Geotechnical Engineering Investigation
Proposed Self Storage Facility
4800 S. San Vincente Boulevard
Los Angeles, California

Westport Properties
660 Newport Center Drive, Suite 1450
Newport Beach, California 92660

Attention : Mr. Joseph Hubbard

Project Number 25093-25
June 30, 2025

NorCal Engineering

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NorCal Engineering

Soils and Geotechnical Consultants
10641 Humbolt Street Los Alamitos, CA 90720
(562) 799-9469

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Westport Properties
660 Newport Center Drive, Suite 1450
Newport Beach, California 92660

Attn.: Mr. Joseph Hubbard

RE: **Geotechnical Engineering Investigation** – Proposed Self-Storage Facility – Located at 4800 S. San Vicente Boulevard, in the City of Los Angeles, California

Dear Mr. Hubbard:

Pursuant to your request, this firm has conducted a Geotechnical Engineering Investigation into the above-mentioned project in accordance with your approval of our proposal dated May 13, 2025. The purpose of this investigation is to evaluate the geotechnical conditions of the subject site and to provide recommendations for the proposed development. The scope of work included the following: 1) site reconnaissance; 2) subsurface geotechnical exploration and sampling; 3) laboratory testing; 4) soil infiltration testing; 5) engineering analysis of field and laboratory data; 6) preparation of a geotechnical engineering report. It is the opinion of this firm that the proposed development is feasible from a geotechnical standpoint provided that the recommendations presented in this report are followed in the design and construction of the project.

1.0 Project Description

It is proposed to construct a new five to six-story self-storage building as shown in Figure 1. Additional improvements will include new pavement areas, hardscape, and landscaping. Final building plans shall be reviewed by this firm prior to submittal for city approval to determine the need for any additional study and revised recommendations pertinent to the proposed development, if necessary.

2.0 Site Description

The subject property is situated within the 4800 block and south side of San Vicente Boulevard, bordered by Longwood Avenue to the west and Tremaine Avenue to the east, in the City of Los Angeles, as shown in Figure 2. The generally triangular shaped parcel is elongated in an east to west direction with the majority of the site occupied by a one-story warehouse building. Small asphalt parking lots are situated at the east and west ends of the site as shown in Figure 3

3.0 Site Exploration

The investigation consisted of the placement of five (5) subsurface exploratory borings by a truckmounted hollow stem auger to depths ranging between 5 and 35 feet below current ground elevations. The explorations were visually classified and logged by a field engineer with locations of the subsurface explorations shown on Figure 1 and 3. The exploratory borings revealed the existing earth materials to consist of fill and natural soil. Detailed descriptions of the subsurface conditions are listed on the boring logs in Appendix A. It should be noted that the transition from one soil type to another as shown on the boring logs is approximate and may in fact be a gradual transition. The soils encountered are described as follows:

Fill: A fill soil classified as a brown, silty CLAY with occasional gravel was encountered across the site to a depth of 1 to 2 feet below ground surface. The fill soil was noted to be medium stiff and moist. The existing pavement section encountered in our exploratory borings consisted of approximately 2½ to 4 inches of asphalt over compacted fill soils, no base material was noted.

Natural: An undisturbed native soil classified as a dark brown to brown, silty CLAY with some sand was encountered directly beneath the fill soils. The native soil was observed to be medium stiff and moist to very moist. A fine to coarse grained silty SAND noted to be dense and damp to moist was encountered at 8 to 15 feet below ground surface.

Groundwater: Groundwater was not encountered to the depth of our bores (35 feet below ground surface). Historic high groundwater in the vicinity has been recorded near 20 feet, as shown on the Seismic Hazard Zone Report for the Hollywood 7.5- Minute Quadrangle (Figure 4).

4.0 Laboratory Tests

Relatively undisturbed samples of the subsurface soils were obtained to perform laboratory testing and analysis for direct shear, consolidation tests, and to determine in-place moisture/densities. These relatively undisturbed ring samples were obtained by driving a thin-walled steel sampler lined with one-inch-long brass rings with an inside diameter of 2.42 inches into the undisturbed soils. Bulk bag samples were obtained in the upper soils for expansion index tests and maximum density tests. All test results are included in Appendix B, unless otherwise noted.

4.1 **Field Moisture Content** (ASTM: D 2216) and the dry density of the ring samples were determined in the laboratory. This data is listed on the logs of explorations.

4.2 **Maximum Density tests** (ASTM: D 1557) were performed on typical samples of the upper soils. Results of these tests are shown on Table I.

4.3 **Expansion Index tests** (ASTM: D 4829) were performed on remolded samples of the upper soils to determine expansive characteristics. Results of these tests are provided on Table II.

4.4 **Atterberg Limits** (ASTM: D 4318) consisting of liquid limit, plastic limit and plasticity index were performed on representative soil samples. Results are shown on Table III.

4.5 **Corrosion tests** consisting of sulfate, pH, resistivity and chloride analysis to determine potential corrosive effects of soils on concrete and underground utilities. Test results are provided on Table IV.

4.6 **R-Value test** per California Test Method 301 was performed on a representative sample, which may be anticipated to be near subgrade to determine pavement design. Results are provided within the pavement design section of the report.

4.7 **Direct Shear tests** (ASTM: D 3080) were performed on undisturbed and/or remolded samples of the subsurface soils. The test is performed under saturated conditions at loads of 1,000 lbs./sq.ft., 2,000 lbs./sq.ft., and 3,000 lbs./sq.ft. with results shown on Plate A.

4.8 **Consolidation tests** (ASTM: D 2435) were performed on undisturbed samples to determine the differential and total settlement which may be anticipated based upon the proposed loads. Water was added to the samples at a surcharge of one KSF and the settlement curves are plotted on Plates B to F.

5.0 Seismicity Evaluation

The proposed development lies outside of any Alquist Priolo Special Studies Zone and the potential for damage due to direct fault rupture is considered unlikely. The Newport-Inglewood fault is located approximately 3.6 kilometers from the site and is capable of producing a Magnitude 7.1 earthquake. Ground shaking originating from earthquakes along other active faults in the region is expected to induce lower horizontal accelerations due to smaller anticipated earthquakes and/or greater distances to other faults.

The seismic design acceleration parameters for the project site are provided on the following page and are based upon the 2022 California Building Code (CBC) Standard ASCE/SEI 7-16. The data was obtained from the American Society of Civil Engineers (ASCE) website, https://asce7hazardtool.online/. The seismic design report is attached in Appendix C.

Seismic Design Acceleration Parameters

Latitude	34.048
Longitude	-118.341
Site Class	D
Risk Category	II
Mapped Spectral Response Acceleration	S_S = 1.991 S_1 = 0.707
Adjusted Maximum Acceleration	S_{MS} = 1.991
Design Spectral Response Acceleration Parameters	S_{DS} = 1.327
Peak Ground Acceleration	PGA_M = 0.936

Use of these values is dependent on requirements of Section 11-4.8, ASCE 7 exception 2 that requires the value of the seismic response coefficient C_s be determined by Equation 12.8.2 for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either 12.8-3 for $T_L \geq T \geq 1.5T_s$ or Equation 12.8-4 for $T > T_L$. Computations and verification of these conditions is referred to the structural engineer.

6.0 Liquefaction Evaluation

The site is expected to experience ground shaking and earthquake activity that is typical of the Southern California area. It is during severe shaking that loose, granular soils below the groundwater table can liquefy. Based upon information on the ZIMAS website and the California Division of Mines and Geology "Seismic Hazard Zone Map – Hollywood Quadrangle" dated March 25, 1999, the subject site is *not* situated within an area of historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions to indicate a potential for permanent ground displacement. Therefore, the design of the proposed development in conformance with the latest Building Code provisions for earthquake design is expected to provide mitigation of ground shaking hazards that are typical to Southern California. A copy of the ZIMAS report and the Seismic Hazard Zone Map –Hollywood Quadrangle is attached in Appendix C.

7.0 Infiltration Characteristics

Infiltration tests within the site were performed to provide preliminary infiltration rates for the purpose of planning and design of an on-site water disposal system field testing per County of Los Angeles Department of Public Works (LADPW) – Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration dated June 20, 2017.

A truck mounted Simco 2800 Drill Rig equipped with a hollow stem auger was used to excavate exploratory boring B-1 (located on the west side of site) to a depth of 5 feet below existing ground surface and exploratory borings B-2 and B-3 (located on the east and west sides of site) to depths of 20 feet below existing ground surface. The borings consisted of six-inch diameter test holes. A three-inch diameter perforated PVC casing with solid end cap was installed in the borings and then surrounded with gravel materials to prevent caving. The infiltration holes were carefully filled with clean water and refilled after two initial readings. Based upon the initial rates of infiltration at each location, test measurements were measured at selected maximum intervals thereafter. Measurements were obtained by using an electronic tape measure with 1/16-inch divisions and timed with a stopwatch. Field data sheets are provided in Appendix D.

Based upon the results of our testing, the soils encountered in the planned on-site drainage disposal system area exhibit field infiltration rates found on the following page. The drainage disposal system shall utilize design infiltration rates based on the safety factor required by the city/county standard.

Boring/Test No.	Depth	Soil Classification	Field Infiltration Rate
B-1/TH-1	5'	Silty CLAY	0.20 in/hr
B-2/TH-2	20'	Clayey SILT	0.16 in/hr
B-3/TH-3	20'	Silty SAND	18.0 in/hr

As previously discussed, groundwater was not encountered to the depth of our bores (35 feet below ground surface). Historic high groundwater in the vicinity has been recorded near 20 feet, as shown on the Seismic Hazard Zone Report for the Hollywood 7.5- Minute Quadrangle (Figure 4).

All systems must meet the latest city and/or county specifications and the California Regional Water Quality Control Board (CRWQCB) requirements. It is recommended that foundations be setback a minimum distance of 10 feet from the drainage disposal system and the bottom of footing shall be a minimum of 10 feet from the expected zone of saturation. The boundary of the zone of saturation may be assumed to project downward from the top of the permeable portion of the disposal system at an inclination of 1 to 1 or flatter, as determined by the geotechnical engineer.

8.0 Conclusions and Recommendations

Based upon our evaluations, the proposed development is acceptable from a geotechnical engineering standpoint. By following the recommendations and guidelines set forth in our report, the structures will be safe from excessive settlements under the anticipated design loadings and conditions. The proposed development shall meet all requirements of the City Building Ordinance and will not impose any adverse effect on existing adjacent structures.

The following recommendations are based upon soil conditions encountered in our field investigation; these near-surface soil conditions could vary across the site. Variations in the soil conditions may not become evident until the commencement of grading operations for the proposed development and revised recommendations from the soils engineer may be necessary based upon the conditions encountered. It is recommended that site inspections be performed by a representative of this firm during all grading and construction of the development to verify the findings and recommendations documented in this report. Any unusual conditions which may be encountered in the course of the project development may require the need for additional study and revised recommendations.

8.1 **Site Grading Recommendations**

All vegetation and demolition debris shall be removed and hauled prior to the start of grading operations. Existing vegetation shall not be mixed or disced into the soil. Any removed soils may be reutilized as compacted fill once any deleterious material or oversized materials (in excess of eight inches) is removed. Grading operations shall be performed in accordance with the attached "Specifications for Placement of Compacted Fill".

All disturbed soils and/or fill (about 1 to 2 feet below ground surface) shall be removed to competent native material, the exposed surface scarified to a depth of 12 inches, brought to within 2% of optimum moisture content and compacted to a minimum of 90% of the laboratory standard (ASTM: D 1557) prior to placement of any additional compacted fill soils, foundations, slabs-on-grade and pavement. Grading shall extend a minimum of five horizontal feet outside the edges of foundations or equidistant to the depth of fill placed, whichever is greater.

It is possible that isolated areas of undiscovered fill not described in this report are present on site; if found, these areas should be treated as discussed earlier. A diligent search shall also be conducted during grading operations to uncover any underground structures, irrigation, or utility lines. If encountered, these structures and lines shall be either removed or properly abandoned prior to the proposed construction.

Any imported fill material should preferably be soil similar to the upper soils encountered at the subject site. All soil shall be approved by this firm prior to importing at the site and will be subjected to additional laboratory testing to assure concurrence with the recommendations stated in this report. If placement of slabs-on-grade and pavement is not completed immediately upon completion of grading operations, additional testing and grading of the areas may be necessary prior to continuation of construction operations. Likewise, if adverse weather conditions occur which may damage the subgrade soils, additional assessment by the soils engineer as to the suitability of the supporting soils may be needed.

Care should be taken to always provide or maintain adequate lateral support for all adjacent improvements and structures during the grading operations and construction phase. Adequate drainage away from the structures, pavement and slopes should be always provided.

8.1.2 **Fill Blanket Recommendations**

Due to the potential for differential settlements, it is recommended that all foundations be underlain by a uniform compacted fill blanket at least three feet in thickness. This fill blanket shall extend a minimum of five horizontal feet outside the edges of foundations or equidistant to the depth of fill placed, whichever is greater, where possible.

8.2 Temporary Excavations

Temporary *unsurcharged* excavations in the existing site materials may be made at vertical inclinations up to 4 feet in height unless cohesionless soils are encountered. In areas where soils with little or no binder are encountered, where adverse geological conditions are exposed, or where excavations are adjacent to existing structures, shoring or flatter excavations may be required. *Site specific recommendations required during grading may be provided once foundation plans and typical detail sections are made available.*

The temporary cut slope gradients given above do not preclude local raveling and sloughing. All excavations shall be made in accordance with the requirements of the soils engineer, CAL-OSHA and other public agencies having jurisdiction. Care should be taken to always provide or maintain adequate lateral support for all adjacent improvements and structures during the grading operations and construction phase.

8.3 Foundation Design

As stated in Section 8.1.2, foundations shall be underlain by a uniform compacted fill blanket at least three feet in thickness. New foundations may be designed utilizing the following allowable bearing capacities for an embedded depth of 30 inches into approved engineered fill with the corresponding widths:

Allowable Bearing Capacity (psf)		
Width (feet)	Continuous Foundation	Isolated Foundation
1.5	2000	2500
2.0	2075	2575
4.0	2375	2875
6.0	2500	3000

The bearing value may be increased by 500 psf for each additional foot of depth in excess of the 30-inch minimum depth, up to a maximum of 4,000 psf. A one-third increase may be used when considering short-term loading and seismic forces. Any foundations located along property line where a fill blanket is installed below foundations but lateral overexcavation is not possible may utilize an allowable bearing capacity of 1,500 psf. Foundations shall be reinforced with a minimum of two No. 4 bars, top and bottom. Additional reinforcement due to proposed loadings may be necessary and shall be determined by the project engineers and/or architect. A representative of this firm shall inspect all foundation excavations prior to pouring concrete.

8.4 Settlement Analysis

Resultant pressure curves for the consolidation tests are shown on Plates B to F. Computations utilizing these curves and the recommended allowable soil bearing capacities reveal that the foundations will experience settlements on the order of ¾ inch and differential settlements of less than ¼ inch.

8.5 Lateral Resistance

The following values may be utilized in resisting lateral loads imposed on the structure. Requirements of the California Building Code should be adhered to when the coefficient of friction and passive pressures are combined.

Coefficient of Friction - 0.35

Equivalent Passive Fluid Pressure = 200 lbs./cu.ft.

Maximum Passive Pressure = 2,000 lbs./cu.ft.

The passive pressure recommendations are valid only for approved compacted fill soils or competent native materials.

8.6 Retaining Wall Design Parameters

Active earth pressures against retaining walls will be equal to the pressures developed by the following fluid densities. These values are for **granular backfill material** placed behind the walls at various ground slopes above the walls.

Surface Slope of Retained Materials (Horizontal to Vertical	Equivalent Fluid Density (lb./cu.ft.)
Level	30
5 to 1	35
4 to 1	38
3 to 1	40
2 to 1	45

Any applicable short-term construction surcharges and seismic forces should be added to the above lateral pressure values. An equivalent fluid pressure of 45 pcf may be utilized for the restrained wall condition with a level grade behind the wall.

The seismic-induced lateral soil pressure for walls greater than 6 feet may be computed using a triangular pressure distribution with the maximum value at the top of the wall. The maximum lateral pressure of (14 pcf) H where H is the height of the retained soils above the wall footing should be used in final design of retaining walls. Sliding resistance values and passive fluid pressure values may be increased by 1/3 during short-term wind and seismic loading conditions.

All walls shall be waterproofed as needed and protected from hydrostatic pressure by a reliable permanent subdrain system. The subsurface drainage system shall consist of a four-inch diameter perforated PVC pipe encased with gravel and wrapped with filter fabric. The granular backfill to be utilized immediately adjacent to retaining walls shall consist of an approved select granular soil with a sand equivalency greater than 30. This backfill zone of free draining material shall consist of a wedge beginning a minimum of one horizontal foot from the base of the wall extending upward at an inclination of no less than ¾ to 1 (horizontal to vertical).

8.7 **Slab Design**

All non-vehicular concrete slabs shall be a minimum of five inches in thickness reinforced a minimum of No. 4 bars, spaced 16 inches in each direction and placed on approved subgrade soils (>90% relative compaction). *Due to the expansive nature of the upper onsite soils, subgrade soils shall be moisture conditioned 3% over optimum moisture levels in the upper eighteen inches immediately prior to pouring concrete.* A modulus of subgrade reaction of 100 pci shall be used in the design of the new structure. Additional reinforcement requirements and an increase in thickness of the slabs-on-grade may be necessary based upon soils expansion potential and proposed loading conditions in the structures and should be evaluated further by the project engineers and/or architect.

A vapor retarder (10-mil minimum thickness) should be utilized in areas which would be sensitive to the infiltration of moisture. This retarder shall meet requirements of ASTM E 96, *Water Vapor Transmission of Materials* and ASTM E 1745, *Standard Specification for Water Vapor Retarders used in Contact with Soil or Granular Fill Under Concrete Slabs.*

The vapor retarder shall be installed in accordance with procedures stated in ASTM E 1643, *Standard practice for Installation of Water Vapor Retarders used in Contact with Earth or Granular Fill Under Concrete Slabs.* The moisture retarder may be placed directly upon compacted subgrade soils conditioned to near optimum moisture levels, although one to two inches of sand beneath the membrane is desirable. The subgrade upon which the retarder is placed shall be smooth and free of rocks, gravel or other protrusions which may damage the retarder. Use of sand above the retarder is under the purview of the structural engineer; if sand is used over the retarder, it should be placed in a dry condition.

8.8 **Pavement Section Design**

The table below provides a preliminary pavement design based upon an R-Value of 5 for the subgrade soils for the proposed pavement areas. Final pavement design may need to be based on R-Value testing of the subgrade soils near the conclusion of site grading to ensure that these soils are consistent with those assumed in this preliminary design. *The recommendations are based upon estimated traffic loads. Client should submit any other anticipated traffic loadings to the geotechnical engineer, if necessary, so that pavement sections may be reviewed to determine adequacy to support the proposed loadings.*

Type of Traffic	Traffic Index	Asphalt (in.)	Base Material (in.)
Automobile Parking Stalls	4.0	4.0	8.0
Light Vehicle Circulation Areas	6.0	4.5	11.0
Heavy Truck Access	7.0	5.0	14.5

All pavement areas shall have positive drainage toward an approved outlet from the site. Drain lines behind curbs and/or adjacent to landscape areas should be considered by the client and the appropriate design engineers to prevent water from infiltrating beneath pavement. If such infiltration occurs, damage to pavement, curbs and flow lines, especially on sites with expansive soils, may occur during the life of the project.

Any approved base material shall consist of a Class II aggregate or equivalent and should be compacted to a minimum of 95% relative compaction. All pavement materials shall conform to the requirements set forth by the City of Los Angeles. The base material: and asphaltic concrete should be tested prior to delivery to the site and during placement to determine conformance with the project specifications. A pavement engineer shall designate the specific asphalt mix design to meet the required project specifications.

8.9 **Utility Trench and Excavation Backfill**

Trenches from installation of utility lines and other excavations may be backfilled with on-site soils or approved imported soils compacted to a minimum of 90% relative compaction. All utility lines shall be properly bedded with clean sand having a sand equivalency rating of 30 or more. This bedding material shall be thoroughly water jetted around the pipe structure prior to placement of compacted backfill soils.

8.10 **Corrosion Design Criteria**

Representative samples of the surficial soils, typical of the subgrade soils expected to be encountered within foundation excavations and underground utilities were tested for corrosion potential. The minimum resistivity value obtained for the samples tested is representative of an environment that may be severely corrosive to metals. The soil pH value was considered mildly alkaline and may not have a significant effect on soil corrosivity. Consideration should be given to corrosion protection systems for buried metal such as protective coatings, wrappings or the use of PVC where permitted by local building codes.

According to Table 4.3.1 of ACI 318 Building Code and Commentary, these contents revealed negligible sulfate concentrations. Therefore, a Type II cement according to latest CBC specifications may be utilized for building foundations at this time. It is recommended that additional sulfate tests be performed at the completion of site grading to assure that the as graded conditions are consistent with the recommendations stated in this design. Corrosion test results may be found on the attached Table IV.

8.11 **Expansive Soil**

The on-site soils are moderate in expansion potential (EI 51-90). When soils have an expansion index (EI) of 20 or more, special attention should be given to the project design and maintenance. The attached *Expansive Soil Guidelines* should be reviewed by the engineers, architects, owner, maintenance personnel and other interested parties and considered during the design of the project and future property maintenance. Expansion test results may be found on the attached Table II.

Because the site is underlain by expansive soil, the following recommendation will be required. New foundations are to be a minimum of 30 inches in depth embedded into approved material and reinforced with a minimum of two No. 4 bars, top and bottom. All concrete slabs shall be a minimum of five inches in thickness and reinforced with a minimum of No. 4 bars, spaced 16-inches in each direction and placed on approved subgrade soils. Any new concrete slabs should be placed on approved subgrade soils with a relative compaction of 90% or greater and moisture conditioned to 3% above optimum moisture content to a depth of eighteen inches below finished subgrade elevations prior to pouring slabs.

In accordance with section 1804.4 of the current California Building Code (CBC), impervious surfaces within 10 feet of the building foundation shall be sloped not less than 2 percent away from the building. Existing drainage patterns that may be altered due to new development shall also be redesigned to provide a minimum 2% slope away from the residence. In addition, roof drains should be considered by the homeowner to divert water away from the residence to an approved discharge device.

9.0 Closure

The recommendations and conclusions contained in this report are based upon the soil conditions uncovered in our test excavations. No warranty of the soil condition between our excavations is implied. NorCal Engineering should be notified for possible further recommendations if unexpected to unfavorable conditions are encountered during construction phase. It is the responsibility of the owner to ensure that all information within this report is submitted to the Architect and appropriate Engineers for the project.

A preconstruction conference should be held between the developer, general contractor, grading contractor, city inspector, architect, and soil engineer to clarify any questions relating to the grading operations and subsequent construction. Our representative should be present during the grading operations and construction phase to certify that such recommendations are complied with within the field.

This geotechnical investigation has been conducted in a manner consistent with the level of care and skill exercised by members of our profession currently practicing under similar conditions in the Southern California area. No other warranty expressed or implied is made.

We appreciate this opportunity to be of service to you. If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
NORCAL ENGINEERING

Keith D. Tucker
Project Engineer
R.G.E. 841

Mike Barone
Project Manager

SPECIFICATIONS FOR PLACEMENT OF COMPACTED FILL

Excavation

Any existing low-density soils and/or saturated soils shall be removed to competent natural soil under the inspection of the Geotechnical Engineering Firm. After the exposed surface has been cleansed of debris and/or vegetation, it shall be scarified until it is uniform in consistency, brought to the proper moisture content and compacted to a minimum of 90% relative compaction (in accordance with ASTM: D 1557).

In any area where a transition between fill and native soil or between bedrock and soil are encountered, additional excavation beneath foundations and slabs will be necessary in order to provide uniform support and avoid differential settlement of the structure.

Material for Fill

The on-site soils or approved import soils may be utilized for the compacted fill provided they are free of any deleterious materials and shall not contain any rocks, brick, asphaltic concrete, concrete or other hard materials greater than eight inches in maximum dimensions. Any imported soil must be approved by the Geotechnical Engineering firm a minimum of 72 hours prior to importation of site.

Placement of Compacted Fill Soils

The approved fill soils shall be placed in layers not in excess of six inches in thickness. Each lift shall be uniform in thickness and thoroughly blended. The fill soils shall be brought to within 2% of the optimum moisture content, unless otherwise specified by the Soils Engineering firm. Each lift shall be compacted to a minimum of 90% relative compaction (in accordance with ASTM: D 1557) and approved prior to the placement of the next layer of soil. Compaction tests shall be obtained at the discretion of the Geotechnical Engineering firm but to a minimum of one test for every 500 cubic yards placed and/or for every 2 feet of compacted fill placed.

The minimum relative compaction shall be obtained in accordance with accepted methods in the construction industry. The final grade of the structural areas shall be in a dense and smooth condition prior to placement of slabs-on-grade or pavement areas. No fill soils shall be placed, spread or compacted during unfavorable weather conditions. When the grading is interrupted by heavy rains, compaction operations shall not be resumed until approved by the Geotechnical Engineering firm.

Grading Observations

The controlling governmental agencies should be notified prior to commencement of any grading operations. This firm recommends that the grading operations be conducted under the observation of a Geotechnical Engineering firm as deemed necessary. A 24-hour notice must be provided to this firm prior to the time of our initial inspection.

Observation shall include the clearing and grubbing operations to assure that all unsuitable materials have been properly removed; approve the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished grade and designate areas of overexcavation; and perform field compaction tests to determine relative compaction achieved during fill placement. In addition, all foundation excavations shall be observed by the Geotechnical Engineering firm to confirm that appropriate bearing materials are present at the design grades and recommend any modifications to construct footings.

EXPANSIVE SOIL GUIDELINES

The following expansive soil guidelines are provided for your project. The intent of these guidelines is to inform you, the client, of the importance of proper design and maintenance of projects supported on expansive soils. ***You, as the owner or other interested party, should be warned that you have a duty to provide the information contained in the soil report including these guidelines to your design engineers, architects, landscapers and other design parties in order to enable them to provide a design that takes into consideration expansive soils.***

In addition, you should provide the soil report with these guidelines to any property manager, lessee, property purchaser or other interested party that will have or assume the responsibility of maintaining the development in the future.

Expansive soils are fine-grained silts and clays which are subject to swelling and contracting. The amount of this swelling and contracting is subject to the amount of fine-grained clay materials present in the soils and the amount of moisture either introduced or extracted from the soils. Expansive soils are divided into five categories ranging from "very low" to "very high". Expansion indices are assigned to each classification and are included in the laboratory testing section of this report. *If the expansion index of the soils on your site, as stated in this report, is 21 or higher, you have expansive soils.* The classifications of expansive soils are as follows:

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

*From Table 18A-I-B of California Building Code (1988)

When expansive soils are compacted during site grading operations, care is taken to place the materials at or slightly above optimum moisture levels and perform proper compaction operations. Any subsequent excessive wetting and/or drying of expansive soils will cause the soil materials to expand and/or contract. These actions are likely to cause distress of foundations, structures, slabs-on-grade, sidewalks and pavement over the life of the structure. ***It is therefore imperative that even after construction of improvements, the moisture contents are maintained at relatively constant levels, allowing neither excessive wetting or drying of soils.***

Evidence of excessive wetting of expansive soils may be seen in concrete slabs, both interior and exterior. Slabs may lift at construction joints producing a trip hazard or may crack from the pressure of soil expansion. Wet clays in foundation areas may result in lifting of the structure causing difficulty in the opening and closing of doors and windows, as well as cracking in exterior and interior wall surfaces. In extreme wetting of soils to depth, settlement of the structure may eventually result. Excessive wetting of soils in landscape areas adjacent to concrete or asphaltic pavement areas may also result in expansion of soils beneath pavement and resultant distress to the pavement surface.

Excessive drying of expansive soils is initially evidenced by cracking in the surface of the soils due to contraction. Settlement of structures and on-grade slabs may also eventually result along with problems in the operation of doors and windows.

Projects located in areas of expansive clay soils will be subject to more movement and "hairline" cracking of walls and slabs than similar projects situated on non-expansive sandy soils. There are, however, measures that developers and property owners may take to reduce the amount of movement over the life the development. The following guidelines are provided to assist you in both design and maintenance of projects on expansive soils:

- Drainage away from structures and pavement is essential to prevent excessive wetting of expansive soils. Grades should be designed to the latest building code and maintained to allow flow of irrigation and rainwater to approved drainage devices or to the street. Any "ponding" of water adjacent to buildings, slabs and pavement after rains is evidence of poor drainage; the installation of drainage devices or regrading of the area may be required to assure proper drainage. The installation of rain gutters is also recommended to control the introduction of moisture next to buildings. Gutters should discharge into a drainage device or onto pavement which drains to roadways.

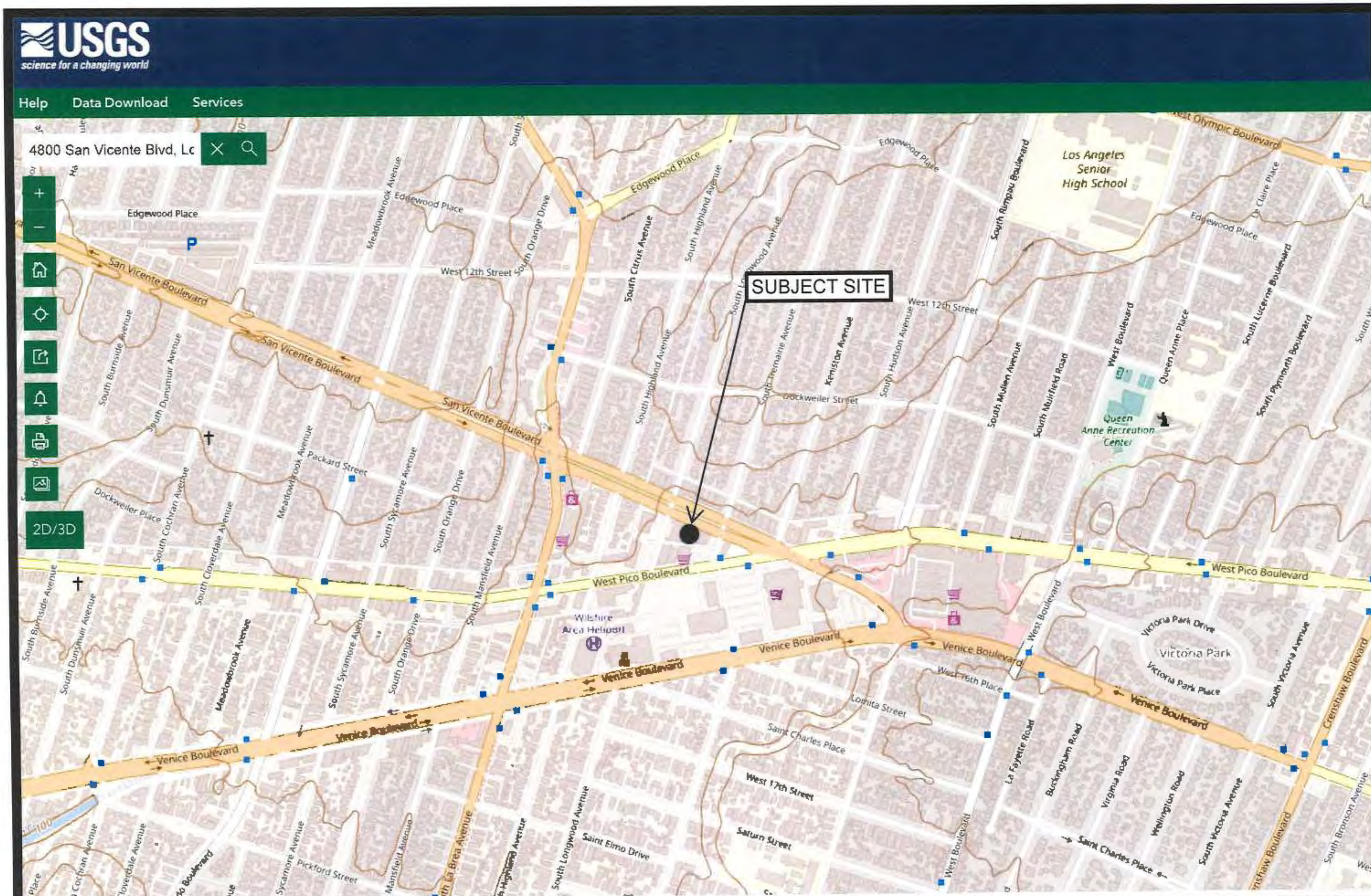
- Irrigation should be strictly controlled around building foundations, slabs and pavement and may need to be adjusted depending upon season. This control is essential to maintain a relatively uniform moisture content in the expansive soils and to prevent swelling and contracting. Over-watering adjacent to improvements may result in damage to those improvements. NorCal Engineering makes no specific recommendations regarding landscape irrigation schedules.

- Planting schemes for landscaping around structures and pavement should be analyzed carefully. Plants (including sod) requiring high amounts of water may result in excessive wetting of soils. Trees and large shrubs may actually extract moisture from the expansive soils, thus causing contraction of the fine-grained soils.

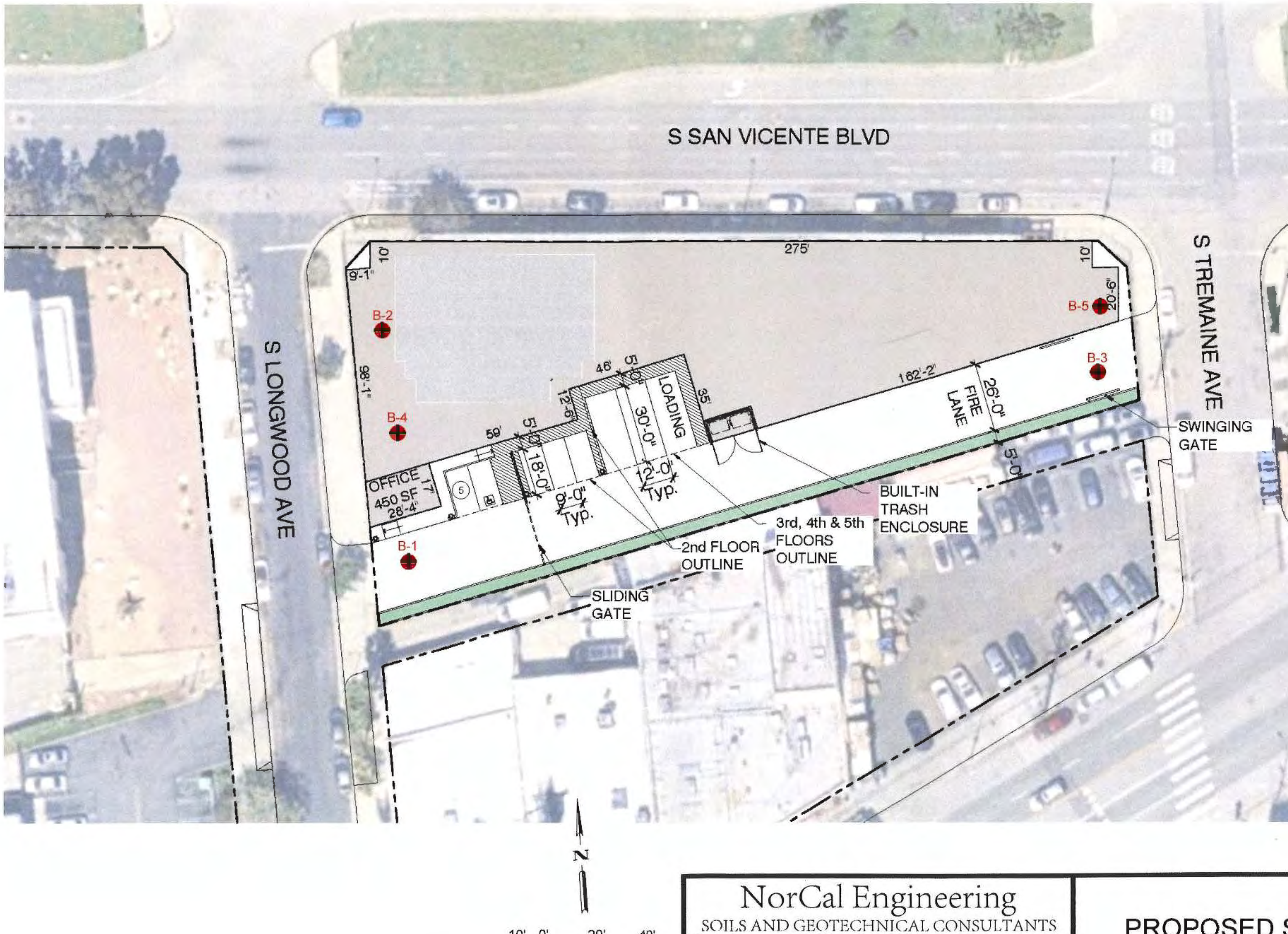
- Thickened edges on exterior slabs will assist in keeping excessive moisture from entering directly beneath the concrete. A six-inch thick or greater deepened edge on slabs may be considered. Underlying interior and exterior slabs with 6 to 12 inches or more of non-expansive soils and providing presaturation of the underlying clayey soils as recommended in the soil report will improve the overall performance of on-grade slabs.

- Increase the amount of steel reinforcing in concrete slabs, foundations and other structures to resist the forces of expansive soils. The precise amount of reinforcing should be determined by the appropriate design engineers and/or architects.

- Recommendations of the soil report should always be followed in the development of the project. Any recommendations regarding presaturation of the upper subgrade soils in slab areas should be performed in the field and verified by the Soil Engineer.



NorCal Engineering SOILS AND GEOTECHNICAL CONSULTANTS		VICINITY MAP
WESTPORT PROPOERTIES		
PROJECT: 25093-25	DATE: JUNE 2025	FIGURE 1



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WESTPORT PROPOERTIES

PROJECT: 25093-25 | DATE: JUNE 2025

PROPOSED SITE PLAN

FIGURE 2

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WESTPORT PROPOERTIES

PROJECT: 25093-25 | DATE: JUNE 2025

AERIAL VIEW

FIGURE 3

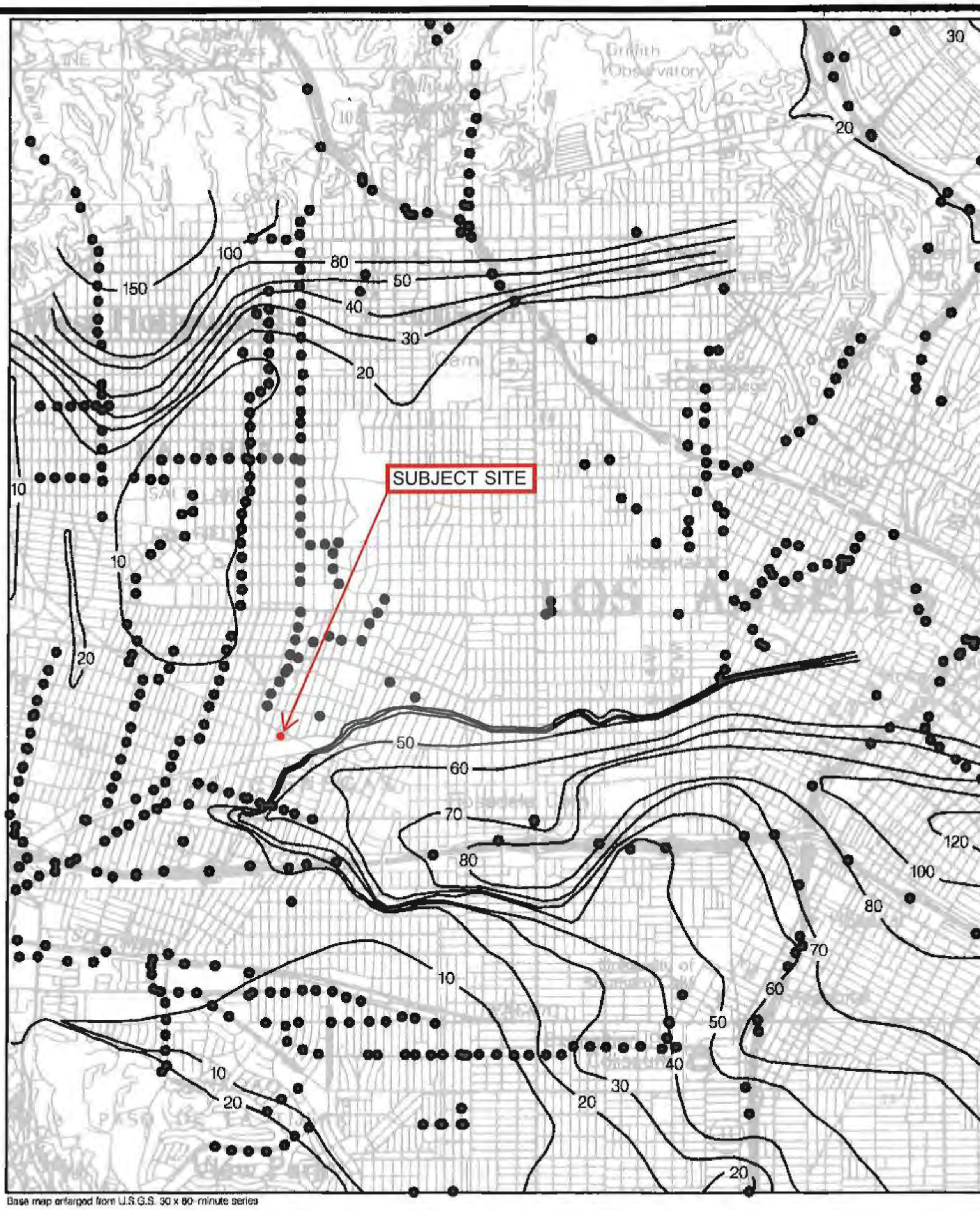

Plate 1.2 Historically Highest Ground Water Contours and Borehole Log Data Locations, Hollywood Quadrangle.

● Borehole Site

30 Depth to ground water in feet

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WESTPORT PROPERTIES

PROJECT: 25093-25 | DATE: JUNE 2025

GROUNDWATER CONTOUR MAP
(SEISMIC HAZARD EVALUATION - HOLLYWOOD 7.5 MIN. QUAD.)

FIGURE 4

List of Appendices
(in order of appearance)

Appendix A
Log of Excavations

MAJOR DIVISION			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL, SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>PASSING ON</u> NO. 4 SIEVE	SANDS WITH FINE (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS <u>SMALLER</u> THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT <u>GREATER</u> THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM

KEY:

- ■ Indicates 2.5-inch Inside Diameter. Ring Sample.
- ☒ Indicates 2-inch OD Split Spoon Sample (SPT).
- ⧄ Indicates Shelby Tube Sample.
- ◫ Indicates No Recovery.
- ◧ Indicates SPT with 140# Hammer 30 in. Drop.
- ⊠ Indicates Bulk Sample.
- ◩ Indicates Small Bag Sample.
- ◨ Indicates Non-Standard
- ⊠ Indicates Core Run.

COMPONENT PROPORTIONS

DESCRIPTIVE TERMS	RANGE OF PROPORTION
Trace	1 - 5%
Few	5 - 10%
Little	10 - 20%
Some	20 - 35%
And	35 - 50%

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5mm) to No. 200 (0.074mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
DAMP	Some perceptible moisture; below optimum
MOIST	No visible water; near optimum moisture content
WET	Visible free water, usually soil is below water table.

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N -VALUE

COHESIONLESS SOILS		COHESIVE SOILS		
Density	N (blows/ft)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	Very Soft	0 to 2	< 250
Loose	4 to 10	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	Very Stiff	15 to 30	2000 - 4000
		Hard	over 30	> 4000

Westport Properties 25093-25	Log of Boring B-1

Boring Location 4800 S. San Vincente Boulevard	
Date of Drilling 06/02/2025	Groundwater Depth None Encountered
Drilling Method Simco 2800 HS	
Hammer Weight 140lbs	Drop 30"
Surface Elevation	

Depth (feet)	Lith-	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines Content %
0		3" AC No base					
		FILL Silty CLAY with some sand Brown, medium stiff, moist	M				
5	GWT not encountered	Natural Silty CLAY with trace sand Dark brown, medium stiff, moist to very moist	M		25.0		
		Boring completed at depth of 5'					
10							
15							
20							
25							
30							
35							

SuperLog CivilTech Software, USA www.civiltech.com File: C:\Superlog4\25093-25.log Date: 7/1/2025

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Westport Properties
25093-25

Log of Boring B-2

Boring Location 4800 S. San Vincente Boulevard	
Date of Drilling 06/24/2025	Groundwater Depth None Encountered
Drilling Method Simco 2800 HS	
Hammer Weight 140lbs	Drop 30"
Surface Elevation	

Depth (feet)	Lith-	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines Content %
0 – 3.3		3" AC No base FILL Silty CLAY with some sand and occasional gravel Brown, medium stiff, moist					
3.3 – 10	GWT not encountered	Natural Silty CLAY with trace sand Dark brown, medium stiff, moist to very moist					
10 – 18		Silty (fine to coarse-grained) SAND Light brown, medium dense, damp to moist					
18 – 20		Clayey SILT with some sand Grey/olive brown, medium stiff, very moist					
20		Boring completed at depth of 20'	☑		28.5		

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

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Westport Properties 25093-25	**Log of Boring B-3**

Boring Location 4800 S. San Vincente Boulevard	
Date of Drilling 06/24/2025	Groundwater Depth None Encountered
Drilling Method Simco 2800 HS	
Hammer Weight 140lbs	Drop 30"
Surface Elevation	

Depth (feet)	Lith-		Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines Content %
0		GWT not encountered	2 1/2" AC No base FILL Silty CLAY with some sand occasional gravel Brown, medium stiff, moist					
5			Natural Silty CLAY Dark brown, medium stiff, moist to very moist					
10			Silty CLAY with some sand Grey, medium stiff, moist to dry moist					
15			Silty (fine to coarse-grained) SAND Light brown, medium dense, damp to moist Variation in grain size with depth					
20			Boring completed at depth of 20'			8.1		
25								
30								
35								

SuperLog CivilTech Software, USA www.civiltech.com File: C:\Superlog4\25093-25.log Date: 7/1/2025

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Westport Properties
25093-25

Log of Boring B-4

Boring Location 4800 S. San Vincente Boulevard

Date of Drilling 06/24/2025 | Groundwater Depth None Encountered

Drilling Method Simco 2800 HS

Hammer Weight 140lbs | Drop 30"

Surface Elevation

Depth (feet)	Lith-	Material Description	Samples Type	Samples Blow Counts	Laboratory Moisture	Laboratory Dry Density	Laboratory Fines Content %
0		4" AC No base					
		FILL Silty CLAY with some sand Brown, medium stiff, moist		4/8	24.2	87.4	
		Natural Silty CLAY Dark brown, medium stiff, moist to very moist		8/17	17.8	101.3	
5		Silty Clay with some sand Brown/dark brown, stiff, moist to very moist					
10		Silty (fine to coarse-grained) SAND Light brown, medium dense, damp to moist		6/9	4.7	101.3	
15		Variation in grain size with depth		7/10	10.9	94.4	
		Clayey SILT with some sand Dark brown, medium stiff, moist to very moist					
20		Silty (fine to coarse-grained) SAND Light brown, dense, damp		8/10	7.2	107.0	
25		Clayey SILT with some sand Grey, stiff, wet to saturated		15/19	26.4	98.8	
30				9/10	34.3	87.9	
		Sandy SILT Dark grey, stiff, wet to saturated					
35							

GWT not encountered

SuperLog CivilTech Software, USA www.civiltech.com File: C:\Superlog4\25093-25.log Date: 7/1/2025

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Westport Properties
25093-25

Log of Boring B-4

Boring Location 4800 S. San Vincente Boulevard	
Date of Drilling 06/24/2025	Groundwater Depth None Encountered
Drilling Method Simco 2800 HS	
Hammer Weight 140lbs	Drop 30"
Surface Elevation	

Depth (feet)	Lith-	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines Content %
35		Sandy SILT Dark grey, stiff, wet to saturated	■	15/17	33.0	91.1	
		Boring completed at depth of 36'					
40							
45							
50							
55							
60							
65							
70							

Westport Properties
25093-25

Log of Boring B-5

Boring Location 4800 S. San Vincente Boulevard

Date of Drilling 06/24/2025 | Groundwater Depth None Encountered

Drilling Method Simco 2800 HS

Hammer Weight 140lbs | Drop 30"

Surface Elevation

GWT not encountered

Depth (feet)	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: Fines Content %
0	2 1/2" AC no base					
	FILL Silty CLAY with some sand and occasional gravel Brown, medium stiff, moist	■	3/6	21.6	93.1	
	Natural Silty CLAY Dark brown, medium stiff, moist to very moist	■	4/10	16.8	114.7	
5	Silty CLAY with some sand Grey, stiff, very moist to wet					
10		■	8/10	17.6	113.8	
15	Silty (fine to coarse-grained) SAND Light brown, dense, moist to damp	■	11/15	10.9	100.0	
20	Variation in grain size with depth	■	15/17	5.8	105.2	
25	Clayey SILT with some sand Grey, stiff, wet to saturated	■	13/20	29.0	94.3	
30	Silty fine grained SAND Dark grey, dense, wet to saturated	■	16/26	25.1	103.0	
	Boring completed at depth of 31'					
35						

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Appendix B
Laboratory Tests

TABLE I
MAXIMUM DENSITY TESTS

Sample	Classification	Optimum Moisture (%)	Maximum Dry Density (lbs/cu.ft)
B-4 @ 2'	Silty CLAY	18.0	109.0

TABLE II
EXPANSION TESTS

Sample	Classification	Expansion Index
B-4 @ 2'	Silty CLAY	79

TABLE III
ATTERBERG LIMITS

Sample	Liquid Limit	Plastic Limit	Plasticity Index
B-4 @ 5'	41	20	21
B-5 @ 10'	36	19	17

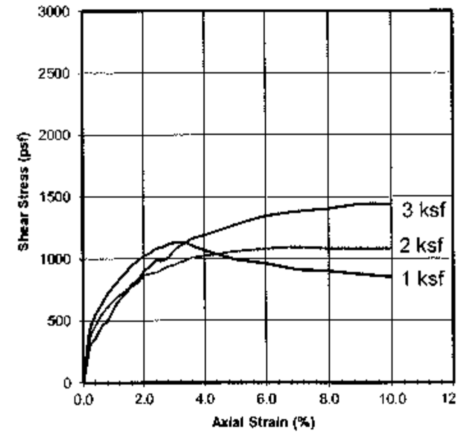
TABLE IV
CORROSION TESTS

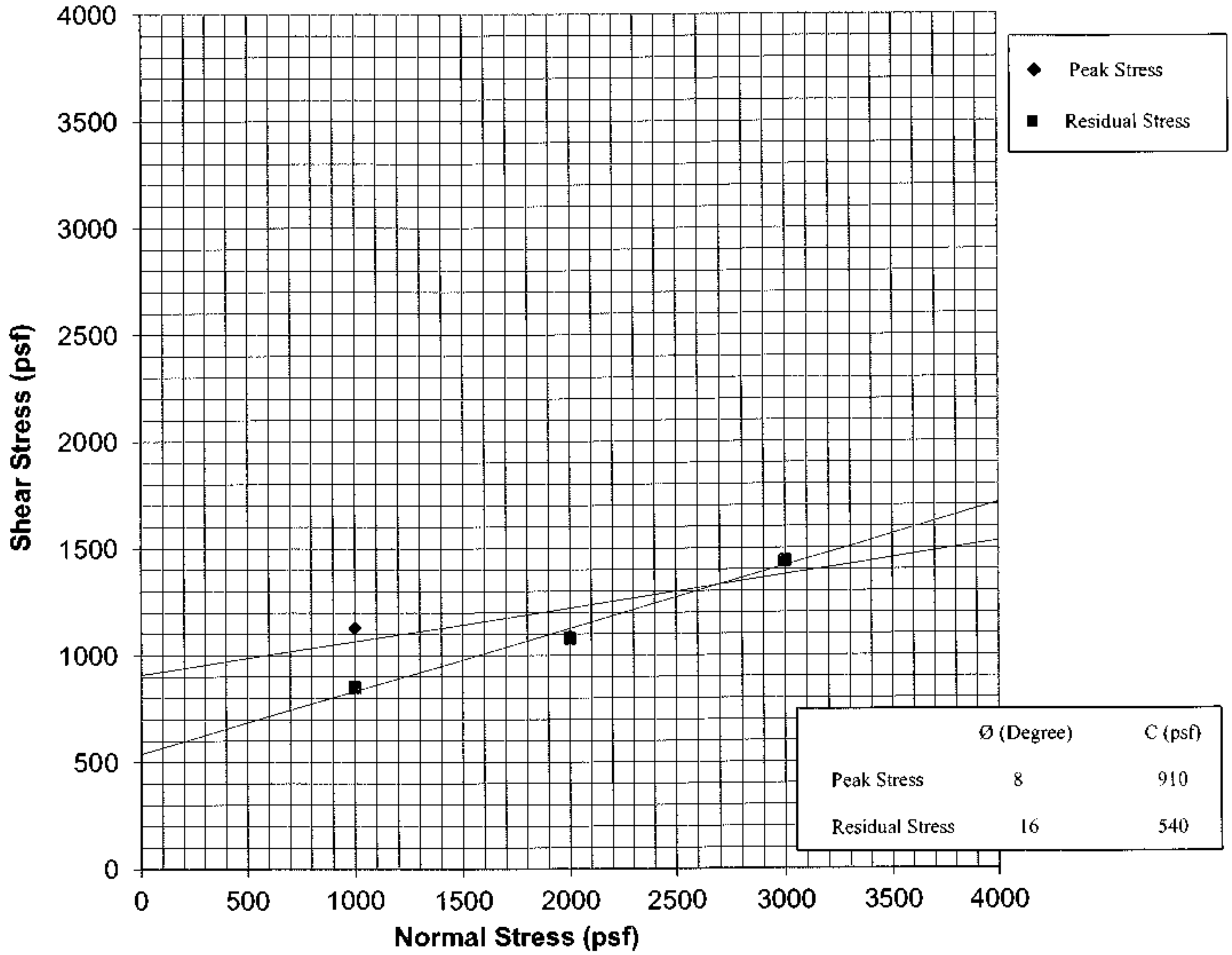
Sample	pH	Electrical Resistivity	Sulfate (%)	Chloride (ppm)
B-3 @ 2'	7.8	1,939	0.0018	134

% by weight
ppm – mg/kg

Sample No.		B4@2'		
Sample Type:		Undisturbed/Saturated		
Soil Description:		Silty Clay		

		1	2	3
Normal Stress	(psf)	1000	2000	3000
Peak Stress	(psf)	1128	1092	1440
Displacement	(in)	0.075	0.175	0.225
Residual Stress	(psf)	852	1080	1440
Displacement	(in.)	0.250	0.250	0.250
In Situ Dry Density	(pcf)	87.4	87.4	87.4
In Situ Water Content	(%)	24.2	24.2	24.2
Saturated Water Content	(%)	34.3	34.3	34.3
Strain Rate	(in/min)	0.020	0.020	0.020





	Ø (Degree)	C (psf)
Peak Stress	8	910
Residual Stress	16	540

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Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

DIRECT SHEAR TEST

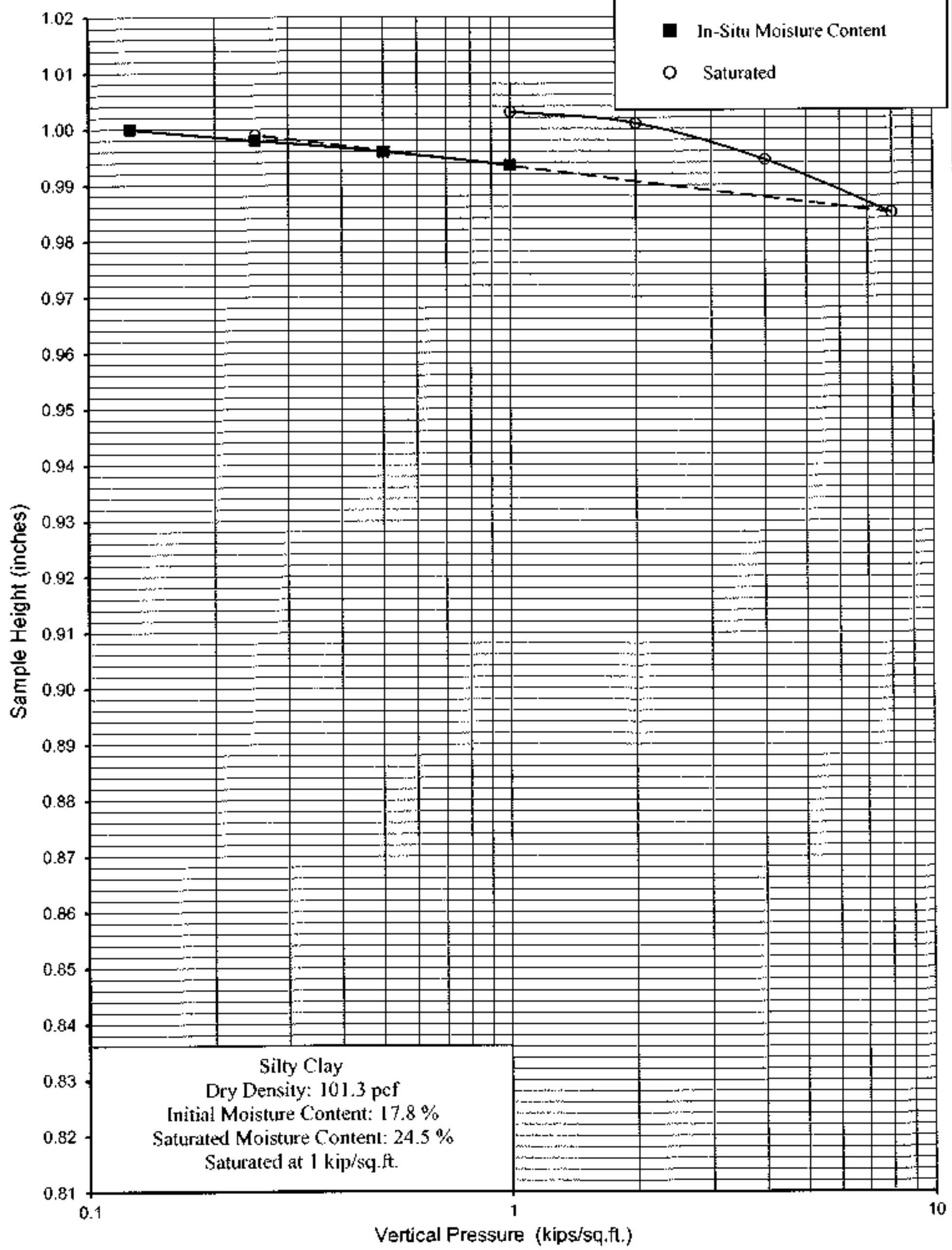
ASTM D3080

Plate A

Sample No.	B4	Depth	5'	Date	6/19/2025

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	
0.125	1.0000	0.0	
0.25	0.9980	0.2	
0.5	0.9960	0.4	
1	0.9935	0.6	
1	1.0030	-0.3	Saturated
2	1.0010	-0.1	Saturated
4	0.9945	0.6	Saturated
8	0.9850	1.5	Saturated
0.25	0.9990	0.1	Saturated

Date Tested: 6/16/2025
Sample: B4
Depth: 5'



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Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

CONSOLIDATION TEST

ASTM D2435

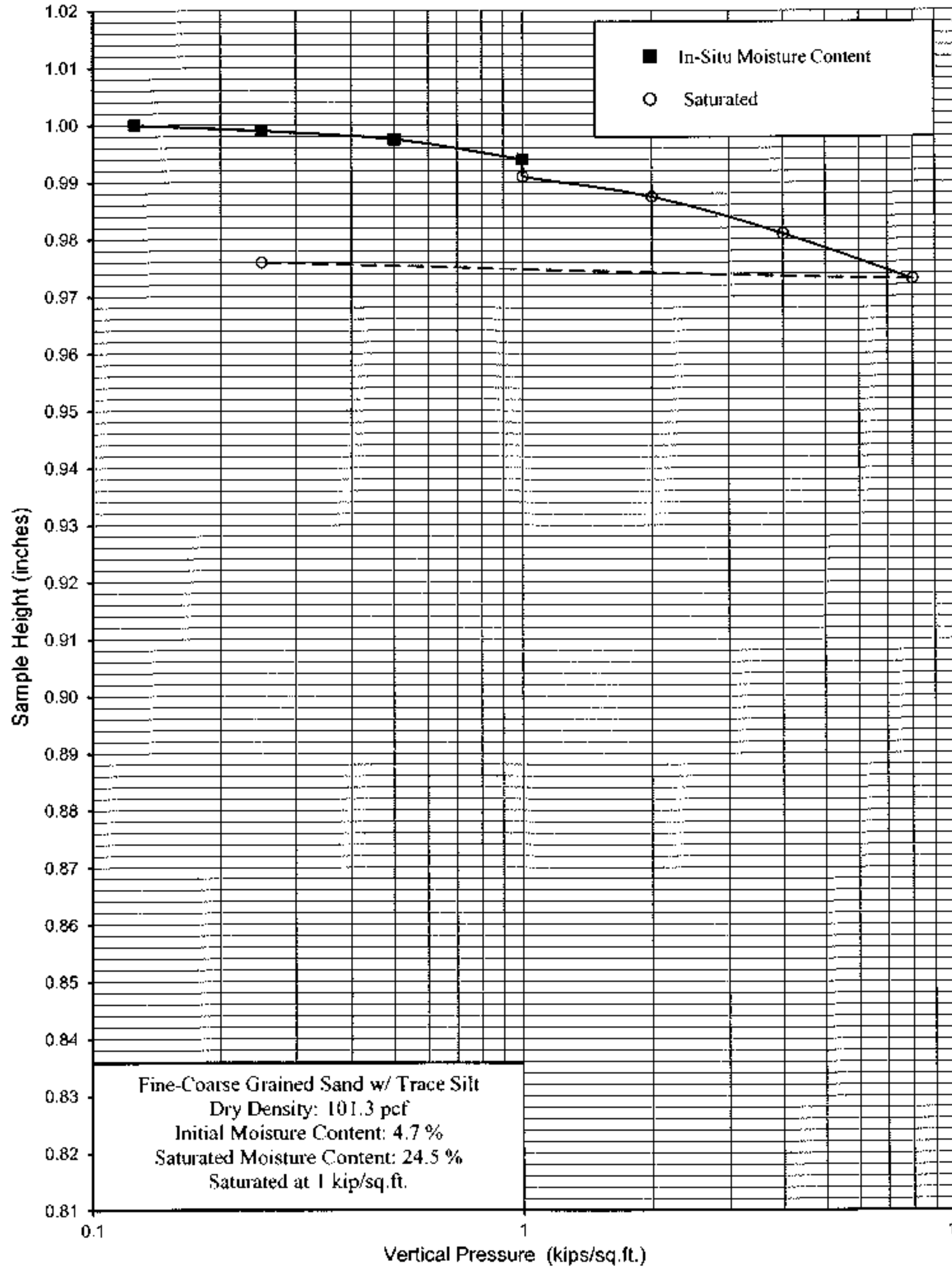
Plate B

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	Sample No.	B4	Depth	10'	Date	6/19/2025

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)
0.125	1.0000	0.0
0.25	0.9990	0.1
0.5	0.9975	0.2
1	0.9940	0.6
1	0.9910	0.9
2	0.9875	1.3
4	0.9810	1.9
8	0.9730	2.7
0.25	0.9760	2.4

Saturated

Date Tested: 6/16/2025
Sample: B4
Depth: 10'



Fine-Coarse Grained Sand w/ Trace Silt
Dry Density: 101.3 pcf
Initial Moisture Content: 4.7 %
Saturated Moisture Content: 24.5 %
Saturated at 1 kip/sq.ft.

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Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

CONSOLIDATION TEST

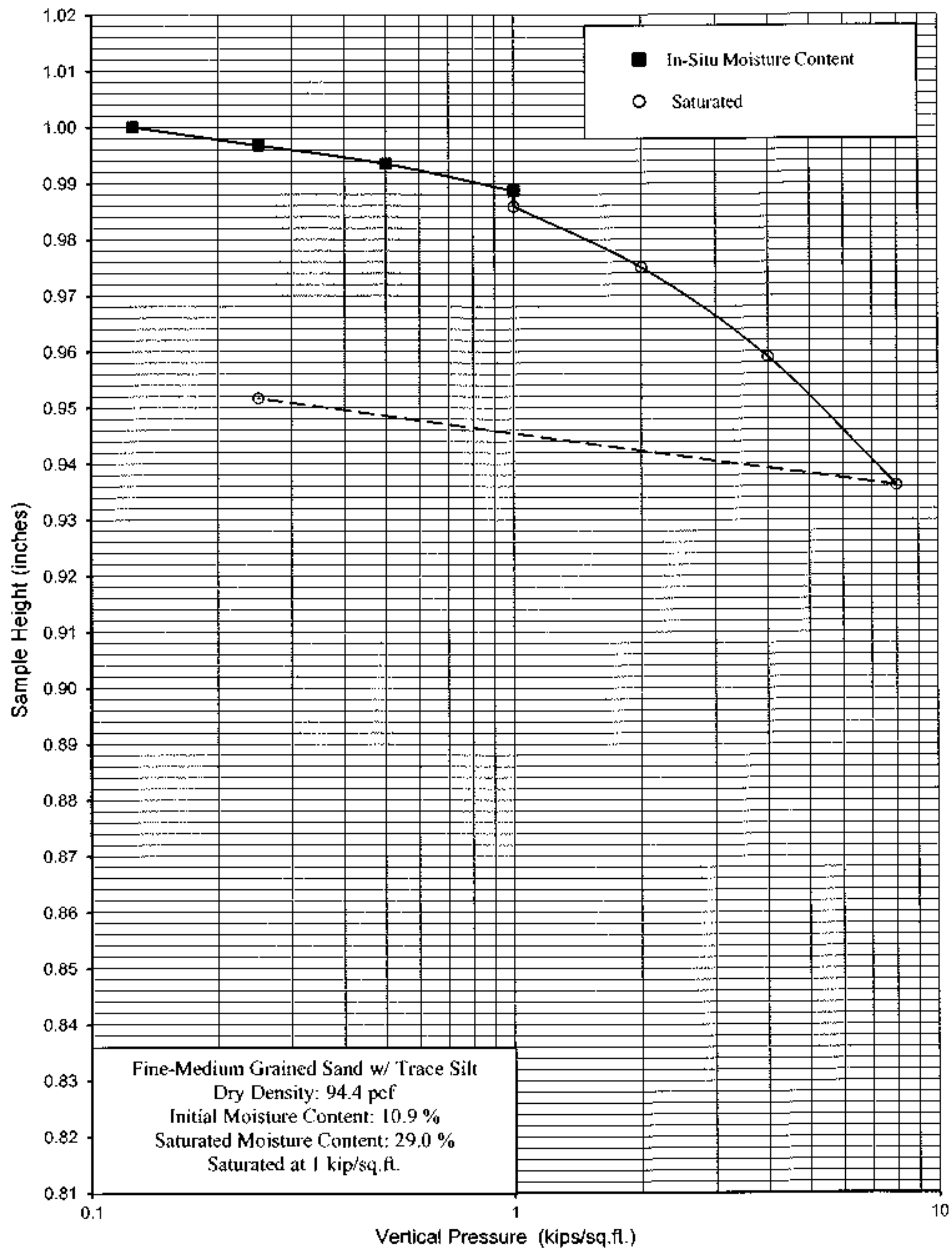
ASTM D2435

Plate C

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	Sample No.	B4	Depth 15'	Date 6/19/2025

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	
0.125	1.0000	0.0	
0.25	0.9968	0.3	
0.5	0.9935	0.6	
1	0.9887	1.1	
1	0.9859	1.4	Saturated
2	0.9750	2.5	
4	0.9590	4.1	
8	0.9361	6.4	
0.25	0.9517	4.8	

Date Tested: 6/17/2025
Sample: B4
Depth: 15'



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Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

CONSOLIDATION TEST

ASTM D2435

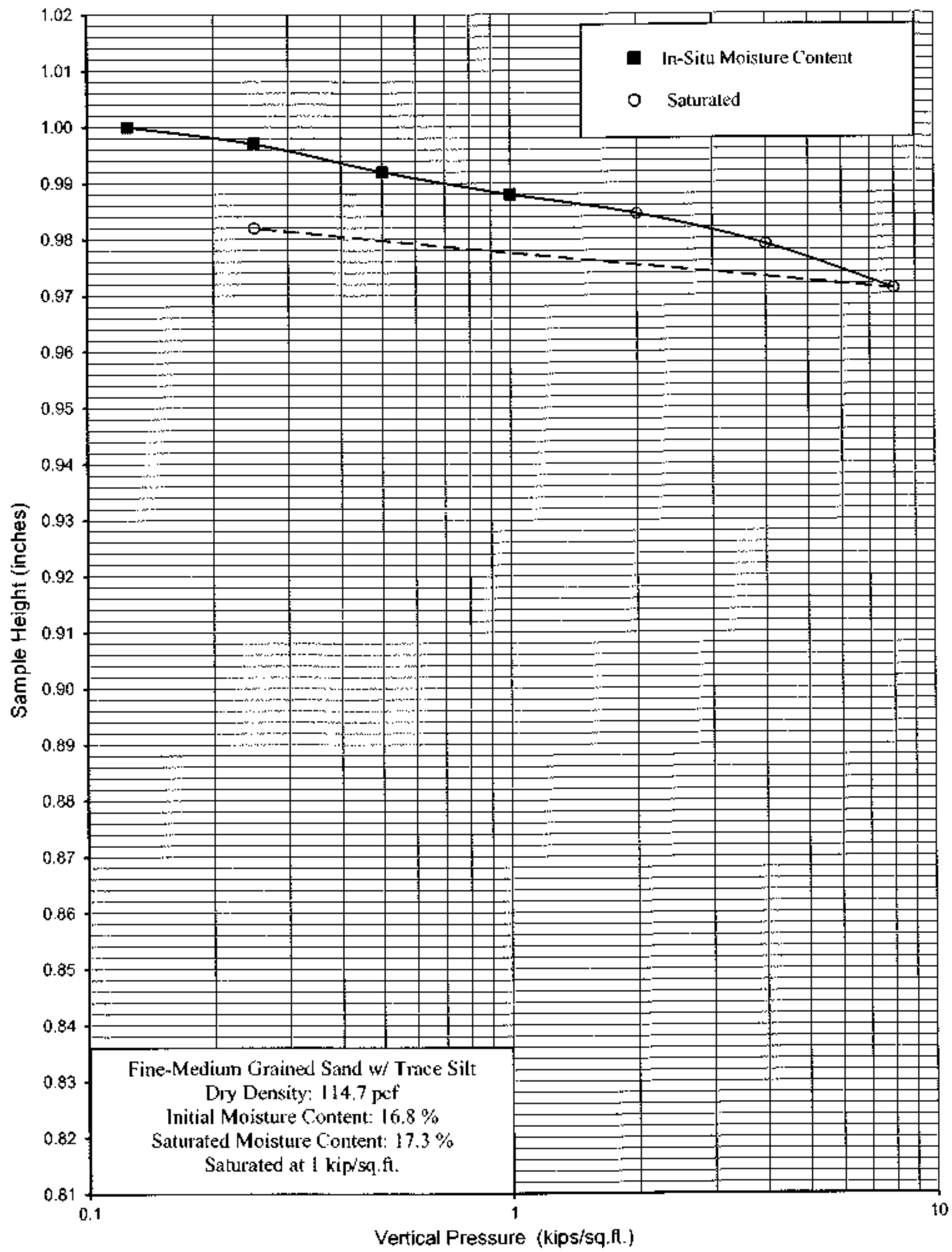
Plate D

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)
0.125	1.0000	0.0
0.25	0.9970	0.3
0.5	0.9920	0.8
1	0.9880	1.2
1	0.9880	1.2
2	0.9845	1.6
4	0.9790	2.1
8	0.9710	2.9
0.25	0.9820	1.8

Saturated

Date Tested: 6/17/2025
Sample: B5
Depth: 5'

Sample No. B5 | Depth 5' | Date 6/19/2025



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SOILS AND GEOTECHNICAL CONSULTANTS

Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

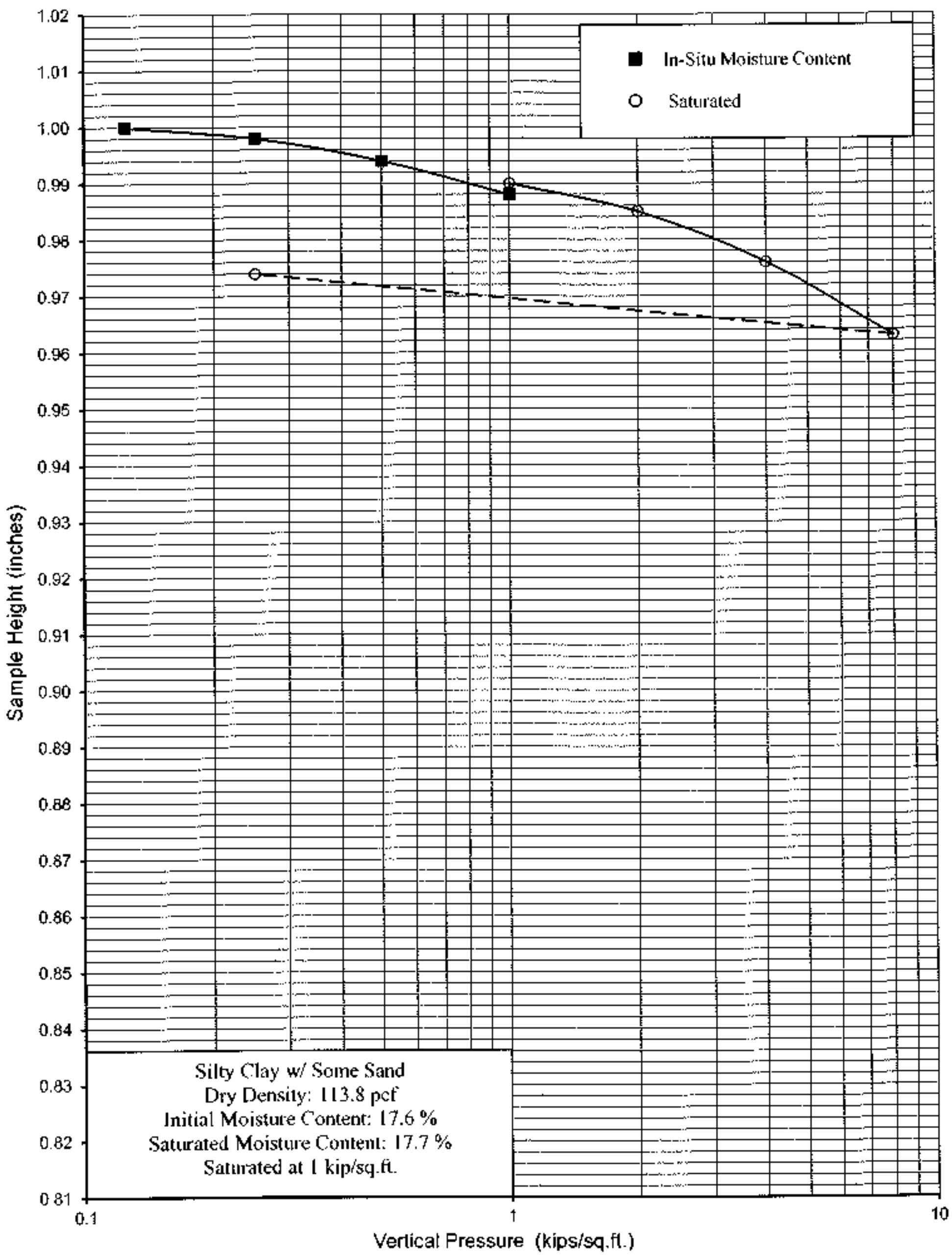
CONSOLIDATION TEST

ASTM D2435

Plate E

Vertical Pressure (kips/sq.ft.)	Sample Height (inches)	Consolidation (percent)	Sample No.	B5	Depth 10'	Date 6/19/2025
0.125	1.0000	0.0				
0.25	0.9980	0.2				
0.5	0.9940	0.6				
1	0.9880	1.2				
1	0.9900	1.0	Saturated			
2	0.9850	1.5	Saturated			
4	0.9760	2.4	Saturated			
8	0.9630	3.7	Saturated			
0.25	0.9740	2.6	Saturated			

Date Tested: 6/17/2025
Sample: B5
Depth: 10'



Silty Clay w/ Some Sand
Dry Density: 113.8 pcf
Initial Moisture Content: 17.6 %
Saturated Moisture Content: 17.7 %
Saturated at 1 kip/sq.ft.

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SOILS AND GEOTECHNICAL CONSULTANTS

Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

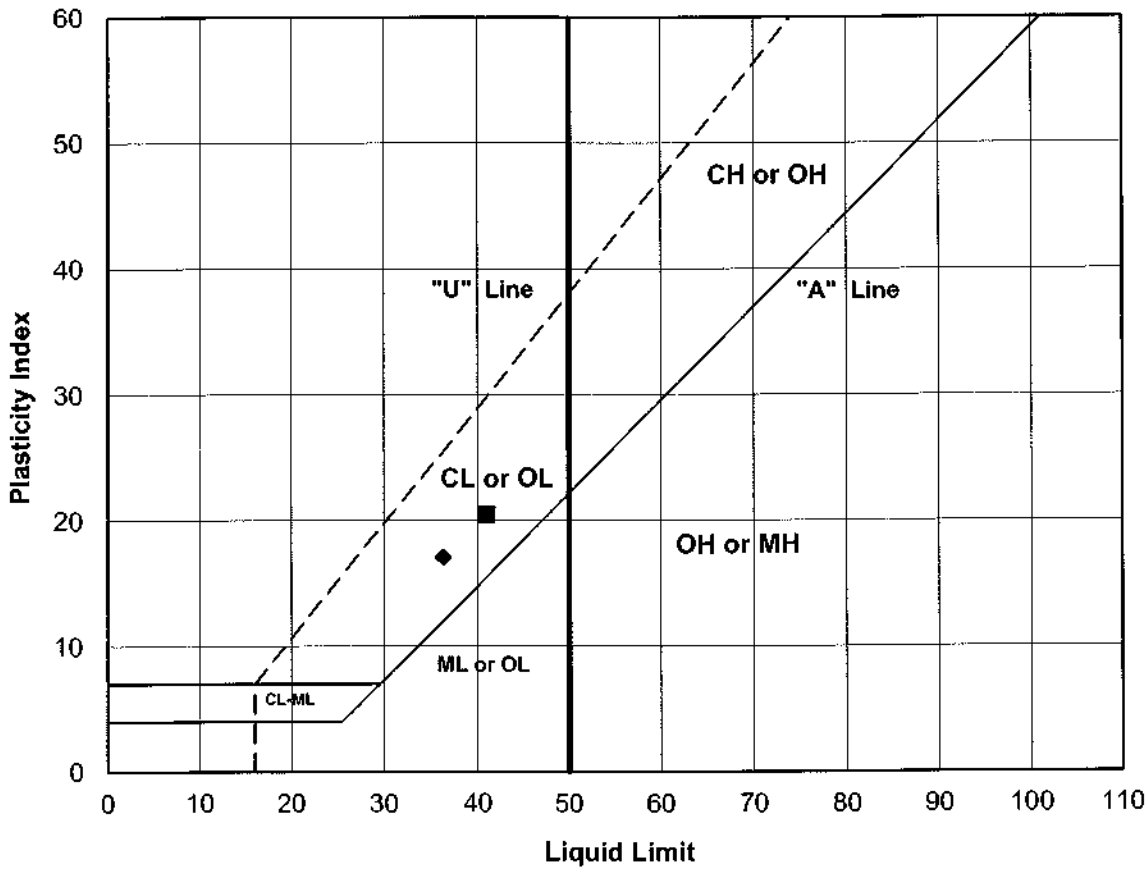
CONSOLIDATION TEST

ASTM D2435

Plate F

PLASTICITY INDEX

ASTM D4318



Symbol	Sample	Depth	LL	PL	PI	USCS	Soil Description
■	B4	5'	**41**	**20**	**21**	CL	Lean Clay
◆	B5	10'	**36**	**19**	**17**	CL	Lean Clay
▲							
□							
◇							
△							

NorCal Engineering

SOILS AND GEOTECHNICAL CONSULTANTS

Westport Properties

PROJECT NUMBER: 25093-25 DATE: 6/19/2025

PLASTICITY INDEX

ASTM D4318

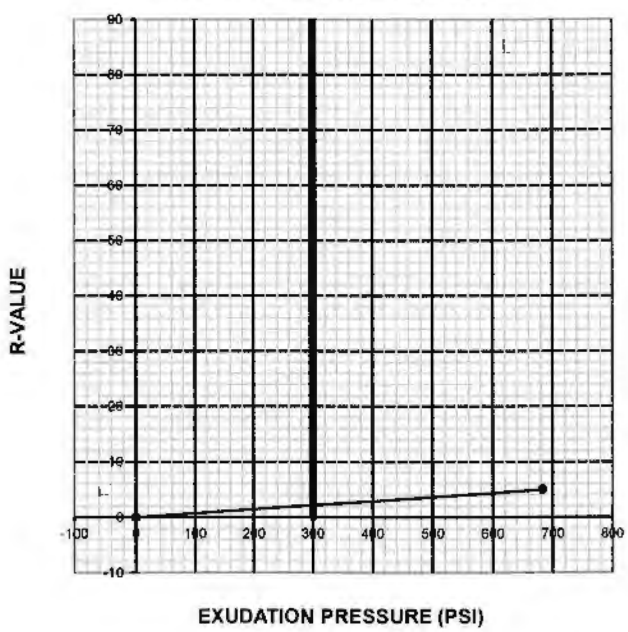
R-VALUE TEST REPORT

☑ CT-301 ☐ ASTM-D2844

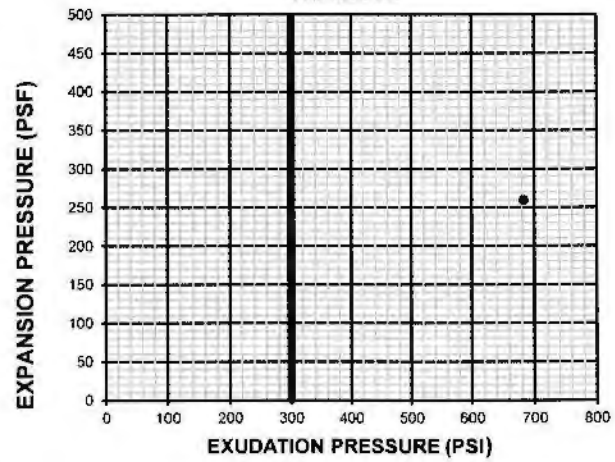
PROJECT NAME:	Norcal: Westport Properties (#25093-25)	PROJECT NUMBER:	L-250601 (#25093-25)
SAMPLE LOCATION:	4800 S. San Vicente Blvd, Los Angeles, CA	SAMPLE NUMBER:	B-1
SAMPLE DESCRIPTION:	FAT CLAY (CH), dark brown	SAMPLE DEPTH:	1'
SAMPLED BY:	Norcal 6/2/25	TESTED BY:	JPG
		DATE TESTED:	6/7/2025

TEST SPECIMEN	A	B	C
MOISTURE AT COMPACTION %	23.0	Sample extruded from under the mold during loading. Soil reported as 5 R-Value.	
WEIGHT OF SAMPLE, grams	924		
HEIGHT OF SAMPLE, Inches	2.36		
DRY DENSITY, pcf	96.5		
COMPACTOR AIR PRESSURE, psi	100		
EXUDATION PRESSURE, psi	683		
EXPANSION, Inches x 10exp-4	60		
STABILITY Ph 2,000 lbs (160 psi)	142		
TURNS DISPLACEMENT	3.89		
R-VALUE UNCORRECTED	8		
R-VALUE CORRECTED	5		
EXPANSION PRESSURE (psf)	259.2		

R-VALUE VS. EXUDATION PRESSURE



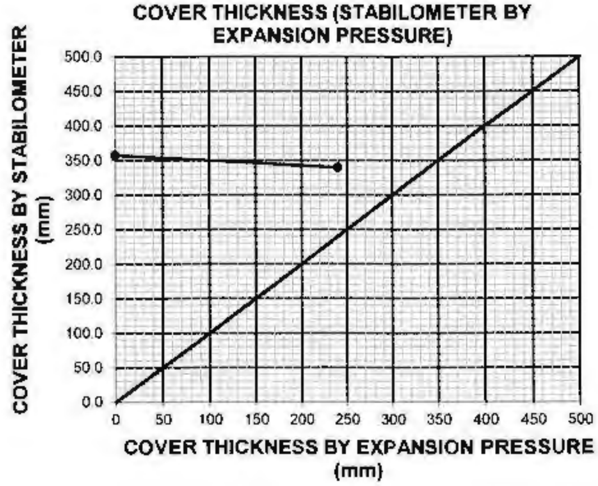
EXPANSION PRESSURE VS. EXUDATION PRESSURE



R-VALUE AT EQUILIBRIUM:	5

R-VALUE BY EXUDATION PRESSURE:	5
R-VALUE BY EXPANSION PRESSURE:	N.A.
EXPANSION PRESSURE AT 300 PSI EXUDATION:	0
TRAFFIC INDEX (Assumed):	5.5
GRAVEL FACTOR (Assumed):	1.5
UNIT MASS OF COVER MATERIAL, kg/m^3 (Assumed):	2100.0

COVER THICKNESS (STABILOMETER BY EXPANSION PRESSURE)



Appendix C
Seismic Design Report
ZIMAS report
Seismic Hazard Zone Map

SEISMIC LATERAL SOIL PRESSURE ⇒ CITY OF LA

Seismic Lateral Soil Pressure $= \frac{3}{8}(K_h)(\gamma_{soil})(\text{Height})$

$P_{seismic} = \frac{3}{8}(0.31)(120\ pcf)(\text{Height})$

$P_{seismic} = (14\ pcf)(\text{Height})$

$PGA_M = 0.936g$

$K_h = \frac{1}{2}\left[\frac{2}{3} PGA_M\right]$

$K_h = \frac{1}{3}(0.936g)$

$K_h = 0.312g$

γ_m = Soil Moist Density

$\gamma_m = 120\ pcf$

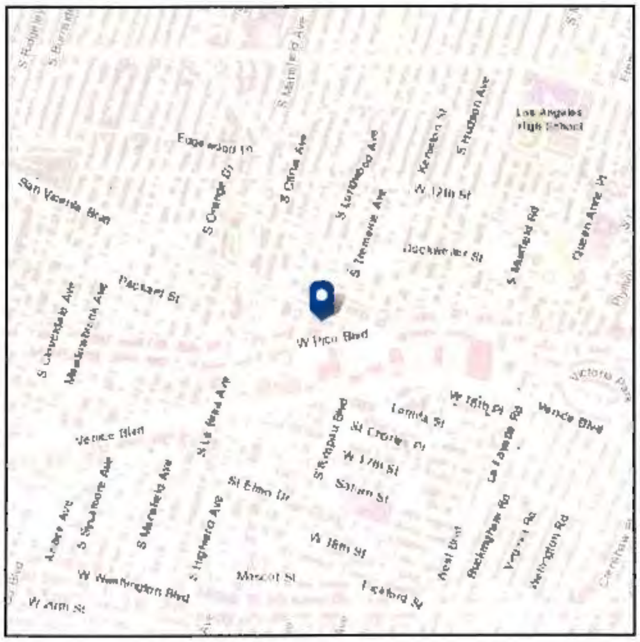
DATE

ASCE Hazards Report

Address:
4800 San Vicente Blvd
Los Angeles, California
90019

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 34.048834
Longitude: -118.341387
Elevation: 135.48118043775983 ft (NAVD 88)



AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	1.991	S_{D1} :	N/A
S_1 :	0.707	T_L :	8
F_a :	1	PGA :	0.851
F_v :	N/A	PGA_M :	0.936
S_{MS} :	1.991	F_{PGA} :	1.1
S_{M1} :	N/A	I_e :	1
S_{DS} :	1.327	C_v :	1.498

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Mon Jun 30 2025

Date Source: USGS Seismic Design Maps

ZIMAS

Public

Search | Reports | Resources

4816 W SAN VICENTE BLVD

Font: A A A +/-

Address/Legal

Site Address	4816 W SAN VICENTE BLVD
ZIP Code	90019
PIN Number	129B181 828
Lot/Parcel Area (Calculated)	2,647.2 (sq ft)
Thomas Brothers Grid	PAGE 633 - GRID D4
Assessor Parcel No. (APN)	5070004026
Tract	TR 4604
Map Reference	M B 51-34/38
Block	None
Lot	FR 665
Arb (Lot Cut Reference)	None
Map Sheet	129B181

Jurisdictional

Permitting and Zoning Compliance

Planning and Zoning

Assessor

Case Numbers

Citywide/Code Amendment Cases

Additional

Environmental

Seismic Hazards

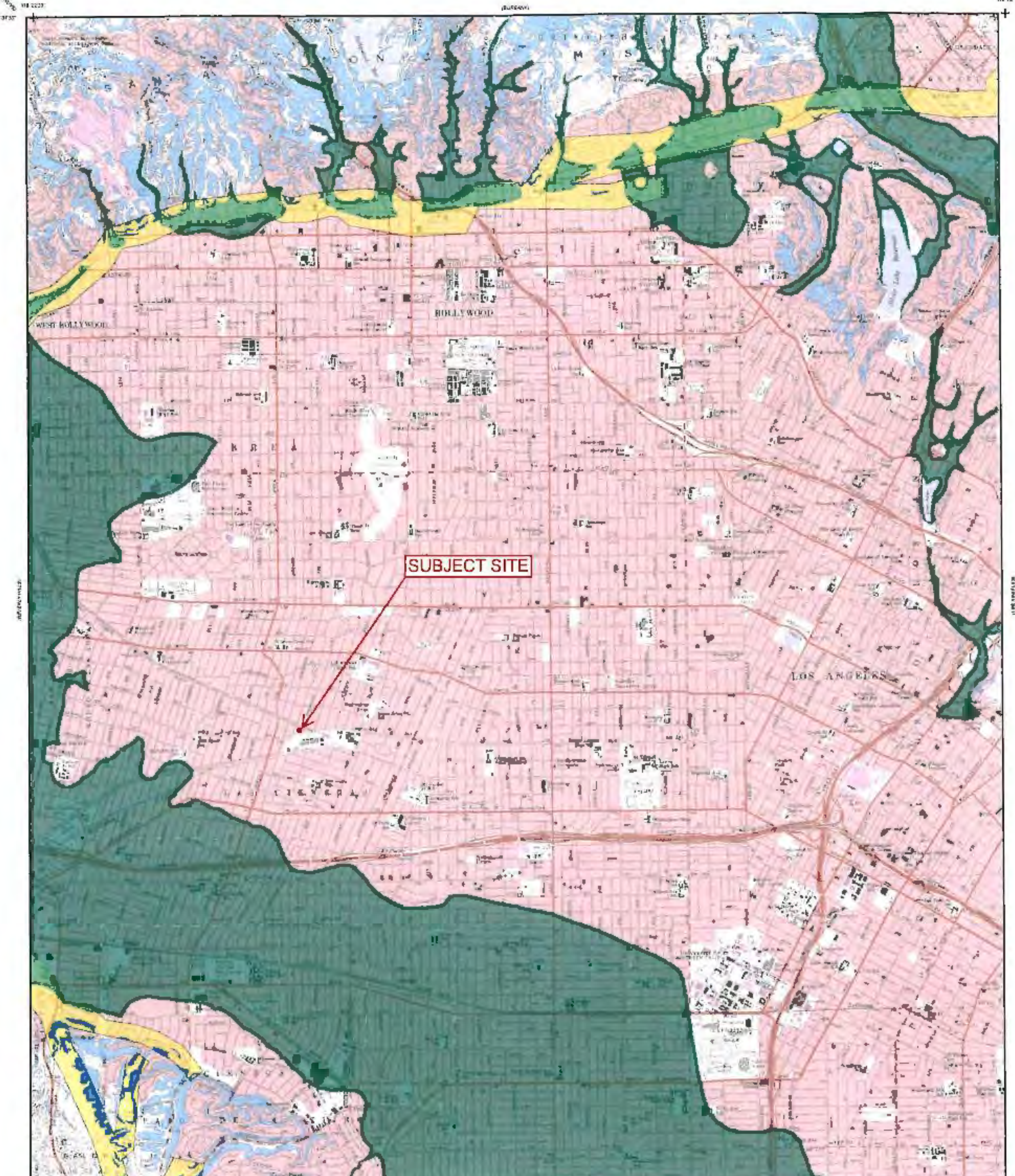
Active Fault Near-Source Zone	
Nearest Fault (Distance in km)	3.666744
Nearest Fault (Name)	Newport - Inglewood Fault Zone (Onshore)
Region	Transverse Ranges and Los Angeles Basin
Fault Type	B
Slip Rate (mm/year)	1.00000000
Slip Geometry	Right Lateral - Strike Slip
Slip Type	Poorly Constrained
Down Dip Width (km)	13.00000000
Rupture Top	0.00000000
Rupture Bottom	13.00000000
Dip Angle (degrees)	90.00000000
Maximum Magnitude	7.10000000
Alquist-Priolo Fault Zone	No
Landslide	No
Liquefaction	No
Preliminary Fault Rupture Study Area	None
Tsunami Hazard Area	No

Economic Development Areas

Housing

Public Safety

Terms & Conditions

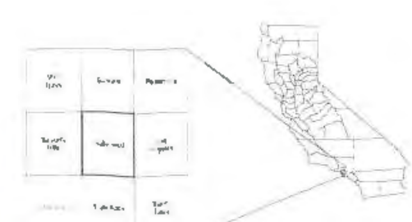


Study area defined by USGS quadrangle boundaries using NAD 27, represented by the visible map extent. Data are maintained and distributed in NAD 83 (EPSG 3310), California Albers (meters), as shown by tics and coordinates.
Shaded topographic relief derived from USGS 10 meter NED (2013).
Topographic base map from USGS 1966, photorevised 1981.
Street data from US Census Bureau TIGER/Line, 2016.

N.T.S.

Contour Interval 20 Feet

California Geological Survey
Geologic Information and Publications
801 K Street, MS 14-34
Sacramento, CA 95814-3532
www.conservation.ca.gov/cgs



Earthquake Zones of Required Investigation Hollywood Quadrangle

California Geological Survey

This Map Shows Both Alquist-Priolo Earthquake Fault Zones And Seismic Hazard Zones Issued For The Hollywood Quadrangle

This map shows the location of Alquist-Priolo (AP) Earthquake Fault Zones and Seismic Hazard Zones, collectively referred to here as Earthquake Zones of Required Investigation. The Geographic Information System (GIS) digital files of these regulatory zones released by the California Geological Survey (CGS) are the "Official Maps." GIS files are available at the CGS website http://maps.conservation.ca.gov/cgs/informationwarehouse/. These zones will assist cities and counties in fulfilling their responsibilities for protecting the public from the effects of surface fault rupture and earthquake-triggered ground failure as required by the AP Earthquake Fault Zoning Act (Public Resources Code Sections 2621-2630) and the Seismic Hazards Mapping Act (Public Resources Code Sections 2690-2699.6). For information regarding the general approach and recommended methods for preparing these zones, see CGS Special Publication 42, *Earthquake Fault Zones, a Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*, Appendix C, and CGS Special Publication 118, *Recommended Criteria for Delineating Seismic Hazard Zones in California*.

For information regarding the scope and recommended methods to be used in conducting required site investigations refer to CGS Special Publication 42, and CGS Special Publication 117A, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*. For a general description of the AP and Seismic Hazards Mapping acts, the zonation programs, and related information, please refer to the website at www.conservation.ca.gov/cgs/.

MAP EXPLANATION

EARTHQUAKE FAULT ZONES

Earthquake Fault Zones
Zone boundaries are delineated by straight-line segments; the boundaries define the zone encompassing active faults that constitute a potential hazard to structures from surface faulting or fault creep such that avoidance as described in Public Resources Code Section 2621.5(a) would be required.

Active Fault Traces
Faults considered to have been active during Holocene time and to have potential for surface rupture: Solid Line in Black or Red where Accurately Located; Long Dash in Black or Solid Line in Purple where Approximately Located; Short Dash in Black or Solid Line in Orange where Inferred; Dotted Line in Black or Solid Line in Rose where Concealed. Query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by fault creep.

SEISMIC HAZARD ZONES

Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslide Zones
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

OVERLAPPING ALQUIST-PRIOLO AND SEISMIC HAZARD ZONES

Overlap of Earthquake Fault Zone and Liquefaction Zone
Areas that are covered by both Earthquake Fault Zone and Liquefaction Zone.

Overlap of Earthquake Fault Zone and Earthquake-Induced Landslide Zone
Areas that are covered by both Earthquake Fault Zone and Earthquake-Induced Landslide Zone.

Note: Mitigation methods differ for each zone – AP Act only allows avoidance; Seismic Hazard Mapping Act allows mitigation by engineering/geotechnical design as well as avoidance.

ADDITIONAL INFORMATION

For additional information on the zones of required investigation presented on this map, the data and methodology used to prepare them, and additional references consulted, please refer to the following:

The Northern Newport-Inglewood Fault Zone, Los Angeles County, California
California Geological Survey, Fault Evaluation Report FER-173
http://gmw.conservation.ca.gov/SHP/EZRIM/Reports/FER/173/

The Hollywood Fault in the Hollywood 7.5' Quadrangle, Los Angeles County, California
California Geological Survey, Fault Evaluation Report FER-253
http://gmw.conservation.ca.gov/SHP/EZRIM/Reports/FER/253

For more information on the Alquist-Priolo Earthquake Fault Zoning Act please refer to
http://www.conservation.ca.gov/cgs/rghm/ap/Pages/main.aspx

Seismic Hazard Zone Report for the Hollywood 7.5-minute Quadrangle, Los Angeles County, California
California Geological Survey, Seismic Hazard Zone Report 026
http://gmw.conservation.ca.gov/SHP/EZRIM/Reports/SHZR/SHZR_026_Hollywood.pdf

For more information on the Seismic Hazards Mapping Act please refer to
http://www.conservation.ca.gov/cgs/shzp/Pages/SHMPpgminfo.aspx

Click the link below to learn how to take greater advantage of the GeoPDF format of this map after downloading.
http://gmw.conservation.ca.gov/SHP/EZRIM/Docs/TerragoUserGuide.pdf

HOLLYWOOD QUADRANGLE

EARTHQUAKE FAULT ZONES	SEISMIC HAZARD ZONES
Delineated in compliance with Chapter 7.5 Division 2 of the California Public Resources Code *(Alquist-Priolo Earthquake Fault Zoning Act)*	Delineated in compliance with Chapter 7.8 Division 2 of the California Public Resources Code *(Seismic Hazards Mapping Act)*
REVISED OFFICIAL MAP	**OFFICIAL MAP**
Released: November 6, 2014	**Released: March 25, 1999**
STATE GEOLOGIST	STATE GEOLOGIST

PROFESSIONAL GEOLOGIST
JOHN G. PARRISH
No. 4767
STATE OF CALIFORNIA

IMPORTANT

PLEASE NOTE THE FOLLOWING FOR ZONES SHOWN ON THIS MAP

1) This map may not show all faults that have the potential for surface fault rupture, either within the Earthquake Fault Zones or outside their boundaries. Additionally, this map may not show all areas that have the potential for liquefaction, landsliding, strong earthquake ground shaking or other earthquake and geologic hazards. Also, a single earthquake capable of causing liquefaction or triggering landslide failure will not uniformly affect the entire area zoned.

2) Boundaries of Earthquake Fault Zones, if included on this map, are based on interpretations of Holocene-active fault traces.

3) The identification and location of these faults are based on the best available data. However, the quality of data used is varied. Traces have been depicted as accurately as possible at a map scale of 1:24,000.

4) Liquefaction zones may also contain areas susceptible to the effects of earthquake-induced landslides. This situation typically exists at or near the toes of existing landslides, downslope from rockfall or debris flow source areas, or adjacent to steep stream banks.

5) Landslide zones on this map were determined, in part, by adapting methods first developed by the U.S. Geological Survey (USGS). Landslide hazard maps prepared by the USGS typically use experimental approaches to assess earthquake-induced and other types of landslide hazards. Although aspects of these new methodologies may be incorporated in future CGS seismic hazard zone maps, USGS maps should not be used as substitutes for these Official SEISMIC HAZARD ZONES maps.

6) USGS base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of this map. The identification and location of liquefaction and earthquake-induced landslide zones are based on available data. However, the quality of data used is varied. The zone boundaries depicted have been drawn as accurately as possible at this scale.

7) Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the California Public Resources Code.

8) Seismic Hazard Zones identified on this map may include developed land where delineated hazards have already been mitigated to city or county standards. Check with your local building/planning department for information regarding the location of such mitigated areas.

9) DISCLAIMER: The State of California and the Department of Conservation make no representations or warranties regarding the accuracy of the data from which these maps were derived. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

Appendix D
Soil Infiltration Data

NORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

PERCOLATION TEST DATA

Client: Westport Properties	**Tested By:** J.S.
Project No.: 25093-25	**Date Tested:** 06/03/2025
Test Hole: 1	**Caving:**
Depth of Test Hole: 5' (60")	**Notes:**
Diameter of Test Hole: 6"	
Date Excavated: 06/02/2025	

PRE-SOAK

TIME	PRE-SOAK NO.	TIME INTERVAL	TOTAL ELAPSED TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	CHANGE IN WATER LEVEL
9:25 9:55	1	30	30	48.0	48.0	0
9:55 10:25	2	30	60	48.0	48.5	0.5

PERCOLATION TEST

TIME	TEST NO.	TIME INTERVAL	TOTAL ELAPSED TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	CHANGE IN WATER LEVEL
8:30 9:00	1	30	30	48.0	48.0	0
9:00 9:30	2	30	60	48.0	48.0	0
9:30 10:00	3	30	90	48.0	48.0	0
10:00 10:30	4	30	120	48.0	48.0	0
10:30 11:00	5	30	150	48.0	48.5	0.5
11:00 11:30	6	30	180	48.0	48.0	0
11:30 12:00	7	30	210	48.0	48.0	0
12:00 12:30	8	30	240	48.0	48.0	0

NORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

PERCOLATION TEST DATA

Client: Westport Properties	**Tested By:** J.S.
Project No.: 25093-25	**Date Tested:** 06/02/2025
Test Hole: 3	**Caving:**
Depth of Test Hole: 20' (240")	**Notes:**
Diameter of Test Hole: 6"	
Date Excavated: 06/02/2025	

PRE-SOAK

TIME	PRE-SOAK NO.	TIME INTERVAL	TOTAL ELAPSED TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	CHANGE IN WATER LEVEL
11:08	1	4	4	228.0	240.0	12.0
11:09						
11:09	2	6	10	228.0	240.0	12.0
11:15						

PERCOLATION TEST

TIME	TEST NO.	TIME INTERVAL	TOTAL ELAPSED TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	CHANGE IN WATER LEVEL
11:15	1	7	7	228.0	240.0	12.0
11:22						
11:22	2	7	14	228.0	240.0	12.0
11:29						
11:29	3	7	21	228.0	240.0	12.0
11:36						
11:36	4	8	29	228.0	240.0	12.0
11:44						
11:44	5	8	37	228.0	240.0	12.0
11:52						
11:52	6	9	46	228.0	240.0	12.0
12:01						
12:01	7	10	56	228.0	240.0	12.0
12:11						
12:11	8	10	66	228.0	240.0	12.0
12:21						
12:21	9	10	76	228.0	240.0	12.0
12:31						
12:31	10	10	86	228.0	240.0	12.8
12:41						
12:41	11	10	96	228.0	239.0	11.0
12:51						
12:51	12	10	106	228.0	239.0	11.0
1:01						

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PERCOLATION TEST

TIME	TEST NO.	TIME INTERVAL	TOTAL ELAPSED TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	CHANGE IN WATER LEVEL
1:01	13	10	116	228.0	239.0	11.0
1:11						
1:11	14	10	126	228.0	238.0	10.0
1:21						

SOIL INFILTRATION RATE CALCS ⇒ Auger Boring

Location:	B-1	B-2	B-3
• Depth =	5.0'	20.0'	20.0'
• Hole Dia. =	6"	6"	6"
• Drop = Δd	0.5"	0.5"	10"
• Time = Δt Interval	30 min	30 min	10 min
• Preadjusted Perc. Rate	1 in/hr	1 in/hr	60 in/hr
• Initial Water Depth = d_1	12.0"	16.0"	12.0"
• Reduction Factor = R_f	4.92	6.25	3.33
• INFILTRATION RATE	0.20 in/hr	0.16 in/hr	18.0 in/hr

$$\text{Infiltration Rate} = \frac{\text{Preadjusted Perc. Rate}}{\text{Reduction Factor}}$$

$$\text{Reduction Factor} = R_f = \left[\frac{2 \cdot d_1 - \Delta d}{\text{Dia.}}\right] + 1$$

NorCal Engineering
SOILS AND GEOTECHNICAL CONSULTANTS

WESTPORT PROPERTIES

25093-25 DATE JUNE 2025

SOIL INFILTRATION RATE CALCULATIONS