ATTACHMENT 4 – PROJECT DESCRIPTION
Groundwater Monitoring Wells Installation Project – Sylmar Basin
Los Angeles Department of Water and Power

The overall Groundwater Monitoring Wells Installation Project will encompass the installation, development and monitoring of 22 groundwater monitoring wells in the San Fernando Basin, up to five in the Central Basin, and up to five in the Sylmar Groundwater Basin**.** The Los Angeles Department of Water and Power (LADWP) is applying for LGA funding for the portion of this project that will be conducted in the Sylmar Basin adjacent to the Mission Wellfield.

The Sylmar Basin is adjudicated under a 1979 judgment agreement (California Superior Court Judgment 650079) and related stipulations that encompass pumping rights in all four groundwater basins (San Fernando, Sylmar, Verdugo, and Eagle Rock) in the Upper Los Angeles River Area (ULARA) watershed. The judgment agreement is provided as Attachment 3, "Status of GWMP."

Since 1999, trichloroethene (TCE) has been detected in the Mission Wellfield. In 2008, TCE concentrations in one of the two active wells began to exceed the California's regulatory maximum contamination level (MCL) of 5 micrograms per liter (ug/L). Recent analyses have detected TCE concentrations as high as 9 ug/L in samples from this well. Additionally, in recent months, TCE concentrations in the second well have risen and been detected at levels ranging between 2 and 4 ug/L. As a result of this contamination, LADWP has not been exercising its full pumping rights in the Sylmar Basin.

Under the judgment agreement and related stipulations, LADWP has adjudicated rights to pump 3,405 acre feet per year from the Sylmar Basin and owns approximately 15,000 acre-feet in stored water due to pumping below the annual allotment. On average over the recent 10-year period, LADWP pumped 65 percent (2,240 acre feet per year) of its annual water right. The Sylmar Basin water rights adjudication allows parties to retain stored water credits only for five years. Stored water credits older than five years can be deducted by the ULARA Watermaster.

This project will install monitoring wells near the Mission Wellfield to investigate the vertical and horizontal extent of the contamination affecting it. Data collected from the two new wells will include the following:

- Water quality data from laboratory analyses and field measurements on water samples collected in situ and from the finished wells;
- Geophysical survey data collected from the pilot boreholes; and
- Water level data collected from the two wells with nested casings screened in both the confined and unconfined aquifer.

Data from these proposed monitoring wells will be used to assist LADWP in determining if new water supply wells installed deeper within the aquifer will result in the production of higher quality groundwater from this wellfield. These data may also be used to determine

whether groundwater treatment facilities are needed, and if so, will help LADWP select the optimal treatment technology and design an appropriate treatment facility. This is an important first step to recovering pumping capacity that has been lost due to problems with groundwater contamination and towards developing and providing locally sustainable water supplies to the City of Los Angeles.

These monitoring wells will also serve as sentinel stations that provide an early warning of contaminants which may emerge within the aquifer over time and eventually reach the Mission Wellfield. This will enable LADWP to respond to changing conditions of the aquifer before deactivating wells due to new or increasing levels of contamination which may impair the quality of water produced.

Geophysical information obtained by the drilling process will broaden and increase the level of understanding of the Sylmar Basin geology, location and extent of the unconfined aquifer, confining layer (aquitard), and confined aquifer of the Saugus Formation.

Water elevation data from these monitoring wells will also provide the ULARA Watermaster with additional information for evaluating safe yield of the Sylmar Basin and determining whether the basin is in overdraft.

The first monitoring well (MI-MW-01) will be installed in the public right of way near the intersection of Berg Street and El Dorado Avenue in Los Angeles, California. Access to private property will not be required for the construction of either well. The plan is to use data from the first well to locate the optimal site of the second well (MI-MW-02). The first well is expected to contain five separate casings nested within the borehole, providing five separate data and sample collection points – however, this could be modified in the field based on the boring and geophysical data. The second well is expected to contain two nested casings. Sample well construction details are provided as part of Attachment 5, “Work Plan.”

All well drilling and construction will be supervised by a Professional Geologist (PG) registered in California. The PG will also review and oversee the drilling, construction, and development of each well, prepare the final design configuration of each monitoring well, and provide a final Well Completion Report for each location. Laboratory analyses will be conducted during certain steps of the well drilling process and on the baseline water samples after well construction and development are complete. Laboratory analysis will be conducted by the LADWP Water Quality Laboratory, LADWP Environmental Laboratory, or other California-certified laboratory, as needed. The final Well Completion Report and associated analytical data will be provided to the DWR and the ULARA Watermaster.

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Well drilling and construction will include the following activities:

1) Drilling 8-inch pilot borehole to 1,000 ft +/-
2) Using Simulprobe sampling instruments and procedures, obtain water quality samples at 50 ft intervals of the pilot borehole. Conduct lab analysis on samples successfully retrieved from the sampling process.
3) Collect soil samples from the borehole at required intervals and conduct geophysical logging on the completed pilot borehole.
4) Classify the soil samples, evaluate the geophysical logs, and prepare final design of the monitoring well.
5) Ream the borehole to the required diameter and construct nested multi-zone well casings and screens, including installation of sand filter packs, Bentonite grout annular seals and sanitary seals.
6) Perform well development procedures to remove drill mud to achieve 10 NTU or less.
7) Install dedicated water quality sampling pumps using Zone Isolation Sampling Technology (ZIST^{TM}) by Besst Inc. Install dedicated water pressure transducers by InSitu.
8) Install wellhead surface completion.
9) Collect baseline water quality samples upon completion of each monitoring well.
10) Conduct lab analysis to characterize solid and liquid wastes for disposal purposes. Dispose wastes to approved disposal locations.

Public outreach activities will focus on notifying residents and businesses in the surrounding neighborhood of potential effects related to construction activities. LADWP will also coordinate activities with the ULARA Watermaster, as needed.

If needed, an on-going monitoring program for the two new wells will be designed after the completion of this Project. This monitoring program would be funded from LADWP's Water Revenue Fund.