

PRELIMINARY HYDROLOGY STUDY

For:

Rexford Expansion Project

Project Site Location/Address:

**14820 Carmenita Road
Norwalk, CA 90650**

Prepared For:

**Rexford Industrial Realty
11620 Wilshire Boulevard, #1000
Los Angeles, CA 90024**

Lead Agency:

**City of Norwalk
12700 Norwalk Blvd.
Norwalk, CA 90650**

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Project No. 19-350

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Introduction

The proposed project is located on approximately 7.0 acres of fully developed land located north of the 5 freeway along Excelsior Drive between Carmenita Road and Spring Avenue in the city of Norwalk, California. The site is bounded to the north by Pumice Street, to the west is the Carmenita Road, to the south is Excelsior Drive, and to the east is Spring Street. The project will include the demolition of two (2) existing industrial buildings and construction of one (1) one-story 144,760 square foot warehouse, parking field, trash enclosures and landscaping. Additional improvements will include underground sewer, domestic and fire water facilities, storm drain facilities, retaining walls, and site signage and striping. This report has been prepared to calculate the post-construction hydrologic conditions for peak storm runoff rates and demonstrate the overall impact to the existing drainage infrastructure as well as demonstrate that the proposed project will not exceed the existing condition.

Project Description

Existing Site Conditions: The existing project site consists of approximately 7.03 acres of developed land that splits the area into two separate drainage areas depicted in the Hydrology Map. The north portion of the site drains via surface flow to the north east corner, out through the existing property bordering the site and ultimately to the public system in Spring Street. The south portion drains via surface flow through an existing concrete ribbon gutter down to the south east corner of the site and ultimately to the public system in Excelsior Drive. The site currently is 100% impervious with little to none landscaping. In the existing condition, there is a run-on condition coming from the private property bordering the west side of the site. The proposed development will allow for this in order to maintain the existing drainage pattern. See Existing Hydrology Map in Section 3.0 for illustration of the existing site conditions.

Proposed Site Conditions: The proposed development will consist of one (1) one-story 144,760 square foot warehouse, and parking spaces including both hardscape and landscape. The proposed buildings and parking lot will approximately $\pm 93\%$ of the total site. The remaining $\pm 7\%$ of the site will contain landscaping. The proposed site will maintain the existing drainage discharge pattern of the site.

The site consists of two separate drainage areas (Area's A & B) and closely matches the existing condition. Analysis was done for the 25-year storm event (in accordance with LA County Hydrology standards). Runoff from the new buildings and parking will be directed to on-site catch basins with filter inserts to filter the debris. Prior to discharging from the site, storm water will be directed into two underground infiltration basins each designed to store the 85th percentile storm water depth (in accordance with LA County LID standards). Any additional stormwater will pond and discharge via surface flow along the existing drainage pattern described above. Since the proposed condition will add landscaping to the site, the pervious area will increase in the proposed condition by $\pm 20,000$ square feet. In addition, the proposed on-site underground infiltration basin will reduce the post-development runoff rates. As a result of the site improvements, the post-developed runoff rates will be lower than the pre-developed runoff rates for the 25-year storm event. See Proposed Hydrology Map in Section 4.0 for illustration of proposed site conditions.

Hydrology Methodology

Methodology: The hydrology calculations for the project were based on the Los Angeles County Department of Public Works (LACDPW) Hydrology Manual (January 2006 edition). Location maps, precipitation values, and soil values have all been interpolated from the LACDPW Manual and can be found in Section 2.0 of this report. The proposed project site has a soil type of 6 and a 50-year Isohyet of 5.5 inches. Existing site conditions were analyzed using the LA County HydroCalc spreadsheets to produce post-construction flow rates for the 25-year storm event. The existing runoff rates were then used as a benchmark for post-developed runoff rates to be restricted to. See Section 4.0 for post development calculations.

Existing Condition: The existing project site peak runoff rates were determined using the LA County Time of Concentration (Tc-Volume) spreadsheets. Refer to Section 3.0, the Existing Condition Hydrology Calculations of this report for data used in the calculations. The following table illustrates the runoff rate calculation results for the Existing Conditions (Entire On-Site project site) analysis. These values were used as the benchmark for flow reduction in the post-developed condition for the on-site areas.

EXISTING DRAINAGE SUMMARY TABLE

Drainage Area	Area (Acre)	Storm Year	Area Flowrate (CFS)
A	2.4	25	4.49
B	4.6	25	7.12
Total	7.0		11.61

Proposed Condition: The proposed site ultimately discharges off-site through the existing gutter/discharge points. Refer to the Proposed Drainage Zone Map and Proposed Hydrology Map included in this report (Section 4.0) for an illustration of the size and location of each drainage zone and for the location of each proposed retention basin. Prior to flowing off site, on-site storm water runoff will pass through and be treated through the implantation of an infiltration basin. The treatment devices remove, to acceptable levels, the pollutants of concern generated by the project and the pollutants of concerns for the downstream watercourses. The following table summarizes the results of the routing of the drainage zones to achieve a total post-development site run-off rate.

PROPOSED DRAINAGE SUMMARY TABLE

Drainage Area	Area (Acre)	Storm Year	Area Flowrate (CFS)
A	2.4	25	4.22
B	4.6	25	7.02
Total	7.0		11.24

Conclusions

The proposed site closely matches the existing condition drainage pattern and reduces or maintains the peak flow rate and runoff volume for the 25 year urban flood storm event due to the increased landscape area proposed. The existing site flowrate for **drainage area A is 4.49 cfs** and the proposed site flowrate for **drainage area A is 4.22 cfs**. The existing site flowrate for **drainage area B is 7.12 cfs** and the proposed site flowrate for **drainage area B is 7.02 cfs**. The proposed project also includes an underground retention system to meet LID treatment requirements that further reduces the peak flow. Therefore, the proposed improvements do not pose significant risk to any upstream or downstream facilities.

Vicinity Map

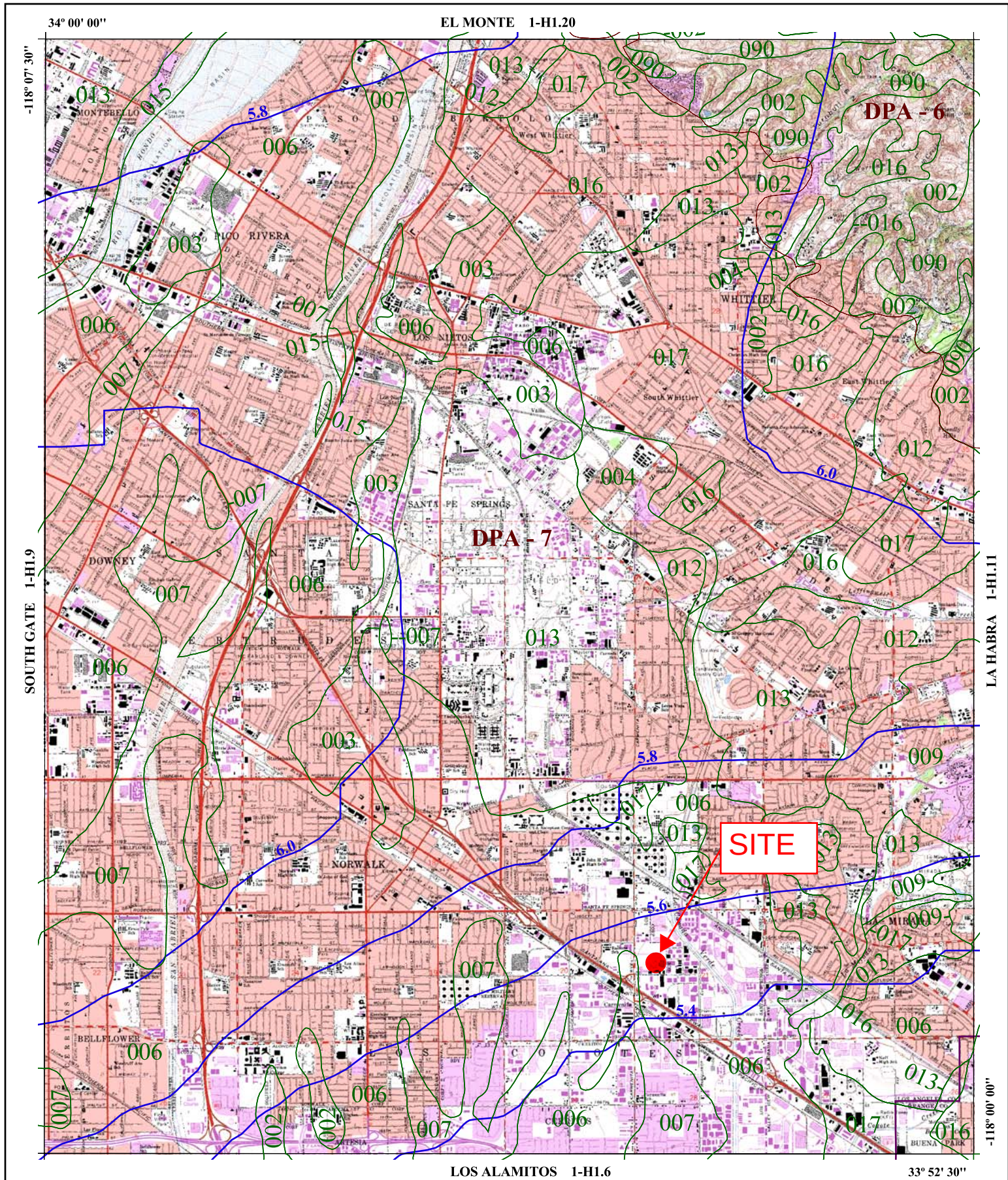


SECTION 3.0

Hydrology Maps

SECTION 4.0

25-year Storm Calculations



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

 25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878

 10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

W H I T T I E R

50-YEAR 24-HOUR ISOHYET

1-H1.10



Peak Flow Hydrologic Analysis

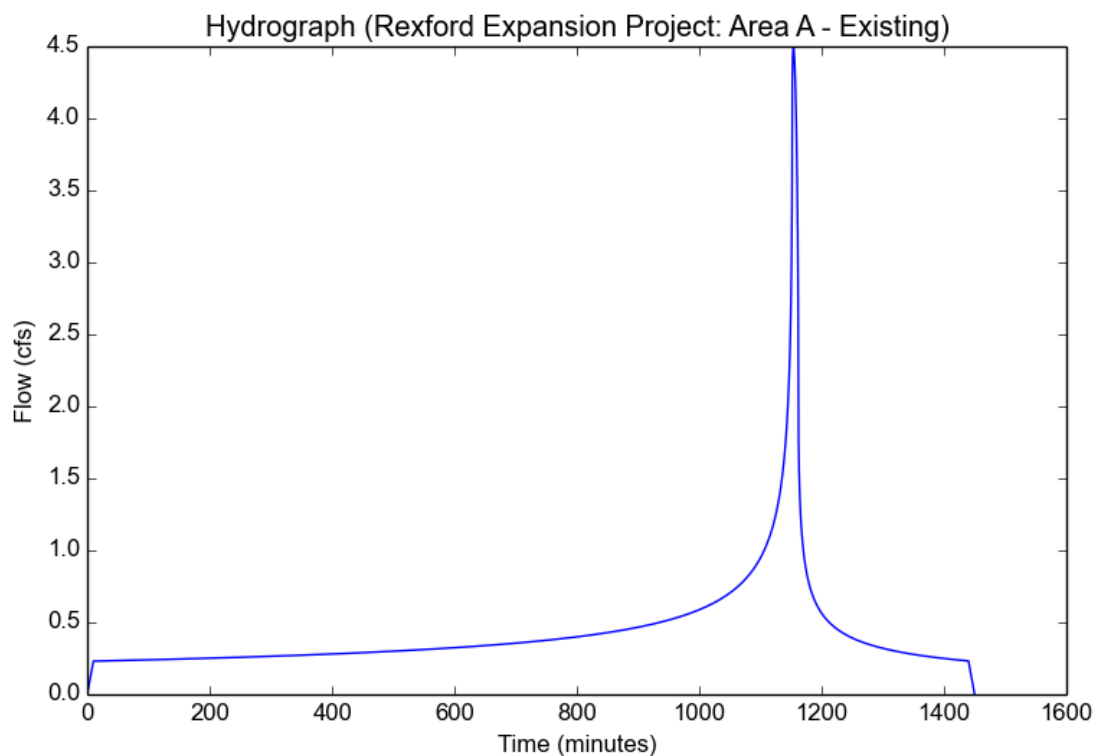
File location: M:/2019/19-350 Rexford Carmenita Rd Norwalk/HM/Rexford Expansion Project - Area A - Existing.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Rexford Expansion Project
Subarea ID	Area A - Existing
Area (ac)	2.4
Flow Path Length (ft)	617.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.5
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	2.0801
Undeveloped Runoff Coefficient (Cu)	0.7411
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	4.4929
Burned Peak Flow Rate (cfs)	4.4929
24-Hr Clear Runoff Volume (ac-ft)	0.862
24-Hr Clear Runoff Volume (cu-ft)	37550.3513



Peak Flow Hydrologic Analysis

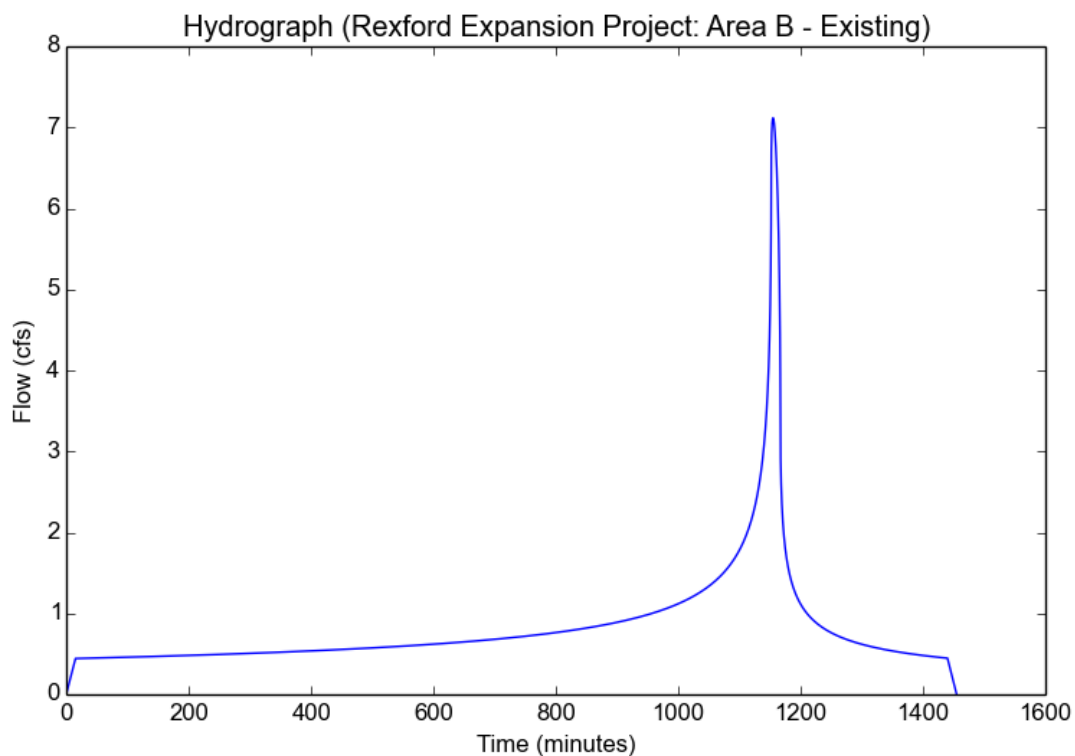
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	Rexford Expansion Project
Subarea ID	Area B - Existing
Area (ac)	4.6
Flow Path Length (ft)	1081.0
Flow Path Slope (vft/hft)	0.004
50-yr Rainfall Depth (in)	5.5
Percent Impervious	1.0
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	1.7191
Undeveloped Runoff Coefficient (Cu)	0.7015
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	7.1173
Burned Peak Flow Rate (cfs)	7.1173
24-Hr Clear Runoff Volume (ac-ft)	1.6522
24-Hr Clear Runoff Volume (cu-ft)	71971.6206



Peak Flow Hydrologic Analysis

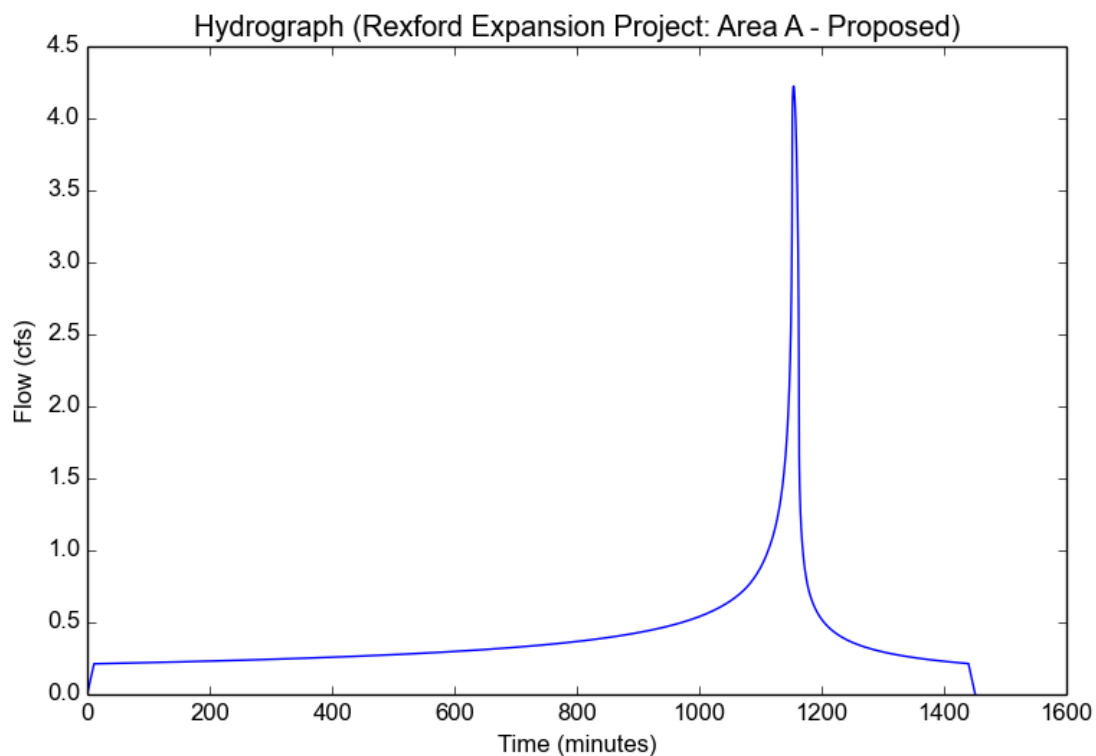
File location: M:/2019/19-350 Rexford Carmenita Rd Norwalk/HM/Rexford Expansion Project - Area A - Proposed.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Rexford Expansion Project
Subarea ID	Area A - Proposed
Area (ac)	2.4
Flow Path Length (ft)	700.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.91
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	1.9889
Undeveloped Runoff Coefficient (Cu)	0.7311
Developed Runoff Coefficient (Cd)	0.8848
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	4.2235
Burned Peak Flow Rate (cfs)	4.2235
24-Hr Clear Runoff Volume (ac-ft)	0.8008
24-Hr Clear Runoff Volume (cu-ft)	34880.7354



Peak Flow Hydrologic Analysis

File location: M:/2019/19-350 Rexford Carmenita Rd Norwalk/HM/Rexford Expansion Project - Area B - Proposed.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Rexford Expansion Project
Subarea ID	Area B - Proposed
Area (ac)	4.6
Flow Path Length (ft)	1109.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.5
Percent Impervious	0.94
Soil Type	6
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	4.829
Peak Intensity (in/hr)	1.7191
Undeveloped Runoff Coefficient (Cu)	0.7015
Developed Runoff Coefficient (Cd)	0.8881
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	7.0231
Burned Peak Flow Rate (cfs)	7.0231
24-Hr Clear Runoff Volume (ac-ft)	1.5739
24-Hr Clear Runoff Volume (cu-ft)	68558.2699

