provides a comprehensive analysis of the 30% design of a water supply well for Project Area 6 (PA6) in Irvine, Ca. The well is planned to be drilled 1,200 ft below ground surface, and is expected to produce 3,500 gallons per minute (gpm) based on information from other wells in the vicinity. It will provide a redundant source of potable water and fire flow supply to Planning Area 6, which has a connection to only one imported water connection. The well will be located in the Orange County Groundwater Basin (Basin) that provides approximately 75% of the demands of the agencies overlying the basin.

The project has two phases. During Phase 1, the well will be drilled, cased, developed, tested, and disinfected. Engineered Well will make a preliminary pump selection and develop a
pumping facility layout during this phase. Phase 2 will involve equipping of the well with the pump and appurtenances based on the information developed during Phase 1.

The Phase 1 project will be bid in June 2009, and completed in January 2010. The estimated cost to construct the well is $1,356,450. Design of the Phase 2 improvements will be completed in February 2010. Phase 2 construction is expected to cover a period of 9 months.

Because the well site is adjacent to an existing residential area, sound attenuation to meet the City of Irvine Noise Ordinance is requirements is a very important issue. The Phase 1 project specifications will include these requirements.

A Pilot Hole will be drilled first to a depth of 1,200 feet to make sure that the selected site is suitable. The pilot hole will be a 17 ½ inch diameter. Results of the sieve analyses of the formation materials, geophysical logging of the pilot hole, discrete zone testing within the pilot hole, and water quality testing will provide the information needed for the final design of Phase 1. The pilot hole will then be reamed for the installation of the well casing, gravel pack, and the sanitary seal. The casing is planned to be 20” inside diameter stainless steel with full-foil louvered screens. Gravel pack between the soil and well casing will screen the soil formation, and the louvers will be sized to screen the gravel pack so that a minimum amount of soil will enter the well when it is completed.

The well will contain a deep well turbine pump, which will be placed above the louvered screens to make sure that water comes into the well evenly, and not through a short section near the pump inlet. It will pump to a closed system that is not regulated by a reservoir. A water lubricated Byron Jackson Vertical Turbine Pump has been preliminarily selected. More details
and specifics regarding the pump can be seen in the Materials & Equipment Requirements section of the report.

Engineered Well has arranged this design report to portray all the detail in specs and schematics of a Well Water Supply. As a group it is our mission to produce the best possible product to serve the community and satisfy the client.