Exhibit G

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May 20, 2023
Updated October 22, 2023

Monterey County Housing & Community Development (MCHCD)
c/o: Fionna Jensen – Associate Planner

Monterey County Environmental Health Bureau (MCEHB)
c/o: Bryan Escamilla – REHS

Monterey County Water Resources Agency (MCWRA)
c/o: Amy Woodrow - PG

Technical Memorandum:
RE: PLN210202 / Abalone Creek LLC, *18000 Corral De Cielo, APN: 416-441-047-000*

This Technical Memorandum and associated Tables and Figures have been prepared by Bierman Hydrogeologic (BHgl) in response to Monterey Country Housing and Community Development & Engineering Services (MCHCD & ES) Letter dated April 20, 2023, for which Monterey County Water Resource Agency (MCWRA) & MCHCD[1] is requesting additional hydrogeologic information on the project, specifically, PS-3.0 - Long-Term Water Supply. More specifically, addressing the adequacy of water for the proposed project in terms of quality and quantity including an analysis of offsite impacts to neighboring wells and whether the El Toro Planning Area and its associated aquifer subbasins/groundwater levels would be cumulatively impacted from the proposed projects water demand.

This Technical Memorandum follows an BHgl March 3, 2023, Letter that provided information on; historic, existing, and proposed water use, including an onsite well inventory and, groundwater quality data[2].

Since May 2023, a detailed analysis of specific-animal water demand has been analyzed and therefore this Updated Report reflects more accurate animal water demand calculations and thus ultimately reduces the overall water demand for the project. References of water use demands for specific animals are attached on Table 1.

In summary, there is no anticipated impact to the aquifer, nearby aquifers, or wells at Z-Ranch from this proposed development.

Background and Summary of Previous Reporting of El Toro Planning Area:
The El Toro Planning Area has been extensively studied with some of the more recent studies both on a regional scale[3] and on a local scale[4,5,6]. The El Toro Planning Area includes five Subareas as shown on attached Figure ES-2 (Geosyntec 2007 Figure) and is based on local topographic drainage divides which include: Calera Creek, Watson Creek, Corral de Tierra, San Benancio Gulch, and El Toro Creek. The water supply for the El Toro Planning Area is derived from groundwater for which the Subareas are hydrogeologically connected[7].

The 2007 Geosyntec Report concludes that:
"Water level data compiled and reviewed for this study indicates that the Primary Aquifer System in the El Toro Planning Area is in overdraft. However, current and increasing rates of pumping could be sustained for decades in areas with large, saturated thicknesses of the El Toro Primary Aquifer System because of the large volume of groundwater in storage".

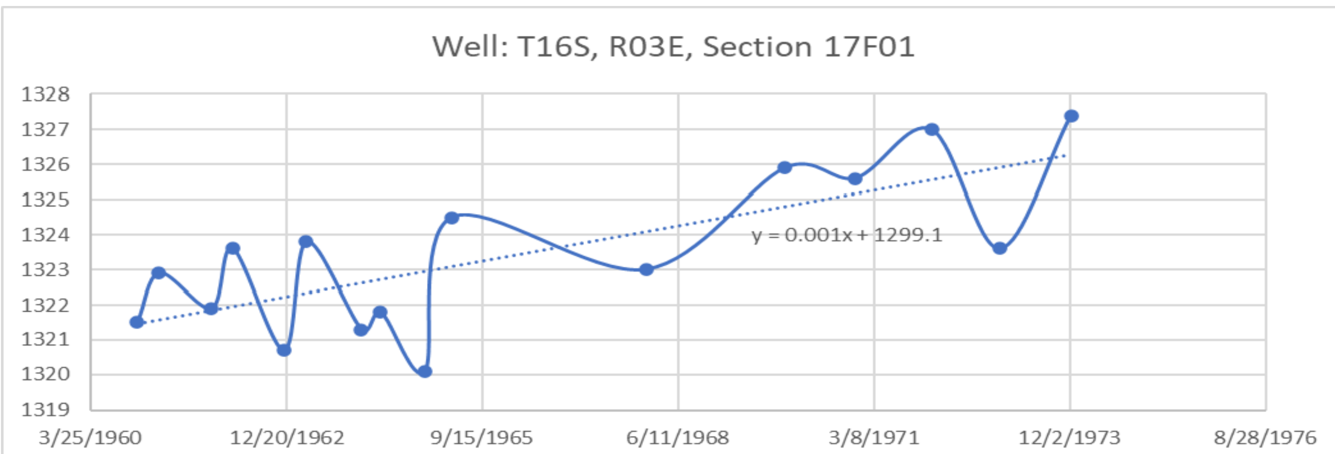
It should be noted that the project-site is not considered to be included in the 'El Toro Primary Aquifer System' as shown on attached Figure ES-4 (2007 Geosyntec Figure). Rather the 2007 Geosyntec Report characterizes the area beneath the project-

1: Personal Communication on 5/4/23 with Jason Retterer (JRG Attorney), Amy Woodrow (MCWRA) and Fionna Jensen (MCHCD).
2: Per the request of MCHCD and MCEHB Letter dated January 13, 2023.
3: Geosyntec, July 2007; El Toro Groundwater Study, Monterey County, California.
4: Bierman Hydrogeologic, February 2015, 72hr Constant Rate Well Pumping & Aquifer Recovery Test on Ambler Oaks & Encina Hills Well for Harper Canyon Division, Monterey County, California.
5: Todd Engineers, July 2003, and Revised October 2010; Project Specific Hydrogeologic Report, Harper Canyon Realty, LLC Subdivision.
6: Feeney, July 2000; 72hr Pumping Test on the Ambler Oaks Well.
7: Geosyntec, July 2007; El Toro Groundwater Study, Monterey County, California.

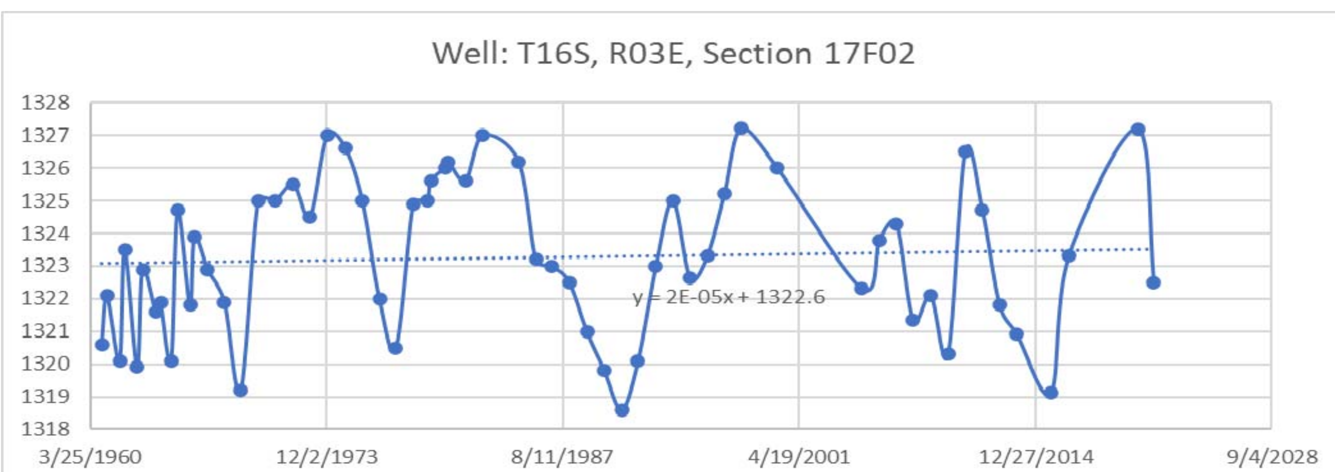
site as a "poor" groundwater production area (Figure ES-4). This is because of the thinning and eventually absence of the primary aquifers (Aromas, Paso Robles, and Santa Margarita Formations) saturated thickness in the Watson Creek Subarea and upper northeast portion of the San Benancio Subareas. The 2007 Geosyntec Report did not study[8] these Subareas Aquifers due to lack of the primary aquifer in these areas. Even though the Watson Creek Subbasin for which the project resides over was not specifically studied in the 2007 Geosyntec Report, as shown on attached Geologic Map Figure 2-3 (2007 Geosyntec Figure) there is an Unamend Sandstone Formation ((Tus) - aka Chamisal Formation)) beneath the project-site and localized area which is of reasonable saturated thickness with capacity to support development (Z Ranch Development and its earliest wells were drilled in the 1980s – 2007 Geosyntec Report, Figure 3-2 not attached). This unnamed sandstone formation includes several historical artesian wells along Watson Creek in the southeast section of the Watson Creek Subarea highlighted by the "rectangular" area identified on Figure ES-4 (attached). Some of these artesian wells have been flowing since 1974[9].

Based on Geosyntec 2007 Report and attached Figure ES-5 (which is based on 1960-2006 groundwater level data) groundwater level contours in the El Toro Primary Aquifer Systems show roughly 0.5ft increase to 1ft+ of groundwater decline (with an average long-term rate of decline of 0.6 ft/yr[10]). However, the same groundwater level contour map shows there to be no significant change in the annual rate of groundwater levels beneath the subject-site (Figure ES-5).

More so, groundwater elevation data provided by MCWRA for the two closest monitoring wells (16S/03E-17F01 and 16S/03E-17F02) to the subject site (see Figure ES-2) were graphed by BHgl (shown below) and suggests that historical groundwater elevations (1960 to 1973 for Well 17F01 and 1960-2021 for Well 17F02) generally show a groundwater elevation rise over the period of record with some oscillation in the groundwater elevation and correlates with drought periods.



*Groundwater elevations above are based on NAVD88 from a limited data set from 1960 to 1973.



*Groundwater elevations above are based on NAVD88 from a data set from 1960 to 2021.

8: Geosyntec, July 2007; El Toro Groundwater Study, Monterey County, California, pg 35.
9: Bierman Hydrogeologic, September 1, 2016; Request Variance of Comprehensive Hydrogeologic Report – Long Term Water Supply Analysis – 450 Corral De Tierra, Salinas, Ca.
10: Geosyntec, July 2007; El Toro Groundwater Study, Monterey County, California.

PS-3.1 - Ensure a Long-Term, Sustainable Water Supply:
As part of the criteria to ensure a long-term sustainable water supply, the historic, current, and proposed water demand was evaluated and is presented in BHgl Letter dated March 3, 2023. For reference, the historic water demand was estimated to range from 1.5 to 3 afy, while the current water demand is approximately 2-3 afy and the proposed water demand was calculated to be 7.38 afy. Please refer to BHgl Letter dated March 3, 2023, for historical and current water demands for the project, as only the proposed water demand is re-referenced below.

Proposed Water Demand:
Proposed water demand was calculated based on data provided by the Applicant. The 'type-of-use' (i.e non-potable and potable uses) were assigned to known water 'use-factors' used in the hydrogeologic industry with references attached on Table 1. Table 1 (attached) shows the proposed 'type-of-use' and associated water 'use-factor' for the project giving a conceptual water demand of 5.96 afy.

Table 2 shows the Water Demand in a monthly time-step methodology along with a breakdown of the average day, dry season, and maximum demands after accounting for a 7% system loss (leaks). There is no treatment for barn toilet or barn washbasin as it would be de-minims loss. It should be noted that the crops proposed are not for commercial resale, rather for onsite use and animal feed. Irrigation of the crops will be completed using best management practices and include using tensiometer, drip-irrigation, and soil amendments to maintain and increase soil moisture content and reduce wasteful irrigation. NOTE: This AFY demand is based on the reasonably assumed yield of the proposed new well at roughly 10 gpm pumping in equivalent 12hr cycles. This assumed yield correlates with other well-yields in the area as shown on attached Figure 3-4 (2007 Geosyntec Figure).

Aquifer Parameters of Transmissivity and Storage Coefficients:
A review of published reports[11,12,13,14] was completed to obtain reasonable values of Transmissivity (T) and Storage Coefficients (S) so that these values could be incorporated into an analysis that would evaluate the proposed wells impacts to nearby offsite wells, the adequacy of the onsite well long-term and whether there would be significantly cumulative impacts to El Toro Primary Aquifer System and/or the Unnamed Sandstone Formation (aka Chamisal) Aquifer.

Due to the basin size and type of formations present, there is a large variability in Transmissivity values as shown on Figure 4-2 (2007 Geosyntec Figure). Table 3 shows a compilation of different T & S values obtained for mostly the El Toro Primary Aquifer System along with an assessment of which values were deemed most accurate and appropriate for this site-specific study. In summary, Table 3 shows a Transmissivity value averaged from pumping and recovery test data from three different consultants to derive an overall average Transmissivity value of 2.9×10^3 gpd/ft for the El Toro Primary Aquifer System. It should be noted that the 2007 Geosyntec Report (attached Figure 4-2) shows a Transmissivity value for a well in the immediate area to be $150 ft^2$/day (equivalent to 1.19×10^3 gpd/ft) and is fairly close to the above compiled average (2.9×10^3 gpd/ft equivalent to 388 ft^2/day). Table 3 also shows the most appropriate Storage Coefficient value (0.075) which is based on the average of two previously published Storage Coefficient values (0.05[15] and 0.10[16]) for the El Toro Primary Aquifer System.

Theoretical Distance-Drawdown Calculations:
Using the Modified Theis Nonequilibrium Well Equation[17] a theoretical drawdown can be determined for offsite wells based on pumping the proposed well intermittently for 1-year (365-days) at the average annual demand (after accounting for system and treatment losses) along with determining the wells radius of influence (r) when solving for drawdown when drawdown = "0".

Theoretical distance-drawdown analysis/calculations were completed (as shown on Table 4 and 5) using the Average Day Water Demand (7.95 gpm in 12hr cycles) after accounting for system and treatment losses using the aforementioned T&S values (two transmissivity values were used – 2900 and 1190 gpd/ft). The technical calculations indicate that the proposed-wells radius of influence pumping intermittently (12hr/day) at 7.95 gpm for 1-year would generate a radius of influence of 400-ft or, a diameter of 800-ft (using a T-value of 2.9×10^3 gpd/ft – Table 4) or, a radius of influence of 270-ft, diameter of 540-ft (using a T-value of 1.19×10^3 gpd/ft – Table 5). These radius off influence values are less than the nearest wells and therefore no hydrogeologic impacts are anticipated.

11: Geosyntec, July 2007; El Toro Groundwater Study, Monterey County, California.
12: Bierman Hydrogeologic, February 2015, 72hr Constant Rate Well Pumping & Aquifer Recovery Test on Ambler Oaks & Encina Hills Well for Harper Canyon Division, Monterey County, California.
13: Todd Engineers, July 2003, and Revised October 2010; Project Specific Hydrogeologic Report, Harper Canyon Realty, LLC Subdivision.
14: Feeney, July 2000; 72hr Pumping Test on the Ambler Oaks Well.
15: Todd Engineers, July 2003, and Revised October 2010; Project Specific Hydrogeologic Report, Harper Canyon Realty, LLC Subdivision.
16: Geosyntec, July 2007; El Toro Groundwater Study, Monterey County, California.
17: Driscoll, 1995; Groundwater and Wells – Second Edition, 1995, pg 235.

Moreso, as shown on Table 6, technical calculations were completed out to 50-years with all other variables remaining the same, suggest that the radius of influence would be 1,000-ft and impacts to the closest offsite wells would be negligible (0.56 ft of drawdown at 500-ft) and roughly 0.04-ft of drawdown at 1,000ft radius (negligible).

It should be noted that the drawdown values calculated above don't incorporate seasonal recharge from precipitation, or heterogeneous conditions that may be present in the aquifer and therefore drawdown values may be less. Although this technical calculation is not mathematically exact, it is intuitively acceptable and produces values with 1-2 percent accuracy.

<u>Distance-Drawdown and Offsite Impacts to Neighboring Wells:</u>
BHgl Figure 1 shows the wells in the vicinity. These wells were approximately located using both Google Earth Imagery and the 2007 Geosyntec Figure ES-2 dataset showing wells in the area. All of the onsite wells are ground-truthed including the two closest neighboring wells. BHgl Figure 1 shows that the closest two neighboring wells at 515-ft and 535-ft from the proposed well are not within the calculated well's radius of influence (after 1-year of pumping at the Average Day Demand) and therefore, there are no cumulatively significant impacts to any offsite wells, including the Z-Ranch well-field.

In addition, BHgl Figure 2 shows the Geology of the area along with a line of geologic cross-section A-A'. BHgl Figure 3 shows the Conceptual Geologic Cross-Section of the proposed onsite well and its draft construction along with the 2007 Z-Ranch Well and its known lithology/construction[18]. BHgl Figure 3 shows the Z-Ranch well to be perforated in a thin section of the Paso Robles Formation (even though the 2007 Geosyntec Report shows no Paso Robles formation in this area) and the deeper fractured granite formation to a depth of 600-ft.

The conceptual geologic cross section (BHgl Figure 3) suggests the proposed new well will likely only penetrate the marine sandstone formation (Paso Robles formation is thinned out and not present beneath the subject site) and the fractured granite formation to a depth of 800-ft. Given the difference in depths of each well, the horizontal distance between these wells and, the technical calculations presented above again suggest that there will be no hydrogeologic interference between the proposed well and offsite wells and no cumulative significant impacts to either the Primary Aquifer System or Marine Sandstone / Fractured Granite Aquifer.

<u>Well Adequacy for Intended Use and Onsite Impacts:</u>
Using the Modified Theis Nonequilibrium Well Equation[19] a drawdown can be determined for the onsite well based on pumping the proposed well intermittently for 50-year (18,250-days) using a more stringent Dry Season Demand of 9.45 gpm (pumping in equivalent 12hr cycles).

Table 6 shows that after 50-years of intermittent pumping at the dry season demand, there would only be 5.71 ft of drawdown in the well. Because the El Toro Primary Aquifer System shows a basin wide long-term decline of 0.6ft/yr it is recommended that the minimum statured thickness of the proposed well be no less than 100-ft so as to maintain at least 60-ft of saturated thickness after 50-years. Based on the draft construction proposed (BHgl Figure 3) the proposed well is anticipated to have 670-ft of perforated interval, in the Marine Sandstone and Fractured Granite.

<u>Conclusion and Summary:</u>
In conclusion, based on aquifer parameter data compiled and technical calculations performed, the proposed new agricultural well will not have any negative impact or constructive interference to other existing offsite wells, creeks, or springs. As shown on Table 4, 5 and Figure 1, the above analysis suggests that no other offsite wells would be impacted as the radius of influence after 1-year of pumping is only 400-ft (more stringent analysis) and after 50-years of intermittent pumping the radius of influence is 1000-ft at which point a well at 500ft would only have 0.56-ft of drawdown which is considered negligible.

In summary, the technical calculation performed based on known averaged aquifer parameters suggests that the proposed well will have a sustainable long-term supply and because it is not pulling for the El Toro Primary Aquifer System, it will have no impacts to the regional groundwater basin or the localized sandstone aquifer beneath the subject site and surrounding area as the data also shows that the proposed well should be able to maintain a long-term water supply as local groundwater level trends (1960 to 2021) are rising in the immediate area. The well should be able to maintain a long-term supply even after accounting for a gradual natural groundwater decline (as seen in the Primary Aquifer System) if designed to have a minimum saturated thickness of 100-ft. Lastly, the existing groundwater quality is average to above average quality and the well should not have any impacts to the regional groundwater quality or cause water quality degradation.

18 : Based on Department of Water Resource Well Completion Report and Geophysical Log
19: Driscoll, 1995; Groundwater and Wells – Second Edition, 1995, pg 235.

Limitations:

Our service consists of professional opinions and recommendations based on the data compiled. *Bierman Hydrogeologic P.C.* bases the conclusions provided upon the tests and measurements, using accepted hydrogeologic principles and practices of the groundwater industry. Additionally, conditions in water wells are subject to dramatic changes, even in short periods of time. The techniques employed in conducting pump testing may be subject to considerable error due to factors within the well and/or aquifer, which are beyond our immediate control or observation.

Therefore, the data included within this report are valid only as of the date and within the observational limitations of the test(s) conducted. The test conclusions are intended for general comparison of the well and/or aquifer in its present condition against known water well standards and/or guidelines. The analysis and conclusions in this report are based on information reviewed, and field-testing which are necessarily limited. Additional data from future work may lead to modification of the opinions expressed herein and may have a different future pumping rate, calculated well yield or water quality that was expressed herein. Our report is not a guarantee of any water production rate, yield, or water quality.

Respectfully submitted,

Aaron Bierman
Certified Hydrogeologist #819

PROFESSIONAL GEOLOGIST
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HYDROGEOLOGIST
STATE OF CALIFORNIA

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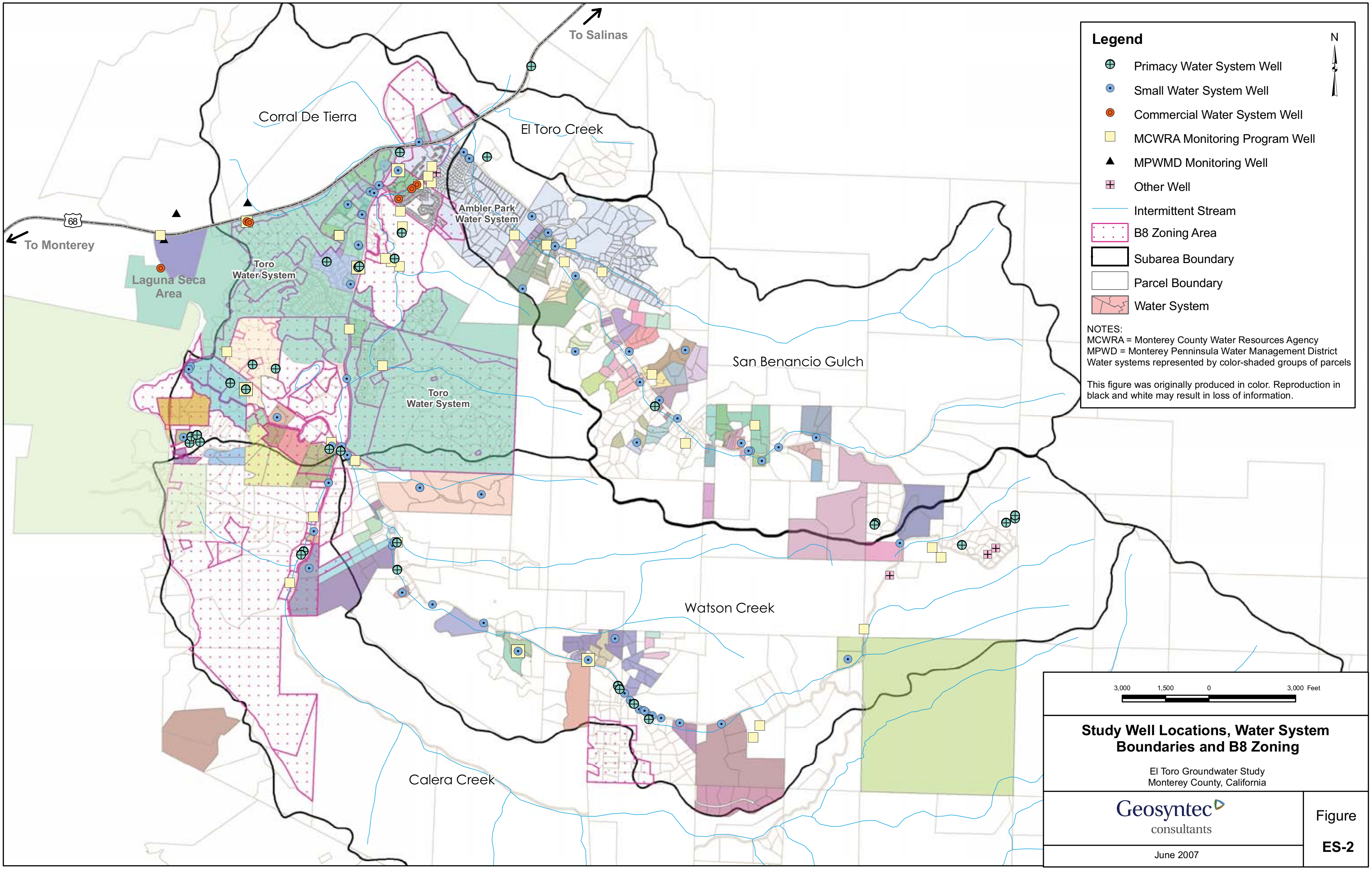

Study Well Locations, Water System Boundaries and B8 Zoning

El Toro Groundwater Study
Monterey County, California

Geosyntec consultants

June 2007

Figure **ES-2**

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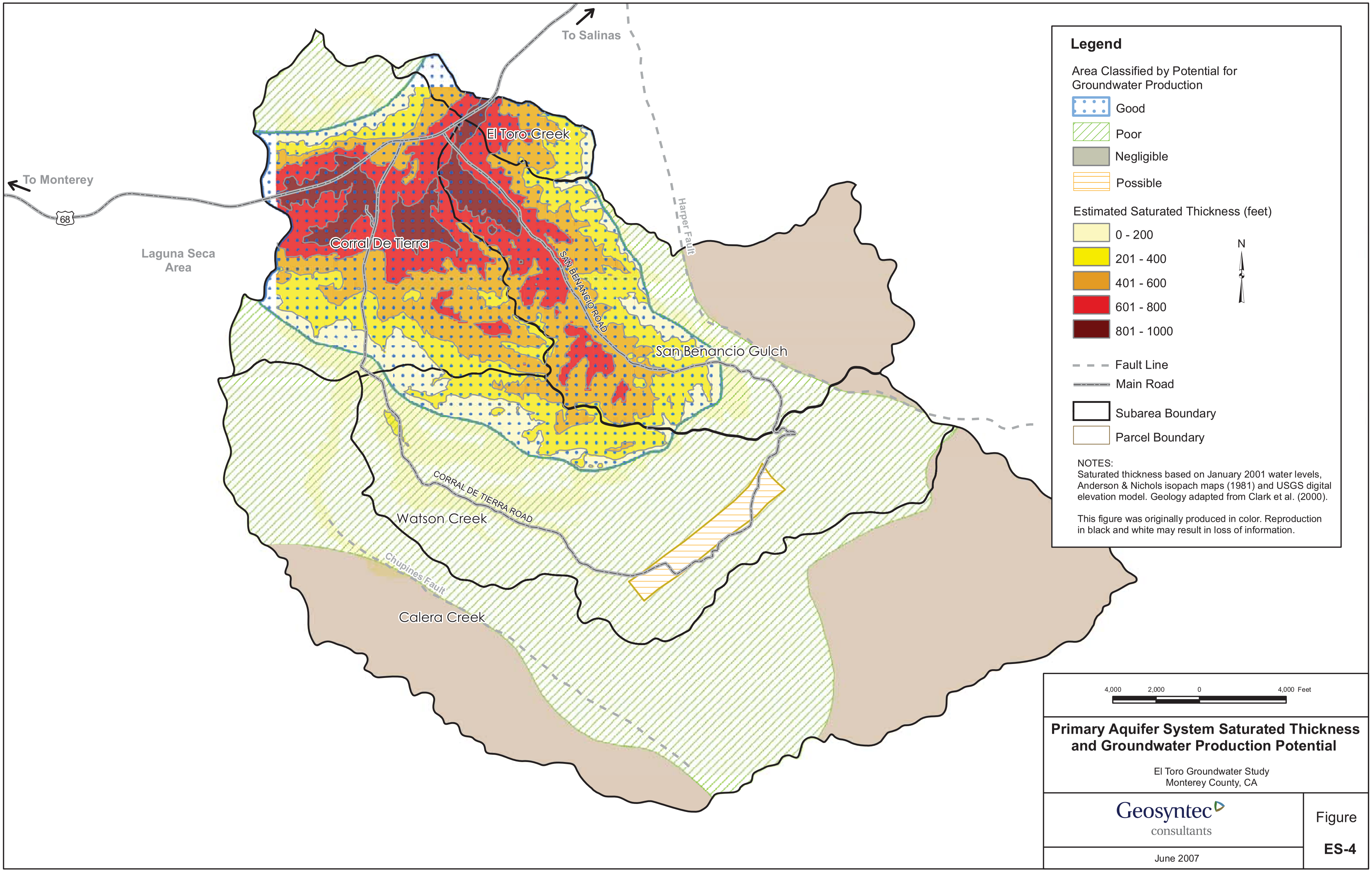

Primary Aquifer System Saturated Thickness and Groundwater Production Potential

El Toro Groundwater Study
Monterey County, CA

Geosyntec consultants

June 2007

Figure
ES-4

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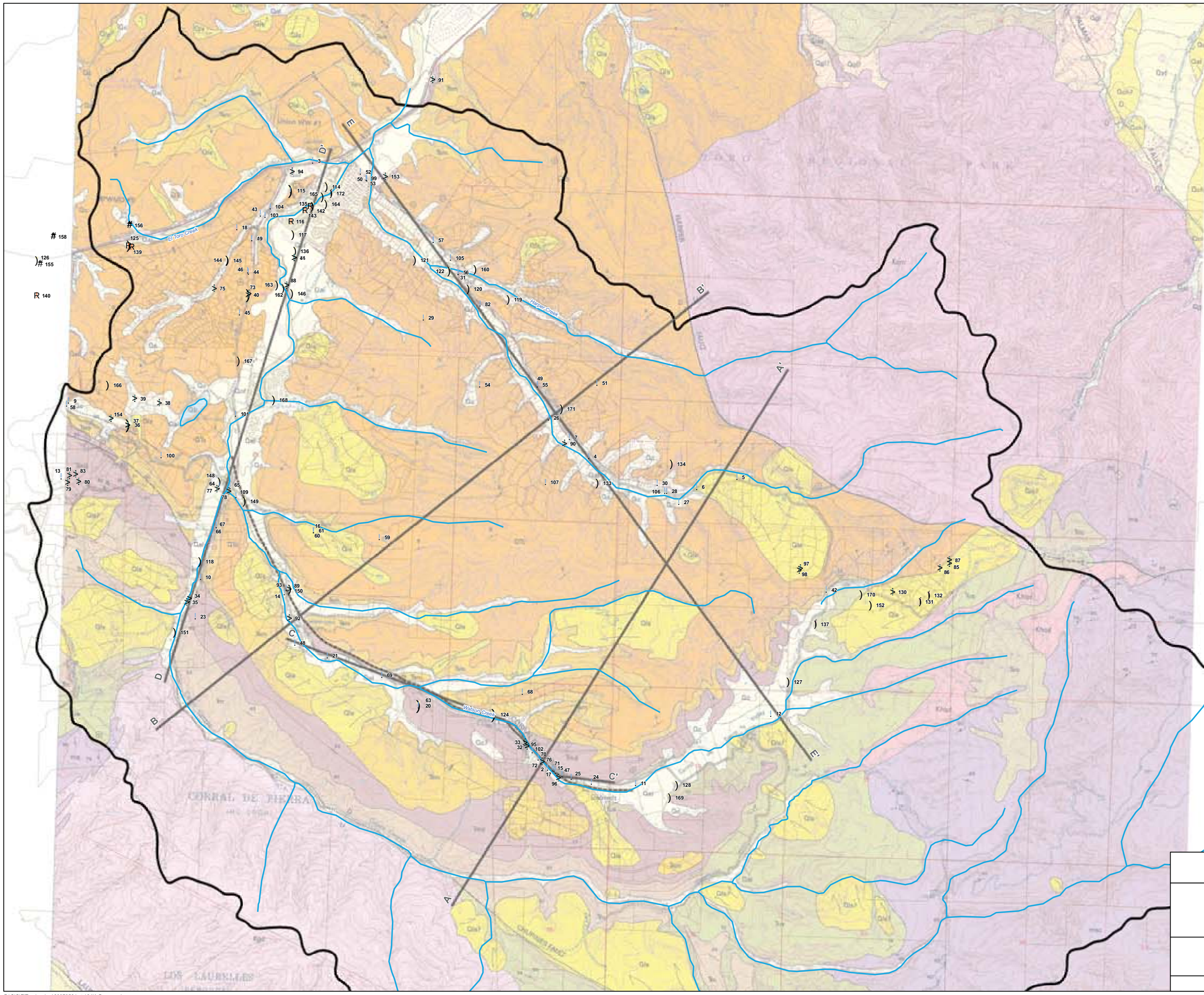


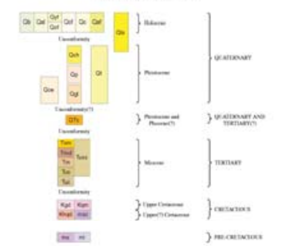
Legend

- 158 # Station ID Name and Location
- Primacy Water System Well
- Small Water System Well
- R Commercial Water System Well
- MCWRA Monitoring Program Well
- MPWMD Monitoring Well
- Other
- Stream
- Cross Sections
- Fault Line
- El Toro Planning Area Boundary
- Parcel Boundary

NOTES:
Adapted from Clark et al. (2000)

This figure was originally produced in color. Reproduction in black and white may result in loss of information.

CORRELATION OF MAP UNITS



LIST OF MAP UNITS

[See accompanying pamphlet for more detailed Description of Map Units]

- Qb **Basin deposits (Holocene)**—Unconsolidated, plastic clay and silty clay containing much organic material; locally contains interbedded thin layers of silt and silty sand
- Qal **Alluvial deposits, undivided (Holocene)**—Unconsolidated, heterogeneous, moderately sorted silt and sand with discontinuous lenses of clay and silty clay
- Qyf **Younger flood-plain deposits (Holocene)**—Unconsolidated, relatively fine-grained, heterogeneous deposits of sand and silt; commonly includes relatively thin, discontinuous layers of clay
- Qcf **Abandoned channel fill deposits (Holocene)**—Unconsolidated, plastic, poorly sorted clay, silty clay, and silt. Deposited within channels on younger and older flood-plain deposits. Thickness generally less than 3 m
- Qc **Colluvium (Holocene)**—Unconsolidated, heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel deposited by slope wash and mass movement
- Qaf **Artificial fill (Holocene)**—Heterogeneous mixture of artificially deposited material ranging from well-compacted sand and silt to poorly compacted sediment high in organic content; only locally delineated
- Qls **Landslide deposits (Quaternary)**—Heterogeneous mixture of deposits ranging from large block slides of indurated bedrock to debris flows in semiconsolidated sand and clay
- Qof **Older flood-plain deposits (Holocene)**—Unconsolidated, relatively fine-grained, heterogeneous deposits of sand and silt; commonly includes relatively thin layers of clay
- Qch **Alluvial fan deposits of Chualar (Pleistocene)**—Weakly consolidated, moderately to poorly sorted sand, silt, and gravel deposited as a series of alluvial fans flanking the Salinas Valley, south of Spreckels. Unit age is late Pleistocene
- Qt **Terrace deposits, undivided (Pleistocene)**—Weakly consolidated to semiconsolidated, moderately to poorly sorted silt, silty clay, sand, and gravel deposited in a fluvial environment
- Qp **Alluvial fan deposits of Placentia (Pleistocene)**—Semiconsolidated, moderately to poorly sorted sand, silt, and gravel; gravel content increases toward head of the fan. Similar to the alluvial fan deposits of Chualar (Qch), except capped by well-developed soils. Unit age is middle(?) Pleistocene
- Qoe **Older eolian deposits (Pleistocene)**—Moderately well-sorted sand as much as 60 m thick that contains no intervening fluvial deposits
- Qgl **Alluvial fan deposits of Gloria (Pleistocene)**—Moderately consolidated, deeply weathered, moderately to poorly sorted sand, silt, and gravel, capped with moderately well drained, maturely developed soils with claypans. Unit age is middle to early(?) Pleistocene
- QTc **Continental deposits, undivided (Pleistocene-Pliocene(?))**—Nonmarine, semiconsolidated, poorly sorted, fine- to coarse-grained sand with pebble and cobble gravel interbeds
- Tsm **Santa Margarita Sandstone (Miocene)**—Marine and brackish-marine, white, friable, fine- to coarse-grained, arkosic sandstone. Age of unit is late Miocene
- Tuss **Unnamed sandstone, undifferentiated (Miocene)**—Marine; buff to light-gray, poorly to well-sorted arkosic sandstone; lithologically similar to unnamed sandstone (Tus). Rests with apparent conformity on the unnamed conglomerate (Tuc). Where Monterey Formation is absent, the unnamed sandstone is not differentiated from the younger Santa Margarita Sandstone, and both units are mapped as Tuss. Age of unit is middle to late Miocene
- Tmd **Monterey Formation, diatomite (Miocene)**—Very pale orange to white, soft, punky, commonly silty; Mohnian Stage
- Tm **Monterey Formation, porcelanite (Miocene)**—Light-brown to white, hard, brittle, platy; Mohnian Stage
- Tus **Unnamed sandstone (Miocene)**—Marine; buff to light-gray, poorly to well-sorted arkosic sandstone, locally friable, locally conglomeratic. Age of unit is middle Miocene
- Tuc **Unnamed conglomerate (Miocene)**—Nonmarine; buff to light-gray, poorly sorted sandy cobble conglomerate, well indurated
- Kgd **Granodiorite of Cachagua of Ross (1976a) (Late Cretaceous)**
- Kgm **Garnetiferous quartz monzonite of Pine Canyon of Ross (1976a) (Late Cretaceous)**
- Khqd **Hornblende-biotite quartz diorite and diorite of Corral de Tierra (Late? Cretaceous)**
- Kssl **Schist of the Sierra de Salinas of Ross (1976a) (Late? Cretaceous)**
- mq **Quartzofeldspathic rocks (pre-Cretaceous)**
- m **Marble (pre-Cretaceous)**

EXPLANATION

- **Contact**—Dashed where approximately located or gradational, dotted where concealed, queried where questionably located
- **Fault**—Dashed where inferred, dotted where concealed, queried where doubtful. U, relatively upthrown side; D, relatively downthrown side
- **Fold**—Dashed where approximately located, dotted where concealed. Showing direction of plunge
  - **Anticline**
  - **Syncline**
- **Strike and dip of beds**
  - **Horizontal**
  - **Inclined**
  - **Overturned**
  - **Vertical**
- **Ash Bed**
- **Foliation**
- **Water well**
- **Dry hole drilled for hydrocarbon exploration**
- **Landslide**—Arrows show general direction of movement. Query indicates that identification of feature is in doubt
- **Spring**

1,500 750 0 1,500 Feet

Geological Map with Well locations and Cross-Section Locations

El Toro Groundwater Study
Monterey County, California

Geosyntec consultants

June 2007

Figure 2-3

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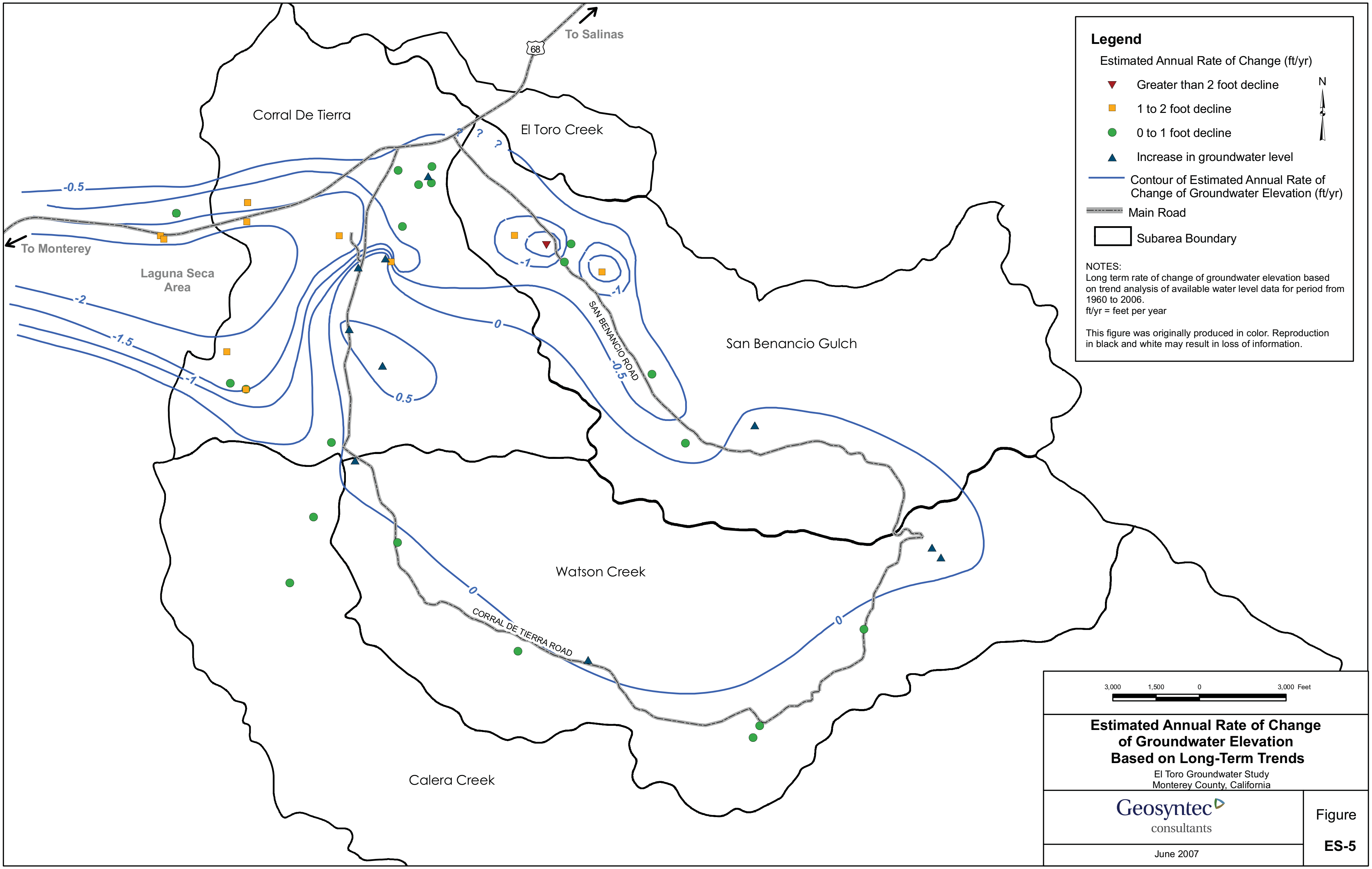

Estimated Annual Rate of Change of Groundwater Elevation Based on Long-Term Trends

El Toro Groundwater Study
Monterey County, California

Geosyntec consultants

June 2007

Figure ES-5

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Table 1

Non-Domestic Water Use Fixtures & Conceptual Water Demand

Type of Use		Landscape Area (acres)	Annual Usage (9) af/y	Annual Use af/yr
Irrigation	Turf (lawn)	0	2.1	0.000
	Non-Turf on Sprinker	0	1.8	0.000
	Non-Turf on Drip	0	0.9	0.000
	Pasture / Alfalfa	0	4.3	0.000
	Pasture / Grazing (natural rainfall)	0	2.1	0.000
	Vineyard / Olives: Non-Commercial	1.45	0.8	1.160
	Orchard (Fruit trees): Non-Commercial: 36 trees/acre at 46 gpd/tree on drip for 240 days of irrigation	2.5	1.2	3.000
	Garden Crops	0.3	2.3	0.690
	Plant Nursery	0	3.92	0.000
Hot Tub/Pool	Surface Area (sq. ft):	0	0.00026	0.000
Farm Animals (# Animals/Parcel)	Poultry (0.06 gallons per head/day)	500	0.000067	0.034
	Pigs (1.5 gallons per head/day)	10	0.0017	0.017
	Donkeys (6 gallons per head/day)	1	0.0067	0.0067
	Horses (13.5 gallons per head/day)	4	0.015	0.0600
	Cattle (12.5 gallons per head/day)	30	0.014	0.420
	Dogs (14 gallons per head/day for 130lb dog - high activity)	4	0.016	0.064
	Sheep (2 gallons per head/day)	200	0.0022	0.440
	Llamas (5 gallons per head/day)	6	0.0056	0.034
Interior Fixtures	Washbasin in Barn	1	0.01	0.010
	Toilet (Ultra Low Flow at 1.6 gallons per flush) in Barn	1	0.017	0.017

Outdoor Water Use Factor/parcel[7]:	0.01	af/yr
Estimated Applied Water Use (EAWU):	5.952	af/yr
Estimated Total Water Use[8]:	5.96	af/yr

Notes:

1) This form was modified from Monterey Peninsula Water Mangement District (MPWMD) Water Use Factors for Land Use Reporting Method form worksheet. The difference is the footnote numbers, and Use-Factor for Orchards and is based on updated Agricultural Water Demands (Montana State University - Western Agricultural Research Center & University of Arizona Cooperative Extension.

2) 1-acre-foot = 325,851 gallons

3) 1 acre = 43,560 ft^2

4) Revisions in 1992 included the addition of a new category, "Pasture / Grazing" to account for irrigated pasture that is not harvested for a crop, but serves as pasture for large animals to graze. The reduced facotr of 2.2 af/yr is based on site inspections and is equivalent to the factor used for "Turf". Actual water usage on grazing land will vary. the factor for irrigated "Pasture / Alfalfa" or other pasture that may be harvested more than once a year remains at 4.3 af/yr.

5) Revisions in 1992 also included a reduction in the factor for "Vineyard" from 2.8 af/yr to 0.8 af/yr, based on site inspections and on measured crop applied water data from Bulletin 113-4 of the California Department of Water Resources, "Crop Water Use in California" (1986).

6) Revisions in 1993 include changes to Turf and Non-Turf, and the addition of Plant Nursery in order to be consistent with the Calculated Average Consumptions: Commerciual Uses Report prepared by the Demand Management Office of the MPWMD, updated June, 1992.

7) Revisions in 2010 follow State Model Water Efficient Landscape Oridnance and is adopted by MPWMD in Rule 24-A-5a & 5b, Dec, 2010. Revisions include the addition of Outdoor Water Use Factor of 0.01 af/yr and revised Evapotranspiration values for Special*, New and Existing landscape Areas (0.3; 0.7; and 0.8 respectively). *Special Landscape Areas are Gardens, Ponds.

8) The combination of EAWU and the Outdoor Water Use Factor.

9) Other Water Demand Sources for Animals:

Poultry	https://www.engineeringtoolbox.com/farm-use-animals-water-consumption-d_1588.html
Pigs	https://ucanr.edu/sites/placernevadasmallfarms/files/90846.pdf
Donkeys	https://ucanr.edu/sites/placernevadasmallfarms/files/90846.pdf
Horses	https://ucanr.edu/sites/placernevadasmallfarms/files/90846.pdf
Cattle	https://ucanr.edu/sites/placernevadasmallfarms/files/90846.pdf
Dogs	https://www.omnicalculator.com/biology/dog-water-intake
Sheep	https://ucanr.edu/sites/placernevadasmallfarms/files/90846.pdf
Llamas	https://ucanr.edu/sites/placernevadasmallfarms/files/90846.pdf

Table 2
Average Day, Dry Season & Maximum Day Water Demands

WATER DEMAND VARIABLES	WATER YEAR												ANNUAL TOTALS
	October	November	December	January	February	March	April	May	June	July	August	September	
Monthly Demand Factor[1]	8.98%	7.16%	6.42%	6.38%	5.74%	6.75%	7.70%	9.21%	9.99%	10.75%	10.96%	9.96%	100%
Combined Monthly and Annual Demand (Acre-Feet)[2]	0.535	0.427	0.382	0.380	0.342	0.402	0.459	0.549	0.595	0.640	0.653	0.593	**5.96**
Annual Day Demand (in GPD)[3]	5622.91	5810.34	5622.91	5622.91	6225.37	5622.91	5810.34	5622.91	5810.34	5622.91	5622.91	5810.34	
Annual Day Demand (in GPM)[4]	3.90	4.03	3.90	3.90	4.32	3.90	4.03	3.90	4.03	3.90	3.90	4.03	

Average Annual Demand[5]:	**3.69 gpm**	(pumping 24/7)	**equal to**	5.957	**af/year**	**or**	**7.38 gpm (pumping on 12 hour cycles)**
Average Annual Demand after System & Treatment Loss[6]:	**3.97 gpm**	**(pumping 24/7)**	**equal to**	**6.41**	**af/year**	**or**	**7.95 gpm (pumping on 12 hour cycles)**
Dry Season Demand[8]:	**4.72 gpm**	**(pumping 24/7)**	**equal to**	7.62	**af/year**	**or**	**9.45 gpm (pumping on 12 hour cycles)**
Maximum Day Demand[9]:	**8.30 gpm**	**(pumping 24/7)**	**equal to**	13.38	**af/year**	**or**	**16.60 gpm (pumping on 12 hour cycles)**
Maximum Day Demand after System & Treatment Loss[6]:	**8.94 gpm**	**(pumping 24/7)**	**equal to**	14.42	**af/year**	**or**	**17.88 gpm (pumping on 12 hour cycles)**
Peak Hourly Demand[10]:	**13.41 gpm**	**or**	**746.81 gph**				

NOTES:

[1]: Monthly Demand Factor obtained from compilation of data from California-American Water Company monthly production reports from 1992-2003 (Monterey Peninsula Water Management District, October 2, 2003).

[2]: Monthly Demand calculated by dividing Total Use (indoor + outdoor use) by Monthly Demand Factor.

---Indoor Water Demand** calculated to be 0.027 af/yr for proposed bathroom in the Barn.

---Exterior Water Demand** - Exterior Total Water Use (ETWU) calculated to be 5.93 af/yr (see ETWU Factors Form - Table 1).

*<u>**Exterior Water Demands: Based on Known water use factors from MPWMD and other known sources as outlined on Table 1.</u>*

[3]: Monthly Demand converted to Day Demand in gallons per day (gpd). Conversion factors: 325,851 gallons per acre-foot; # day per month (Jan-31; Feb-28; Mrch-31; Apl-30; May-31; June-30; July-31; Aug-31; Sep-30; Oct-31; Nov-30; Dec-31)

[4]: Day Demand (in gpm) calculated by dividing Day Demand (in gpd) by 1440 minutes (1440 minutes per day).

[5]: Average Annual Day Demand (gpm) calculated by dividing sum of Day Demands (in gpm) by 12.

[6]: For MCEHB, a 7% System Loss is used[11]. For MPWMD a 5% System Loss is used[11]. For conservative purposes for this report, the greater precentage value (7%) is used.

[7]: Treatment Loss depends on water quality. Generally, groundwater will require treatment. Since there is de minims domestic use with only 1 washbasin, no treatment loss is accounted for[12].

[8]: Dry Season Demand (May through October) represents highest six month demand period with approximately 59.85% of annual demand during this period[1].

[9]: Maximum Day Demand obtained by multiplying the Average Day Demand by Average Day Peaking Factor. Peaking Factors vary from agency to agency.

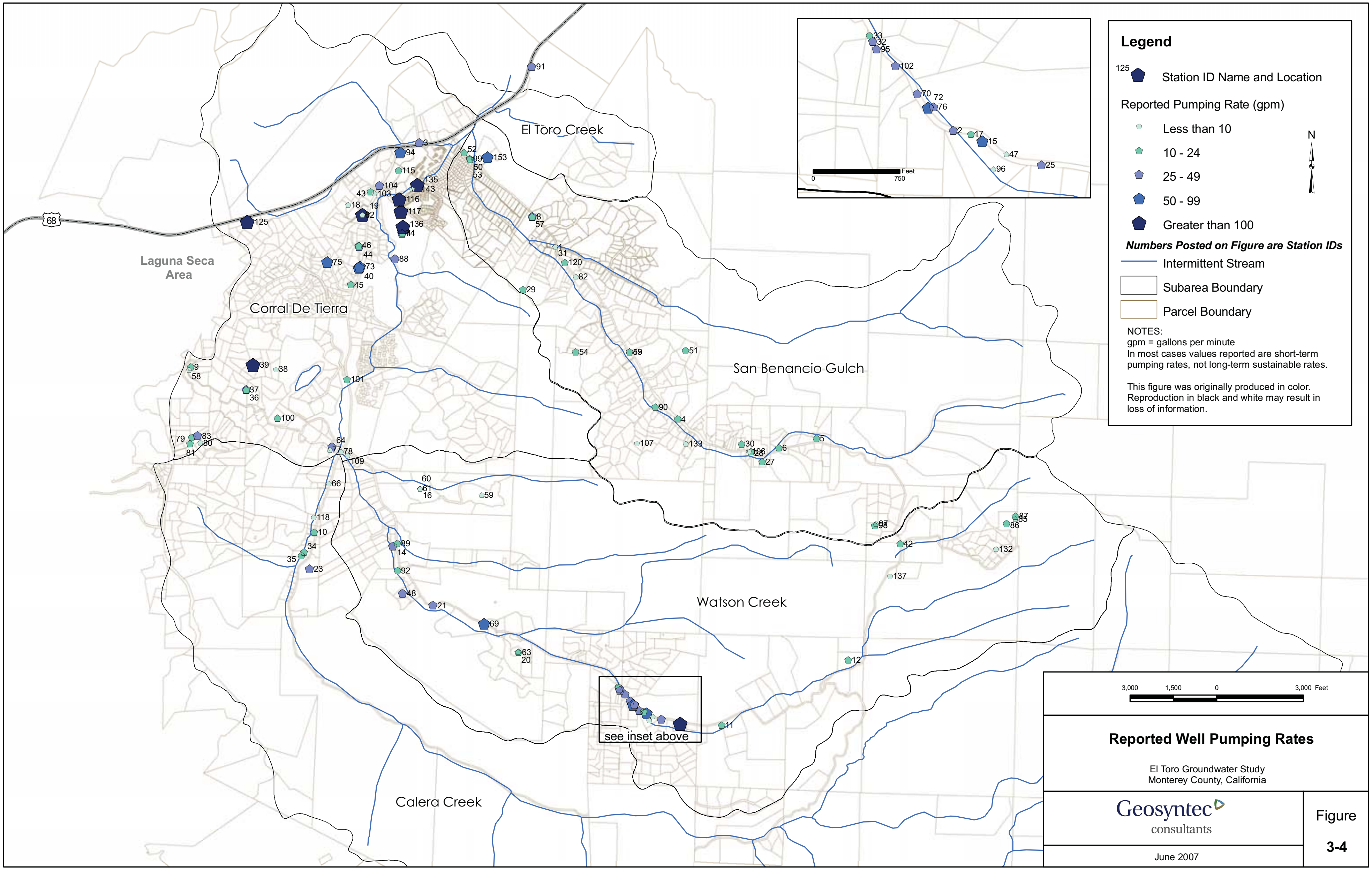
---State and MCHD use a Peaking Factor of 2.25. (State of CA Code of Regulations, Title 22, Division 4, Chapter 16, Article 2, Section 64554 New and Existing Source Capacity, March, 2008).

---MPWMD uses a Peaking Factor of 1.5. (MPWMD; Procedures for Prepartation of Well Source and Pumping Impact Assessments, September, 2005, Revised May, 2006).

[10]: Peak Hourly Demand determined by calculating the average hourly flow during maximum day demand and multiplying by a peaking factor of 1.5 (State of Califorina Code of Regulations, Title 22, Division 4, Chapter 16, Article 2, Section 64554, March, 2008).

[11]: A 7% System Loss is Based on data from Canada Woods and Monterra Ranch Mutual Water Systems, Monterey County, 2008 to present.

[12]: A 30% Treatment Loss could be used for POU Reverse Osmosis (RO) system (Axiom Engineering, 2022).



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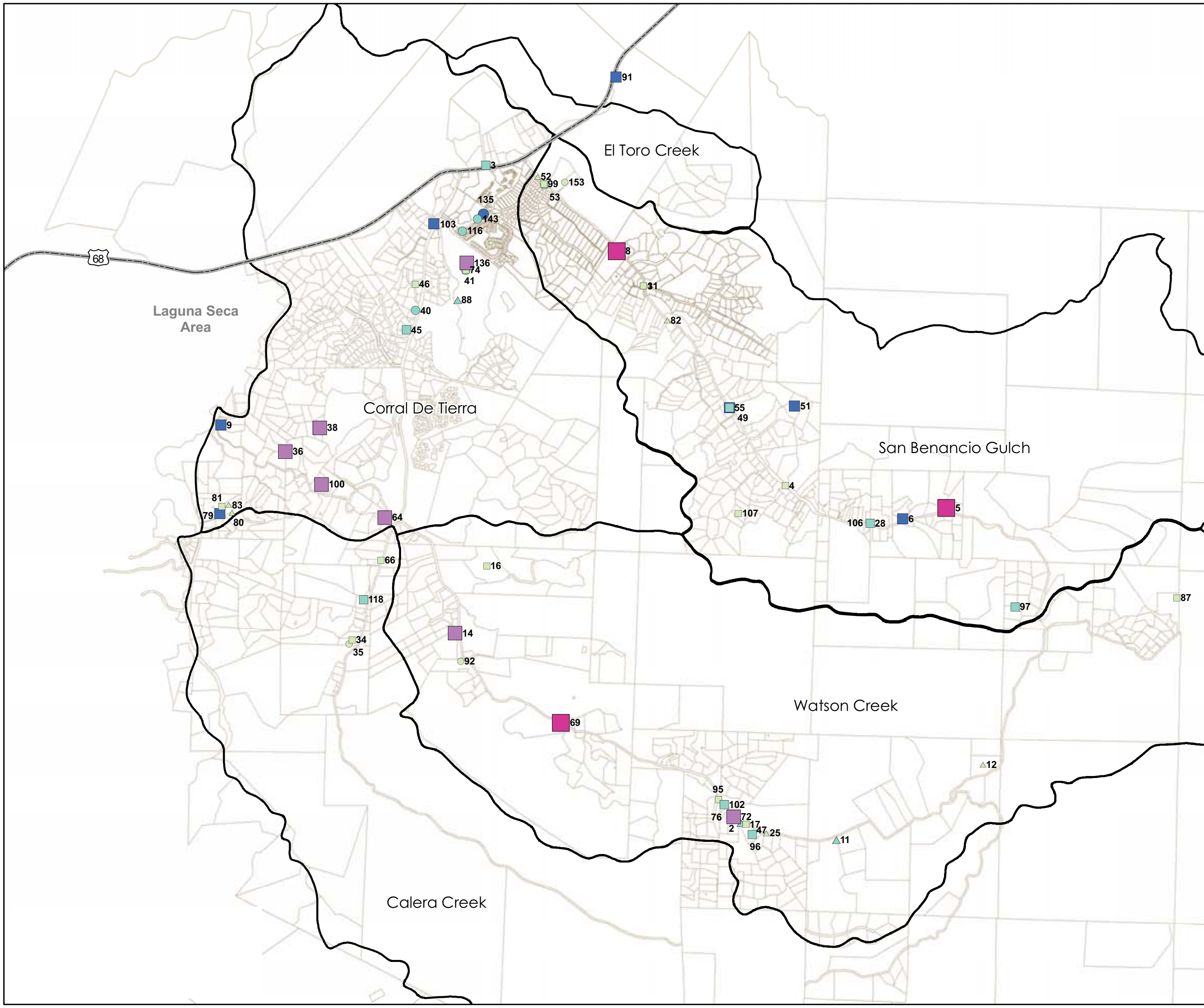

Transmissivity

El Toro Groundwater Study
Monterey County, California

Geosyntec consultants

June 2007

Figure 4-2

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Table 3
Compiled Aquifer Paratmeters of Transmissity and Storage Coefficient
El Toro Groundwater Basin

Data Source	Type of Data	Transmissivity Value (gpd/ft)	Stoarge Coefficient (unitless)	Comments
Bierman Hydrogeologic (February 2015)	Pumping Test	3.92×10^{3}	3.31×10^{-4}	Transmissivty value based on average of 4-wells (Oaks, Encina Hills, Rustad, Lagana) using later-time pumping data (72hr test). Storativity value based on average of 4-observation wells data.
	Recovery Test	8.21×10^{2}	2.51×10^{-3}	Transmissivty values based on average of 4-wells (Oaks, Encina Hills, Rustad, Lagana) using recovery-time data. Storativity value based on single well observation well data.
	Average	2.29×10^{3}	1.4×10^{-3}	Transmissivity value is average of the 4-wells average values. Storativity value based on average of single point and 4-point observation well data.
Geosytec Consultants (July 2007)	Specific Capacity	5.83×10^{3}	NA	Transmissity value considered overestimated as specific capacity data is short-term that generally provide overly optimisitic estimates of transmissivity that do not reflect steady-state pumping conditions.
	Pumping Test	8.15×10^{2}	NA	Transmissivity value from compilation of pumping test on-file at MCEHB. There is no mention of wheter the value generated is from early, late or recovery test data analyzed.
	Pumping Test	2.09×10^{3}	NA	Transmissivity value from specific pumping test conducted by Geosyntect for the 2007 Report. There is no mention of whether the value genertaed is from early, late or recovery test data analyzed.
	Average	4.39×10^{3}	1.0×10^{-1}	Transmissivity value is average of all of Geosyntec compiled values. This average T-value is considered an overestimated value likely caused by inclusion of the Specific Capacity value used in the average. Storativity value derviation is not noted in the report but is a conservative value based on being just less than the average value of alluvial formation storage coefficients (0.16 unitless).
Todd Engineers (October 2010)	Pumping Test	3.50×10^{3}	5.0×10^{-2}	Transmissivity value based on 48hr pumping test on Oaks Well using later-time pumping data. Storativity value derviation is not noted in the report but is a conservative value based on being just less than the average value of alluvial formation storage coefficients (0.16 unitless).
2023 Values to be used	Averages	**2.9×10^{3}**	**7.5×10^{-2}**	T & S values are based on highlighted average above and are considered the most reasonable values for the on/offsite impact analysis.

<u>In summary based on the data reviewed and compiled above:</u>

The T-value used in this offsite theoretical distance-drawdown analysis is a average of the above three highlighed values as they are most representative, specifically $T = 2.9 \times 10^{3}$

The S-value used in this offsite theoretical distance-drawdown analysis is the average of the values used in the 2007 Geosyntec Report and 2010 Todd Engineers Report, specifically $S = 7.5 \times 10^{-2}$

<u>Sources:</u>

Bierman Hydrogeologic, 2015; *72hr Constant Rate Well Pumping & Aquifer Recovery Test on Ambler Oaks and Encina Hills Wells for Harper Canyon Subdivision, Monterey County, California.*

Geosyntec Consultants, 2007; *El Toro Groundwater Study, Monterey County, California.*

Todd Engineers, 2010; *Project Specific Hydrogelogic Report - Harper Canyon Realty, LLC Subdivision.*

Table 4

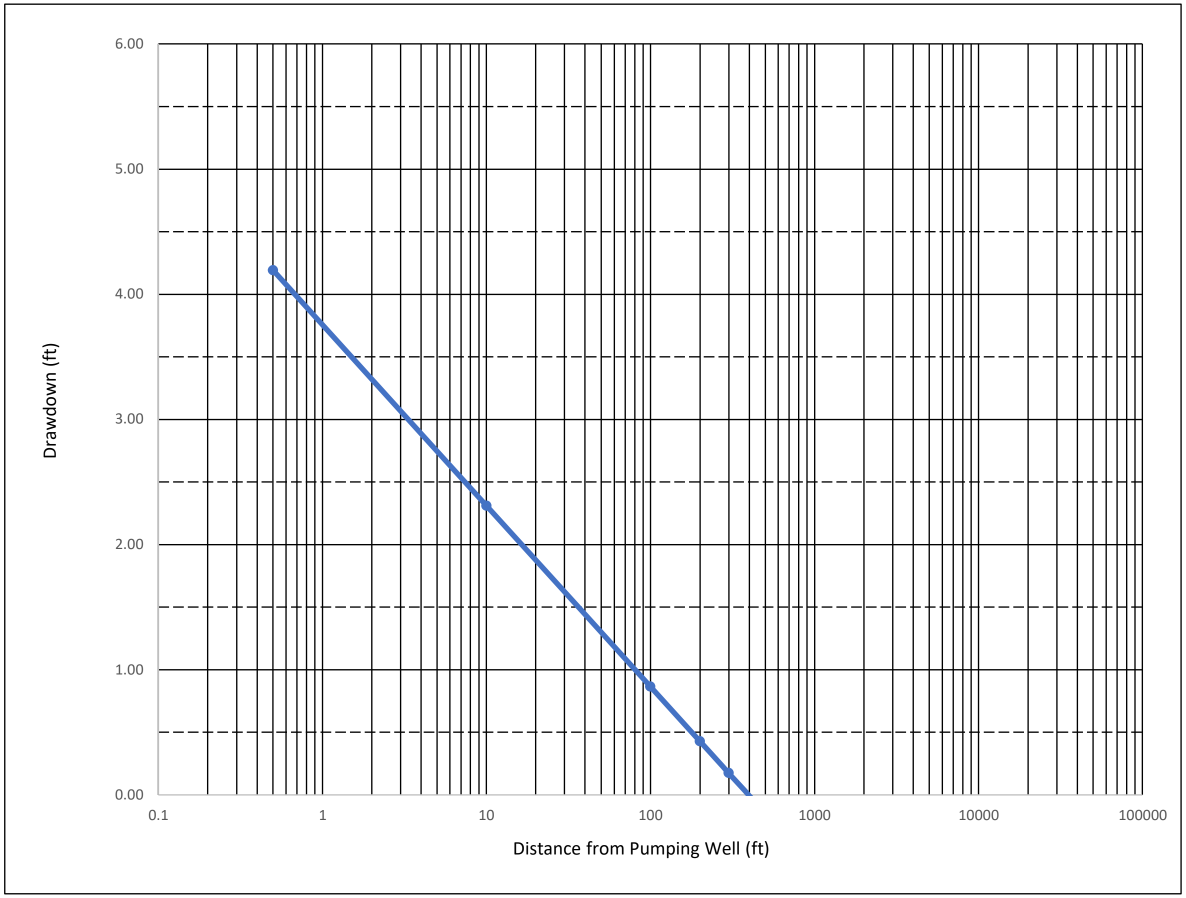
Variables & Sources

Qiw#1	=	3.97	Pumping 24/7/364.5 at a pumping rate (gpm) that would produce a volume produced by the cycled well pumping rate (7.95 gpm) for Non-Commercial Ag Use (Table 2 - Water Demand).
Qwi#2	=	3.97	Pumping rate (gpm) for the last half day to make 365 days
T	=	2900.00	Transmissivty Value (gpd/ft) from average of Bierman Hydrogeologic (Feb 2015), Geosyntec (July 2007) & Todd Engineers (Oct 2010) Reported values.
tiw#1	=	364.5	Based on Intermitent Pumping 12hr/day, 7days/wk for 1year
tiw#2	=	0.5	
r	=	0.5	Radial distance (in feet) from pumping well
	=	10	
	=	100	
	=	200	
	=	300	
	=	400	
	=	500	
	=	600	
	=	700	
	=	800	
	=	900	
	=	1000	
S	=	7.50E-02	Based on Avg of Geosyntec 2007 and Todd Engineers 2010 Reports

RESULTS

r (ft)	Dd
0.5	4.19
10	2.31
100	0.86
200	0.43
300	0.17
400	-0.01
500	-0.15
600	-0.26
700	-0.36
800	-0.44
900	-0.52
1000	-0.58

Theoretical Distance - Drawdown Analysis Pumping at Average Annual Demand for 1-Year



Theoretical Calculated Radius of Influence = 400 ft

Closest Neighboring Wells = 515 ft and 535 ft (Figure 1) and therefore are not considered to be impacted.

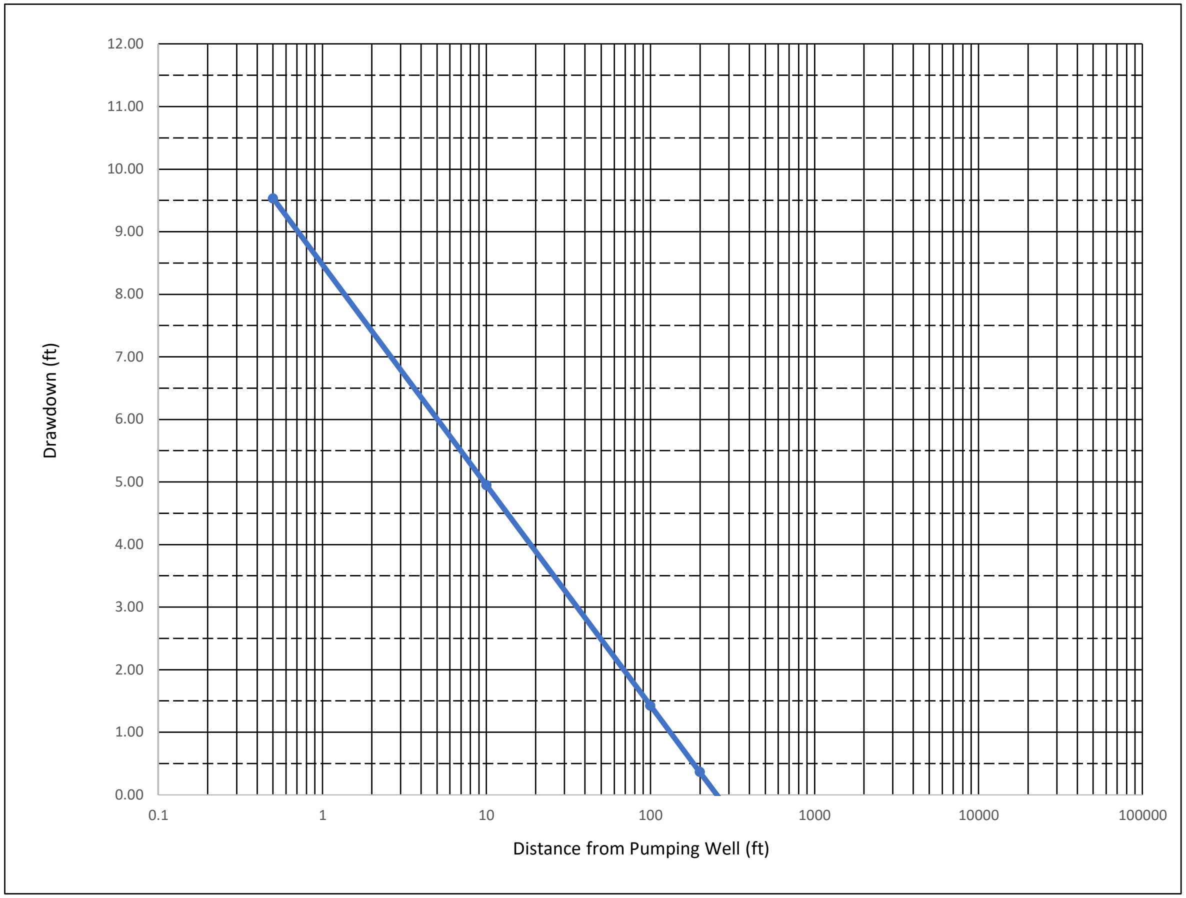
Table 5

Variables & Sources			
Qiw#1	=	3.97	Pumping 24/7/364.5 at a pumping rate (gpm) that would produce a volume produced by the cycled well pumping rate (7.95 gpm) for Non-Commercial Ag Use (Table 2 - Water Demand).
Qwi#2	=	3.97	Pumping rate (gpm) for the last half day to make 365 days
T	=	1190.00	Transmissivty Value (gpd/ft) Geosyntec (July 2007) Report from well in the immediate area.
tiw#1	=	364.5	Based on Intermitent Pumping 12hr/day, 7days/wk for 1year
tiw#2	=	0.5	
r	=	0.5	Radial distance (in feet) from pumping well
	=	10	
	=	100	
	=	200	
	=	300	
	=	400	
	=	500	
	=	600	
	=	700	
	=	800	
	=	900	
	=	1000	
S	=	7.50E-02	Based on Avg of Geosyntec 2007 and Todd Engineers 2010 Reports

RESULTS

r (ft)	Dd
0.5	9.53
10	4.95
100	1.42
200	0.36
300	-0.26
400	-0.70
500	-1.04
600	-1.32
700	-1.55
800	-1.76
900	-1.94
1000	-2.10

Theoretical Distance - Drawdown Analysis Pumping at Average Annual Demand for 1-Year



Theoretical Calculated Radius of Influence = 270 ft

Closest Neighboring Wells = 515 ft and 535 ft (Figure 1) and therefore are not considered to be impacted.

Table 6

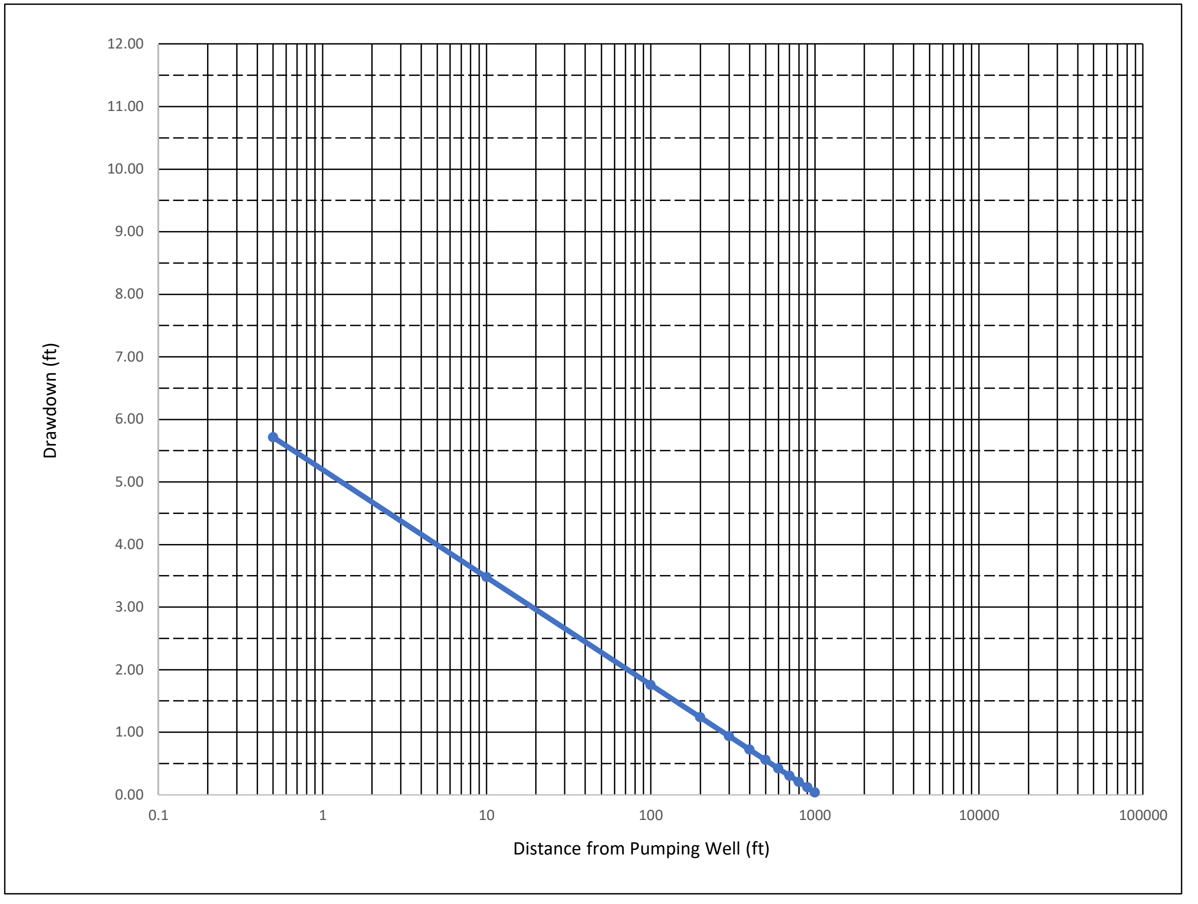
Variables & Sources

Qiw#1	=	4.72	Pumping 24/7 for 50years at a pumping rate (gpm) that would produce a volume produced by the cycled well pumping rate (9.45 gpm) for Non-Commercial Ag Use (Table 2 - Water Demand).
Qwi#2	=	4.72	Pumping rate (gpm) for the last half day
T	=	2900.00	Transmissivty Value (gpd/ft) from average of Bierman Hydrogeologic (Feb 2015), Geosyntec (July 2007) & Todd Engineers (Oct 2010) Reported values.
tiw#1	=	18,250	Based on Intermitent Pumping 12hr/day, 7days/wk for 50-years
tiw#2	=	0.5	
r	=	0.5	Radial distance (in feet) from pumping well
	=	10	
	=	100	
	=	200	
	=	300	
	=	400	
	=	500	
	=	600	
	=	700	
	=	800	
	=	900	
	=	1000	
S	=	7.50E-02	Based on Avg of Geosyntec 2007 and Todd Engineers 2010 Reports

RESULTS

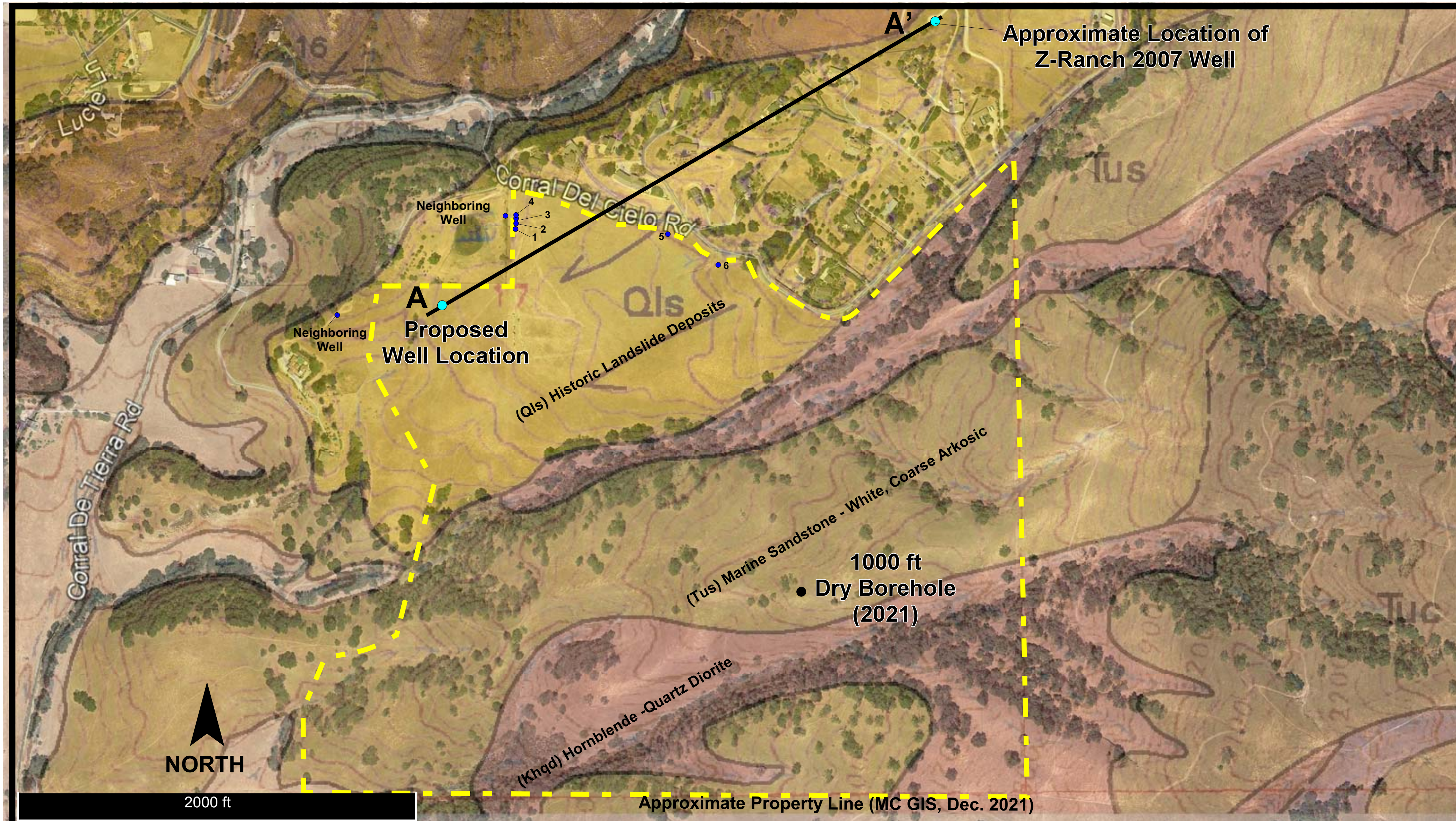
r (ft)	Dd
0.5	5.71
10	3.48
100	1.76
200	1.24
300	0.94
400	0.72
500	0.56
600	0.42
700	0.30
800	0.20
900	0.12
1000	0.04

Theoretical Distance - Drawdown Analysis Pumping at Average Annual Demand for 1-Year



Theoretical Calculated Radius of Influence = 1,000 ft

Closest Neighboring Wells = 515 ft and 535 ft (Figure 1) and therefore are not considered to be impacted.



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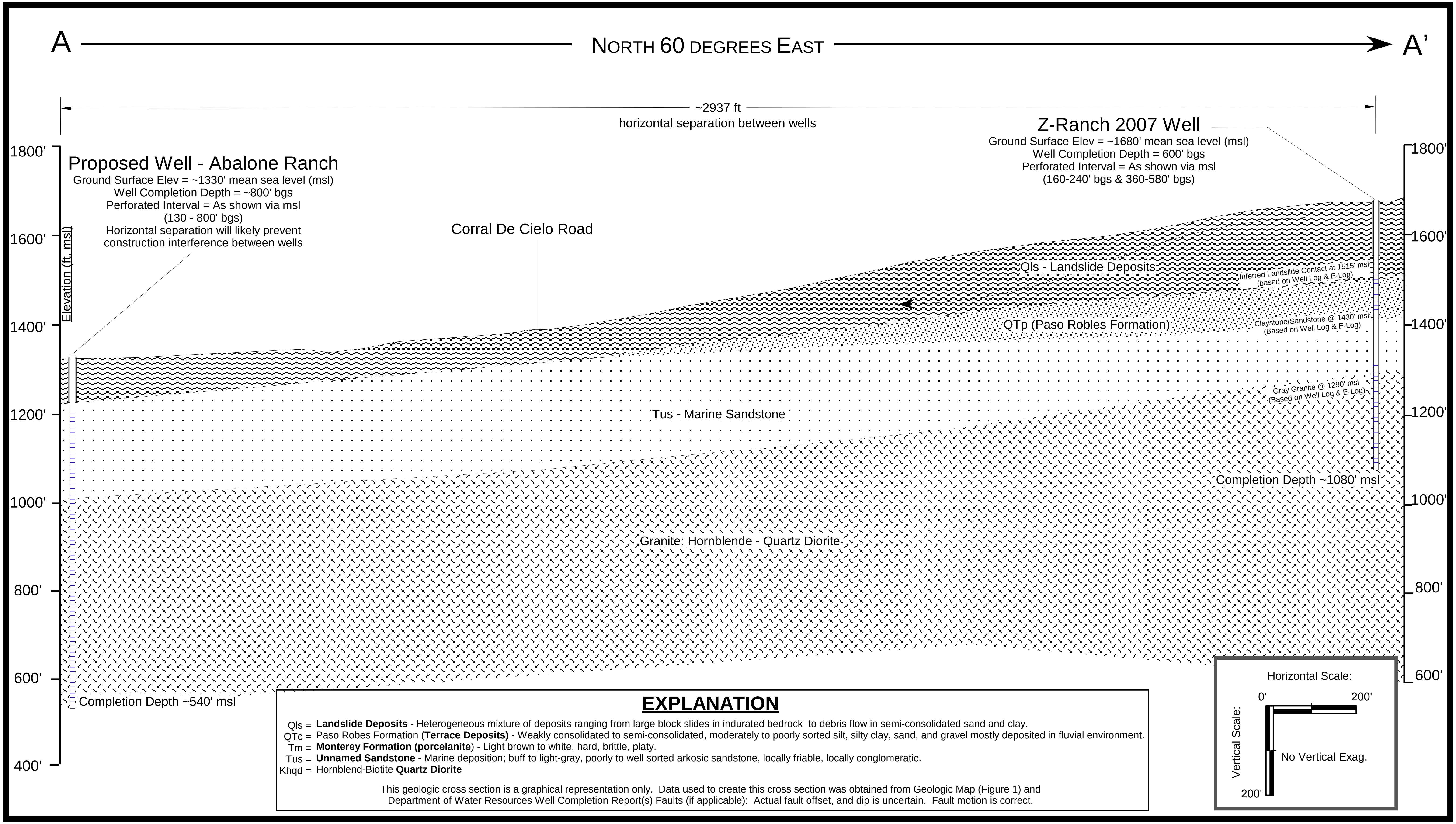
Hydrogeologic Consulting & Water Resource Management

GEOLOGIC UNDERLAY W/LINE OF GEOLOGIC SECTION A-A'
18000 CORRAL DE CIELO, SALINAS
MONTEREY COUNTY, CALIFORNIA

FIGURE 2

By: AB; 12/23/21
Christensen/Figures/GeologicUnderlay



BIERMAN Hydrogeologic

A Professional Company

Hydrogeologic Consulting & Water Resource Management

CONCEPTUAL GEOLOGIC CROSS SECTION A-A'

18000 CORRAL DE CIELO ROAD

SALINAS, MONTEREY COUNTY, CALIFORNIA

FIGURE 3

AB; 12/32/21
Christensen/Figures/A-A'