

Appendix H Hydrology Technical Report

DRAINAGE & SURFACE WATER HYDROLOGY TECHNICAL REPORT

CONDITIONAL USE PERMIT (CUP 97-03) EXTENSION PROJECT

Signal Hill Petroleum, Inc.
City of Signal Hill, California

June 2023

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1.0 INTRODUCTION

Sespe Consulting, Inc. (“Sespe”) has prepared the following Drainage & Surface Water Hydrology Technical Report (“Report”) on behalf of Signal Hill Petroleum, Inc. (“SHP”), to determine the potential surface water hydrology and water quality impacts associated with the proposed continuance of SHP’s existing Conditional Use Permit (CUP 97-03). SHP currently operates seven (7) existing oil and gas sites (referred to herein as “CUP Sites”) located throughout the City of Signal Hill (“City”) under one consolidated Conditional Use Permit (CUP Record No. 97-03 or “CUP 97-03”), which was first approved by the City in 1998. CUP 97-03 was last renewed by the City in 2021, and is set to expire in 2023. SHP is seeking the continuance of their existing consolidated oil and gas operations at the seven CUP Sites covered under CUP 97-03 for 20-years beyond its current term, as well as installation of proposed redundancy and efficiency modifications to the existing natural gas system located at CUP Site #2 (the “Project”). Additionally, new well cellars may also be constructed at the CUP Sites as part of the Project. Except for the proposed natural gas processing system modifications planned at CUP Site #2 and potential construction of new well cellars, no changes to the existing structures, equipment or scope of the current operations are proposed as part of the Project. The existing CUP boundaries would not change or expand, and all operations (existing and proposed) would continue to occur within the existing permitted CUP footprint(s) and consistent with current and historical norms. As such, the Project site(s) evaluated within this Report consists of the existing seven CUP Sites located in the City of Signal Hill, Los Angeles County, California (see Figure 1, Attachment A).

1.1 Purpose & Scope

The City of Signal Hill is the lead agency for purposes of administering the requirements of the California Environmental Quality Act (CEQA), and for preparing the appropriate CEQA environmental document. Sespe has prepared this Report to be included as a technical appendix within the City’s subsequent CEQA documentation prepared for the Project. This Report has also been prepared to satisfy the County of Los Angeles hydrology requirements. The scope of this Report is as follows:

- Identification of the tributary watershed to the Project site.
- Identification of floodplain(s) impacting the site.
- Identification of existing and final site conditions (as applicable), and discussion of on-site drainage conditions including on-site flows and runoff volumes.

- Summary of the Project’s potential impacts and conclusions pertaining to surface water hydrology, drainage, and water quality.

2.0 PROJECT DETAILS

2.1 Location

As shown in Figure 1 (Attachment A), the existing Project sites (i.e., CUP Sites #1 through #7) are situated throughout the City of Signal Hill, in Los Angeles County. The City is surrounded on all sides by the City of Long Beach, and sits within the West, Central, and East units of the Long Beach Oil Field. The CUP sites are located within developed urban areas, and are surrounded by existing commercial, industrial, and residential land uses, and many of the adjacent properties/land uses are either owned by SHP and leased to various residential, commercial, or industrial tenants, or were previously owned by SHP and sold for redevelopment. Table 1 below details the location of the seven (7) CUP Sites within the City, as well as the land uses within the immediately Project vicinity. Figure 2 through Figure 7 (Attachment A) shows the location of the CUP Sites individually.

Table 1 CUP Site Locations and Surrounding Land Uses

CUP Site	Adjacent Land Uses	Location Description
No. 1	Commercial	CUP Site #1 is located within the central portion of an existing shopping center parking lot (Gateway Center developed on SHP-owned property) and is surrounded on all sides by existing parking/commercial developments.
No. 2	Commercial / Industrial	CUP Site #2 is located at the southeastern corner of E. Spring Street/Orange Avenue, north of E. 29 th Street, and is directly adjacent to existing commercial/industrial properties to the east (Honda dealership developed on SHP-owned property) and south (various commercial offices/warehouses).
No. 3	Commercial / Industrial	CUP Site #3 is located north of E. Willow Street and east of Walnut Avenue and is directly adjacent to existing commercial/industrial properties to the north (miscellaneous scrapyards) and east (industrial storage yard/fast food/retail developed on SHP-owned property). Other SHP oil and gas operations not part of CUP 97-03 surround CUP Site #3 on all sides.
No. 4	Commercial / Industrial	CUP Site #4 is located directly behind the existing Home Depot and Costco Wholesale retail stores (both developments were facilitated by/located on SHP-owned property). Other SHP oil and gas operations not part of CUP 97-03 are located uphill to the east and south of the site.
No. 5	Residential / Industrial	CUP Site #5 is located southwest of Combellack Drive and Temple Avenue/Obispo Avenue, adjacent to existing residential neighborhoods (developed on SHP-owned property) located to the north and south. Other SHP industrial land uses not part of CUP 97-03 are located uphill to the south/southwest.
No. 6	Residential / Industrial	CUP Site #6 is located south of 20 th Street, west of Redondo Avenue, and north of E. Grant Street. Residential neighborhoods (developed on SHP-owned property) are located to the north across 20 th Street, while existing industrial uses (also developed on SHP-owned property) surround the site to the west, south (across E. Grant Street) and east.

CUP Site	Adjacent Land Uses	Location Description
No. 7	Industrial	CUP Site #7 is located just south of CUP Site #6 across E. Grant Street, south of E. Grant Street and west of Redondo Avenue. The site is surrounded by existing industrial facilities (developed on SHP-owned property) on all sides.

2.2 Project Overview

As discussed in Section 1.0 above, the Project is the continuance of SHP’s existing consolidated oil and gas operations at the seven CUP Sites permitted under CUP 97-03 for the proposed 20-year term, as well as the installation and operation of proposed redundancy and efficiency modifications to the existing natural gas system located at CUP Site #2 and potential construction of new well cellars. Other than the modifications to the existing natural gas system at CUP Site #2 and construction of new well cellars, the Project would include no substantial changes or expansions to SHP’s existing oil and gas operations at the CUP Sites. SHP would continue to operate the existing oil and gas facilities in the same manner and with the same equipment as they have historically, and SHP is not seeking any amendments or modifications to the CUP that would expand the activities authorized under the CUP’s existing terms. The existing CUP boundaries would also not change or expand, and all operations (existing and proposed) would continue to occur within the existing permitted CUP footprint(s) and consistent with current and historical norms. Specifically, SHP would continue the following general operations at their seven CUP Sites:

- Well servicing and maintenance;
- Drilling and re-drilling operations;
- Oil processing, storage, and transfer;
- Natural gas and natural gas liquids processing, storage, and transfer;
- Produced water separation and injection facilities; and
- Electrical production from a natural gas turbine powered generator.

In addition to the industrial activities summarized above, the Project would not modify the existing production levels, hours of operation, materials to be extracted, processed and sold, the number or type of onsite equipment (mobile equipment, drilling rigs, etc.), production methods, or the number of onsite employees.

The gas system modifications to be installed at CUP Site #2 represent the primary new structure that would be installed as part of the Project. Additionally, consistent with existing operations, SHP would continue to construct new well cellars and install new wells (which would require the installation of a new pumpjack) at the CUP Sites on an as needed basis throughout the 20-year term. Other than these potential improvements, no new buildings or above- or belowground structures (tanks, sumps, piping, etc.) would be installed at any of the CUP Sites as a result of the Project.

2.2.1 CUP Site #2 Gas Processing System Modification

As part of the Project, SHP is proposing to modify its current natural gas processing system at CUP Site #2 by adding a backup low temperature separation (“LTS”) unit and a backup membrane unit for the removal of inert gas. SHP will also connect to a new gas sales meter and pipeline provided by the SoCal Gas Company (“SCG”). The SCG sales outlet will be in addition to and provide back-up to the current Long

Beach Energy gas sales outlet. A booster compressor will to be added to provide the line pressure required to move gas into the SCG system. Finally, SHP will add a “CEB” technology clean burning combustion unit to handle waste gas streams that currently are recycled through the facility. The proposed modifications at CUP Site #2 will give SHP operational flexibility and back-up capacity for its critical gas processing equipment. Finally, SHP will add a CEB technology clean burning combustion unit to handle waste gas streams that currently are recycled through the facility. The proposed modifications at CUP Site #2 will give SHP operational flexibility and back-up capacity for its critical gas processing equipment.

The booster compressor and CEB burner will be installed in Phase 1 following approval of the Project. The LTS and membrane units will be installed in Phase 2, estimated to occur sometime in 2024. The construction process and timing will be virtually identical for the two phases. Specifically, each phase will span approximately 12 weeks. The construction process will start with excavations for underground process piping, electrical conduits and control cable conduits as well as reinforced concrete foundations for each piece of equipment. As shown on Figure 3, the foundations will be located immediately adjoining the existing natural gas processing facilities within CUP Site #2. Process piping and electrical conduits in and around the actual equipment packages will be located aboveground. The LTS and membrane units will come with certain piping and controls already installed and mounted on an independent steel skid unit. The skid units will be installed on the foundations and secured per the foundation plans.

Other than the redundancy and efficiency modifications to the existing gas system, no other changes to the processing facilities at CUP Site #2 are proposed as part of this Project. See Figure 3 (Attachment A) for the approximate location of the proposed gas system modifications at CUP Site #2.

2.2.2 Drilling/Redrilling

In accordance with the existing CUP 97-03, as well as applicable City and CalGEM requirements, SHP has and would continue to drill new wells and redrill existing wells (both production and injection wells) at the seven CUP Sites on an as needed basis. As with current operations, these activities would continue to occur entirely within the existing CUP boundaries. SHP’s oil and gas production has been, and will continue to be, cyclical and dependent upon market demands, economic cycles, and other factors beyond SHP’s control (e.g., geological studies, production capacity of wells drilled, availability of required materials and services, etc.). As such, SHP’s drilling/redrilling activities for both production and injection wells have and will continue to vary from year to year.

If a new well were drilled and put into production, a new aboveground well pumpjack would also be installed. Note that any new wells/pumpjacks would be installed within/adjacent to the well cellar.

2.2.3 Well Cellar Construction

Generally, SHP would continue drilling/redrilling operations within the existing well cellars at each CUP Site; however, consistent with past operations, at times a new ancillary well cellar may need to be created. As with SHP’s current protocols, new well cellars are created by excavating a shallow hole (approximately 6-feet wide, 6-feet long, and 5-feet deep) using a back-hoe type excavator (new well cellars can be excavated within a single day). Once excavation is complete, a pre-cast concrete box or a large diameter galvanized round steel pipe is placed into the excavation hole to secure the new well cellar.

As with SHP's existing protocols, onsite areas where new well cellars are proposed are inspected and monitored prior to and during excavation. If potentially contaminated soil is encountered, that soil would be isolated in a stockpile pending evaluation by an environmental engineer, samples and/or lab analysis to determine the proper disposal procedure of the contaminated soil. Well cellar excavation, monitoring, and soil evaluation/sampling would continue to be conducted in accordance with applicable City, state and federal regulations.

3.0 ENVIRONMENTAL SETTING

This section describes the existing surface water drainage and hydrology as well as the applicable water quality environment in and around the existing Project sites. For this Report, the existing surface hydrology setting includes current drainage conditions at the seven (7) CUP Sites, which would in general not change as a result of the Project. Related environmental setting aspects to the surface water hydrology and water quality environment are also described, including geology, soils, and climate, as applicable.

3.1 Regional Setting

As shown on Figure 1 (Attachment A), the seven (7) CUP Sites are situated throughout the City of Signal Hill. The City is a small community, approximately 2.1 square miles in size, located in Los Angeles County, California. The City is in the geographic middle of, and surrounded on all sides by (i.e., is an enclave within), the City of Long Beach. The City is located approximately three (3) miles north of the Port of Long Beach and 22 miles south of downtown Los Angeles. Primary highway access to the City is provided by the San Diego Freeway (I-405), located to the north. The main surface roadways providing access into the City include Cherry Avenue and the Pacific Coast Highway (State Route 1).

The City is topographically defined by the hill in which the City is named after (herein referenced as the "Hill") located in the central southeast portion of the City. The Newport-Inglewood Fault created the City's unique hillside profile with elevation ranges from approximately 25-feet above mean sea level (amsl) in the southwestern portion of the City to approximately 367-feet amsl at the Hill plateau (City of Signal Hill, 1986). The Newport-Inglewood Fault cuts diagonally through the City and is considered the most significant seismically active geologic feature in the area. Slopes in the City generally vary from 10 to 80 percent, with the steepest slopes occurring along and adjacent to the Hill. The greatest percentage of slope change occurs on the southerly slopes of the Hill with an average of 40 percent slope and increasing to as much as 80 percent slope (City of Signal Hill, 1986). As shown on Figure 1 (Attachment A), CUP Sites #4 and #5 are located along the northern base of the Hill.

The City falls within the boundaries of both the Los Cerritos (LCC) and the Lower Los Angeles River (Lower LAR) Watersheds. The City comprises approximately 530.7 and 774 acres of the LLC and Lower LAR Watersheds, respectively (John L. Hunter and Associates, Inc., 2015; Richard Watson & Associates, Inc., 2017). The Newport-Inglewood Fault traces the topographical divide dictating the City's surface water drainage direction into these two watersheds. Surface water runoff originating on the Hill's north side slope (north of the Newport-Inglewood Fault) generally flows into the LCC Watershed, while the south side slope runoff generally flows into the Lower LAR Watershed.

No surface water bodies exist within the City. The nearest surface water body is the Los Angeles River Reach 1 located approximately 1.2 miles east from the City's eastern boundary. All surface water runoff is directed to surface water bodies outside the City via Municipal Separate Storm Sewer ("MS4") discharges. Given the unique geography of the City, and the fact that it is surrounded on all sides by areas under the jurisdiction of the City of Long Beach, any discharges originating from within the City must pass through the City of Long Beach before reaching any receiving waters.

The City is also served by two stormwater flood control facilities, namely the Hamilton Bowl and the California Bowl; however, both basins also fall within the City of Long Beach. These two facilities control major portions of the City's drainage before discharging to the MS4 and provide opportunities for urban-runoff capture, treatment, infiltration, and monitoring. Specifically, the Hamilton Bowl is a 15-acre flood control facility, owned and operated by the Los Angeles County Flood Control District. Approximately half of the City's stormwater runoff flows to the Hamilton Bowl where it is retained and eventually discharged into the Los Angeles River.

The following sub-sections provide further detail on the regional geology, soils, climate, and surface water hydrology associated with the City as well as the Project sites.

3.1.1 Geology/Soils

Generally, the land coinciding with the City/Project area is composed of a broad, slightly elevated marine terrace that is underlain by over 15,000-feet of stratified sedimentary rocks (City of Signal Hill, 2016). As previously stated, the City is cut diagonally by the Newport-Inglewood Fault. The Newport-Inglewood Fault is a normal fault with a strike-slip fault component and forms the Newport Inglewood Fault System. Within the Newport-Inglewood Fault System are five faults in the immediate vicinity of the City including the Wardlow, Cherry Hill, Pickler, Northeast Flank, and the Reservoir Hill Faults (City of Signal Hill, 2016). CUP Sites #1, #2, and #3 are situated closest to the Cherry Hill Fault, while CUP Sites #4 and #5 are closest to the Pickler Fault. CUP Sites #6 and #7 are closest to the Northeast Flank Fault (City of Signal Hill, 2016).

The soils in the City are composed of weathered alluvium and are classified as silts and sands, which describes the underlying soils at the CUP Sites. Soils at the Project sites are mapped by the U.S. Department of Agriculture (USDA's) Natural Resources Conservation Service – Web Soil Survey as either the Urban land-Typic Xerorthents, coarse substratum-Typic Haploxeralfs complex 0 to 5 percent slopes or 5 to 15 percent slopes map units, which are described as loamy and sandy soil profiles (Soil Survey Staff, 2022). The majority of the existing land area within the CUP Sites are paved or heavily disturbed/compacted surfaces, so soils are largely unexposed.

3.1.2 Climate

As with most of California, the City experiences a Mediterranean climate with warm, dry summers and mild winters. The City is in Southern California's coastal plain where it experiences cool ocean breezes and the marine cloud layer, keeping the monthly temperature maximum average modest. The historical climate data collected from the Western Regional Climate Center's (WRCC) Long Beach Daugherty Field Station for the period of January 1, 1949 to June 9, 2016 indicates an average monthly temperature maximum of 83.9° Fahrenheit (F) for August. The same climate data indicates an average monthly minimum of 45.3° F for December. Average annual precipitation for the area has historically been

approximately 12.0 inches, with the most precipitation occurring between November and April. More recent precipitation data collected by the Los Angeles County Department of Public Works shows dramatic variation in the annual amount of precipitation year to year. Average annual precipitation from 1996 to 2019 was 11.32 inches, with a maximum and minimum annual precipitation of 3.35 and 29.01 inches, respectively (AKM Consulting Engineers, 2021).

3.2 Project Surface Water Hydrology

The City is broken into the North, East, South, and West Drainage Areas per the Environmental Resources Element of the Signal Hill – General Plan (City of Signal Hill, 1986). These drainage areas from the General Plan provide a convenient way to describe the existing drainage conditions surrounding the CUP Sites and their respective watersheds. The West Drainage Area generally conveys water either to the California Bowl Detention Basin or a minor storm drain located on Columbia Street. Water is conveyed to the California Bowl via a storm drain south of the San Diego Freeway (Interstate 405). Both the basin and the Columbia Street storm drain ultimately outlet to the Lower Los Angeles River. Both the North and East Drainage Area direct runoff toward a storm drain originating on East Spring Street that continues in a westerly direction into the City of Long Beach. This stormwater carried through the City of Long Beach and ultimately discharged to the Los Cerritos Channel. Lastly, the South Drainage Area discharges most of its runoff into the Hamilton Bowl Detention Basin. The Hamilton Bowl is fed by several storm drains including the 19th Street drain. All other runoff in the South Drainage Area is discharged south of the Pacific Coast Highway into the City the Long Beach. All runoff originating in the South Drainage Area ultimately discharges to the Lower Los Angeles River.

All CUP Sites are within a City drainage area described in the Environmental Resources Element of the General Plan, with the exception of CUP Site #1. CUP Site #1 is in a region north of the West Drainage Area that directs stormwater to the west, ultimately reaching the Los Cerritos Channel.

Table 2 provides a summary of the applicable City drainage areas and larger watersheds in which each CUP Site belongs, as well as the general direction of runoff at each site. Note that the Project is primarily the continuation of existing oil and gas operations at the CUP Sites, and SHP is proposing no changes to onsite conditions or structures that would change onsite drainage conditions. The proposed redundancy and efficiency equipment modifications at CUP Site #2 would occur entirely within the existing facility boundaries on a paved/flat area, and would therefore not effect onsite drainage conditions. Additionally, any new cellars constructed would act as containment structures, and would therefore not increase the potential for runoff. Except for CUP Site #5, existing CUP Sites have been designed to contain the majority of stormwater that falls onsite using existing retaining walls, site design/drains, and stormwater best management practices (BMPs).

Table 2 CUP Site Drainage Conditions

CUP Site	Applicable City Drainage Area	Existing Onsite Drainage Condition	Watershed
No. 1	N/A	CUP Site #1 is a flat, 0.94-acre oil and gas extraction site, within the center of an existing paved parking lot. The existing site ground surface is compacted soils/gravel. Stormwater that falls on CUP Site #1 generally drains to the center of the site, where it's captured in the existing well cellar sump and recycled through the existing water separation/processing system. Other than small gaps where existing access gates are located (3 total), the site is completely surrounded by an existing block wall, which contains stormwater/prevents offsite discharges (the majority of runoff is contained onsite).	Los Cerritos Channel
No. 2	West	CUP Site #2 is a generally flat, 8.76-acre oil/gas extraction and processing site. The site is both a well/extraction site and central processing facility (existing gas processing facility and power plant/turbine are also located at CUP Site #2). The majority of the site is paved. Additionally, other than small gaps where existing access gates are located (3 total), the majority of the site is surrounded by an existing block wall. Stormwater that falls on CUP Site #2 generally drains to the low-point in the northeast corner of the site, where it's captured in the existing well cellar sump and recycled through the existing water separation/processing system. The site generally does not discharge stormwater offsite (the majority of runoff contained onsite).	Lower Los Angeles River
No. 3	North	CUP Site #3 is a flat, 1.65-acre oil and gas extraction site. As stated above, other SHP oil and gas operations not part of CUP 97-03 surround CUP Site #3 on all sides. Stormwater that falls on CUP Site #3 generally drains to the center of the site, where it's captured in the existing well cellar sump and recycled through the existing water separation/processing system. The existing site ground surface is compacted soils/gravel, and, other than small gaps where existing access gates are located (3 total), the site is completely surrounded by a block wall, which sufficiently contains stormwater/prevents offsite discharges (the majority of runoff contained onsite).	Los Cerritos Channel
No. 4	North	CUP Site #4 is a flat, 1.23-acre oil and gas extraction site, located at the base of the Hill. The entirety of the site is paved, and other than the small gaps where access gates are located (2 total), the site is completely surrounded by a block wall, which sufficiently contains stormwater/prevents offsite discharges (the majority of runoff contained onsite). Any stormwater that falls on CUP Site #4 is directed toward the center of the site, where it is captured in the existing well cellar sump and recycled through SHP's existing water separation/processing system.	Los Cerritos Channel

CUP Site	Applicable City Drainage Area	Existing Onsite Drainage Condition	Watershed
No. 5	North	<p>CUP Site #5 is the 7.35-acre oil/gas extraction and processing site, located at the base of the Hill. Existing topography gently slopes from south to north, to the northeast corner of the site toward Combella Drive and Temple Avenue/Obispo Avenue. The site is surrounded by a combination of existing block walls, concrete paneled fencing, and chain-link fences with silt fencing attached.</p> <p>Storm water that falls onto CUP Site #5 is gathered by a series of drains located throughout the facility and is gravity fed to a collection separator (weir box) prior to being discharged to a storm drain line. Stormwater that falls on the southeast portion of the site is also captured in the existing well cellar sump and recycled through the existing water separation/processing system. Please see Section 5.2.1 below for additional detail.</p>	Los Cerritos Channel
No. 6	South	<p>CUP Site #6 is a generally flat, 1.07-acre oil/gas extraction and processing site. The majority of the site is paved, and is surrounded on all sides by an existing block wall that sufficiently contains stormwater/prevents offsite discharges (all runoff contained onsite). Stormwater that falls on CUP Site #6 generally drains to the center of the site, where it's captured in the existing drainage system.</p>	Los Cerritos Channel
No. 7	South	<p>CUP Site #7 is a generally flat, 0.59-acre oil/gas extraction and processing site. The entirety of the site is paved. Other than the small gaps where access gates are located (2 total), the entire site is surrounded on all sides by an existing block wall which sufficiently contains stormwater/prevents offsite discharges (majority of runoff contained onsite). Additionally, stormwater that falls on the eastern portion of the site is also captured in the existing well cellar sump and recycled through the existing water separation/processing system. Note that bulk storage of hazardous materials/production chemicals was recently relocated to CUP Site #7 and a supplemental Hazardous Materials Business Plan (HMBP) is in process.</p>	Lower Los Angeles River

3.2.1 FEMA Floodplain

In general, the City is not subject to flood hazards (City of Signal Hill, 2016). According to the Federal Emergency Management Agency's (FEMA) most recent Federal Insurance Rate Map (FIRM) all seven CUP Sites are in areas designated as Zone X, specifically "areas of minimal flood hazard" (Attachment B).

4.0 REGULATORY SETTING

4.1 Federal

Federal Water Pollution Control Act

The Federal Water Pollution Control Act (33 United States Code, Section 1251 et seq.), commonly known as the Federal Clean Water Act (CWA), establishes the basic structure for regulating discharges of pollutants into the Waters of the United States (US). The CWA's scope is limited to Waters of the US, and thus does not apply to groundwater. The statute provides the United States Environmental Protection Agency (USEPA) authority to promulgate regulations and implement pollution control programs, such as establishing water quality standards and criteria for contaminants in surface waters. The CWA prohibits the discharge of any pollutant to navigable waters from any point source. To discharge pollutants in compliance with the CWA, a National Pollutant Discharge Elimination System (NPDES) permit from the EPA or an authorized state-equivalent permit is required. The CWA allowed the USEPA to authorize the NPDES Permit Program to state governments, enabling states to perform many of the permitting, administrative, and enforcement aspect of the NPDES Program. California implements the CWA by promulgating its own water quality protection laws and regulations.

The CWA utilizes both water quality standards and technology-based effluent limitations to protect water quality. Technology-based effluent limitations are specific numerical limitations established by EPA and placed on certain pollutants from certain sources. They are applied to industrial and municipal sources through numerical effluent limitations in discharge permits issued by states or EPA. Water quality standards are standards that consist of the designated beneficial use or uses of a waterbody (for example, recreation, water supply, industrial, or other), plus a numerical or narrative statement identifying maximum concentrations of various pollutants that would not interfere with the designated use. The CWA requires each state to establish water quality standards for all bodies of water in the state. These standards serve as the backup to federally set technology-based requirements by indicating where additional pollutant controls are needed.

Under CWA Section 402, discharges of pollutants into waters of the US are not allowed, except in accordance with the NPDES program established in that section of the Act. Non-point source discharges are regulated under NPDES permits for municipal stormwater discharges, industrial activities, and construction activities. Section 402 authorizes the NPDES permit program to control water pollution by regulating point sources that discharge pollutants into waters of the US. These permits require development and adherence to Storm Water Pollution Prevention Plans (SWPPPs). Point sources are discrete conveyances such as pipes or manmade ditches. The primary method to control stormwater discharges is using Best Management Practices (BMPs).

In waters where industrial and municipal sources have achieved technology-based effluent limitations, yet water quality standards have not been met, dischargers may be required to meet additional pollution control requirements. For each of these waters, Section 303 of the CWA requires states to set a total maximum daily load (TMDL) of pollutants at a level that ensures that applicable water quality standards can be attained and maintained. A TMDL is both a planning process for attaining water quality standards and a quantitative assessment of pollution problems, sources, and pollutant reductions needed to restore and protect a river, stream, or lake.

In accordance with Section 303(d) of the CWA, the California State Water Resources Control Board (SWRCB) has listed both the Los Angeles River Reach 1 and Los Cerritos Channel as water quality impaired. Los Angeles River Reach 1 (Estuary to Carson Street) is water quality impaired for indicator bacteria, cyanide, trash, ammonia, copper (dissolved), lead, nutrients (algae), pH, and zinc (dissolved). The Los Cerritos Channel is water quality impaired for Chlordane (sediment), lead, trash, indicator bacteria, copper, zinc, Bis(2ethylhexyl) phthalate (DEHP), ammonia, and pH (SWRCB, 2022).

4.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It created the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) to plan, implement, manage, and enforce water quality protection and management. The RWQCB is empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards. The Porter-Cologne Act contains a complete framework for the regulation of waste discharges to both state surface water and groundwater, through the issuance of Waste Discharge Requirements (WDRs) by the RWQCBs. The NPDES Permitting program is administered by the SWRCB. To obtain a NPDES permit, applicants must prepare and submit a Notice of Intent (NOI) with the SWRCB, and prepare and implement a SWPPP, which includes a water quality monitoring program and identification of BMPs. For this Project, the Los Angeles RWQCB is the board with jurisdictional authority.

4.3 Local

City of Signal Hill General Plan

The City's General Plan is the fundamental policy document for City land use decisions. Within the General Plan, applicable policies pertaining to surface water (including stormwater) contained in the Land Use and Environmental Resources Elements were reviewed, and are summarized below.

- *Land Use Element – Goal 3, Policy 3.18:* Minimize the impacts of storm water runoff to the maximum extent practicable, on the biology, water quality and integrity of natural drainage systems and water bodies.
- *Land Use Element – Goal 3, Policy 3.19:* Maximize to the extent practicable, the percentage of permeable surfaces to allow more percolation of storm water runoff into the ground.
- *Land Use Element – Goal 3, Policy 3.20:* Minimize to the extent practicable, the amount of storm water directed to impermeable areas and to the municipal separate storm water system. Build storm water pollution prevention systems into all development projects including maximizing landscaped areas and providing areas for storm water storage and sedimentation.
- *Land Use Element – Goal 3, Policy 3.21:* Require new projects to include permanent controls to reduce storm water pollutant loads from development sites including parking lots to the maximum extent practicable.
- *Environmental Resources Element – Goal 5, Policy 5.2:* Protect water quantity and conserve water supplies through reducing and eliminating contamination from industrial operations or resource

development activities. Cooperate and participate in regional water quality and water supply plans, programs, and implementation measures.

City of Signal Hill Municipal Code – Chapter 12.16

Chapter 12.16 of the City of Signal Hill Municipal Code is intended to protect the public health, welfare, and safety and to reduce the quantity of pollutants being discharged to the Waters of the United States. Specifically, the provisions outlined in Chapter 12.16 of the Municipal Code intent to accomplish the following:

- Eliminating non-storm water discharges to the municipal storm drain system;
- Eliminating the discharge of pollutants into the municipal storm drain system;
- Reducing pollutants in storm water discharges to the maximum extent practicable;
- Protecting and enhancing the quality of the Waters of the United States in a manner consistent with provisions of the Clean Water Act; and
- Reducing the contribution of pollutants from the MS4 through interagency coordination.

Chapter 12.16 focuses on ensuring persons engaged in commercial, industrial, or construction activity comply with all stormwater discharge requirements of the United States EPA and SWRQB through pollutant reduction strategies. As outlined in Chapter 12.16 of the Municipal Code, these strategies include best management practices (BMPs) and low impact development (LID). Heavy emphasis is put on compliance with the MS4 Permit.

Lower Los Angeles River & Los Cerritos Watershed Management Programs (WMPs)

The City of Signal Hill is a permittee under the Los Angeles RWQCB Order No. R4-2012-0175, adopted on November 08, 2012, which enacted Waste Discharge Requirements (WDRs) for municipal separate storm sewer system (MS4) discharges within the Coastal Watersheds of Los Angeles County. The MS4 Permit established strict numerical limits regarding the quantity of pollutants that can be discharged by stormwater and urban runoff. In order to comply with the MS4 Permit, the City has submitted Watershed Management Programs (WMPs) for each of the Lower Los Angeles River and the Los Cerritos Channel Watersheds. Both WMPs include a commitment to make a good faith effort to reduce the quantity of pollutants carried by soil and sediment.

Los Angeles County Department of Public Works – Hydrology Manual

The Los Angeles County Department of Public Works Hydrology Manual (Los Angeles County PWD, 2006) establishes the Los Angeles County Department of Public Work's hydrologic design procedures and techniques that are applicable to the design of local storm drains, retention and detention basins, pump stations, and major channel projects. The standards set forth in the manual dictate all hydrology calculations done under Public Works' jurisdiction. Because the Project would not alter existing stormwater drainage or retention conditions at the CUP Sites, the procedures and protocols summarized within the County's Hydrology Manual would not apply.

5.0 CEQA IMPACT DISCUSSION

The CEQA Guidelines provide threshold criteria that can be used to determine whether a project would result in a potentially significant impact to the environment. These criteria are found in the Environmental Checklist in Appendix G of the CEQA Guidelines. Section X of the Appendix G Environmental Checklist outlines criteria for “hydrology and water quality” analysis under CEQA, and these specific criteria form the basis of the significance thresholds utilized to determine the potential hydrology and water quality impacts of the Project.

Using the applicable criteria for water quality, the proposed Project would be considered to have a potentially significant adverse surface water hydrology or water quality impact if it were to:

- a) *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*
- c) *Substantially alter the drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*
 - i. *Result in substantial erosion or siltation on- or off-site?*
 - ii. *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.*
 - iii. *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional source of polluted runoff?*
 - iv. *Impede or redirect flood flows?*
- d) *In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*
- e) *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Note that these significance criteria apply strictly to surface water hydrology and water quality, and therefore exclude criteria addressing impacts to groundwater, specifically CEQA Environmental Checklist, Hydrology and Water Quality Criteria b) – *Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.* A separate groundwater quality and quantity will be completed under separate cover, and included within the forthcoming CEQA document prepared by the City.

5.1 Analysis Conditions

As discussed above, the proposed Project is primarily the continuation of SHP’s existing oil and gas operations at the seven (7) consolidated CUP Sites permitted under CUP 97-03 for the requested permit term of 20 years. The primary proposed modification to SHP’s existing operations resulting from the Project would be the installation/construction and operation of the redundancy and flexibility modifications to the existing natural gas system at CUP Site #2. Additionally, consistent with existing operations, new well cellars could also be constructed, and new well pumpjacks installed at the CUP Sites throughout the 20-year term of the Project. Other than these modifications, SHP would not alter or expand the scope of their existing oil and gas operations at the CUP Sites.

The new redundant low temperature separation (LTS) and CO₂ units would be installed within an existing paved area in the central portion of CUP Site #2. The installation of the proposed above-ground structures (i.e., LTS unit, CO₂ capture and sequestration unit, and CEB burner) and the subsequent operation of the redundant natural gas system would not alter the existing drainage pattern at CUP Site #2. Additionally, as discussed in Section 2.2.3, construction of new well cellars involve excavation of a shallow hole (approximately 6-feet wide, 6-feet long, and 5-feet deep) using a back-hoe type excavator (new well cellars can be excavated within a single day). Once excavation is complete, a pre-cast concrete box or a large diameter galvanized round steel pipe is placed into the excavation hole to secure the new well cellar. Consistent with existing protocols, well cellar excavation, monitoring, and soil evaluation/sampling would continue to be conducted in accordance with applicable City, state and federal regulations.

Other than the gas system modifications at CUP Site #2, or potential construction of additional well cellars at the CUP Sites, no other physical changes are proposed at the other CUP Sites that would affect onsite drainage or stormwater capture potential.

5.2 Impact Assessment

5.2.1 Impacts to Water Quality

Impact Statement

Impact HYDROLOGY-1: *Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? (Appendix G Threshold Criteria (a))*

Impact Analysis

There will be no change or increase in the quantities of hazardous materials utilized or stored onsite as a result of the Project. Additionally, none of the SHP's CUP 97-03 facilities have underground storage tanks (USTs), and none are proposed as part of this Project. The primary hazardous materials stored and used are corrosion control chemicals. Hazardous materials/production chemicals are used at all CUP Sites. These CUP Sites maintain Hazardous Materials Business Plans (HMBP), which are updated annually by SHP and reviewed/approved by the Los Angeles County Fire Department (i.e., the Certified Unified Program Agencies [CUPA]). Bulk storage of hazardous materials/production chemicals was recently relocated to CUP Site #7, and SHP is in the process of preparing a supplemental HMBP. SHP updates their hazardous materials inventories and associated reports annually and on an as needed basis through the California Environmental Reporting System (CERS). Minimal quantities of hazardous waste would continue to be generated as a byproduct of SHP's existing and ongoing oil and gas processing currently occurring at CUP Sites #2 and #5; however, the Project would not result in additional hazardous waste generation, and hazardous waste would continue to be handled and properly disposed of in accordance with local (i.e., City, Los Angeles County Fire Department) and state (i.e., Department of Toxic Substances Control [DTSC]) requirements.

SHP also maintains three (3) existing Spill Prevention, Control, and Countermeasures (SPCC) Plans (e.g., Central, West, and East Units) that cover the existing operations at all seven (7) CUP Sites, which comply with federal and state regulations applicable to the land-based oil/natural gas extraction and production sector (40 CFR Part 112 and California Health and Safety Code Chapter 6.67, Section 25270). CUP Sites

have and would continue to comply with the general requirements for all facilities outlined in 40 CFR Part 112.7 and the applicable facility-specific requirements located in 40 CFR Part 112.9 and 112.10. The existing SPCC Plans identify procedures, controls, devices, and facilities to prevent or minimize the release of petroleum products to surface water and groundwater. The SPCC Plans also include descriptions of the regulated materials stored at the CUP Sites, discharge prevention measures (for example, secondary and general containment, equipment maintenance, and facility transfer procedures), drainage control to ensure spill containment, and spill response and clean-up procedures. They also include spill reporting procedures, training, and summarize any periodic updates to the plans. Because the Project would not change or increased onsite storage conditions, the existing SPCC Plans and the spill prevention and containment measures found therein would remain sufficient for the Project as proposed. Although significant changes are not anticipated, following Project approval the existing SPCC Plan for the West Unit would undergo updates as warranted to include appropriate response and control measures for the proposed modification to the existing natural gas processing system at CUP Site #2. The existing SPCC Plans would continue to be implemented and updated as needed throughout the 20-year life of the Project. As such, the potential for the Project to impact surface water quality due to accidental releases or spills of hazardous substances is considered unlikely, as suitable measures would continue to be implemented through the SPCC Plans, in accordance with applicable federal and state regulations.

In addition to the SPCCs, SHP has and would continue to update their existing HMBPs in accordance with the requirements contained in California Health and Safety Code Section 25508 and California Code of Regulations Title 19 Section 2729. Specifically, SHP maintains five (5) separate HMBPs for CUP Sites #1 through #5, while preparation of a new HMBP for CUP Site #7 is in process, as bulk storage of hazardous materials/production chemicals was recently relocated to this site. CUP Sites #6 does not store hazardous materials, nor is hazardous materials storage proposed as a result of the Project, and is therefore not subject to the HMBP requirements. The HMBPs will continue to be amended and updated as needed (HMBPs are updated annually) and submitted to the County Fire Department for review and approval throughout the proposed 20-year life of the Project.

As discussed above, most of the existing CUP Sites have been designed and engineered to contain stormwater or other quantities of incidental water that may fall within the CUP Site boundaries. Except for CUP Site #5, the CUP Sites are generally flat, and surrounded by existing block walls that generally contain water that falls within the CUP boundaries. Additionally, water that falls on most of the CUP Sites is generally direct toward the existing well cellars/sumps or floor drains (as is the case at CUP Site #6) where it is then contained and recycled through SHP's existing water separation/processing system. Because the CUP Sites (with the exception of CUP Site #5) have been designed for onsite containment of stormwater or other quantities of incidental water that may fall within the CUP boundaries, it was determined that the majority of sites have no potential of offsite discharge during storm events, and are therefore exempt from the State's Industrial General Permit (IGP) and do not maintain SWPPPs. Specifically, the State Water Resources Control Board (SWRCB) has approved Notices of Non-Applicability (NONAs) for all CUP Sites apart from CUP Site #5. The Project would not involve any changes to existing onsite drainage conditions or containment structures, and therefore there would continue to be no potential for new offsite discharge at the CUP Sites. As such, with the exception of CUP Site #5, the Project has and would continue to be designed to contain the maximum historic precipitation event (or series of

events) so that there will be no discharge of industrial stormwater through the City MS4 to waters of the United States.

As stated above, the SWRCB has approved Notices of Non-Applicability (NONAs) for all CUP Sites apart from CUP Site #5. In accordance with the IGP requirements, SHP maintains and implements a site specific, active SWPPP (WDID Number: 4 19I025902) at CUP Site #5. The existing SWPPP includes specific prohibitions, effluent limitations, source identification, practice to reduce pollutants, assessment of pollutant sources, materials inventory, preventative maintenance program, spill prevention and response procedures, general stormwater management practices, training, record keeping, sampling procedures and monitoring program. Stormwater BMPs which manage off-site sediment transport during operations and rain events are also outlined in the SWPPP. The SWPPP would continue to be implemented and updated as needed. Stormwater pollution at CUP Site #5 would continue to be minimized through the implementation of the SWPPP, and the BMPs outlined therein, as well as ongoing compliance with the current IGP. Moreover, the SWPPP and IGP contain provisions and requirements to improve BMPs over time as technology improves and water quality monitoring data provide new information. Therefore, through continued implementation of the SWPPP and compliance with the IGP, water quality impacts associated with stormwater discharges at CUP Site #5 are considered less than significant.

As discussed above, the Project would not involve any changes to existing onsite drainage conditions, containment structures or hazardous materials storage at the remaining CUP Sites. SHP has and would continue to implement site-specific pollution and erosion control plans (i.e., SPCCs, HMBPs, SWPPPs) at the CUP Sites, as applicable. The Project activities would occur completely within the existing industrial/facility footprints, and the Project would not involve activities that would otherwise impact surface or groundwater quality, or violate RWQCB water quality standards and WDRs. Therefore, there would be no new potential for offsite discharge and impacts to water quality as a result of the Project, and potential impacts would remain less than significant at all CUP Sites.

5.2.2 Impacts to Drainage

Impact Statement

Impact HYDROLOGY-2: *Would the Project substantially alter the drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

- i. *Result in substantial erosion or siltation on- or off-site?*
- ii. *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.*
- iii. *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional source of polluted runoff?*
- iv. *Impede or redirect flood flows? (Appendix G Threshold Criteria (c))*

Impact Analysis

See discussion in Section 5.2.1 above for additional detail. As previously discussed, the primary physical site changes proposed as part of the Project would be the minimal modifications to the existing natural gas processing system at CUP Site #2, and the construction of additional well cellars (6-feet wide, 6-feet

long, and 5-feet deep) at the CUP Sites as needed. As shown on Figure 3 (Attachment A), the gas system modification includes the addition of low temperature separation (LTS) equipment, gas membrane unit, and ancillary equipment (e.g., burner, foundations) within the northcentral portion of CUP Site #2. The new natural gas processing equipment would generally be installed on top of existing paved surfaces (minimal ground disturbance for underground process piping, electrical conduits and control cable conduits as well as reinforced concrete foundations for each piece of equipment) entirely within the existing containment boundary of CUP Site #2. Installation of the gas system structures would not create new slopes, permanently exposed soil, or other topographic conditions which could increase the chance of surface runoff or erosion/siltation. Additionally, the natural gas processing system modification would not increase the amount of total paved surfaces or introduce new onsite features that would alter the existing drainage pattern at CUP Site #2.

Similarly, if additional well cellars were installed at any of the CUP Sites, they would be constructed within the contained boundaries of the existing CUP Sites, and in accordance with the City's applicable setback requirements. Consistent with SHP's existing protocols, onsite areas where new well cellars are proposed are inspected and monitored prior to and during excavation. If potentially contaminated soil is encountered, that soil would be isolated in a stockpile pending evaluation by an environmental engineer, samples and/or lab analysis to determine the proper disposal procedure of the contaminated soil. Well cellar excavation, monitoring, and soil evaluation/sampling would continue to be conducted in accordance with applicable City, state and federal regulations. Furthermore, once constructed, the new well cellar would act as a containment structure and therefore increase the containment capacity of the given CUP Site.

Furthermore, during construction activities as well as ongoing operations, SHP would continue to maintain existing containment/drainage structures and implement site-specific erosion control plans (i.e., SWPPPs) and related BMPs as warranted. For these reasons, Project would not substantially alter the existing drainage pattern of the CUP Sites or surrounding areas through alteration of existing streams, rivers or through the addition of impervious surfaces, and there would be less than significant impacts.

5.2.3 Flood Hazards & Inundation

Impact Statement

Impact HYDROLOGY-3: *In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to project inundation? (Appendix G Threshold Criteria (d))*

Impact Analysis

As discussed in Section 3.2.1 above, according to the most recent Federal Emergency Management Agency (FEMA) Federal Insurance Rate Map (FIRM), all seven (7) CUP sites are in areas designated as Zone X, specifically areas of minimal flood hazard (Attachment B). Per the most recent Tsunami Hazard Area Map published by the California Department of Conservation (DOC), none of the CUP Sites are located within or near an existing tsunami hazards or inundation zone (DOC, 2022). With minimal flood hazards at the CUP Sites, and no water features on or nearby the site that would cause substantial flooding, the risk of pollutant release due to project inundation is less than significant.

5.2.4 Water Quality Control Plan

Impact Statement

Impact HYDROLOGY-4: *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (Appendix G Threshold Criteria (e))*

Impact Analysis

As discussed in Section 5.2.1 above, the Project would have no potential for new offsite runoff or create new onsite conditions with the potential to adversely impact water quality in violation of applicable regulations and management plans. Other than the proposed gas system modifications at CUP Site #2, the Project primarily entails a continuation of existing oil and gas operations at the CUP Sites with no proposed changes. The proposed modifications at CUP Site #2 would occur entirely within the existing CUP footprint, and would not alter existing drainage conditions. Project activities would not result in new waste streams or discharges that would be subject to regulation under an applicable water quality control plan. Additionally, SHP has and would continue to implement site-specific BMP's to protect surface and ground water quality, and would continue to comply with existing conditions of approval (COAs) under CUP 97-03 that ensure operations would continue to not adversely impact water resources. Therefore, the Project would continue to have a less than significant impact regarding the implementation of applicable water quality control plan, and there would be no new impacts as a result of the Project.

6.0 CONCLUSIONS

As summarized above, the proposed Project is primarily the continuation of Signal Hill Petroleum's (SHP) existing oil and gas operations at seven consolidated CUP Sites permitted under CUP 97-03 for the proposed 20-year permit term. Other than the proposed natural gas system modifications at CUP Site #2, which would be minor in nature and occur entirely within the existing facility footprint, and potential construction of new well cellars/installation of new well pumpjacks as needed, SHP would not alter or expand the scope of their existing oil and gas facilities, processing structures, or other ancillary equipment/processes at the CUP Sites.

Given the CUP Sites are oil and gas facilities that would continue to produce and transport extracted resources, ongoing operations could potentially introduce pollutants into surface waters through accidental release or incidental discharges. However, through SHP's continued compliance with relevant federal and state regulations, local policies, and implementation of site-specific SPCCs, HMBPs and the SWPPP at applicable CUP Sites, the potential for an accidental release that could impact surface waters would remain low. Additionally, most of the CUP Sites are designed to retain stormwater onsite, which makes the potential for water quality impacts effectively de minimis, and to-date, SHP has not received any violations from the SWRCB, the Los Angeles Regional Water Quality Control Board (LARWQCB), or other agency which regulates surface water quality and drainage. Existing containment structures and perimeter barriers would also ensure that in the unlikely event of an accidental spill or leak, materials would be contained onsite where they could be properly cleaned up and disposed of.

For these reasons, the Project would not alter drainage conditions or increase runoff potential at any of the CUP Sites, nor would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality.





7.0 REFERENCE

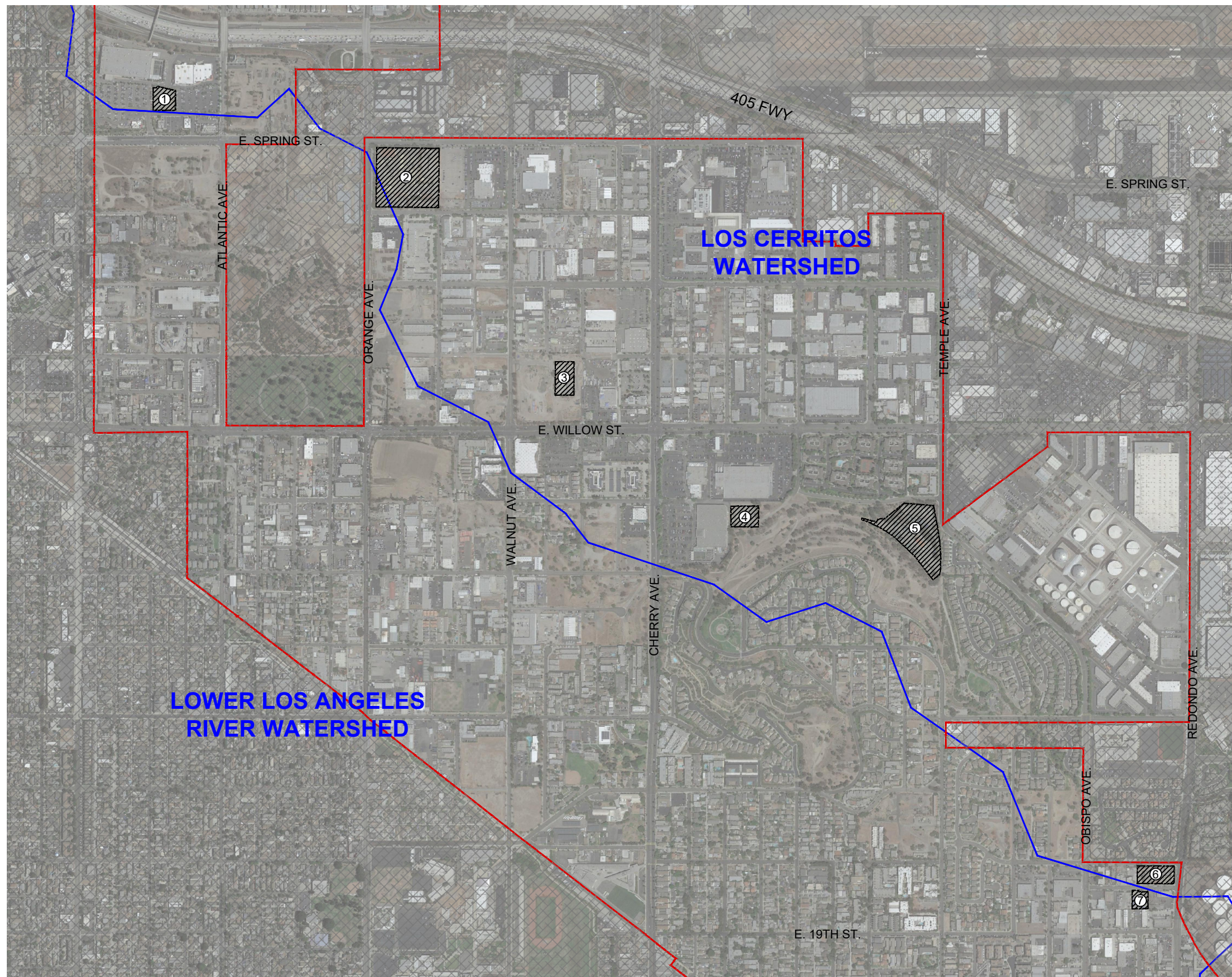
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ATTACHMENT A

Figures

LEGEND

-  CUP 97-03 SITE NUMBER
-  CUP 97-03 BOUNDARIES (APPROX.)
-  WATERSHED LIMITS (APPROX.)
-  CITY OF SIGNAL HILL LIMITS



LOCATION MAP



DATUM: HORZ= NAD83, CALIFORNIA ZONE 5, US FOOT
 VERT=NAVD88
 AERIAL: GOOGLE EARTH 07/06/2022

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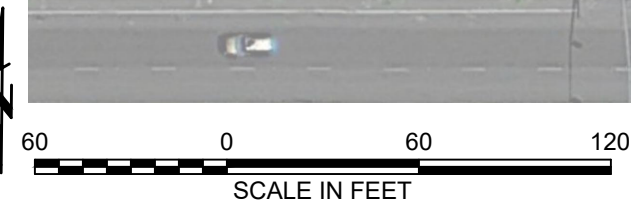
SIGNAL HILL PETROLEUM, INC.
 2633 CHERRY AVENUE
 SIGNAL HILL, CALIFORNIA 90755

SCALE: HORZ: AS SHOWN	FIGURE NUMBER
VERT: AS SHOWN	1
DRAWN BY: G.CAMUS	
CHECKED BY: APS	DATE: JULY 2022



LEGEND

- ① — CUP 97-03 SITE NUMBER
- — CUP 97-03 BOUNDARY (APPROX.)
- - - — EXISTING CINDER BLOCK WALL



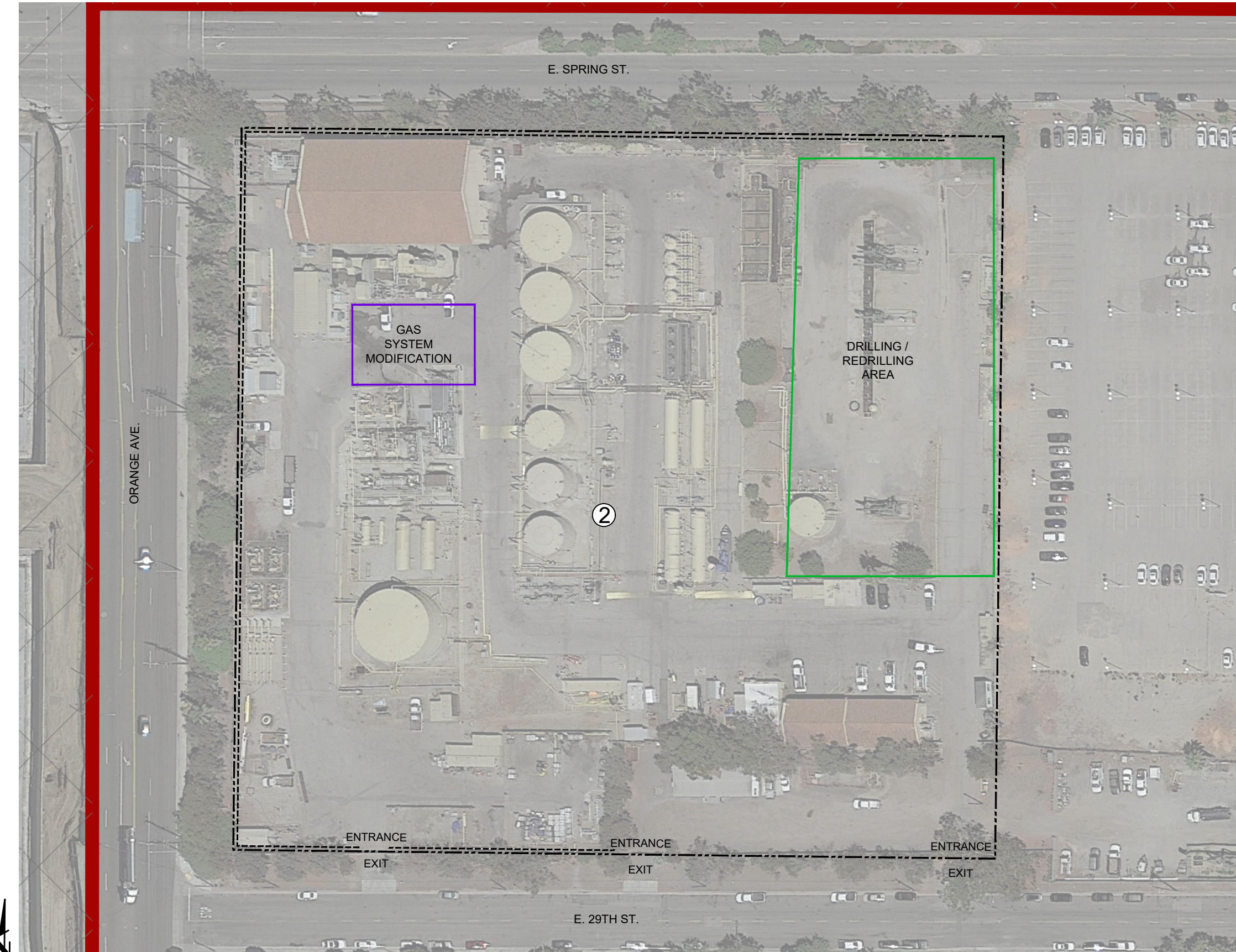
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CUP SITE NO. 1

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LEGEND

- ② — CUP 97-03 SITE NUMBER
- CUP 97-03 BOUNDARY (APPROX.)
- EXISTING CINDER BLOCK WALL
- █ CITY OF SIGNAL HILL LIMITS



DATUM: HORZ= NAD83, CALIFORNIA ZONE 5, US FOOT
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 AERIAL: GOOGLE EARTH 07/06/2022

CUP SITE NO. 2

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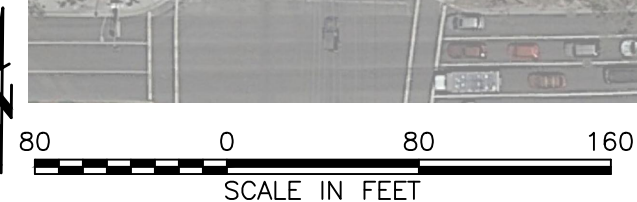
SIGNAL HILL PETROLEUM, INC.
 2633 CHERRY AVENUE
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DRAWN BY: G. CAMUS	CHECKED BY: APS
DATE: JULY 2022	



LEGEND

- ③ — CUP 97-03 SITE NUMBER
- CUP 97-03 BOUNDARY (APPROX.)
- EXISTING CINDER BLOCK WALL



DATUM: HORZ= NAD83, CALIFORNIA ZONE 5, US FOOT
 VERT=NAVD88
 AERIAL: GOOGLE EARTH 07/06/2022

CUP SITE NO. 3

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VERT: AS SHOWN	4
DRAWN BY: G.CAMUS	
CHECKED BY: APS	DATE: JULY 2022



LEGEND

- ④ — CUP 97-03 SITE NUMBER
- CUP 97-03 BOUNDARY (APPROX.)
- EXISTING CINDER BLOCK WALL



DATUM: HORZ= NAD83, CALIFORNIA ZONE 5, US FOOT
 VERT=NAVD88
 AERIAL: GOOGLE EARTH 07/06/2022

CUP SITE NO. 4

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SCALE: HORZ. AS SHOWN	FIGURE NUMBER
VERT. AS SHOWN	5
DRAWN BY: G. CAMUS	
CHECKED BY: APS	DATE: JULY 2022



LEGEND

- ⑤ — CUP 97-03 SITE NUMBER
- CUP 97-03 BOUNDARY (APPROX.)
- EXISTING WOOD PANEL WALL
- █ CITY OF SIGNAL HILL LIMITS



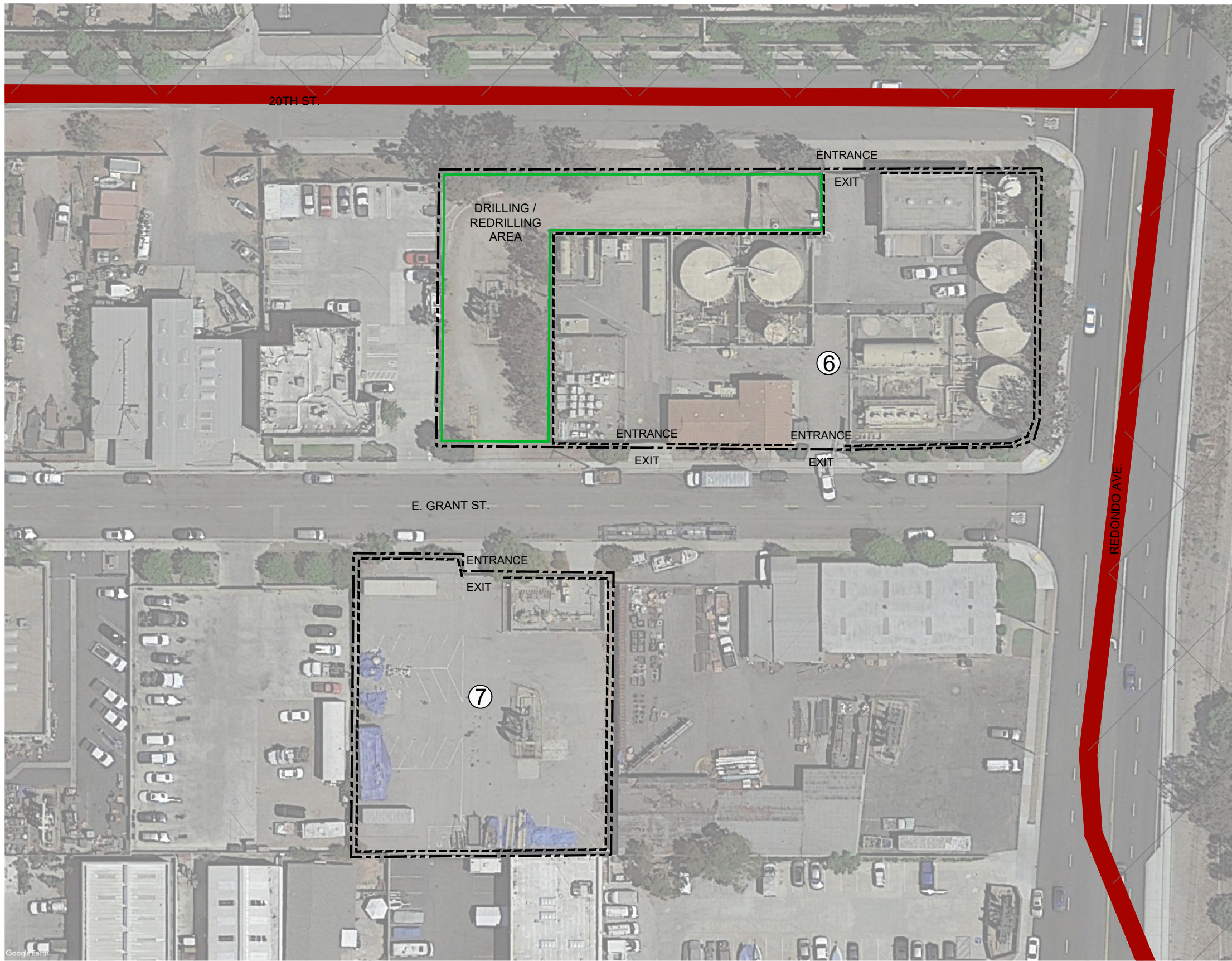
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 VERT=NAVD88
 AERIAL: GOOGLE EARTH 07/06/2022

CUP SITE NO. 5

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VERT: AS SHOWN	6
DRAWN BY: G. CAMUS	
CHECKED BY: APS	DATE: JULY 2022



LEGEND

- # — CUP 97-03 SITE NUMBER
- — CUP 97-03 BOUNDARY (APPROX.)
- - - — EXISTING CINDER BLOCK WALL
- CITY OF SIGNAL HILL LIMITS



DATUM: HORZ= NAD83, CALIFORNIA ZONE 5, US FOOT
 VERT=NAVD88
 AERIAL: GOOGLE EARTH 07/06/2022

CUP SITES NO. 6 & 7

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SCALE: HORZ: AS SHOWN	FIGURE NUMBER
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CHECKED BY: APS	DATE: JULY 2022

ATTACHMENT B

Federal Insurance Rate Map (FIRM)

National Flood Hazard Layer FIRMette



118°10'50"W 33°48'53"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
MAP PANELS		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

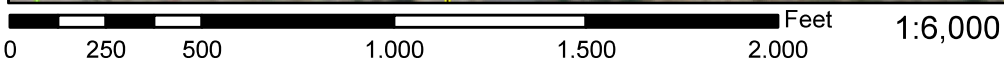
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/21/2022 at 3:16 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette



118°11'16"W 33°49'1"N



118°10'38"W 33°48'31"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
MAP PANELS		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

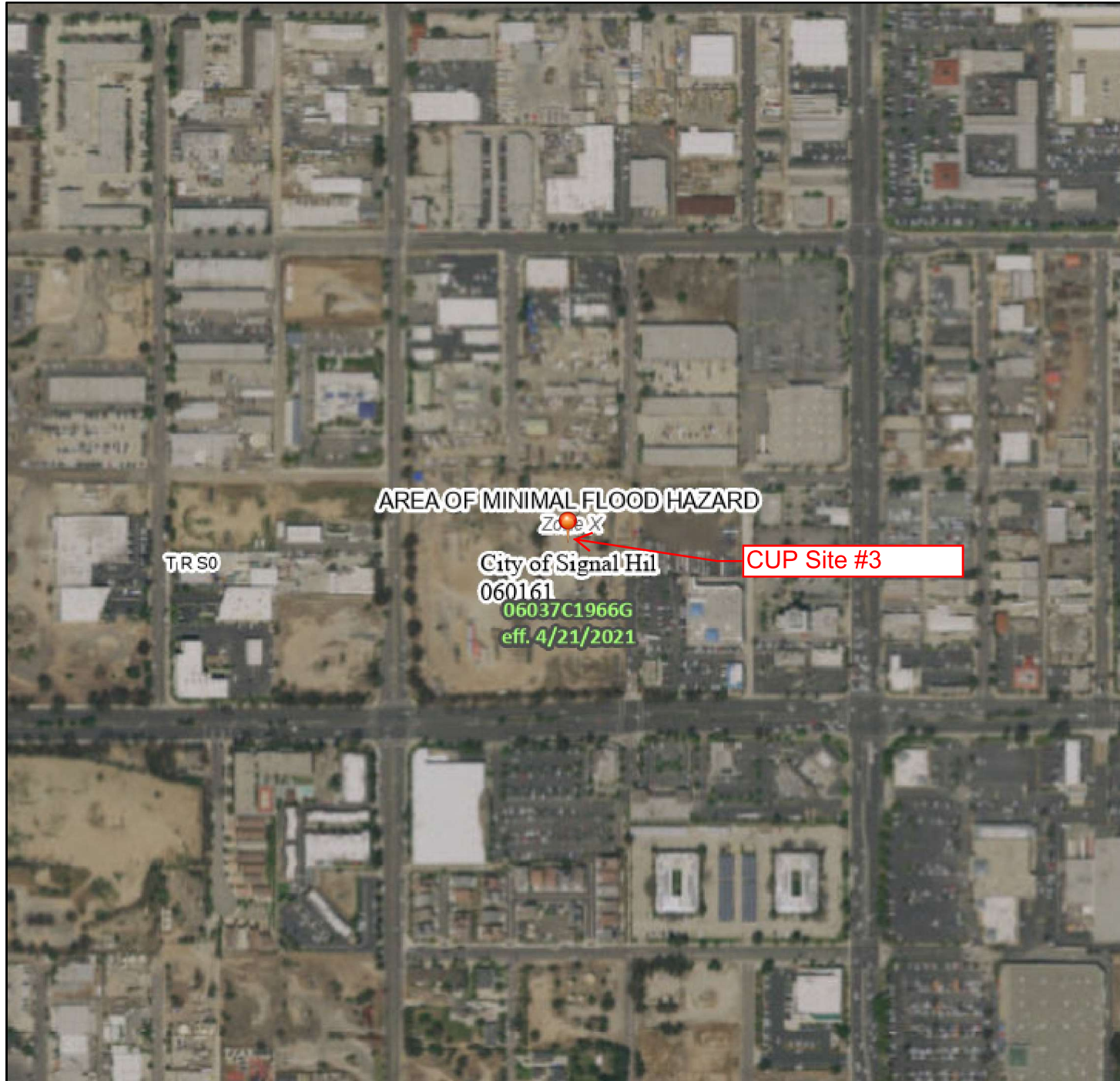
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/21/2022 at 3:13 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMMette



118°10'32"W 33°48'36"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | | |
|------------------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> |
| | | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
| | | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> |
| | | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> |
| | | Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard <i>Zone D</i> |
| | | Channel, Culvert, or Storm Sewer |
| OTHER FEATURES | | Levee, Dike, or Floodwall |
| | | 20.2 Cross Sections with 1% Annual Chance |
| MAP PANELS | | 17.5 Water Surface Elevation |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |
| | | Hydrographic Feature |
| | | Digital Data Available |
| | | No Digital Data Available |
| | Unmapped | |
| | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location. | |



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/21/2022 at 3:18 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

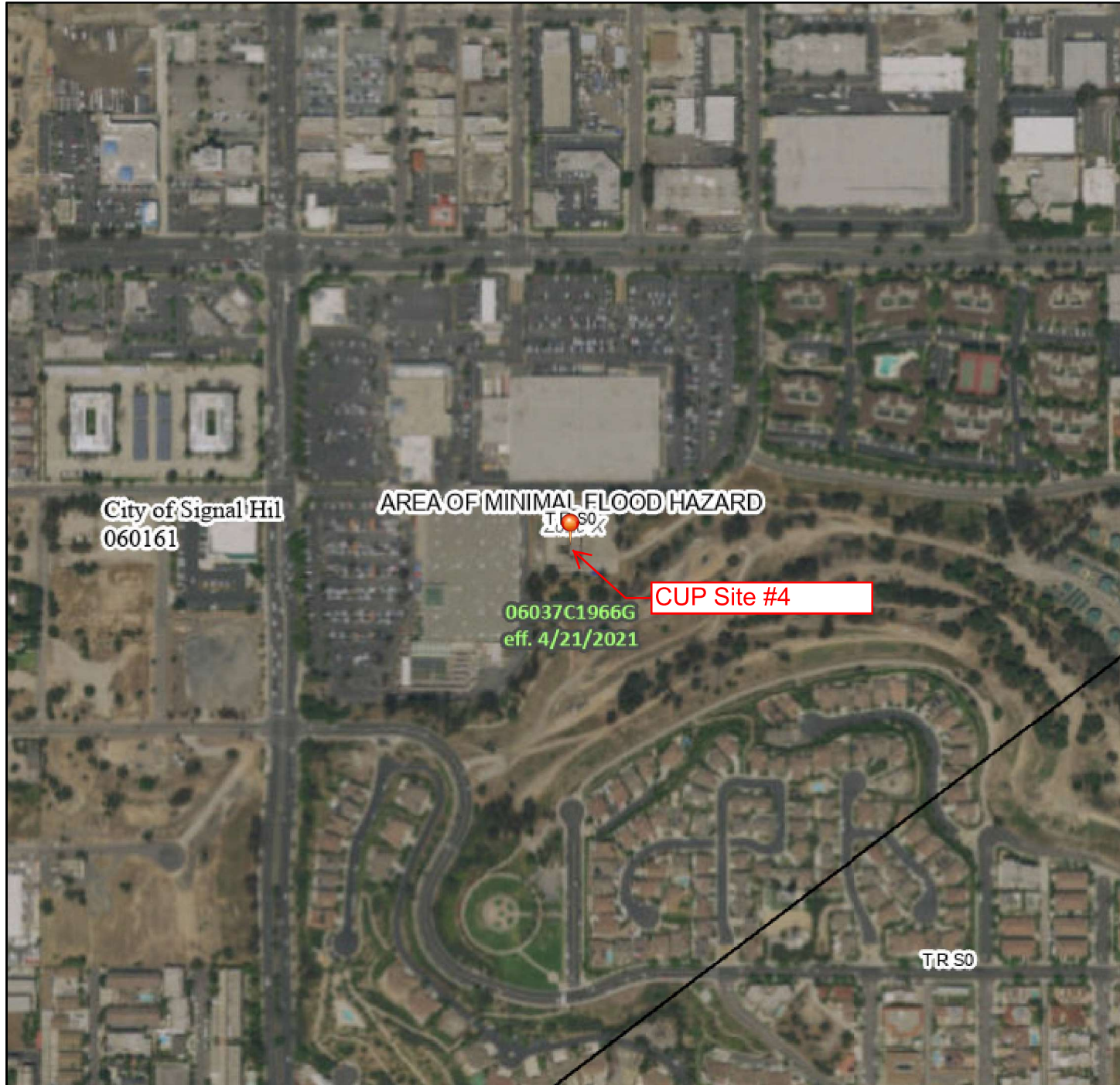
118°9'55"W 33°48'6"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

National Flood Hazard Layer FIRMMette



118°10'13"W 33°48'23"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | | |
|------------------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> |
| | | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
| | | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> |
| | | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> |
| | | Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> |
| | | Effective LOMRs |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard <i>Zone D</i> |
| | | Channel, Culvert, or Storm Sewer |
| | | Levee, Dike, or Floodwall |
| OTHER FEATURES | | 20.2 Cross Sections with 1% Annual Chance |
| | | 17.5 Water Surface Elevation |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| MAP PANELS | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |
| | | Hydrographic Feature |
| | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |
| | | The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location. |



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/21/2022 at 3:20 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

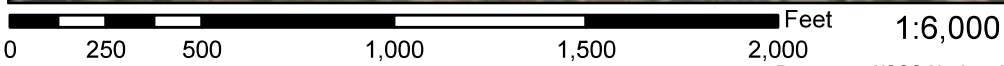
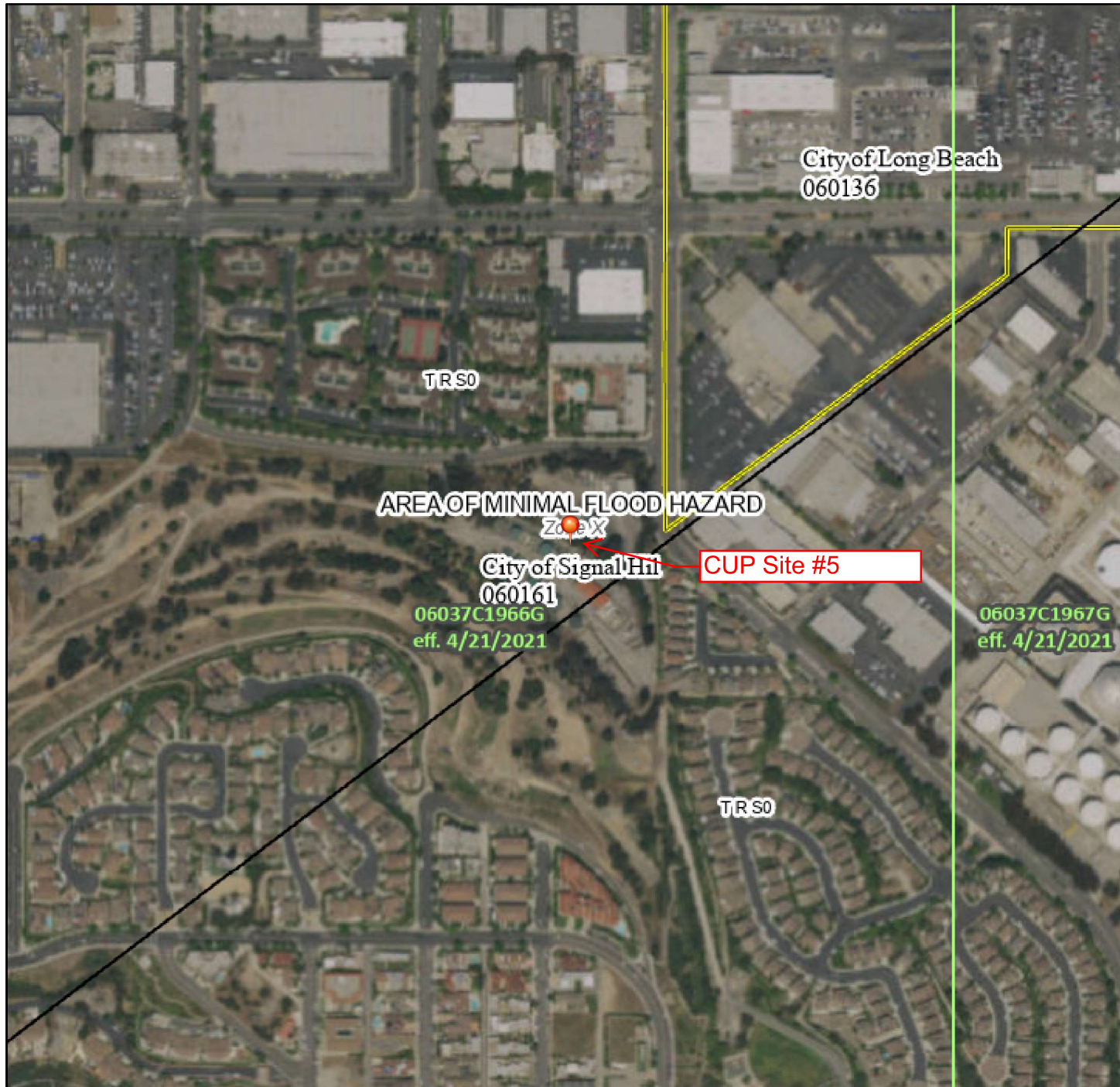
118°9'35"W 33°47'53"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

National Flood Hazard Layer FIRMette



118°9'54"W 33°48'22"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

118°9'17"W 33°47'52"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

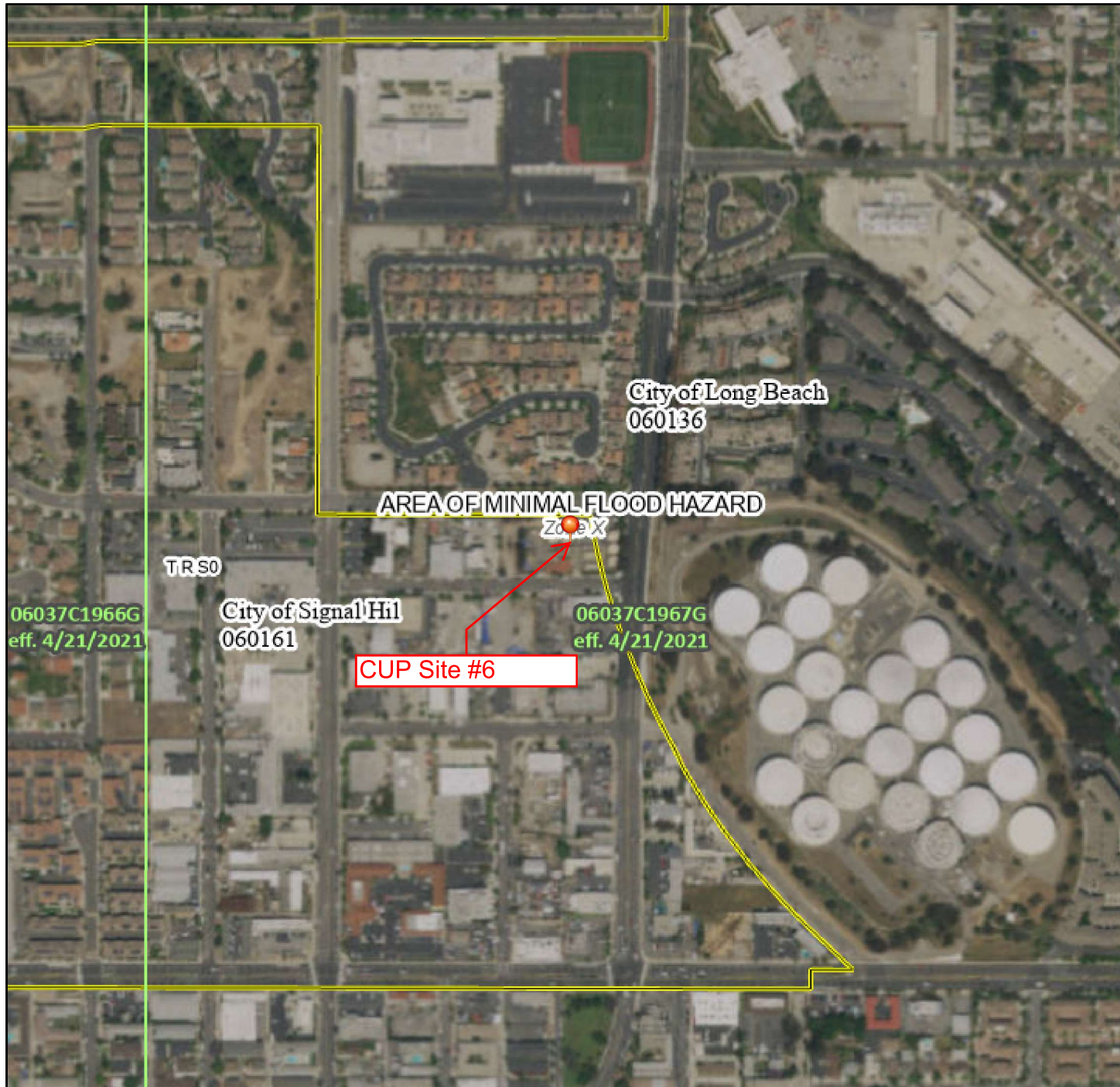
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/21/2022 at 3:22 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette



118°9'27"W 33°47'50"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
MAP PANELS		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

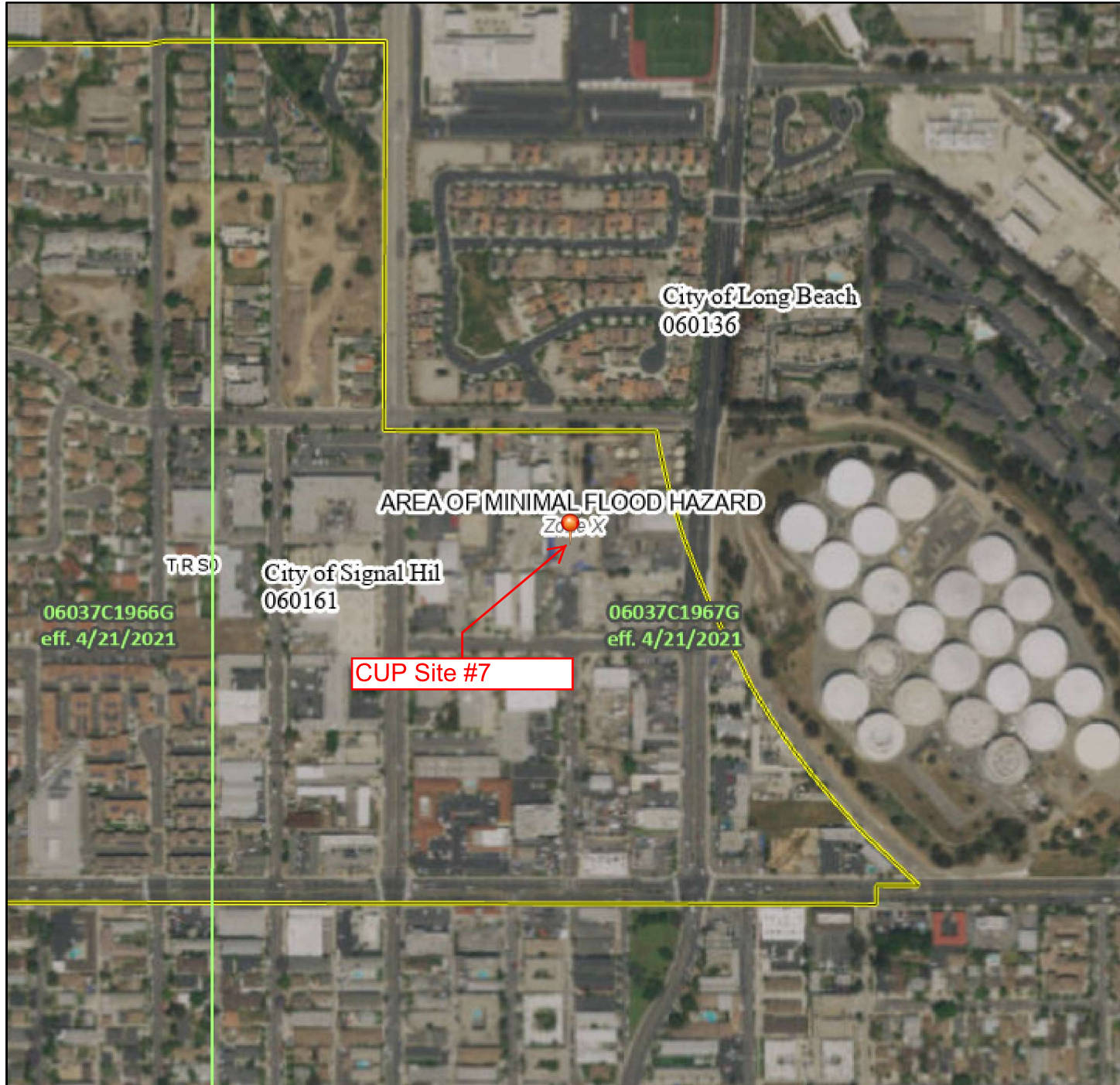
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/21/2022 at 3:24 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette



118°9'29"W 33°47'48"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		8 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



0 250 500 1,000 1,500 2,000 Feet 1:6,000
 Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020
 118°8'52"W 33°47'18"N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/21/2022 at 3:25 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.