GEO ENVIRONMENTAL RESOURCES INC

GEOTECHNICAL ENVIRONMENTAL CONSULTANTS

January 30, 2024

Thrifty Oil Company
13116 Imperial Highway
Santa Fe Springs, CA

Attention: Ms. Jamie Jones
Project manager

Subject: Response to County Geologic Report Review
Proposed Commercial Tilt-up
23628 Water Street, Perris, California
Project No. G-021422

Dear Ms. Jones:

This letter has been prepared in response to the recent County of Riverside Geologic report review (County Geologic Report No.230026).

Response to Report Review Sheet

Item No. 1

The consultant appears to be utilizing very outdated groundwater data for their analysis. The consultant should utilize 21st Century groundwater data.

Response to item No. 1

Attached please find data based on the information obtained from USGS water well data (see the attached) for period between Jan /2022-to- Jan /2024 the average water-level is approximately 80 feet below surface elevation.

Item No. 2

The consultant has not addressed the potential for settlement at the site (including dry sand settlement). Hence, please provide the positive lines of evidence (I. e site-specific drilling data and associated analysis) to support a conclusion regarding settlement potential at this site.

Response to Item No.2

Based on the information obtained from our sub-surface exploration Logs, all the encountered soils have classified as SM and SC. The encountered soils founded to be in dense and very dense condition with the in-situ moisture of the near-surface soils to be in "Dry-Moist" condition.

To mitigate the future potential settlement, due to the presence of the collapsible soils, we are recommending that the proposed building pad be over-excavated to approximate depth of four (4) below bottom of its proposed footings grade. The continuous and column pad footings within this type of structure are about 3 to 5 feet deep.

Therefore, upon completion of grading recommendation, the proposed structure will be supported by 7-to-9 feet of newly placed and compacted structural fill material.

It is our opinion that the recommended grading should provide an adequate support for the proposed structure in potential seismic event. In addition, any future potential collapse and/or settlement at greater depth should not have any adverse effect of the new structure.

Item No. 3

The consultant has not adequately addressed the liquefaction potential for the site. Hence, please provide the positive lines of evidence (I. e specific drilling data, current regional groundwater data, and associated analysis) to support a conclusion regarding liquefaction potential at this site.

Response to item No. 3

The subject site underlain with material which are in dense to very dense condition (please refer to boring logs attached). Per response to item no. 1, the average groundwater level is approximately 80-feet Below existing ground elevation. Also, per Aerial photos (2000 & 2010) there is no evidence of fault(s) displacement on the subject property (please see the attached aerial photo). Therefore, liquefaction potential to cause damage to the structure is unlikely.

Item No.4

The consultant has not adequately addressed the fault hazard potential for this site. Hence, please provide the positive lies of evidence (I. e aerial photo analysis, site-specific mapping, etc.) to support a conclusion regarding the fault hazard potential at the site.

Response to Item No. 4

In general, the severity of any potential seismic event(s) depends on several factors; 1- proximate distance of the potential active fault(s) to the subject property, 2- Distance in which the seismic event has occurred, 3- Soil type and 4- depth of ground water.

Based on the review of California Seismic Hazard Map (please see attached map), there are no active fault(s) below the subject property. The property is located approximately 12 miles west of Casa Loma Fault and 16 miles east of Elsinore fault respectively.

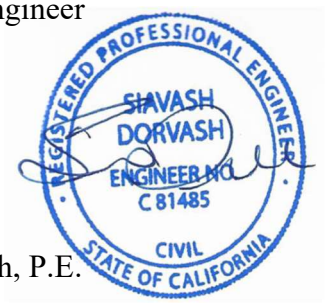
Based on our review of Aerial photos from 2000 and 2010 by our Engineering Geologist there are no sign of scarps and lineament along the subject site.

2511 West La Palma Avenue, Suite E, Anaheim, CA, 92801
Tell: 714-995-9001

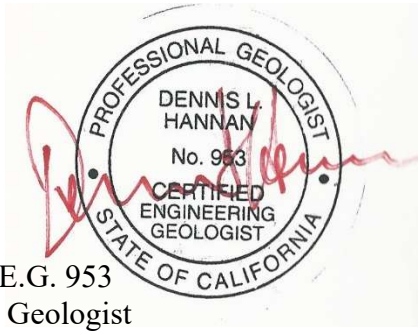
We appreciate the opportunity to be of service on this report. If we may be of additional Assistance, should Geotechnical Related problems occurs, please do not hesitate to call at Any time.

Very truly yours,
GEO ENVIRONMENTAL RESOURCES, INC.

Alexander A. Rastegar
Project Engineer

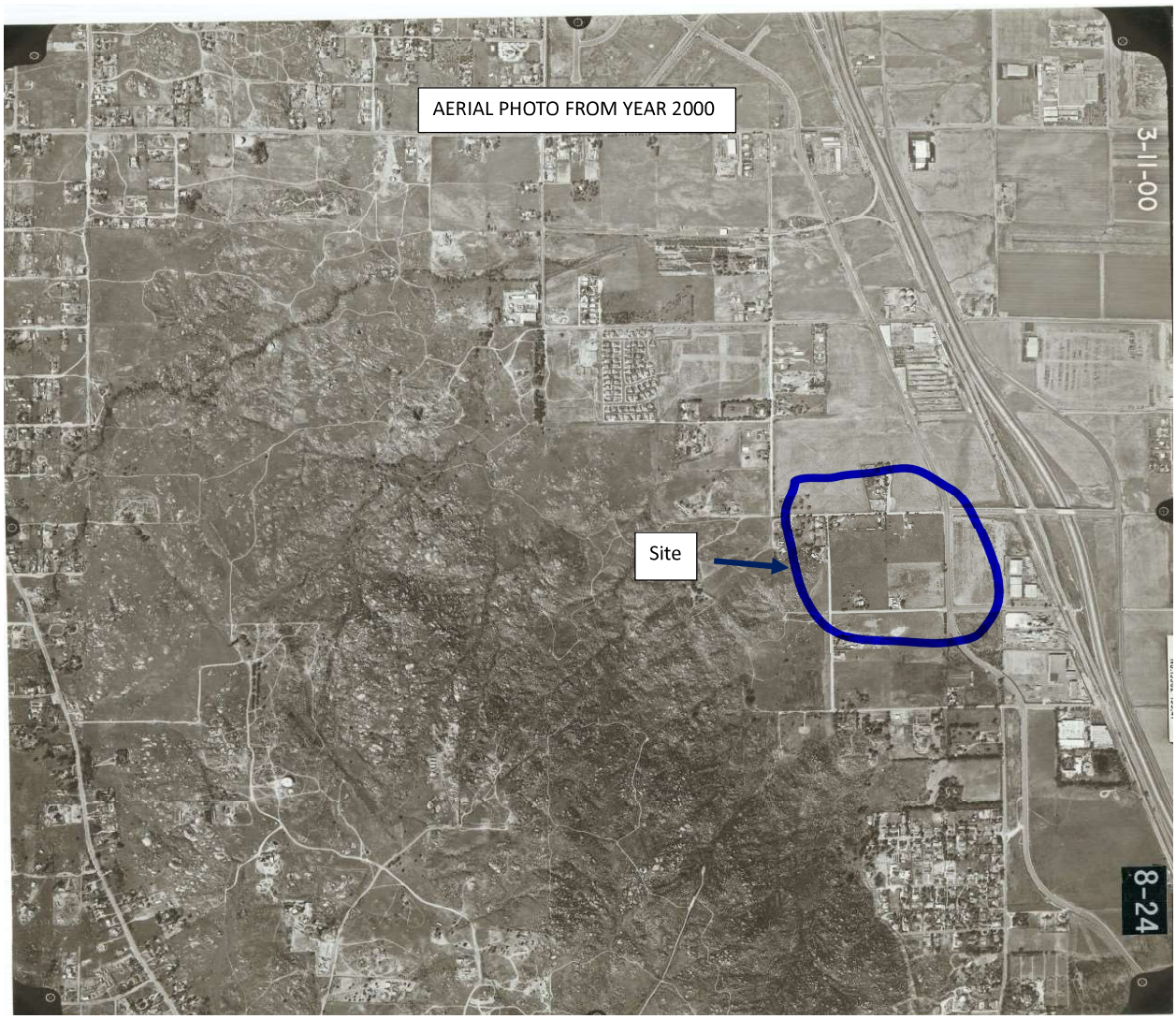


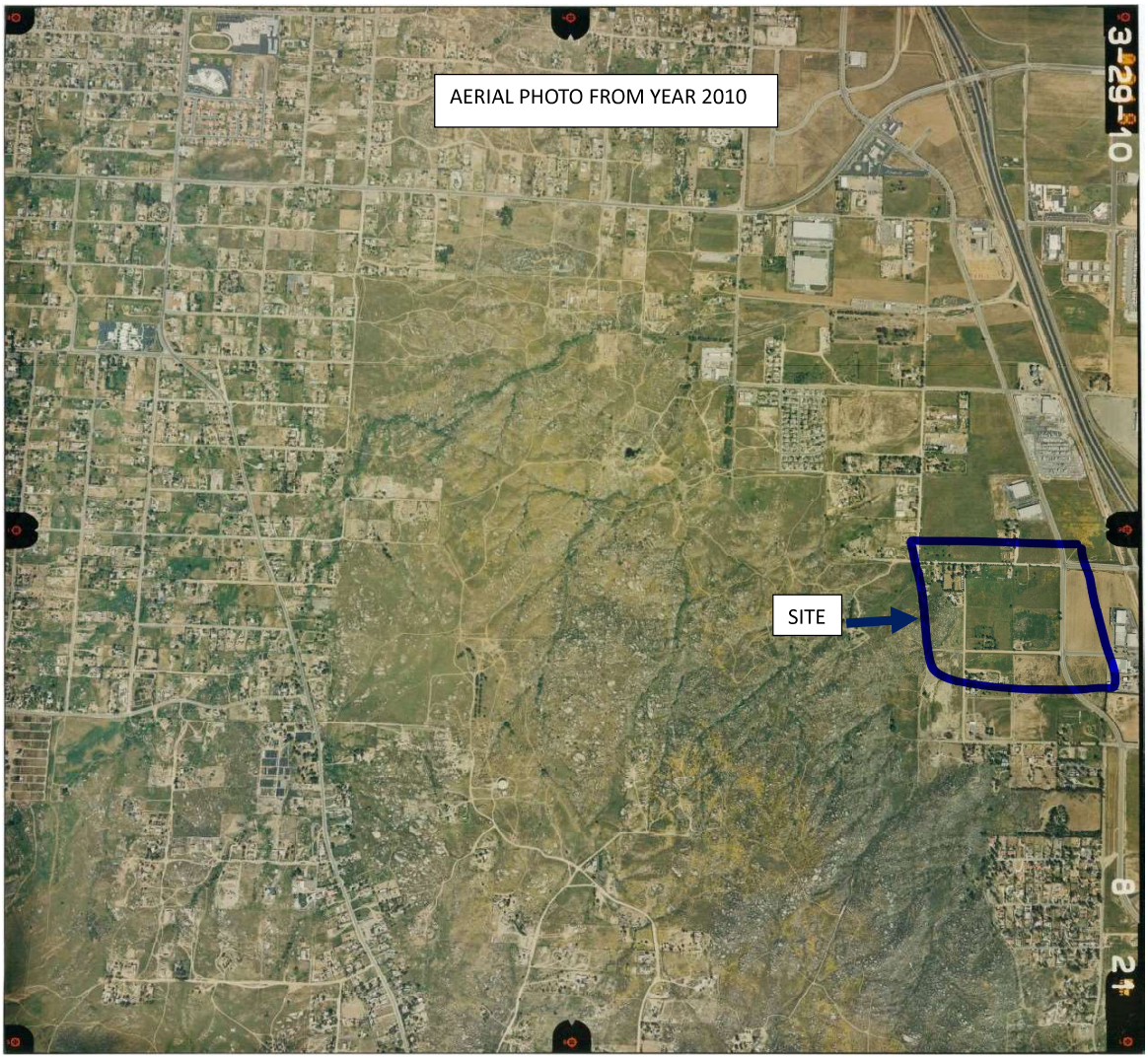
S. Dorvash, P.E.



Dennis L. Hannan, C.E.G. 953
Principal Engineering Geologist

2511 West La Palma Avenue, Suite E, Anaheim, CA, 92801
Tell: 714-995-9001


AERIAL PHOTO FROM YEAR 2000
Site
3-11-00
8-24


AERIAL PHOTO FROM YEAR 2010
SITE
3-29-10

LOG OF BORING

B-1

Project Location:23628 Water Street, Perris
Surface Elevation (ft):

Date Drilled: 2/20/2022
Project No: G-021422

Depth (ft)	USCS Class.	Summary of subsurface conditions	Sample Depth (ft)	Sample	Blow count (N)	Moisture (%)	Wet Unit Wt. (pcf)
-1	SM	Brown Silty Fine Sand, Trace Roots(Top Soil) Dry to Damp, Loose To the depth of (1 1/2) ft	-1	S	8	2.3	
-3	SM/SC	Orange Brown Silty Fine Sand with Clay to Clayey Fine Sand, Alluvial Deposits(Qof) Dry to Damp, Dense	-3	S	34	3.4	
-5	SM/SC	Same Alluvial deposits (Qof) Damp very Dense	-5	S	70	2.7	119.8
-7		Same Alluvial Deposits (Qof) Damp, Dense	-7	S	46	3.7	123.2
-9		To the depth of (9 1/2) ft					
		Light Brown Silty Fine to Coarse Sand (Cemeneted) Alluvial Deposits (Qof) Damp to moist, Very Dense	-10	S	68	5.3	
-15			-15	S	67	5.3	134.2
-20		Same Alluvial deposits (Qof) Damp to Moist, Very Dense Light Brown Silty Fine to Coarse Sand (Cemeneted) with CALICHÉ Damp to moist, Very Dense	-20	S	3"/64	5.2	-
-25		Same Damp to Moist, Very Dense	-25	S	5"/69	5.7	126.7
-30		Terminated at the depth of 29 1/2 ft					

GERI **Geo Environmental Resources, Inc.**
2511 West La Palma Ave., Suite E
Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate

LOG OF BORING

B-2

Project Location:23628 Water Street,
Perris Surface Elevation (ft):

Date Drilled: 2/20/2022
Project No: G-021422

Depth (ft)	USCS Class.	Summary of subsurface conditions	Sample Depth (ft)	Sample	Blow count (N)	Moisture (%)	Wet Unit Wt. (pcf)
-1	SM	Top Soil Brown to Orange Brown Silty Fine Sand Trace Root, Dry, Loose To the depth of (1 1/2) ft	-1	S	6	2.1	
-3	SM	Orange Brown Silty Fine to Coarse sand, Trace to little Clay Dry to Damp, Dense	-3	S	32	3.3	119.2
-5	SM	Same Dry to Damp, Dense	-5	S	48	3.9	
-7	SM	Same Dry, Very Dense	-7	S	54	2.7	126.3
-10	SM	Orange Brown Silty Fine to Coarse Sand Trace Clay with CALICHE Alluvial Deposit (Qof) Damp to Moist, Very Dense	-10	S	4"/63	5.7	129.5
-15	SM	Same Alluvial Deposits (Qof) Damp to Moist, Very Dense	-15	S	5"/56	5.3	--
-20	SM	Same Alluvial Deposits, Damp to Moist, Very Dense Terminated at the depth of (23 1/2) ft	-20	S	64	5.4	132.6
-25							
-30							
-35							

GERI **Geo Environmental Resources, Inc.**
2511 West La Palma Ave., Suite E
Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate

LOG OF BORING

B-3

Project Location:23628 Water Street,
Perris Surface Elevation (ft):

Date Drilled: 2/20/2022
Project No: G-021422

Depth (ft)	USCS Class.	Summary of subsurface conditions	Sample Depth (ft)	Sample	Blow count (N)	Moisture (%)	Dry Unit Wt. (pcf)
-1	SM	Top Soil Brown Silty Fine Sand, Trace Roots Dry, Loose	-1	S	8	2.3	--
-3	SM	Orange Brown Silty Fine to Medium Sand (Cemented), Alluvial Deposite (Qof) Damp to Moist, Very Dense	-3	S	55	4.7	--
-5	SM	Same Damp to Moist, Very Dense, Alluvial Deposite,	-5	S	51	4.6	--
-9							
-10		Same Moist, Very Dense Terminated at the depth of (11 1/2) ft	-10	S	54	5.7	

LOG OF BORING

B-4

Project Location:23628 Water Street,
Perris Surface Elevation (ft):

Date Drilled: 2/20/2022
Project No: G-021422

Depth (ft)	USCS Class.	Summary of subsurface conditions	Sample Depth (ft)	Sample	Blow count (N)	Moisture (%)	Dry Unit Wt. (pcf)
-1	SM	Top Soil Brown Silty Fine Sand, Trace Root Dry, Loose To the depth of (1 1/2) ft	-1	S	5	2.1	–
-3	SM/SC	Orange Brown Silty Fine to Coarse Sand, Trace Clay to Clayey Fine Coarse sand Alluvial Deposits (Qof), Damp, Dense	-3	S	45	2.9	122.7
-5		Same Damp, Dense Alluvial Deposits (Qof)	-5	S	50	3.2	
-7	SM/SC	Light Brown Silty Fine to medium Sand (Cemented), Trace CALICHE Damp to Moist, Very Dense	-7	S	4"/64	4.3	
-9							
-10	SM/SC	Damp to Moist, Very Dense To the depth of (14 1/2) ft	-10	D		4.5	124.6
-15	SM	Brown Silty Fine to Coarse Sand, Trace Clay with CALICHE (Cemented) Damp to Moist, Very Dense	-15	D	65	5.3	126.7
-20	SM	Same Damp to Moist, Very Dense Alluvial Deposit (Qof) Terminated at the depth of (23 1/2) ft	-20	D	5"/69	5.6	133.4
-25							

GERI **Geo Environmental Resources, Inc.**
2511 West La Palma Ave., Suite E
Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate

LOG OF BORING

B-5

Project Location:23628 Water Street,
Perris Surface Elevation (ft):

Date Drilled: 2/20/2022
Project No: G-021422

Depth (ft)	USCS Class.	Summary of subsurface conditions	Sample Depth (ft)	Sample	Blow count (N)	Moisture (%)	Dry Unit Wt. (pcf)
-1	SM	Brown Silty Fine to Coarse Sand, Trace Clay Alluvial Deposits (Qof) Dry to damp, Dense					
-3			-3	S	41	3.1	
-5	SM	Orange Brown Silty Fine to Coarse Sand (Cemented) with CALICHE Alluvial Deposit (Qof) Moist, Very Dense	-5	S	56	7.5	130.9
-7	SM	Same Alluvial Deposit (Qof) Moist, Very Dense	-7	S	5"/56	8.2	--
-10	SM	Light Brown Silty Fine to Coarse Sand (Cemented) Alluvial Deposit (Qof) Moist, Very Dense	-10	S	3"/64	9.3	--
-15	SM	Same Alluvial Deposite (Qof) Moist, Very Dense	-15	S	71	6.1	133.5
-20	SM	Same Alluvial Deposit Damp to Moist, Very Dense	-20	S	59	5.8	
-25	SM	Same Cemeneted with CALICHE Damp to Moist, Very Dense Terminated at the depth of (29 1/2) ft	-25	S	3"/61	5.6	
-30							

GERI **Geo Environmental Resources, Inc.**
2511 West La Palma Ave., Suite E
Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate

LOG OF BORING

B-6

Project Location:23628 Water Street,
Perris Surface Elevation (ft):

Date Drilled: 2/20/2022
Project No: G-021422

Depth (ft)	USCS Class.	Summary of subsurface conditions	Sample Depth (ft)	Sample	Blow count (N)	Moisture (%)	Wet Unit Wt. (pcf)
-1	SM	Brown Silty Fine Sand, Trace Roots(Top Soil) Dry to Damp, Loose To the depth of (1 1/2) ft	-1	D		3.5	
-3	SM/SC	Orange Silty Fine Sand with Clay to Clayey Fine Sand, Alluvial Deposits(Qof) Dry to Damp, Dense	-3	D		2.9	
-5	SM/SC	Same Alluvial deposits (Qof) Damp very Dense	-5	D		3.2	120.1
-7		Same Alluvial Deposits (Qof) Damp, Dense	-7	D		3.9	123.1
-10		To the depth of (10) ft					

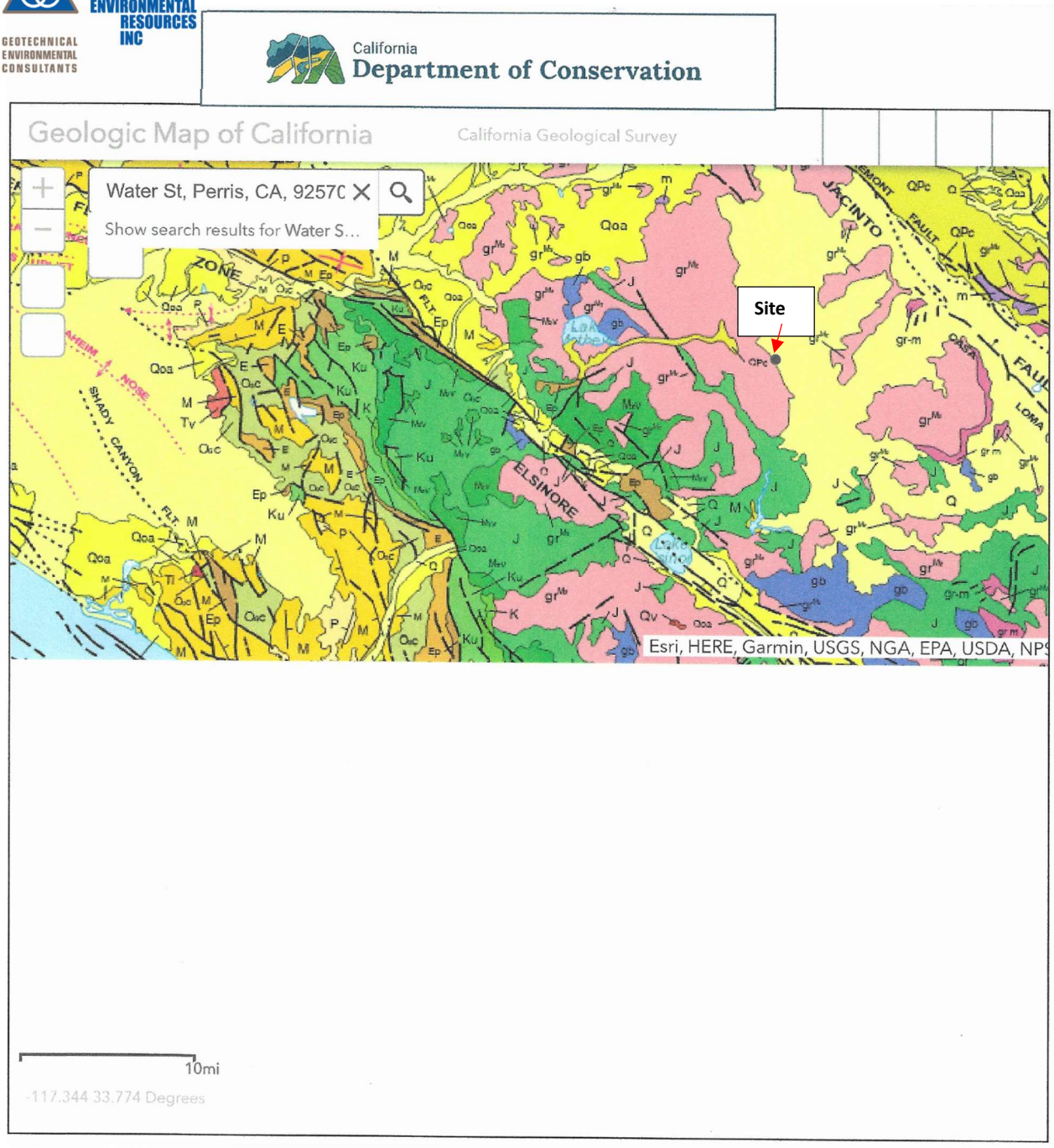
GERI **Geo Environmental Resources, Inc.**
2511 West La Palma Ave., Suite E
Anaheim, California 92801

D =Drive sample
S = SPT sample

Plate

GEO ENVIRONMENTAL RESOURCES INC

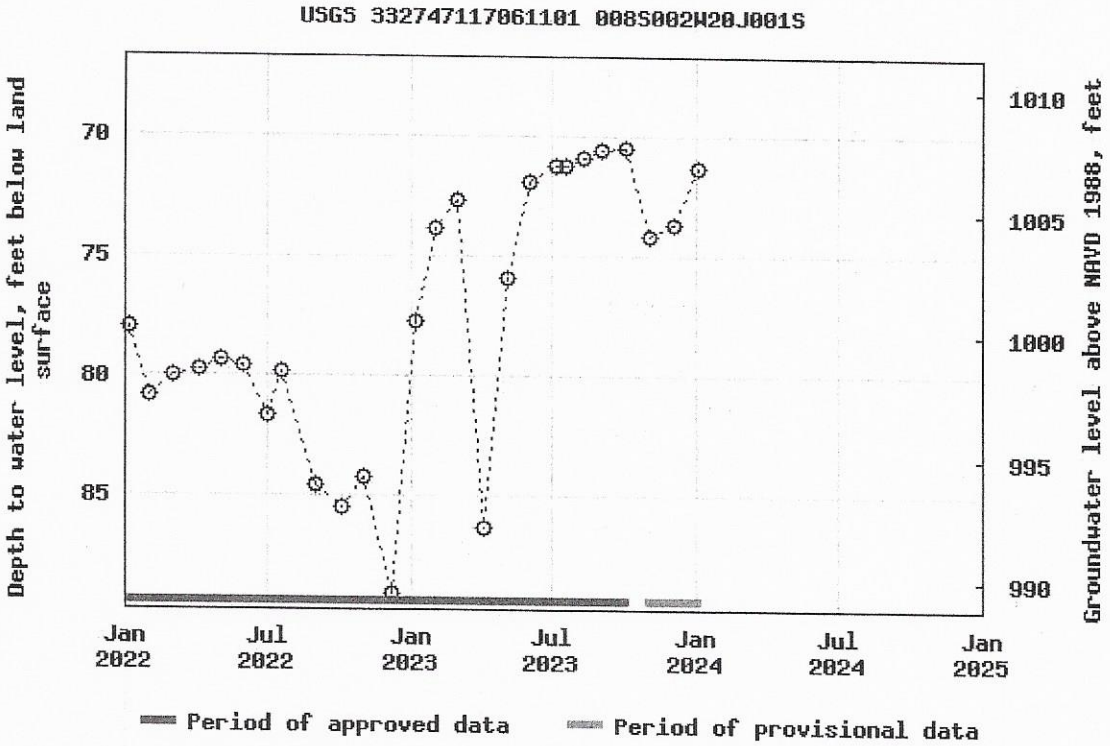
GEOTECHNICAL ENVIRONMENTAL CONSULTANTS



Project: Proposed Commercial Building

Project Address: 23628 Water Street, Perris, CA

Project No.: G-021422



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

USGS 332747117061102 008S002W20J002S

Riverside County, California
Hydrologic Unit Code 18070302
Latitude 33°27'47.53", Longitude 117°06'15.58" NAD83
Land-surface elevation 1,078.36 feet above NAVD88
The depth of the well is 180 feet below land surface.
The depth of the hole is 590 feet below land surface.
This well is completed in the California Coastal Basin aquifers (N100CACSTL) national aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period