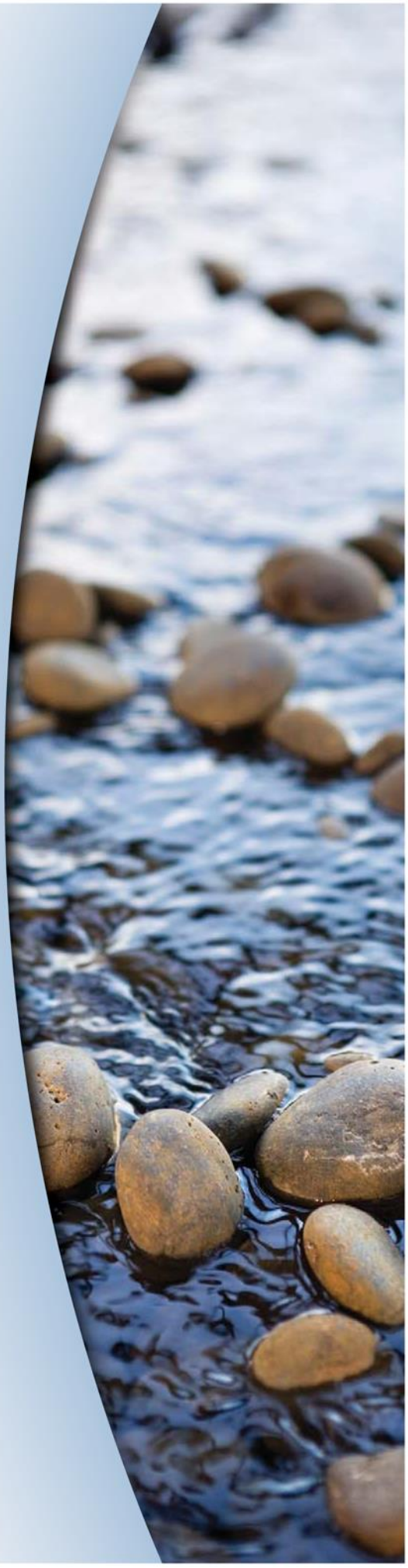
Appendix IS-6

Hydrology and Water Quality
Technical Memorandum



Hydrology and Water Quality Technical Memorandum

Senior Residential Community at The Bellwood

10328-10384, 10341-10381 Bellwood Avenue
Los Angeles, California 90064

Prepared For

Eyestone Environmental
6701 Center Drive, Suite 900
Los Angeles, CA 90045

Prepared By

Fuscoe Engineering, Inc.
600 Wilshire Blvd., Ste. 1470
Los Angeles, California 90017
213.988.8802
www.fuscoe.com

Project Manager:
Samson E. Kawjaree, PE
C-83863

Date Prepared: May 2019

Job Number: 1755.001

full circle thinking®

TABLE OF CONTENTS

LIST OF TABLES

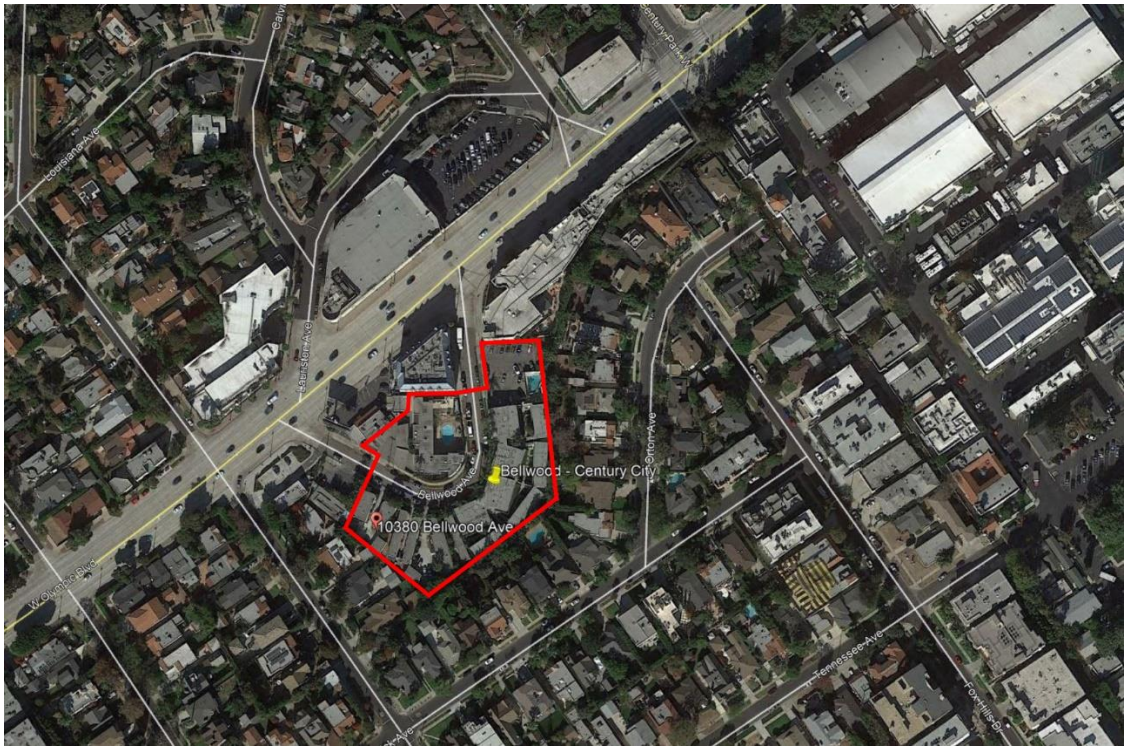
LIST OF ATTACHMENTS

1. INTRODUCTION

1.1. PROJECT DESCRIPTION

SBLP Century City, LLC (Applicant) is proposing to develop a new eldercare facility for persons 62 years of age and older (Project) on an approximately 2.22-acre site located at 10328-10384 and 10341-10381 Bellwood Avenue (Project Site) in the City of Los Angeles (City). The Project Site includes the portion of Bellwood Avenue that bifurcates the Project Site and is proposed to be realigned through the Project Site. The Project would include 192 senior housing residential units, comprised of 71 senior independent dwelling units, 75 assisted living guest rooms, and 46 memory care guest rooms in a single building ranging in height from three to six stories. The Project would comprise 241,754 square feet of floor area. Three existing multi-family residential developments with a total of 112 residential units and associated parking areas would be removed to accommodate the Project.

The Project Site is bounded by commercial structures adjacent to Olympic Boulevard to the north and northwest, and by residential uses to the west, south and east.



1.2. SCOPE OF WORK

This report describes the existing and proposed surface water hydrology and surface water quality at the Project Site and immediate surrounding areas.

2. ENVIRONMENTAL SETTING

2.1. SURFACE WATER HYDROLOGY

2.1.1. Regional

The Project Site is located within the Ballona Creek Watershed, which covers approximately 130 square miles. The watershed includes the cities of Beverly Hills, West Hollywood, portions of the cities of Los Angeles, Culver City, Inglewood and Santa Monica, unincorporated areas of Los Angeles County, and areas under the jurisdiction of Caltrans. Ballona Creek flows as an open channel for just under 10 miles from mid-Los Angeles (south of Hancock Park) through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor). Ballona Creek watershed is highly developed with 49% of the watershed covered by impervious surfaces.

Major tributaries of Ballona Creek include Centinela Creek, Sepulveda Channel and Benedict Canyon Channel. The Project falls within the Sepulveda Channel sub-watershed.

Please refer to Attachment A for a map of the Ballona Creek Watershed.

2.1.2. Local

Stormwater runoff is collected by storm drain facilities along Bellwood Avenue. The storm drain facilities along Bellwood Avenue tie into an adjacent 63-inch storm drain main line to the northwest, along Olympic Boulevard. These storm drain facilities are owned and maintained by the City of Los Angeles. The mainline flows in a southwesterly direction and discharges into the Sepulveda Channel.

All of the stormwater runoff from the Project Site, which is within the Sepulveda Channel sub-watershed as discussed above, is discharged into Ballona Creek, Reach 2 and ultimately into the Pacific Ocean. Reach 2 is approximately four miles long and spans the area between National Boulevard and Centinela Avenue where Ballona Estuary starts. It includes the Los Angeles neighborhoods of Culver City and Beverly Hills along with portions of other cities of Los Angeles County.

2.1.3. On Site

The existing Project Site consists of one and two story apartment complexes and associated parking areas and community pools. Stormwater runoff from the Project Site is collected and conveyed onto Bellwood Avenue. Flows then travel to the northwest via surface flow on Bellwood Avenue, where they are captured by one of two catch basins located on the corner of Bellwood Avenue and Olympic Boulevard. These two catch basins then flow westerly into the 63-inch storm drain main line that runs parallel to Olympic Boulevard.

Please refer to Attachment B for the existing drainage pattern and existing hydrology of the Project Site.

Table 1 below provides the 25-year and 50-year storm frequency analysis for the Project Site's existing conditions. Output calculations are provided in Attachment C.

Table 1 Existing Drainage Conditions

Drainage Area	Area (acres)	% Impervious	Q25 (cfs)	Q50 (cfs)
A-1	0.37	95	1.05	1.20
A-2	1.40	74	3.39	4.15
B-1	0.18	84	0.51	0.58
B-2	0.21	83	0.55	0.68
C-1	0.02	100	0.06	0.07
C-2	0.04	100	0.11	0.13
Existing Total	2.22	89	5.67	6.80

Under existing conditions, the Project Site discharges to Bellwood Avenue. The total amount of runoff produced from the Project Site during a 25-year storm event is 5.67 cubic feet per second (cfs). For a 50-year event, the total project runoff is 6.80 cfs. Runoff from the Project Site is captured by two catch basins located adjacent to the intersection of Bellwood Avenue and Olympic Boulevard. There are no known existing storm drain deficiencies or capacity issues within the storm drains that collect runoff from the Project Site.

2.2. SURFACE WATER QUALITY

2.2.1. Regional

As described above, the Project is located within the Sepulveda Channel sub-watershed of the Ballona Creek watershed. This sub-watershed drains directly into Reach 2 of the Ballona Creek. Ballona Creek Reach 2 is an impaired portion of the Ballona Creek and primarily includes the Los Angeles neighborhoods of Beverly Hills, Culver City, and other portions of other cities of Los Angeles County. Ballona Creek consists of a concrete channel, with the water generally restricted to a central low-flow channel.

2.2.1.1. Impairments and TMDLs in Ballona Creek Reach 2/Ballona Creek Watershed

Clean Water Act 303(d) List of Water Quality Limited Segments

Under Section 303(d) of the Clean Water Act (CWA), states are required to identify water bodies that do not meet their water quality standards. Biennially, the Los Angeles Regional Water Quality Control Board (LARWQCB) prepares a list of impaired waterbodies in the region, referred to as the 303(d) list. The 303(d) list outlines the impaired waterbody and the specific pollutant(s) for which it is impaired. Table 2 lists the existing 303(d) impairments in water bodies that ultimately receive flows from the Project Site.

Table 2 303(d) Impairments

Water Body	303(d) Impairment
Ballona Creek	Copper, Cyanide, Indicator Bacteria, Lead, Toxicity, Trash, Viruses, Zinc
Ballona Creek Estuary	Cadmium, Chlordane, Copper, DDT, Indicator Bacteria, Lead, PAHs, PCBs, Toxicity, Zinc
Santa Monica Bay Offshore/Nearshore	Arsenic, DDT, Mercury, PCBs, Trash
Notes: Source: 2014 - 2016 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) – Statewide, found here: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml	

Total Maximum Daily Loads (TMDLs)

Once a water body has been listed as impaired on the 303(d) list, a TMDL for the constituent of concern (pollutant) must be developed for that water body. A TMDL is an estimate of the daily load of pollutants that a water body may receive from point sources, non-point sources, and natural background conditions (including an appropriate margin of safety), without exceeding its water quality standard. Those facilities and activities that are discharging into the water body, collectively, must not exceed the TMDL. In general terms, municipal separate stormwater systems (MS4), and other dischargers within each watershed are collectively responsible for meeting the required reductions and other TMDL requirements by the assigned deadline. TMDLs for water bodies that ultimately receive flows from the Project Site are listed in Table 3 below.

Table 3 Total Maximum Daily Loads

Water Body	TMDLs In Effect
Ballona Creek	Copper, Indicator Bacteria, Lead, Selenium, Toxicity, Trash, Viruses, Zinc
Ballona Creek Estuary	Cadmium, Chlordane, Copper, DDT, Indicator Bacteria, Lead, PAHs, PCBs, Toxicity, Zinc
Santa Monica Bay Offshore/Nearshore	DDT, PCBs, Trash
Notes: Source: 2014 - 2016 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report) – Statewide, found here: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml	

Ballona Creek Watershed Enhanced Watershed Management Program

The County of Los Angeles, the City of Los Angeles and all other cities in the Los Angeles Watershed are responsible for the implementation of watershed improvement plans or Enhanced Watershed Management Programs (EWMP) to improve water quality and assist in meeting the Total Maximum Daily Load (TMDL) milestones. A draft EWMP for the Ballona Creek Watershed (BC EWMP, July 2015), prepared with the City of Los Angeles as the lead coordinating agency, is in the process of review by the LARWQCB. The objective of the EWMP Plan is to determine the network of control measures (often referred to as best management practices [BMPs]) that will achieve required pollutant reductions while also providing multiple benefits to the community and leveraging sustainable green infrastructure practices (BC EWMP, July 2015).

The draft BC EWMP identifies a toolbox of distributed and regional watershed control measures to address applicable stormwater quality regulations including the following:

- Low Impact Development (LID) at individual parcels
- Green Streets features within the public right-of-way and privately maintained streets
- Regional projects that retain and treat runoff from large upstream areas
- Institutional control measures to prevent transport of pollutants in the watershed

The Project Site, located in the Sepulveda Channel Sub-watershed, falls within the BC EWMP and ultimately discharges into Reach 2 of Ballona Creek. The draft BC EWMP does not identify any regional BMP projects in the vicinity of the Project.

2.2.2. Local

Within the urban environment of the Project, stormwater runoff occurs during and shortly after rain events. The volume of runoff depends on the intensity and duration of the storm event and the imperviousness of the drainage area. Typical urban pollutants associated with stormwater runoff following rain events includes sediment, trash, bacteria, metals, nutrients, and potentially organics and pesticides. The source of contaminants is wide ranging and includes all areas where rainfall occurs along with atmospheric deposition. Therefore, sources of contaminants within urban areas include roadways, building tops, parking lots, landscape areas and maintenance areas.

To reduce contaminant loads from entering the storm drain system, the City conducts routine street cleaning operations as well as periodic cleaning and maintenance of the catch basins to reduce stormwater pollution within the storm drain system. The City also installs catch basin screens to reduce trash from entering the catch basins.

2.2.3. On Site

Under existing conditions, the Project Site is mostly residential, with associated parking areas. Based on visual inspection, water quality treatment control BMPs are not currently present at the Project Site. Stormwater that leaves the Project Site is untreated and flows into curbside inlets on the west into the public right-of-way where it ultimately gets picked up by the public storm drain system. Anticipated pollutants consistent with parking lots, building areas and landscaping include total suspended solids (TSS), oil/grease, heavy metals, nutrients, pesticides and trash.

3. METHODOLOGY

3.1. SURFACE WATER HYDROLOGY

On December 3, 1999, the City of Los Angeles issued Special Order No. 007-1299 which adopted the Los Angeles County Department of Public Works' Hydrology Manual to be used for hydrology studies within the City of Los Angeles. According to the County's Hydrology Manual, the Project is required to have drainage facilities that meet the Urban Flood level of protection, which is equivalent to runoff from a 25-year frequency design storm falling on a saturated watershed. A 25-year frequency design storm has a probability of 1/25 of being equaled or exceeded in any year.

However, per the *L.A. CEQA Thresholds Guide*, a 50-year storm frequency analysis is required when determining flood hazards impacts and changes in the amount or movement of surface water. Therefore, runoff for both 25- and 50-year frequency design storms was calculated for this report.

This study was prepared using HydroCalc 1.0.2 software in conformance with the County's Hydrology Manual (2006). The HydroCalc program uses the Modified Rational Method to calculate the required time of concentration and designed flowrates for 25- and 50-year storm events. The peak runoff for a drainage area is calculated using the formula Q= CIA, where

- Q= flowrate (cfs)
- C= runoff coefficient (unit less)
- I=rainfall intensity (in/hr)
- A= basin area (acres)

The HydroCalc calculator is supported by the County's online GIS system. This database is used to locate the Project Site's 50-year isohyet rainfall frequency as well as relevant soil type. The data collected is then used in the HydroCalc program to calculate peak stormwater runoff values.

3.2. SURFACE WATER QUALITY

3.2.1. Construction

As Project construction would disturb more than one acre of land, the Project would be required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) stormwater permitting program, which is administered by the State Water Resources Control Board through its nine regional boards, including the LARWQCB. The NPDES Construction General Permit (Order No 2012-0006-DWQ) requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) to document the selection and implementation of Best Management Practices (BMPs) during construction to reduce or prevent the discharge of pollutants from construction activities.

3.2.2. Operation

Low Impact Development (LID) is a stormwater strategy that is used to mitigate the impacts of runoff and stormwater pollution as close to its source as possible. Urban runoff discharged from municipal storm drain systems is one of the principal causes of water quality impacts in most urban areas. The stormwater may contain pollutants such as trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals that can negatively affect the ocean, rivers, plant and animal life, and public health.

LID encompasses a set of site design approaches and BMPs that are designed to address runoff and pollution at the source. These LID practices can effectively remove nutrients, bacteria, and metals, while reducing the volume and intensity of stormwater flows.

In accordance with LARWQCB Order No. R4-2012-0175, stormwater runoff shall be infiltrated, evapotranspired, captured and used, or treated through high removal efficiency BMPs, onsite, through stormwater management techniques that comply with provisions of the City of Los Angeles Planning and Land Development Handbook for Low Impact Development (May 2016) (LID Manual).

The City of Los Angeles also passed a LID Ordinance (#181899) on October 7, 2011 which provides mandates for LID BMPs within development and redevelopment projects.

The LARWQCB has a BMP hierarchy for projects to follow when selecting the type or types of BMPs to be constructed on site, per Order No. R4-2012-0175 as amended by Order WQ 2015-0075 NPDES NO. CAS004001:

1. On-site infiltration,
2. On-site bioretention and/or harvest and use,
3. On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit

The Project will also comply with the City's LID Manual,[1] which requires that post-construction stormwater runoff from new developments be infiltrated, evapotranspired, captured and reused, and/or treated through a high efficiency BMP onsite for the 85th percentile storm event or 0.75"—whichever is greater.

The LID Manual states that BMPs shall be designed to manage and capture stormwater runoff. Consistent with the LARWQCB's BMP hierarchy, infiltration systems are the first priority type of BMP improvements as they provide for percolation and infiltration of the stormwater into the ground, which not only reduces the volume of stormwater runoff entering the stormwater system but also contributes to groundwater recharge in some areas. The second priority BMP is capturing and reusing stormwater onsite for either landscape irrigation or toilet flushing. Projects that cannot infiltrate or harvest/reuse the water quality volume may implement biofiltration BMPs. Biofiltration BMPs shall be sized to adequately capture 1.5 times the volume not managed through infiltration and/or capture and reuse.

4. PROJECT ANALYSIS

4.1. CONSTRUCTION

4.1.1. Surface Water Hydrology and Quality

Implementation of the Project would result in construction activities that include demolition of the existing buildings and parking areas on-site, excavation of existing soils, and the export of soil from the Project Site. Construction activities have the potential to temporarily alter the existing drainage patterns of the Project Site and also increase the permeability of the site based on increased pervious surface coverage during construction. Exposed pervious surfaces also have the potential for erosion, scour, and increased sediment and associated pollutants discharging from the Project Site during construction activities. The main pollutant of concern during construction is typically sediment and soil particles that discharge off-site due to wind, rain, and construction patterns. In the event exceedances of receiving water quality objectives are observed, measures must be taken and documented within the SWPPP to improve discharge water quality and runoff effluent. This may include but not be limited to increasing the size of existing BMPs, adding more BMPs to the drainage area, additional filtering, and/or a reduction in active grading area.

Construction Best Management Practices (BMPs)

Prior to commencement of construction activities, the General Permit requires the Project SWPPP to be prepared in accordance with the site-specific information including grading limits, BMPs for each phase, schedule and sediment risk analyses. In accordance with the General Permit, the construction SWPPP must describe construction BMPs that address pollutant source reduction, and provide measures/controls necessary to mitigate potential pollutant sources. These measures/controls include, but are not limited to: erosion controls, sediment controls, tracking controls, non-storm water management, materials & waste management, and good housekeeping practices including the following types of BMPs:

- Erosion control BMPs, such as hydraulic mulch, soil binders, and geotextiles and mats, protect the soil surface by covering and/or binding the soil particles. Temporary earth dikes or drainage swales may also be employed to divert runoff away from exposed areas and into more suitable locations. If implemented correctly, erosion controls can effectively reduce the sediment loads entrained in storm water runoff from construction sites.
- Sediment controls are designed to intercept and filter out soil particles that have been detached and transported by the force of water. Storm drain inlets on the Project Site or within the project

[1] Planning and Land Development Handbook for Low Impact Development, Part B Planning Activities, 5th Edition; adopted by the City of Los Angeles, Board of Public Works on May 9, 2016.

vicinity (i.e., along streets immediately adjacent to the project boundary) should be adequately protected with an impoundment (i.e., gravel bags) around the inlet and equipped with a sediment filter (i.e., fiber roll). Bags should also be placed around areas of soil disturbing activities, such as grading or clearing.

- Stabilize construction entrance/exit points to reduce the tracking of sediments onto adjacent streets. Wind erosion controls should be employed in conjunction with tracking controls.
- Non-storm water management BMPs prohibit the discharge of materials other than storm water, as well as reduce the potential for pollutants from discharging at their source. Examples include avoiding paving and grinding operations during the rainy season (i.e., October 1 through April 30 each year) where feasible, and performing any vehicle equipment cleaning, fueling and maintenance in designated areas that are adequately protected and contained.
- Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges.

Through compliance with the General Permit including the preparation of a SWPPP, implementation of BMPs appropriate for each major phase of construction, and compliance with applicable City grading regulations, construction of the Project would not cause flooding, substantially increase or decrease the amount of surface water in a water body, or result in a permanent, adverse change to flow direction. The construction of the Project would also not result in discharges that would cause: (1) pollution that would impact the quality of waters of the state to a degree which negatively impacts beneficial uses of the waters; (2) contamination of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) nuisance that would be injurious to health, affect an entire community or neighborhood or any considerable number of persons, and occurs during or as a result of the treatment or disposal of wastes. With compliance with NPDES requirements and City of Los Angeles grading regulations, construction of the Project would not result in discharges that would violate any surface water quality standard or waste discharge requirements.

4.2. OPERATION

4.2.1. Surface Water Hydrology

Development of the Project would result in an increase in the landscaped areas throughout the Project Site and would reduce the amount of impervious surfaces from approximately 89 percent to 87 percent. Proposed flows decrease slightly over existing flows for both the 25 and 50-year storm events due to changes in slope and pervious surface ratios. Table 4 below provides an analysis of a 25-year and 50-year frequency design storm events following construction of the Project. Attachment D provides the Proposed On-Site Hydrology Map and output calculations are provided in Attachment E.

Table 4 Proposed Drainage Conditions

Drainage Area	Area (acres)	% Impervious	Q25 (cfs)	Q50 (cfs)
A-1	1.90	79	4.18	4.78
A-2	0.06	60	0.14	0.16
B-1	0.20	98	0.45	0.52
C-1	0.02	100	0.06	0.07

Drainage Area	Area (acres)	% Impervious	Q25 (cfs)	Q50 (cfs)
C-2	0.04	99	0.11	0.13
Proposed Total	2.22	87	4.94	5.66

Table 5 provides a comparison of the existing and proposed peak flows for the 25-year and 50-year storm events. As shown in the table, the total amount of runoff produced from the Project Site during a 25-year storm event under the proposed Project conditions is projected to decrease to 4.94 cubic feet per second (cfs), as compared to 5.67 cfs under existing conditions. For a 50-year event, the total project runoff is projected to decrease to 5.66 cfs under proposed Project conditions, as compared to 6.80 cfs under existing conditions.

Table 5 Existing Vs Proposed Drainage Conditions

Condition	Area (acres)	Q25 (cfs)	Q50 (cfs)
Existing	2.22	5.67	6.80
Proposed	2.22	4.94	5.66
Difference	0	-0.73	-1.14
% Increase or Decrease from Existing to Proposed Conditions	--	-12.9%	-16.8%

The above analysis includes the assumption based on the proposed Project design that additional landscaped area will be added along the property boundary, as compared to existing conditions, thereby increasing the pervious area of the Project Site. As shown in Table 5, the increase in permeable surfaces on the Project Site would result in a slight decrease of flows for a 25-year storm and 50-year storm event for the Project.

Based on the above, operation of the Project would not result in flooding, impact the capacity of the existing storm drain system, or worsen an existing flood condition. In addition, the Project would not substantially increase the amount of surface water in the local water body or result in a permanent adverse change in the drainage pattern that would result in an incremental effect on the capacity of the existing storm drain system.

4.2.2. Surface Water Quality

Stormwater runoff from the Project has the potential to discharge pollutants into the City and County storm drain system. Anticipated pollutants and typical source of the pollutants are listed in Table 6 below.

Table 6 Potential Pollutants

Potential Pollutants	Source of Pollutants
Sediment	Parking lots, driveways, building rooftops, landscape areas, road
Nutrients	Landscape areas, lawns
Pesticides	Landscape areas, lawns

Potential Pollutants	Source of Pollutants
Pathogens	Landscape areas, lawns, building rooftops
Trash/Debris	Parking lots, driveways, roadways, parks
Oil/Grease	Parking lots, driveways, roadways
Metals	Parking lots, driveways, roadways

To meet the local MS4 Permit and LID requirements consistent with the City's LID Ordinance and LID Manual (May 2016), stormwater management strategies will be implemented throughout the Project Site. Infiltration design features will be implemented to meet the local LID requirements.

The on-site LID measures may include such measures as drywell BMPs and storage vaults to satisfy the water quality requirements of the Project Site. Drywell BMPs are subsurface storage facilities that receive and temporarily store stormwater runoff prior to infiltrating into surrounding soils. Storage vaults add additional stormwater storage. Drywells would be appropriately sized in conformance with the LID Manual, and a drywell and detention system would be equipped with a pre-treatment system (hydrodynamic separator or equivalent) designed to reduce sediment loads and improve infiltration efficiency and LID feature lifespan. Other potential infiltration BMPs that may be utilized on-site include infiltration trenches, subsurface infiltration galleries, and permeable pavement. If infiltration is shown to be infeasible during site-specific soils investigations, an equivalent LID treatment method such as biotreatment will be utilized.

The existing Project Site does not have any structural or LID BMPs to treat or infiltrate stormwater. Therefore, implementation of the LID features for the Project consistent with the City's LID requirements would result in a substantial improvement in surface water quality runoff as compared to existing conditions. Implementation of the Project's BMP system in compliance with the City's LID requirements will result in the treatment of the required volume for the Project Site and the elimination of pollutant runoff up to the 85th percentile storm event.

With compliance with LID requirements, operation of the Project would not result in discharges that would cause: (1) an incremental increase in pollution which would alter the quality of the waters of the state to a degree which unreasonably affects beneficial uses of the waters; (2) an incremental increase of contamination of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of diseases; or (3) an incremental increase in the nuisance that would be injurious to health; affect an entire community or neighborhood, or any considerable numbers of persons; and occurs during or as a result of the treatment or disposal of wastes. With compliance with LID requirements, operation of the Project would not result in discharges that would violate any surface water quality standard or waste discharge requirements.

5. ATTACHMENTS

ATTACHMENT A – Ballona Creek Watershed Map

ATTACHMENT B – Existing On-Site Hydrology map

ATTACHMENT C – HydroCalc Hydrology Results for Existing Site

ATTACHMENT D – Proposed On-Site Hydrology Map

ATTACHMENT E – HydroCalc Hydrology Results for Proposed Site

ATTACHMENT A

BALLONA CREEK WATERSHED MAP

COUNTY OF LOS ANGELES

BALLONA CREEK & OTHER URBAN WATERSHEDS

Ballona Creek and other Urban Watersheds

PROJECT SITE

PACIFIC OCEAN

MILES
0 0.875 1.75 3.5

LEGEND

- BALLONA CREEK & OTHER URBAN WATERSHED
- UNINCORPORATED AREA
- DAM / LAKE / RESERVOIR
- MAJOR RIVER
- MAJOR CHANNEL

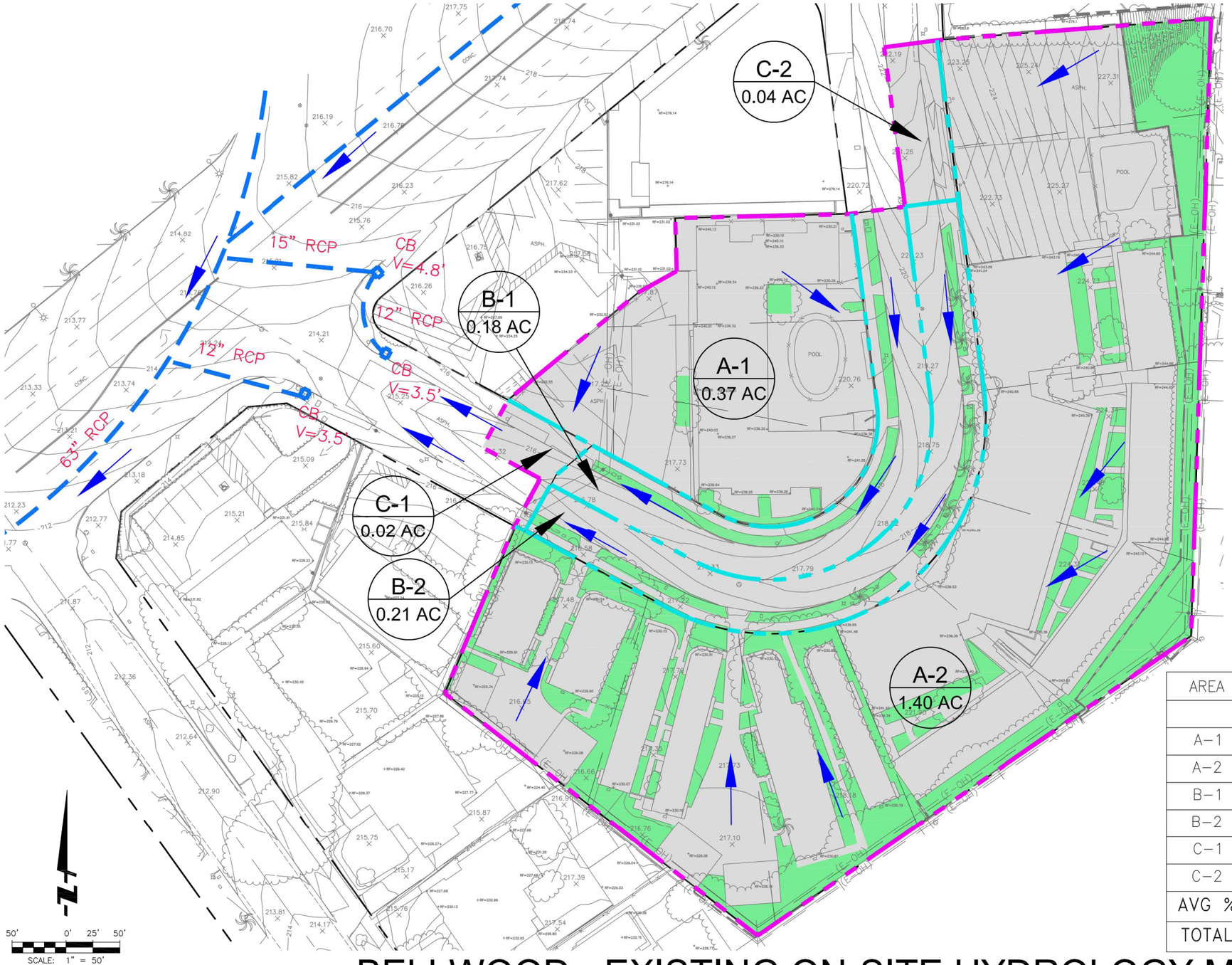
Data contained in this map is produced in whole or part from the Los Angeles County Department of Public Works' digital database.

REF: \\pwgisd02\mpmgis$\MPMGIS\projects\mpm\gismaps\wk_2627\ballonacreeketc_wtrsheds.mxd DATE: 08/22/07

Mapping & Property Management Division, Mapping & GIS Services Section

ATTACHMENT B

EXISTING ON-SITE HYDROLOGY MAP



LEGEND

- EXISTING STORM DRAIN
- A-# / 2.16 — DRAINAGE AREA DESIGNATION / ACRES
- SITE HYDROLOGIC BOUNDARY
- HYDROLOGY SUB-AREA
- DIRECTION OF FLOW
- PERVIOUS AREAS
- IMPERVIOUS AREAS

FLOW RATE	
	CFS
Q_{25}	5.67
Q_{50}	6.80

AREA	PERVIOUS		IMPERVIOUS		
	AC	%	AC	%	
A-1	0.17	5	0.20	95	
A-2	0.37	26	1.03	74	
B-1	0.03	16	0.15	84	
B-2	0.04	17	0.17	83	
C-1	0.00	0	0.02	100	
C-2	0.00	0	0.04	100	
AVG %		11		89	TOTAL
TOTAL	0.61		1.61		2.22

50' 0' 25' 50'
SCALE: 1" = 50'

BELLWOOD - EXISTING ON-SITE HYDROLOGY MAP

10328-10384 AND 10341-10381 BELLWOOD AVENUE
LOS ANGELES, CALIFORNIA

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

ATTACHMENT C

HydroCalc Hydrology Results for Existing Site

Peak Flow Hydrologic Analysis

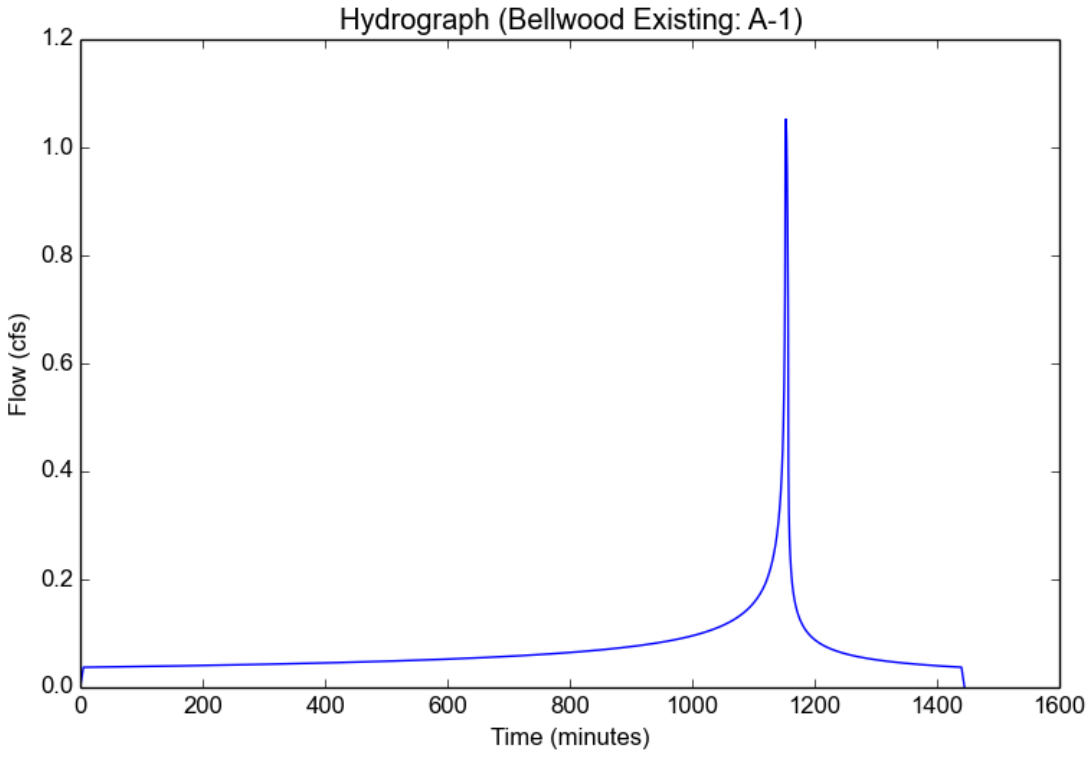
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - A-1 25 yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	A-1
Area (ac)	0.37
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0501
Burned Peak Flow Rate (cfs)	1.0501
24-Hr Clear Runoff Volume (ac-ft)	0.1396
24-Hr Clear Runoff Volume (cu-ft)	6080.6996



Peak Flow Hydrologic Analysis

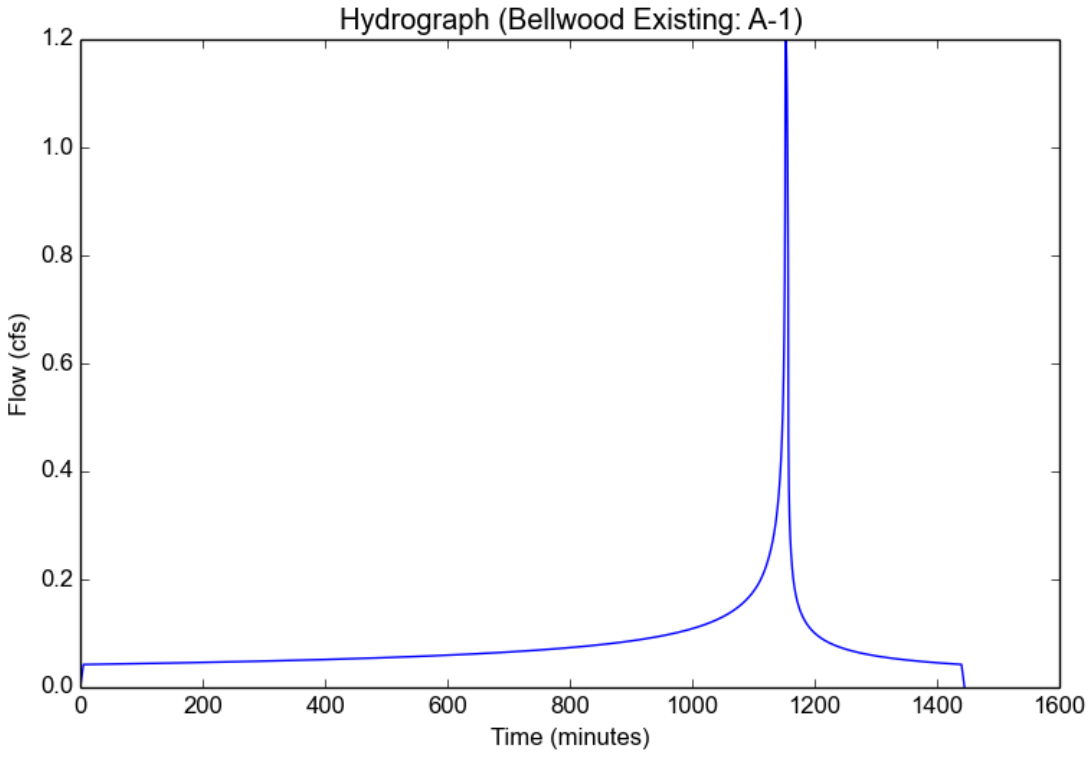
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - A-1 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	A-1
Area (ac)	0.37
Flow Path Length (ft)	300.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.196
Burned Peak Flow Rate (cfs)	1.196
24-Hr Clear Runoff Volume (ac-ft)	0.1591
24-Hr Clear Runoff Volume (cu-ft)	6930.187



Peak Flow Hydrologic Analysis

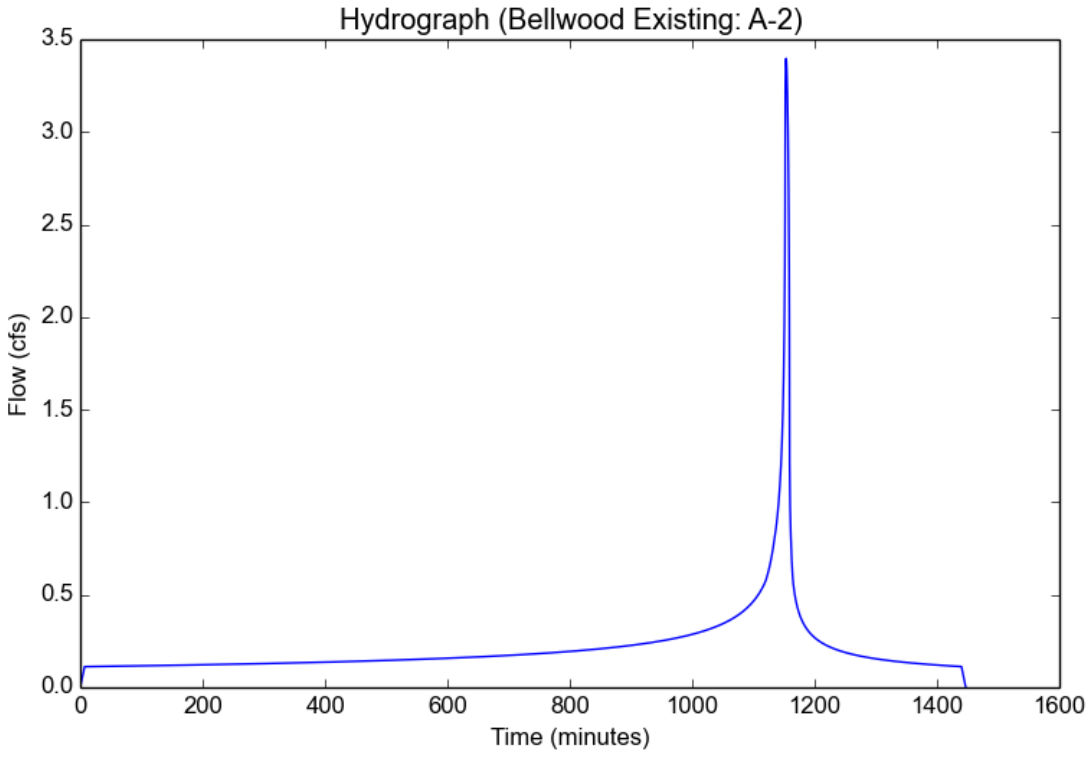
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - A-2 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	A-2
Area (ac)	1.4
Flow Path Length (ft)	530.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.73
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	2.6922
Undeveloped Runoff Coefficient (Cu)	0.9047
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	3.3922
Burned Peak Flow Rate (cfs)	3.3922
24-Hr Clear Runoff Volume (ac-ft)	0.4305
24-Hr Clear Runoff Volume (cu-ft)	18753.0248



Peak Flow Hydrologic Analysis

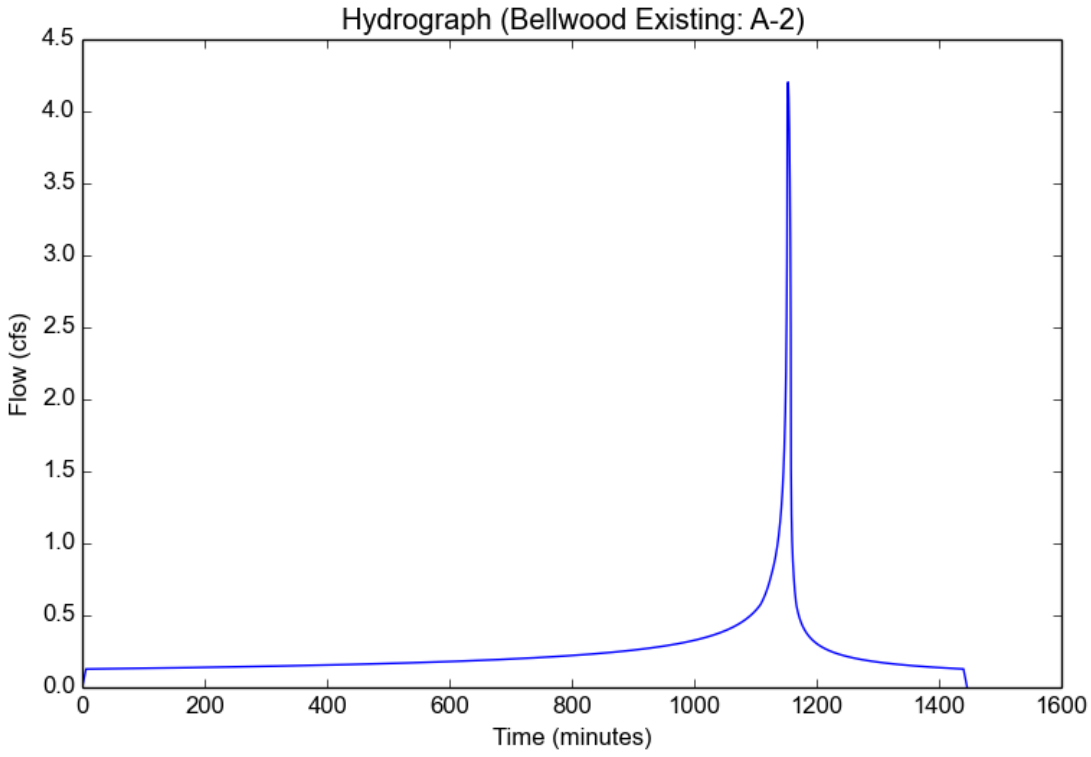
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - A-2 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	A-2
Area (ac)	1.4
Flow Path Length (ft)	530.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.73
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.2967
Undeveloped Runoff Coefficient (Cu)	0.9393
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.1539
Burned Peak Flow Rate (cfs)	4.1539
24-Hr Clear Runoff Volume (ac-ft)	0.4925
24-Hr Clear Runoff Volume (cu-ft)	21452.5558



Peak Flow Hydrologic Analysis

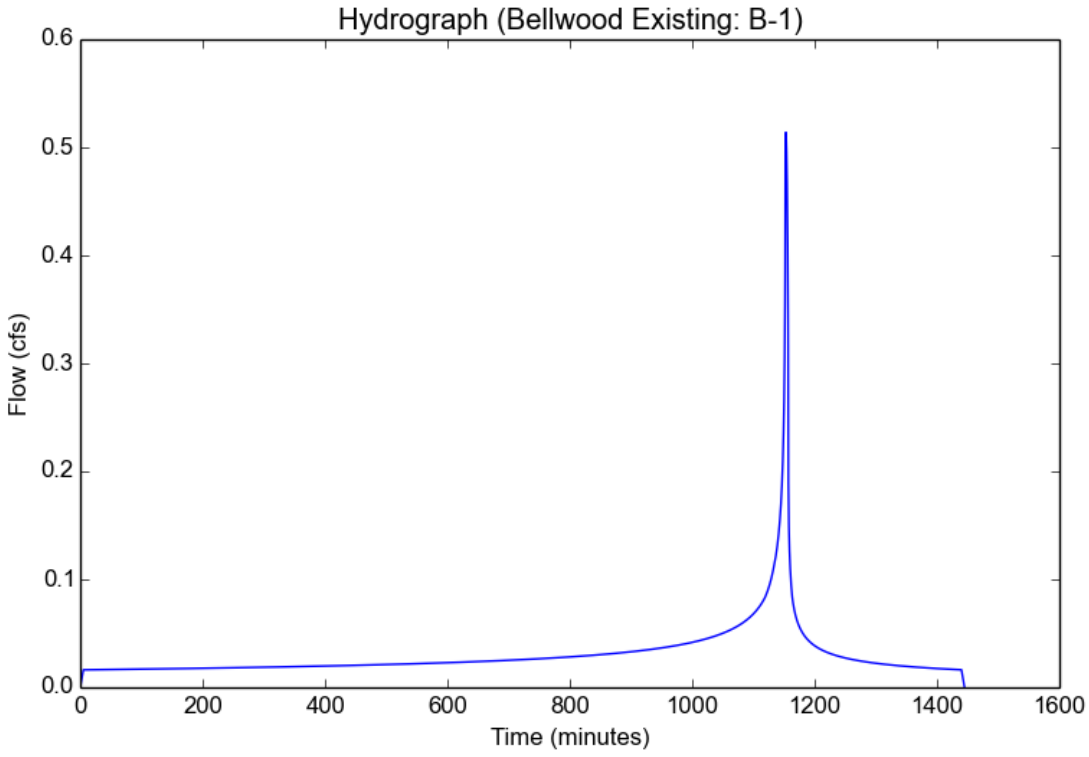
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - B-1 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	B-1
Area (ac)	0.18
Flow Path Length (ft)	285.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.84
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5109
Burned Peak Flow Rate (cfs)	0.5109
24-Hr Clear Runoff Volume (ac-ft)	0.0616
24-Hr Clear Runoff Volume (cu-ft)	2684.5832



Peak Flow Hydrologic Analysis

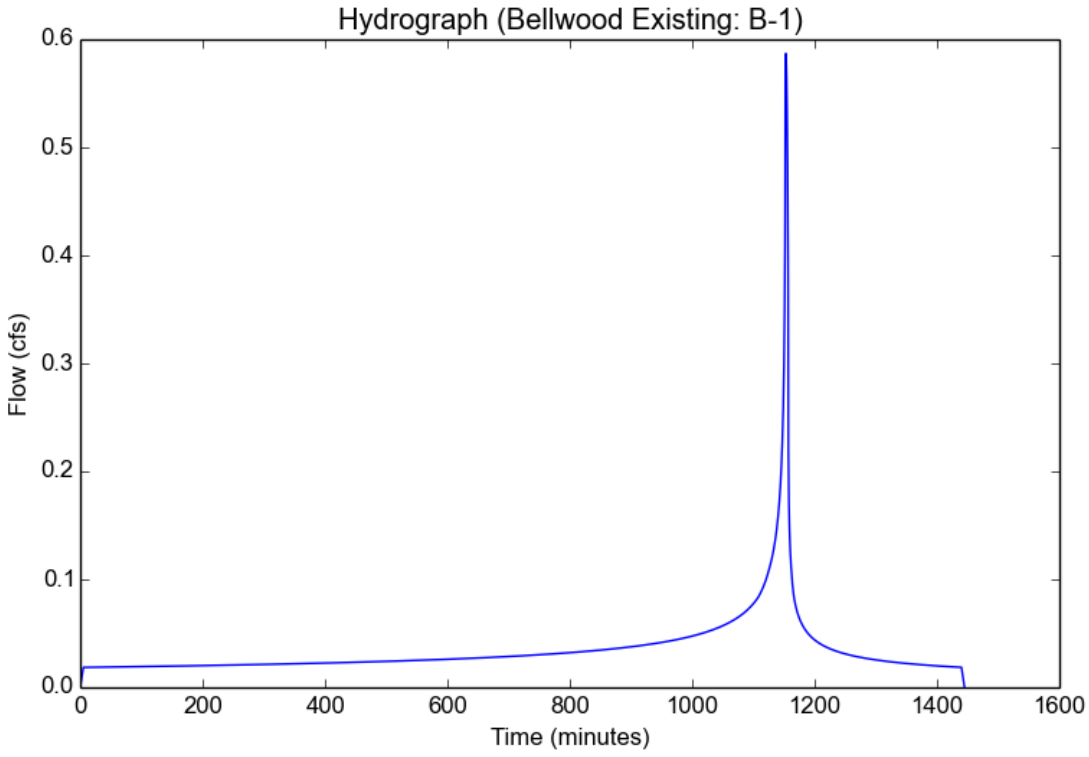
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - B-1 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	B-1
Area (ac)	0.18
Flow Path Length (ft)	285.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.84
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5819
Burned Peak Flow Rate (cfs)	0.5819
24-Hr Clear Runoff Volume (ac-ft)	0.0704
24-Hr Clear Runoff Volume (cu-ft)	3064.7122



Peak Flow Hydrologic Analysis

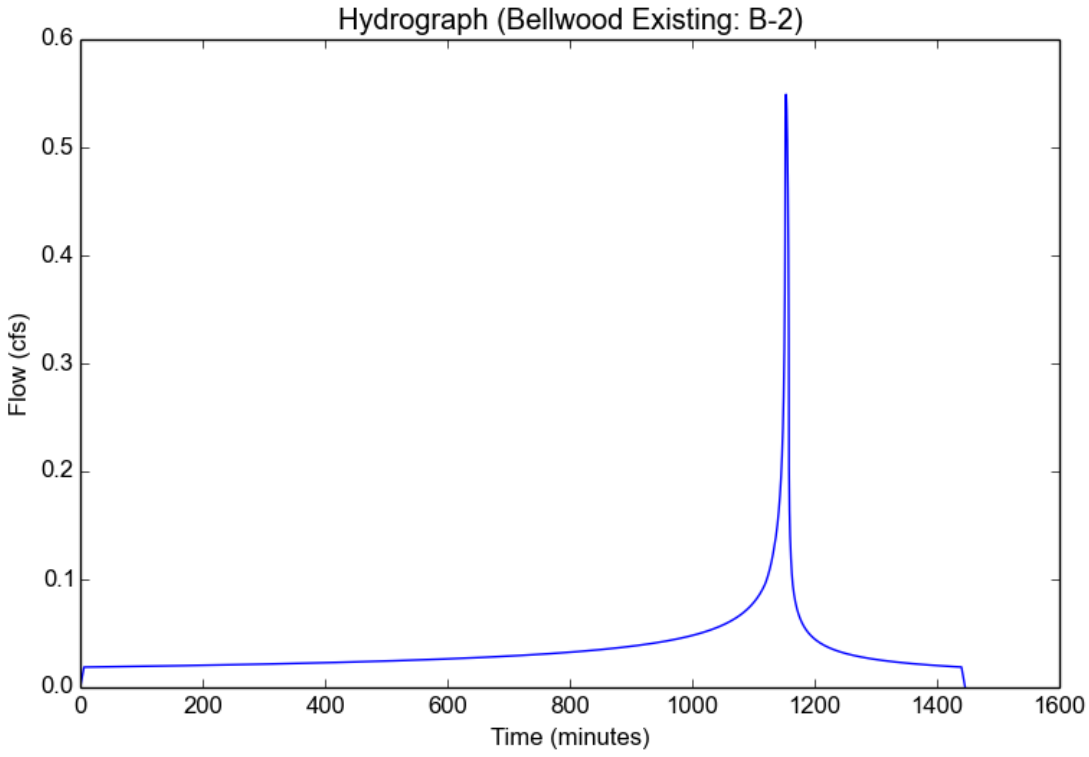
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - B-2 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	B-2
Area (ac)	0.21
Flow Path Length (ft)	385.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.83
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	2.8945
Undeveloped Runoff Coefficient (Cu)	0.9192
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	0.5471
Burned Peak Flow Rate (cfs)	0.5471
24-Hr Clear Runoff Volume (ac-ft)	0.0712
24-Hr Clear Runoff Volume (cu-ft)	3103.0508



Peak Flow Hydrologic Analysis

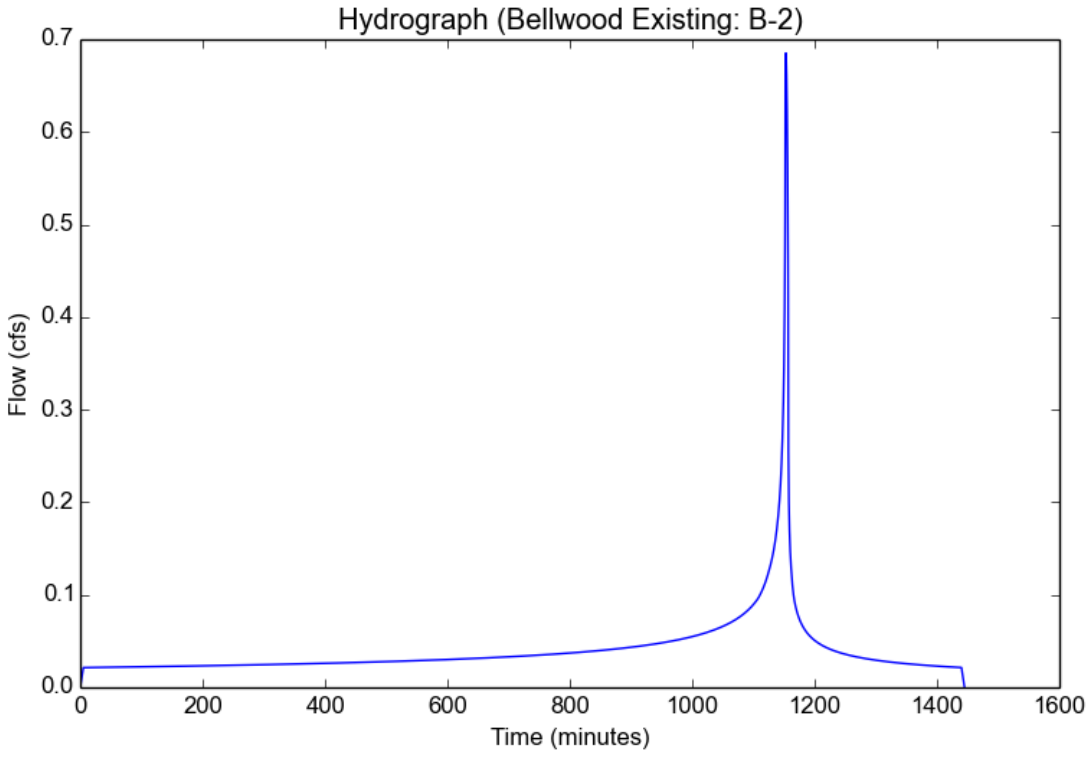
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - B-2 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	B-2
Area (ac)	0.21
Flow Path Length (ft)	385.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.83
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.6788
Burned Peak Flow Rate (cfs)	0.6788
24-Hr Clear Runoff Volume (ac-ft)	0.0813
24-Hr Clear Runoff Volume (cu-ft)	3542.9656



Peak Flow Hydrologic Analysis

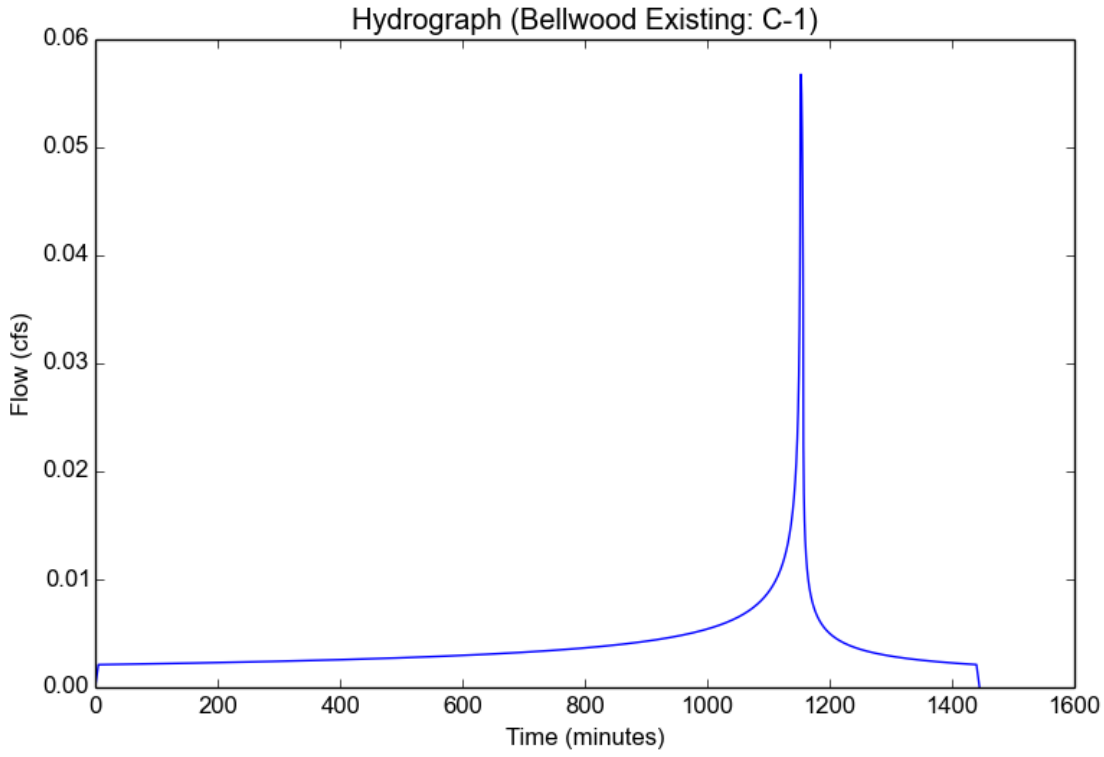
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - C-1 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	C-1
Area (ac)	0.02
Flow Path Length (ft)	50.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0568
Burned Peak Flow Rate (cfs)	0.0568
24-Hr Clear Runoff Volume (ac-ft)	0.0079
24-Hr Clear Runoff Volume (cu-ft)	342.5044



Peak Flow Hydrologic Analysis

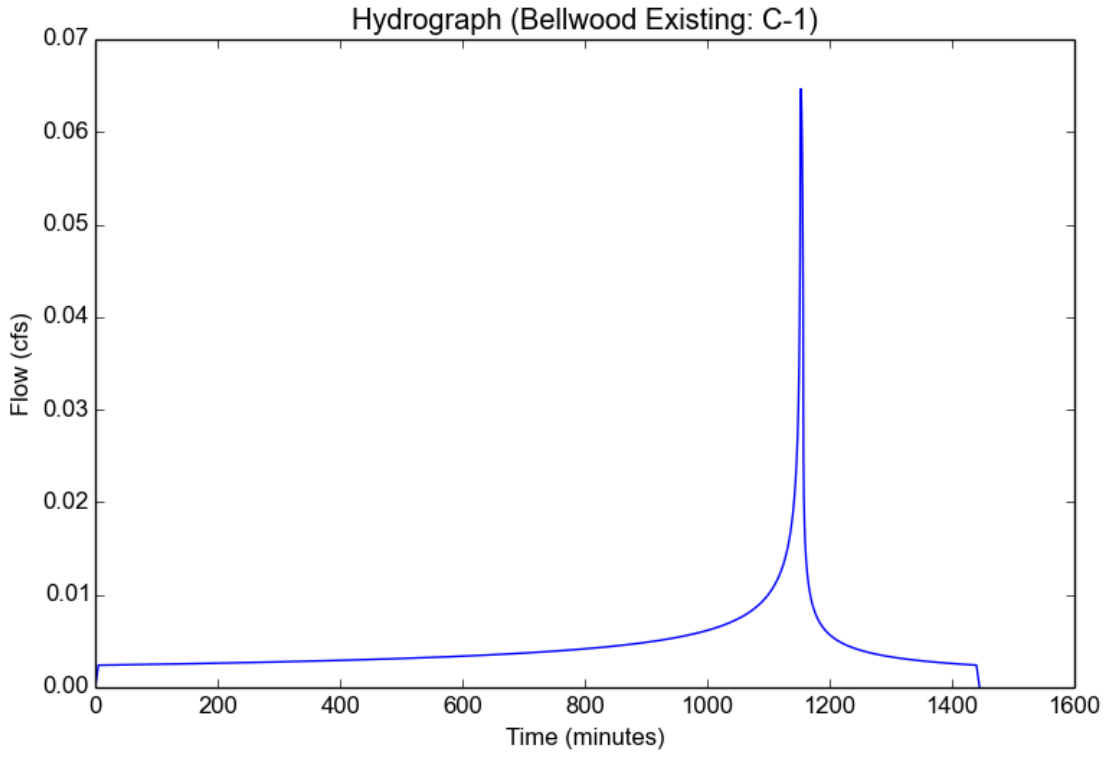
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - C-1 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	C-1
Area (ac)	0.02
Flow Path Length (ft)	50.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0647
Burned Peak Flow Rate (cfs)	0.0647
24-Hr Clear Runoff Volume (ac-ft)	0.009
24-Hr Clear Runoff Volume (cu-ft)	390.0961



Peak Flow Hydrologic Analysis

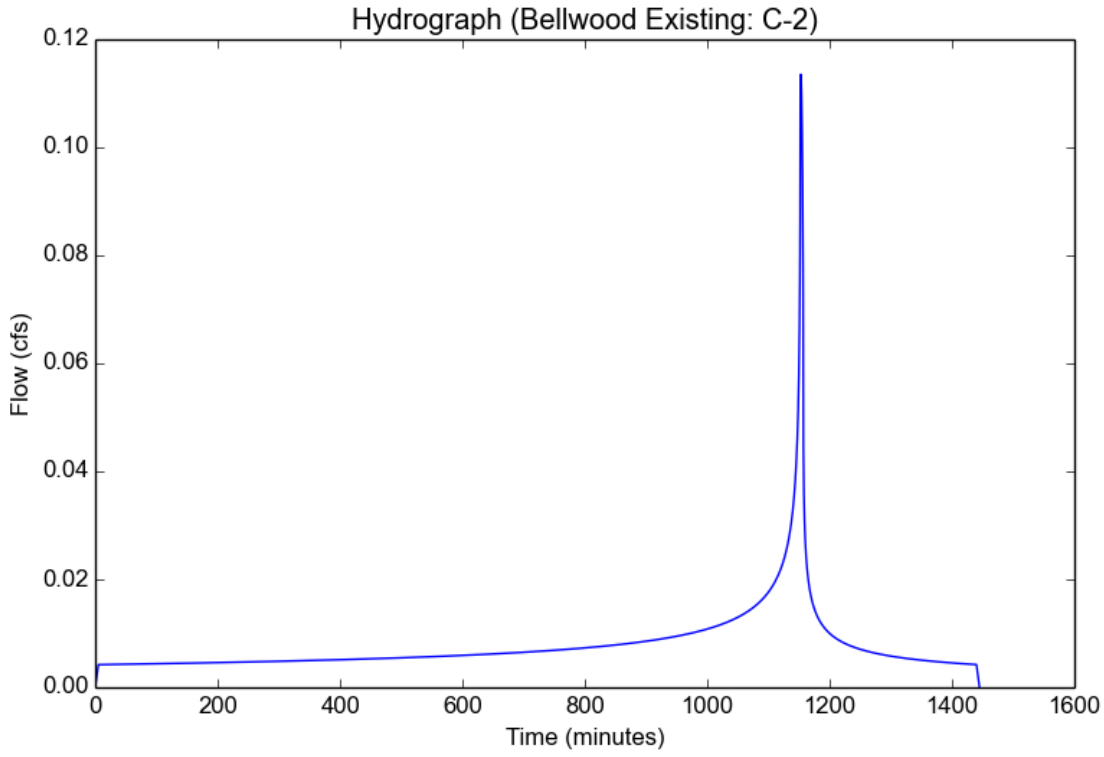
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - C-2 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	C-2
Area (ac)	0.04
Flow Path Length (ft)	360.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1135
Burned Peak Flow Rate (cfs)	0.1135
24-Hr Clear Runoff Volume (ac-ft)	0.0157
24-Hr Clear Runoff Volume (cu-ft)	685.0088



Peak Flow Hydrologic Analysis

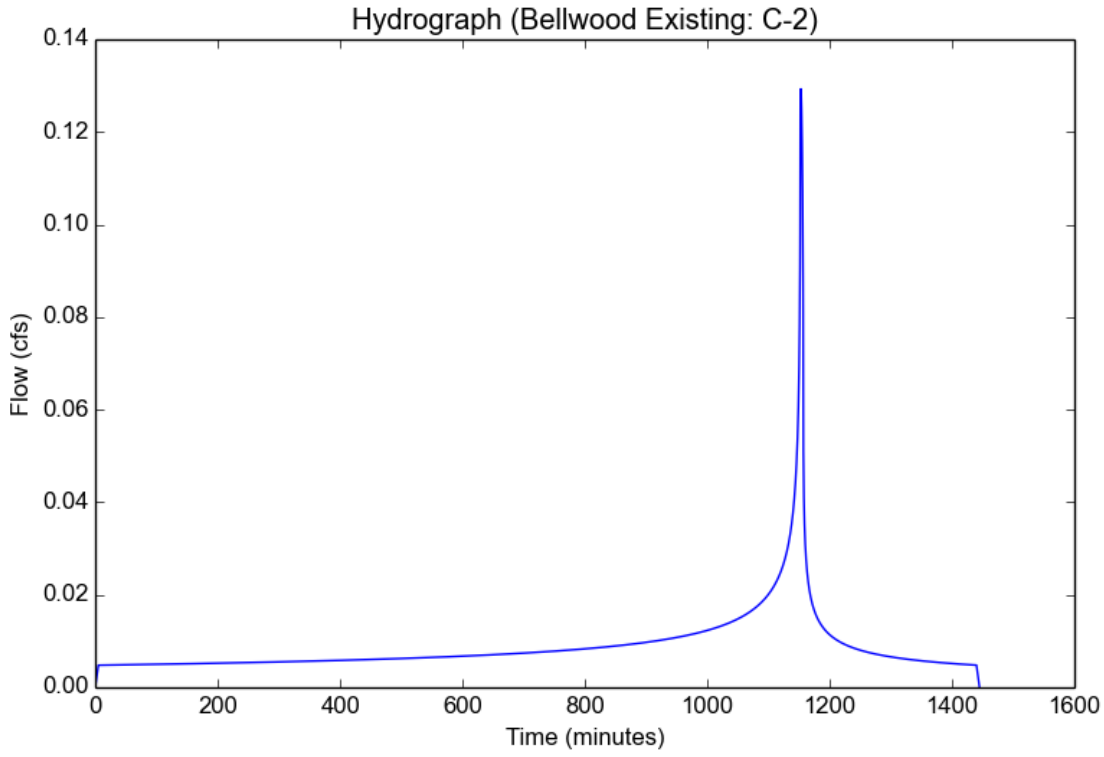
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment D - Existing Hydrocalc/Bellwood - C-2 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Existing
Subarea ID	C-2
Area (ac)	0.04
Flow Path Length (ft)	360.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

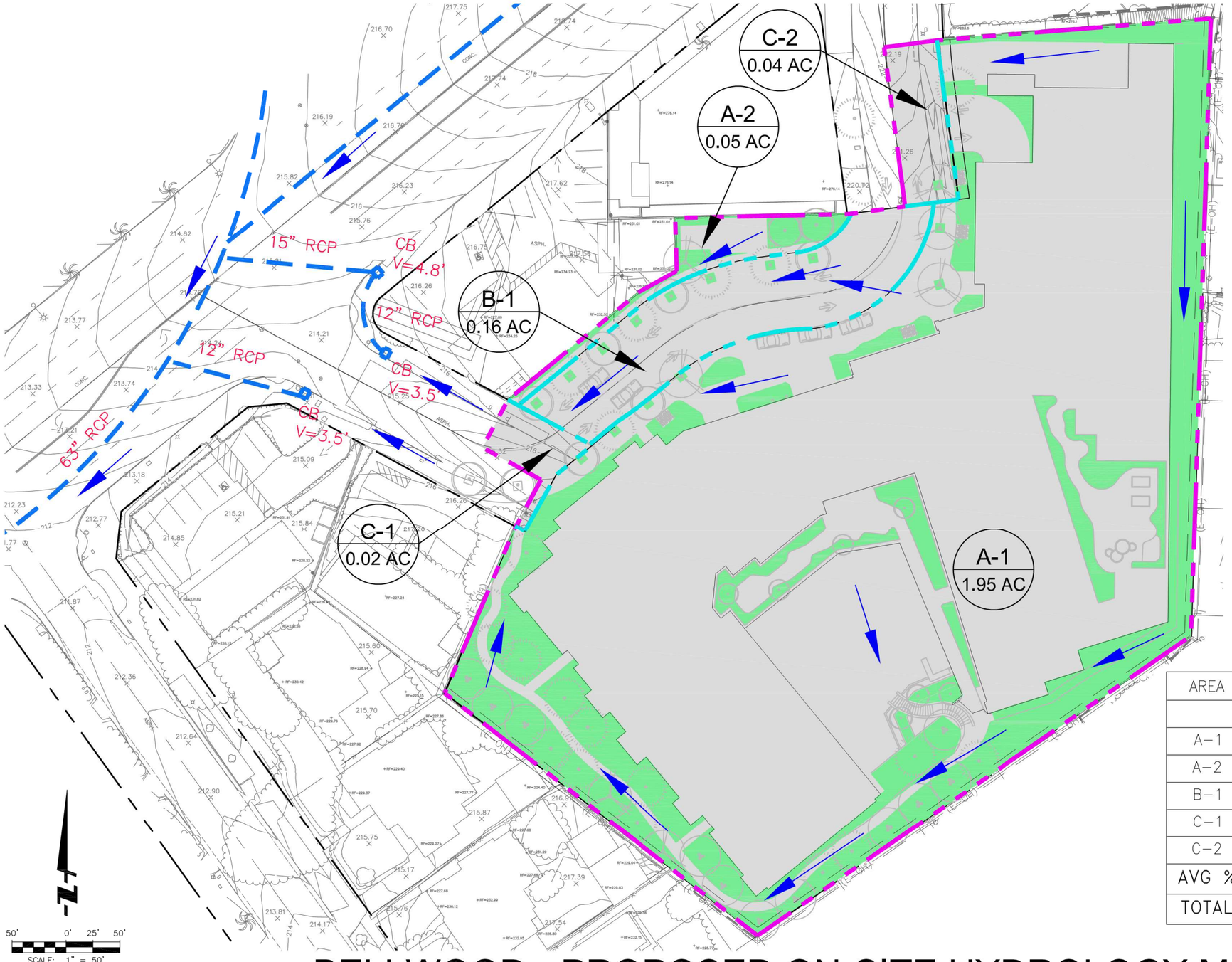
Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1293
Burned Peak Flow Rate (cfs)	0.1293
24-Hr Clear Runoff Volume (ac-ft)	0.0179
24-Hr Clear Runoff Volume (cu-ft)	780.1922



ATTACHMENT D

PROPOSED ON-SITE HYDROLOGY MAP



LEGEND

- EXISTING STORM DRAIN
- A-# / 2.16 — DRAINAGE AREA DESIGNATION / ACRES
- SITE HYDROLOGIC BOUNDARY
- HYDROLOGY SUB-AREA
- DIRECTION OF FLOW
- PERVIOUS AREAS
- IMPERVIOUS AREAS

FLOW RATE	
	CFS
Q_{25}	4.94
Q_{50}	5.66
Q_{LID}	0.52

AREA	PERVIOUS		IMPERVIOUS		
	AC	%	AC	%	
A-1	0.39	21	1.56	79	
A-2	0.02	40	0.03	60	
B-1	0.00	2	0.16	98	
C-1	0.00	C	0.02	100	
C-2	0.00	1	0.04	99	
AVG %		13		87	TOTAL
TOTAL	0.41		1.81		2.22

50' 0' 25' 50'
SCALE: 1" = 50'

BELLWOOD - PROPOSED ON-SITE HYDROLOGY MAP

10328-10384 AND 10341-10381 BELLWOOD AVENUE
LOS ANGELES, CALIFORNIA

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

ATTACHMENT E

HydroCalc Hydrology Results for Proposed Site

Peak Flow Hydrologic Analysis

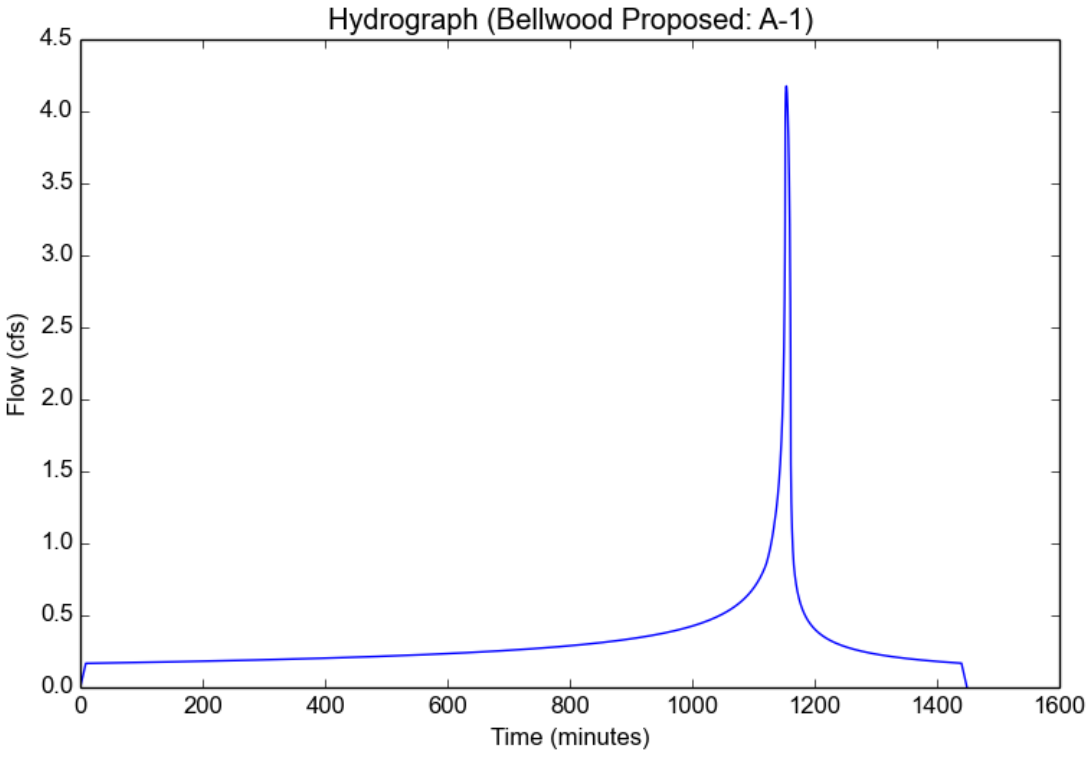
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - A-1 - 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	A-1
Area (ac)	1.95
Flow Path Length (ft)	720.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.79
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	2.3923
Undeveloped Runoff Coefficient (Cu)	0.8768
Developed Runoff Coefficient (Cd)	0.8951
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	4.1757
Burned Peak Flow Rate (cfs)	4.1757
24-Hr Clear Runoff Volume (ac-ft)	0.6367
24-Hr Clear Runoff Volume (cu-ft)	27735.3629



Peak Flow Hydrologic Analysis

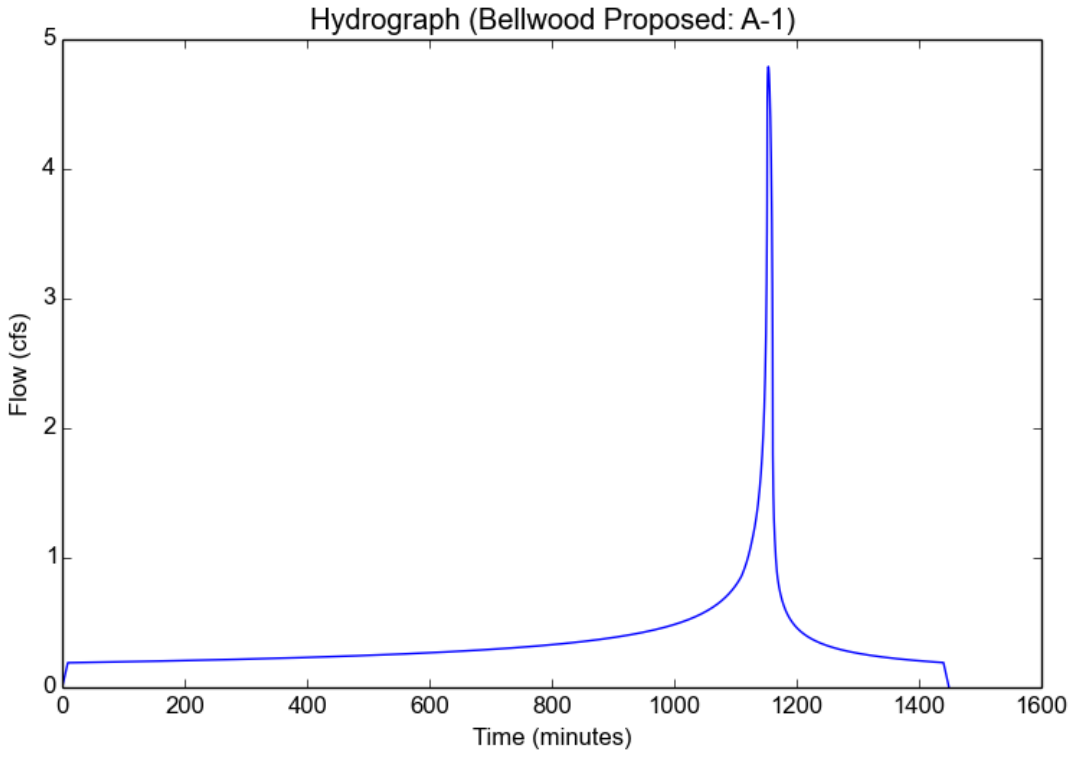
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - A-1 - 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	A-1
Area (ac)	1.95
Flow Path Length (ft)	720.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.79
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	2.7247
Undeveloped Runoff Coefficient (Cu)	0.907
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	4.7819
Burned Peak Flow Rate (cfs)	4.7819
24-Hr Clear Runoff Volume (ac-ft)	0.7276
24-Hr Clear Runoff Volume (cu-ft)	31694.4396



Peak Flow Hydrologic Analysis

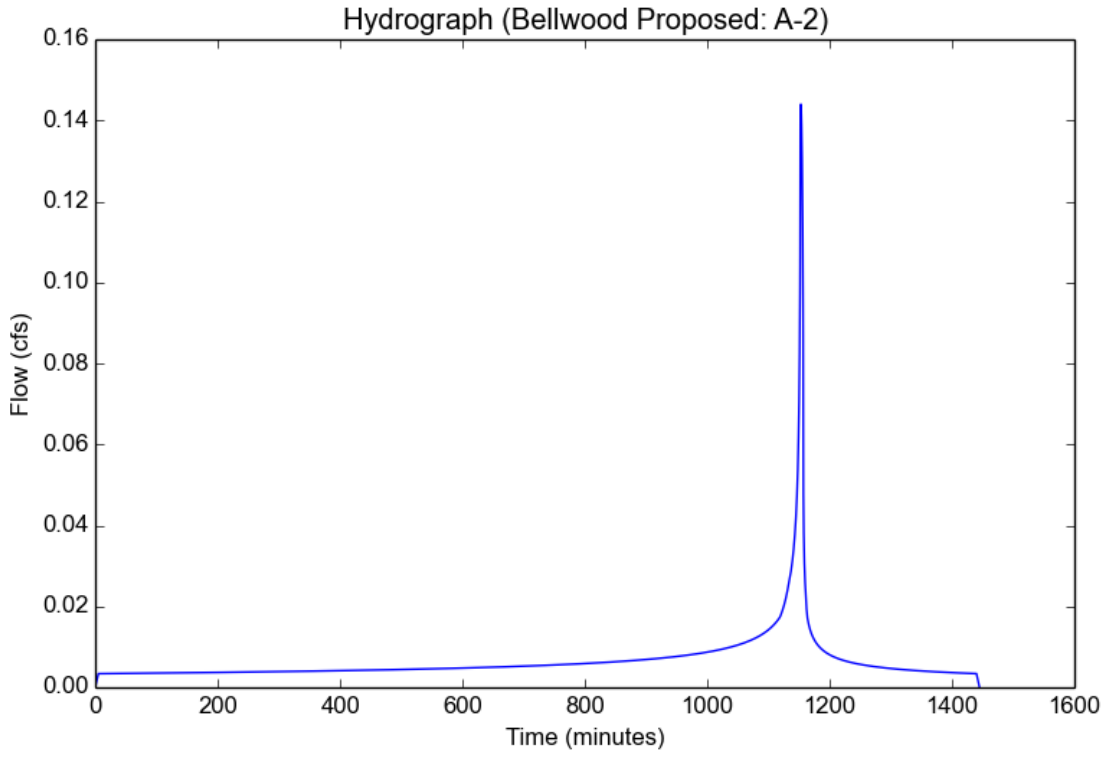
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - A-2 - 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	A-2
Area (ac)	0.05
Flow Path Length (ft)	185.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.6
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1419
Burned Peak Flow Rate (cfs)	0.1419
24-Hr Clear Runoff Volume (ac-ft)	0.0133
24-Hr Clear Runoff Volume (cu-ft)	579.9024



Peak Flow Hydrologic Analysis

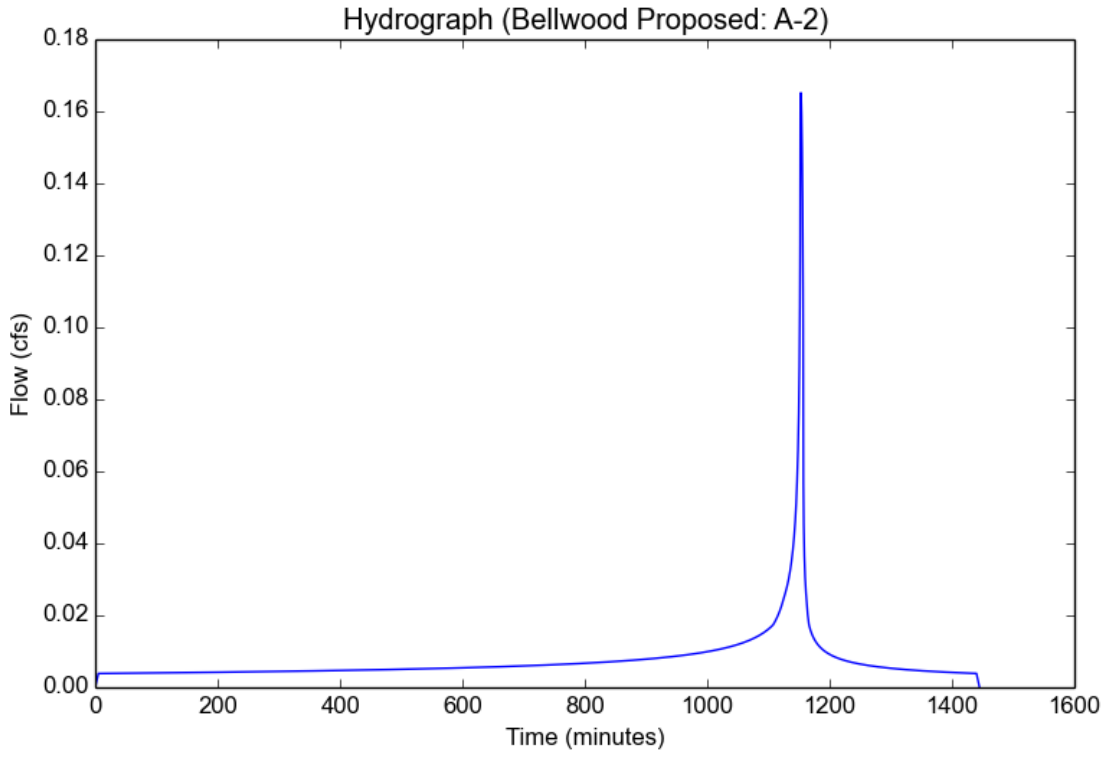
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - A-2 - 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	A-2
Area (ac)	0.05
Flow Path Length (ft)	185.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.6
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1616
Burned Peak Flow Rate (cfs)	0.1616
24-Hr Clear Runoff Volume (ac-ft)	0.0153
24-Hr Clear Runoff Volume (cu-ft)	665.4119



Peak Flow Hydrologic Analysis

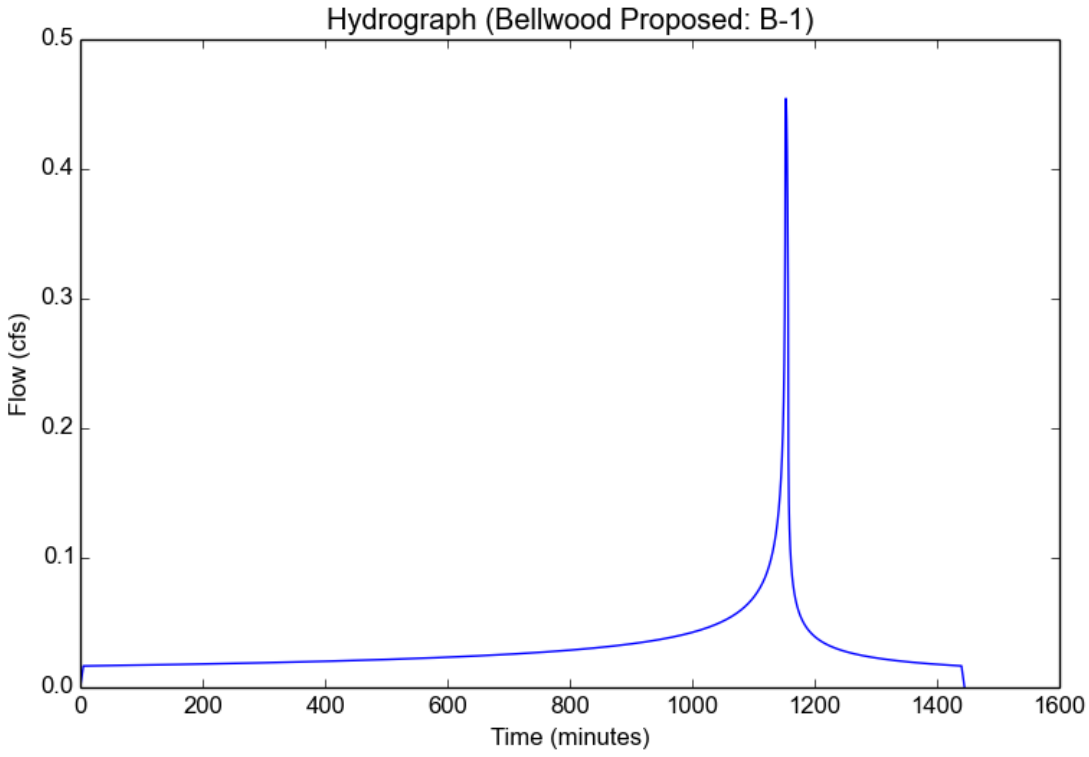
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - B-1 - 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	B-1
Area (ac)	0.16
Flow Path Length (ft)	225.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.98
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.4541
Burned Peak Flow Rate (cfs)	0.4541
24-Hr Clear Runoff Volume (ac-ft)	0.0619
24-Hr Clear Runoff Volume (cu-ft)	2695.8178



Peak Flow Hydrologic Analysis

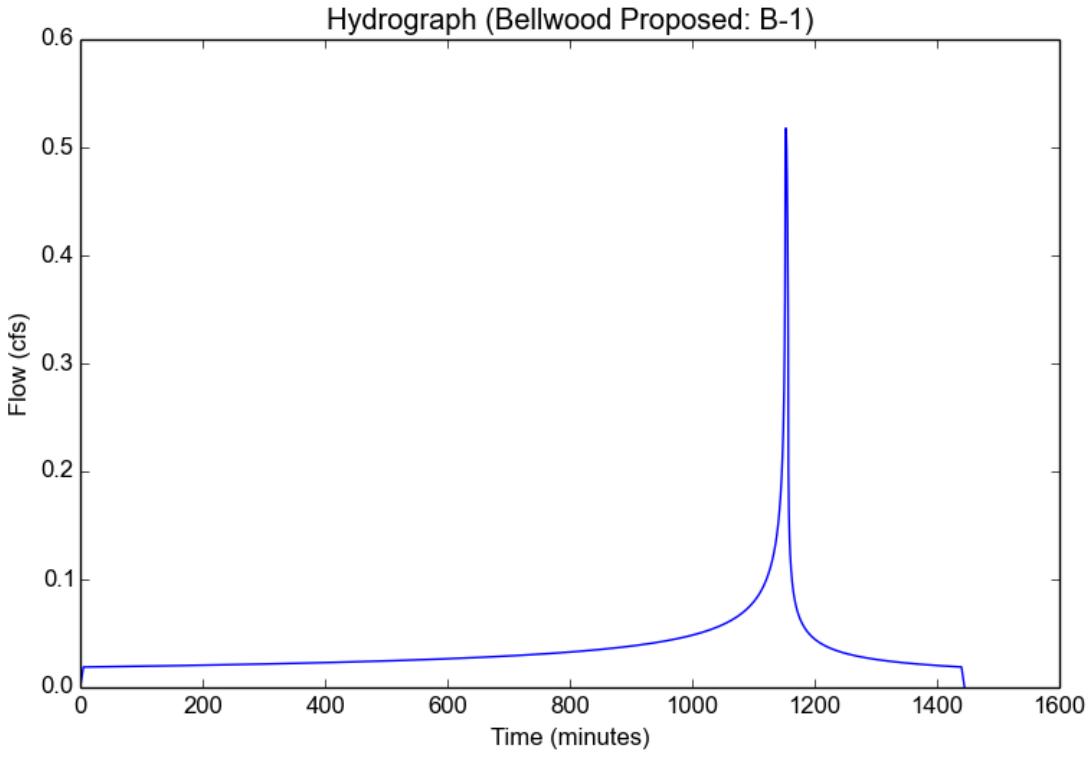
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - B-1 - 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	B-1
Area (ac)	0.16
Flow Path Length (ft)	225.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.98
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.5172
Burned Peak Flow Rate (cfs)	0.5172
24-Hr Clear Runoff Volume (ac-ft)	0.0705
24-Hr Clear Runoff Volume (cu-ft)	3071.1964



Peak Flow Hydrologic Analysis

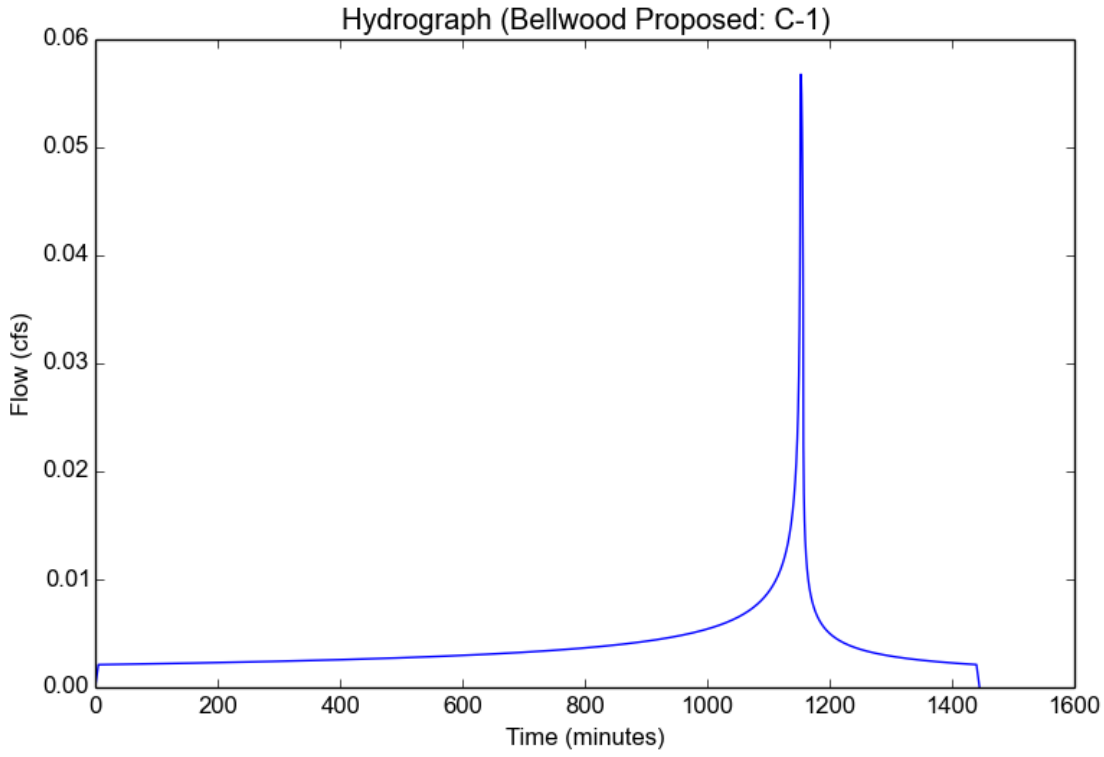
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - C-1 - 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	C-1
Area (ac)	0.02
Flow Path Length (ft)	50.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0568
Burned Peak Flow Rate (cfs)	0.0568
24-Hr Clear Runoff Volume (ac-ft)	0.0079
24-Hr Clear Runoff Volume (cu-ft)	342.5044



Peak Flow Hydrologic Analysis

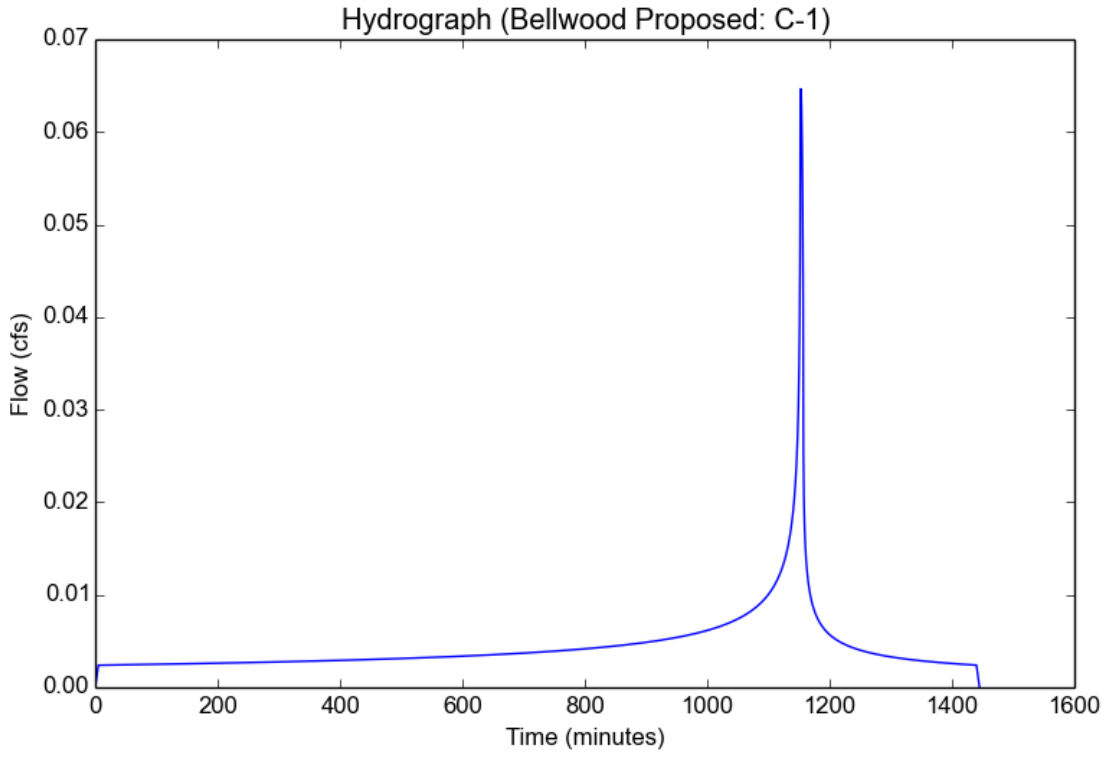
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - C-1 - 50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	C-1
Area (ac)	0.02
Flow Path Length (ft)	50.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	1.0
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.0647
Burned Peak Flow Rate (cfs)	0.0647
24-Hr Clear Runoff Volume (ac-ft)	0.009
24-Hr Clear Runoff Volume (cu-ft)	390.0961



Peak Flow Hydrologic Analysis

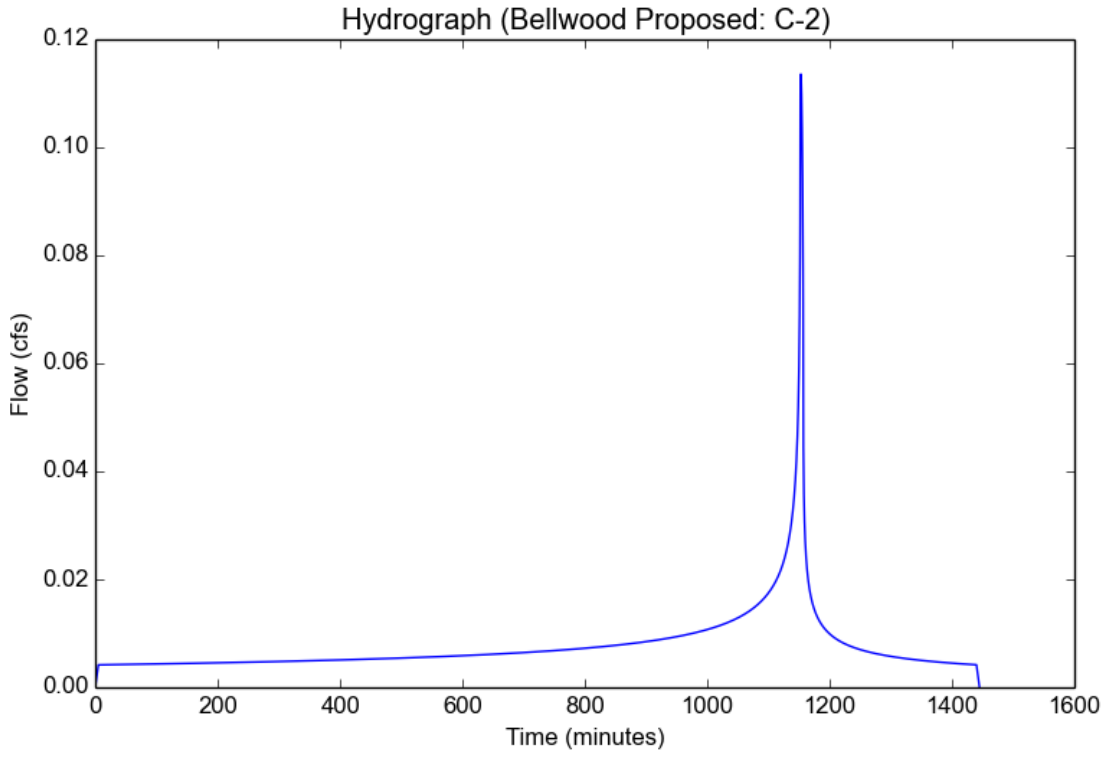
File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - C-2 - 25yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	C-2
Area (ac)	0.04
Flow Path Length (ft)	360.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.99
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	5.2856
Peak Intensity (in/hr)	3.1535
Undeveloped Runoff Coefficient (Cu)	0.9333
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1135
Burned Peak Flow Rate (cfs)	0.1135
24-Hr Clear Runoff Volume (ac-ft)	0.0156
24-Hr Clear Runoff Volume (cu-ft)	679.4816



Peak Flow Hydrologic Analysis

File location: F:/Projects/1755/001/_Support Files/Reports/Hydrology/Attachment H - Proposed Hydrocalc/Bellwood Proposed - C-2 -50yr.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Bellwood Proposed
Subarea ID	C-2
Area (ac)	0.04
Flow Path Length (ft)	360.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.02
Percent Impervious	0.99
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.02
Peak Intensity (in/hr)	3.5917
Undeveloped Runoff Coefficient (Cu)	0.9495
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1293
Burned Peak Flow Rate (cfs)	0.1293
24-Hr Clear Runoff Volume (ac-ft)	0.0178
24-Hr Clear Runoff Volume (cu-ft)	773.9957