



April 23, 2020
File No. 19-5-014

Mr. Mike Yeraka
Town of Discovery Bay CSD
1800 Willow Lake Road
Discovery Bay, CA 94514

**SUBJECT: SCOPE AND BUDGET FOR NEW WATER SUPPLY WELL (No. 8)
HYDROGEOLOGIC INVESTIGATION FOR THE TOWN OF DISCOVERY BAY
COMMUNITY SERVES DISTRICT**

Dear Mr. Yeraka:

This letter outlines a scope for engineering and field services associated with the investigation and design of a new water supply well facility (Well 8) located in the Pantages Trails development in the southwest corner of the development on Parcel C. The proposed scope of engineering services for this project encompasses a suitability assessment of the candidate well site, assistance with environmental review and regulatory approvals, exploratory drilling and testing, and preparation of a well design.

Project Understanding and Approach

We understand that the Town of Discovery Bay Community Services District (Town or District) seeks to construct the new municipal Well 8 station in the proposed Pantages Trails development on Parcel C, which is a 19,889 square foot parcel located in the southwest corner of the development and is adjacent to the existing Ravenswood development and Kellogg Creek. The Well 8 facility will serve to increase overall water supply reliability, particularly with ongoing water quality concerns regarding Well 5A.

Well 8 at this location would be connected directly to the distribution system. Rather than supplying one of the centralized water treatment plants as is the case with the other water supply wells, Well 8 would be equipped with onsite water treatment systems for removal of manganese and iron and disinfection with sodium hypochlorite prior to deliver water to the distribution system. This configuration for Well 8 (as a standalone water treatment plant) will satisfy other treatment capacity and storage Capital Improvement Projects in addition to providing the supply reliability with the loss of Well 5A.

The target capacity of the Well 8 treatment facility will still be refined after this current hydrogeologic investigation, but the maximum capacity anticipated would be 2,000 gallons per minute, which will serve as an initial basis of the production well investigation. The sizing of the production well will

consider the treatment facility needs and the lakefill water supply needs that Well 8 will provide to Pantages.

Based on the objective of developing a high capacity water supply well, we propose to initially conduct a suitability assessment of the proposed well site. For this effort, we will evaluate suitability in terms of accommodating construction and future O&M activities, and for compliance with regulatory offsets from potential sources of contamination.

As part of the suitability assessment, LSCE will develop a conceptual site plan showing the station layout with site access, required State Water Resources Control Board, Department of Drinking Water (DDW) setbacks, and connections to the distribution system. The site plan will serve to delineate the production well point for initial regulatory submittals. It will also be used to select a location suitable for exploratory test hole drilling and monitoring well construction. LSCE will submit the conceptual layout and supporting information needed to obtain regulatory concurrence from DDW.

With regulatory concurrence on the conceptual site plan, the next step will be to conduct exploratory test hole drilling, which will be overseen by LSCE and drilled by a licensed and qualified well drilling subcontractor. The test hole-drilling program will be designed to delineate target aquifer units for the proposed production well. A geophysical log and formation samples obtained during this phase will serve as primary input to well design including sanitary and intermediate annular seal depths, screen intake locations, gravel envelope gradation for sand control, etc. For the project setting, we recommend converting the test hole to a monitoring well to assess aquifer conditions, collect ground-water samples for water quality screening, and to measure pumping interference from other District wells. From these activities, we will produce a preliminary well design suitable for the regulatory review and approval for the production well (Well 8).

Scope for Engineering and Field Services

LSCE's proposed project approach is integrated into the following tasks. Each task description includes a summary of deliverables and key activities on which the cost estimating is based. Budgets for each task are compiled in the subsequent section on Cost Estimating and Contract Administration.

Task 1: Project Administration

This task provides for project management and administrative activities such as:

- Contract administration
- Project management for adherence to scope, budget, and schedule
- Coordination with staff and subcontractors
- QA/QC of work products prior to delivery
- Client meetings, phone conferences, and coordination
- Invoicing review by project management

Task 2: Suitability Assessment and Preliminary DDW Siting Concurrence

Under Task 2, LSCE will assess the Well 8 site for its suitability to accommodate construction activities, future O&M, how the production well (and a future replacement well) might optimally be situated to comply with regulatory offset requirements. From this analysis, the preferred location(s) of the exploratory test hole/monitoring well will be identified.

LSCE will prepare a conceptual station layout that delineates the facility components and the prospective production well location, and provisions for a second production well as a replacement. LSCE intends to use the existing boundary and topographical basemap of the Pantages Trails property (LSCE assumes the AutoCAD files for the basemap will be made available by the developer). LSCE will use the basemap to delineate site improvements on the conceptual site plan including site access, station piping, treatment filter, backwash tank, outdoor panel assembly, chlorination facilities, emergency generator, transformer, and utility connections. The conceptual layout will show approximate footprints for these facilities with recommended working space for access and maintenance. The purpose of this activity is to identify the proposed locations of the production well and monitoring well. LSCE assumes for this purpose that up to three (3) conceptual facility layouts would be presented for discussion.

To ensure the site location is acceptable to DDW, LSCE will make a preliminary siting concurrence request from DDW in this Task 2, prior to constructing the monitoring well. This initial regulatory correspondence will be followed with a final siting concurrence submittal (in Task 4) after the hydrogeologic investigation and production well design. In this initial regulatory correspondence, LSCE will prepare a brief letter report that includes the selected conceptual layout along with the setback distances. LSCE will submit the letter report to the DDW and obtain tentative approval on setback distance before proceeding either the subsequent tasks discussed below. This step ensures DDW is aware of the site selected by the District and takes no issue with the location prior to constructing the test hole and monitoring wells. If any regulatory offset cannot be met, the submittal will provide a basis for a variance request (if necessary).

LSCE will develop a basis for sizing of the production well to meet lakefill and Town water supply needs. LSCE will work with the developer to develop a preliminary lake fill strategy that keeps water supply to the Town as the overriding primary purpose of the well.

Task 2 Overview

Key Activities:

- One field inspection of the Well 8 site.
- Develop three (3) alternative conceptual site plans for review and discussion with District.
- Initial regulatory siting concurrence letter to DDW.

Deliverables:

- Conceptual site plan(s)
- Letter to DDW to obtain preliminary siting concurrence
- Memo summarizing Well 8 sizing basis and preliminary lake fill strategy

Task 3: Exploratory Test Hole Drilling Oversight and Evaluation

Under Task 3, LSCE will coordinate and oversee exploratory test hole drilling at the Well 8 site for well design purposes. Based on previous hydrogeologic assessments by LSCE and experience with the CSD water supply well network, we have budgeted this phase of work using an exploratory target depth of 500 feet. At this depth, we anticipate being able to assess site conditions to the extent necessary to meet project objectives.

The drilling work will be performed by a licensed and qualified well driller under subcontract to LSCE. A well drilling permit will be secured by the driller. A geophysical survey conducted in the exploratory test hole will be used to delineate completion intervals for the prospective water supply well. Formation samples from the test hole will be used as a basis for design of a gravel pack to satisfy the appropriate sand control requirements for a municipal well station. The test hole will be converted to a monitoring well that will be used to measure water levels and collect water samples. In addition, the monitoring well can serve as an observation well, to assess production well efficiency and final acceptance of the constructed well.

The monitoring well design prepared by LSCE will comply with all state and local well standards. The monitoring well may include up to three piezometers depending on the lithology encountered. Upon completion of the monitoring well construction and development, LSCE will provide a sampling rig to obtain water samples from each monitoring well piezometer. LSCE will submit collected water samples to a State certified laboratory for preliminary water quality screening. The screening will encompass DDW initial source water quality monitoring requirements for primary and secondary constituents, volatile organic chemicals, selected synthetic organic chemicals, and selected unregulated chemicals.

At the completion of exploratory drilling, monitoring well construction, and water quality testing, LSCE will prepare a status memorandum summarizing results and recommendations for final well design. The report will delineate recommended completion intervals that appear most favorable in meeting project objectives.

Task 3 Overview

Key Activities:

- Multiple trips to project site for exploratory drilling activities, monitoring well construction, and groundwater sampling.

Deliverables:

- Summary report on test hole exploratory activities including recommendations for well design, estimates of yield, and water quality for a production well.
- Lithologic log, geophysical log, monitoring well as-built profile, sieve analysis, water quality analysis results reports, and a well design engineering worksheet.

Task 4: Well Design and Initial Regulatory Submittal to DDW

LSCE will prepare and submit the initial regulatory materials to DDW to amend the District’s water supply permit to include Well 8. This initial regulatory submittal is an initial step required by DDW to obtain concurrence on the well design and well location. The final regulatory materials required to amend the water supply permit occurs after the well and pump station facilities are constructed and prior to bringing the new system online (this will be a subsequent scope of work). The regulatory items to amend the water supply permit are in the table below. The items that are completed by LSCE in this task for the initial regulatory submittal are noted in the table. This initial regulatory submittal includes a Drinking Water Source Assessment and Protection (DWSAP) Program as required by DDW.

Prior to the production well construction, DDW will also require documentation showing compliance with California Environmental Quality Act (CEQA). LSCE understands that the CEQA document will be prepared by the District after DDW approves the well design and well location. DDW would also be involved in reviews of facility designs prior to construction. LSCE will assist the District, as needed, on the CEQA document and DDW permitting in a subsequent scope of work for the well and pump station design and construction.

Amended Water Supply Permit	Description
DWSAP Program Document (Initial Regulatory Submittal)	The DWSAP of the proposed well establishing protection zones, documenting potential contaminating activities, defining the well’s physical barrier effectiveness, and assessing vulnerabilities to the well.
Well Plot Plan (Initial Regulatory Submittal)	The plot plan for the proposed well, and conceptual site plan of proposed facilities, documenting control zone and protection from threats.
Well Design (Initial Regulatory Submittal)	The preliminary design of the production well is provided in the initial submittal. The as-builts are provided in the final permit application (subsequent scope of work).
State Well No. and Lat./Long. (Initial Regulatory Submittal)	Coordinates for proposed well location. As-Built coordinates are provided in the DWR Well Completion Report.
Water Quality Reports (Initial Regulatory Submittal)	Analytical results for representative samples from monitoring well and other CSD wells. Final water quality testing occurs after production well construction (subsequent scope of work).
CEQA Documentation	The District will prepare CEQA documentation after the initial regulatory submittal by LSCE. Under a subsequent scope of work LSCE will provide the technical information on the production well and treatment facilities for the CEQA documents.
Permit Amendment Application	To be prepared after well station is constructed and tested in the final regulatory submittal (subsequent scope of work).
DWR Well Completion	To be submitted in final permit application after test the well is constructed (subsequent scope of work).
Technical Data Sheets, Technical Report and Operations Plan	To be submitted in final permit application station is constructed and tested (subsequent scope of work).

Task 4 Overview

Key Activities:

- Development of the DDW initial regulatory submittal components identified above.

Deliverables:

- Initial DDW regulatory submittal for production well design and siting concurrence request.

Task 5: Contingency for Undefined Services

LSCE proposes a contingency for unforeseen services that arise during the completion of this work that are not defined in the current scope of services. Any additional work completed under this contingency budget would only be utilized with prior approval from the General Manager.

Fee Proposal

LSCE's proposed fee estimate for the scope of engineering and field services for the Well 8 hydrogeologic investigation and related tasks are encompassed in the following table. Cost estimates are presented by task and are considered suitable for planning and budgeting purposes.

Task	Description	Outside Services	Engineering Services	Total
1	Project Administration		\$5,040	\$5,040
2	Suitability Assessment and Preliminary DDW Siting Concurrence		\$14,200	\$14,200
3	Exploratory Test Hole Drilling Oversight and Evaluation	\$107,235 ^(1, 2)	\$16,500	\$123,735
4	Well Design and Initial Regulatory Submittal to DDW		\$9,800	\$9,800
5	Contingency for Undefined Services		\$20,000	\$20,000
Totals		\$107,235	\$65,540	\$172,775

Notes:

- (1) Outside services provided by subcontract driller for 500-ft test hole, triple completion monitoring well, and full containment of drilling fluids and cuttings (the ability to dispose cuttings and fluids onsite would result in \$15,000 cost reduction). The total cost also includes Water quality testing performed by certified testing laboratory for a modified-Title 22 water quality analysis from all three (3) piezometers (radionuclides are only taken from the MW reflecting production zone).
- (2) A cost from a surveyor (Mackay & Soms) is included to set the location of the test hole prior to drilling.

The proposed project sum presented above includes LSCE's labor under each task and outside engineering services, all as delineated in this proposal. LSCE will bill monthly for labor and materials, only as incurred, in accordance with LSCE's Schedule of Fees for Engineering and Field services (attached).

If LSCE is directed to deviate from the proposed scope, or as dictated by unforeseen field conditions, LSCE will provide notification of any potential changes in the estimated cost and time to complete the work. LSCE will not proceed with any work that deviates from the approved scope and budget until approval to proceed is granted.

We appreciate the opportunity to provide you with this scope and budget.

Sincerely,
LUHDORFF & SCALMANINI
CONSULTING ENGINEERS



Scott Lewis, P.G.
Principal Geologist



Justin Shobe, P.E.
Supervising Engineer

Attachments: Schedule of Fees for Engineering and Field Services (January 2020)



**Luhdorff &
Scalmanini**
Consulting Engineers

SCHEDULE OF FEES - ENGINEERING AND FIELD SERVICES 2020

Professional	
Senior Principal	\$225/hr
Principal Professional	\$220/hr
Supervising Professional	\$210/hr
Senior Professional	\$192/hr
Project Professional	\$150 to 170/hr
Staff Professional	\$135 to 145/hr
Technical	
Engineering Inspector	\$140/hr
ACAD Drafting/GIS	\$135/hr
Engineering Assistant	\$105 to 125/hr
Scientist	\$105 to 125/hr
Technician	\$105 to 125/hr
Clerical Support	
Word Processing, Clerical	\$80/hr
Digital Communications Specialist	\$90/hr
Project Admin/Accounting Assistant	\$100/hr
Other Services	
Vehicle Use	\$0.58/mi
Subsistence	Cost Plus 15%
Groundwater Sampling Equipment (Includes Operator)	\$170.00/hr
Copies	0.20 ea
Professional or Technical Testimony	200% of Regular Rates
Technical Overtime (if required)	150% of Regular Rates
Outside Services/Rentals	Cost Plus 15%
Services by Associate Firms	Cost Plus 15%