



April 13, 2020

Tim Reed
1646 4th St
Los Osos, CA 93402
805-550-7177
treed32@me.com

Subject: Groundwater Impacts Analysis, Pozo Management Group Proposed Cannabis Project, 880 Park Hill Road Property near Pozo, San Luis Obispo County, APN 071-201-042

Dear Mr. Reed:

As requested, Cleath-Harris Geologists (CHG) presents this impact analysis to evaluate the potential impacts to water levels and production capacity at neighboring wells from pumping for the proposed cannabis project at the Beanway property at 880 Park Hill Road, Pozo, California (APN 071-201-042). Our findings and recommendations are presented in this letter report.

The 60-acre property is located north of Park Hill Road in the eastern half of the northeast quarter of Section 4, Township 30 South, and Range 15 East MDBM (Figure 1). The property slopes to the south with a small creek valley crossing the property. The soils are silty fine sands on the hills and coarser sands in the creek valley. The land is used for growing cannabis and has a residence on site (Figure 2).

Water Supply Facilities

The water supply facilities on and adjacent to the property are shown on Figure 3, Geology Map.

The 75-foot deep Project well, tested at 18 gallons per minute (gpm), has provided water for the property for more than 50 years. The well is reported to have periods of time when the production rate declined. If the well is not adequate for the project, another well could be installed on the property to augment the water supply.

One adjacent well that is being evaluated for water level drawdown impacts is the Oak Creek Ranch well, located about 55 feet from the northwestern corner of the property. This well is about 1,600 feet from the Project well on the Beanway property ("Beanway well"). Another well, the Middleton well, is located to the east of the property (Figure 3).

The well information for the Beanway Well and the two neighboring wells are summarized in Table 1.



Table 1
Well Information

Well ID	Well Completion Report No.	Approx. Well Location (Google Earth coordinates)	Ground Surface Elevation (feet above mean sea level)	Perforation Interval (feet depth)	Depth to Water (feet)	Pumping Capacity (gpm)	Formation Description
Beanway	Not available	35° 20' 36.48" 120° 21' 53.88"	1714	Not available (total depth is 75')	49' (April 2020)	18 (4 hr. pump test, 2018)	Not available (No well completion report)
Oak Creek Ranch	802764	35° 20' 36.48" 120° 21' 59.08"	1796	110-160' 180-280'	98' (2012)	15 (12 hr pump test)	Sand and clay
Middleton	E0184489	35° 20' 37.82" 120° 21' 44.01"	1720	25-100'	36' (2018)	0.5 (airlift test)	Sandy clay

Project Demand

Water supply for the project is to be provided from wells that will produce a reliable sufficient quantity of water of suitable water quality for the agricultural operations and domestic uses. The historic agricultural water use was 0.32 acre-feet per year and the proposed agricultural water use is estimated by the project engineer at 5.94 acre-feet per year. The domestic water supply demand for the existing ranch house and minimal outdoor use is estimated at 0.5 acre-feet per year. The total demand for the property would be 6.44 acre-feet per year with the proposed project and the existing residence.

Hydrogeology

The main producing formations on the property include Recent Alluvium and the Santa Margarita Formation. The published geologic map for the vicinity of the property is the US Geological Survey Open File Report 86-635: A Geologic Map of Parts of Lopez Mountain, Santa Margarita Lake and Pozo Summit Quadrangles by Vedder, Howell, and McLean, Scale 1:24,000 (Figure 3). This map shows that, in the vicinity of the property, the Santa Margarita Formation dips to the north-northeast toward the La Panza fault at about 5 degrees. Recent Alluvium is deposited on the Santa Margarita Formation beneath the creek valley that crosses the property. Alluvium may also underlie the elevated terrace in the southwest portion of the property, though it is not shown on the published map.

The 75-foot deep Project Well, located on the elevated terrace adjacent to the creek valley (Figure 3), appears to tap alluvium, which is more permeable than the Santa Margarita Formation



based on the low amount of drawdown during the 4-hour test (18 gallons per minute (gpm) with 3 feet of drawdown). The transmissivity of the aquifer based on the specific capacity of 6 gpm/foot of drawdown is estimated at about 8,000 gallons per day per foot. This shallow aquifer is unconfined, with a specific yield/Storativity of about 0.10. The pumping test report for this well is attached.

The Santa Margarita Formation is tapped by the Middleton well and the Oak Creek Ranch well (Figure 3). The well completion reports for these wells are attached. The 100-foot deep well drilled by Filipponi & Thompson Drilling in 2018 for Jeff Middleton east of the property produces from gray compact sandy clay beds at about ½ gpm on airlift test. The 300-foot deep well drilled at the Oak Creek Ranch by F.V. Wells in 2002 (near the northwest corner of the subject property) described the formation as sand and clay to a depth of 300 feet, with a change in clay color from “light green to yellow” to dark green at a depth of 180 feet. This well was pump tested at 15 gpm for 12 hours with a total drawdown of 171 feet. The transmissivity of the formation tapped by the Oak Creek Ranch well, with a specific capacity of 0.088 gpm/foot of drawdown, is estimated at 200 gallons per day per foot. These marine-deposited beds are most likely semi-confined with a storativity value of about 0.001.

Depth to groundwater varies across the property. The Project Well depth to water level was at 48 feet in October 2018 and 49 feet in April 2020 (approximate elevation of 1652 feet). At the Middleton well, the depth to water recorded on the well completion report is 77 feet but was noted by the owner to be at a depth of 36 feet (approximate elevation of 1684 feet). A recent measurement at an abandoned well near to the Middleton well was at 38 feet (a water level elevation similar to the Middleton well). At the Oak Creek Ranch well, the depth to water reported on the well completion report in 2002 was 98 feet (approximate elevation of 1697 feet).

Potential Additional Wells

Should one or more additional agricultural wells be required for the proposed project, there may be a potential for water level drawdown/pumping capacity reduction impact to off-site wells. The two off-site existing wells identified herein are the closest wells to the property (Figure 3). The amount of drawdown interference that could be significant at an adjacent well is the amount that could cause a significant reduction in an off-site existing well’s pumping capacity.

Two possible sites have been proposed for supplemental wells (Figure 3): one south of the existing well on the property and one in the northeastern corner of the property, about 1,100 feet from the two existing off-site wells. A well located along Park Hill Road is not likely to have any impact on the two adjacent off-site wells since it would be similar to the existing shallow alluvial Project well.

Production of groundwater from a potential well at the northeastern well site could have some interference at the Oak Creek Ranch well and less so at the Middleton well. While the actual impacts cannot be determined without the completed well in place, we can estimate drawdown with distance from pumping a well in the northeastern corner using the aquifer characteristics as



observed/estimated from the pumping test at the Oak Creek Ranch well. This calculation is based on the Theis equation for groundwater flow. The one year duration is used to reflect the time until winter recharge occurs.

Assuming equal pumpage at the existing Project well and the northeastern proposed well over the course of one year to meet project water demand, a new well would need to produce 3.22 acre-feet (an average continuous discharge rate of 2 gpm). The calculated drawdown at the Oak Creek Ranch well, for a well producing an annual amount of pumpage of 3.22 acre-feet per year at 600 feet setback would be 4.72 feet. This water level interference would lower the static water level in the 300-foot deep Oak Creek Ranch well from 98 feet to 102.72 feet depth and, based on the specific capacity of this well, which could reduce the maximum pumping rate (the flow rate tested during the pumping test at the maximum drawdown) by 0.5 gallon per minute for the long term, (3 percent of the tested flow rate). If the Oak Creek Ranch well produces at less than the tested rate or for a shorter duration, the pumping rate reduction from the water level interference would be correspondingly reduced.

The Middleton well is a similar distance from the northeastern proposed well site. The low yield from this shallow well (1/2 gpm on an airlift test) is probably not going to be significantly impacted by production at the proposed well site due to the very low permeability and the limited thickness of saturated clayey sands at the Middleton well.

Impact Assessment

The Project well produces water from an unconfined permeable aquifer that was not encountered in the Oak Creek Ranch and Middleton wells. Therefore, water level drawdown due to pumping the Project well will not occur in the Oak Creek Ranch or Middleton wells.

A new agricultural well along Park Hill Road, assumed to be similar to the Project well, would also not be expected to impact the adjacent water wells.

A new agricultural well at a 600-foot setback from the Oak Creek Ranch well, if tapping a semi-confined aquifer similar to the Oak Creek Ranch well, could produce half of the project demand (3.22 AFY) with a very low impact on the productivity of the Oak Creek Ranch well and would have no significant impact on productivity at the Middleton well.

Respectfully transmitted,
CLEATH-HARRIS GEOLOGISTS, INC.

Timothy S. Cleath, Certified Hydrogeologist #81



ATTACHMENT 1

KEN BUNDY MOBIL PUMP SERVICE
P O Box 100
CRESTON CA. 93432
PH # 805-237-1010
FAX# 805-239-5778

WELL TEST REPORT

DATE: 10-8-18

TESTING ORDERED BY: BRIAN BEANWAY
880 PARKHILL ROAD
SANTA MARGARITA, CA. 93453

PUMP SIZE: 1/2 HP WELL DEPTH: 75' STATIC LEVEL: 18'

<u>WATER LEVEL - START</u>	<u>STATIC</u>	<u>GPM</u>
9:00AM	18'	18
9:30AM	20'	18
10:00AM	21'	18
10:30AM	21'	18
11:00AM	21'	18
11:30AM	21'	18
12:00PM	21'	18
12:30PM	21'	18
1:00PM	21'	18

WELL TESTED 4 HOURS WELL PRODUCES 18 GPM

SIGNATURE OF TESTER: _____

Ken Bundy



ATTACHMENT 2

Original with DWR
Page 1 of 1
Owner's Well Number
Date Work Began 8-2-18
Local Permit Agency
Permit Number
Permit Date

WP# 2018 115
Gr-1/24/19
State of California
Well Completion Report
Refer to Instruction Pamphlet
No. e0184489
8-3-18

DWR Use Only - Do Not Fill In
State Well Number/Site Number
Latitude N Longitude W
APN/TRS/Other

Geologic Log			
Orientation		Specify	
<input checked="" type="radio"/> Vertical	<input type="radio"/> Horizontal	<input type="radio"/> Angle	<input type="radio"/> Other
Drilling Method		Drilling Fluid	
ROTARY		BENTONITE	
Depth from Surface	Feet to Feet	Description	
13	2	sandy top soil	20 4.5
2	32	DA	40 8
32	100	gray sandy clay	60 10.5
			80 12.5
			100 14

Well Owner			
Name JEFF MIDDLETON			
Mailing Address 770 PARKHILL RD - SANTA MARGARITA			
City		State Zip	
Address 770 PARKHILL RD - SANTA MARGARITA			
City		County Monterey	
Latitude		Longitude	
Datum		Decimal Lat. Decimal Long.	
APN Book		Page Parcel	
Township		Range Section	

Location Sketch		Activity	
(Sketch must be drawn by hand after form is printed.)		<input checked="" type="radio"/> New Well	
North		<input type="radio"/> Modification/Repair	
		<input type="radio"/> Deepen	
		<input type="radio"/> Other	
		<input type="radio"/> Destroy	
		Describe procedures and materials under "GEOLOGIC LOG"	
West		Planned Uses	
		<input checked="" type="radio"/> Water Supply	
		<input type="checkbox"/> Domestic <input type="checkbox"/> Public	
		<input type="checkbox"/> Irrigation <input type="checkbox"/> Industrial	
		<input type="radio"/> Cathodic Protection	
		<input type="radio"/> Dewatering	
		<input type="radio"/> Heat Exchange	
		<input type="radio"/> Injection	
		<input type="radio"/> Monitoring	
		<input type="radio"/> Remediation	
		<input type="radio"/> Sparging	
		<input type="radio"/> Test Well	
		<input type="radio"/> Vapor Extraction	
		<input type="radio"/> Other	
South			

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Water Level and Yield of Completed Well			
Depth to first water (Feet below surface)			
Depth to Static			
Water Level		Date Measured	
77		8-3-18	
Estimated Yield		Test Type	
42		DISC	
Test Length		Total Drawdown	
242-3			
*May not be representative of a well's long term yield.			

Casings						Annular Material				
Depth from Surface	Borehole Diameter	Type	Material	Wall Thickness	Outside Diameter	Screen Type	Slot Size	Depth from Surface	Fill	Description
Feet to Feet	(Inches)			(Inches)	(Inches)		(Inches)	Feet to Feet		
0	25	10"	blank		5			0	21	Cement
25	100	Schedule				Perf	040	21	100	8x12 steel

Attachments		Certification Statement	
<input type="checkbox"/> Geologic Log <input type="checkbox"/> Well Construction Diagram <input type="checkbox"/> Geophysical Log(s) <input type="checkbox"/> Soil/Water Chemical Analyses <input type="checkbox"/> Other		I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief. Name FILIPPONI & THOMPSON DRILLING, INC. Person, Firm or Corporation P.O. Box 845 ATASCADERO CA 93423 Address City State Zip Signed 432680 Date Signed C-57 License	

Attach additional information, if it exists.

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM



ATTACHMENT 3

May 27 03 07:33a Jeff & Dottie Nelson (805) 964-6790 p.7

TRIPPLICATE
Owner's Copy
Page 1 of 1
Owner's Well No. 1
Date Work Began 10/24/02 Ended 10/31/02
Local Permit Agency Santa Barbara Co. Environmental Health
Permit No. 2002-419 Permit Date 10/23/02

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 802764

USE ONLY -- DO NOT FILL IN --
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

WELL OWNER
Name Oak Creek Ranch
Mailing Address 112 E. Victoria Street
Santa Barbara CA 93102
CITY STATE ZIP
WELL LOCATION
Address 750 Park Hill Road
City Pozo
County San Luis Obispo
APN Book Page Parcel 071-051-017
Township 29S Range 15E Section 33
Latitude Longitude
DEG. MIN. SEC. NORTH
DEG. MIN. SEC. WEST

ORIENTATION (°) VERTICAL HORIZONTAL ANGLE (SPECIFY)
DRILLING METHOD FLUID
DEPTH FROM SURFACE
FL to FL
DESCRIPTION
Describe material, grain size, color, etc.
0 130 Sand, Light Green to Yellow Clay
130 300 Sand, Dark Green Clay

LOCATION SKETCH
NORTH
(See Attached)
WEST EAST
SOUTH
Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (°)
X NEW WELL
MODIFICATION/REPAIR
Deepen
Other (Specify)
DESTROY (Describe Procedures and Material Under "GEOLOGIC LOG")
PLANNED USES (°)
WATER SUPPLY
X Domestic Public
Irrigation Industrial
MONITORING
TEST WELL
CATHODIC PROTECTION
HEAT EXCHANGE
DIRECT PUSH
INJECTION
VAPOR EXTRACTION
SPARGING
REMEDIATION
OTHER (SPECIFY)

WATER LEVEL & YIELD OF COMPLETED WELL
DEPTH TO FIRST WATER (FL) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 98 (FL) & DATE MEASURED
ESTIMATED YIELD 15 (GPM) & TEST TYPE Continuous
TEST LENGTH 12 (Hrs.) TOTAL DRAWDOWN 171 (FL)
* May not be representative of a well's long-term yield.

TOTAL DEPTH OF BORING 300 (Feet)
TOTAL DEPTH OF COMPLETED WELL 300 (Feet)

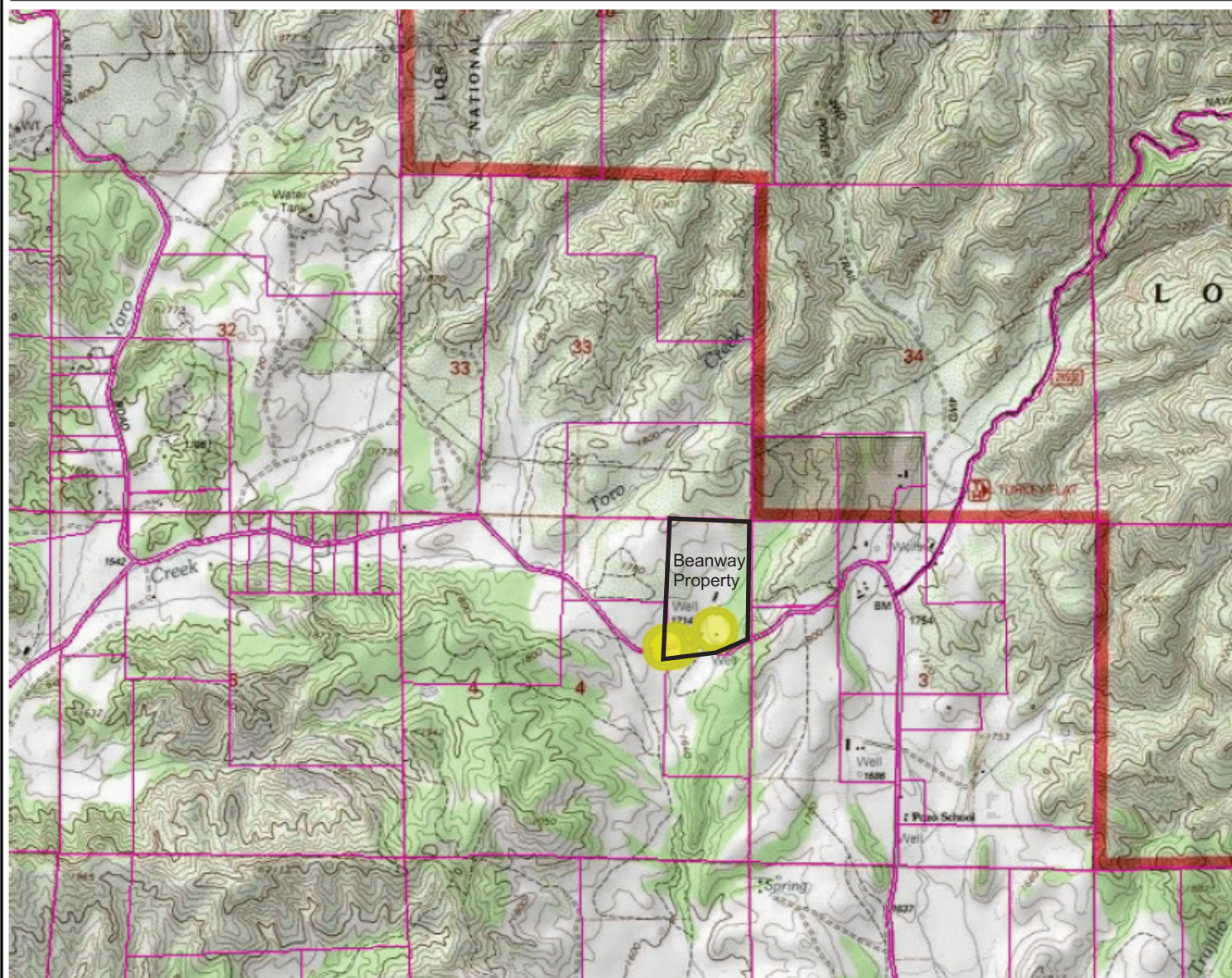
DEPTH FROM SURFACE	BORE- HOLE DIA. (Inches)	CASING (S)							DEPTH FROM SURFACE	ANNULAR MATERIAL				
		TYPE (≤)				MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS		SLOT SIZE IF ANY (Inches)	TYPE			
		BLANK	SCREEN	CON- DUCTOR	FILL PIPE						CE- MENT (≤)	BEN- TONITE (≤)	FILL (≤)	FILTER PACK (TYPE/SIZE)
FL to FL									FL to FL					
0 110	12	X				SDR21PVC	6	0.316		0 50	X			6-Sack
110 160	12	X				SDR21PVC	6	0.316	0.040	50 300			X	Levis#3
160 180	12	X				SDR21PVC	6	0.316						
180 230	12	X				SDR21PVC	6	0.316						
230 300	12	X				SDR21PVC	6	0.316						

ATTACHMENTS (°)
Geologic Log
Well Construction Diagram
X Geophysical Log(s)
Soil/Water Chemical Analyses
Other

CERTIFICATION STATEMENT
I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME Floyd V. Wells, Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
1337 W. Betteravia Rd., Santa Maria, CA 93455
ADDRESS CITY STATE ZIP
Signed DATE SIGNED 12-16-02 257-229570
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

Interactive Data Viewer



Legend



-  SLO County Parcels
-  SLO County Boundary

Figure 1
 Location Map
 Beanway Property

Cleath-Harris Geologists

-6,018.65 0 3,009.33 6,018.65 Feet

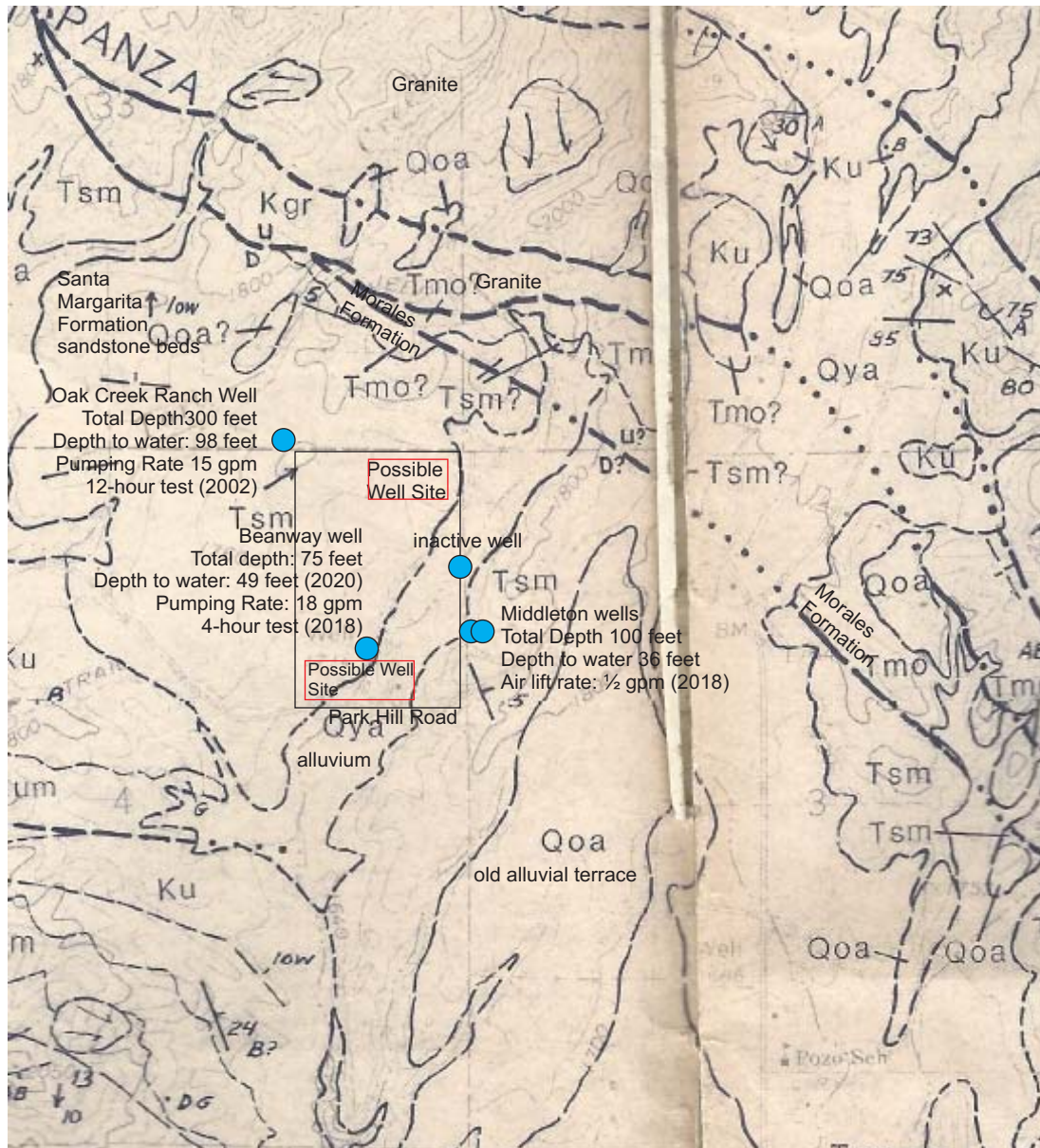
WGS_1984_Web_Mercator_Auxiliary_Sphere
 © County of San Luis Obispo Planning and Building Department



The County of San Luis Obispo does not assume liability for any damages
 caused by errors or omissions in the data and makes no warranty of any kind,
 express or implied, that these data are accurate and reliable.

Map for Reference Purposes Only





Source: Vedder et al, USGS Open File Report 86-635



● well

Figure 3
Geologic Map
Beanway Property
880 Parkhill Road