

Stormwater Calculations

**Laugle Industrial Park
City of Franklin
Johnson County**

**Submitted:
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By:



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Section 1: Stormwater Calculations Summary

Introduction

This report shall identify the existing and proposed drainage aspects associated with the proposed Laugle Industrial Park development. The proposed development contains ± 36 acres of land located at the northeast corner of Graham Road and Earlywood Drive in the City of Franklin (see Exhibit 1: Location Map). The overall ± 36 acres shall be platted into one ± 11 acre lot and a future ± 23 acre block for future development.

Pre-Development Conditions

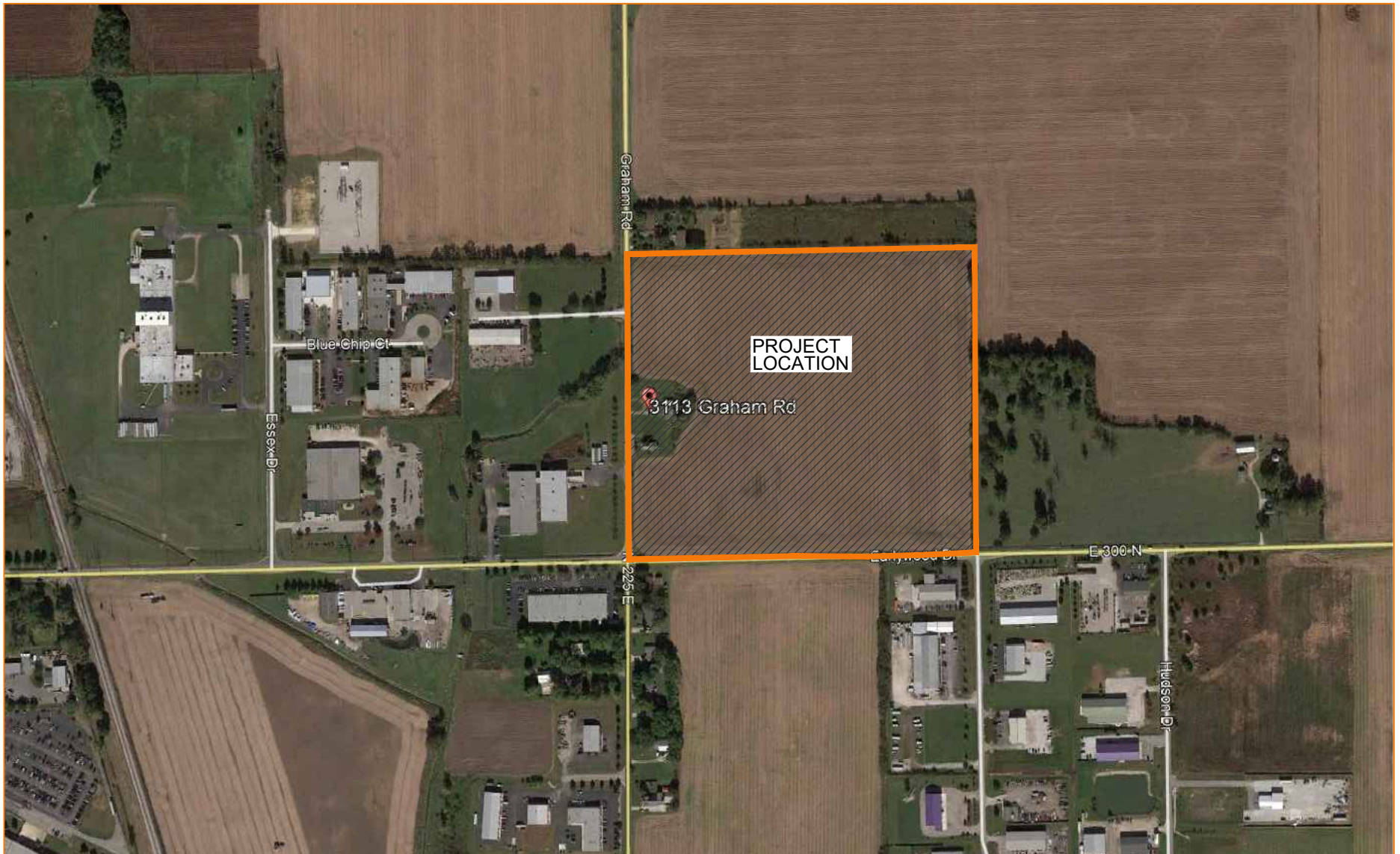
The project site is situated on ± 33.5 acres that currently is made up of cultivated fields. The current topography creates 2 onsite watersheds. A ± 22 acre onsite basin conveys runoff to the southeast and drains through a 15" CMP culvert under Earlywood Drive (C.R. 300 N.) The remaining ± 11.5 acre onsite watershed conveys drainage westerly towards Graham Road and to Canary Creek. A 20.39 acre offsite watershed conveys runoff through the project site and to the aforementioned culvert (see Exhibit 2: Pre-Development Watershed Map). The existing culvert conveys drainage under Earlywood Drive, and discharges into an existing swale, where it follows existing drainage patterns.

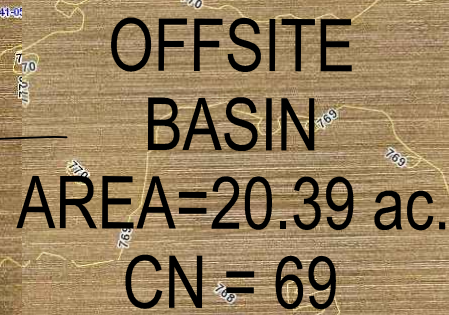
The project site lies outside any mapped floodways and/or floodplains per Community Panel 18081C0143D of the Flood Insurance Rate Map of Johnson County, dated August 2, 2007. However, per the IDNR best available flood zone database, there is a small portion of land along the eastern frontage of Graham Road that is within Zone 'A' & Zone 'AE' (1% Annual Chance Flood Hazard).

Post-Development Conditions

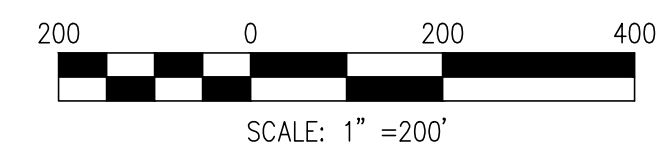
The proposed project includes the creation of one lot and one block for future industrial development. A private roadway, along with public utilities and private drainage facilities shall be constructed to serve the development. A detention basin and shall be designed and constructed by the developer to provide the required storm water quantity and quality treatment (see Exhibit 3: Post-Development Watershed Map). A 14" by 23" elliptical pipe shall be installed under Earlywood Drive in order to convey the drainage from the proposed development. The existing 15" CMP culvert shall be extended and utilized for drainage of the Earlywood Drive right-of-way. Development of the western portion of Block A shall require additional detention facilities and storm sewer infrastructure for the conveyance of runoff from the future area(s).

EXHIBIT 1: LOCATION MAP



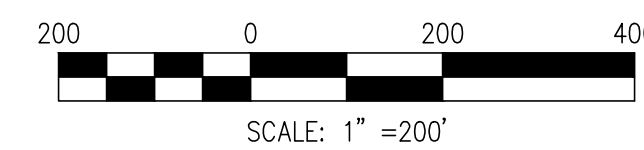


ONSITE
BASIN
AREA=22.35 ac.
CN = 69

[illegible]



OFFSITE
BASIN
AREA=20.39 ac.
CN= 69

[illegible]

Section 2: Hydrologic Modeling Calculations

Hydrologic modeling calculations were generated to determine allowable release rates from the watershed areas. All drainage calculations were completed using Hydraflow modeling software. The SCS Triangular method utilizing SCS II rainfall distribution was used to calculate the onsite and offsite hydrographs. The TR-55 Method was used to calculate times of concentration. Curve numbers were computed based on the applicable land use and the percentage by area of each hydrologic soil type obtained from the Johnson County Soils Survey.

Soil Hydrologic Group Percentage Calculations

| Table 1 Soil Hydrologic Group Percentage Calculations Onsite Basin | | |
|---|---|---|
| Soil Type | Hydrologic Group – B (acres) | Hydrologic Group – C (acres) |
| Miami Silt Loam, MnB2 | -- | 1.520 |
| Miami Silt Loam, MnC2 | -- | 0.358 |
| Brookston Silty Clay Loam, Br | 9.231 | -- |
| Crosby-Miami Silt Loam, CsB2 | -- | 0.581 |
| Crosby Silt Loam, CrA | -- | 10.661 |
| Totals | 9.23 | 13.12 |
| Percentages of Hydrologic Groups | 41.30% | 58.70% |

| Table 2 Soil Hydrologic Group Percentage Calculations Offsite Basin | | |
|--|---|---|
| Soil Type | Hydrologic Group – B (acres) | Hydrologic Group – C (acres) |
| Miami Silt Loam, MnB2 | -- | 1.386 |
| Miami Silt Loam, MnC2 | -- | 0.326 |
| Brookston Silty Clay Loam, Br | 8.421 | -- |
| Crosby-Miami Silt Loam, CsB2 | -- | 0.530 |
| Crosby Silt Loam, CrA | -- | 9.726 |
| Totals | 8.42 | 11.97 |
| Percentages of Hydrologic Groups | 41.30% | 58.70% |

Pre-Development Conditions

| Land Use Description | Runoff Curve No. For Hydrologic Group – B | | Runoff Curve No. For Hydrologic Group – C | | Q |
|-----------------------------|---|--------|---|--------|----|
| | Percentage Used* | 41.30% | Percentage Used* | 58.70% | |
| Pasture (Good Condition) | 61 | | 74 | | 69 |

| Land Use Description | Runoff Curve No. For Hydrologic Group – B | | Runoff Curve No. For Hydrologic Group – C | | Average Runoff Curve Number |
|-----------------------------|--|--------|--|--------|------------------------------------|
| | <i>Percentage Used*</i> | 41.30% | <i>Percentage Used*</i> | 58.70% | |
| Pasture (Good Condition) | 61 | | 74 | | 69 |

Pre-Development Conditions

| <p align="center">Table 5</p> <p align="center">Pre-Development Hydrograph Peak Runoff Rate Summary</p> <p align="center">Onsite Basin</p> | | | | | | |
|---|----------------|---------|---------|---------|----------|--------------|
| Return Period (years) | Storm Duration | | | | | |
| | 1 Hour | 2 Hours | 3 Hours | 6 Hours | 12 Hours | 24 Hours |
| 2 | 0.06 | 0.38 | 0.87 | 2.58 | 6.31 | 8.93 |
| 10 | 2.44 | 6.31 | 8.93 | 15.16 | 22.17 | 29.76 |

| Table 6 Pre-Development Hydrograph Peak Runoff Rate Summary Offsite Basin | | | | | | |
|--|----------------|---------|---------|---------|----------|--------------|
| Return Period (years) | Storm Duration | | | | | |
| | 1 Hour | 2 Hours | 3 Hours | 6 Hours | 12 Hours | 24 Hours |
| 2 | 0.06 | 0.31 | 0.68 | 1.85 | 4.46 | 6.32 |
| 10 | 1.76 | 4.46 | 6.32 | 10.71 | 15.80 | 21.33 |

Post-Development Conditions

The post-developed unit hydrograph assumes full development of all proposed industrial areas within Lot #1 and assumed a curve number of 87 for the future areas within the onsite watershed. The runoff shall be conveyed to the proposed detention facility via sheet flow and a storm sewer network, where it shall be treated for water quality and quantity. The following table summarizes the peak runoff rate (cfs) resulting from hydrologic modeling for the proposed onsite basin. Entries in bold indicate the critical storm event for the respective return period. See Appendix B for post-development unit and computed flood hydrograph reports.

| Table 7 Post-Development Hydrograph Peak Runoff Rate Summary Onsite Basin | | | | | | |
|--|----------------|---------|---------|---------|----------|---------------|
| Return Period (years) | Storm Duration | | | | | |
| | 1 Hour | 2 Hours | 3 Hours | 6 Hours | 12 Hours | 24 Hours |
| 10 | 28.05 | 39.62 | 46.12 | 59.38 | 72.85 | 86.42 |
| 100 | 52.72 | 70.03 | 80.47 | 98.34 | 117.09 | 140.93 |

An analysis of the proposed watershed, combined with the existing offsite watershed, is needed to determine a total runoff to the proposed detention facility. The following table combines the proposed runoff from the onsite and the offsite areas.

| Table 8 Offsite & Post-Developed Onsite Combined Hydrograph Peak Runoff Rate Summary | | | | | | |
|---|----------------|---------|---------|---------|----------|---------------|
| Return Period (years) | Storm Duration | | | | | |
| | 1 Hour | 2 Hours | 3 Hours | 6 Hours | 12 Hours | 24 Hours |
| 10 | 28.58 | 41.21 | 48.62 | 64.34 | 80.90 | 97.96 |
| 100 | 56.35 | 77.40 | 90.45 | 113.18 | 137.48 | 168.92 |

The existing downstream swale, along the south side of Earlywood Drive, shall be the restrictive basis for this project site. A hydraulic analysis of the swale has been provided within this section to verify that the proposed development does not overburden the swale. Per the analysis, the max conveyance is 20.15 cfs.

Channel Report

<Name>

Triangular

Side Slopes (z:1) = 5.52, 4.79
Total Depth (ft) = 1.00

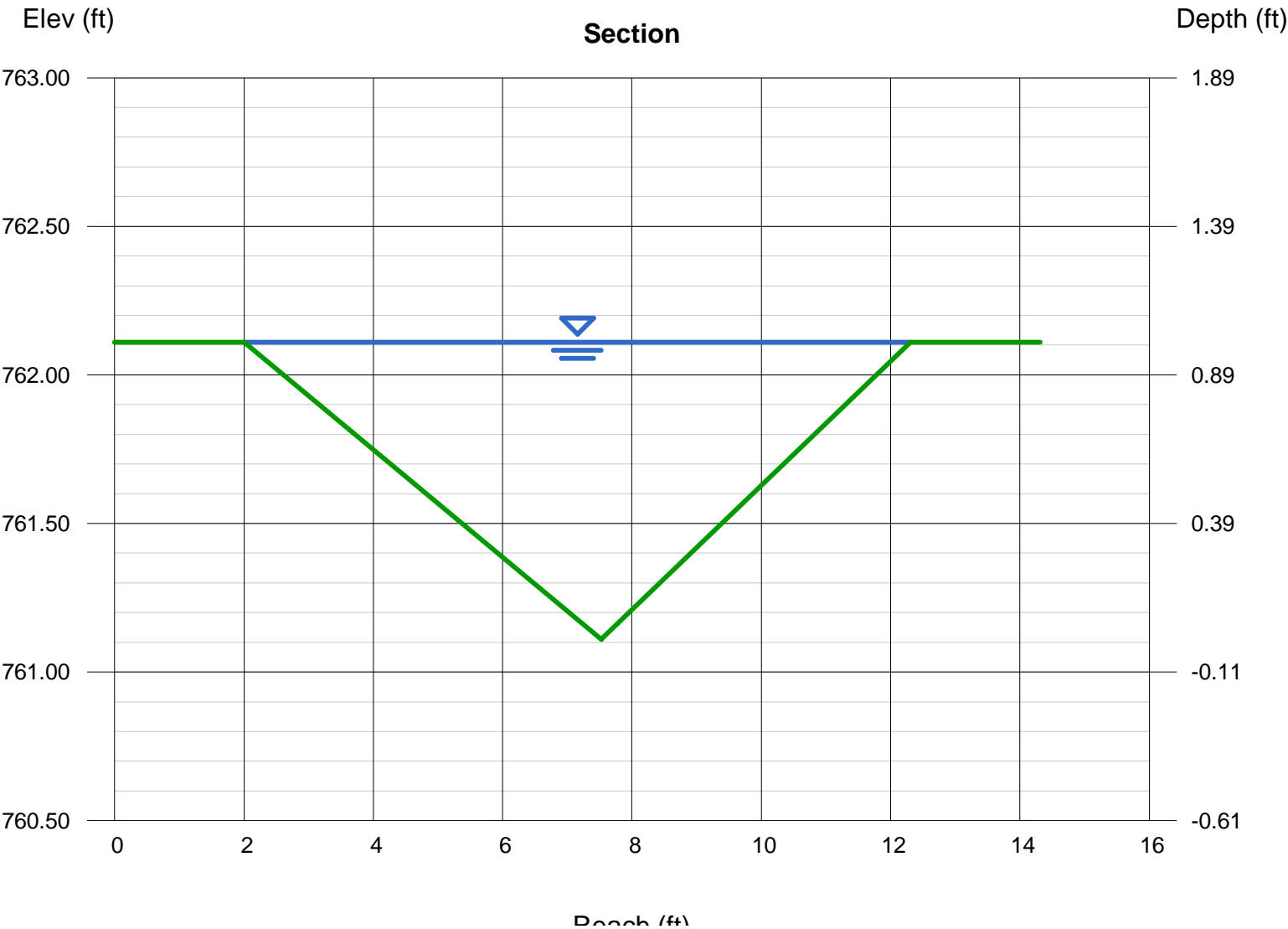
Invert Elev (ft) = 761.11
Slope (%) = 1.61
N-Value = 0.030

Calculations

Compute by: Q vs Depth
No. Increments = 10

Highlighted

Depth (ft) = 1.00
Q (cfs) = 20.15
Area (sqft) = 5.16
Velocity (ft/s) = 3.91
Wetted Perim (ft) = 10.50
Crit Depth, Yc (ft) = 0.99
Top Width (ft) = 10.31
EGL (ft) = 1.24



Section 3: Detention Calculations

Stormwater detention is addressed by releasing the critical 10 year post-development peak runoff at the critical 2 year pre-development peak runoff rate and releasing the critical 100 year post-development peak runoff at the critical 10 year pre-development peak runoff rate. However, as presented previously, the downstream receiving channel shall be the restriction for the hydraulic analysis. The detention facility shall provide water quantity & quality treatment for the onsite & offsite basin. See Appendix A & B for pre and post-developed hydrograph reports, respectively. See Appendix C for the proposed pond data and routed hydrographs.

Allowable Discharge Rate (see Section 2: Hydrologic Modeling Calculations, Hydrologic Modeling Runoff Summary)

- Allowable overall 10-year discharge rate = 8.93 cfs (Onsite Ex. Basin, 2yr-2hr event)
- Allowable overall 100-year discharge rate = 20.15 cfs (Downstream Channel)

| Table 9 | | | | | | |
|---|-----------------------|---------|---------|---------|----------|--------------|
| Offsite & Post Developed Onsite Combined Routed Peak Runoff Rate Summary | | | | | | |
| Return Period (years) | Storm Duration | | | | | |
| | 1 Hour | 2 Hours | 3 Hours | 6 Hours | 12 Hours | 24 Hours |
| 10 | 1.38 | 2.60 | 3.43 | 5.08 | 5.87 | 7.21 |
| 100 | 4.35 | 5.87 | 6.60 | 8.31 | 9.83 | 11.54 |

Peak 10 Year Post-Development Discharge Rate = **7.21 cfs** < 8.93 cfs (allowable)

Peak Water Surface Elev. = **763.46** < 764.20 (spillway crest elevation)

Peak 100 Year Post-Development Discharge Rate = **11.54 cfs** < 20.15 cfs (allowable)

Peak Water Surface Elev. = **764.20** = 764.20 (spillway crest elevation)

All post-development storms are discharged at flow rates less than their respective allowable discharge rates. All post-development storms produce a peak water surface elevation below, or at, the spillway crest elevation.

Emergency Scenario

An emergency spillway shall be constructed on the south side of the proposed detention facility. The emergency spillway shall convey 1.25 times the peak runoff from the combined 100-year storm event. The contributing watershed for the emergency spillway includes all improvements routed through the facility.

Spillway

$$L = 1.25 \times Q_{100} / (CDH^{1.5}) = 1.25 \times 168.92 / (3.3 \times 0.4^{1.5}) = 251.9' \text{ use } 252'$$

Q_{100} Combined Inflow = 168.92 cfs

Top of Bank Elevation = 766.60

Water Surface Elevation = 761.60

Spillway Crest Elevation = 764.20

Max. Head, $H = 764.60 - 764.20 = 0.40$ ft.

Freeboard = $766.60 - 764.60 = 2.0$ ft.

Section 4: Water Quality Calculations

The City of Franklin Subdivision Control Ordinance requires all paved areas to be routed through a water quality detention system. The water quality detention system shall be designed to detain, for over 24 hours after peak runoff, at least 20% of the volume of runoff from either a 1 ¼" rainfall depth storm or 0.5" of direct runoff, whichever is greater. See Appendix D for the routed water quality hydrograph data.

Water Quality Volume

Volume of Runoff from 1 ¼" Rainfall Depth Storm, $V_1 = \underline{0.711 \text{ ac.-ft.}}$

Volume of Runoff from 0.5" Direct Runoff,

$$V_2 = 22.35 \text{ ac.} * (0.5"/12) = \underline{0.931 \text{ ac.-ft.}}$$

Water Quality Volume, $WQ_v = 20\% * V_2 = 0.2 * 0.931 \text{ ac.-ft.} = \underline{\underline{0.186 \text{ ac.-ft.}}}$

At a time of 24 hours after the peak runoff rate of the inflow hydrograph, the detention pond must have at least 0.186 ac.-ft. remaining in the basin.

Routed Water Quality Storm Hydrograph

The 0.5" direct runoff storm event is routed through the proposed detention facility with a 3" diameter circular water quality orifice. The Routed 0.5" Storm Event Hydrograph (see following page) is used to verify the water quality volume, WQ_v , is remaining after 24 hours after peak runoff.

Time to Peak Runoff = 1,042 min.

Detention Facility Elevation at Peak Runoff = 761.88

Storage Volume at Peak Runoff = 26,337 cft

Time of 24 hours Past Peak Runoff = 1,042 min. + 1,440 min. = 2,482 min.

Detention Facility Elevation at 24hr Past Peak Runoff = 761.73

Storage Volume at 24hr Past Peak Runoff = 12,167 cft

Storage Volume at Time 2,482 min. = 12,167 cft = **0.279 ac.-ft.** > **0.186 ac.-ft.** (WQ_v)

The storage volume 24 hours after peak runoff is greater than the required water quality volume.

Section 5: Pipe & Swale Calculations

The Rational Method was used to size the pipes to convey the peak runoff from the 10-year storm. The TR-55 Method was used to calculate the Times of Concentration. FlowMaster by Haestad Methods was used for pipe capacity calculations. The pipe sizing calculations and time of concentration worksheets are included within this section. The Inlet Basin map can be found enclosed at the back of this report.

Structure numbers 1, & 3 have been designed to accommodate future development of the remaining onsite basin. Currently, the infrastructure shall convey runoff from the agricultural fields, however, the pipes were sized for future industrial uses.

An assumed 5-minute time of concentration was utilized for structure number 1.

Structure number 2 shall be utilized as a temporary pipe for conveyance of the onsite and offsite agricultural areas. The culvert shall be removed from structure number 3 (if necessary) to accommodate future infrastructure.

The onsite conveyance swale located to the east of the proposed buildings has been sized to convey the contributing watershed. A worksheet showing the capacity of the swale exceeds the runoff from the contributing watershed is included within this section.

| LAUGLE INDUSTRIAL PARK Pipe Sizing Calculations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------------|-------------|--------------------|---------------|-----------|----------------|----------------|----------------------|-------------------|--------------------------------|---------------------------------|---------------------------|----------------------------|---------------------------------|----------------------------------|-------------------|-------------------------|----------|------------------------------|---------------------------|-----------------------------|-------------------|----------------------|-----------------------------|--------------------------------------|---------------------|-----------------------|--------------------------|----------------------|-------------------------|
| Structure | Pipe Data | | | | | | | | | Inlet Watershed Data | | | | | | | | | | | Contributing Watershed Data | | | | | | Pipe Analysis | | | |
| | Downstream Structure | Length (ft) | Pipe Diameter (in) | Pipe Material | Rim Grade | U.S. Elevation | D.S. Elevation | Invert Slope (ft/ft) | Mannings Number n | Catchment Area (ac) Impervious | Runoff Coefficient C Impervious | Catchment Area (ac) Grass | Runoff Coefficient C Grass | Catchment Area (ac) Cult. Field | Runoff Coefficient C Cult. Field | Total Area A (ac) | Composite Coefficient C | Tc (min) | Rainfall Intensity (i) in/hr | Manual Input Flow Q (cfs) | Q=CiA (cfs) | Total Area A (ac) | Runoff Coefficient C | Time in Upstream Pipe (min) | Total Time of Concentration Tc (min) | Intensity I (in/hr) | Total Pipe Flow (cfs) | Pipe Capacity Qmax (cfs) | Pipe Velocity (ft/s) | % of Full Flow Capacity |
| Str. 1 | Outlet | 95 | 18 | RCP | -- | 764.21 | 762.25 | 0.0200 | 0.013 | 2.278 | 0.850 | 0.379 | 0.20 | 0.000 | 0.30 | 2.657 | 0.76 | 5.00 | 6.99 | -- | 14.06 | 2.657 | 0.757 | N/A | 5.00 | 6.99 | 14.06 | 16.09 | 9.11 | 87.41% |
| Str. 2 | Str. 3 | 11 | 24 | RCP | -- | 764.20 | 764.08 | 0.0110 | 0.013 | 0.000 | 0.850 | 0.000 | 0.20 | 26.667 | 0.30 | 26.667 | 0.30 | 33.57 | 2.74 | -- | 21.94 | 26.667 | 0.300 | N/A | 33.57 | 2.74 | 21.94 | 25.70 | 8.18 | 85.37% |
| Str. 3 | Outlet | 94 | 36 | RCP | 767.75 | 762.21 | 761.60 | 0.0065 | 0.013 | 8.315 | 0.850 | 0.000 | 0.20 | 18.352 | 0.30 | 26.667 | 0.47 | 33.57 | 2.74 | -- | 34.48 | 26.667 | 0.471 | N/A | 33.57 | 2.74 | 34.48 | 58.25 | 8.24 | 59.20% |
| Str. 4 | Str. 5 | 18 | 12 | RCP | 767.75 | 765.21 | 765.10 | 0.0061 | 0.013 | 0.050 | 0.850 | 0.082 | 0.20 | 0.000 | 0.30 | 0.132 | 0.45 | 8.79 | 5.85 | -- | 0.34 | 0.132 | 0.446 | N/A | 8.79 | 5.85 | 0.34 | 3.01 | 3.84 | 11.44% |
| Str. 5 | Str. 6 | 87 | 15 | RCP | 769.70 | 765.10 | 764.45 | 0.0075 | 0.013 | 0.689 | 0.850 | 0.000 | 0.20 | 0.000 | 0.30 | 0.689 | 0.85 | 5.00 | 6.99 | -- | 4.09 | 0.821 | 0.785 | 0.08 | 8.87 | 5.82 | 3.75 | 6.06 | 4.94 | 61.90% |
| Str. 6 & 7 | Str. 8 | 140 | 15 | RCP | 767.45 | 764.45 | 763.36 | 0.0075 | 0.013 | 0.559 | 0.850 | 0.582 | 0.20 | 0.000 | 0.30 | 1.141 | 0.52 | 18.34 | 4.22 | -- | 2.50 | 1.962 | 0.630 | N/A | 18.34 | 4.22 | 5.22 | 6.06 | 4.94 | 86.18% |
| Str. 8 | Str. 9 | 157 | 18 | RCP | 766.38 | 763.36 | 762.42 | 0.0060 | 0.013 | 0.147 | 0.850 | 0.383 | 0.20 | 0.000 | 0.30 | 0.530 | 0.38 | 13.83 | 4.77 | -- | 0.96 | 2.492 | 0.577 | 0.47 | 18.81 | 4.18 | 6.01 | 8.81 | 4.99 | 68.21% |
| Str. 9 | Outlet | 109 | 18 | RCP | 766.38 | 762.42 | 761.60 | 0.0075 | 0.013 | 0.231 | 0.850 | 0.220 | 0.20 | 0.000 | 0.30 | 0.451 | 0.53 | 15.42 | 4.51 | -- | 1.08 | 2.943 | 0.570 | 0.52 | 19.33 | 4.13 | 6.93 | 9.85 | 5.58 | 70.36% |
| Str. 10 | Outlet | 51 | 18 | RCP | -- | 762.00 | 761.60 | 0.0078 | 0.013 | 1.489 | 0.850 | 1.474 | 0.20 | 1.294 | 0.30 | 4.257 | 0.46 | 30.87 | 3.01 | -- | 5.86 | 4.257 | 0.458 | N/A | 30.87 | 3.01 | 5.86 | 10.05 | 5.69 | 58.27% |
| Str. 12 | Outlet | 12 | 15 | RCP | -- | 762.24 | 762.22 | 0.0020 | 0.013 | 0.229 | 0.850 | 0.683 | 0.20 | 0.000 | 0.30 | 0.912 | 0.36 | 25.16 | 3.56 | -- | 1.18 | 0.912 | 0.363 | N/A | 25.16 | 3.56 | 1.18 | 3.13 | 2.55 | 37.69% |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #1

Sheet Flow

| | | | |
|---|----------------|----------------|----------------|
| 1. Surface Description | cult. Field | pvm | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.035 | 0.011 | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | 2.64 in. | 2.64 in. |
| 5. Land Slope, (s) | 0.0053 ft./ft. | 0.0210 ft./ft. | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.000 hr | + | 0.000 hr |

Shallow Concentrated Flow

| | | | |
|--|----------------|----------------|----------------|
| 7. Surface Description (paved or unpaved) | paved | unpaved | unpaved |
| 8. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0239 ft./ft. | 0.0053 ft./ft. | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 2.494 ft./s | 1.175 ft./s | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr |

Watershed or
Subarea Tc or Tt =

0.000 hr

or

0.00 min

Channel Flow

| | | | |
|--|----------------|----------------|----------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | 132.12 ft.^2 | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | 30.71 ft. | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | 4.302 ft. | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | 0.0121 ft./ft. | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | 0.027 | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | 16.136 ft./s | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #4

Sheet Flow

| | | | |
|---|----------------|----------------|----------------|
| 1. Surface Description | grass | pvm | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.200 | 0.011 | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 37.42 ft. | 10.00 ft. | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | 2.64 in. | 2.64 in. |
| 5. Land Slope, (s) | 0.0090 ft./ft. | 0.0100 ft./ft. | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.142 hr | 0.005 hr | 0.000 hr |

Shallow Concentrated Flow

| | | | |
|--|----------------|----------------|----------------|
| 7. Surface Description (paved or unpaved) | paved | unpaved | unpaved |
| 8. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0239 ft./ft. | 0.0053 ft./ft. | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 2.494 ft./s | 1.175 ft./s | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | 0.000 hr | 0.000 hr |

Watershed or
Subarea Tc or Tt =

0.147 hr

or

8.79 min

Channel Flow

| | | | |
|--|----------------|----------------|----------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | 132.12 ft.^2 | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | 30.71 ft. | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | 4.302 ft. | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | 0.0121 ft./ft. | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | 0.027 | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | 16.136 ft./s | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | 0.000 hr | 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #6 & #7

Sheet Flow

| | | | |
|---|----------------|----------------|---------------------|
| 1. Surface Description | grass | pvm | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.200 | 0.011 | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 71.98 ft. | 28.02 ft. | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | 2.64 in. | 2.64 in. |
| 5. Land Slope, (s) | 0.0092 ft./ft. | 0.0050 ft./ft. | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.237 hr | + | 0.014 hr + 0.000 hr |

Shallow Concentrated Flow

| | | | |
|--|----------------|----------------|---------------------|
| 7. Surface Description (paved or unpaved) | paved | unpaved | unpaved |
| 8. Flow Length, (L) | 222.85 ft. | 0.00 ft. | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0050 ft./ft. | 0.0053 ft./ft. | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 1.141 ft./s | 1.175 ft./s | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.054 hr | + | 0.000 hr + 0.000 hr |

Watershed or
Subarea Tc or Tt =

0.306 hr

or

18.34 min

Channel Flow

| | | | |
|--|----------------|----------------|---------------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | 132.12 ft.^2 | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | 30.71 ft. | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | 4.302 ft. | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | 0.0121 ft./ft. | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | 0.027 | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | 16.136 ft./s | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr + 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #8

Sheet Flow

| | | | | | |
|---|----------------|---|----------------|---|----------------|
| 1. Surface Description | grass | | pvm | | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.200 | | 0.011 | | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 77.46 ft. | | 22.54 ft. | | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | | 2.64 in. | | 2.64 in. |
| 5. Land Slope, (s) | 0.0129 ft./ft. | | 0.0110 ft./ft. | | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.220 hr | + | 0.009 hr | + | 0.000 hr |

Shallow Concentrated Flow

| | | | | | |
|--|----------------|---|----------------|---|----------------|
| 7. Surface Description (paved or unpaved) | paved | | unpaved | | unpaved |
| 8. Flow Length, (L) | 12.55 ft. | | 0.00 ft. | | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0110 ft./ft. | | 0.0053 ft./ft. | | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 1.692 ft./s | | 1.175 ft./s | | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.002 hr | + | 0.000 hr | + | 0.000 hr |

Watershed or
Subarea Tc or Tt =

0.230 hr

or

13.83 min

Channel Flow

| | | | | | |
|--|----------------|---|----------------|---|----------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | | 132.12 ft.^2 | | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | | 30.71 ft. | | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | | 4.302 ft. | | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | | 0.0121 ft./ft. | | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | | 0.027 | | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | | 16.136 ft./s | | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | | 0.00 ft. | | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr | + | 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #9

Sheet Flow

| | | | |
|---|----------------|----------------|---------------------|
| 1. Surface Description | grass | pvm | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.200 | 0.011 | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 74.78 ft. | 25.22 ft. | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | 2.64 in. | 2.64 in. |
| 5. Land Slope, (s) | 0.0104 ft./ft. | 0.0076 ft./ft. | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.233 hr | + | 0.011 hr + 0.000 hr |

Shallow Concentrated Flow

| | | | |
|--|----------------|----------------|---------------------|
| 7. Surface Description (paved or unpaved) | paved | unpaved | unpaved |
| 8. Flow Length, (L) | 66.67 ft. | 0.00 ft. | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0076 ft./ft. | 0.0053 ft./ft. | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 1.407 ft./s | 1.175 ft./s | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.013 hr | + | 0.000 hr + 0.000 hr |

Watershed or
Subarea Tc or Tt =

0.257 hr

or

15.42 min

Channel Flow

| | | | |
|--|----------------|----------------|---------------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | 132.12 ft.^2 | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | 30.71 ft. | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | 4.302 ft. | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | 0.0121 ft./ft. | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | 0.027 | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | 16.136 ft./s | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr + 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #10

Sheet Flow

| | | | | | |
|---|----------------|---|----------------|---|----------------|
| 1. Surface Description | cult. Field | | pvmr | | pvmr |
| 2. Manning's Roughness Coeff., (n) | 0.200 | | 0.011 | | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 100.00 ft. | | 0.00 ft. | | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | | 2.64 in. | | 2.64 in. |
| 5. Land Slope, (s) | 0.0061 ft./ft. | | 0.0076 ft./ft. | | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.364 hr | + | 0.000 hr | + | 0.000 hr |

Shallow Concentrated Flow

| | | | | | |
|--|----------------|---|----------------|---|----------------|
| 7. Surface Description (paved or unpaved) | paved | | unpaved | | unpaved |
| 8. Flow Length, (L) | 0.00 ft. | | 64.03 ft. | | 111.20 ft. |
| 9. Watercourse Slope, (s) | 0.0076 ft./ft. | | 0.0061 ft./ft. | | 0.0080 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 1.407 ft./s | | 1.260 ft./s | | 1.443 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.014 hr | + | 0.021 hr |

Watershed or
Subarea Tc or Tt =

0.514 hr

or

30.87 min

Channel Flow

| | | | | | |
|--|----------------|---|----------------|---|----------------|
| 12. Cross Sectional Flow Area, (a) | 149.25 ft.^2 | | 132.12 ft.^2 | | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 55.99 ft. | | 30.71 ft. | | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 2.666 ft. | | 4.302 ft. | | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | | 0.0121 ft./ft. | | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | | 0.027 | | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 1.691 ft./s | | 16.136 ft./s | | 12.769 ft./s |
| 18. Flow Length, (L) | 700.00 ft. | | 0.00 ft. | | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.115 hr | + | 0.000 hr | + | 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 6/8/2020

Scenario/Structure: Str. #12

Sheet Flow

| | | | |
|---|----------------|----------------|----------------|
| 1. Surface Description | grass | pvm | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.200 | 0.011 | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 100.00 ft. | 0.00 ft. | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | 2.64 in. | 2.64 in. |
| 5. Land Slope, (s) | 0.0063 ft./ft. | 0.0076 ft./ft. | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.359 hr | + | 0.000 hr |

Shallow Concentrated Flow

| | | | |
|--|----------------|----------------|----------------|
| 7. Surface Description (paved or unpaved) | paved | unpaved | unpaved |
| 8. Flow Length, (L) | 0.00 ft. | 18.28 ft. | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0076 ft./ft. | 0.0063 ft./ft. | 0.0080 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 1.407 ft./s | 1.281 ft./s | 1.443 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.004 hr |

Watershed or
Subarea Tc or Tt =

0.419 hr

or

25.16 min

Channel Flow

| | | | |
|--|----------------|----------------|----------------|
| 12. Cross Sectional Flow Area, (a) | 7.50 ft.^2 | 132.12 ft.^2 | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 7.57 ft. | 30.71 ft. | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 0.991 ft. | 4.302 ft. | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | 0.0121 ft./ft. | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | 0.027 | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.871 ft./s | 16.136 ft./s | 12.769 ft./s |
| 18. Flow Length, (L) | 176.00 ft. | 0.00 ft. | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.056 hr | + | 0.000 hr |

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Tuesday, Jun 9 2020

Laugle Industrial Park - East Swale

Trapezoidal

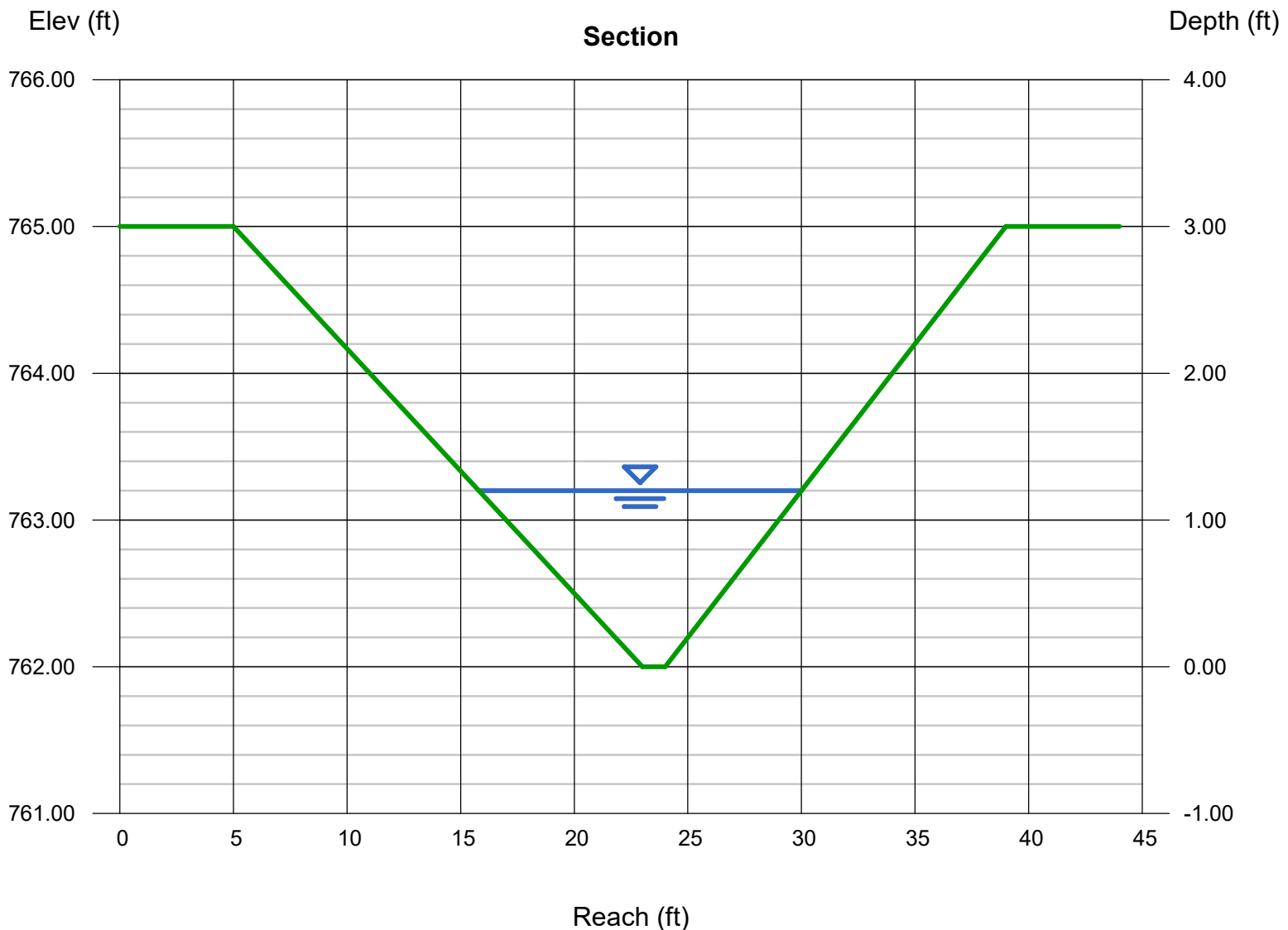
Bottom Width (ft) = 1.00
Side Slopes (z:1) = 6.00, 5.00
Total Depth (ft) = 3.00
Invert Elev (ft) = 762.00
Slope (%) = 1.00
N-Value = 0.170

Highlighted

Depth (ft) = 1.20
Q (cfs) = 5.873
Area (sqft) = 9.12
Velocity (ft/s) = 0.64
Wetted Perim (ft) = 14.42
Crit Depth, Yc (ft) = 0.51
Top Width (ft) = 14.20
EGL (ft) = 1.21

Calculations

Compute by: Q vs Depth
No. Increments = 5



Section 6: Storm Inlet Calculations

Storm inlets were placed throughout the site to ensure that there will be adequate capacity to pass the design 10-year flow with the maximum depth of water not exceeding nine inches in swales and maintaining one travel lane in paved areas.

The weir and orifice equations were utilized to determine the maximum inlet capacity. The weir equation was used when depth of flow is less than 4" and the orifice equation was utilized for depths 4" or greater.

The weir equation is as follows: $Q = 3.3P(h)^{1.5}$

Where: P = perimeter of the grate; h = head above the casting; Q = Capacity

The orifice equation is as follows: $Q = 0.6A(2gh)^{0.5}$

Where: A = open area of the grate; h = head above the casting; g = 32.2 ft/sec²

The casting used for all curb inlets, located in a sag, is a Neenah R-3501-TB, which has a perimeter of 5.7 feet. However, to simulate a clogged inlet, the perimeter was reduced by 50%, for a total perimeter of 2.85 feet.

A Neenah R-3405-A casting shall be employed for structure number 4. Per the manufacturer the casting has a perimeter of 8.0 feet (4.0' assuming 50% clogged).

The following table provides the applicable inlet capacity.

| Structure No. | Casting Type | Watershed Runoff | Inlet Capacity | Depth Over Grate |
|---------------|--------------|------------------|----------------|------------------|
| 4 | R-3405-A | 0.34 cfs | 0.42 cfs | 0.10' |
| 6 & 7 | R-3501-TB | 2.50 cfs | 2.64 cfs | 0.27' |
| 8 | R-3501-TB | 0.96 cfs | 0.97 cfs | 0.22' |
| 9 | R-3501-TB | 1.08 cfs | 1.11 cfs | 0.24' |

Appendix A: Pre-Developed Conditions

| | | |
|---|--|------|
| ■ | Onsite Time of Concentration | A-1 |
| ■ | Offsite Time of Concentration | A-2 |
| ■ | 2 yr. Hydrograph Summary Report..... | A-3 |
| ■ | Onsite Basin: 2 yr. – 24 hr. Flood Hydrograph | A-4 |
| ■ | Offsite Basin: 2 yr. – 24 hr. Flood Hydrograph | A-5 |
| ■ | 10 yr. Hydrograph Summary Report..... | A-6 |
| ■ | Onsite Basin: 10 yr. – 24 hr. Flood Hydrograph..... | A-7 |
| ■ | Offsite Basin: 10 yr. – 24 hr. Flood Hydrograph..... | A-8 |
| ■ | 100 yr. Hydrograph Summary Report..... | A-9 |
| ■ | Onsite Basin: 100 yr. – 24 hr. Flood Hydrograph | A-10 |
| ■ | Offsite Basin: 100 yr. – 24 hr. Flood Hydrograph | A-11 |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 4/8/2020

Scenario/Structure: Existing Onsite Watershed TC

Sheet Flow

| | | | | | |
|---|----------------|---|----------------|---|----------------|
| 1. Surface Description | cult. Field | | pvmt | | pvmt |
| 2. Manning's Roughness Coeff., (n) | 0.035 | | 0.011 | | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 100.00 ft. | | 0.00 ft. | | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | | 2.64 in. | | 2.64 in. |
| 5. Land Slope, (s) | 0.0053 ft./ft. | | 0.0210 ft./ft. | | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.095 hr | + | 0.000 hr | + | 0.000 hr |

Shallow Concentrated Flow

| | | | | | |
|--|----------------|---|----------------|---|----------------|
| 7. Surface Description (paved or unpaved) | paved | | unpaved | | unpaved |
| 8. Flow Length, (L) | 0.00 ft. | | 1145.62 ft. | | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0239 ft./ft. | | 0.0053 ft./ft. | | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 2.494 ft./s | | 1.175 ft./s | | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.271 hr | + | 0.000 hr |

Watershed or
Subarea Tc or Tt =

0.366 hr

or

21.98 min

Channel Flow

| | | | | | |
|--|----------------|---|----------------|---|----------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | | 132.12 ft.^2 | | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | | 30.71 ft. | | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | | 4.302 ft. | | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | | 0.0121 ft./ft. | | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | | 0.027 | | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | | 16.136 ft./s | | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | | 0.00 ft. | | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr | + | 0.000 hr |

TIME OF CONCENTRATION or TRAVEL TIME WORKSHEET

Project: Laugle Industrial Park

Designer: DJM

Date: 4/8/2020

Scenario/Structure: Offsite Watershed

Sheet Flow

| | | | |
|---|----------------|----------------|----------------|
| 1. Surface Description | cult. Field | pvm | pvm |
| 2. Manning's Roughness Coeff., (n) | 0.035 | 0.011 | 0.011 |
| 3. Flow Length, (L) **total L<= 100 ft | 100.00 ft. | 0.00 ft. | 0.00 ft. |
| 4. Two-yr 24-hr Rainfall, (P2) | 2.64 in. | 2.64 in. | 2.64 in. |
| 5. Land Slope, (s) | 0.0092 ft./ft. | 0.0210 ft./ft. | 0.0366 ft./ft. |
| 6. Travel Time, (Tt) (Tt = [0.007(nL)^0.8]/[P2^0.5*s^0.4]) | 0.077 hr | + | 0.000 hr |

Shallow Concentrated Flow

| | | | |
|--|----------------|----------------|----------------|
| 7. Surface Description (paved or unpaved) | paved | unpaved | unpaved |
| 8. Flow Length, (L) | 0.00 ft. | 2690.89 ft. | 0.00 ft. |
| 9. Watercourse Slope, (s) | 0.0239 ft./ft. | 0.0092 ft./ft. | 0.0060 ft./ft. |
| 10. Average Velocity, (V) (Vp = 20.3282(s)^0.5) (Vup = 16.1345(s)^0.5) | 2.494 ft./s | 1.548 ft./s | 1.250 ft./s |
| 11. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.483 hr |

Watershed or
Subarea Tc or Tt =

0.560 hr

or

33.57 min

Channel Flow

| | | | |
|--|----------------|----------------|----------------|
| 12. Cross Sectional Flow Area, (a) | 9.00 ft.^2 | 132.12 ft.^2 | 174.24 ft.^2 |
| 13. Wetted Perimeter, Pw | 8.54 ft. | 30.71 ft. | 43.74 ft. |
| 14. Hydraulic Radius, (r) (r = a/Pw) | 1.054 ft. | 4.302 ft. | 3.984 ft. |
| 15. Channel Slope, (s) | 0.0100 ft./ft. | 0.0121 ft./ft. | 0.0084 ft./ft. |
| 16. Manning's Roughness Coeff., (n) | 0.170 | 0.027 | 0.027 |
| 17. Velocity, (V) (V = [1.49*r^0.67*s^0.5]/n) | 0.908 ft./s | 16.136 ft./s | 12.769 ft./s |
| 18. Flow Length, (L) | 0.00 ft. | 0.00 ft. | 0.00 ft. |
| 19. Travel Time, (Tt) (Tt = L/3600V) | 0.000 hr | + | 0.000 hr |

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|----------------------------|--------------------------|-----------------|---------------------|--------------------|-----------------------|---------------|------------------------|-------------------------|-------------------------------------|
| 1 | SCS Runoff | 0.061 | 2 | 908 | 2,106 | ----- | ----- | ----- | Onsite - Existing 1hr |
| 2 | SCS Runoff | 0.375 | 2 | 746 | 6,213 | ----- | ----- | ----- | Onsite - Existing 2hr |
| 3 | SCS Runoff | 0.867 | 2 | 738 | 9,540 | ----- | ----- | ----- | Onsite - Existing 3hr |
| 4 | SCS Runoff | 2.583 | 2 | 730 | 17,310 | ----- | ----- | ----- | Onsite - Existing 6hr |
| 5 | SCS Runoff | 6.307 | 2 | 730 | 31,057 | ----- | ----- | ----- | Onsite - Existing 12hr |
| 6 | SCS Runoff | 8.929 | 2 | 728 | 40,169 | ----- | ----- | ----- | Onsite - Existing 24hr |
| 7 | SCS Runoff | 0.055 | 2 | 916 | 1,911 | ----- | ----- | ----- | Offsite - Existing 1hr |
| 8 | SCS Runoff | 0.314 | 2 | 758 | 5,638 | ----- | ----- | ----- | Offsite - Existing 2hr |
| 9 | SCS Runoff | 0.678 | 2 | 748 | 8,658 | ----- | ----- | ----- | Offsite - Existing 3hr |
| 10 | SCS Runoff | 1.853 | 2 | 738 | 15,708 | ----- | ----- | ----- | Offsite - Existing 6hr |
| 11 | SCS Runoff | 4.456 | 2 | 736 | 28,184 | ----- | ----- | ----- | Offsite - Existing 12hr |
| 12 | SCS Runoff | 6.323 | 2 | 736 | 36,452 | ----- | ----- | ----- | Offsite - Existing 24hr |
| 13 | SCS Runoff | 11.43 | 2 | 722 | 30,952 | ----- | ----- | ----- | Onsite - Proposed 1hr |
| 14 | SCS Runoff | 17.39 | 2 | 722 | 45,946 | ----- | ----- | ----- | Onsite - Proposed 2hr |
| 15 | SCS Runoff | 21.14 | 2 | 722 | 55,505 | ----- | ----- | ----- | Onsite - Proposed 3hr |
| 16 | SCS Runoff | 28.56 | 2 | 720 | 74,467 | ----- | ----- | ----- | Onsite - Proposed 6hr |
| 17 | SCS Runoff | 39.62 | 2 | 720 | 102,734 | ----- | ----- | ----- | Onsite - Proposed 12hr |
| 18 | SCS Runoff | 46.12 | 2 | 720 | 119,563 | ----- | ----- | ----- | Onsite - Proposed 24hr |
| 19 | Combine | 11.43 | 2 | 722 | 32,863 | 7, 13, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 1hr |
| 20 | Combine | 17.42 | 2 | 722 | 51,584 | 8, 14, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 2hr |
| 21 | Combine | 21.29 | 2 | 722 | 64,162 | 9, 15, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 3hr |
| 22 | Combine | 29.12 | 2 | 722 | 90,175 | 10, 16, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 6hr |
| 23 | Combine | 41.21 | 2 | 722 | 130,918 | 11, 17, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 12hr |
| 24 | Combine | 48.62 | 2 | 722 | 156,015 | 12, 18, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 24hr |
| 25 | Reservoir | 0.300 | 2 | 1172 | 29,491 | 19 | 761.83 | 21,932 | RTD CMB 1hr |
| 26 | Reservoir | 0.594 | 2 | 1032 | 47,802 | 20 | 761.93 | 31,430 | RTD CMB 2hr |
| 27 | Reservoir | 0.828 | 2 | 962 | 60,219 | 21 | 762.00 | 37,756 | RTD CMB 3hr |
| 28 | Reservoir | 1.423 | 2 | 896 | 86,013 | 22 | 762.13 | 50,600 | RTD CMB 6hr |
| 29 | Reservoir | 2.596 | 2 | 834 | 126,562 | 23 | 762.34 | 70,886 | RTD CMB 12hr |
| 30 | Reservoir | 3.429 | 2 | 818 | 151,579 | 24 | 762.47 | 83,425 | RTD CMB 24hr |
| Laugle Industrial Park.gpw | | | | | Return Period: 2 Year | | | Sunday, 05 / 3 / 2020 | |

Hydrograph Report

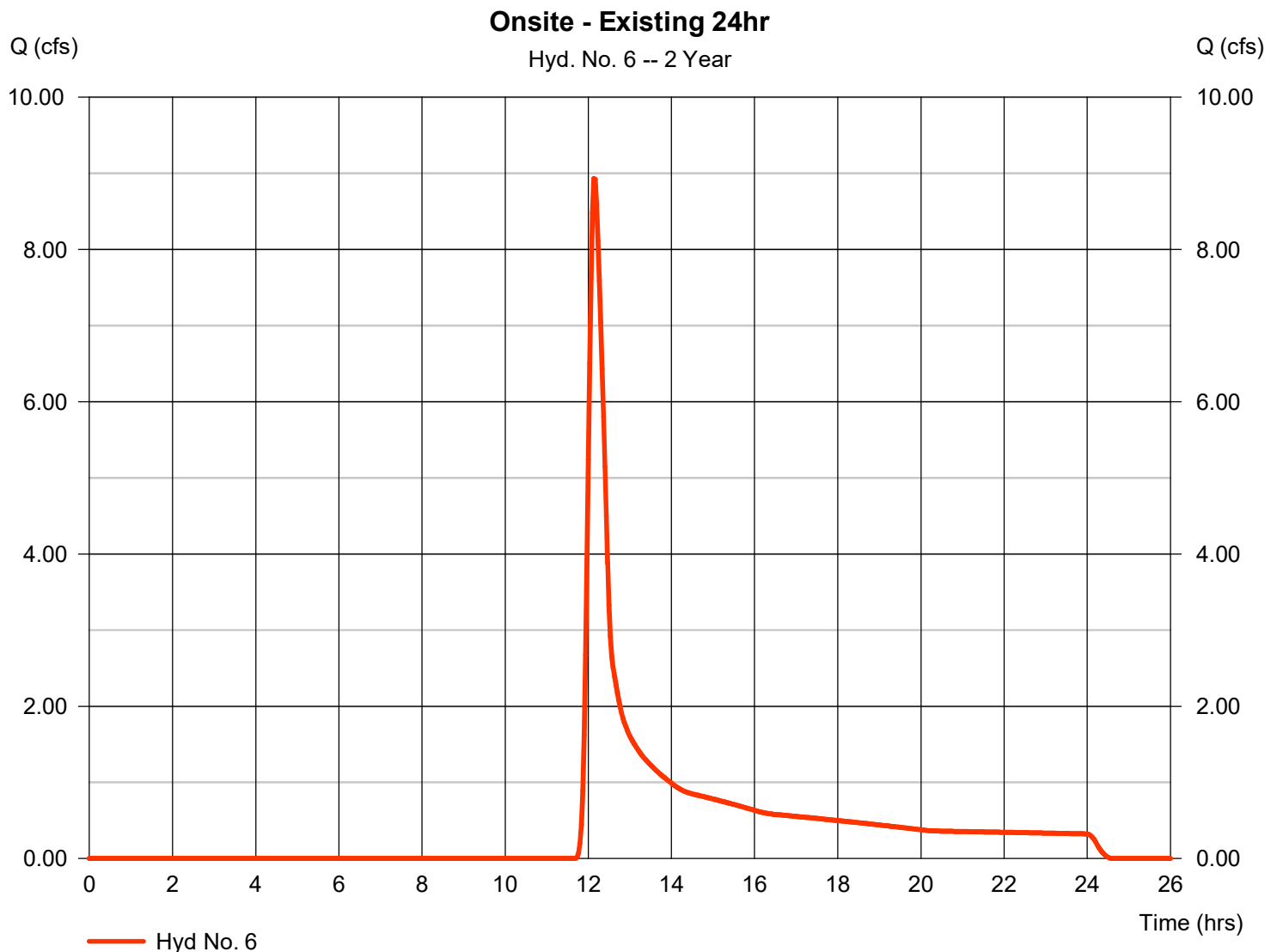
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 6

Onsite - Existing 24hr

| | | | |
|-----------------|--------------|--------------------|---------------|
| Hydrograph type | = SCS Runoff | Peak discharge | = 8.929 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 12.13 hrs |
| Time interval | = 2 min | Hyd. volume | = 40,169 cuft |
| Drainage area | = 22.350 ac | Curve number | = 69 |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = User | Time of conc. (Tc) | = 22.00 min |
| Total precip. | = 2.64 in | Distribution | = Type II |
| Storm duration | = 24 hrs | Shape factor | = 484 |



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 12

Offsite - Existing 24hr

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 20.389 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 2.64 in
 Storm duration = 24 hrs

Peak discharge = 6.323 cfs
 Time to peak = 12.27 hrs
 Hyd. volume = 36,452 cuft
 Curve number = 69
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 33.60 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|----------------------------|--------------------------|-----------------|---------------------|--------------------|------------------------|---------------|------------------------|-------------------------|-------------------------------------|
| 1 | SCS Runoff | 2.445 | 2 | 730 | 16,743 | ----- | ----- | ----- | Onsite - Existing 1hr |
| 2 | SCS Runoff | 6.307 | 2 | 730 | 31,057 | ----- | ----- | ----- | Onsite - Existing 2hr |
| 3 | SCS Runoff | 8.929 | 2 | 728 | 40,169 | ----- | ----- | ----- | Onsite - Existing 3hr |
| 4 | SCS Runoff | 15.16 | 2 | 728 | 60,695 | ----- | ----- | ----- | Onsite - Existing 6hr |
| 5 | SCS Runoff | 22.17 | 2 | 728 | 83,769 | ----- | ----- | ----- | Onsite - Existing 12hr |
| 6 | SCS Runoff | 29.76 | 2 | 728 | 108,916 | ----- | ----- | ----- | Onsite - Existing 24hr |
| 7 | SCS Runoff | 1.758 | 2 | 738 | 15,194 | ----- | ----- | ----- | Offsite - Existing 1hr |
| 8 | SCS Runoff | 4.456 | 2 | 736 | 28,184 | ----- | ----- | ----- | Offsite - Existing 2hr |
| 9 | SCS Runoff | 6.323 | 2 | 736 | 36,452 | ----- | ----- | ----- | Offsite - Existing 3hr |
| 10 | SCS Runoff | 10.71 | 2 | 734 | 55,079 | ----- | ----- | ----- | Offsite - Existing 6hr |
| 11 | SCS Runoff | 15.80 | 2 | 734 | 76,018 | ----- | ----- | ----- | Offsite - Existing 12hr |
| 12 | SCS Runoff | 21.33 | 2 | 734 | 98,838 | ----- | ----- | ----- | Offsite - Existing 24hr |
| 13 | SCS Runoff | 28.05 | 2 | 720 | 73,166 | ----- | ----- | ----- | Onsite - Proposed 1hr |
| 14 | SCS Runoff | 39.62 | 2 | 720 | 102,734 | ----- | ----- | ----- | Onsite - Proposed 2hr |
| 15 | SCS Runoff | 46.12 | 2 | 720 | 119,563 | ----- | ----- | ----- | Onsite - Proposed 3hr |
| 16 | SCS Runoff | 59.38 | 2 | 720 | 154,305 | ----- | ----- | ----- | Onsite - Proposed 6hr |
| 17 | SCS Runoff | 72.85 | 2 | 720 | 190,131 | ----- | ----- | ----- | Onsite - Proposed 12hr |
| 18 | SCS Runoff | 86.42 | 2 | 720 | 226,746 | ----- | ----- | ----- | Onsite - Proposed 24hr |
| 19 | Combine | 28.58 | 2 | 722 | 88,361 | 7, 13, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 1hr |
| 20 | Combine | 41.21 | 2 | 722 | 130,918 | 8, 14, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 2hr |
| 21 | Combine | 48.62 | 2 | 722 | 156,015 | 9, 15, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 3hr |
| 22 | Combine | 64.34 | 2 | 722 | 209,384 | 10, 16, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 6hr |
| 23 | Combine | 80.90 | 2 | 722 | 266,149 | 11, 17, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 12hr |
| 24 | Combine | 97.96 | 2 | 722 | 325,584 | 12, 18, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 24hr |
| 25 | Reservoir | 1.376 | 2 | 902 | 84,211 | 19 | 762.12 | 49,723 | RTD CMB 1hr |
| 26 | Reservoir | 2.596 | 2 | 834 | 126,562 | 20 | 762.34 | 70,886 | RTD CMB 2hr |
| 27 | Reservoir | 3.429 | 2 | 818 | 151,579 | 21 | 762.47 | 83,425 | RTD CMB 3hr |
| 28 | Reservoir | 5.079 | 2 | 804 | 204,820 | 22 | 762.76 | 111,419 | RTD CMB 6hr |
| 29 | Reservoir | 5.865 | 2 | 924 | 261,459 | 23 | 763.00 | 145,876 | RTD CMB 12hr |
| 30 | Reservoir | 7.206 | 2 | 808 | 320,766 | 24 | 763.46 | 181,419 | RTD CMB 24hr |
| Laugle Industrial Park.gpw | | | | | Return Period: 10 Year | | | Sunday, 05 / 3 / 2020 | |

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

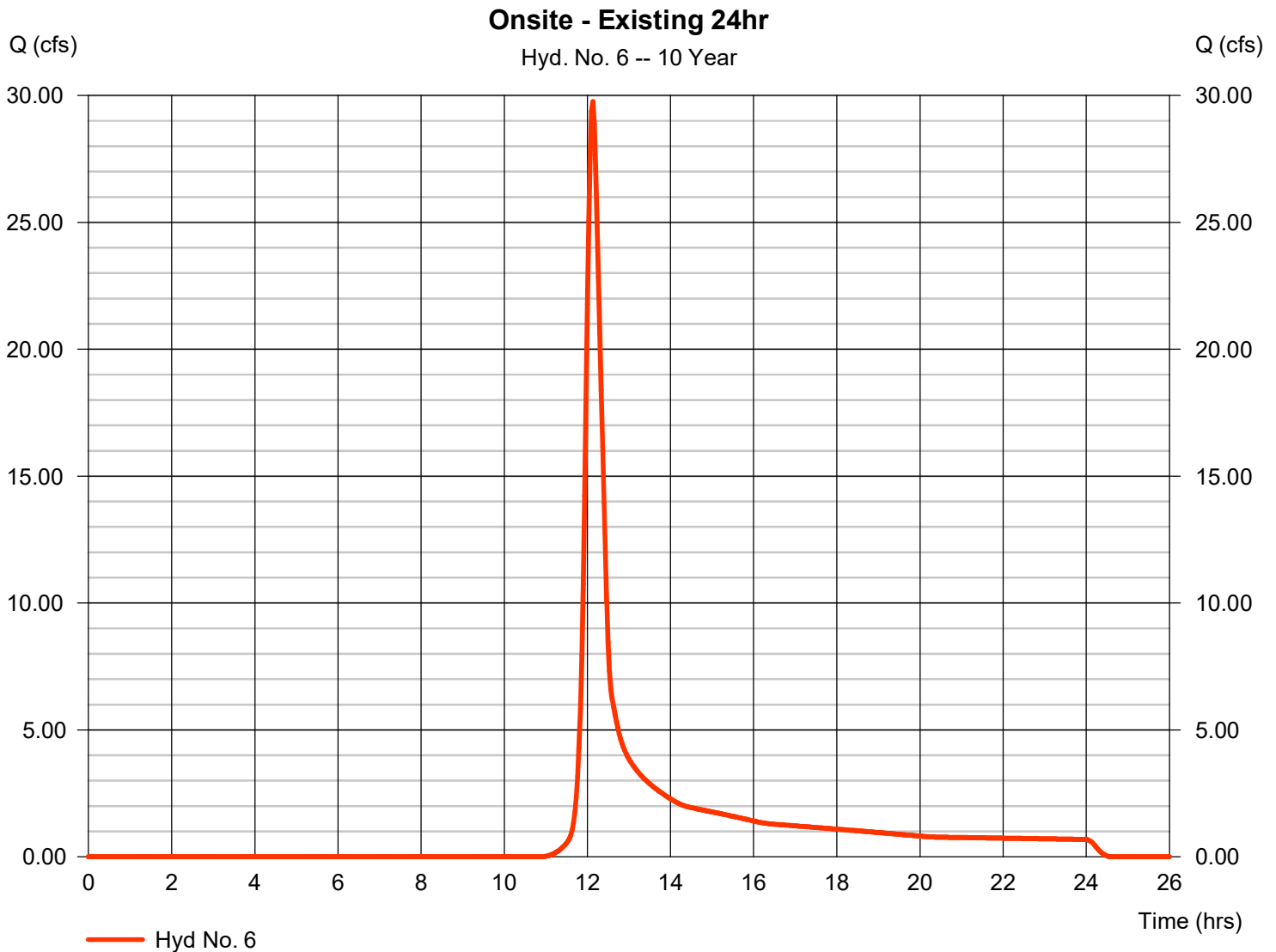
Sunday, 05 / 3 / 2020

Hyd. No. 6

Onsite - Existing 24hr

Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 22.350 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 4.08 in
 Storm duration = 24 hrs

Peak discharge = 29.76 cfs
 Time to peak = 12.13 hrs
 Hyd. volume = 108,916 cuft
 Curve number = 69
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 22.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

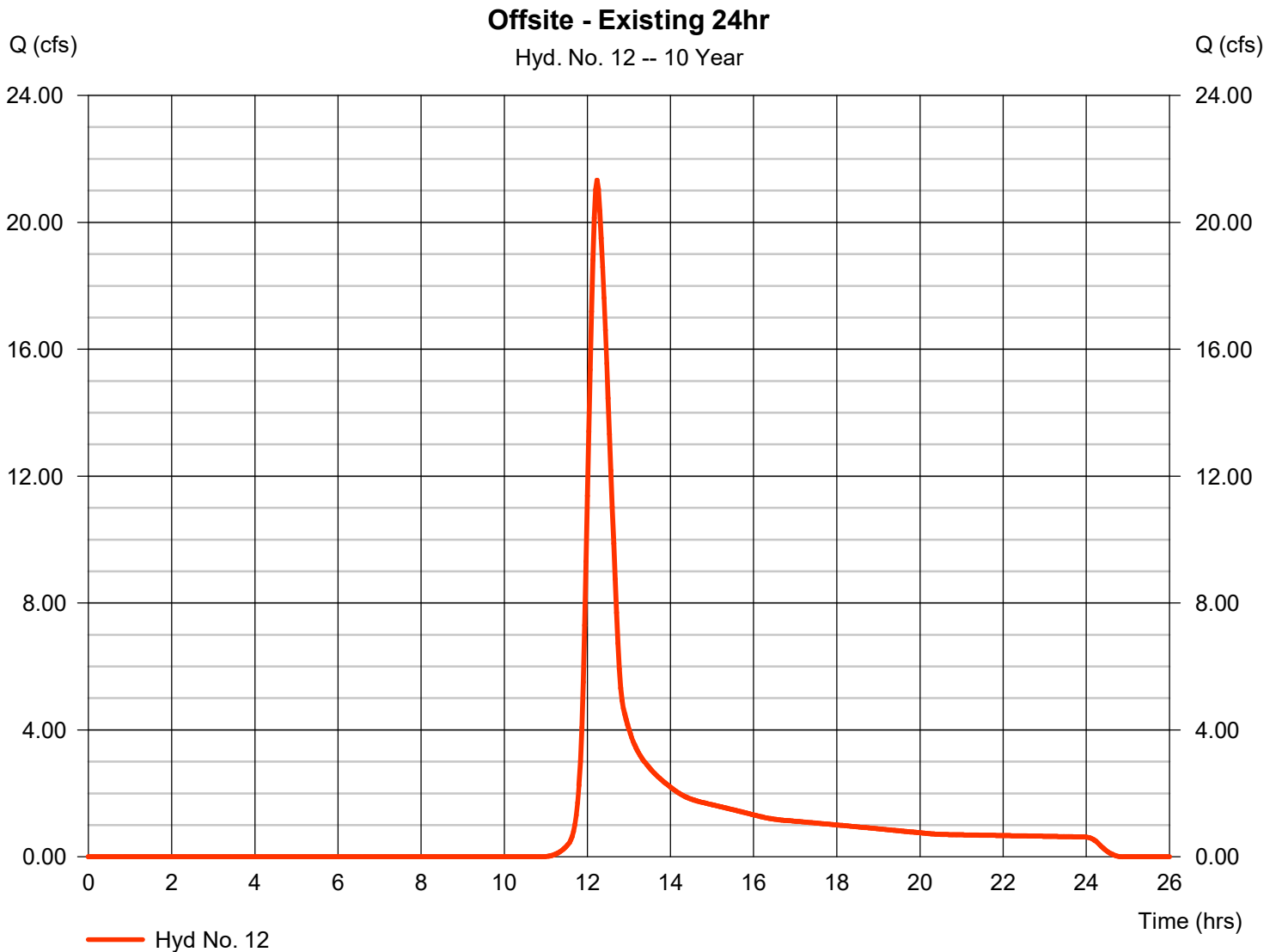
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 12

Offsite - Existing 24hr

| | | | |
|-----------------|--------------|--------------------|---------------|
| Hydrograph type | = SCS Runoff | Peak discharge | = 21.33 cfs |
| Storm frequency | = 10 yrs | Time to peak | = 12.23 hrs |
| Time interval | = 2 min | Hyd. volume | = 98,838 cuft |
| Drainage area | = 20.389 ac | Curve number | = 69 |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = User | Time of conc. (Tc) | = 33.60 min |
| Total precip. | = 4.08 in | Distribution | = Type II |
| Storm duration | = 24 hrs | Shape factor | = 484 |



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|----------------------------|--------------------------|-----------------|---------------------|--------------------|-------------------------|---------------|------------------------|-------------------------|-------------------------------------|
| 1 | SCS Runoff | 11.92 | 2 | 728 | 50,075 | ----- | ----- | ----- | Onsite - Existing 1hr |
| 2 | SCS Runoff | 20.65 | 2 | 728 | 78,777 | ----- | ----- | ----- | Onsite - Existing 2hr |
| 3 | SCS Runoff | 26.37 | 2 | 728 | 97,685 | ----- | ----- | ----- | Onsite - Existing 3hr |
| 4 | SCS Runoff | 36.78 | 2 | 728 | 132,329 | ----- | ----- | ----- | Onsite - Existing 6hr |
| 5 | SCS Runoff | 48.40 | 2 | 728 | 171,306 | ----- | ----- | ----- | Onsite - Existing 12hr |
| 6 | SCS Runoff | 63.99 | 2 | 726 | 224,003 | ----- | ----- | ----- | Onsite - Existing 24hr |
| 7 | SCS Runoff | 8.411 | 2 | 736 | 45,442 | ----- | ----- | ----- | Offsite - Existing 1hr |
| 8 | SCS Runoff | 14.70 | 2 | 734 | 71,488 | ----- | ----- | ----- | Offsite - Existing 2hr |
| 9 | SCS Runoff | 18.86 | 2 | 734 | 88,646 | ----- | ----- | ----- | Offsite - Existing 3hr |
| 10 | SCS Runoff | 26.45 | 2 | 734 | 120,085 | ----- | ----- | ----- | Offsite - Existing 6hr |
| 11 | SCS Runoff | 34.95 | 2 | 734 | 155,455 | ----- | ----- | ----- | Offsite - Existing 12hr |
| 12 | SCS Runoff | 46.35 | 2 | 734 | 203,276 | ----- | ----- | ----- | Offsite - Existing 24hr |
| 13 | SCS Runoff | 52.72 | 2 | 720 | 136,774 | ----- | ----- | ----- | Onsite - Proposed 1hr |
| 14 | SCS Runoff | 70.03 | 2 | 720 | 182,594 | ----- | ----- | ----- | Onsite - Proposed 2hr |
| 15 | SCS Runoff | 80.47 | 2 | 720 | 210,645 | ----- | ----- | ----- | Onsite - Proposed 3hr |
| 16 | SCS Runoff | 98.34 | 2 | 720 | 259,275 | ----- | ----- | ----- | Onsite - Proposed 6hr |
| 17 | SCS Runoff | 117.09 | 2 | 720 | 311,088 | ----- | ----- | ----- | Onsite - Proposed 12hr |
| 18 | SCS Runoff | 140.93 | 2 | 720 | 377,935 | ----- | ----- | ----- | Onsite - Proposed 24hr |
| 19 | Combine | 56.35 | 2 | 722 | 182,216 | 7, 13, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 1hr |
| 20 | Combine | 77.40 | 2 | 722 | 254,082 | 8, 14, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 2hr |
| 21 | Combine | 90.45 | 2 | 722 | 299,291 | 9, 15, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 3hr |
| 22 | Combine | 113.18 | 2 | 722 | 379,359 | 10, 16, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 6hr |
| 23 | Combine | 137.48 | 2 | 722 | 466,543 | 11, 17, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 12hr |
| 24 | Combine | 168.92 | 2 | 722 | 581,211 | 12, 18, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 24hr |
| 25 | Reservoir | 4.351 | 2 | 806 | 177,713 | 19 | 762.61 | 96,682 | RTD CMB 1hr |
| 26 | Reservoir | 5.865 | 2 | 848 | 249,422 | 20 | 763.00 | 137,607 | RTD CMB 2hr |
| 27 | Reservoir | 6.596 | 2 | 810 | 294,527 | 21 | 763.30 | 165,822 | RTD CMB 3hr |
| 28 | Reservoir | 8.306 | 2 | 808 | 374,434 | 22 | 763.77 | 213,722 | RTD CMB 6hr |
| 29 | Reservoir | 9.834 | 2 | 810 | 461,444 | 23 | 763.94 | 267,355 | RTD CMB 12hr |
| 30 | Reservoir | 11.54 | 2 | 814 | 575,902 | 24 | 764.20 | 339,522 | RTD CMB 24hr |
| Laugle Industrial Park.gpw | | | | | Return Period: 100 Year | | | Sunday, 05 / 3 / 2020 | |

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

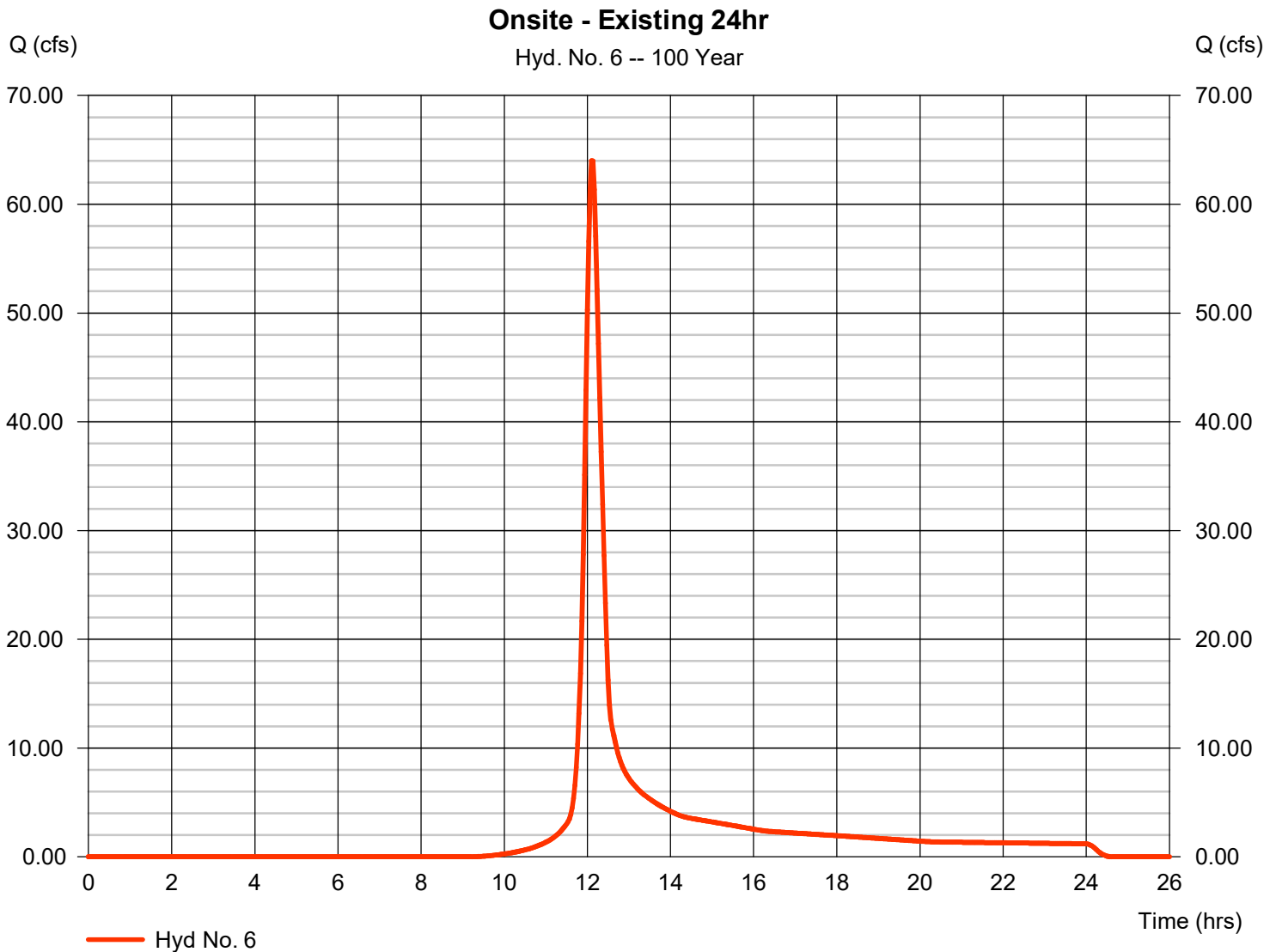
Sunday, 05 / 3 / 2020

Hyd. No. 6

Onsite - Existing 24hr

Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 22.350 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.00 in
 Storm duration = 24 hrs

Peak discharge = 63.99 cfs
 Time to peak = 12.10 hrs
 Hyd. volume = 224,003 cuft
 Curve number = 69
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 22.00 min
 Distribution = Type II
 Shape factor = 484



Hydrograph Report

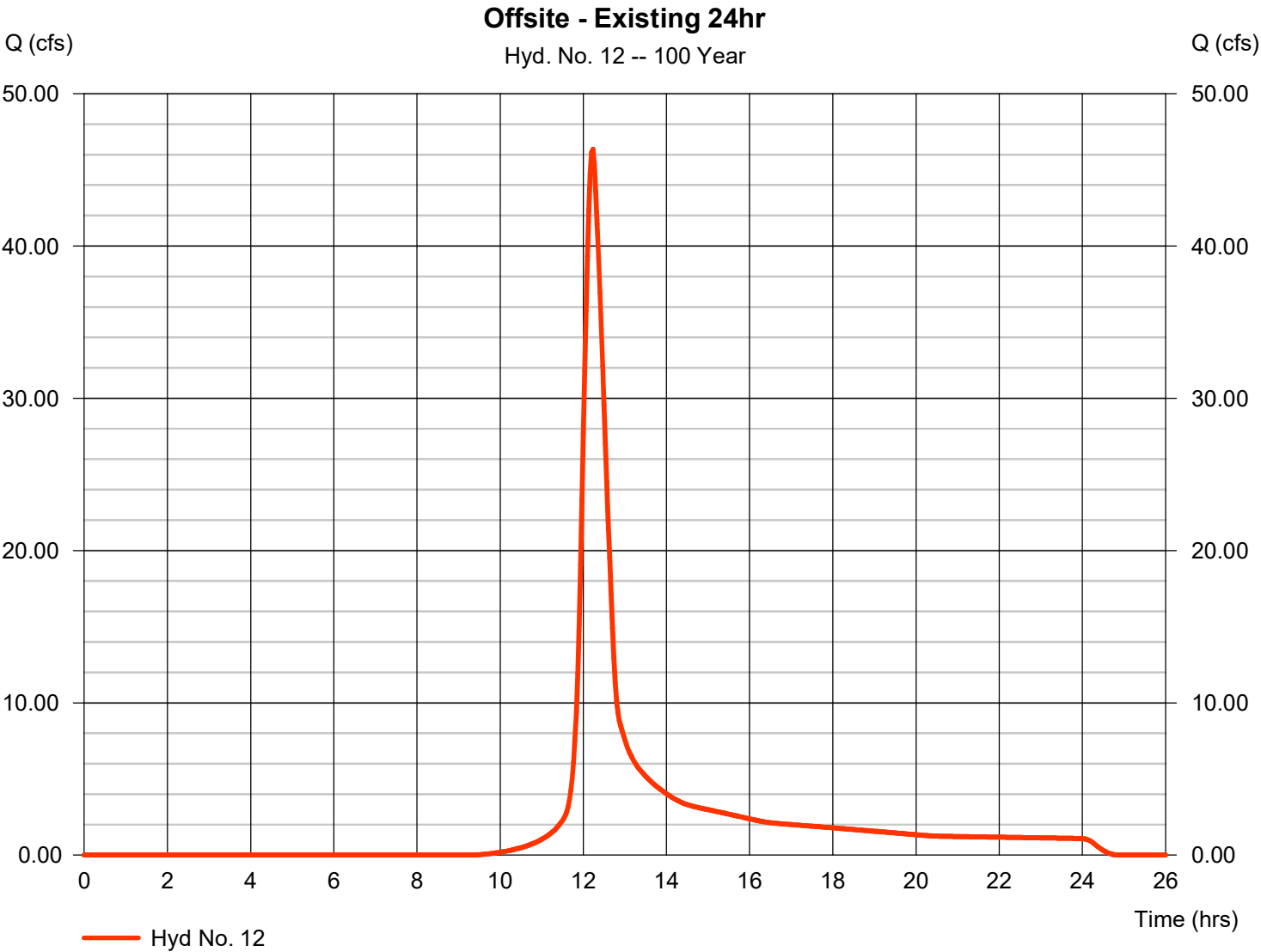
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 12

Offsite - Existing 24hr

| | | | |
|-----------------|--------------|--------------------|----------------|
| Hydrograph type | = SCS Runoff | Peak discharge | = 46.35 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 12.23 hrs |
| Time interval | = 2 min | Hyd. volume | = 203,276 cuft |
| Drainage area | = 20.389 ac | Curve number | = 69 |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = User | Time of conc. (Tc) | = 33.60 min |
| Total precip. | = 6.00 in | Distribution | = Type II |
| Storm duration | = 24 hrs | Shape factor | = 484 |



Appendix B: Post-Developed Conditions

| | | |
|---|--|-----|
| ■ | 2 yr. Hydrograph Summary Report..... | B-1 |
| ■ | Onsite Basin: 2 yr. – 24 hr. Flood Hydrograph | B-2 |
| ■ | Combined Basin: 2 yr. – 24 hr. Flood Hydrograph..... | B-3 |
| ■ | 10 yr. Hydrograph Summary Report..... | B-4 |
| ■ | Onsite Basin: 10 yr. – 24 hr. Flood Hydrograph..... | B-5 |
| ■ | Combined Basin: 10 yr. – 24 hr. Flood Hydrograph | B-6 |
| ■ | 100 yr. Hydrograph Summary Report..... | B-7 |
| ■ | Onsite Basin: 100 yr. – 24 hr. Flood Hydrograph | B-8 |
| ■ | Combined Basin: 100 yr. – 24 hr. Flood Hydrograph..... | B-9 |

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|----------------------------|--------------------------|-----------------|---------------------|--------------------|-----------------------|---------------|------------------------|-------------------------|-------------------------------------|
| 1 | SCS Runoff | 0.061 | 2 | 908 | 2,106 | ----- | ----- | ----- | Onsite - Existing 1hr |
| 2 | SCS Runoff | 0.375 | 2 | 746 | 6,213 | ----- | ----- | ----- | Onsite - Existing 2hr |
| 3 | SCS Runoff | 0.867 | 2 | 738 | 9,540 | ----- | ----- | ----- | Onsite - Existing 3hr |
| 4 | SCS Runoff | 2.583 | 2 | 730 | 17,310 | ----- | ----- | ----- | Onsite - Existing 6hr |
| 5 | SCS Runoff | 6.307 | 2 | 730 | 31,057 | ----- | ----- | ----- | Onsite - Existing 12hr |
| 6 | SCS Runoff | 8.929 | 2 | 728 | 40,169 | ----- | ----- | ----- | Onsite - Existing 24hr |
| 7 | SCS Runoff | 0.055 | 2 | 916 | 1,911 | ----- | ----- | ----- | Offsite - Existing 1hr |
| 8 | SCS Runoff | 0.314 | 2 | 758 | 5,638 | ----- | ----- | ----- | Offsite - Existing 2hr |
| 9 | SCS Runoff | 0.678 | 2 | 748 | 8,658 | ----- | ----- | ----- | Offsite - Existing 3hr |
| 10 | SCS Runoff | 1.853 | 2 | 738 | 15,708 | ----- | ----- | ----- | Offsite - Existing 6hr |
| 11 | SCS Runoff | 4.456 | 2 | 736 | 28,184 | ----- | ----- | ----- | Offsite - Existing 12hr |
| 12 | SCS Runoff | 6.323 | 2 | 736 | 36,452 | ----- | ----- | ----- | Offsite - Existing 24hr |
| 13 | SCS Runoff | 11.43 | 2 | 722 | 30,952 | ----- | ----- | ----- | Onsite - Proposed 1hr |
| 14 | SCS Runoff | 17.39 | 2 | 722 | 45,946 | ----- | ----- | ----- | Onsite - Proposed 2hr |
| 15 | SCS Runoff | 21.14 | 2 | 722 | 55,505 | ----- | ----- | ----- | Onsite - Proposed 3hr |
| 16 | SCS Runoff | 28.56 | 2 | 720 | 74,467 | ----- | ----- | ----- | Onsite - Proposed 6hr |
| 17 | SCS Runoff | 39.62 | 2 | 720 | 102,734 | ----- | ----- | ----- | Onsite - Proposed 12hr |
| 18 | SCS Runoff | 46.12 | 2 | 720 | 119,563 | ----- | ----- | ----- | Onsite - Proposed 24hr |
| 19 | Combine | 11.43 | 2 | 722 | 32,863 | 7, 13, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 1hr |
| 20 | Combine | 17.42 | 2 | 722 | 51,584 | 8, 14, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 2hr |
| 21 | Combine | 21.29 | 2 | 722 | 64,162 | 9, 15, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 3hr |
| 22 | Combine | 29.12 | 2 | 722 | 90,175 | 10, 16, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 6hr |
| 23 | Combine | 41.21 | 2 | 722 | 130,918 | 11, 17, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 12hr |
| 24 | Combine | 48.62 | 2 | 722 | 156,015 | 12, 18, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 24hr |
| 25 | Reservoir | 0.300 | 2 | 1172 | 29,491 | 19 | 761.83 | 21,932 | RTD CMB 1hr |
| 26 | Reservoir | 0.594 | 2 | 1032 | 47,802 | 20 | 761.93 | 31,430 | RTD CMB 2hr |
| 27 | Reservoir | 0.828 | 2 | 962 | 60,219 | 21 | 762.00 | 37,756 | RTD CMB 3hr |
| 28 | Reservoir | 1.423 | 2 | 896 | 86,013 | 22 | 762.13 | 50,600 | RTD CMB 6hr |
| 29 | Reservoir | 2.596 | 2 | 834 | 126,562 | 23 | 762.34 | 70,886 | RTD CMB 12hr |
| 30 | Reservoir | 3.429 | 2 | 818 | 151,579 | 24 | 762.47 | 83,425 | RTD CMB 24hr |
| Laugle Industrial Park.gpw | | | | | Return Period: 2 Year | | | Sunday, 05 / 3 / 2020 | |

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

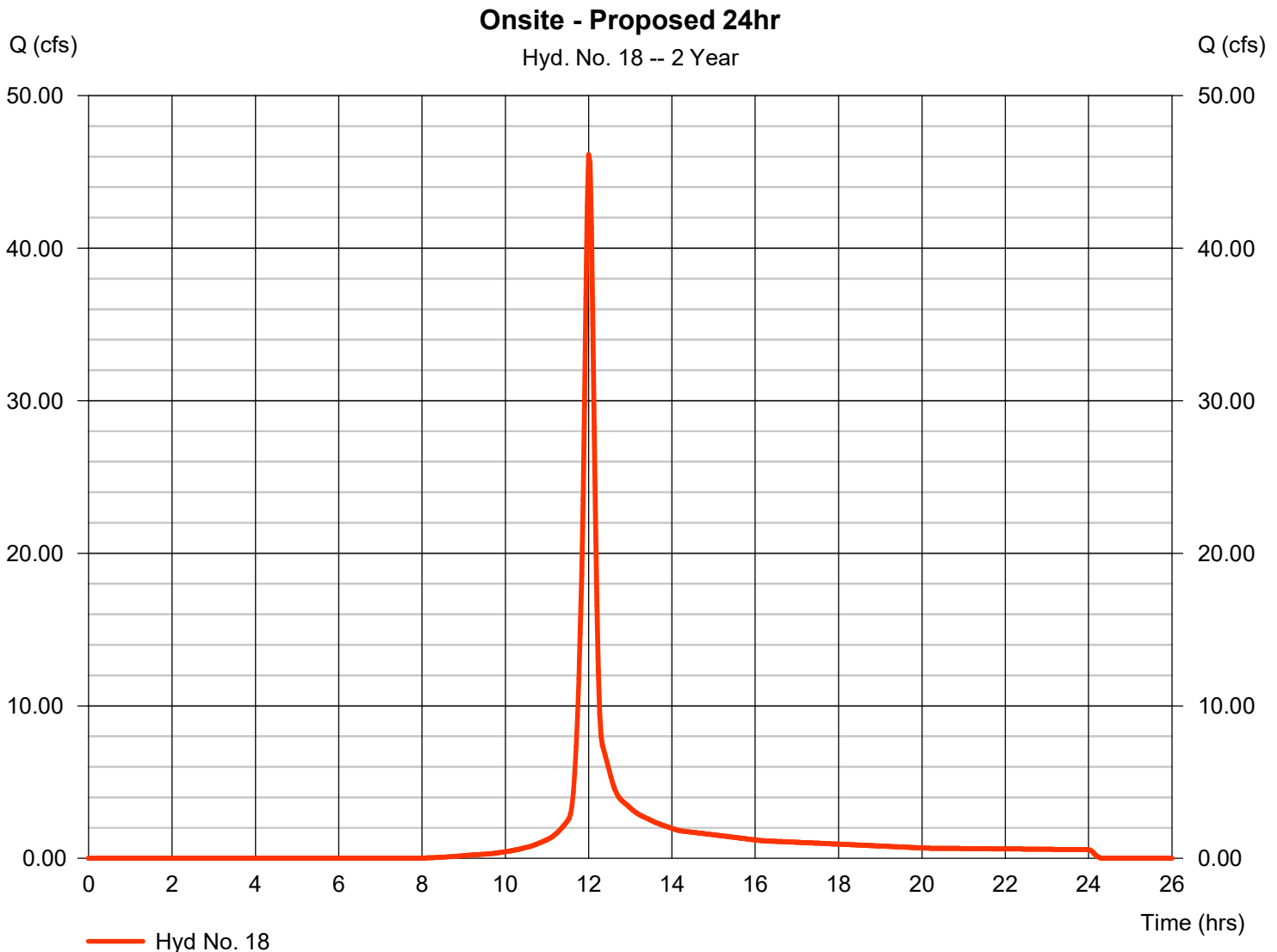
Sunday, 05 / 3 / 2020

Hyd. No. 18

Onsite - Proposed 24hr

| | | | |
|-----------------|--------------|--------------------|----------------|
| Hydrograph type | = SCS Runoff | Peak discharge | = 46.12 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 12.00 hrs |
| Time interval | = 2 min | Hyd. volume | = 119,563 cuft |
| Drainage area | = 22.350 ac | Curve number | = 87* |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = User | Time of conc. (Tc) | = 10.00 min |
| Total precip. | = 2.64 in | Distribution | = Type II |
| Storm duration | = 24 hrs | Shape factor | = 484 |

* Composite (Area/CN) = $[(6.610 \times 98) + (4.100 \times 69) + (11.645 \times 87)] / 22.350$



Hydrograph Report

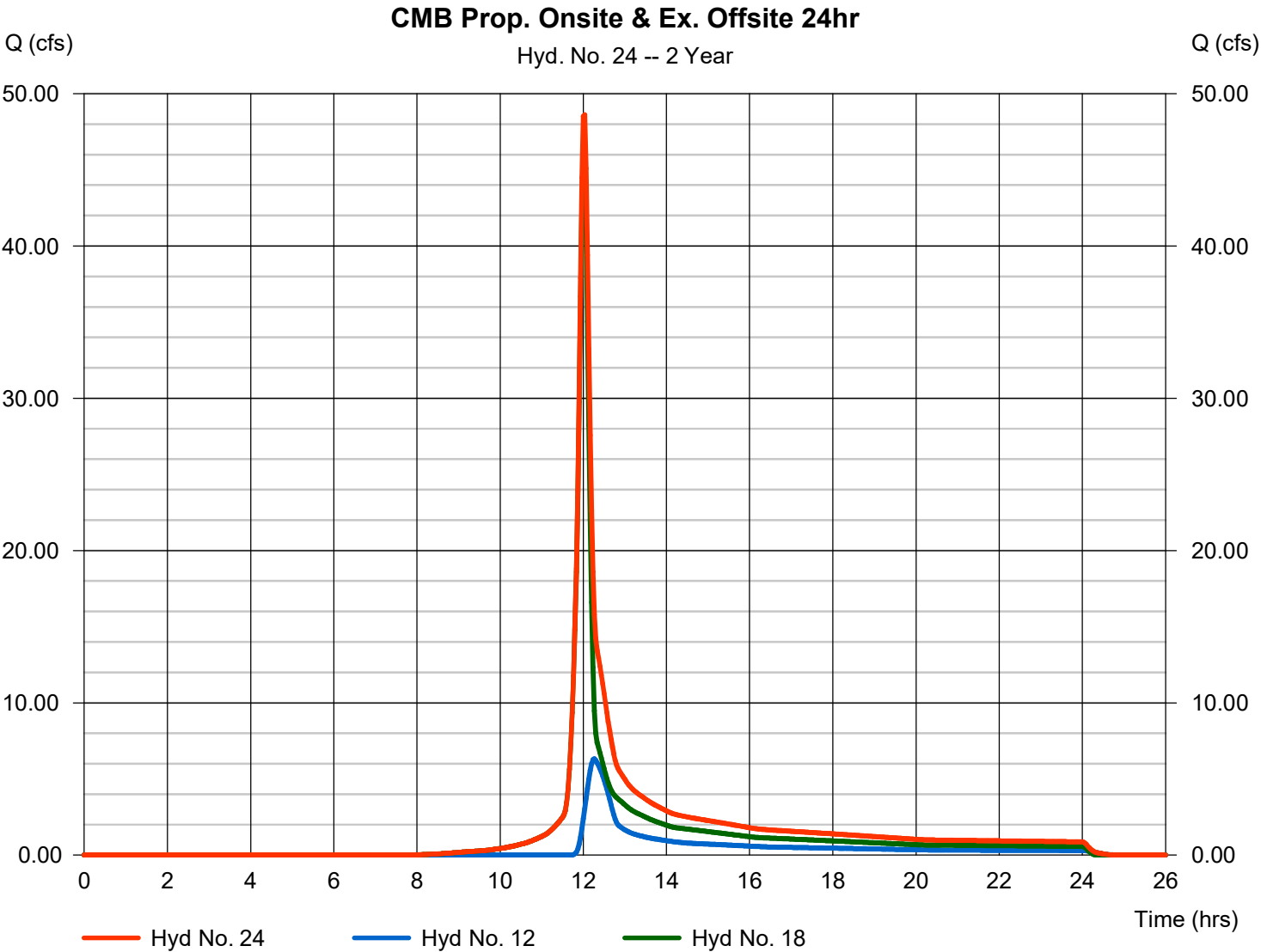
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 24

CMB Prop. Onsite & Ex. Offsite 24hr

| | | | |
|-----------------|-----------|----------------------|----------------|
| Hydrograph type | = Combine | Peak discharge | = 48.62 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 12.03 hrs |
| Time interval | = 2 min | Hyd. volume | = 156,015 cuft |
| Inflow hyds. | = 12, 18 | Contrib. drain. area | = 42.740 ac |



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|----------------------------|--------------------------|-----------------|---------------------|--------------------|------------------------|---------------|------------------------|-------------------------|-------------------------------------|
| 1 | SCS Runoff | 2.445 | 2 | 730 | 16,743 | ----- | ----- | ----- | Onsite - Existing 1hr |
| 2 | SCS Runoff | 6.307 | 2 | 730 | 31,057 | ----- | ----- | ----- | Onsite - Existing 2hr |
| 3 | SCS Runoff | 8.929 | 2 | 728 | 40,169 | ----- | ----- | ----- | Onsite - Existing 3hr |
| 4 | SCS Runoff | 15.16 | 2 | 728 | 60,695 | ----- | ----- | ----- | Onsite - Existing 6hr |
| 5 | SCS Runoff | 22.17 | 2 | 728 | 83,769 | ----- | ----- | ----- | Onsite - Existing 12hr |
| 6 | SCS Runoff | 29.76 | 2 | 728 | 108,916 | ----- | ----- | ----- | Onsite - Existing 24hr |
| 7 | SCS Runoff | 1.758 | 2 | 738 | 15,194 | ----- | ----- | ----- | Offsite - Existing 1hr |
| 8 | SCS Runoff | 4.456 | 2 | 736 | 28,184 | ----- | ----- | ----- | Offsite - Existing 2hr |
| 9 | SCS Runoff | 6.323 | 2 | 736 | 36,452 | ----- | ----- | ----- | Offsite - Existing 3hr |
| 10 | SCS Runoff | 10.71 | 2 | 734 | 55,079 | ----- | ----- | ----- | Offsite - Existing 6hr |
| 11 | SCS Runoff | 15.80 | 2 | 734 | 76,018 | ----- | ----- | ----- | Offsite - Existing 12hr |
| 12 | SCS Runoff | 21.33 | 2 | 734 | 98,838 | ----- | ----- | ----- | Offsite - Existing 24hr |
| 13 | SCS Runoff | 28.05 | 2 | 720 | 73,166 | ----- | ----- | ----- | Onsite - Proposed 1hr |
| 14 | SCS Runoff | 39.62 | 2 | 720 | 102,734 | ----- | ----- | ----- | Onsite - Proposed 2hr |
| 15 | SCS Runoff | 46.12 | 2 | 720 | 119,563 | ----- | ----- | ----- | Onsite - Proposed 3hr |
| 16 | SCS Runoff | 59.38 | 2 | 720 | 154,305 | ----- | ----- | ----- | Onsite - Proposed 6hr |
| 17 | SCS Runoff | 72.85 | 2 | 720 | 190,131 | ----- | ----- | ----- | Onsite - Proposed 12hr |
| 18 | SCS Runoff | 86.42 | 2 | 720 | 226,746 | ----- | ----- | ----- | Onsite - Proposed 24hr |
| 19 | Combine | 28.58 | 2 | 722 | 88,361 | 7, 13, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 1hr |
| 20 | Combine | 41.21 | 2 | 722 | 130,918 | 8, 14, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 2hr |
| 21 | Combine | 48.62 | 2 | 722 | 156,015 | 9, 15, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 3hr |
| 22 | Combine | 64.34 | 2 | 722 | 209,384 | 10, 16, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 6hr |
| 23 | Combine | 80.90 | 2 | 722 | 266,149 | 11, 17, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 12hr |
| 24 | Combine | 97.96 | 2 | 722 | 325,584 | 12, 18, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 24hr |
| 25 | Reservoir | 1.376 | 2 | 902 | 84,211 | 19 | 762.12 | 49,723 | RTD CMB 1hr |
| 26 | Reservoir | 2.596 | 2 | 834 | 126,562 | 20 | 762.34 | 70,886 | RTD CMB 2hr |
| 27 | Reservoir | 3.429 | 2 | 818 | 151,579 | 21 | 762.47 | 83,425 | RTD CMB 3hr |
| 28 | Reservoir | 5.079 | 2 | 804 | 204,820 | 22 | 762.76 | 111,419 | RTD CMB 6hr |
| 29 | Reservoir | 5.865 | 2 | 924 | 261,459 | 23 | 763.00 | 145,876 | RTD CMB 12hr |
| 30 | Reservoir | 7.206 | 2 | 808 | 320,766 | 24 | 763.46 | 181,419 | RTD CMB 24hr |
| Laugle Industrial Park.gpw | | | | | Return Period: 10 Year | | | Sunday, 05 / 3 / 2020 | |

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 18

Onsite - Proposed 24hr

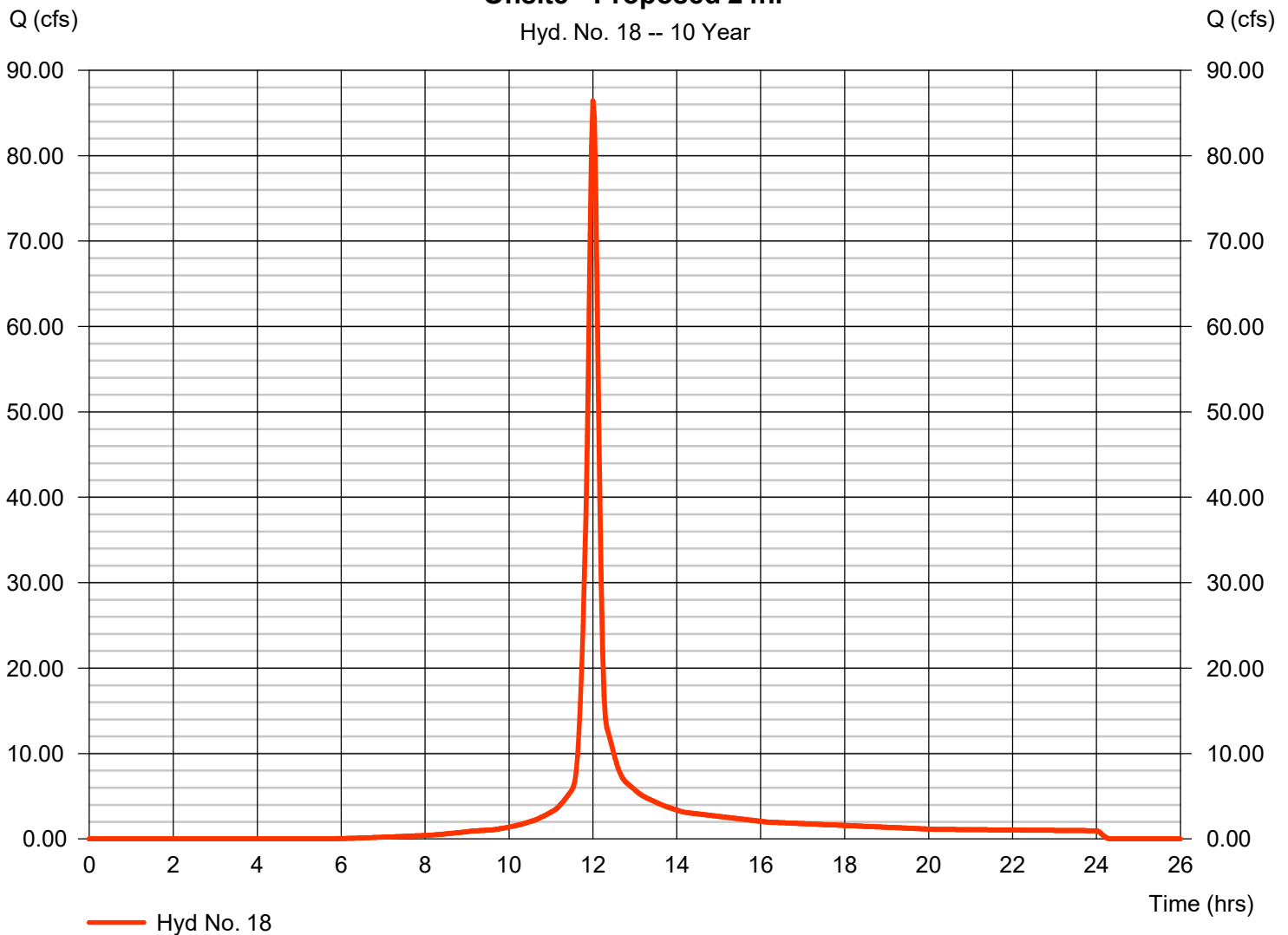
Hydrograph type = SCS Runoff
 Storm frequency = 10 yrs
 Time interval = 2 min
 Drainage area = 22.350 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 4.08 in
 Storm duration = 24 hrs

Peak discharge = 86.42 cfs
 Time to peak = 12.00 hrs
 Hyd. volume = 226,746 cuft
 Curve number = 87*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(6.610 \times 98) + (4.100 \times 69) + (11.645 \times 87)] / 22.350$

Onsite - Proposed 24hr

Hyd. No. 18 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 24

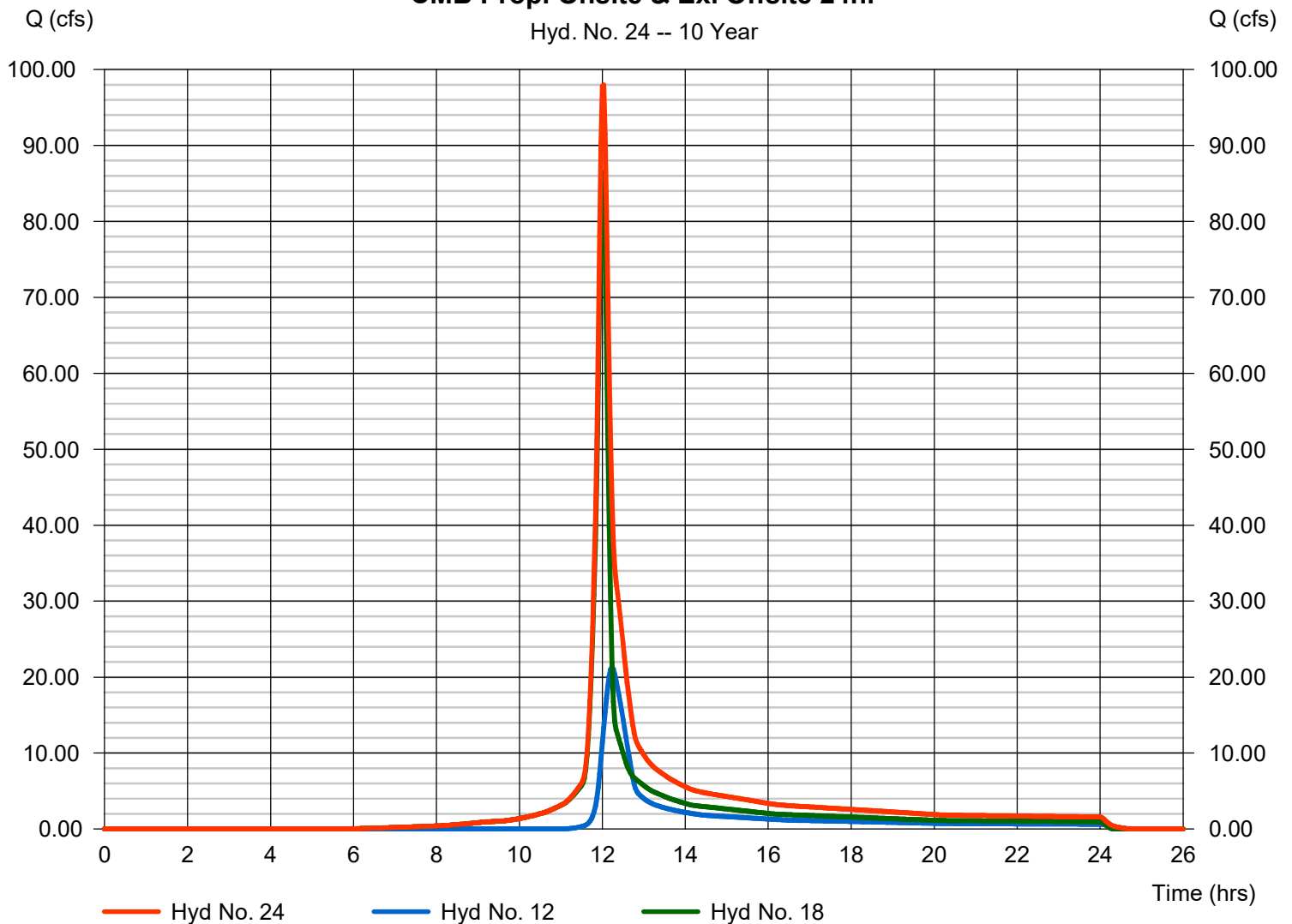
CMB Prop. Onsite & Ex. Offsite 24hr

Hydrograph type = Combine
Storm frequency = 10 yrs
Time interval = 2 min
Inflow hyds. = 12, 18

Peak discharge = 97.96 cfs
Time to peak = 12.03 hrs
Hyd. volume = 325,584 cuft
Contrib. drain. area = 42.740 ac

CMB Prop. Onsite & Ex. Offsite 24hr

Hyd. No. 24 -- 10 Year



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|----------------------------|--------------------------|-----------------|---------------------|--------------------|-------------------------|---------------|------------------------|-------------------------|-------------------------------------|
| 1 | SCS Runoff | 11.92 | 2 | 728 | 50,075 | ----- | ----- | ----- | Onsite - Existing 1hr |
| 2 | SCS Runoff | 20.65 | 2 | 728 | 78,777 | ----- | ----- | ----- | Onsite - Existing 2hr |
| 3 | SCS Runoff | 26.37 | 2 | 728 | 97,685 | ----- | ----- | ----- | Onsite - Existing 3hr |
| 4 | SCS Runoff | 36.78 | 2 | 728 | 132,329 | ----- | ----- | ----- | Onsite - Existing 6hr |
| 5 | SCS Runoff | 48.40 | 2 | 728 | 171,306 | ----- | ----- | ----- | Onsite - Existing 12hr |
| 6 | SCS Runoff | 63.99 | 2 | 726 | 224,003 | ----- | ----- | ----- | Onsite - Existing 24hr |
| 7 | SCS Runoff | 8.411 | 2 | 736 | 45,442 | ----- | ----- | ----- | Offsite - Existing 1hr |
| 8 | SCS Runoff | 14.70 | 2 | 734 | 71,488 | ----- | ----- | ----- | Offsite - Existing 2hr |
| 9 | SCS Runoff | 18.86 | 2 | 734 | 88,646 | ----- | ----- | ----- | Offsite - Existing 3hr |
| 10 | SCS Runoff | 26.45 | 2 | 734 | 120,085 | ----- | ----- | ----- | Offsite - Existing 6hr |
| 11 | SCS Runoff | 34.95 | 2 | 734 | 155,455 | ----- | ----- | ----- | Offsite - Existing 12hr |
| 12 | SCS Runoff | 46.35 | 2 | 734 | 203,276 | ----- | ----- | ----- | Offsite - Existing 24hr |
| 13 | SCS Runoff | 52.72 | 2 | 720 | 136,774 | ----- | ----- | ----- | Onsite - Proposed 1hr |
| 14 | SCS Runoff | 70.03 | 2 | 720 | 182,594 | ----- | ----- | ----- | Onsite - Proposed 2hr |
| 15 | SCS Runoff | 80.47 | 2 | 720 | 210,645 | ----- | ----- | ----- | Onsite - Proposed 3hr |
| 16 | SCS Runoff | 98.34 | 2 | 720 | 259,275 | ----- | ----- | ----- | Onsite - Proposed 6hr |
| 17 | SCS Runoff | 117.09 | 2 | 720 | 311,088 | ----- | ----- | ----- | Onsite - Proposed 12hr |
| 18 | SCS Runoff | 140.93 | 2 | 720 | 377,935 | ----- | ----- | ----- | Onsite - Proposed 24hr |
| 19 | Combine | 56.35 | 2 | 722 | 182,216 | 7, 13, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 1hr |
| 20 | Combine | 77.40 | 2 | 722 | 254,082 | 8, 14, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 2hr |
| 21 | Combine | 90.45 | 2 | 722 | 299,291 | 9, 15, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 3hr |
| 22 | Combine | 113.18 | 2 | 722 | 379,359 | 10, 16, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 6hr |
| 23 | Combine | 137.48 | 2 | 722 | 466,543 | 11, 17, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 12hr |
| 24 | Combine | 168.92 | 2 | 722 | 581,211 | 12, 18, | ----- | ----- | CMB Prop. Onsite & Ex. Offsite 24hr |
| 25 | Reservoir | 4.351 | 2 | 806 | 177,713 | 19 | 762.61 | 96,682 | RTD CMB 1hr |
| 26 | Reservoir | 5.865 | 2 | 848 | 249,422 | 20 | 763.00 | 137,607 | RTD CMB 2hr |
| 27 | Reservoir | 6.596 | 2 | 810 | 294,527 | 21 | 763.30 | 165,822 | RTD CMB 3hr |
| 28 | Reservoir | 8.306 | 2 | 808 | 374,434 | 22 | 763.77 | 213,722 | RTD CMB 6hr |
| 29 | Reservoir | 9.834 | 2 | 810 | 461,444 | 23 | 763.94 | 267,355 | RTD CMB 12hr |
| 30 | Reservoir | 11.54 | 2 | 814 | 575,902 | 24 | 764.20 | 339,522 | RTD CMB 24hr |
| Laugle Industrial Park.gpw | | | | | Return Period: 100 Year | | | Sunday, 05 / 3 / 2020 | |

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 18

Onsite - Proposed 24hr

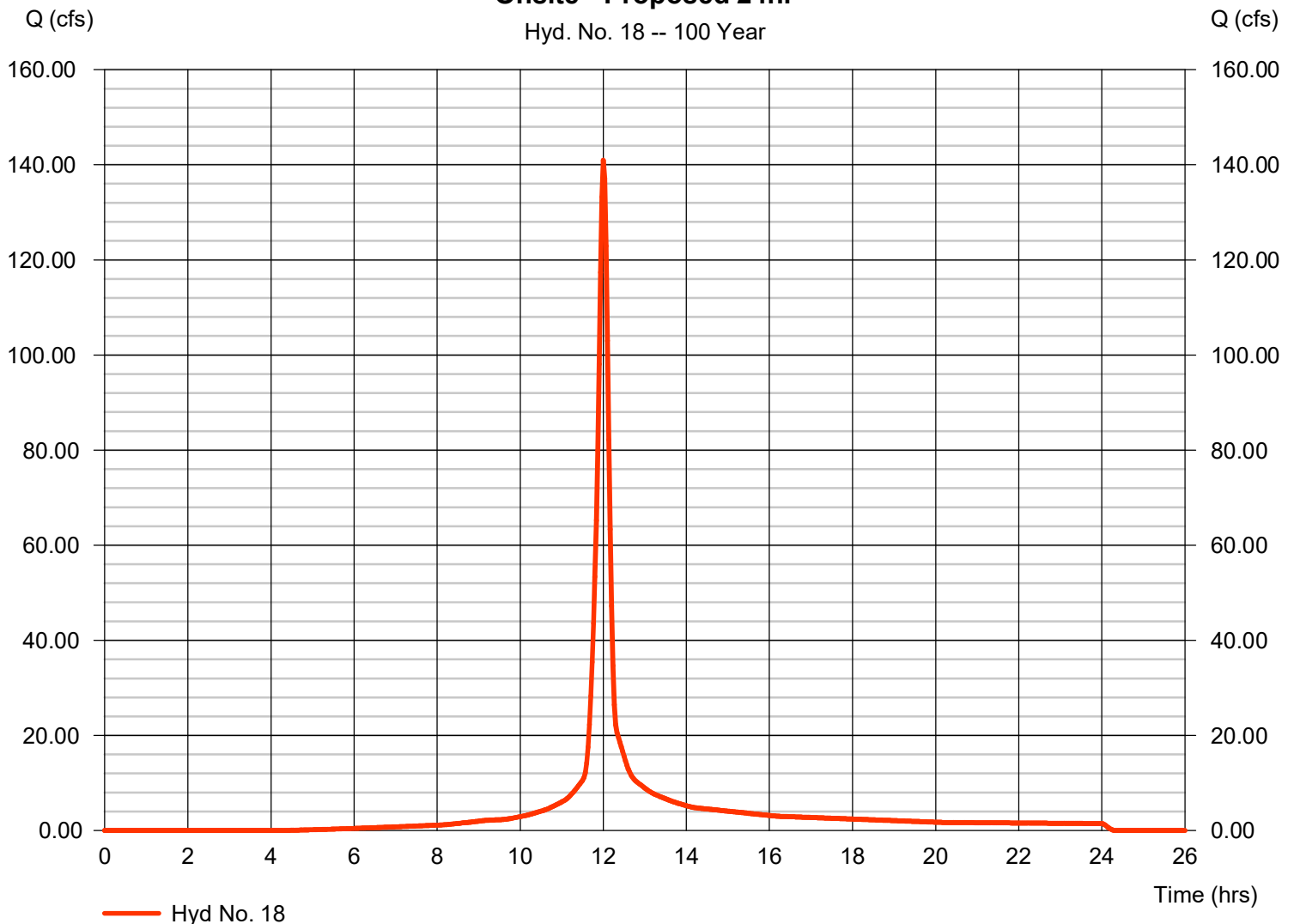
Hydrograph type = SCS Runoff
 Storm frequency = 100 yrs
 Time interval = 2 min
 Drainage area = 22.350 ac
 Basin Slope = 0.0 %
 Tc method = User
 Total precip. = 6.00 in
 Storm duration = 24 hrs

Peak discharge = 140.93 cfs
 Time to peak = 12.00 hrs
 Hyd. volume = 377,935 cuft
 Curve number = 87*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 10.00 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(6.610 \times 98) + (4.100 \times 69) + (11.645 \times 87)] / 22.350$

Onsite - Proposed 24hr

Hyd. No. 18 -- 100 Year



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Sunday, 05 / 3 / 2020

Hyd. No. 24

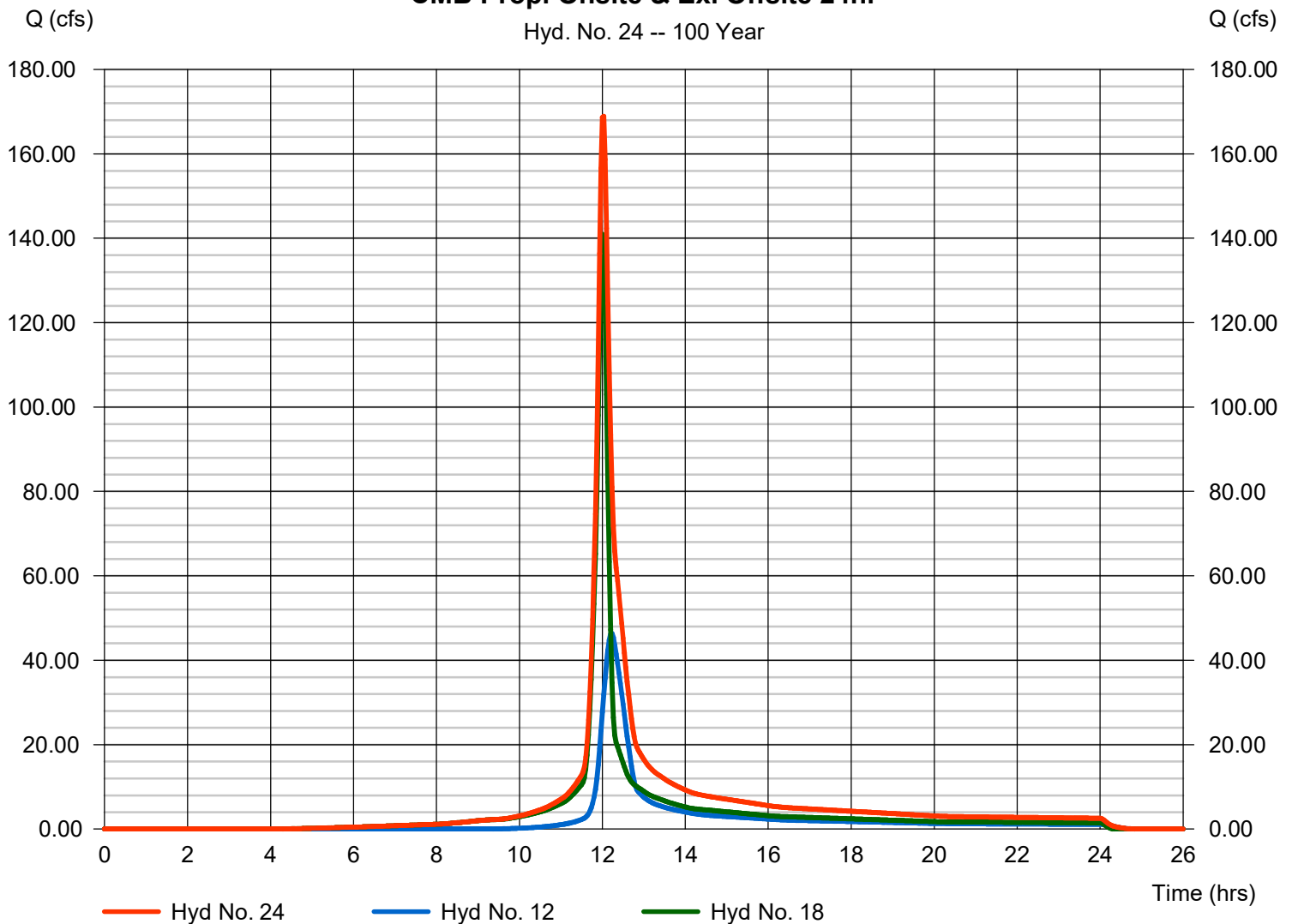
CMB Prop. Onsite & Ex. Offsite 24hr

Hydrograph type = Combine
Storm frequency = 100 yrs
Time interval = 2 min
Inflow hyds. = 12, 18

Peak discharge = 168.92 cfs
Time to peak = 12.03 hrs
Hyd. volume = 581,211 cuft
Contrib. drain. area = 42.740 ac

CMB Prop. Onsite & Ex. Offsite 24hr

Hyd. No. 24 -- 100 Year



Appendix C: Detention Calculations

| | | |
|---|--|-----|
| ■ | Reservoir Report..... | C-1 |
| ■ | Combined Basin: 2 yr. – 24 hr. Routed Flood Hydrograph | C-2 |
| ■ | Combined Basin: 10 yr. – 24 hr. Routed Flood Hydrograph..... | C-3 |
| ■ | Combined Basin: 100 yr. – 24 hr. Routed Flood Hydrograph | C-4 |

Pond No. 2 - Detention Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Beginning Elevation = 761.60 ft

Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|------------|----------------|---------------------|----------------------|----------------------|
| 0.00 | 761.60 | 92,979 | 0 | 0 |
| 1.00 | 762.60 | 97,728 | 95,334 | 95,334 |
| 2.00 | 763.60 | 102,578 | 100,133 | 195,467 |
| 3.00 | 764.60 | 107,529 | 105,033 | 300,501 |
| 4.00 | 765.60 | 112,580 | 110,034 | 410,534 |
| 5.00 | 766.60 | 117,731 | 115,134 | 525,669 |

Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|-----------------|----------|--------|--------|----------|
| Rise (in) | = 18.00 | 3.00 | 18.00 | 0.00 |
| Span (in) | = 18.00 | 3.00 | 18.00 | 0.00 |
| No. Barrels | = 1 | 1 | 1 | 0 |
| Invert El. (ft) | = 761.60 | 761.60 | 762.15 | 0.00 |
| Length (ft) | = 122.00 | 0.00 | 0.00 | 0.00 |
| Slope (%) | = 0.49 | 0.00 | 0.00 | n/a |
| N-Value | = .013 | .013 | .013 | n/a |
| Orifice Coeff. | = 0.60 | 0.60 | 0.60 | 0.60 |
| Multi-Stage | = n/a | Yes | Yes | No |

Weir Structures

| | [A] | [B] | [C] | [D] |
|----------------|-----------------------|------|------|------|
| Crest Len (ft) | = 10.00 | 0.00 | 0.00 | 0.00 |
| Crest El. (ft) | = 764.40 | 0.00 | 0.00 | 0.00 |
| Weir Coeff. | = 3.33 | 3.33 | 3.33 | 3.33 |
| Weir Type | = 1 | --- | --- | --- |
| Multi-Stage | = Yes | Yes | No | No |
| Exfil.(in/hr) | = 0.000 (by Wet area) | | | |
| TW Elev. (ft) | = 0.00 | | | |

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|----------|--------------|--------------|-----------|-----------|-----------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 0.00 | 0 | 761.60 | 0.00 | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 0.000 |
| 1.00 | 95,334 | 762.60 | 4.28 ic | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 4.281 |
| 2.00 | 195,467 | 763.60 | 7.72 oc | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 7.719 |
| 3.00 | 300,501 | 764.60 | 10.67 oc | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 10.67 |
| 4.00 | 410,534 | 765.60 | 12.97 oc | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 12.97 |
| 5.00 | 525,669 | 766.60 | 14.91 oc | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 14.91 |

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

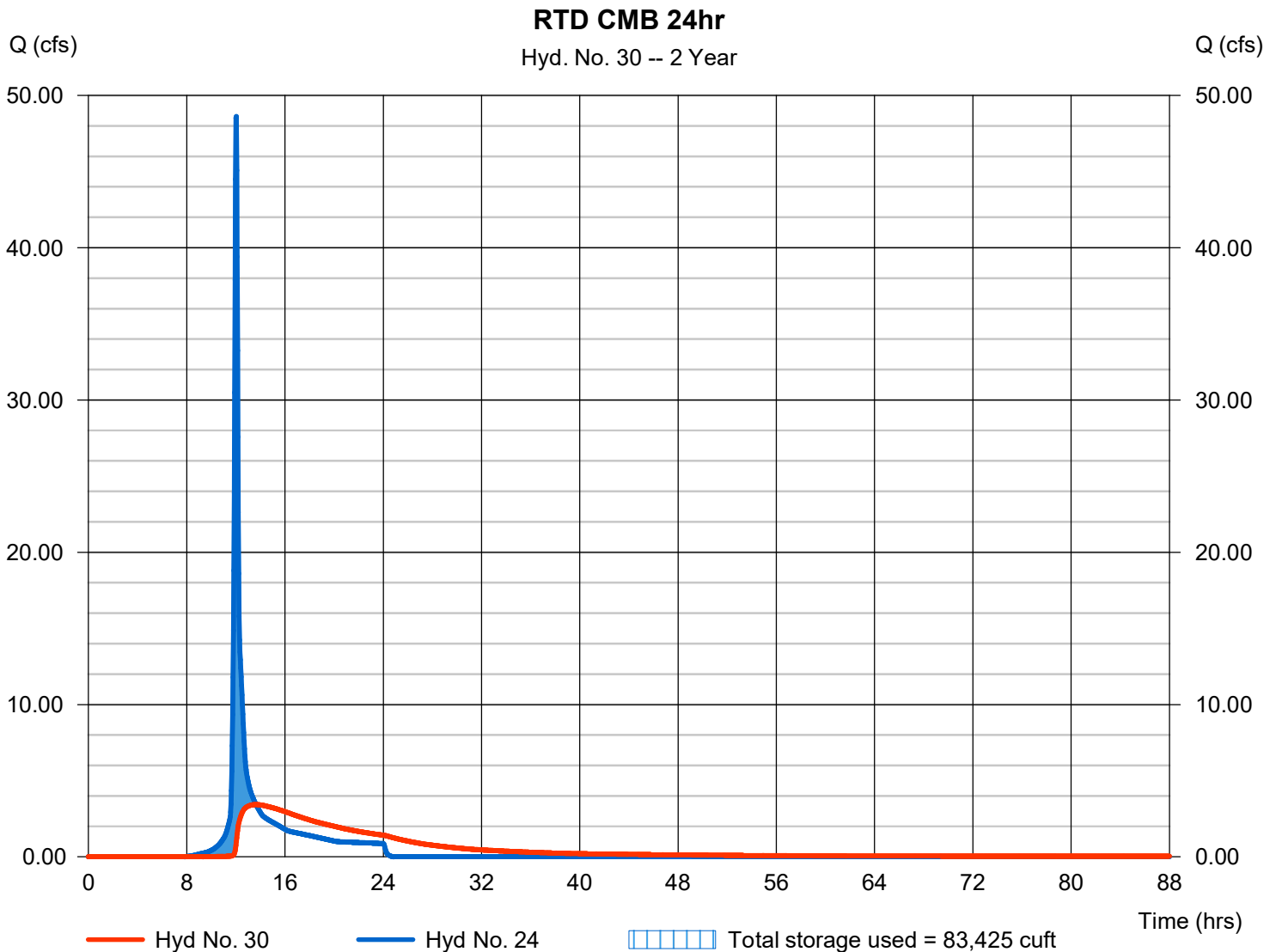
Sunday, 05 / 3 / 2020

Hyd. No. 30

RTD CMB 24hr

| | | | |
|-----------------|-------------------------------|----------------|----------------|
| Hydrograph type | = Reservoir | Peak discharge | = 3.429 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 13.63 hrs |
| Time interval | = 2 min | Hyd. volume | = 151,579 cuft |
| Inflow hyd. No. | = 24 - CMB Prop. Onsite & Ex. | Max. Elevation | = 762.47 ft |
| Reservoir name | = Detention Pond | Max. Storage | = 83,425 cuft |

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

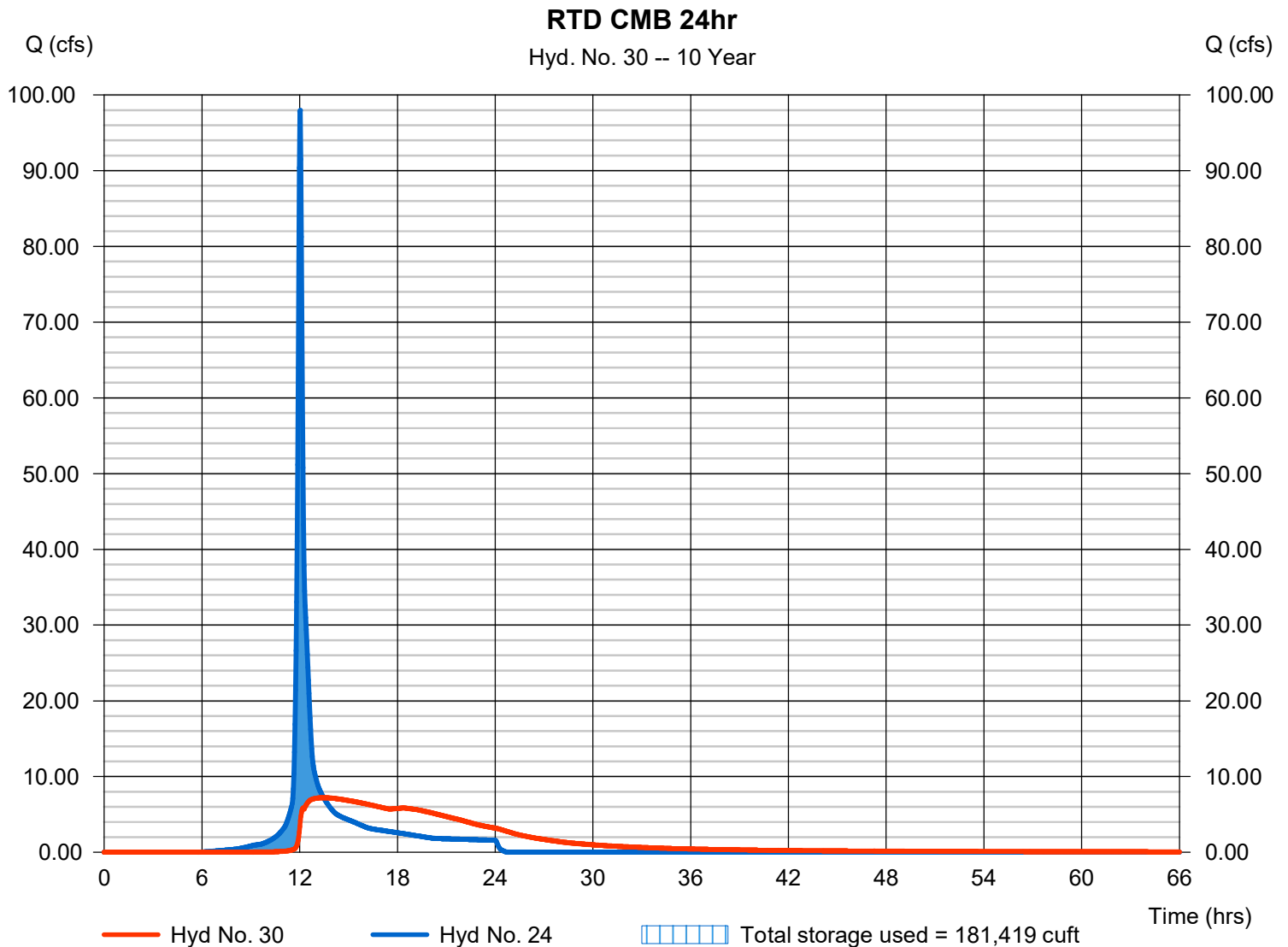
Sunday, 05 / 3 / 2020

Hyd. No. 30

RTD CMB 24hr

| | | | |
|-----------------|-------------------------------|----------------|----------------|
| Hydrograph type | = Reservoir | Peak discharge | = 7.206 cfs |
| Storm frequency | = 10 yrs | Time to peak | = 13.47 hrs |
| Time interval | = 2 min | Hyd. volume | = 320,766 cuft |
| Inflow hyd. No. | = 24 - CMB Prop. Onsite & Ex. | Max. Elevation | = 763.46 ft |
| Reservoir name | = Detention Pond | Max. Storage | = 181,419 cuft |

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

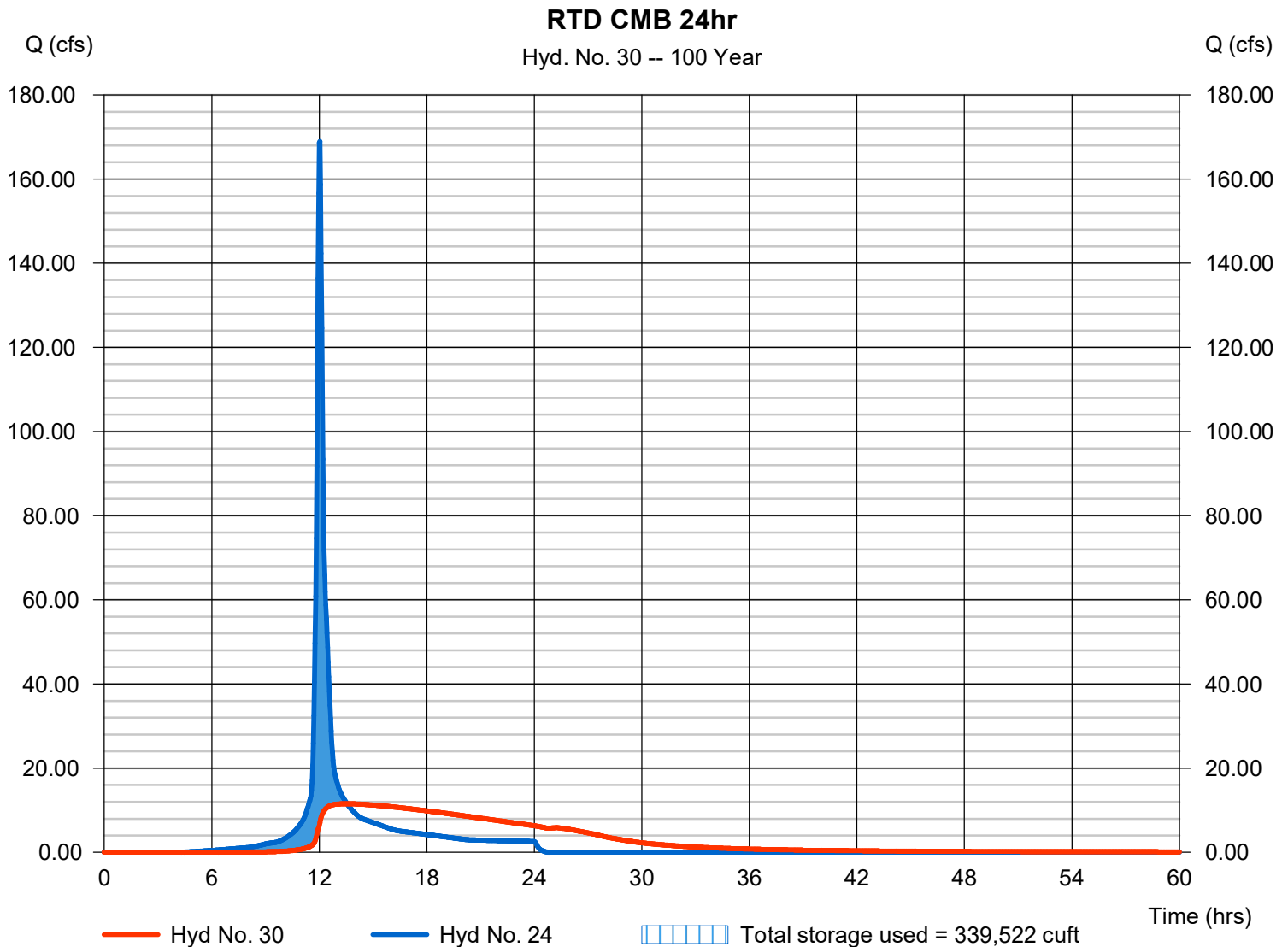
Sunday, 05 / 3 / 2020

Hyd. No. 30

RTD CMB 24hr

| | | | |
|-----------------|-------------------------------|----------------|----------------|
| Hydrograph type | = Reservoir | Peak discharge | = 11.54 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 13.57 hrs |
| Time interval | = 2 min | Hyd. volume | = 575,902 cuft |
| Inflow hyd. No. | = 24 - CMB Prop. Onsite & Ex. | Max. Elevation | = 764.20 ft |
| Reservoir name | = Detention Pond | Max. Storage | = 339,522 cuft |

Storage Indication method used.



Appendix D: Water Quality Calculations

- Routed 0.5" Direct Runoff Water Quality HydrographD-1 – D-6

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Monday, 06 / 8 / 2020

Hyd. No. 33

RTD WQ - 0.5in DR

| | | | |
|-----------------|----------------------|----------------|------------------|
| Hydrograph type | = Reservoir | Peak discharge | = 0.425 cfs |
| Storm frequency | = 1 yrs | Time to peak | = 1042 min |
| Time interval | = 2 min | Hyd. volume | = 37,231 cuft |
| Inflow hyd. No. | = 32 - WQ - 0.5in DR | Reservoir name | = Detention Pond |
| Max. Elevation | = 761.88 ft | Max. Storage | = 26,337 cuft |

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

| Time (min) | Inflow cfs | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | Outflow cfs |
|------------|------------|--------------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|-----------|-------------|
| 700 | 1.058 | 761.61 | 0.004 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.004 |
| 702 | 1.456 | 761.61 | 0.005 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.005 |
| 704 | 1.977 | 761.61 | 0.006 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.006 |
| 706 | 2.642 | 761.61 | 0.008 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.008 |
| 708 | 3.526 | 761.62 | 0.010 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.010 |
| 710 | 4.725 | 761.62 | 0.013 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.013 |
| 712 | 6.360 | 761.63 | 0.017 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.017 |
| 714 | 8.566 | 761.64 | 0.023 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.023 |
| 716 | 11.15 | 761.65 | 0.030 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.030 |
| 718 | 13.56 | 761.67 | 0.039 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.039 |
| 720 | 15.13 | 761.69 | 0.050 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.050 |
| 722 | 15.34 << | 761.70 | 0.065 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.065 |
| 724 | 14.21 | 761.72 | 0.095 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.095 |
| 726 | 12.23 | 761.74 | 0.121 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.121 |
| 728 | 10.02 | 761.75 | 0.143 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.143 |
| 730 | 7.944 | 761.76 | 0.161 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.161 |
| 732 | 6.098 | 761.77 | 0.175 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.175 |
| 734 | 4.599 | 761.78 | 0.186 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.186 |
| 736 | 3.582 | 761.78 | 0.193 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.193 |
| 738 | 3.048 | 761.79 | 0.200 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.200 |

Continues on next page...

RTD WQ - 0.5in DR

Hydrograph Discharge Table

| Time (min) | Inflow cfs | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | Outflow cfs |
|-----------------------|-----------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|------------------------|
| 740 | 2.824 | 761.79 | 0.205 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.205 |
| 742 | 2.704 | 761.79 | 0.210 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.210 |
| 744 | 2.582 | 761.80 | 0.215 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.215 |
| 746 | 2.459 | 761.80 | 0.221 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.221 |
| 748 | 2.333 | 761.80 | 0.228 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.228 |
| 750 | 2.205 | 761.81 | 0.235 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.235 |
| 752 | 2.078 | 761.81 | 0.242 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.242 |
| 754 | 1.956 | 761.81 | 0.248 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.248 |
| 756 | 1.846 | 761.81 | 0.254 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.254 |
| 758 | 1.751 | 761.81 | 0.259 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.259 |
| 760 | 1.674 | 761.82 | 0.264 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.264 |
| 762 | 1.612 | 761.82 | 0.269 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.269 |
| 764 | 1.562 | 761.82 | 0.273 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.273 |
| 766 | 1.521 | 761.82 | 0.277 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.277 |
| 768 | 1.487 | 761.82 | 0.281 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.282 |
| 770 | 1.456 | 761.82 | 0.286 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.286 |
| 772 | 1.427 | 761.83 | 0.290 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.290 |
| 774 | 1.398 | 761.83 | 0.293 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.293 |
| 776 | 1.368 | 761.83 | 0.297 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.297 |
| 778 | 1.339 | 761.83 | 0.301 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.301 |
| 780 | 1.308 | 761.83 | 0.304 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.304 |
| 782 | 1.279 | 761.83 | 0.307 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.308 |
| 784 | 1.249 | 761.83 | 0.311 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.311 |
| 786 | 1.222 | 761.84 | 0.314 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.314 |
| 788 | 1.197 | 761.84 | 0.317 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.317 |
| 790 | 1.174 | 761.84 | 0.320 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.320 |
| 792 | 1.153 | 761.84 | 0.323 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.323 |
| 794 | 1.134 | 761.84 | 0.326 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.326 |

Continues on next page...

RTD WQ - 0.5in DR

Hydrograph Discharge Table

| Time (min) | Inflow cfs | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | Outflow cfs |
|---------------|---------------|-----------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|----------------|
| 1020 | 0.442 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1022 | 0.440 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1024 | 0.439 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1026 | 0.437 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1028 | 0.436 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1030 | 0.434 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1032 | 0.433 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1034 | 0.431 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1036 | 0.429 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1038 | 0.428 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1040 | 0.426 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| << 1042 | 0.425 | 761.88 << | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1044 | 0.423 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1046 | 0.421 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1048 | 0.420 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1050 | 0.418 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1052 | 0.417 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1054 | 0.415 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1056 | 0.413 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1058 | 0.412 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1060 | 0.410 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1062 | 0.409 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1064 | 0.407 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1066 | 0.405 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1068 | 0.404 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1070 | 0.402 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1072 | 0.401 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |

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RTD WQ - 0.5in DR

Hydrograph Discharge Table

| Time (min) | Inflow cfs | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | Outflow cfs |
|-----------------------|-----------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|------------------------|
| 1074 | 0.399 | 761.88 | 0.425 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1076 | 0.397 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.425 |
| 1078 | 0.396 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1080 | 0.394 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1082 | 0.392 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1084 | 0.391 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1086 | 0.389 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1088 | 0.387 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1090 | 0.386 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1092 | 0.384 | 761.88 | 0.424 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.424 |
| 1094 | 0.382 | 761.88 | 0.423 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1096 | 0.381 | 761.88 | 0.423 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1098 | 0.379 | 761.88 | 0.423 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1100 | 0.378 | 761.88 | 0.423 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1102 | 0.376 | 761.88 | 0.423 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1104 | 0.374 | 761.88 | 0.423 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1106 | 0.373 | 761.88 | 0.422 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.423 |
| 1108 | 0.371 | 761.88 | 0.422 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.422 |
| 1110 | 0.369 | 761.88 | 0.422 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.422 |
| 1112 | 0.368 | 761.87 | 0.422 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.422 |
| 1114 | 0.366 | 761.87 | 0.422 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.422 |
| 1116 | 0.364 | 761.87 | 0.422 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.422 |
| 1118 | 0.363 | 761.87 | 0.421 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.421 |
| 1120 | 0.361 | 761.87 | 0.421 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.421 |
| 1122 | 0.359 | 761.87 | 0.421 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.421 |
| 1124 | 0.357 | 761.87 | 0.421 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.421 |
| 1126 | 0.356 | 761.87 | 0.420 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.421 |
| 1128 | 0.354 | 761.87 | 0.420 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.420 |

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RTD WQ - 0.5in DR

Hydrograph Discharge Table

| Time (min) | Inflow cfs | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | Outflow cfs |
|-----------------------|-----------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|------------------------|
| 2418 | 0.000 | 761.73 | 0.110 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.110 |
| 2420 | 0.000 | 761.73 | 0.110 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.110 |
| 2422 | 0.000 | 761.73 | 0.110 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.110 |
| 2424 | 0.000 | 761.73 | 0.110 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.110 |
| 2426 | 0.000 | 761.73 | 0.109 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.109 |
| 2428 | 0.000 | 761.73 | 0.109 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.109 |
| 2430 | 0.000 | 761.73 | 0.109 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.109 |
| 2432 | 0.000 | 761.73 | 0.109 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.109 |
| 2434 | 0.000 | 761.73 | 0.109 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.109 |
| 2436 | 0.000 | 761.73 | 0.108 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.108 |
| 2438 | 0.000 | 761.73 | 0.108 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.108 |
| 2440 | 0.000 | 761.73 | 0.108 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.108 |
| 2442 | 0.000 | 761.73 | 0.108 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.108 |
| 2444 | 0.000 | 761.73 | 0.107 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.107 |
| 2446 | 0.000 | 761.73 | 0.107 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.107 |
| 2448 | 0.000 | 761.73 | 0.107 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.107 |
| 2450 | 0.000 | 761.73 | 0.107 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.107 |
| 2452 | 0.000 | 761.73 | 0.107 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.107 |
| 2454 | 0.000 | 761.73 | 0.106 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.106 |
| 2456 | 0.000 | 761.73 | 0.106 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.106 |
| 2458 | 0.000 | 761.73 | 0.106 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.106 |
| 2460 | 0.000 | 761.73 | 0.106 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.106 |
| 2462 | 0.000 | 761.73 | 0.105 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.105 |
| 2464 | 0.000 | 761.73 | 0.105 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.105 |
| 2466 | 0.000 | 761.73 | 0.105 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.105 |
| 2468 | 0.000 | 761.73 | 0.105 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.105 |
| 2470 | 0.000 | 761.73 | 0.105 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.105 |
| 2472 | 0.000 | 761.73 | 0.104 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.104 |

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RTD WQ - 0.5in DR

Hydrograph Discharge Table

| Time (min) | Inflow cfs | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | Outflow cfs |
|------------|------------|--------------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|-----------|-------------|
| 2474 | 0.000 | 761.73 | 0.104 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.104 |
| 2476 | 0.000 | 761.73 | 0.104 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.104 |
| 2478 | 0.000 | 761.73 | 0.104 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.104 |
| 2480 | 0.000 | 761.73 | 0.104 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.104 |
| 2482 | 0.000 | 761.73 | 0.103 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.103 |
| 2484 | 0.000 | 761.73 | 0.103 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.103 |
| 2486 | 0.000 | 761.73 | 0.103 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.103 |
| 2488 | 0.000 | 761.73 | 0.103 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.103 |
| 2490 | 0.000 | 761.73 | 0.103 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.103 |
| 2492 | 0.000 | 761.73 | 0.102 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.102 |
| 2494 | 0.000 | 761.73 | 0.102 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.102 |
| 2496 | 0.000 | 761.73 | 0.102 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.102 |
| 2498 | 0.000 | 761.73 | 0.102 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.102 |
| 2500 | 0.000 | 761.73 | 0.102 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.102 |
| 2502 | 0.000 | 761.73 | 0.101 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.101 |
| 2504 | 0.000 | 761.73 | 0.101 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.101 |
| 2506 | 0.000 | 761.73 | 0.101 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.101 |
| 2508 | 0.000 | 761.73 | 0.101 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.101 |
| 2510 | 0.000 | 761.73 | 0.100 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.100 |
| 2512 | 0.000 | 761.73 | 0.100 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.100 |
| 2514 | 0.000 | 761.73 | 0.100 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.100 |
| 2516 | 0.000 | 761.73 | 0.100 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.100 |
| 2518 | 0.000 | 761.73 | 0.100 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.100 |
| 2520 | 0.000 | 761.73 | 0.099 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.099 |
| 2522 | 0.000 | 761.73 | 0.099 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.099 |
| 2524 | 0.000 | 761.73 | 0.099 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.099 |
| 2526 | 0.000 | 761.73 | 0.099 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.099 |
| 2528 | 0.000 | 761.73 | 0.099 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 0.099 |

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