



1340 Charwood Road, Suite I
Hanover, MD
21076
p| 410.850.0404
f| 410.850.0049
kleinfelder.com

DHL: 28208577751

July 18, 2008

Mr. Herbert M. Meade, Administrator
Maryland Department of the Environment
Oil Control Program
1800 Washington Boulevard, Suite 620
Baltimore, Maryland 21230

**Subject: Water Supply Investigation Results
Jacksonville Veterinary Hospital
14240 Jarrettsville Pike
Phoenix, Maryland**

Dear Mr. Meade:

This letter details the water supply investigation completed by Kleinfelder on behalf of ExxonMobil Environmental Services Company (ExxonMobil), on behalf of Exxon Mobil Corporation for 14240 Jarrettsville Pike (veterinary hospital) in response to the communication from the Maryland Department of the Environment (MDE) in February 2008 that the property owner had complained of diminished yield. The work plan for this investigation, entitled *Water Supply Investigation Work Plan*, was submitted to the MDE on April 4, 2008. The MDE approved the work plan in correspondence dated April 10, 2008. The water supply investigation was completed by Kleinfelder personnel between April 25 and May 29, 2008.

Background

In August 2007, Kleinfelder began a water supply well evaluation for the veterinary hospital after complaints from the property owner to the MDE of diminished yield from its private supply well. Four days into the evaluation the owner reported to MDE that a leaking toilet had been discovered and repaired.

Kleinfelder evaluated data collected between August 20 and August 24, 2007 and submitted the *Water Supply Well Evaluation* to the MDE on November 2, 2007. Based on the data collected prior to resolving a plumbing issue, water levels and usage observed were generally consistent on a daily basis. At the end of the business day on Friday August 24, 2007, there was evidence of a brief spike in water usage that was inconsistent with water usage data collected earlier during the week. The spike in water usage resulted in a brief water level decline and recovery in the supply well. No water supply issues were reported at the beginning of the following week.

Water usage and related pumping of the veterinary hospital supply well were not observed to have a measurable effect on either of the monitoring wells on the property where water level data were simultaneously recorded.

In late February 2008, ExxonMobil was notified by the MDE that the owner of the veterinary hospital had renewed its complaint of diminished yield from its private supply well, and the MDE requested that ExxonMobil investigate the problem to determine an appropriate solution.

Work Completed

On April 25, 2008 a Solinst® Levellogger Gold Model 3001 data-logging pressure transducer, capable of measuring up to 300 feet of head pressure, was installed in the veterinary hospital supply well. A Solinst® Barologger Gold Model 3001 data-logging pressure transducer was installed in the room which houses the supply well to collect data to compensate the recorded pressure data in the supply well for indoor barometric pressure changes. Solinst® Levellogger Mini Model 3001 data-logging pressure transducers, capable of measuring up to 15 feet of head pressure, were also installed in the monitoring wells located at the northwest, southwest, and southeast corners of the property (MW-149, MW-44, and MW-46 respectively). A Solinst® Barologger Mini Model 3001 data-logging pressure transducer was installed above the casing of monitoring well MW-44 in order to compensate the pressure data recorded in the monitoring wells for outdoor barometric pressure changes. Each of the data-logging transducers used during the investigation was set to record pressure data at 5-minute intervals. Depth to water was measured in the supply well and monitoring wells during data logger installation using an electronic water level meter.

To record water usage at the veterinary building, a flow meter was installed on the Point of Entry Treatment (POET) system. The flow meter contained a pulse output connected to a data logger with a data-logging frequency of two minutes. Flow totalizer readings were also recorded from the existing flow meter on the supply well to confirm flow measured by the data-logging flow meter. In addition, daily precipitation data were collected from the weather station located at the Former Exxon Facility 28077, 14258 Jarrettsville Pike, Phoenix, Maryland.

On May 1 and May 14, 2008, data from the water level pressure transducers, the barometric pressure transducers and the data-logging flow meter were downloaded. Once data transfer was complete, the data-logging pressure transducers were replaced to their original positions in the supply well and monitoring wells, and depth to water was measured. Flow totalizer measurements were also recorded from the existing flow meter on the supply well.

On May 29, 2008, data from the water level pressure transducers¹, the barometric pressure transducers and the data-logging flow meter were downloaded and the equipment was removed from the property. Final flow totalizer measurements were recorded from the flow meter on the supply well.

Results of Investigation

The results of the water supply investigation are displayed graphically in **Attachment 1**. Pressure transducer and flow logging data are provided in electronic form as **Attachment 2**. Rain events and sampling events requiring purging of the monitoring wells are noted on the chart to explain the variation in water levels in the monitoring wells.

The veterinary hospital supply well submersible pump is reportedly set at approximately 118 feet below grade (fbg), which corresponds to an elevation of approximately 456 feet above mean sea level, (ft-msl). As observed on the chart in **Attachment 1**, the potentiometric surface elevations measured in the veterinary hospital supply well during the investigation period ranged from 541.82 to 526.49 ft-msl. These data indicate that the water level inside the supply well did not fall to a level near the pump intake during the study period.

¹ On May 29, 2008, the data-logging pressure transducer for MW-149 was lost down the monitoring well during data retrieval, and has not been recovered.

The potentiometric surface elevations in the monitoring wells measured (MW-149, MW-44, and MW-46) remained generally consistent during the study period, except during purging and sampling of MW-44 and MW-46 on May 21, 2008. The data indicate that pumping water from the veterinary hospital supply well between April 25 and May 29, 2008 did not affect potentiometric surface elevations in monitoring wells MW-149, MW-44, and MW-46.

During the study period, the maximum peak demand flow rate associated with water usage by the veterinary hospital was 7.34 gallons per minute (gpm). During the same study period the average peak flow rate during business days was approximately 3.97 gpm. The minimum peak flow rate during business days was 2.29 gpm.

Findings and Conclusions

Conclusions based on the investigative activities conducted to date are summarized as follows:


- Kleinfelder received no reports of diminished yield from the veterinary hospital personnel during the period of April 25 through May 29, 2008.
- The data collected between April 25 and May 29, 2008 do not indicate a water supply issue associated with the supply well in the veterinary hospital since the water level in the pumping well was consistently greater than 70 feet above the pump intake.
- The two investigations of the veterinary hospital water supply, taken together, do not support a conclusion that the nearby groundwater remediation activities have caused diminished yield from the private supply well.
- Approximately 128 gallons of water are stored in the system, consisting of approximately 25 gallons of deliverable water stored in the pressure tank and approximately 103 gallons of standing water in the supply well (conservatively assuming a potentiometric surface elevation of 520 ft-msl, and not accounting for natural recharge to the system).
- The permit decision dated June 18, 2008 for water appropriations and use permit BA2006G003 states, "A previous 6 hour yield test of the well [veterinary hospital supply well], conducted in April of 2002, demonstrated that the well was capable of producing about 1.8 gallons per minute, which is sufficient to meet the average needs of the animal hospital." The peak demand of the veterinary hospital exceeds the reliable yield of the well (1.8 gpm, pre-remediation) every business day, and if sustained, will deplete the quantity of water stored in the water supply system (tank and well volume). This finding is consistent with occasional diminished yield conditions reportedly encountered at this location. Though as reported in August 2007, the peak demand at this property may be in part related to plumbing fixtures (i.e., a running toilet).

Recommendations

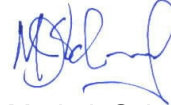
It is recommended that the water storage capacity of the water supply system be increased to alleviate future water supply issues that may arise during peak demand periods. Replacing the existing pressure tank connected to the water supply system with larger capacity tanks will increase the storage capacity of the water supply system and reduce the amount of water extracted from the supply well during peak demand periods.

If you have any questions or require additional information, please contact the undersigned.

Sincerely,
Kleinfelder East, Inc.



Jeffrey R. Hale, P.G.
Principal Hydrogeologist



Mark J. Schaaf, CPG
Project Director

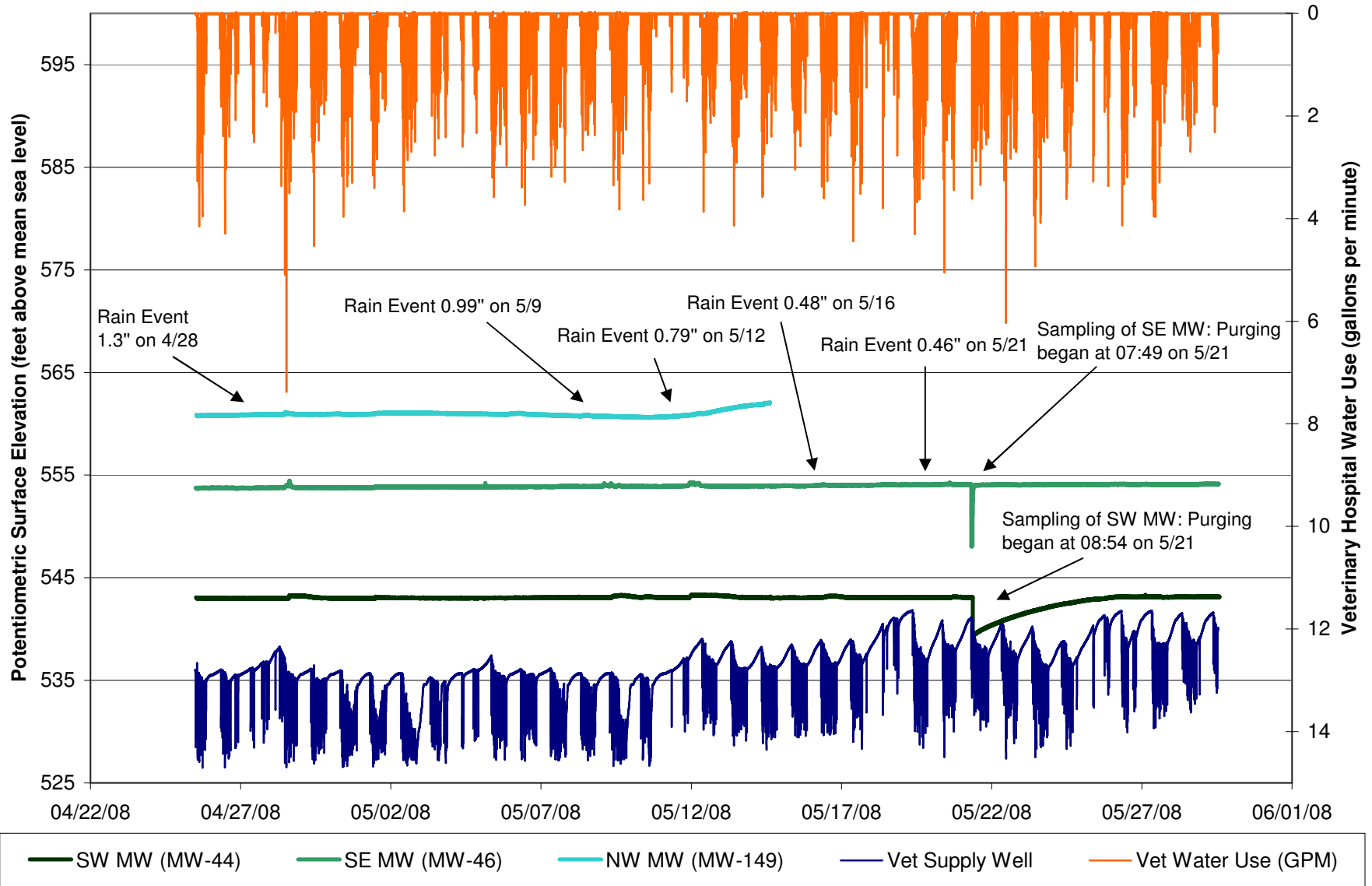
Attachments

cc: James F. Medlin – ExxonMobil (Kleinfelder file)
John W. Grace – MDE Water Supply Program
Yolande Norman – MDE Oil Control Program
Ellen Jackson – MDE Oil Control Program
Carlos Bollar – Archer and Greiner

Attachment 1

Veterinary Hospital Water Supply Investigation Data

Veterinary Hospital Water Supply Investigation Data



Attachment 2

**Pressure Transducer and Flow Logging Data
(Refer to Excel file on CD)**