## APPENDIX 5.6

GEOLOGIC AND GEOTECHNICAL STUDY EAST GATEWAY PROJECT
LEIGHTON & ASSOCIATES – JULY 12, 2012

# GEOLOGIC AND GEOTECHNICAL STUDY
# EAST GATEWAY PROJECT
# WITHIN AND EAST OF THE SOUTHEASTERN PORTION OF THE CITY OF SANTA PAULA, VENTURA COUNTY, CALIFORNIA

Prepared for:

**CITY OF SANTA PAULA**

City Hall
970 East Ventura Street
Santa Paula, California 93060-3637

Project No. 032544-001

July 12, 2012

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

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To: City of Santa Paula
City Hall
970 East Ventura Street
Santa Paula, California 93060-3637

Attention: Ms. Janna Minsk, AICP, Planning Director

Subject: Geotechnical and Geologic Study, East Gateway Project, Within and East of the Southeastern Portion of the City of Santa Paula, Ventura County, California

In accordance with your authorization, Leighton and Associates, Inc. (Leighton) has conducted a geotechnical and geologic study for the East Gateway Project within and east of the southeastern portion of the City of Santa Paula, in unincorporated Ventura County, California. The purpose of this study has been to review the general geologic and geotechnical conditions of the land encompassed by the East Gateway Project, and to identify potential geologic and geotechnical hazards that may be present for input into an Environmental Impact Report (EIR).

In performing the review, we have referred to California Geological Survey (CGS) Notes regarding preparation of geologic reports as well as the Geology and Soil portion of Appendix G, California Environmental Quality Act (CEQA) checklist of the CEQA Guidelines. Specific items addressed in our study include:

- Onsite earth units and their general engineering characteristics (including settlement, collapse or expansion)
- Faulting and seismicity
- Seismic related ground failure (secondary seismic hazards)
- Seismic related ground failure (secondary seismic hazards)

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- Slope stability and landslides
- Erosion

This report summarizes our findings and conclusions with respect to the East Gateway Project, identifies potential geologic hazards and presents measures to mitigate the hazards. Our study has incorporated the data collected during our background review and field reconnaissance.

Detailed geologic and geotechnical studies should be conducted for future development to evaluate geotechnical aspects of the specific development design. Such studies should include evaluation of compressible soils, faulting and seismic hazards, corrosive soils, and other measures needed to develop specific recommendations for the design of future improvements.

We appreciate this opportunity to provide our services. If you have any questions, please contact this office at your convenience.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

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# 1.0 INTRODUCTION

## 1.1 Purpose and Scope of Work

The purpose of this study has been to review the general geologic and geotechnical conditions of the land encompassed by the East Gateway Project (Site) within and adjacent to the City of Santa Paula (City), as shown on Figure 1 (Site Location Map), and to identify potential geologic and geotechnical hazards that may be present. This information will be included in an Environmental Impact Report (EIR) being prepared for annexation of the majority of the Site that is not already within City limits.

## 1.2 Methodology

This geologic and geotechnical study was conducted as follows:

- Available published reports and geologic maps were reviewed and the data analyzed. Historical aerial photographs were also reviewed. References and photographs reviewed are listed in Appendix A.
- A site reconnaissance was conducted to observe existing conditions onsite and the general surface distribution of geologic materials.
- The data obtained from our background review and site reconnaissance was evaluated and analyzed by a Professional Geotechnical Engineer and Certified Engineering Geologist.
- Preparation of this report addressing the geologic, seismic, and geotechnical engineering aspects of the Site. This report is based on our experience in the region and data obtained from the above-mentioned sources.

## 1.3 Site Location and Project Description

The East Gateway Project consists of two elements. The Project Area is approximately 108 acres in size outside City limits and will be annexed into the City. The Specific Plan Area straddles the southeastern City boundary and is approximately 36.5 acres in size.

In general, the Project Area includes the following currently unincorporated areas, as generally depicted on Figure 1:

- Land located south of State Route 126 and north of Lemonwood Drive (approximately five acres);
- An area located to the east of the current city limits (generally east of Grant Line Street, if extended south), north of State Route 126 and south of the East Area 1 Specific Plan Area (generally south of the Southern Pacific Railroad) (approximately 58 acres); and
- Land located east of Hallock Drive and south of (and including) Telegraph Road (approximately 37 acres).

Much of the Specific Plan Area overlaps with the eastern portion of the Project Area. In general, the Specific Plan Area includes the following area, as generally depicted on Figure 1:

- Land located east of Hallock Drive and south of the railroad (approximately 36.5 acres), including a 7-acre parcel on the west margin that extends into incorporated portions of the City.

Annexation of the Project Area is proposed to eliminate “islands” of unincorporated land within the existing city limits and within city limits when the annexation of the East Area 1 Planning Area is completed. Existing zoning and land use designations for the Project Area and the Specific Plan Area are shown by the City of Santa Paula (1998b; 2010); proposed zoning and land use designation are shown by the City of Santa Paula (2011).

Historical aerial photographs were reviewed for information regarding past uses of the Site. Aerial photographs were reviewed for the following years: 1938, 1952, and 1981.

In the 1938 aerial photograph the Site appears to be primarily developed for agricultural use. A small triangular area of residential development is visible adjacent to the east of Santa Paula Creek and south of Telegraph Road. Sparse residential development is visible west of Santa Paula Creek. Residential and light commercial development is visible on the north side of Telegraph Road (Figure 1). Santa Paula Creek appears to cross the far western end of the Site. The land north of the Southern Pacific Railroad line (Figure 1) appears undeveloped. A large structure was located near the northeast corner of the Site. To the north and east of the Site, the land was predominately developed for agricultural and residential use. To the south of the Site, the land was largely undeveloped or developed for agricultural use, and was within the floodplain of the Santa Clara River. The Santa Clara River is visible to the south. To the west, the land was developed for residential, agricultural and commercial use.

In the 1952 aerial photograph, the Site and surrounding land do not appear to have changed significantly. Santa Paula Creek appears to have been confined to a concrete-lined channel. Additional residential development appears to have taken place adjacent to Santa Paula Creek and south of Telegraph Road. Additional residential and what appears to be light commercial development had been added to the area adjacent to the west of Santa Paula Creek north and south of Telegraph Road. To the north and east of the Site, the land was predominately developed for agricultural use or was vacant. To the south of the Site the land was largely undeveloped or developed for agricultural use and within the floodplain of the Santa Clara River. The Santa Clara River is visible to the south. To the west, the land was developed for residential and light commercial use.

In the 1982 aerial photograph, State Route 126 is clearly visible adjacent to the south of the Site (Figure 1). The agricultural development within the Site appears to have been in the process of being replaced by light commercial development. Light commercial and residential development appears to have been expanding north and south of Telegraph Road east of Santa Paula Creek. To the north and east of the Site, the land was predominately developed for agricultural use. To the south of the Site, the land was largely undeveloped and within the floodplain of the Santa Clara River. The Santa Clara River is visible to the south. To the west, the land was developed for residential and light commercial use.

# 2.0 GEOTECHNICAL CONDITIONS

## 2.1 Regional Geologic Setting

The Site is located between South Mountain to the south and Santa Paula Ridge to the north within the Transverse Ranges Geomorphic Province. The Transverse Ranges are generally characterized by east-to-west-trending folds and faults. The area contains extensive Tertiary marine and non-marine sedimentary units and Quaternary alluvial and landslide deposits (Dibblee, 1992). Minor amounts of Tertiary-aged andesite-basalt are present in South Mountain. Major structural features in the vicinity include the Oak Ridge fault, the Long Canyon Syncline, the Long Canyon Anticline, and the South Mountain Anticline to the south (Dibblee, 1992). Major structural features to the north include the Orcutt fault, the Timber Canyon fault, the Sisar fault, the Cayetano fault, the Santa Paula Ridge Anticline, the Pine Canyon Anticline, and the Echo Canyon Anticline (Dibblee, 1990). The present landscape in the area has been formed by tectonic (i.e. mountain-building) forces and erosion.

## 2.2 Earth Units

Quaternary alluvium of the Santa Clara River and Santa Paula Creek has been mapped in the area of the Site (Dibblee, 1992). The alluvial soil is expected to consist of silts, sands and gravel, and extend to depths on the order of 200 feet below the ground surface. Soft sedimentary bedrock of the San Pedro Formation is expected to be present beneath the alluvium (California Department of Water Resources, DWR, 2003). A regional geologic map of the area is provided as Figure 2.

## 2.3 Regional Faulting and Seismicity

Southern California is a geologically complex area with numerous fault systems including strike-slip, oblique, thrust and blind thrust faults. Therefore, any specific area is subject to seismic hazards of varying degree, depending on the proximity and earthquake potential of nearby active faults, and the local geologic and topographic conditions. Seismic hazards include primary hazards from surface rupturing of rock and soil materials along active fault traces, and secondary hazards resulting from strong ground shaking. Based on a review of Weber et al., (1975), the closest mapped fault to the Site is the Oak Ridge fault, located approximately 1,000 feet to the south of the Site (Figure 4). This and other faults are discussed in the following section.

### 2.3.1 Surface Rupture

To protect structures from the hazard of surface ground rupture along a fault line, the California Geological Survey (CGS), under the State-mandated Alquist-Priolo (AP) Act of 1972, has delineated "Earthquake Fault Zones" that encompass active or potentially active faults that are both "sufficiently active" and "well defined" (CGS, 2002; Bryant and Hart, 2007). Development projects within these zones that are intended for human occupancy require detailed investigations to evaluate faulting. An active fault, as defined by State law, is a fault that has been proven by direct geologic methods, such as trenching, to have offset Holocene-age sediments (11,000 years old or younger). A fault that has been proven by direct geologic evidence *not* to have moved during the last 11,000 years is termed inactive.

The City of Santa Paula has also established Earthquake Fault Zones along faults within the City's sphere of influence. These include faults mapped by the state as part of the AP Act as well as faults recognized by the City as warranting additional study (City of Santa Paula, 1998a).

No State of California or City of Santa Paula designated Earthquake Fault Zones (CGS, 2000, 2002; City of Santa Paula, 1998a) have been mapped transecting the Site. Currently, the closest Earthquake Fault Zone with respect to the Site is designated along the Thorpe fault, located approximately 1.6 miles northeast of the study area. Thus, the risk of damage associated with surface fault rupture is considered to be low.

### 2.3.2 Nearby Active Faults

Numerous active faults have been mapped within this area of southern California (Figure 4). The most significant fault systems that could produce significant ground shaking at the Site include the Oak Ridge fault and the San Cayetano fault. Even though portions of these faults may be considered active per the criteria of the California Geological Survey (Bryant and Hart, 2007), not all portions of all of the faults have been included within Alquist-Priolo Earthquake Fault Zones by the California

Geological Survey, even though Holocene activity of certain fault segments may have been demonstrated by other workers. Such inclusion is typically limited by the resources available to the California Geological Survey to perform studies that would warrant inclusion.

The characteristics of the known nearby fault systems that are discussed below were gathered from the Southern California Earthquake Data Center website (http://www.data.scec.org/index.html), and supplemented with information from other sources, where noted.

*Oak Ridge Fault*

The Oak Ridge fault is a southeast-dipping thrust fault; at its nearest approach, it is located approximately 1,000 feet south of the southern portion of the Site (Figure 4). The Oak Ridge fault is approximately 54 miles long, and is thought to have a slip rate between 3.5 and 6 millimeters per year. The Oak Ridge Fault strikes generally parallel to State Route 126 from the town of Piru in the east extending out to sea to a point approximately 12 miles due south of Santa Barbara. This fault is expected to produce earthquakes of magnitude (Mw) 6.5 to 7.5.

*San Cayetano Fault*

The San Cayetano fault is a north dipping thrust fault, located approximately 4.5 miles north of the Site. The fault is approximately 27 miles long, and is thought to have a slip rate between 1.3 and 9 millimeters per year. This fault is estimated to be capable of producing earthquakes of magnitude (Mw) 6.5 to 7.3. It may have produced an earthquake on December 21, 1812 that exceeded magnitude 7.0 (Dolan and Rockwell, 2001).

*Ventura Fault*

The Ventura fault is a north-dipping thrust fault, located approximately 12 miles southwest of the Site. The fault is approximately 12 miles long, and is thought to have a slip rate of approximately 0.5 to 1.5 millimeters per year. This fault is estimated to be capable of producing earthquakes of magnitude (Mw) 6.0 to 6.8.

*Bailey Fault*

The Bailey fault is a left-lateral, oblique reverse fault, located approximately 10 miles south of the Site. The fault is approximately 12 miles long. The maximum potential earthquake magnitude and the slip rate are unknown. The fault is thought to have last ruptured during the late Quaternary.

*Red Mountain Fault*

The Red Mountain fault is a north-dipping, thrust fault, located approximately 13 miles west of the Site. The fault is approximately nine miles long and thought to have a slip rate of 0.4 to 1.5 millimeters per year. This fault is estimated to be capable of producing earthquakes of magnitude (Mw) 6.0 to 6.8.

*Simi Fault*

The Simi fault is a north dipping fault with a left-lateral reverse sense of slip. It is approximately 17 miles long and, at its closest approach, is approximately 8.5 miles south of the Site. Based on studies performed by Hitchcock et al. (2001), the most recent rupture of the fault occurred about 1,350 years before present and produced approximately 6.5 feet to 8 feet of total oblique slip displacement; this is consistent with a magnitude 7 earthquake.

A listing of faults located within 62 miles (approximately 100 kilometers) of the Site is provided below (Blake 2000a).

| Fault Name | Distance mi (km) | Maximum Earthquake (Mw) |
|---|---|---|
| OAK RIDGE (Onshore) | 0.9 (1.4) | 6.9 |
| SAN CAYETANO | 5.3 (8.5) | 6.8 |
| VENTURA - PITAS POINT | 5.5 (8.9) | 6.8 |
| SIMI-SANTA ROSA | 7.0 (11.3) | 6.7 |
| M.RIDGE-ARROYO PARIDA-SANTA ANA | 10.3 (16.5) | 6.7 |
| SANTA YNEZ (East) | 12.4 (20.0) | 7.0 |
| RED MOUNTAIN | 13.7 (22.0) | 6.8 |
| MONTALVO-OAK RIDGE TREND | 15.2 (24.5) | 6.6 |
| SANTA SUSANA | 15.9 (25.6) | 6.6 |
| CHANNEL IS. THRUST (Eastern) | 16.7 (26.9) | 7.4 |
| HOLSER | 17.4 (28.0) | 6.5 |
| OAK RIDGE(Blind Thrust Offshore) | 17.9 (28.8) | 6.9 |
| ANACAPA-DUME | 18.8 (30.2) | 7.3 |
| NORTHRIDGE (E. Oak Ridge) | 18.9 (30.4) | 6.9 |
| MALIBU COAST | 21.6 (34.7) | 6.7 |
| SAN GABRIEL | 23.5 (37.9) | 7.0 |
| BIG PINE | 26.9 (43.3) | 6.7 |
| SANTA MONICA | 31.8 (51.2) | 6.6 |
| SIERRA MADRE (San Fernando) | 32.4 (52.2) | 6.7 |
| SAN ANDREAS - 1857 Rupture | 32.6 (52.5) | 7.8 |
| SAN ANDREAS - Carrizo | 32.6 (52.5) | 7.2 |
| GARLOCK (West) | 33.3 (53.6) | 7.1 |
| PLEITO THRUST | 34.0 (54.7) | 7.2 |
| SANTA YNEZ (West) | 34.6 (55.7) | 6.9 |
| NORTH CHANNEL SLOPE | 35.8 (57.6) | 7.1 |
| VERDUGO | 36.3 (58.4) | 6.7 |
| SANTA CRUZ ISLAND | 37.0 (59.5) | 6.8 |
| PALOS VERDES | 38.6 (62.2) | 7.1 |
| SAN ANDREAS - Mojave | 38.9 (62.6) | 7.1 |
| HOLLYWOOD | 39.5 (63.6) | 6.4 |
| SIERRA MADRE | 43.0 (69.2) | 7.0 |
| NEWPORT-INGLEWOOD (L.A.Basin) | 44.5 (71.6) | 6.9 |
| WHITE WOLF | 45.5 (73.3) | 7.2 |
| COMPTON THRUST | 48.9 (78.7) | 6.8 |

| Fault Name | Distance mi (km) | Maximum Earthquake (Mw) |
|---|---|---|
| RAYMOND | 49.5 (79.6) | 6.5 |
| ELYSIAN PARK THRUST | 52.7 (84.8) | 6.7 |
| SANTA ROSA ISLAND | 54.3 (87.4) | 6.9 |
| CLAMSHELL-SAWPIT | 56.1 (90.3) | 6.5 |
| LOS ALAMOS-W. BASELINE | 61.1 (98.3) | 6.8 |

### 2.3.3 Seismic Shaking

The probability that the Site will be subject to strong seismic shaking from a moderate to large earthquake on a major active fault in southern California is high. The intensity of ground shaking at a given location depends primarily on the earthquake magnitude, faulting mechanism, distance and depth from the source (hypocenter) and the site response characteristics. The intensity of shaking is generally amplified in areas underlain by deep deposits of loose, unconsolidated soils. In the study area, the hazard posed by seismic shaking is considered high, due to the proximity of known active faults. A map showing recent earthquakes in the region is provided as Figure 5.

The computer program EQSEARCH (Blake, 2000b) was used to evaluate past, documented seismic activity near the Site. This program performs an automated search of a catalog of historic southern California earthquakes, and computes the distance from a project site to each of the earthquake epicenters within a specified search radius of 62 miles (approximately 100 kilometers). From the computed distances, the program also estimates (using an appropriate attenuation relationship) the peak horizontal ground acceleration that may have occurred at the Site due to each earthquake. A database of recorded earthquakes with magnitudes of 4.0 or larger between 1800 and 2011 was used in the analysis. The results of the analysis, including an earthquake epicenter map for events from 1800 to 2011, and a listing of historic earthquakes with an epicentral distance of less than 62 miles from the Site, are presented in Appendix B.

The largest historical earthquake within the 62-mile radius of the Site was the 1952, magnitude 7.7 Arvin-Tehachapi Earthquake that occurred on the White Wolf fault approximately 51 miles to the northeast. It is estimated to have produced a horizontal ground acceleration of 0.1g at the Site. A 1904, magnitude 4.6 earthquake occurred approximately 0.5 mile from the Site and resulted in an estimated horizontal ground acceleration of 0.16g within the Site, which is the earthquake event believed to have produced the highest estimated horizontal ground acceleration at the Site.

Peak Horizontal Ground Acceleration (PHGA) was estimated for the Site using the United States Geological Survey's 2008 Interactive Deaggregations utility. The results of this analysis indicate that the predominant modal earthquake has a PHGA of 1.1g with magnitude of approximately 6.8 ($M_W$) at a distance on the order of 2.2 kilometers for the Maximum Considered Earthquake (2% probability of exceedance in 50 years).

### 2.3.4 Secondary Seismic Hazards

Secondary effects of seismic shaking are non-tectonic processes that are directly related to strong seismic shaking. Ground deformation, including fissures, settlement, displacement and loss of bearing strength are expressions of these processes, and are among the leading causes of damage to improvements during moderate to large earthquakes. Secondary effects leading to ground deformation include liquefaction, lateral spreading, settlement, and landsliding. Other hazards indirectly related to seismic shaking are inundation, tsunamis, and seiches.

*Liquefaction*. Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sand and silt) are subjected to strong seismic ground motion of significant duration. These soils essentially behave similar to liquids, losing much of its shear strength. Improvements constructed on these soils may buckle, tilt or settle when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young sandy alluvium where the groundwater table is less than 50 feet below the existing ground surface (bgs).

According to the Seismic Hazard Zone Report for the Santa Paula 7.5-Minute Quadrangle, Ventura County, California (CGS, 2002a), the historically shallowest depth to groundwater in the vicinity of the Site ranges from approximately 20 feet below the existing ground surface at the southern boundary to greater than 40 feet below ground surface at the northern boundary (Figure 3). As shown in Figure 6, Liquefaction Hazard Maps prepared by the California Geological Survey, the area adjacent to Santa Paula Creek in the western portion of the Project Area, most of the eastern portion of the Project Area, and almost all of the Specific Plan Area of the Site is located within a potential liquefaction zone (CGS, 2002b). The City of Santa Paula General Plan, Safety Element liquefaction map shows the area as completely within a liquefaction zone (City of Santa Paula, 1998a). The presence of shallow groundwater historically, and loose sandy alluvial soils make liquefaction a potential hazard within the Site, and this will need to be studied on a case-by-case basis.

*Lateral Spreading*. Lateral spreading is a phenomenon where large blocks of intact, non-liquefied soil move down slope on a liquefied substrate of relatively large aerial extent. The mass moves toward an unconfined area, such as a descending slope or stream-cut bluff, or is known to move on slope gradients as gentle as 1 degree. The land in the vicinity of the Site is essentially flat, no slopes are present. As such, the potential for lateral spreading to occur at the Site may be low, but this will need to be studied on a case-by-case basis.

*Seismically Induced Settlement.* Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, loosely packed granular alluvial deposits are especially susceptible to this phenomenon. Poorly compacted artificial fills may also experience seismically induced settlement. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement. If settlement occurs, it could result in damage to improvements. There is the potential for seismically induced settlement to occur in areas underlain by alluvial deposits.

*Seismically Induced Landslides*: Marginally stable slopes may be subject to landsliding caused by seismic shaking. In most cases, this is limited to relatively shallow soil failures on steeper natural slopes, although deep-seated failures of oversteepened slopes are also possible. The Site is located on flat land (Figure 1) and thus, the potential for seismically induced landslides is considered to be low.

*Seismically Induced Inundation*: Strong seismic ground motion can cause dams and levees to fail, resulting in damage to structures and properties located downstream. Four up-gradient dams have the potential to inundate the Site: Pyramid Lake Dam, Lake Castaic Dam, Bouquet Canyon Dam, and Santa Felicia Dam. Details of each dam are shown in the table below:

| Name | Year Completed | Type of Dam | Storage Capacity (Acre-Feet) | Height (Feet) |
|---|---|---|---|---|
| Lake Pyramid Dam | 1973 | Earth-Rock Embankment | 180,000 | 444 |
| Lake Castaic Dam | 1973 | Earth Embankment | 327,700 | 360 |
| Bouquet Canyon Dam | 1934 Upgraded 1981 | Earth Fill | 36,505 | 190 |
| Santa Felicia Dam | 1955 | Earth Embankment | 100,000 | 236.3 |

Based on a review of the Safety Element of the City of Santa Paula's General Plan (City of Santa Paula, 1998a), each of these dams has been designed to withstand an earthquake of Mw 6.0, although the specific ground acceleration assumed for each design is not documented (City of Santa Paula, 1998a). Nonetheless, several of the active faults in the vicinity of the Site have the potential to generate earthquakes in excess of magnitude 6.0 (see Section 2.3.3 of this report). Failure of any of these dams could have a significant impact on the Site.

As an example, in 1928, failure of the San Francis Dam approximately 35 miles northeast of the Site flooded appreciable portions of the Santa Clara River Valley, including the City of Santa Paula north to East Santa Paula Street, near the high school. Loss of life and property occurred. Some of the dams currently upstream from Santa Paula are larger than the Saint Francis Dam. All of the dams listed in the table above are closer to the Site than the St. Francis Dam, and some are larger.

According to the Ventura County General Plan Hazard Appendix, the entire Site is located within a dam inundation zone (Ventura County, 2011).

*Tsunamis and Seiches:* A tsunami, or seismically generated sea wave, is generally created by a large earthquake that causes a sudden vertical displacement of the ocean floor. A seiche is an earthquake-induced wave in a confined body of water, such as a lake or reservoir. Damage from tsunamis is confined to coastal areas that are typically 20 feet or less above sea level. Since the average elevation of the Site is approximately 260 feet above mean sea level, the area is 13 miles from the coast, and is not located near any confined bodies of water, the risk of inundation from a tsunami or seiche is considered to be very low.

## 2.4 Slope Stability

The Site is located on flat terrain, and no significant slopes are present in or immediately surrounding the area. No areas of potential slope instability are shown on the Seismic Hazards Zone Map for the Santa Paula 7.5-Minute Quadrangle, Ventura County, California (CGS, 2002b) or the City of Santa Paula General Plan, Safety Element (1998a) at or adjacent to the Site.

Manufactured slopes and walls, if any, from developments within the area should be designed in accordance with current codes and standards, and the design should be reviewed from a geotechnical perspective. When so designed, the risk of slope instability is considered to be very low.

## 2.5 Groundwater

The Site is located within the Santa Paula sub-basin of the Santa Clara River Valley Basin. The Santa Paula sub-basin is bounded to the north by the impermeable rocks of the Topatopa Mountains and on the south by the impermeable rocks of South Mountain and by the Oak Ridge fault (DWR, 2003). The eastern boundary is defined by a bedrock constriction, which coincides with shallow groundwater. The western boundary of the sub-basin is defined by the point at which the dip of the water table steepens toward the Oxnard and Mound sub-basins (DWR, 2003). Water-bearing formations within the sub-basin include the upper Pleistocene and Holocene alluvium and the lower Pleistocene San Pedro Formation (DWR, 2003). The alluvium typically consists of silts and sands with lenses of coarser, more permeable material. The alluvium is approximately 200 feet thick in the basin. The San Pedro Formation consists of finer sands and gravels than the overlying alluvium and is up to 4,000 feet thick at the deepest point in the sub-basin (DWR, 2003). Groundwater flows from northeast to southwest, generally along the direction of flow of the Santa Clara River (DWR, 2003).

Historically, groundwater beneath the Site was as shallow as 20 feet below ground surface at the southern portion of the Site and greater than 40 feet below ground surface at the northern portion of the Site (CGS, 2002a).

## 2.6 Soil Engineering Characteristics

The following findings are based on our review of existing data and our experience in the Santa Paula area. Geotechnical investigations should be conducted for individual improvement projects within the Site to provide recommendations for grading, overexcavation and removal of compressible soils, fill placement, wall design and other geotechnical aspects of proposed improvements.

### 2.6.1 Compressible and Collapsible Soil

Soil compressibility refers to a soil's potential for settlement when subjected to increased loads, such as from a fill surcharge. Based on our experience in the area, topsoil, and the upper portion of the young alluvial soil are generally expected to be slightly to moderately compressible. Uncontrolled fill would be considered compressible throughout the entire depth.

Collapse potential refers to the potential settlement of the alluvial soil under existing stresses (loads) upon being wetted. Based on our experience, the alluvial soil underlying the area is expected to have a slight to moderate collapse potential.

### 2.6.2 Expansive Soils

The upward pressures induced by expansive soils can have significant effects upon structures and other surface improvements. Shrinkage of these soils during drying can also cause damage as structural support is removed. Based on our experience in the Santa Paula area, the alluvial soils present within the Site vicinity are expected to exhibit a low expansion potential. Soils with a higher expansion potential (medium or greater) may be encountered locally. Testing to evaluate the expansion potential of the soil should be conducted in areas where improvements are planned.

Typical Classification of expansive soil is provided below.

Classification of Expansive Soil

| Expansion Index | Potential Expansion |
|---|---|
| 0-20 | Very Low |
| 21-50 | Low |
| 51-90 | Medium |
| 91-130 | High |
| Above 130 | Very High |

### 2.6.3 Corrosive Soils

Corrosive soils contain chemical constituents that may cause damage to construction materials such as concrete and ferrous metals. One such constituent is water-soluble sulfate, which, if high enough in concentration, can react with and damage concrete. Electrical resistivity, chloride content and pH level are indicators of the soil's tendency to corrode ferrous metals. Based on our experience, the soil in the area is expected to be corrosive to ferrous metals. Testing of the soils should be conducted in order to identify the corrosive potential of the earth materials in the area. If concrete structures are planned, sulfate testing should also be conducted to determine if special concrete will be required to withstand sulfate attack.

### 2.6.4 Rippability and Oversized Rock

The alluvial soils at the Site are expected to be readily excavated using conventional earthmoving methods. Oversized material could be generated depending on the design and specific site conditions and depth of excavation into the alluvial soils. Development designs should consider the presence of oversized materials such as cobbles and boulders at depth. If oversized materials are encountered, the design should be reviewed and additional geotechnical recommendations provided for oversized material placement.

#### 2.6.5 Suitability as Fill Material

The soils underlying the Site are generally suitable for use as compacted fill, provided they are free of debris, significant organic material, and oversized material. Moisture conditioning (either moistening or drying) will generally be needed in order to obtain the proper moisture content needed for compaction.

#### 2.6.6 Erosion

The unconsolidated alluvial deposits exposed on potential cut slopes or other excavations in the area are expected to be susceptible to erosion. Manufactured slopes composed of compacted fill are also expected to be moderately to highly susceptible to erosion. Measures to control erosion will be required for projects at the Site.

### 2.7 Mineral Resources

The requirements of the California Surface Mining and Reclamation Act of 1975 are such that full consideration has to be given to the potential loss of significant mineral deposits to land uses that preclude mining. The primary mineral resource in the Santa Paula area is aggregate (sand and gravel) mined from the Santa Clara River wash adjacent to the south of the Site (Anderson, et al., 1981; City of Santa Paula, 1998b). The aggregate resource is in high demand because much of the material mined from the Santa Clara River meets California Department of Transportation standards for Portland cement concrete aggregate. The aggregate mines are also important to flood control along the Santa Clara River. Removal of material from the River is controlled by the Ventura County Flood Control District to ensure that that the optimum stream gradient is maintained. Therefore, CGS has defined the Western Ventura County Production-Consumption Region within which the likelihood for the presence or absence of mineral deposits has been estimated. The Site lies within this Production-Consumption Region. The vast majority of the Site lies within Mineral Resource Zones 2 and 3 (MRZ-2 and MRZ-3) with a small portion in Mineral Resource Zone 1 (See Figure 7).

MRZ-1 is an area , "….. where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence." MRZ-2 is an area, "… where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood exists for their presence." MRZ-3 is an area, "….. containing mineral deposits, the significance of which cannot be evaluated from available data." (Anderson, et al., 1981)

Extractable sand and gravel deposits suitable for use as aggregate have been identified within the Western Ventura County Production-Consumption Region and characterized as Resource Sectors within MRZ-2 (Anderson, et al., 1981). Most of the Project Area of the Site south of State Route 126 and north of Lemonwood Drive, and approximately the southern portion of the Specific Plan Area (and corresponding portions of the Project Area) in the eastern and southern parts of the Site lie within MRZ-2 Sector E.

The locations of MRZ-1, MRZ-2, MRZ-3 and MRZ-2, Sector E with respect to the Site are shown in Figure 7.

Historically, petroleum has also been an important mineral resource in the Santa Paula area. However, the oil fields are located far to the north and south of the Site. Recently, oil production and exploration has been in decline around the Santa Paula area, due to the high viscosity and high sulfur content of the oil, and a lack of nearby refining capabilities. The Site is not located within an established oil resource area (City of Santa Paula, 1998).

## 3.0 SUMMARY OF POTENTIAL GEOLOGIC, GEOTECHNICAL AND MINERAL RESOURCES IMPACTS, AND MITIGATION MEASURES

This section summarizes the principal geotechnical conditions that occur on the Site. The potential impact that each condition may have on the improvements is subjectively rated as less-than-significant or potentially significant. The California Natural Resources Agency CEQA Guidelines for Geologic and Soils portions of Environmental Reports were used in preparation of this section of the report. The checklist from those guidelines (in bold) is provided below. A discussion of the geologic, seismic or soil condition at the Site and associated risk from the condition is provided following each checklist topic.

**Geology and Soils**
**Would the project:**

**a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**

**i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

No known active faults have been mapped crossing the Site and no state of California or City of Santa Paula established Earthquake Fault Zone (CGS, 2000 and 2002, City of Santa Paula, 1998a; Bryant and Hart, 2007) have been established in the Site area. As such, the risk of loss, injury or death associated with surface rupture of a known earthquake fault is considered to be very low and is considered to be a *less than significant impact.*

**ii) Strong seismic ground shaking?**

The intensity of ground shaking at a given location depends on several factors, but primarily on the earthquake magnitude, the distance from the hypocenter to the site of interest, and response characteristics of soil units underlying the Site. Peak Horizontal Ground Acceleration (PHGA) at the Site was estimated using the United States Geological Survey's 2008 Interactive Deaggregations utility. The results of this analysis indicate that the predominant modal earthquake has a PHGA of 1.09g with magnitude of approximately 6.8 ($M_W$) at a distance on the order of 2.2 kilometers for the Maximum Considered Earthquake (2% probability of exceedance in 50 years).

As such, the hazard posed by seismic shaking is considered high, due to the proximity of known active faults. Therefore, seismic ground shaking is considered to be a *potentially significant impact.*

**Mitigation Measures**: There is no realistic way in which the hazard of seismic shaking can be totally avoided. However, exposure to future ground shaking at the Site is no greater than at many other sites in southern California. Design of improvements in accordance with the 2010 California Building Code and appropriate County of Ventura Standards is expected to reduce the impact of ground shaking to *less than significant.*

**iii) Seismic-related ground failure, including liquefaction?**

*Liquefaction, and Lateral Spreading*. Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sand and silt) are subjected to strong seismic ground motion of significant duration. These soils essentially behave similar to liquids, losing shear strength. Improvements constructed on these soils may buckle, tilt or settle when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young sandy alluvium where the groundwater table is less than 50 feet below the ground surface.

Lateral spreading is a phenomenon where large blocks of intact, non-liquefied soil move down slope on a liquefied substrate of relatively large aerial extent. The mass moves toward an unconfined area, such as a descending slope or stream-cut bluff, or on slope gradients as gentle as 1 degree.

Historic groundwater data for the Santa Paula area shows that in the historic high groundwater levels at the Site range from approximately 20 feet below ground surface near the southern boundary to greater than 40 feet below ground surface near the northern boundary. Liquefaction hazard maps prepared by the California Geological Survey (2002a) and the City of Santa Paula (1998) indicate the young alluvial soils in the area may have the potential to be liquefiable, if shallow groundwater conditions were to be present. Therefore, the potential for liquefaction is considered to be a *potentially significant impact.*

**Mitigation Measures**: Geotechnical studies should be conducted for planned improvements within the Site and should further evaluate the potential for liquefaction and shallow groundwater conditions in areas of planned development. If liquefaction is found to be a hazard to the proposed development, recommendations to reduce the potential for liquefaction should be provided and may include overexcavation and recompaction of potentially liquefiable soils, ground improvement, structural design improvements to building and other measures. Conducting such studies in accordance with California Building Code and City requirements and implementing appropriate geotechnical recommendations during design and construction will reduce the risk associated with liquefaction and lateral spreading to *less than significant.*

*Seismically Induced Settlement.* Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, loosely packed granular alluvial deposits are especially susceptible to this phenomenon. Poorly compacted artificial fills may also experience seismically induced settlement. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement. If settlement occurs, it could result in damage to improvements. Seismic settlement could occur on the Site and is thus considered a *potentially significant impact*.

**Mitigation Measures**: Geotechnical studies should be conducted for planned improvements within the Site and should evaluate the potential for seismic settlement in areas of planned development. If seismic settlement is found to be a hazard to proposed developments within the Site, measures to reduce the potential for settlement should be provided and may include overexcavation and recompaction of settlement prone soils, ground improvement, structural design improvements to building and other measures. Conducting such studies in accordance with California Building Code and City requirements and implementing appropriate geotechnical recommendations will reduce the risk associated with seismic settlement to *less than significant.*

**iv) Landslides?**

The Site is located on essentially flat terrain. No areas of potential slope instability on the Site are shown in the Seismic Hazard Zone Report, Santa Paula 7.5-Minute Quadrangle, Ventura County, California (CGS, 2002a) or the City of

Santa Paula General Plan, Safety Element (1998a). As such, the risk associated with landslides on the Site is considered to be *less than significant.*

Individual project designs within the Site should be reviewed as the Site is developed and design cut or fill slopes and walls associated with improvements to the site should be geotechnically reviewed. Recommendations for design and construction of such slopes and walls should be provided and implemented during construction provide adequate stability of project slopes.

**b) Result in substantial soil erosion or the loss of topsoil?**

The native topsoil and alluvial soils in the Site may be moderately susceptible to erosion. These materials will be particularly prone to erosion during construction or earth moving activities (if any), especially during heavy rains. Fill soils generated during grading and any development may also be subjected to erosion. The impact of erosion at the Site is considered to be *potentially significant*.

**Mitigation Measures**: The potential for erosion can typically be reduced by appropriate protection or paving of exposed ground surfaces, landscaping, providing terraces on slopes, placing berms or V-ditches at the tops of slopes, and installing adequate drainage improvements. Disturbed areas should be protected until healthy plant growth is established. Typically, protection can be provided by the use of sprayed polymers, straw waddles, jute mesh or by other measures in accordance with California Building Code and City of Santa Paula requirements.

Temporary erosion control measures should be provided during construction. Such measures typically include temporary catchment basins and/or sandbagging to control runoff and contain sediment transport on the Site. Correct implementation of these erosion control measures in accordance with City requirements is expected to reduce the impact resulting from erosion to *less than significant.*

**c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?**

The native alluvial soils on the Site are generally considered to be suitable to support development without adverse effects of settlement, subsidence, slope failures or other significant geologic hazards, provided proper overexcavation and foundation design, and other appropriate measures are conducted. Geotechnical studies should be conducted to evaluate the proposed design of future improvements including, slopes, walls, planned excavations and other aspects of the design. Such studies should be prepared in accordance with California Building Code and City of Santa Paula requirements and should provide recommendations for grading and construction of planned improvements to include recommendations for overexcavation of potentially compressible soil, wall design, fill placement, paving, and other geotechnical aspects. With the implementation of the recommendations contained in those reports, risks posed by the geologic units are expected to be *less than significant.*

**d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?**

Based on our experience in the Santa Paula area, the alluvial soils present at the Site are expected to exhibit a low expansion potential. However, soils with a higher expansion potential (medium or greater) may be encountered locally. Depending on the improvements planned for the area, expansive soils could pose a risk to property. However, as previously noted, geotechnical studies should be conducted to evaluate the potential for expansive soil to impact individual improvements. If encountered, proposed structures should be constructed in accordance with California Building Code requirements for construction on expansive soils. With the implementation of the recommendations contained in those reports, the risk posed by expansive soil is expected to be *less than significant.*

**e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**

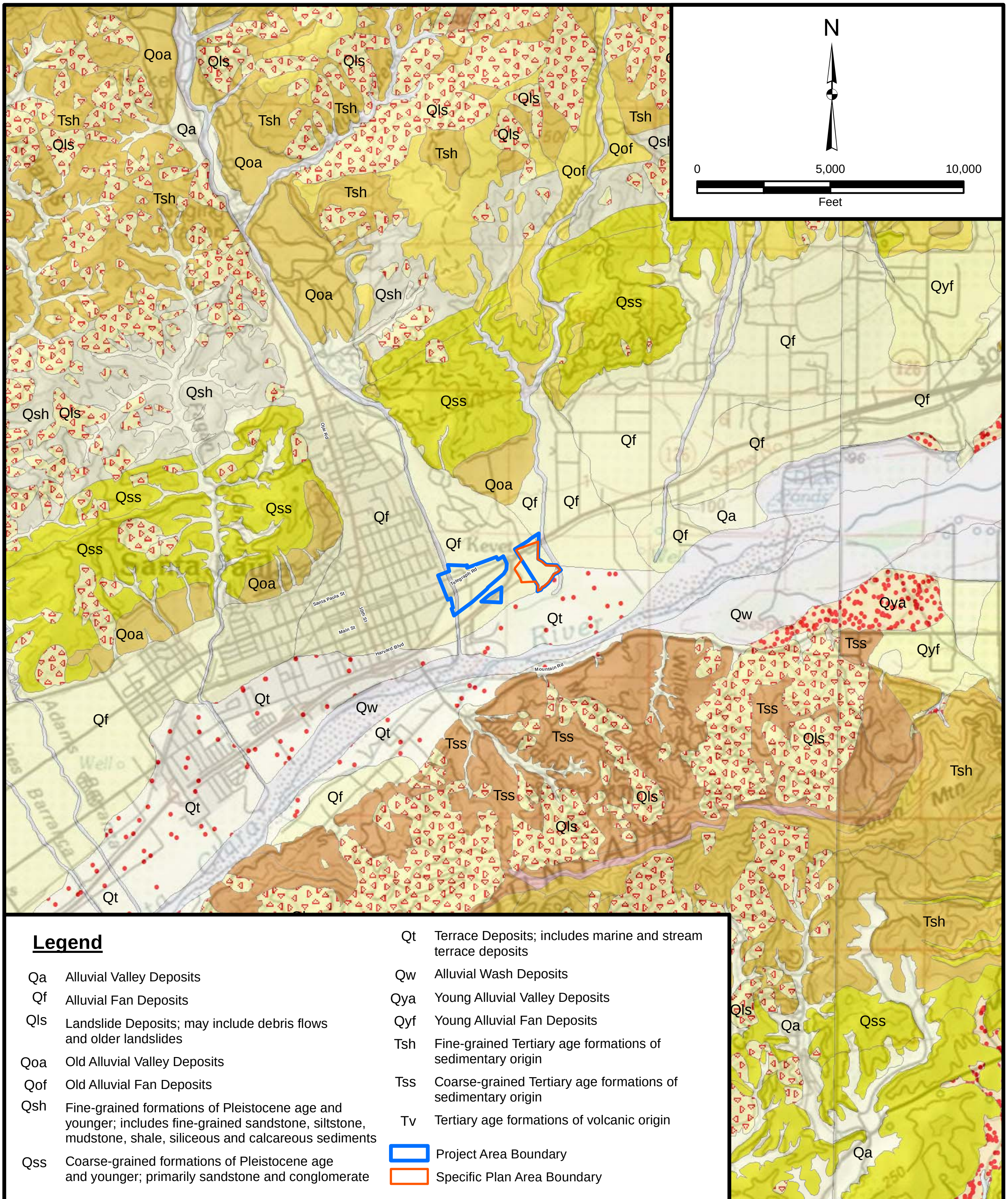
We would expect that sewers are available, or will be constructed, at the Site. Geotechnical studies should be conducted to evaluate the suitability of soils to support a wastewater disposal system in locations where sewers will not be available. With the implementation of the recommendations contained in those reports, the potential risk posed by waste water disposal systems supported by unsuitable soils is expected to be *less than significant.*

**Mineral Resources**
**Would the project:**

a) **Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

b) **Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**

Extractable sand and gravel deposits suitable for use as aggregate have been identified within the Western Ventura County Production-Consumption Region and characterized as Resource Sectors within MRZ-2 (Anderson, et al., 1981). Most of the Project Area of the Site south of State Route 126 and north of Lemonwood Drive, and approximately the southern portion of the Specific Plan Area (and corresponding portions of the Project Area) in the eastern and southern parts of the Site lie within MRZ-2 Sector E and a City of Santa Paula-recognized aggregate resource area (City of Santa Paula, 2010). These areas are relatively small and development of the Site does not preclude future mining of mineral resources. As such the potential loss of mineral resources is considered to be *less than significant.*




## Legend

| | | | |
|---|---|---|---|
| Qa | Alluvial Valley Deposits | Qt | Terrace Deposits; includes marine and stream terrace deposits |
| Qf | Alluvial Fan Deposits | Qw | Alluvial Wash Deposits |
| Qls | Landslide Deposits; may include debris flows and older landslides | Qya | Young Alluvial Valley Deposits |
| Qoa | Old Alluvial Valley Deposits | Qyf | Young Alluvial Fan Deposits |
| Qof | Old Alluvial Fan Deposits | Tsh | Fine-grained Tertiary age formations of sedimentary origin |
| Qsh | Fine-grained formations of Pleistocene age and younger; includes fine-grained sandstone, siltstone, mudstone, shale, siliceous and calcareous sediments | Tss | Coarse-grained Tertiary age formations of sedimentary origin |
| Qss | Coarse-grained formations of Pleistocene age and younger; primarily sandstone and conglomerate | Tv | Tertiary age formations of volcanic origin |

Project Area Boundary

Specific Plan Area Boundary

| | |
|---|---|
| Project: 032544-001 | Eng/Geol: JDH/PB |
| Scale: 1 " = 5,000 ' | Date: July, 2012 |

Base Map: ESRI Resource Center, 2010

Thematic Info: Southern California USGS Geology in GIS Format by CGS, July 2010

Author: (kmanchikanti)

# REGIONAL GEOLOGY MAP

East Gateway Project

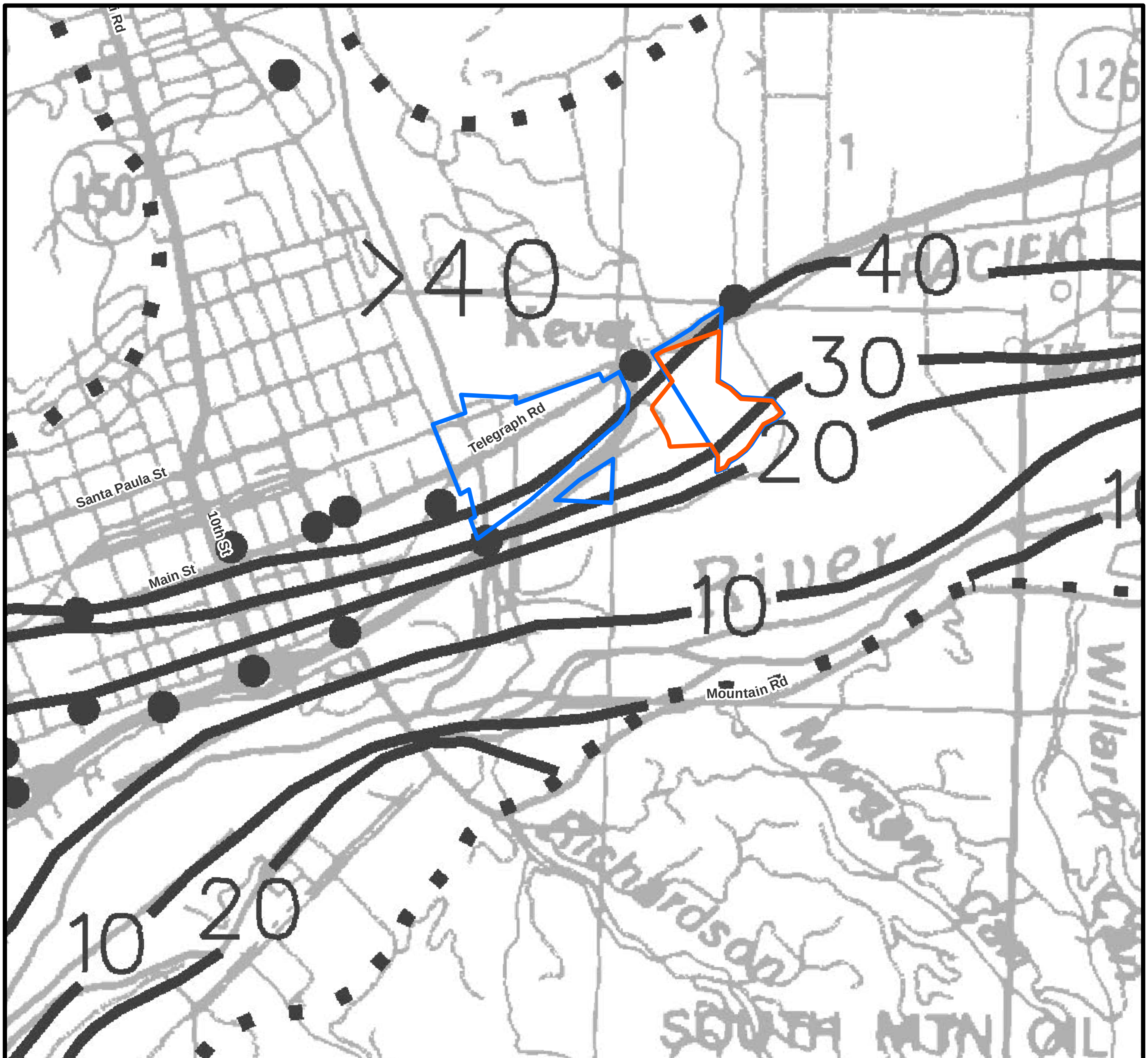
City of Santa Paula

Ventura County, California

Figure 2

Leighton

Map Saved as V:\Drafting\032544\001\GIS\of_2011-08-18\Figure2-GeologyMap.mxd on 7/12/2012 9:20:32 AM




EXPLANATION

Alluviated Valley

Borehole Site

20 — Historically shallowest ground-water depth contours (in feet)

>40 — Histrorically shallowed ground-water depth greater than 40 feet over a broad area

Project Area Boundary

Specific Plan Area Boundary

N

0 2,000 4,000

Feet

| | |
|---|---|
| Project: 032544-001 | Eng/Geol: JDH/PB |
| Scale: 1 " = 2,000 ' | Date: July, 2012 |

Reference: Plate 1.2, Historically shallowest ground-water depths and borehole locations in alluviated valley areas of the Santa Paula 7.5-minute Quadrangle.

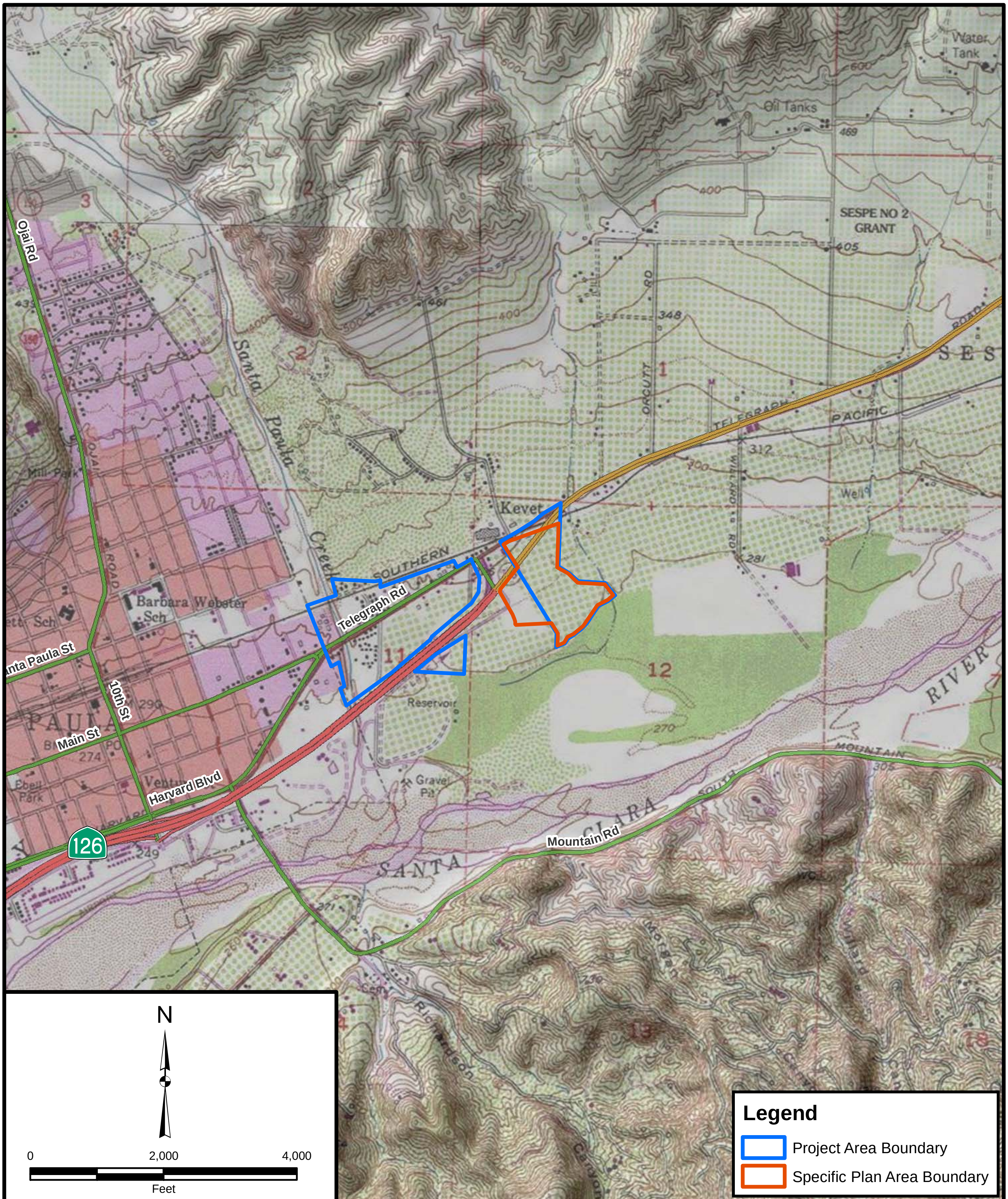
# HISTORIC GROUNDWATER DEPTHS

East Gateway Project
City of Santa Paula
Ventura County, California

Figure 3

Leighton

Map Saved as V:\Drafting\032544\001\GIS\of_2011-08-18\Figure3-GW_Map.mxd on 7/12/2012 9:21:38 AM




| | |
|---|---|
| Project: 032544-001 | Eng/Geol: JDH/PB |
| Scale: 1 " = 2,000 ' | Date: July, 2012 |

Base Map: ESRI Resource Center, 2010
Thematic Info: Leighton
Author: (kmanchikanti)

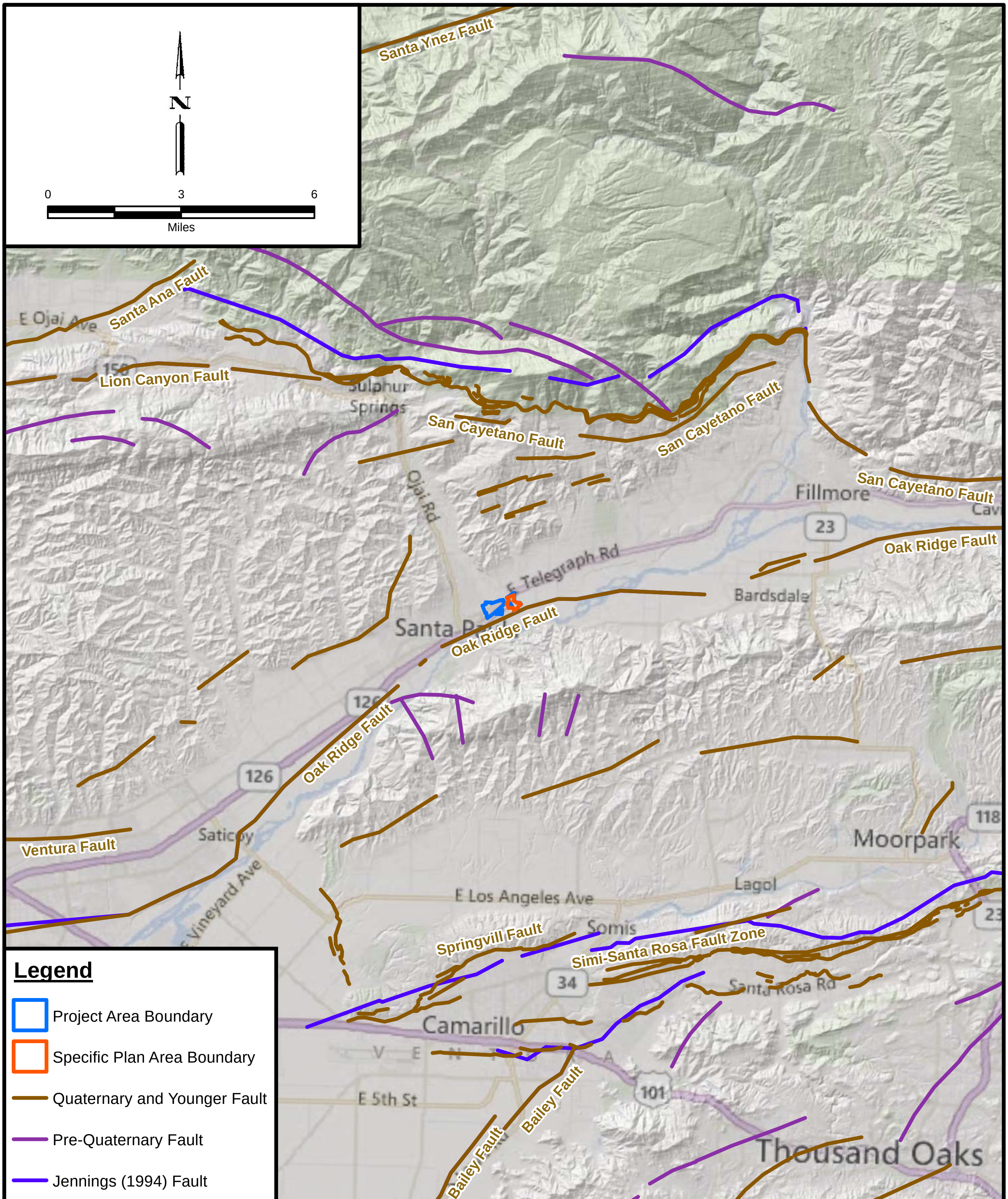
# SITE LOCATION MAP

## East Gateway Project
## City of Santa Paula
## Ventura County, California

Figure 1

Leighton

Map Saved as V:\Drafting\032544\001\GIS\of_2011-08-18\Figure1-SiteLocationMap.mxd on 7/12/2012 9:18:07 AM




| Project: 032544-001 | Eng/Geol: JDH/PB |
|---|---|
| Scale: 1 " = 3 miles | Date: July, 2012 |

Base Map: ESRI Resource Center, 2010
Thematic Info: Leighton
Author: (kmanchikanti)

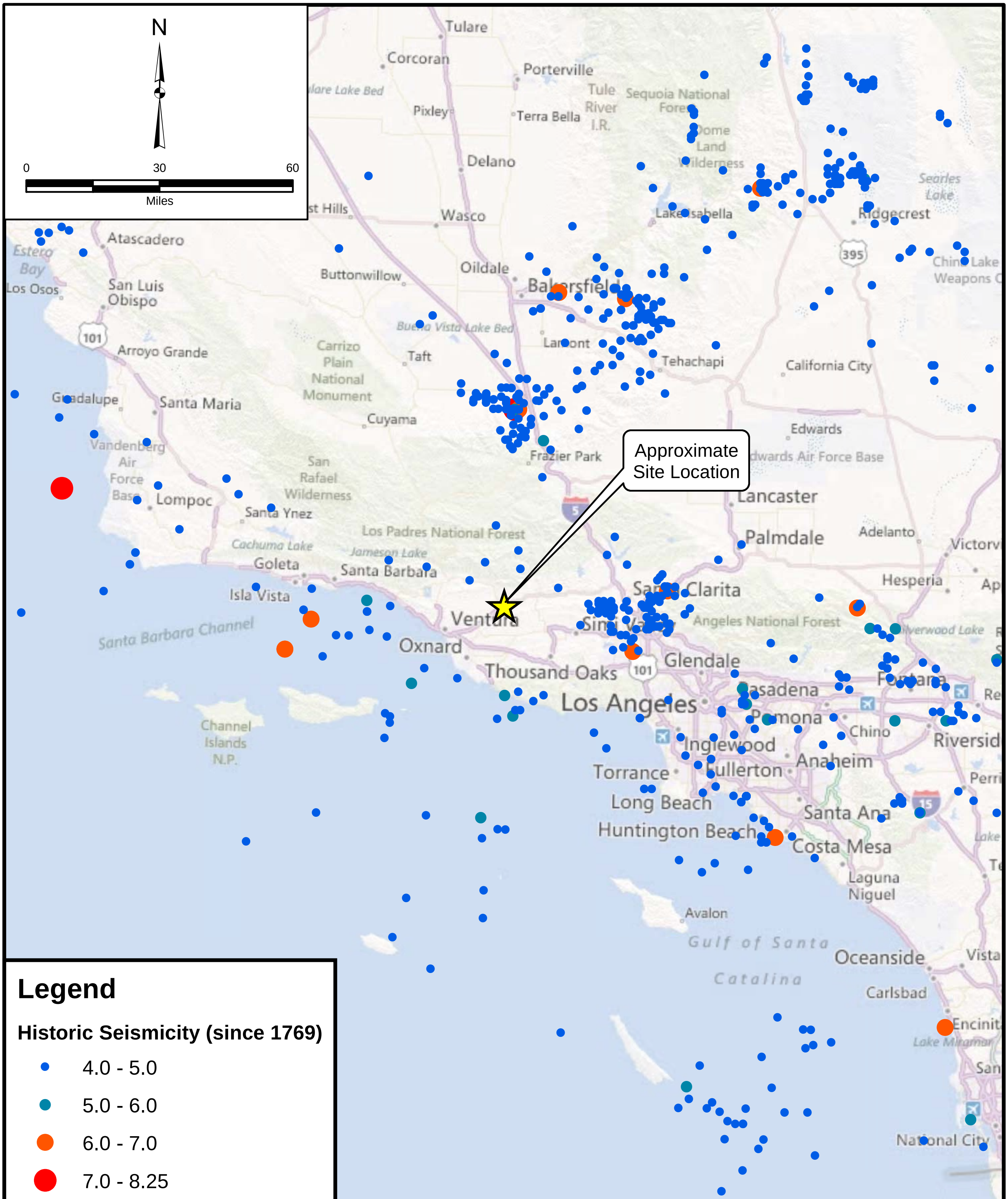
# REGIONAL FAULT MAP

East Gateway Project
City of Santa Paula
Ventura County, California

Figure 4

Leighton

Map Saved as V:\Drafting\032544\001\GIS\of_2011-08-18\Figure4-FaultMap.mxd on 7/12/2012 9:23:33 AM




## Legend

**Historic Seismicity (since 1769)**

- 4.0 - 5.0
- 5.0 - 6.0
- 6.0 - 7.0
- 7.0 - 8.25

| Project: 032544-001 | Eng/Geol: JDH/PB |
|---|---|
| Scale: 1 " = 30 miles | Date: July, 2012 |

Base Map: Esri Resource Center, 2011
Thematic Info: USGS National Earthquake Information Center. 2011
Author: KVM

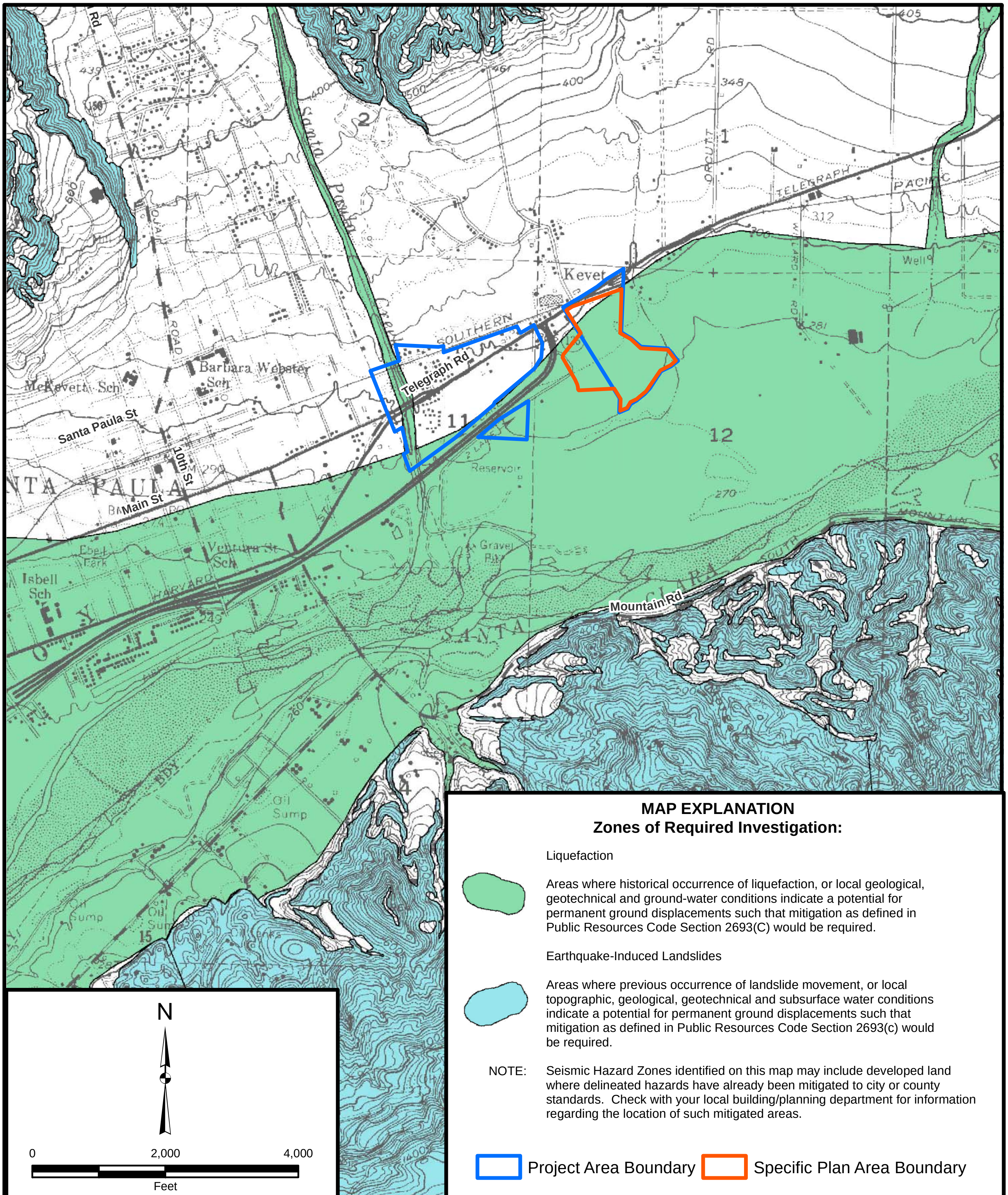
# HISTORICAL SEISMICITY MAP

East Gateway Project
City of Santa Paula
Ventura County, California

Figure 5

Leighton

Map Saved as V:\Drafting\032544\001\GIS\of_2011-08-18\Figure5-SeisMap.mxd on 7/11/2012 5:20:04 PM




| | |
|---|---|
| Project: 032544-001 | Eng/Geol: JDH/PB |
| Scale: 1 " = 2,000 ' | Date: July, 2012 |

Reference: State of California Seismic Hazard Zones, Santa Paula Quadrangle Official Map, Released: June 21, 2002.
Data and Methodology used to develop this map are presented in the following: Seismic Hazard Zones Report of the Santa Paula 7.5-Minute Quadrangle, Ventura County California: California Geological Survey, Seismic Hazards Zone Report 062.

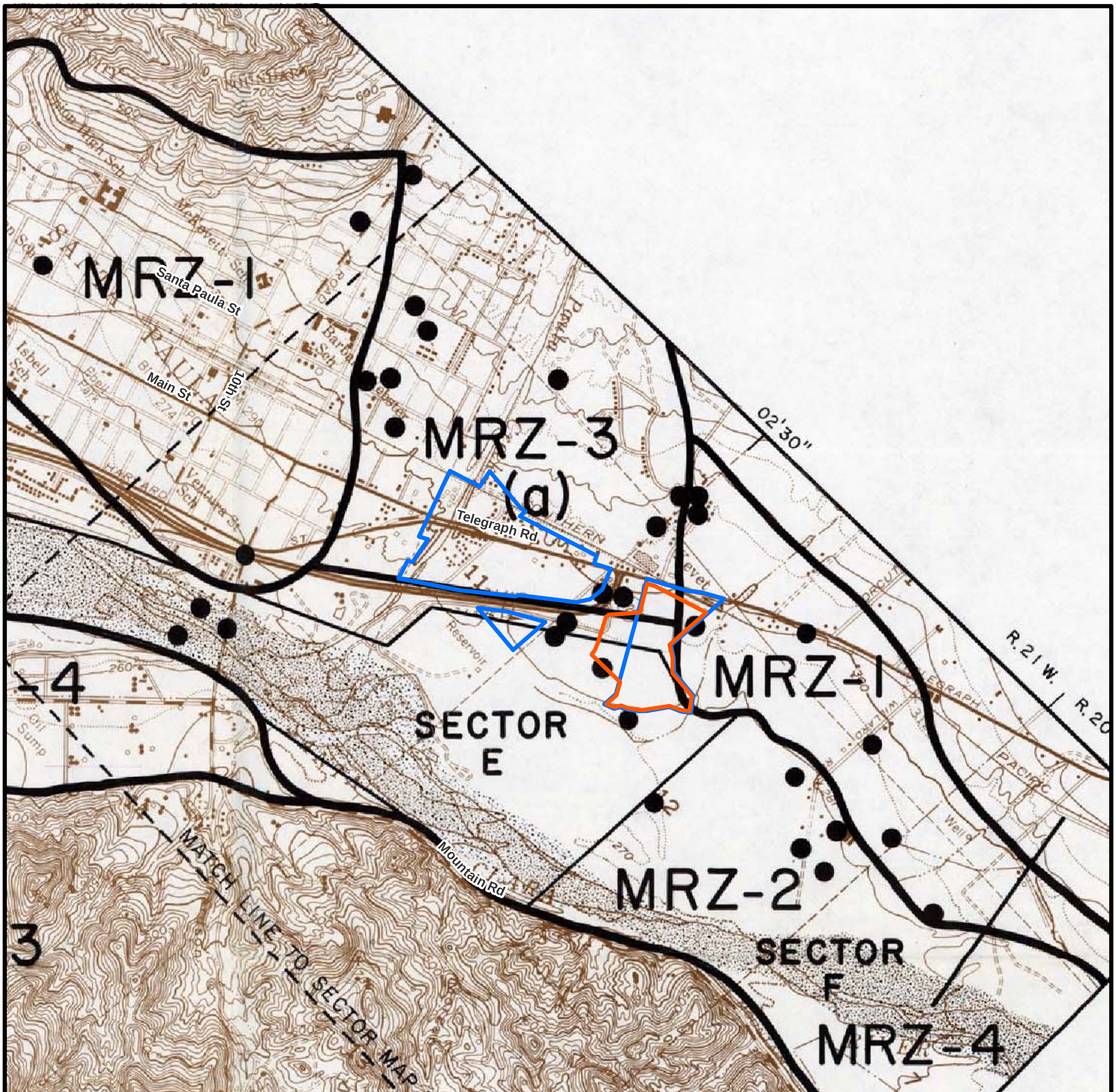
# LIQUEFACTION HAZARD MAP

## East Gateway Project
## City of Santa Paula
## Ventura County, California

Figure 6

Leighton

Map Saved as V:\Drafting\032544\001\GIS\of_2011-08-18\Figure6-LiquifactionMap.mxd on 7/11/2012 5:17:29 PM




EXPLANATION

● Drill Hole

Area underlain by extractable sand and gravel (Resource Sector)

Riverbed

MRZ-2 MRZ Line

Project Area Boundary

Specific Plan Area Boundary



| | |
|---|---|
| Project: 032544-001 | Eng/Geol: JDH/PB |
| Scale: 1 " = 2,000 ' | Date: July, 2012 |

Reference: Mineral Land Classification of Ventura County Santa Clara River Aggregate Resource Sectors A-J, by T.P. Anderson, R.C. Loyd, E.W. Kiessling, S.L. Kohler, R.V. Miller, dated 1981.

# MINERAL RESOURCES ZONE MAP

East Gateway Project
City of Santa Paula
Ventura County, California

Figure 7

Leighton

# APPENDIX A

# REFERENCES

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# APPENDIX A

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## Aerial Photographs

| Agency | Flight | Frame | Date | Scale |
|---|---|---|---|---|
| Pacific Western Aerial Surveys | PW VEN | 3-167 | June 15, 1981 | 1 : 24,000 |
| USDA | AXI-1K | 46 | December 13, 1952 | 1 : 20,000 |
| USDA | AXI-1K | 47 | December 13, 1952 | 1 : 20,000 |
| Stringfellow | AXI | 21-91 | May 10, 1938 | 1 : 20,000 |

# APPENDIX B

# HISTORICAL EARTHQUAKE LIST

Leighton

```
*************************
*                       *
*    E Q S E A R C H    *
*                       *
*     Version 3.00      *
*                       *
*************************
```

ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 032544-001

DATE: 08-25-2011

JOB NAME: East Area 2 Annexation

EARTHQUAKE-CATALOG-FILE NAME: C:\Program Files\EQSEARCH\ALLQUAKE.DAT

MAGNITUDE RANGE:
MINIMUM MAGNITUDE: 4.00
MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
SITE LATITUDE: 34.2933
SITE LONGITUDE: 119.2972

SEARCH DATES:
START DATE: 1800
END DATE: 2011

SEARCH RADIUS:
62.0 mi
99.8 km

ATTENUATION RELATION: 2) Boore et al. (1997) Horiz. - NEHRP C (520)
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0

## EARTHQUAKE SEARCH RESULTS

Page 1

| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 34.3330 | 119.5830 | 09/14/1941 | 14518.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.3330 | 119.5830 | 09/15/1941 | 137 2.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| GSP | 34.2450 | 118.4710 | 01/18/1994 | 155144.9 | 12.0 | 4.00 | 0.015 | IV | 47.3( 76.0) |
| DMG | 35.0330 | 119.1000 | 09/02/1953 | 152756.0 | 0.0 | 4.00 | 0.014 | IV | 52.3( 84.1) |
| DMG | 34.3330 | 119.5830 | 11/18/1941 | 18 810.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.3170 | 119.7000 | 10/21/1953 | 16 238.0 | 0.0 | 4.00 | 0.027 | V | 23.0( 37.1) |
| PAS | 33.9060 | 119.1660 | 05/23/1978 | 91650.8 | 6.0 | 4.00 | 0.023 | IV | 27.8( 44.7) |
| GSP | 34.2920 | 118.4660 | 01/19/1994 | 144635.2 | 6.0 | 4.00 | 0.015 | IV | 47.4( 76.3) |
| DMG | 34.6830 | 119.0000 | 04/06/1943 | 223624.0 | 0.0 | 4.00 | 0.021 | IV | 31.8( 51.1) |
| DMG | 34.2670 | 119.5170 | 04/12/1944 | 153310.0 | 0.0 | 4.00 | 0.042 | VI | 12.7( 20.4) |
| MGI | 34.4000 | 119.7000 | 08/26/1927 | 1240 0.0 | 0.0 | 4.00 | 0.026 | V | 24.1( 38.8) |
| DMG | 34.3500 | 119.7670 | 11/10/1940 | 102510.0 | 0.0 | 4.00 | 0.024 | IV | 27.1( 43.6) |
| MGI | 34.0000 | 118.3000 | 06/22/1920 | 2035 0.0 | 0.0 | 4.00 | 0.013 | III | 60.5( 97.3) |
| DMG | 35.1000 | 119.0830 | 07/24/1946 | 019 8.0 | 0.0 | 4.00 | 0.013 | III | 57.0( 91.7) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 710.0 | 8.0 | 4.00 | 0.014 | IV | 51.7( 83.2) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 730.0 | 8.0 | 4.00 | 0.014 | IV | 51.7( 83.2) |
| DMG | 34.6670 | 118.8330 | 01/24/1950 | 215659.0 | 0.0 | 4.00 | 0.019 | IV | 36.9( 59.4) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 8 4.0 | 8.0 | 4.00 | 0.014 | IV | 51.7( 83.2) |
| DMG | 34.0000 | 119.5000 | 03/19/1905 | 440 0.0 | 0.0 | 4.00 | 0.026 | V | 23.3( 37.5) |
| USG | 34.4180 | 119.4680 | 09/07/1984 | 11 345.2 | 9.5 | 4.00 | 0.041 | V | 13.0( 20.9) |
| DMG | 34.1000 | 118.8000 | 05/10/1911 | 1340 0.0 | 0.0 | 4.00 | 0.021 | IV | 31.4( 50.5) |
| DMG | 34.3800 | 118.6230 | 10/29/1936 | 223536.1 | 10.0 | 4.00 | 0.018 | IV | 38.9( 62.6) |
| DMG | 35.1830 | 119.1740 | 06/04/1956 | 83319.3 | 14.3 | 4.00 | 0.012 | III | 61.8( 99.5) |
| DMG | 34.3250 | 119.7610 | 08/09/1956 | 0 849.2 | 4.0 | 4.00 | 0.024 | V | 26.5( 42.7) |
| MGI | 33.8000 | 118.5000 | 06/18/1915 | 15 5 0.0 | 0.0 | 4.00 | 0.013 | III | 56.9( 91.6) |
| DMG | 34.8410 | 119.2400 | 01/11/1958 | 23 847.4 | 10.8 | 4.00 | 0.018 | IV | 38.0( 61.1) |
| DMG | 34.3870 | 118.3640 | 02/09/1971 | 143917.8 | -1.6 | 4.00 | 0.014 | IV | 53.6( 86.2) |
| DMG | 34.4710 | 119.7570 | 11/16/1958 | 934 6.1 | 15.2 | 4.00 | 0.022 | IV | 28.9( 46.6) |
| DMG | 34.8430 | 119.0260 | 03/07/1939 | 195331.8 | 10.0 | 4.00 | 0.017 | IV | 41.0( 65.9) |
| DMG | 34.2500 | 119.5000 | 04/21/1917 | 659 0.0 | 0.0 | 4.00 | 0.043 | VI | 11.9( 19.2) |
| DMG | 34.0000 | 118.5000 | 03/06/1918 | 1820 0.0 | 0.0 | 4.00 | 0.015 | IV | 49.8( 80.2) |
| MGI | 34.0000 | 118.5000 | 03/08/1918 | 1230 0.0 | 0.0 | 4.00 | 0.015 | IV | 49.8( 80.2) |
| DMG | 34.9450 | 118.9680 | 03/04/1963 | 201042.3 | 8.5 | 4.00 | 0.015 | IV | 48.7( 78.4) |
| DMG | 35.0000 | 119.0000 | 01/25/1919 | 2229 0.0 | 0.0 | 4.00 | 0.014 | IV | 51.6( 83.1) |
| DMG | 34.4850 | 118.5210 | 07/16/1965 | 74622.4 | 15.1 | 4.00 | 0.016 | IV | 46.2( 74.3) |
| MGI | 34.5000 | 119.7000 | 08/26/1919 | 1212 0.0 | 0.0 | 4.00 | 0.024 | IV | 27.0( 43.5) |
| MGI | 34.5000 | 119.7000 | 08/26/1919 | 1457 0.0 | 0.0 | 4.00 | 0.024 | IV | 27.0( 43.5) |
| DMG | 33.7830 | 118.4170 | 11/02/1940 | 25826.0 | 0.0 | 4.00 | 0.013 | III | 61.5( 98.9) |
| MGI | 34.5000 | 119.7000 | 07/29/1925 | 14 0 0.0 | 0.0 | 4.00 | 0.024 | IV | 27.0( 43.5) |
| GSP | 34.2890 | 118.4030 | 01/14/2001 | 025053.7 | 8.0 | 4.00 | 0.014 | IV | 51.0( 82.1) |
| MGI | 34.0000 | 118.5000 | 06/23/1920 | 1220 0.0 | 0.0 | 4.00 | 0.015 | IV | 49.8( 80.2) |
| MGI | 34.0000 | 118.3000 | 06/30/1920 | 350 0.0 | 0.0 | 4.00 | 0.013 | III | 60.5( 97.3) |
| GSG | 34.4080 | 118.5590 | 01/17/1994 | 200205.4 | 0.0 | 4.00 | 0.017 | IV | 42.8( 68.9) |
| DMG | 34.0720 | 119.7230 | 07/05/1968 | 23614.1 | 4.3 | 4.00 | 0.023 | IV | 28.7( 46.2) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1317 0.0 | 0.0 | 4.00 | 0.014 | IV | 51.6( 83.1) |
| DMG | 34.2540 | 119.6280 | 07/08/1968 | 91837.2 | 15.7 | 4.00 | 0.031 | V | 19.1( 30.7) |
| MGI | 34.1000 | 118.3000 | 07/26/1920 | 1215 0.0 | 0.0 | 4.00 | 0.013 | III | 58.5( 94.1) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 1025 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 1820 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.2730 | 118.5320 | 06/21/1971 | 16 1 8.5 | 4.1 | 4.00 | 0.016 | IV | 43.7( 70.3) |
| DMG | 34.3330 | 119.5830 | 07/02/1941 | 2219 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.1830 | 119.6460 | 06/29/1968 | 63320.9 | 8.4 | 4.00 | 0.028 | V | 21.3( 34.3) |
| MGI | 34.4000 | 119.3000 | 08/12/1925 | 1845 0.0 | 0.0 | 4.00 | 0.060 | VI | 7.4( 11.9) |

# EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| PAS | 34.2510 | 119.6220 | 03/23/1988 | 84247.0 | 16.4 | 4.00 | 0.031 | V | 18.8( 30.2) |
| DMG | 34.3330 | 119.5830 | 09/08/1941 | 31423.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| MGI | 34.4000 | 119.7000 | 06/24/1926 | 1530 0.0 | 0.0 | 4.00 | 0.026 | V | 24.1( 38.8) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 830 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| MGI | 34.4000 | 119.7000 | 07/06/1926 | 1745 0.0 | 0.0 | 4.00 | 0.026 | V | 24.1( 38.8) |
| MGI | 34.4000 | 119.7000 | 08/09/1926 | 412 0.0 | 0.0 | 4.00 | 0.026 | V | 24.1( 38.8) |
| MGI | 34.3000 | 119.3000 | 09/28/1926 | 1749 0.0 | 0.0 | 4.00 | 0.117 | VII | 0.5( 0.8) |
| MGI | 34.0000 | 118.4000 | 01/29/1927 | 2324 0.0 | 0.0 | 4.00 | 0.014 | III | 55.1( 88.7) |
| DMG | 33.7830 | 118.4170 | 10/12/1940 | 024 0.0 | 0.0 | 4.00 | 0.013 | III | 61.5( 98.9) |
| MGI | 34.3000 | 119.3000 | 05/15/1927 | 1120 0.0 | 0.0 | 4.00 | 0.117 | VII | 0.5( 0.8) |
| DMG | 33.7830 | 118.4170 | 11/01/1940 | 725 3.0 | 0.0 | 4.00 | 0.013 | III | 61.5( 98.9) |
| DMG | 34.3330 | 119.5830 | 10/02/1938 | 1845 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 33.9030 | 118.4310 | 11/29/1938 | 192115.8 | 10.0 | 4.00 | 0.013 | III | 56.4( 90.7) |
| DMG | 34.0000 | 118.4170 | 12/07/1938 | 338 0.0 | 0.0 | 4.00 | 0.014 | IV | 54.2( 87.2) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 819 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 821 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| GSP | 34.3110 | 118.4560 | 01/17/1994 | 193534.3 | 2.0 | 4.00 | 0.015 | IV | 48.0( 77.2) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 848 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| PAS | 34.0540 | 118.9640 | 04/13/1982 | 11 212.2 | 16.6 | 4.00 | 0.025 | V | 25.2( 40.6) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 9 5 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 35.1000 | 119.0830 | 12/06/1934 | 743 0.0 | 0.0 | 4.00 | 0.013 | III | 57.0( 91.7) |
| DMG | 34.7170 | 118.9670 | 06/11/1935 | 1810 0.0 | 0.0 | 4.00 | 0.019 | IV | 34.8( 55.9) |
| DMG | 33.5830 | 119.1830 | 02/10/1952 | 135055.0 | 0.0 | 4.00 | 0.015 | IV | 49.5( 79.6) |
| DMG | 34.8350 | 118.9880 | 11/29/1936 | 55445.3 | 10.0 | 4.00 | 0.017 | IV | 41.3( 66.5) |
| DMG | 34.2120 | 119.6910 | 06/26/1968 | 181111.2 | 13.9 | 4.00 | 0.027 | V | 23.2( 37.3) |
| GSP | 34.3970 | 118.6090 | 07/22/1999 | 095724.0 | 11.0 | 4.00 | 0.018 | IV | 39.9( 64.2) |
| DMG | 34.3330 | 119.5830 | 07/03/1941 | 1926 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 35.0000 | 119.0000 | 07/25/1952 | 0 3 0.0 | 0.0 | 4.00 | 0.014 | IV | 51.6( 83.1) |
| PAS | 34.7360 | 120.1470 | 11/06/1986 | 91958.3 | 0.0 | 4.00 | 0.013 | III | 57.2( 92.0) |
| DMG | 34.3570 | 118.4060 | 02/09/1971 | 141950.2 | 11.8 | 4.00 | 0.014 | IV | 51.0( 82.1) |
| DMG | 34.1920 | 119.7330 | 07/05/1968 | 036 6.4 | 15.6 | 4.00 | 0.024 | V | 25.8( 41.6) |
| DMG | 33.6670 | 119.5000 | 11/30/1939 | 64251.0 | 0.0 | 4.00 | 0.016 | IV | 44.8( 72.0) |
| DMG | 33.9830 | 118.3000 | 02/11/1940 | 192410.0 | 0.0 | 4.00 | 0.013 | III | 60.9( 98.0) |
| DMG | 34.6000 | 118.9000 | 05/18/1940 | 91512.0 | 0.0 | 4.00 | 0.021 | IV | 31.0( 49.9) |
| DMG | 34.3330 | 119.5830 | 11/21/1941 | 1656 3.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.2680 | 118.4450 | 08/30/1964 | 225737.1 | 15.4 | 4.00 | 0.015 | IV | 48.6( 78.3) |
| DMG | 33.7830 | 118.4170 | 10/14/1940 | 205111.0 | 0.0 | 4.00 | 0.013 | III | 61.5( 98.9) |
| DMG | 34.3680 | 118.3140 | 04/25/1971 | 1448 6.5 | -2.0 | 4.00 | 0.013 | III | 56.3( 90.6) |
| DMG | 35.0500 | 118.9500 | 11/14/1952 | 2334 1.4 | 0.0 | 4.00 | 0.013 | III | 55.8( 89.9) |
| PAS | 34.3780 | 119.0350 | 04/03/1985 | 4 449.8 | 27.9 | 4.00 | 0.035 | V | 16.0( 25.8) |
| DMG | 34.9830 | 118.9000 | 03/23/1953 | 17 637.0 | 0.0 | 4.00 | 0.014 | IV | 52.7( 84.8) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 945 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| DMG | 34.2550 | 119.6140 | 07/31/1968 | 224445.3 | 15.0 | 4.00 | 0.032 | V | 18.3( 29.4) |
| GSP | 33.6570 | 120.0330 | 04/21/2005 | 063619.0 | 6.0 | 4.00 | 0.013 | III | 60.9( 97.9) |
| DMG | 34.2450 | 119.5880 | 06/29/1968 | 203633.6 | 1.8 | 4.00 | 0.034 | V | 16.9( 27.2) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 858 0.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |
| GSG | 34.3040 | 118.7220 | 01/17/1994 | 221922.3 | 10.0 | 4.00 | 0.020 | IV | 32.8( 52.8) |
| DMG | 34.9670 | 118.9500 | 11/27/1952 | 153641.0 | 0.0 | 4.00 | 0.015 | IV | 50.5( 81.3) |
| GSP | 34.2870 | 118.4660 | 01/19/1994 | 071406.2 | 11.0 | 4.00 | 0.015 | IV | 47.4( 76.3) |
| DMG | 34.3700 | 118.3020 | 02/10/1971 | 31212.0 | 0.8 | 4.00 | 0.013 | III | 57.0( 91.7) |
| DMG | 35.0500 | 118.9500 | 08/17/1952 | 614 4.0 | 0.0 | 4.00 | 0.013 | III | 55.8( 89.9) |
| DMG | 34.4900 | 119.6910 | 09/16/1962 | 181235.2 | 13.3 | 4.00 | 0.024 | V | 26.2( 42.2) |
| DMG | 34.3330 | 119.5830 | 09/25/1941 | 51256.0 | 0.0 | 4.00 | 0.034 | V | 16.5( 26.6) |

# EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 34.9220 | 119.1030 | 01/09/1963 | 6 4 3.8 | 8.7 | 4.00 | 0.016 | IV | 44.8( 72.1) |
| DMG | 34.2840 | 118.5280 | 04/02/1971 | 54025.0 | 3.0 | 4.00 | 0.016 | IV | 43.9( 70.6) |
| DMG | 35.0670 | 118.9830 | 08/04/1952 | 194750.0 | 0.0 | 4.00 | 0.013 | III | 56.3( 90.6) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 439.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| PAS | 35.0460 | 119.0010 | 06/05/1975 | 144645.3 | 9.0 | 4.10 | 0.014 | IV | 54.6( 87.9) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1311 0.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 34.4170 | 118.8330 | 06/01/1946 | 11 631.0 | 0.0 | 4.10 | 0.024 | V | 27.8( 44.7) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 550.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| DMG | 34.9670 | 118.9500 | 07/30/1952 | 11 255.0 | 0.0 | 4.10 | 0.015 | IV | 50.5( 81.3) |
| DMG | 34.4330 | 118.3980 | 02/09/1971 | 144017.4 | -2.0 | 4.10 | 0.015 | IV | 52.1( 83.9) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 444.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| DMG | 35.0330 | 118.9170 | 07/23/1952 | 211658.0 | 0.0 | 4.10 | 0.014 | IV | 55.4( 89.2) |
| DMG | 35.0330 | 119.0000 | 07/22/1952 | 101939.0 | 0.0 | 4.10 | 0.015 | IV | 53.8( 86.6) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 541.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| GSP | 34.5000 | 118.5600 | 07/05/1991 | 174157.1 | 11.0 | 4.10 | 0.017 | IV | 44.4( 71.4) |
| DMG | 35.0670 | 119.0330 | 07/27/1952 | 113438.0 | 0.0 | 4.10 | 0.014 | IV | 55.5( 89.3) |
| DMG | 35.0000 | 119.0000 | 07/22/1952 | 175236.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1617 0.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| GSP | 34.3680 | 118.6370 | 01/17/1994 | 194353.4 | 13.0 | 4.10 | 0.019 | IV | 38.0( 61.1) |
| DMG | 34.2960 | 118.4640 | 03/30/1971 | 85443.3 | 2.6 | 4.10 | 0.016 | IV | 47.5( 76.5) |
| GSP | 34.4400 | 119.1830 | 05/08/2009 | 202714.0 | 7.0 | 4.10 | 0.046 | VI | 12.0( 19.4) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 159.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| DMG | 35.0330 | 119.1000 | 01/12/1954 | 234037.0 | 0.0 | 4.10 | 0.015 | IV | 52.3( 84.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1336 0.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 4 7.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| DMG | 35.0000 | 119.0000 | 07/22/1952 | 82122.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 34.2500 | 119.6540 | 06/29/1968 | 153242.8 | 14.6 | 4.10 | 0.031 | V | 20.6( 33.1) |
| PAS | 34.4020 | 119.8020 | 03/10/1986 | 153316.3 | 18.0 | 4.10 | 0.023 | IV | 29.7( 47.9) |
| GSP | 34.3570 | 118.4800 | 02/25/1994 | 125912.6 | 1.0 | 4.10 | 0.016 | IV | 46.8( 75.3) |
| DMG | 35.0330 | 119.0500 | 07/27/1952 | 71611.0 | 0.0 | 4.10 | 0.015 | IV | 53.0( 85.2) |
| DMG | 34.3390 | 118.3320 | 02/09/1971 | 141612.9 | 11.1 | 4.10 | 0.014 | IV | 55.1( 88.7) |
| DMG | 35.0000 | 119.0000 | 07/22/1952 | 191024.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 2 3.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| DMG | 33.9900 | 119.0580 | 05/29/1955 | 164335.4 | 17.4 | 4.10 | 0.026 | V | 25.0( 40.2) |
| GSP | 34.2690 | 118.5760 | 01/17/1994 | 125546.8 | 16.0 | 4.10 | 0.018 | IV | 41.2( 66.3) |
| DMG | 35.0000 | 119.0000 | 08/10/1952 | 194424.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 346.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |
| GSP | 34.3540 | 118.7040 | 05/01/1996 | 194956.4 | 14.0 | 4.10 | 0.021 | IV | 34.1( 54.8) |
| GSP | 34.3620 | 118.6150 | 03/20/1996 | 073759.8 | 13.0 | 4.10 | 0.019 | IV | 39.2( 63.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1417 0.0 | 0.0 | 4.10 | 0.015 | IV | 51.6( 83.1) |
| DMG | 35.0670 | 118.9330 | 07/23/1952 | 223220.0 | 0.0 | 4.10 | 0.014 | IV | 57.3( 92.2) |
| DMG | 35.1000 | 119.0000 | 07/24/1952 | 311 7.0 | 0.0 | 4.10 | 0.014 | IV | 58.2( 93.6) |
| GSP | 34.2910 | 118.4760 | 02/06/1994 | 131926.9 | 11.0 | 4.10 | 0.016 | IV | 46.8( 75.4) |
| GSP | 35.0310 | 119.1800 | 05/06/2005 | 022909.5 | 11.0 | 4.10 | 0.015 | IV | 51.4( 82.7) |
| GSP | 34.3040 | 118.7370 | 01/19/1994 | 091310.9 | 13.0 | 4.10 | 0.022 | IV | 32.0( 51.4) |
| DMG | 34.4280 | 118.4130 | 04/01/1971 | 15 3 3.6 | 8.0 | 4.10 | 0.015 | IV | 51.2( 82.5) |
| DMG | 34.8670 | 118.8670 | 07/22/1952 | 74455.0 | 0.0 | 4.10 | 0.016 | IV | 46.5( 74.9) |
| PAS | 34.5410 | 118.9890 | 06/12/1984 | 02752.4 | 11.7 | 4.10 | 0.027 | V | 24.5( 39.4) |
| DMG | 34.9500 | 119.0170 | 11/11/1952 | 181225.0 | 0.0 | 4.10 | 0.016 | IV | 48.1( 77.3) |
| DMG | 35.0670 | 119.0330 | 07/23/1952 | 175329.0 | 0.0 | 4.10 | 0.014 | IV | 55.5( 89.3) |
| GSP | 33.6740 | 119.7600 | 07/24/2005 | 125942.9 | 6.0 | 4.10 | 0.015 | IV | 50.3( 80.9) |
| DMG | 35.0500 | 118.9000 | 09/25/1952 | 162136.0 | 0.0 | 4.10 | 0.014 | IV | 56.9( 91.6) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 140.0 | 8.0 | 4.10 | 0.015 | IV | 51.7( 83.2) |

## EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 35.0170 | 118.9830 | 08/17/1952 | 9 9 7.0 | 0.0 | 4.10 | 0.015 | IV | 53.1( 85.4) |
| GSP | 34.3650 | 118.7080 | 01/19/1994 | 044314.5 | 12.0 | 4.10 | 0.021 | IV | 34.0( 54.6) |
| DMG | 35.0670 | 118.7670 | 07/22/1952 | 21 211.0 | 0.0 | 4.20 | 0.014 | IV | 61.3( 98.7) |
| DMG | 34.2530 | 119.6980 | 06/29/1968 | 191221.3 | 9.5 | 4.20 | 0.030 | V | 23.0( 37.1) |
| DMG | 34.2650 | 118.5770 | 04/15/1971 | 111432.0 | 4.2 | 4.20 | 0.019 | IV | 41.1( 66.2) |
| DMG | 34.5290 | 118.6440 | 02/07/1956 | 21656.5 | 16.0 | 4.20 | 0.019 | IV | 40.6( 65.3) |
| GSB | 34.2990 | 118.4280 | 01/23/1994 | 085508.7 | 6.0 | 4.20 | 0.016 | IV | 49.6( 79.8) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1542 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| PAS | 35.0120 | 119.1790 | 11/10/1981 | 2237 5.0 | 9.4 | 4.20 | 0.016 | IV | 50.1( 80.6) |
| GSP | 34.3110 | 118.3980 | 06/15/1994 | 055948.6 | 7.0 | 4.20 | 0.016 | IV | 51.3( 82.6) |
| DMG | 34.7000 | 120.1000 | 07/28/1945 | 23348.0 | 0.0 | 4.20 | 0.015 | IV | 53.6( 86.3) |
| GSP | 34.3740 | 118.4950 | 01/28/1994 | 200953.4 | 0.0 | 4.20 | 0.017 | IV | 46.1( 74.1) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 446.0 | 8.0 | 4.20 | 0.016 | IV | 51.7( 83.2) |
| GSB | 34.3100 | 118.4740 | 01/21/1994 | 184228.8 | 7.0 | 4.20 | 0.017 | IV | 47.0( 75.6) |
| DMG | 34.8830 | 119.0330 | 08/20/1952 | 84747.0 | 0.0 | 4.20 | 0.018 | IV | 43.4( 69.8) |
| DMG | 34.4310 | 118.3690 | 08/14/1974 | 144555.2 | 8.2 | 4.20 | 0.015 | IV | 53.7( 86.5) |
| GSP | 34.0590 | 118.3870 | 09/09/2001 | 235918.0 | 4.0 | 4.20 | 0.015 | IV | 54.4( 87.6) |
| GSP | 34.2180 | 118.6070 | 01/18/1994 | 113509.9 | 12.0 | 4.20 | 0.020 | IV | 39.7( 63.9) |
| DMG | 35.0500 | 119.1330 | 05/23/1953 | 75255.0 | 0.0 | 4.20 | 0.016 | IV | 53.1( 85.4) |
| GSP | 34.3610 | 118.6570 | 01/29/2002 | 055328.9 | 14.0 | 4.20 | 0.021 | IV | 36.8( 59.2) |
| DMG | 34.3560 | 118.4740 | 03/25/1971 | 2254 9.9 | 4.6 | 4.20 | 0.017 | IV | 47.1( 75.9) |
| DMG | 34.4570 | 118.4270 | 02/09/1971 | 161926.5 | -1.0 | 4.20 | 0.016 | IV | 50.9( 81.8) |
| GSG | 34.3340 | 118.4840 | 01/17/1994 | 223152.1 | 10.0 | 4.20 | 0.017 | IV | 46.5( 74.8) |
| DMG | 33.6040 | 119.1050 | 03/25/1956 | 332 2.3 | 8.2 | 4.20 | 0.017 | IV | 48.8( 78.6) |
| PAS | 34.4630 | 118.4090 | 09/24/1977 | 212824.3 | 5.0 | 4.20 | 0.016 | IV | 51.9( 83.6) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 14 6 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1228 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1239 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| DMG | 34.4460 | 118.4360 | 02/10/1971 | 185441.7 | 8.1 | 4.20 | 0.016 | IV | 50.2( 80.8) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1536 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1451 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1442 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| GSP | 34.4810 | 119.3530 | 10/23/1996 | 220929.4 | 14.0 | 4.20 | 0.045 | VI | 13.3( 21.5) |
| PAS | 33.9330 | 118.6690 | 10/17/1979 | 205237.3 | 5.5 | 4.20 | 0.018 | IV | 43.7( 70.3) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 8 7.0 | 8.0 | 4.20 | 0.016 | IV | 51.7( 83.2) |
| PAS | 34.6610 | 119.9730 | 05/07/1984 | 193232.8 | 9.9 | 4.20 | 0.017 | IV | 46.1( 74.2) |
| DMG | 35.0830 | 119.2330 | 03/03/1956 | 62412.0 | 0.0 | 4.20 | 0.015 | IV | 54.6( 87.9) |
| DMG | 34.1500 | 119.3500 | 08/22/1950 | 224758.0 | 0.0 | 4.20 | 0.054 | VI | 10.3( 16.6) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 133.0 | 8.0 | 4.20 | 0.016 | IV | 51.7( 83.2) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 154.0 | 8.0 | 4.20 | 0.016 | IV | 51.7( 83.2) |
| DMG | 34.3960 | 118.3660 | 02/10/1971 | 173855.1 | 6.2 | 4.20 | 0.015 | IV | 53.6( 86.2) |
| DMG | 34.3610 | 118.4870 | 02/10/1971 | 143526.7 | 4.4 | 4.20 | 0.017 | IV | 46.4( 74.7) |
| DMG | 35.1500 | 119.0500 | 11/11/1952 | 1722 8.0 | 0.0 | 4.20 | 0.014 | IV | 60.8( 97.8) |
| GSP | 34.2990 | 118.4390 | 02/03/1994 | 162335.4 | 8.0 | 4.20 | 0.017 | IV | 48.9( 78.8) |
| DMG | 35.0670 | 118.8830 | 08/14/1952 | 114146.0 | 0.0 | 4.20 | 0.014 | IV | 58.4( 93.9) |
| DMG | 34.3840 | 118.4550 | 02/10/1971 | 113134.6 | 6.0 | 4.20 | 0.017 | IV | 48.4( 77.9) |
| GSP | 34.3630 | 118.6270 | 01/24/1994 | 055421.1 | 10.0 | 4.20 | 0.020 | IV | 38.5( 62.0) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1259 0.0 | 0.0 | 4.20 | 0.016 | IV | 51.6( 83.1) |
| GSP | 34.3040 | 118.4730 | 01/17/1994 | 150703.2 | 2.0 | 4.20 | 0.017 | IV | 47.0( 75.7) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 434.0 | 8.0 | 4.20 | 0.016 | IV | 51.7( 83.2) |
| PDP | 35.0220 | 119.2530 | 05/08/2010 | 192306.6 | 15.0 | 4.30 | 0.017 | IV | 50.4( 81.1) |
| GSP | 34.0490 | 118.9150 | 02/19/1995 | 212418.1 | 15.0 | 4.30 | 0.027 | V | 27.6( 44.4) |
| GSP | 34.2970 | 118.4580 | 01/21/1994 | 185344.6 | 7.0 | 4.30 | 0.018 | IV | 47.9( 77.0) |

EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 230.0 | 8.0 | 4.30 | 0.017 | IV | 51.7( 83.2) |
| DMG | 35.0450 | 119.0040 | 03/23/1956 | 212327.1 | 12.1 | 4.30 | 0.016 | IV | 54.5( 87.7) |
| T-A | 34.5000 | 119.6700 | 06/25/1855 | 22 0 0.0 | 0.0 | 4.30 | 0.029 | V | 25.6( 41.2) |
| DMG | 33.4000 | 119.4000 | 07/24/1947 | 1654 2.0 | 0.0 | 4.30 | 0.015 | IV | 62.0( 99.7) |
| DMG | 35.0170 | 119.0500 | 08/05/1953 | 122059.0 | 0.0 | 4.30 | 0.017 | IV | 51.9( 83.5) |
| T-A | 34.4200 | 118.9200 | 03/29/1917 | 8 6 0.0 | 0.0 | 4.30 | 0.031 | V | 23.2( 37.3) |
| GSB | 34.3330 | 118.6230 | 01/18/1994 | 072356.0 | 14.0 | 4.30 | 0.021 | IV | 38.5( 62.0) |
| T-A | 34.5000 | 119.6700 | 05/31/1854 | 1250 0.0 | 0.0 | 4.30 | 0.029 | V | 25.6( 41.2) |
| GSP | 34.3590 | 118.6290 | 01/24/1994 | 055024.3 | 12.0 | 4.30 | 0.021 | IV | 38.4( 61.7) |
| DMG | 34.3330 | 119.8330 | 06/26/1933 | 62752.0 | 0.0 | 4.30 | 0.025 | V | 30.7( 49.4) |
| PAS | 35.0350 | 119.1370 | 06/16/1978 | 42131.6 | 1.8 | 4.30 | 0.017 | IV | 52.0( 83.7) |
| DMG | 34.4110 | 118.3290 | 02/10/1971 | 5 636.0 | 4.7 | 4.30 | 0.016 | IV | 55.8( 89.8) |
| GSP | 34.3810 | 119.4350 | 07/24/2004 | 125519.9 | 3.0 | 4.30 | 0.058 | VI | 9.9( 16.0) |
| MGI | 34.0000 | 119.5000 | 05/03/1926 | 1353 0.0 | 0.0 | 4.30 | 0.031 | V | 23.3( 37.5) |
| T-A | 34.5000 | 119.6700 | 07/09/1885 | 0 0 0.0 | 0.0 | 4.30 | 0.029 | V | 25.6( 41.2) |
| DMG | 34.9000 | 119.0500 | 07/22/1952 | 143018.0 | 0.0 | 4.30 | 0.019 | IV | 44.2( 71.1) |
| GSP | 34.2840 | 118.4040 | 01/14/2001 | 022614.1 | 8.0 | 4.30 | 0.017 | IV | 51.0( 82.0) |
| GSP | 34.3010 | 118.4520 | 01/21/1994 | 185244.2 | 7.0 | 4.30 | 0.018 | IV | 48.2( 77.6) |
| DMG | 35.0660 | 119.0490 | 01/24/1974 | 5 2 0.8 | 6.4 | 4.30 | 0.016 | IV | 55.2( 88.8) |
| DMG | 34.8670 | 119.0170 | 07/21/1952 | 2153 9.0 | 0.0 | 4.30 | 0.019 | IV | 42.7( 68.7) |
| DMG | 35.0000 | 118.7330 | 08/23/1952 | 6 3 3.0 | 0.0 | 4.30 | 0.015 | IV | 58.4( 93.9) |
| T-A | 34.9200 | 118.9200 | 08/29/1857 | 0 0 0.0 | 0.0 | 4.30 | 0.018 | IV | 48.3( 77.7) |
| DMG | 34.9280 | 118.9700 | 01/15/1955 | 1 3 6.7 | 9.1 | 4.30 | 0.018 | IV | 47.6( 76.6) |
| DMG | 34.3330 | 119.8330 | 06/26/1933 | 62542.0 | 0.0 | 4.30 | 0.025 | V | 30.7( 49.4) |
| GSB | 34.3430 | 118.6660 | 01/17/1994 | 234925.4 | 8.0 | 4.30 | 0.022 | IV | 36.2( 58.2) |
| T-A | 34.5000 | 119.6700 | 02/09/1902 | 15 0 0.0 | 0.0 | 4.30 | 0.029 | V | 25.6( 41.2) |
| DMG | 34.9500 | 118.9500 | 10/16/1952 | 1222 7.0 | 0.0 | 4.30 | 0.017 | IV | 49.4( 79.6) |
| DMG | 34.9830 | 118.9000 | 07/24/1952 | 95032.0 | 0.0 | 4.30 | 0.017 | IV | 52.7( 84.8) |
| DMG | 34.3990 | 118.4190 | 02/10/1971 | 134953.7 | 9.7 | 4.30 | 0.017 | IV | 50.6( 81.4) |
| DMG | 35.0670 | 118.8830 | 08/17/1952 | 21 442.0 | 0.0 | 4.30 | 0.015 | IV | 58.4( 93.9) |
| DMG | 35.1000 | 119.0000 | 07/22/1952 | 14 511.0 | 0.0 | 4.30 | 0.015 | IV | 58.2( 93.6) |
| GSP | 34.2780 | 118.6110 | 01/29/1994 | 121656.4 | 2.0 | 4.30 | 0.021 | IV | 39.2( 63.0) |
| T-A | 34.5000 | 119.6700 | 03/14/1857 | 23 0 0.0 | 0.0 | 4.30 | 0.029 | V | 25.6( 41.2) |
| DMG | 34.5000 | 119.1170 | 11/17/1954 | 23 351.0 | 0.0 | 4.40 | 0.040 | V | 17.6( 28.3) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1218 0.0 | 0.0 | 4.40 | 0.018 | IV | 51.6( 83.1) |
| GSP | 34.3790 | 118.5630 | 01/18/1994 | 003935.0 | 7.0 | 4.40 | 0.021 | IV | 42.3( 68.0) |
| DMG | 35.0000 | 118.8330 | 12/01/1952 | 52610.0 | 0.0 | 4.40 | 0.017 | IV | 55.5( 89.2) |
| DMG | 33.7700 | 118.4800 | 04/24/1931 | 182754.8 | 0.0 | 4.40 | 0.016 | IV | 59.1( 95.1) |
| DMG | 35.0500 | 119.1330 | 08/06/1953 | 1120 4.0 | 0.0 | 4.40 | 0.017 | IV | 53.1( 85.4) |
| GSP | 34.3120 | 118.3930 | 05/25/1994 | 125657.1 | 7.0 | 4.40 | 0.018 | IV | 51.6( 83.0) |
| DMG | 35.0500 | 119.1670 | 12/14/1950 | 135623.0 | 0.0 | 4.40 | 0.017 | IV | 52.8( 84.9) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 325.0 | 8.0 | 4.40 | 0.018 | IV | 51.7( 83.2) |
| DMG | 35.0330 | 119.1000 | 02/07/1954 | 0 953.0 | 0.0 | 4.40 | 0.018 | IV | 52.3( 84.1) |
| DMG | 34.2670 | 119.5670 | 06/29/1968 | 191357.0 | 10.0 | 4.40 | 0.044 | VI | 15.5( 24.9) |
| GSP | 34.0690 | 118.8820 | 05/02/2009 | 011113.7 | 14.0 | 4.40 | 0.028 | V | 28.3( 45.6) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1415 0.0 | 0.0 | 4.40 | 0.018 | IV | 51.6( 83.1) |
| GSP | 34.3000 | 118.6200 | 08/09/2007 | 075849.0 | 4.0 | 4.40 | 0.022 | IV | 38.6( 62.2) |
| DMG | 35.0000 | 119.0000 | 07/23/1952 | 043 8.0 | 0.0 | 4.40 | 0.018 | IV | 51.6( 83.1) |
| DMG | 34.7840 | 118.9020 | 07/27/1972 | 03117.4 | 8.0 | 4.40 | 0.021 | IV | 40.7( 65.4) |
| DMG | 35.0330 | 119.1000 | 01/13/1954 | 14531.0 | 0.0 | 4.40 | 0.018 | IV | 52.3( 84.1) |
| GSP | 34.9180 | 119.0200 | 12/24/2000 | 010421.9 | 14.0 | 4.40 | 0.019 | IV | 45.9( 73.9) |
| GSP | 34.3950 | 120.0220 | 05/09/2004 | 085717.3 | 4.0 | 4.40 | 0.021 | IV | 41.9( 67.4) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1210 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |

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EARTHQUAKE SEARCH RESULTS
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| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1638 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1553 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0500 | 09/12/1952 | 103525.0 | 0.0 | 4.50 | 0.019 | IV | 50.8( 81.7) |
| PAS | 34.3800 | 118.4590 | 08/12/1977 | 21926.1 | 9.5 | 4.50 | 0.020 | IV | 48.2( 77.5) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1313 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| GSB | 34.3600 | 118.5710 | 01/19/1994 | 044048.0 | 2.0 | 4.50 | 0.022 | IV | 41.7( 67.0) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 13 8 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| GSP | 34.2930 | 118.3890 | 12/06/1994 | 034834.5 | 9.0 | 4.50 | 0.019 | IV | 51.8( 83.4) |
| DMG | 34.9330 | 119.0670 | 02/10/1954 | 235838.0 | 0.0 | 4.50 | 0.020 | IV | 46.1( 74.1) |
| DMG | 34.8850 | 119.0020 | 02/23/1939 | 91846.7 | 10.0 | 4.50 | 0.021 | IV | 44.2( 71.1) |
| DMG | 35.0000 | 119.0000 | 03/13/1929 | 228 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| DMG | 34.9030 | 119.0380 | 05/08/1939 | 248 5.3 | 10.0 | 4.50 | 0.021 | IV | 44.6( 71.8) |
| GSB | 34.3190 | 118.5580 | 01/18/1994 | 132444.1 | 1.0 | 4.50 | 0.022 | IV | 42.2( 67.9) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 838.0 | 8.0 | 4.50 | 0.019 | IV | 51.7( 83.2) |
| PAS | 35.0000 | 119.1030 | 05/13/1975 | 02135.6 | 19.1 | 4.50 | 0.019 | IV | 50.0( 80.5) |
| DMG | 34.4830 | 118.9830 | 09/04/1942 | 63433.0 | 0.0 | 4.50 | 0.036 | V | 22.2( 35.7) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 745.0 | 8.0 | 4.50 | 0.019 | IV | 51.7( 83.2) |
| DMG | 35.0670 | 119.0670 | 02/24/1954 | 223022.0 | 0.0 | 4.50 | 0.018 | IV | 55.0( 88.5) |
| DMG | 35.0500 | 119.2330 | 08/19/1952 | 191226.0 | 0.0 | 4.50 | 0.018 | IV | 52.4( 84.3) |
| DMG | 34.3330 | 119.5830 | 07/12/1941 | 1618 0.0 | 0.0 | 4.50 | 0.045 | VI | 16.5( 26.6) |
| DMG | 34.2500 | 119.5000 | 04/13/1917 | 359 0.0 | 0.0 | 4.50 | 0.057 | VI | 11.9( 19.2) |
| DMG | 34.9110 | 118.9730 | 02/23/1939 | 84551.7 | 10.0 | 4.50 | 0.020 | IV | 46.5( 74.8) |
| PAS | 35.0180 | 119.1410 | 11/10/1981 | 223435.5 | 3.1 | 4.50 | 0.019 | IV | 50.8( 81.8) |
| DMG | 34.3530 | 118.4560 | 03/07/1971 | 13340.5 | 3.3 | 4.50 | 0.020 | IV | 48.1( 77.5) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 18 0 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| DMG | 34.4830 | 118.9830 | 09/03/1942 | 14 6 1.0 | 0.0 | 4.50 | 0.036 | V | 22.2( 35.7) |
| DMG | 34.5000 | 119.5000 | 12/05/1920 | 1158 0.0 | 0.0 | 4.50 | 0.041 | V | 18.4( 29.5) |
| DMG | 34.4260 | 118.4140 | 02/10/1971 | 518 7.2 | 5.8 | 4.50 | 0.019 | IV | 51.2( 82.3) |
| PAS | 34.7370 | 120.1480 | 10/25/1984 | 1036 2.4 | 6.0 | 4.50 | 0.017 | IV | 57.3( 92.2) |
| GSP | 34.3310 | 118.4420 | 01/17/1994 | 141430.3 | 1.0 | 4.50 | 0.019 | IV | 48.8( 78.6) |
| DMG | 34.0000 | 118.5000 | 11/08/1914 | 1140 0.0 | 0.0 | 4.50 | 0.019 | IV | 49.8( 80.2) |
| GSB | 34.3580 | 118.6220 | 01/18/1994 | 040126.8 | 1.0 | 4.50 | 0.023 | IV | 38.8( 62.4) |
| DMG | 35.0000 | 119.0330 | 07/21/1952 | 1159 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.0( 82.1) |
| DMG | 34.3330 | 119.5830 | 09/08/1941 | 31245.0 | 0.0 | 4.50 | 0.045 | VI | 16.5( 26.6) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 150.0 | 8.0 | 4.50 | 0.019 | IV | 51.7( 83.2) |
| GSP | 34.2150 | 118.5100 | 01/19/1994 | 140914.8 | 17.0 | 4.50 | 0.021 | IV | 45.2( 72.8) |
| DMG | 34.9830 | 119.0330 | 07/21/1952 | 235328.0 | 0.0 | 4.50 | 0.019 | IV | 49.9( 80.3) |
| DMG | 34.3920 | 118.4270 | 02/21/1971 | 71511.7 | 7.2 | 4.50 | 0.019 | IV | 50.1( 80.6) |
| GSP | 34.2610 | 118.5340 | 01/17/1994 | 123939.8 | 14.0 | 4.50 | 0.021 | IV | 43.6( 70.2) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 132512.0 | 0.0 | 4.50 | 0.019 | IV | 51.6( 83.1) |
| DMG | 35.0000 | 119.0330 | 07/21/1952 | 1157 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.0( 82.1) |
| DMG | 35.0000 | 119.0330 | 07/21/1952 | 1155 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.0( 82.1) |
| DMG | 34.3330 | 119.5830 | 07/01/1941 | 2354 0.0 | 0.0 | 4.50 | 0.045 | VI | 16.5( 26.6) |
| DMG | 35.0000 | 119.0330 | 07/21/1952 | 1154 0.0 | 0.0 | 4.50 | 0.019 | IV | 51.0( 82.1) |
| DMG | 34.1760 | 119.7540 | 07/07/1968 | 143330.8 | 12.8 | 4.50 | 0.030 | V | 27.3( 43.9) |
| MGI | 34.0000 | 118.4000 | 02/22/1920 | 1610 0.0 | 0.0 | 4.60 | 0.019 | IV | 55.1( 88.7) |
| PAS | 34.0160 | 118.9880 | 10/26/1984 | 172043.5 | 13.3 | 4.60 | 0.033 | V | 26.0( 41.9) |
| GSP | 33.6660 | 119.3300 | 03/16/2002 | 213323.8 | 7.0 | 4.60 | 0.023 | IV | 43.3( 69.8) |
| PAS | 34.3470 | 118.6560 | 04/08/1976 | 152138.1 | 14.5 | 4.60 | 0.026 | V | 36.7( 59.1) |
| GSP | 34.2540 | 118.5450 | 01/17/1994 | 130627.9 | 0.0 | 4.60 | 0.023 | IV | 43.0( 69.2) |
| MGI | 34.1000 | 118.3000 | 07/16/1920 | 2022 0.0 | 0.0 | 4.60 | 0.018 | IV | 58.5( 94.1) |
| MGI | 34.0000 | 118.4000 | 02/07/1927 | 429 0.0 | 0.0 | 4.60 | 0.019 | IV | 55.1( 88.7) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1212 0.0 | 0.0 | 4.60 | 0.020 | IV | 51.6( 83.1) |

## EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 853.0 | 8.0 | 4.60 | 0.020 | IV | 51.7( 83.2) |
| MGI | 34.0000 | 118.4000 | 10/01/1930 | 040 0.0 | 0.0 | 4.60 | 0.019 | IV | 55.1( 88.7) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1359 0.0 | 0.0 | 4.60 | 0.020 | IV | 51.6( 83.1) |
| MGI | 34.1000 | 118.3000 | 07/16/1920 | 2130 0.0 | 0.0 | 4.60 | 0.018 | IV | 58.5( 94.1) |
| DMG | 35.0000 | 119.0830 | 11/07/1952 | 85535.0 | 0.0 | 4.60 | 0.020 | IV | 50.3( 80.9) |
| PAS | 33.6370 | 119.0560 | 10/23/1981 | 191552.5 | 6.3 | 4.60 | 0.021 | IV | 47.4( 76.2) |
| GSP | 34.2280 | 118.5730 | 01/17/1994 | 175608.2 | 19.0 | 4.60 | 0.023 | IV | 41.6( 66.9) |
| GSP | 34.2740 | 118.5630 | 01/27/1994 | 171958.8 | 14.0 | 4.60 | 0.023 | IV | 41.9( 67.4) |
| MGI | 34.4000 | 119.8000 | 09/09/1929 | 515 0.0 | 0.0 | 4.60 | 0.030 | V | 29.6( 47.6) |
| GSB | 35.0270 | 119.1780 | 04/16/2005 | 191813.0 | 10.0 | 4.60 | 0.020 | IV | 51.1( 82.2) |
| MGI | 34.1000 | 118.3000 | 07/16/1920 | 2127 0.0 | 0.0 | 4.60 | 0.018 | IV | 58.5( 94.1) |
| DMG | 34.2860 | 118.5150 | 03/31/1971 | 145222.5 | 2.1 | 4.60 | 0.022 | IV | 44.6( 71.8) |
| MGI | 34.3000 | 119.3000 | 05/01/1904 | 1830 0.0 | 0.0 | 4.60 | 0.160 | VIII | 0.5( 0.8) |
| DMG | 35.0000 | 119.0330 | 07/21/1952 | 1158 0.0 | 0.0 | 4.60 | 0.020 | IV | 51.0( 82.1) |
| GSB | 35.0380 | 119.1300 | 02/14/2004 | 124311.4 | 12.0 | 4.60 | 0.019 | IV | 52.3( 84.1) |
| DMG | 34.5860 | 118.6130 | 02/07/1956 | 31638.6 | 2.6 | 4.60 | 0.022 | IV | 43.9( 70.6) |
| MGI | 34.2000 | 119.2000 | 06/16/1914 | 1052 0.0 | 0.0 | 4.60 | 0.076 | VII | 8.5( 13.7) |
| PAS | 33.6300 | 119.0200 | 10/23/1981 | 172816.9 | 12.0 | 4.60 | 0.021 | IV | 48.5( 78.0) |
| GSB | 34.3000 | 118.4660 | 01/21/1994 | 183915.3 | 10.0 | 4.70 | 0.022 | IV | 47.4( 76.3) |
| DMG | 34.3990 | 118.4730 | 03/09/1974 | 05431.9 | 24.4 | 4.70 | 0.022 | IV | 47.5( 76.5) |
| DMG | 34.9670 | 119.0000 | 09/02/1952 | 204556.0 | 0.0 | 4.70 | 0.021 | IV | 49.5( 79.6) |
| DMG | 35.0330 | 119.0500 | 08/18/1952 | 44010.0 | 0.0 | 4.70 | 0.020 | IV | 53.0( 85.2) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 12 7 0.0 | 0.0 | 4.70 | 0.021 | IV | 51.6( 83.1) |
| DMG | 34.3610 | 118.3060 | 02/09/1971 | 141021.5 | 5.0 | 4.70 | 0.019 | IV | 56.7( 91.3) |
| DMG | 34.6170 | 119.0830 | 02/26/1950 | 0 622.0 | 0.0 | 4.70 | 0.036 | V | 25.5( 41.0) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 231.0 | 8.0 | 4.70 | 0.021 | IV | 51.7( 83.2) |
| DMG | 34.0170 | 118.9670 | 04/16/1948 | 222624.0 | 0.0 | 4.70 | 0.034 | V | 26.8( 43.2) |
| GSP | 33.9380 | 118.3360 | 05/18/2009 | 033936.3 | 13.0 | 4.70 | 0.018 | IV | 60.2( 96.8) |
| GSB | 34.2850 | 118.6240 | 01/17/1994 | 135602.4 | 19.0 | 4.70 | 0.026 | V | 38.4( 61.8) |
| DMG | 35.1000 | 118.9670 | 08/25/1952 | 62026.0 | 0.0 | 4.70 | 0.019 | IV | 58.8( 94.6) |
| GSP | 34.3170 | 118.4550 | 01/17/1994 | 132644.7 | 2.0 | 4.70 | 0.022 | IV | 48.1( 77.3) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1225 0.0 | 0.0 | 4.70 | 0.021 | IV | 51.6( 83.1) |
| DMG | 34.3970 | 118.4390 | 02/21/1971 | 55052.6 | 6.9 | 4.70 | 0.021 | IV | 49.4( 79.6) |
| DMG | 34.1180 | 119.2200 | 03/18/1957 | 185628.0 | 13.8 | 4.70 | 0.060 | VI | 12.9( 20.7) |
| DMG | 35.0000 | 118.7330 | 04/29/1953 | 124745.0 | 0.0 | 4.70 | 0.019 | IV | 58.4( 93.9) |
| DMG | 33.7670 | 118.4500 | 10/11/1940 | 55712.3 | 0.0 | 4.70 | 0.018 | IV | 60.6( 97.5) |
| GSP | 35.0430 | 119.0130 | 09/22/2005 | 202448.6 | 11.0 | 4.70 | 0.020 | IV | 54.2( 87.2) |
| DMG | 35.0330 | 118.9330 | 07/22/1952 | 223133.0 | 0.0 | 4.70 | 0.020 | IV | 55.1( 88.7) |
| DMG | 34.3490 | 119.4920 | 07/14/1958 | 52555.3 | 16.0 | 4.70 | 0.064 | VI | 11.8( 18.9) |
| GSP | 34.3790 | 118.5610 | 01/18/1994 | 152346.9 | 7.0 | 4.80 | 0.025 | V | 42.4( 68.2) |
| DMG | 35.0000 | 119.0000 | 07/22/1952 | 133143.0 | 0.0 | 4.80 | 0.022 | IV | 51.6( 83.1) |
| GSB | 34.3450 | 118.5520 | 01/24/1994 | 041518.8 | 6.0 | 4.80 | 0.025 | V | 42.6( 68.6) |
| DMG | 35.0000 | 119.0170 | 05/25/1953 | 324 1.0 | 0.0 | 4.80 | 0.022 | IV | 51.3( 82.6) |
| GSP | 34.3770 | 118.6490 | 04/27/1997 | 110928.4 | 15.0 | 4.80 | 0.028 | V | 37.4( 60.2) |
| DMG | 34.3350 | 118.3310 | 02/09/1971 | 155820.7 | 14.2 | 4.80 | 0.021 | IV | 55.2( 88.8) |
| DMG | 33.9170 | 119.5000 | 08/26/1954 | 1348 3.0 | 0.0 | 4.80 | 0.035 | V | 28.4( 45.8) |
| DMG | 33.4300 | 119.0960 | 10/31/1969 | 103929.0 | 7.3 | 4.80 | 0.019 | IV | 60.7( 97.7) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 12 6 0.0 | 0.0 | 4.80 | 0.022 | IV | 51.6( 83.1) |
| GSP | 34.3740 | 118.6220 | 01/17/1994 | 155410.8 | 12.0 | 4.80 | 0.027 | V | 38.9( 62.6) |
| DMG | 35.0330 | 118.8500 | 10/07/1953 | 145921.0 | 0.0 | 4.90 | 0.021 | IV | 57.0( 91.8) |
| DMG | 34.0000 | 118.5000 | 06/22/1920 | 248 0.0 | 0.0 | 4.90 | 0.024 | IV | 49.8( 80.2) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1222 0.0 | 0.0 | 4.90 | 0.023 | IV | 51.6( 83.1) |
| DMG | 34.3440 | 118.6360 | 02/09/1971 | 143436.1 | -2.0 | 4.90 | 0.029 | V | 37.9( 60.9) |

# EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 1240 0.0 | 0.0 | 4.90 | 0.023 | IV | 51.6( 83.1) |
| DMG | 35.0330 | 119.0500 | 08/07/1952 | 163151.0 | 0.0 | 4.90 | 0.023 | IV | 53.0( 85.2) |
| GSP | 34.3940 | 118.6690 | 06/26/1995 | 084028.9 | 13.0 | 5.00 | 0.032 | V | 36.5( 58.7) |
| MGI | 34.0800 | 118.2600 | 07/16/1920 | 18 8 0.0 | 0.0 | 5.00 | 0.021 | IV | 61.0( 98.2) |
| DMG | 34.0000 | 118.5000 | 08/04/1927 | 1224 0.0 | 0.0 | 5.00 | 0.025 | V | 49.8( 80.2) |
| PAS | 33.9440 | 118.6810 | 01/01/1979 | 231438.9 | 11.3 | 5.00 | 0.028 | V | 42.7( 68.7) |
| DMG | 34.5000 | 119.5000 | 08/05/1930 | 1125 0.0 | 0.0 | 5.00 | 0.054 | VI | 18.4( 29.5) |
| DMG | 34.9410 | 118.9870 | 11/15/1961 | 53855.5 | 10.7 | 5.00 | 0.026 | V | 48.1( 77.3) |
| T-A | 34.9200 | 118.9200 | 05/23/1857 | 0 0 0.0 | 0.0 | 5.00 | 0.026 | V | 48.3( 77.7) |
| DMG | 35.0000 | 119.0000 | 02/16/1919 | 1557 0.0 | 0.0 | 5.00 | 0.024 | V | 51.6( 83.1) |
| DMG | 34.0000 | 119.5000 | 02/18/1926 | 1818 0.0 | 0.0 | 5.00 | 0.045 | VI | 23.3( 37.5) |
| MGI | 34.4000 | 119.7000 | 03/25/1806 | 8 0 0.0 | 0.0 | 5.00 | 0.044 | VI | 24.1( 38.8) |
| T-A | 34.5000 | 119.6700 | 06/01/1893 | 12 0 0.0 | 0.0 | 5.00 | 0.042 | VI | 25.6( 41.2) |
| MGI | 34.0000 | 118.5000 | 11/19/1918 | 2018 0.0 | 0.0 | 5.00 | 0.025 | V | 49.8( 80.2) |
| DMG | 33.9860 | 119.4750 | 08/06/1973 | 232917.0 | 16.9 | 5.00 | 0.044 | VI | 23.5( 37.9) |
| PAS | 33.9190 | 118.6270 | 01/19/1989 | 65328.8 | 11.9 | 5.00 | 0.026 | V | 46.2( 74.4) |
| T-A | 34.9200 | 118.9200 | 01/20/1857 | 0 0 0.0 | 0.0 | 5.00 | 0.026 | V | 48.3( 77.7) |
| DMG | 34.9320 | 118.9760 | 03/01/1963 | 02557.9 | 13.9 | 5.00 | 0.026 | V | 47.7( 76.8) |
| GSP | 34.3690 | 118.6720 | 04/26/1997 | 103730.7 | 16.0 | 5.10 | 0.034 | V | 36.0( 58.0) |
| DMG | 34.9000 | 118.9500 | 08/01/1952 | 13 430.0 | 0.0 | 5.10 | 0.028 | V | 46.3( 74.5) |
| GSP | 34.3780 | 118.6180 | 01/19/1994 | 211144.9 | 11.0 | 5.10 | 0.032 | V | 39.2( 63.0) |
| DMG | 34.9830 | 118.9830 | 05/23/1954 | 235243.0 | 0.0 | 5.10 | 0.026 | V | 50.9( 81.8) |
| PAS | 34.3470 | 119.6960 | 08/13/1978 | 225453.4 | 12.8 | 5.10 | 0.048 | VI | 23.0( 37.1) |
| GSP | 34.3050 | 118.5790 | 01/29/1994 | 112036.0 | 1.0 | 5.10 | 0.031 | V | 41.0( 65.9) |
| GSP | 35.1490 | 119.1040 | 05/28/1993 | 044740.6 | 21.0 | 5.20 | 0.024 | V | 60.1( 96.7) |
| GSP | 34.3770 | 118.6980 | 01/18/1994 | 004308.9 | 11.0 | 5.20 | 0.037 | V | 34.6( 55.8) |
| DMG | 34.1180 | 119.7020 | 07/05/1968 | 04517.2 | 5.9 | 5.20 | 0.046 | VI | 26.1( 42.0) |
| DMG | 34.8670 | 118.9330 | 09/21/1941 | 1953 7.2 | 0.0 | 5.20 | 0.030 | V | 44.7( 71.9) |
| DMG | 33.9500 | 118.6320 | 08/31/1930 | 04036.0 | 0.0 | 5.20 | 0.030 | V | 44.8( 72.1) |
| DMG | 35.0000 | 118.8330 | 07/23/1952 | 181351.0 | 0.0 | 5.20 | 0.026 | V | 55.5( 89.2) |
| DMG | 34.3080 | 118.4540 | 02/09/1971 | 144346.7 | 6.2 | 5.20 | 0.029 | V | 48.1( 77.4) |
| GSB | 34.3010 | 118.5650 | 01/17/1994 | 204602.4 | 9.0 | 5.20 | 0.032 | V | 41.8( 67.2) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 141028.0 | 8.0 | 5.30 | 0.028 | V | 51.7( 83.2) |
| PAS | 33.6710 | 119.1110 | 09/04/1981 | 155050.3 | 5.0 | 5.30 | 0.032 | V | 44.3( 71.2) |
| DMG | 34.9500 | 118.8670 | 07/21/1952 | 121936.0 | 0.0 | 5.30 | 0.028 | V | 51.5( 82.9) |
| MGI | 34.3000 | 119.8000 | 07/03/1925 | 1638 0.0 | 0.0 | 5.30 | 0.045 | VI | 28.7( 46.2) |
| MGI | 34.0000 | 118.3000 | 09/03/1905 | 540 0.0 | 0.0 | 5.30 | 0.025 | V | 60.5( 97.3) |
| GSP | 34.2310 | 118.4750 | 03/20/1994 | 212012.3 | 13.0 | 5.30 | 0.031 | V | 47.1( 75.8) |
| MGI | 34.3000 | 119.8000 | 07/03/1925 | 1821 0.0 | 0.0 | 5.30 | 0.045 | VI | 28.7( 46.2) |
| DMG | 35.0000 | 118.8330 | 07/23/1952 | 75319.0 | 0.0 | 5.40 | 0.028 | V | 55.5( 89.2) |
| PAS | 34.9430 | 118.7430 | 06/10/1988 | 23 643.0 | 6.8 | 5.40 | 0.029 | V | 54.8( 88.2) |
| DMG | 34.0000 | 120.0170 | 04/01/1945 | 234342.0 | 0.0 | 5.40 | 0.033 | V | 45.8( 73.8) |
| GSB | 34.3790 | 118.7110 | 01/19/1994 | 210928.6 | 14.0 | 5.50 | 0.044 | VI | 33.9( 54.6) |
| DMG | 34.1000 | 119.4000 | 05/19/1893 | 035 0.0 | 0.0 | 5.50 | 0.083 | VII | 14.6( 23.5) |
| DMG | 34.5000 | 119.5000 | 06/29/1926 | 2321 0.0 | 0.0 | 5.50 | 0.070 | VI | 18.4( 29.5) |
| DMG | 34.7000 | 119.0000 | 10/23/1916 | 254 0.0 | 0.0 | 5.50 | 0.045 | VI | 32.8( 52.7) |
| GSP | 34.3260 | 118.6980 | 01/17/1994 | 233330.7 | 9.0 | 5.60 | 0.046 | VI | 34.2( 55.1) |
| DMG | 35.0000 | 119.0330 | 07/21/1952 | 12 2 0.0 | 0.0 | 5.60 | 0.034 | V | 51.0( 82.1) |
| T-A | 34.4200 | 119.8200 | 00/00/1862 | 0 0 0.0 | 0.0 | 5.70 | 0.052 | VI | 31.1( 50.0) |
| MGI | 34.0000 | 119.0000 | 12/14/1912 | 0 0 0.0 | 0.0 | 5.70 | 0.059 | VI | 26.4( 42.5) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 1 8.0 | 8.0 | 5.80 | 0.037 | V | 51.7( 83.2) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 244.0 | 8.0 | 5.80 | 0.037 | V | 51.7( 83.2) |
| DMG | 34.3670 | 119.5830 | 07/01/1941 | 75054.8 | 0.0 | 5.90 | 0.091 | VII | 17.1( 27.5) |

## EARTHQUAKE SEARCH RESULTS



| FILE CODE | LAT. NORTH | LONG. WEST | DATE | TIME (UTC) H M Sec | DEPTH (km) | QUAKE MAG. | SITE ACC. g | SITE MM INT. | APPROX. DISTANCE mi [km] |
|---|---|---|---|---|---|---|---|---|---|
| DMG | 35.0000 | 119.0170 | 01/12/1954 | 233349.0 | 0.0 | 5.90 | 0.039 | V | 51.3( 82.6) |
| DMG | 34.0650 | 119.0350 | 02/21/1973 | 144557.3 | 8.0 | 5.90 | 0.076 | VII | 21.7( 35.0) |
| DMG | 34.8000 | 119.1000 | 09/05/1883 | 1230 0.0 | 0.0 | 6.00 | 0.054 | VI | 36.7( 59.1) |
| DMG | 34.9000 | 118.9000 | 10/23/1916 | 244 0.0 | 0.0 | 6.00 | 0.044 | VI | 47.6( 76.6) |
| DMG | 34.3000 | 118.6000 | 04/04/1893 | 1940 0.0 | 0.0 | 6.00 | 0.050 | VI | 39.8( 64.0) |
| DMG | 34.3000 | 119.8000 | 06/29/1925 | 144216.0 | 0.0 | 6.25 | 0.074 | VII | 28.7( 46.2) |
| DMG | 35.0000 | 119.0000 | 07/21/1952 | 12 531.0 | 0.0 | 6.40 | 0.051 | VI | 51.6( 83.1) |
| DMG | 34.4110 | 118.4010 | 02/09/1971 | 14 041.8 | 8.4 | 6.40 | 0.051 | VI | 51.7( 83.2) |
| GSP | 34.2130 | 118.5370 | 01/17/1994 | 123055.4 | 18.0 | 6.70 | 0.068 | VI | 43.7( 70.4) |
| DMG | 34.0000 | 119.0000 | 09/24/1827 | 4 0 0.0 | 0.0 | 7.00 | 0.117 | VII | 26.4( 42.5) |
| T-A | 34.8300 | 118.7500 | 11/27/1852 | 0 0 0.0 | 0.0 | 7.00 | 0.073 | VII | 48.4( 77.9) |
| DMG | 34.2000 | 119.8000 | 12/21/1812 | 19 0 0.0 | 0.0 | 7.00 | 0.108 | VII | 29.4( 47.3) |
| DMG | 35.0000 | 119.0170 | 07/21/1952 | 115214.0 | 0.0 | 7.70 | 0.101 | VII | 51.3( 82.6) |

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-END OF SEARCH- 437 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2011

LENGTH OF SEARCH TIME: 212 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 0.5 MILES (0.8 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.7

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.160 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 3.551
b-value= 0.811
beta-value= 1.868

## TABLE OF MAGNITUDES AND EXCEEDANCES:

| Earthquake Magnitude | Number of Times Exceeded | Cumulative No. / Year |
|---|---|---|
| 4.0 | 437 | 2.07109 |
| 4.5 | 173 | 0.81991 |
| 5.0 | 64 | 0.30332 |
| 5.5 | 24 | 0.11374 |
| 6.0 | 11 | 0.05213 |
| 6.5 | 5 | 0.02370 |
| 7.0 | 4 | 0.01896 |
| 7.5 | 1 | 0.00474 |