Low Impact Development (LID) Plan

For:
Chick-fil-A Restaurant No. 4698
HWY 210 & Huntington SW
Monrovia, CA

APNs
8507-008-35, 8507-008-41, 8507-008-42, 8807-008-44, 8807-008-70, 8807-008-71

Latitude/Longitude
34.13972 N
118.01750 W

Prepared for:
Chick-fil-A Inc.
15635 Alton Parkway, Suite 350
Irvine, CA 92618

Prepared by:
Joseph C. Truxaw & Associates, Inc.
Civil Engineers & Land Surveyors
265 S. Anita Drive, Suite 111
Orange, CA 92868
(714) 935-0265

November 20, 2020

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Project Description

The project site is approximately 1.4 acres. The subject site is bounded on the north by Huntington Drive, on the east by Encino Avenue, and on the south by Alta Street and private property. The west is bounded by private property. See Appendix for Vicinity Map.

The site is zoned as Retail Corridor Mixed Use where restaurants are permitted by right in this zone. The existing site is occupied by a closed Claim Jumper restaurant, asphalt parking and drive lanes of approximately 50,738 square feet and landscaped area of approximately 10,268 square feet. Stormwater discharges into five drainage sub-areas. Sub-area 100 sheet flows from the northwest to the southeast to an existing culvert. Sub-area 200 sheet flows from northwest to southeast into an existing culvert. Sub-areas 300 and 400 both drain to onsite area drains. Sub-area 500 drains to landscape areas around the building. Drainage from both culverts exits into Alta Street and is conveyed via gutters into a culvert at the east end of Alta Street. Drainage is then conveyed to Santa Anita Wash, which flows into the Rio Hondo Channel. The Rio Hondo Channel joins the Los Angeles River, ultimately ending in the Pacific Ocean.

Based on Site plan prepared by CRHO Architecture (Project Architect), the existing building and parking area will be demolished to accommodate the construction of a new Chick-fil-A restaurant # 4698 building (approximately 4,562 square feet). The new Chick-fil-A building will be constructed approximately 38 ft. west of the easterly property line and approximately 35 ft south of the northerly property line. The proposed building will be a single-story wood frame structure with no basement or underground level. Other planned improvements include new parking stalls, menu board signs, new trash enclosure, and new concrete walkways (approximately 40,216 square feet), and new planter areas (approximately 16,228 square feet). The site can be accessed from Huntington Drive, Encino Avenue, or the neighboring property.

In the proposed condition the site has been divided into four drainage sub-areas. The runoff from sub-areas 100, 200, 300, and 400 is collected into onsite catch basins and routed via underground storm drainpipes into underground infiltrators on the Chick-fil-A property. Once the system is full water will flow out of the catch basin located at node 401 and into Encino Avenue. The stormwater will flow from Encino Avenue to Alta Street and into the Santa Anita Wash, connect with the Rio Hondo Channel, which will convey the drainage to the Los Angeles River and finally the Pacific Ocean. Sub-area 800 is comprised entirely of landscaped area except for an existing wall. This area will be considered a self-treating area.

The site is located in the Los Angeles River Watershed. The pollutants of concern, as per the 2016 CWA Section 303(d) Listed Waters with Adopted TMDLs, in Peck Road Park Lake are: Chlordane (tissue), DDT (tissue), Odor, Organic Enrichment/Low Dissolved Oxygen, and Trash. In Rio Hondo Reach 3 (above spreading grounds) are: Indicator Bacteria, Iron, and Oxygen, dissolved. In the Rio Hondo Reach 2 (At Spreading Grounds) are: Coliform Bacteria and Cyanide. In the Rio Hondo Reach 1 (Confl. LA River to Snt Ana Fwy) are Copper, Indicator Bacteria, lead, pH, Toxicity, Trash, and Zinc. In the Los Angeles River Reach 2 (Carson to Figueroa Street) are Ammonia, Copper, Indicator Bacteria, Lead, Nutrients (Algae), Oil, and Trash. In the Los Angeles River Reach 1 (Estuary to Carson Street) are Ammonia, Cadmium, Copper (dissolved), Cyanide, Indicator Bacteria, Lead, Nutrients (Algae), pH, Trash, and Zinc (Dissolved). In the Los Angeles Estuary (Queensway Bay) are Trash. In the San Pedro Bay Near/Off Shore Zones are Chlordane, PCBs, Total DDT, and Toxicity.

The Standard Industrial Classification Code which best describes the facility operations are: **5812** Restaurants, Sandwich Shops and Cafes.
The following activities will take place at this site: Preparation of meals, snacks, and beverages to customer order for immediate on-premises and off-premises consumption. Food preparation, consumption, and cleanup produce organic waste.

- Organic material will be properly stored inside the Restaurant.
- There is an outdoor walled and covered storage area next to the refuse enclosure.
- No vehicle maintenance, washing, cleaning or repair will take place at the site.
- No service bays will be provided.
- No loading dock will be necessary and no storage will take place onsite.

Existing impervious area = 83.17 % Proposed impervious area = 73.40 %

Existing Site pervious area = 16.83 % Proposed pervious area = 26.60 %

Lot/Property Size Surface Area:	90,992	Sq ft	Disturbance Area[1]: *Includes right of way, fill/borrow sites.*	61,006	Sq ft
	2.09	acres		1.40	acres
Existing Impervious Area:	50,738	Sq ft	Post Construction Impervious Area:	44,778	Sq ft
	1.16	acres		1.03	acres
	83.17	% impervious to total size		73.40	% impervious to total size[2]
Total SWQDv Required:	3,826	Cu. ft.	Total SWQDv Provided:	4,114	Cu. ft.

[1] Disturbance Areas less than 1 acre, provide Erosion and Sediment Control Plan (ESCP), all others 1 acre and more refer to General Construction Permit.
[2] Where Redevelopment results in an alteration of >50% impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, the entire project must be mitigated.

As per the “County of Los Angeles Department of Public Works” Low Impact Development. Standards Manual dated February 2014, and as per the activities and the characteristics of this project, it is cataloged as **Designated Project** and requires the elaboration of a Standard Urban Stormwater Mitigation Plan.

SUSMP SPECIFIC REQUIREMENTS

1. Peak Stormwater Runoff Discharge Rates

This project should be designed for 10-year, 24-hour and 25-year, 24-hour rainfall event. As per the Los Angeles County Department of Public Works, the site is located near rainfall isohyet 6.8 in. as per 1-H1.30 MOUNT WILSON 50-YEAR 24-HOUR ISOYHET (See Appendix)

The total runoff from the site will be computed using the information given by the L.A.C.P.W. Hydrology Manual related to Soil Classification and 10-Year and 25-Year 24-Hour Isohyet for said site. The Isohyet is also utilized to determine the runoff when the Rational Formula is used. The Rational Formula assumes that the effective rainfall intensity over the site is equal to the intensity found at the time of concentration.

From LACDPW Soil Classification Area: 006

Isohyet Events: 10 Year and 25 Year-24-hour

Time of concentration

The time of concentration was computed using the HydroCalc program from LACDPW.

$$CD = (0.9 \times Imp) + [(1.0 - Imp) \times CU] \quad \text{If } CD < CU\text{, use } CD = CU$$

The discharge Q was computed using the Rational Formula.

<u>Overall Site Pre-development Condition</u>

<u>Node 100 to Node 101</u>

Area =1.151 acres

L = 376 ft. s = 0.0159 Tc = 6.00 min.

Q_{10} = 3.00 cfs. Q_{25} = 4.06 cfs.

I = 2.93 in/hr. I = 3.93 in/hr.

Node 200 to Node 201

Area =0.654 acres
L = 230 ft. s = 0.0186 Tc = 5.00 min.

Q_{10} = 1.87 cfs. Q_{25} = 2.31 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 300 to Node 301

Area =0.047 acres
L = 52 ft. s = 0.0119 Tc = 5.00 min.

Q_{10} = 0.13 cfs. Q_{25} = 0.16 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 400 to Node 401

Area =0.03 acres
L = 33 ft. s = 0.0206 Tc = 5.00 min.

Q_{10} = 0.08 cfs. Q_{25} = 0.10 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 500 to Node 501

Area =0.238 acres
L = 30 ft. s = 0.0613 Tc = 5.00 min.

Q_{10} = 0.66 cfs. Q_{25} = 0.83 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Total runoff pre-development condition.
Q10 = 3.00 + 1.87 + 0.13 + 0.08 + 0.66 = 5.74 cfs
Q25 = 4.06 + 2.31 + 0.16 + 0.10 + 0.83 = 7.46 cfs

Ultimate disposition of on-site runoff.
The discharge for onsite drainage will be located north of the property. See Hydrology Map

Burn Factor. The site is paved, no Burn Factor is calculated

Overall Site Post-development Condition

The following calculations are used to size the required grate inlets and piping.

Node 100 to Node 101

Area =0.581 acres
L = 368 ft. s = 0.007 Tc = 7.00 min.

Q_{10} = 1.40 cfs. Q_{25} = 1.87 cfs.
I = 2.73 in/hr. I = 3.60 in/hr.

Node 200 to Node 201

Area =0.27 acres
L = 138 ft. s = 0.0151 Tc = 5.00 min.

Q_{10} = 0.77 cfs. Q_{25} = 0.95 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 300 to Node 301

Area =0.230 acres
L = 162 ft. s = 0.0175 Tc = 5.00 min

Q_{10} = 0.66 cfs. Q_{25} = 0.81 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 400 to Node 401

Area =0.119 acres
L = 143 ft. s = 0.02 Tc = 5.00 min

Q_{10} = 0.33 cfs. Q_{25} = 0.42 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 500 to Node 501

Area =0.487 acres
L = 2.88 ft. s = 0.0131 Tc = 5.00 min

Q_{10} = 1.38 cfs. Q_{25} = 1.71 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 600 to Node 601

Area =0.205 acres
L = 180 ft.   s = 0.0061   Tc = 5.00 min

Q_{10} = 0.57 cfs. Q_{25} = 0.72 cfs.
I = 3.19 in/hr.   I = 3.93 in/hr.

Node 700 to Node 701

Area =0. acres
L = 99 ft.   s = 0.0147   Tc = 5.00 min

Q_{10} = 0.08 cfs. Q_{25} = 0.10 cfs.
I = 3.19 in/hr.   I = 3.93 in/hr.

Node 800 to Node 801

Area =0.49 acres
L = 125 ft.   s = 0.018   Tc = 5.00 min

Q_{10} = 0.53 cfs. Q_{25} = 0.69 cfs.
I = 3.19 in/hr.   I = 3.93 in/hr.

Total runoff post-development condition.

Q10 = 1.40 + 0.77 + 0.66 + 0.33 + 1.38 + 0.57 + 0.08 + 0.53 = 5.72 cfs

Q25 = 1.87 + 0.95 + 0.81 + 0.42 + 1.71 + 0.72 + 0.10 + 0.69 = 7.27 cfs

Volume to Retain

The volume to retain will be the difference in volume between the **Post Q_{10} = 5.72 cfs minus the Pre Q_{10} = 5.74 cfs**

ΔQ = -0.02 cfs.

No volume to retain.

2. Minimize Stormwater Pollutants of Concern

Anticipated Pollutants of the Project Area

The anticipated pollutants in the restaurant and parking lot of this project as per Table 7-3: “Typical Pollutants of Concern by Land Use” are as follows:

Commercial – food related

- Suspended Solids
- Total Phosphorous

- Total Nitrogen
- Total Kjeldahl Nitrogen
- Copper Total
- Lead Total
- Zinc Total

The traditional way to remove sediments is by sedimentation. Many toxic metals are attached to suspended solids and may settle out as sediment. Oil and grease as floating substances will be eliminated by filtration/adsorption.

Runoff containing surface oil and grease contaminants from the parking lot will be collected by the concrete curb and gutter system and will be treated. From the Standard Urban Storm Water Mitigation Plan the selected BMP to be used is **RET-3 Infiltration Trench.**

This system shall be used to remove soluble pollutants depending of the holding time, the degree of bacterial activity and chemical bonding with the soil, to mitigate the first inches of rainfall from the site included in the private storm drain system, and they will maximize the reduction of pollutant loadings in the runoff to the Maximum Extent Practicable.

3. Source Control BMPs

Source Control BMPs, structural and non-structural and Treatment BMPs will be implemented after construction and before the operation of the Warehouse, inspection, maintenance frequency and inspection criteria and the responsible party is described in detail in the “BMP Operations and Maintenance Plan” see page 14. The responsible party information is located in page 16.

S-1: Storm Drain Message and Signage

Purpose

Waste material dumped into storm drain inlets can adversely impact surface and ground waters. In fact, any material discharged into the storm drain system has the potential to significantly impact downstream receiving waters. Storm drain messages have become a popular method of alerting and reminding the public about the effects of and the prohibitions against waste disposal into the storm drain system. The signs are typically stenciled or affixed near the storm drain inlet or catch basin. The message simply informs the public that dumping of wastes into storm drain inlets is prohibited and/or that the drain ultimately discharges into receiving waters.

General Guidance

□ The signs must be placed so they are easily visible to the public.

□ Be aware that signs placed on sidewalk will be worn by foot traffic.

Design Specifications

□ Signs with language and/or graphical icons that prohibit illegal dumping, must be posted at designated public access points within the project area.

□ Storm drain message markers, placards, concrete stamps, or stenciled language/icons (e.g., "No Dumping – Drains to the Ocean") are required at all storm drain inlets and catch basins within the project area to discourage illegal or inadvertent dumping. Signs should be placed in clear sight facing anyone approaching the storm drain inlet or catch basin from either side. A stencil can be purchased for a nominal fee from LACDPW Building and Safety Office by calling (626) 458-3171. All storm drain inlet and catch basin locations are identified on the project site map.

S-2: Outdoor Material Storage Area
Purpose
No Applicable. The County defines outdoor material storage areas as areas or facilities whose sole purpose is the storage of materials. Materials, including raw materials, by-products, finished products, and waste products, stored outdoors can become sources of pollutants in stormwater runoff if not handled or stored properly.

S-3: Outdoor Trash Storage and Waste Handling Area
Purpose
Stormwater runoff from areas where trash is stored or handled can be polluted. Loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or receiving waters. Waste handling operations (i.e., dumpsters, litter control, waste piles) may be sources of stormwater pollution.

Design Specifications

Wastes from industrial sites are typically hauled away for disposal by either public or commercial carriers that may have design or access requirements for waste storage areas. The waste hauler should be contacted prior to the design of trash storage and collection areas to determine established and accepted guidelines for designing trash collection areas. All hazardous waste must be handled in accordance with the legal requirements established in Title 22 of the California Code of Regulations.

S-4: Outdoor Loading/Unloading Dock Area
Purpose
Not Applicable. Materials spilled, leaked, or lost during loading or unloading may collect on impervious surfaces or in the soil and be carried away by stormwater runoff or when the area is cleaned.

S-5: Outdoor Vehicle/Equipment Repair/Maintenance Area
Purpose

Not Applicable. Activities in vehicle and equipment repair/maintenance areas that can contaminate stormwater runoff include engine repair, service, and parking (i.e., leaking engines or parts).

S-6: Outdoor Vehicle/Equipment/Accessory Washing Area
Purpose
Not Applicable. Washing vehicles, equipment, and accessories in areas where wash water flows onto the ground can pollute stormwater runoff and adversely impact receiving waters.

S-7: Fuel and Maintenance Area
Purpose
Not Applicable. Spills at vehicle and equipment fueling areas can be a significant source of pollution because fuels contain toxic materials and heavy metals that are not easily removed by stormwater quality control measures.

S-8: Landscape Irrigation Practices
Purpose
Irrigation runoff provides a pathway for pollutants (i.e., nutrients, bacteria, organics, sediment) to enter the storm drain system. By effectively irrigating, less runoff is produced resulting in less potential for pollutants to enter the storm drain system.

General Guidance

- □ Do not allow irrigation runoff from the landscaped area to drain directly to storm drain system.
- □ Minimize use of fertilizer, pesticides, and herbicides on landscaped areas.
- □ Plan sites with sufficient landscaped area and dispersal capacity (e.g., ability to receive irrigation water without generating runoff).
- □ Consult a landscape professional regarding appropriate plants, fertilizer, mulching applications, and irrigation requirements to ensure healthy vegetation growth.

Design Specifications

- □ Choose plants that minimize the need for fertilizer and pesticides.
- □ Group plants with similar water requirements and water accordingly.
- □ Use mulch to minimize evaporation and erosion.
- □ Include a vegetative boundary around project site to act as a filter.
- □ Design the irrigation system to only water areas that need it.
- □ Install an approved subsurface drip, pop-up, or other irrigation system.[1] The irrigation system should employ effective energy dissipation and uniform flow spreading methods to prevent erosion and facilitate efficient dispersion.

□ Install rain sensors to shut off the irrigation system during and after storm events.
□ Include pressure sensors to shut off flow-through system in case of sudden pressure drop. A sudden pressure drop may indicate a broken irrigation head or water line.
□ If the hydraulic conductivity in the soil is not sufficient for the necessary water application rate, implement soil amendments to avoid potential geotechnical hazards (i.e., liquefaction, landslide, collapsible soils, and expansive soils).

For sites located on or within 50 feet of a steep slope (15% or greater), do not irrigate landscape within three days of a storm event to avoid potential geotechnical instability.
□ Implement Integrated Pest Management practices.

S-9: Building Materials Selection
Purpose
Building materials can potentially contribute pollutants of concern to stormwater runoff through leaching. For example, metal buildings, roofing, and fencing materials may be significant sources of metals in stormwater runoff, especially due to acidic precipitation. The use of alternative building materials can reduce pollutant sources in stormwater runoff by eliminating compounds that can leach into stormwater runoff. Alternative building materials may also reduce the need to perform maintenance activities (i.e., painting) that involve pollutants of concern, and may reduce the volume of stormwater runoff. Alternative materials are available to replace lumber and paving.

Design Specifications

Lumber
Decks and other house components constructed using pressure-treated wood that is typically treated using arsenate, copper, and chromium compounds are hazardous to the environment. Pressure-treated wood may be replaced with cement-fiber or vinyl.
Roofs, Fencing, and Metals
Minimizing the use of copper and galvanized (zinc-coated) metals on buildings and fencing can reduce leaching of these pollutants into stormwater runoff. The following building materials are conventionally made of galvanized metals:
□ Metal roofs;
□ Chain-link fencing and siding; and
□ Metal downspouts, vents, flashing, and trim on roofs.
Architectural use of copper for roofs and gutters should be avoided. As an alternative to copper and galvanized materials, coated metal products are available for both roofing and gutter application. Vinyl-coated fencing is an alternative to traditional galvanized chain-link fences. These products eliminate

contact of bare metal with precipitation or stormwater runoff, and reduce the potential for stormwater runoff contamination. Roofing materials are also made of recycled rubber and plastic.

S-10: Animal Care and Handling Facilities
Purpose
Not Applicable. Animal care, confinement, and slaughter may potentially contribute nutrients, bacteria and viruses, and other pollutants to stormwater runoff. Implementing source control measures, such as preventing stormwater runoff in animal care and confinement areas and good housekeeping, reduces the potential for pollutant mobilization from animal care and handling facilities into stormwater runoff.

S-11: Outdoor Horticulture Areas
Purpose
Not Applicable. Horticulture areas may potentially contribute nutrients, bacteria, organics, sediment, and other pollutants to the stormwater runoff. Irrigation runoff provides a pathway for pollutants to enter the storm drain system. Implementation of source control measures can reduce the potential for pollutant mobilization from outdoor horticulture areas into stormwater runoff.

4. Conserve Natural Areas

Total landscape area is 16,228 sf. New landscape is implemented using native and drought tolerant plants. Parking lot islands and other landscaped areas are used.

5. Provide Proof of Ongoing BMP Maintenance
See VII. Maintenance Covenant at the end on the document.

BMP Operations and Maintenance Plan

BMP	Responsible Party	Maintenance Activity	Inspection/Maintenance Frequency
Source Control BMPs			
S-1 Storm Drain Message and Signage	Chick-fil-A	Legibility and visibility of markers and signs should be maintained (e.g., signs should be repainted or replaced as necessary). If	Once every 6 months.

		required by LACDPW, the owner/operator shall enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards and signs.	
S-3 Outdoor Trash Storage and Waste Handling Area	Chick-fil-A	The integrity of structural elements that are subject to damage (e.g., screens, covers, signs) must be maintained by the owner/operator as required by local codes and ordinances. Outdoor material storage areas must be checked periodically to ensure containment of accumulated water and prevention of stormwater run-on. Any enclosures should be checked periodically to ensure spills are contained efficiently. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.	Once a week with maintenance activities.
S-8 Landscape Irrigation Practices	Chick-fil-A	Maintain irrigation areas to remove trash and debris and loose vegetation. Rehabilitate areas of bare soil. If a rain or pressure sensor is installed, it should be checked periodically to ensure proper function. Inspect and maintain irrigation equipment and components to ensure	Once a week with maintenance activities

		proper functionality. Clean equipment as necessary to prevent algae growth and vector breeding. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.	
S-9 Building Materials Selection	Chick-fil-A	The integrity of structural elements that are subject to damage (e.g., signs) must be maintained by the owner/operator as required by local codes and ordinances. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.	Once a week with maintenance activities
Treatment Control BMPs			
Cultec Infiltration System	Chick-fil-A	The owner will routinely inspect the stormwater infiltration system. Owner to contract with manufacturer of the infiltration system, located as shown on plans, the service of maintenance.	Monthly and prior to October 1st each year.

The funding for the treatment by the treatment and structural BMPs will be provided by Chick-fil-A, Inc., through the current budget for Operation and Maintenance.

Responsible Party Information:

Name: Jennifer Daw
Company: Chick-fil-A, Inc.

Phone Number: (404)305-4834

6. Runoff Treatment BMPs

RET-3 Infiltration trench

An infiltration trench is constructed in naturally pervious soils designed to retain and infiltrate stormwater runoff into the underlying native soils and groundwater table.

Cultec Recharger 330XL and Stormfilter 330

We are proposing to the City a treatment train as follows:

- **Pre-Treat** the required volume for LID purpose, using **Cultec Stormfilter330** to remove sedimentation as manufactured by Cultec.

Store and infiltrate the required **treated** volume for LID purpose, using **Cultec Recharger 330XL** chambers.

For details and computations see Appendix

7. Properly Design to Limit Oil Contamination and Perform Maintenance

Remove oil and petroleum hydrocarbons if any at the drive-way using housekeeping cleaning fluids or calling industrial and commercial cleaning services contractors. Remove oil and petroleum hydrocarbons at the drive way per BMP Operation and Maintenance Plan above (Private Street sweeping)

Follow the procedures given by CASQA “Parking/Storage Area Maintenance SC-43” when cleaning heavy oily deposits:

- Clean oily spots with absorbent materials
- Use a screen or filter fabric over inlet, then wash surfaces
- Do not allow discharges to the storm drain
- Vacuum/pump discharges to a tank or discharge to sanitary sewer
- Appropriately dispose of spilled materials and absorbents

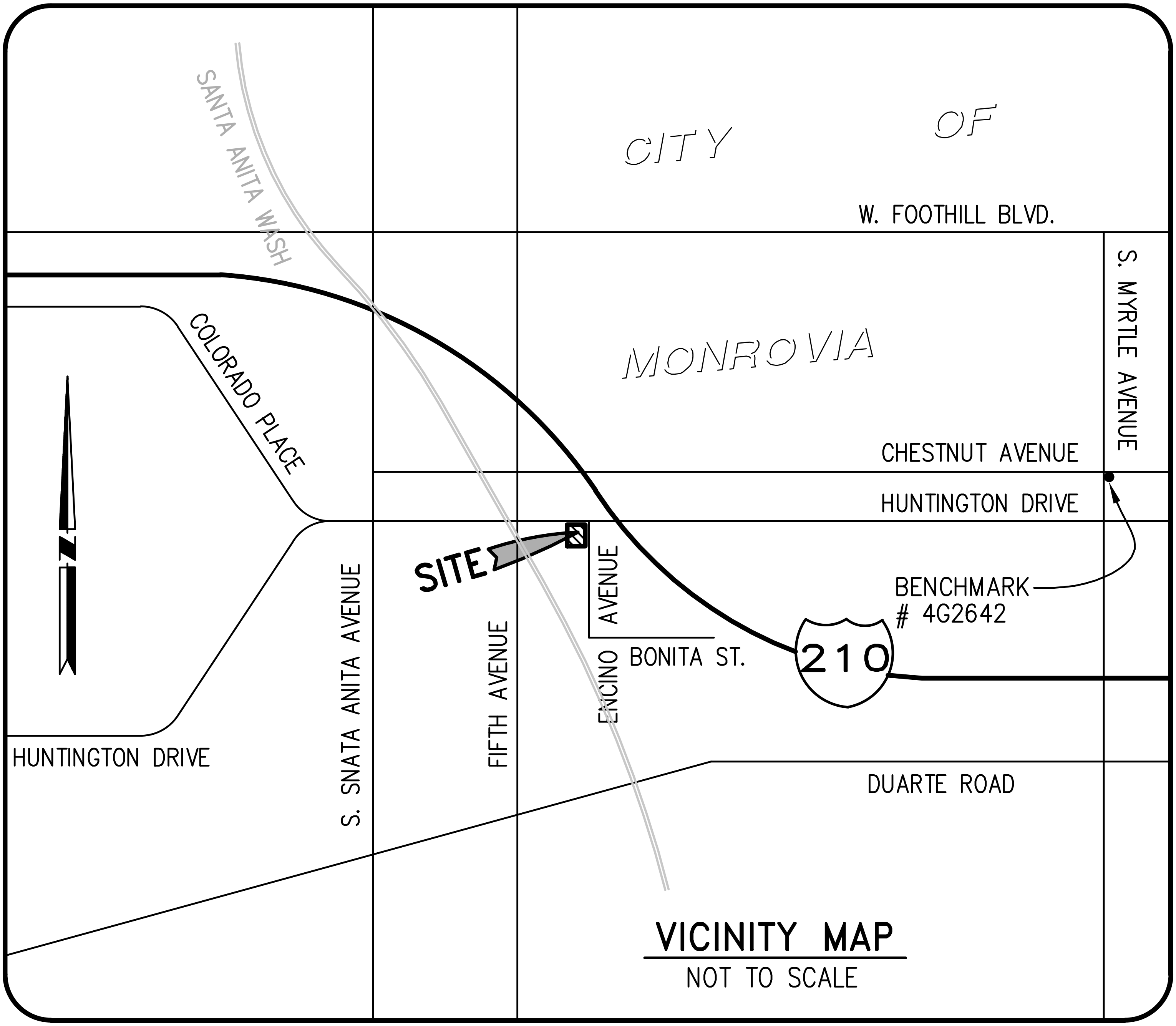
The best demonstration that the above BMP measures will remove oil and petroleum hydrocarbons at the driveway and drive thru is to contract with a commercial cleaning service contractor for regular maintenance. He must keep a log book of maintenance and procedures performed and are ready to share results when required.

8. Limitation of Use of Infiltration BMPs

The site **is** a candidate for infiltration as per the Geotechnical Engineering Exploration and Analysis issued by Giles Engineering Associates, Inc. dated October 27, 2020. See report in Appendix.

Appendix

I. Vicinity Map



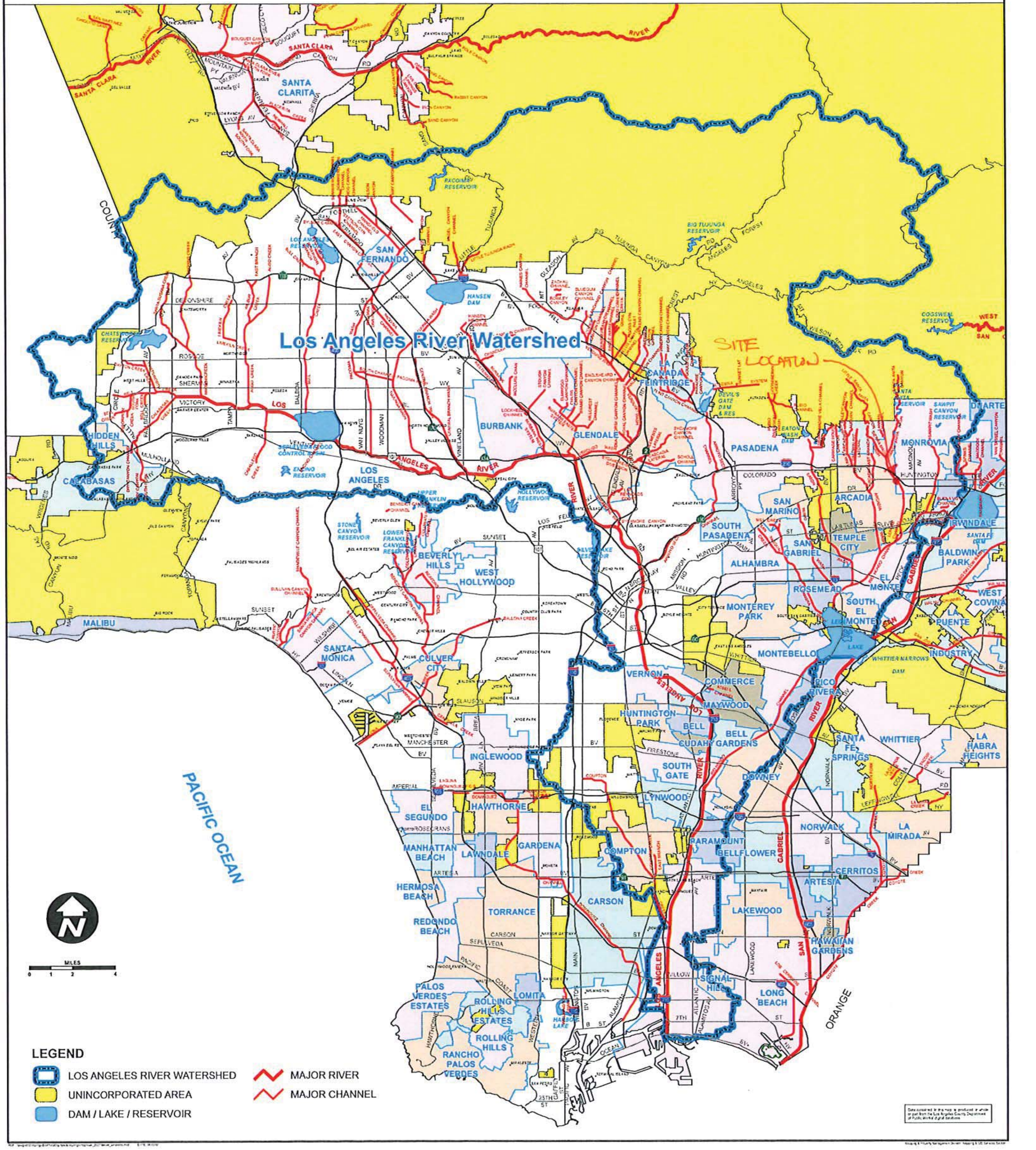
VICINITY MAP

NOT TO SCALE

II. Site and Project Plans

COUNTY OF LOS ANGELES

LOS ANGELES RIVER WATERSHED



CONCEPTUAL GRADING AND UTILITY PLANS

FOR

CHICK-FIL-A RESTAURANT NO. 4698
820 HUNTINGTON DRIVE
MONROVIA, CA

**** TITLE REPORT**

THIS SURVEY AND EASEMENTS SHOWN HEREON ARE BASED ON INFORMATION CONTAINED IN THE PRELIMINARY TITLE REPORT PREPARED BY:

FIRST AMERICAN TITLE INSURANCE COMPANY
4380 LA JOLLA VILLAGE DRIVE, SUITE 110
SAN DIEGO, CA 92122
(858) 410-2151
COMMITMENT NUMBER: NCS-998343-SD
COMMITMENT DATE: JANUARY 10, 2020
TITLE OFFICER: TRIXY BROWN / JANICE TREANOR

**** LEGAL DESCRIPTION**

THE LAND REFERRED TO HEREON BELOW IS SITUATED IN THE CITY OF MONROVIA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT 2 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 2:

LOT 3 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78 , PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 3:

LOT 5 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THE NORTHERLY HALF OF ALTA STREET ADJOINING SAID LAND ON THE SOUTH, BOUNDED EASTERLY BY THE SOUTHERLY PROLONGATION OF THE EASTERLY LINE OF SAID LOT 5 AND BOUNDED WESTERLY BY THE SOUTHERLY PROLONGATION OF THE WESTERLY LINE OF SAID LOT 5, AS VACATED BY THE CITY COUNCIL OF THE CITY OF MONROVIA BY RESOLUTION NO. 95-05, ADOPTED, PASSED AND APPROVED FEBRUARY 7, 1995 AND RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644, OFFICIAL RECORDS.

EXCEPTING THEREFROM THE NORTHERLY 50 FEET OF SAID LOT 5.

PARCEL 4:

THE NORTH 170 FEET OF BLOCK 42, IN THE SANTA ANITA TRACT, IN THE CITY OF MONROVIA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 34 PAGES 41 AND 42 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM THE WEST 150 FEET.

PARCEL 5:

LOT 1 AND THE NORTH 50 FEET OF LOT 5 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE(S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 6:

LOT 6 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE(S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THE NORTHERLY HALF OF ALTA STREET ADJOINING SAID LAND ON THE SOUTH, BOUNDED EASTERLY BY THE SOUTHERLY PROLONGATION OF THE EASTERLY LINE OF SAID LOT 6 AND BOUNDED WESTERLY BY THE SOUTHERLY PROLONGATION OF THE WESTERLY LINE OF SAID LOT 6, AS VACATED BY THE CITY COUNCIL OF THE CITY OF MONROVIA BY RESOLUTION NO. 95-05, ADOPTED, PASSED AND APPROVED FEBRUARY 7, 1995 AND RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644, OFFICIAL RECORDS.

PARCEL 7:

LOT 4 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THAT PORTION OF VACATED ALTA STREET PURSUANT TO THAT CERTAIN RESOLUTION NO. 95-05 RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644 OF OFFICIAL RECORDS.

NOTE: SAID DOCUMENT IS ALSO REFERRED TO HEREON IN THE EASEMENT NOTES AS ITEM NO. 23 AND IS PLOTTED HEREON.

FOR CONVEYANCING PURPOSES ONLY: APN 8507-008-041 (AFFECTS PARCEL 1);
APN 8507-008-042 (AFFECTS PARCEL 2);
APN 8507-008-071 (AFFECTS PARCEL 3);
APN 8507-008-035 (AFFECTS PARCEL 4);
APN 8507-008-044 (AFFECTS PARCEL 5);
APN 8507-008-072 (AFFECTS PARCEL 6); AND
APN 8507-008-070 (AFFECTS PARCEL 7)

**** EASEMENT NOTES**

REFER TO TITLE REPORT FOR ADDITIONAL INFORMATION AND DETAILS:

(16) AN EASEMENT FOR PUBLIC STREET AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 9347, PAGE 352 OF OFFICIAL RECORDS.

(AFFECTS PARCEL 4)

NOTE: STREET CONDEMNATION IN HUNTINGTON DRIVE DOES NOT AFFECT SURVEY PROPERTY.

(17) AN EASEMENT FOR POWER LINES AND INCIDENTAL PURPOSES, RECORDED MARCH 13, 1963 AS BOOK D1952, PAGE 216 OF OFFICIAL RECORDS.

IN FAVOR OF: SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

(AFFECTS PARCEL 6)

(18) THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT FOR MUTUAL EASEMENT" RECORDED APRIL 09, 1968 AS INSTRUMENT NO. 2636 OF OFFICIAL RECORDS.

(AFFECTS PARCEL 4)

NOTE: PARCEL "A" OF SAID DOCUMENT CANNOT BE LOCATED FROM THE RECORD. PARCEL "B" IS SHOWN ON THE SURVEY.

(21) AN EASEMENT FOR UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS AND INCIDENTAL PURPOSES, RECORDED AUGUST 23, 1994 AS INSTRUMENT NO. 94-1557466 OF OFFICIAL RECORDS.

IN FAVOR OF: SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

(AFFECTS PARCELS 1, 4 AND 5)

(22) AN EASEMENT FOR TRANSMISSION OF ELECTRIC ENERGY FOR COMMUNICATIONS AND OTHER PURPOSES AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 01, 1995 AS INSTRUMENT NO. 95-166641 OF OFFICIAL RECORDS.

IN FAVOR OF: GTE CALIFORNIA INCORPORATED, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

(AFFECTS PARCELS 1, 4 AND 5)

(23) THE RIGHTS, IF ANY, OF A CITY, PUBLIC UTILITY OR SPECIAL DISTRICT, PURSUANT TO SECTION 8345 ET SEQ. OF THE CALIFORNIA STREETS AND HIGHWAYS CODE, TO PRESERVE A PUBLIC EASEMENT IN ALTA STREET AS THE SAME WAS VACATED BY THE DOCUMENT RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644 OF OFFICIAL RECORDS .

(AFFECTS PARCELS 3, 6 AND 7)

**** BASIS OF BEARINGS**

THE BEARING NORTH 88°55'55" EAST FOR THE CENTERLINE OF HUNTINGTON DRIVE AS SHOWN ON PARCEL MAP NO. 16361, FILED IN BOOK 174, PAGES 54-55 OF PARCEL MAPS, RECORDS OF LOS ANGELES COUNTY, STATE OF CALIFORNIA, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

**** BENCHMARK**

LOS ANGELES COUNTY PUBLIC WORKS BENCHMARK NO. 4G2642

ELEVATION = 501.918 FEET (2005 QUAD YEAR)

CSBM MON IN E. END C. B. 69FT E/O BCR @ SE COR MYRTLE AVE & HUNTINGTON DR MKD (BM 11-10A 1962)

**** FLOOD ZONE**

COMMUNITY NUMBER: 065046, PANEL NUMBER 1400F, EFFECTIVE DATE: 9/26/2008

ZONE X (UNSHADED); PROPERTY NOT IN A SPECIAL FLOOD HAZARD AREA, AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

INFORMATION OBTAINED FROM CERTIFIED FLOOD SYSTEMS, INC. ON 2/21/2020

**** SITE AREA**

THE SUBJECT SITE, PER TITLE REPORT DESCRIPTION CONTAINS APPROXIMATELY:
90,992 SQ. FT. OR 2.089 ACRES

SOURCE OF BOUNDARY & EASEMENT INFORMATION. **

THE TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS WERE TAKEN FROM THE PLAN REFERENCED BELOW.
DATE OF SURVEY: MARCH 19, 2020
ALTA SURVEY BY: TRUXAW AND ASSOCIATES, INC.
1915 W. ORANGEWOOD AVE., SUITE 101
ORANGE, CA 92868
(714) 935-0265
JOB # CFA20011

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS AND NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO VERIFY POINTS OF CONNECTION TO PIPES, INLETS, CURBS, GUTTERS, ETC. AND NOTIFY TRUXAW AND ASSOCIATES OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
3. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS, BUILDING SETBACKS, CONCRETE COLORS AND FINISHES, STRUCTURAL DETAILS, WALKWAYS, EXPANSION JOINT LOCATIONS, UTILITIES, ETC.
4. ALL WORK SHALL BE DONE IN STRICT CONFORMANCE WITH CURRENT CITY OF MONROVIA AND SPPWC STANDARDS. WORK SHALL ALSO CONFORM TO APPLICABLE BUILDING CODES (CA BUILDING CODE, CA PLUMBING CODE, ETC.) AS INTERPRETED BY THE CITY OF MONROVIA.
5. ALL CONTRACTORS PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE THEMSELVES WITH THE SITE AND SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM THEIR OPERATIONS, WHETHER OR NOT SHOWN ON THESE PLANS.
6. EXISTING UNDERGROUND UTILITY LINE LOCATIONS WERE TAKEN FROM AVAILABLE RECORDS. OTHER UTILITIES MAY EXIST THAT ARE NOT PLOTTED HEREON.
7. EXISTING UNDERGROUND UTILITIES ARE TO BE RELOCATED AS REQUIRED TO AVOID CONFLICT WITH PROPOSED STRUCTURES.
8. EXISTING PUBLIC UTILITY EASEMENTS IN CONFLICT WITH PROPOSED STRUCTURES ARE TO BE QUITCLAIMED WITH THE APPROVAL OF THE UTILITY COMPANY. NEW EASEMENTS ARE TO BE GRANTED AT PROPOSED UTILITY LOCATIONS.
9. CALL UNDERGROUND SERVICE ALERT FOR UNDERGROUND LOCATIONS 48 HOURS BEFORE YOU DIG. 811
10. THE CONTRACTOR SHALL RENEW OR REPLACE ANY EXISTING TRAFFIC STRIPING AND/OR PAVEMENT MARKINGS, WHICH DURING HIS OPERATIONS HAVE BEEN EITHER REMOVED OR THE EFFECTIVENESS OF WHICH HAS BEEN REDUCED.
11. THE CONTRACTOR SHALL COMPLY WITH THE SOILS REPORT (AND ADDENDA) FOR THIS PROJECT AND ALL RECOMMENDATIONS FROM THE SOILS ENGINEER.
12. ALL TOPOGRAPHIC AND BOUNDARY INFORMATION SHOWN HEREON WAS OBTAINED FROM AN ALTA/ACSM TITLE SURVEY DATED MARCH 19, 2020 BY TRUXAW AND ASSOCIATES, INC.
13. ALL STORM DRAIN AND SEWER PIPE SHALL BE PLACED BEGINNING AT THE DOWNSTREAM POINT OF CONNECTION AND CONTINUING TO THE UPSTREAM TERMINUS. PIPE PLACEMENT SHALL BE CONTINUOUS. DEVIATIONS FROM THIS SEQUENCE WILL NOT BE PERMITTED. POTHOLING INFORMATION, WHERE REQUIRED, SHALL BE OBTAINED AND PROVIDED TO TRUXAW AND ASSOCIATES PRIOR TO CONSTRUCTION.
14. ALL IMPROVEMENTS BEYOND THE LIMITS OF GRADING ARE TO BE PROTECTED IN PLACE UNLESS NOTED OTHERWISE.
15. THESE PLANS ARE BASED ON THE SITE PLAN PROVIDED TO TRUXAW AND ASSOCIATES, RECEIVED JULY 27, 2020. THE SITE PLAN PROVIDED WAS NOT AN AGENCY APPROVED SITE PLAN.

**** SITE PLANNING DATA**

DISCLAIMER: INFORMATION PROVIDED BY 4G DEVELOPMENT AND CONSULTING, INC IN THE SITE INVESTIGATION REPORT DATED 2/13/2020.

ZONING: RCM, RETAIL CORRIDOR MIXED USE

MAXIMUM BUILDING HEIGHT:

PER 17.16.050, THE SCALE AND CHARACTER OF NEW DEVELOPMENT IS INTENDED TO SUPPORT AND REINFORCE THE IMAGE OF WEST HUNTINGTON DRIVE AS A RETAIL CORRIDOR. BUILDINGS SHALL BE AT LEAST TWO STORIES (NO SPECIFIC HEIGHT LISTED), ORIENTED TO STREETS AND PEDESTRIANS WITH SUBTERRANEAN AND/OR STRUCTURED PARKING LOTS. DEVELOPMENTS SHOULD EMPHASIZE GROUND-LEVEL RETAIL USES ALONG HUNTINGTON DRIVE AND PEDESTRIAN CONNECTIONS THROUGHOUT. BUILDINGS SHALL BE BUILT TO FACE ON HUNTINGTON DRIVE.

SETBACKS (BUILDING AND LANDSCAPE)

NORTH = HUNTINGTON DRIVE/ 10 FEET
WEST = INTERIOR/0 FEET
EAST = ENCINO AVENUE/8 FEET
SOUTH = INTERIOR/0 FEET

**** PARKING COUNT**

203 EXISTING STRIPED PARKING STALLS LIE WITHIN SUBJECT SITE LEGAL DESCRIPTION.

**** UTILITY PROVIDERS**

+ SEWER................CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, RICHARD CORTEZ (626) 932-5575
+ WATER................CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, RICHARD CORTEZ (626) 932-5575
+ ELECTRIC............SO CAL EDISON, 1440 S. CALIFORNIA AVE., MONROVIA, CA, SANDRA SOLIS (626) 303-8464
+ GAS....................SO CAL GAS, 1919 S. STATE COLLAGE BLVD. ANAHEIM CA, ISMAEL AYALA, IAYALA@SEMPRAUTILITIES.COM
  TELEPHONE........FRONTIER COMMUNICATIONS, 1440 E. PHILLIPS AVE., POMONA CA, DAVID ARMENTA (909) 469-6352
+ CABLE................
+ STORM DRAIN.....CITY OF MONROVIA, PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, BRAD MERRELL (626) 932-5577
  ROADWAY...........CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, BRAD MERRELL (626) 932-5577

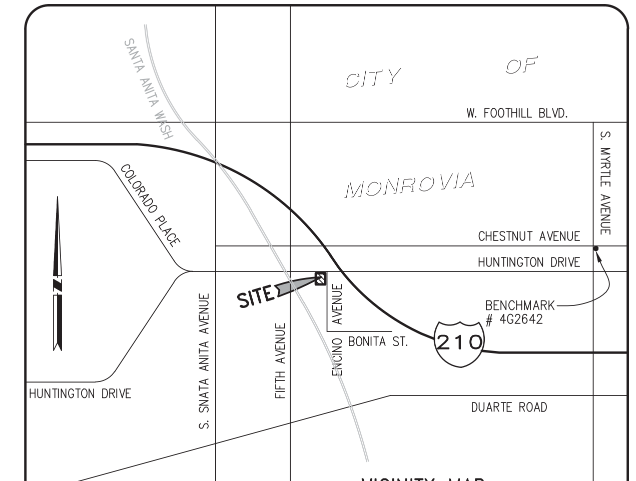
+ AGENCY RECORD INFORMATION NOT AVAILABLE AT THE TIME OF THIS SURVEY.

DEVELOPER

CHICK-FIL-A
5200 BUFFINGTON ROAD
ATLANTA, GEORGIA 30349

ARCHITECT

CRHO ARCHITECTS
1833 E. 17TH ST.; SUITE 301
SANTA ANA, CA 92705
(714) 832-1834 FAX (714) 832-1910



VICINITY MAP
NOT TO SCALE

SHEET #		TITLE
1	—	TITLE SHEET
2	—	CONCEPTUAL GRADING PLAN
3	—	CONCEPTUAL CONSTRUCTION NOTES
4	—	CONCEPTUAL UTILITY PLAN
*1	—	ALTA SURVEY (TITLE SHEET)
*2	—	ALTA SURVEY (BOUNDARY)
*3	—	ALTA SURVEY (TOPO)

*FOR REFERENCE ONLY

LEGEND

AB = AGGREGATE BASE
AC = ASPHALT CONCRETE
BLK = CONCRETE BLOCK
BS = BACK OF SIDEWALK
CB = CATCH BASIN
CF = CURB FACE
CL = CENTERLINE
CLF = CHAIN LINK FENCE
CO = CLEANOUT
DCV = DETECTOR CHECK VALVE
DS = ROOF DOWNSPOUT
EG = EDGE OF GUTTER
EP = EDGE OF PAVEMENT
FD = FOUND
FDC = FIRE DEPT. CONNECTION
FF = FINISHED FLOOR
FG = FINISHED GRADE
FH = FIRE HYDRANT
FL = FLOW LINE
FS = FINISHED SURFACE
GB = GRADE BREAK
GM = GAS METER
GR = TOP OF GRATE
GV = GAS VALVE
HP = HIGH POINT
HT = HEIGHT
ICV = IRRIGATION CONTROL VALVE
INV = INVERT
IP = IRON PIPE
LS = LIGHT STANDARD
L&T = LEAD & TAG
MH = MANHOLE
NG = NATURAL GROUND
N&T = NAIL & TAG
OHW = OVERHEAD WIRE
PB = PULL BOX
PCC = CONCRETE
PIV = POST INDICATOR VALVE
PL = PROPERTY LINE
RD = ROOF DRAIN
RWH = REDWOOD HEADER
SCB = SIGNAL CONTROL BOX
SMH = SEWER MANHOLE
SPK = SPIKE
SW = SIDEWALK
TC = TOP OF CURB
TE = TRASH ENCLOSURE
TP = TELEPHONE POLE
TRAN = TRANSITION
TRANS= TRANSFORMER

TRW = TOP OF RETAINING WALL
TW = TOP OF WALL
UG = UNDERGROUND
UP = UTILITY POLE
VAR = VARIABLE
W = WASHER
WDF = WOOD FENCE
WM = WATER METER
WV = WATER VALVE

N. = NORTH
S. = SOUTH
E. = EAST
W. = WEST
N'LY = NORTHERLY
S'LY = SOUTHERLY
E'LY = EASTERLY
W'LY = WESTERLY
N/O = NORTH OF
S/O = SOUTH OF
E/O = EAST OF
W/O = WEST OF
PL = PROPERTY LINE
CL = CENTERLINE
R/W = RIGHT OF WAY
△ = DELTA
R = RADIUS
L = LENGTH
T = TANGENT
M = MEASURED DATA
C = CALCULATED DATA
(RAD)= RADIAL BEARING
PRO = PROPORTIONATE MEASUREMENT
(210.00' R) = RECORD DATA
210.00' M. = MEASURED DATA
210.00' PRO. = PRORATED DATA
210.00' C. = CALCULATED DATA
(427.00) TC = EXISTING ELEVATION
427.00 TC = DESIGN ELEVATION
— CATV — = CABLE TV LINE
— E — = ELECTRICAL LINE
— FW — = FIRE WATER LINE
— G — = GAS LINE
— GB — GB — = GRADE BREAK LINE
— R — R — = RIDGE LINE
— S — = SEWER LINE
— SD — = STORM DRAIN LINE
— T — = TELEPHONE LINE
— W — = WATER LINE

SYMBOLS

FIRE HYDRANT
STREET LIGHT
TRAFFIC SIGNAL
TRAFFIC SIGNAL ARM & POLE
LIGHT STANDARD
UTILITY POLE
GUY WIRE & ANCHOR
WM WATER METER
GM GAS METER
WV WATER VALVE
GAS VALVE
PB PULL BOX
GRATE INLET
SIGN
VENT
(S) SEWER MANHOLE
(D) STORM DRAIN MANHOLE
(T) TELEPHONE MANHOLE
(MH) MANHOLE
CO SEWER CLEANOUT
(W) MONITORING WELL
HANDICAP PARKING STALL
(L) LANDSCAPED AREA
(P) PROTECT IN PLACE
(R) REMOVE AND DISPOSE OFFSITE
(RE) RELOCATE
(3) PLOTABLE EASEMENT ITEM No. PER TITLE REPORT
(427.0) EXIST. CONTOUR
427.0 DESIGN CONTOUR

SOILS ENGINEER

THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL RECOMMENDATIONS MADE BY:

GILES ENGINEERING ASSOCIATES, INC.
1965 NORTH MAIN STREET
ORANGE, CA 92865
PH (714) 279-0817 FAX (714) 279-9687
PROJECT No. 2G-2003006
REPORT DATE: MAY 18, 2020

CONTRACTOR SHALL OBTAIN A COPY OF THIS REPORT AND ALL ADDENDUM AND FOLLOW THE RECOMMENDATIONS THEREIN. NOTIFY TRUXAW AND ASSOCIATES OF ANY DISCREPANCIES OR FIELD CHANGES PRIOR TO CONSTRUCTION.

SIGNATURE - SOILS ENGINEER DATE

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

Prepared by:

JOSEPH C. TRUXAW & ASSOCIATES, INC.
Civil Engineers and Land Surveyors
1915 W. ORANGEWOOD AVE.
SUITE 101
ORANGE, CA 92868
(714) 935-0265
(714) 935-0106 (FAX)

REGISTERED PROFESSIONAL ENGINEER
RANDY J. DECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

CHICK-FIL-A
HUNTINGTON SW & 210
820 HUNTINGTON DRIVE
MONROVIA, CA 91016

FSR# 04698

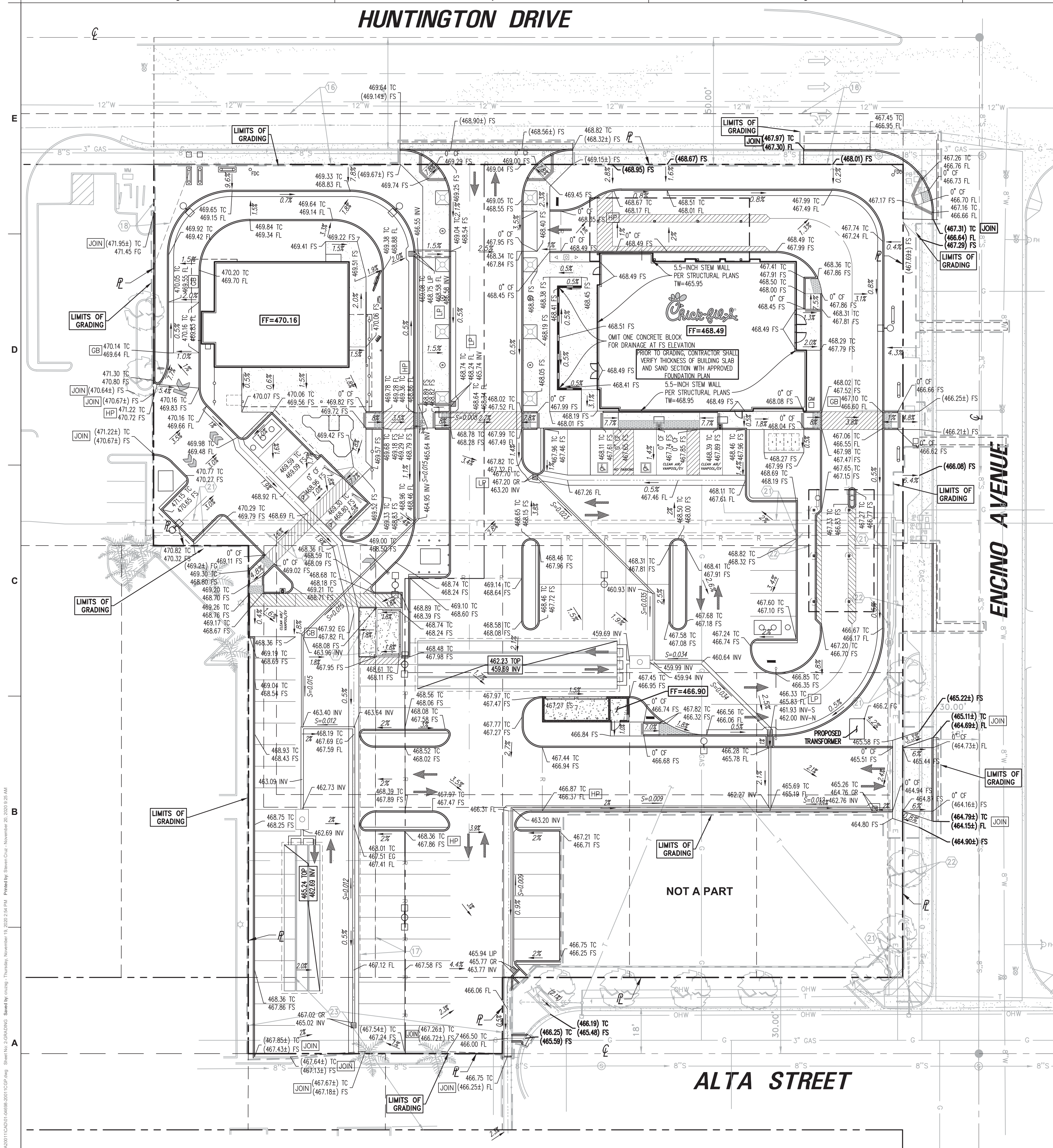
REVISION SCHEDULE

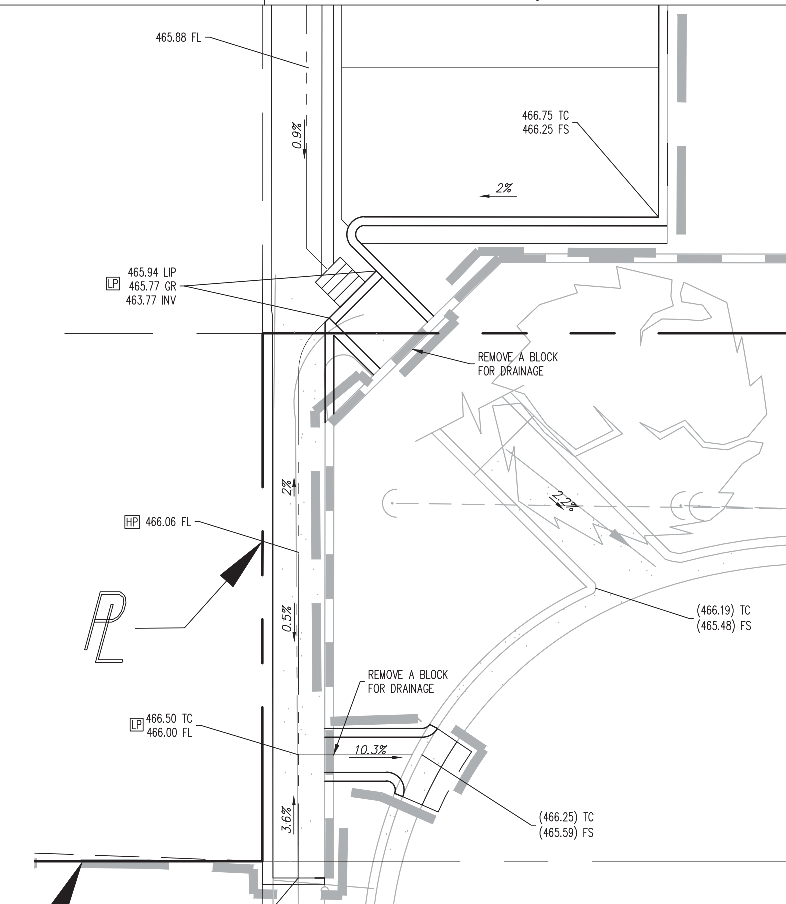
NO.	DATE	DESCRIPTION

ENGINEER'S PROJECT #	CFA20011
PRINTED FOR	Plan'g, Building, Etc.
DATE	11/20/20
DRAWN BY	MDR

SHEET
TITLE SHEET

SHEET NUMBER





GUTTER DETAIL
SCALE: 1"=5'

SCALE: 1"=20'

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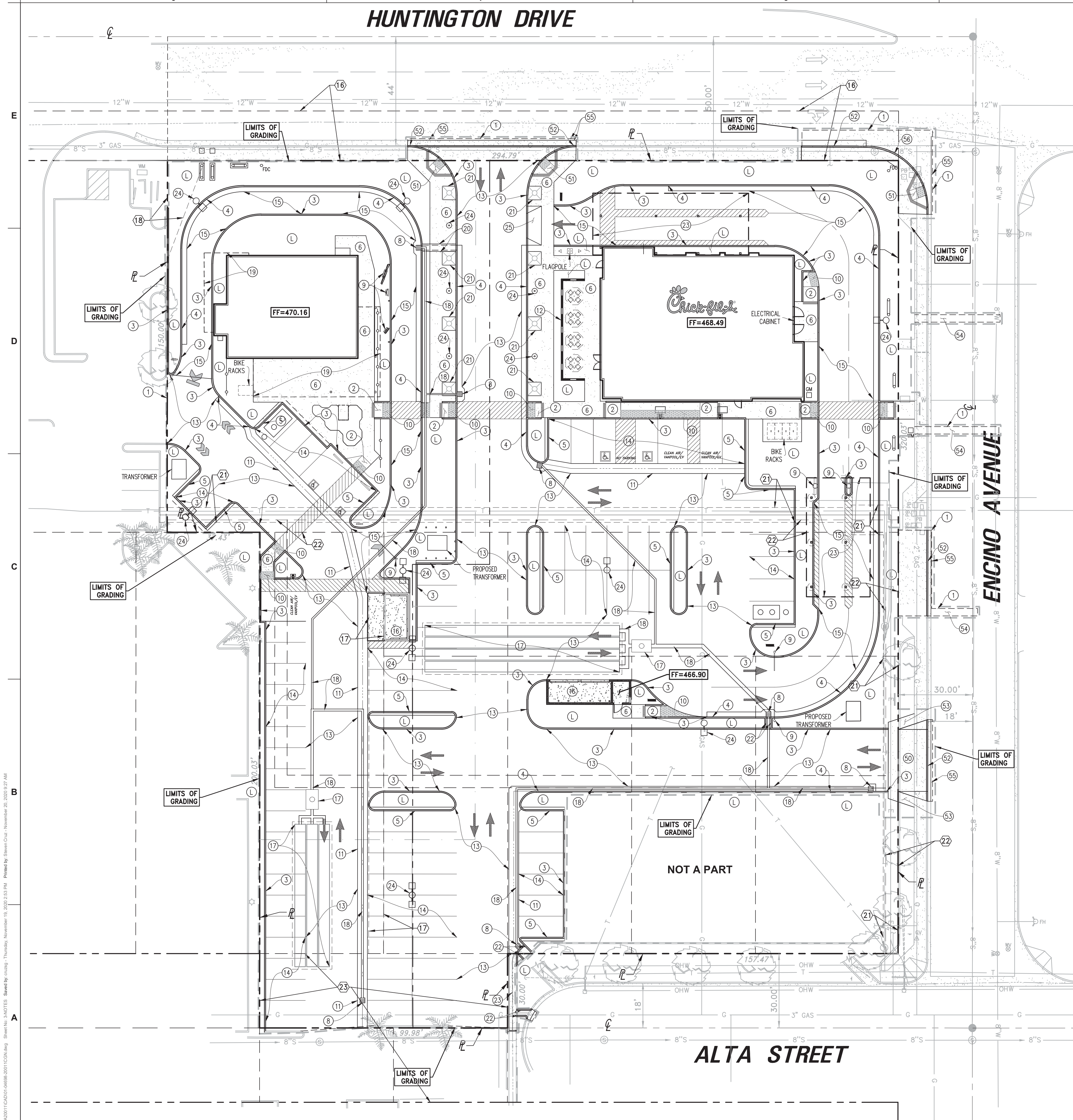
SHEET
CONCEPTUAL GRADING PLAN

SHEET NUMBER



CONSTRUCTION ON-SITE NOTES

1. SAWCUT & REMOVE EXISTING AC PAVING, CONCRETE CURB, ETC.
2. CONSTRUCT CONCRETE ACCESSIBLE RAMP IN ACCORDANCE WITH CA TITLE 24 REQUIREMENTS, ADA GUIDELINES, CITY STANDARDS AND ARCHITECTURAL DETAILS.
3. CONSTRUCT CONCRETE CURB (6-INCH CURB HEIGHT UNLESS SHOWN OTHERWISE).
4. CONSTRUCT 6" CURB & 24" GUTTER.
5. CONSTRUCT 6-INCH CURB WITH 12-INCH CONCRETE STEP-OFF.
6. CONSTRUCT CONCRETE SIDEWALK.
7. NOT USED
8. CONSTRUCT 24" x 24" GRATED INLET
9. MENU BOARD AND CLEARANCE ARM PER ARCHITECTURAL PLANS.
10. PLACE TRUNCATED DOMES PER ADA REQUIREMENTS.
11. CONSTRUCT 48-INCH CONCRETE V-GUTTER
12. CONSTRUCT SCREEN WALL PER ARCHITECTURAL PLANS.
13. PAVE WITH 3-INCHES AC OVER 6-INCHES AB OVER COMPACTED SUBGRADE. (DRIVE LANES).
14. PAVE WITH 3-INCHES AC OVER 4-INCHES AB OVER COMPACTED SUBGRADE. (PARKING STALLS).
15. PAVE WITH 6-INCHES PCC WITH #3 REINFORCING BARS @ 18" O.C. EACH WAY OVER 4-INCHES AB OVER COMPACTED SUBGRADE.
16. COVERED TRASH ENCLOSURE/STORAGE ROOM AND CONCRETE APRON PER ARCHITECTURAL DETAILS.
17. INSTALL UNDERGROUND INFILTRATOR AND FILTER
18. INSTALL SDR-35 PVC DRAIN PIPE WITH NECESSARY FITTINGS & ADAPTERS.
19. CANOPY PER SEPARATE CANOPY PACKAGE
20. CONSTRUCT PARKWAY CULVERT PER SPPWC STANDARDS.
21. CONSTRUCT TREE WELL.
22. CONSTRUCT DOUBLE CURB & GUTTER
23. CONSTRUCT 36-INCH CONCRETE V-GUTTER
24. PARKING LOT LIGHT STANDARD PER ARCHITECTURAL PLANS.
25. CONSTRUCT CONCRETE DRIVEWAY

(L) LANDSCAPE

CONSTRUCTION OFF-SITE NOTES

50. CONSTRUCT DRIVEWAY PER CITY OF MONROVIA STD. 305-1 TYPE A.
51. CONSTRUCT CONCRETE ACCESSIBLE RAMP IN ACCORDANCE WITH CA TITLE 24 REQUIREMENTS, PER CITY OF MONROVIA STD. 330.
52. CONSTRUCT CURB & GUTTER PER CITY OF MONROVIA STD. 360.
53. CONSTRUCT CONCRETE SIDEWALK PER CITY OF MONROVIA STD. 315.
54. TRENCHING AND PAVING PER CITY STANDARD PER CITY OF MONROVIA STD. 225.
55. PATCH WITH FULL DEPTH AC PAVEMENT. (8-INCH MINIMUM THICKNESS)
56. CONSTRUCT CURB PER CITY OF MONROVIA STD. 315.

SCALE: 1"=20'

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

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IMPORTANT NOTICE

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Prepared by:

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REGISTERED PROFESSIONAL ENGINEER RANDY J. DECKER No. 81077 CIVIL STATE OF CALIFORNIA

CHICK-FIL-A

HUNTINGTON SW & 210

820 HUNTINGTON DRIVE
MONROVIA, CA 91016

FSR# 04698

REVISION SCHEDULE

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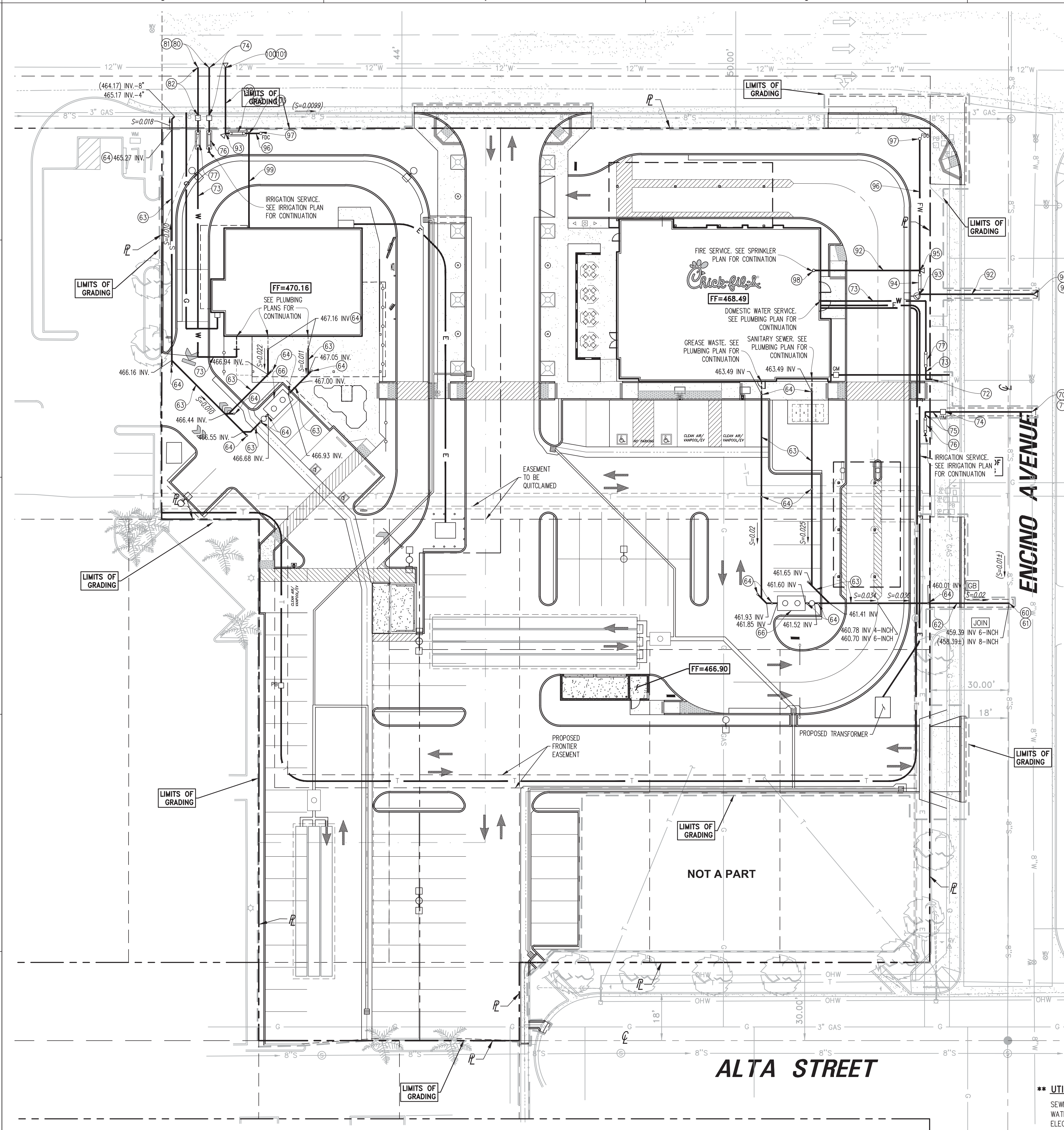
SHEET
CONCEPTUAL CONSTRUCTION NOTES



DRY UTILITIES

PROPOSED ELECTRIC, TELEPHONE, CABLE TV, AND GAS LINES ARE SHOWN HEREON FOR COORDINATION PURPOSES. CONTRACTOR TO VERIFY POINTS OF CONNECTION AND CONSTRUCT PROPOSED SERVICE LINES IN ACCORDANCE WITH SERVICE PLANNING DOCUMENTS PREPARED BY EACH RESPECTIVE UTILITY COMPANY.

CONSTRUCTION NOTES – SEWER

(60) POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF EXISTING 8–INCH SEWER MAIN. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.

(61) CONNECT TO SEWER MAIN WITH 6" SEWER LATERAL PER CITY OF MONROVIA STD. 215.

(62) PLACE 6–INCH VCP SEWER PIPE PER CPC REQUIREMENTS. PIPE BEDDING AND BACKFILL TO BE PER CITY OF MONROVIA STD. 225.

(63) PLACE 4–INCH VCP SEWER PIPE PER CPC REQUIREMENTS. PIPE BEDDING AND BACKFILL TO BE PER CITY OF MONROVIA STD. 225.

(64) INSTALL CLEANOUT, SIZE TO MATCH DOWNSTREAM PIPE SIZE, PER CITY STD. 220.

(66) UNDERGROUND GREASE INTERCEPTOR AND SAMPLE BOX PER PLUMBING PLANS.

WATER (DOMESTIC & IRRIGATION)

(70) POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF 8–INCH WATER LINE. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.

(71) CONNECT WATER SERVICE TO EXISTING 8–INCH MAIN IN ENCINO AVENUE (IRRIGATION). PER CITY OF MONROVIA REQUIREMENTS.

(72) CONNECT TO EXISTING WATER METER PER AGENCY STANDARDS. VERIFY THE EXISTENCE, SIZE, MATERIAL, AND CONDITION OF THE EXISTING WATER METER AND SERVICE. REPORT FINDINGS TO TRUXAW & ASSOCIATES. (MINIMUM 1.5–INCH WATER METER REQUIRED)

(73) PLACE 2–INCH TYPE "K" COPPER TUBING WATER LINE (DOMESTIC). PIPE BEDDING AND BACKFILL TO BE PER CITY OF MONROVIA STD. 225.

(74) INSTALL 1–INCH WATER METER AND SERVICE PER CITY OF MONROVIA STD. 100. (IRRIGATION)

(75) PLACE 1–INCH TYPE "K" COPPER TUBING WATER LINE (IRRIGATION). PIPE BEDDING AND BACKFILL TO BE PER CITY OF MONROVIA STD. 225.

(76) INSTALL 1–INCH BACKFLOW PREVENTOR PER CITY OF MONROVIA STD. 131. (IRRIGATION)

(77) INSTALL 2–INCH BACKFLOW PREVENTOR PER CITY OF MONROVIA STD. 131. (DOMESTIC)

(80) POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF 12–INCH WATER LINE. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.

(81) CONNECT WATER SERVICE TO EXISTING 12–INCH MAIN IN ENCINO AVENUE PER CITY OF MONROVIA REQUIREMENTS. (DOMESTIC)

(82) INSTALL 2–INCH WATER METER AND SERVICE PER CITY OF MONROVIA STD. 101. (DOMESTIC)

WATER (FIRE SERVICE)

(90) POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF THE EXISTING 8–INCH WATER MAIN. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.

(91) CONNECT 6–INCH FIRE SERVICE TO EXISTING 8–INCH MAIN. PER CITY OF MONROVIA STD. 130

*** (92) PLACE 6–INCH AWWA C150 PC350 DIP FIRE WATER LINE. PIPE BEDDING AND BACKFILL TO BE PER CITY OF MONROVIA STD. 225.

*** (93) PLACE 90° DUCTILE IRON PIPE (DIP) BEND WITH THRUST BLOCK PER CITY STD. 150

*** (94) INSTALL 6–INCH DOUBLE CHECK DETECTOR ASSEMBLY PER CITY OF MONROVIA STD. 130.

*** (95) PLACE DUCTILE IRON PIPE (DIP) TEE 6"X4"X6" WITH THRUST BLOCK. PER CITY STD. 150

*** (96) PLACE 4–INCH AWWA C150 PC350 DIP FIRE WATER LINE. PIPE BEDDING AND BACKFILL PER CITY STD. 225.

*** (97) INSTALL 4–INCH FIRE DEPARTMENT CONNECTION (FDC).

*** (98) INSTALL 6–INCH STAINLESS STEEL FIRE RISER PIECE AND CONNECT TO FIRE RISER.

*** (99) PLACE 4–INCH AWWA C150 PC350 DIP FIRE WATER LINE. PIPE BEDDING AND BACKFILL TO BE PER CITY OF MONROVIA STD. 225.

(100) POTHOLE AND VERIFY THE EXISTENCE, LOCATION, DEPTH, MATERIAL, SIZE, AND CONDITION OF THE EXISTING 12–INCH WATER MAIN. REPORT FINDINGS TO TRUXAW & ASSOCIATES PRIOR TO CONSTRUCTION.

(101) CONNECT 4–INCH FIRE SERVICE TO EXISTING 12–INCH MAIN. PER CITY OF MONROVIA STD. 130

*** (102) INSTALL 4–INCH DOUBLE CHECK DETECTOR ASSEMBLY PER CITY OF MONROVIA STD. 130.

*** (103) PLACE DUCTILE IRON PIPE (DIP) TEE 4"X4"X4" WITH THRUST BLOCK. PER CITY STD. 150

*** FIRE PROTECTION PIPE LINE AND SPRINKLERS IN THE BUILDING TO BE DESIGNED AND PERMITTED BY SEPARATE PLANS. PRIOR TO CONSTRUCTION OF FIRE WATER SYSTEM SHOWN ON THIS PLAN, CONTRACTOR SHALL VERIFY VIA HYDRAULIC CALCULATIONS ACCEPTABLE TO THE FIRE DEPARTMENT THAT SIZE OF FIRE SERVICE & DETECTOR CHECK ARE OF SUFFICIENT SIZE TO SERVE BUILDING. (SIZE SHOWN FOR PLAN CHECK & BID PURPOSES ONLY).

GENERAL SEWER NOTES

1. ALL WORK SHALL CONFORM TO THE STANDARDS & REQUIREMENTS OF THE CITY OF MONROVIA, UNIFORM PLUMBING CODE AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND CONFORMING WITH THE REQUIREMENTS OF THE ENCROACHMENT PERMIT REQUIRED FOR WORK IN THE PUBLIC RIGHT–OF–WAY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND PROTECTION OF PEDESTRIANS. THIS RESPONSIBILITY SHALL BE CONTINUOUS.
4. PIPE BEDDING AND BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF MONROVIA AND THE RECOMMENDATIONS OF THE SOILS ENGINEER.
5. NO ON–SITE PIPE MAY BE LAID UNTIL THE SEWER CONNECTION AT THE PUBLIC MAIN HAS BEEN MADE.

20 10 0 20 40 60

SCALE: 1"=20'

GENERAL WATER NOTES

1. ALL WORK SHALL CONFORM TO THE STANDARDS & REQUIREMENTS OF THE CITY OF MONROVIA, UNIFORM PLUMBING CODE AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND CONFORMING WITH THE REQUIREMENTS OF THE ENCROACHMENT PERMIT REQUIRED FOR WORK IN THE PUBLIC RIGHT–OF–WAY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND PROTECTION OF PEDESTRIANS. THIS RESPONSIBILITY SHALL BE CONTINUOUS.
4. PIPE BEDDING AND BACKFILL SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF MONROVIA AND THE RECOMMENDATIONS OF THE SOILS ENGINEER.
5. NO ON–SITE PIPE MAY BE LAID UNTIL THE WATER CONNECTION AT THE PUBLIC MAIN HAS BEEN MADE.
6. ALL EXISTING WATER LINES TO BE ABANDONED, SHALL BE PLUGGED AT THE MAIN LINE IN THE STREET.

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

** UTILITY PROVIDERS

SEWER................CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, RICHARD CORTEZ (626) 932–5575
WATER................CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, RICHARD CORTEZ (626) 932–5575
ELECTRIC............SO CAL EDISON, 1440 S. CALIFORNIA AVE., MONROVIA, CA, SANDRA SOLIS (626) 303–8464
GAS....................SO CAL GAS, 1919 S. STATE COLLAGE BLVD. ANAHEIM CA, ISMAEL AYALA, IAYALA@SEMPRAUTILITIES.COM
TELEPHONE........FRONTIER COMMUNICATIONS, 1440 E. PHILLIPS AVE., POMONA CA, DAVID ARMENTA (909) 469–6352
CABLE................
STORM DRAIN.....CITY OF MONROVIA, PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, BRAD MERRELL (626) 932–5577
ROADWAY...........CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, BRAD MERRELL (626) 932–5577

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

Prepared by:

JOSEPH C. TRUXAW & ASSOCIATES, INC.
Civil Engineers and Land Surveyors
1915 W. ORANGEWOOD AVE.
SUITE 101
ORANGE, CA 92868
(714) 935–0265
(714) 935–0106 (FAX)

REGISTERED PROFESSIONAL ENGINEER — RANDY J. DECKER — No. 81077 — CIVIL — STATE OF CALIFORNIA

CHICK-FIL-A

HUNTINGTON SW & 210

820 HUNTINGTON DRIVE
MONROVIA, CA 91016

FSR# 04698

REVISION SCHEDULE

NO.	DATE	DESCRIPTION

ENGINEER'S PROJECT #	CFA20011
PRINTED FOR	Plan'g, Building, Etc.
DATE	11/20/20
DRAWN BY	MDR

SHEET
CONCEPTUAL UTILITY PLAN

SHEET NUMBER

TITLE REPORT

THIS SURVEY AND EASEMENTS SHOWN HEREON ARE BASED ON INFORMATION CONTAINED IN THE PRELIMINARY TITLE REPORT PREPARED BY:

FIRST AMERICAN TITLE INSURANCE COMPANY
4380 LA JOLLA VILLAGE DRIVE, SUITE 110
SAN DIEGO, CA 92122
(858) 410-2151
COMMITMENT NUMBER: NCS-998343-SD
COMMITMENT DATE: JANUARY 10, 2020
TITLE OFFICER: TRIXY BROWN / JANICE TREANOR

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREON BELOW IS SITUATED IN THE CITY OF MONROVIA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT 2 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 2:

LOT 3 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78 , PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 3:

LOT 5 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THE NORTHERLY HALF OF ALTA STREET ADJOINING SAID LAND ON THE SOUTH, BOUNDED EASTERLY BY THE SOUTHERLY PROLONGATION OF THE EASTERLY LINE OF SAID LOT 5 AND BOUNDED WESTERLY BY THE SOUTHERLY PROLONGATION OF THE WESTERLY LINE OF SAID LOT 5, AS VACATED BY THE CITY COUNCIL OF THE CITY OF MONROVIA BY RESOLUTION NO. 95-05, ADOPTED, PASSED AND APPROVED FEBRUARY 7, 1995 AND RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644, OFFICIAL RECORDS.

EXCEPTING THEREFROM THE NORTHERLY 50 FEET OF SAID LOT 5.

PARCEL 4:

THE NORTH 170 FEET OF BLOCK 42, IN THE SANTA ANITA TRACT, IN THE CITY OF MONROVIA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 34 PAGES 41 AND 42 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM THE WEST 150 FEET.

PARCEL 5:

LOT 1 AND THE NORTH 50 FEET OF LOT 5 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE(S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 6:

LOT 6 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE(S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THE NORTHERLY HALF OF ALTA STREET ADJOINING SAID LAND ON THE SOUTH, BOUNDED EASTERLY BY THE SOUTHERLY PROLONGATION OF THE EASTERLY LINE OF SAID LOT 6 AND BOUNDED WESTERLY BY THE SOUTHERLY PROLONGATION OF THE WESTERLY LINE OF SAID LOT 6, AS VACATED BY THE CITY COUNCIL OF THE CITY OF MONROVIA BY RESOLUTION NO. 95-05, ADOPTED, PASSED AND APPROVED FEBRUARY 7, 1995 AND RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644, OFFICIAL RECORDS.

PARCEL 7:

LOT 4 OF TRACT NO. 6999, IN THE CITY OF MONROVIA, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 78, PAGE (S) 58 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

TOGETHER WITH THAT PORTION OF VACATED ALTA STREET PURSUANT TO THAT CERTAIN RESOLUTION NO. 95-05 RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644 OF OFFICIAL RECORDS.

NOTE: SAID DOCUMENT IS ALSO REFERRED TO HEREON IN THE EASEMENT NOTES AS ITEM NO. 23 AND IS PLOTTED HEREON.

FOR CONVEYANCING PURPOSES ONLY: APN 8507-008-041 (AFFECTS PARCEL 1);
APN 8507-008-042 (AFFECTS PARCEL 2);
APN 8507-008-071 (AFFECTS PARCEL 3);
APN 8507-008-035 (AFFECTS PARCEL 4);
APN 8507-008-044 (AFFECTS PARCEL 5);
APN 8507-008-072 (AFFECTS PARCEL 6); AND
APN 8507-008-070 (AFFECTS PARCEL 7)

EASEMENT NOTES

REFER TO TITLE REPORT FOR ADDITIONAL INFORMATION AND DETAILS:

∗1 ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I-REQUIREMENTS ARE MET.

∗2 (A) TAXES OR ASSESSMENTS THAT ARE NOT SHOWN AS EXISTING LIENS BY THE RECORDS OF ANY TAXING AUTHORITY THAT LEVIES TAXES OR ASSESSMENTS ON REAL PROPERTY OR BY THE PUBLIC RECORDS; (B) PROCEEDINGS BY A PUBLIC AGENCY THAT MAY RESULT IN TAXES OR ASSESSMENTS, OR NOTICES OF SUCH PROCEEDINGS, WHETHER OR NOT SHOWN BY THE RECORDS OF SUCH AGENCY OR BY THE PUBLIC RECORDS.

∗3 ANY FACTS, RIGHTS, INTERESTS, OR CLAIMS THAT ARE NOT SHOWN BY THE PUBLIC RECORDS BUT THAT COULD BE ASCERTAINED BY AN INSPECTION OF THE LAND OR THAT MAY BE ASSERTED BY PERSONS IN POSSESSION OF THE LAND.

∗4 EASEMENTS, LIENS OR ENCUMBRANCES, OR CLAIMS THEREOF, NOT SHOWN BY THE PUBLIC RECORDS.

∗5 ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND AND NOT SHOWN BY THE PUBLIC RECORDS.

∗6 (A) UNPATENTED MINING CLAIMS; (B) RESERVATIONS OR EXCEPTIONS IN PATENTS OR IN ACTS AUTHORIZING THE ISSUANCE THEREOF; (C) WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT THE MATTERS EXCEPTED UNDER (A), (B), OR (C) ARE SHOWN BY THE PUBLIC RECORDS.

∗7 ITEM THAT DEALS WITH TAXES.

∗8 ITEM THAT DEALS WITH TAXES.

∗9 ITEM THAT DEALS WITH TAXES.

∗10 ITEM THAT DEALS WITH TAXES.

∗11 ITEM THAT DEALS WITH TAXES.

∗12 ITEM THAT DEALS WITH TAXES.

∗13 ITEM THAT DEALS WITH TAXES.

∗14 ITEM THAT DEALS WITH TAXES.

∗15 ITEM THAT DEALS WITH TAXES.

16 AN EASEMENT FOR PUBLIC STREET AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED AS BOOK 9347, PAGE 352 OF OFFICIAL RECORDS.

(AFFECTS PARCEL 4)

NOTE: STREET CONDEMNATION IN HUNTINGTON DRIVE DOES NOT AFFECT SURVEY PROPERTY.

17 AN EASEMENT FOR POWER LINES AND INCIDENTAL PURPOSES, RECORDED MARCH 13, 1963 AS BOOK D1952, PAGE 216 OF OFFICIAL RECORDS.

IN FAVOR OF: SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

(AFFECTS PARCEL 6)

18 THE TERMS, PROVISIONS AND EASEMENT(S) CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT FOR MUTUAL EASEMENT" RECORDED APRIL 09, 1968 AS INSTRUMENT NO. 2636 OF OFFICIAL RECORDS.

(AFFECTS PARCEL 4)

NOTE: PARCEL "A" OF SAID DOCUMENT CANNOT BE LOCATED FROM THE RECORD. PARCEL "B" IS SHOWN ON THE SURVEY.

∗19 THE FACT THAT THE LAND LIES WITHIN THE BOUNDARIES OF THE PROJECT AREA NO. 1 -CENTRAL REDEVELOPMENT PROJECT AREA, AS DISCLOSED BY THE DOCUMENT RECORDED OCTOBER 25, 1979 AS INSTRUMENT NO. 79?1200276 OF OFFICIAL RECORDS.

∗20 EASEMENTS, COVENANTS AND CONDITIONS CONTAINED IN THE DEED FROM MONROVIA REDEVELOPMENT AGENCY, A PUBLIC BODY, CORPORATE AND POLITIC OF THE STATE OF CALIFORNIA, AS GRANTOR, TO RICHARD T. HALE, JR. AND SUSAN L. HALE, HUSBAND AND WIFE AS COMMUNITY PROPERTY, AS GRANTEE, RECORDED AUGUST 03, 1994 AS INSTRUMENT NO. 94-1439739 OF OFFICIAL RECORDS. REFERENCE BEING MADE TO THE DOCUMENT FOR FULL PARTICULARS.

(AFFECTS PARCEL 6)

21 AN EASEMENT FOR UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS AND INCIDENTAL PURPOSES, RECORDED AUGUST 23, 1994 AS INSTRUMENT NO. 94-1557466 OF OFFICIAL RECORDS.

IN FAVOR OF: SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

(AFFECTS PARCELS 1, 4 AND 5)

22 AN EASEMENT FOR TRANSMISSION OF ELECTRIC ENERGY FOR COMMUNICATIONS AND OTHER PURPOSES AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 01, 1995 AS INSTRUMENT NO. 95-166641 OF OFFICIAL RECORDS.

IN FAVOR OF: GTE CALIFORNIA INCORPORATED, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

(AFFECTS PARCELS 1, 4 AND 5)

23 THE RIGHTS, IF ANY, OF A CITY, PUBLIC UTILITY OR SPECIAL DISTRICT, PURSUANT TO SECTION 8345 ET SEQ. OF THE CALIFORNIA STREETS AND HIGHWAYS CODE, TO PRESERVE A PUBLIC EASEMENT IN ALTA STREET AS THE SAME WAS VACATED BY THE DOCUMENT RECORDED MARCH 23, 1995 AS INSTRUMENT NO. 95-423644 OF OFFICIAL RECORDS .

(AFFECTS PARCELS 3, 6 AND 7)

∗24 A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $1,578,689.00 RECORDED NOVEMBER 30, 2004 AS INSTRUMENT NO. 04 3088715 OF OFFICIAL RECORDS.

DATED: OCTOBER 30, 2003
TRUSTOR: RICHARD T. HALE, JR. AND SUSAN L. HALE, HUSBAND AND WIFE AS COMMUNITY PROPERTY AS TO AN UNDIVIDED 55% INTEREST AND RICHARD T. HALE, JR. AND SUSAN L. HALE, HUSBAND AND WIFE AS JOINT TENANTS AS TO AN UNDIVIDED 45% INTEREST
TRUSTEE: COMMUNITY TRUST DEED SERVICES, A CALIFORNIA CORPORATION
BENEFICIARY: CITIZENS BUSINESS BANK

A DOCUMENT ENTITLED "ASSIGNMENT OF RENTS" RECORDED NOVEMBER 30, 2004 AS INSTRUMENT NO. 04 3088716 OF OFFICIAL RECORDS, AS ADDITIONAL SECURITY FOR THE PAYMENT OF THE INDEBTEDNESS SECURED BY THE DEED OF TRUST.

THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "HAZARDOUS SUBSTANCES CERTIFICATE AND INDEMNITY AGREEMENT" RECORDED NOVEMBER 30, 2004 AS INSTRUMENT NO. 04 3088717 OF OFFICIAL RECORDS.

A DOCUMENT RECORDED SEPTEMBER 24, 2018 AS INSTRUMENT NO. 20180974256 OF OFFICIAL RECORDS PROVIDES THAT CITIZENS BUSINESS BANK WAS SUBSTITUTED AS TRUSTEE UNDER THE DEED OF TRUST.

THE EFFECT OF A DOCUMENT ENTITLED "SUBSTITUTION OF TRUSTEE AND FULL RECONVEYANCE", RECORDED SEPTEMBER 24, 2018 AS INSTRUMENT NO. 20180974256 OF OFFICIAL RECORDS.

NOTE: THE (TITLE) COMPANY WILL REQUIRE SATISFACTORY PROOF OF FULL PAYMENT OF THE DEBT SECURED BY SAID MORTGAGE OR DEED OF TRUST PRIOR TO REMOVING THIS EXCEPTION OR INSURING THE CONTEMPLATED TRANSACTION.

∗25 ANY DEFECTS, LIENS, ENCUMBRANCES OR OTHER MATTERS WHICH NAME PARTIES WITH THE SAME OR SIMILAR NAMES AS RICHARD T. HALE, JR. THE NAME SEARCH NECESSARY TO ASCERTAIN THE EXISTENCE OF SUCH MATTERS HAS NOT BEEN COMPLETED. IN ORDER TO COMPLETE THIS PRELIMINARY REPORT OR COMMITMENT, WE WILL REQUIRE A STATEMENT OF INFORMATION.

∗26 WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

∗27 ANY CLAIM THAT THE TITLE IS SUBJECT TO A TRUST OR LIEN CREATED UNDER THE PERISHABLE AGRICULTURAL COMMODITIES ACT, 1930 (7 U.S.C. 499A, ET SEQ.) OR THE PACKERS AND STOCKYARDS ACT (7 U.S.C. 181 ET SEQ.) OR UNDER SIMILAR STATE LAWS.

28 ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

29 RIGHTS OF PARTIES IN POSSESSION.

∗NOTE: SAID DOCUMENT IS NOT A SURVEY ITEM AND IS NOT PLOTTED HEREON.

BASIS OF BEARINGS

THE BEARING NORTH 88°55'55" EAST FOR THE CENTERLINE OF HUNTINGTON DRIVE AS SHOWN ON PARCEL MAP NO. 16361, FILED IN BOOK 174, PAGES 54-55 OF PARCEL MAPS, RECORDS OF LOS ANGELES COUNTY, STATE OF CALIFORNIA, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

RECORD DATA

(R) = RECORD DATA PER TRACT NO. 6999, BOOK 78, PAGE 58

(R1) = RECORD DATA PER SANTA ANITA TRACT, BOOK 34, PAGES 41-42

(R2) = RECORD DATA PER PARCEL MAP NO. 16361, BOOK 174, PAGES 54-55

(R3) = RECORD DATA PER PARCEL MAP NO. 25774, BOOK 336, PAGES 8-9

BENCHMARK

LOS ANGELES COUNTY PUBLIC WORKS BENCHMARK NO. 4G2642

ELEVATION = 501.918 FEET (2005 QUAD YEAR)

CSBM MON IN E. END C. B. 69FT E/O BCR @ SE COR
MYRTLE AVE & HUNTINGTON DR MKD (BM 11-10A 1962)

FLOOD ZONE

COMMUNITY NUMBER: 065046, PANEL NUMBER 1400F, EFFECTIVE DATE: 9/26/2008

ZONE X (UNSHADED); PROPERTY NOT IN A SPECIAL FLOOD HAZARD AREA, AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

INFORMATION OBTAINED FROM CERTIFIED FLOOD SYSTEMS, INC. ON 2/21/2020

SITE AREA

THE SUBJECT SITE, PER TITLE REPORT DESCRIPTION CONTAINS APPROXIMATELY:

90,992 SQ. FT. OR 2.089 ACRES

SITE PLANNING DATA

DISCLAIMER: INFORMATION PROVIDED BY 4G DEVELOPMENT AND CONSULTING, INC IN THE SITE INVESTIGATION REPORT DATED 2/13/2020.

ZONING: RCM, RETAIL CORRIDOR MIXED USE

MAXIMUM BUILDING HEIGHT:

PER 17.16.050, THE SCALE AND CHARACTER OF NEW DEVELOPMENT IS INTENDED TO SUPPORT AND REINFORCE THE IMAGE OF WEST HUNTINGTON DRIVE AS A RETAIL CORRIDOR. BUILDINGS SHALL BE AT LEAST TWO STORIES (NO SPECIFIC HEIGHT LISTED), ORIENTED TO STREETS AND PEDESTRIANS WITH SUBTERRANEAN AND/OR STRUCTURED PARKING LOTS. DEVELOPMENTS SHOULD EMPHASIZE GROUND-LEVEL RETAIL USES ALONG HUNTINGTON DRIVE AND PEDESTRIAN CONNECTIONS THROUGHOUT. BUILDINGS SHALL BE BUILT TO FACE ON HUNTINGTON DRIVE.

SETBACKS (BUILDING AND LANDSCAPE)

NORTH = HUNTINGTON DRIVE/ 10 FEET
WEST = INTERIOR/0 FEET
EAST = ENCINO AVENUE/10 FEET
SOUTH = INTERIOR/0 FEET

PARKING COUNT

203 STRIPED PARKING STALLS LIE WITHIN SUBJECT SITE LEGAL DESCRIPTION.
(INCLUDES: 6 HANDICAP STALLS AND 3 CATERING & CARRY OUT STALL)

UTILITY PROVIDERS

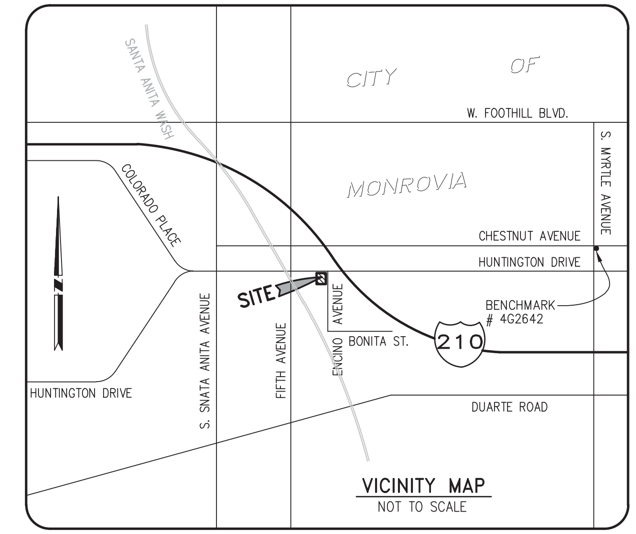
+ SEWER................CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, RICHARD CORTEZ (626) 932-5575
+ WATER................CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, RICHARD CORTEZ (626) 932-5575
+ ELECTRIC............SO CAL EDISON, 1440 S. CALIFORNIA AVE., MONROVIA, CA, SANDRA SOLIS (626) 303-8464
+ GAS....................SO CAL GAS, 1919 S. STATE COLLAGE BLVD. ANAHEIM CA, ISMAEL AYALA, IAYALA@SEMPRAUTILITIES.COM

TELEPHONE........FRONTIER COMMUNICATIONS, 1440 E. PHILLIPS AVE., POMONA CA, DAVID ARMENTA (909) 469-6352

+ CABLE................
+ STORM DRAIN.....CITY OF MONROVIA, 415 S. IVY AVE., MONROVIA CA, EVAN NUCKLES (626) 932-5583

ROADWAY............CITY OF MONROVIA PUBLIC WORKS, 600 S. MOUNTAIN AVE., MONROVIA CA, BRAD MERRELL (760) 900-7526

+ AGENCY RECORD INFORMATION NOT AVAILABLE AT THE TIME OF THIS SURVEY.



VICINITY MAP
NOT TO SCALE

SURVEYOR'S NOTES

1. IT IS NOT WITHIN THE PURVIEW OF THIS SURVEYOR TO MAKE DETERMINATIONS OF OWNERSHIP. AS TO "ENCROACHMENTS" SPECIFICALLY, NO INFERENCE TO SUCH DETERMINATION IS INTENDED OR IMPLIED.
2. LOCATIONS OF UNDERGROUND UTILITIES / STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES / STRUCTURES MAY EXIST. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES / STRUCTURES. THE LOCATIONS OF UNDERGROUND FEATURES SHOWN HEREON ARE PLOTTED FROM AVAILABLE RECORD INFORMATION AND VISIBLE SURFACE INDICATIONS. BEFORE ANY EXCAVATIONS ARE PERFORMED, UTILITY PURVEYORS SHOULD BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FIELD LOCATIONS.
3. VEHICULAR ACCESS TO THE "SUBJECT SITE" IS CURRENTLY FROM DRIVE ENTRANCES ALONG HUNTINGTON DRIVE AND ENCINO AVENUE AND ACROSS ADJACENT PARCEL.
4. ALL MATTERS SHOWN ON RECORDED PLATS LISTED IN RECORD DATA HEREON THAT ARE PERTINENT TO THE SURVEY OF THE SUBJECT SITE ARE SHOWN ON THIS ALTA SURVEY HEREON.
5. AT THE TIME OF SURVEY NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR ADDITIONS WERE OBSERVED ON THE SUBJECT SITE.
6. NO RECENT CHANGES IN STREET RIGHTS-OF-WAY OR STREET CONSTRUCTION OR REPAIRS WERE OBSERVED AT THE TIME OF SURVEY.

SURVEY CERTIFICATION

TO: CHICK-FIL-A, INC. AND FIRST AMERICAN TITLE INSURANCE COMPANY,

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 6(a), 7, 8, 9, 11, 13, 16 & 17 OF "TABLE A" THEREOF.
THE FIELD WORK WAS COMPLETED ON FEBRUARY 27, 2020.

THIS CERTIFICATION IS SUBMITTED PURSUANT TO SECTION 8770.6 OF THE PROFESSIONAL LAND SURVEYORS ACT, BUSINESS AND PROFESSIONS CODE, STATE OF CALIFORNIA.

03/19/2020

STEPHEN M. HAGER DATE
REGISTERED LAND SURVEYOR NO. 6161

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

Prepared by:

JOSEPH C. TRUXAW & ASSOCIATES, INC.
Civil Engineers and Land Surveyors
1915 W. ORANGEWOOD AVE.
SUITE 101
ORANGE, CA 92868
(714) 935-0265
(714) 935-0106 (FAX)

LICENSED LAND SURVEYOR
STEPHEN M. HAGER
NO. 6161
EXP. 3-31-20
STATE OF CALIFORNIA

CHICK-FIL-A
HUNTINGTON SW & 210
820 HUNTINGTON DRIVE
MONROVIA, CA 91016

FSR# 04698

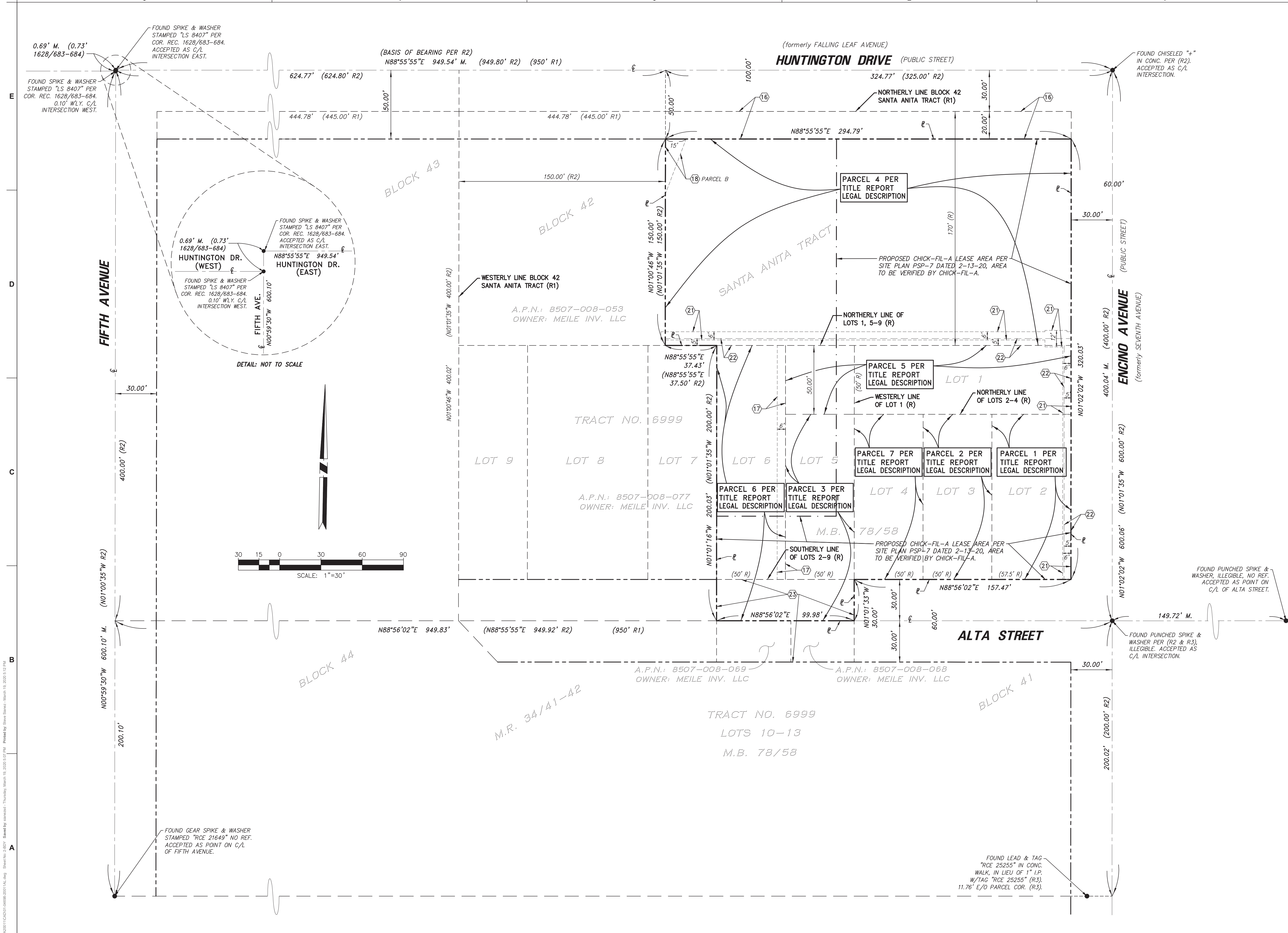
REVISION SCHEDULE

NO.	DATE	DESCRIPTION

ENGINEER'S PROJECT #	CFA20011
PRINTED FOR	ENTITLEMENT
DATE	03/19/20
DRAWN BY	SDS/DB

SHEET
ALTA/NSPS LAND TITLE SURVEY

SHEET NUMBER



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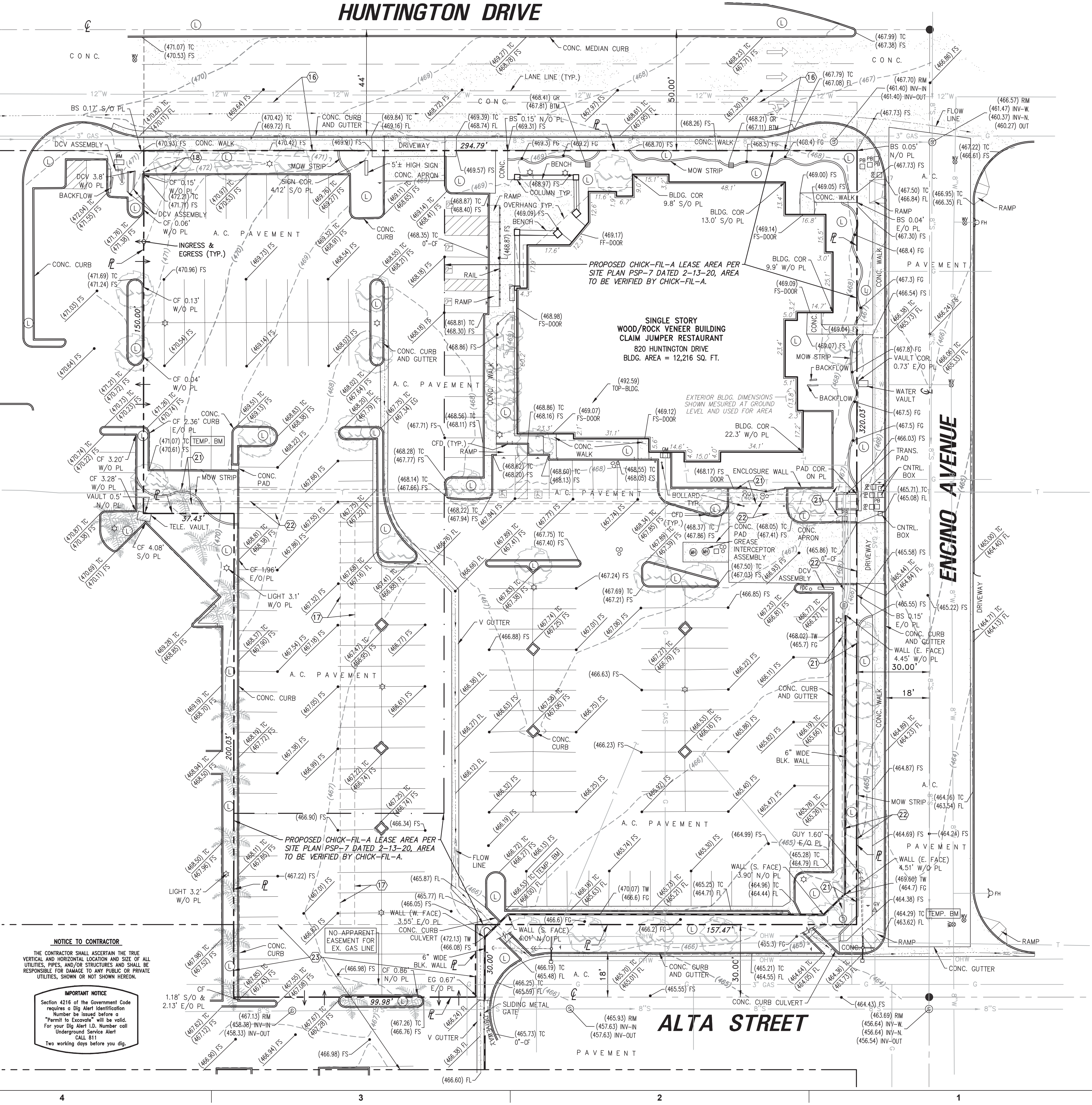

SCALE: 1"=20'

REFER TO SHEET 2 FOR MONUMENTS AND BOUNDARY DETAILS.

LEGEND

AC = ASPHALT CONCRETE
BLK = CONCRETE BLOCK
BS = BACK OF SIDEWALK
BTM = BOTTOM
CF = CURB FACE
CFD = CURB FACE DRAIN
CL = CENTERLINE
CLF = CHAIN LINK FENCE
CO = CLEANOUT
DCV = DETECTOR CHECK VALVE
DS = ROOF DOWNSPOUT
EG = EDGE OF GUTTER
EP = EDGE OF PAVEMENT
FD = FOUND
FDC = FIRE DEPT. CONNECTION
FF = FINISHED FLOOR
FG = FINISHED GRADE
FH = FIRE HYDRANT
FL = FLOW LINE
FS = FINISHED SURFACE
GB = GRADE BREAK
GM = GAS METER
GR = TOP OF GRATE
GV = GAS VALVE
HP = HIGH POINT
HT = HEIGHT
ICV = IRRIGATION CONTROL VALVE
IP = IRON PIPE
LS = LIGHT STANDARD
L&T = LEAD & TAG
MH = MANHOLE
NG = NATURAL GROUND
N&T = NAIL & TAG
OHW = OVERHEAD WIRE
PB = PULL BOX
PCC = CONCRETE
PIV = POST INDICATOR VALVE
PL = PROPERTY LINE
RD = ROOF DRAIN
RWH = REDWOOD HEADER
SCB = SIGNAL CONTROL BOX
SMH = SEWER MANHOLE
SPK = SPIKE
SW = SIDEWALK
TC = TOP OF CURB
TE = TRASH ENCLOSURE
TP = TELEPHONE POLE
TRAN = TRANSITION
TRANS= TRANSFORMER

TRW = TOP OF RETAINING WALL
TW = TOP OF WALL
UG = UNDERGROUND
UNK = UNKNOWN
VAR = VARIABLE
W = WASHER
WDF = WOOD FENCE
WM = WATER METER
WV = WATER VALVE

N. = NORTH
S. = SOUTH
E. = EAST
W. = WEST
N'LY = NORTHERLY
S'LY = SOUTHERLY
E'LY = EASTERLY
W'LY = WESTERLY
N/O = NORTH OF
S/O = SOUTH OF
E/O = EAST OF
W/O = WEST OF
PL = PROPERTY LINE
CL = CENTERLINE
R/W = RIGHT OF WAY
Δ OR D = DELTA
R = RADIUS
L = LENGTH
T = TANGENT
M = MEASURED DATA
C = CALCULATED DATA
(RAD)= RADIAL BEARING
PRO = PROPORTIONATE MEASUREMENT
(210.00' R) = RECORD DATA
210.00' M. = MEASURED DATA
210.00' PRO. = PRORATED DATA
210.00' C. = CALCULATED DATA
(427.00) TC = EXISTING ELEVATION
427.00 TC = DESIGN ELEVATION
—CATV— = CABLE TV LINE
—E— = ELECTRICAL LINE
—G— = GAS LINE
—GB—GB— = GRADE BREAK LINE
—R—R— = RIDGE LINE
—S— = SEWER LINE
—SD— = STORM DRAIN LINE
—T— = TELEPHONE LINE
—OHW— = OVERHEAD WIRES
—W— = WATER LINE

SYMBOLS

FIRE HYDRANT
STREET LIGHT
TRAFFIC SIGNAL
TRAFFIC SIGNAL ARM & POLE
LIGHT STANDARD
UTILITY POLE
GUY WIRE & ANCHOR
WM WATER METER
GM GAS METER
WV WATER VALVE
GAS VALVE
PB PULL BOX
GRATE INLET
SIGN
VENT
(S) SEWER MANHOLE
(D) STORM DRAIN MANHOLE
(T) TELEPHONE MANHOLE
(MH) MANHOLE
CO SEWER CLEANOUT
(W) MONITORING WELL
HANDICAP PARKING STALL
(L) LANDSCAPED AREA
(P) PROTECT IN PLACE
(R) REMOVE AND DISPOSE OFFSITE
(RE) RELOCATE
(3) PLOTABLE EASEMENT ITEM No. PER TITLE REPORT
—(427.0)— EXIST. CONTOUR
—427.0— DESIGN CONTOUR
TREE
PALM TREE

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert
CALL 811
Two working days before you dig.

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

Prepared by:

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LICENSED LAND SURVEYOR
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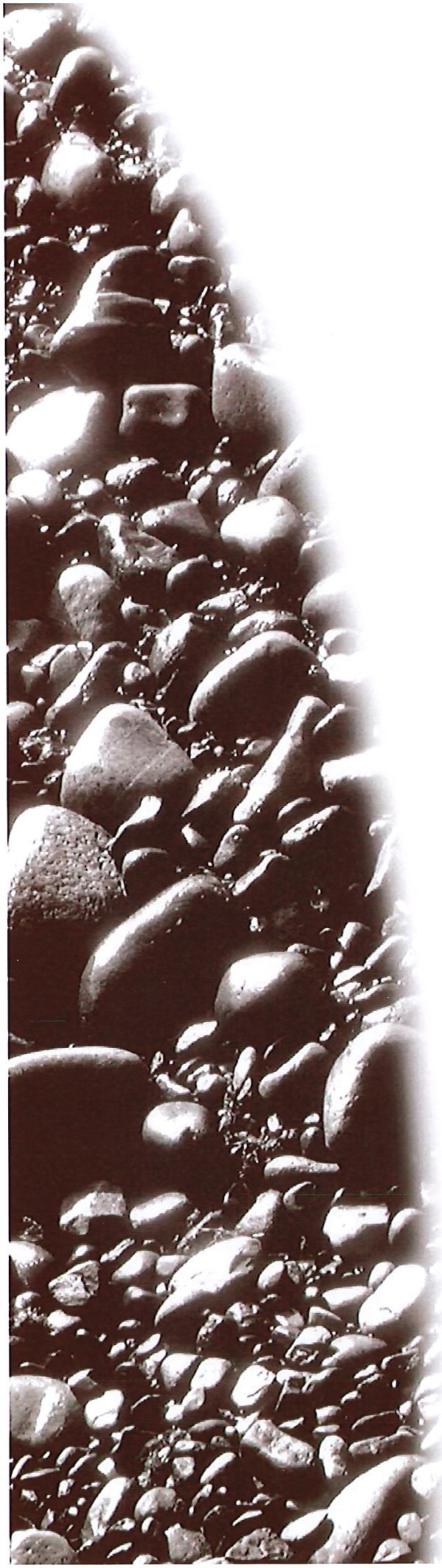
SHEET
ALTA/NSPS LAND TITLE SURVEY

III. Soils Report



RED

Geotechnical Engineering Exploration and Analysis

Proposed Chick-fil-A Restaurant #4698
Huntington SW & 210 FSU
820 W. Huntington Drive
Monrovia, California

Prepared for:

Chick-fil-A, Inc.
Irvine, California

Prepared by:

Giles Engineering Associates, Inc.

October 27, 2020
Project No. 2G-2003006

GILES
ENGINEERING ASSOCIATES, INC.

GILES
ENGINEERING ASSOCIATES, INC.

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

- Atlanta, GA
- Dallas, TX
- Los Angeles, CA
- Manassas, VA
- Milwaukee, WI

October 27, 2020

Chick-fil-A, Inc.
15635 Alton Parkway, Suite 350
Irvine, California 92618

Attention: Ms. Leslie Clay
New Restaurant Growth

Subject: Geotechnical Engineering Exploration and Analysis
Proposed Chick-fil-A Restaurant #4698
Huntington SW & 210 FSU
820 W. Huntington Drive
Monrovia, California
Project No. 2G-2003006

Dear Ms. Clay

Giles Engineering Associates, Inc. (Giles) is pleased to present our *Geotechnical Engineering Exploration and Analysis* report prepared for the above-referenced project. Conclusions and recommendations developed from the exploration and analysis are discussed in the accompanying report.

We appreciate the opportunity to be of service on this project. If we may be of additional assistance, should geotechnical related problems occur or to provide construction observation and testing services, please do not hesitate to call at any time.

Respectfully submitted,

GILES ENGINEERING ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER MONICA LAUREN SELL C 89833 EXP. 6-30-21 CIVIL STATE OF CALIFORNIA

Monica L. Sell, P.E.
Project Engineer I

Terry L. Giles, P.E., G.E.
President and CEO

REGISTERED PROFESSIONAL ENGINEER TERRY LEE GILES No. GE00342 Exp. 12-31-21 GEOTECHNICAL STATE OF CALIFORNIA

Distribution: Chick-fil-A, Inc.
Attn: Ms. Leslie Clay (email: Leslie.Clay@cfacorp.com)
Attn: Ms. Jennifer Daw (email: Jennifer.Daw@cfacorp.com)
Attn: Mr. Brent Ryhlick (email: Brent.Ryhlick@cfacorp.com)

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PROPOSED CHICK-FIL-A RESTAURANT #4698
HUNTINGTON SW & 210 FSU
820 W. HUNTINGTON DRIVE
MONROVIA, CALIFORNIA
PROJECT NO. 2G-2003006

Description | Page No.

GEOTECHNICAL ENGINEERING EXPLORATION AND ANALYSIS

PROPOSED CHICK-FIL-A RESTAURANT #4698
HUNTINGTON SW & 210 FSU
820 W. HUNTINGTON DRIVE
MONROVIA, CALIFORNIA
PROJECT NO. 2G-2003006

1.0 EXECUTIVE SUMMARY OUTLINE

The executive summary is provided solely for purposes of overview. Any party who relies on this report must read the full report. The executive summary omits a number of details, any one of which could be crucial to the proper application of this report.

Subsurface Conditions

- Site Class designation D is recommended for seismic design considerations.
- Existing pavement encountered within our test borings consisted of approximately 3 to 4 inches of asphaltic concrete over 2 to 4 ½ inches of aggregate base materials.
- Our review of the *Quaternary Geologic Map of Mount Wilson Quadrangle* compiled by United States Geological Survey indicated that the subject site is underlain by younger alluvial basin deposits.
- Onsite soils encountered within our test borings consisted generally of dry to moist, loose to firm in relative density silty fine sand and fine to coarse sand. Possible fill was encountered in the borings to a depth ranging from about 3 ½ to 10 feet below existing grade.
- Groundwater was not encountered during our subsurface investigation to the maximum depth explored (16.5 feet).
- Tested onsite soils generally possess a very low expansion potential.

Site Development

- The proposed site development will include the demolition of the existing building for the construction of a new Chick-fil-A single-story building within the existing building footprint and site improvements that will include drive-thru lane, new parking stalls, menu board signs, a new trash enclosure, new concrete walkways, and new planter areas.
- Demolition of the existing building should include removal of all foundations, floor slabs, and any other below grade construction. Soils disturbed by the demolition operations should be removed and stockpiled for future use.
- **From the late 1960s to 1994, the subject property was occupied by a Buick dealership and several former auto repair facilities. A waste oil tank was installed on the property in 1956 and it was listed that the UST equipment was eventually removed. The precise location of the former UST and the compactive effort used for pit backfill is not known. As part of the Phase I ESA completed by Giles and submitted under separate cover, a Magnetometer Survey was recommended to be performed on the subject property determine if magnetic anomalies indicative of USTs or hydraulic lifts associated with the former auto repair facilities are present on the subject property.**

- As part of the Limited Phase II ESA completed by Giles and submitted under separate cover, volatile organic compounds (VOCs) were detected in soil gas at the site. The risk of soil gas migration into structures at the site is considered low to moderate. It is Giles' opinion that it would be prudent to install a passive vapor mitigation system for the proposed Chick-fil-A building at the site.
- New Building: Due to the variable strength characteristics of the near surface onsite soils and the presence of variable depth possible fill and fill, and to develop uniformity of support, it is recommended that the soils within the proposed new building area and an appropriate distance beyond (5 feet minimum) be cut and filled as necessary to develop the planned subgrade with the existing soils proofrolled to remove any unstable materials and the surface compacted to an in-place density of at least 90% of its maximum dry density per ASTM D-1557. The existing fill and possible fill soils are considered suitable for foundation and pavement support with recommended proofroll and geotechnical inspection/testing. The soils exposed after cutting should be examined by the geotechnical engineer to document that the soils are suitable for building support. Depending on examination by the geotechnical engineer, some over-excavation may be required due to the fill and possible fill soils and possible former UST pit backfill. Prior to placement of fill, the exposed surfaces approved for fill placement should be scarified to a depth of at least 6 to 8 inches, moisture conditioned and then recompacted to at least 90% of the maximum dry density as determined by Modified Proctor (ASTM D 1557-00).

Building Foundation

- The proposed structure may be supported by a shallow spread footing foundation system or turned-down slabs designed for a maximum, net allowable soil bearing pressure of 3,000 pounds per square foot (psf).
- Foundation reinforcement should be determined by the structural engineer.

Building Floor Slab

- It is recommended that on grade slab be a minimum 4 inch thick slab-on-grade or turned-down slab, underlain by a minimum 4-inch thick granular base supported on a properly prepared subgrade.
- A minimum 10-mil vapor retarder is recommended to be directly below the floor slab or base course where required to protect moisture sensitive floor coverings.
- The floor is recommended to be designed as a mat on elastic subgrade based on a maximum modulus of subgrade reaction (k_s) of 250 pci.

New Pavement

- Asphalt Pavements: 3 inches of asphaltic concrete underlain by 4 or 6 inches of base course in parking stall and drive lane areas, respectively.
- Portland Cement Concrete: 6 inches in thickness underlain by 4 inches of base course in high stress areas such as entrance/exit aprons, drive-thru lane and the trash enclosure-loading zone.

Construction Considerations

- The results of the Giles Limited Phase II ESA indicated that soil at the site is impacted above applicable screening levels. Soil generated from the site that requires off-site disposal should be characterized and disposed of at a licensed disposal facility or other commercial/industrial property after written approval from the disposal site owner is obtained. The process may require 2 to 4 weeks to complete and should be completed before soil is transported off site.

RED - This site has been given a Red designation as the location of the former UST and the compactive effort used for pit backfill are not known, the new building footprint may be constructed within the limits of the previous USTs, and other unknown underground structures may be encountered during grading, which may require additional removal of underground facilities, over-excavation, and backfill.

2.0 SCOPE OF SERVICES

This report provides the results of the *Geotechnical Engineering Exploration and Analysis* that Giles Engineering Associates, Inc. ("Giles") conducted regarding the proposed development. The *Geotechnical Engineering Exploration and Analysis* included several separate, but related, service areas referenced hereafter as the Geotechnical Subsurface Exploration Program, Geotechnical Laboratory Services, and Geotechnical Engineering Services. The scope of each service area was narrow and limited, as directed by our client and in consideration of the proposed project. The scope of each service area is briefly explained in this report. The scope of work performed for this report was consistent with the scope of work outlined within Proposal No. 2GEP-2003009.

Geotechnical-related recommendations for design and construction of the foundation and ground-bearing floor slab for the proposed building are provided in this report. Geotechnical-related recommendations are also provided for the proposed parking lot improvement. Site preparation recommendations are also given; however, those recommendations are only preliminary since the means and methods of site preparation will depend on factors that were unknown when this report was prepared. Those factors include the weather before and during construction, the water table at the time of construction, subsurface conditions that are exposed during construction, and finalized details of the proposed development.

Giles conducted a Phase I Environmental Site Assessment (ESA) for the subject site. The results of that assessment are provided under separate cover (2E-2003005).

3.0 SITES AND PROJECT DESCRIPTION

3.1 Site Description

A new Chick-fil-A restaurant is to be constructed at 820 W. Huntington Drive, in the City of Monrovia, California. The site is currently developed as an operating Claim Jumper restaurant. The site is bordered on the north by Huntington Drive, on the east by Encino Avenue, on the south by residential properties, and on the west by commercial businesses.

The existing parking lot within the site is considered to be in fair condition. The property is situated at approximately latitude 34.1398° North and longitude -118.0176° West.

Other existing improvements include concrete curb and gutter, concrete walkways, landscape areas and underground utilities.

Based upon a review of the ALTA/NSPS land title survey prepared by Joseph C. Truxaw & Associates, elevations at the site range from El. 469 feet at the northwestern property corner to El. 465 feet at the southeastern property corner. The site slopes slightly to the southeast.

3.2 Proposed Project Description

The proposed development includes the construction of a new, single-story Chick-fil-A restaurant building to be located within the existing building footprint. Although detailed building plans are not yet ready for our review, the new building will be a single-story wood-frame structure, 4,960 square feet, with no basement or underground levels. We were not provided with specific loading information for this project at the time of this report; however, based on previous experience with similar projects, we expect the maximum combined dead and live loads supported by the bearing walls and columns will be 2 to 3 kips per lineal foot (klf) and 40 to 50 kips, respectively. The live load supported by the floor slab is expected to be a maximum of 100 pounds per square foot (psf).

The precise location of the former UST and the compactive effort used for pit backfill are not known.

Other planned improvements include a drive-thru lane, new parking stalls, menu board signs, a new trash enclosure, new concrete walkways, and new planter areas.

According to the Conceptual Grading Plan, prepared by Joseph C. Truxaw & Associates, sheet 2 of 4, dated October 19, 2020, the planned finish floor elevation for the proposed Chick-fil-A building will be at El. 468.49 feet. Therefore, site grading is anticipated to include only minor cutting or filling in order to establish the necessary site grade to accommodate the assumed floor elevation, exclusive of site preparation or over-excavation requirements necessary to create a stable site suited for the proposed development. We only considered the proposed Chick-fil-A building area during our review of the Conceptual Grading Plan.

The traffic loading on the proposed parking lot improvement is understood to predominantly consist of automobiles with occasional heavy trucks resulting from deliveries and trash removal. The parking lot pavement sections have been designed on the basis of daily traffic intensity equivalent to five equivalent 18-kip single axle loads and 1,500 automobiles within the main drive lanes and only automobiles of a lesser intensity within the parking stalls. Pavement designs are based on a 20-year design period. Therefore, the parking lot pavement sections have been designed on the basis of a Traffic Index (TI) of 4.0 for the automobile traffic parking stalls (light duty) and a TI of 5.0 for drive lane areas (medium duty).

3.3 Background Information

The subject property is currently developed with an operating Claim Jumper restaurant and asphalt paved parking lot. The existing building on the subject property was originally built in 1994 and has been occupied by Claim Jumper restaurant since then. Prior to that, from the late 1960s to 1994, the subject property was occupied by a Buick dealership and several former auto repair facilities.

A waste oil tank was installed on the property in 1956 and it was listed that the UST equipment was eventually removed. **As part of the Phase I ESA completed by Giles and submitted under separate cover, a Magnetometer Survey was recommended to be performed on the subject property determine if magnetic anomalies indicative of USTs or hydraulic lifts associated with the former auto repair facilities are present on the subject property.**

4.0 SUBSURFACE EXPLORATION

4.1 Subsurface Exploration

Our subsurface exploration consisted of the drilling of six (6) test borings (B-1 to B-6) to depths of approximately 5 to 16 ½ feet below existing ground surfaces utilizing a truck rig with hollow-stem auger drilling equipment. The approximate test boring locations are shown in the Test Boring Location Plan (Figure 1). The Test Boring Location Plan and Test Boring Logs (Records of Subsurface Exploration) are enclosed in Appendix A. Field and laboratory test procedures are enclosed in Appendix B and C, respectively. The terms and symbols used on the Test Boring Logs are defined on the General Notes in Appendix D.

Our subsurface exploration included the collection of relatively undisturbed samples of subsurface soil materials for laboratory testing purposes in accordance with ASTM D 3550, Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils. Bulk samples consisted of composite soil materials obtained at selected depth intervals from the borings. The sampler was driven with successive 30-inch drops of a hydraulically operated, 140-pound automatic trip hammer. Blow counts for each 6-inch driving increment were recorded on the field exploration logs with the number of blows required to drive the standard split-spoon sampler for the last 12 of the 18 inches reported. The central portions of the driven core samples were placed in sealed containers and transported to our laboratory for testing.

Where deemed appropriate, standard split-spoon tests (SS), also called Standard Penetration Test (SPT), were also performed at selected depth intervals in accordance with the American Society for Testing Materials (ASTM) Standard Procedure D 1586. This method consists of mechanically driving an unlined standard split-barrel sampler 18 inches into the soil with successive 30-inch drops of the 140-pound automatic trip hammer. Blow counts for each 6-inch driving increment were recorded on the exploration logs. The number of blows required to drive the standard split-spoon sampler for the last 12 of the 18 inches was identified as the uncorrected standard penetration resistance (N). Disturbed soil samples from the unlined standard split-spoon samplers were placed in plastic bags and transported to our laboratory for testing.

4.2 Subsurface Conditions

The subsurface conditions as subsequently described have been simplified somewhat for ease of report interpretation. A more detailed description of the subsurface conditions at the test boring locations is provided by the logs of the test borings enclosed in Appendix B of this report.

Pavement

Existing pavement encountered within our test borings consisted of approximately 3 to 4 inches of asphaltic concrete over 2 to 4 ½ inches of aggregate base materials. Based on our visual observation, the existing pavement is in fair condition.

Site Geology

Our review of the *Quaternary Geologic Map of Mount Wilson Quadrangle* compiled by United States Geological Survey indicated that the subject site is underlain by younger alluvial basin deposits.

Soil

Onsite soils encountered within our test borings consisted generally of dry to moist, loose to firm in relative density silty fine sand and fine to coarse sand. Possible fill was encountered in the borings to a depth ranging from about 3 ½ to 10 feet below existing grade.

Groundwater

Groundwater was not encountered during our subsurface investigation to the maximum depth explored (16.5 feet). Historic high groundwater is about 175 feet below existing ground surface.

Fluctuations of the groundwater table, localized zones of perched water, and rise in soil moisture content should be anticipated during and after the rainy season. Irrigation of landscape areas on or adjacent to the site could also cause fluctuations of local or shallow perched groundwater levels.

4.3 Percolation Testing

It is our understanding that an on-site below grade storm water infiltration system is being considered for the subject site. Therefore, two percolation tests were performed to assess the infiltration characteristics of the site soils.

The percolation testing consisted of drilling a 8-inch-diameter hole using a hollow-stem auger, installing a 2-inch-diameter slotted pvc casing with a solid end cap and then surrounding the casing with a granular filter pack. The test holes (B-5 and B-6) were then pre-soaked to a minimum depth of 1 foot above the bottom of the boring. After pre-soaking, test water was added to the casing and refilled after each consecutive percolation test reading. The drop in water level over time is the percolation rate at the test location. The percolation rate was reduced to account for the discharge of water from both the sides and bottom of the boring. The formula given by the County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division was used to calculate for the tested infiltration rate.

Infiltration Rate = Pre-adjusted Percolation Rate divided by Reduction Factor

Where the reduction factor (R_f) is given by:

$R_f = (2di - \Delta d/ dia) + 1$

With: di = initial water depth (in.)
Δd = average/final water level drop (in.)
Dia = diameter of the boring (in.)

The results obtained from our percolation testing are summarized below. The infiltration rate noted below has not been reduced to account for a factor of safety.

TABLE 1 – PERCOLATION TEST RESULTS

Test Hole	Test Depth[1] (feet)	Percolation Rate (in/hr)	Design Infiltration Rate (in/hr)	Soil Type
B-4	5.0	100.8	21.91	Fine to Medium Sand
B-6	5.0	11.76	3.51	Silty Fine Sand

1) Depth is referenced to the existing surface grade at the test location.

It should be noted that the infiltration rate of the on-site soils represents a specific area and depth tested and may fluctuate throughout other parts of the site.

5.0 LABORATORY TESTING

Several laboratory tests were performed on selected samples considered representative of those encountered in order to evaluate the engineering properties of the on-site soils. The following are brief description of our laboratory test results.

In Situ Moisture and Density

Tests were performed on select samples from the test borings to determine the subsoils dry density and natural moisture contents in accordance with Test Method ASTM 2216-05. The results of these tests are included in the Test Boring Logs enclosed in Appendix A.

Expansive Potential

To evaluate the expansive potential of the near surface soils encountered during our subsurface exploration, a composite sample collected from Test Borings B-1 through B-3 (1 to 5 feet) was subjected to Expansive Index (EI) testing in accordance with Test Method ASTM D 4829-08a. The result of our expansion index (EI) test indicates that the near surface sample has a very low expansion potential (EI=0).

Consolidation Test

Settlement predictions under anticipated loads were made on the basis of a one-dimensional consolidation test. This test was performed in general conformance with Test Method ASTM D 2435. The test sample was inundated in order to evaluate the sudden increase in moisture condition (collapse/swell potential). Results of this test indicated that the tested sample has slight collapse potential (0.30%). The results of the consolidation test are graphically presented as Figure 2 in Appendix A.

Soluble Sulfate Analysis and Soil Corrosivity

A representative sample of the near surface soils which may contact shallow buried utilities and structural concrete was performed to determine the corrosion potential for buried ferrous metal conduits and the concentrations present of water soluble sulfate which could result in chemical attack of cement. The following table presents the results of our laboratory testing.

Parameter	**B-1 through B-3 1 to 5 feet**
pH	7.3
Chloride	52 ppm
Sulfate	0.0078%
Resistivity	15,000 ohm-cm

The chloride content of near-surface soils was determined for a selected sample in accordance with California Test Method No. 422. The results of this test indicated that **tested on-site soils have a Low exposure to chloride.**

The results of limited testing of soil pH and minimum resistivity were determined in accordance with California Test Method No. 643. The test results for pH indicated the **tested soil was neutral**. The results from the minimum resistivity test generally indicate that the tested soils have a **very low corrosive potential** when in contact with ferrous materials.

A representative sample of the near surface soils which may contact shallow buried utilities and structural concrete was performed to determine the concentrations present of water soluble sulfate which could result in chemical attack of cement. Our laboratory test data indicated that **near surface**

soils contain approximately 0.0078 percent of water soluble sulfates. Based on Section 1904.1 of the 2019 California Building Code (CBC), concrete that may be exposed to sulfate containing soils shall comply with the provisions of ACI 318-11, Section 4.3. Therefore, according to Table 4.3.1 of the ACI 318-11 a negligible exposure to sulfate can be expected for concrete placed in contact with the tested on-site soils. **No special sulfate resistant cement is considered necessary for concrete** which will be in contact with the tested on-site soils.

6.0 GEOLOGIC AND SEISMIC HAZARDS

6.1 Active Fault Zones

The site is not located within an Alquist-Priolo Earthquake Fault Zone. The potential for fault rupture through the site is, therefore, considered to be low. The site may however be subject to strong groundshaking during seismic activity.

6.2 Seismic Hazard Zones

Our review of the published Seismic Hazard Evaluation Report for the Mt. Wilson Quadrangle (within which the subject site is located) indicates that the subject site does not lie within a designated Liquefaction Hazard Zone. In addition, historic high groundwater is about 175 feet below existing ground surface. Based on these conditions, a liquefaction analysis is deemed not necessary.

General types of ground failures that might occur as a consequence of severe ground shaking typically include landsliding, ground subsidence, ground lurching and shallow ground rupture. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, subsoils and groundwater conditions, in addition to other factors. Based on our subsurface exploration and the seismic designation for this site, all of the above effects of seismic activity are considered unlikely at the site.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Conditions imposed by the proposed development have been evaluated on the basis of the assumed floor elevation and engineering characteristics of the subsurface materials encountered during our subsurface investigation and their anticipated behavior both during and after construction. Conclusions and recommendations presented for the design of building foundations and floor slab, and pavement along with site preparation recommendations and construction considerations are discussed in the following sections of this report.

From a soils engineering point of view, the subject property is considered geotechnically suitable for the proposed new improvements provided the following recommendations are incorporated in the design and construction of the project.

We recommend that Giles Engineering Associates, Inc. be involved in the review of the grading and foundation plans for the site to ensure our recommendations are interpreted correctly. Based on the results of our review, modifications to our recommendations or the plans may be warranted.

Effect of Proposed Grading and Construction on Adjacent Property

It is our opinion that the proposed construction and grading will be safe against geotechnical hazards from landslides, settlement, or slippage and the proposed work will not adversely affect the geologic stability of the adjacent property provided grading and construction are performed in compliance with the local city code and in accordance with the recommendations presented herein.

7.1 Seismic Design Considerations

Faulting/Seismic Design Parameters

The site is not located within an Alquist-Priolo Earthquake Fault Zone. The potential for fault rupture through the site is, therefore, considered to be low. The site may however be subject to strong groundshaking during seismic activity. The proposed structure should be designed in accordance with the current version of the *California Building Code (CBC)* and applicable local codes. In accordance with *ASCE 7*, Chapter 20, a Site Classification D is recommended for this site based upon the mapped geological features of the site also verified by test borings.

According to the maps of known active fault near-source zones to be used with the CBC, the Raymond and Sierra Madre faults are the closest known active faults and located about 0.96 and 2.31 miles from the site, respectively. These faults would probably generate the most severe site ground motions at the site with an anticipated maximum moment magnitude (Mw) of 7.3.

The proposed structure should be designed in accordance with the current version of the *California Building Code (CBC)*, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures ASCE 7*, and applicable local codes. The following values are determined by using the SEAOC/OSHPD Seismic Design Map Tool based upon the *CBC 2019* and *ASCE 7-16*.

CBC 2019, Earthquake Loads	
Site Class Definition (Table 20.3-1)	D
Mapped Spectral Response Acceleration Parameter, S_s (for 0.2 second)	1.914
Mapped Spectral Response Acceleration Parameter, S_1 (for 1.0 second)	0.692
Site Coefficient, F_a short period	1.0
Site Coefficient, F_v 1-second period	1.7
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter, S_{MS}	1.914
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter, S_{M1}	1.177
Design Spectral Response Acceleration Parameter, S_{DS}	1.276
Design Spectral Response Acceleration Parameter, S_{D1}	0.785

According to Section 11.4.7 of ASCE 7-16, a ground motion hazard analysis is required and should be performed in accordance with Section 21.2 for structures on Site Class D with S_1 greater than or equal to 0.2. However, as an exception to performing the ground motion hazard analysis, the value of the Seismic Response Coefficient (Cs) must be determined by Equation (12.8-2) for values of the fundamental period of the building (T) ≤ 1.5Ts, and taken as 1.5 times the value computed in accordance with either Equation (12.8-3) for T_L ≥ 1.5Ts, or Equation (12.8-4) for T > T_L.

7.2 Site Development Recommendations

The recommendations for site development as subsequently described are based upon the conditions encountered at the test boring locations and the results of our laboratory testing.

Site Clearing

Clearing and demolition operations should include the removal of all landscape vegetation and existing structural features such as building footings and floor slab, asphaltic concrete pavement, and concrete walkways within the area of the proposed new building and site improvements. Existing pavement within areas of proposed development should be removed or processed to a maximum 3-inch size and maybe used as compacted fill or stabilizing material for the new development. Processed asphalt may be used as fill, sub-base course material, or subgrade stabilization material beyond the building perimeter. Processed concrete or existing base may be used as fill, sub-base course material, or subgrade stabilization material both within and outside of the building perimeter. Due to the moisture sensitivity and variable support characteristics of the on-site soils, the pavement is recommended to remain in-place as long as possible to help protect the subgrade from construction traffic disturbance.

Should any unusual soil conditions or subsurface structures be encountered during demolition operations or during grading, they should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations.

Existing Utilities

All existing utilities should be located. Utilities that are not reused should be capped off and removed or properly abandoned in-place in accordance with city codes and ordinances. The excavations made for removed utilities that are in the influence zone of new construction are recommended to be backfilled with structural compacted fill. Underground utilities, which are to be reused or abandoned in-place, are recommended to be evaluated by the structural engineer and utility backfill is recommended to be evaluated by the geotechnical engineer, to determine their potential effect on the new development. If any existing utilities are to be preserved, construction operations must be carefully performed so as not to disturb or damage the existing utility.

Building Area

Due to the variable strength characteristics of the near surface onsite soils and the presence of variable depth possible fill and fill, and to develop uniformity of support, it is recommended that the soils within the proposed new building area and an appropriate distance beyond (5 feet minimum) be cut and filled as necessary to develop the planned subgrade with the existing soils proofrolled to remove any unstable materials and the surface compacted to an in-place density of at least 90% of its maximum dry density per ASTM D-1557. The existing fill and possible fill soils are considered suitable for foundation support with recommended proofroll and geotechnical inspection/testing. The soils exposed after cutting should be examined by the geotechnical engineer to document that the soils are suitable for building support. Depending on examination by the geotechnical engineer, some over-excavation may be required due to the fill and possible fill soils and possible former UST pit backfill. Prior to placement of fill, the exposed surfaces approved for fill placement should be scarified to a depth of at least 6 to 8 inches, moisture conditioned and then recompacted to at least 90% of the maximum dry density as determined by Modified Proctor (ASTM D 1557-00).

Positive drainage devices such as sloped concrete flatwork, earth swales, and sheet flow gradients in landscape, setback, and easement areas should be designed for the site. The drainage system should drain to a suitable discharge area. The purpose of this drainage system is to reduce water infiltration into the subgrade soils and to direct water away from buildings and site improvements.

All utility trench backfill should be placed in lifts no greater than 12 inches in thickness, moisture conditioned and then compacted to a minimum of 90 percent of the soil's maximum density near the optimum moisture content. A representative of the project geotechnical engineer should observe, probe, and test the backfills to document adequacy of compaction.

Proofroll and Compact Subgrade

Following site clearing, removal of disturbed soils and lowering of site grades where necessary, the subgrades within the proposed building, pavement and drive through areas should be proofrolled in the presence of the geotechnical engineer with appropriate rubber-tire mounted heavy construction equipment or a loaded truck to detect very loose/soft yielding soil which should be removed to a stable subgrade, or stabilized in place. Depending on examination by the geotechnical engineer, some over-excavation may be required due to the existing fill and possible fill soils. The existing fill and possible fill soils are considered suitable for foundation and pavement support with recommended preparation and geotechnical inspection/testing. Excavation to a moderate to deep depth in the former UST area may be necessary to remove any loose unstable backfill. Any unsuitable materials discovered should be removed and backfilled with structural fill. Following proofrolling and completion of any necessary over-excavation, the subgrades in the building, parking lot and drive thru areas should be scarified to a depth of 6 to 8 inches, air dried and recompacted to at least 90 percent of the Modified Proctor (ASTM D1557-00) maximum density. The upper 1 foot of the pavement subgrade should have minimum in-place density of at least 95% of the maximum dry density. Low areas and excavations may then be backfilled in lifts with suitable low-expansive structural compacted fill. The selection, placement and compaction of structural fill should be performed in accordance with the project specifications.

The Guide Specifications included in Appendix D (Modified Proctor) of this report are recommended to be used, at a minimum, as an aid in developing the project specifications. The floor slab subgrade may need to be recompacted prior to slab construction due to weather and equipment traffic effects on the previously compacted soil.

Reuse of On-site Soil

On-site material may be reused as structural compacted fill (if needed) within the proposed building and pavement area provided they do not contain oversized materials and significant quantities of organic matter or other deleterious materials. Care should be used in controlling the moisture content of the soils to achieve proper compaction for load bearing. All subgrade soil compaction as well as the selection, placement and compaction of new fill soils should be performed in accordance with the project specifications under engineering controlled conditions.

Subgrade Protection

The near surface soils that are expected to comprise the subgrade are sensitive to water and disturbance from construction activities. Unstable soil conditions will develop if the soils are exposed to moisture increases or are disturbed (rutted) by construction traffic. If unstable soil conditions occur, recommendations for stabilization should be provided by the geotechnical engineer at the time of grading/construction based on the conditions encountered. The site should be graded to prevent water from ponding within construction areas and/or flowing into excavations. Accumulated water must be removed immediately along with any unstable soil. Foundation concrete should be placed and excavations backfilled as soon as possible to protect the bearing grade. The degree of subgrade instability and associated remedial construction is dependent, in part, upon precautions taken by the contractor to protect the subgrade during site development.

Silt fences or other appropriate erosion control devices should be installed in accordance with local, state and federal requirements at the perimeter of the development areas to control sediment from erosion. Since silt fences or other erosion control measures are temporary structures, careful and continuous monitoring and periodic maintenance to remove accumulated soil and/or replacement should be anticipated.

Fill Placement

All fill should be placed in 8-inch-thick maximum loose lift, moisture conditioned and then compacted to at least 90 percent of the Modified Proctor maximum density. A representative of the project geotechnical consultant should be present on-site during grading operations to document proper placement and compaction of all fill, as well as to verify compliance with the other geotechnical recommendations presented herein.

Import Structural Fill

Any soils imported to the site for use as structural fill should consist of very low expansive (EI less than 21) soils. Materials designated for import should be submitted to the project geotechnical engineer no less than three working days for evaluation. In addition to expansion criteria, soils imported to the site should exhibit adequate shear strength characteristics for the recommended allowable soil bearing pressure, soluble sulfate content and corrosivity and pavement support characteristics.

7.3 Construction Considerations

Construction Dewatering

Groundwater was not encountered during our subsurface exploration to the maximum depth explored (16.5 feet). However, the site may be susceptible to a shallower perched water table due to seasonal precipitation and runoff characteristics of the site. Conventional filtered sump pumps placed in excavations are expected to be suitable for dewatering should any excess water conditions be observed.

Soil Excavation

Some localized slope stability problems may be encountered in steep, unbraced excavations considering the nature of the subsoils. All excavations must be performed in accordance with CAL-OSHA requirements, which is the responsibility of the contractor. Shallow excavations may be adequately sloped for bank stability while deeper excavations or excavations where adequate back sloping cannot be performed may require some form of external support such as shoring or bracing.

Off-Site Soil Disposal

The results of the Giles Limited Phase II ESA indicated that soil at the site is impacted above applicable screening levels. Soil generated from the site that requires off-site disposal should be characterized and disposed of at a licensed disposal facility or other commercial/industrial property after written approval from the disposal site owner is obtained. The process may require 2 to 4 weeks to complete and should be completed before soil is transported off site.

7.4 Foundation Recommendations

Vertical Load Capacity

Upon completion of the recommended building pad preparation, it is our opinion the proposed structure may be supported by a shallow foundation system. Foundations may be designed for a maximum, net, allowable soil-bearing pressure of 3,000 pounds per square foot (psf). Minimum foundation widths for walls and columns should be 18 and 24 inches, respectively, for bearing considerations, regardless of actual soil pressure. The maximum bearing value applies to combined dead and sustained live loads. This allowable soil bearing pressure may be increased by one-third for short term wind and/or seismic loads.

Reinforcing

The determination of the actual quantity of steel reinforcing and dimensions should be performed by the project structural engineer.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. Passive pressure and friction may be used in combination, without reduction, in determining the total resistance to lateral loads. A one-third increase in the passive pressure value may be used for short duration wind or seismic loads.

A coefficient of friction of 0.45 may be used with dead load forces for footings placed on newly placed compacted fill soil. An allowable passive earth pressure of 250 psf per foot of footing depth (pcf) below the lowest adjacent grade may be used for the sides of footings placed against newly placed structural fill. The maximum recommended allowable passive pressure is 1,500 psf.

Bearing Material Criteria

Soil suitable to serve as the foundation bearing grade should exhibit at least a loose relative density (average N value of at least 9) for non-cohesive soils, and an unconfined compressive strength of 1.5 tsf for cohesive soils, for the recommended 3,000 psf allowable soil bearing pressure. For design and construction estimating purposes, suitable bearing soils are expected to be encountered at nominal foundation depths following the recommended site preparation activities. The existing fill and possible fill soils are considered suitable for foundation support with recommended proofroll and geotechnical inspection/testing. However, field testing by the Geotechnical Engineer within the foundation bearing soils is recommended to document that the foundation support soils possess the minimum strength parameters noted above. If unsuitable bearing soils are encountered, they should be recompacted in-place, if feasible, or excavated to a suitable bearing soil subgrade and to a lateral extent as defined by Item No. 3 of the enclosed Guide Specifications, with the excavation backfilled with structural compacted fill to develop a uniform bearing grade.

Foundation Embedment

The California Building Code (CBC) requires a minimum 12-inch foundation embedment depth. However, it is recommended that exterior foundations extend at least 18 inches below the adjacent exterior grade for bearing capacity and to provide greater protection of the moisture sensitive bearing soils. Interior footings may be supported at nominal depth below the floor. All footings must be protected against weather and water damage during and after construction, and must be supported within suitable bearing materials.

Estimated Foundation Movement

Post-construction total and differential settlement of a shallow foundation system designed and constructed in accordance with the recommendations provided in this report are estimated to be less than ¾ and ½ inch, respectively, for static and seismic conditions. The estimated differential movement is anticipated to result in an angular distortion of about 0.002 inches per inch on the basis of a minimum clear span of 20 feet. The maximum estimated total and differential movement is considered within tolerable limits for the proposed structure provided it is considered in the structural design.

7.5 Floor Slab Recommendations

Subgrade

The floor slab subgrade should be prepared in accordance with the appropriate recommendations presented in the Site Development Recommendations section of this report. Foundation, utility trenches and other below-slab excavations should be backfilled with structural compacted fill in accordance with the project specifications.

Design

The floor of the proposed building is recommended to be designed as a mat on an elastic subgrade based on a maximum modulus of subgrade reaction (ks) of 250 pci, supported on a properly prepared subgrade. If desired, the floor slab may be poured monolithically with perimeter foundations where the foundations consist of thickened sections thereby using a turned-down slab construction technique. The slab is recommended to be a minimum of 4 inches in thickness. A qualified structural engineer should perform the actual design of the slab to ensure proper thickness and reinforcing.

The slab is recommended to be underlain by a 4-inch thick layer of free-draining granular material. The existing fine to medium sand may be suitable, with proper testing. A minimum 10-mil synthetic sheet should be placed below the floor slab to serve as a vapor retarder where required to protect moisture sensitive floor coverings (i.e. tile, or carpet, etc.). The vapor retarder is recommended to be in accordance with ASTM E 1745-11, which is entitled: *Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.* The sheets of the vapor retarder material should be evaluated for holes and/or punctures prior to placement and the edges overlapped and taped. If materials underlying the synthetic sheet contain sharp, angular particles, a layer of coarse sand (Sand Equivalent>30) approximately 2 inches thick or a geotextile should be provided to protect it from puncture. An additional 2-inch thick layer of coarse sand may be needed between the slab and the vapor retarder to promote proper curing. The sand layers above and below the synthetic sheeting may be used as a substitute for the granular material below the slab. Proper curing techniques are recommended to reduce the potential for shrinkage cracking and slab curling.

Estimated Settlement

Post-construction total and differential movements of the floor slab designed and constructed in accordance with the recommendations provided in this report are estimated to be less than ½ and ⅓ inch, respectively. Movements on the order of those estimated for foundations should be expected when the foundation and floor slab are structurally connected or constructed monolithically. The estimated differential movement is anticipated to occur across the short dimension of the structure.

7.6 New Pavement

The following recommendations for the new pavement are intended for vehicular traffic associated with the restaurant development within the subject property.

New Pavement Subgrades

Following completion of the recommended subgrade preparation procedures, the subgrade in areas of new pavement construction are expected to consist of existing on-site soil that exhibit a very low expansion potential. An R-value of 50 has been assumed in the preparation of the pavement design. It should however, be recognized that the City of Monrovia may require a specific R-value test to verify the use of the following design. It is recommended that this testing, if required, be conducted following completion of rough grading in the proposed pavement areas so that the R-value test results are indicative of the actual pavement subgrade soils. Alternatively, a minimum code pavement section may be required if a specific R-value test is not performed. To use this R-value, all fill added to the pavement subgrade must have pavement support characteristics at least equivalent to the existing soils, and must be placed and compacted in accordance with the project specifications.

Asphalt Pavements

The following table presents recommended thicknesses for a new flexible pavement structure consisting of asphaltic concrete over a granular base, along with the appropriate CALTRANS specifications for proper materials and placement procedures. An alternate pavement section has been provided for use in parking stall areas due to the anticipated lower traffic intensity in these areas. However, care must be used so that truck traffic is excluded from areas where the thinner pavement section is used, since premature pavement distress may occur. In the event that heavy vehicle traffic cannot be excluded from the specific areas, the pavement section recommended for drive lanes should be used throughout the parking lot.

ASPHALT PAVEMENTS

Materials	Thickness (Inches)		CALTRANS Specifications
	Parking Stalls (TI=4.0)	Drive Lanes (TI=5.0)	
Asphaltic Concrete Surface Course (b)	1	1	Section 39, (a)
Asphaltic Concrete Binder Course (b)	2	2	Section 39, (a)
Crushed Aggregate Base Course	4	6	Section 26, Class 2 (R-value at least 78)

NOTES:
(a) Compaction to density between 95 and 100 percent of the 50-Blow Marshall Density
(b) The surface and binder course may be combined as a single layer placed in one lift if similar materials are utilized.

Pavement recommendations are based upon CALTRANS design parameters for a twenty-year design period and assume proper drainage and construction monitoring. It is, therefore, recommended that the geotechnical engineer monitors and tests subgrade preparation, and that the subgrade be evaluated immediately before pavement construction.

Portland Concrete Pavements

Portland Cement Concrete pavements are recommended in areas where traffic is concentrated such as the entrance/exit aprons as well as areas subjected to heavy loads such as the trash enclosure loading zone. The preparation of the subgrade soils within concrete pavement areas should be performed as previously described in this report. Portland Cement Concrete pavements in high stress areas are recommended to be at least 6 inches thick containing No. 3 bars at 18-inch on-center both ways placed at mid-height. The pavement should be constructed in accordance with Section 40 of the CALTRANS Standard Specifications. A minimum 4-inch thick layer of base course (CALTRANS Class 2) is recommended below the concrete pavement. This base course should be compacted to at least 95% of the material's maximum dry density.

The maximum joint spacing within all of the Portland Cement Concrete pavements is recommended to be 15 feet or less to control shrinkage cracking. Load transfer reinforcing is recommended at construction joints perpendicular to traffic flow if construction joints are not properly keyed. In this event, ¾-inch diameter smooth dowel bars, 18 inches in length placed at 12 inches on-center are recommended where joints are perpendicular to the anticipated traffic flow. Expansion joints are recommended only where the pavement abuts fixed objects such as light standard foundations. Tie bars are recommended at the first joint within the perimeter of the concrete pavement area. Tie bars are recommended to be No. 4 bars at 42-inch on-center spacings and at least 48 inches in length.

General Considerations

Pavement recommendations assume proper drainage and construction monitoring and are based on traffic loads as indicated previously. Pavement designs are based on either PCA or CALTRANS design parameters for twenty (20) year design period. However, these designs are also based on a routine pavement maintenance program and significant asphalt concrete pavement rehabilitation after about 8 to 10 years, in order to obtain a reasonable pavement service life. Due to the presence of variable strength characteristics of the near surface on-site soils, some increased pavement maintenance should be expected.

7.7 Recommended Construction Materials Testing Services

The report was prepared assuming that Giles will perform Construction Materials Testing (CMT) services during construction of the proposed development. In general, CMT services are recommended (and expected) to at least include observation and testing of foundation and pavement support soil and other construction materials. It might be necessary for Giles to provide supplemental geotechnical recommendations based on the results of CMT services and specific details of the project not known at this time.

7.8 Basis of Report

This report is based on Giles' proposal, which is dated March 12, 2020 and is referenced by Giles' proposal number 2GEP-2003009. The actual services for the project varied somewhat from those described in the proposal because of the conditions that were encountered while performing the services and in consideration of the proposed project.

This report is strictly based on the project description given earlier in this report. Giles must be notified if any parts of the project description or our assumptions are not accurate so that this report can be amended, if needed. This report is based on the assumption that the facility will be designed and constructed according to the codes that govern construction at the site.

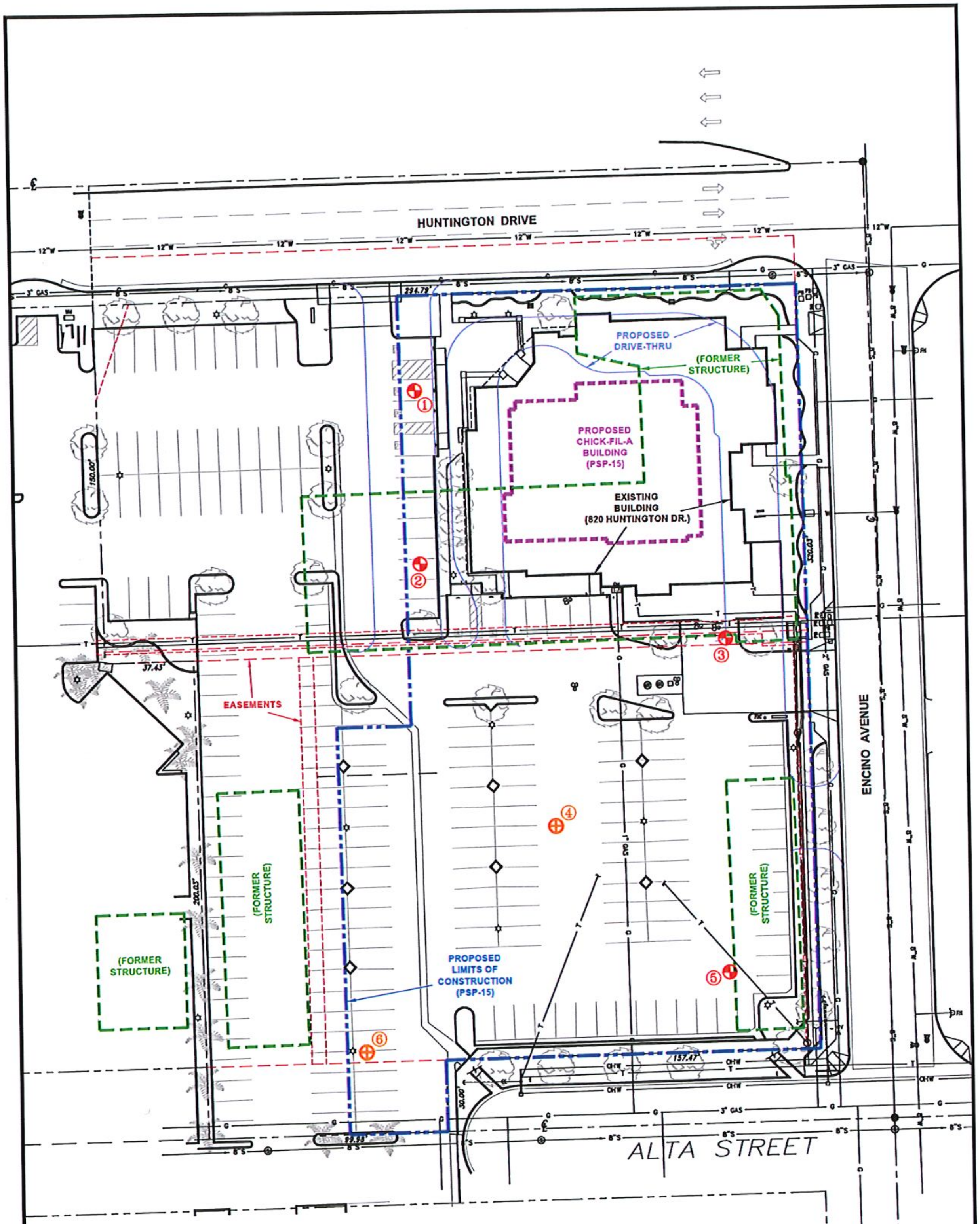
The conclusions and recommendations in this report are based on estimated subsurface conditions as shown on the *Records of Subsurface Exploration*. Giles must be notified if the subsurface conditions that are encountered during construction of the proposed development differ from those shown on the *Records of Subsurface Exploration* because this report will likely need to be revised. General comments and limitations of this report are given in the appendix.

APPENDIX A

FIGURES AND TEST BORING LOGS

The Test Boring Location Plan contained herein was prepared based upon information supplied by *Giles'* client, or others, along with *Giles'* field measurements and observations. The diagram is presented for conceptual purposes only and is intended to assist the reader in report interpretation.

The Test Boring Logs and related information enclosed herein depict the subsurface (soil and water) conditions encountered at the specific boring locations on the date that the exploration was performed. Subsurface conditions may differ between boring locations and within areas of the site that were not explored with test borings. The subsurface conditions may also change at the boring locations over the passage of time.



LEGEND:

① GEOTECHNICAL TEST BORING

④ GEOTECHNICAL TEST BORING / PERCOLATION TEST BORING

— · · — SITE BOUNDARY

N W E S

0 20' 40'

APPROXIMATE SCALE

GILES ENGINEERING ASSOCIATES, INC.
1965 N. MAIN STREET
ORANGE, CA 92865 (714)279-0817
www.gilesengr.com

FIGURE 1
TEST BORING LOCATION PLAN
PROPOSED CHICK-FIL-A RESTAURANT NO. 04698
HUNTINGTON SW & 210 FSU
820 W. HUNTINGTON DRIVE
MONROVIA, CALIFORNIA

DESIGNED	DRAWN	SCALE	DATE	REVISED
MLS	JDid	approx. 1"=40'	05-01-20	--
PROJECT NO.: 2G-2003006			CAD No. 2g2003006-blp	

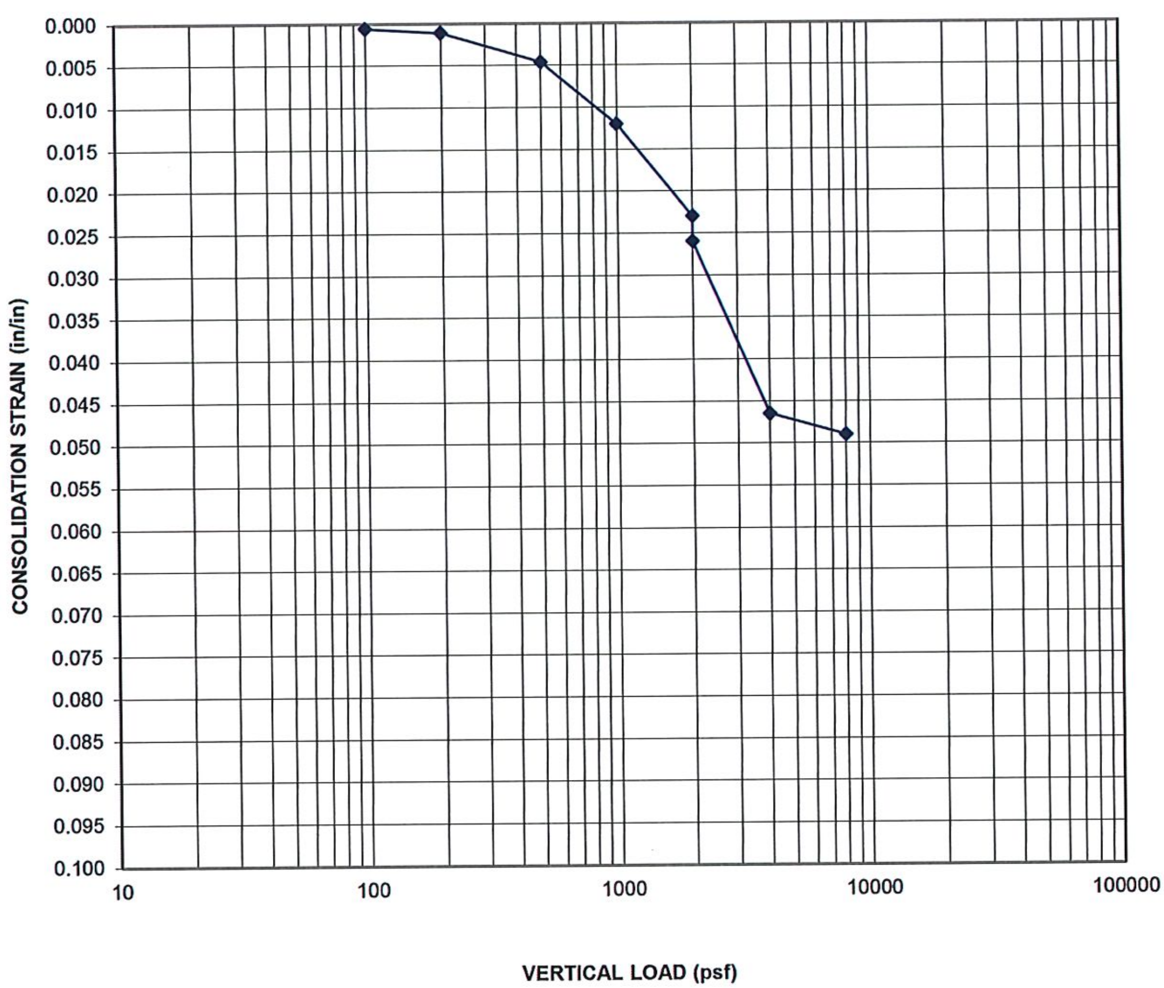
NOTES:

1.) EXISTING FEATURES DEVELOPED FROM THE "ALTA/NSPS LAND TITLE SURVEY", DATED 3-19-2020, PREPARED BY PREPARED BY JOSEPH C. TRUXAW & ASSOCIATES, INC.

2.) PROPOSED FEATURES ARE APPROXIMATE BASED ON THE "PRELIMINARY SITE PLAN" (SHEET PSP 15), REV. 4-3-2020, PREPARED BY CRHO ARCHITECTS.

3.) FORMER STRUCTURES ARE APPROXIMATE BASED ON A 1980 AERIAL.

CONSOLIDATION / COLLAPSE TEST ASTM D2435/ASTM D5333



Classification	Silty fine Sand (SM)		
Boring No.	B-3		
Sample No.	2-CS	Initial Moisture Content (%)	10.2
Depth (ft.)	3.5 - 5.0	Final Moisture Content (%)	17.7
Elevation (ft.)		Natural Density (pcf)	111.2
Liquid Limit	NP	Initial Dry Density (pcf)	101
Plastic Limit	NP	Final Dry Density (pcf)	106.6
Specimen Diameter (in.)	2.42	Collapse at 2000 psf	0.30%
Initial Specimen Thickness (in.)	1.00		

Sample inundated at 2000 psf pressure

Project:	CFA Monrovia
Client:	Chick-fil-A Inc.
Project No.:	2G-2003006
Figure No.:	2

GILES ENGINEERING ASSOCIATES, INC.

-GEOTECHNICAL, ENVIRONMENTAL, AND CONSTRUCTION MATERIALS-
1965 NORTH MAIN STREET, ORANGE, CALIFORNIA
OFFICE: 714-279-0817 FAX : 714-279-9687

BORING NO. & LOCATION: B-1	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 468 feet	PROPOSED CHICK-FIL-A RESTAURANT #4698	
COMPLETION DATE: 04/08/20	820 W. HUNTINGTON DRIVE MONROVIA, CA	
FIELD REP: LARRY BALLARD	PROJECT NO: 2G-2003006	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
Approximately 4 inches of asphaltic concrete over 2 inches of aggregate base										
Light Brown fine to coarse Sand - Damp			1-SS	14				4		
		465								
			2-CS	20				4		Dd=105.0 pcf
	5									
			3-CS	13				6		Dd=125.6 pcf
		460								
Brown Silty fine to medium Sand - Moist	10		4-SS	8				8		
		455								
Light Brown fine to coarse Sand - Dry	15		5-SS	18				3		
Boring Terminated at about 16.5 feet (EL. 451.5')										

	Water Observation Data	Remarks:
▽	Water Encountered During Drilling: None	CS = California Split Spoon
▼	Water Level At End of Drilling:	SS - Standard Penetration Test
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: B-2	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 469 feet	PROPOSED CHICK-FIL-A RESTAURANT #4698	
COMPLETION DATE: 04/08/20	820 W. HUNTINGTON DRIVE MONROVIA, CA	
FIELD REP: LARRY BALLARD	PROJECT NO: 2G-2003006	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
Approximately 3 inches of asphaltic concrete over 2 inches of aggregate base										
Light Brown fine to medium Sand - Moist (Possible Fill)			1-SS	15				6		
Light Brown fine to coarse Sand - Damp	5	465	2-SS	13				4		
Brown Silty fine Sand - Moist (Native)		460	3-SS	5				9		
Light Brown fine to medium Sand - Moist	10	455	4-SS	10				7		
Light Brown fine to coarse Sand - Dry	15		5-SS	19				2		

Boring Terminated at about 16.5 feet (EL. 452.5')

Water Observation Data	Remarks:
Water Encountered During Drilling: None	SS = Standard Penetration Test
Water Level At End of Drilling:	
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: B-3	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 468 feet	PROPOSED CHICK-FIL-A RESTAURANT #4698	
COMPLETION DATE: 04/08/20	820 W. HUNTINGTON DRIVE MONROVIA, CA	
FIELD REP: LARRY BALLARD	PROJECT NO: 2G-2003006	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
Approximately 3.5 inches of asphaltic concrete over 3.5 inches of aggregate base										
Brown Silty fine Sand, some coarse Sand - Moist (Possible Fill)		465	1-SS	11				7		
Dark Brown Silty fine Sand - Moist (Possible Fill)	5		2-CS	18				10		Dd=106.6 pcf
Brown Silty fine Sand - Damp (Possible Fill)		460	3-CS	13				3		Dd=105.8 pcf
Light Brown fine to coarse Sand - Damp	10	455	4-SS	8				3		
Light Brown fine to medium Sand - Damp	15		5-SS	14				4		

Boring Terminated at about 16.5 feet (EL. 451.5')

Water Observation Data	Remarks:
Water Encountered During Drilling: None	CS = California Split Spoon
Water Level At End of Drilling:	SS - Standard Penetration Test
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

GILES LOG REPORT 2G-2003006.GPJ GILES.GDT 5/18/20

BORING NO. & LOCATION: B-4	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 467 feet	PROPOSED CHICK-FIL-A RESTAURANT #4698	
COMPLETION DATE: 04/08/20	820 W. HUNTINGTON DRIVE MONROVIA, CA	
FIELD REP: LARRY BALLARD	PROJECT NO: 2G-2003006	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
Approximately 3.5 inches of asphaltic concrete over 3 inches of aggregate base										
Light Brown fine to medium Sand - Moist		465.0	1-SS	27				6		
	2.5									
		462.5	2-SS	8				4		
	5.0									
Boring Terminated at about 5 feet (EL. 462')										

Water Observation Data

- Water Encountered During Drilling: None
- Water Level At End of Drilling:
- Cave Depth At End of Drilling:
- Water Level After Drilling:
- Cave Depth After Drilling:

Remarks:

SS = Standard Penetration Test

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: B-5	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 465 feet	PROPOSED CHICK-FIL-A RESTAURANT #4698	
COMPLETION DATE: 04/08/20	820 W. HUNTINGTON DRIVE MONROVIA, CA	
FIELD REP: LARRY BALLARD	PROJECT NO: 2G-2003006	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
Approximately 3 inches of asphaltic concrete over 4.5 inches of aggregate base										
Light Bown fine to medium Sand, trace Gravel - Damp (Fill)			1-SS	14				4		
	2.5	462.5								
Light Brown fine to coarse Sand - Damp			2-SS	13				4		
	5.0	460.0								

Boring Terminated at about 5 feet (EL. 460')

	Water Observation Data	Remarks:
▽	Water Encountered During Drilling: None	SS = Standard Penetration Test
▼	Water Level At End of Drilling:	
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

GILES LOG REPORT 2G-2003006.GPJ GILES.GDT 5/18/20

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: B-6	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 466 feet	PROPOSED CHICK-FIL-A RESTAURANT #4698	
COMPLETION DATE: 04/08/20	820 W. HUNTINGTON DRIVE MONROVIA, CA	
FIELD REP: LARRY BALLARD	PROJECT NO: 2G-2003006	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
Approximately 3 inches of asphaltic concrete over 3 inches of aggregate base										
Light Brown Silty fine Sand - Dry		465.0	1-SS	7				2		
	2.5	462.5	2-SS	8				4		
	5.0									
Boring Terminated at about 5 feet (EL. 461')										

	Water Observation Data	Remarks:
∇	Water Encountered During Drilling: None	SS = Standard Penetration Test
▼	Water Level At End of Drilling:	
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

APPENDIX B

FIELD PROCEDURES

The field operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) designation D

420 entitled "Standard Guide for Sampling Rock and Rock" and/or other relevant specifications. Soil samples were preserved and transported to *Giles'* laboratory in general accordance with the procedures recommended by ASTM designation D 4220 entitled "Standard Practice for Preserving and Transporting Soil Samples." Brief descriptions of the sampling, testing and field procedures commonly performed by *Giles* are provided herein.

GENERAL FIELD PROCEDURES

Test Boring Elevations

The ground surface elevations reported on the Test Boring Logs are referenced to the assumed benchmark shown on the Boring Location Plan (Figure 1). Unless otherwise noted, the elevations were determined with a conventional hand-level and are accurate to within about 1 foot.

Test Boring Locations

The test borings were located on-site based on the existing site features and/or apparent property lines. Dimensions illustrating the approximate boring locations are reported on the Boring Location Plan (Figure 1).

Water Level Measurement

The water levels reported on the Test Boring Logs represent the depth of "free" water encountered during drilling and/or after the drilling tools were removed from the borehole. Water levels measured within a granular (sand and gravel) soil profile are typically indicative of the water table elevation. It is usually not possible to accurately identify the water table elevation with cohesive (clayey) soils, since the rate of seepage is slow. The water table elevation within cohesive soils must therefore be determined over a period of time with groundwater observation wells.

It must be recognized that the water table may fluctuate seasonally and during periods of heavy precipitation. Depending on the subsurface conditions, water may also become perched above the water table, especially during wet periods.

Borehole Backfilling Procedures

Each borehole was backfilled upon completion of the field operations. If potential contamination was encountered, and/or if required by state or local regulations, boreholes were backfilled with an "impervious" material (such as bentonite slurry). Borings that penetrated pavements, sidewalks, etc. were "capped" with Portland Cement concrete, asphaltic concrete, or a similar surface material. It must, however, be recognized that the backfill material may settle, and the surface cap may subside, over a period of time. Further backfilling and/or re-surfacing by *Giles'* client or the property owner may be required.

FIELD SAMPLING AND TESTING PROCEDURES

Auger Sampling (AU)

Soil samples are removed from the auger flights as an auger is withdrawn above the ground surface. Such samples are used to determine general soil types and identify approximate soil stratifications. Auger samples are highly disturbed and are therefore not typically used for geotechnical strength testing.

Split-Barrel Sampling (SS) – (ASTM D-1586)

A split-barrel sampler with a 2-inch outside diameter is driven into the subsoil with a 140-pound hammer free-falling a vertical distance of 30 inches. The summation of hammer-blows required to drive the sampler the final 12-inches of an 18-inch sample interval is defined as the "Standard Penetration Resistance" or N-value is an index of the relative density of granular soils and the comparative consistency of cohesive soils. A soil sample is collected from each SPT interval.

Shelby Tube Sampling (ST) – (ASTM D-1587)

A relatively undisturbed soil sample is collected by hydraulically advancing a thin-walled Shelby Tube sampler into a soil mass. Shelby Tubes have a sharp cutting edge and are commonly 2 to 5 inches in diameter.

Bulk Sample (BS)

A relatively large volume of soils is collected with a shovel or other manually-operated tool. The sample is typically transported to *Giles'* materials laboratory in a sealed bag or bucket.

Dynamic Cone Penetration Test (DC) – (ASTM STP 399)

This test is conducted by driving a 1.5-inch-diameter cone into the subsoil using a 15-pound steel ring (hammer), free-falling a vertical distance of 20 inches. The number of hammer-blows required to drive the cone 1¾ inches is an indication of the soil strength and density, and is defined as "N". The Dynamic Cone Penetration test is commonly conducted in hand auger borings, test pits and within excavated trenches.

- Continued -

Ring-Lined Barrel Sampling – (ASTM D 3550)

In this procedure, a ring-lined barrel sampler is used to collect soil samples for classification and laboratory testing. This method provides samples that fit directly into laboratory test instruments without additional handling/disturbance.

Sampling and Testing Procedures

The field testing and sampling operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the field testing (i.e. N-values) are reported on the Test Boring Logs. Explanations of the terms and symbols shown on the logs are provided on the appendix enclosure entitled "General Notes".

APPENDIX C

LABORATORY TESTING AND CLASSIFICATION

The laboratory testing was conducted under the supervision of a geotechnical engineer in accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Brief descriptions of laboratory tests commonly performed by *Giles* are provided herein.

LABORATORY TESTING AND CLASSIFICATION

Photoionization Detector (PID)

In this procedure, soil samples are "scanned" in *Giles'* analytical laboratory using a Photoionization Detector (PID). The instrument is equipped with an 11.7 eV lamp calibrated to a Benzene Standard and is capable of detecting a minute concentration of **certain** Volatile Organic Compound (VOC) vapors, such as those commonly associated with petroleum products and some solvents. Results of the PID analysis are expressed in HNu (manufacturer's) units rather than actual concentration.

Moisture Content (w) (ASTM D 2216)

Moisture content is defined as the ratio of the weight of water contained within a soil sample to the weight of the dry solids within the sample. Moisture content is expressed as a percentage.

Unconfined Compressive Strength (qu) (ASTM D 2166)

An axial load is applied at a uniform rate to a cylindrical soil sample. The unconfined compressive strength is the maximum stress obtained or the stress when 15% axial strain is reached, whichever occurs first.

Calibrated Penetrometer Resistance (qp)

The small, cylindrical tip of a hand-held penetrometer is pressed into a soil sample to a prescribed depth to measure the soils capacity to resist penetration. This test is used to evaluate unconfined compressive strength.

Vane-Shear Strength (qs)

The blades of a vane are inserted into the flat surface of a soil sample and the vane is rotated until failure occurs. The maximum shear resistance measured immediately prior to failure is taken as the vane-shear strength.

Loss-on-Ignition (ASTM D 2974; Method C)

The Loss-on-Ignition (L.O.I.) test is used to determine the organic content of a soil sample. The procedure is conducted by heating a dry soil sample to 440°C in order to burn-off or "ash" organic matter present within the sample. The L.O.I. value is the ratio of the weight loss due to ignition compared to the initial weight of the dry sample. L.O.I. is expressed as a percentage.

Particle Size Distribution (ASTB D 421, D 422, and D 1140)

This test is performed to determine the distribution of specific particle sizes (diameters) within a soil sample. The distribution of coarse-grained soil particles (sand and gravel) is determined from a "sieve analysis," which is conducted by passing the sample through a series of nested sieves. The distribution of fine-grained soil particles (silt and clay) is determined from a "hydrometer analysis" which is based on the sedimentation of particles suspended in water.

Consolidation Test (ASTM D 2435)

In this procedure, a series of cumulative vertical loads are applied to a small, laterally confined soil sample. During each load increment, vertical compression (consolidation) of the sample is measured over a period of time. Results of this test are used to estimate settlement and time rate of settlement.

Classification of Samples

Each soil sample was visually-manually classified, based on texture and plasticity, in general accordance with the Unified Soil Classification System (ASTM D-2488-75). The classifications are reported on the Test Boring Logs.

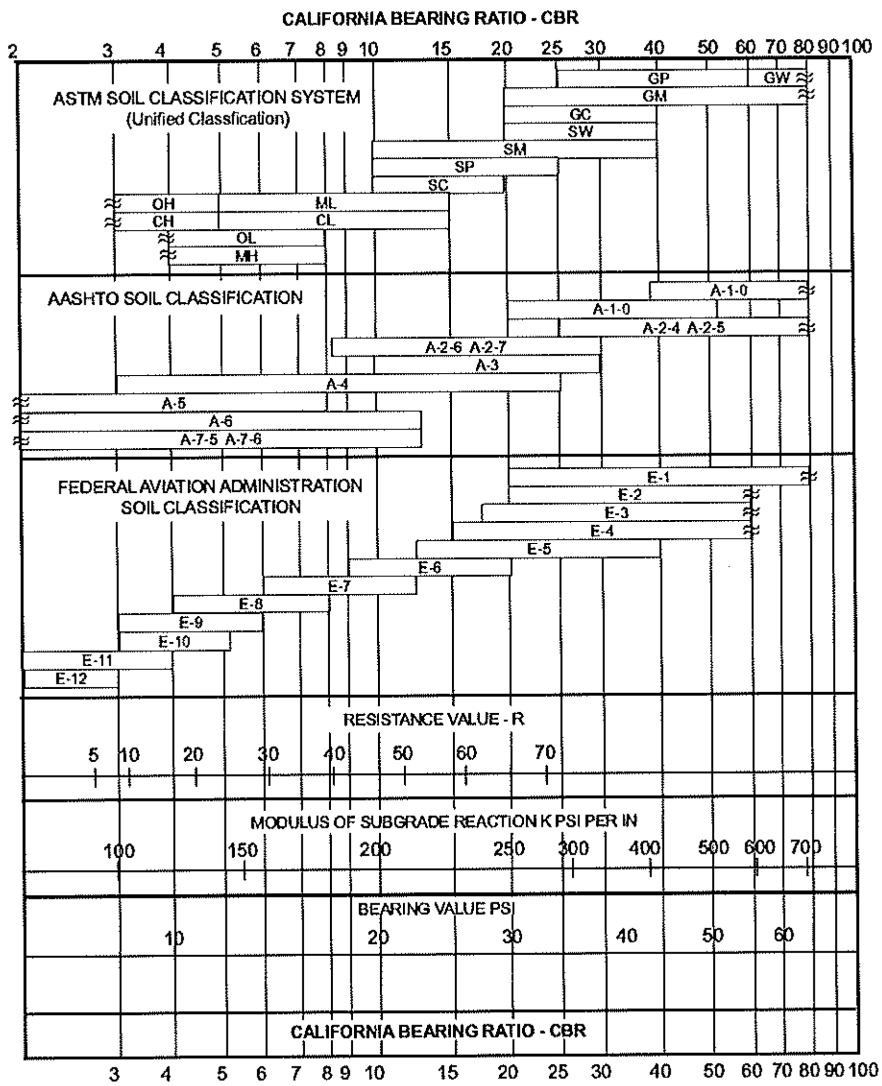
Laboratory Testing

The laboratory testing operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the laboratory tests are provided on the Test Boring Logs or other appendix enclosures. Explanation of the terms and symbols used on the logs is provided on the appendix enclosure entitled "General Notes."

California Bearing Ratio (CBR) Test ASTM D-1833

The CBR test is used for evaluation of a soil subgrade for pavement design. The test consists of measuring the force required for a 3-square-inch cylindrical piston to penetrate 0.1 or 0.2 inch into a compacted soil sample. The result is expressed as a percent of force required to penetrate a standard compacted crushed stone.

Unless a CBR test has been specifically requested by the client, the CBR is estimated from published charts, based on soil classification and strength characteristics. A typical correlation chart is below.



APPENDIX D

GENERAL INFORMATION

GUIDE SPECIFICATIONS FOR SUBGRADE AND PREPARATION FOR FILL, FOUNDATION, FLOOR SLAB AND PAVEMENT SUPPORT; AND SELECTION, PLACEMENT AND COMPACTION OF FILL SOILS USING MODIFIED PROCTOR PROCEDURES

1. Construction monitoring and testing of subgrades and grades for fill, foundation, floor slab and pavement; and fill selection, placement and compaction shall be performed by an experienced soils engineer and/or his representatives.

2. All compacted fill, subgrades, and grades shall be (a) underlain by suitable bearing material, (b) free of all organic frozen, or other deleterious material, and (c) observed, tested and approved by qualified engineering personnel representing an experienced soils engineer. Preparation of subgrades after stripping vegetation, organic or other unsuitable materials shall consist of (a) proofrolling to detect soft, wet, yielding soils or other unstable materials that must be undercut, (b) scarifying top 6 to 8 inches, (c) moisture conditioning the soils as required, and (d) recompaction to same minimum in-situ density required for similar material indicated under Item 5. Note: Compaction requirements for pavement subgrade are higher than other areas. Weather and construction equipment may damage compacted fill surface and reworking and retesting may be necessary for proper performance.

3. In overexcavation and fill areas, the compacted fill must extend (a) a minimum 1 foot lateral distance beyond the exterior edge of the foundation at bearing grade or pavement at subgrade and down to compacted fill subgrade on a maximum 0.5(H):1(v) slope, (b) 1 foot above footing grade outside the building, and (c) to floor subgrade inside the building. Fill shall be placed and compacted on a 5(H):1(V) slope or must be stepped or benched as required to flatten if not specifically approved by qualified personnel under the direction of an experienced soils engineer.

4. The compacted fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as "contaminated", and shall be low-expansive with a maximum Liquid Limit (ASTM D-423) and Plasticity Index (ASTM D-424) of 30 and 15, respectively, unless specifically tested and found to have low expansive properties and approved by an experienced soils engineer. The top 12 inches of compacted fill should have a maximum 3 inch particle diameter and all underlying compacted fill a maximum 6 inch diameter unless specifically approved by an experienced soils engineer. All fill material must be tested and approved under the direction of an experienced soils engineer prior to placement. If the fill is to provide non-frost susceptible characteristics, it must be classified as a clean GW, GP, SW or SP per Unified Soils Classification System (ASTM D-2487).

5. For structural fill depths less than 20 feet, the density of the structural compacted fill and scarified subgrade and grades shall not be less than 90 percent of the maximum dry density as determined by Modified Proctor (ASTM D-1557) with the exception of the top 12 inches of pavement subgrade which shall have a minimum in-situ density of 95 percent of maximum dry density, or 5 percent higher than underlying structural fill materials. Where the structural fill depth is greater than 20 feet, the portion below 20 feet should have a minimum in-place density of 95 percent of its maximum dry density or 5 percent higher than the top 20 feet. Cohesive soils shall not vary by more than -1 to +3 percent moisture content and granular soil ±3 percent from the optimum when placed and compacted or recompacted, unless specifically recommended/approved by the soils engineer observing the placement and compaction. Cohesive soils with moderate to high expansion potentials (PI>15) should, however, be placed, compacted and maintained prior to construction at a 3±1 percent moisture content above optimum moisture content to limit future heave. Fill shall be placed in layers with a maximum loose thickness of 8 inches for foundations and 10 inches for floor slabs and pavements, unless specifically approved by the soils engineer taking into consideration the type of materials and compaction equipment being used. The compaction equipment should consist of suitable mechanical equipment specifically designed for soil compaction. Bulldozers or similar tracked vehicles are typically not suitable for compaction.

6. Excavation, filing, subgrade grade preparation shall be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working platform. Springs or water seepage encountered during grade/foundation construction must be called to the soils engineer's attention immediately for possible construction procedure revision or inclusion of an underdrain system.

7. Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls (i.e. basement walls and retaining walls) must be properly tested and approved by an experienced soils engineer with consideration for the lateral pressure used in the wall design.

8. Wherever, in the opinion of the soils engineer or the Owner's Representatives, an unstable condition is being created either by cutting or filling, the work should not proceed into that area until an appropriate geotechnical exploration and analysis has been performed and the grading plan revised, if found necessary.

GENERAL COMMENTS

The soil samples obtained during the subsurface exploration will be retained for a period of thirty days. If no instructions are received, they will be disposed of at that time.

This report has been prepared exclusively for the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. Copies of this report may be provided to contractor(s), with contract documents, to disclose information relative to this project. The report, however, has not been prepared to serve as the plans and specifications for actual construction without the appropriate interpretation by the project architect, structural engineer, and/or civil engineer. Reproduction and distribution of this report must be authorized by the client and *Giles*.

This report has been based on assumed conditions/characteristics of the proposed development where specific information was not available. It is recommended that the architect, civil engineer and structural engineer along with any other design professionals involved in this project carefully review these assumptions to ensure they are consistent with the actual planned development. When discrepancies exist, they should be brought to our attention to ensure they do not affect the conclusions and recommendations provided herein. The project plans and specifications may also be submitted to *Giles* for review to ensure that the geotechnical related conclusions and recommendations provided herein have been correctly interpreted.

The analysis of this site was based on a subsoil profile interpolated from a limited subsurface exploration. If the actual conditions encountered during construction vary from those indicated by the borings, *Giles* must be contacted immediately to determine if the conditions alter the recommendations contained herein.

The conclusions and recommendations presented in this report have been promulgated in accordance with generally accepted professional engineering practices in the field of geotechnical engineering. No other warranty is either expressed or implied.

CHARACTERISTICS AND RATINGS OF UNIFIED SOIL SYSTEM CLASSES FOR SOIL CONSTRUCTION *

Class	Compaction Characteristics	Max. Dry Density Standard Proctor (pcf)	Compressibility and Expansion	Drainage and Permeability	Value as an Embankment Material	Value as Subgrade When Not Subject to Frost	Value as Base Course	Value as Temporary Pavement	
								With Dust Palliative	With Bituminous Treatment
GW	Good: tractor, rubber-tired, steel wheel or vibratory roller	125-135	Almost none	Good drainage, pervious	Very stable	Excellent	Good	Fair to poor	Excellent
GP	Good: tractor, rubber-tired, steel wheel or vibratory roller	115-125	Almost none	Good drainage, pervious	Reasonably stable	Excellent to good	Poor to fair	Poor	
GM	Good: rubber-tired or light sheepsfoot roller	120-135	Slight	Poor drainage, semipervious	Reasonably stable	Excellent to good	Fair to poor	Poor	Poor to fair
GC	Good to fair: rubber-tired or sheepsfoot roller	115-130	Slight	Poor drainage, impervious	Reasonably stable	Good	Good to fair **	Excellent	Excellent
SW	Good: tractor, rubber-tired or vibratory roller	110-130	Almost none	Good drainage, pervious	Very stable	Good	Fair to poor	Fair to poor	Good
SP	Good: tractor, rubber-tired or vibratory roller	100-120	Almost none	Good drainage, pervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SM	Good: rubber-tired or sheepsfoot roller	110-125	Slight	Poor drainage, impervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SC	Good to fair: rubber-tired or sheepsfoot roller	105-125	Slight to medium	Poor drainage, impervious	Reasonably stable	Good to fair	Fair to poor	Excellent	Excellent
ML	Good to poor: rubber-tired or sheepsfoot roller	95-120	Slight to medium	Poor drainage, impervious	Poor stability, high density required	Fair to poor	Not suitable	Poor	Poor
CL	Good to fair: sheepsfoot or rubber-tired roller	95-120	Medium	No drainage, impervious	Good stability	Fair to poor	Not suitable	Poor	Poor
OL	Fair to poor: sheepsfoot or rubber-tired roller	80-100	Medium to high	Poor drainage, impervious	Unstable, should not be used	Poor	Not suitable	Not suitable	Not suitable
MH	Fair to poor: sheepsfoot or rubber-tired roller	70-95	High	Poor drainage, impervious	Poor stability, should not be used	Poor	Not suitable	Very poor	Not suitable
CH	Fair to poor: sheepsfoot roller	80-105	Very high	No drainage, impervious	Fair stability, may soften on expansion	Poor to very poor	Not suitable	Very poor	Not suitable
OH	Fair to poor: sheepsfoot roller	65-100	High	No drainage, impervious	Unstable, should not be used	Very poor	Not suitable	Not suitable	Not suitable
Pt	Not suitable		Very high	Fair to poor drainage	Should not be used	Not suitable	Not suitable	Not suitable	Not suitable

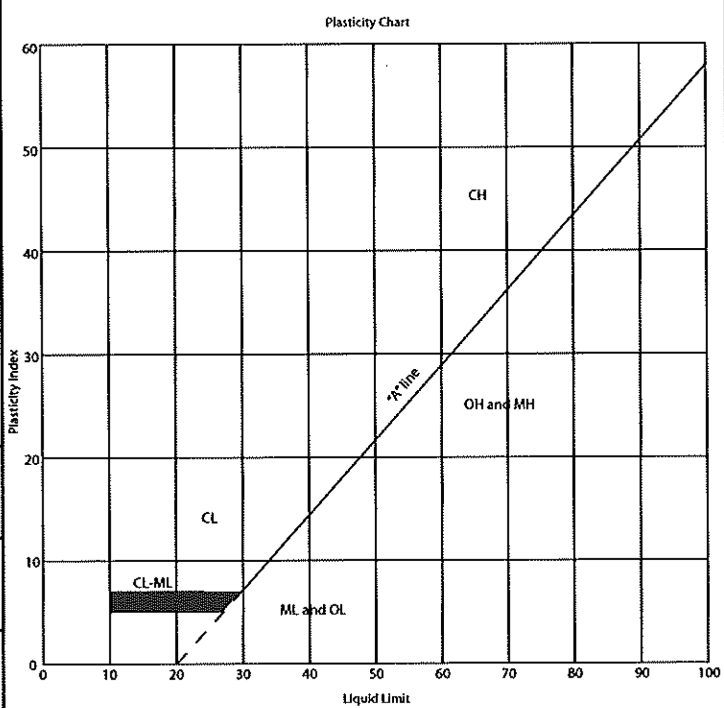
* "The Unified Classification: Appendix A - Characteristics of Soil, Groups Pertaining to Roads and Airfields, and Appendix B - Characteristics of Soil Groups Pertaining to Embankments and Foundations," Technical Memorandum 357, U.S. Waterways Ixperiment Station, Vicksburg, 1953.

** Not suitable if subject to frost.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

Major Divisions			*Group Symbols*	*Typical Names*	*Laboratory Classification Criteria*	
Coarse-grained soils (more than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			GP	Poorly graded gravels, gravel-sand mixtrues, little or no fines	Not meeting all gradation requirements for GW	
		Gravels with fines (appreciable amount of fines)	GM[a] d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Limits plotting within shaded area, above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM[a] d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Limits plotting within shaded area, above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7	
Fine-grained soils (More than half material is smaller than No. 200 sieve size)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	Plasticity Chart (see below)	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays		
			OL	Organic silts and organic silty clays of low plasticity		
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity, organic silts		
	Highly organic soils		Pt	Peat and other highly organic soils		

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:
Less than 5 percent: GW, GP, SW, SP
More than 12 percent: GM, GC, SM, SC
5 to 12 percent: *Borderline* cases requiring dual symbols[b]



[a]Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits, suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u is used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group sympols. For example GW-GC, well-graded gravel-sand mixture with clay binder.

Giles Engineering Associates, Inc.

GENERAL NOTES

SAMPLE IDENTIFICATION

All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)

Trace:	1-10%
Little:	11-20%
Some:	21-35%
And/Adjective	36-50%

PARTICLE SIZE (DIAMETER)

Boulders:	8 inch and larger
Cobbles:	3 inch to 8 inch
Gravel:	coarse - ¾ to 3 inch
	fine – No. 4 (4.76 mm) to ¾ inch
Sand:	coarse – No. 4 (4.76 mm) to No. 10 (2.0 mm)
	medium – No. 10 (2.0 mm) to No. 40 (0.42 mm)
	fine – No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt:	No. 200 (0.074 mm) and smaller (non-plastic)
Clay:	No 200 (0.074 mm) and smaller (plastic)

SOIL PROPERTY SYMBOLS

Dd:	Dry Density (pcf)
LL:	Liquid Limit, percent
PL:	Plastic Limit, percent
PI:	Plasticity Index (LL-PL)
LOI:	Loss on Ignition, percent
Gs:	Specific Gravity
K:	Coefficient of Permeability
w:	Moisture content, percent
qp:	Calibrated Penetrometer Resistance, tsf
qs:	Vane-Shear Strength, tsf
qu:	Unconfined Compressive Strength, tsf
qc:	Static Cone Penetrometer Resistance (correlated to Unconfined Compressive Strength, tsf)
PID:	Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-Units. (BDL=Below Detection Limit)
N:	Penetration Resistance per 12 inch interval, or fraction thereof, for a standard 2 inch O.D. (1⅜ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N-Values where plus sign (+) is shown.
Nc:	Penetration Resistance per 1¾ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.
Nr:	Penetration Resistance per 12 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon
ST:	Shelby Tube – 3 inch O.D. (except where noted)
CS:	3 inch O.D. California Ring Sampler
DC:	Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Wash Sample
RB:	Rock-Roller Bit
BS:	Bulk Sample
Note:	Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE CONSISTENCY	BLOWS PER FOOT (N)	UNCONFINED COMPRESSIVE STRENGTH (TSF)
Very Soft	0 - 2	0 - 0.25
Soft	3 - 4	0.25 - 0.50
Medium Stiff	5 – 8	0.50 - 1.00
Stiff	9 – 15	1.00 - 2.00
Very Stiff	16 – 30	2.00 - 4.00
Hard	31+	4.00+

NON-COHESIVE (GRANULAR) SOILS

RELATIVE DENSITY	BLOWS PER FOOT (N)
Very Loose	0 - 4
Loose	5 - 10
Firm	11 - 30
Dense	31 - 50
Very Dense	51+

DEGREE OF PLASTICITY	PI
None to Slight	0 - 4
Slight	5 - 10
Medium	11 - 30
High to Very High	31+

DEGREE OF EXPANSIVE POTENTIAL	PI
Low	0 - 15
Medium	15 - 25
High	25+

Important Information About Your
Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
The Best People on Earth

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IIGER06045.0M

Geotechnical, Environmental & Construction Materials Consultants

GILES
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www.gilesengr.com

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(770) 458-3399

DALLAS, TX
(214) 358-5885

LOS ANGELES, CA
(714) 279-0817

MILWAUKEE, WI
(262) 544-0118

ORLANDO, FL
(407) 321-5356

TAMPA, FL
(813) 283-0096

BALTIMORE/WASHINGTON, D.C.
(410) 636-9320

IV. BMP Details and Calculations

QUANTITY CONTROL.

Implement a stormwater management plan that prevents the post development peak discharge rate and quantity from exceeding the predevelopment peak discharge rate and quantity for the 10-year design storm.

Total runoff pre-development condition and ultimate disposition of on-site runoff.
The discharge for onsite drainage will be:
Total discharge:
Q_{10} = 5.74 cfs. **Q_{25} = 7.46 cfs.**

Total runoff post-development condition and ultimate disposition of on-site runoff.

The discharge for onsite drainage will be:
Total discharge:
Q_{10} = 5.72 cfs. **Q_{25} = 7.27 cfs.**

Volume to Retain
The volume to retain will be the difference in volume between the Post Q_{10} = 5.74 cfs minus the Pre Q_{10} = 5.72 cfs
ΔQ = -0.02 cfs.
No volume to retain.

QUALITY CONTROL.

LID Hydrology Analysis

As per LID Requirements, the nonresidential development projects shall prioritize the selection of BMPs to treat stormwater pollutants, reduce stormwater runoff volume, and promote groundwater infiltration and stormwater reuse in the integrated approach to protecting water quality and managing water resources. **Infiltration is feasible** for the site.

Methodology
Current water quality requirements are based on treating a specific volume of stormwater runoff from the project site (stormwater quality design volume [SWQDv]). By treating the SWQDv, it is expected that pollutant loads, which are typically higher during the beginning of storm events, will be reduced in the discharge to or prevented from reaching the receiving waters.

Stormwater Quality Design Volume (SWQDv)
The design storm, from which the SWQDv is calculated, is defined as **the greater of:**

- **The 0.75-inch, 24-hour rain event; or**
- **The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isohyetal map.**

The volume of stormwater runoff that must be retained at the project site is calculated using LACDPW hydrologic calculator (HydroCalc). HydroCalc completes the calculation process and produces the peak stormwater runoff flow rates and volumes for single subareas. Because HydroCalc does not have reach routing capabilities, it is limited to watersheds and project areas up to 40 acres.

As per the County of Los Angeles Department of Public Works Analysis of 85th Percentile 24-hour Rainfall Depth Analysis. Within the County of Los Angeles. The 85th Percentile 24-hr Rainfall Depth for the site is: **1.1 inch.**

The Modified Rational Method will be used to calculate the peak mitigation $Q_{PM.}$ and V_M
See results from the Los Angeles Department of Public Works' HydroCalc.

Predominant Soil Type:
From LACDPW Soil Classification Area: 006

DMA-1

Sub-area Node 100 to Node 101
Area = 0.581 acres
L = 368 ft. s = 0.007
Using the HydroCalc from LACDPW, the following values were found:
Q_{PM} = 0.142 cfs. **V_M = 0.0395 acre-ft.**
Tc = 22 min. **V_M = 1,720 cf**
I = 0.327 in/hr.

Sub-area Node 200 to Node 201
Area = 0.27 acres
L = 138 ft. s = 0.0151
Using the HydroCalc from LACDPW, the following values were found:
Q_{PM} = 0.1167 cfs. **V_M = 0.021 acre-ft.**
Tc = 9 min. **V_M = 916 cf**
I = 0.50 in/hr.

Sub-area Node 300 to Node 301
Area = 0.23 acres

L = 176 ft.   s = 0.0175

Using the HydroCalc from LACDPW, the following values were found:

Q_{PM} = 0.0944 cfs.   **V_M = 0.0179 acre-ft.**
Tc = 10 min.   **V_M = 780 cf**
I = 0.47 in/hr.

Sub-area Node 400 to Node 401

Area = 0.119 acres

L = 143 ft.   s = 0.02

Using the HydroCalc from LACDPW, the following values were found:

Q_{PM} = 0.0413 cfs.   **V_M = 0.0074 acre-ft.**
Tc = 10 min.   **V_M = 324 cf**
I = 0.47 in/hr.

Sub-area Node 800 to Node 801

Area = 0.20 acres

L = 125 ft.   s = 0.018

Using the HydroCalc from LACDPW, the following values were found:

Q_{PM} = 0.0057 cfs.   **V_M = 0.002 acre-ft.**
Tc = 35 min.   **V_M = 86 cf**
I = 0.26 in/hr.

Required LID volume DMA-1 = 3,826 ft^3

Treatment

As per the "County of Los Angeles Department of Public Works" Low Impact Development. Standards Manual dated February 2014, RET-3 Infiltration trench is similar to the proposed underground infiltration system.

RET-3 Infiltration Trench

Proposed Solution

Cultec Stormfilter and Recharger chambers

We are proposing to the City a treatment train as follows:

- **Pre-Treat** the required volume for LID purpose, using **Cultec Stormfilter330** to remove sedimentation as manufactured by Cultec.
- **Store and infiltrate** the required **treated** volume for LID purpose, using **Cultec Recharger 330XL** chambers.

As per the Geotechnical Report by Giles Engineering Associates, the infiltration rates for the subject site are 1.17 in/hr and 7.30 in/hr with a safety factor of 3 applied.

Infiltration System:

Selected Model: Recharger 330XL
DMA-1:
Proposed volume = 3,826 ft^3
Number of rows: 4
Number of chambers: 12 per row
Bed area: 20.83' x 87.50' =1,822.92 sq. ft.

Total:
Required volume = 3,826.00 ft^3 Proposed volume = 4,113.87 ft^3

Infiltration rates after safety of 3:
Boring B-4 = 21.91/3 = 7.30 in/hr
Boring B-6 = 3.51/3 = 1.17 in/hr
Average Infiltration rate = $\frac{7.3+1.17}{2}$ = 4.23 in/hr
Draw Down Time

$$DD = \frac{4{,}113.87x12}{1{,}822.92x4.23} = 6.40\ hr. < 96\ \text{hr.}$$

Treatment is complete.

CULTEC
Founder of Plastic Chamber Technology
Stormwater and Septic Solutions
Since 1986
1-800-4-CULTEC
custservice@cultec.com

Prepared For:	Project Information:	Engineer:	Calculations Performed By:
Name	CFA #4698	Randy Decker	Matthew Ersek
Chick-fil-A, Inc	Huntington SW & HWY 210	Truxaw & Associates	Truxaw & Associates
15635 Alton Parkway, Suite 350	Monrovia	1915 W. Orangewood Avenue, Suite 101	1915 Orangewood Avenue, Suite 101
Irvine	CA 91016	Orange	Orange
CA 92618		CA 92868	CA 92868
Phone	Date: October 18, 2020	714-935-0265	714-935-0265
Fax		714-935-0106	714-935-0106
Email		randydecker@truxaw.com	mattersek@truxaw.com

Input Given Parameters

Unit of Measure	English	
Select Model	Recharger 330XLHD	
Stone Porosity	40.0%	
Number of Header Systems	1 Header	
Stone Depth **Above** Chamber	6	inches
Stone Depth **Below** Chamber	6	inches
Workable Bed Depth	5.00	feet
Max. Bed Width	25.00	feet
Storage Volume Required	3826.00	cu. feet

Chamber Specifications

Height	30.5	inches
Width	52.00	inches
Length	8.50	feet
Installed Length	7.00	feet
Bare Chamber Volume	52.21	cu. feet
Installed Chamber Volume	79.26	cu. feet

Image for visual reference only.May not reflect selected model.

Bed Depth	4.63	feet
Bed Width	20.83	feet
Storage Volume Provided	4113.87	cu. feet

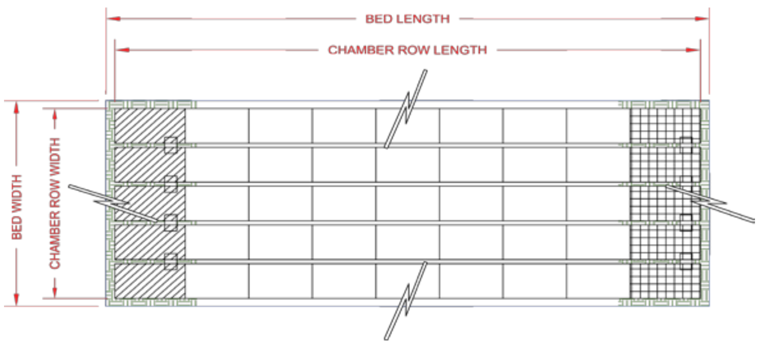
Materials List

Recharger 330XLHD Stormwater System by CULTEC, Inc.

Approx. Unit Count - not for construction	48	pieces
Actual Number of Chambers Required	48	pieces
Starter Chambers	4	pieces
Intermediate Chambers	40	pieces
End Chambers	4	pieces

HVLV FC-24 Feed Connector	3	pieces
CULTEC No. 410™ Filter Fabric	539.39	sq. yards
CULTEC No. 20L Polyethylene Liner	20.83	feet
Stone	144.59	cu. yards

Bed Detail



Number of Rows Wide	4	pieces
Number of Chambers Long	12	pieces
Chamber Row Width	18.83	feet
Chamber Row Length	85.50	feet
Bed Width	20.83	feet
Bed Length	87.50	feet
Bed Area Required	1822.92	sq. feet

Bed detail for reference only. Not project specific. Not to scale. Use CULTEC StormGenie to output project specific detail.

Founder of Plastic Chamber Technology
Stormwater and Septic Solutions
Since 1986

CULTEC

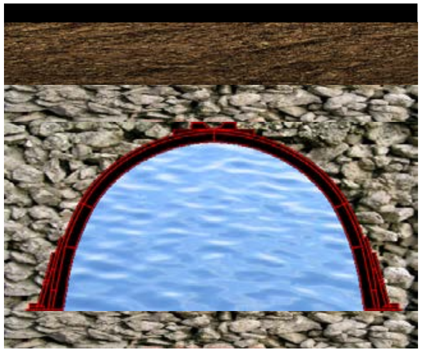
1-800-4-CULTEC
custservice@cultec.com

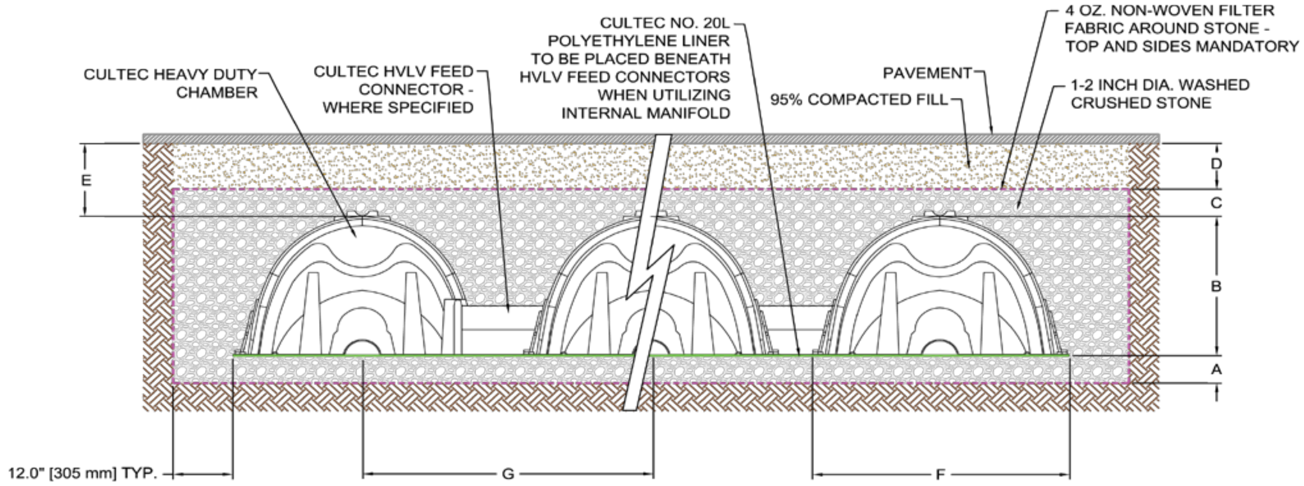
Project Name: CFA #4698 **Date:** October 18, 2020

Cross Section Detail

Conceptual graphic only. Not job specific.

Recharger 330XLHD		
Pavement	3	inches
95% Compacted Fill	10	inches
Stone Above	6	inches
Chamber Height	30.5	inches
Stone Below	6	inches
Effective Depth	42.5	inches
Bed Depth	55.5	inches

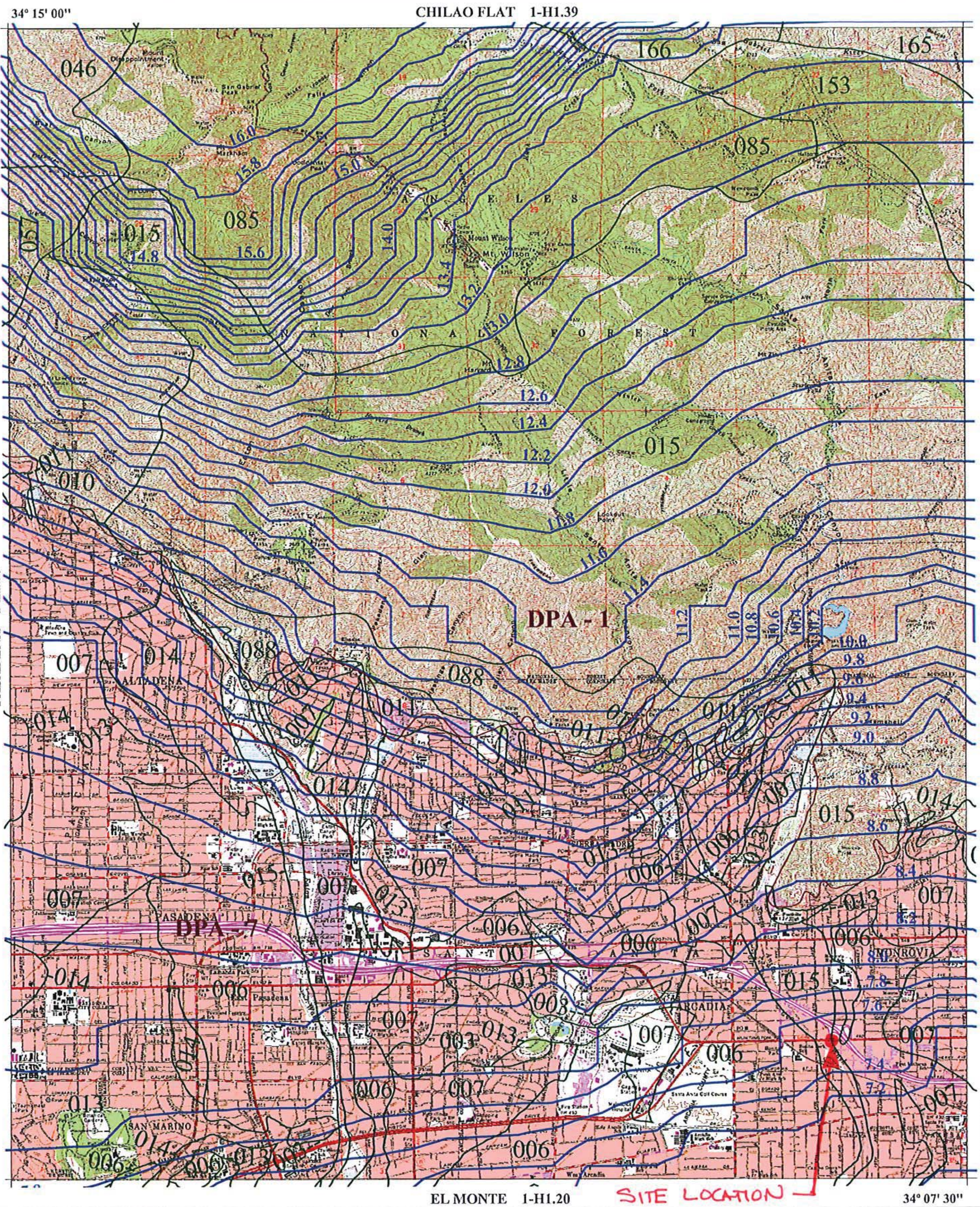




A	Depth of Stone Base	6.0	inches
B	Chamber Height	30.5	inches
C	Depth of Stone Above Units	6.0	inches
D	Depth of 95% Compacted Fill	10.0	inches
E	Max. Depth of Cover Allowed Above Crown of Chamber	12.0	feet
F	Chamber Width	52.0	inches
G	Center to Center Spacing	4.83	feet

Breakdown of Storage Provided by Recharger 330XLHD Stormwater System		
Chambers	2550.98	cu. feet
Feed Connectors	1.37	cu. feet
Stone	1561.53	cu. feet
Total Storage Provided	4113.87	cu. feet

CULTEC, Inc.
P.O. Box 280, Brookfield, CT 06804 USA
Phone: 203-775-4416 - Fax: 203-775-1462 - **www.cultec.com**



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878

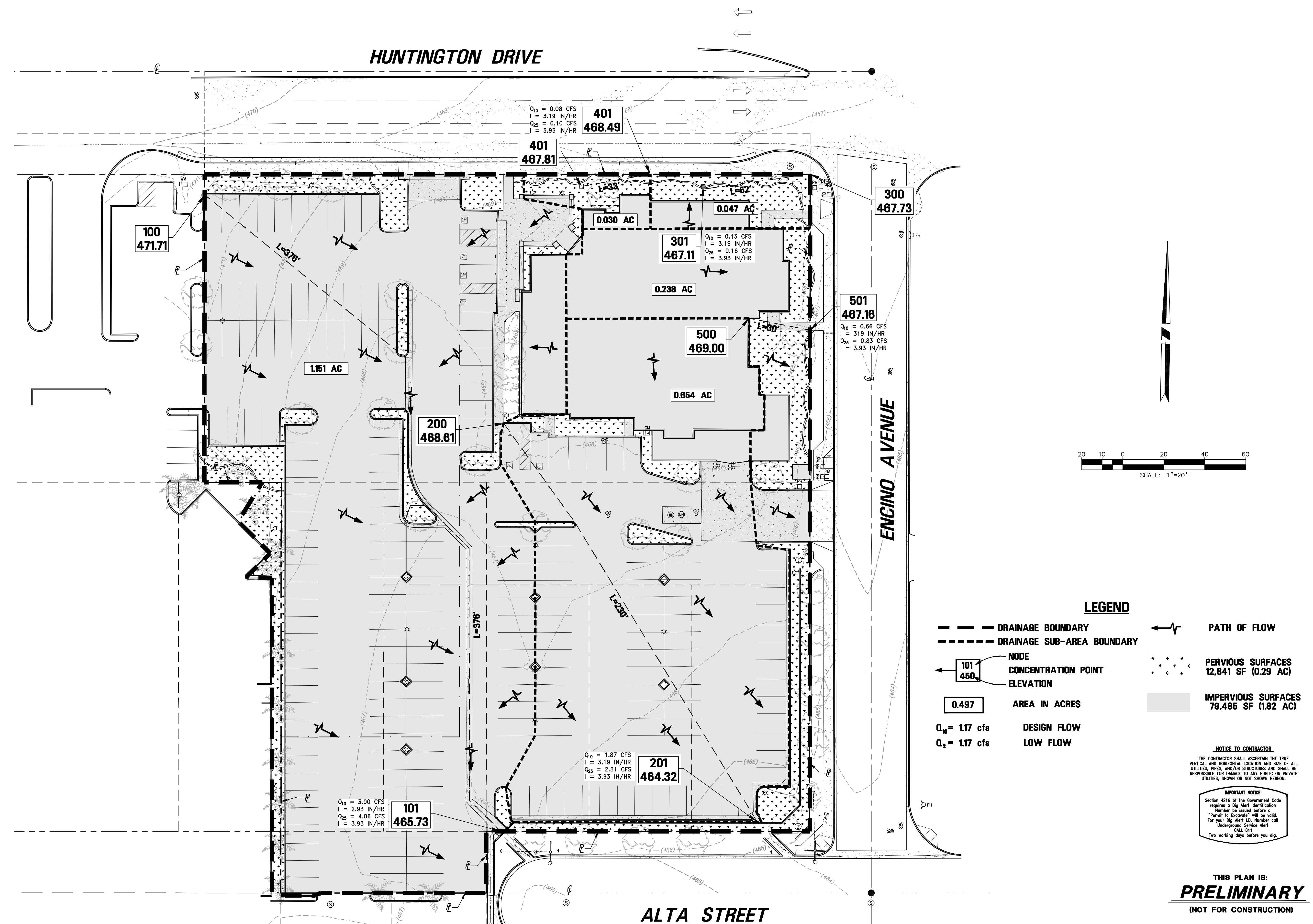
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

MOUNT WILSON

50-YEAR 24-HOUR ISOHYET

1-H1.30

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works



NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

PRE-HYDROLOGY MAP

CHICK-FIL-A STORE # 04698
820 HUNTINGTON DRIVE, CITY OF MONROVIA
COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE 10/16/2020
DRAWN BY SGC
CHECKED BY RJD
JOB NO. CFA20011
SHEET NO. 1 OF 2 SHEETS

Peak Flow Hydrologic Analysis

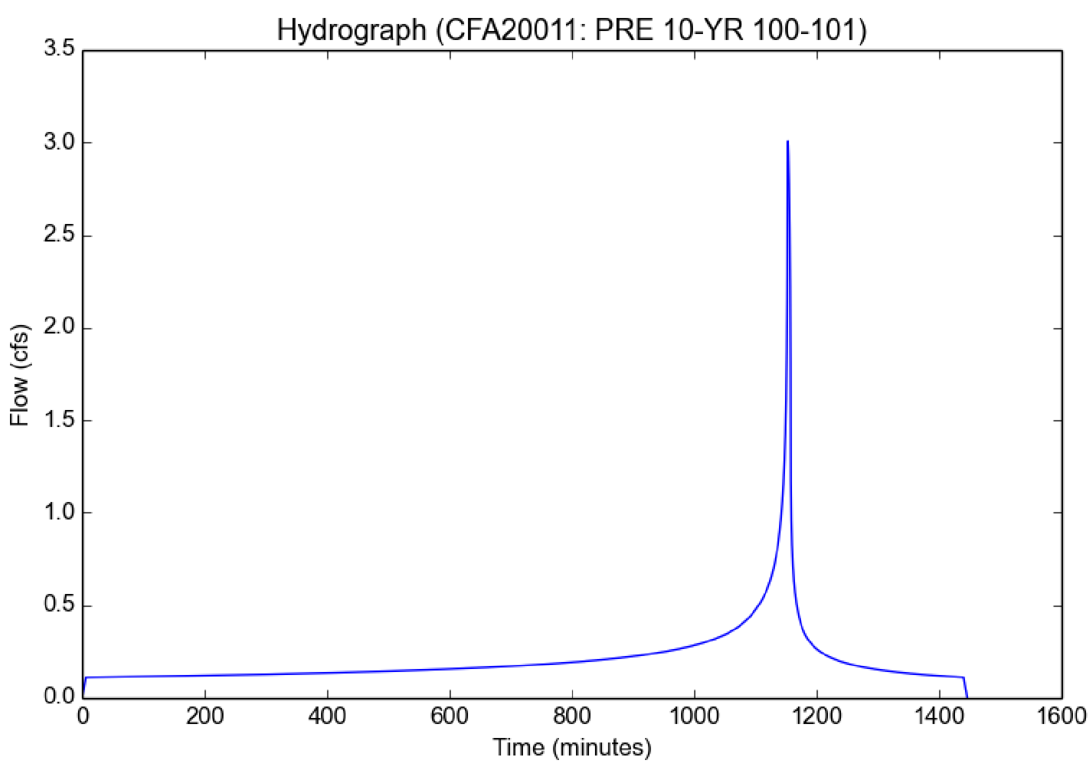
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 100-101
Area (ac)	1.151
Flow Path Length (ft)	376.0
Flow Path Slope (vft/hft)	0.0159
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.89
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	2.9326
Undeveloped Runoff Coefficient (Cu)	0.8175
Developed Runoff Coefficient (Cd)	0.8909
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	3.0072
Burned Peak Flow Rate (cfs)	3.0072
24-Hr Clear Runoff Volume (ac-ft)	0.4193
24-Hr Clear Runoff Volume (cu-ft)	18266.1644



Peak Flow Hydrologic Analysis

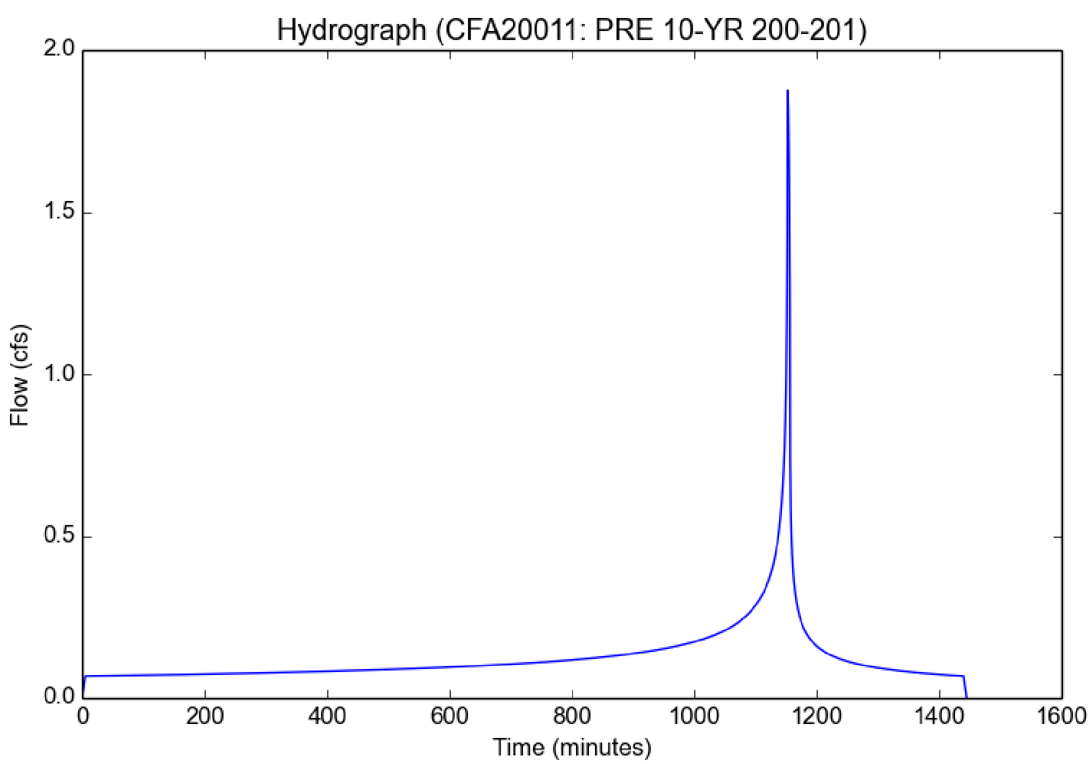
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 200-201
Area (ac)	0.654
Flow Path Length (ft)	230.0
Flow Path Slope (vft/hft)	0.0186
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.962
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8976
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.8755
Burned Peak Flow Rate (cfs)	1.8755
24-Hr Clear Runoff Volume (ac-ft)	0.2528
24-Hr Clear Runoff Volume (cu-ft)	11012.7198



Peak Flow Hydrologic Analysis

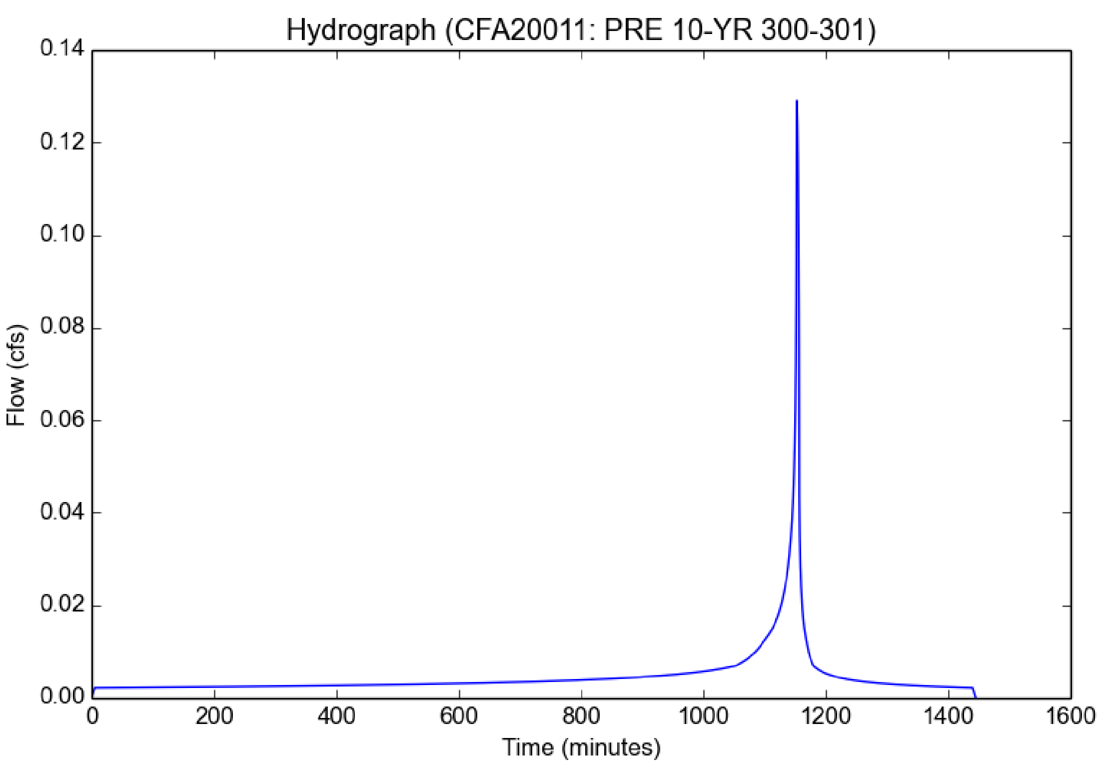
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 300-301
Area (ac)	0.047
Flow Path Length (ft)	52.0
Flow Path Slope (vft/hft)	0.0119
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.374
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8599
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1291
Burned Peak Flow Rate (cfs)	0.1291
24-Hr Clear Runoff Volume (ac-ft)	0.0096
24-Hr Clear Runoff Volume (cu-ft)	419.6685



Peak Flow Hydrologic Analysis

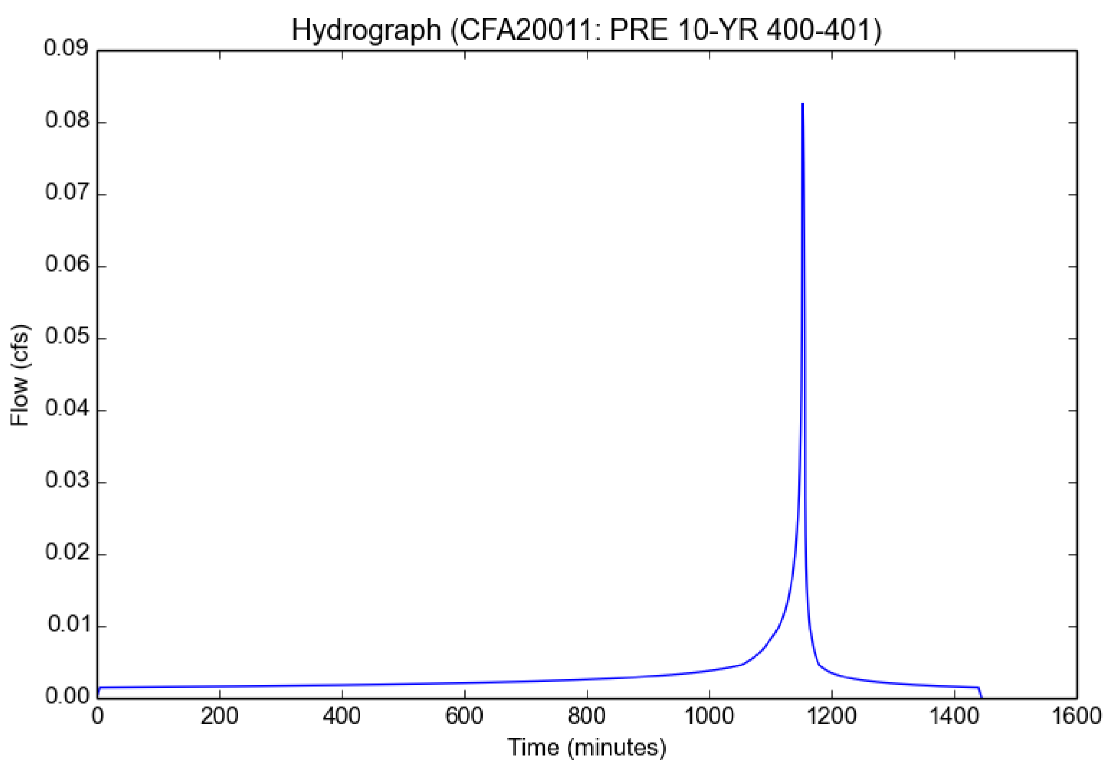
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 400-401
Area (ac)	0.03
Flow Path Length (ft)	33.0
Flow Path Slope (vft/hft)	0.0206
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.39
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8609
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0825
Burned Peak Flow Rate (cfs)	0.0825
24-Hr Clear Runoff Volume (ac-ft)	0.0063
24-Hr Clear Runoff Volume (cu-ft)	274.3305



Peak Flow Hydrologic Analysis

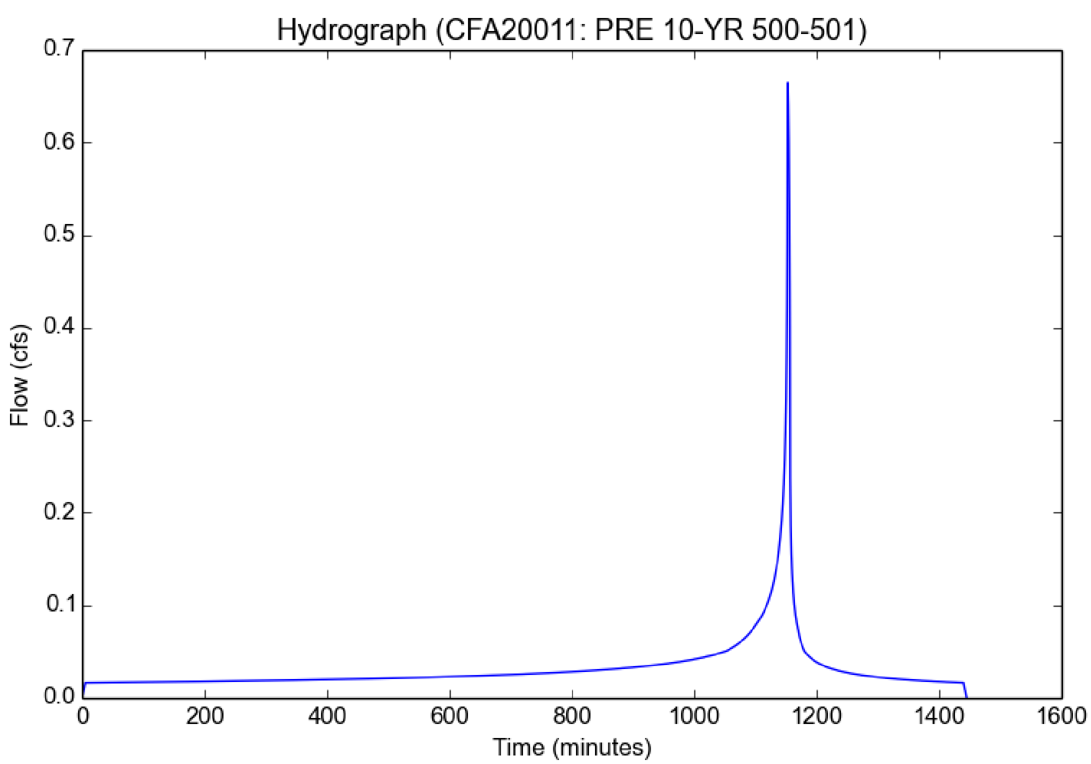
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 500-501
Area (ac)	0.238
Flow Path Length (ft)	30.0
Flow Path Slope (vft/hft)	0.0613
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.595
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8741
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6646
Burned Peak Flow Rate (cfs)	0.6646
24-Hr Clear Runoff Volume (ac-ft)	0.065
24-Hr Clear Runoff Volume (cu-ft)	2832.6895



Peak Flow Hydrologic Analysis

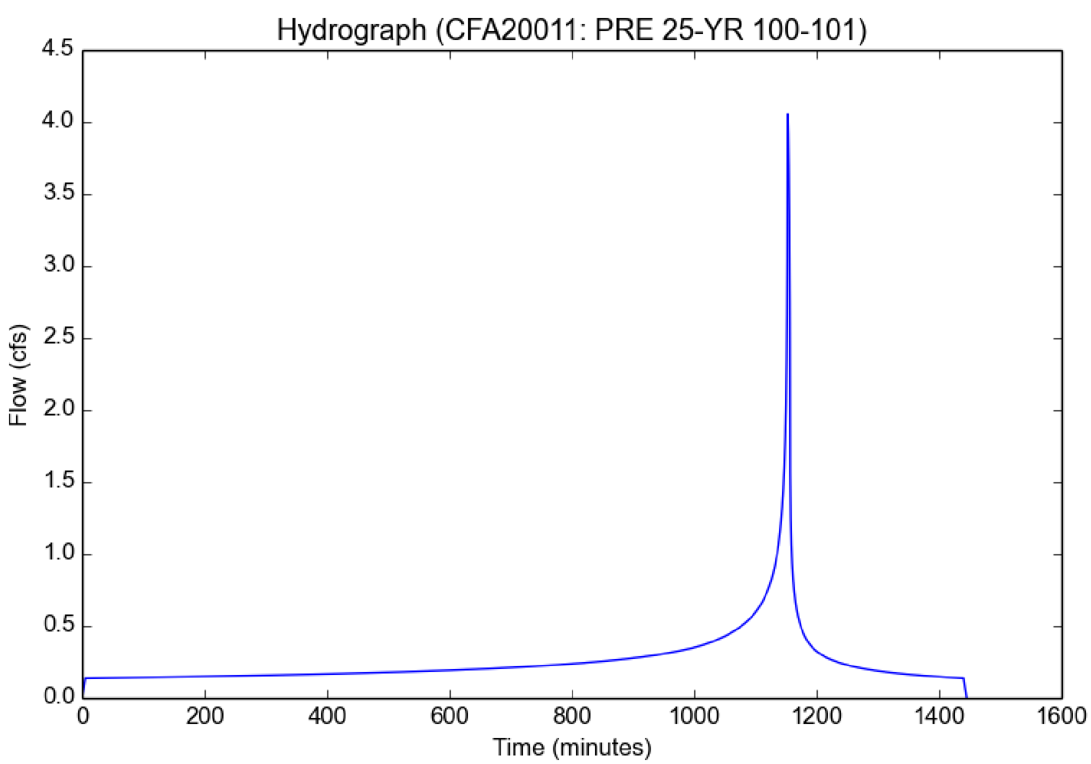
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 100-101
Area (ac)	1.151
Flow Path Length (ft)	376.0
Flow Path Slope (vft/hft)	0.0159
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.89
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8971
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.0568
Burned Peak Flow Rate (cfs)	4.0568
24-Hr Clear Runoff Volume (ac-ft)	0.5176
24-Hr Clear Runoff Volume (cu-ft)	22545.3306



Peak Flow Hydrologic Analysis

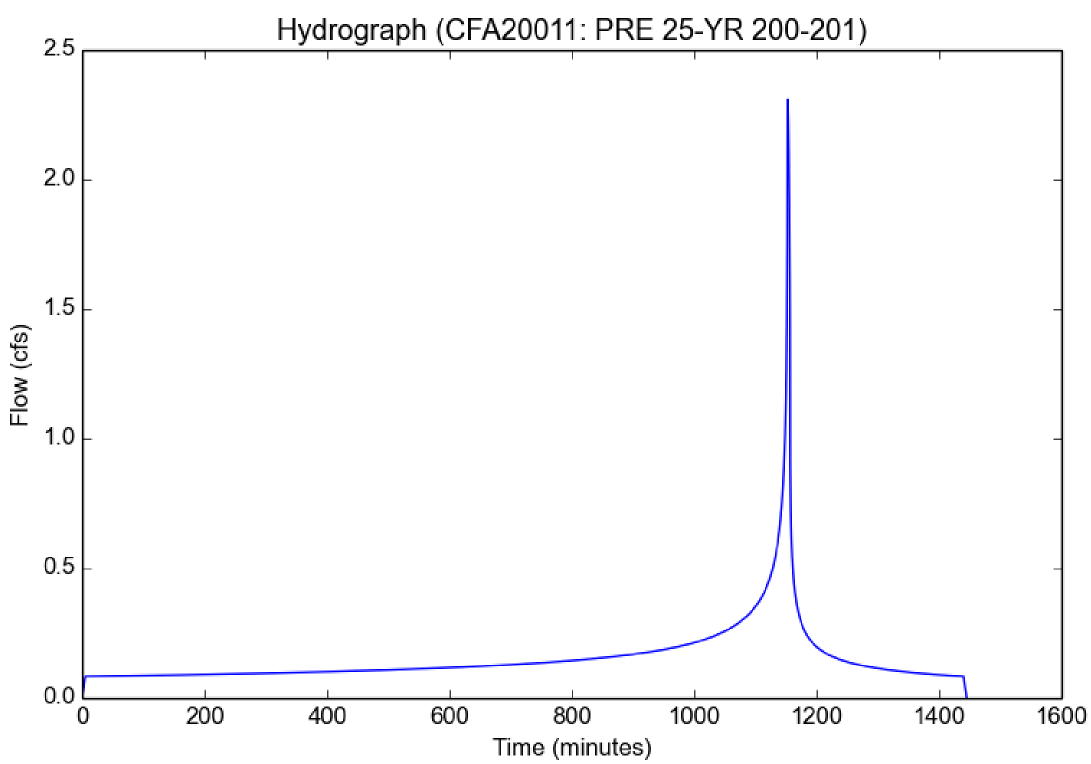
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 200-201
Area (ac)	0.654
Flow Path Length (ft)	230.0
Flow Path Slope (vft/hft)	0.0186
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.962
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.899
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3099
Burned Peak Flow Rate (cfs)	2.3099
24-Hr Clear Runoff Volume (ac-ft)	0.3113
24-Hr Clear Runoff Volume (cu-ft)	13558.4794



Peak Flow Hydrologic Analysis

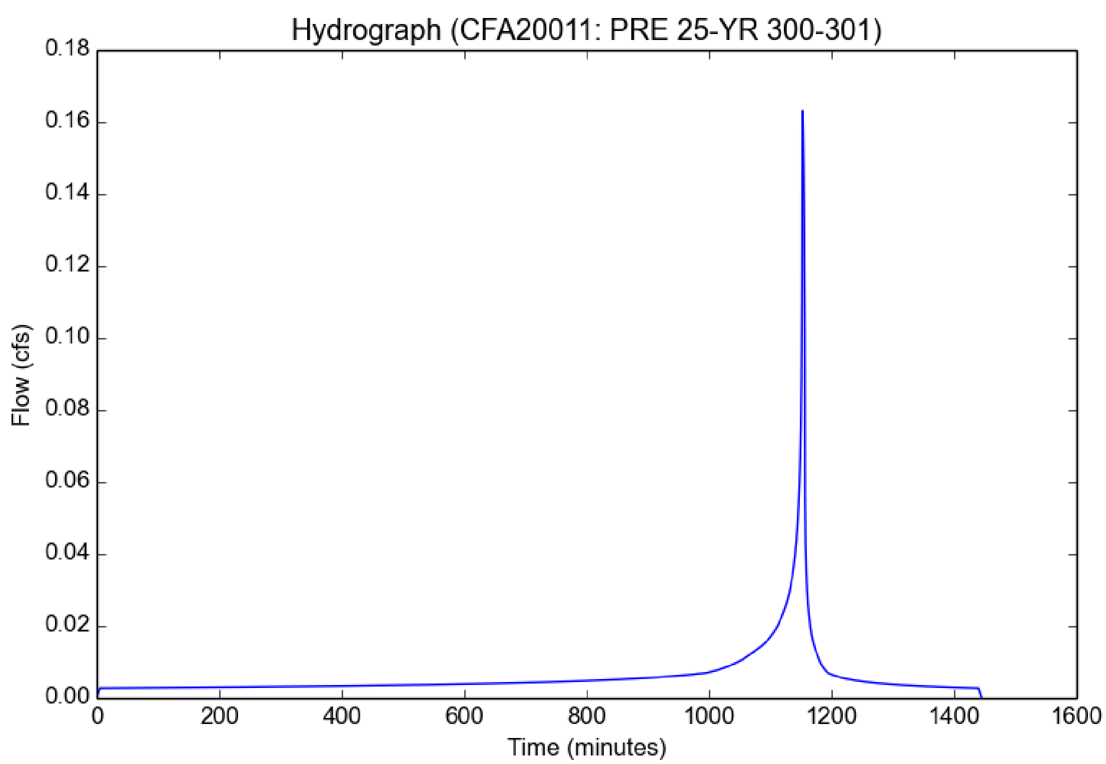
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 300-301
Area (ac)	0.047
Flow Path Length (ft)	52.0
Flow Path Slope (vft/hft)	0.0119
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.374
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8836
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1632
Burned Peak Flow Rate (cfs)	0.1632
24-Hr Clear Runoff Volume (ac-ft)	0.0123
24-Hr Clear Runoff Volume (cu-ft)	535.2742



Peak Flow Hydrologic Analysis

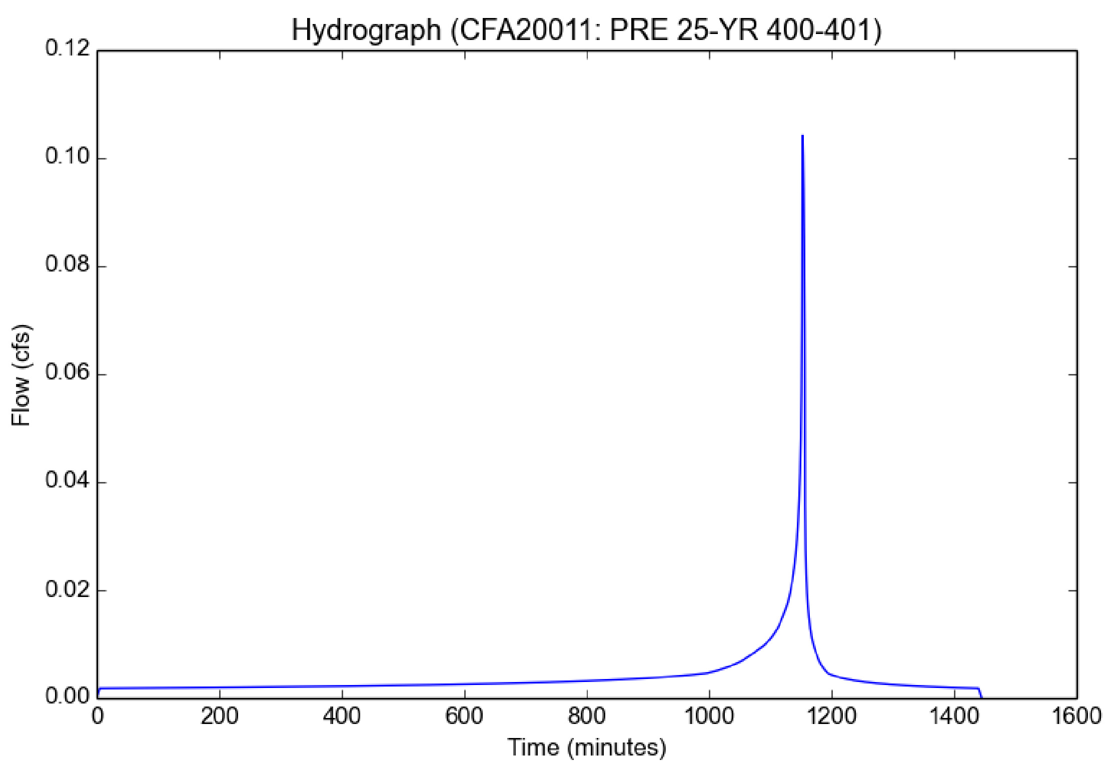
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 400-401
Area (ac)	0.03
Flow Path Length (ft)	33.0
Flow Path Slope (vft/hft)	0.0206
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.39
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.884
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1042
Burned Peak Flow Rate (cfs)	0.1042
24-Hr Clear Runoff Volume (ac-ft)	0.008
24-Hr Clear Runoff Volume (cu-ft)	349.2912



Peak Flow Hydrologic Analysis

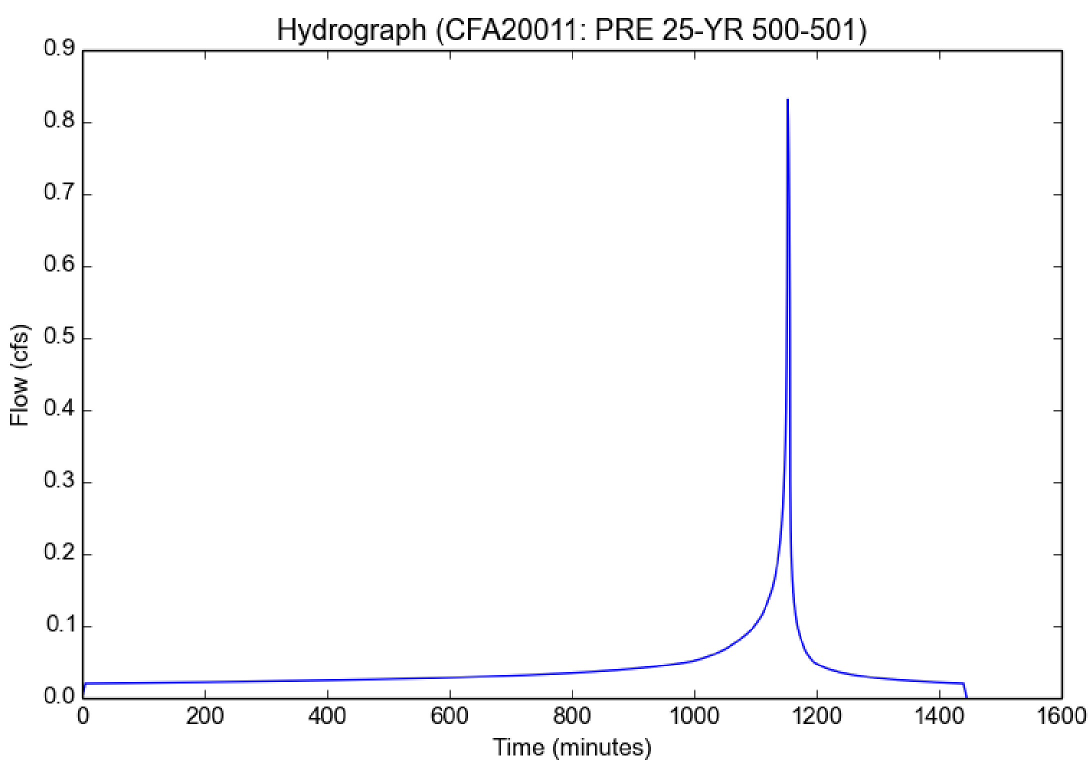
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 500-501.pdf
Version: HydroCalc 1.0.2

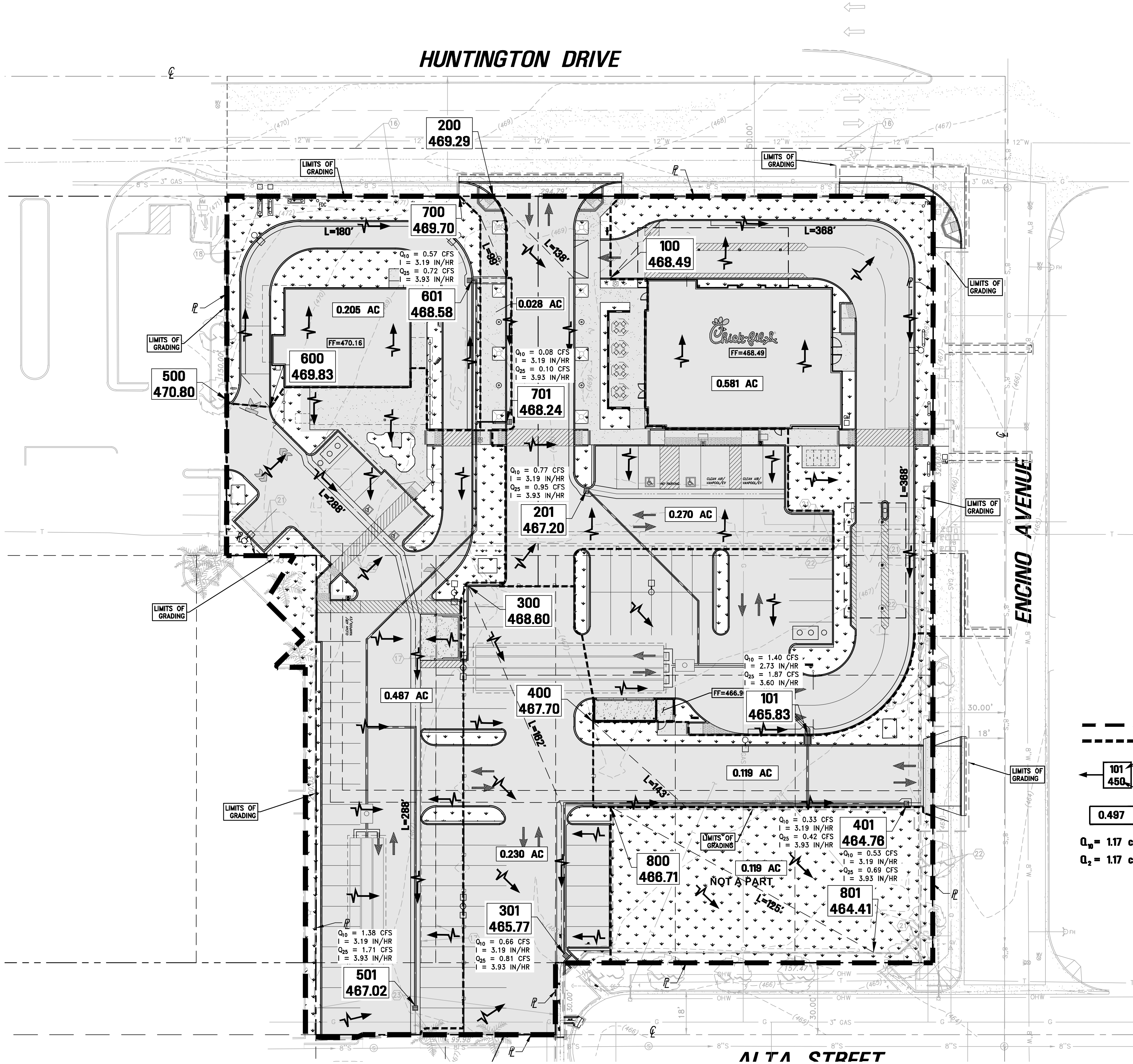
Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 500-501
Area (ac)	0.238
Flow Path Length (ft)	30.0
Flow Path Slope (vft/hft)	0.0613
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.595
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8894
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.8316
Burned Peak Flow Rate (cfs)	0.8316
24-Hr Clear Runoff Volume (ac-ft)	0.0814
24-Hr Clear Runoff Volume (cu-ft)	3546.2737





LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE SUB-AREA BOUNDARY
- NODE / CONCENTRATION POINT / ELEVATION (101 / 450)
- 0.497 — AREA IN ACRES
- Q_{10} = 1.17 cfs — DESIGN FLOW
- Q_2 = 1.17 cfs — LOW FLOW
- PATH OF FLOW
- PERVIOUS SURFACES 23,666 SF (0.54 AC)
- IMPERVIOUS SURFACES 68,660 SF (1.57 AC)

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

NO.	REVISIONS	DATE

Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

POST-HYDROLOGY MAP

CHICK-FIL-A STORE # 04698

829 HUNTINGTON DRIVE, CITY OF MONROVIA
COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE 10/16/2020
DRAWN BY MME
CHECKED BY RJD
JOB NO. CFA20011
SHEET NO. 2 OF 2 SHEETS

Peak Flow Hydrologic Analysis

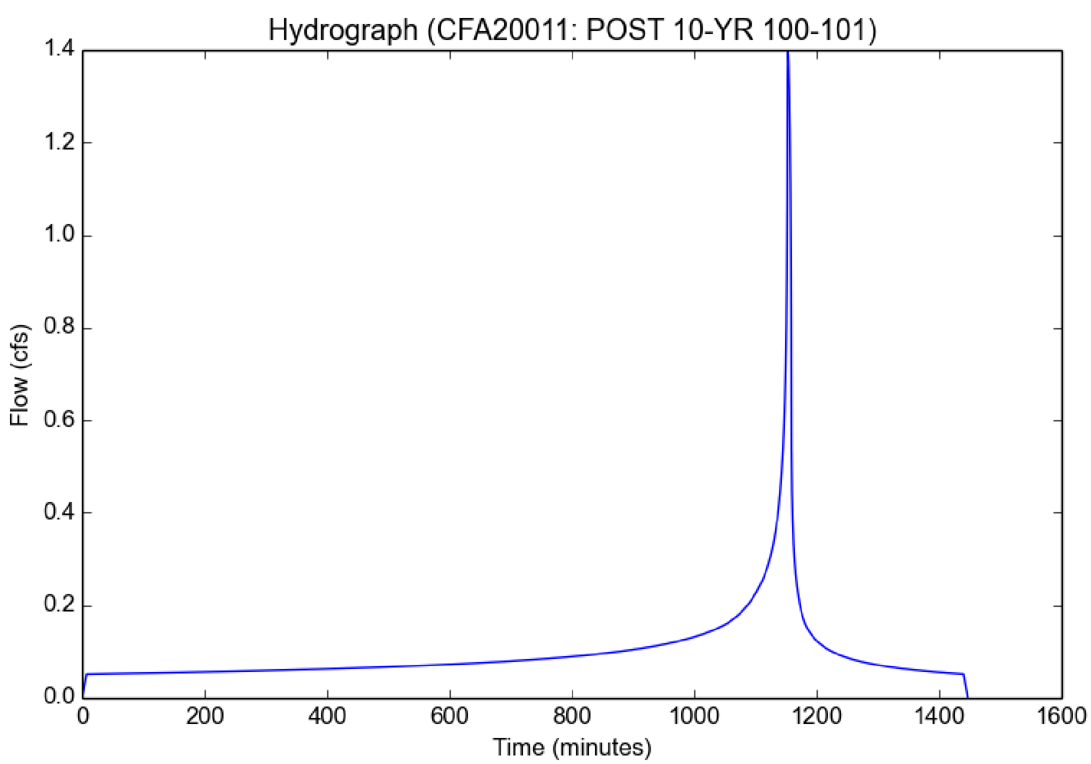
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 100-101
Area (ac)	0.581
Flow Path Length (ft)	368.0
Flow Path Slope (vft/hft)	0.007
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.809
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	2.7276
Undeveloped Runoff Coefficient (Cu)	0.8032
Developed Runoff Coefficient (Cd)	0.8815
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	1.397
Burned Peak Flow Rate (cfs)	1.397
24-Hr Clear Runoff Volume (ac-ft)	0.1971
24-Hr Clear Runoff Volume (cu-ft)	8586.4879



Peak Flow Hydrologic Analysis

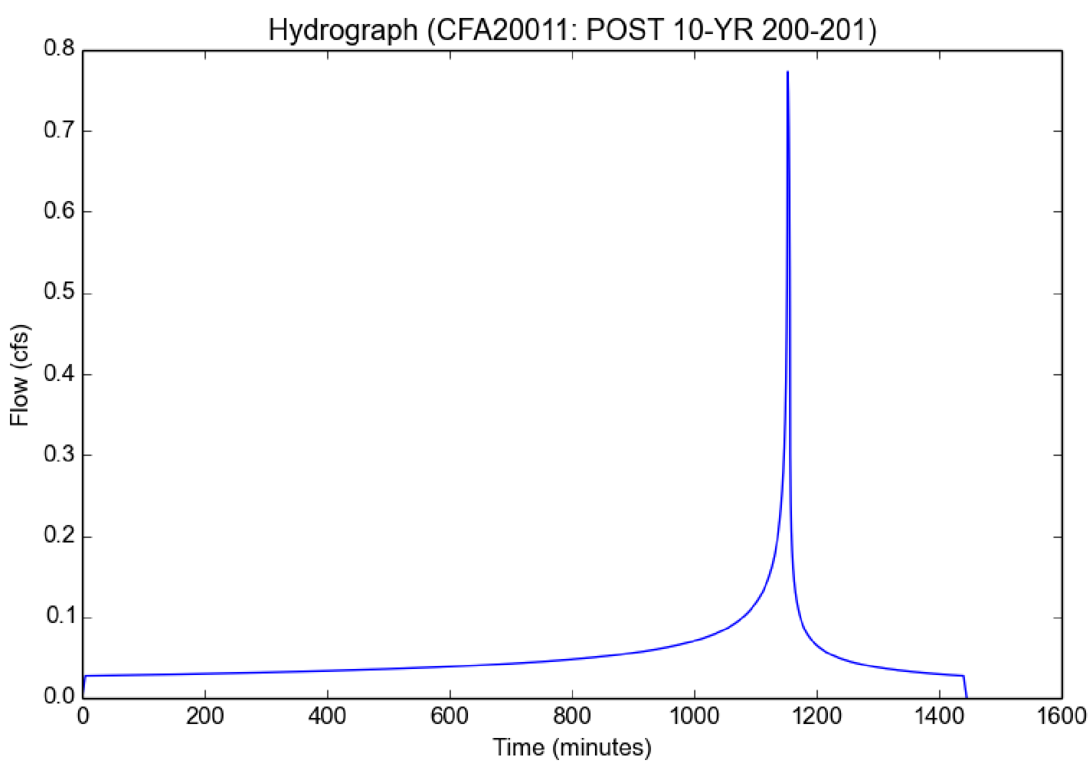
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8965
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7733
Burned Peak Flow Rate (cfs)	0.7733
24-Hr Clear Runoff Volume (ac-ft)	0.103
24-Hr Clear Runoff Volume (cu-ft)	4484.79



Peak Flow Hydrologic Analysis

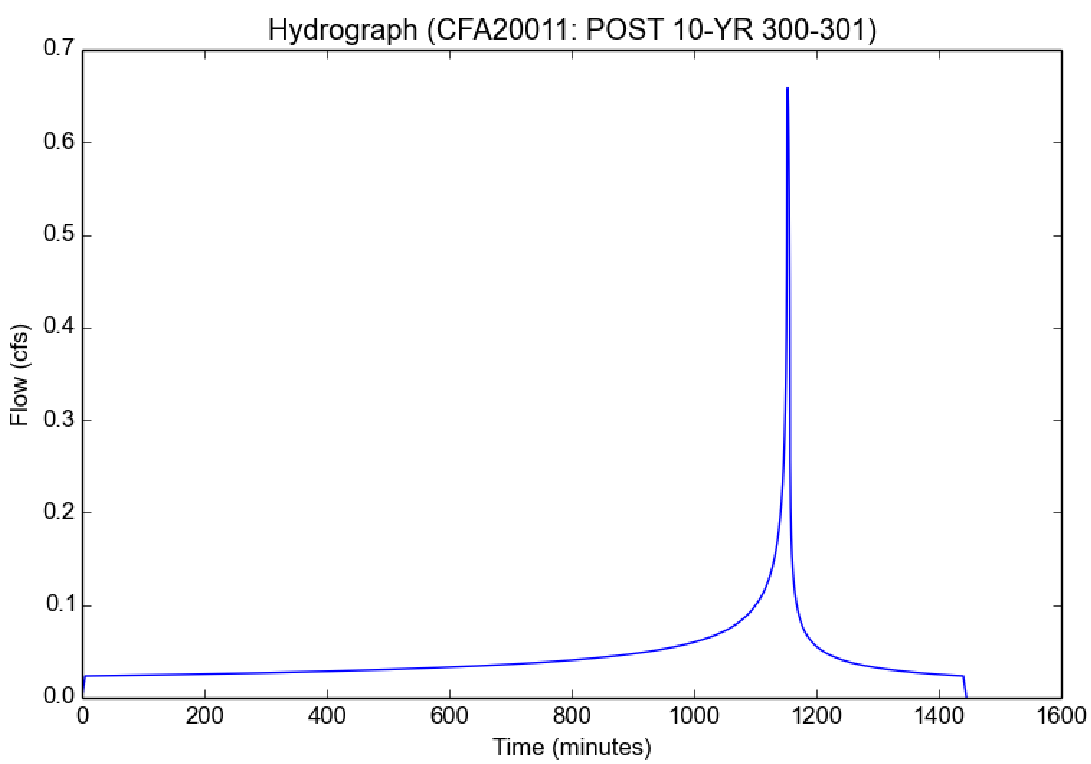
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 300-301
Area (ac)	0.23
Flow Path Length (ft)	162.0
Flow Path Slope (vft/hft)	0.0175
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8965
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6588
Burned Peak Flow Rate (cfs)	0.6588
24-Hr Clear Runoff Volume (ac-ft)	0.0877
24-Hr Clear Runoff Volume (cu-ft)	3820.3767



Peak Flow Hydrologic Analysis

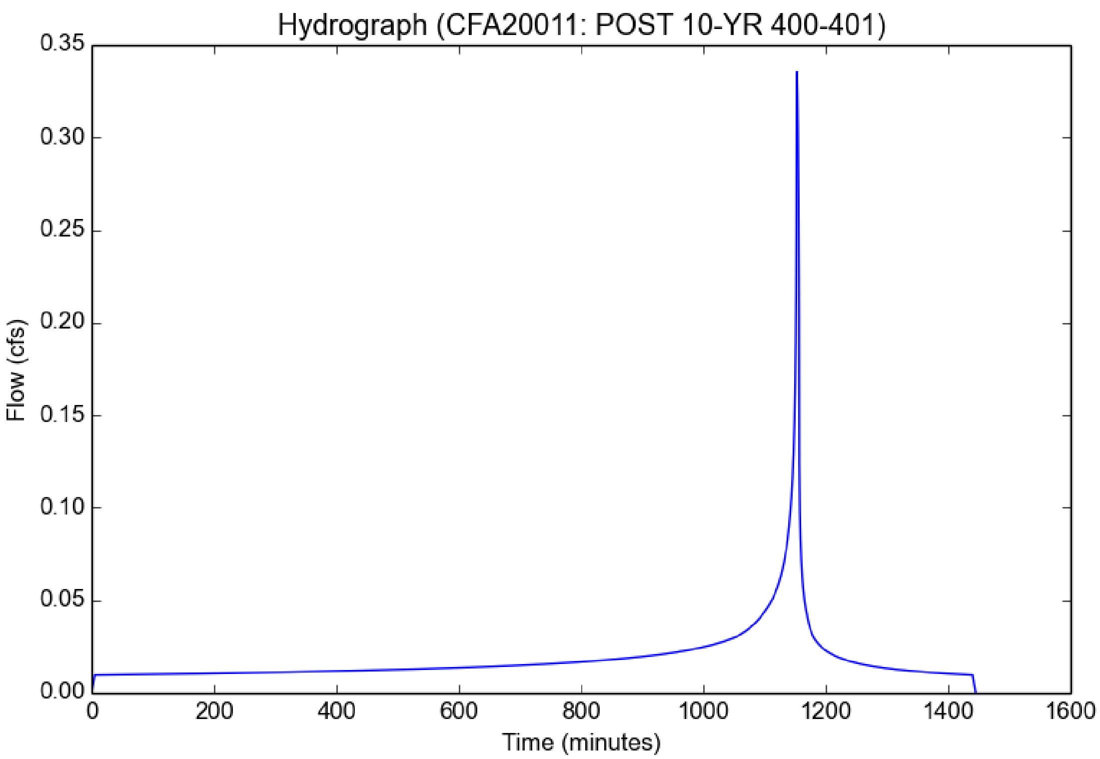
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 400-401
Area (ac)	0.119
Flow Path Length (ft)	143.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.73
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8827
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.3356
Burned Peak Flow Rate (cfs)	0.3356
24-Hr Clear Runoff Volume (ac-ft)	0.0375
24-Hr Clear Runoff Volume (cu-ft)	1632.4546



Peak Flow Hydrologic Analysis

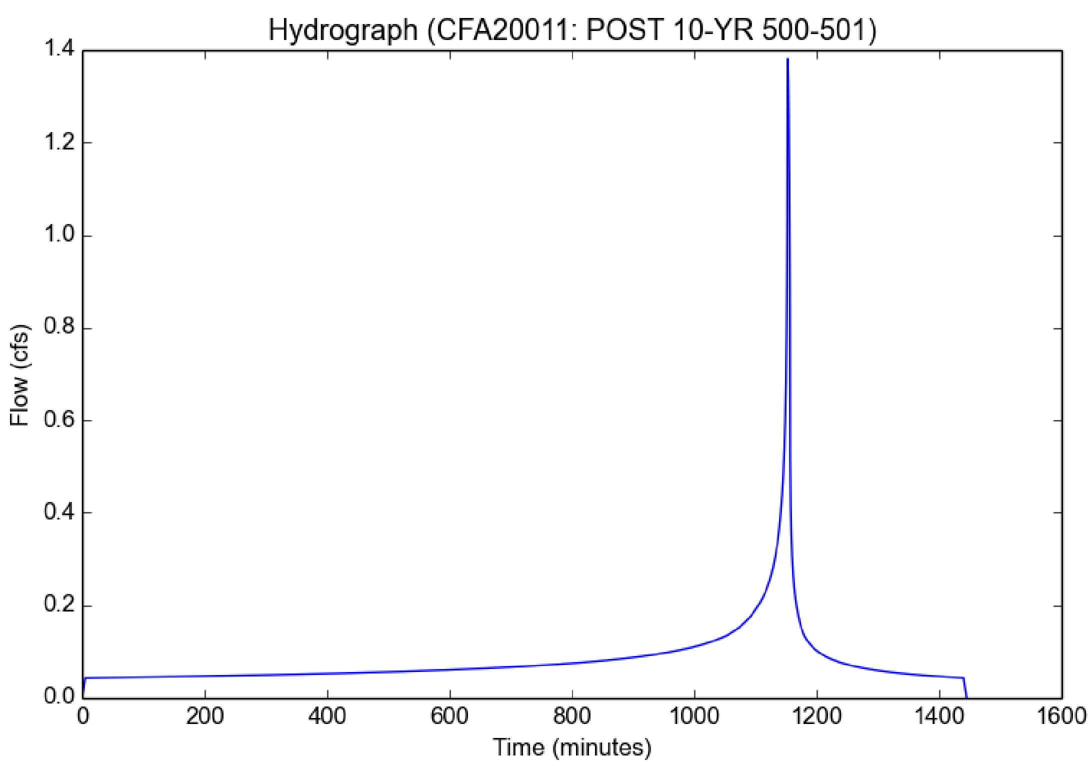
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 500-501
Area (ac)	0.487
Flow Path Length (ft)	288.0
Flow Path Slope (vft/hft)	0.0131
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.807
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8876
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.3811
Burned Peak Flow Rate (cfs)	1.3811
24-Hr Clear Runoff Volume (ac-ft)	0.1649
24-Hr Clear Runoff Volume (cu-ft)	7185.1625



Peak Flow Hydrologic Analysis

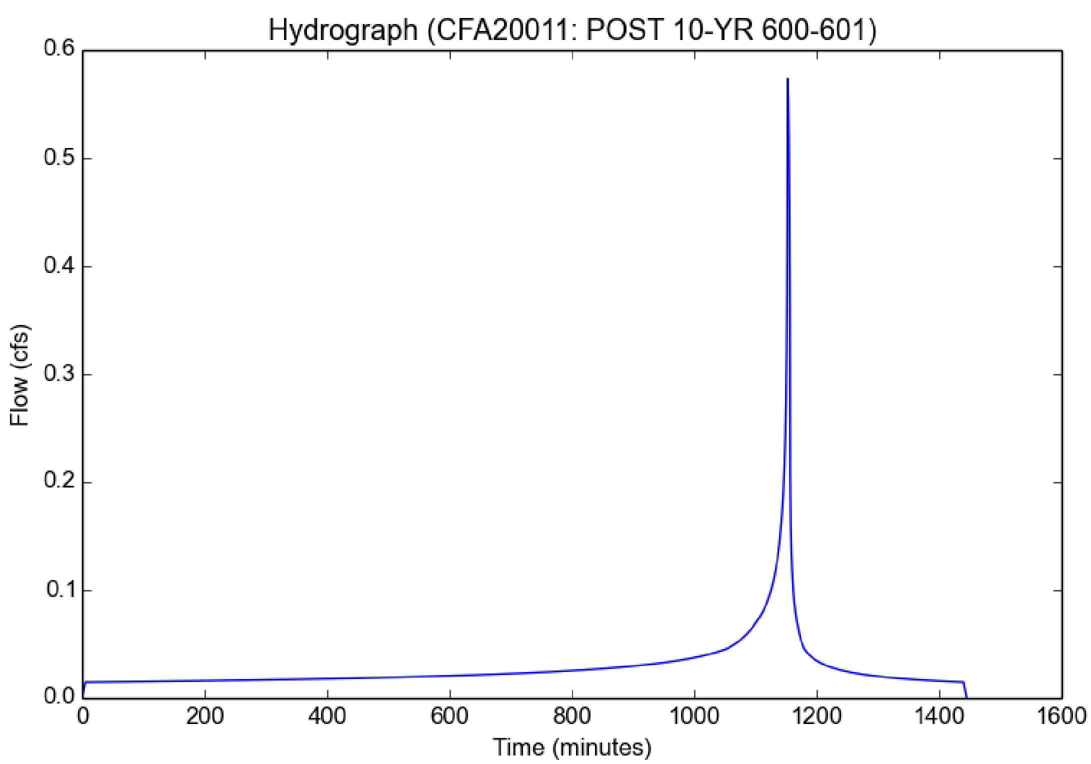
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 600-601.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 600-601
Area (ac)	0.205
Flow Path Length (ft)	180.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.622
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8758
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5736
Burned Peak Flow Rate (cfs)	0.5736
24-Hr Clear Runoff Volume (ac-ft)	0.0577
24-Hr Clear Runoff Volume (cu-ft)	2514.3796



Peak Flow Hydrologic Analysis

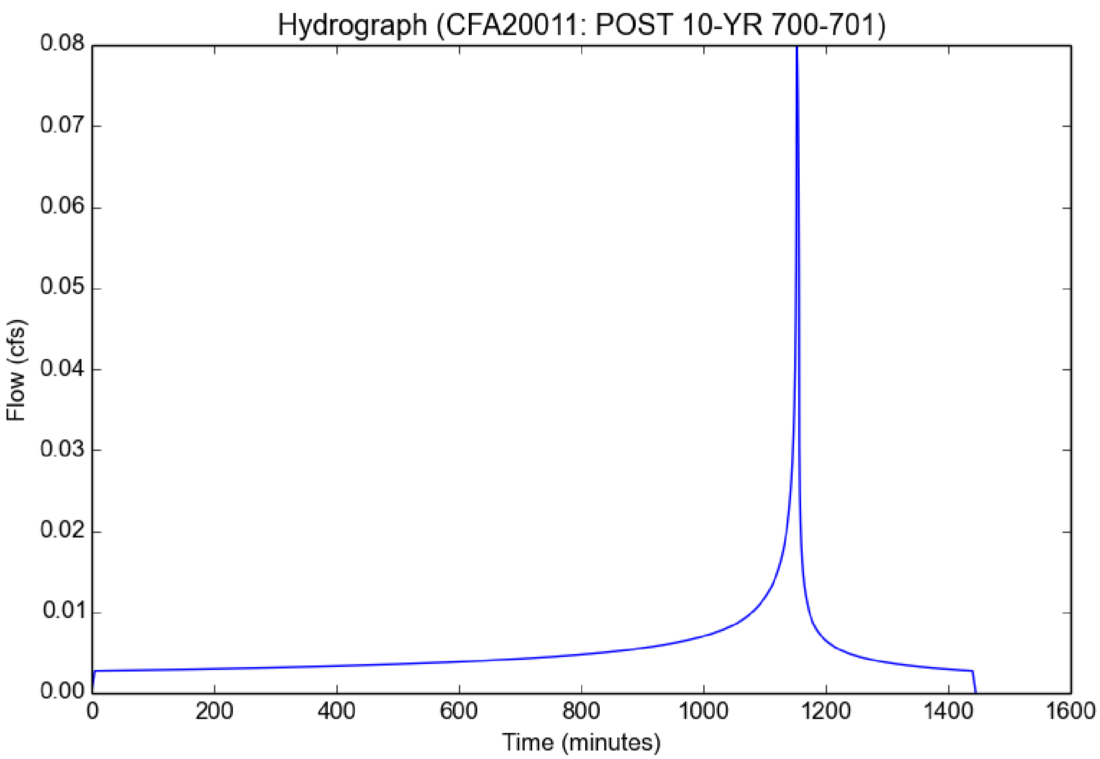
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 700-701.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 700-701
Area (ac)	0.028
Flow Path Length (ft)	99.0
Flow Path Slope (vft/hft)	0.0147
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.901
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8937
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0799
Burned Peak Flow Rate (cfs)	0.0799
24-Hr Clear Runoff Volume (ac-ft)	0.0103
24-Hr Clear Runoff Volume (cu-ft)	448.5162



Peak Flow Hydrologic Analysis

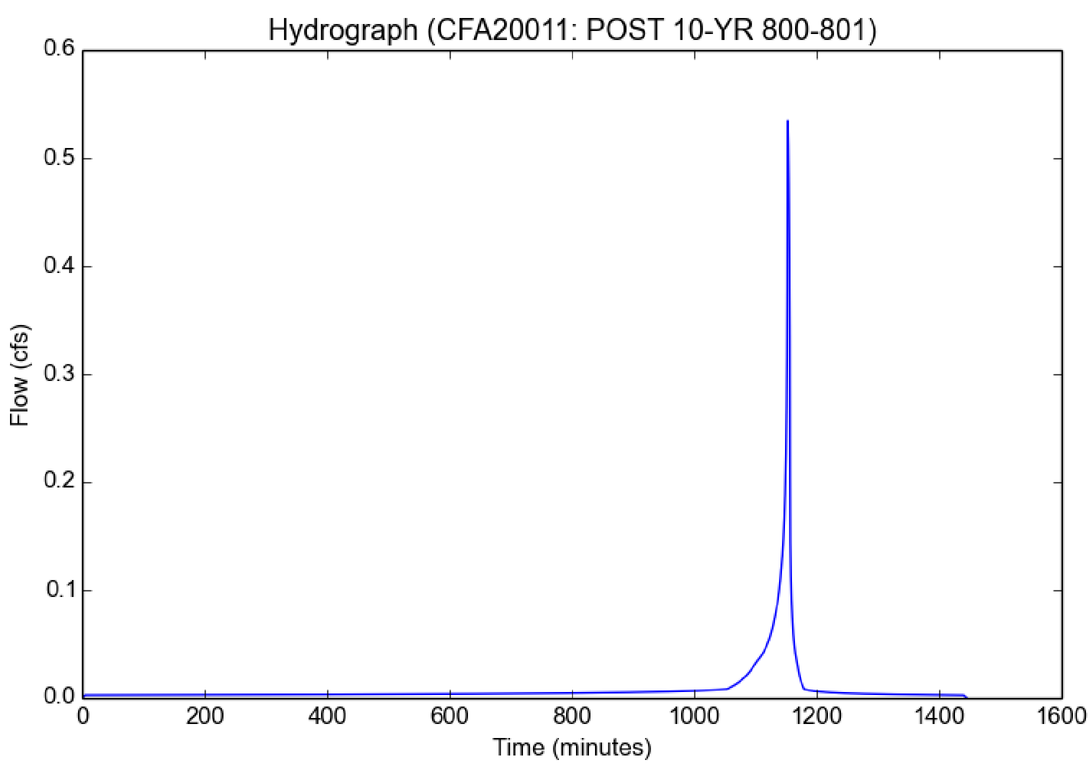
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 800-801.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 800-801
Area (ac)	0.2
Flow Path Length (ft)	125.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.01
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8366
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5346
Burned Peak Flow Rate (cfs)	0.5346
24-Hr Clear Runoff Volume (ac-ft)	0.0185
24-Hr Clear Runoff Volume (cu-ft)	806.5016



Peak Flow Hydrologic Analysis

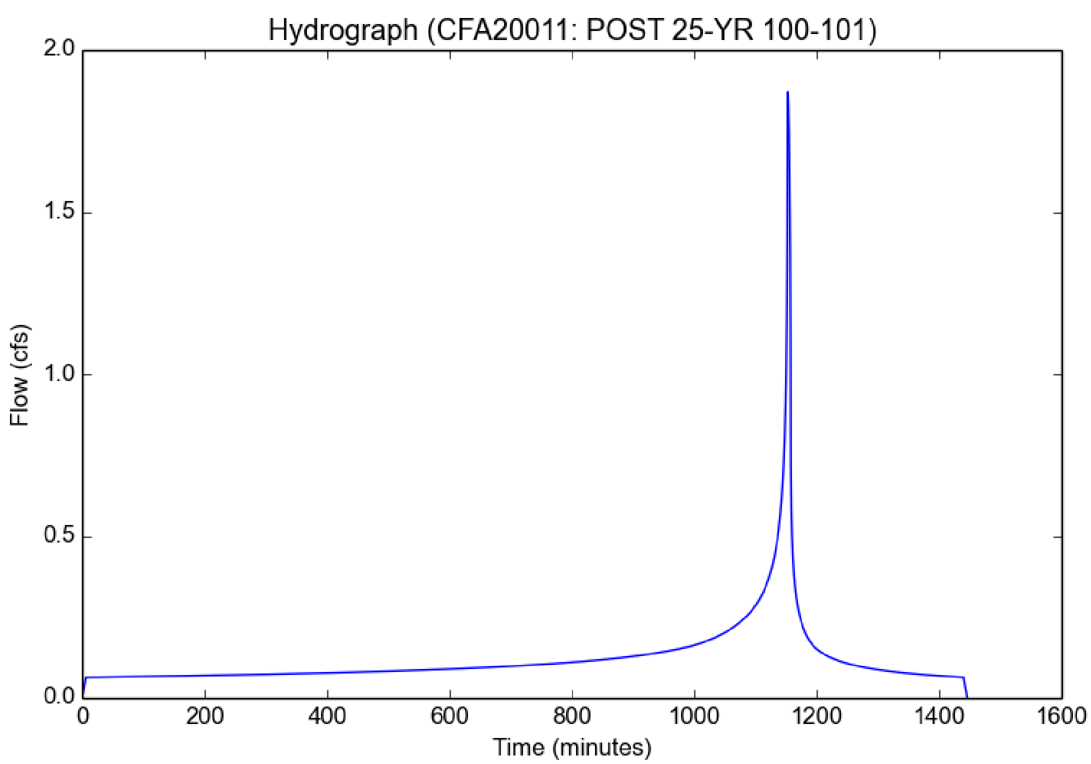
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 100-101
Area (ac)	0.581
Flow Path Length (ft)	368.0
Flow Path Slope (vft/hft)	0.007
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.809
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.6062
Undeveloped Runoff Coefficient (Cu)	0.8614
Developed Runoff Coefficient (Cd)	0.8926
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	1.8702
Burned Peak Flow Rate (cfs)	1.8702
24-Hr Clear Runoff Volume (ac-ft)	0.2441
24-Hr Clear Runoff Volume (cu-ft)	10632.1601



Peak Flow Hydrologic Analysis

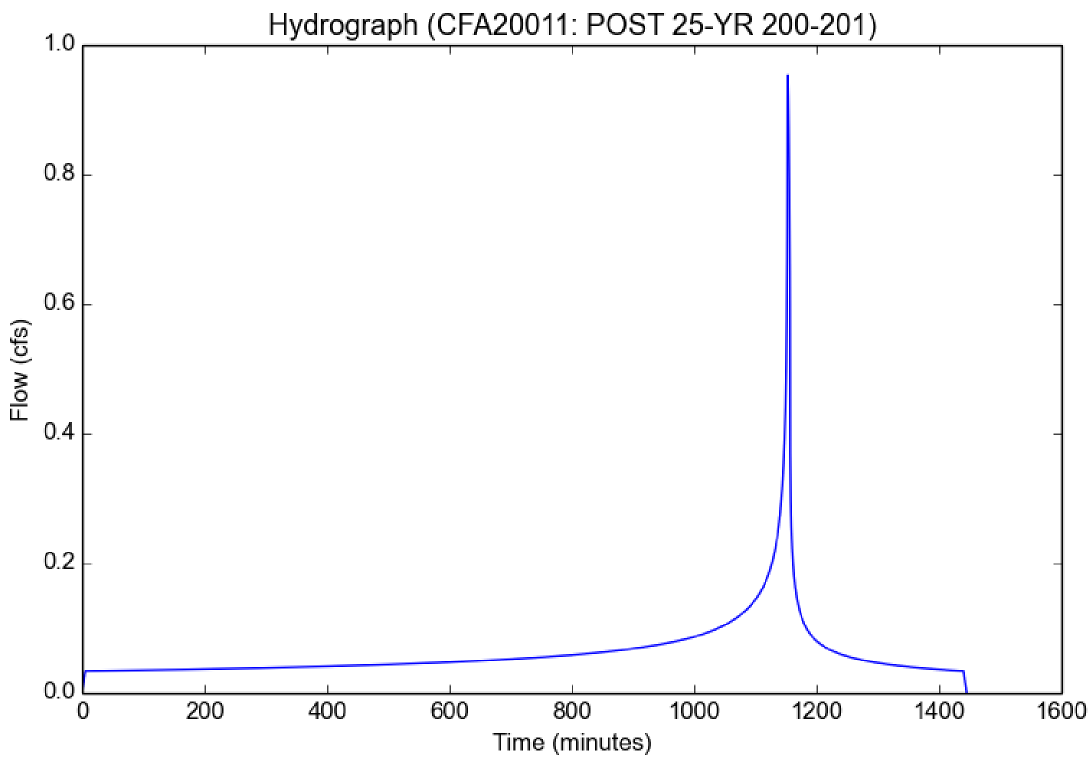
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8986
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.9532
Burned Peak Flow Rate (cfs)	0.9532
24-Hr Clear Runoff Volume (ac-ft)	0.1268
24-Hr Clear Runoff Volume (cu-ft)	5524.6063



Peak Flow Hydrologic Analysis

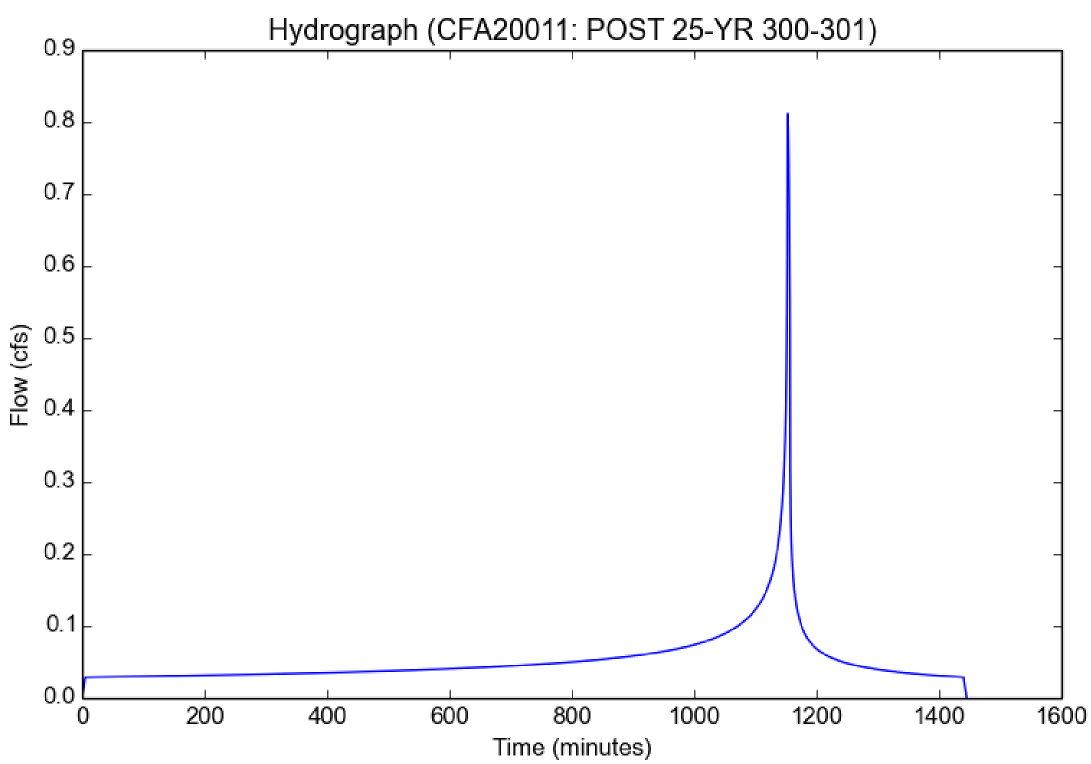
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 300-301
Area (ac)	0.23
Flow Path Length (ft)	162.0
Flow Path Slope (vft/hft)	0.0175
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8986
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.812
Burned Peak Flow Rate (cfs)	0.812
24-Hr Clear Runoff Volume (ac-ft)	0.108
24-Hr Clear Runoff Volume (cu-ft)	4706.1461



Peak Flow Hydrologic Analysis

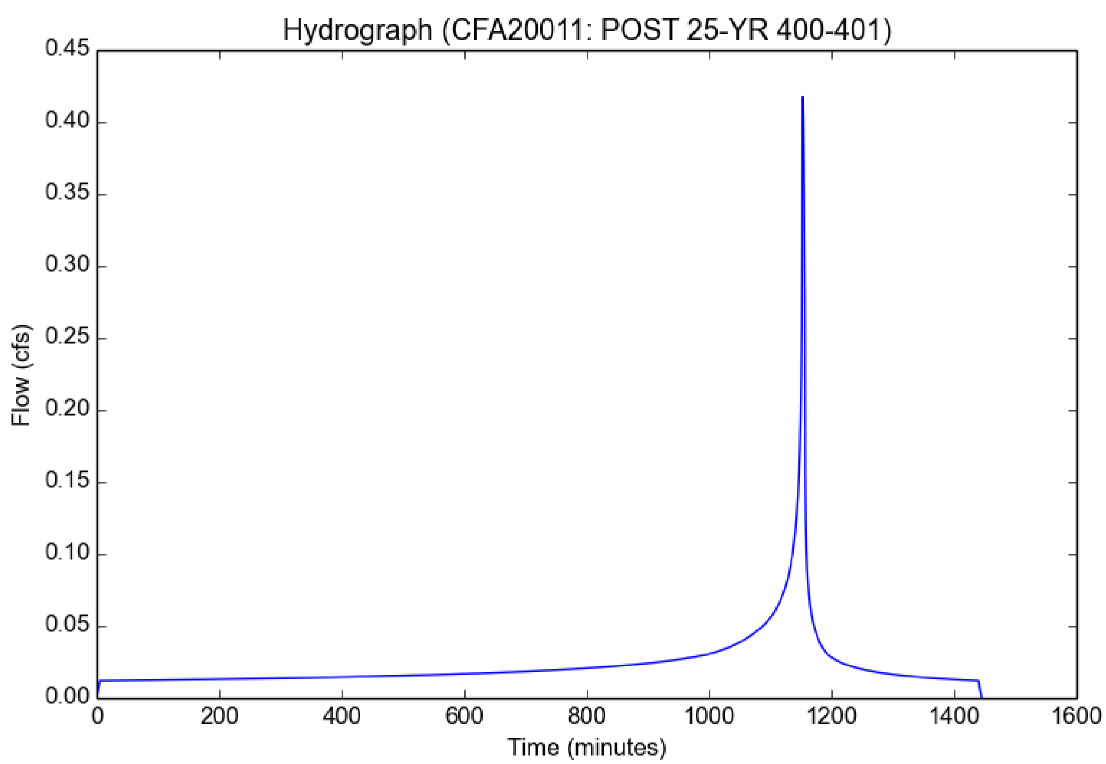
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 400-401
Area (ac)	0.119
Flow Path Length (ft)	143.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.73
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8929
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4175
Burned Peak Flow Rate (cfs)	0.4175
24-Hr Clear Runoff Volume (ac-ft)	0.0466
24-Hr Clear Runoff Volume (cu-ft)	2028.3957



Peak Flow Hydrologic Analysis

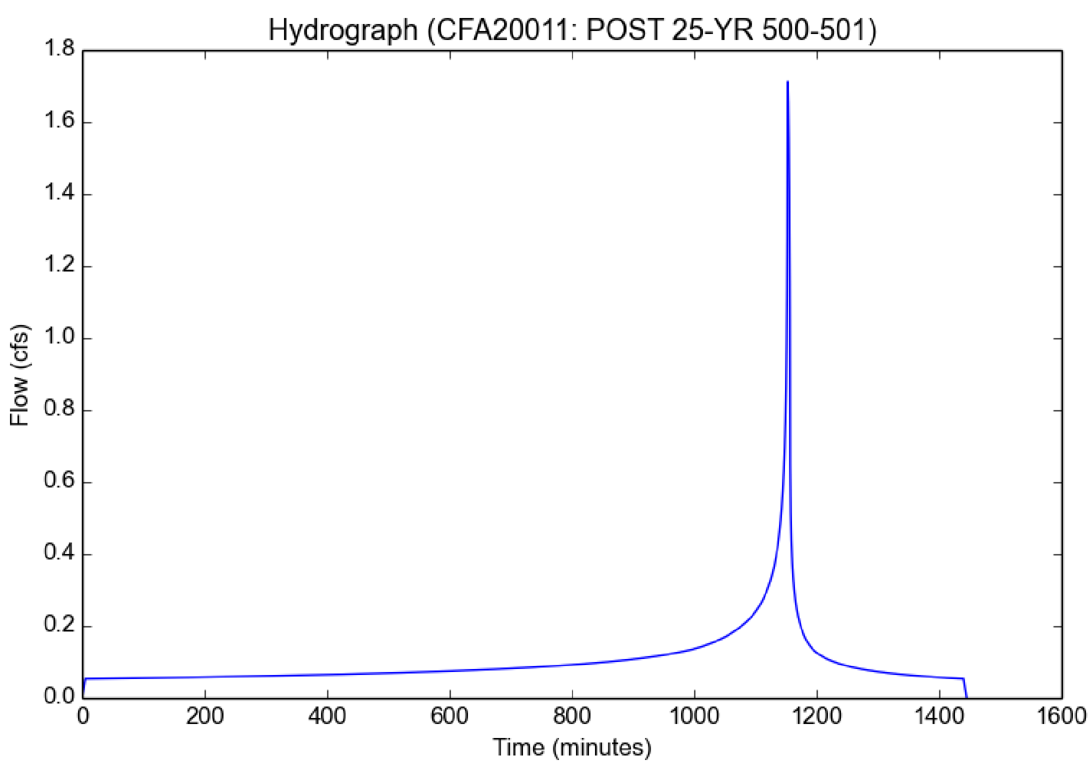
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 500-501
Area (ac)	0.487
Flow Path Length (ft)	288.0
Flow Path Slope (vft/hft)	0.0131
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.807
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8949
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.7123
Burned Peak Flow Rate (cfs)	1.7123
24-Hr Clear Runoff Volume (ac-ft)	0.2042
24-Hr Clear Runoff Volume (cu-ft)	8896.908



Peak Flow Hydrologic Analysis

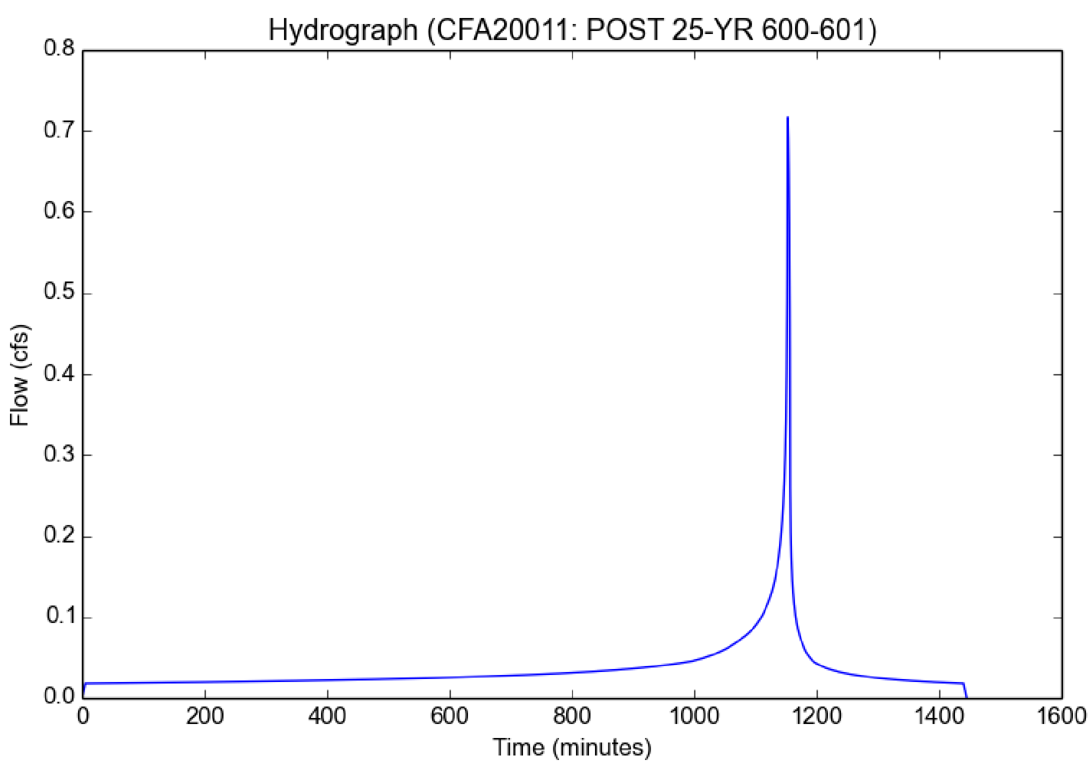
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 600-601.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 600-601
Area (ac)	0.205
Flow Path Length (ft)	180.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.622
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8901
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7169
Burned Peak Flow Rate (cfs)	0.7169
24-Hr Clear Runoff Volume (ac-ft)	0.0721
24-Hr Clear Runoff Volume (cu-ft)	3142.5098



Peak Flow Hydrologic Analysis

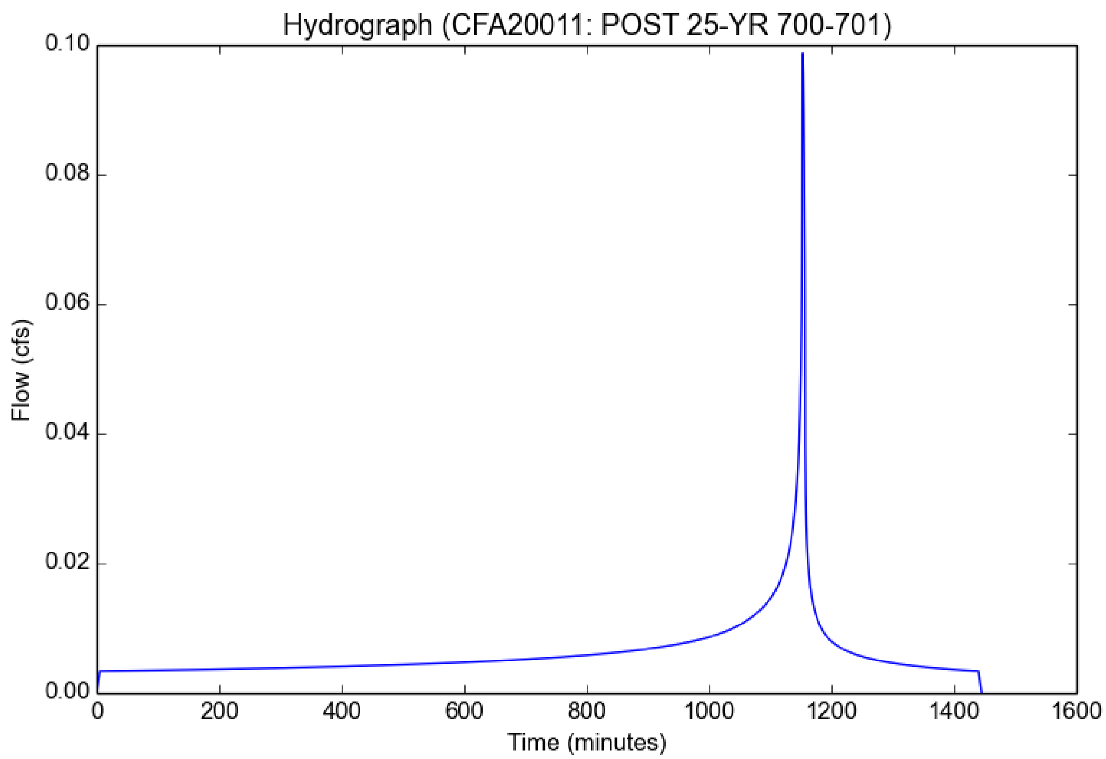
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 700-701.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 700-701
Area (ac)	0.028
Flow Path Length (ft)	99.0
Flow Path Slope (vft/hft)	0.0147
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.901
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8974
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0987
Burned Peak Flow Rate (cfs)	0.0987
24-Hr Clear Runoff Volume (ac-ft)	0.0127
24-Hr Clear Runoff Volume (cu-ft)	553.3467



Peak Flow Hydrologic Analysis

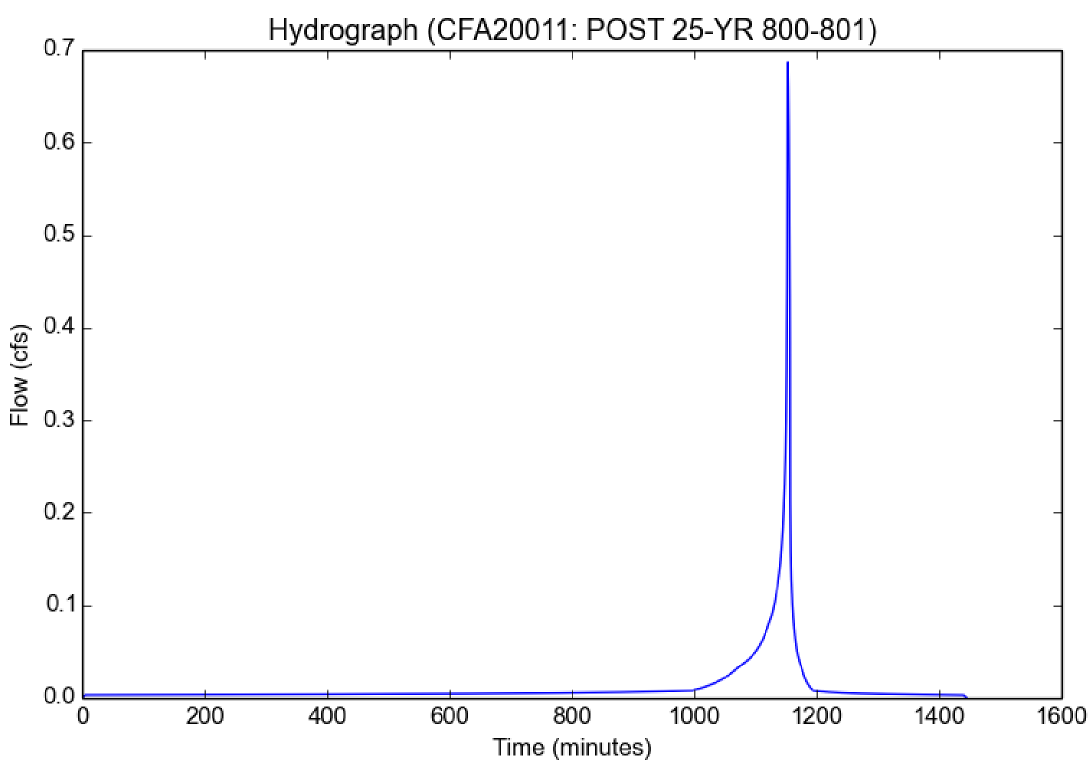
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 800-801.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 800-801
Area (ac)	0.2
Flow Path Length (ft)	125.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.01
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6868
Burned Peak Flow Rate (cfs)	0.6868
24-Hr Clear Runoff Volume (ac-ft)	0.0257
24-Hr Clear Runoff Volume (cu-ft)	1121.034



Peak Flow Hydrologic Analysis

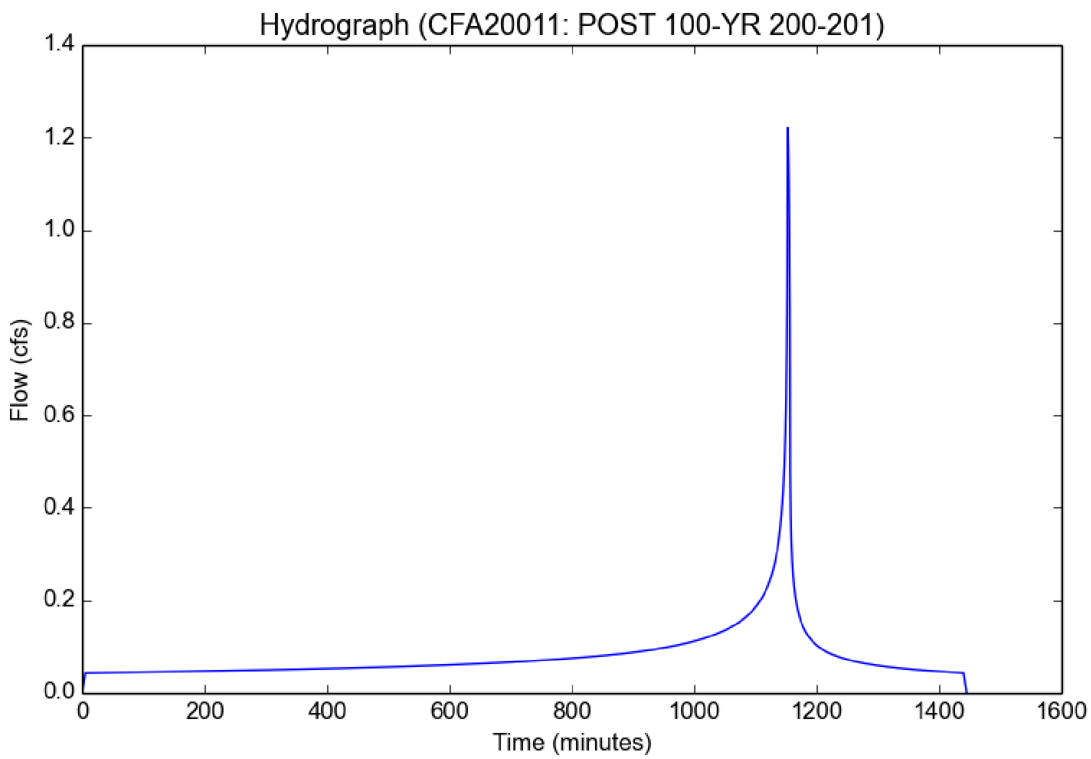
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 100-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 100-YR 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	8.415
Peak Intensity (in/hr)	5.0206
Undeveloped Runoff Coefficient (Cu)	0.9151
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.22
Burned Peak Flow Rate (cfs)	1.22
24-Hr Clear Runoff Volume (ac-ft)	0.1625
24-Hr Clear Runoff Volume (cu-ft)	7078.7782



Peak Flow Hydrologic Analysis

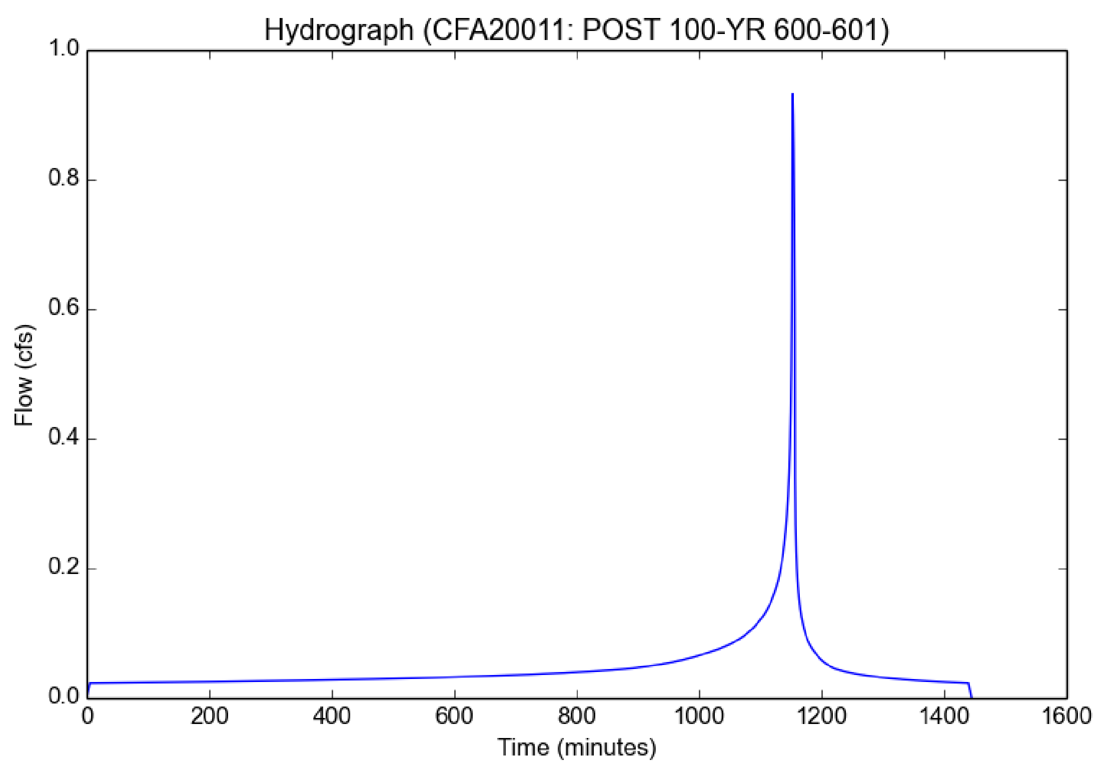
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 100-YR 600-601.pdf
Version: HydroCalc 1.0.2

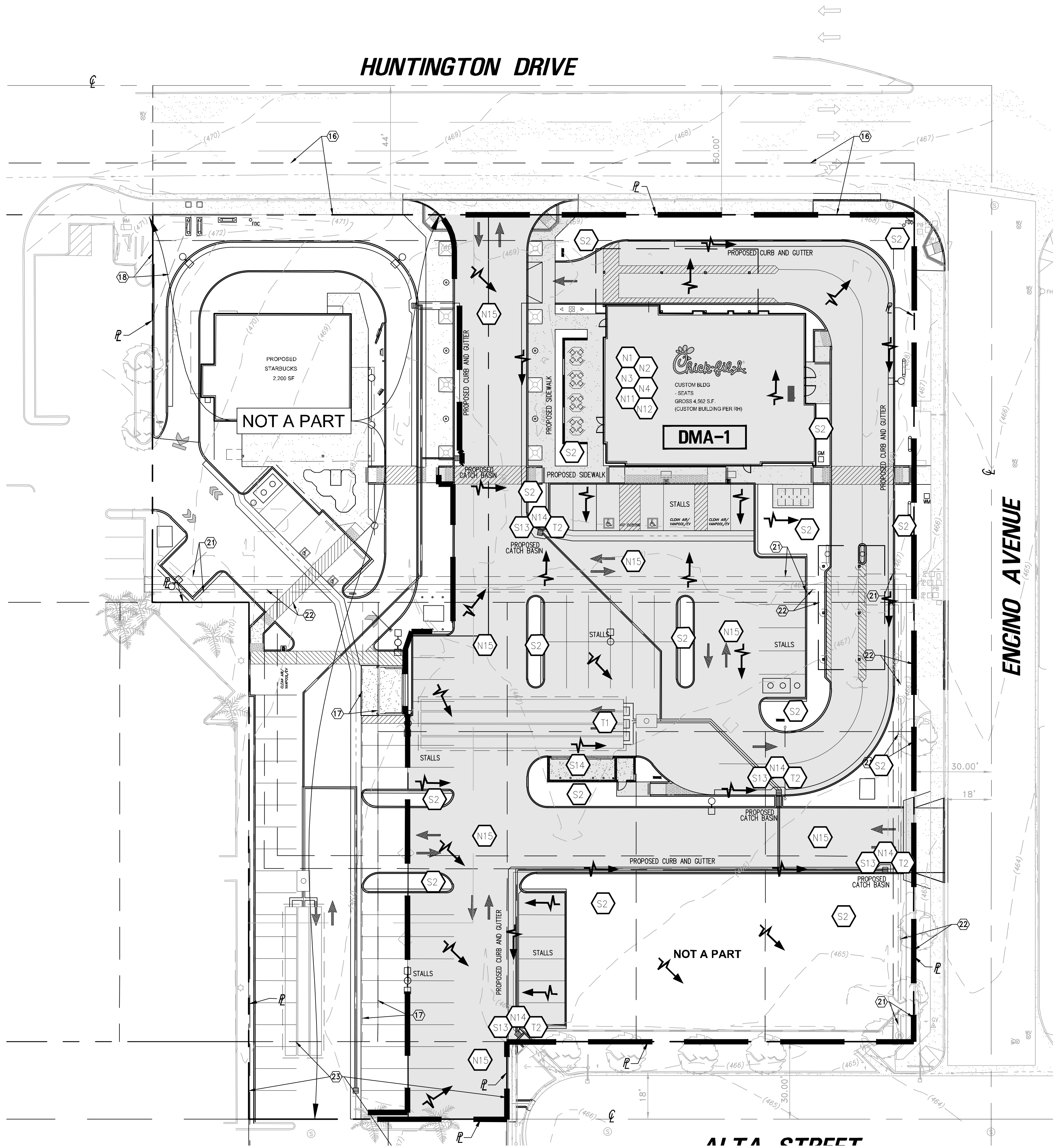
Input Parameters

Project Name	CFA20011
Subarea ID	POST 100-YR 600-601
Area (ac)	0.205
Flow Path Length (ft)	180.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.622
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	8.415
Peak Intensity (in/hr)	5.0206
Undeveloped Runoff Coefficient (Cu)	0.9151
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.9263
Burned Peak Flow Rate (cfs)	0.9263
24-Hr Clear Runoff Volume (ac-ft)	0.0944
24-Hr Clear Runoff Volume (cu-ft)	4114.2415



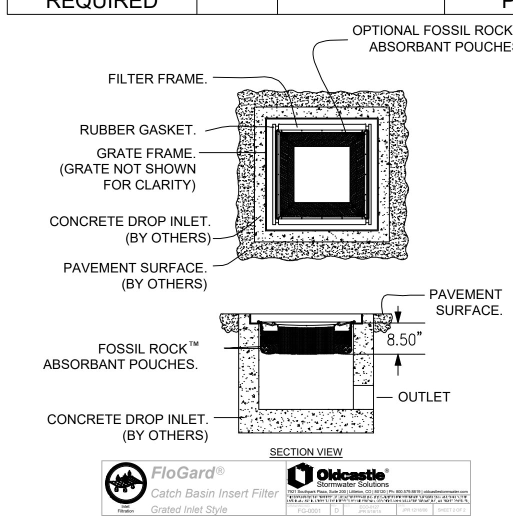


LEGEND

- N1 EDUCATION FOR PROPERTY OWNERS
- N2 ACTIVITY RESTRICTIONS
- N3 COMMON AREA LANDSCAPE MANAGEMENT
- N4 BMP MAINTENANCE (ALL BMPs)
- N11 COMMON AREA LITTER CONTROL
- N12 EMPLOYEE TRAINING
- N14 CATCH BASIN/TRASH & DEBRIS INSPECTION
- N15 STREET SWEEPING AND OIL CONTAMINATION REMOTION
- S2 EFFICIENT IRRIGATION SYSTEM AND LANDSCAPE DESIGN
- S13 STORM DRAIN SYSTEM STENCILING AND SIGNAGE
- S14 TRASH CONTAINER AREA
- T1 UNDERGROUND INFILTRATION SYSTEM
- T2 FLOGARD CATCH BASIN INSERT FILTER

IMPERVIOUS AREA
LANDSCAPE AREA
LIMITS OF DMA
PATH OF FLOW

LOT/PROPERTY SIZE SURFACE AREA:	90,992	SQ FT	DISTURBANCE AREA	61,006	SQ FT
	2.09	ACRES		1.40	ACRES
EXISTING IMPERVIOUS AREA:	50,738	SQ FT	POST CONSTRUCTION IMPERVIOUS AREA:	44,778	SQ FT
	1.16	ACTRES		1.03	ACRES
	83.17	% IMPERVIOUS		73.40	% IMPERVIOUS
TOTAL SWQDV REQUIRED	3826	CU. FT.	TTAL SWQDV PROVIDED	4,114	CU FT



T2 MODEL FG-M24

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

THIS PLAN IS:

PRELIMINARY

(NOT FOR CONSTRUCTION)

NO.	REVISIONS	DATE

Prepared by: Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

LOW IMPACT DEVELOPMENT PLAN

CHICK-FIL-A #4698
HUNTINGTON SW & HWY 210
CITY OF MONROVIA, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE 11/20/2020
DRAWN BY MME
CHECKED BY RJD
JOB NO. CFA20011
SHEET NO. 1 OF 1 SHEETS

Peak Flow Hydrologic Analysis

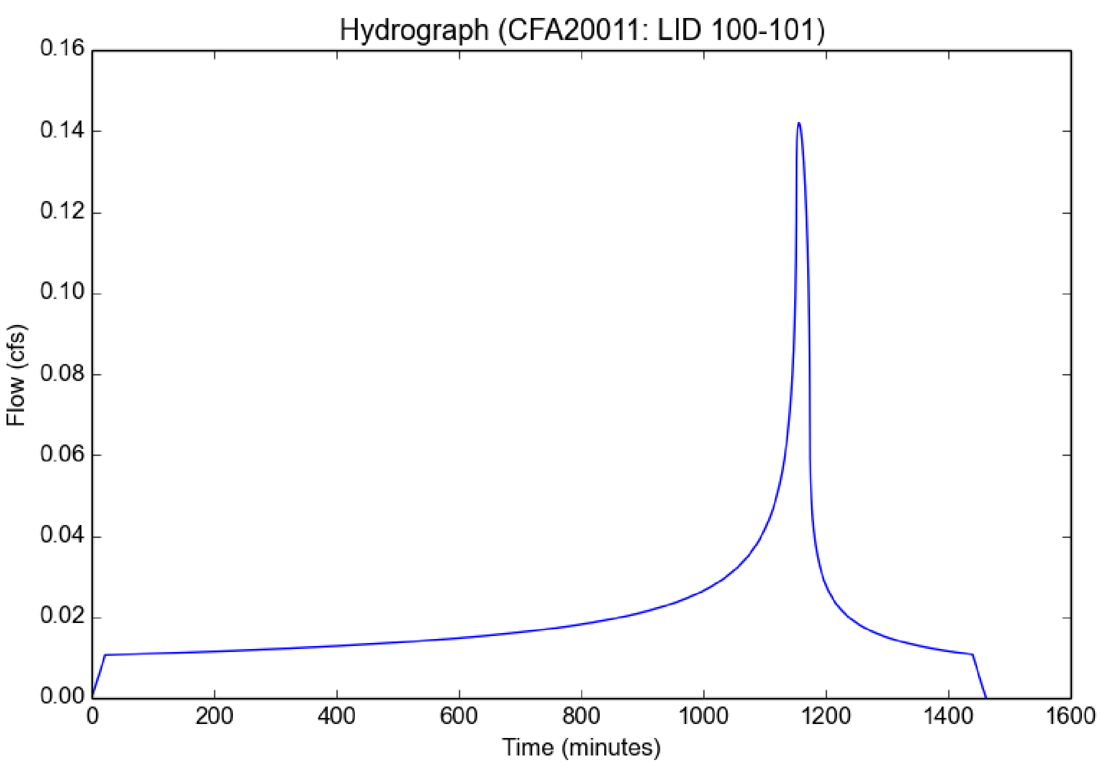
File location: P:/CFA20011/Reports/WQMP/HydroCalc/CFA20011 - LID 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	LID 100-101
Area (ac)	0.581
Flow Path Length (ft)	368.0
Flow Path Slope (vft/hft)	0.007
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.809
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.3271
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.7472
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.142
Burned Peak Flow Rate (cfs)	0.142
24-Hr Clear Runoff Volume (ac-ft)	0.0395
24-Hr Clear Runoff Volume (cu-ft)	1719.1384



Peak Flow Hydrologic Analysis

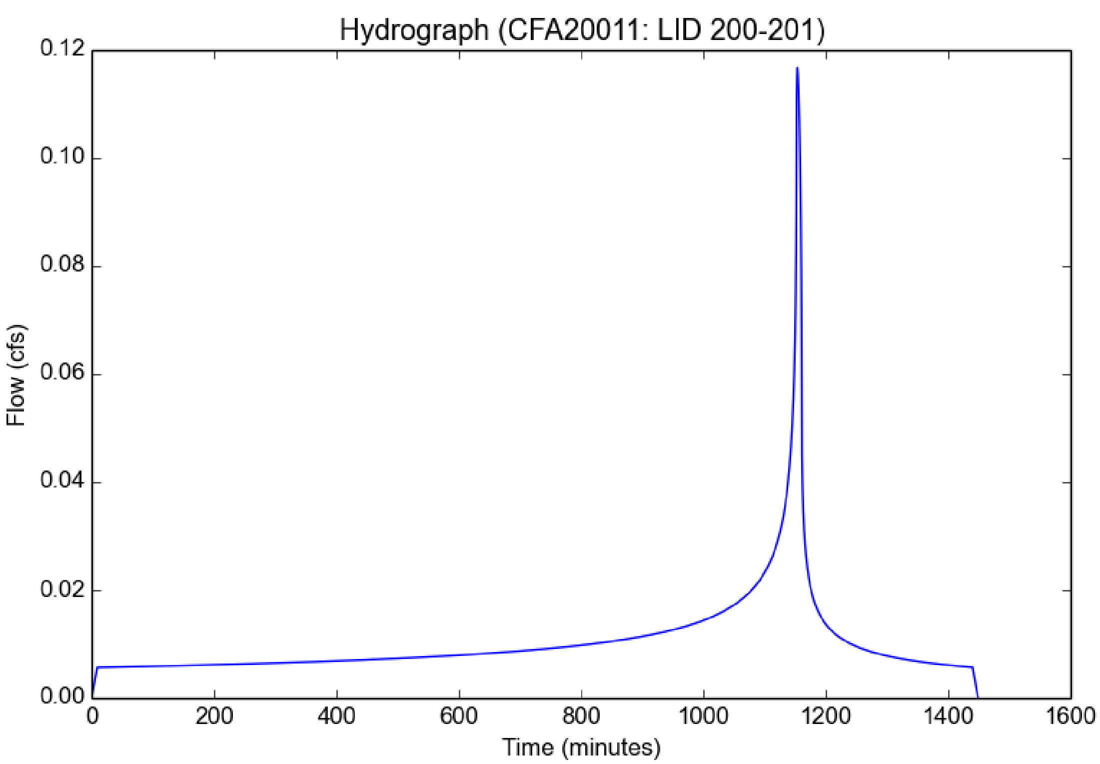
File location: P:/CFA20011/Reports/WQMP/HydroCalc/CFA20011 - LID 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	LID 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4979
Undeveloped Runoff Coefficient (Cu)	0.3197
Developed Runoff Coefficient (Cd)	0.8681
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	0.1167
Burned Peak Flow Rate (cfs)	0.1167
24-Hr Clear Runoff Volume (ac-ft)	0.021
24-Hr Clear Runoff Volume (cu-ft)	915.7802



Peak Flow Hydrologic Analysis

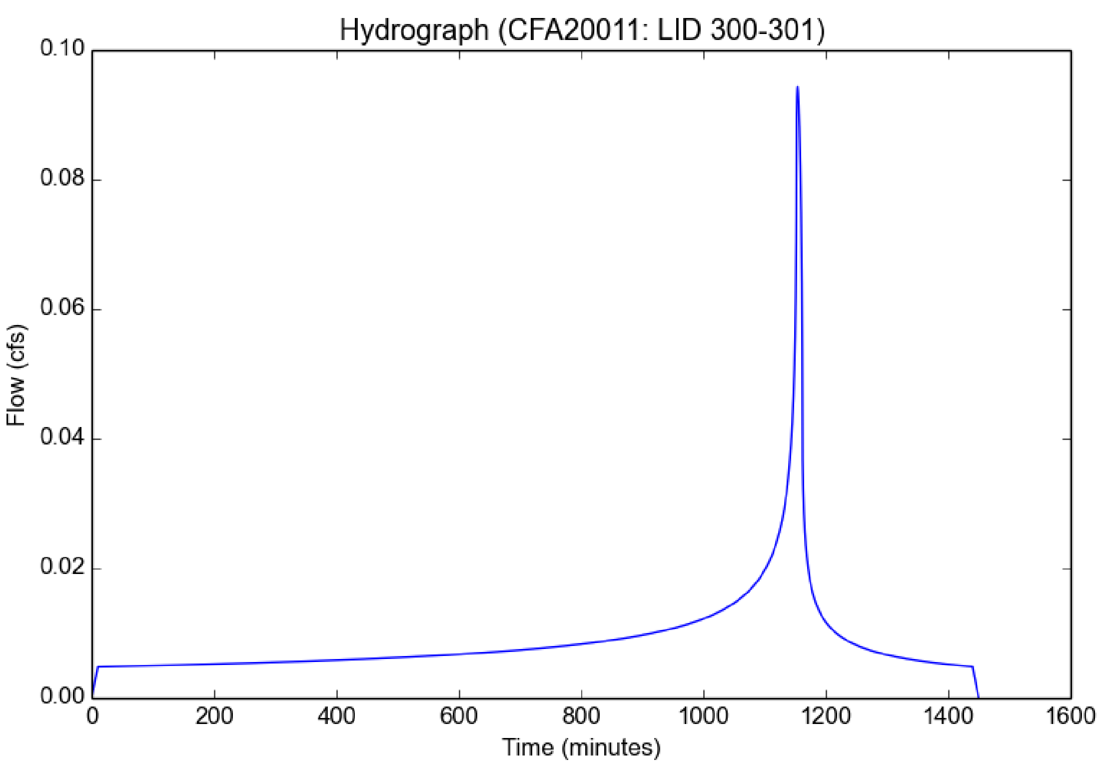
File location: P:/CFA20011/Reports/WQMP/HydroCalc/CFA20011 - LID 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	LID 300-301
Area (ac)	0.23
Flow Path Length (ft)	162.0
Flow Path Slope (vft/hft)	0.0175
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4738
Undeveloped Runoff Coefficient (Cu)	0.2784
Developed Runoff Coefficient (Cd)	0.8658
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	0.0944
Burned Peak Flow Rate (cfs)	0.0944
24-Hr Clear Runoff Volume (ac-ft)	0.0179
24-Hr Clear Runoff Volume (cu-ft)	780.0213



Peak Flow Hydrologic Analysis

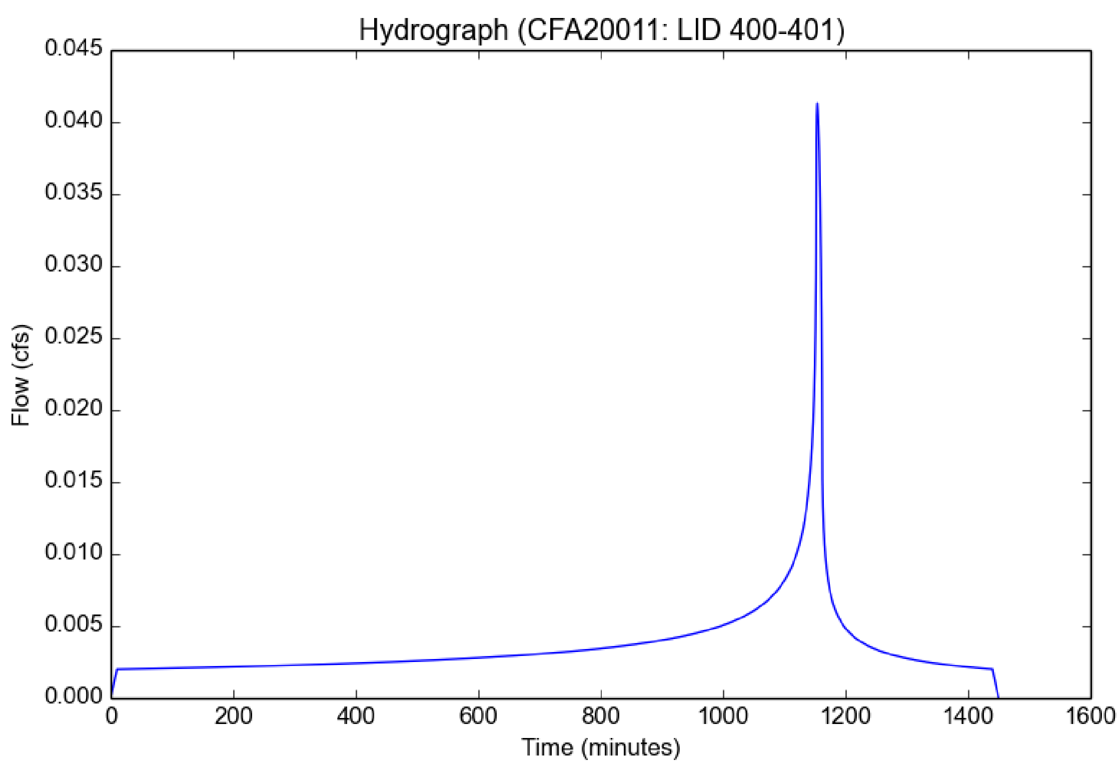
File location: P:/CFA20011/Reports/WQMP/HydroCalc/CFA20011 - LID 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	LID 400-401
Area (ac)	0.119
Flow Path Length (ft)	143.0
Flow Path Slope (vft/hft)	0.02
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.73
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.4738
Undeveloped Runoff Coefficient (Cu)	0.2784
Developed Runoff Coefficient (Cd)	0.7322
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	0.0413
Burned Peak Flow Rate (cfs)	0.0413
24-Hr Clear Runoff Volume (ac-ft)	0.0074
24-Hr Clear Runoff Volume (cu-ft)	323.2825



Peak Flow Hydrologic Analysis

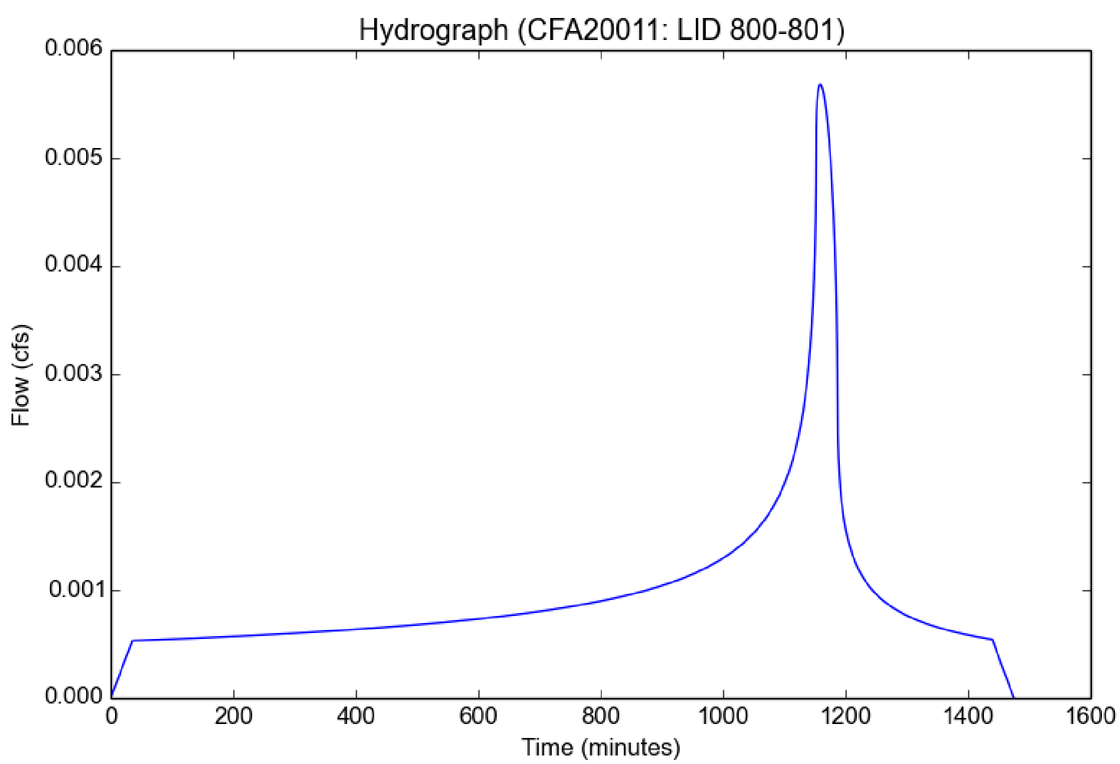
File location: P:/CFA20011/Reports/WQMP/HydroCalc/CFA20011 - LID 800-801.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	LID 800-801
Area (ac)	0.2
Flow Path Length (ft)	125.0
Flow Path Slope (vft/hft)	0.018
85th Percentile Rainfall Depth (in)	1.1
Percent Impervious	0.01
Soil Type	6
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.1
Peak Intensity (in/hr)	0.263
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	35.0
Clear Peak Flow Rate (cfs)	0.0057
Burned Peak Flow Rate (cfs)	0.0057
24-Hr Clear Runoff Volume (ac-ft)	0.002
24-Hr Clear Runoff Volume (cu-ft)	85.5373



V. Maintenance Covenant

VI. Hydrology Report

820 HUNTINGTON DRIVE

County of Los Angeles, California

HYDROLOGY AND HYDRAULIC ANALYSIS

For:

HWY 210 & Huntington SW
County of Los Angeles, California 91016
Grading Permit:

Project Name: Chick - fil - A Restaurant # 4698

Prepared for:
Chick-fil-A, Inc.
15635 Alton Parkway, Suite 350
Irvine, CA 92618

Prepared by:
Joseph C. Truxaw & Associates, Inc.
Civil Engineers & Land Surveyors
1915 W. Orangewood Avenue, Suite 101
Orange, CA 92868
(714) 935-0265

REGISTERED PROFESSIONAL ENGINEER
RANDY J. DECKER
No. 81077
CIVIL
STATE OF CALIFORNIA

Prepared on: October 16, 2020

TABLE OF CONTENTS **Page**

1.0 PROJECT DESCRIPTION

1.1 PURPOSE

This drainage study provides an analysis of the existing and proposed hydrology characteristics for the improvements of a Chick-fil-A Restaurant. The project site is in a shopping center located at Antonio Parkway and Windmill Avenue. The project site is approximately 2.1 acres. The subject site is bounded on the north by Huntington Drive, on the east by Encino Avenue, and on the south by Alta Street and private property. The west is bounded by private property. See Appendix for Vicinity Map.

1.2 EXISTING SITE CONDITION

The site is zoned as Retail Corridor Mixed Use where restaurants are permitted by right in this zone. The existing site is occupied by a closed Claim Jumper restaurant, asphalt parking and drive lanes of approximately 79,485 square feet and landscaped area of approximately 12,841 square feet. The discharge flow is broken into five drainage sub-areas. Sub-area 100 sheet flows from the northwest to the southeast to an existing culvert. Sub-area 200 sheet flows from northwest to southeast into an existing culvert. Sub-areas 300 and 400 both drain to onsite area drains. Sub-area 500 drains to landscape areas around the building. Drainage from both culverts exits into Alta Street and is conveyed via gutters into a culvert at the east end of Alta Street. Drainage is then conveyed to Santa Anita Wash, which flows into the Rio Hondo Channel. The Rio Hondo Channel joins the Los Angeles River, ultimately ending in the Pacific Ocean.

1.3 PROPOSED SITE CONDITION

Based on Site plan prepared by CRHO Architecture (Project Architect), the existing building and parking area will be demolished to accommodate the construction of a new Chick-fil-A restaurant # 4698 building (approximately 4,562 square feet) and a new Starbucks restaurant building (approximately 2,200 square feet). The new Chick-fil-A building will be constructed approximately 38 ft. west of the easterly property line and approximately 35 ft south of the northerly property line. The proposed building will be a single-story wood frame structure with no basement or underground level. The new Starbucks building will be constructed approximately 19 ft east of the westerly property line and approximately 38 ft south of the northerly property line. Other planned improvements include for each building, new parking stalls, menu board signs, two new trash enclosures, and new concrete walkways (approximately 68,660 square feet), and new planter areas (approximately 23,666 square feet). The site can be accessed from Huntington Drive, Encino Avenue, or the neighboring property.

In the proposed condition the site has been divided into five drainage sub-areas. The runoff from sub-areas 100, 200, 300, and 400 is collected into onsite catch basins and routed via underground storm drainpipes into underground infiltrators on the Chick-fil-A property. Once the system is full water will flow out of the catch basin located at node 401 and into Encino Avenue. The stormwater will flow from Encino Avenue to Alta Street and into the Santa Anita Wash, connect with the Rio Hondo Channel, which will convey the drainage to the Los Angeles River and finally the Pacific Ocean. The runoff from sub-areas 500, 600, and 700 is collected into onsite catch basins and routed via underground storm drainpipes into underground infiltrators on the Starbucks property. Once the system has reached capacity the runoff will flow from the catch basin located at node 501 and exit the site via an existing culvert. The culvert conveys drainage into the Alta Street, which then flows via surface flow into a channel at the end of Alta Street. The drainage is conveyed into the Santa Anita Wash, which connects to the Rio Hondo Channel, then joins the Los Angeles River and ultimately ends in the Pacific Ocean. Sub-area 800 is comprised entirely of landscaped area except for an existing wall. This area will be considered a self-treating area.

1.4 METHODOLOGY

This project should be designed for 10-year, 24-hour and 25-year, 24-hour rainfall event. As per the Los Angeles County Department of Public Works, the site is located near rainfall isohyet 7.5 in. as per 1-H1.30 MOUNT WILSON 50-YEAR 24-HOUR ISOYHET (See Appendix)

The total runoff from the site will be computed using the information given by the L.A.C.P.W. Hydrology Manual related to Soil Classification and 10-Year and 25-Year 24-Hour Isohyet for said site. The Isohyet is also utilized to determine the runoff when the Rational Formula is used. The Rational Formula assumes that the effective rainfall intensity over the site is equal to the intensity found at the time of concentration.

From LACDPW	Soil Classification Area:	006
Isohyet	Events:	10 Year and 25 Year-24-hour

Time of concentration
The time of concentration was computed using the HydroCalc program from LACDPW.

$$Tc = 10^{-0.507}(C_D I_X)^{-0.519} L^{0.483} S^{-0.135}$$

$C_D = (0.9 \text{ x Imp}) + [(1.0 - \text{Imp}) \text{ x } C_U)]$ If $CD < C_U$, use $C_D = C_U$

The discharge Q was computed using the Rational Formula.

1.5 TOTAL DISCHARGE SUMMARY

TOTAL SITE DISCHARGE		
STORM EVENT (YEAR)	EXISTING CONDITION (cfs)	PROPOSED CONDITON (cfs)
10	5.74	5.72
25	7.46	7.27

2.0 HYDROLOGY ANALYSIS

2.1 EXISTING CONDITION

Node 100 to Node 101

Area =1.151 acres
L = 376 ft. s = 0.0159 Tc = 6.00 min.

Q_{10} = 3.00 cfs. Q_{25} = 4.06 cfs.
I = 2.93 in/hr. I = 3.93 in/hr.

Node 200 to Node 201

Area =0.654 acres
L = 230 ft. s = 0.0186 Tc = 5.00 min.

Q_{10} = 1.87 cfs. Q_{25} = 2.31 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 300 to Node 301

Area =0.047 acres
L = 52 ft. s = 0.0119 Tc = 5.00 min.

Q_{10} = 0.13 cfs. Q_{25} = 0.16 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 400 to Node 401

Area =0.03 acres
L = 33 ft. s = 0.0206 Tc = 5.00 min.

Q_{10} = 0.08 cfs. Q_{25} = 0.10 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 500 to Node 501

Area =0.238 acres
L = 30 ft. s = 0.0613 Tc = 5.00 min.

Q_{10} = 0.66 cfs. Q_{25} = 0.83 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

2.2 PROPOSED CONDITION

Node 100 to Node 101

Area =0.581 acres
L = 368 ft. s = 0.007 Tc = 7.00 min.

Q_{10} = 1.40 cfs. Q_{25} = 1.87 cfs.
I = 2.73 in/hr. I = 3.60 in/hr.

Node 200 to Node 201

Area =0.27 acres
L = 138 ft. s = 0.0151 Tc = 5.00 min.

Q_{10} = 0.77 cfs. Q_{25} = 0.95 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 300 to Node 301

Area =0.230 acres
L = 162 ft. s = 0.0175 Tc = 5.00 min

Q_{10} = 0.66 cfs. Q_{25} = 0.81 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 400 to Node 401

Area =0.119 acres
L = 143 ft. s = 0.02 Tc = 5.00 min

Q_{10} = 0.33 cfs. Q_{25} = 0.42 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 500 to Node 501

Area =0.487 acres
L = 2.88 ft. s = 0.0131 Tc = 5.00 min

Q_{10} = 1.38 cfs. Q_{25} = 1.71 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 600 to Node 601

Area =0.205 acres
L = 180 ft. s = 0.0061 Tc = 5.00 min

Q_{10} = 0.57 cfs. Q_{25} = 0.72 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 700 to Node 701

Area =0. acres
L = 99 ft. s = 0.0147 Tc = 5.00 min

Q_{10} = 0.08 cfs. Q_{25} = 0.10 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

Node 800 to Node 801

Area =0.49 acres
L = 125 ft. s = 0.018 Tc = 5.00 min

Q_{10} = 0.53 cfs. Q_{25} = 0.69 cfs.
I = 3.19 in/hr. I = 3.93 in/hr.

TOTAL SITE RUNOFF DISCHARGE

EXISTING

Q_{10} = 3.00 + 1.87 + 0.13 + 0.08 + 0.66 = **5.74 cfs**

Q_{25} = 4.06 + 2.31 + 0.16 + 0.10 + 0.83 = **7.46 cfs**

PROPOSED

Q_{10} = 1.40 + 0.77 + 0.66 + 0.33 + 1.38 + 0.57 + 0.08 + 0.53 = **5.72 cfs**

Q_{25} = 1.87 + 0.95 + 0.81 + 0.42 + 1.71 + 0.72 + 0.10 + 0.69 = **7.27 cfs**

Q_{10} (PROPOSED) – Q_{10} (EXISTING)

5.72 cfs – 5.74 cfs = -0.02 cfs => DECREASE OF 0.02 cfs [0.3%]

Q_{25} (PROPOSED) – Q_{25} (EXISTING)

7.27 cfs – 7.46 cfs = -0.19 cfs => DECREASE OF 0.19 cfs [2.5%]

BUILDING PROTECTION

Chick-fil-A:

For building protection purposes, the water surface elevation NODE 201 will be 467.25' during a 100-yr storm event. This provides a difference of 1.24' below the finished floor of the building.

Starbucks:

For building protection purposes, the water surface elevation NODE 601 will be 468.61' during a 100-yr storm event. This provides a difference of 1.55' below the finished floor of the building.

2.3 CONCLUSION

The findings of this report show that no significant changes to the drainage of this site will occur. The existing site land use is a Claim Jumper Restaurant and parking lot and the proposed land use is a restaurant with a drive-thru. The amount of impervious surfaces has decreased in the proposed condition (80,117 sf Existing Cond., 68,882 sf Proposed Cond.).

The drainage pattern of the site will be maintained as it drains from northeast to southwest, although due to the addition of the building and drive-thru the subareas that make up the DMA are configured differently than in the existing condition. The site has been designed to allow for drainage to flow away from the building and be conveyed by drainage devices such as curb & gutters south to existing catch basins. The proposed condition of the site will maintain the site discharge into the public storm drain system through the culverts, therefore no re-routing of storm water will occur from this development project.

It was found that in both the 10 yr and 25 yr storm event analyses the peak runoff values were decreased from the existing site condition values by 0.3% and 2.5%.

It shall be noted that the most significant difference to the drainage of this site in the proposed condition is the addition of a storm water treatment system. Per State and County requirements this development project is required to install a Structural BMP for storm water treatment. Both sites will have an underground infiltration systems that will capture the Design Volume and allow for storage and infiltration of the runoff. In high flow storm events, the storm water will first enter the underground storage system, once full the system will back up to the lowest grates, which are located in the drive lane at Node 401 and Node 501. The storm water will then flow into Alta Street. See project WQMP for details.

2.4 HYDROCALC CALCULATIONS

Peak Flow Hydrologic Analysis

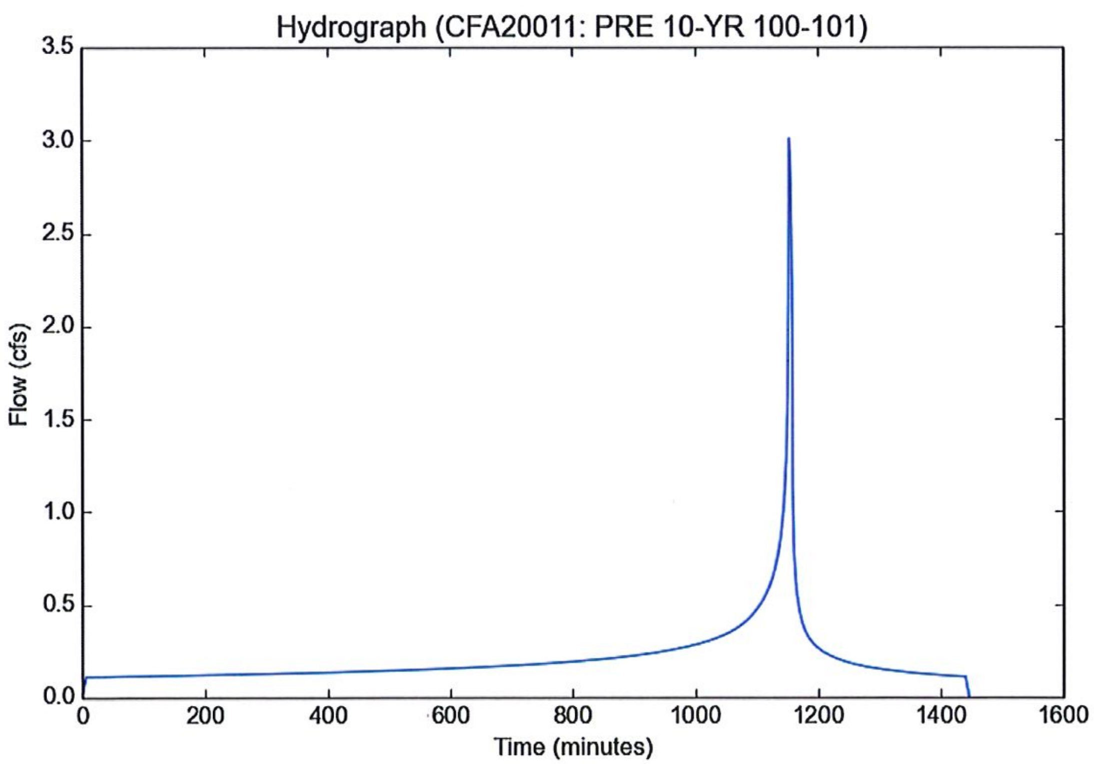
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 100-101
Area (ac)	1.151
Flow Path Length (ft)	376.0
Flow Path Slope (vft/hft)	0.0159
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.89
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	2.9326
Undeveloped Runoff Coefficient (Cu)	0.8175
Developed Runoff Coefficient (Cd)	0.8909
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	3.0072
Burned Peak Flow Rate (cfs)	3.0072
24-Hr Clear Runoff Volume (ac-ft)	0.4193
24-Hr Clear Runoff Volume (cu-ft)	18266.1644



Peak Flow Hydrologic Analysis

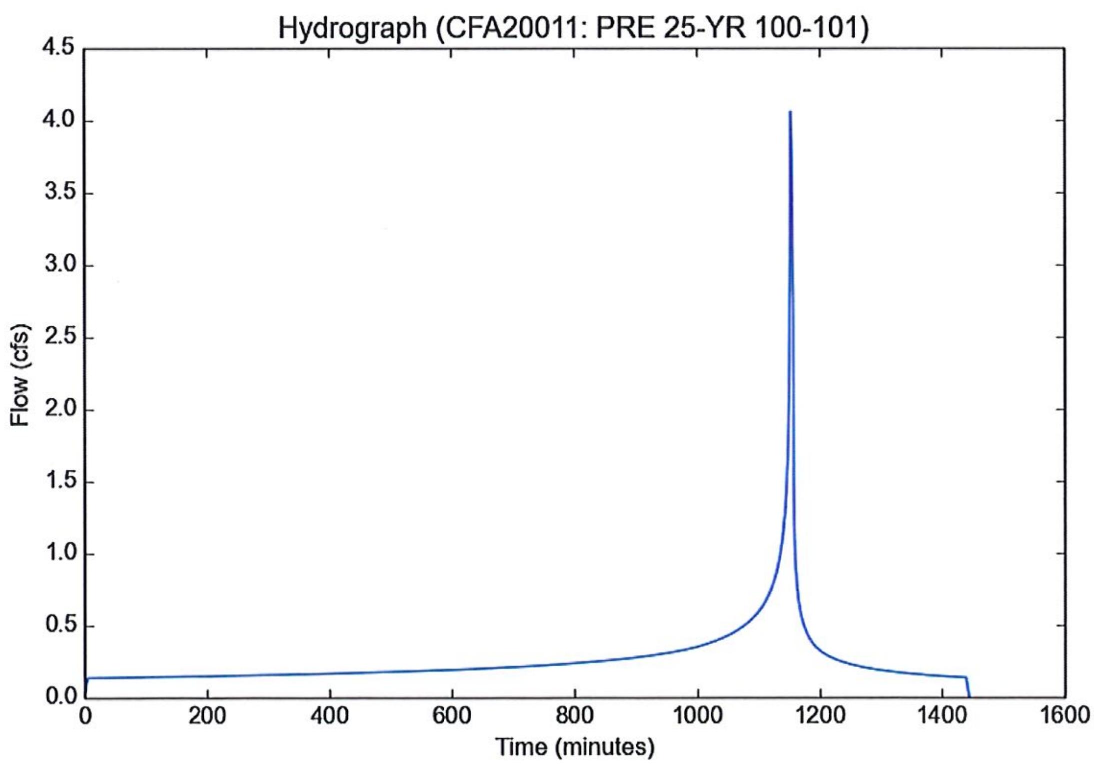
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 100-101
Area (ac)	1.151
Flow Path Length (ft)	376.0
Flow Path Slope (vft/hft)	0.0159
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.89
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8971
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.0568
Burned Peak Flow Rate (cfs)	4.0568
24-Hr Clear Runoff Volume (ac-ft)	0.5176
24-Hr Clear Runoff Volume (cu-ft)	22545.3306



Peak Flow Hydrologic Analysis

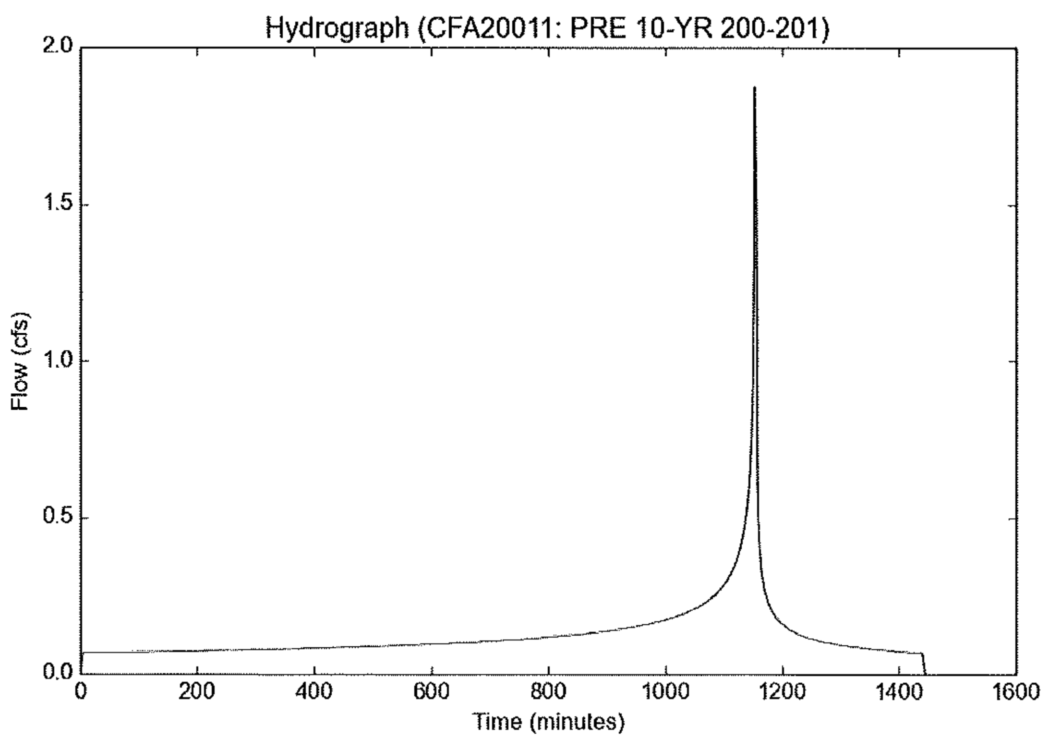
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 200-201
Area (ac)	0.654
Flow Path Length (ft)	230.0
Flow Path Slope (vft/hft)	0.0186
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.962
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8976
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.8755
Burned Peak Flow Rate (cfs)	1.8755
24-Hr Clear Runoff Volume (ac-ft)	0.2528
24-Hr Clear Runoff Volume (cu-ft)	11012.7198



Peak Flow Hydrologic Analysis

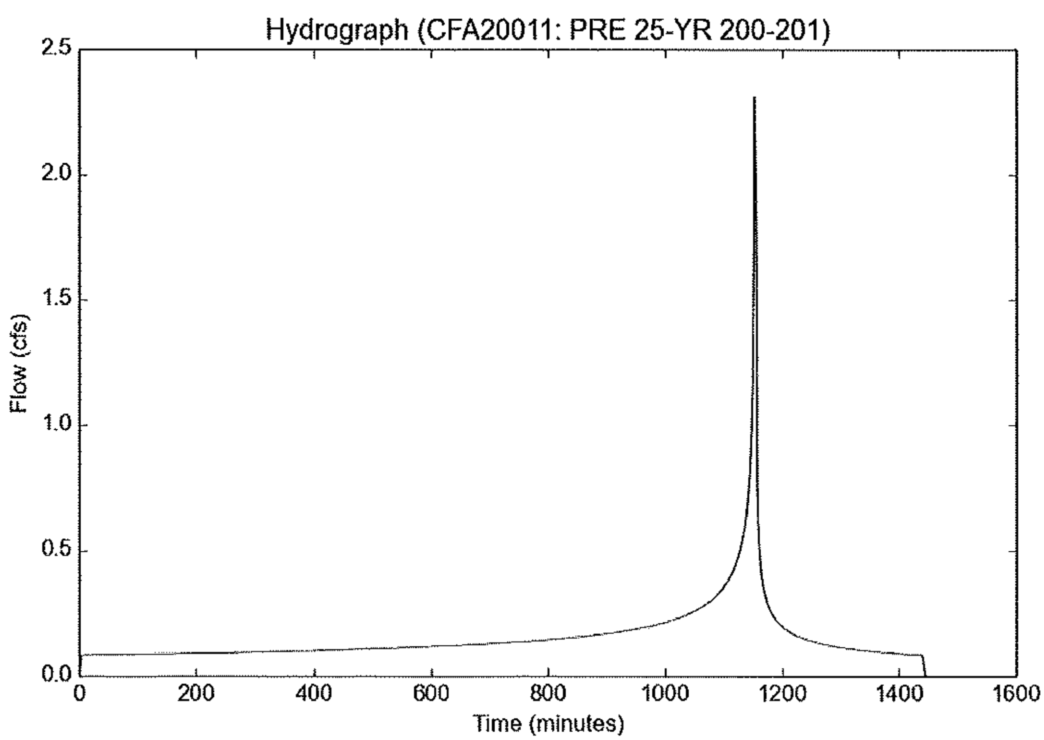
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 200-201
Area (ac)	0.654
Flow Path Length (ft)	230.0
Flow Path Slope (vft/hft)	0.0186
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.962
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.899
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3099
Burned Peak Flow Rate (cfs)	2.3099
24-Hr Clear Runoff Volume (ac-ft)	0.3113
24-Hr Clear Runoff Volume (cu-ft)	13558.4794



Peak Flow Hydrologic Analysis

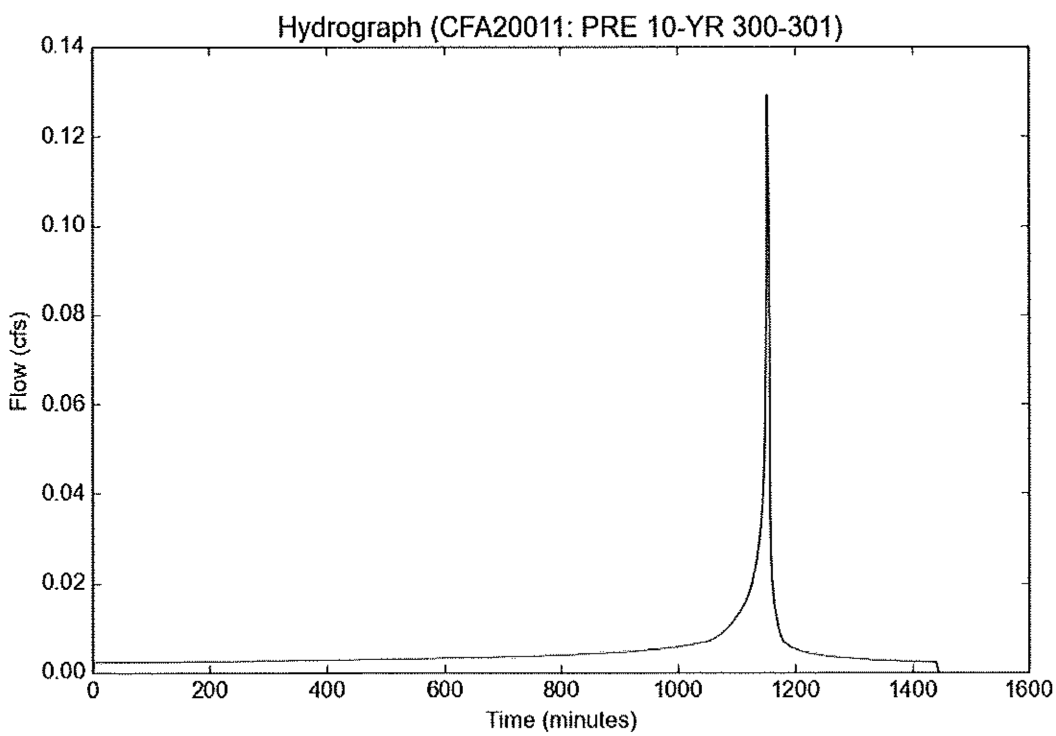
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 300-301
Area (ac)	0.047
Flow Path Length (ft)	52.0
Flow Path Slope (vft/hft)	0.0119
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.374
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8599
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1291
Burned Peak Flow Rate (cfs)	0.1291
24-Hr Clear Runoff Volume (ac-ft)	0.0096
24-Hr Clear Runoff Volume (cu-ft)	419.6685



Peak Flow Hydrologic Analysis

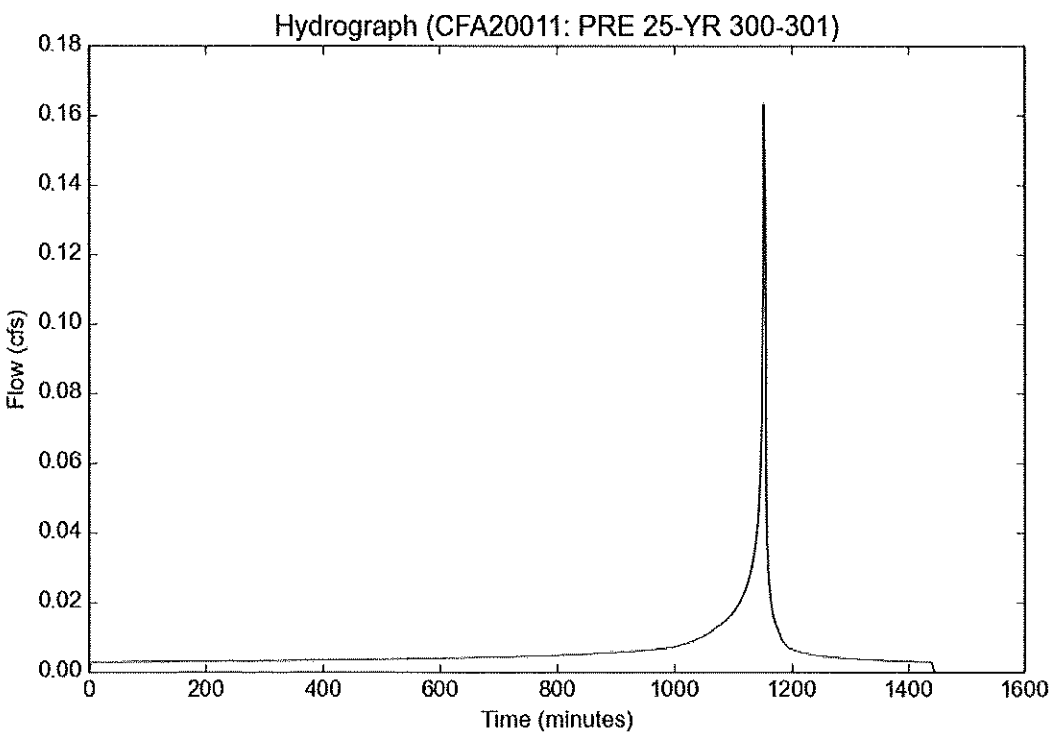
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 300-301
Area (ac)	0.047
Flow Path Length (ft)	52.0
Flow Path Slope (vft/hft)	0.0119
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.374
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8836
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1632
Burned Peak Flow Rate (cfs)	0.1632
24-Hr Clear Runoff Volume (ac-ft)	0.0123
24-Hr Clear Runoff Volume (cu-ft)	535.2742



Peak Flow Hydrologic Analysis

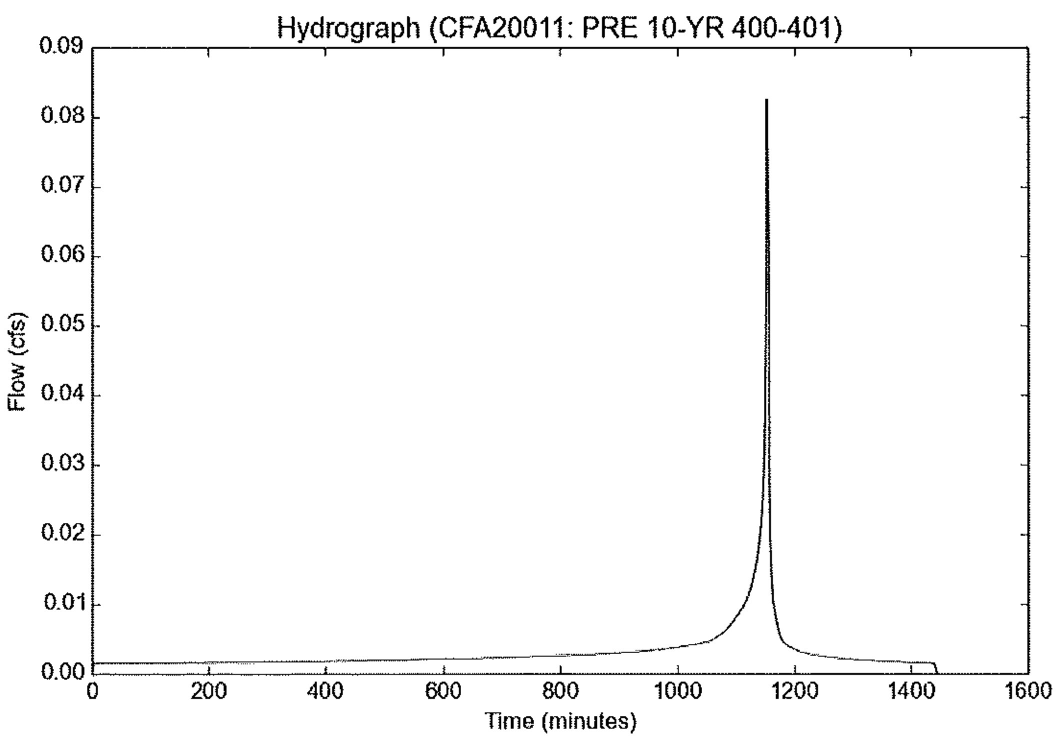
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 400-401
Area (ac)	0.03
Flow Path Length (ft)	33.0
Flow Path Slope (vft/hft)	0.0206
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.39
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8609
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0825
Burned Peak Flow Rate (cfs)	0.0825
24-Hr Clear Runoff Volume (ac-ft)	0.0063
24-Hr Clear Runoff Volume (cu-ft)	274.3305



Peak Flow Hydrologic Analysis

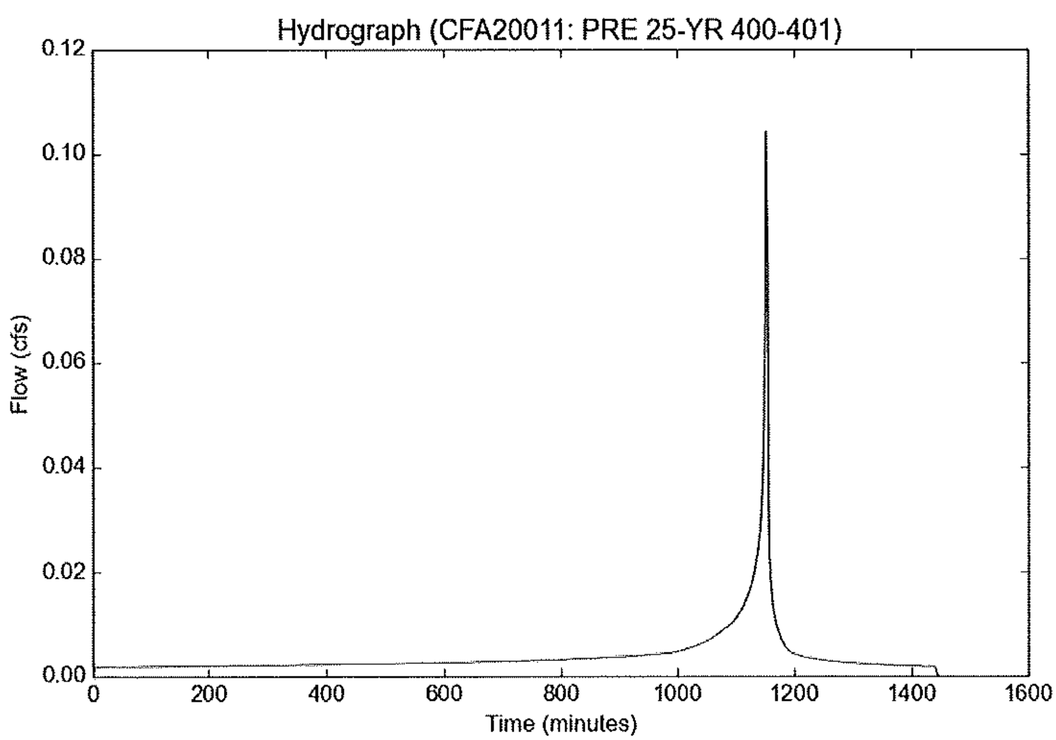
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 400-401
Area (ac)	0.03
Flow Path Length (ft)	33.0
Flow Path Slope (vft/hft)	0.0206
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.39
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.884
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1042
Burned Peak Flow Rate (cfs)	0.1042
24-Hr Clear Runoff Volume (ac-ft)	0.008
24-Hr Clear Runoff Volume (cu-ft)	349.2912



Peak Flow Hydrologic Analysis

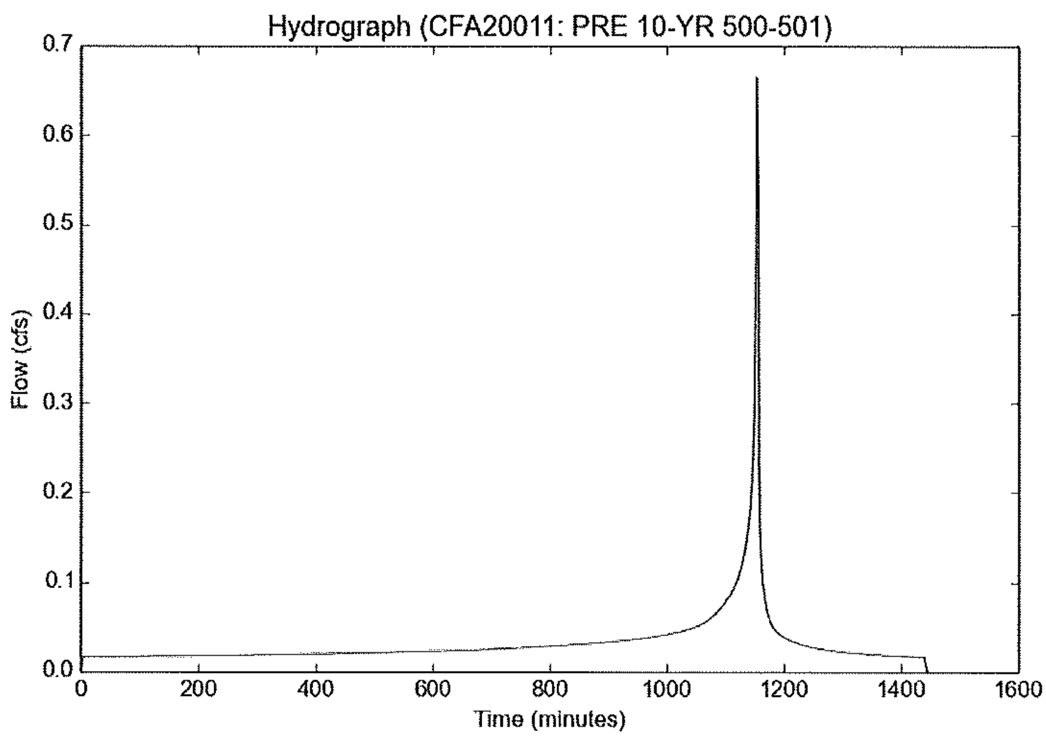
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 10-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 10-YR 500-501
Area (ac)	0.238
Flow Path Length (ft)	30.0
Flow Path Slope (vft/hft)	0.0613
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.595
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8741
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6646
Burned Peak Flow Rate (cfs)	0.6646
24-Hr Clear Runoff Volume (ac-ft)	0.065
24-Hr Clear Runoff Volume (cu-ft)	2832.6895



Peak Flow Hydrologic Analysis

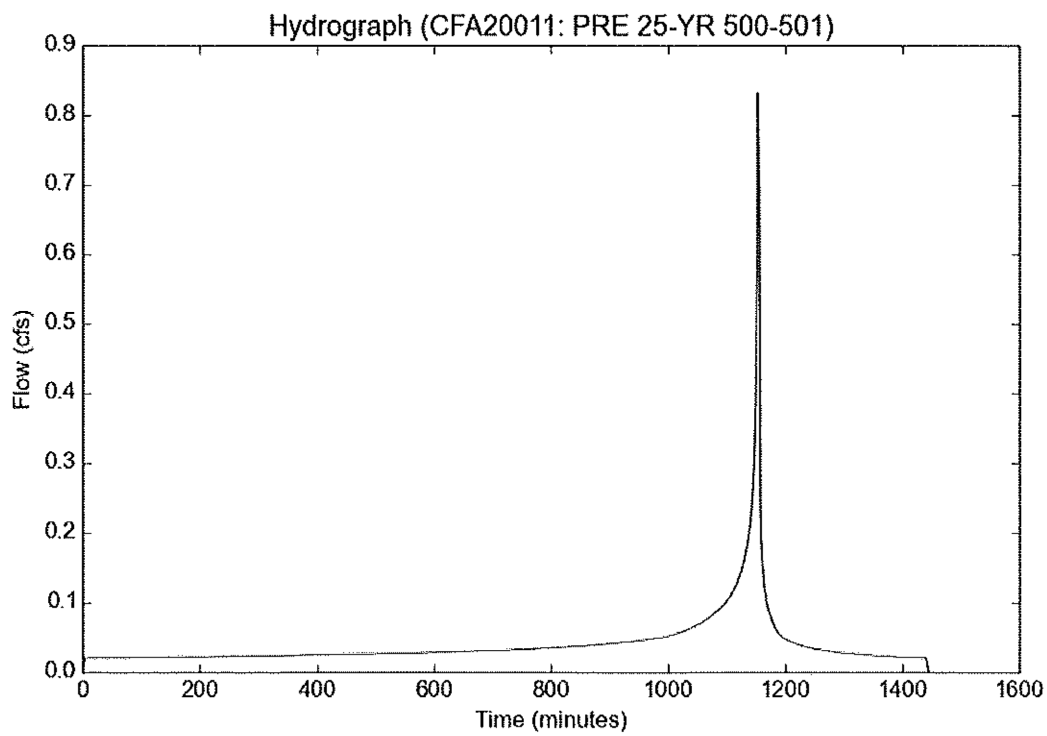
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/PRE/CFA20011 - PRE 25-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	PRE 25-YR 500-501
Area (ac)	0.238
Flow Path Length (ft)	30.0
Flow Path Slope (vft/hft)	0.0613
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.595
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8894
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.8316
Burned Peak Flow Rate (cfs)	0.8316
24-Hr Clear Runoff Volume (ac-ft)	0.0814
24-Hr Clear Runoff Volume (cu-ft)	3546.2737



Peak Flow Hydrologic Analysis

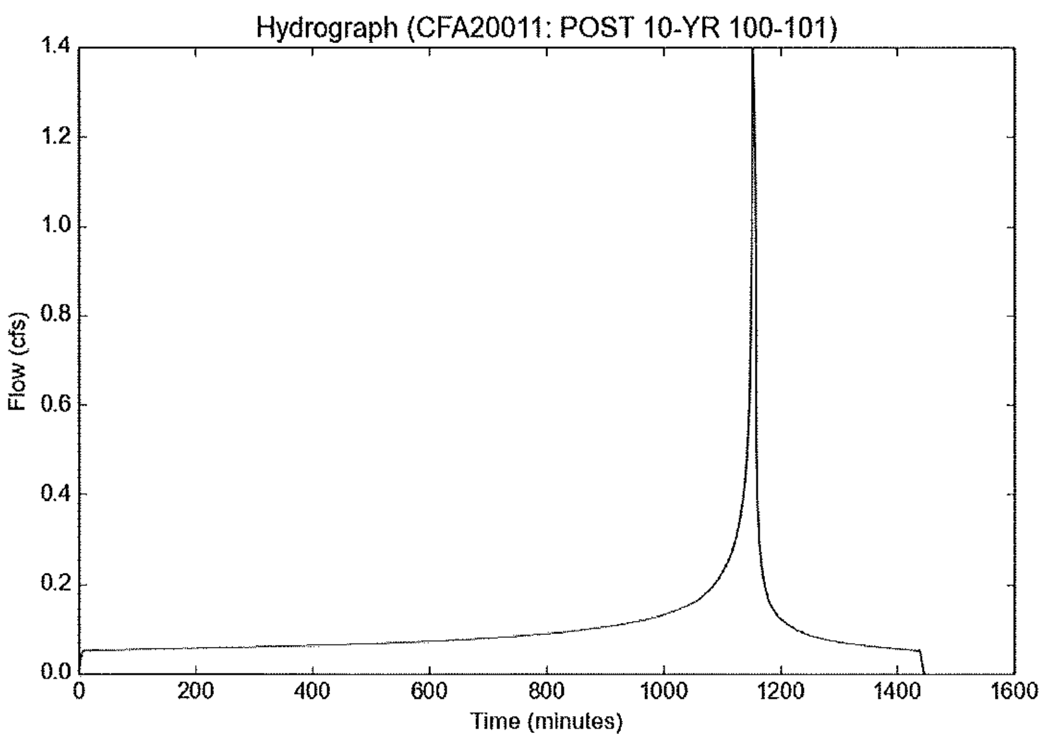
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 100-101
Area (ac)	0.581
Flow Path Length (ft)	368.0
Flow Path Slope (vft/hft)	0.007
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.809
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	2.7276
Undeveloped Runoff Coefficient (Cu)	0.8032
Developed Runoff Coefficient (Cd)	0.8815
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	1.397
Burned Peak Flow Rate (cfs)	1.397
24-Hr Clear Runoff Volume (ac-ft)	0.1971
24-Hr Clear Runoff Volume (cu-ft)	8586.4879



Peak Flow Hydrologic Analysis

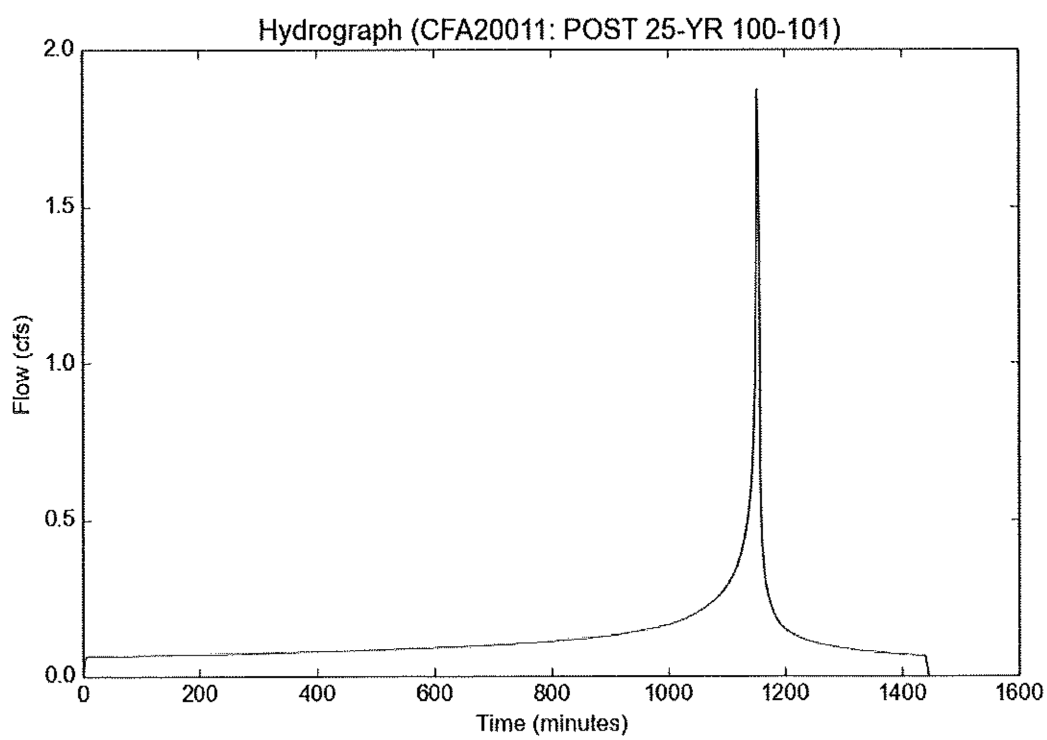
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 100-101.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 100-101
Area (ac)	0.581
Flow Path Length (ft)	368.0
Flow Path Slope (vft/hft)	0.007
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.809
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.6062
Undeveloped Runoff Coefficient (Cu)	0.8614
Developed Runoff Coefficient (Cd)	0.8926
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	1.8702
Burned Peak Flow Rate (cfs)	1.8702
24-Hr Clear Runoff Volume (ac-ft)	0.2441
24-Hr Clear Runoff Volume (cu-ft)	10632.1601



Peak Flow Hydrologic Analysis

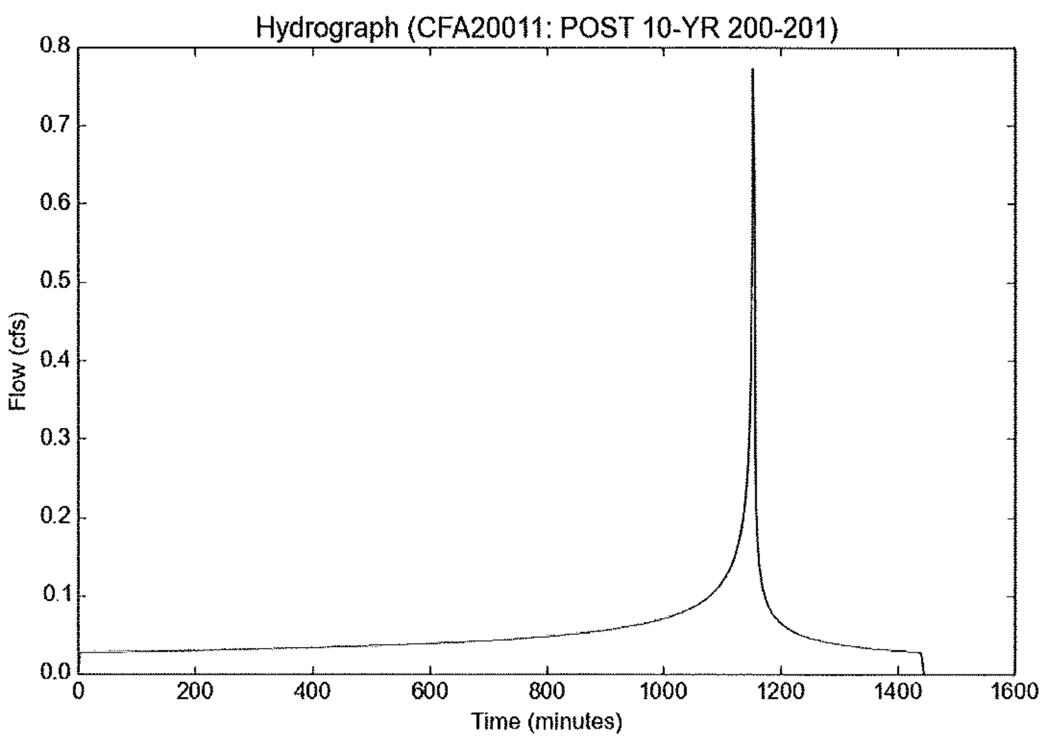
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8965
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7733
Burned Peak Flow Rate (cfs)	0.7733
24-Hr Clear Runoff Volume (ac-ft)	0.103
24-Hr Clear Runoff Volume (cu-ft)	4484.79



Peak Flow Hydrologic Analysis

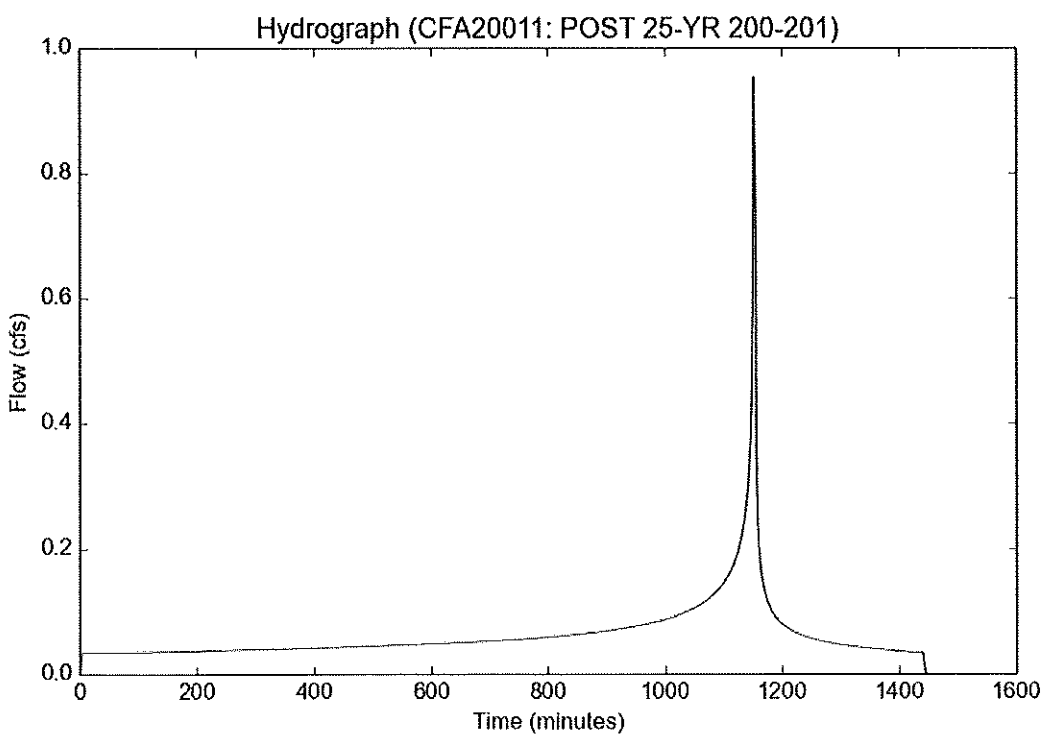
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8986
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.9532
Burned Peak Flow Rate (cfs)	0.9532
24-Hr Clear Runoff Volume (ac-ft)	0.1268
24-Hr Clear Runoff Volume (cu-ft)	5524.6063



Peak Flow Hydrologic Analysis

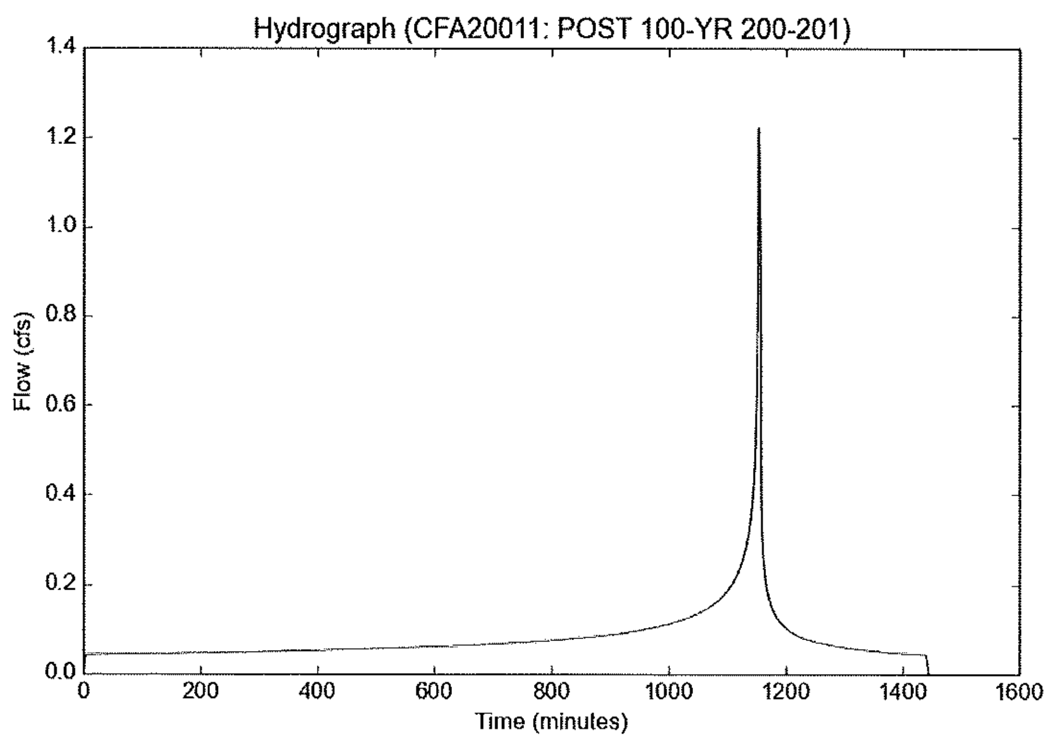
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 100-YR 200-201.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 100-YR 200-201
Area (ac)	0.27
Flow Path Length (ft)	138.0
Flow Path Slope (vft/hft)	0.0151
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	8.415
Peak Intensity (in/hr)	5.0206
Undeveloped Runoff Coefficient (Cu)	0.9151
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.22
Burned Peak Flow Rate (cfs)	1.22
24-Hr Clear Runoff Volume (ac-ft)	0.1625
24-Hr Clear Runoff Volume (cu-ft)	7078.7782



Peak Flow Hydrologic Analysis

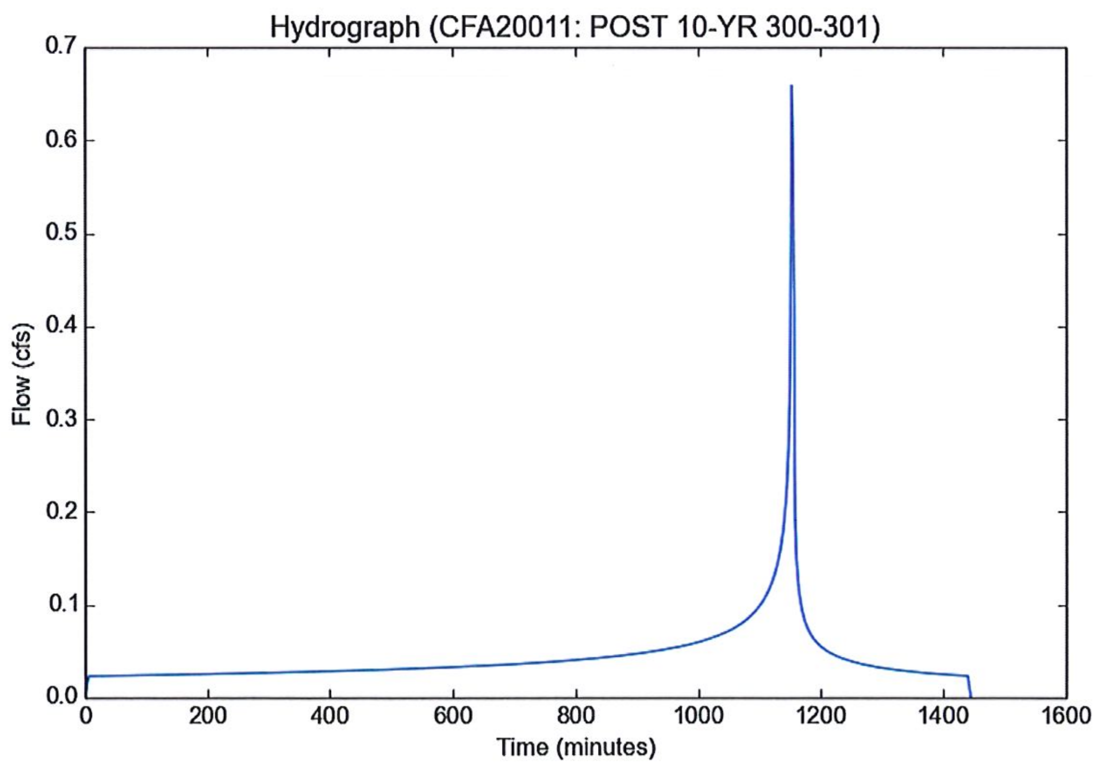
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 300-301
Area (ac)	0.23
Flow Path Length (ft)	162.0
Flow Path Slope (vft/hft)	0.0175
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8965
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6588
Burned Peak Flow Rate (cfs)	0.6588
24-Hr Clear Runoff Volume (ac-ft)	0.0877
24-Hr Clear Runoff Volume (cu-ft)	3820.3767



Peak Flow Hydrologic Analysis

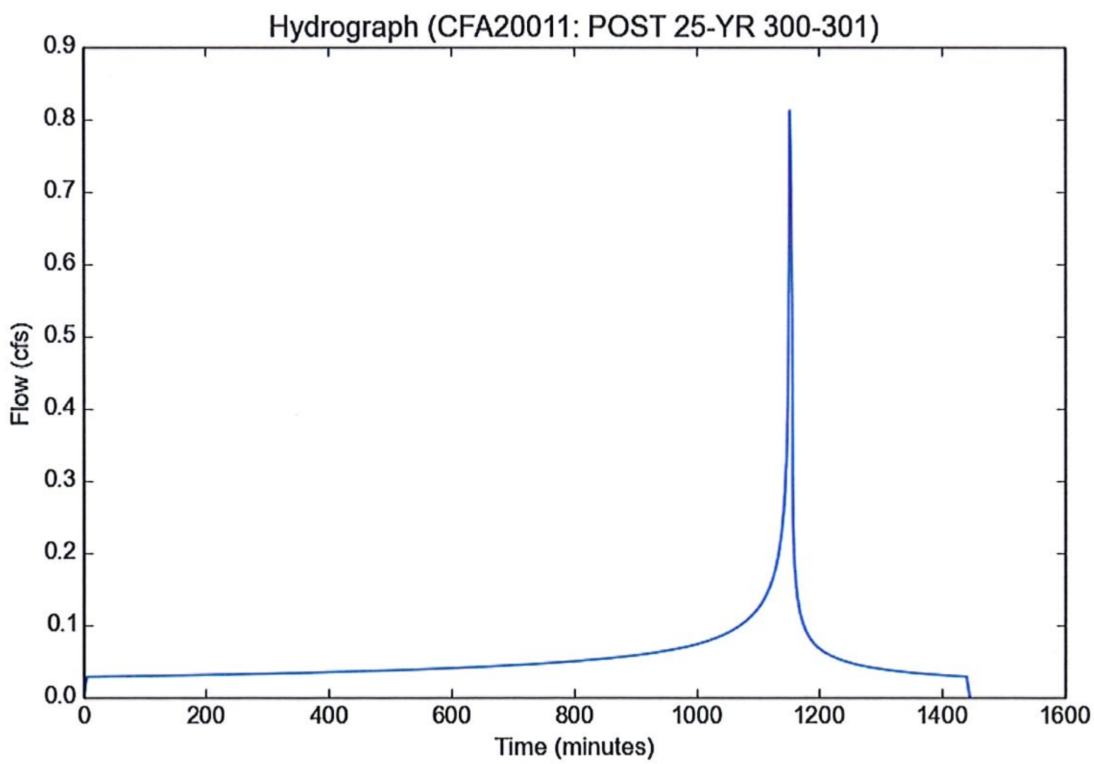
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 300-301.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 300-301
Area (ac)	0.23
Flow Path Length (ft)	162.0
Flow Path Slope (vft/hft)	0.0175
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.945
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8986
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.812
Burned Peak Flow Rate (cfs)	0.812
24-Hr Clear Runoff Volume (ac-ft)	0.108
24-Hr Clear Runoff Volume (cu-ft)	4706.1461



Peak Flow Hydrologic Analysis

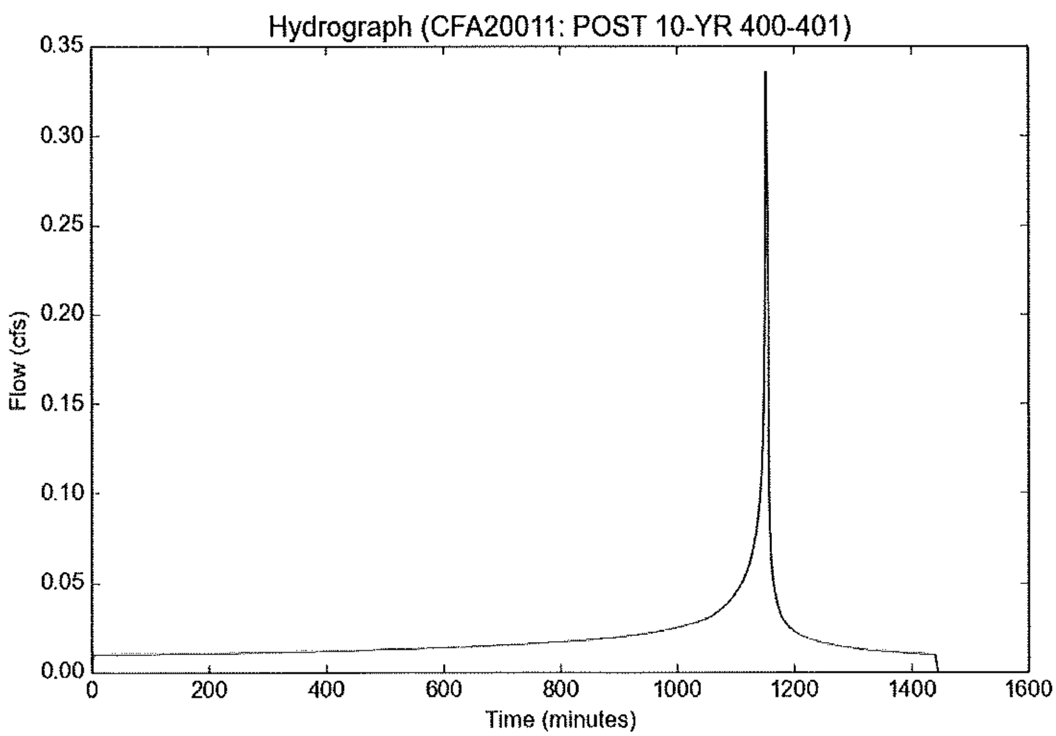
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 400-401
Area (ac)	0.119
Flow Path Length (ft)	143.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.73
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8827
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.3356
Burned Peak Flow Rate (cfs)	0.3356
24-Hr Clear Runoff Volume (ac-ft)	0.0375
24-Hr Clear Runoff Volume (cu-ft)	1632.4546



Peak Flow Hydrologic Analysis

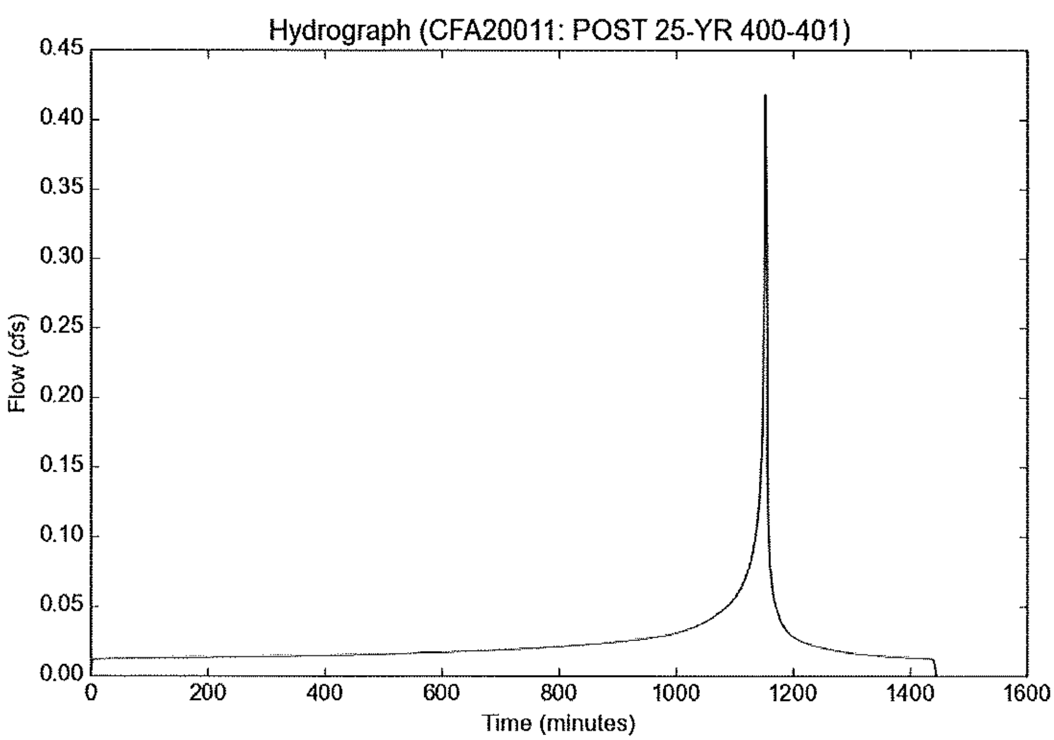
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 400-401.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 400-401
Area (ac)	0.119
Flow Path Length (ft)	143.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.73
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8929
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4175
Burned Peak Flow Rate (cfs)	0.4175
24-Hr Clear Runoff Volume (ac-ft)	0.0466
24-Hr Clear Runoff Volume (cu-ft)	2028.3957



Peak Flow Hydrologic Analysis

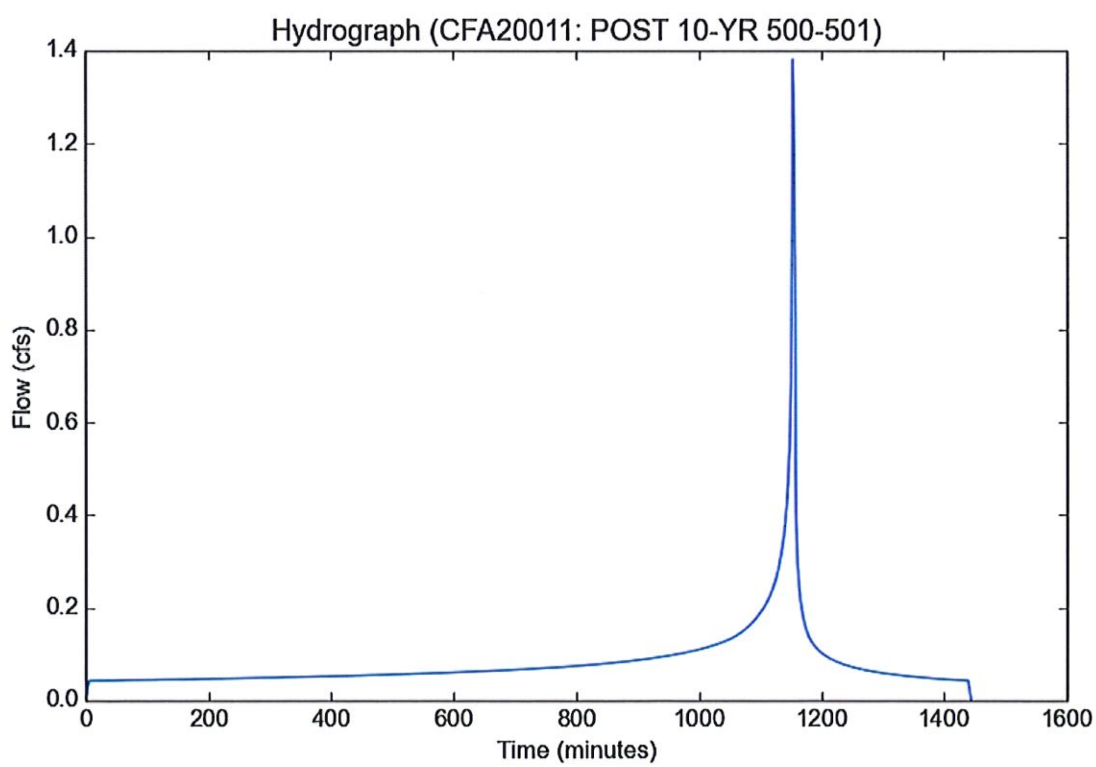
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 500-501
Area (ac)	0.487
Flow Path Length (ft)	288.0
Flow Path Slope (vft/hft)	0.0131
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.807
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8876
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.3811
Burned Peak Flow Rate (cfs)	1.3811
24-Hr Clear Runoff Volume (ac-ft)	0.1649
24-Hr Clear Runoff Volume (cu-ft)	7185.1625



Peak Flow Hydrologic Analysis

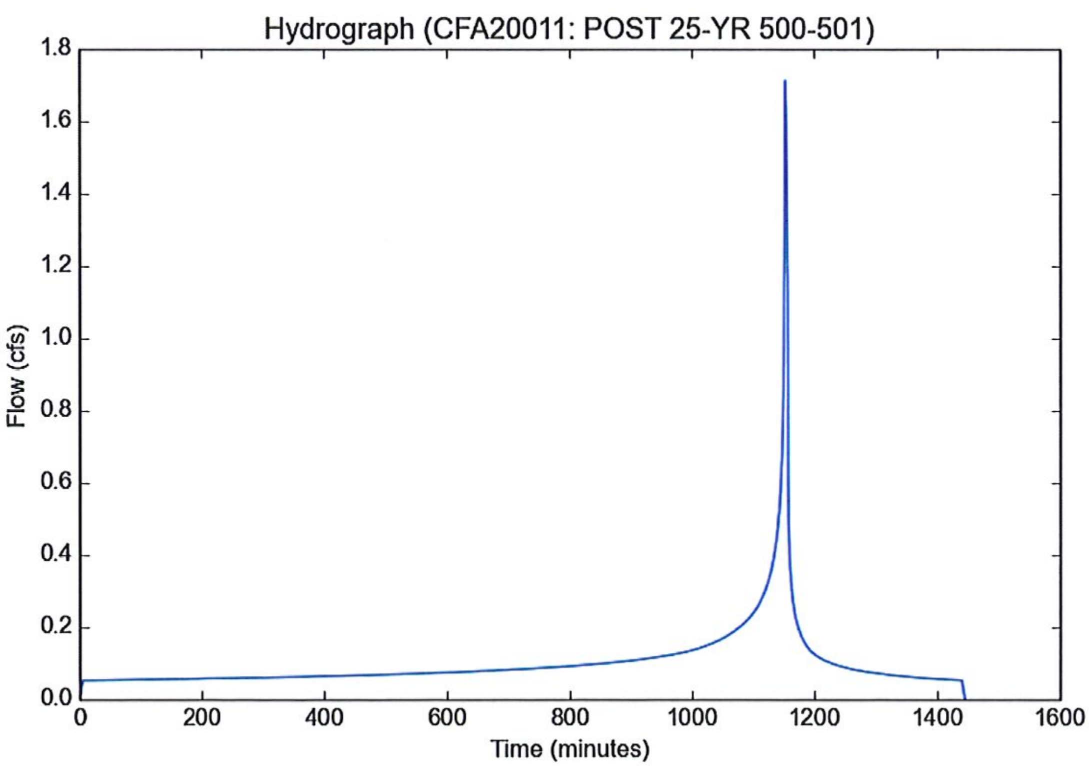
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 500-501.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 500-501
Area (ac)	0.487
Flow Path Length (ft)	288.0
Flow Path Slope (vft/hft)	0.0131
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.807
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8949
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.7123
Burned Peak Flow Rate (cfs)	1.7123
24-Hr Clear Runoff Volume (ac-ft)	0.2042
24-Hr Clear Runoff Volume (cu-ft)	8896.908



Peak Flow Hydrologic Analysis

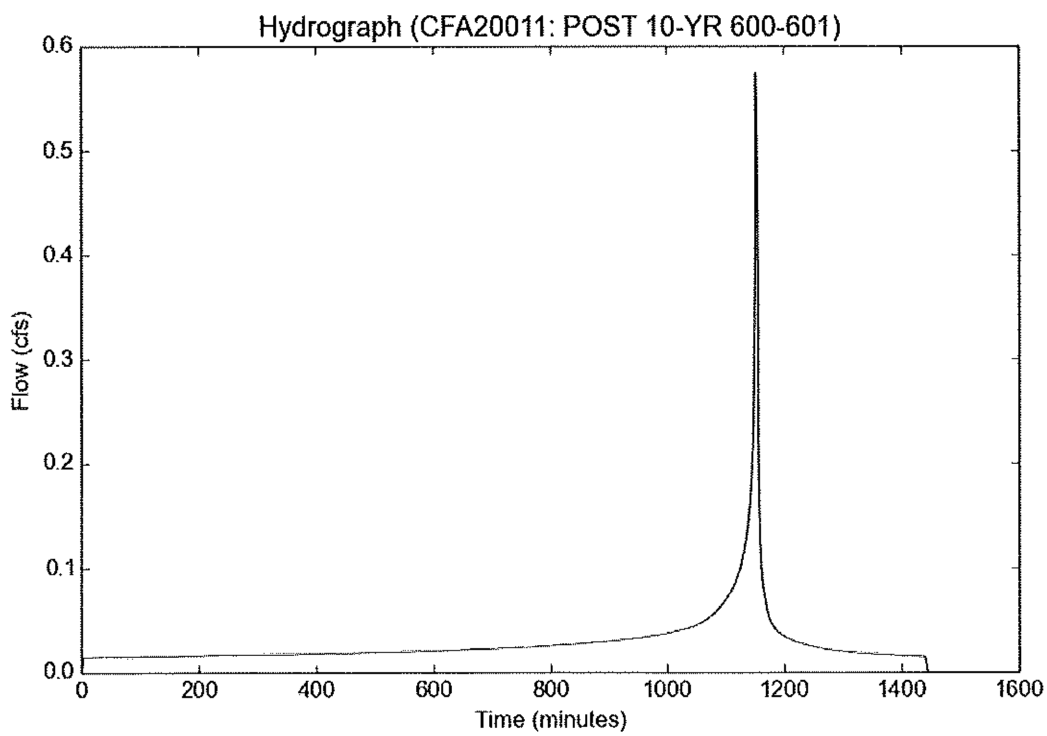
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 600-601.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 600-601
Area (ac)	0.205
Flow Path Length (ft)	180.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.622
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8758
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5736
Burned Peak Flow Rate (cfs)	0.5736
24-Hr Clear Runoff Volume (ac-ft)	0.0577
24-Hr Clear Runoff Volume (cu-ft)	2514.3796



Peak Flow Hydrologic Analysis

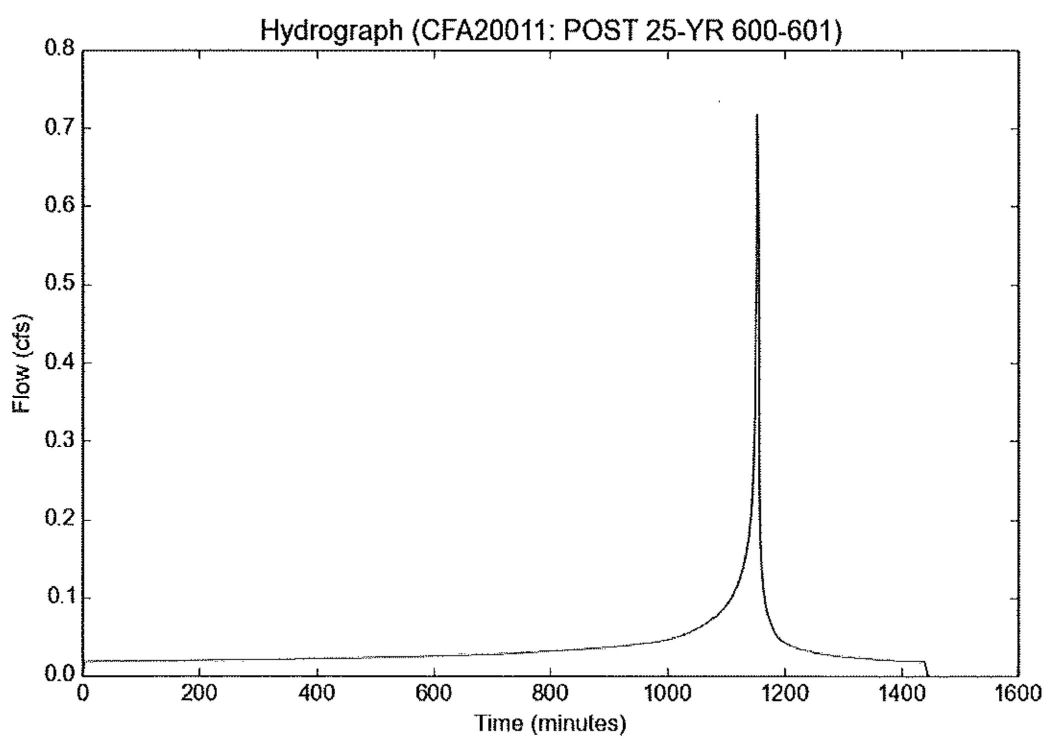
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 600-601.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 600-601
Area (ac)	0.205
Flow Path Length (ft)	180.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.622
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8901
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.7169
Burned Peak Flow Rate (cfs)	0.7169
24-Hr Clear Runoff Volume (ac-ft)	0.0721
24-Hr Clear Runoff Volume (cu-ft)	3142.5098



Peak Flow Hydrologic Analysis

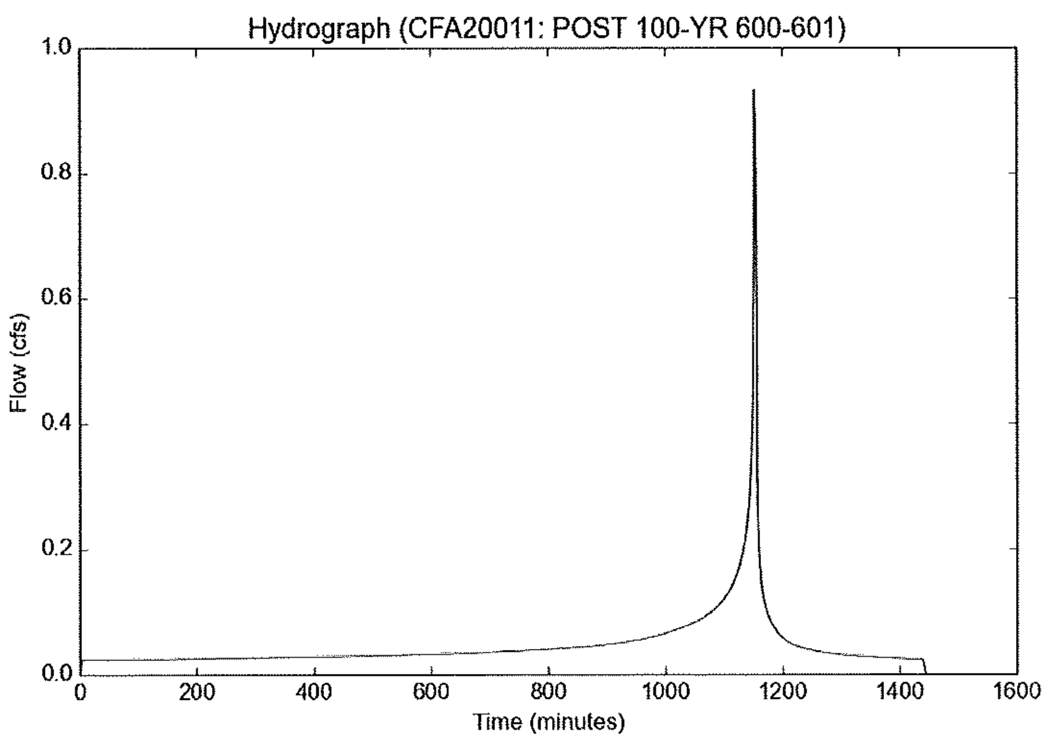
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 100-YR 600-601.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 100-YR 600-601
Area (ac)	0.205
Flow Path Length (ft)	180.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.622
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	8.415
Peak Intensity (in/hr)	5.0206
Undeveloped Runoff Coefficient (Cu)	0.9151
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.9263
Burned Peak Flow Rate (cfs)	0.9263
24-Hr Clear Runoff Volume (ac-ft)	0.0944
24-Hr Clear Runoff Volume (cu-ft)	4114.2415



Peak Flow Hydrologic Analysis

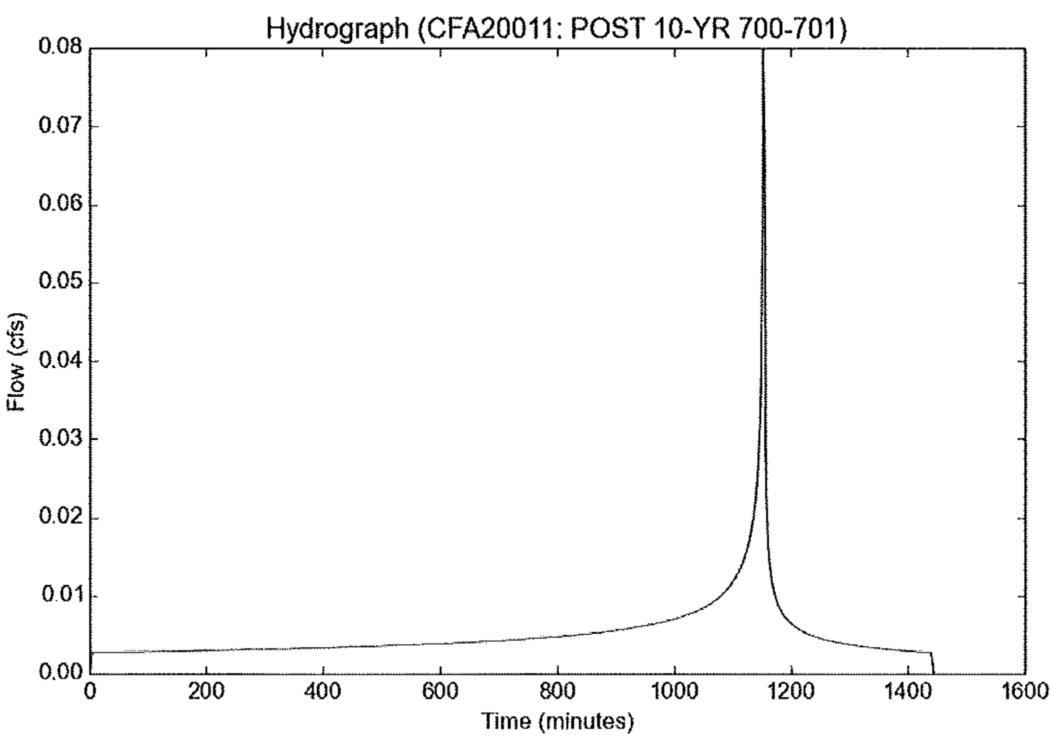
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 700-701.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 700-701
Area (ac)	0.028
Flow Path Length (ft)	99.0
Flow Path Slope (vft/hft)	0.0147
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.901
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8937
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0799
Burned Peak Flow Rate (cfs)	0.0799
24-Hr Clear Runoff Volume (ac-ft)	0.0103
24-Hr Clear Runoff Volume (cu-ft)	448.5162



Peak Flow Hydrologic Analysis

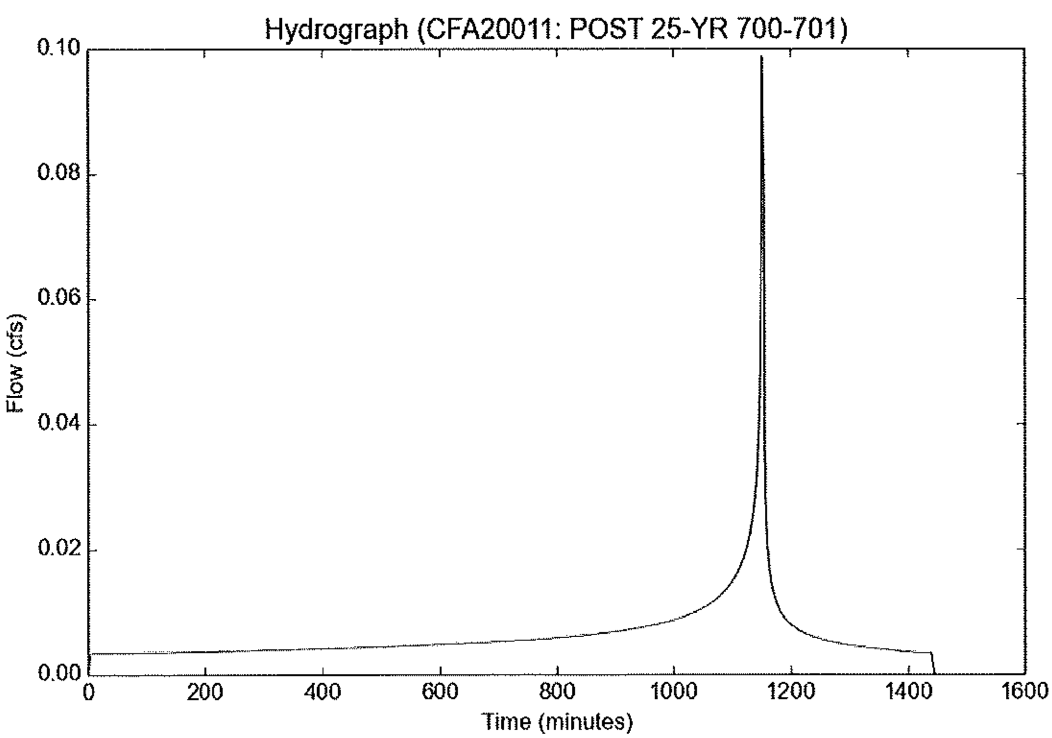
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 700-701.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 700-701
Area (ac)	0.028
Flow Path Length (ft)	99.0
Flow Path Slope (vft/hft)	0.0147
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.901
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.8974
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0987
Burned Peak Flow Rate (cfs)	0.0987
24-Hr Clear Runoff Volume (ac-ft)	0.0127
24-Hr Clear Runoff Volume (cu-ft)	553.3467



Peak Flow Hydrologic Analysis

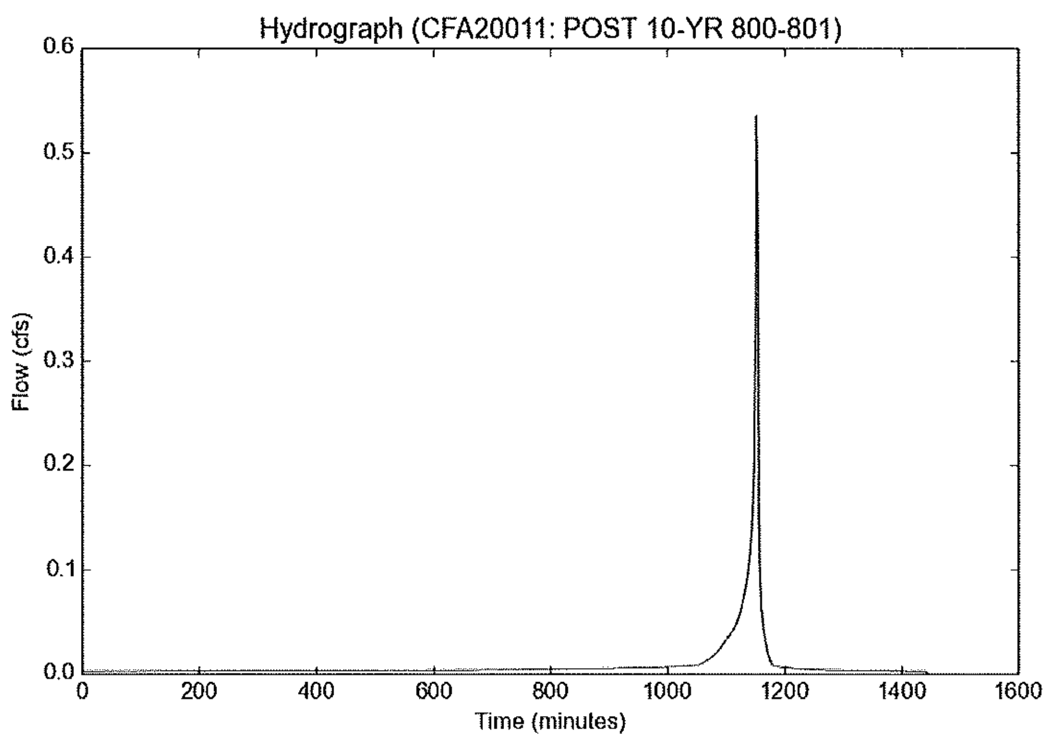
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 10-YR 800-801.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 10-YR 800-801
Area (ac)	0.2
Flow Path Length (ft)	125.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.01
Soil Type	6
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.355
Peak Intensity (in/hr)	3.1949
Undeveloped Runoff Coefficient (Cu)	0.836
Developed Runoff Coefficient (Cd)	0.8366
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5346
Burned Peak Flow Rate (cfs)	0.5346
24-Hr Clear Runoff Volume (ac-ft)	0.0185
24-Hr Clear Runoff Volume (cu-ft)	806.5016



Peak Flow Hydrologic Analysis

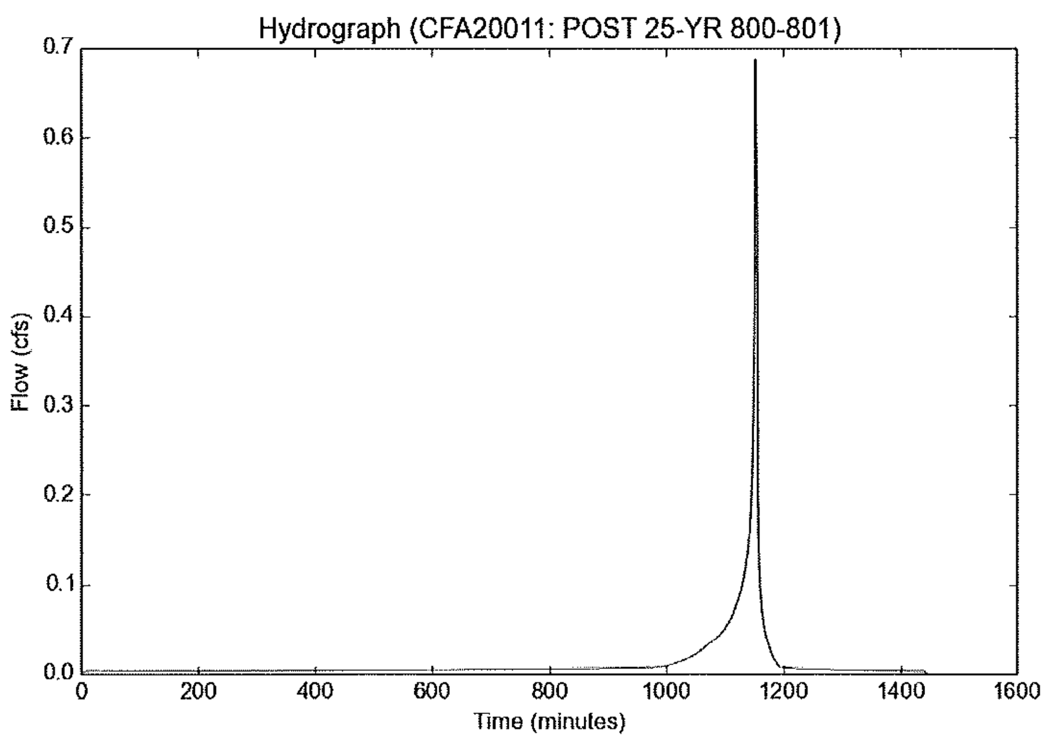
File location: P:/CFA20011/Reports/Hydrology/HydroCalc/POST/CFA20011 - POST 25-YR 800-801.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	CFA20011
Subarea ID	POST 25-YR 800-801
Area (ac)	0.2
Flow Path Length (ft)	125.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	7.5
Percent Impervious	0.01
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.585
Peak Intensity (in/hr)	3.9288
Undeveloped Runoff Coefficient (Cu)	0.8738
Developed Runoff Coefficient (Cd)	0.874
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6868
Burned Peak Flow Rate (cfs)	0.6868
24-Hr Clear Runoff Volume (ac-ft)	0.0257
24-Hr Clear Runoff Volume (cu-ft)	1121.034



3.0 HYDRAULICS ANALYSIS

3.1 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 1 – NODE 101

$Q_{25} = C\ A\ \sqrt{2Gh}$

A = Area of proposed 24" by 24" opening ➔ 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor ➔ 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 1.87 cfs

$1.87 = 0.67\ X\ 1.0\ \sqrt{2X\ 32.2\ X\ h}$

h = 0.12 ft. = 1.45"← Depth of ponding over grated inlet # 1.

3.2 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 2 – NODE 201

$Q_{25} = C\ A\ \sqrt{2Gh}$

A = Area of proposed 24" by 24" opening ➔ 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor ➔ 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 0.95 cfs

$0.95 = 0.67\ X\ 1.0\ \sqrt{2X\ 32.2\ X\ h}$

h = 0.03 ft. = 0.37"← Depth of ponding over grated inlet # 2.

3.3 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 3 – NODE 301

$Q_{25} = C\ A\ \sqrt{2Gh}$

A = Area of proposed 24" by 24" opening → 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor → 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 0.81 cfs

$0.81 = 0.67\ X\ 1.0\ \sqrt{2X\ 32.2\ X\ h}$

h = 0.023 ft. = 0.27"← Depth of ponding over grated inlet # 3.

3.4 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 4 – NODE 401

$Q_{25} = C\ A\ \sqrt{2Gh}$

A = Area of proposed 24" by 24" opening → 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor → 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 0.42 cfs

$0.42 = 0.67\ X\ 1.0\ \sqrt{2X\ 32.2\ X\ h}$

h = 0.006 ft. = 0.07"← Depth of ponding over grated inlet # 4.

3.5 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 5 – NODE 501

$Q_{25} = C\ A\ \sqrt{2Gh}$

A = Area of proposed 24" by 24" opening → 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor → 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 1.71 cfs

$1.71 = 0.67\ X\ 1.0\ \sqrt{2X\ 32.2\ X\ h}$

h = 0.10 ft. = 1.21"← Depth of ponding over grated inlet # 5.

3.6 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 6 – NODE 501

$Q_{25} = C\ A\ \sqrt{2Gh}$

A = Area of proposed 24" by 24" opening → 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor → 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 0.72 cfs

$0.72 = 0.67\ X\ 1.0\ \sqrt{2X\ 32.2\ X\ h}$

h = 0.02 ft. = 0.21"← Depth of ponding over grated inlet # 6.

3.7 DEPTH OF PONDING OVER PROPOSED GRATE GRATED INLET# 7 – NODE 701

Q_{25} = C A $\sqrt{2Gh}$

A = Area of proposed 24" by 24" opening → 50% opening = 4 /2 = 2 sq-ft.

Assumed 50% clogging factor → 2 / 2 = 1.0 sf.
A = 1.0 sf
G = 32.2
C = 0.67
h = depth of water over the grated inlet

Q_{25} = 0.10 cfs

0.10 = 0.67 X 1.0 $\sqrt{2X\ 32.2\ X\ h}$

h = 0.0003 ft. = 0.004"← Depth of ponding over grated inlet # 7.

3.8 PIPE SIZE ANALYSIS FOR PIPE 1

```
****************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =  0.670
  PIPE SLOPE(FEET/FEET) = 0.0230
  PIPEFLOW(CFS) =        0.95
  MANNINGS FRICTION FACTOR = 0.011000
==========================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =    0.46
  CRITICAL FLOW AREA(SQUARE FEET) =    0.260
  CRITICAL FLOW TOP-WIDTH(FEET) =  0.620
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          8.89
  CRITICAL FLOW VELOCITY(FEET/SEC.) =   3.673
  CRITICAL FLOW VELOCITY HEAD(FEET) =          0.21
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =    0.42
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =          0.67
==========================================================================
  NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =    0.31
  FLOW AREA(SQUARE FEET) =    0.16
  FLOW TOP-WIDTH(FEET) =   0.668
  FLOW PRESSURE + MOMENTUM(POUNDS) =         12.38
  FLOW VELOCITY(FEET/SEC.) =        6.006
  FLOW VELOCITY HEAD(FEET) =          0.560
  HYDRAULIC DEPTH(FEET) =      0.24
  FROUDE NUMBER =    2.171
  SPECIFIC ENERGY(FEET) =          0.87
==========================================================================
```

3.9 PIPE SIZE ANALYSIS FOR PIPE 2

```
******************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =   0.670
  PIPE SLOPE(FEET/FEET) =  0.0090
  PIPEFLOW(CFS) =        0.83
  MANNINGS FRICTION FACTOR = 0.011000
==============================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =     0.43
  CRITICAL FLOW AREA(SQUARE FEET) =    0.239
  CRITICAL FLOW TOP-WIDTH(FEET) =  0.642
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          8.37
  CRITICAL FLOW VELOCITY(FEET/SEC.) =    3.465
  CRITICAL FLOW VELOCITY HEAD(FEET) =          0.19
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =     0.37
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =         0.62
==============================================================================
  NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =     0.38
  FLOW AREA(SQUARE FEET) =     0.20
  FLOW TOP-WIDTH(FEET) =     0.665
  FLOW PRESSURE + MOMENTUM(POUNDS) =          8.59
  FLOW VELOCITY(FEET/SEC.) =          4.077
  FLOW VELOCITY HEAD(FEET) =          0.258
  HYDRAULIC DEPTH(FEET) =      0.31
  FROUDE NUMBER =     1.299
  SPECIFIC ENERGY(FEET) =          0.63
==============================================================================
```

3.10 PIPE SIZE ANALYSIS FOR PIPE 3

```
****************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =   0.670
  PIPE SLOPE(FEET/FEET) =  0.0120
  PIPEFLOW(CFS) =          0.69
  MANNINGS FRICTION FACTOR = 0.011000
============================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =      0.39
  CRITICAL FLOW AREA(SQUARE FEET) =    0.214
  CRITICAL FLOW TOP-WIDTH(FEET) =   0.661
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =         6.56
  CRITICAL FLOW VELOCITY(FEET/SEC.) =    3.228
  CRITICAL FLOW VELOCITY HEAD(FEET) =         0.16
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =    0.32
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =         0.55
============================================================================
  NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =      0.31
  FLOW AREA(SQUARE FEET) =      0.16
  FLOW TOP-WIDTH(FEET) =     0.668
  FLOW PRESSURE + MOMENTUM(POUNDS) =         7.10
  FLOW VELOCITY(FEET/SEC.) =          4.341
  FLOW VELOCITY HEAD(FEET) =          0.293
  HYDRAULIC DEPTH(FEET) =       0.24
  FROUDE NUMBER =     1.568
  SPECIFIC ENERGY(FEET) =           0.60
============================================================================
```

3.11 PIPE SIZE ANALYSIS FOR PIPE 4

```
*********************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
 PIPE DIAMETER(FEET) =   0.830
 PIPE SLOPE(FEET/FEET) = 0.0090
 PIPEFLOW(CFS) =         1.52
 MANNINGS FRICTION FACTOR = 0.011000
==========================================================================
 CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
 CRITICAL DEPTH(FEET) =     0.55
 CRITICAL FLOW AREA(SQUARE FEET) =    0.383
 CRITICAL FLOW TOP-WIDTH(FEET) =  0.783
 CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =         17.49
 CRITICAL FLOW VELOCITY(FEET/SEC.) =    3.969
 CRITICAL FLOW VELOCITY HEAD(FEET) =         0.24
 CRITICAL FLOW HYDRAULIC DEPTH(FEET) =     0.49
 CRITICAL FLOW SPECIFIC ENERGY(FEET) =         0.80
==========================================================================
 NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
 NORMAL DEPTH(FEET) =     0.48
 FLOW AREA(SQUARE FEET) =     0.32
 FLOW TOP-WIDTH(FEET) =    0.821
 FLOW PRESSURE + MOMENTUM(POUNDS) =         18.04
 FLOW VELOCITY(FEET/SEC.) =         4.740
 FLOW VELOCITY HEAD(FEET) =          0.349
 HYDRAULIC DEPTH(FEET) =      0.39
 FROUDE NUMBER =     1.337
 SPECIFIC ENERGY(FEET) =          0.82
==========================================================================
```

3.12 PIPE SIZE ANALYSIS FOR PIPE 5

```
******************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
----------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =   1.500
  PIPE SLOPE(FEET/FEET) =  0.0100
  PIPEFLOW(CFS) =        3.39
  MANNINGS FRICTION FACTOR = 0.011000
============================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
----------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =     0.70
  CRITICAL FLOW AREA(SQUARE FEET) =    0.811
  CRITICAL FLOW TOP-WIDTH(FEET) =  1.497
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          42.45
  CRITICAL FLOW VELOCITY(FEET/SEC.) =    4.178
  CRITICAL FLOW VELOCITY HEAD(FEET) =          0.27
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =     0.54
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =          0.97
============================================================================
  NORMAL-DEPTH FLOW INFORMATION:
----------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =     0.54
  FLOW AREA(SQUARE FEET) =     0.57
  FLOW TOP-WIDTH(FEET) =     1.437
  FLOW PRESSURE + MOMENTUM(POUNDS) =          47.20
  FLOW VELOCITY(FEET/SEC.) =          5.984
  FLOW VELOCITY HEAD(FEET) =          0.556
  HYDRAULIC DEPTH(FEET) =       0.39
  FROUDE NUMBER =     1.680
  SPECIFIC ENERGY(FEET) =          1.09
============================================================================
```

3.13 PIPE SIZE ANALYSIS FOR PIPE 6

****

>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<

PIPE DIAMETER(FEET) = 1.500
PIPE SLOPE(FEET/FEET) = 0.0100
PIPEFLOW(CFS) = 4.34
MANNINGS FRICTION FACTOR = 0.011000

==

CRITICAL-DEPTH FLOW INFORMATION:

CRITICAL DEPTH(FEET) = 0.80
CRITICAL FLOW AREA(SQUARE FEET) = 0.957
CRITICAL FLOW TOP-WIDTH(FEET) = 1.497
CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) = 58.45
CRITICAL FLOW VELOCITY(FEET/SEC.) = 4.537
CRITICAL FLOW VELOCITY HEAD(FEET) = 0.32
CRITICAL FLOW HYDRAULIC DEPTH(FEET) = 0.64
CRITICAL FLOW SPECIFIC ENERGY(FEET) = 1.12

==

NORMAL-DEPTH FLOW INFORMATION:

NORMAL DEPTH(FEET) = 0.61
FLOW AREA(SQUARE FEET) = 0.68
FLOW TOP-WIDTH(FEET) = 1.474
FLOW PRESSURE + MOMENTUM(POUNDS) = 64.66
FLOW VELOCITY(FEET/SEC.) = 6.401
FLOW VELOCITY HEAD(FEET) = 0.636
HYDRAULIC DEPTH(FEET) = 0.46
FROUDE NUMBER = 1.663
SPECIFIC ENERGY(FEET) = 1.25

==

3.14 PIPE SIZE ANALYSIS FOR PIPE 7

****

>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<

PIPE DIAMETER(FEET) = 0.670
PIPE SLOPE(FEET/FEET) = 0.0150
PIPEFLOW(CFS) = 0.72
MANNINGS FRICTION FACTOR = 0.011000

==

CRITICAL-DEPTH FLOW INFORMATION:

CRITICAL DEPTH(FEET) = 0.40
CRITICAL FLOW AREA(SQUARE FEET) = 0.220
CRITICAL FLOW TOP-WIDTH(FEET) = 0.657
CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) = 6.94
CRITICAL FLOW VELOCITY(FEET/SEC.) = 3.280
CRITICAL FLOW VELOCITY HEAD(FEET) = 0.17
CRITICAL FLOW HYDRAULIC DEPTH(FEET) = 0.33
CRITICAL FLOW SPECIFIC ENERGY(FEET) = 0.57

==

NORMAL-DEPTH FLOW INFORMATION:

NORMAL DEPTH(FEET) = 0.30
FLOW AREA(SQUARE FEET) = 0.15
FLOW TOP-WIDTH(FEET) = 0.666
FLOW PRESSURE + MOMENTUM(POUNDS) = 7.83
FLOW VELOCITY(FEET/SEC.) = 4.767
FLOW VELOCITY HEAD(FEET) = 0.353
HYDRAULIC DEPTH(FEET) = 0.23
FROUDE NUMBER = 1.764
SPECIFIC ENERGY(FEET) = 0.65

==

3.15 PIPE SIZE ANALYSIS FOR PIPE 8

```
******************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
----------------------------------------------------------------------------
 PIPE DIAMETER(FEET) =  0.500
 PIPE SLOPE(FEET/FEET) =  0.0050
 PIPEFLOW(CFS) =        0.10
 MANNINGS FRICTION FACTOR = 0.011000
==============================================================================
 CRITICAL-DEPTH FLOW INFORMATION:
----------------------------------------------------------------------------
 CRITICAL DEPTH(FEET) =    0.16
 CRITICAL FLOW AREA(SQUARE FEET) =    0.052
 CRITICAL FLOW TOP-WIDTH(FEET) =  0.463
 CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          0.58
 CRITICAL FLOW VELOCITY(FEET/SEC.) =   1.908
 CRITICAL FLOW VELOCITY HEAD(FEET) =        0.06
 CRITICAL FLOW HYDRAULIC DEPTH(FEET) =    0.11
 CRITICAL FLOW SPECIFIC ENERGY(FEET) =       0.21
==============================================================================
 NORMAL-DEPTH FLOW INFORMATION:
----------------------------------------------------------------------------
 NORMAL DEPTH(FEET) =    0.16
 FLOW AREA(SQUARE FEET) =    0.05
 FLOW TOP-WIDTH(FEET) =    0.464
 FLOW PRESSURE + MOMENTUM(POUNDS) =         0.58
 FLOW VELOCITY(FEET/SEC.) =         1.899
 FLOW VELOCITY HEAD(FEET) =          0.056
 HYDRAULIC DEPTH(FEET) =      0.11
 FROUDE NUMBER =    0.993
 SPECIFIC ENERGY(FEET) =          0.21
==============================================================================
```

3.16 PIPE SIZE ANALYSIS FOR PIPE 9

****

>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<

```
----------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =  0.670
  PIPE SLOPE(FEET/FEET) = 0.0150
  PIPEFLOW(CFS) =       0.82
  MANNINGS FRICTION FACTOR = 0.011000
==============================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
----------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =     0.43
  CRITICAL FLOW AREA(SQUARE FEET) =    0.238
  CRITICAL FLOW TOP-WIDTH(FEET) =  0.644
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          8.25
  CRITICAL FLOW VELOCITY(FEET/SEC.) =   3.449
  CRITICAL FLOW VELOCITY HEAD(FEET) =        0.18
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =    0.37
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =        0.61
==============================================================================
  NORMAL-DEPTH FLOW INFORMATION:
----------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =     0.32
  FLOW AREA(SQUARE FEET) =     0.17
  FLOW TOP-WIDTH(FEET) =    0.669
  FLOW PRESSURE + MOMENTUM(POUNDS) =          9.24
  FLOW VELOCITY(FEET/SEC.) =        4.930
  FLOW VELOCITY HEAD(FEET) =        0.377
  HYDRAULIC DEPTH(FEET) =     0.25
  FROUDE NUMBER =    1.743
  SPECIFIC ENERGY(FEET) =        0.70
==============================================================================
```

3.17 PIPE SIZE ANALYSIS FOR PIPE 10

```
******************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =  0.833
  PIPE SLOPE(FEET/FEET) =  0.0120
  PIPEFLOW(CFS) =         1.72
  MANNINGS FRICTION FACTOR = 0.011000
==============================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =     0.59
  CRITICAL FLOW AREA(SQUARE FEET) =    0.412
  CRITICAL FLOW TOP-WIDTH(FEET) =  0.759
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          20.61
  CRITICAL FLOW VELOCITY(FEET/SEC.) =    4.179
  CRITICAL FLOW VELOCITY HEAD(FEET) =          0.27
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =      0.54
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =          0.86
==============================================================================
  NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =      0.47
  FLOW AREA(SQUARE FEET) =      0.32
  FLOW TOP-WIDTH(FEET) =     0.826
  FLOW PRESSURE + MOMENTUM(POUNDS) =          22.10
  FLOW VELOCITY(FEET/SEC.) =          5.449
  FLOW VELOCITY HEAD(FEET) =          0.461
  HYDRAULIC DEPTH(FEET) =      0.38
  FROUDE NUMBER =     1.554
  SPECIFIC ENERGY(FEET) =          0.93
==============================================================================
```

3.18 PIPE SIZE ANALYSIS FOR PIPE 11

```
*******************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
---------------------------------------------------------------------------
  PIPE DIAMETER(FEET) =   1.000
  PIPE SLOPE(FEET/FEET) =  0.0150
  PIPEFLOW(CFS) =         2.54
  MANNINGS FRICTION FACTOR = 0.011000
==============================================================================
  CRITICAL-DEPTH FLOW INFORMATION:
---------------------------------------------------------------------------
  CRITICAL DEPTH(FEET) =     0.68
  CRITICAL FLOW AREA(SQUARE FEET) =    0.571
  CRITICAL FLOW TOP-WIDTH(FEET) =  0.931
  CRITICAL FLOW PRESSURE + MOMENTUM(POUNDS) =          32.59
  CRITICAL FLOW VELOCITY(FEET/SEC.) =    4.446
  CRITICAL FLOW VELOCITY HEAD(FEET) =          0.31
  CRITICAL FLOW HYDRAULIC DEPTH(FEET) =      0.61
  CRITICAL FLOW SPECIFIC ENERGY(FEET) =           0.99
==============================================================================
  NORMAL-DEPTH FLOW INFORMATION:
---------------------------------------------------------------------------
  NORMAL DEPTH(FEET) =     0.50
  FLOW AREA(SQUARE FEET) =     0.39
  FLOW TOP-WIDTH(FEET) =     1.000
  FLOW PRESSURE + MOMENTUM(POUNDS) =          37.29
  FLOW VELOCITY(FEET/SEC.) =          6.541
  FLOW VELOCITY HEAD(FEET) =           0.664
  HYDRAULIC DEPTH(FEET) =       0.39
  FROUDE NUMBER =     1.850
  SPECIFIC ENERGY(FEET) =          1.16
==============================================================================
```

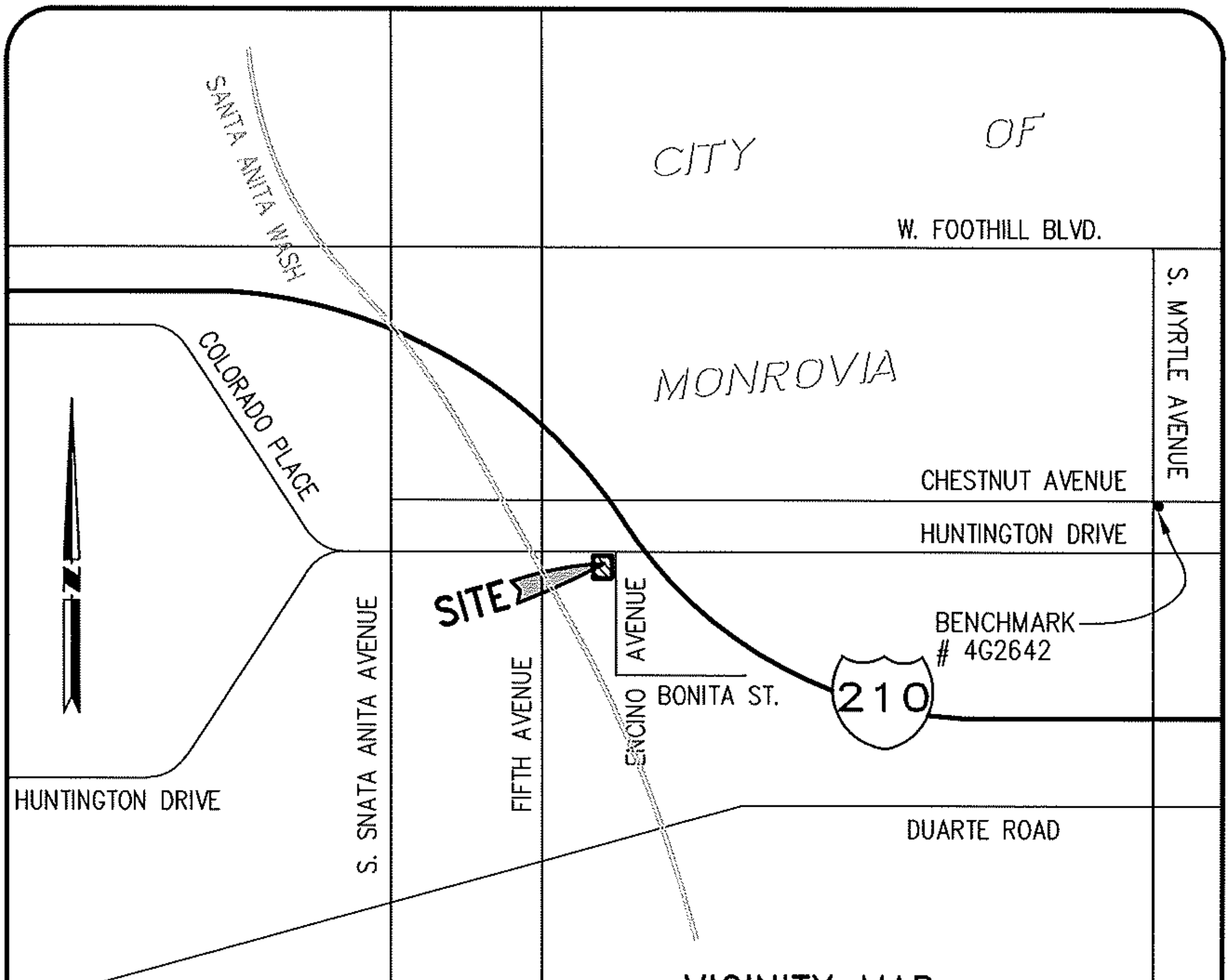
3.19 PIPE SIZE SUMMARY

Hydraulic Analysis					
Pipe Node	Diameter (ft)	Slope (%)	Pipe Flow (cfs)	Flow Velocity (ft/s)	Flow Hydraulic Depth (ft)
1	0.67	2.30	0.95	6.01	0.24
2	0.67	0.90	0.83	4.08	0.31
3	0.67	1.20	0.69	4.34	0.24
4	0.83	0.90	1.52	4.74	0.39
5	1.50	1.00	3.39	5.98	0.39
6	1.50	1.00	4.34	6.40	0.46
7	0.67	1.50	0.72	4.77	0.23
8	0.50	0.50	0.10	1.90	0.11
9	0.67	1.50	0.82	4.93	0.25
10	0.83	1.20	1.72	5.45	0.38
11	1.0	1.50	2.54	6.54	0.39

4.0 APPENDIX "A"

4.1 REFERENCE MAPS

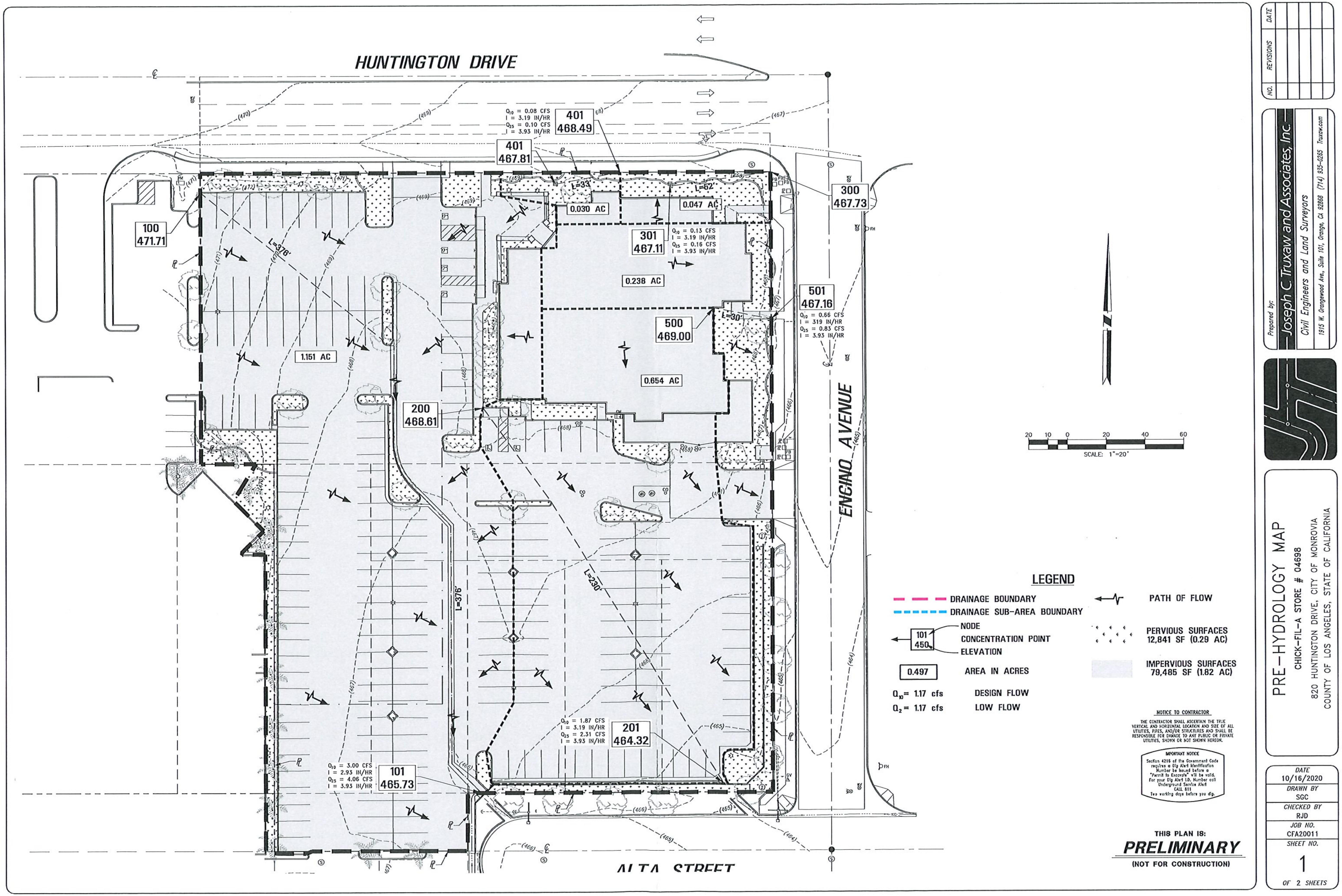
VICINITY MAP



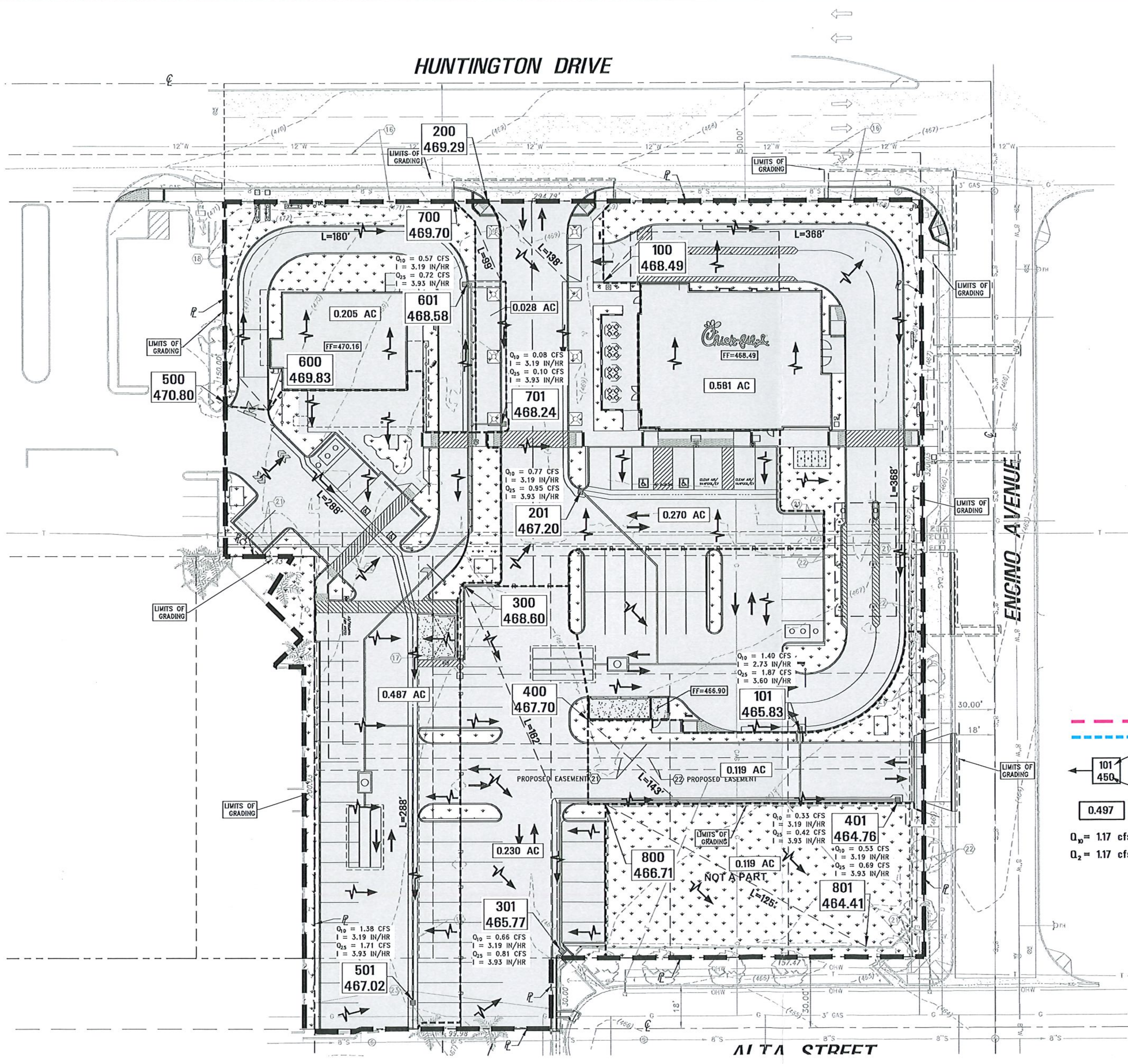
VICINITY MAP

NOT TO SCALE

5.0 HYDROLOGY MAPS



HUNTINGTON DRIVE
ENGINO AVENUE
ALTA STREET
100
471.71
401
467.81
401
468.49
Q_{10} = 0.08 CFS
I = 3.19 IN/HR
Q_{25} = 0.10 CFS
I = 3.93 IN/HR
300
467.73
301
467.11
Q_{10} = 0.13 CFS
I = 3.19 IN/HR
Q_{25} = 0.16 CFS
I = 3.93 IN/HR
0.030 AC
0.047 AC
0.238 AC
501
467.16
Q_{10} = 0.66 CFS
I = 319 IN/HR
Q_{25} = 0.83 CFS
I = 3.93 IN/HR
500
469.00
0.654 AC
1.151 AC
200
468.61
L=376'
L=230'
L=33'
L=62'
L=30'
201
464.32
Q_{10} = 1.87 CFS
I = 3.19 IN/HR
Q_{25} = 2.31 CFS
I = 3.93 IN/HR
101
465.73
Q_{10} = 3.00 CFS
I = 2.93 IN/HR
Q_{25} = 4.06 CFS
I = 3.93 IN/HR
SCALE: 1"=20'
20 10 0 20 40 60
LEGEND
DRAINAGE BOUNDARY
DRAINAGE SUB-AREA BOUNDARY
NODE
CONCENTRATION POINT
ELEVATION
101
450
0.497
AREA IN ACRES
Q_{10}= 1.17 cfs
DESIGN FLOW
Q_{2}= 1.17 cfs
LOW FLOW
PATH OF FLOW
PERVIOUS SURFACES
12,841 SF (0.29 AC)
IMPERVIOUS SURFACES
79,485 SF (1.82 AC)
NOTICE TO CONTRACTOR
IMPORTANT NOTICE
THIS PLAN IS:
PRELIMINARY
(NOT FOR CONSTRUCTION)
NO.
REVISIONS
DATE
Prepared by:
Joseph C. Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com
PRE-HYDROLOGY MAP
CHICK-FIL-A STORE # 04698
820 HUNTINGTON DRIVE, CITY OF MONROVIA
COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
DATE
10/16/2020
DRAWN BY
SGC
CHECKED BY
RJD
JOB NO.
CFA20011
SHEET NO.
1
OF 2 SHEETS



SCALE: 1"=20'

LEGEND

DRAINAGE BOUNDARY		PATH OF FLOW	
DRAINAGE SUB-AREA BOUNDARY		PERVIOUS SURFACES	23,666 SF (0.54 AC)
NODE / CONCENTRATION POINT / ELEVATION (101 / 450)		IMPERVIOUS SURFACES	68,660 SF (1.57 AC)
0.497	AREA IN ACRES		
Q_{10} = 1.17 cfs	DESIGN FLOW		
Q_2 = 1.17 cfs	LOW FLOW		

NOTICE TO CONTRACTOR

THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ALL UTILITIES, PIPES, AND/OR STRUCTURES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

IMPORTANT NOTICE

Section 4216 of the Government Code requires a Dig Alert Identification Number be issued before a "Permit to Excavate" will be valid. For your Dig Alert I.D. Number call Underground Service Alert CALL 811 Two working days before you dig.

THIS PLAN IS:
PRELIMINARY
(NOT FOR CONSTRUCTION)

NO.	REVISIONS	DATE

Prepared by:
Joseph C Truxaw and Associates, Inc.
Civil Engineers and Land Surveyors
1915 W. Orangewood Ave., Suite 101, Orange, CA 92868 (714) 935-0265 Truxaw.com

POST-HYDROLOGY MAP

CHICK-FIL-A STORE # 04698
829 HUNTINGTON DRIVE, CITY OF MONROVIA
COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE 10/16/2020
DRAWN BY MME
CHECKED BY RJD
JOB NO. CFA20011
SHEET NO. 2 OF 2 SHEETS