TO: BOARD OF DIRECTORS

FROM: DON SPAGNOLO
GENERAL MANAGER

DATE: OCTOBER 12, 2010

AGENDA ITEM
E-6

OCTOBER 13, 2010

CONSIDER PASQUINI HYDROGEOLOGIC INVESTIGATION

ITEM

Consider Pasquini Hydrogeologic Investigation and Groundwater Modeling and Potential Use of Site for Wastewater Effluent Disposal and CEQA Analysis [PROVIDE DIRECTION TO STAFF].

BACKGROUND

The Board selected Fugro West Inc. to provide hydrogeologic services to investigate the feasibility of the Pasquini property as an alternate effluent disposal site for the Southland Wastewater Treatment Facility (WWTF). Fugro issued a draft report in February 2010 that identified the potential existence of two low permeability layers at depths below the sampling methods previously utilized. Fugro recommended that the presence and nature of these deep layers be investigated. The field work involved the drilling of three deep boreholes to investigate the presence and lateral continuity of the deep clay layers utilizing the sonic drilling method. This method allowed the collection of "undisturbed" soil samples at the required depths.

Fugro completed the necessary field work, developed a groundwater model to simulate effluent disposal at the site, and prepared a final report. The major finding of the report was that the potential exists for groundwater breakout at the bluff face and day-lighting at the ground surface adjacent to the bluff at the planned constant long-term wastewater discharge rate of 1.23 million gallons per day. Furthermore, the report suggested that alternative discharge strategies could possibly mitigate these potential results.

The Board subsequently authorized Fugro to perform supplemental groundwater modeling to determine the appropriate discharge rate and schedule for the site. Attached is a summary of those results. The supplemental modeling estimates that the maximum long-term constant discharge rate for the site is 300,000 gallons per day and that at a rate of 1.23 MGD, the maximum seasonal discharge period would be 3 months.

Based on the latest information, staff seeks direction from the Board regarding continued consideration of the Pasquini Property as a potential effluent disposal site since the site is capable of accepting only a portion of the anticipated future discharge rate from the Southland Wastewater Treatment Facility (WWTF).

Furthermore, staff seeks direction from the Board whether the site should be analyzed as an alternative instead of a proposed project component in terms of CEQA. The administrative draft of the EIR for the Southland WWTF Upgrade Project is tentatively scheduled to be completed by the end of the month and the District's EIR consultant, Doug Wood and Associates, needs timely direction from the District in order to maintain the schedule.

FISCAL IMPACT

Fugro has completed the investigation of the site. No additional work is planned.

RECOMMENDATION

Staff recommends that the Board analyze the site as an alternative instead of a proposed project component in terms of CEQA.

ATTACHMENTS

- Supplemental Groundwater Modeling for the Hydrogeologic Assessment of the Pasquini Property dated September 7, 2010 prepared by Fugro West, Inc.

FUGRO WEST, INC.

660 Clarion Court, Suite A
San Luis Obispo, California 93401
Tel: (805) 542-0797
Fax: (805) 542-9311

September 7, 2010
Proposal No. 3596.005.03

Nipomo Community Services District
Post Office Box 326
Nipomo, California 93444

Attention: *Mr. Peter V. Sevcik*
District Engineer

Subject: Supplemental Groundwater Modeling for the Hydrogeologic Assessment of the Pasquini Property, Nipomo, California

Dear Mr. Sevcik:

This report presents the findings of supplemental groundwater modeling performed by Fugro for the Nipomo Community Services District (District) as part of the hydrogeologic assessment of the Pasquini property as a site for a future percolation pond system. The proposed pond system would be part of the planned upgrade and expansion of the Southland Wastewater Treatment Facility.

Background

A meeting was held on July 16, 2010 between representatives of the District, AECOM, and Fugro to discuss the results documented in a draft report entitled "*Final Report, Hydrogeologic Assessment of the Pasquini Property, Nipomo, California*" (dated July 12, 2010). The major finding of the report was that the potential exists for groundwater breakout at the bluff face and daylighting at the ground surface of the adjacent Santa Maria River alluvium given the long-term discharge of treated wastewater effluent in the proposed pond system at the planned constant rate of 1.23 million gallons per day (mgd). However, the report also recommended that an alternative effluent discharge rate and disposal schedule might exist that would mitigate against the potential for breakout along the bluff face and daylighting in the alluvium.

We met with your Board on August 11, 2010 to present the findings of the final report and discuss the potential alternative discharge rates and disposal schedules. At that meeting, your Board requested Fugro to perform the additional modeling tasks towards the determination of an appropriate discharge rate and schedule at the site.

The first task was to estimate the maximum long-term constant discharge rate that can be achieved at the site without either a breakout at the bluff face or daylighting in the alluvium. The second task was to evaluate the groundwater mounding impacts in the underlying dune sands for three different seasonal discharge periods (i.e., 3 months, 6 months, and 9 months) each at a constant discharge rate of 1.23 mgd. During the 3-month discharge period, for example, the pond system would receive discharge at a constant rate of 1.23 mgd and for the

remaining 9 months of the year the pond system would be inactive (i.e., receive no discharge). The purpose of the second task was to determine whether the proposed pond system could be operated on a long-term seasonal basis (i.e., without the occurrence of breakout or daylighting) for any of the three evaluated seasonal discharge periods. The results of the two modeling tasks are presented in the following sections.

Estimation of Maximum Long-term Constant Discharge Rate

A numerical groundwater flow model was developed in MODFLOW for the study area (i.e., model domain) displayed on Figure 1. The model was used to estimate the maximum long-term constant discharge rate in the pond system that would not lead to breakout at the bluff face or daylighting at the ground surface of the adjacent Santa Maria River alluvium. The elevation of the top of the clay layer was defined in the model to be 110 feet (MSL). In the vicinity of the toe of the bluff face, the ground surface was estimated to be between 40 to 70 feet above the top of the clay layer (i.e., a ground surface elevation of 150 to 180 feet (MSL) along the toe of the bluff face). The lowest ground surface elevation in the Santa Maria River alluvium in the area near the bluff face was estimated to be about 30 feet above the assumed top elevation of the clay layer (i.e., a ground surface elevation of 140 feet (MSL) in the alluvium). Therefore, to prevent breakout along the bluff face and daylighting at the ground surface of the river alluvium, the maximum long-term constant discharge rate was estimated as the highest discharge rate that would not result in modeled groundwater levels greater than 40 feet above the top elevation of the deep clay layer in the area along the bluff face by the end of the 20-year simulation period. For analysis purposes, simulated groundwater levels were observed in the model at three different hypothetical monitoring locations along the bluff face (HMW-1, HMW-2, HMW-3) and one hypothetical monitoring location in the Santa Maria River alluvium (HMW-4) at an elevation of 140 feet (MSL) (Figure 1).

For the estimation of the maximum long-term constant discharge rate, the horizontal hydraulic conductivity of the aquifer underlying the pond system (i.e., the dune sands of the mesa) was defined to be 20 feet/day. The horizontal hydraulic conductivity of the Santa Maria Fault was conservatively assumed to be 0.01 feet/day. These modeling assumptions were the same assumptions and model domain that were used in the simulations presented in the July 12, 2010 final report.

A plot displaying the simulated mound heights above the top of the deep clay layer at HMW-2 over the 20-year simulation period for constant discharge rates of 1.23, 0.615, and 0.3075 mgd is shown on Figure 2. The estimated maximum long-term constant discharge rate given these assumptions was conservatively estimated to be 0.3075 mgd. Although not shown, the simulated groundwater levels at HMW-4 in the Santa Maria River alluvium were less than 30 feet above the assumed top elevation of the deep clay layer.

Evaluation of 1.23 MGD Discharge Rate for Different Seasonal Discharge Periods

The numerical groundwater flow model was also used to evaluate the potential for breakout along the bluff face and daylighting at the ground surface of the Santa Maria River alluvium for three different seasonal discharge periods (i.e., 3 months, 6 months, and 9 months)

each at a constant discharge rate of 1.23 mgd. For these three simulations, the horizontal hydraulic conductivity of the aquifer underlying the pond system (i.e., the dune sands of the mesa) was again defined to be 20 feet/day and the horizontal hydraulic conductivity of the Santa Maria Fault was conservatively assumed to be 0.01 feet/day. The simulated groundwater mound heights above the top of the deep clay layer at the three different hypothetical monitoring locations along the bluff face (HMW-1, HMW-2, HMW-3) and the one hypothetical monitoring location in the Santa Maria River alluvium (HMW-4) at an elevation of 140 feet (MSL) for the seasonal discharge periods of 3-months, 6-months, and 9-months are shown on Figures 3, 4, and 5, respectively.

Over the 20-year simulation period, only the 3-month seasonal discharge period generated groundwater levels that were less than 40 feet above the top elevation of the deep clay layer along the bluff face and less than 30 feet above the top of the deep clay layer further into the Santa Maria River alluvium. The results for the 6-month seasonal discharge period suggest that the pond system could receive discharge at the rate of 1.23 mgd for possibly up to 7 years before breakout along the bluff face or daylighting in the alluvium occurs. The results for the 9-month seasonal discharge period indicate that the pond system could receive discharge at the rate of 1.23 mgd for potentially up to 3 years before breakout along the bluff face or daylighting in the alluvium occurs.

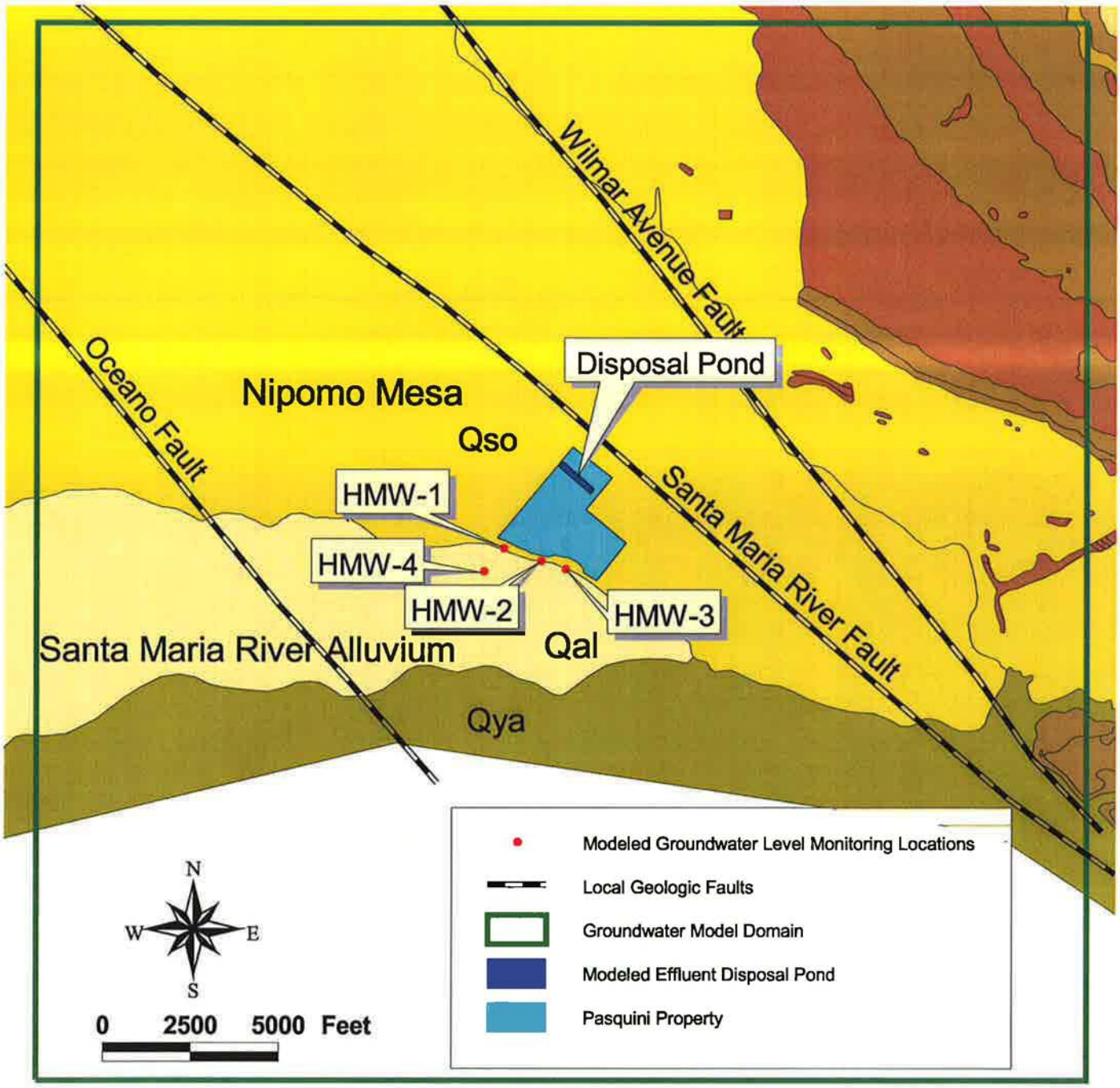
If you have any questions, please do not hesitate to call us.

Sincerely,

FUGRO WEST, INC

Nels C. Ruud, PhD
Project Hydrogeologist

Paul A. Sorensen, C.Hg 154
Principal Hydrogeologist



STUDY AREA AND GROUNDWATER MODEL DOMAIN
Hydrogeologic Assessment of the Pasquini Property
Nipomo, California

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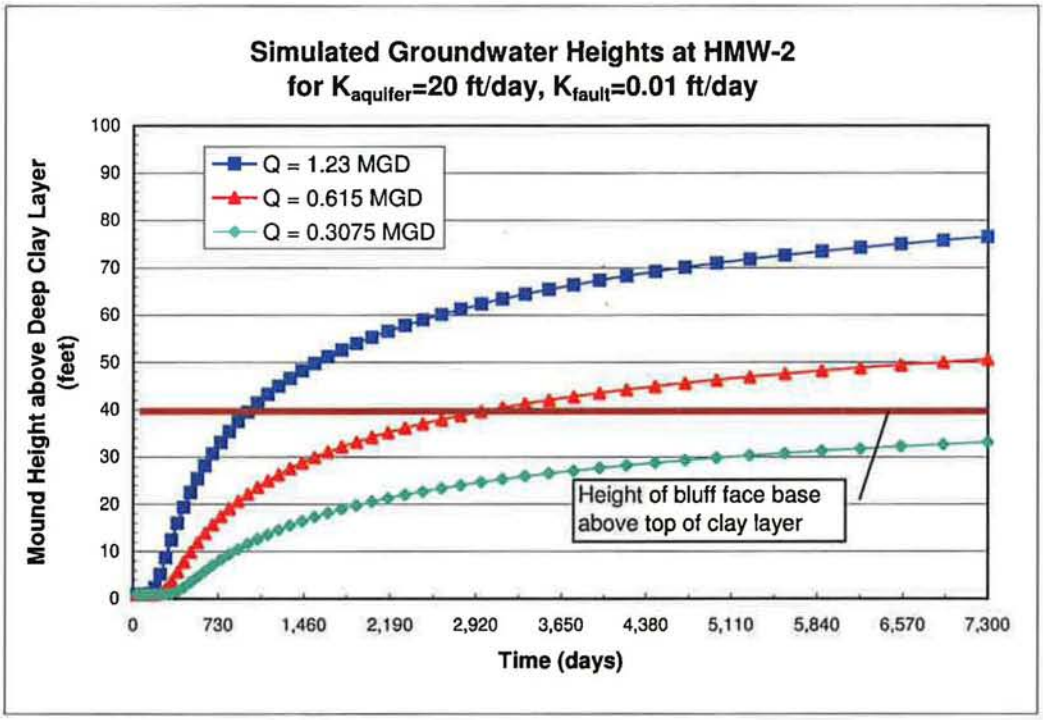
FIGURE 1



SIMULATED LONG-TERM GROUNDWATER HEIGHTS ABOVE DEEP CLAY LAYER AT HMW-2 FOR THREE DIFFERENT CONSTANT DISCHARGE RATES

Hydrogeologic Assessment of the Pasquini Property
Nipomo, California

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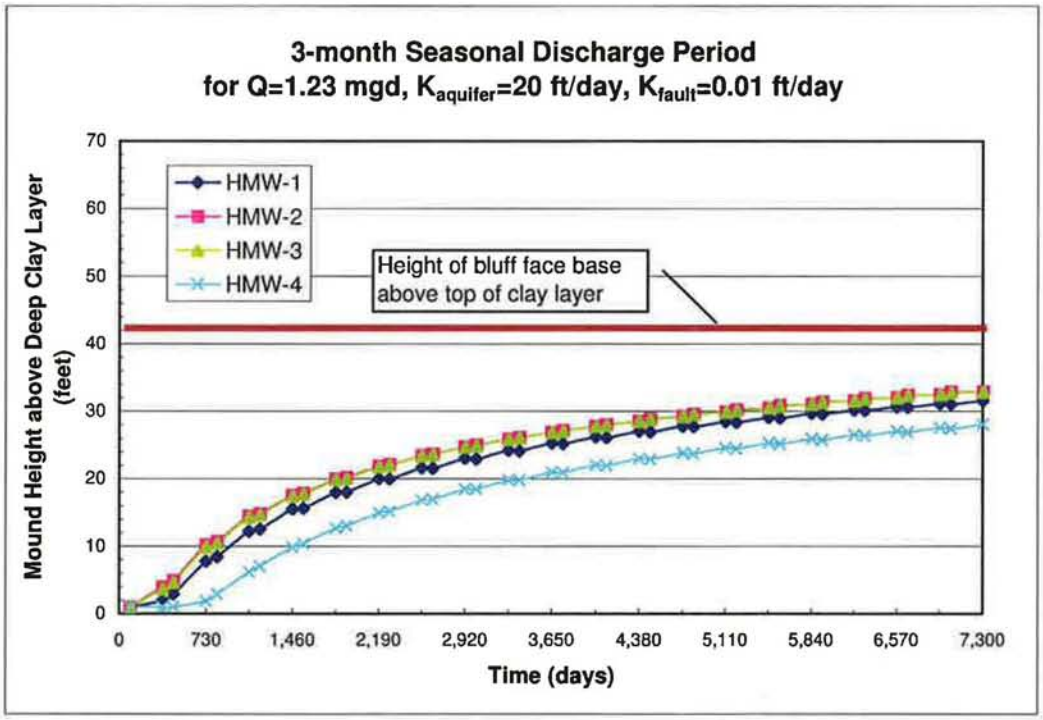
FIGURE 2



SIMULATED LONG-TERM GROUNDWATER HEIGHTS ABOVE DEEP CLAY LAYER FOR 3-MONTH SEASONAL DISCHARGE RATE OF 1.23 MGD

Hydrogeologic Assessment of the Pasquini Property
Nipomo, California

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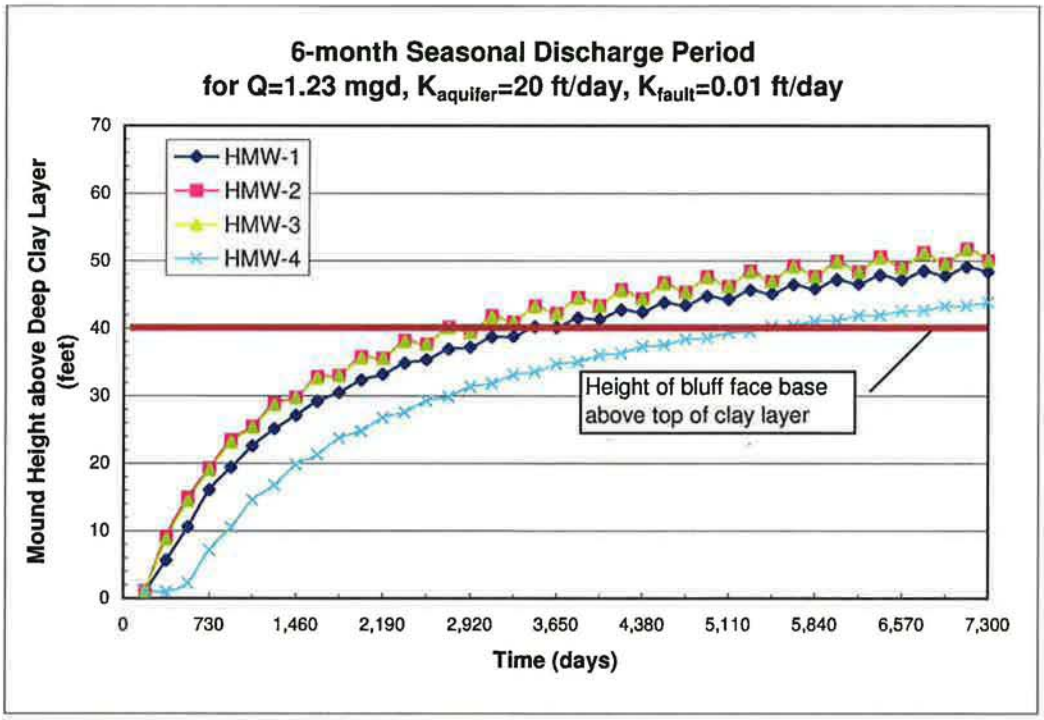
FIGURE 3



SIMULATED LONG-TERM GROUNDWATER HEIGHTS ABOVE DEEP CLAY LAYER FOR 6-MONTH SEASONAL DISCHARGE RATE OF 1.23 MGD

Hydrogeologic Assessment of the Pasquini Property
Nipomo, California

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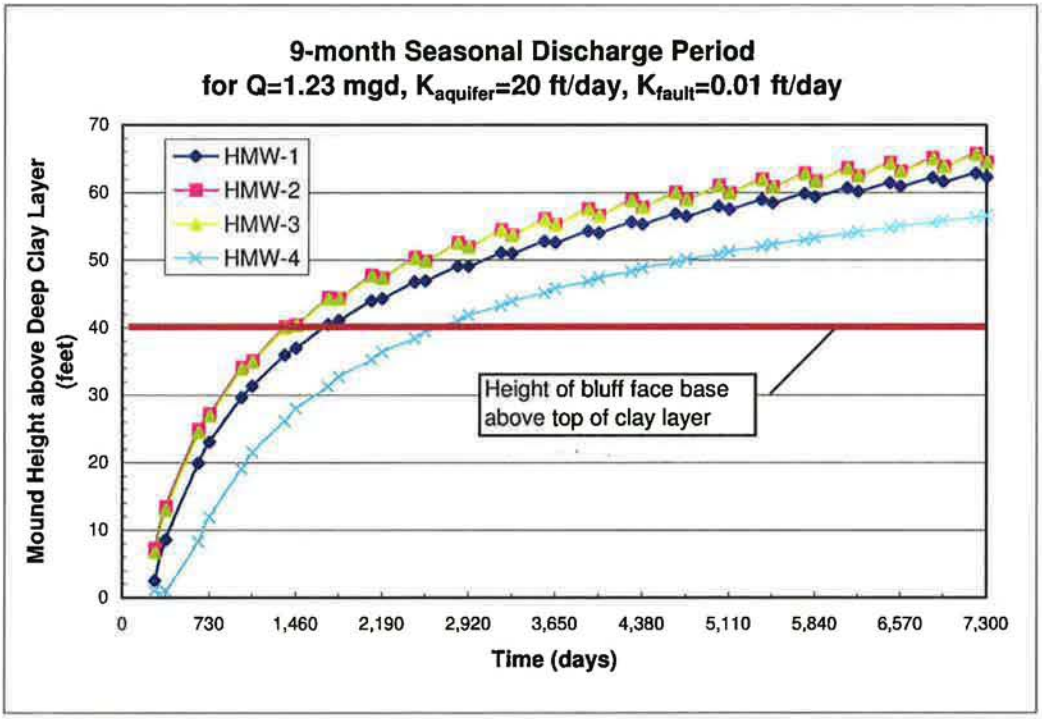
FIGURE 4



SIMULATED LONG-TERM GROUNDWATER HEIGHTS ABOVE DEEP CLAY LAYER FOR 9-MONTH SEASONAL DISCHARGE RATE OF 1.23 MGD

Hydrogeologic Assessment of the Pasquini Property
Nipomo, California

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FIGURE 5