RESOLUTION - ACTION REQUESTED 2012-577

MEETING: November 27, 2012

TO: The Board of Supervisors

FROM: Charles Mosher, Health Officer

RE: Request to Modify the Variance for on Gallery-Snyder Property

RECOMMENDATION AND JUSTIFICATION:
Approve a modification to the Variance for Christian Gallery and Lucy Snyder to locate a well on their Foresta Property, APN 006-160-035.

On April 17, 2012, the Board approved a variance for Christian Gallery and Lucy Snyder to drill a well on their property in Foresta. The variance had specific conditions which were not followed; therefore, the variance will have to be reapproved by the Board. (Res. #12-187).

The condition of the variance which was not followed was condition #2: "An annular seal of at least fifty (50) feet in depth, if the geologist is on-site during drilling and determines that the seal will be at least 20 feet into solid un-weathered and unfractured granite or 100 feet in depth if the geologist is not present during drilling, to be placed with the well".

The geologist was not on site during drilling and the driller did not install the required 100 foot deep seal. Instead the driller had the geologist observe the installation of the annular seal to a depth of 90 feet. The geologist has submitted a report affirming that the seal is at least 20 feet into solid granite and explaining how he has come to the conclusion that the seal is adequate. We forwarded the report to Jan Stepik, a geologist at the State Water Resources Board familiar with hard rock well drilling. Mr. Stepik stated to us in a telephone call on November 6, 2012, that based on the information given to him he believes that the well is adequately sealed. In a follow-up email Mr. Stepik recommended testing the well at a frequency that is actually less than the current requirement and confirmed his opinion that the 90 foot seal is adequate.

Based upon the GRD report, well drillers report and Mr. Stepik’s review the Health Department believes it is appropriate to recommend approval of the modification to the variance. See attached memo dated November 8, 2012.

BACKGROUND AND HISTORY OF BOARD ACTIONS:
ALTERNATIVES AND CONSEQUENCES OF NEGATIVE ACTION:
Well must be destroyed and a new well drilled, meeting all requirements of Resolution 12-187, at considerable expense to owner.

ATTACHMENTS:
Memo to BOS re Modify Variance for Gallery-Snyder (PDF)
GRD_Snyder Attachment A (PDF)

CAO RECOMMENDATION
Requested Action Recommended

RESULT: ADOPTED [UNANIMOUS]
MOVER: Lee Stetson, District I Supervisor
SECONDER: Jim Allen, District V Supervisor
AYES: Stetson, Turpin, Bibby, Cann, Allen
November 8, 2012

TO: Members, Board of Supervisors

FROM: Charles B. Mosher, M.D., MPH, Health Officer

SUBJECT: Revised Variance Request on Gallery Property, APN 006-160-035

BACKGROUND:

This property is located in Foresta on a small lot measuring 50 by 100 feet. The owner’s desire to rebuild on this property after the Foresta Fire presents the now familiar challenge of maintaining setbacks required by County Code applicable to both planning issues and public health issues. In April 2012, Dr. Gallery received a variance to drill a well closer than the required 100 feet from his septic system (See attached Board Resolution 2012-187).

During the drilling process the well driller misunderstood the requirements of the variance. He believed that the geologist only had to witness the placement of the annular seal rather than be present during the actual drilling phase. The error was not discovered until the Environmental Health Director asked the geologist to submit a letter stating that he observed the drilling and seal placement and it met the requirements of the variance. The geologist responded to that request and advised the Health Department that he was only present for the seal placement. The geologist has submitted a geological report which supports his opinion that the seal is installed at least 20 feet into solid un-fractured granite (See Attachment A).

Review of the geologic report by staff and an Engineering Geologist in the Ground Water Protection Section at the State Water Resource Control Board shows it to adequately address the concern over whether or not the seal meets the intent of the variance to be at least 20 feet into solid un-fractured granite.
I. Applicable codes:

A. County Code Section 13.08.090 Rules and Regulations Section .070 “minimum setbacks”


D. Regional Water Quality Control Board guidelines for on-site sewage disposal.

E. Board of Supervisors Resolution 2012-187

II. Analysis of request:

Health Department and State water Board staff analysis of the geologist’s report and drilling record indicates the following findings:

A. The first recharge of water to the well is at a depth of 125 feet below the surface.

B. An adequately constructed annular seal consistent with current Department of Water Resources standards of 90 feet was installed.

C. The geological report indicates that the seal is placed at least 20 feet into solid un-weathered and un-fractured granite.

RECOMMENDATION:

Staff finds that the geological conditions on this lot are unique and geology report is sufficient to reasonably allow a 10 foot shallower seal than the 100-foot minimum established by Resolution 2012-187. We recommend granting change to the variance with the following conditions (consistent with conditions placed on previous variances including 2012-187):

1. Quarterly bacteriological testing to be performed by the property owner on water from the private well on said APN to include coliform count and heterotrophic plate count. Copy of results to be sent to the Health Department. (This condition may be waived after two years of monitoring).

2. In the case of any bacteriological tests of water demonstrating presence of coliform organisms or significant increase in the heterotrophic plate count, the
County Health Department will be immediately notified and the drinking of raw water from that well will be immediately suspended.

3. In the event that the water from said well should demonstrate bacteriological contamination and that standard and reasonable attempts to decontaminate the well fail, after three such attempts the landowner will destroy the well.
David Conway, REHS  
Mariposa County Health Department  
5100 Bullion Street, P.O. Box 5  
Mariposa, CA  95338

RE: Mariposa County APN 006-160-035, Well Observations

The undersigned was contacted by Mark Harris, owner of Yosemite Falls Well Drilling to observe the construction of the well seal on the well drilled in the southeastern corner of the referenced parcel. The well sealing took place during the afternoon of May 2, 2012. The following items were noted and recorded in my field notes during observation of the process, review of the Well Completion Report Number e0150088 dated 8/21/12 (copy attached) and conversations with Mark Harris:

The total depth of the well was reported to be 200 feet with soil encountered to a depth of 6 feet, decomposed granite from 6 to 40 feet and granitic rock to the bottom of the well. The borehole diameter was 12 inches. Water was encountered at 125 feet, 148 feet, and 175 feet. It is significant that the first indication of water was reported at 125 feet as groundwater normally occurs in the granitic rocks either along fractures or joints.

The casing was set with 10.625 inch diameter steel to a depth of 60 feet. At approximately 55 feet it was necessary to drive the 10.625 inch casing. The cause of the obstruction which required driving the casing was not apparent. Possible causes could include a slight deviation in the boring sidewall alignment, slight deviation of the well casing alignment or caving of the boring sidewall as the 10.625 inch casing was being lowered. A 6.625 inch diameter steel casing was set inside the larger casing to a depth of 90 feet.

The annular spaces between the casings from 0 to approximately 60 feet and, from 60 to 90 feet the native rock and the outside of the 6.625 inch casing, were filled with an Enviroplug (bentonite) slurry mixed in a Groutmaster mixer and pump. Twelve and a portion of the 13th bags of Enviroplug were placed under pressure through a 1 inch PVC pipe in stages from the bottom of the 6.625 inch steel casing to the surface, using an up and down motion of the PVC ("Tremie") pipe to ensure lack of voids.

A review of the data gathered previously during the initial work on the property was performed with a special emphasis on the results of Seismic Traverse #2 which found that a seismic velocity of 1100 feet per second (fps) represents the general/average velocity for the soils to a depth of 10 feet. The geology underlying this parcel is granitic. The 1100 fps velocity is typical for decomposed granitic soils which are commonly referred to as "DG". At approximately 10 feet below the adjacent ground surface, the velocity changes to 3500 fps which is a typical velocity representing decomposed granitic soils of a density which would require mechanical equipment to excavate. At approximately 50 feet from the baseline "shot point" an offset in the seismic data indicates the possibility of an existing tank being present. The tank apparently served the previous owner. Its presence was not confirmed by probing nor excavation efforts.
The seismic "shot points" for stations 60 to 100 feet beyond the eastern geophone site indicate that the velocities start to increase in excess of 5,000 fps. The increasing velocities represent a gradational transition from decomposed granitic soils ("DG") into granitic rock.

The seismic method of geophysical exploration is an averaging technology which presents an indirect representation of the earth materials underlying the line of traverse. The effective depth of representation of earth materials below the surface is approximately 1/3 the length of the traverse line, which is to say for the 100 foot line of traverse length used in this study, the effective depth of knowledge obtained is to 30 feet below the surface. The technique is relatively simple being based on the principle that the faster a sound wave travels through the underlying earth materials, the more dense the underlying earth materials are. Mechanically, the technique works by a sledge hammer striking a metal plate thereby starting the timer in the seismograph and creating a seismic wave in the underlying materials. The wavefront travels through the earth materials to a geophone where it is intercepted and stops the timer in the seismograph which records the time of travel.

When subsequent time/distance points are plotted on a graph, a relatively homogeneous earth mass will result in the points all falling along or close to a straight line. The slope of the line represents the velocity of the underlying earth materials. When significant subsurface voids are encountered, there will be an offset similar to that which was represented by what was interpreted as the location of the septic tank along Traverse #2. However, when the seismic time/distance data plots form a relatively straight line for several distance points in succession, it is proper to interpret the represented rock mass to be competent. Such is the case for the shot points 60, 70, 80, 90 and 100 along traverse #2 from the eastern geophone.

The seismic data indicates that, within the first thirty feet below the ground surface, decomposed granitic soils overlie weathered bedrock. The increasing seismic velocities represent an increase in density with depth. Evidence for substantial fracturing of the weathered bedrock is not indicated within the depth interval represented by the seismic traverses. This is further substantiated by the first reported indication of water being reported at 125 feet. Groundwater within granitic masses rock generally flows through fractures and joints within the rock mass.

A variance to County Code was approved for this property by the Mariposa County Board of Supervisors which required a statement from a professional geologist that the annular seal is at least 20 feet into solid, un-weathered and un-fractured granitic rock. Through an apparent misunderstanding/miscommunication, the undersigned was not contacted by the well driller until the grouting process was ready for observation.

In summary, it is the opinion of the undersigned and (1) based on experience in the local area (2) reports of the well driller concerning the depth to first water and (3) interpretation of the seismic data indicating that the earth materials underlying the site increase in density with depth that a minimum of 20 feet of competent granitic rock was encountered by the bentonite slurry which was placed to a depth on the order of 90 feet under my observation. This opinion is presented with the understanding that the undersigned was not present during the drilling process and the opinion stated is based entirely on the scope of work outlined above.

If you have any questions concerning the above, please do not hesitate in contacting the undersigned. I can be most readily contacted at 209 607 1962.

Respectfully submitted,

Michael R. Flynn, PG 3395
Expires 2/8/13

Attachment: Yosemite Well Drilling revision Completion Report