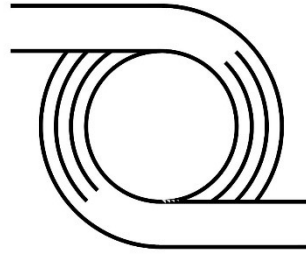




## **Appendix J-1**

Low Impact Development Report



D & D ENGINEERING, INC.

## Morningside High School Development Low Impact Development (LID) Report

November 1, 2023

D&D Engineering, Inc.  
424-351-6800

119 W. Hyde Park Boulevard  
Inglewood, CA 90302

5708 Cahuenga Boulevard  
North Hollywood, CA 91601



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## **I. Introduction**

The purpose of this report is to provide a conceptual analysis of the Low Impact Development (LID) strategies and Best Management Practices (BMPs) necessary for the proposed Morningside HS development project to comply with the requirements of LID Ordinance and LID Standard Manual. This report will determine the storm water quality design volume (SWQDv) calculated from the 85<sup>th</sup> percentile, 24-hour rain event that is required to be treated and will also discuss the methodology used to arrive at these conclusions.

## **II. Project Description**

The project site consists of 23.2 acres of land on the campus of Morningside High School and is located southwest of the intersection of 104<sup>th</sup> Street and 10<sup>th</sup> Avenue in the City of Inglewood. It is bounded by 104<sup>th</sup> Street to the North, 10<sup>th</sup> Avenue and Monroe Middle School to the East, existing single-family homes to the South, and the remainder of Morningside High School to the West. The project site is currently an open field with some school buildings, and the proposed project will build 573 townhome units, two recreation areas, tot lots / dog parks, and the necessary streets and underground utilities to serve the proposed residential units.

## **III. Low Impact Development (LID) Stormwater Quality Control Measures**

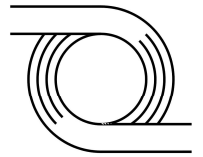
The Low Impact Development (LID) plan is intended to mitigate the hydrological and environmental stresses imposed on the site due to its proposed development. As the site's development typically increases impervious level, so does the stormwater runoff volume and the amount of environmental pollutant produced. The goal of the LID plan is to mitigate these factors by reducing the volume of stormwater and potential pollutants in stormwater runoff to the most reasonable extent possible. This strategy may be accomplished by implementing a variety of Best Management Practices (BMPs) for stormwater quality control measures that are designed to handle the frequent, smaller storm events, or the initial volume of stormwater run-off from a larger storm event (referred as first flush). This study will focus on and follow the procedures for selecting and implementing stormwater quality measures, as recommended in the Los Angeles County Department of Public Works (LACDPW) Low Impact Development Standards Manual.

The proposed Low Impact Development (LID) system will rely on a combination of BMPs to treat the SWQDv from the 85<sup>th</sup> percentile, 24-hour storm. The exact approach will vary depending on the location of the proposed subareas as detailed below:

### **Subarea Type A, B, C and Subarea D, Rec Area West, Rec Area East**

These subareas represent the townhome buildings structures and the recreation areas. Runoff from these areas will be treated by a combination of raised and surface level biofiltration stormwater planters. These planters are designed in accordance with the LA County LID Manual.

- Type A: these are single rows of townhomes that will be treated by stormwater planters. Calculations for stormwater planters with a ponding depth of 18" and 6" are shown in Appendix B. A combination of raised planters with 18" ponding depth and ground level planters with 6" ponding depth is proposed for this site as shown in Figure 1 – Low Impact Development (LID) Plan.
- Type B: these are double rows of townhomes that will drain to the walkway in between and will be treated by stormwater planters located in the walkway in between the two rows of townhomes. Calculations for stormwater planters with a ponding depth of 18" and 6" are shown in Appendix B. A combination of raised planters with 18" ponding depth and ground level planters with 6" ponding depth is proposed for this site as shown in Figure 1 – Low Impact Development (LID) Plan.
- Type C: these are double rows of townhomes that will drain to the walkway in between and will be treated by stormwater planters located in the walkway in between the two rows of townhomes. Calculations for stormwater planters with a ponding depth of 18" and 6" are shown in Appendix B. A combination of raised



planters with 18" ponding depth and ground level planters with 6" ponding depth is proposed for this site as shown in Figure 1 – Low Impact Development (LID) Plan.

- Subarea D: these are townhome groupings that do not fit any of the template types specified above but will be treated by stormwater planters. Calculations for stormwater planters with a ponding depth of 18" and 6" are shown in Appendix B. A combination of raised planters with 18" ponding depth and ground level planters with 6" ponding depth is proposed for this site as shown in Figure 1 – Low Impact Development (LID) Plan.
- Subarea Rec Area West: this subarea represents the clubhouse recreation area to the south of the roundabout. A total stormwater planter area of 540 SF with 6" ponding depth can treat the runoff from this area.
- Subarea Rec Area East: this subarea represents the clubhouse recreation area on the east portion of the project site. A total stormwater planter area of 450 SF with 6" ponding depth can treat the runoff from this area.

#### Driveway Alleys (Subarea E1, E2)

These subareas represent the roads and alleys. Runoff from these areas will be treated by proprietary stormwater planters, such as the Oldcastle Biopod system. Per the calculations in Appendix B, a single 8'x16' Biopod unit can treat a drainage area of 1.68 acres. The total combined area of subareas E1 and E2 is 9.98 acres, so these subareas can be treated by a total of six (6) 8'x16' Biopod units. These units will be split so four units will be located within subarea E1 and two units will be located within subarea E2.

#### **IV. Site Design Calculations**

Current water quality requirements are based on treating a specific volume of stormwater run-off from the project site (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 85<sup>th</sup> percentile, 24-hour rain event as determined by the Los Angeles County 85<sup>th</sup> percentile precipitation isohyetal map

LACDPW developed a hydrologic calculator (HydroCalc) that completes the full MODRAT calculation process and produce the SWQDv volumes and flow rates for single subareas. This report will utilize the results from HydroCalc as a means of determining the stormwater quality design volumes (SWQDv), as summarized in the table below. The proposed site is divided into eight (8) drainage subareas, based on proposed drainage patterns. Refer to *Figure 1 – Low Impact Development (LID) Plan* and *Appendix A – Post-Development 85<sup>th</sup> Percentile Storm HydroCalc Worksheets*.

**TABLE 1 - POST-DEVELOPMENT CONDITIONS**

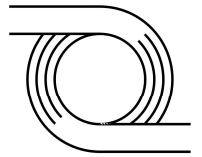
| <b>Drainage Subarea</b> | <b>Area [ac]</b>       | <b><math>Q_{pm}</math> [cfs]</b> | <b>SWQDv [CF]</b>       | <b>Required LID BMP</b>                                                                                   |
|-------------------------|------------------------|----------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------|
| Type A                  | 0.131 (x 18)<br>= 2.36 | 0.06 (x 18) =<br>1.08            | 391 (x 18) =<br>7,038   | 75 SF stormwater planter with 18" ponding depth, OR<br>130 SF stormwater planter with 6" ponding depth    |
| Type B                  | 0.276 (x 15)<br>= 4.14 | 0.13 (x 15) =<br>1.95            | 799 (x 15) =<br>11,985  | 150 SF stormwater planter with 18" ponding depth, OR<br>250 SF stormwater planter with 6" ponding depth   |
| Type C                  | 0.355 (x 7) =<br>2.49  | 0.18 (x 7) =<br>1.26             | 1,090 (x 7) =<br>10,853 | 200 SF stormwater planter with 18" ponding depth, OR<br>340 SF stormwater planter with 6" ponding depth   |
| Subarea D               | 2.82                   | 1.40                             | 8,408                   | 1560 SF stormwater planter with 18" ponding depth, OR<br>2600 SF stormwater planter with 6" ponding depth |
| Rec Area West           | 0.77                   | 0.17                             | 1,640                   | 540 SF stormwater planter with 6" ponding depth                                                           |
| Rec Area East           | 0.66                   | 0.14                             | 1,406                   | 450 SF stormwater planter with 6" ponding depth                                                           |
| Subarea E1              | 6.60                   | 1.16                             | 19,098                  | Four (4) 8'x16' Biopod Planters                                                                           |
| Subarea E2              | 3.38                   | 0.60                             | 9,780                   | Two (2) 8'x16' Biopod Planters                                                                            |
| <b>Totals</b>           | <b>23.2</b>            | <b>7.8</b>                       | <b>70,208</b>           |                                                                                                           |

## **V. Summary and Conclusion**

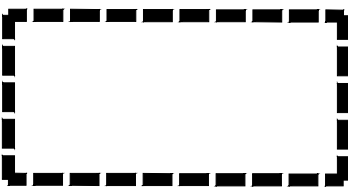
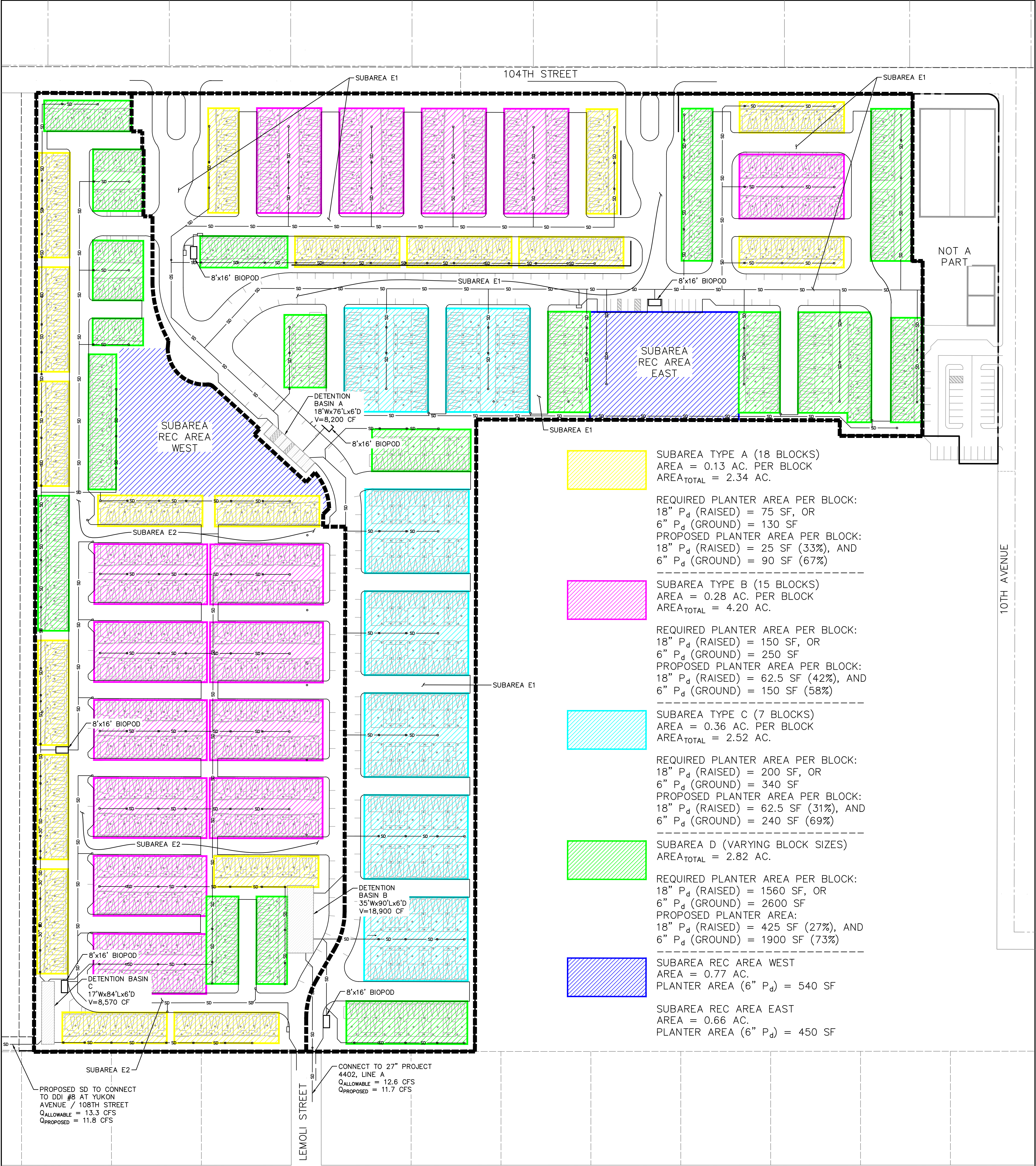
The proposed low impact development (LID) system stormwater quality control measures are adequately designed and sized to treat the proposed runoff from the 85<sup>th</sup> Percentile storm event.

## **VI. References**

County of Los Angeles Department of Public Works. (2014). *Low Impact Development Standards Manual*. Los Angeles.



# Figures



SUBAREA E1, E2 BOUNDARY (OLDCASTLE BIOPOD BMPs)

E1: 6.60 AC  
E2: 3.38 AC  
TOTAL = 9.98 AC  
MAX AREA TREATED BY 8x16 BIOPOD = 1.68 AC  
9.98 AC / 1.68 AC = 5.9  
SIX 8x16 BIOPOD UNITS REQUIRED

ALLOWABLE HYDROLOGY

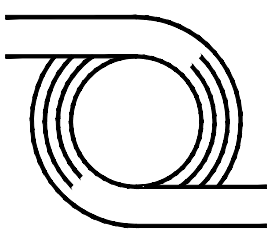
| SUBAREA* | ACREAGE | ALLOWABLE RATE [CFS/AC] | ALLOWABLE DDI #8 [CFS] | ALLOWABLE PROJECT 4402 [CFS] |
|----------|---------|-------------------------|------------------------|------------------------------|
| 220T     | 2.94    | 0.75                    | 2.21                   |                              |
| 221T     | 11.12   | 1.00                    | 11.12                  |                              |
| 233U     | 9.18    | 1.37                    |                        | 12.58                        |
| TOTALS   | 23.2    |                         | 13.3                   | 12.6                         |

\*SUBAREA NAMING BASED ON INFORMATION REQUEST FORM FROM LA COUNTY.

DETENTION BASIN SUMMARY

| DETENTION BASIN | INFLOW Q <sub>90</sub> [CFS] | DETENTION BASIN SIZE [CF] | BASIN OUTLET SIZE [IN] | POST-DETENTION OUTFLOW [CFS] | DESTINATION  |
|-----------------|------------------------------|---------------------------|------------------------|------------------------------|--------------|
| A               | 18.00                        | 8,200                     | 15                     | 12.86                        | BASIN B      |
| B               | 18.32                        | 18,900                    | 15                     | 11.65                        | PROJECT 4402 |
| C               | 16.40                        | 8,570                     | 15                     | 11.83                        | DDI #8       |

FIGURE 1

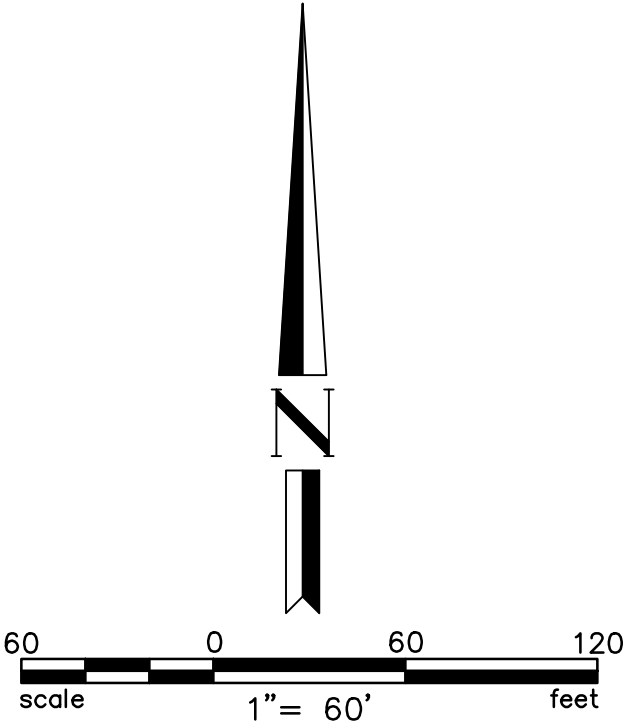


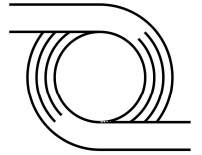
D & D ENGINEERING, INC.  
INGLEWOOD, CA 90302  
Phone: 424-351-6800

MORNINGSIDE HIGH SCHOOL DEVELOPMENT

LOW IMPACT DEVELOPMENT (LID) PLAN

SCALE: AS SHOWN  
DATE: 11/1/2023  
SHT NO.: 05 OF 05





# Appendix A

## Peak Flow Hydrologic Analysis

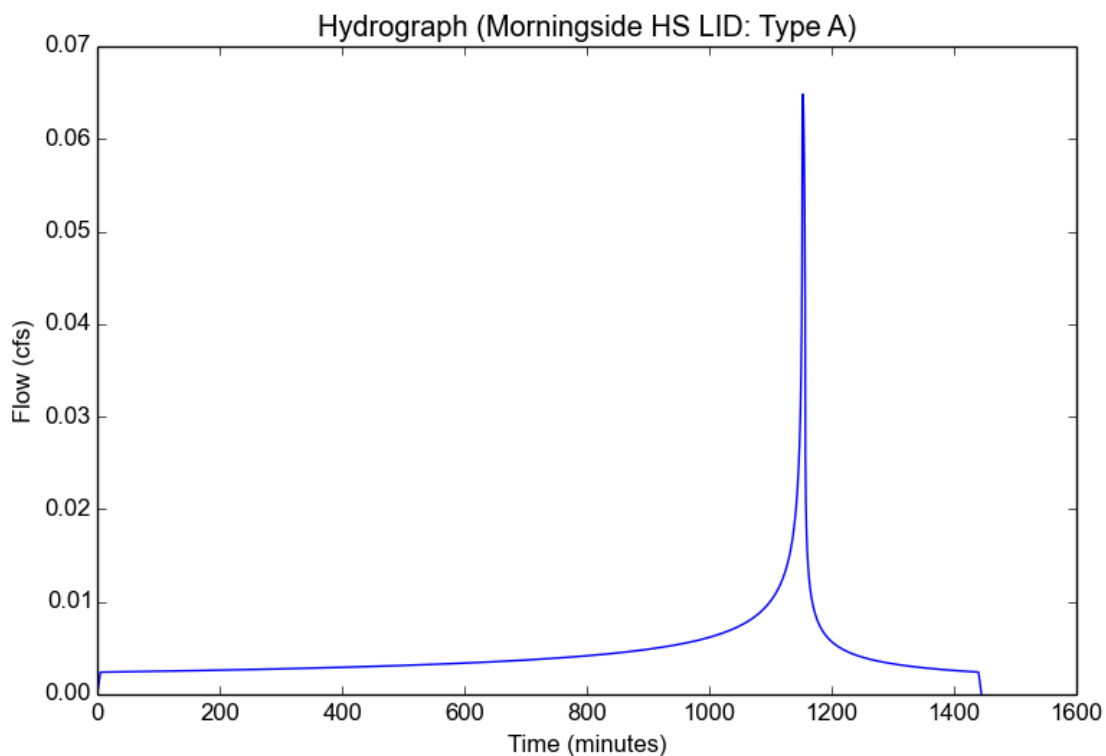
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Type A                |
| Area (ac)                           | 0.131                 |
| Flow Path Length (ft)               | 56.0                  |
| Flow Path Slope (vft/hft)           | 0.04                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.89                  |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |          |
|-----------------------------------------------------|----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02     |
| Peak Intensity (in/hr)                              | 0.6086   |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1124   |
| Developed Runoff Coefficient (Cd)                   | 0.8134   |
| Time of Concentration (min)                         | 5.0      |
| Clear Peak Flow Rate (cfs)                          | 0.0648   |
| Burned Peak Flow Rate (cfs)                         | 0.0648   |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.009    |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 390.6039 |



## Peak Flow Hydrologic Analysis

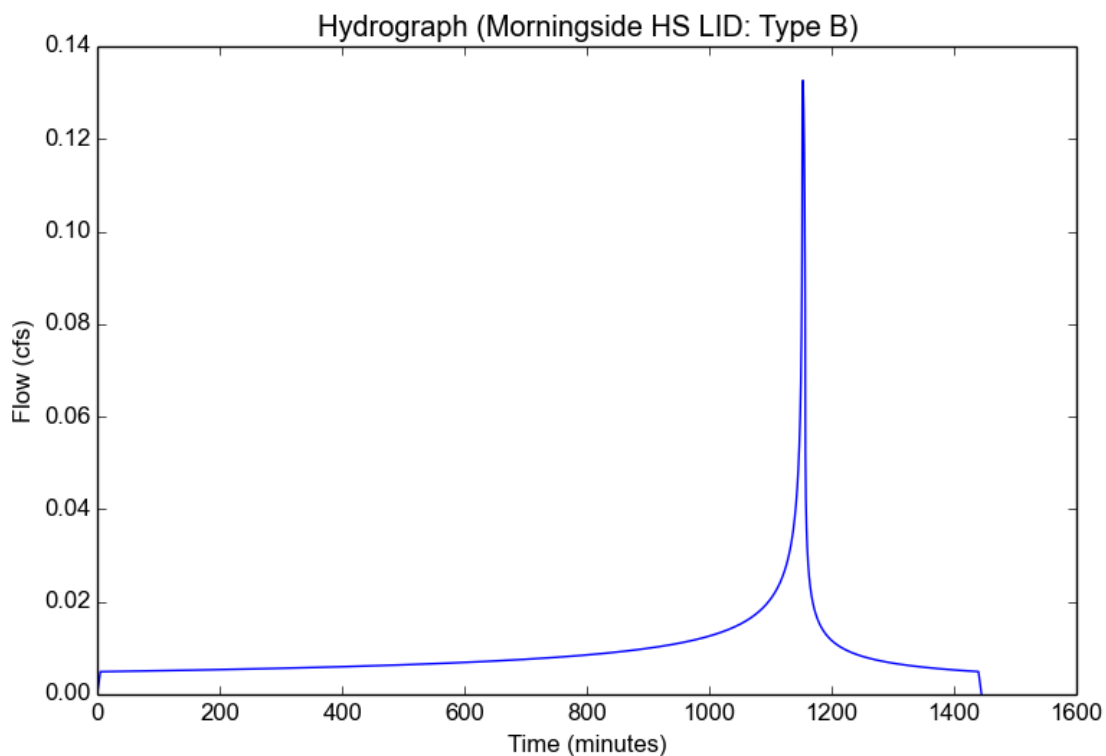
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Type B                |
| Area (ac)                           | 0.276                 |
| Flow Path Length (ft)               | 56.0                  |
| Flow Path Slope (vft/hft)           | 0.04                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.86                  |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |          |
|-----------------------------------------------------|----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02     |
| Peak Intensity (in/hr)                              | 0.6086   |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1124   |
| Developed Runoff Coefficient (Cd)                   | 0.7897   |
| Time of Concentration (min)                         | 5.0      |
| Clear Peak Flow Rate (cfs)                          | 0.1326   |
| Burned Peak Flow Rate (cfs)                         | 0.1326   |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.0183   |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 798.6316 |



## Peak Flow Hydrologic Analysis

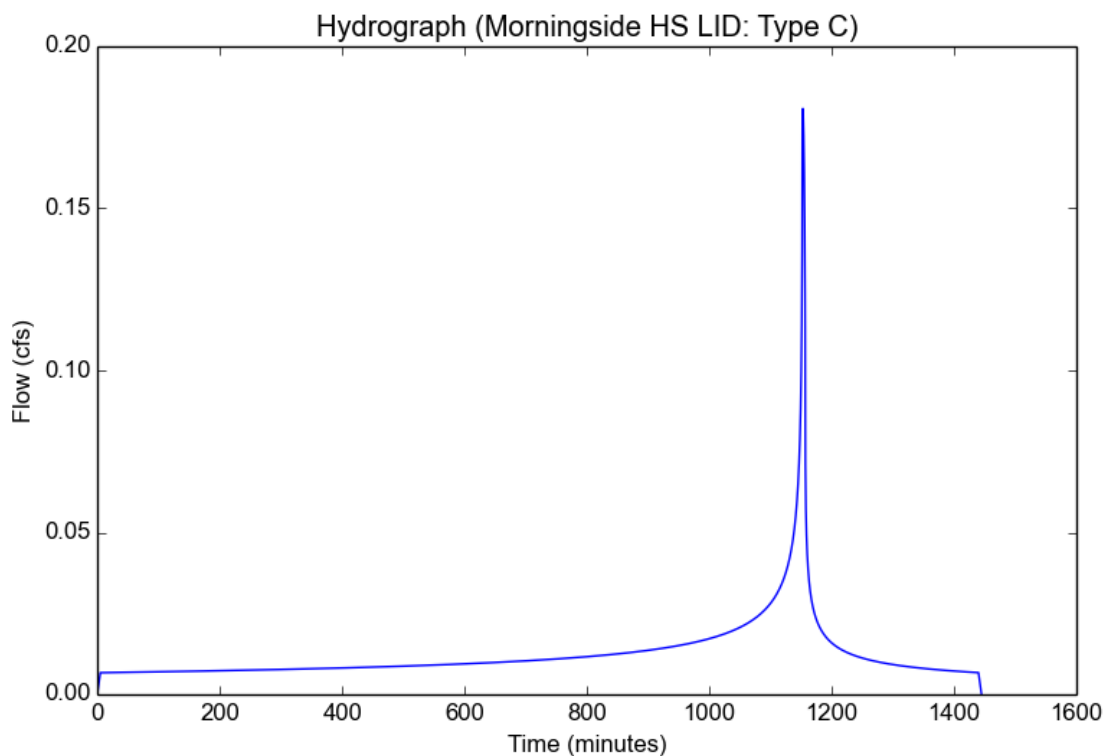
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Type C                |
| Area (ac)                           | 0.355                 |
| Flow Path Length (ft)               | 56.0                  |
| Flow Path Slope (vft/hft)           | 0.04                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.92                  |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |           |
|-----------------------------------------------------|-----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02      |
| Peak Intensity (in/hr)                              | 0.6086    |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1124    |
| Developed Runoff Coefficient (Cd)                   | 0.837     |
| Time of Concentration (min)                         | 5.0       |
| Clear Peak Flow Rate (cfs)                          | 0.1808    |
| Burned Peak Flow Rate (cfs)                         | 0.1808    |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.025     |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 1089.7878 |



## Peak Flow Hydrologic Analysis

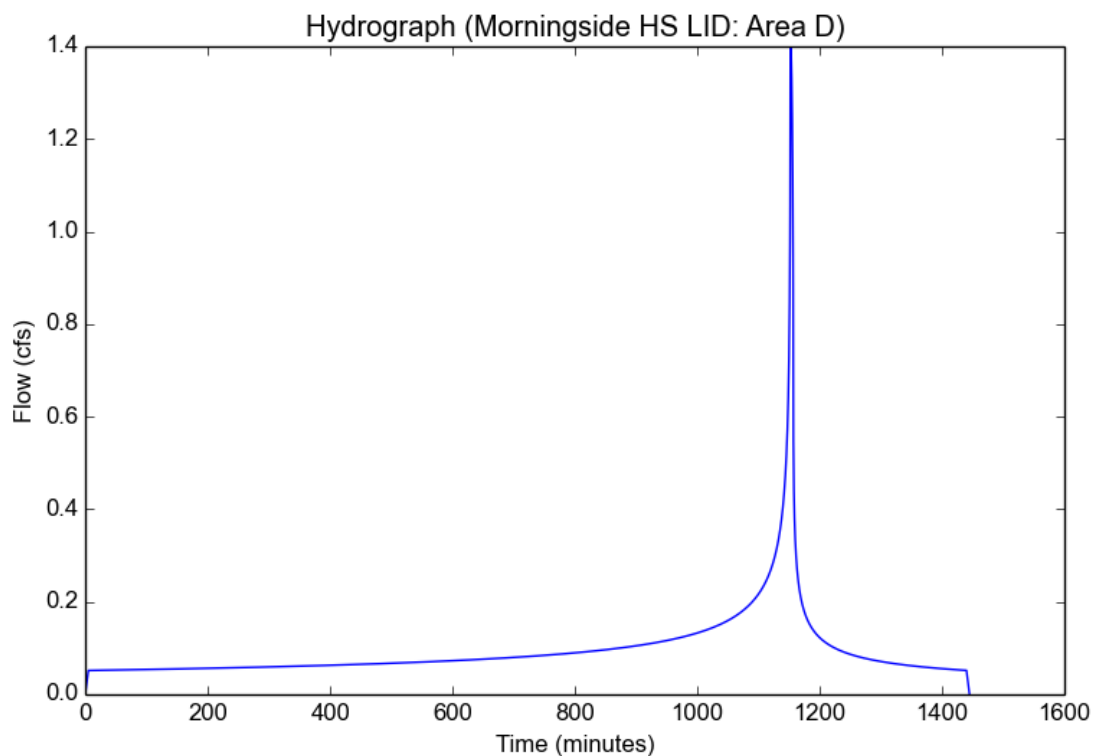
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Area D                |
| Area (ac)                           | 2.82                  |
| Flow Path Length (ft)               | 56.0                  |
| Flow Path Slope (vft/hft)           | 0.04                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.89                  |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |           |
|-----------------------------------------------------|-----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02      |
| Peak Intensity (in/hr)                              | 0.6086    |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1124    |
| Developed Runoff Coefficient (Cd)                   | 0.8134    |
| Time of Concentration (min)                         | 5.0       |
| Clear Peak Flow Rate (cfs)                          | 1.3958    |
| Burned Peak Flow Rate (cfs)                         | 1.3958    |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.193     |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 8408.4188 |



## Peak Flow Hydrologic Analysis

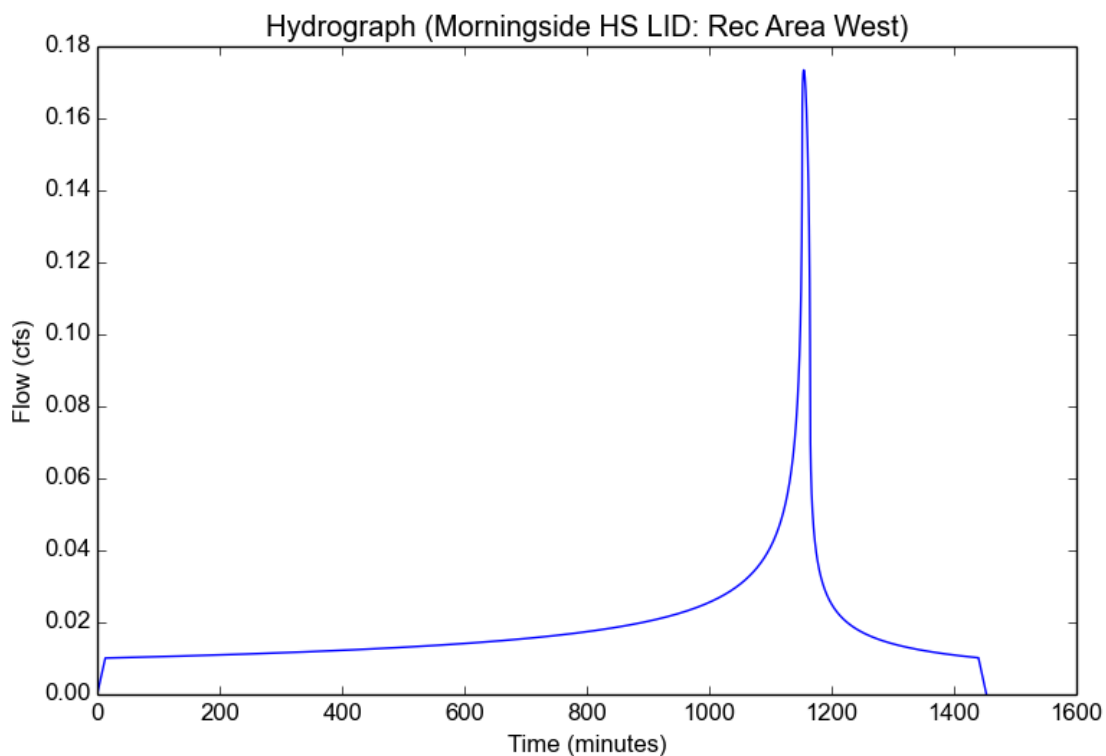
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Rec Area West         |
| Area (ac)                           | 0.77                  |
| Flow Path Length (ft)               | 120.0                 |
| Flow Path Slope (vft/hft)           | 0.01                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.6                   |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |           |
|-----------------------------------------------------|-----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02      |
| Peak Intensity (in/hr)                              | 0.3884    |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1       |
| Developed Runoff Coefficient (Cd)                   | 0.58      |
| Time of Concentration (min)                         | 13.0      |
| Clear Peak Flow Rate (cfs)                          | 0.1735    |
| Burned Peak Flow Rate (cfs)                         | 0.1735    |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.0376    |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 1639.9187 |



## Peak Flow Hydrologic Analysis

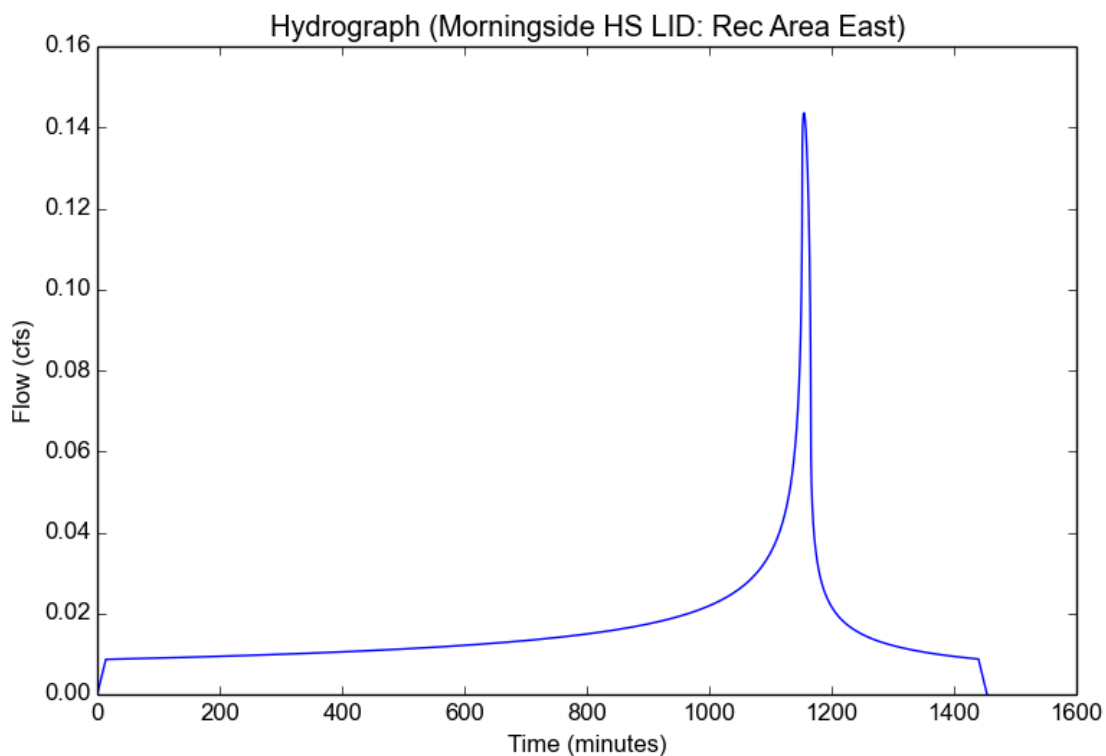
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Rec Area East         |
| Area (ac)                           | 0.66                  |
| Flow Path Length (ft)               | 140.0                 |
| Flow Path Slope (vft/hft)           | 0.01                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.6                   |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |           |
|-----------------------------------------------------|-----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02      |
| Peak Intensity (in/hr)                              | 0.3751    |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1       |
| Developed Runoff Coefficient (Cd)                   | 0.58      |
| Time of Concentration (min)                         | 14.0      |
| Clear Peak Flow Rate (cfs)                          | 0.1436    |
| Burned Peak Flow Rate (cfs)                         | 0.1436    |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.0323    |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 1405.6451 |



## Peak Flow Hydrologic Analysis

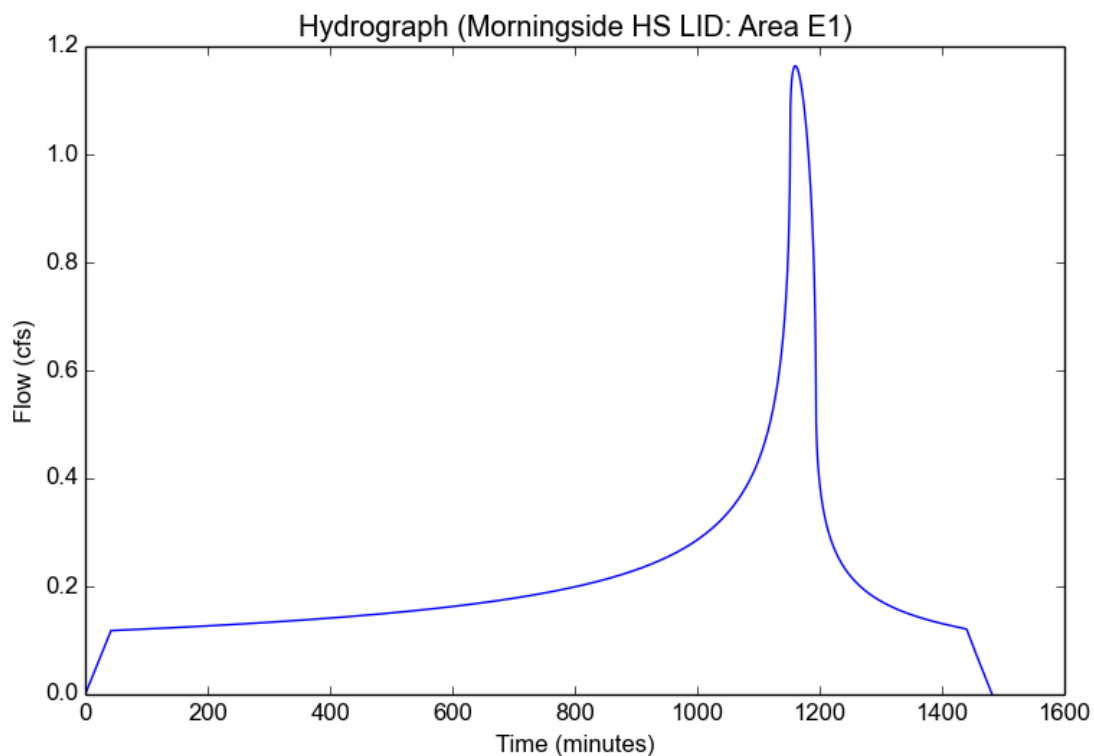
File location: B:/22009/Eng/22009/Reports/LID/Figures, Tables, & Exhibits/Morningside HS LID Report.pdf  
Version: HydroCalc 1.0.3

### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Area E1               |
| Area (ac)                           | 6.6                   |
| Flow Path Length (ft)               | 1100.0                |
| Flow Path Slope (vft/hft)           | 0.01                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.86                  |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

|                                                     |            |
|-----------------------------------------------------|------------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02       |
| Peak Intensity (in/hr)                              | 0.2238     |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1        |
| Developed Runoff Coefficient (Cd)                   | 0.788      |
| Time of Concentration (min)                         | 42.0       |
| Clear Peak Flow Rate (cfs)                          | 1.164      |
| Burned Peak Flow Rate (cfs)                         | 1.164      |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.4384     |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 19097.7708 |



## Peak Flow Hydrologic Analysis

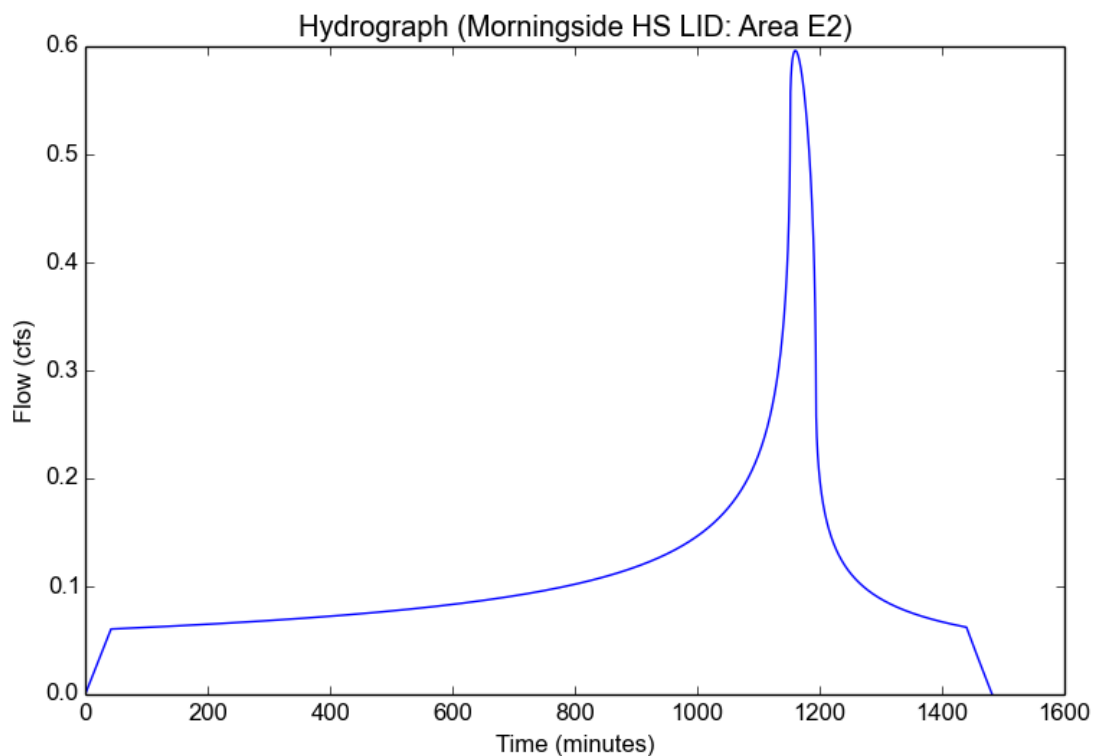
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Version: HydroCalc 1.0.3

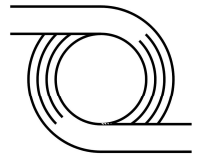
### Input Parameters

|                                     |                       |
|-------------------------------------|-----------------------|
| Project Name                        | Morningside HS LID    |
| Subarea ID                          | Area E2               |
| Area (ac)                           | 3.38                  |
| Flow Path Length (ft)               | 1100.0                |
| Flow Path Slope (vft/hft)           | 0.01                  |
| 85th Percentile Rainfall Depth (in) | 1.02                  |
| Percent Impervious                  | 0.86                  |
| Soil Type                           | 13                    |
| Design Storm Frequency              | 85th percentile storm |
| Fire Factor                         | 0                     |
| LID                                 | True                  |

### Output Results

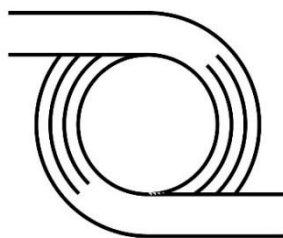
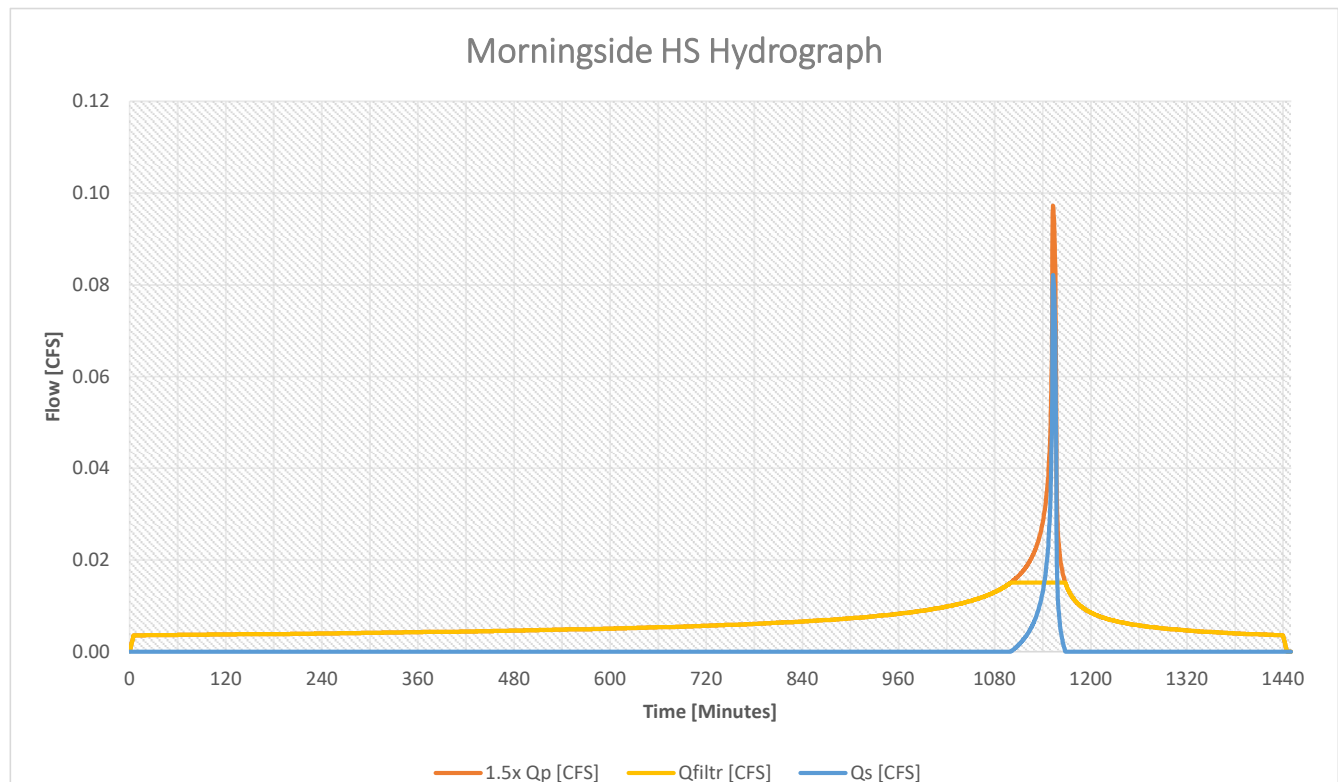
|                                                     |           |
|-----------------------------------------------------|-----------|
| Modeled (85th percentile storm) Rainfall Depth (in) | 1.02      |
| Peak Intensity (in/hr)                              | 0.2238    |
| Undeveloped Runoff Coefficient (Cu)                 | 0.1       |
| Developed Runoff Coefficient (Cd)                   | 0.788     |
| Time of Concentration (min)                         | 42.0      |
| Clear Peak Flow Rate (cfs)                          | 0.5961    |
| Burned Peak Flow Rate (cfs)                         | 0.5961    |
| 24-Hr Clear Runoff Volume (ac-ft)                   | 0.2245    |
| 24-Hr Clear Runoff Volume (cu-ft)                   | 9780.3735 |





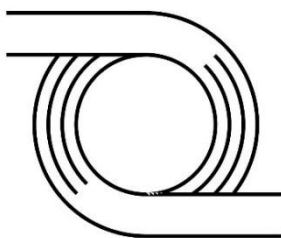
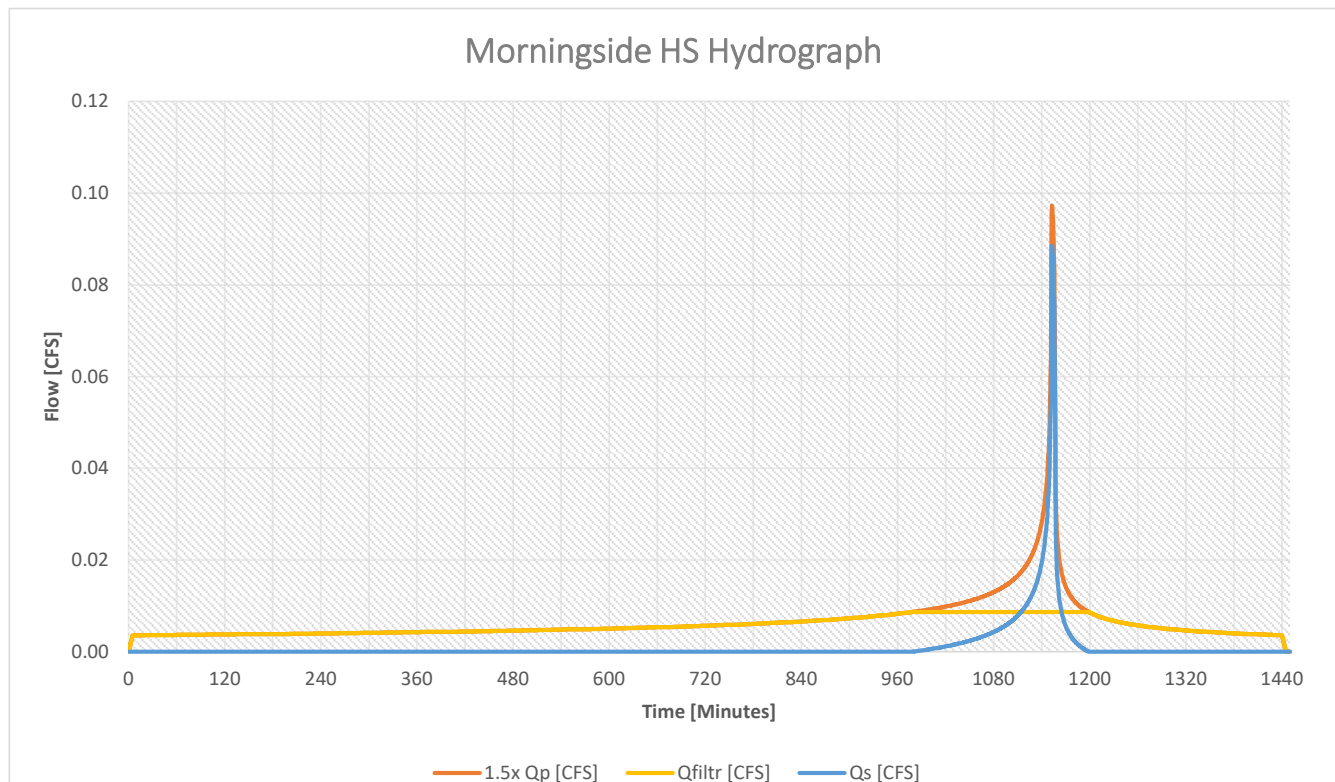
# Appendix B

| Morningside HS - Subarea Type A |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 0.13  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 0.065 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 0.098 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 391   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 587   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 130   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.015 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 6     | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 65    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 55    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 6     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



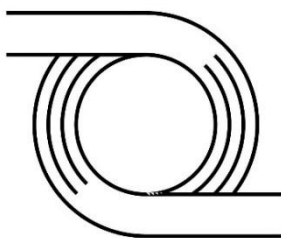
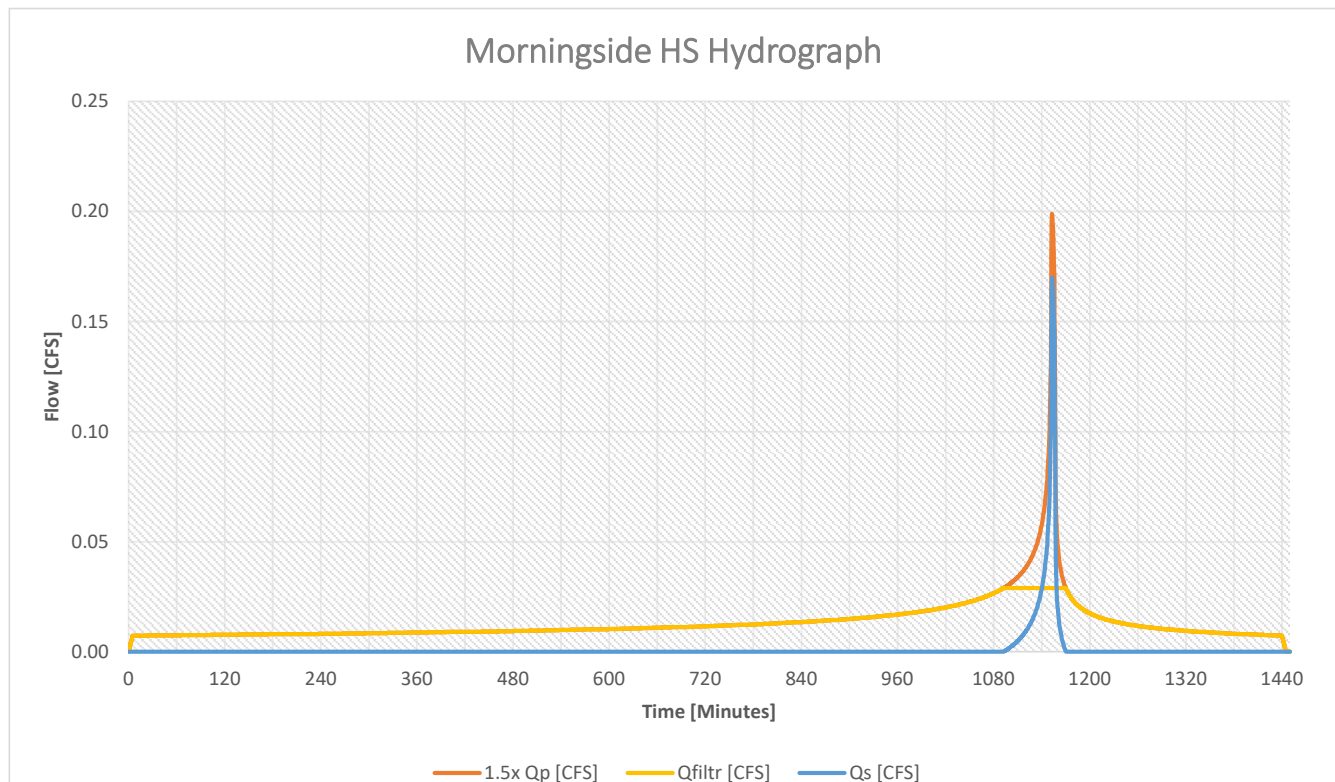
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| Morningside HS - Subarea Type A |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 0.13  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 0.065 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 0.098 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 391   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 587   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 75    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.009 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 18    | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 113   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 102   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 17    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



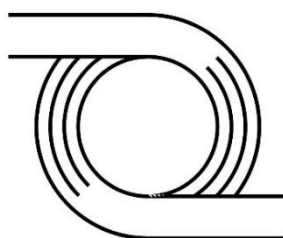
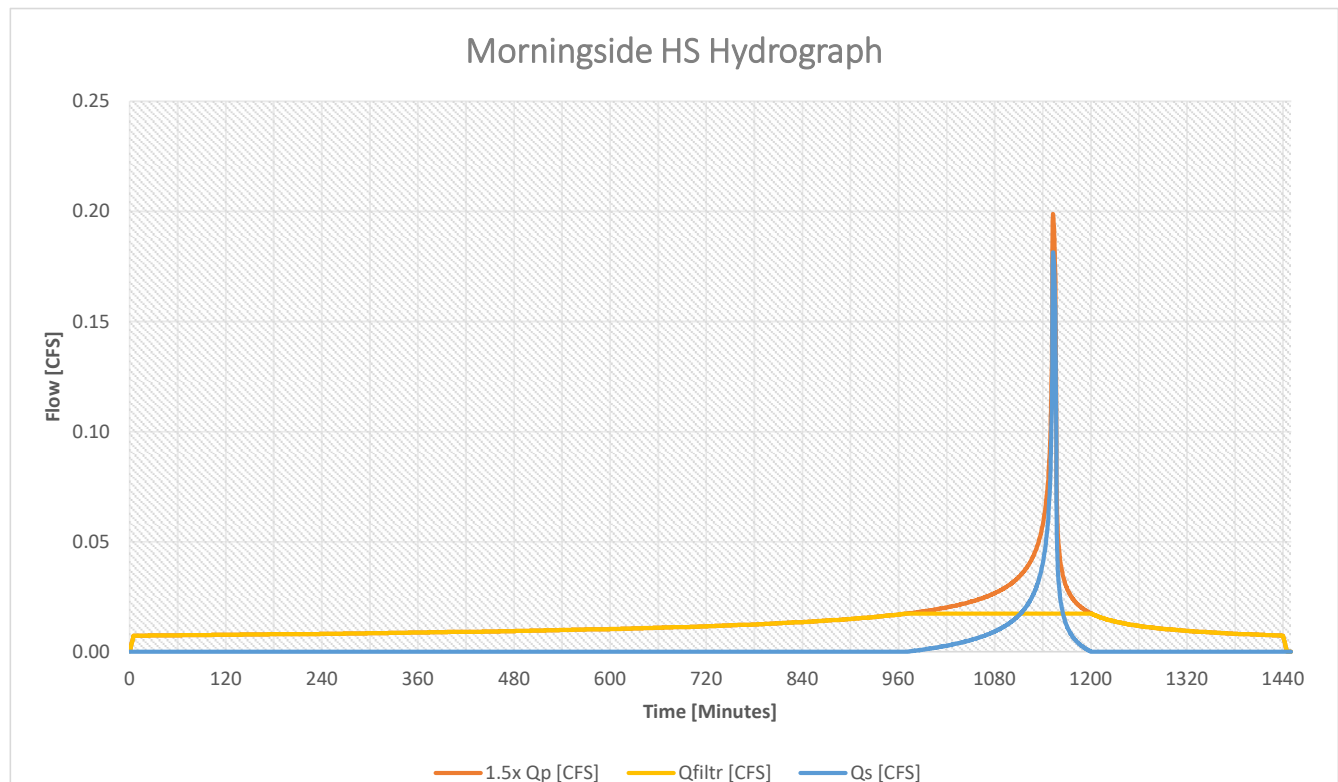
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| Morningside HS - Subarea Type B |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 0.28  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 0.130 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 0.195 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 799   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 1199  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 250   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.029 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 6     | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 125   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 120   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 6     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



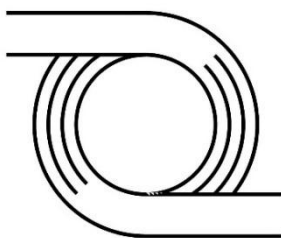
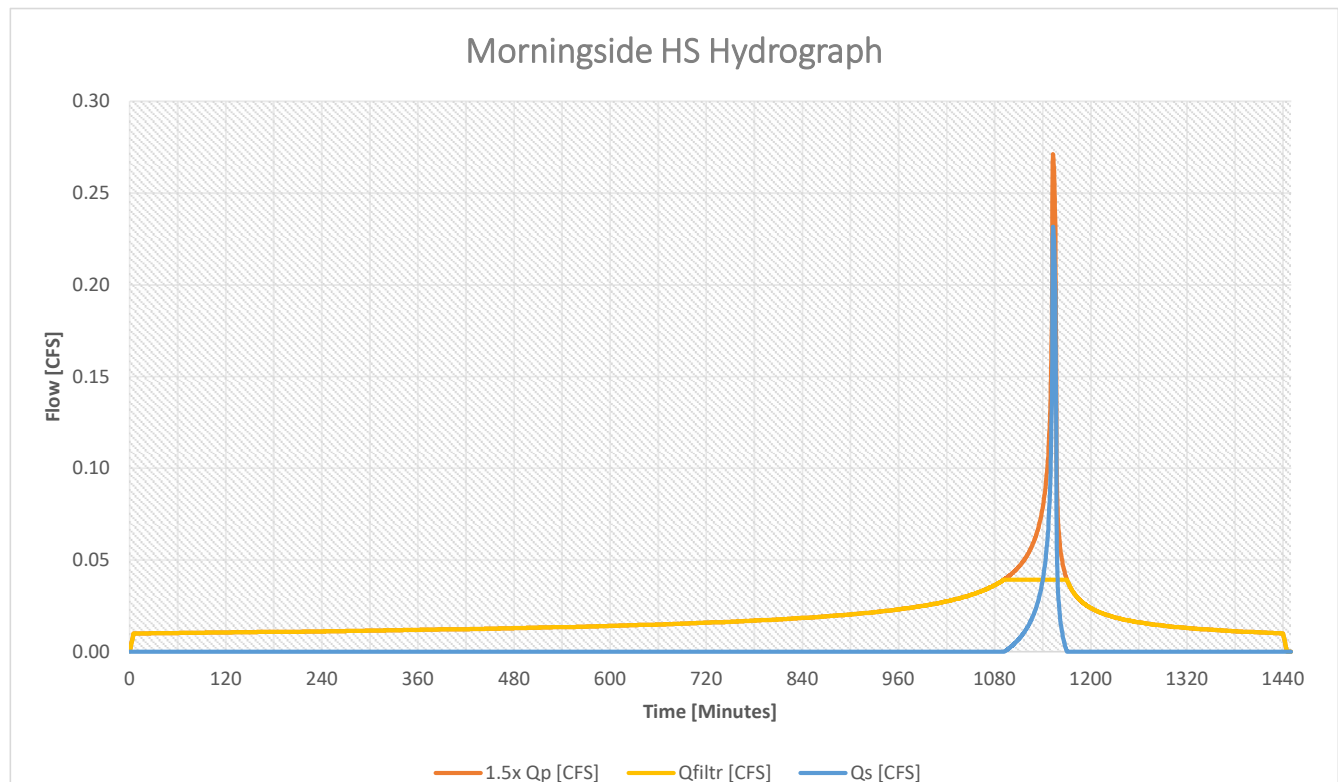
D & D ENGINEERING, INC.

| Morningside HS - Subarea Type B |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 0.28  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 0.130 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 0.195 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 799   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 1199  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 150   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.017 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 18    | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 225   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 214   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 18    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



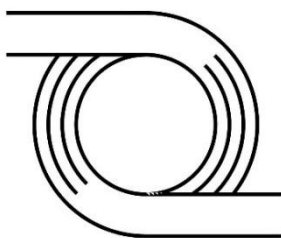
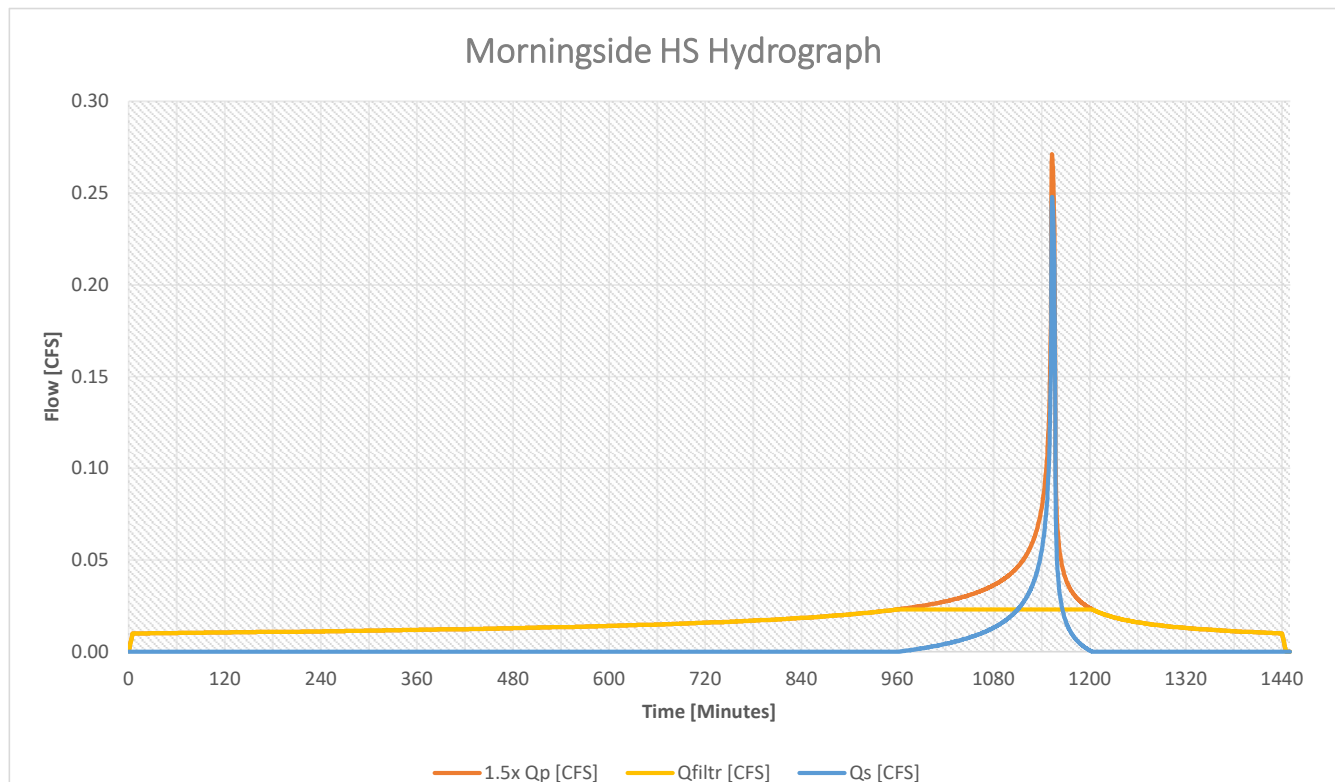
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| Morningside HS - Subarea Type C |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 0.36  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 0.180 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 0.270 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 1090  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 1635  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 340   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.039 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 6     | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 170   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 164   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 6     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



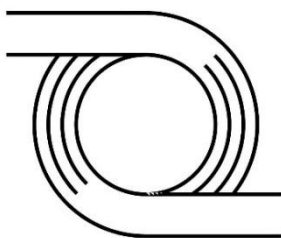
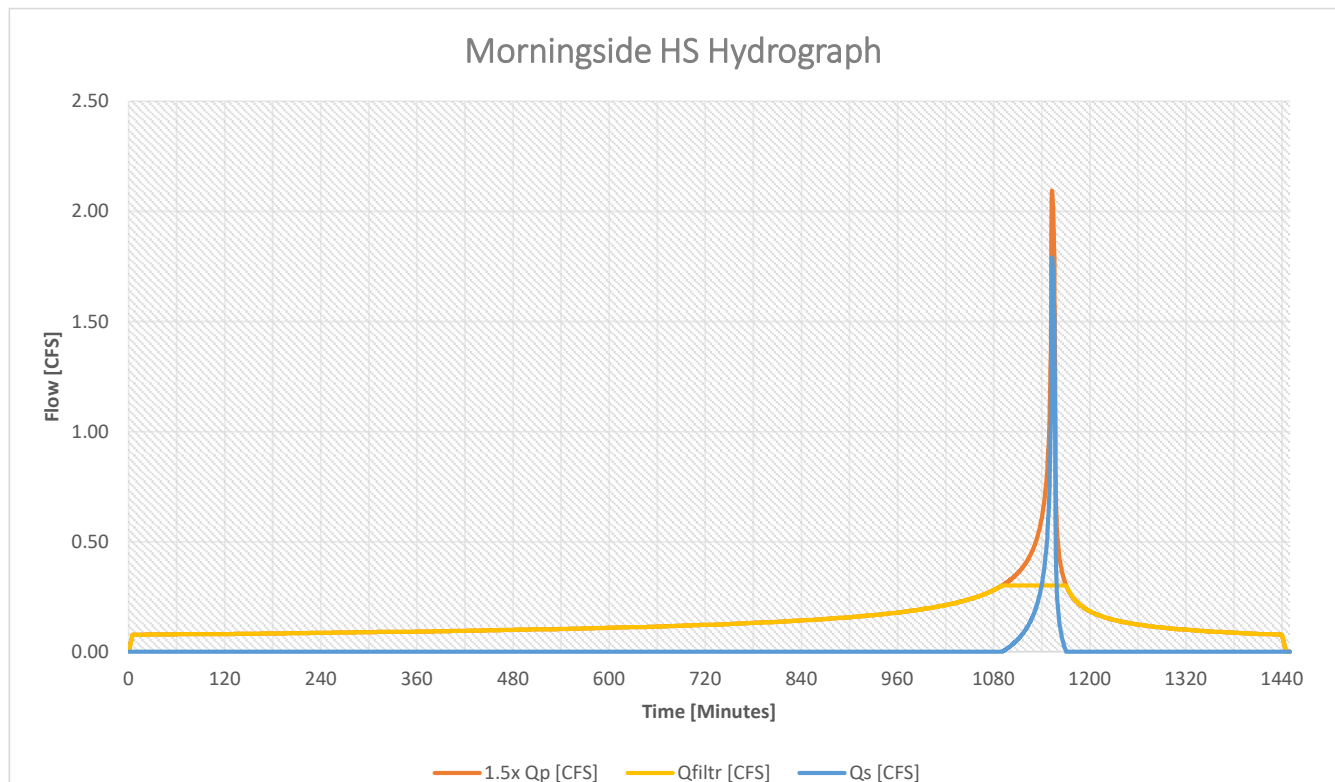
D & D ENGINEERING, INC.

| Morningside HS - Subarea Type C |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 0.36  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 0.180 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 0.270 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 1090  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 1635  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 200   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.023 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 18    | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 300   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 299   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 18    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



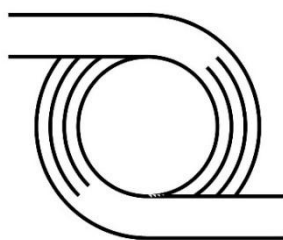
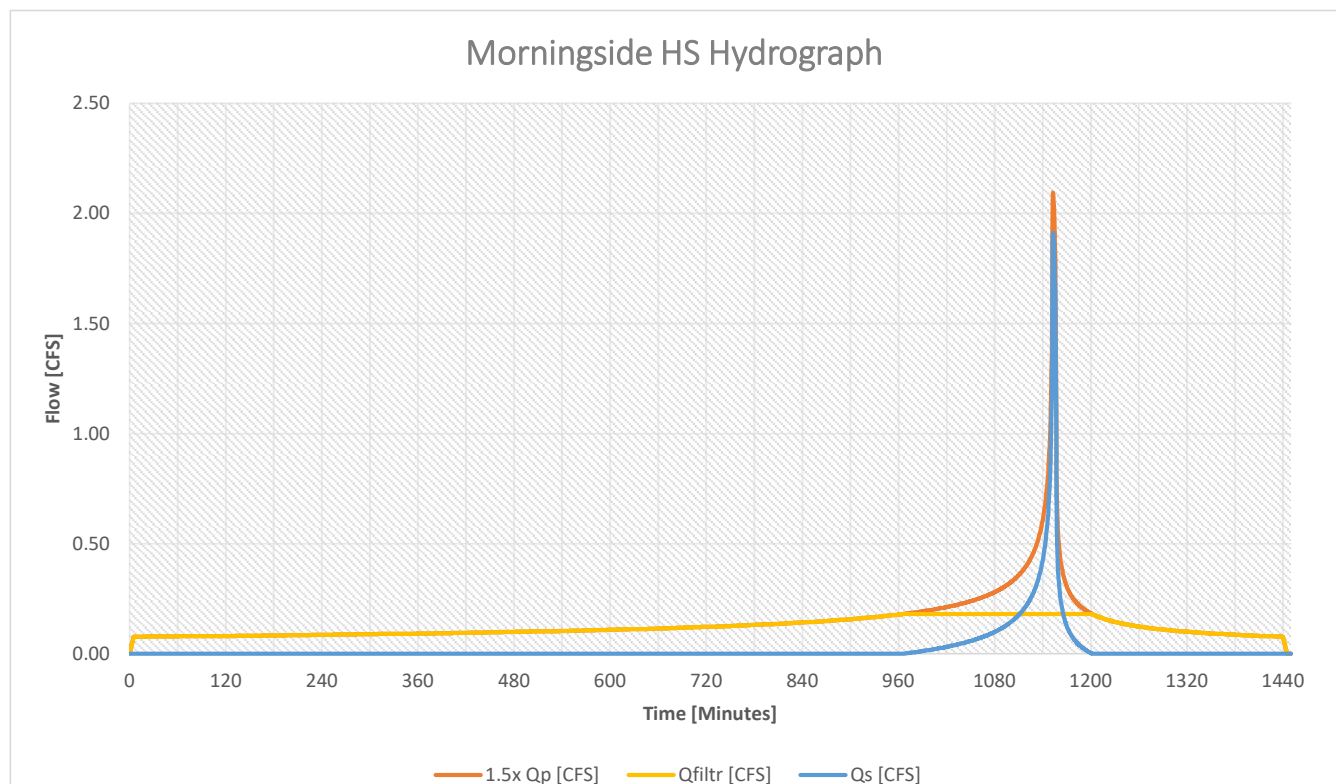
D & D ENGINEERING, INC.

| Morningside HS - Subarea Area D |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 2.82  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 1.396 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 2.094 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 8408  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 12612 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 2600  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.301 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 6     | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 1300  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 1281  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 6     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



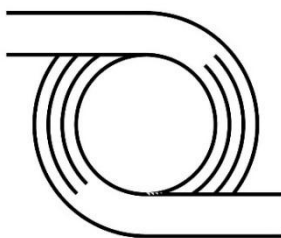
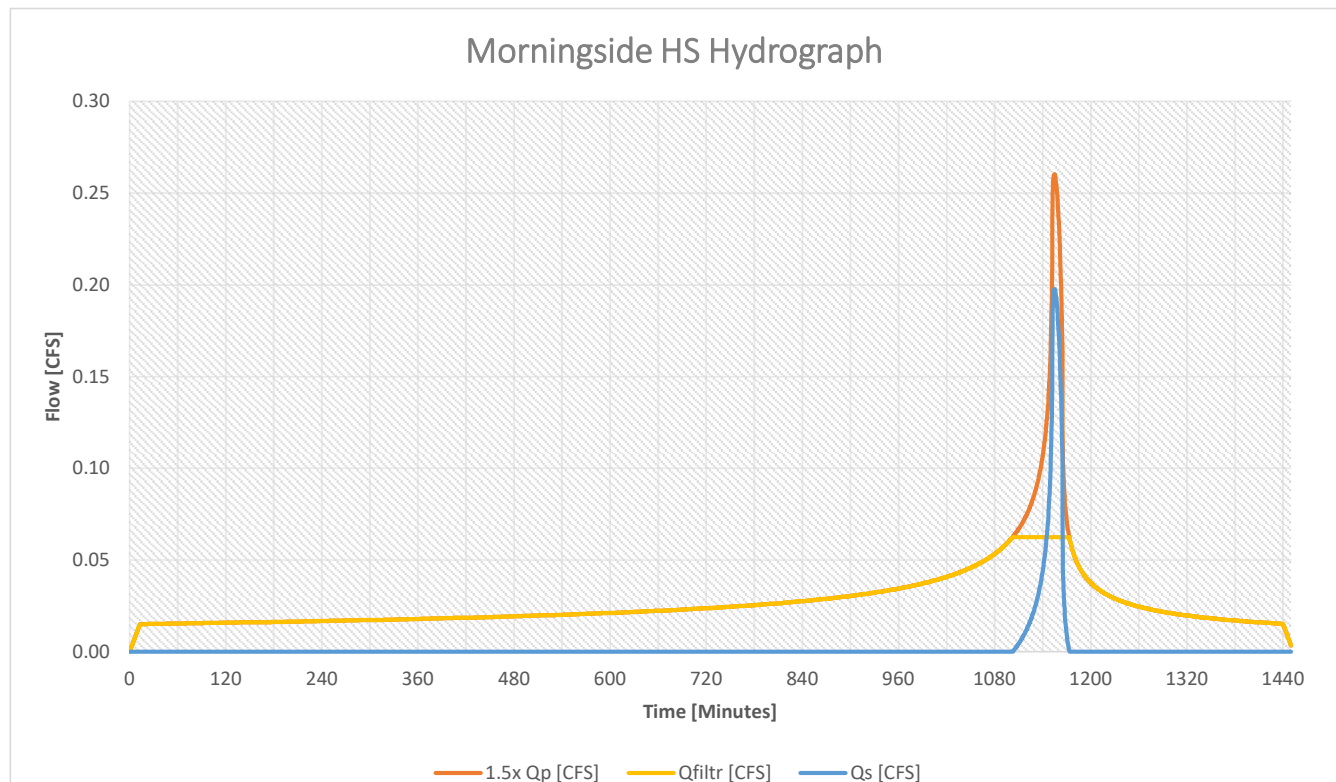
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| Morningside HS - Subarea Area D |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Townhomes                       |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =            | 2.82  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =      | 1.396 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =               | 2.094 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =     | 8408  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =              | 12612 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =          | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =             | 1560  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =             | 0.181 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =    | 18    | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =         | 2340  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =         | 2280  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =       | 18    |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



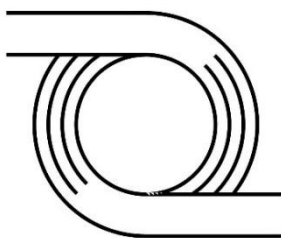
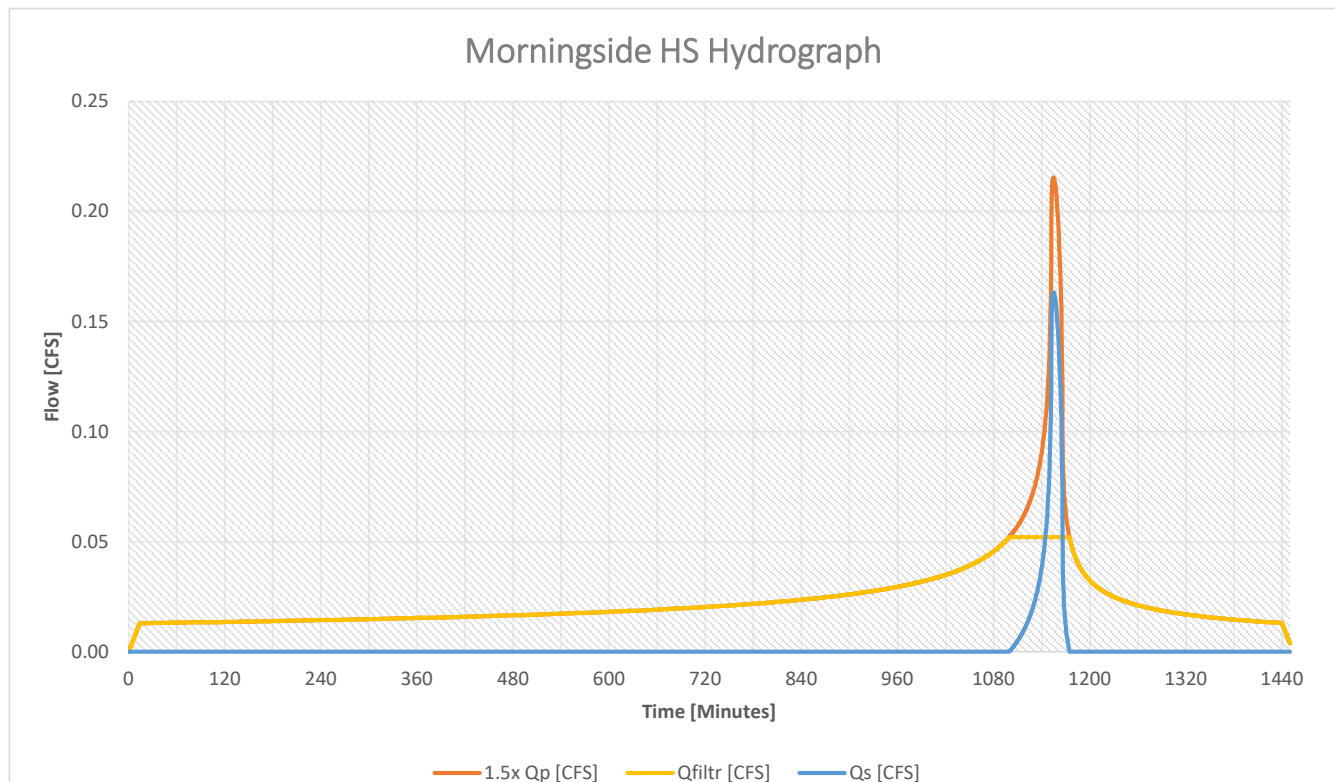
D & D ENGINEERING, INC.

| Morningside HS - Subarea Rec Area West |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|----------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Clubhouse / Recreation Area            |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =                   | 0.96  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =             | 0.216 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =                      | 0.324 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =            | 2045  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =                     | 3068  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =                 | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =                    | 540   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =                    | 0.063 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =           | 6     | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =                | 270   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =                | 232   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =              | 6     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



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| Morningside HS - Subarea Rec Area East |       | Printed:                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10/25/2023 |
|----------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Clubhouse / Recreation Area            |       | Biofiltration Planter                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| Drainage Area [AC] =                   | 0.66  | *Drainage Area, Qpm, and SWQVD for the tributary subarea(s) are calculated with HydroCalc software using the 85th percentile storm data as per LA County LID Manual. Per the County LID Manual, the treatment volume is multiplied by a factor of 1.5x for biofiltration calculations                                                                                                                                                            |            |
| Qpm from HydroCalc [CFS] =             | 0.144 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qpm x 1.5 [CFS] =                      | 0.216 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV from HydroCalc [CF] =            | 1406  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| SWQDV x 1.5 [CF] =                     | 2109  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Infiltration [IN/HR] =                 | 5     | *Per LA County guidelines, the planter can provide filtration during the storm event provided that the filtration rate is at least 5 inches per hour.                                                                                                                                                                                                                                                                                            |            |
| Planter Area [SF] =                    | 450   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Qfiltration [CFS] =                    | 0.052 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Planter Ponding Depth [IN] =           | 6     | *The hydrograph calculated using HydroCalc and multiplied by a factor of 1.5x to determine the above ground storage required to treat the required mitigation volume, taking into account the filtration that happens during the storm event, per the filtration rate above. The storage volume is then used to calculate the minimum ponding depth that the planter should have, and compared to the actual storage and ponding depth provided. |            |
| Storage Provided [CF] =                | 225   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Storage Required [CF] =                | 205   |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| Ponding Depth Req. [IN] =              | 6     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |



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**BIOPOD™ SYSTEM WITH STORMMIX™ MEDIA**

**Los Angeles County Equivalency Sizing**

**Project Information**

Date: 10/24/2023

|                   |                 |
|-------------------|-----------------|
| Project Name:     | Morningside HS  |
| Project Location: | Inglewood, CA   |
| Catchment Name:   | Subareas E1, E2 |

**Required Site Specific Constraints**

|                         |          |             |
|-------------------------|----------|-------------|
| Drainage Area to BioPod | 1.68     | Acres       |
| Percent Impervious      | 86       | %           |
| Time of Concentration   | 42.0     | minutes     |
| Precipitation Depth*    | 1.02     | inches      |
| Site Infiltration Rate  | 0        | inches/hour |
| Width of BioPod         | 8        | feet        |
| Bypass of BioPod        | Internal |             |
| Type of BioPod          | Tree     |             |
| Type of BioPod Inlet    | Side     |             |
| Site-Specific SWQDv     | 4800     | CF          |

**BioPod Sizing Results - Equivalency Analysis Option A (w/Supplemental Storage)**

|                                |                 |                              |
|--------------------------------|-----------------|------------------------------|
| Runoff Coefficient             | 0.788           |                              |
| Scaling Factor                 | 1.0             |                              |
| Design Precipitation Intensity | 0.31            | inches/hour                  |
| Design Flow Rate               | 0.418           | CFS                          |
| Size BioPod                    | <b>8' X 16'</b> | <b>MODEL: BPT - 816 - SI</b> |
| Size Supplemental Storage**    | 0               | CF                           |

**Option B Required. Supplemental Storage infeasible due to inability to infiltrate.**

**BioPod Sizing Results - Equivalency Analysis Option B (w/o Supplemental Storage)**

|                                   |                 |                              |
|-----------------------------------|-----------------|------------------------------|
| Runoff Coefficient                | 0.788           |                              |
| Scaling Factor                    | 1.0             |                              |
| Design Precipitation Intensity*** | 0.326           | inches/hour                  |
| Design Flow Rate                  | 0.439           | CFS                          |
| Size BioPod                       | <b>8' X 16'</b> | <b>MODEL: BPT - 816 - SI</b> |

**Additional Notes**

\*Determined from LA County 85th percentile precipitation isohyetal map. If value is less than 0.75 in, use 0.75 in (MS4 Permit).

\*\*Supplemental Storage will be 2' in depth. Alternative depths considered - consult Oldcastle Territory Manager for assistance.

\*\*\*Design Precipitation Intensity based on infiltration rate 0-0.15 in/hr. Higher precipitation rates must consider infiltration.

