

**APPENDIX H-1**  
**RESPONSES TO FREQUENT QUESTIONS**  
**(JULY 2008) – KLEINFELDER, INC.**



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July 10, 2008  
Project 68188

Mr. Gary Johnson  
Granite Construction Company  
38000 Monroe Street  
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**SUBJECT: RESPONSES TO FREQUENT QUESTIONS  
PROPOSED LIBERTY QUARRY  
RIVERSIDE COUNTY, CALIFORNIA**

Dear Mr. Johnson:

At your request, we have prepared this letter summarizing our responses to frequently asked questions raised by the public subsequent to the publication of the report entitled *Geologic and Hydrologic Evaluation, Proposed Liberty Quarry, Riverside County, California* (Kleinfelder, August 10, 2007). Specifically, you have requested Kleinfelder to respond to seven geology- and hydrogeology-related questions considered typical of those presented to Granite Construction during public meetings. Provided below are the questions followed by our response.

**1. Will the proposed Liberty Quarry affect the Royal Oak Draw drainage?**

**Response:** This is actually a two part question dealing with separate, but related topics: (a) Is there a potential for a reduction in surface water flow in the draw? (b) Is there a potential for water quality degradation in the draw as a result of the proposed quarry?

(a) Is there a potential for a reduction in surface water flow in the draw?

Yes, but not considered a significant reduction. The Royal Oak Draw is part of an approximately 586.5 acre (0.92 sq. mi.) drainage network within the Gavilan Sub-basin of the Santa Margarita River Watershed. This drainage network contains approximately 67.7 acres of the proposed quarry; or approximately 11.5 percent of the drainage network.

An estimated maximum 11.5 percent reduction in surface flow in the Royal Oak Draw is based on evaluating the potential area of the draw that would be lost due to development of the proposed quarry. This should be considered a conservative estimate because not all precipitation falling on the 67.7 acres is available for flow into the Santa Margarita River; a substantial portion of the precipitation will be lost to infiltration or evaporation and additional precipitation will be lost to plant uptake. Therefore, only a portion of the precipitation falling on the 67.7 acres is actually available for flow to the Royal Oak Draw, and the potential reduction in flow will be less than the 11.5 percent estimate for loss of area.

Estimating the percentage of precipitation available to flow from the Royal Oak Draw to the Santa Margarita River is a complex process, which is compounded by differing conditions from the head of the draw and three contributing drainage basins (only one potentially affected by the proposed quarry), that combine with Royal Oak Draw before discharging to the river. The Royal Oak Draw constitutes approximately 4.5 percent of the surface area and flow of the three contributing drainage basins. As discussed above and for the same reasons, not all of the precipitation presently falling on Royal Oak Draw is available for flow to the river.

A further complication in estimating the percentage of precipitation available for flow to the Santa Margarita River is the historically variable nature of precipitation in southern California, which can be 50 percent, or more, between given years. Variable precipitation in Royal Oak Draw between years can alter the percentages lost to infiltration, evaporation, or plant uptake in any given year. This variability in precipitation and water availability has a large impact on surface flow in the Royal Oak Draw that overshadows the incremental reduction in flow resulting from the proposed quarry. Therefore, because of the limited contribution of the Royal Oak Draw to the Santa Margarita River and the effects of variability of precipitation, the potential impact of removing 67.7 acres from the watershed at the proposed Liberty Quarry is not considered to significantly reduce the volume of water potentially measurable at the point of discharge of this drainage network to the Santa Margarita River.

In response to recent discussions, we evaluated potential effects on surface drainage of not including the southern "dog leg" portion in the quarry, which includes the portions of the quarry originally contemplated to be developed as

sediment ponds. By not including the "dog leg," approximately 7.5 more acres are undisturbed at the property, which results in a small, incremental increase in the amount of potential surface water flow. Specifically, under this scenario the amount of surface area potentially eliminated from drainage would be approximately 10.5 percent, as opposed to the 11.5 percent in the current design. It is anticipated this incremental increase would not have a significant affect on stormwater exiting the property via this drainage or on the Santa Margarita River.

(b) Is there a potential for water quality degradation in the draw as a result of the proposed quarry?

No, there is not a potential for a significant impact to water quality due to development of the project with appropriate mitigation measures. Stormwater runoff is a natural part of the hydrologic cycle and human activities can affect surface water quality with various pollutants. Erosion and sedimentation are key considerations when developing Best Management Practices (BMPs) to address stormwater runoff considerations during construction. BMPs are also important for successful Water Quality Management Plans (WQMP) after initial quarry construction transitions to daily operations.

Approximately 67.7 acres of land potentially draining from the proposed quarry site to the Royal Oak Draw will be removed from the drainage basin. The remainder of the proposed quarry resides in different drainages, not connected to the Royal Oak Draw. Prior to construction of the proposed quarry, a Stormwater Pollution Prevention Plan (SWPPP) will be developed for submittal and approval by the California Regional Water Quality Control Board. The SWPPP will present detailed descriptions of the BMPs that will be put in place prior to and during construction activities to preclude potential stormwater impacts originating from the quarry site.

After quarry boundaries and internal drainage for the site are established, precipitation falling on the quarry will remain within the quarry. Precipitation falling outside the quarry boundaries will follow pre-existing drainage patterns. The BMPs established for the SWPPP during construction will transition to the BMPs used for the WQMP during quarry operations, which will also be approved by the California Regional Water Quality Control Board.

Both the SWPPP and WQMP are site-specific designs that take into account the unique concerns and specific issues associated with stormwater management for a given site. For that reason, they are developed in consultation with the California Regional Water Quality Control Board staff and on-site personnel expert with the various types of activities to be performed. The results are detailed plans and procedures designed to prevent potential stormwater impacts reaching off-site receptors, such as the Royal Oak Draw.

**2. *Is there a connection between the Proposed Liberty Quarry and springs and seeps located at the Santa Margarita River Ecological Reserve?***

**Response:** No, there is not. The property associated with proposed Liberty Quarry is topographically, geologically, and hydraulically isolated from surrounding topographic lowlands, such as the Santa Margarita Ecological Reserve (SMER). Water was encountered in fractures and joint sets in borings advanced at the proposed quarry property, but the joints and fractures were demonstrated by hydrogeologic testing to have little, if any, intercommunication on or off of the property. Limited, apparently seasonal surface seeps/springs were encountered at the proposed quarry site, and based on hydrogeologic testing appear be related to localized fractures draining under the influence of gravity.

No indications were encountered during testing and evaluation that fractures found at the proposed Liberty Quarry were in hydraulic communication with SMER. This is further supported by a watershed terrain and drainage analysis modeling program that did not provide indications of springs or seeps in the vicinity of the proposed quarry. Requests for information from personnel associated with SMER disclosed no information suggesting there was/were hydraulic communication between the proposed Liberty Quarry site and springs/seeps located within SMER.

**3. *Will the Jurkosky well be impacted by the proposed Liberty Quarry?***

**Response:** No. The Jurkosky well is located west of the southwest corner of the proposed Liberty Quarry; within a basin that is north-northwest of the Royal Oak Draw. The well is located at an approximate ground surface elevation of 1,300 ft. MSL. This reach of the Draw passes south of the Jurkosky well, approximately 20

feet lower in elevation than the well location. Additionally, the basin containing the Jurkosky well drains into a drainage course containing the Royal Oak Draw. Therefore, the proposed quarry will not disturb any land area that may provide subsurface flows to the Jurkosky well. Lilburn Company requested information on the well from the property owner but it was not provided to them. Therefore, based on the relative location of drainages, the Jurkosky well is not anticipated to be affected by the proposed Liberty Quarry.

**4. Will the proposed Liberty Quarry result in reduction of flow in the Santa Margarita River?**

**Response:** No. The Santa Margarita River Watershed has a surface area of approximately 475,474 acres. The Gavilan and Vallecitos Basins containing the proposed quarry cover approximately 35,015 acres. The overall surface area at the proposed Liberty Quarry potentially removed from providing recharge to the Santa Margarita River is approximately 156 acres; or approximately 0.03 percent of the total area of the watershed (475,474 acres). Conservatively, if one considered all the precipitation falling on the 156 acres as available for surface flow to the Santa Margarita River, this would equate to a maximum 0.03 percent reduction in potential recharge to the river. However, not all the precipitation falling on the 156 acre footprint of the proposed quarry is available for surface flow to the river.

The estimated maximum 0.03 percent reduction in surface flow to the Santa Margarita River is based on evaluating the potential area of the watershed that would be lost to the proposed quarry. This is considered a conservative estimate because not all the precipitation falling on the 156 acres proposed for the quarry would be available for flow into the Santa Margarita River; some portion of the precipitation will be lost to infiltration and additional precipitation will be lost to plant uptake. Therefore, only a portion of precipitation falling on the 156 acres is actually available for flow to the river, and the potential reduction in recharge to the river will be a portion of 0.03 percent.

The potential reduction in flow to the river is further complicated by the historically variable nature of precipitation in southern California, which can vary 50 percent, or more, between given years. The variability of precipitation makes it difficult to measurably discern potential surface flow reductions due to less precipitation from

removal of a small area from contributing to the flow, as variable precipitation between years can alter the percentages lost to infiltration, evaporation, or plant uptake in any given year. The limited potential reduction in flow to the river is considered smaller than annual precipitation variations and the removal of 156 acres from the watershed is not considered a significant potential reduction in water available for river recharge.

**5. *Will the proposed Liberty Quarry result in a reduction of water quality in the Santa Margarita River?***

No. The proposed quarry forms an enclosed basin, precipitation falling within the quarry remains in the quarry. Similarly, processing equipment and materials are contained within the quarry; the quarry and access road will also follow regulatory agency-approved stormwater BMPs. Precipitation falling outside the quarry foot print leaves the property within existing, natural drainages. The proposed Liberty Quarry is not expected to have a significant impact on water quality in the Santa Margarita River.

It is anticipated the greatest potential impacts to water quality in the Santa Margarita River result from the rapid urbanization of the Santa Margarita River Watershed. Specifically, based on a comparison of the watershed area with 2000 census data, 80 percent of the watershed and 94 percent of the population within the watershed lie hydrologically above the confluence of Murrieta and Temecula creeks, where the Santa Margarita River begins.

**6. *Where does surface water flow from the proposed Liberty Quarry Property intersect the Santa Margarita River?***

**Response:** Surface water flow from the proposed Liberty Quarry property will result from precipitation falling on those portions of the property surrounding the quarry. Precipitation falling within the proposed quarry footprint will remain within the quarry, either evaporating, or used as dust control.

Information pertaining to where flow to the Santa Margarita River from drainages extending from the proposed Liberty Quarry were developed from hydrologic modeling using Better Assessment Science Integrating Point and Nonpoint Sources

(BASINS) and USGS NHD1807 GIS hydrology data. Based on surface topography, there are two points of discharge into the Santa Margarita River from drainages originating at or near the proposed quarry property, the Royal Oak Draw and the Rainbow Creek reach:

- a) The Royal Oak Draw to the Santa Margarita confluence is approximately 3.6 miles (18,743 ft) in length and crosses three drainage basins. These drainage basins have a surface area of approximately 1,411 acres or 2.2 sq. mi. There are two un-named drainage courses that intersect the Royal Oak Draw reach downstream from the proposed quarry that also contribute to the surface runoff in this drainage network. Removal of surface area at the proposed quarry from Royal Oak Draw drainage presents an approximately 4.5 percent reduction of potential runoff of the 1,411 acre drainage system to the Santa Margarita River. This limited potential reduction in flow to the river is considered smaller than annual precipitation variations and is not considered a significant potential reduction in water available for river recharge.
- b) The Rainbow Creek reach to the Santa Margarita confluence is approximately 5.7 miles (30,202 ft.) in length, and crosses three drainage basins. These drainage basins have a surface area is approximately 4,150 acres or 6.5 sq. mi. Rainbow Creek is intersected by a minimum of five un-named drainage courses downstream from the proposed quarry property as well. The portion of the drainage network removed by the proposed Liberty Quarry presents an approximately 1.8 percent reduction of potential runoff into the Santa Margarita River drainage system – if all precipitation were available for river recharge, which it is not. This limited potential reduction in flow to the river is considered smaller than annual precipitation variations and is not considered a significant potential reduction in water available for river recharge.

**7. *What are potential impacts associated with constructing one house per ten acres over the 414 acres proposed for the Liberty Quarry property rather than constructing the quarry?***

**Response:** Whether 41 houses or the proposed quarry are constructed on this property, the same physical realities must be addressed:

- a) This site is essentially underlain by solid granite with localized, thinly mantled layers of decomposed granitic sand/sediment found mostly in drainage courses.
- b) Much of the east-facing slopes above I-15 are very steep. While not necessarily an engineering impossibility, carving roads and housing pad areas for the 10-acre lots on these slopes could be economically infeasible.
- c) Roads and other infrastructure improvements will require blasting, or be routed above ground.
- d) There is no exploitable supply of groundwater at this topographic highland; water will require conveyance via pressurized delivery system to lift the water from pipelines located near I-15 up several hundred feet to the top of the highland for further distribution. Or, water could be trucked in as in other rural communities with no or limited water supplies.
- e) The majority of 414-acre property appears to lack the soil depth necessary for conventional leach fields associated with sanitary systems commonly used in rural areas. Sewage holding tanks for off-site disposal, or bioreactor systems would likely be required.
- f) Discounting the amount of blasting required to gain access to and across the 414 acres, it is assumed that paved roads will be established to the 41 residences to reduce the amount airborne dust raised by routine traffic over unimproved dirt roads. Paved roads do not increase the amount of precipitation, but they typically concentrate stormwater flow and will require siltation basins or similar means to reduce the flow rate of water leaving paved surfaces and reduce the entrained sediment load prior to discharging to existing, natural drainages.
- g) Unless prohibited by covenants, it is anticipated that residents would likely introduce non-native plant and animal species to the area, as well as the use of fertilizers, pesticides, herbicides, etc. It is expected these potential anthropogenic chemicals would be entrained in stormwater runoff and carried into and degrading local drainages.

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Based on these engineering considerations, there appear to be several economic challenges facing the referenced 10-acre property developments.

### **Modeling Software and References**

Several computer models and Geographic Information System (GIS) analytical packages were utilized in addressing your questions and preparing the associated maps/models. The modeling and references used in these responses are presented below.

#### Software

The primary model is the Better Assessment Science Integrating Point and Nonpoint Sources (BASINS). BASINS is a multipurpose environmental analysis system for use by regional, state, and local agencies, developed by the U.S. Environmental Protection Agency's (EPA's) Office of Water. Also used, is the ArcHydro model from the Center for Research in Water Resources, University of Texas at Austin. The Arc Hydro Toolset is a suite of tools which facilitate the creation, manipulation, and display of ESRI GIS data as Arc Hydro features and objects within the ESRI ArcMap environment. The tools provide raster, vector, and time series functionality, and many of them populate the attributes of Arc Hydro features.

The use of Federal and State GIS databases were incorporated into these applications in performing watershed- and water-quality-based investigations of the proposed Liberty Quarry property within the Santa Margarita River Watershed. The U.S. Geological Survey (USGS) and the U.S. Fish & Wildlife Service National Wetland Inventory has collected historical flow data on the watershed. The EPA integrates data from these agencies as well as the US Census, BLM, and the California Department of Water Resources. In addition, historical data within the Santa Margarita River (SMR) watershed was used for the Santa Margarita River Watershed Modeling (SMRWM) calibration.

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## REFERENCES

ArchHydro, The Center for Research in Water Resources (CRWR), University of Texas at Austin, 2008.

BASINS 4, U.S. Environmental Protection Agency (EPA), Office of Water, 2007.

Digital Elevation Models, USGS, Reston, Virginia, 2001.

GIS County Data, Transportation & Land Management Agency (TLMA), Riverside County, California, 2007.

Kleinfelder, 2007, Geologic and Hydrologic Evaluation, Proposed Liberty Quarry, Riverside County, California.

SANGIS Data, San Diego County GIS, San Diego, California, 2008.

2000 Census GIS Data, U.S. Census Bureau, Washington D.C., 2000.

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## LIMITATIONS

This letter has been prepared for the exclusive use of Granite Construction and its consultants for specific application to the proposed Liberty Quarry project. The findings, conclusions, and recommendations presented in this letter were prepared in a manner consistent with the standards of care and skill ordinarily exercised by members of its profession practicing under similar conditions in the geographic vicinity and at the time the services will be performed. No warranty or guarantee, express or implied, is made.


The client has the responsibility to see that all parties to the project, including the designer, contractor, subcontractors, etc., are made aware of this letter in its entirety. This report contains information, which may be useful in the preparation of contract specifications. However, the report is not designed as a specification document and may not contain sufficient information for this use without proper modification.

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We appreciate the opportunity to be of service. Please contact us at your convenience with questions or comments concerning this letter.

Sincerely,  
KLEINFELDER WEST, INC

  
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Principal Professional

  
Keith P. Askew, P.E.  
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