SAN GABRIEL VALLEY REGIONAL CONFIRMATION OF INFILTRATION RATES

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East San Gabriel Valley Watershed Management Group

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Stantec

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Introduction

Stantec Consulting Services, Inc. (Stantec) has prepared this letter to summarize infiltration test results from recent testing performed at 18 sites within the San Gabriel Valley Watershed. Stantec engaged and managed a geotechnical subconsultant, GeoAdvantec Inc. (GAI), to perform the testing. Stantec provided on-site overview of the geotechnical investigations and infiltration testing, reviewed calculations performed by the subconsultant, and peer reviewed the subconsultant's geotechnical report. The geotechnical reports for the 12 sites (Phase 1) and 6 additional sites (Phase 2) are submitted with this summary letter. While this letter summarizes the infiltration testing results, the complete geotechnical reports should be read for more detailed information related to the investigation, test results, requirements and guidelines for construction of infiltration facilities, and other accompanying geotechnical information.

Geotechnical Exploration

Geotechnical exploration and infiltration testing was performed at 18 sites within the cities of Claremont, La Verne, San Dimas, Pomona, City of Industry, and El Monte. The first stage of the geotechnical field investigations included advancing two geotechnical borings at each of the 18 sites to depths of approximately 50 feet below ground surface (BGS) or drilling refusal. The second stage of the field program included performing infiltration tests as described in of this letter. Groundwater was encountered at borings 6a (21.5 feet), 6b (26 feet), 7b (45 feet), 11a (39 feet) and 11b (40.5 feet) for Phase 1 and at borings 1a (48 feet), 5a (40.2 feet) and 5b (40.3 feet) for Phase 2. Locations where groundwater was encountered are presented in **Table ES-2.** Drilling refusal was encountered at borings 1a (16 feet), 1b (19 feet), 2a (15 feet), 2b (18 feet) and 8b (33 feet) for Phase 1 and borings 1b (44 feet), 3a (25.7 feet), and 3b (45.2 feet) for Phase 2. The subsurface soil conditions included alternating layers of loose to very dense sand and gravel and stiff to hard silt and clay. Please see the boring logs in the attached geotechnical report for detailed soil descriptions.

Laboratory testing was performed on samples obtained from the investigation and included the following tests:

- Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937)
- Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Particle Size Analysis (ASTM D422)
- One-Dimensional Swell or Collapse of Soils (ASTM D4546)
- Amount of Material Finer than 75-µm (No. 200) Sieve (ASTM D1140)
- Liquid Limit, Plastic Limit, and Plasticity Index (ASTM D4318)
- Sulfate Content and Chloride Content (CT 417 and CT 422)

- Resistivity and pH Measurements (CT 643)

Infiltration Testing

The geotechnical field investigation also included performing an infiltration test at each of the 18 sites. For Phase 1, the infiltration testing was performed in accordance with 2017 version of the County of Los Angeles Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration (GS 200.2 dated June 30, 2017) since this was the current reference document at the time the fieldwork was being performed. An updated version of this document (GS200.1 dated June 30, 2021) became available after the Phase 1 fieldwork was performed. The infiltration testing for Phase 2 was performed in accordance with GS200.1. Accordingly, guidelines from this updated version have been used to calculate design infiltration rates for both Phase 1 and Phase 2 (discussed later). After reviewing the boring logs and laboratory tests, one location at each of the 18 sites was selected for infiltration testing. The selected location was chosen as the location which would have the highest infiltration rate between the two borings completed at the site. The infiltration well depth was selected between a depth of 10 to 20 feet BGS with a minimum 10-foot vertical separation between the bottom of the well and the groundwater level encountered in the boring (if groundwater was encountered).

Preliminary infiltration testing was performed to determine whether a standard boring percolation test or a high flow rate boring percolation test was required at each location in accordance with the procedure described in the 2017 GS200.2 document for Phase 1 and the GS200.1 document for Phase 2. **Table ES-1** summarizes the results of the infiltration testing and provides the testing location, test well designation, infiltration test type (standard or high flow rate), test depth interval, groundwater level encountered during the investigation, raw infiltration rate, and design infiltration rates.

The average and maximum design infiltration rates were determined using the recommended reduction factors from GS 200.1 based on the test type, as summarized in **Table ES-1** below. An average reduction factor of 6 for the standard boring percolation test and the falling head small diameter boring infiltration test and 7 for the high flow rate boring percolation test and constant head small diameter boring infiltration were applied. Similarly, a minimum reduction factor of 3.0 for the standard percolation test and the falling head small diameter boring infiltration test and 5.0 for the high flow rate boring percolation test and constant head small diameter boring infiltration were applied. Stantec recommends that the average design rates developed using these reduction factors are used for planning purposes only. The current project was a feasibility level study, and as such, additional testing will be needed depending on the conceptual design, depth, and location of the infiltration facilities. It may be possible to implement a lower reduction factor pending results from additional detailed on-site testing and concurrence with the governing agency.

Table ES-1 Summary of Infiltration Testing Results

City	Location	Test Well	Infiltration Test Type[1]	Test Depth Interval (feet)	Groundwater Depth (feet)	Raw Infiltration Rate (inch/hour)	Average Design Infiltration Rate[2] (RF = 6 to 7) (inch/hour)	Max. Design Infiltration Rate[3] (RF = 3 to 5) (inch/hour)	Infiltration Facility Feasible?
Phase 1									
Claremont	Larkin Park	P-1	HF	13.6 – 15.2	N/A	5.85	0.84	1.17	Yes
Claremont	Wheeler Park[4]	P-2	BP	17.0 – 18.3	N/A	1.04	0.17	0.35	No
La Verne	Pelota Park	P-3	HF	13.0 – 15.5	N/A	29.69	4.24	5.94	Yes
La Verne[4]	J. Marion Roynon El. Sch.[4]	P-4	BP	18.1 – 20.2	N/A	0.44	0.07	0.15	No
San Dimas	Marchant Park	P-5	BP	17.7 – 20.1	N/A	5.87	0.98	1.96	Yes
San Dimas[4]	Via Verde Park[4]	P-6	BP	8.6 – 11.5	21.5	0	0	0	No
San Dimas	Lone Hill Park	P-7	HF	14.5 – 18.3	N/A	30.06	4.29	6.01	Yes
Pomona	Hamilton Park	P-8	BP	12.7 – 15.2	N/A	2.94	0.49	0.98	Yes
Pomona	John F. Kennedy Park	P-9	BP	17.7 – 20.0	N/A	2.83	0.47	0.94	Yes
Pomona[4]	Westmont Park[4]	P-10	BP	15.1 – 17.5	N/A	0.23	0.04	0.08	No
City of Industry	Azusa/Gale Ave	P-11	HF	15.7 – 18.3	39	11.84	1.69	2.37	Yes
El Monte	Lambert Park	P-12	HF	17.5 – 20.0	N/A	31.01	4.43	6.20	Yes
Phase 2									
Pomona	Fairplex Fairgrounds	P-1	CH	17.2 – 20.0	48	9.57	1.37	1.91	Yes
La Verne	Emerald Park[4]	P-2	FH	11.9 – 16.6	N/A	0.60	0.10	0.20	No
Claremont	Claremont Boulevard	P-3	CH	17.6 – 19.8	N/A	8.26	1.18	1.65	Yes
El Monte	Mountain View Park	P-4	CH	18.3 – 20.0	N/A	24.91	3.56	4.98	Yes
City of Industry	Park and Ride Lot	P-5	CH	10.3 – 13.1	40	8.42	1.20	1.68	Yes

San Dimas	Pioneer Park	P-6	CH	17.7 – 20.3	N/A	7.60	1.09	1.52	Yes

1. BP = Standard Boring Percolation Test, HF = High Flow Rate Boring Percolation Test, FH = Falling Head Small Diameter Boring Infiltration Test, CH = Constant Head Small Diameter Boring Infiltration Test
2. Reduction Factor (RF) = 6 for BP/FH Test and 7 for HF/CH Tests
3. Reduction Factor (RF) = 3 for BP/FH Test and 5 for HF/CH Tests
4. Site does not have the required average design infiltration rate of 0.3 inch/hour

The GS 200.1 document provides the following site requirements for siting stormwater infiltration facilities:

1. Subsurface materials shall have a design infiltration rate equal to or greater than 0.3 inch per hour.

2. The invert of stormwater infiltration shall be at least 10 feet above the groundwater elevation.

3. Stormwater infiltration is not allowed in areas that pose a risk of causing pollutant mobilization, such as on sites identified on environmental regulatory databases or similar files maintained by local agencies, or on properties with other documented environmental concerns.

4. Stormwater infiltration is not allowed in areas that pose a risk of causing sewage effluent mobilization from septic pits, seepage lines, or other sewage disposal.

5. Stormwater infiltration BMPs shall not be placed on steep slopes and shall not create the condition or potential for slope instability.

6. Stormwater infiltration shall not increase the potential for static settlement of structures on or adjacent to the site.

7. Stormwater infiltration shall not increase the potential for seismic settlement of structures on or adjacent to the site.

8. Stormwater infiltration shall not place an increased surcharge on structures or foundations on or adjacent to the site. The pore-water pressure shall not be increased on soil retaining structures on or adjacent to the site.

9. The invert of stormwater infiltration shall be set back at least 15 feet and outside a 1:1 plane drawn up from the bottom of adjacent foundations, unless otherwise recommended by the geotechnical consultant.

10. Stormwater infiltration shall not be located near utility lines where the introduction of stormwater could cause damage to utilities or settlement of trench backfill.

11. Stormwater infiltration is not allowed within 100 feet of any groundwater production wells used for drinking water.

12. Sites proposing to infiltrate an SWQDv of 10,000 gallons or more must have the geotechnical report signed and stamped by a State of California certified professional geologist. It is highly recommended that reports for large projects also be signed and stamped by a certified hydrogeologist.

13. At least two percolation tests shall be performed at each location and elevation where stormwater infiltration is proposed for mid-scale and large-scale projects. Alternative test procedures must be submitted ahead of time and will be approved on a case-by-case basis.

The 2021 GS200.1 requirements listed above should be reviewed in detail relative to the conceptual design and location to determine if any mitigations are necessary to meet the requirements. As shown in **Table ES-1**, 5 of the 18 sites do not meet the minimum design infiltration rate.

Groundwater Evaluation

The design groundwater level was evaluated by researching data from nearby wells, contours of historically highest groundwater levels from seismic hazard maps, and from groundwater levels encountered in the borings performed at each site. In general, the data from nearby wells did not provide reliable site-specific information due to proximity of the wells, age of the data, and extreme fluctuations in the data at some locations which is an indicator of erroneous data. The historically highest groundwater levels from the seismic hazard maps are attached with this letter.

Accordingly, in the geotechnical reports, the design groundwater level was selected as the higher of the groundwater level encountered during drilling and the historically highest groundwater level from seismic hazard maps. The historically high groundwater levels from the seismic hazard maps are a compilation of data sources greater than 40 years old which does not have site-specific data on the project site. Subsequently, the groundwater level encountered during the drilling investigation will likely provide the most accurate groundwater level for the evaluations. The currently available groundwater data is presented in **Table ES-2** and includes data obtained during the geotechnical investigations and historically highest groundwater levels from seismic hazard maps.

Table ES-2. Groundwater Data

Site	Site Description	Groundwater Depth (feet)			
		During Drilling [1]	Nearby Recent Well Data [2]	Historically Highest [3]	Selected for Design [4]
Phase 1					
1	Larkin Park	NE	140.5 - 176.5	150	150
2	Wheeler Park	NE	n/a	200	200
3	Pelota Park	NE	n/a	125	125
4	J. Marion Roynon Elementary School	NE	n/a	120	120
5	Marchant Park	NE	n/a	85	85
6	Via Verde Park	21.5 – 26.0	n/a	55	21.5
7	Lone Hill Park	45.0	n/a	37	37
8	Hamilton Park	NE	n/a	80	80

9	John F. Kennedy Park	NE	n/a	48	48
10	Westmont Park	NE	n/a	25	25
11	Azusa/Gale Ave	39.0 - 40.5	n/a	18	18
12	Lambert Park	NE	n/a	18	18
Phase 2					
1	Fairplex Fairgrounds	48	N/A	18	18
2	Emerald Park	NE	N/A	145	145
3	Claremont Boulevard	NE	N/A	100	100
4	Mountain View Park	NE	N/A	10	10
5	Park and Ride Lot	40	N/A	15	15
6	Pioneer Park	NE	N/A	80	80

1. Depth as measured from borehole ground surface to the groundwater level during the time of drilling. NE: Not encountered in any boreholes at the site to the maximum depth explored.
2. Range of recorded well station data that are within 1,000 feet proximity to the site in the past 5 years. n/a: No available well station data fitting the aforementioned criteria.
3. Groundwater depths obtained from Historically Highest Groundwater Contour Maps from the *Seismic Hazard Zone Report for the Baldwin Park 7.5-Minute Quadrangle*, *Seismic Hazard Zone Report for the El Monte 7.5-Minute Quadrangle*, *Seismic Hazard Zone Report for the Ontario 7.5-Minute Quadrangle*, and *Seismic Hazard Zone Report for the San Dimas 7.5-Minute Quadrangle*.
4. Selected groundwater depth for design and evaluation of liquefaction, earthquake-induced settlement, and vertical separation to the proposed bottom depth of infiltration.

A minimum 10-foot separation between the infiltration invert and the design groundwater level is required based on the 2021 GS200.1 document. There are two sites (11 and 12) for Phase 1 and three sites (1, 4 and 5) for Phase 2 where the design groundwater level, based on the historic high groundwater levels, are shallow enough to preclude an infiltration invert within the targeted infiltration depth of 10 to 20 feet below ground surface. If the design groundwater level was taken as the groundwater level encountered during the investigation, sites 11 and 12 for Phase 1 and sites 1, 4 and 5 for Phase 2 would be viable for an infiltration invert within the targeted depth of 10 to 20 feet below ground surface. It is Stantec's opinion that the groundwater level encountered during the investigation will provide the most accurate design groundwater level for the evaluations and this groundwater level should be considered for use in final design evaluations. The governing agency typically approves the design groundwater level used for final design. Discussions with the governing agency and additional groundwater monitoring for evaluation may be needed to gain concurrence regarding the design groundwater level for use in final design.

Note that the invert of the infiltration wells during the field program was selected to fall within the targeted 10 to 20-foot depth for all locations and several of these site locations (10, 11 and 12) do not correlate with a 10-foot vertical separation from the design groundwater level based on the historic high groundwater level. Final design infiltration rates will need to be obtained at the approved final invert depth.

Seismic Liquefaction Issues

Liquefaction analyses have been performed using the design groundwater levels and the infiltration groundwater levels in accordance with the 2021 GS200.1 document. Seismic settlements have been estimated based on the results of the liquefaction analyses and are presented in the geotechnical report. Some infiltration locations have relatively large estimated seismic settlement which could result in structural damage to the infiltration facilities and adjacent facilities depending on their proximity to the infiltration facility. General mitigation options are provided in the geotechnical report.

Closure

The recommendation for sites suitable for infiltration is presented in the summary report solely based on historic high groundwater levels, groundwater levels encountered during investigations, and average design infiltration rate. Therefore, recommendations presented here are subjective and shall be reviewed in combination with other factors.

Stantec appreciates the opportunity to provide engineering services for this project. If you have any questions, or if we may be of further assistance, feel free to contact our office.

Site Selection and Utility Research

The Los Angeles County Municipal Separate Stormwater System Permit (MS4 Permit) regulates stormwater discharges from the Los Angeles Region through establishment of water quality standards and goals that the waterbodies are required to meet. The Safe, Clean Water Program (SCW Program), which started in 2018 with the passing of Measure W, provides $280 million annually to fund stormwater capture, treatment, and use projects within Los Angeles County.

One way the ESGVWMG is achieving compliance with the MS4 Permit is through the implementation of regional infiltration projects to capture stormwater. Submitting projects to the SCW Program provides the opportunity for funding support of these regional stormwater capture projects. Determination of infiltration rates is an essential factor to further a feasible design. While infiltration rates can be estimated through ksat values obtained from web soil survey (NRCS) or from adjacent borings, field verification of infiltration rates is ultimately required.

Study Objectives

The overall study objective is field verification of effective infiltration rates for sites to optimize project design; field verification of soil characteristics and infiltration rates are performed by a licensed geotechnical engineering subconsultant, Geo-Advantec, Incorporated. The field verified results will then be compared to site specific ksat values obtained from web soil survey (NRCS) to determine if a correlation exists between field data and web soil survey data.

The objective of this memo is to summarize the twelve priority study sites located within the ESGVWMG limits, along with six additional priority sites selected by the Upper San Gabriel River Watershed Area Steering Commission (USGR WASC) that are located within the Upper San Gabriel Valley limits. In addition, this memo summarizes the presence of utilities at the priority locations, and six study sites for field verification efforts to be performed through this Study.

Criteria

Considering the vast extent of the area under the jurisdiction of the ESGVWMG cities, a strategic approach was needed to identify, screen, and prioritize potential stormwater capture projects. A multi-step process was applied to identify stormwater capture opportunities. This process utilizes ArcGIS to perform a series of network analyses, as presented through figures in **Appendix A**.

- A Topographic Base Map **(Appendix A-1)** was established showing topographic features such as buildings, streets, receiving waters, and contour lines. The impervious cover value (percent impervious) was overlaid onto the base map. The impervious cover layer was obtained from the Multi-Resolution Land Characteristics Consortium, a group of federal agencies that cooperate to create a consistent land cover GIS grid-based product for the entire United States.
- A Land Use Map **(Appendix A-2)** showing City boundaries and City Jurisdictions was utilized to identify public parcels such as parks and schools within the city boundaries and jurisdictions.

- A Jurisdictional Boundary Map **(Appendix A-3)** was developed to identify potential partners outside of the Cities. The map shows boundaries for the Six Basins Watermaster, Chino Basin Water Conservation District, Los Angeles County, Cal Poly Pomona, and Los Angeles County Fair Association.
- A Slope Map **(Appendix A-4)** was developed using a Digital Elevation Model (DEM). Slopes are classified as mild slopes (<10%) and steep slopes.
- A Hydrologic Soil Groups (HSG) Map **(Appendix A-5)** was developed. The four groups are defined by Soil Conservation Service soil scientists as follows:
    - Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission.
    - Group B soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
    - Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission.
    - Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high-water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission.
- A network analysis of the Slope Map and Hydrologic Soil Groups Map was conducted to determine the feasibility of stormwater capture. Hydrologic Soil Group A and B soils are preferential for stormwater capture because of their ability to infiltrate stormwater runoff, whereas Hydrologic Soil Groups C and D soils have low to very low infiltration rates. In general, stormwater capture features should be constructed on flat to moderate slopes and not on steep slopes. Error! Reference source n ot found. describes how the results were derived.

Table 1. Stormwater Capture Suitability Map Development Matrix

Hydrologic Soil Group	Slope	
	Mild (< 10%)	Steep (≥ 10%)
Group A	Suitable	Unsuitable
Group B	Suitable	Unsuitable
Group C	Marginally Suitable	Unsuitable
Group D	Unsuitable	Unsuitable

- Finally, a network analysis of the stormwater capture suitability results and the Land Use map was conducted. Preference was given to publicly owned properties. Error! Reference source not found. d escribes how the results were derived.

Table 2. Prospective Stormwater Capture Area Map Matrix

Stormwater Capture Suitability	Land Use Co-located Type						
	City-owned Parcels Overlaying Six Basins Watermaster	City-owned Parcels Overlaying Chino Basin Water Conservation District	City-owned Parcels	Los Angeles County-owned Parcels	School District-owned Parcels	Cal Poly Pomona	Los Angeles County Fair Association
Suitable	Highly Probable Location	Highly Probable Location	Highly Probable Location	Moderately Probable Location	Moderately Probable Location	Moderately Probable Location	Moderately Probable Location
Marginally Suitable	Marginally Probable Location	Marginally Probable Location	Marginally Probable Location	Less Probable Location	Less Probable Location	Less Probable Location	Less Probable Location
Unsuitable	Unlikely Location	Unlikely Location	Unlikely Location	Unlikely Location	Unlikely Location	Unlikely Location	Unlikely Location

- A Storm Drain Systems layer was generated from the ESGVWMG and Los Angeles County Flood Control District Storm Drain System geodatabase. Suitable and marginally suitable sites in close proximity to storm drains are higher prioritized and shown in Error! Reference source not found..
- A shapefile showing the locations of groundwater supply wells and existing recharge areas was generated. A 100-foot buffer radius was placed around the wells to denote areas where stormwater capture features should not be placed.

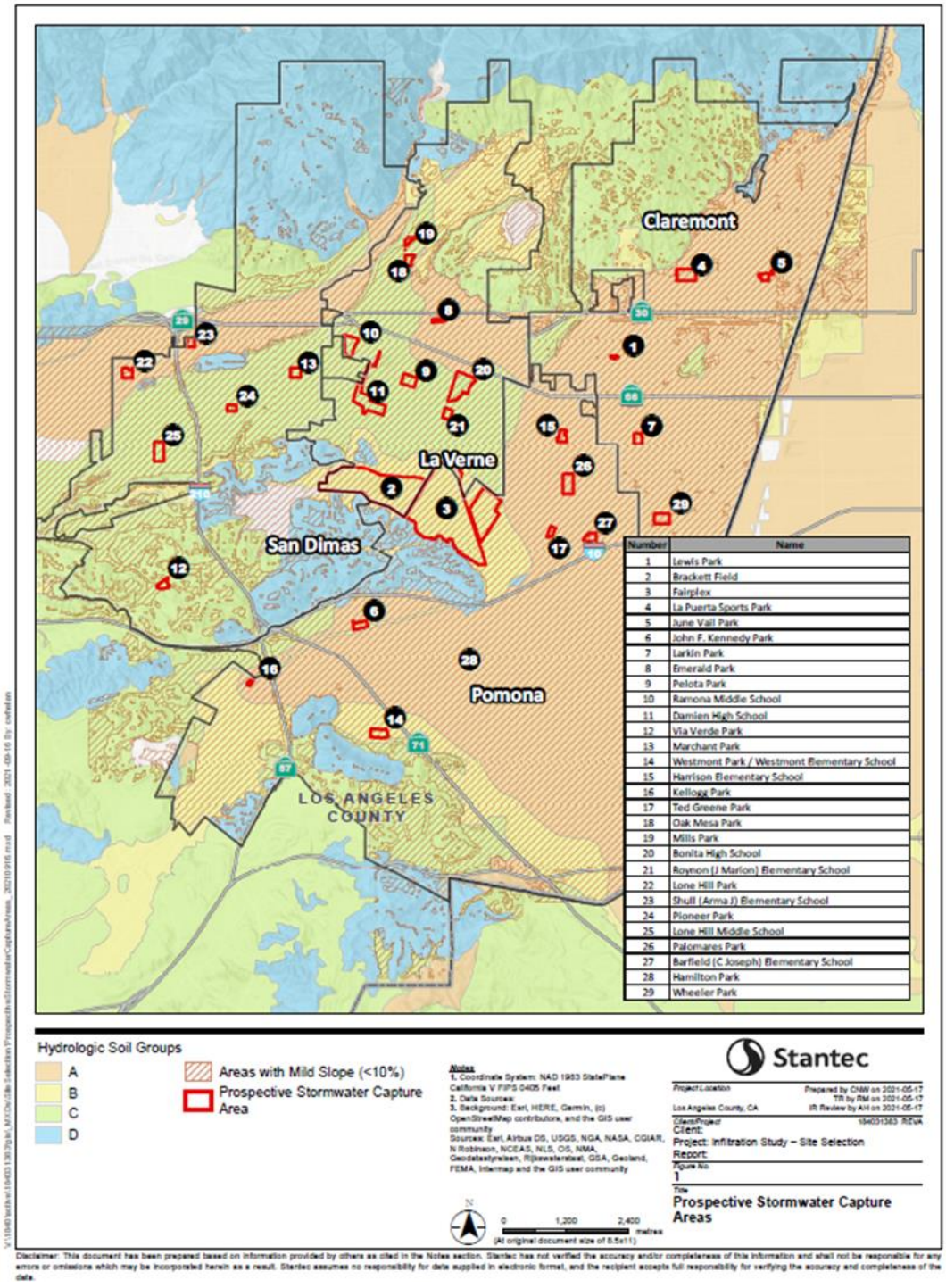


Figure 1. Prospective Stormwater Capture Areas

Methodology

The Prospective Stormwater Capture Area map (Error! Reference source not found.) was used to d evelop a list of potential projects for buy-in from the ESGVWMG Cities. Due to the Study's accelerated timeline, sixteen prioritized sites were presented to the Cities such that each City may select three priority sites, in case one site was unavailable during the field verification timeframe. These decisions were based on the stormwater capture suitability map development matrices and perspective stormwater capture map areas, on Error! Reference source not found. and Error! Reference source not found.. The Ci ties ultimately made their selections based on stormwater capture volume, schedule for other co-located projects, and feasibility of site access during the planned field study period. The selected sites are presented in the following section.

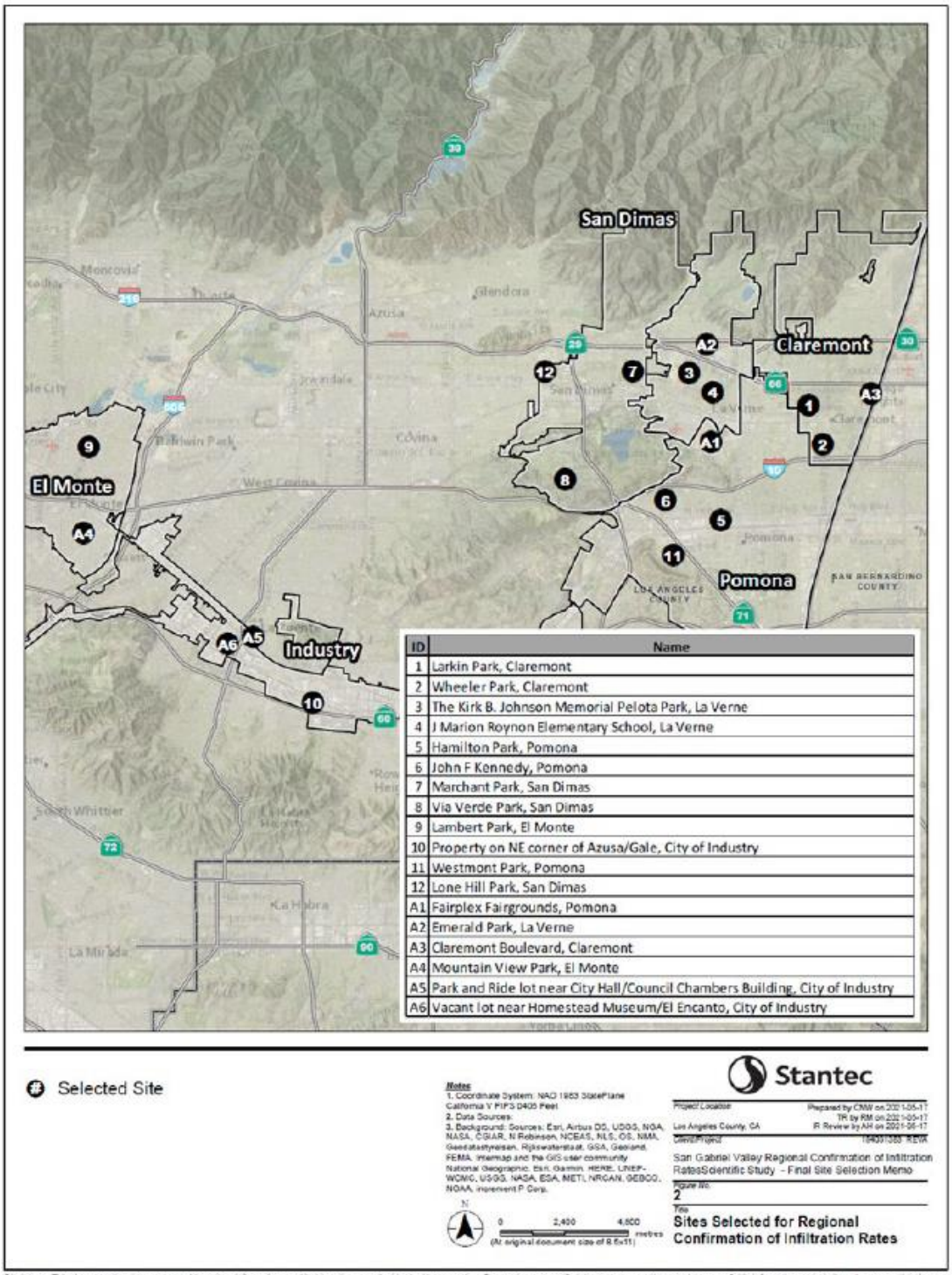
Selected Sites

Using the criteria above and based on the cities' preference and other considerations, 18 sites have been selected as shown in **Table 3** and on **Figure 2**. Utility research has been performed at the 12 priority sites. DigAlert was contacted and Atlas Technical Consultants conducted by independent utility mark-outs. Atlas utilized a GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer to mark detectably utilities on the ground above them. While these tools detect the presence of a utility line, it does not have the capability to identify the type of utility line and its size. The remaining 6 alternative sites will be the focus for potential future field verification efforts performed through this Study.

A brief description of each of the sites, including NRCS soil information and utility detection, is presented in the following section.

Table 3. List of Selected Sites

Priority No.	Site Name
1	Larkin Park, Claremont
2	Wheeler Park, Claremont
3	The Kirk B. Johnson Memorial Pelota Park, La Verne
4	J Marion Roynon Elementary School, La Verne
5	Hamilton Park, Pomona
6	John F Kennedy, Pomona
7	Marchant Park, San Dimas
8	Via Verde Park, San Dimas
9	Lambert Park, El Monte
10	Property on NE corner of Azusa/Gale, City of Industry
11	Westmont Park, Pomona
12	Lone Hill Park, San Dimas
Alt. Site 1	Fairplex Fairgrounds, Pomona
Alt. Site 2	Emerald Park, La Verne
Alt. Site 3	Claremont Boulevard, Claremont
Alt. Site 4	Mountain View Park, El Monte
Alt. Site 5	Park and Ride lot near City Hall/Council Chambers Building, City of Industry
Alt. Site 6	Pioneer Park, San Dimas



ID	Name
1	Larkin Park, Claremont
2	Wheeler Park, Claremont
3	The Kirk B. Johnson Memorial Pelota Park, La Verne
4	J Marion Roynon Elementary School, La Verne
5	Hamilton Park, Pomona
6	John F Kennedy, Pomona
7	Marchant Park, San Dimas
8	Via Verde Park, San Dimas
9	Lambert Park, El Monte
10	Property on NE corner of Azusa/Gale, City of Industry
11	Westmont Park, Pomona
12	Lone Hill Park, San Dimas
A1	Fairplex Fairgrounds, Pomona
A2	Emerald Park, La Verne
A3	Claremont Boulevard, Claremont
A4	Mountain View Park, El Monte
A5	Park and Ride lot near City Hall/Council Chambers Building, City of Industry
A6	Vacant lot near Homestead Museum/El Encanto, City of Industry

Figure 2. Sites Selected for Regional Confirmation of Infiltration Rates Study

SITE 1
LARKIN PARK, CLAREMONT

1 Larkin Park, Claremont

1.1 Site Description

Larkin Park is located at 660 North Mountain Avenue in Claremont, California. It is the home of the Joslyn Center and serves as the community's base for most of its senior citizen activities. It is also the site for a K-squad soccer program, which is played on former lawn bowling greens.

1.2 Geologic Setting and Infiltration Capacity

Larkin Park is underlain by Urban land-Palmview-Tujunga, gravelly complex soils with 2 to 9 percent slopes. The typical profile of Palmview soil is as follows: 0 to 4 inches – sandy loam; 4 to 14 inches – sandy loam; 14 to 28 inches – sandy loam; 28 to 79 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 7.8 inches). The parent material for Palmview soil is discontinuous human-transported material (imported fill) over alluvium derived from granite.

The typical profile of Tujunga Gravelly soil is as follows: 0 to 6 inches – loamy sand; 6 to 9 inches gravelly loamy sand; 9 to 30 inches – gravelly sand; 30 to 79 inches – gravelly sand. The runoff class is low (HSG A) and the available water capacity[1] is low (about 3.1 inches). The parent material for Tujunga Gravelly soil is discontinuous human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Larkin Park is 9.65 inches per hour (NRCS Web Soil Survey).

1.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found near the location of the percolation test.

1.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 4** and on **Figure 3**.

[1] Available water capacity is the maximum amount of plant available water a soil can provide. It is an indicator of a soil's ability to retain water and make it sufficiently available for plant use.

Table 4. Larkin Park Site Information

Site Name	Larkin Park
Site City	Claremont
Site Address	660 N Mountain Ave., Claremont, CA 91711
Hydrologic Soil Group	A
Slope	0.6%
Weighted ksat (inches/hour)	9.65
Boring Location 1	34.100518,-117.728225
Boring Location 2	34.100129,-117.728696
Infiltration Testing Location	34.100527,-117.728761

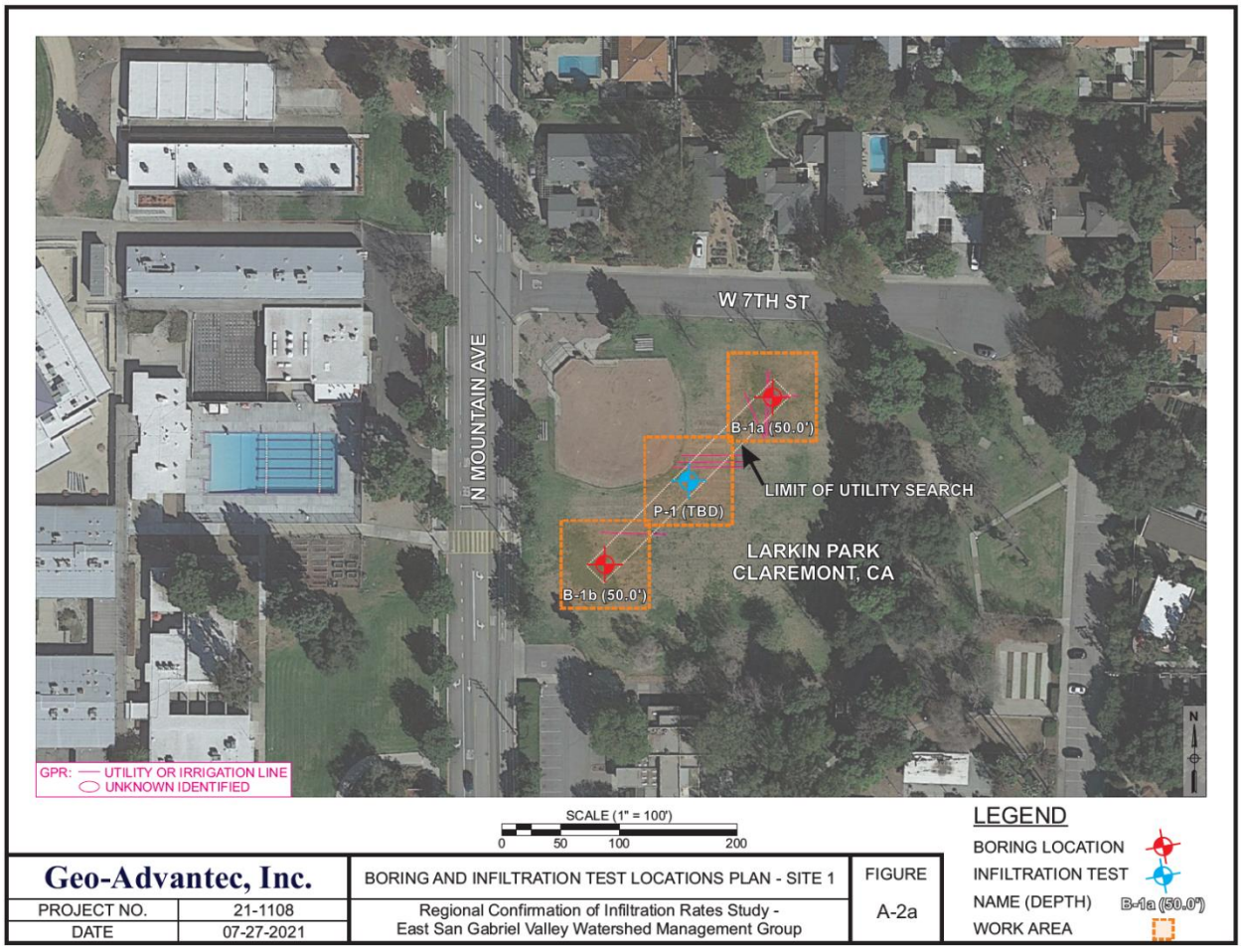


Figure 3. Larkin Park Boring and Infiltration Locations

SITE 2
WHEELER PARK, CLAREMONT

2 Wheeler Park, Claremont

2.1 Site Description

Wheeler Park is located at 626 Vista Drive in Claremont, California. The southernmost park in the city, Wheeler Park is located west of Vista del Valle Elementary School on 7 acres and is home to Claremont's only public pickleball courts.

2.2 Geologic Setting and Infiltration Capacity

Wheeler Park is underlain by Urban land-Palmview-Tujunga, gravelly complex soils with 2 to 9 percent slopes. The typical profile of Palmview soil is as follows: 0 to 4 inches – sandy loam; 4 to 14 inches – sandy loam; 14 to 28 inches – sandy loam; 28 to 79 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 7.8 inches). The parent material for Palmview soil is discontinuous human-transported material over alluvium derived from granite.

The typical profile of Tujunga Gravelly soil is as follows: 0 to 6 inches – loamy sand; 6 to 9 inches gravelly loamy sand; 9 to 30 inches – gravelly sand; 30 to 79 inches – gravelly sand. Tujunga Gravelly soil is somewhat excessively drained with low runoff class (HSG A) and low available water capacity (about 3.1 inches). The parent material for Tujunga Gravelly soil is discontinuous human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Wheeler Park is 9.65 inches per hour (NRCS Web Soil Survey).

2.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found near the location of the percolation test and the B-2a boring location.

2.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 5** and on **Figure 4.**

Table 5. Wheeler Park Site Information

Site Name	Wheeler Park
Site City	Claremont
Site Address	626 Vista Dr., Claremont, CA 91711
Hydrologic Soil Group	A
Slope	1%
Weighted ksat (inches/hour)	9.65
Boring Location 1	34.08565,-117.723729
Boring Location 2	34.085253,-117.723281
Infiltration Testing Location (TBD)	34.085714,-117.723512

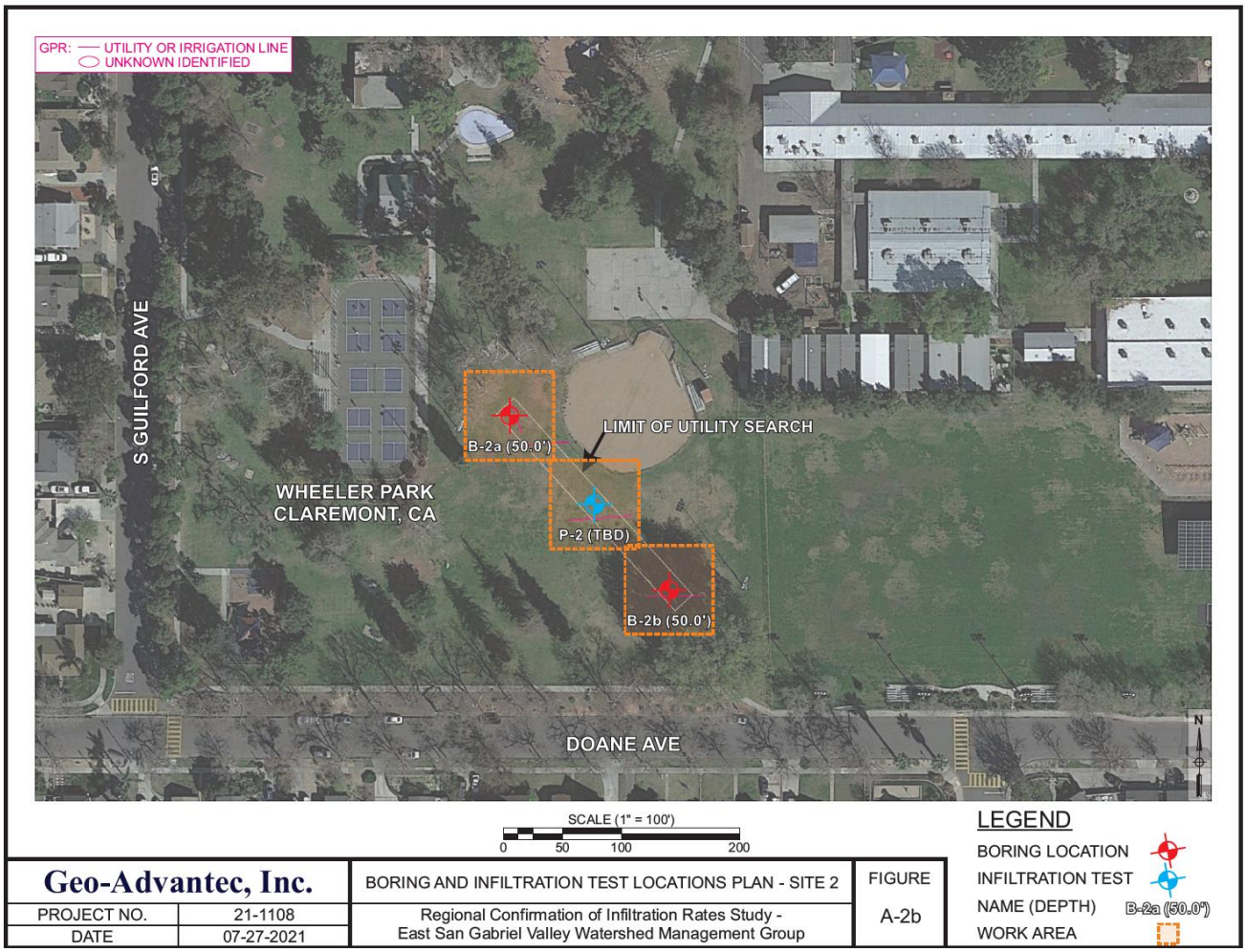


Figure 4. Wheeler Park, Claremont Boring and Infiltration Locations

SITE 3
PELOTA PARK, LA VERNE

3 Kirk B. Johnson Memorial - Pelota Park/Grace Miller Elementary School, La Verne

3.1 Site Description

The Kirk B. Johnson Memorial Pelota Park is located at 1505 Holly Oak Street in La Verne, California. This 4.6-acre neighborhood park is located adjacent to Grace Miller School, and the City of La Verne and the Bonita Unified School District share use of the facilities through a joint use agreement. Facilities incorporated into this park are: three lighted baseball/softball fields, score boards, a concession building, restroom facilities, three picnic tables, and on-site parking. Kirk B. Johnson Memorial-Pelota Park is an active area; and home to many Little League games.

3.2 Geologic Setting and Infiltration Capacity

Pelota Park is underlain by Urban land-Azuvina-Montebello, soils with 0 to 5 percent slopes. The typical profile of Azuvina soil is as follows: 0 to 5 inches – loam; 5 to 14 inches – loam; 14 to 24 inches – clay loam; 24 to 43 inches – sandy clay loam; 43 to 57 inches – loam; 57 to 79 inches – fine sandy loam. The runoff class is medium (HSG C) and the available water capacity is high (about 9.9 inches). The parent material for Palmview soil is discontinuous human-transported material over old alluvium derived from granite.

The typical profile of Montebello soil is as follows: 0 to 4 inches – silt loam; 4 to 34 inches – clay loam; 34 to 53 inches – loam; 53 to 79 inches – loam. The runoff class is low (HSG C) and the available water capacity is high (about 10.9 inches). The parent material for Montebello soil is human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Pelota Park is 0.83 inches per hour (NRCS Web Soil Survey).

3.3 Utility Research

No utilities were discovered in the limits of the utility search.

3.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 6** and on **Figure 5**.

Table 6. Pelota Park Site Information

Site Name	Pelota Park / Grace Miller Elem School
Site City	La Verne
Site Address	1505 Holly Oak St., La Verne, CA 91750
Hydrologic Soil Group	C
Slope	0.4%
Weighted ksat (inches/hour)	0.83
Boring Location 1	34.11036, -117.774795
Boring Location 2	34.110191, -117.775434
Infiltration Testing Location	34.110352, -117.774827

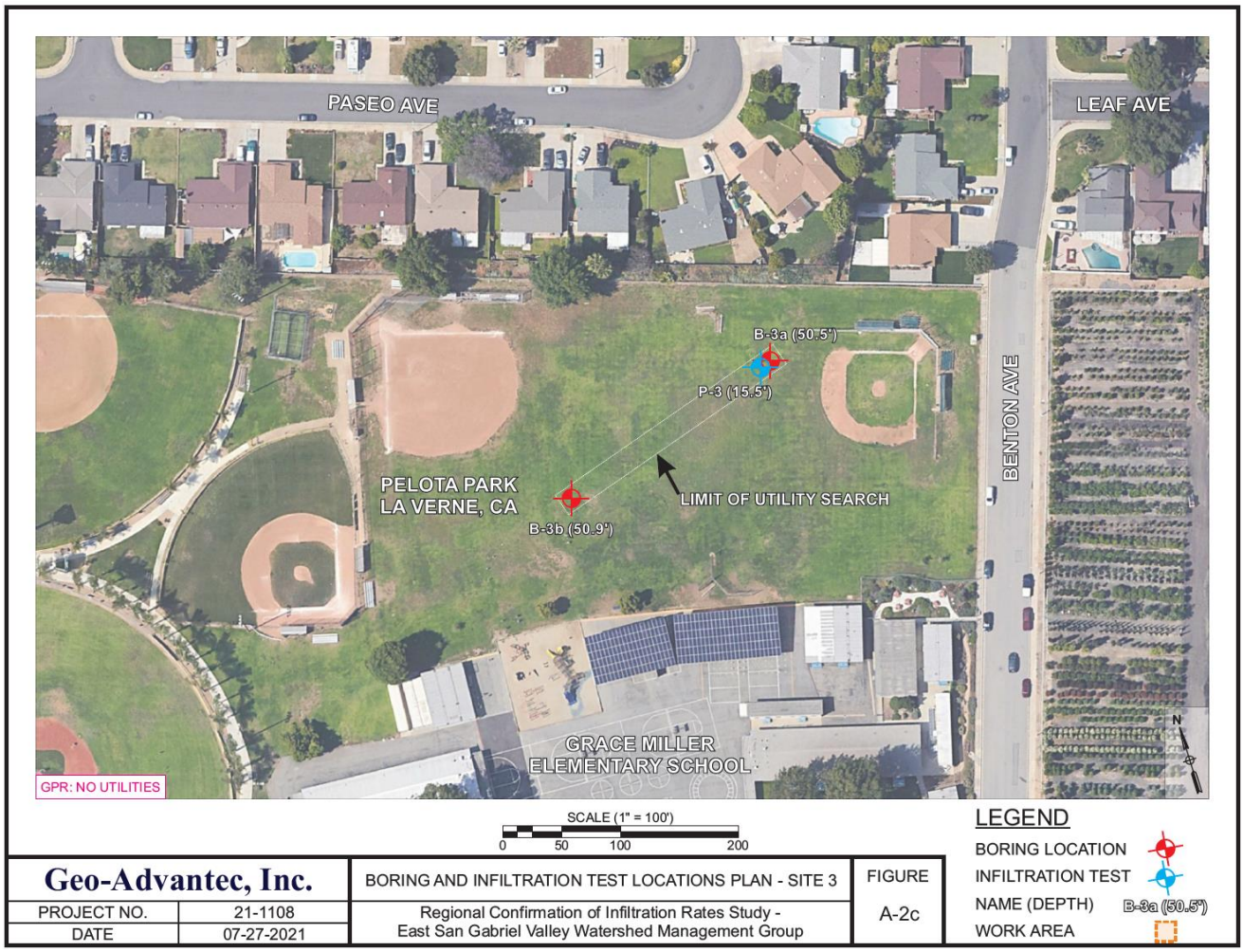


Figure 5. Pelota Park, La Verne Boring and Infiltration Locations

SITE 4
ROYNON ELEMENTARY SCHOOL, LA VERNE

4 J Marion Roynon Elementary School, La Verne

4.1 Site Description

The J Marion Roynon Elementary School is located at 2715 E Street in La Verne, California. The school has a 3-acre grass field within the school property, which is where infiltration testing was performed.

4.2 Geologic Setting and Infiltration Capacity

J. Marion Roynon Elementary School is underlain by Urban land-Azuvina-Montebello, soils with 0 to 5 percent slopes. The typical profile of Azuvina soil is as follows: 0 to 5 inches – loam; 5 to 14 inches – loam; 14 to 24 inches – clay loam; 24 to 43 inches – sandy clay loam; 43 to 57 inches – loam; 57 to 79 inches – fine sandy loam. The runoff class is medium (HSG C) and the available water capacity is high (about 9.9 inches). The parent material for Palmview soil is discontinuous human-transported material over old alluvium derived from granite.

The typical profile of Montebello soil is as follows: 0 to 4 inches – silt loam; 4 to 34 inches – clay loam; 34 to 53 inches – loam; 53 to 79 inches – loam. The runoff class is low (HSG C) and the available water capacity is high (about 10.9 inches). The parent material for Montebello soil is human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at J. Marion Roynon Elementary School is 0.83 inches per hour (NRCS Web Soil Survey).

4.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found near the location of the Boring B-4b.

4.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 7** and on **Figure 6**.

Table 7. J Marion Roynon Elementary School Site Information

Site Name	J Marion Roynon Elementary School
Site City	La Verne
Site Address	2715 E St., La Verne, CA 91750
Hydrologic Soil Group	C
Slope	1.5%
Weighted ksat (inches/hour)	0.83
Boring Location 1	34.104967,-117.768242
Boring Location 2	34.104505,-117.767882
Infiltration Testing Location	34.104505,-117.768224

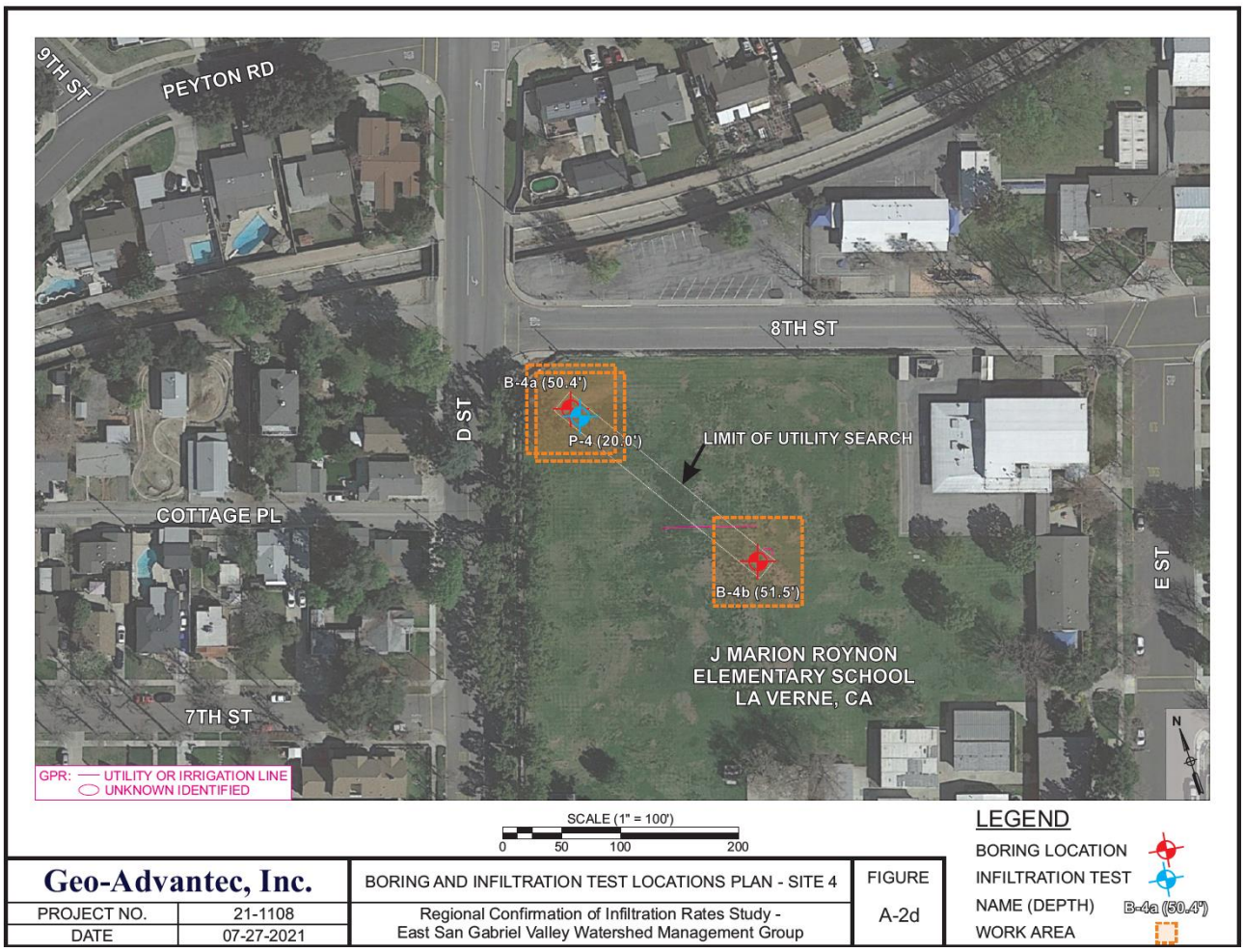


Figure 6. J Marion Roynon Elementary School, La Verne Boring and Infiltration Locations

SITE 5
HAMILTON PARK, POMONA

5 Hamilton Park, Pomona

5.1 Site Description

Hamilton Park is located at 825 West Monterey Avenue in Pomona, California. This 1.1-acre park, featuring picnic tables, a small playground, and a basketball court, is situated at the intersection of North Hamilton Boulevard and West Monterey Avenue.

5.2 Geologic Setting and Infiltration Capacity

Hamilton Park is underlain by Urban land-Pico-Metz complex soils with 0 to 2 percent slopes. The typical profile of Pico soil is as follows: 0 to 7 inches – sandy loam; 7 to 16 inches – sandy loam; 16 to 35 inches – sandy loam; 35 to 53 inches – sandy loam; 53 to 79 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 6.7 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The typical profile of Metz soil is as follows: 0 to 3 inches – sandy loam; 3 to 18 inches – sandy loam; 18 to 49 inches – sandy loam; 49 to 58 inches – sandy loam; 58 to 63 inches – sandy loam; 63 to 79 inches – sandy loam. The runoff class is negligible (HSG A) and the available water capacity is low (about 5.0 inches). The parent material for Metz soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The weighted ksat for the underlying soils at Hamilton Park is 5.16 inches per hour (NRCS Web Soil Survey).

5.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found approximately 50 feet southeast of the location of the percolation test.

5.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 8** and on **Figure 7**.

Table 8. Hamilton Park Site Information

Site Name	Hamilton Park
Site City	Pomona
Site Address	825 W Monterey Ave., Pomona, CA 91768
Hydrologic Soil Group	A
Slope	1.1%
Weighted ksat (inches/hour)	5.16
Boring Location 1	34.06106, -117.764304
Boring Location 2	34.060788, -117.76404
Infiltration Testing Location	34.061039,-117.764284

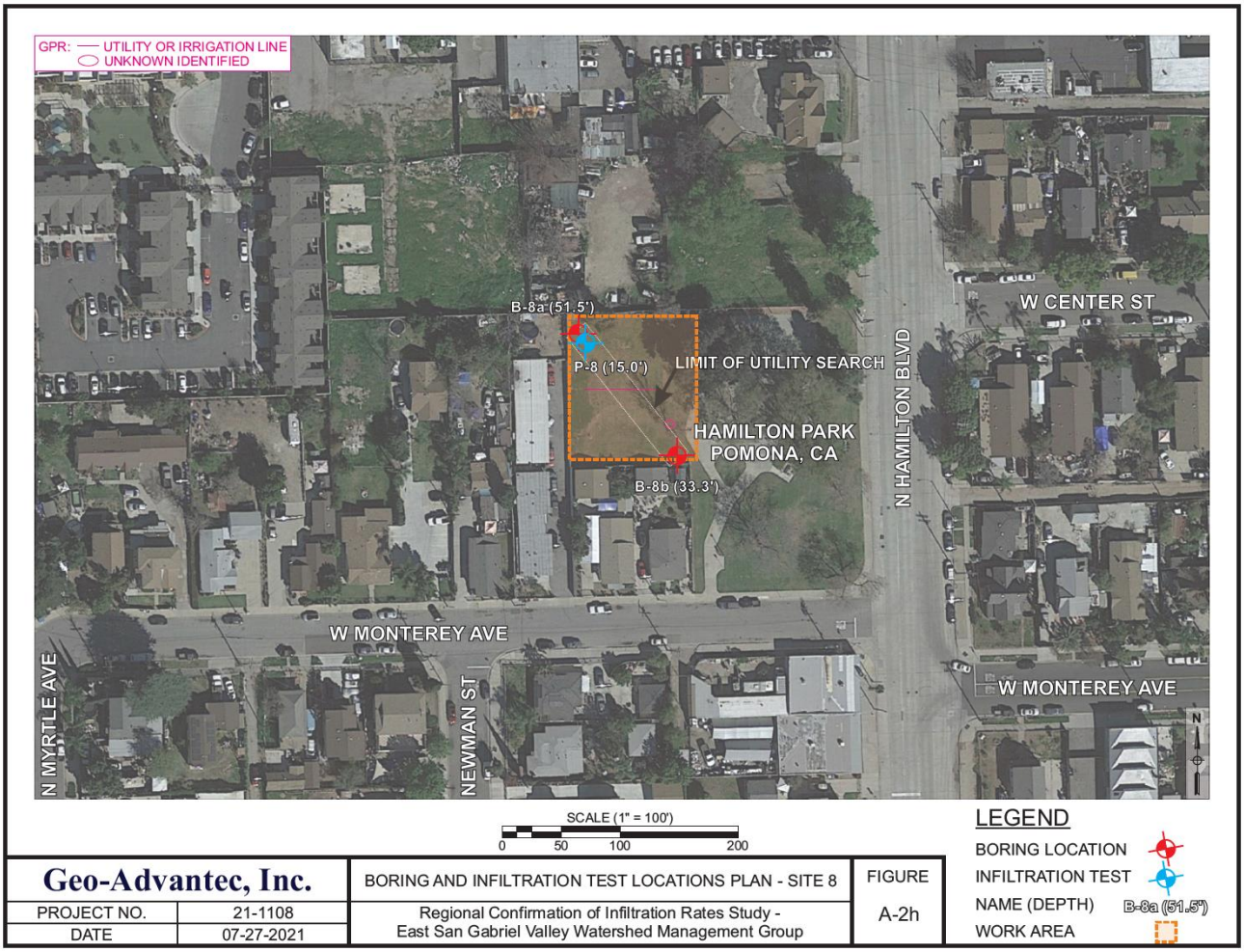


Figure 7. Hamilton Park, Pomona Boring and Infiltration Locations

SITE 6
JOHN F KENNEDY PARK, POMONA

6 John F. Kennedy Park, Pomona

6.1 Site Description

John F. Kennedy Park is located at 1150 Fairplex Drive in Pomona, California. The park covers approximately 7.82 acres. Some of the amenities offered at the park include a baseball field, a basketball court, and a picnic area.

6.2 Geologic Setting and Infiltration Capacity

John F. Kennedy Park is underlain by Urban land-Palmview-Tujunga, gravelly complex soils with 0 to 5 percent slopes. The typical profile of Palmview soil is as follows: 0 to 5 inches – fine sandy loam; 5 to 15 inches – fine sandy loam; 15 to 45 inches – fine sandy loam; 45 to 55 inches – fine sandy loam; 55 to 79 – fine sandy loam. The runoff class is very low (HSG B) and the available water capacity is moderate (about 8.4 inches). The parent material for Palmview soil is discontinuous human-transported material over alluvium derived from granite.

The typical profile of Tujunga Gravelly soil is as follows: 0 to 6 inches – loamy sand; 6 to 35 inches – loamy sand; 35 to 72 inches – loamy sand. The runoff class is low (HSG A) and the available water capacity is low (about 3.1 inches). The parent material for Tunjunga Gravelly soil is discontinuous human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at John F. Kennedy Park is 7.35 inches per hour (NRCS Web Soil Survey).

6.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found in several locations but primarily clustered among P-9 and B-9a.

6.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 9** and on **Figure 8**.

Table 9. John F. Kennedy Park Site Information

Site Name	John F. Kennedy Park
Site City	Pomona
Site Address	1150 Fairplex Dr., Pomona, CA 91768
Hydrologic Soil Group	A
Slope	0.6%
Weighted ksat (inches/hour)	7.35
Boring Location 1	34.067348, -117.786718
Boring Location 2	34.066986, -117.787233
Infiltration Testing Location	34.06733,-117.786743

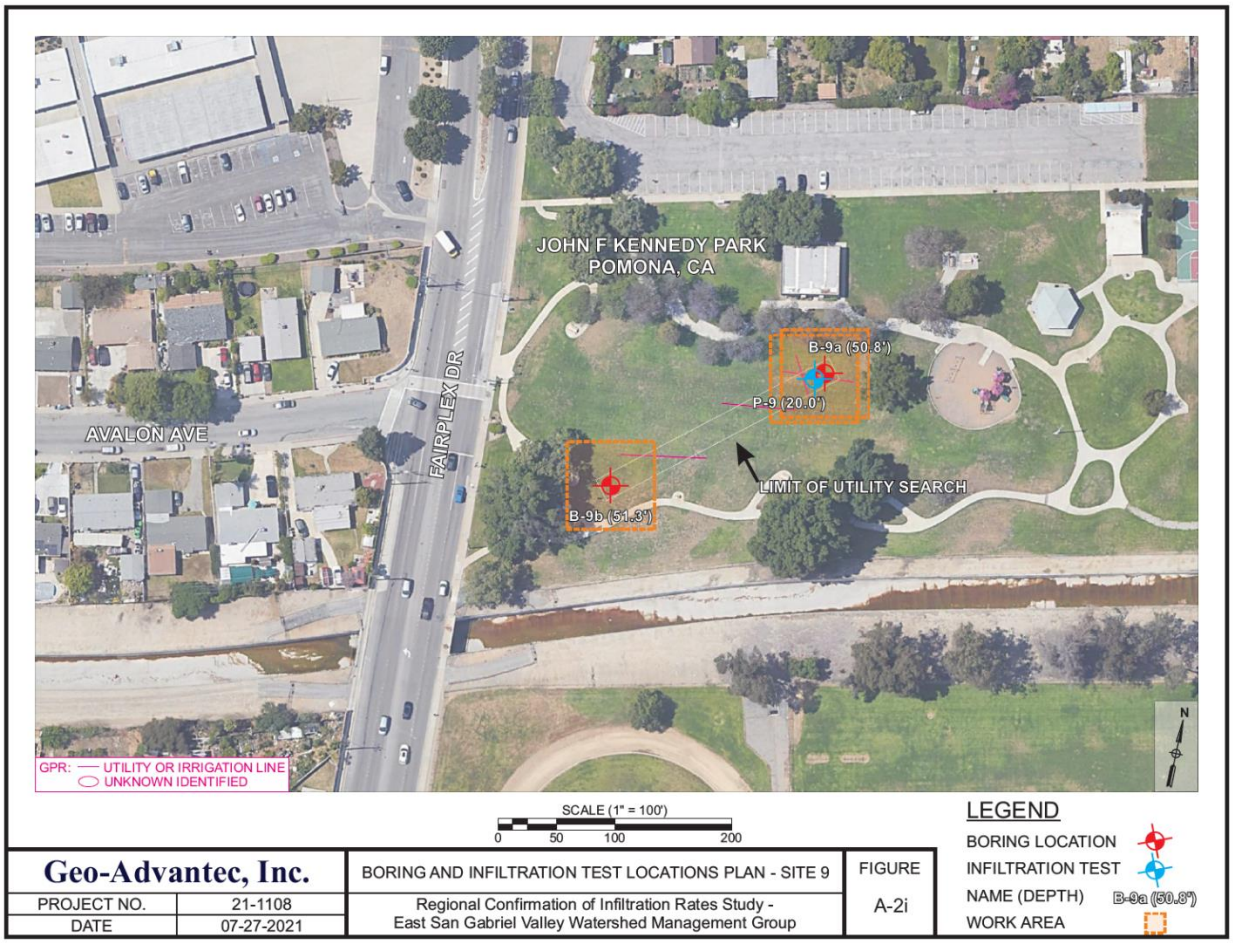


Figure 8. John F Kennedy Park, Pomona Boring and Infiltration Locations

SITE 7
MARCHANT PARK, SAN DIMAS

7 Marchant Park, San Dimas

7.1 Site Description

Marchant Park is located at 425 Juanita Avenue in San Dimas, California. Spread over approximately 9.11 acres, it offers a picnic area, BBQ grill, playground, tennis courts, baseball fields, and basketball courts.

7.2 Geologic Setting and Infiltration Capacity

Marchant Park is underlain by Urban land-Azuvina-Montebello, soils with 0 to 5 percent slopes. The typical profile of Azuvina soil is as follows: 0 to 5 inches – loam; 5 to 14 inches – loam; 14 to 24 inches – clay loam; 24 to 43 inches – sandy clay loam; 43 to 57 inches – loam; 57 to 79 inches – fine sandy loam. The runoff class is medium (HSG C) and the available water capacity is high (about 9.9 inches). The parent material for Palmview soil is discontinuous human-transported material over old alluvium derived from granite.

The typical profile of Montebello soil is as follows: 0 to 4 inches – silt loam; 4 to 34 inches – clay loam; 34 to 53 inches – loam; 53 to 79 inches – loam. The runoff class is low (HSG C) and the available water capacity is high (about 10.9 inches). The parent material for Montebello soil is human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Marchant Park is 0.83 inches per hour (NRCS Web Soil Survey).

7.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found aligned with the locations of all borings and infiltration tests.

7.4 Infiltration Testing Location

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 10** and on **Figure 9**.

Table 10. Marchant Park Site Information

Site Name	Marchant Park
Site City	San Dimas
Site Address	425 Juanita Ave., San Dimas, CA 91773
Hydrologic Soil Group	C
Slope	0.6%
Weighted ksat (inches/hour)	0.83
Boring Location 1	34.111064, -117.798664
Boring Location 2	34.110511, -117.798662
Infiltration Testing Location	34.111036, -117.798664

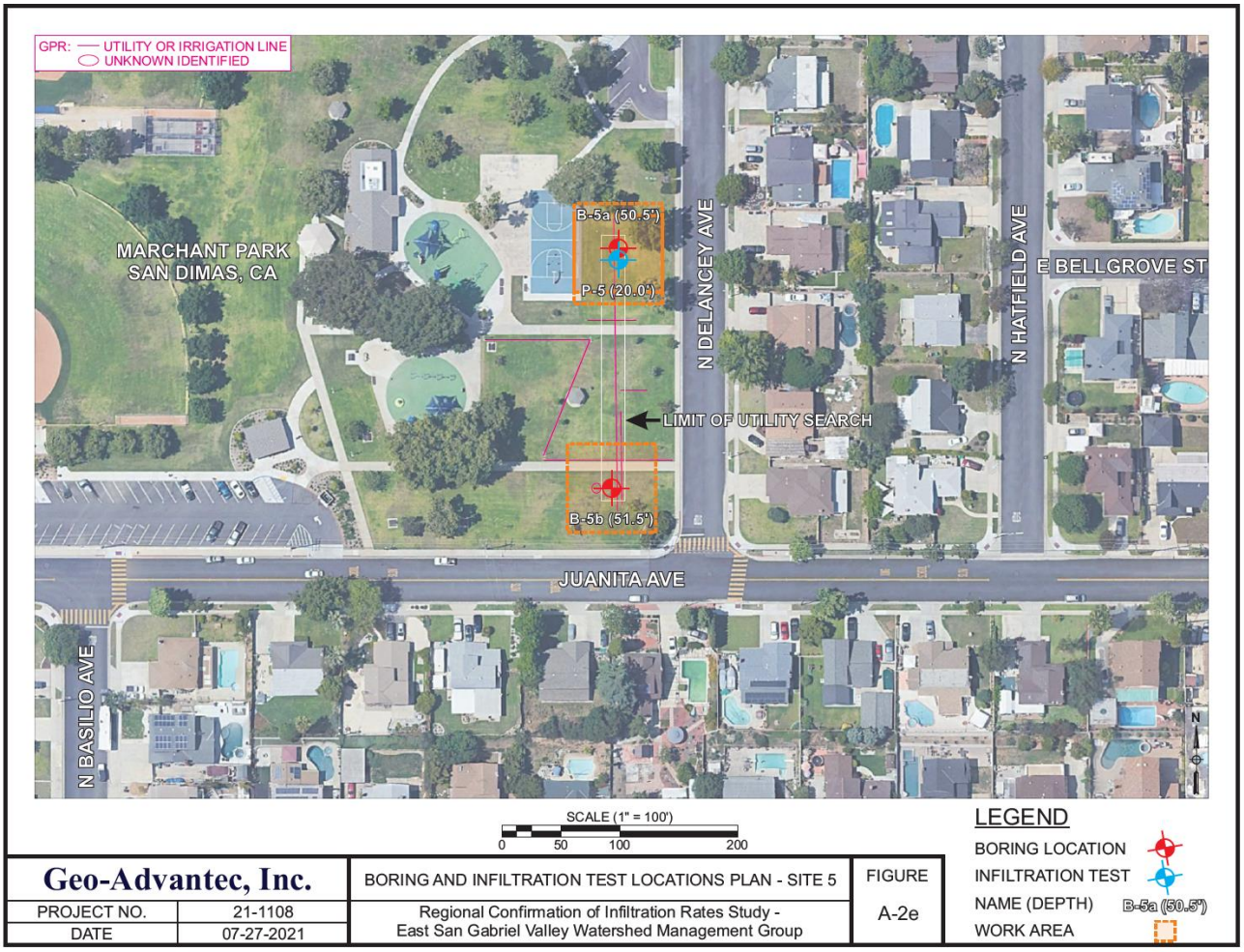


Figure 9. Marchant Park, San Dimas Boring and Infiltration Locations

SITE 8
VIA VERDE PARK, SAN DIMAS

8 Via Verde Park, San Dimas

8.1 Site Description

Via Verde Park is located at 1010 Puente Street in San Dimas, California. Spread over approximately 8.5 acres, the park offers a picnic area, BBQ grill, playground, and a walking path.

8.2 Geologic Setting and Infiltration Capacity

Via Verde Park is underlain by Counterfeit-Urban land complex, soils with 10 to 35 percent slopes. The typical profile of Counterfeit soil is as follows: 0 to 5 inches – clay loam; 5 to 18 inches – clay; 18 to 37 inches – clay; 37 to 57 inches – clay loam; 57 to 79 inches – sandy loam. Counterfeit soil is somewhat poorly drained, with high runoff class (HSG C) and the available water capacity is high (about 10.4 inches). The parent material for Counterfeit soil is human-transported material consisting mostly of colluvium and/or residuum weathered from sedimentary rock.

The weighted ksat for the underlying soils at Via Verde Park is 0.15 inches per hour (NRCS Web Soil Survey).

8.3 Utility Research

An unknown utility was discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found closer to the B-6a location.

8.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 11** and on **Figure 10**.

Table 11. Via Verde Park Site Information

Site Name	Via Verde Park
Site City	San Dimas
Site Address	1010 Puente St., San Dimas, CA 91773
Hydrologic Soil Group	C
Slope	1.5%
Weighted ksat (inches/hour)	0.45
Boring Location 1	34.07448, -117.82748
Boring Location 2	34.074414,-117.826828
Infiltration Testing Location	34.074346,-117.826814

Figure 10. Via Verde Park, San Dimas Boring and Infiltration Locations

SITE 9
LAMBERT PARK, EL MONTE

9 Lambert Park, El Monte

9.1 Site Description

Lambert Park is a 9-acre park located at 11431 McGirk Avenue in El Monte. The park has fields and courts for youth sports programs, a playground, and a community center.

9.2 Geologic Setting and Infiltration Capacity

Lambert Park is underlain by Urban land-Pico-Metz complex soils with 0 to 2 percent slopes. The typical profile of Pico soil is as follows: 0 to 7 inches – sandy loam; 7 to 16 inches – sandy loam; 16 to 35 inches – sandy loam; 35 to 53 inches – sandy loam; 53 to 79 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 6.7 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The typical profile of Metz soil is as follows: 0 to 3 inches – sandy loam; 3 to 18 inches – sandy loam; 18 to 49 inches – sandy loam; 49 to 58 inches – sandy loam; 58 to 63 inches – sandy loam; 63 to 79 inches – sandy loam. The runoff class is negligible (HSG A) and the available water capacity is low (about 5.0 inches). The parent material for Metz soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The weighted ksat for the underlying soils at Lambert Park is 5.16 inches per hour (NRCS Web Soil Survey).

9.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. Due to the clustering of these facilities, many irrigation lines were detected in between both ballfields.

9.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 12** and on **Figure 11.**

Table 12. Lambert Park Site Information

Site Name	Lambert Park
Site City	El Monte
Site Address	11431 McGirk Ave., El Monte CA 91732
Hydrologic Soil Group	A
Slope	0%
Weighted ksat (inches/hour)	5.16
Boring Location 1	34.08599, -118.019558
Boring Location 2	34.086227, -118.018729
Infiltration Testing Location	34.086218, -118.018759

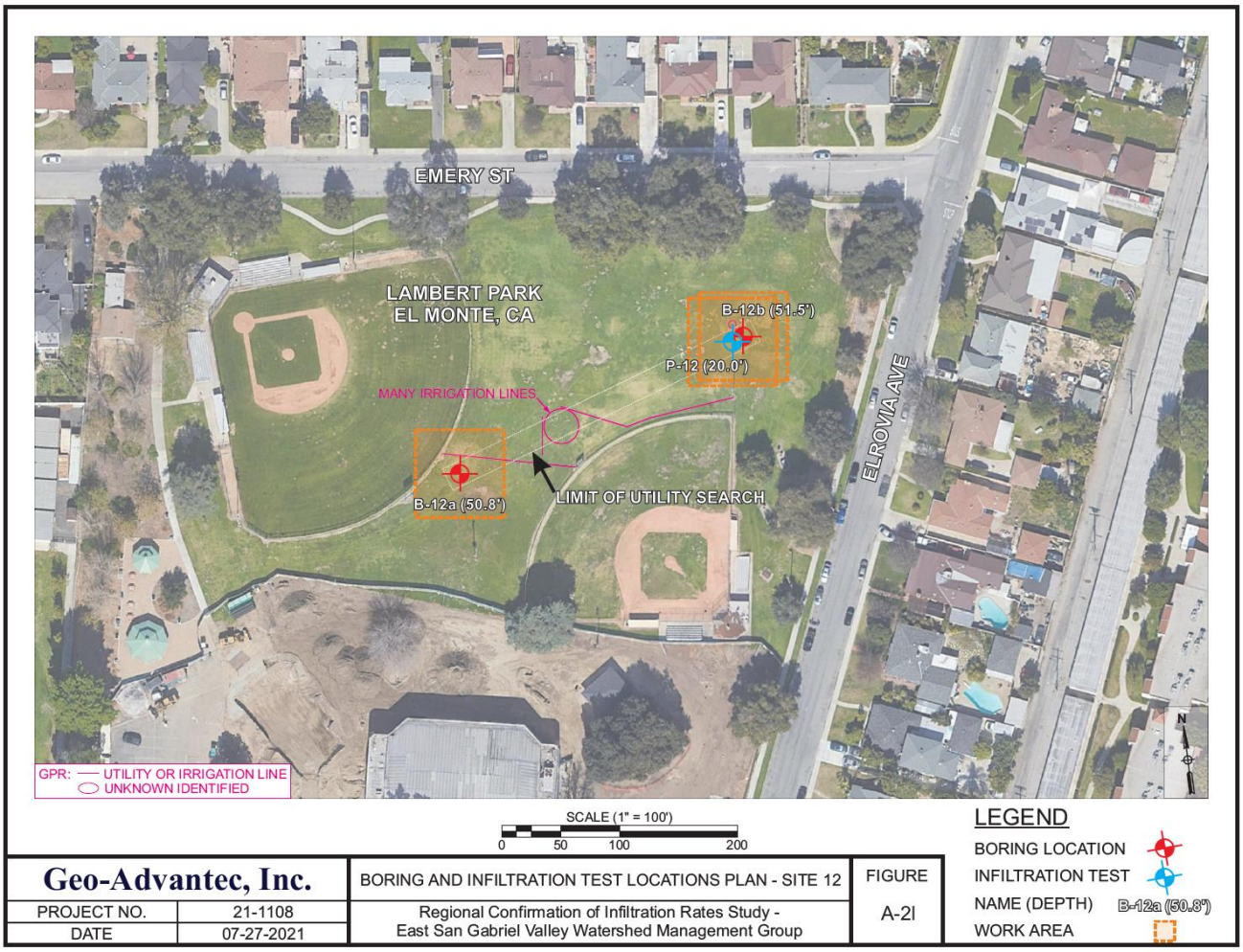


Figure 11. Lambert Park, El Monte Boring and Infiltration Locations

SITE 10
PROPERTY ON NE CORNER OF AZUSA/GALE, CITY OF INDUSTRY

10 Property on NE Corner of Azusa/Gale, City of Industry

10.1 Site Description

This is a privately owned parcel of land located on the northeast corner of S Azusa Avenue and E Gale Ave. The area is covered by grass, and is bounded by the railroad to the north, parking lots to the east and south and Azusa Avenue to the west.

10.2 Geologic Setting and Infiltration Capacity

The site is underlain by Urban land-Ballona-Typic Xerorthents, fine substratum complex, 0 to 5 percent slopes. The typical profile of Typic Xerorthents, fine substratum soil is as follows: 0 to 13 inches – loam; 13 to 47 inches – clay loam; 47 to 57 inches – clay; 57 to 79 inches – clay loam. This soil is well drained, with high runoff class (HSG C) and the available water capacity is moderate (about 7.7 inches). The parent material for is human-transported material over young alluvium from sedimentary rock.

The typical profile of Ballona is as follows: 0 to 6 inches – loam; 6 to 18 inches – loam; 18 to 31 inches – clay loam; 18 to 31 inches – clay loam; 31 to 47 inches – clay; 47 to 79 inches - clay. This soil is well drained, with high runoff class (HSG C) and the available water capacity is moderate (about 10.1 inches). The parent material for is human-transported material over young alluvium from sedimentary rock.

The weighted ksat for the underlying soils is 0.55 inches per hour (NRCS Web Soil Survey).

10.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found along Depot Street.

10.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 13** and on **Figure 12**.

Table 13. Property on NE Corner of Azusa/Gale Site Information

Site Name	Property on NE Corner of Azusa/Gale
Site City	City of Industry
Site Address	APN 8264-001-140
Hydrologic Soil Group	C
Slope	0.1%
Weighted ksat (inches/hour)	0.55
Boring Location 1	34.001015, -117.929009
Boring Location 2	34.000766, -117.928409
Infiltration Testing Location	34.001002, -117.92898

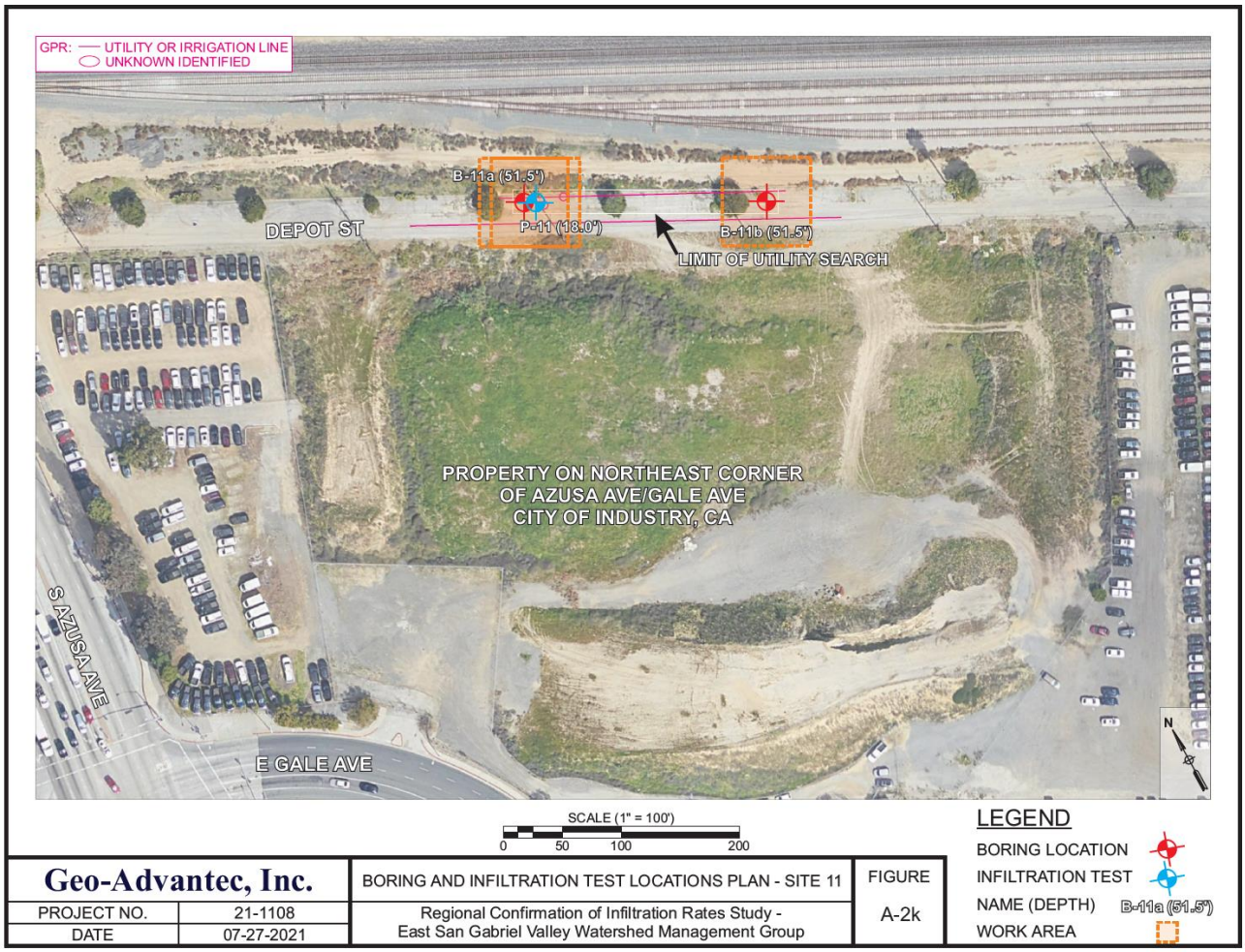


Figure 12. Property on NE Corner of Azusa/Gale, City of Industry Boring and Infiltration Locations

SITE 11
WESTMONT PARK, POMONA

11 Westmont Park, Pomona

11.1 Site Description

Westmont Park is located 1806 West 9th Street in Pomona, California. The park is approximately 5.98 acres, situated adjacent to Westmont Elementary School and has tennis courts, a community center, a children's playground, and picnic tables.

11.2 Geologic Setting and Infiltration Capacity

Westmont Park is underlain by Urban land-Biscailuz-Pico complex soils with 0 to 2 percent slopes. The typical profile of Biscailuz soil is as follows: 0 to 13 inches – loam; 13 to 28 inches – loam; 28 to 37 inches – loam; 37 to 49 inches – sandy clay loam; 49 to 57 inches – sandy loam; 57 to 79 inches - sand. The runoff class is low (HSG B) and the available water capacity is high (about 10.0 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The typical profile of Pico soil is as follows: 0 to 7 inches – sandy loam; 7 to 16 inches – sandy loam; 16 to 35 inches – sandy loam; 35 to 53 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 6.7 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The weighted ksat for the underlying soils at Westmont Park is 3.91 inches per hour (NRCS Web Soil Survey).

11.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found in between both boring locations.

11.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 14** and on **Figure 13**.

Table 14. Westmont Park Site Information

Site Name	Westmont Park
Site City	Pomona
Site Address	1808 W 9th St., Pomona, CA 91766
Hydrologic Soil Group	B
Slope	0.7%
Weighted ksat (inches/hour)	3.91
Boring Location 1	34.048641,-117.782459
Boring Location 2	34.048322,-117.783002
Infiltration Testing Location	34.04863,-117.782478

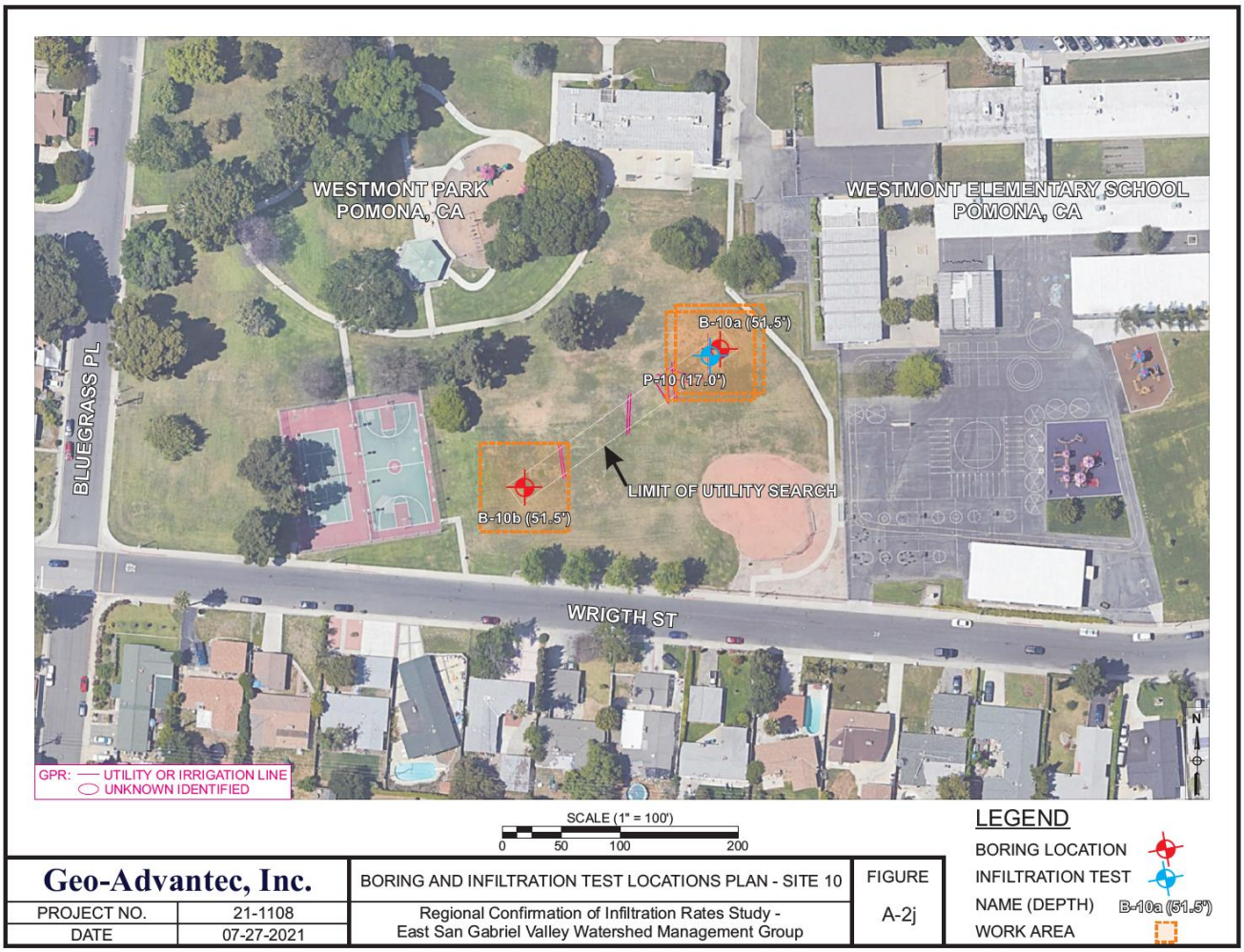


Figure 13. Westmont Park, Pomona Boring and Infiltration Locations

SITE 12
LONE HILL PARK, SAN DIMAS

12 Lone Hill Park, San Dimas

12.1 Site Description

Lone Hill Park is located at 500 North Shellman Avenue in San Dimas, California. The park is spread over approximately 9.11 acres and offers a picnic area, BBQ grill, playground, tennis courts, baseball fields, and basketball courts.

12.2 Geologic Setting and Infiltration Capacity

Lone Hill Park is underlain by Urban land-Palmview-Tujunga, gravelly complex soils with 2 to 9 percent slopes. The typical profile of Palmview soil is as follows: 0 to 4 inches – sandy loam; 4 to 14 inches – sandy loam; 14 to 28 inches – sandy loam; 28 to 79 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 7.8 inches). The parent material for Palmview soil is discontinuous human-transported material over alluvium derived from granite.

The typical profile of Tujunga Gravelly soil is as follows: 0 to 6 inches – loamy sand; 6 to 9 inches gravelly loamy sand; 9 to 30 inches – gravelly sand; 30 to 79 inches – gravelly sand. The runoff class is low (HSG A) and the available water capacity is low (about 3.1 inches). The parent material for Tunjunga Gravelly soil is discontinuous human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Lone Hill Park is 9.65 inches per hour (NRCS Web Soil Survey).

12.3 Utility Research

Utilities or irrigation lines were discovered in the limits of the utility search. GPR, EM61 Time Domain Instrument, M-Scope Pipe and Cable Locator, RD4000 Line Tracer, and a magnetic gradiometer were used to mark detectable utilities on the ground above them but are unable to capability to identify the type of utility line and its size. These were found all across the limits of the utility search.

12.4 Infiltration Testing Locations

Infiltration testing is being performed at the boring and infiltration locations shown in **Table 15** and on **Figure 14**.

Table 15. Lone Hill Park Site Information

Site Name	Lone Hill Park
Site City	San Dimas
Site Address	500 N Shellman Ave., San Dimas, CA 91773
Hydrologic Soil Group	A
Slope	1.4%
Weighted ksat (inches/hour)	9.65
Boring Location 1	34.110799,-117.834959
Boring Location 2	34.110502,-117.834405
Infiltration Testing Location	34.110784,-117.834931

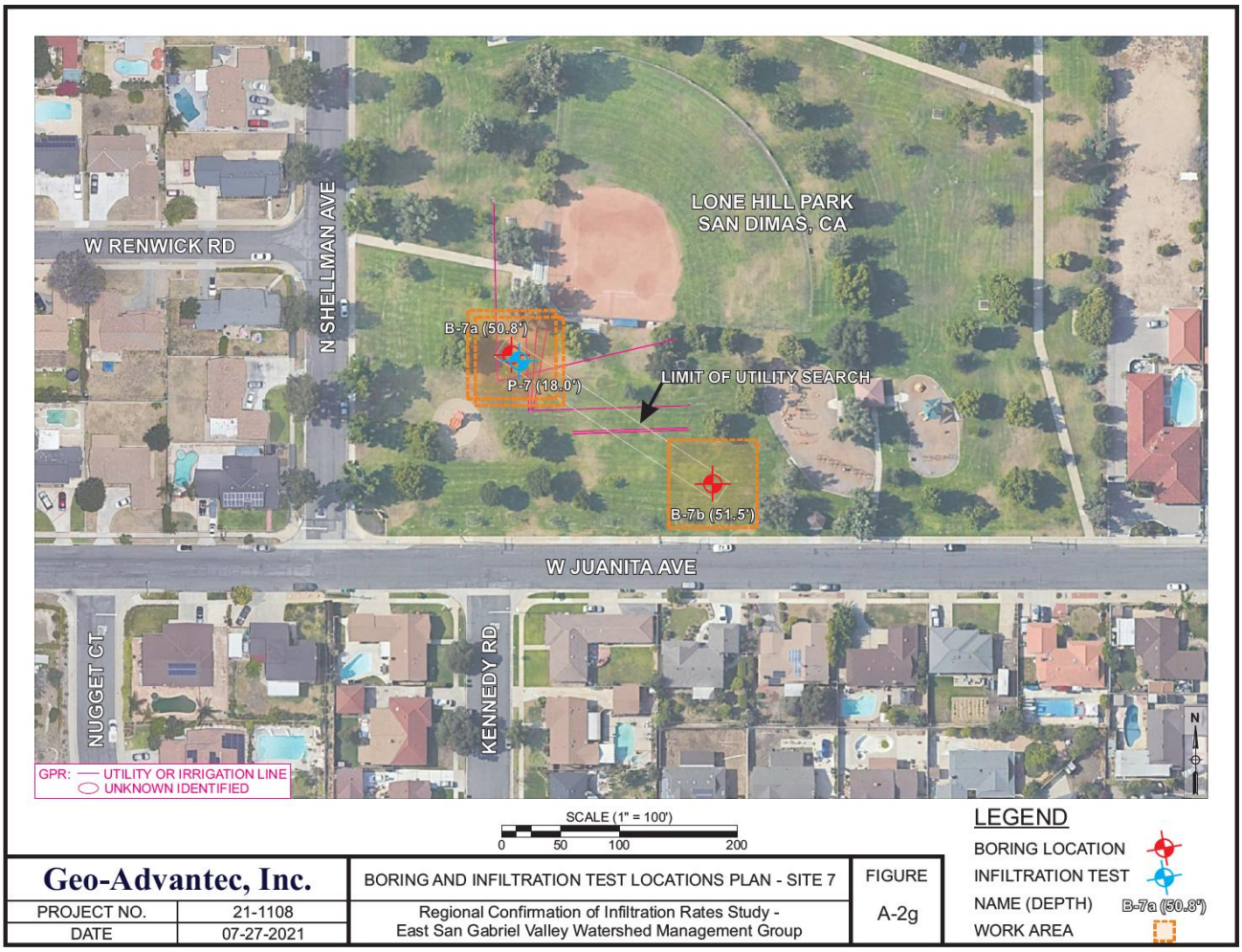


Figure 14. Lone Hill Park, San Dimas Infiltration and Boring Locations

ALTERNATIVE SITE 1
FAIRPLEX FAIRGROUNDS, POMONA

13 ALTERNATIVE SITE 1.Fairplex Fairgrounds, Pomona

13.1 Site Description

Fairplex Fairgrounds is located at 1101 W McKinley Avenue in Pomona, California. The Fairplex has been home to the L.A. County Fair since 1922.

13.2 Geologic Setting and Infiltration Capacity

The site is underlain by Urban land-Biscailuz-Pico complex soils with 0 to 2 percent slopes. The typical profile of Biscailuz soil is as follows: 0 to 13 inches – loam; 13 to 28 inches – loam; 28 to 37 inches – loam; 37 to 49 inches – sandy clay loam; 49 to 57 inches – sandy loam; 57 to 79 inches - sand. The runoff class is low (HSG B) and the available water capacity is high (about 10.0 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The typical profile of Pico soil is as follows: 0 to 7 inches – sandy loam; 7 to 16 inches – sandy loam; 16 to 35 inches – sandy loam; 35 to 53 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 6.7 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The weighted ksat for the underlying soils at Fairplex is 3.9 inches per hour (NRCS Web Soil Survey).

13.3 Infiltration Testing Locations

Potential boring and infiltration testing locations are shown in **Table 16** and on **Figure 15**.

Table 16. Fairplex Fairgrounds Site Information

Site Name	Fairplex Fairgrounds
Site City	Pomona
Site Address	1101 W McKinley Ave., Pomona, CA 91768
Hydrologic Soil Group	A
Slope	0.1%
Weighted ksat (inches/hour)	3.9
Boring Location 1	34.080251, -117.765122
Boring Location 2	34.079834, -117.764483
Infiltration Testing Location	34.079852, -117.764508

Figure 15. Fairplex Fairgrounds, Pomona Boring and Infiltrations Locations

ALTERNATIVE SITE 2
EMERALD PARK, LA VERNE

14 ALTERNATE SITE 2. Emerald Park, La Verne

14.1 Site Description

Emerald Park is located at 1900 Genesee Avenue in La Verne, California. This 3-acre neighborhood park is situated at the corner of Genesee Avenue and Chelsea Drive. Passive and active recreation opportunities are incorporated into this park and include three shaded picnic areas with barbecues, a tot lot with swings and concrete animals for climbing, and a soccer field with goals.

14.2 Geologic Setting and Infiltration Capacity

Emerald Park is underlain by Urban land-Palmview-Tujunga, gravelly complex soils with 2 to 9 percent slopes. The typical profile of Palmview soil is as follows: 0 to 4 inches – sandy loam; 4 to 14 inches – sandy loam; 14 to 28 inches – sandy loam; 28 to 79 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 7.8 inches). The parent material for Palmview soil is discontinuous human-transported material over alluvium derived from granite.

The typical profile of Tujunga Gravelly soil is as follows: 0 to 6 inches – loamy sand; 6 to 9 inches gravelly loamy sand; 9 to 30 inches – gravelly sand; 30 to 79 inches – gravelly sand. The runoff class is low (HSG A) and the available water capacity is low (about 3.1 inches). The parent material for Tujunga Gravelly soil is discontinuous human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Emerald Park is 9.65 inches per hour (NRCS Web Soil Survey).

14.3 Infiltration Testing Locations

Potential boring and infiltration testing locations are shown in **Table 17** and on

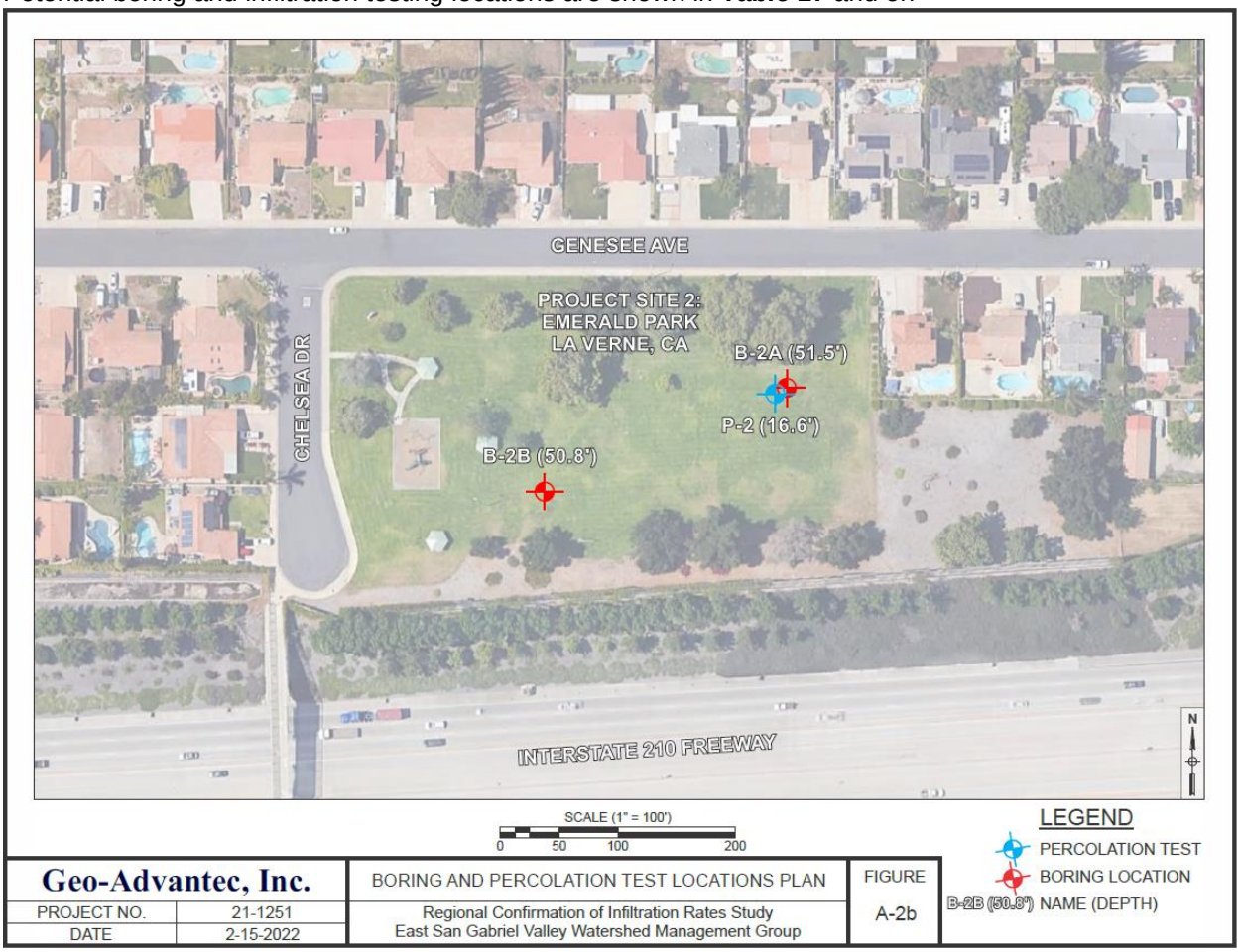


Figure 16.

Table 17. Emerald Park Site Information

Site Name	Emerald Park
Site City	La Verne
Site Address	1900 Genesee Ave., La Verne, CA 91750
Hydrologic Soil Group	A
Slope	2.1%
Weighted ksat (inches/hour)	3.22
Boring Location 1	34.120498, -117.769723
Boring Location 2	34.120259, -117.770405
Infiltration Testing Location	34.120484, -117.769755

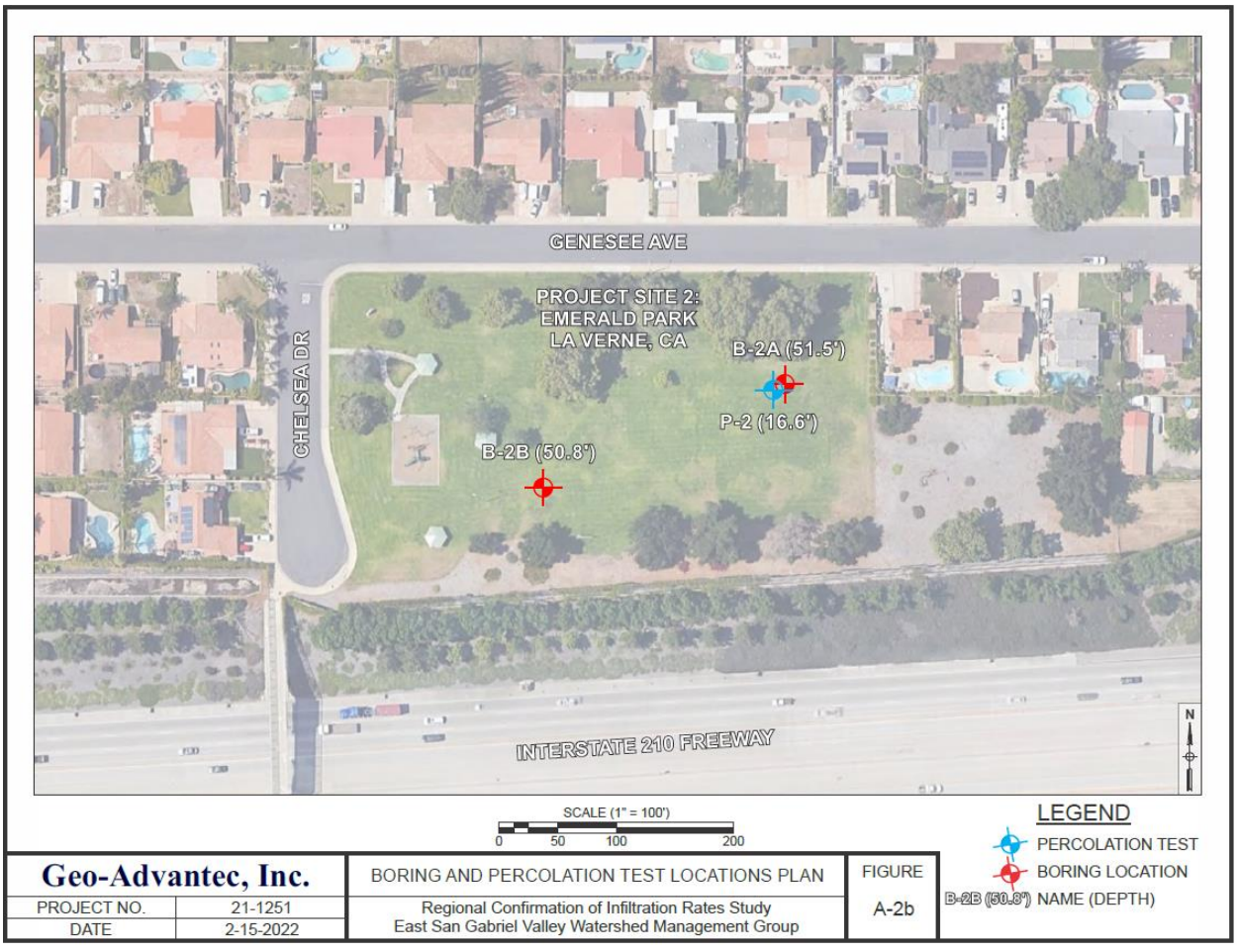


Figure 16. Emerald Park, La Verne Boring and Infiltration Locations

ALTERNATIVE SITE 3
CLAREMONT BOULEVARD, CLAREMONT

15 ALTERNATE SITE 3. Claremont Boulevard, Claremont

15.1 Site Description

This site is located on Claremont Boulevard between Foothill Boulevard and 6th Street. This site may be utilized by the City of Claremont to further design of a project on Claremont Boulevard.

15.2 Geologic Setting and Infiltration Capacity

Claremont Boulevard, at the selected location, is underlain by Pits and Quarries-Soboba stony loamy sand with 2 to 9 percent slopes. The typical profile of Soboba soil is as follows: 0 to 10 inches – stony sandy loam; 10 to 24 inches – very stony sandy loam; 24 to 60 inches – very stony sand. The runoff class is very low (HSG A) and the available water capacity is low (about 3.8 inches).

The weighted ksat for the underlying soils at Claremont Boulevard is 6.00 inches per hour (NRCS Web Soil Survey).

15.3 Infiltration Testing Locations

Potential boring and infiltration testing locations are shown in **Table 18** and on

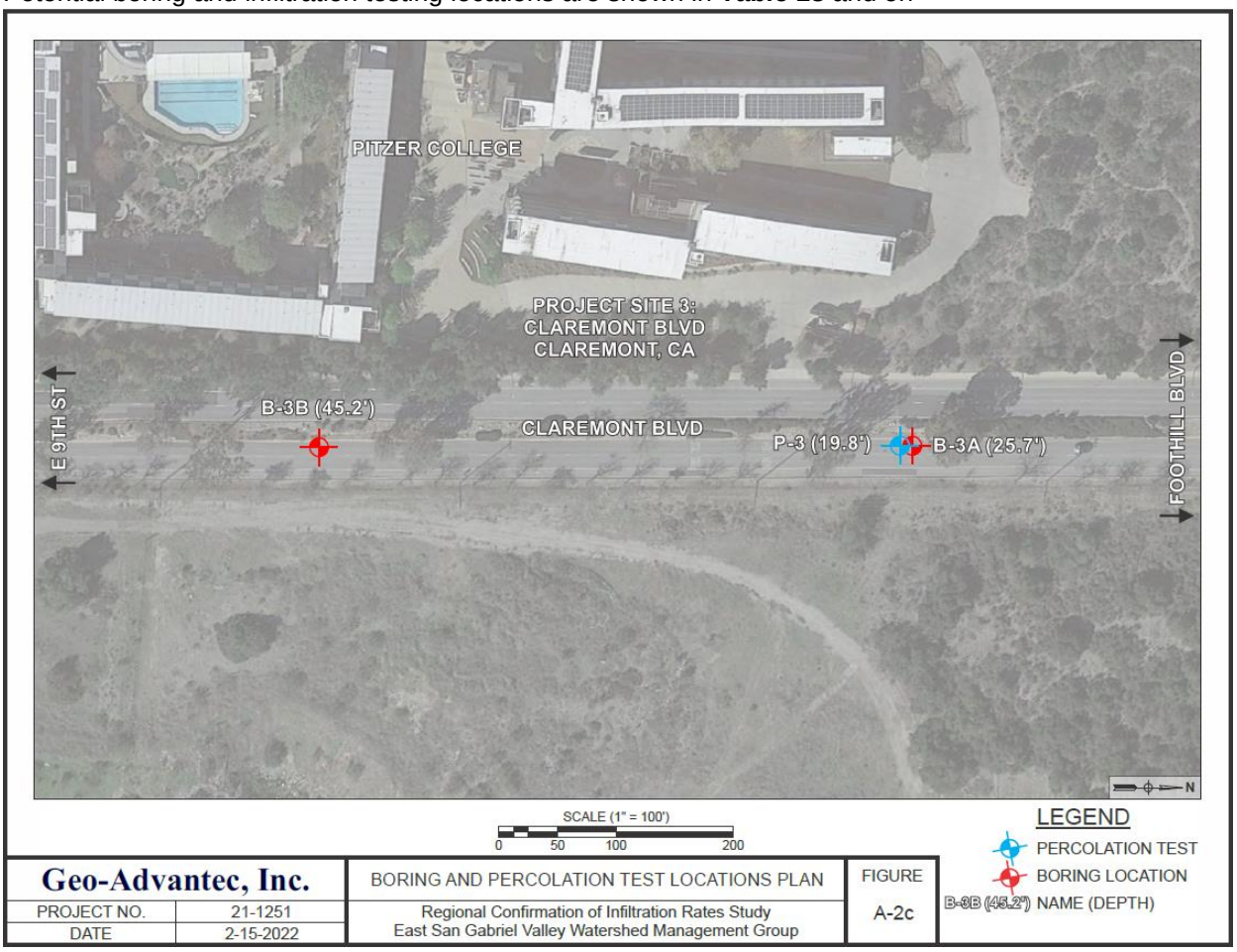


Figure 17.

Table 18. Claremont Avenue Site Information

Site Name	Claremont Blvd
Site City	Claremont
Site Address	Claremont Blvd., Claremont, CA 91711
Hydrologic Soil Group	A
Slope	1.2%
Weighted ksat (inches/hour)	6.00
Boring Location 1	34.105666,-117.702901
Boring Location 2	34.104278,-117.702897
Infiltration Testing Location	34.105637, -117.702902

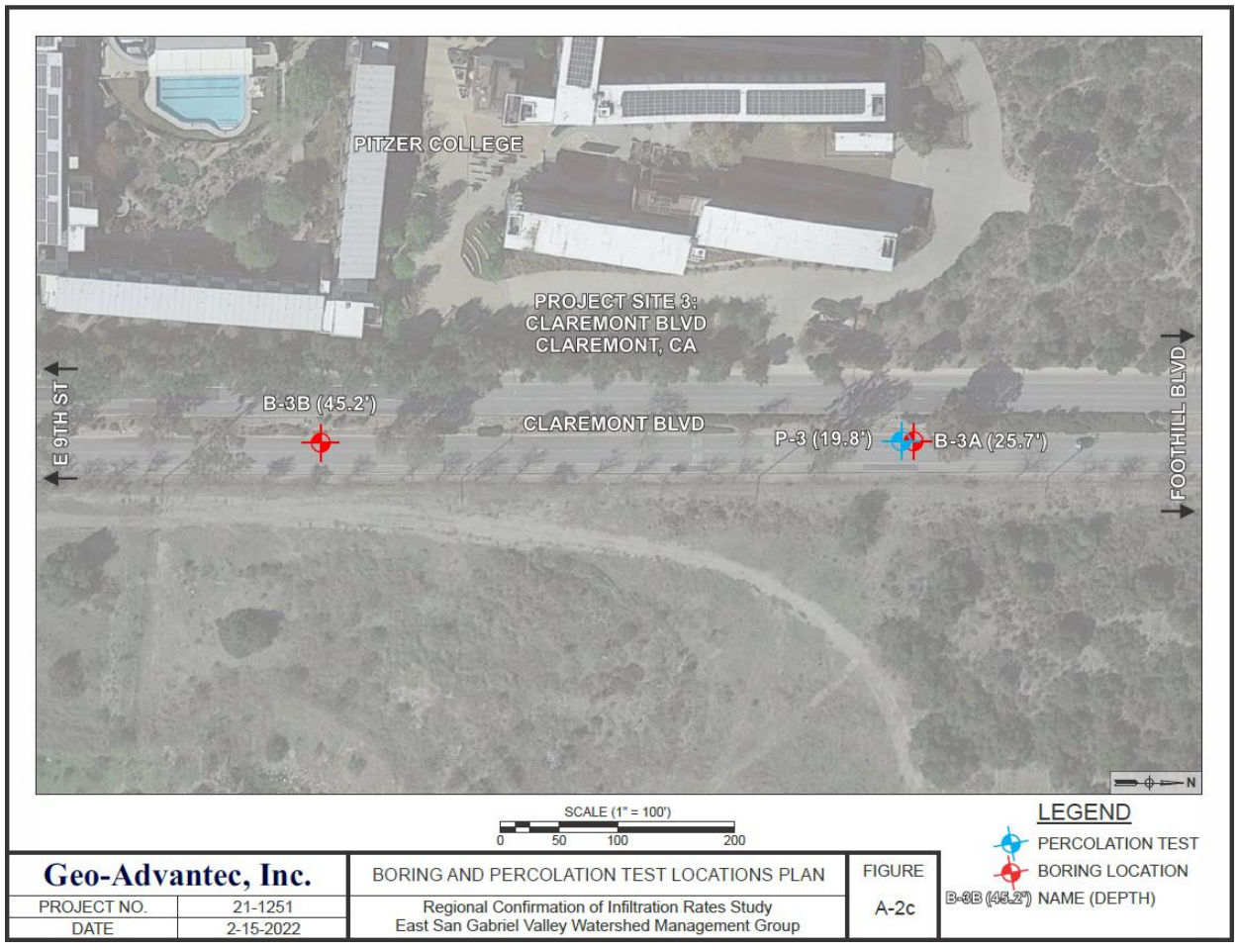


Figure 17. Claremont Boulevard, Claremont Boring and Infiltration Locations

ALTERNATIVE SITE 4
MOUNTAIN VIEW PARK, EL MONTE

16 ALTERNATE SITE 4. Mountain View Park, El Monte

16.1 Site Description

Mountain View Park is located at 12127 Elliott Avenue in El Monte. Some of the amenities at the park include lighted athletic fields, a playground, a multipurpose venue and picnic space.

16.2 Geologic Setting and Infiltration Capacity

The site is underlain by Urban land-Biscailuz-Pico complex soils with 0 to 2 percent slopes. The typical profile of Biscailuz soil is as follows: 0 to 13 inches – loam; 13 to 28 inches – loam; 28 to 37 inches – loam; 37 to 49 inches – sandy clay loam; 49 to 57 inches – sandy loam; 57 to 79 inches - sand. The runoff class is low (HSG B) and the available water capacity is high (about 10.0 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

The typical profile of Pico soil is as follows: 0 to 7 inches – sandy loam; 7 to 16 inches – sandy loam; 16 to 35 inches – sandy loam; 35 to 53 inches – sandy loam. The runoff class is very low (HSG A) and the available water capacity is moderate (about 6.7 inches). The parent material for Pico soil is discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock.

16.3 Infiltration Testing Locations

Potential boring and infiltration testing locations are shown in **Table 19** and on **Figure 18**.

Table 19. Mountain View Park Site Information

Site Name	Mountain View Park
Site City	El Monte
Site Address	12127 Elliott Ave., El Monte, CA 91732
Hydrologic Soil Group	A
Slope	1.2%
Weighted ksat (inches/hour)	3.9
Boring Location 1	34.055480, -118.022508
Boring Location 2	34.055631, -118.021211
Infiltration Testing Location	34.055627, -118.021244

Figure 18. Mountain View Park, El Monte Boring and Infiltration Locations

ALTERNATIVE SITE 5
PARK AND RIDE LOT, CITY OF INDUSTRY

17 ALTERNATE SITE 5. Park and Ride Lot, City of Industry

17.1 Site Description

This site is a 5.7-acre vacant lot located at the intersection of Glendora Avenue and Sotro Street in the City of Industry, adjacent to the Park and Ride.

17.2 Geologic Setting and Infiltration Capacity

The site is underlain by Cropley-Urban land complex soils with 0 to 5 percent slopes. The typical profile of Cropley soil is as follows: 0 to 4 inches – clay loam; 4 to 25 inches – clay loam; 25 to 55 inches – clay loam; 55 to 71 inches – clay loam. The runoff class is medium (HSG C) and the available water capacity is high (about 10.3 inches). The parent material is discontinuous human-transported material over mixed alluvium derived from sedimentary rock.

17.3 Infiltration Testing Locations

Potential boring and infiltration testing locations are shown in **Table 20** and on **Figure 19**.

Table 20. Park and Ride Lot Site Information

Site Name	Park and Ride lot near City Hall/Council Chambers Building
Site City	City of Industry
Site Address	15660 Stafford St., La Puente, CA 91746
Hydrologic Soil Group	C
Slope	2.1%
Weighted ksat (inches/hour)	0.35
Boring Location 1	34.022213, -117.954291
Boring Location 2	34.021714, -117.954008
Infiltration Testing Location	34.021740, -117.954022

Figure 19. Park and Ride Lot, City of Industry Boring and Infiltration Locations

ALTERNATIVE SITE 6
PIONEER PARK, SAN DIMAS

18 ALTERNATE SITE 6. Pioneer Park, San Dimas

18.1 Site Description

Pioneer Park is located at 225 South Cataract Avenue in San Dimas, California. This site is 4.92 acres with tennis courts, basketball courts, a baseball field and a skate park.

18.2 Geologic Setting and Infiltration Capacity

The site is underlain by Urban land-Azuvina-Montebello complex soils with 0 to 5 percent slopes. The typical profile of Azuvina soil is as follows: 0 to 5 inches – loam; 5 to 14 inches – loam; 14 to 24 inches – clay loam; 24 to 43 inches – sandy clay loam; 43 to 57 inches – loam; 57 to 79 inches – fine sandy loam. The runoff class is medium (HSG C) and the available water capacity is high (about 9.9 inches). The parent material is discontinuous human-transported material over old alluvium derived from granite.

The typical profile of Montebello soil is as follows: 0 to 4 inches – silt loam; 4 to 34 inches – clay loam; 34 to 53 inches – loam; 53 to 79 inches – loam. The runoff class is medium (HSG C) and the available water capacity is high (about 10.9 inches). The parent material is human-transported material over alluvium derived from granite.

The weighted ksat for the underlying soils at Pioneer Park is 0.83 inches per hour (NRCS Web Soil Survey).

18.3 Infiltration Testing Locations

Potential boring and infiltration testing locations are shown in **Table 21**and on **Figure 20**.

Table 21. Pioneer Park Site Information

Site Name	Pioneer Park
Site City	San Dimas
Site Address	225 S Cataract Ave., San Dimas, CA 91773
Hydrologic Soil Group	C
Slope	1.46%
Weighted ksat (inches/hour)	0.83
Boring Location 1	34.104752, -117.812641
Boring Location 2	34.105097, -117.813141
Infiltration Testing Location	34.104770, -117.812667

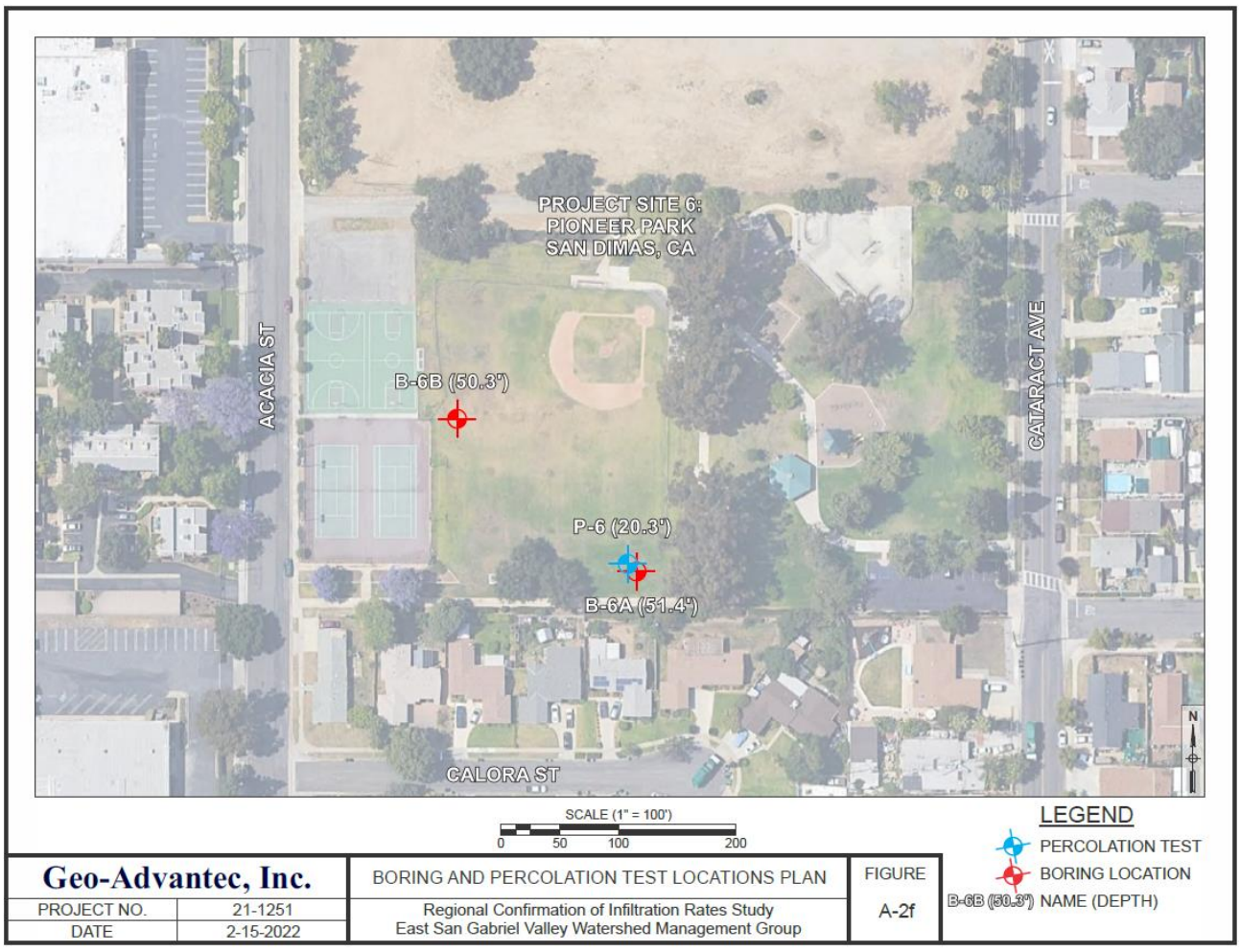
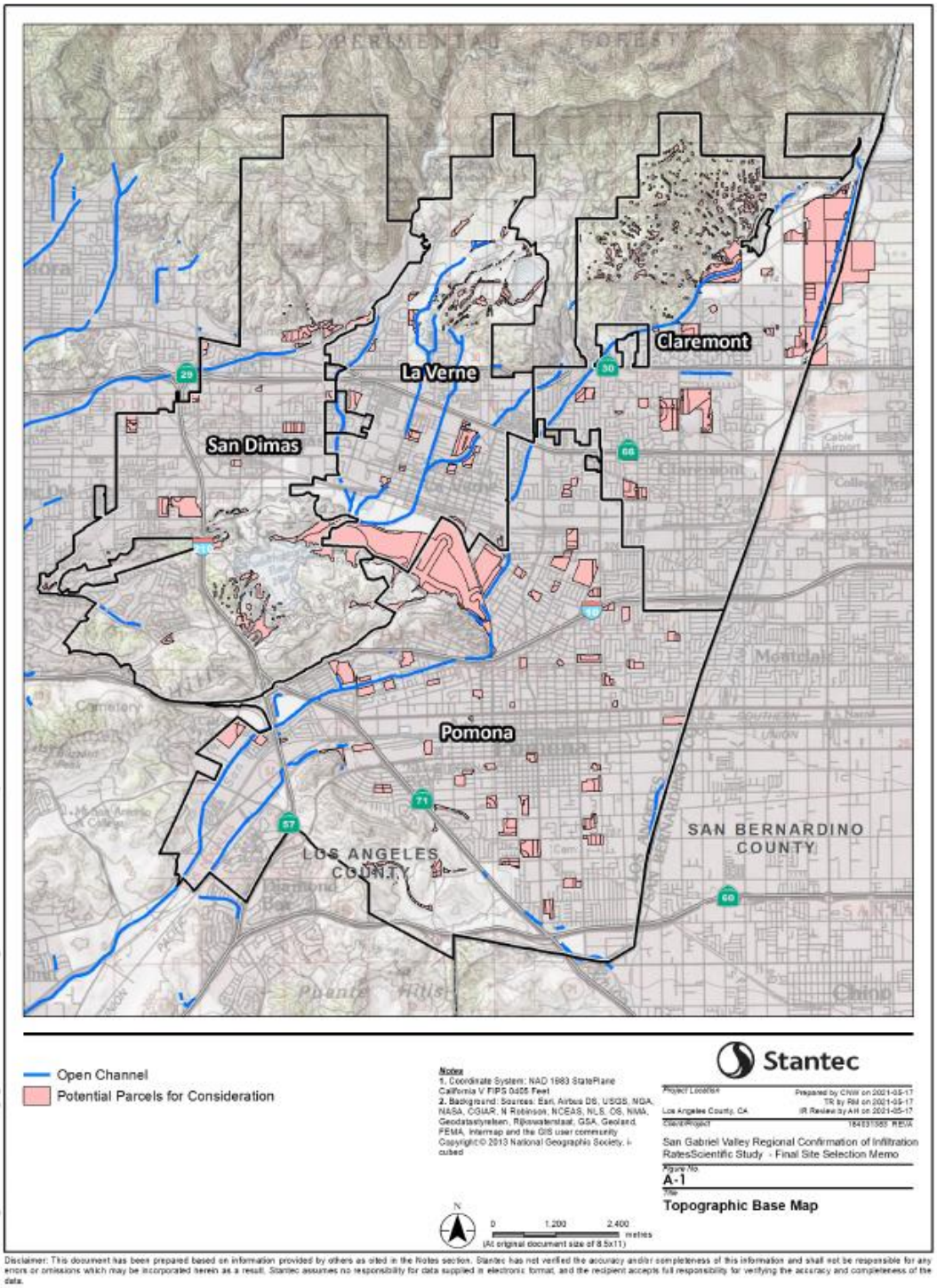


Figure 20. Pioneer Park, San Dimas Boring and Infiltration Locations

Appendix A Stormwater Capture Site Identification Maps

A.1 Topographic Basemap



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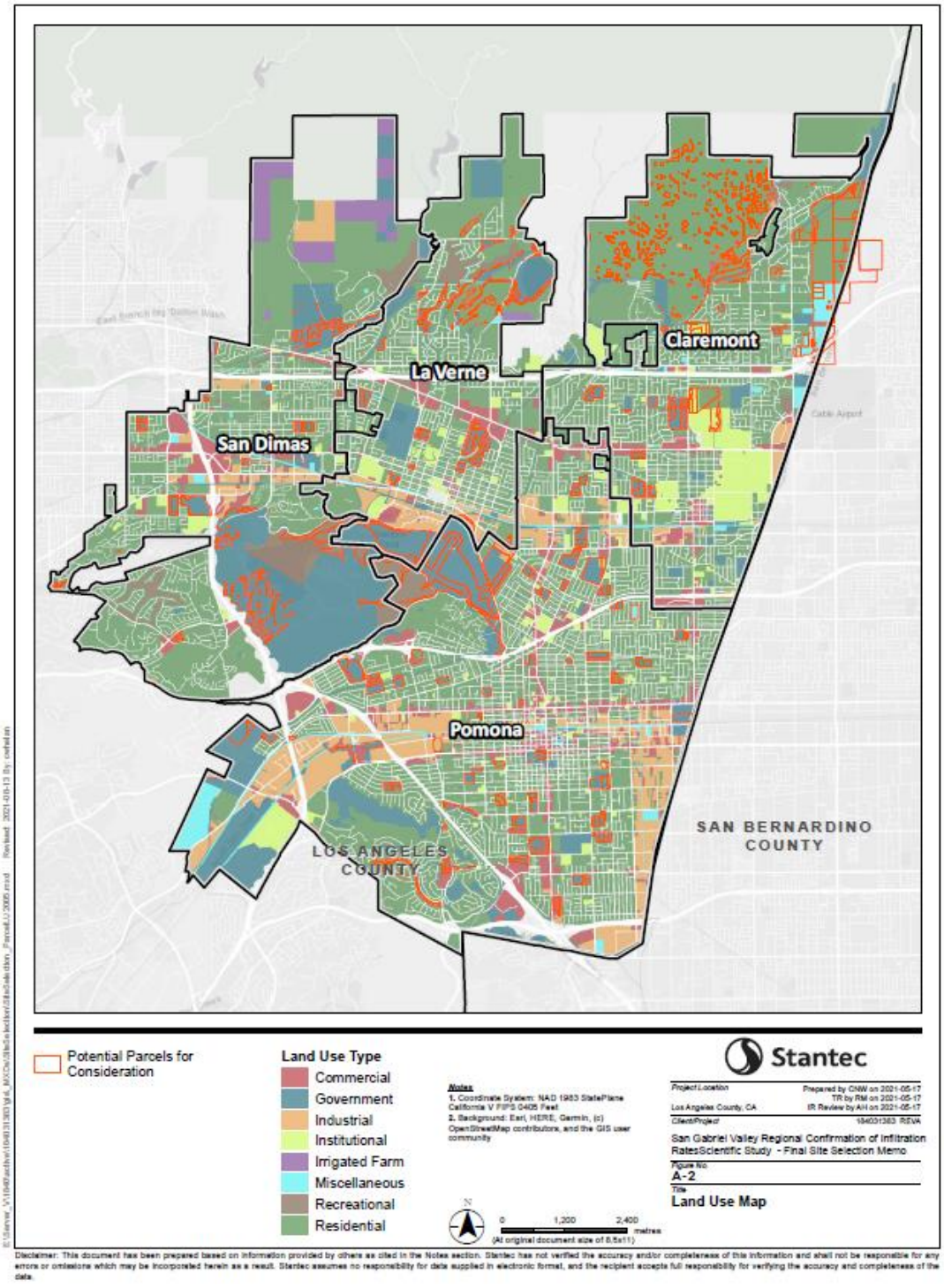
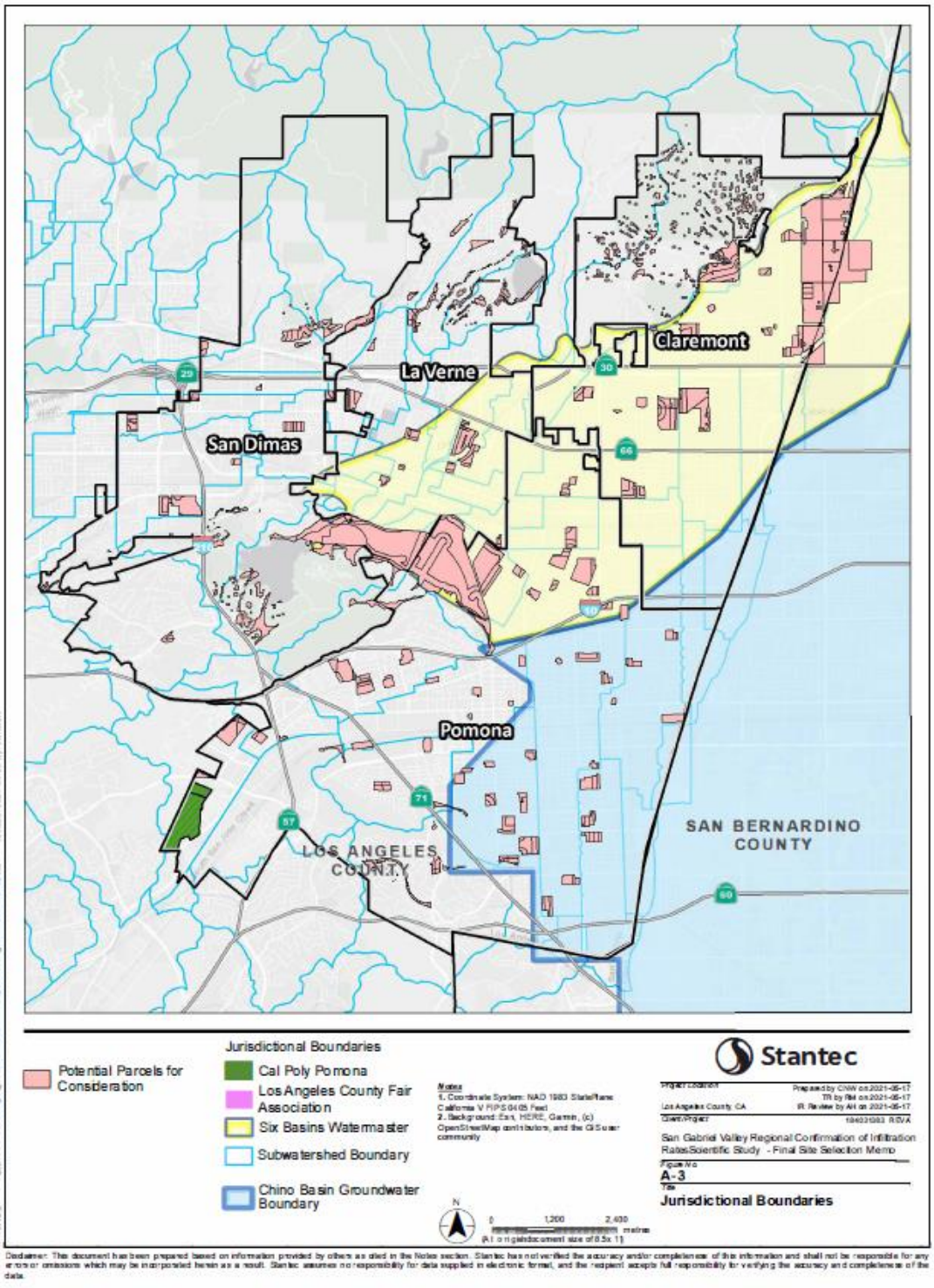
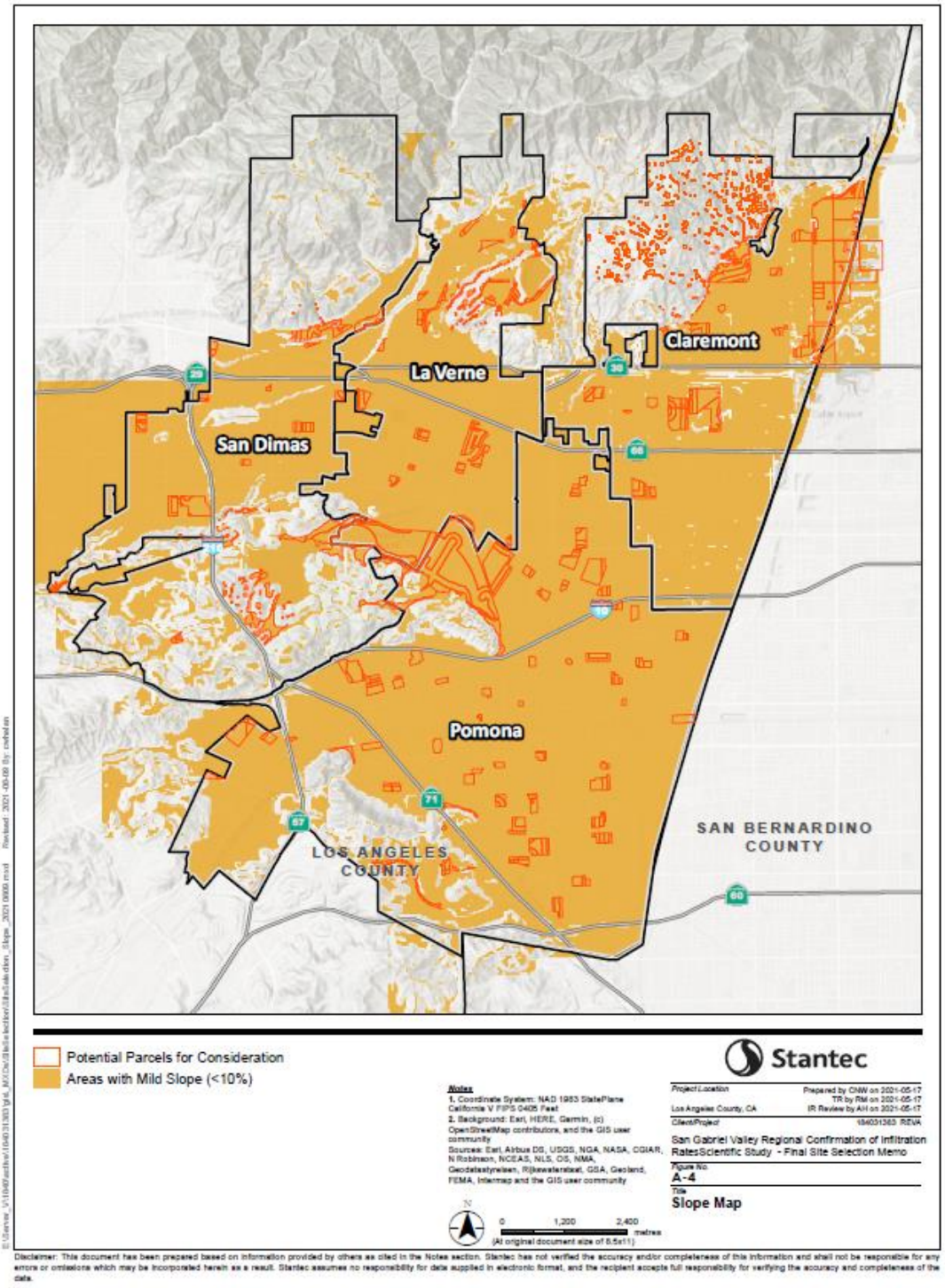
A.2 Land Use Map



A.3 Jurisdictional Boundary Map



A.4 Slope Map


La Verne
Claremont
San Dimas
Pomona
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
Potential Parcels for Consideration
Areas with Mild Slope (<10%)
Stantec
Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Background: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Project Location
Los Angeles County, CA
Prepared by CNW on 2021-05-17
TR by RM on 2021-05-17
IR Review by AH on 2021-05-17
Client/Project
184031383 RIVA
San Gabriel Valley Regional Confirmation of Infiltration RatesScientific Study - Final Site Selection Memo
Figure No.
A-4
Title
Slope Map
0
1,200
2,400
metres
(At original document size of 8.5x11)
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A.5 Hydrologic Soil Groups Map